

CPC**COOPERATIVE PATENT CLASSIFICATION****H04N**

PICTORIAL COMMUNICATION, e.g. TELEVISION (measuring, testing [G01](#); systems for autographic writing, e.g. writing telegraphy, which involve following an outline [{G08C 21/00}](#); information storage based on relative movement between record carrier and transducer [G11B](#); coding, decoding or code conversion, in general [H03M](#); broadcast distribution or the recording of use made thereof [H04H](#))

NOTES

1. This subclass covers :
 - {generation, recording or} transmission of pictures or their transient or permanent reproduction either locally or remotely {and the corresponding electronic image capture and reproduction process employing image representative electric signals,} by methods or arrangements {involving at least one of} the following steps:
 - a. the {electronic acquisition or} scanning of a picture {or scene} , i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence {, e.g. by reading an electronic solid-state image sensor [SSIS] pickup device (e.g. CCD or CMOS image sensor) as electronic image sensor converting optical image information into said electrical signals;}
 - b. the reproduction of the whole picture-containing area {or scene} by the reproduction of individual picture-elements into which the picture is resolved by means of picture representative electric signals derived therefrom, simultaneously or in sequence by converting an electric image signal into light e.g. with an electronic spatial light modulator;
 - concerning cameras or projectors:
 - video cameras or TV cameras, e.g. in studios, CCTV cameras, surveillance cameras, camcorders; constructional or mechanical details related to such cameras even when not peculiar to the presence of an electronic image sensor [EIS] e.g. housings;
 - arrangements or methods for image capture using an EIS or image projection using an electronic spatial light modulator [ESLM], i.e.
 - i. sensor read-out;
 - ii. processing of electrical image signals from the EIS or provided to the ESLM for the generation of respective camera or projector control signals,
 - for controlling the EIS or its read-out for e.g. exposure, scene selection for auto focussing, or electronic image enhancement or processing of the image signals captured by the EIS, e.g. white balance, electronic motion blur correction, noise suppression [H04N 5/00](#),
 - for controlling the ESLM, e.g. control of the light source based on electronic image signal, light conditioning specially adapted for the ESLM, or
 - for controlling other camera functions, e.g. exposure, shaking by influencing optical parts of the camera (generation of control signals for focussing for optical elements [G02B 7/28](#); using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), [H04N](#));

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- electronic image data storage (data storage in general [G11B](#), [G11C](#));
- in-camera image processing e.g. correction of lens distortion, defect pixel correction, noise suppression, removal of motion blur, improving of the dynamic range of the image, in-projector image processing, electronic image data manipulation, e.g. during display or projection (image processing per se [G06T](#));
- electronic viewfinders e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS ;
- electrical or mechanical aspects of camera modules using electronic image sensors, as well as related constructional details as in webcams or mobile phones (see [H04M 1/0264](#) for mounting structure in mobile phones);
- details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM (dichroic or polarizing arrangements in general [G02B](#), [G03B](#));
- remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated image signal;
- adaptations peculiar to the use of a EIS or ESLM and/or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS, controlling the operation of the EIS by external input signals;
- systems or apparatus wherein the inventive contribution lies in the interaction between features covered in Notes 1 above, concerning cameras and projectors, when interacting with those covered in Note 1 of [G03B](#), e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic motion blur correction of the electronic image sensor based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS;]
- (in group [H04N 1/00](#)) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);
- circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.

2. This subclass does not cover :

- circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. [H03C](#), [H03F](#), [H03J](#), [H04B](#), [H04H](#);
- systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass [G06K](#);
- systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) of and employed to modify the operation of the system, e.g. to control exposure, which are covered by class [G03](#);
- systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the

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production of the equivalent of a signal which would be derived according to the abovementioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. [G01D](#), [G06T](#), [H04L](#);

- systems for the reproduction to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the abovementioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. [B41B](#), [G06K](#), subject to those applications which are covered by this subclass;
 - printing, duplication or marking methods, or materials or processes therefor, which are covered by the relevant subclasses, e.g. [B41C](#), [B41M](#), [G03C](#), [G03F](#), [G03G](#);
 - apparatus or methods for taking photographs using light sensitive film for image capture, apparatus/methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, and their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;
 - aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus methods for taking photographs using light sensitive film, i.e. insofar as not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, and their related controls insofar as they are not peculiar to the presence or use of the EIS, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake);
 - aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus/ methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, and their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;
 - (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
 - optical viewfinders;
 - remote control of cameras and projectors insofar not peculiar to the EIS or ESLM, e.g. not affecting their operation, or being based on a generated image signal;
 - optical aspects of camera modules using electronic image sensors and related constructional details (optical elements or arrangements associated with solid state imager structures [H01L 27/14625](#));
 - constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM;]
3. In this subclass, the following expression is used with the meaning indicated:
"television systems" means those systems for the {electronic generation} , transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, {electronic} recordings of such scenes such as cinematograph films].
4. In this subclass, as in subclass [G03B](#), the following terms are used with the meaning indicated:

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- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
- "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;
- "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
- "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
- "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :

- H04N 5/31 covered by [G01S 7/52](#), [G01S 15/89](#)
- H04N 5/761 covered by [H04N 5/782](#)
- H04N 5/7613 covered by [H04N 5/782](#)
- H04N 5/7617 covered by [H04N 5/782](#)
- H04N 5/922 covered by [H04N 5/92](#)
- H04N 5/924 covered by [H04N 5/92](#)
- H04N 9/815 covered by [H04N 9/81](#)
- H04N 11/24 covered by [H04N 11/002](#)
- H04N 15/00 covered by [H04N 13/00](#)

H04N 1/00

Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof [{\(recording arrangements for measuring instruments G01D; sensing record carriers G06K 7/00; character or pattern recognition G06K 9/00; mosaic printer telegraph systems H04L 21/00\)}](#)

H04N 1/00002

- [{Diagnosis, testing or measuring; Detecting, analysing or monitoring not otherwise provided for \(error detection, error correction or monitoring in digital computers or digital computer components G06F 11/00\)}](#)

H04N 1/00005

- • [{relating to image data}](#)

H04N 1/00007

- • [{relating to particular apparatus or devices}](#)

H04N 1/0001

- • • [{Transmission systems or arrangements}](#)

H04N 1/00013

- • • [{Reading apparatus}](#)

H04N 1/00015

- • • [{Reproducing apparatus}](#)

H04N 1/00018

- • • [{Scanning arrangements}](#)

H04N 1/00021

- • • [{Picture signal circuits}](#)

H04N 1/00023

- • • [{Colour systems}](#)

- H04N 1/00026 . . {Methods therefor}
- H04N 1/00029 . . . {Diagnosis, i.e. identifying a problem by comparison with a normal state}
- H04N 1/00031 . . . {Testing, i.e. determining the result of a trial ([H04N 1/00029](#) takes precedence; using test signals for transmission mode changing [H04N 2201/33371](#))}
- H04N 1/00034 . . . {Measuring, i.e. determining a quantity by comparison with a standard ([H04N 1/00031](#) takes precedence)}
- H04N 1/00037 . . . {Detecting, i.e. determining the occurrence of a predetermined state ([H04N 1/00031](#) takes precedence)}
- H04N 1/00039 . . . {Analysis, i.e. separating and studying components of a greater whole}
- H04N 1/00042 . . . {Monitoring, i.e. observation ([H04N 1/00029](#) to [H04N 1/00039](#) take precedence)}
- H04N 1/00045 . . . {using a reference pattern designed for the purpose, e.g. a test chart}
- H04N 1/00047 . . . {using an image not specifically designed for the purpose}
- H04N 1/0005 . . . {in service, i.e. during normal operation}
- H04N 1/00053 . . . {out of service, i.e. outside of normal operation}
- H04N 1/00055 . . . {automatically on a periodic basis}
- H04N 1/00058 . . . {using a separate apparatus}
- H04N 1/00061 {using a remote apparatus ([H04N 1/00066](#) takes precedence)}
- H04N 1/00063 {using at least a part of the apparatus itself, e.g. self-testing}
- H04N 1/00066 {using a program downloaded or received from another apparatus}
- H04N 1/00068 {Calculating or estimating}
- H04N 1/00071 . . {characterised by the action taken}
- H04N 1/00074 . . . {Indicating or reporting (details of user-machine interface [H04N 1/0035](#))}
- H04N 1/00076 {locally}
- H04N 1/00079 {remotely}
- H04N 1/00082 . . . {Adjusting or controlling (interrupting an operation [H04N 1/00915](#); inhibiting an operation [H04N 1/00925](#))}
- H04N 1/00084 {Recovery or repair, e.g. self-repair}
- H04N 1/00087 {Setting or calibrating (picture signal circuits [H04N 1/40](#))}
- H04N 1/0009 . . . {Storage}
- H04N 1/00092 . . {relating to the original or to the reproducing medium, e.g. imperfections or dirt (detecting properties of a sheet [H04N 1/00681](#))}
- H04N 1/00095 . {Systems or arrangements for the transmission of the picture signal}
- H04N 1/00098 . . {via a television channel, e.g. for a series of still pictures with or without sound}
- H04N 1/001 . . {specially adapted for transmission via digital wireline networks ([H04N 1/00098](#) takes precedence)}
- H04N 1/00103 . . {specially adapted for radio transmission, e.g. via satellites ([H04N 1/00098](#) takes precedence)}
- H04N 1/00106 . . . {using land mobile radio networks, e.g. mobile telephone}
- H04N 1/00108 . . . {of digital signals}
- H04N 1/00111 . . {specially adapted for optical transmission}

- H04N 1/00114 . . {with transmission of additional information signals (for control or supervision between transmitter and receiver [H04N 1/32101](#))}
- H04N 1/00116 . . . {of multimedia information}
- H04N 1/00119 . . . {of sound information only}
- H04N 1/00122 . . . {of text or character information only}
- H04N 1/00124 . . . {of video information only}
- H04N 1/00127 . {Connection or combination of a still picture apparatus with another apparatus, e.g. for storage, processing or transmission of still picture signals or of information associated with a still picture}
- H04N 1/00129 . . {with a display device, e.g. CRT or LCD monitor (with a television apparatus [H04N 1/00283](#); arrangements for control of display devices [G09G](#))}
- H04N 1/00132 . . {in a digital photofinishing system, i.e. a system where digital photographic images undergo typical photofinishing processing, e.g. printing ordering}
- H04N 1/00135 . . . {Scanning of a photographic original}
- H04N 1/00137 . . . {Transmission}
- H04N 1/0014 {via e-mail}
- H04N 1/00143 . . . {Ordering}
- H04N 1/00145 {from a remote location}
- H04N 1/00148 . . . {Storage (information retrieval [G06F 17/30](#))}
- H04N 1/00151 {with selective access}
- H04N 1/00153 {for sharing images with a selected individual or correspondent}
- H04N 1/00156 {with a group of selected individuals or correspondents}
- H04N 1/00159 {for sharing images without access restriction, e.g. publishing images}
- H04N 1/00161 . . . {Viewing or previewing}
- H04N 1/00164 {at a remote location}
- H04N 1/00167 . . . {Processing or editing ([H04N 1/00196](#) to [H04N 1/00201](#) take precedence)}
- H04N 1/00169 . . . {Digital image input}
- H04N 1/00172 {directly from a still digital camera or from a storage medium mounted in a still digital camera ([H04N 1/0018](#) takes precedence)}
- H04N 1/00175 {from a still image storage medium ([H04N 1/00172](#), [H04N 1/0018](#) take precedence)}
- H04N 1/00177 {from a user terminal, e.g. personal computer}
- H04N 1/0018 {of images captured using a loaned, rented or limited-use still digital camera, e.g. recyclable or disposable camera}
- H04N 1/00183 . . . {Photography assistance, e.g. displaying suggestions to the user}
- H04N 1/00185 . . . {Image output (for details of particular output arrangements see the relevant sub-class, e.g. [B41J](#), [G03B](#), [G09G](#), [G11B](#))}
- H04N 1/00188 {Printing, e.g. prints or reprints ([H04N 1/0019](#), [H04N 1/00196](#) take precedence)}
- H04N 1/0019 {on souvenir-type products or the like, e.g. T-shirts or mugs}
- H04N 1/00193 {to a portable storage medium, e.g. a read-writable compact disk}

H04N 1/00196	. . . . {Creation of a photo-montage, e.g. photoalbum (H04N 1/0019 takes precedence)}
H04N 1/00198	. . . . {Creation of a soft photo presentation, e.g. digital slide-show}
H04N 1/00201	. . . . {Creation of a lenticular or stereo hardcopy image}
H04N 1/00204	. . {with a digital computer or a digital computer system, e.g. an internet server (programmed control between transmitter and receiver or between image input and image output device H04N 1/32561)}
H04N 1/00206	. . . {Transmitting or receiving computer data via an image communication device, e.g. a facsimile transceiver (H04N 1/00236 takes precedence)}
H04N 1/00209	. . . {Transmitting or receiving image data, e.g. facsimile data, via a computer, e.g. using e-mail, a computer network, the internet, I-fax}
H04N 1/00212	. . . . {Attaching image data to computer messages, e.g. to e-mails}
H04N 1/00214	. . . . {details of transmission}
H04N 1/00217	. . . . . {only involving computer data transmission protocols, e.g. SMTP, WAP or HTTP (communication protocol aspects and techniques in packet data networks H04L 69/00 ; network-specific arrangements or communication protocols supporting networked applications H04L 67/00)}
H04N 1/0022	. . . . . {involving facsimile protocols or a combination of facsimile protocols and computer data transmission protocols}
H04N 1/00222	. . . . {details of image data generation or reproduction, e.g. scan-to-email or network printing}
H04N 1/00225	. . . . . {details of image data generation, e.g. scan-to-email or network scanners (using an image reading device as a local input to a computer H04N 1/00241)}
H04N 1/00228	. . . . . {Image push arrangements, e.g. from an image reading device to a specific network destination (push based network services H04L 67/26)}
H04N 1/0023	. . . . . {Image pull arrangements, e.g. to a multifunctional peripheral from a networked computer}
H04N 1/00233	. . . . . {details of image data reproduction, e.g. network printing or remote image display (using an image reproducing device as a local output from a computer H04N 1/00238 ; digital output from computer to printer unit G06F 3/12)}
H04N 1/00236	. . . {using an image reading or reproducing device, e.g. a facsimile reader or printer, as a local input to or local output from a computer (image input to or image output from a computer via a network H04N 1/00209)}
H04N 1/00238	. . . . {using an image reproducing device as a local output from a computer (output via network, e.g. network printing H04N 1/00233)}
H04N 1/00241	. . . . {using an image reading device as a local input to a computer (input via network, e.g. network scanners H04N 1/00225)}
H04N 1/00244	. . . {with a server, e.g. an internet server (fax-servers or the like for store and forward H04N 1/324)}
H04N 1/00246	. . {with an optical device, e.g. an optical viewing aid}
H04N 1/00249	. . {with a photographic apparatus, e.g. a photographic printer or a projector (photographic apparatus per se G03B , G03D)}
H04N 1/00251	. . . {with an apparatus for taking photographic images, e.g. a camera}

H04N 1/00254	. . . {with an electrophotographic copying machine, i.e. a photocopier}
H04N 1/00257	. . . {with an electro-developing recording medium, e.g. generating image signals by reading such a medium in a still camera}
H04N 1/00259	. . . {with an apparatus for processing exposed photographic materials}
H04N 1/00262	. . . . {Reading a film during its processing, e.g. generating image signals from a film while the photographic image on the film is in the process of being developed}
H04N 1/00265	. . . {with a photographic printing apparatus}
H04N 1/00267	. . . {with a viewing or projecting apparatus, e.g. for reading image information from a film (H04N 1/00262 takes precedence)}
H04N 1/0027	. . . {Reading or writing of non-image information from or to a photographic material, e.g. processing data stored in a magnetic track}
H04N 1/00273	. . . {with apparatus for handling photographic material}
H04N 1/00275	. . . {Recording image information on a photographic material}
H04N 1/00278	. . {with a printing apparatus, e.g. a laser beam printer}
H04N 1/00281	. . {with a telecommunication apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, a selective call terminal (details of transmission H04N 1/00095 ; establishing a communication with one of a facsimile machine or another apparatus sharing a single line H04N 1/32704 ; interfacing cordless telephone terminals with an accessory to increase the functionality of user interface H04M 1/72527)}
H04N 1/00283	. . . {with a television apparatus}
H04N 1/00286	. . . . {with studio circuitry, devices or equipment, e.g. television cameras (television studio circuitry, devices or equipment per se H04N 5/222)}
H04N 1/00289	. . . . . {in a video photo booth or the like}
H04N 1/00291	. . . . {with receiver circuitry (television receiver circuitry per se H04N 5/44)}
H04N 1/00294	. . . . . {for printing images at a television receiver}
H04N 1/00297	. . . . {with a television signal recorder, e.g. for recording facsimile images on a VCR (motion video recording combined with still video recording in a still video camera H04N 1/212)}
H04N 1/00299	. . . . {with a television transmission apparatus, e.g. a videophone, a teletext system or a digital television system}
H04N 1/00302	. . . {with a telephonic apparatus, e.g. telephone answering machine or videotex terminal (H04N 1/00307 takes precedence; telephonic communication H04M)}
H04N 1/00305	. . . . {with a cordless telephone apparatus}
H04N 1/00307	. . . {with a mobile telephone apparatus (constructional features of portable telephone sets H04M 1/0202 ; mobile radio systems H04W 84/00)}
H04N 1/0031	. . . {with a selective call apparatus, e.g. a paging device (selective call receivers H04W 88/022 ; selective call encoders H04W 88/185)}
H04N 1/00312	. . . {with a digital transmission apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, SMS or ISDN device (transmitting or receiving via a computer e.g. using e-mail, a computer network or the internet H04N 1/00214 ; transmission of digital information H04L)}

- H04N 1/00315 . . . {with a radio transmission apparatus (with a cordless telephone [H04N 1/00305](#); systems or arrangements for the transmission of a picture signal specially adapted for transmission via radio [H04N 1/00103](#); [H04N 1/00307](#) takes precedence; radio transmission systems [H04B 7/00](#); wireless communication networks [H04W](#))}
- H04N 1/00318 . . . {with a multi-media apparatus}
- H04N 1/0032 . . {with a medium handling apparatus, e.g. a sheet sorter (handling thin or filamentary material, e.g. sheets [B65H](#))}
- H04N 1/00323 . . {with a measuring, monitoring or signaling apparatus, e.g. for transmitting measured information to a central location}
- H04N 1/00326 . . {with a data reading, recognizing or recording apparatus, e.g. with a bar-code apparatus (arrangements for the associated working of recording or reproducing apparatus with related apparatus [G11B 31/00](#))}
- H04N 1/00328 . . . {with an apparatus processing optically-read information}
- H04N 1/00331 {with an apparatus performing optical character recognition (arrangements for recognising printed or written characters [G06K 9/00](#))}
- H04N 1/00334 {with an apparatus processing barcodes or the like (arrangements for sensing record carriers [G06K 7/00](#))}
- H04N 1/00336 {with an apparatus performing pattern recognition, e.g. of a face or a geographic feature (arrangements for recognising patterns [G06K 9/00](#))}
- H04N 1/00339 . . . {with an electronic or magnetic storage medium I/O device (RFID or the like [H04N 1/00342](#))}
- H04N 1/00342 . . . {with a radio frequency tag transmitter or receiver (storage of additional information in an RFID tag attached to an image bearing paper sheet [H04N 1/32138](#))}
- H04N 1/00344 . . {with a management, maintenance, service or repair apparatus (monitoring [H04N 1/00002](#))}
- H04N 1/00347 . . {with another still picture apparatus, e.g. hybrid still picture apparatus (circuits or arrangements for control or supervision between image input and image output device [H04N 1/32](#))}
- H04N 1/0035 . {User-machine interface; Control console (input or output arrangements for computers [G06F 3/00](#))}
- H04N 1/00352 . . {Input means ([H04N 1/00411](#) takes precedence; input arrangements for computers [G06F 3/00](#))}
- H04N 1/00355 . . . {Mark-sheet input (sensing record carriers [G06K 7/00](#); recognising printed or written characters [G06K 9/00](#))}
- H04N 1/00358 {Type of the scanned marks}
- H04N 1/0036 {Alphanumeric symbols}
- H04N 1/00363 {Bar codes or the like}
- H04N 1/00366 {Marks in boxes or the like, e.g. crosses or blacking out ([H04N 1/0036](#) takes precedence)}
- H04N 1/00368 {Location of the scanned marks}
- H04N 1/00371 {on a separate sheet}
- H04N 1/00374 {on the same page as at least a part of the image}
- H04N 1/00376 {Means for identifying a mark sheet or area}

H04N 1/00379	. . . .	{Means for enabling correct scanning of a mark sheet or area, e.g. registration or timing marks}
H04N 1/00381	. . .	{Input by recognition or interpretation of visible user gestures (manual input means, e.g. digitisers, writing tablets H04N 1/00392 ; recognition algorithms G06K 9/00335 ; gesture input to computers G06F 3/017)}
H04N 1/00384	. . .	{Key input means, e.g. buttons or keypads (electromechanical details of key input means in general H01H 13/00)}
H04N 1/00387	. . . .	{Multiple functions per key}
H04N 1/00389	. . . .	{Programmable function keys, e.g. for one-touch operation (H04N 1/00387 takes precedence; for automation of transmitter jobs H04N 1/32058)}
H04N 1/00392	. . .	{Other manual input means, e.g. digitisers or writing tablets}
H04N 1/00395	. . .	{Arrangements for reducing operator input (input arrangements for job or mode instructions or parameters H04N 1/00962 ; intelligent menu interfaces H04N 1/00437)}
H04N 1/00397	. . .	{Switches, knobs or the like}
H04N 1/004	. . . .	{Rocker or tumbler switches}
H04N 1/00403	. . .	{Voice input means, e.g. voice commands}
H04N 1/00405	. .	{Output means (output arrangements for computers G06F 3/00)}
H04N 1/00408	. . .	{Display of information to the user, e.g. menus}
H04N 1/00411	. . . .	{the display also being used for user input, e.g. touch screen}
H04N 1/00413	. . . .	{using menus, i.e. presenting the user with a plurality of selectable options (H04N 1/00464 takes precedence)}
H04N 1/00416	. . . . .	{Multi-level menus}
H04N 1/00419	. . . . .	{Arrangements for navigating between pages or parts of the menu}
H04N 1/00421	. . . . .	{using drop-down menus}
H04N 1/00424	. . . . .	{using a list of graphical elements, e.g. icons or icon bar}
H04N 1/00427	. . . . .	{using a menu list (H04N 1/00421 , H04N 1/00424 , H04N 1/00429 take precedence)}
H04N 1/00429	. . . . .	{using a navigation tree}
H04N 1/00432	. . . . .	{using tabs}
H04N 1/00435	. . . . .	{arranged in a predetermined sequence, e.g. using next and previous buttons}
H04N 1/00437	. . . . .	{Intelligent menus, e.g. anticipating user selections}
H04N 1/0044	. . . .	{for image preview or review, e.g. to help the user position a sheet}
H04N 1/00442	. . . . .	{Simultaneous viewing of a plurality of images, e.g. using a mosaic display arrangement of thumbnails}
H04N 1/00445	. . . . .	{arranged in a one dimensional array}
H04N 1/00448	. . . . .	{horizontally}
H04N 1/0045	. . . . .	{vertically}
H04N 1/00453	. . . . .	{arranged in a two dimensional array}
H04N 1/00456	. . . . .	{for layout preview, e.g. page layout}

H04N 1/00458	. . . . . {Sequential viewing of a plurality of images, e.g. browsing or scrolling}
H04N 1/00461	. . . . . {marking or otherwise tagging one or more displayed image, e.g. for selective reproduction}
H04N 1/00464	. . . . . {using browsers, i.e. interfaces based on mark-up languages}
H04N 1/00466	. . . . . {displaying finishing information, e.g. position of punch holes or staple or orientation references}
H04N 1/00469	. . . . . {with enlargement of a selected area of the displayed information}
H04N 1/00472	. . . . . {using a pop-up window}
H04N 1/00474	. . . {outputting a plurality of functional options, e.g. scan, copy or print}
H04N 1/00477	. . . {Indicating status, e.g. of a job (for control or supervision between transmitter and receiver or between image input and image output device H04N 2201/3219)}
H04N 1/0048	. . . {Indicating an illegal or impossible operation or selection to the user}
H04N 1/00482	. . . {outputting a plurality of job set-up options, e.g. number of copies, paper size or resolution}
H04N 1/00485	. . . {providing a hardcopy output to the user, e.g. print out}
H04N 1/00488	. . . {providing an audible output to the user}
H04N 1/0049	. . . {providing a visual indication to the user, e.g. using a lamp (H04N 1/00408 takes precedence)}
H04N 1/00493	. . {Particular location of the interface or console}
H04N 1/00496	. . {Constructional details of the interface or console not otherwise provided for, e.g. rotating or tilting means}
H04N 1/00498	. . {Multi-lingual facilities}
H04N 1/00501	. . {Tailoring a user interface [UI] to specific requirements}
H04N 1/00503	. . . {Customising to a particular machine or model, machine function or application}
H04N 1/00506	. . . {Customising to the data to be displayed}
H04N 1/00509	. . . {Personalising for a particular user or group of users, e.g. a workgroup or company}
H04N 1/00511	. . . . {for a group of users, e.g. a workgroup , company, or a service provider}
H04N 1/00514	. . . . {for individual users}
H04N 1/00517	. . . . {involving favourite or frequently used settings}
H04N 1/00519	. {Constructional details not otherwise provided for, e.g. housings, covers}
H04N 1/00522	. . {Reducing apparatus footprint, e.g. wall-mounted or vertically arranged apparatus}
H04N 1/00525	. . {Providing a more compact apparatus, e.g. sheet discharge tray in cover}
H04N 1/00527	. . . {Discharge tray at least partially sandwiched between image generating and reproducing components}
H04N 1/0053	. . . {Discharge tray in cover}
H04N 1/00533	. . . {using slidably mounted components, e.g. reader in drawer}
H04N 1/00535	. . . {using rotatably mounted or foldable components}

- H04N 1/00538 . . {Modular devices, i.e. allowing combinations of separate components, removal or replacement of components}
- H04N 1/00541 . . . {with detachable image reading apparatus}
- H04N 1/00543 . . {Allowing easy access, e.g. for maintenance or in case of paper jam (H04N 1/00538 takes precedence)}
- H04N 1/00546 . . . {using a side opening}
- H04N 1/00549 . . {Counter-measures for mechanical vibration not otherwise provided for}
- H04N 1/00551 . . {Top covers or the like}
- H04N 1/00554 . . . {Latches or hinges therefor}
- H04N 1/00557 . . {Connection or assembly of components or elements (H04N 1/00538 takes precedence)}
- H04N 1/00559 . . {Mounting or support of components or elements (H04N 1/00538 takes precedence)}
- H04N 1/00562 . . {Supporting the apparatus as a whole, e.g. stands}
- H04N 1/00564 . . {Constructional details relating to ergonomic aspects}
- H04N 1/00567 . {Handling of original or reproduction media, e.g. cutting, separating, stacking}
- H04N 1/0057 . . {Conveying sheets before or after scanning (arrangements for conveying sheets as part of the scanning operation H04N 1/04 and subgroups)}
- H04N 1/00572 . . . {with refeeding for double-sided scanning, e.g. using one scanning head for both sides of a sheet}
- H04N 1/00575 {Inverting the sheet prior to refeeding}
- H04N 1/00578 {using at least part of a loop, e.g. using a return loop}
- H04N 1/0058 {using at least one dead-end path, e.g. using a sheet ejection path}
- H04N 1/00583 {by rotating the sheet about an axis lying in its plane}
- H04N 1/00586 {Inverting the scanning elements with respect to the scanning plane prior to refeeding}
- H04N 1/00588 . . . {to the scanning position (H04N 1/00572, H04N 1/00594 take precedence)}
- H04N 1/00591 . . . {from the scanning position (H04N 1/00572 takes precedence)}
- H04N 1/00594 {along at least a part of the same path as transport to the scanning position (H04N 1/00575 takes precedence)}
- H04N 1/00596 . . . {using at least a part of the apparatus in common for transporting to or from a plurality of scanning positions, e.g. for reading and printing}
- H04N 1/00599 . . . {Using specific components (details of components related to handling thin or filamentary material B65H)}
- H04N 1/00602 {Feed rollers}
- H04N 1/00604 {Transport trays}
- H04N 1/00607 {Grippers or the like, e.g. suction grippers}
- H04N 1/0061 {Feed belts}
- H04N 1/00612 {Path switches (H04N 1/00575, H04N 1/00623, H04N 1/00633 take precedence)}
- H04N 1/00615 {Guiding elements, e.g. plates}
- H04N 1/00618 . . . {Transporting curved sheets or curving sheets during transportation, e.g. for feeding to a drum-type scanner}

- H04N 1/0062 . . {Removing sheets from a stack or inputting media}
- H04N 1/00623 . . . {Selectively inputting media from one of a plurality of input sources, e.g. input trays}
- H04N 1/00625 . . . {Removing sheets selectively from the top or bottom of a single stack or tray}
- H04N 1/00628 . . {Separating, e.g. preventing feeding of two sheets at a time}
- H04N 1/00631 . . {Ejecting or stacking ([H04N 1/00641](#) takes precedence)}
- H04N 1/00633 . . . {selectively to one of a plurality of output trays ([H04N 1/00641](#) takes precedence)}
- H04N 1/00636 . . . {Ejecting sheets selectively to the top or bottom of a single stack or tray}
- H04N 1/00639 . . {Binding, stapling, folding or perforating, e.g. punching}
- H04N 1/00641 . . {Sorting, reordering or inverting (postal sorting or sorting individual articles [B07C](#))}
- H04N 1/00644 . . {Counting or calculating, e.g. a number of remaining sheets}
- H04N 1/00647 . . {Decurling}
- H04N 1/00649 . . {Control or synchronising different handling operations ([H04N 1/00657](#) takes precedence)}
- H04N 1/00652 . . . {Control of feeding speed, e.g. fast feeding to scanning position ([H04N 1/00673](#) takes precedence)}
- H04N 1/00655 . . {Apparatus in common for different handling operations ([H04N 1/00575](#), [H04N 1/00594](#), [H04N 1/00596](#), [H04N 1/00618](#) take precedence)}
- H04N 1/00657 . . {Compensating for different handling speeds of different apparatus or arrangements for handling a plurality of sheets simultaneously, e.g. mechanical buffering}
- H04N 1/0066 . . {Aligning or positioning related to handling}
- H04N 1/00663 . . {Indicating relating to handling of media}
- H04N 1/00665 . . {Details specific to handling of web-shaped media, e.g. paper or film rolls}
- H04N 1/00668 . . . {Removing the medium from a cassette, spindle or the like}
- H04N 1/00671 . . . {Winding or feeding the medium into a cassette or onto a spindle or the like}
- H04N 1/00673 . . . {Controlling the amount of slack or tension control}
- H04N 1/00676 . . . {Cutting}
- H04N 1/00679 {after scanning}
- H04N 1/00681 . {Detecting the presence, position or size of a sheet or correcting its position before scanning ([H04N 1/047](#) takes precedence; mode signalling [H04N 1/333](#); skew detection or correction in image signals [H04N 1/3878](#))}
- H04N 1/00684 . . {Object of the detection}
- H04N 1/00687 . . . {Presence or absence}
- H04N 1/00689 {Presence}
- H04N 1/00692 {Absence}
- H04N 1/00694 {in an input tray}
- H04N 1/00697 {in an output tray}
- H04N 1/007 {of holder, e.g. film mount}

H04N 1/00702	. . . {Position}
H04N 1/00705	. . . . {at a plurality of spaced apart locations, e.g. as a sheet is fed through the apparatus}
H04N 1/00708	. . . {Size or dimensions}
H04N 1/0071	. . . . {Width}
H04N 1/00713	. . . . {Length}
H04N 1/00716	. . . . {Thickness}
H04N 1/00718	. . . {Skew}
H04N 1/00721	. . . {Orientation}
H04N 1/00724	. . . {Type of sheet, e.g. colour of paper or transparency}
H04N 1/00726	. . . {Other properties of the sheet, e.g. curvature or reflectivity}
H04N 1/00729	. . {Detection means}
H04N 1/00732	. . . {Mechanical detectors}
H04N 1/00734	. . . {Optical detectors}
H04N 1/00737	. . . . {using the scanning elements as detectors}
H04N 1/0074	. . . . . {using inactive scanning elements, e.g. elements outside the scanning area}
H04N 1/00742	. . {Detection methods}
H04N 1/00745	. . . {Detecting the leading or trailing ends of a moving sheet}
H04N 1/00748	. . . {Detecting edges, e.g. of a stationary sheet}
H04N 1/0075	. . . {Detecting a change in reflectivity}
H04N 1/00753	. . . . {of a sheet relative to a particular background}
H04N 1/00755	. . . {Detecting an interruption of light}
H04N 1/00758	. . . {using a prescan}
H04N 1/00761	. . . {using reference marks, e.g. on sheet, sheet holder or guide}
H04N 1/00763	. . {Action taken as a result of detection}
H04N 1/00766	. . . {Storing data}
H04N 1/00769	. . . {Comparing, e.g. with threshold}
H04N 1/00771	. . . {Indicating or reporting, e.g. issuing an alarm}
H04N 1/00774	. . . {Adjusting or controlling}
H04N 1/00777	. . . . {Inhibiting, e.g. an operation}
H04N 1/00779	. . . . {Adjusting settings, e.g. mode, feeding rate or type of paper}
H04N 1/00782	. . . . {Initiating operations}
H04N 1/00785	. . {Correcting the position of a sheet before scanning}
H04N 1/00787	. . . {using mechanical means}
H04N 1/0079	. . . {using guide or holder}
H04N 1/00793	. . . {using paper feeding mechanism, e.g. operate drive rollers at different speeds}
H04N 1/00795	. {Reading arrangements (details of scanning heads H04N 1/024 ; scanning arrangements therefor H04N 1/04)}

- H04N 1/00798 . . {Circuits or arrangements for the control thereof, e.g. using a programmed control device or according to a measured quantity}
- H04N 1/00801 . . . {according to characteristics of the original}
- H04N 1/00803 {Presence or absence of information}
- H04N 1/00806 {According to type of the original, e.g. colour paper or transparency, or reading a plurality of different types of original}
- H04N 1/00809 {Orientation}
- H04N 1/00811 . . . {according to user specified instructions, e.g. user selection of reading mode}
- H04N 1/00814 . . . {according to a detected condition or state of the reading apparatus, e.g. temperature}
- H04N 1/00816 . . . {Determining the reading area, e.g. eliminating reading of margins}
- H04N 1/00819 . . . {Self-calibrating reading means}
- H04N 1/00822 . . . {Selecting or setting a particular reading mode, e.g. from amongst a plurality of modes, simplex or duplex, or high or low resolution}
- H04N 1/00824 . . . {for displaying or indicating, e.g. a condition or state (details of displaying or indicating means [H04N 1/00405](#))}
- H04N 1/00827 . . {Arrangements for reading an image from an unusual original, e.g. 3-dimensional objects}
- H04N 1/0083 . {Arrangements for transferring signals between different components of the apparatus, e.g. arrangements of signal lines or cables (for control or supervision between image input and output device [H04N 1/32](#))}
- H04N 1/00832 . {Recording use, e.g. counting number of pages copied}
- H04N 1/00835 . {Detecting external or ambient light}
- H04N 1/00838 . {Preventing unauthorised reproduction}
- H04N 1/0084 . . {Determining the necessity for prevention}
- H04N 1/00843 . . . {based on recognising a copy prohibited original, e.g. a banknote (recognising characters or patterns [G06K 9/00](#); testing paper currency or similar valuable papers for genuineness [G07D 7/00](#))}
- H04N 1/00846 {based on detection of a dedicated indication, e.g. marks or the like}
- H04N 1/00848 {by detecting a particular original}
- H04N 1/00851 {externally to or remotely from the reproduction apparatus, e.g. using a connected apparatus}
- H04N 1/00854 . . . {Recognising an unauthorised user or user-associated action}
- H04N 1/00856 . . {Preventive measures}
- H04N 1/00859 . . . {Issuing an alarm or the like}
- H04N 1/00862 . . . {Retaining the original}
- H04N 1/00864 . . . {Modifying the reproduction, e.g. outputting a modified copy of a scanned original (details of composing or otherwise geometrically modifying originals [H04N 1/387](#))}
- H04N 1/00867 {with additional data, e.g. by adding a warning message (details of embedding additional information in an image [H04N 1/32144](#))}
- H04N 1/0087 {with hidden additional data, e.g. data invisible to the human eye}
- H04N 1/00872 {by image quality reduction, e.g. distortion or blacking out}

- H04N 1/00875 . . . {Inhibiting reproduction, e.g. by disabling reading or reproduction apparatus}
- H04N 1/00877 . . . {Recording information, e.g. details of the job}
- H04N 1/0088 . . {Detecting or preventing tampering attacks on the reproduction system}
- H04N 1/00883 . . {Auto-copy-preventive originals, i.e. originals that are designed not to allow faithful reproduction}
- H04N 1/00885 . {Power supply means, e.g. arrangements for the control of power supply to the apparatus or components thereof}
- H04N 1/00888 . . {Control thereof}
- H04N 1/00891 . . . {Switching on or off, e.g. for saving power when not in use ([H04N 1/00896](#) takes precedence)}
- H04N 1/00893 . . . {using a back-up supply, e.g. in case of main-supply failure}
- H04N 1/00896 . . . {using a low-power mode, e.g. standby}
- H04N 1/00899 . . {Detection of supply level or supply failure}
- H04N 1/00901 . . {Using different supplies or connection to an external supply ([H04N 1/00893](#), [H04N 1/00896](#) take precedence)}
- H04N 1/00904 . . {Arrangements for supplying power to different circuits or for supplying power at different levels ([H04N 1/00896](#) takes precedence)}
- H04N 1/00907 . . {Details of supply connection, e.g. arrangement of power cables ([H04N 1/00901](#) and [H04N 1/00904](#) take precedence)}
- H04N 1/00909 . {Cleaning arrangements or preventing or counter-acting contamination from dust or the like (cleaning in general, prevention of fouling in general [B08B](#))}
- H04N 1/00912 . {Arrangements for controlling a still picture apparatus or components thereof not otherwise provided for}
- H04N 1/00915 . . {Assigning priority to, or interrupting, a particular operation}
- H04N 1/00917 . . . {Resuming after an intentional interruption, e.g. resetting parameters}
- H04N 1/0092 . . . {Assigning priority according to size job or task, e.g. small jobs first}
- H04N 1/00923 . . . {Variably assigning priority ([H04N 1/0092](#) takes precedence)}
- H04N 1/00925 . . {Inhibiting an operation}
- H04N 1/00928 . . {Initialisation or control of normal start-up or shut-down, i.e. non failure or error related}
- H04N 1/00931 . . {Synchronising different operations or sub-apparatus, e.g. controlling on-times taking into account different warm-up times}
- H04N 1/00933 . . {Timing control or synchronising ([H04N 1/00928](#), [H04N 1/00931](#), [H04N 1/00954](#) and [H04N 1/0096](#) take precedence)}
- H04N 1/00936 . . {Skipping a function or process step}
- H04N 1/00938 . . {Software related arrangements, e.g. loading applications (program loading in general [G06F 9/445](#))}
- H04N 1/00941 . . . {Interaction of different applications ([H04N 1/00949](#) takes precedence; multiprogramming arrangements of computers [G06F 9/46](#))}
- H04N 1/00944 . . . {using hot folders, i.e. folders or directories which trigger an action when written to or accessed}
- H04N 1/00946 {Details of actions associated with a hot folder}

- H04N 1/00949 . . . {Combining applications, e.g. to create workflows (allocation of computer machine resources considering the execution order of a plurality of tasks [G06F 9/5038](#))}
- H04N 1/00952 . . {Using a plurality of control devices, e.g. for different functions}
- H04N 1/00954 . . {Scheduling operations or managing resources ([H04N 1/0096](#) takes precedence; program initiating or switching [G06F 9/48](#); allocation of computer resources [G06F 9/50](#))}
- H04N 1/00957 . . {Compiling jobs, e.g. for batch processing ([H04N 1/3208](#) takes precedence; program code compilation [G06F 8/41](#))}
- H04N 1/0096 . . {Simultaneous or quasi-simultaneous functioning of a plurality of operations ([H04N 1/32545](#) takes precedence; multiprogramming arrangements of computers [G06F 9/46](#))}
- H04N 1/00962 . {Input arrangements for operating instructions or parameters, e.g. updating internal software (program loading in general [G06F 9/445](#); network-specific protocols involving the movement of software or configuration parameters [H04L 67/34](#))}
- H04N 1/00965 . . {using a plug-in memory module, e.g. memory card, memory stick}
- H04N 1/00968 . . {by scanning marks on a sheet (mark-sheet input means [H04N 1/00355](#); sensing record carriers [G06K 7/00](#))}
- H04N 1/0097 . . {Storage of instructions or parameters, e.g. customised instructions or different parameters for different user IDs}
- H04N 1/00973 . . {from a remote device, e.g. receiving via the internet instructions input to a computer terminal}
- H04N 1/00976 . {Arrangements for regulating environment, e.g. removing static electricity}
- H04N 1/00978 . . {Temperature control}
- H04N 1/00981 . . . {by forced convection, e.g. using fans}
- H04N 1/00984 {using fins or the like}
- H04N 1/00986 . . . {Heating}
- H04N 1/00989 . . . {by natural convection, e.g. using fins without a fan}
- H04N 1/00992 . . {Humidity control, e.g. removing condensation}
- H04N 1/00994 . . {Compensating for electric noise, e.g. electromagnetic interference}
- H04N 1/00997 . . {Light control, e.g. shielding from ambient light or preventing light leakage}
- H04N 1/024 . . Details of scanning heads; {Means for illuminating the original (circuit details thereof [H04N 1/40](#))}
- H04N 1/02409 . . {Focusing, i.e. adjusting the focus of the scanning head}
- H04N 1/02418 . . {for picture information pick up and reproduction}
- H04N 1/02427 . . . {in different planes}
- H04N 1/02436 {using a single head selectively and alternately arranged to scan in the different planes}
- H04N 1/02445 . . . {in the same plane}
- H04N 1/02454 . . . {using interchangeable heads}
- H04N 1/02463 . . . {using heads mounted on the same support or substrate}
- H04N 1/02472 . . . {using a single head, i.e. for pick up and reproduction ([H04N 1/02436](#) takes precedence)}

- H04N 1/02481 . . {Arrangements for positioning elements within a head ([H04N 1/02409](#) takes precedence)}
- H04N 1/0249 . . {Arrangements for mounting or supporting elements within a scanning head ([H04N 1/02481](#) takes precedence)}
- H04N 1/028 . . for picture information pick-up
- H04N 1/02805 . . . {with photodetectors arranged in a two-dimensional array}
- H04N 1/0281 . . . {with means for collecting light from a line or an area of the original and for guiding it to only one or a relatively low number of picture element detectors ([light-guides per se G02B 6/00](#))}
- H04N 1/02815 . . . {Means for illuminating the original, not specific to a particular type of pick-up head}
- H04N 1/0282 {Using a single or a few point light sources, e.g. a laser diode}
- H04N 1/02825 {in combination with at least one reflector which is fixed in relation to the light source ([H04N 1/02835](#) and [H04N 1/0284](#) take precedence)}
- H04N 1/0283 {in combination with a light deflecting element, e.g. a rotating mirror}
- H04N 1/02835 {in combination with a light guide, e.g. optical fibre, glass plate ([light-guides per se G02B 6/00](#))}
- H04N 1/0284 {in combination with a light integrating, concentrating or diffusing cavity}
- H04N 1/02845 {using an elongated light source, e.g. tubular lamp, LED array}
- H04N 1/0285 {in combination with at least one reflector which is in fixed relation to the light source}
- H04N 1/02855 {in combination with a light guide, e.g. optical fibre, glass plate ([light-guides per se G02B 6/00](#))}
- H04N 1/0286 {in combination with a light integrating, concentrating or defusing cavity}
- H04N 1/02865 {using an array of light sources or a combination of such arrays, e.g. an LED bar}
- H04N 1/0287 {using a tubular lamp or a combination of such lamps}
- H04N 1/02875 {comprising a reflective coating}
- H04N 1/0288 {using a two-dimensional light source, e.g. two-dimensional LED array}
- H04N 1/02885 {Means for compensating spatially uneven illumination, e.g. an aperture arrangement}
- H04N 1/0289 {Light diffusing elements, e.g. plates or filters ([optical diffusing elements per se G02B 5/02](#))}
- H04N 1/02895 {Additional elements in the illumination means or cooperating with the illumination means, e.g. filters ([H04N 1/02885](#) takes precedence; [optical elements other than lenses per se G02B 5/00](#))}
- H04N 1/029 . . . Heads optically focused on only one picture element at a time {([H04N 1/0281](#) takes precedence)}
- H04N 1/03 . . . with photodetectors arranged in a substantially linear array ([scanning of linear arrays H04N 1/19](#))

- H04N 1/0301 {using a bent optical path between the scanned line and the photodetector array, e.g. a folded optical path}
- H04N 1/0303 {with the scanned line and the photodetector array lying in non-parallel planes}
- H04N 1/0305 {with multiple folds of the optical path}
- H04N 1/0306 {using a plurality of optical elements arrayed in the main scan direction, e.g. an array of lenses}
- H04N 1/0308 {characterised by the design of the photodetectors, e.g. shape}
- H04N 1/031 the photodetectors having a one-to-one and optically positive correspondence with the scanned picture elements, e.g. linear contact sensors
- H04N 1/0311 {using an array of elements to project the scanned image elements onto the photodetectors ([H04N 1/0318](#) takes precedence)}
- H04N 1/0312 {using an array of optical fibres or rod-lenses}
- H04N 1/0313 {Direct contact pick-up heads, i.e. heads having no array of elements to project the scanned image elements onto the photodetectors}
- H04N 1/0314 {using photodetectors and illumination means mounted in the same plane on a common support or substrate}
- H04N 1/0315 {using photodetectors and illumination means mounted on separate supports or substrates or mounted in different planes}
- H04N 1/0316 {illuminating the scanned image elements through the plane of the photodetector, e.g. back-light illumination}
- H04N 1/0317 {detecting the scanned image elements through the plane of the illumination means}
- H04N 1/0318 {Integral pick-up heads, i.e. self-contained heads whose basic elements are a light-source, a lens array and a photodetector array which are supported by a single-piece frame}
- H04N 1/032 . . for picture information reproduction
- H04N 1/0323 . . . {Heads moving to and away from the reproducing medium, e.g. for pressure sensitive reproducing}
- H04N 1/0326 . . . {Magnetic heads}
- H04N 1/034 . . . using ink, e.g. ink-jet heads ([H04N 1/0323](#) takes precedence)}
- H04N 1/036 . . . for optical reproduction
- H04N 1/04 . . Scanning arrangements, {i.e. arrangements for the displacement of active reading or reproducing elements relative to the original or reproducing medium, or vice versa} ([H04N 1/387](#) takes precedence; {scanning by varying the direction of light in general [G02B 26/10](#)})
- H04N 1/0402 . . {Scanning different formats; Scanning with different densities of dots per unit length, e.g. different numbers of dots per inch (dpi); Conversion of scanning standards ([H04N 1/00283](#) takes precedence; picture signal circuits for modification of image resolution [H04N 1/3935](#), [H04N 1/40068](#))}
- H04N 1/0405 . . . {Different formats, e.g. A3 and A4}
- H04N 1/0408 . . . {Different densities of dots per unit length}
- H04N 1/0411 {in the main scanning direction}
- H04N 1/0414 {in the sub scanning direction}

H04N 1/0417	. . . {Conversion of standards}
H04N 1/042	. . . {Details of the method used}
H04N 1/0423	. . . . {Switching between or selecting from a plurality of optical paths}
H04N 1/0426	. . . . {using different sized scanning elements, e.g. reproducing different sized dots}
H04N 1/0429	. . . . {Varying the size of apertures}
H04N 1/0432	. . . . {Varying the magnification of a single lens group}
H04N 1/0435	. . . . {Optical element switching, e.g. switching lenses into a single optical path}
H04N 1/0437	. . . . {Tilting an array with respect to the main or sub scanning direction}
H04N 1/044	. . . . {Tilting an optical element, e.g. a refractive plate (H04N 1/0423 takes precedence)}
H04N 1/0443	. . . . {Varying the scanning velocity or position}
H04N 1/0446	. . . . {Varying the modulation time or intensity}
H04N 1/0449	. . . . {using different sets of scanning elements, e.g. for different formats}
H04N 1/0452	. . . . . {mounted on the same support or substrate}
H04N 1/0455	. . . . {using a single set of scanning elements, e.g. the whole of and a part of an array respectively for different formats}
H04N 1/0458	. . . . . {using different portions of the scanning elements for different formats or densities of dots}
H04N 1/0461	. . {part of the apparatus being used in common for reading and reproducing (simultaneous scanning of the original picture and the reproduced picture with a common scanning device H04N 1/207)}
H04N 1/0464	. . {capable of performing non-simultaneous scanning at more than one scanning station}
H04N 1/0467	. . . {the different stations being used for transmissive and reflective originals}
H04N 1/047	. . Detection, control or error compensation of scanning velocity or position (H04N 1/0402 and H04N 1/17 take precedence)
H04N 1/0473	. . . {in subscanning direction, e.g. picture start or line-to-line synchronisation}
H04N 1/0476	. . . {Indicating the scanning velocity}
H04N 1/053	. . . in main scanning direction, e.g. synchronisation of line start or picture elements in a line
H04N 1/06	. . using cylindrical picture-bearing surfaces, {i.e. scanning a main-scanning line substantially perpendicular to the axis and lying in a curved cylindrical surface (for feeding a sheet in the subscanning direction by rotation about its axis only H04N 1/12)}
H04N 1/0607	. . . {Scanning a concave surface, e.g. with internal drum type scanners (H04N 1/0657 takes precedence)}
H04N 1/0614	. . . . {with main-scanning by rotation of the picture-bearing surface}
H04N 1/0621	. . . . {using a picture-bearing surface stationary in the main-scanning direction}
H04N 1/0628	. . . . . {using several scanning heads circumferentially spaced from one another and circumferentially aligned, e.g. mounted on a rotating disk}
H04N 1/0635	. . . . . {using oscillating or rotating mirrors}

H04N 1/0642	. . . . .	{Scanners capable of scanning the total circumference of a closed cylinder}
H04N 1/065	. . . . .	{using rotating prisms}
H04N 1/0657	. . .	{Scanning a transparent surface, e.g. reading a transparency original}
H04N 1/0664	. . .	{with sub-scanning by translational movement of the picture-bearing surface}
H04N 1/0671	. . .	{with sub-scanning by translational movement of the main-scanning components}
H04N 1/0678	. . . . .	{using a lead-screw or worm}
H04N 1/0685	. . . . .	{using a belt or cable}
H04N 1/0692	. . .	{Details of the cylindrical surface (for mounting or holding the sheet H04N 1/08)}
H04N 1/08	. . .	Mechanisms for mounting or holding the sheet around the drum
H04N 1/0804	. . . . .	{Holding methods}
H04N 1/0808	. . . . .	{Holding corners of the sheet}
H04N 1/0813	. . . . .	{Holding sides of the sheet which are substantially parallel to the drum axis}
H04N 1/0817	. . . . .	{Holding sides of the sheet which are substantially perpendicular to the drum axis}
H04N 1/0821	. . . . .	{Holding substantially the whole of the sheet, e.g. with a retaining sheet}
H04N 1/0826	. . . . .	{Holding or supporting the sheet in the vicinity of the scanning element}
H04N 1/083	. . . . .	{Holding means}
H04N 1/0834	. . . . .	{Flexible holding means, e.g. envelopes or sheaths}
H04N 1/0839	. . . . .	{Mechanical clamps, i.e. means for holding the sheet against the drum by mechanical force}
H04N 1/0843	. . . . .	{Pins or the like}
H04N 1/0847	. . . . .	{Magnetic means}
H04N 1/0852	. . . . .	{Adhesive means}
H04N 1/0856	. . . . .	{Suction or vacuum means}
H04N 1/086	. . . . .	. {using grooves}
H04N 1/0865	. . . . .	{Single holding means holding both ends of a sheet}
H04N 1/0869	. . . . .	{capable of holding different sized sheets}
H04N 1/0873	. . . . .	{for holding the sheet on the internal surface of the drum}
H04N 1/0878	. . . . .	{for holding a sheet adjacent an aperture on an opaque drum}
H04N 1/0882	. . . . .	{Registering or guiding means other than the holding means}
H04N 1/0886	. . . . .	{Mounting the sheet from a roll}
H04N 1/0891	. . . . .	{Detecting failure of the holding, e.g. by detecting a loose sheet}
H04N 1/0895	. . . . .	{Means other than holding means for removing the sheet from the drum}
H04N 1/10	. .	using flat picture-bearing surfaces {(H04N 1/113 , H04N 1/195 take precedence; arrangements for the main-scanning H04N 1/12)}

- H04N 1/1004 . . . {using two-dimensional electrical scanning, e.g. cathode-ray tubes (using two-dimensional arrays [H04N 1/195](#))}
- H04N 1/1008 . . . {with sub-scanning by translatory movement of the picture-bearing surface}
- H04N 1/1013 . . . {with sub-scanning by translatory movement of at least a part of the main-scanning components ([H04N 1/107](#) takes precedence)}
- H04N 1/1017 {the main-scanning components remaining positionally invariant with respect to one another in the sub-scanning direction}
- H04N 1/1021 {using a lead screw or worm}
- H04N 1/1026 {using a belt or cable}
- H04N 1/103 {by engaging a rail}
- H04N 1/1035 {by other means, e.g. linear motor or hydraulic system}
- H04N 1/1039 {Movement of the main scanning components}
- H04N 1/1043 {of a sensor array}
- H04N 1/1048 {of a lens or lens arrangement}
- H04N 1/1052 {of a mirror}
- H04N 1/1056 {of two or more separate mirror arrangements}
- H04N 1/1061 . . . {Details relating to flat picture-bearing surfaces, e.g. transparent platen}
- H04N 1/1065 {Support or mounting of the flat picture-bearing surface}
- H04N 1/107 . . . with manual scanning
- H04N 1/1071 {using a folded light path}
- H04N 1/1072 {Means for guiding the scanning, e.g. rules ([H04N 1/1077](#) takes precedence)}
- H04N 1/1074 {Apparatus incorporating a hardcopy reproducing device, e.g. a printer, not working directly by manual scanning}
- H04N 1/1075 {Arrangements for facilitating holding of the scanner, e.g. shapes, grips}
- H04N 1/1077 {Arrangements for facilitating movement over the scanned medium, e.g. disposition of rollers}
- H04N 1/1078 {by moving the scanned medium}
- H04N 1/113 . . . using oscillating or rotating mirrors
- H04N 1/1135 {for the main-scan only}
- H04N 1/12 . . . using the sheet-feed movement {or the medium-advance or the drum-rotation movement} as the slow scanning component, {e.g. arrangements for the main-scanning} ({sheet-feed movement by translatory movement of a flat picture-bearing surface [H04N 1/1008](#); main-scanning using oscillating or rotating mirrors [H04N 1/113](#); } using multi-element arrays [H04N 1/19](#))
- H04N 1/1205 {using a device, e.g. an optical fibre bundle, converting rectilinear scanning into circular line scanning or vice versa}
- H04N 1/121 {Feeding arrangements (transporting sheets to or from the scanning position [H04N 1/0057](#); control or error compensation of sub-scanning velocity [H04N 1/0473](#))}
- H04N 1/1215 {Feeding using one or more cylindrical platens or rollers in the immediate vicinity of the main scanning line}

H04N 1/122	. . . . {using a feed belt (feed belts for transporting to or from the scanning position H04N 1/0061)}
H04N 1/1225	. . . . {Means for maintaining contact between the sheet and the image sensor, e.g. pressing means}
H04N 1/123	. . . . {Using a dedicated sheet guide element}
H04N 1/1235	. . . . {Feeding a sheet past a transparent plate; Details thereof}
H04N 1/124	. . . . . {Plate shape}
H04N 1/1245	. . . . . {Arrangements for mounting or holding the plate}
H04N 1/125	. . . . {the sheet feeding apparatus serving an auxiliary function, e.g. as a white reference}
H04N 1/1255	. . . {Electronic copy boards}
H04N 1/126	. . . {Arrangements for the main scanning}
H04N 1/1265	. . . . {using a holographic scanning element}
H04N 1/127	. . . . {using a cathode ray tube or the like}
H04N 1/1275	. . . . {using a solid-state deflector, e.g. an acousto-optic deflector or a semiconductor waveguide device}
H04N 1/128	. . . . {using a scanning head arranged for linear reciprocating motion}
H04N 1/1285	. . . . {using apertures arranged in a spiral}
H04N 1/129	. . . . {using an element rotating or oscillating about an axis not covered by any other group or code}
H04N 1/1295	. . . . {using an optical guide, e.g. a fibre-optic bundle between the scanned line and the scanning elements}
H04N 1/14	. . . using a rotating endless belt carrying the scanning heads {or at least a part of the main scanning components}
H04N 1/16	. . . using a rotating helical element
H04N 1/17	. . the scanning speed being dependent on content of picture
H04N 1/19	. . using multi-element arrays
H04N 1/1903	. . . {Arrangements for enabling electronic abutment of lines or areas independently scanned by different elements of an array or by different arrays}
H04N 1/1906	. . . {Arrangements for performing substitution scanning for a defective element}
H04N 1/191	. . . the array comprising a one-dimensional array, {or a combination of one-dimensional arrays, or a substantially one-dimensional array, e.g. an array of staggered elements}
H04N 1/1911	. . . . {Simultaneously or substantially simultaneously scanning picture elements on more than one main scanning line, e.g. scanning in swaths}
H04N 1/1912	. . . . . {Scanning main scanning lines which are spaced apart from one another in the sub-scanning direction}
H04N 1/1913	. . . . . {Scanning adjacent picture elements in different scans of the array, e.g. in complementary checkerboard patterns}
H04N 1/1915	. . . . . {with subscan displacement of the array between successive scans}

H04N 1/1916	. . . . .	{using an array of elements displaced from one another in the main scan direction, e.g. a diagonally arranged array}
H04N 1/1917	. . . . .	{Staggered element array, e.g. arrays with elements arranged in a zigzag}
H04N 1/1918	. . . . .	{Combination of arrays}
H04N 1/192	. . . . .	Simultaneously {or substantially simultaneously} scanning picture elements on one main scanning line {(details of the sub-scanning H04N 1/10 , H04N 1/12)}
H04N 1/193	. . . . .	using electrically scanned linear arrays, {e.g. linear CCD arrays}
H04N 1/1931	. . . . .	{with scanning elements electrically interconnected in groups}
H04N 1/1932	. . . . .	{using an array of elements displaced from one another in the sub scan direction, e.g. a diagonally arranged array}
H04N 1/1933	. . . . .	{Staggered element arrays, e.g. arrays with elements arranged in a zigzag}
H04N 1/1934	. . . . .	{Combination of arrays}
H04N 1/1935	. . . . .	{Optical means for mapping the whole or part of a scanned line onto the array}
H04N 1/1936	. . . . .	{using a light guide, e.g. an optical fibre bundle or array}
H04N 1/1937	. . . . .	{using a reflecting element, e.g. a mirror or a prism}
H04N 1/1938	. . . . .	{Details of the electrical scanning}
H04N 1/195	. . .	the array comprising a two-dimensional array {or a combination of two-dimensional arrays}
H04N 1/19505	. . . . .	{Scanning picture elements spaced apart from one another in at least one direction}
H04N 1/1951	. . . . .	{in one direction}
H04N 1/19515	. . . . .	{in two directions}
H04N 1/19521	. . . . .	{Arrangements for moving the elements of the array relative to the scanned image or vice versa}
H04N 1/19526	. . . . .	{Optical means}
H04N 1/19531	. . . . .	{Reflecting elements}
H04N 1/19536	. . . . .	{Refracting elements}
H04N 1/19542	. . . . .	{Fibre bundles}
H04N 1/19547	. . . . .	{Apertures}
H04N 1/19552	. . . . .	{Rotation of optical elements}
H04N 1/19557	. . . . .	{about an axis parallel to the optical axis}
H04N 1/19563	. . . . .	{about an axis perpendicular to the optical axis}
H04N 1/19568	. . . . .	{Displacing the array}
H04N 1/19573	. . . . .	{Displacing the scanned image}
H04N 1/19578	. . . . .	{Hybrid systems, i.e. systems combining more than one arrangement for moving the elements of the array relative to the scanned image or vice versa}
H04N 1/19584	. . . . .	{Combination of arrays}
H04N 1/19589	. . . . .	{Optical means, e.g. an optical fibre bundle, for mapping the whole or a part of a scanned image onto the array}

- H04N 1/19594 {using a television camera or a still video camera}
- H04N 1/203 . . Simultaneous scanning of two or more separate pictures, {e.g. two sides of the same sheet (refeeding a sheet for double-sided scanning [H04N 1/00572](#))}
- H04N 1/2032 . . . {of two pictures corresponding to two sides of a single medium (refeeding a sheet for double-sided scanning [H04N 1/00572](#))}
- H04N 1/2034 {at identical corresponding positions, i.e. without time delay between the two image signals}
- H04N 1/2036 . . . {of a plurality of pictures corresponding to a single side of a plurality of media}
- H04N 1/2038 {lying in the same plane}
- H04N 1/207 . . Simultaneous scanning of the original picture and the reproduced picture with a common scanning device
- H04N 1/21 . . Intermediate information storage ([H04N 1/387](#), [H04N 1/41](#) take precedence; {for control between transmitter and receiver or between image input and image output device [H04N 1/32358](#)}; information storage in general [G11](#); {indexing, editing [G11B 27/00](#)})
- H04N 1/2104 . . {for one or a few pictures}
- H04N 1/2108 . . . {for one picture only}
- H04N 1/2112 . . . {using still video cameras}
- H04N 1/2116 {Picture signal recording combined with imagewise recording, e.g. photographic recording (photographic cameras [G03B 19/00](#))}
- H04N 1/212 {Motion video recording combined with still video recording (television signal recording [H04N 5/76](#))}
- H04N 1/2125 {Display of information relating to the still picture recording}
- H04N 1/2129 {Recording in, or reproducing from, a specific memory area or areas, or recording or reproducing at a specific moment}
- H04N 1/2133 {Recording or reproducing at a specific moment, e.g. time interval or time-lapse}
- H04N 1/2137 {with temporary storage before final recording, e.g. in a frame buffer}
- H04N 1/2141 {in a multi-frame buffer}
- H04N 1/2145 {of a sequence of images for selection of a single frame before final recording, e.g. from a continuous sequence captured before and after shutter-release}
- H04N 1/215 {Recording a sequence of still pictures, e.g. burst mode}
- H04N 1/2154 {the still video camera incorporating a hardcopy reproducing device, e.g. a printer}
- H04N 1/2158 . . . {using a detachable storage unit}
- H04N 1/2162 . . . {using a non electronic storage unit, e.g. by recording marks on a sheet}
- H04N 1/2166 . . {for mass storage, e.g. in document filing systems (information retrieval [G06F 17/30](#))}
- H04N 1/217 . . . {Interfaces allowing access to a single user}
- H04N 1/2175 {with local image input}
- H04N 1/2179 . . . {Interfaces allowing access to a plurality of users, e.g. connection to electronic image libraries}

- H04N 1/2183 {the stored images being distributed among a plurality of different locations, e.g. among a plurality of users}
- H04N 1/2187 {with image input from a plurality of different locations or from a non-central location, e.g. from one or more users}
- H04N 1/2191 {for simultaneous, independent access by a plurality of different users}
- H04N 1/2195 . . . {with temporary storage before final recording or on play-back, e.g. in a frame buffer}
- H04N 1/23 . Reproducing arrangements (details of scanning heads [H04N 1/024](#); scanning arrangements therefor [H04N 1/04](#) {perforating or marking objects by electrical discharge [B26F 1/28](#)})
- H04N 1/2307 . . {Circuits or arrangements for the control thereof, e.g. using a programmed control device, according to a measured quantity ([H04N 1/27](#), [H04N 1/29](#) take precedence)}
- H04N 1/2315 . . . {according to characteristics of the reproducing apparatus, e.g. capability}
- H04N 1/2323 . . . {according to characteristics of the reproducing medium, e.g. type, size or availability}
- H04N 1/233 . . . {according to characteristics of the data to be reproduced, e.g. number of lines}
- H04N 1/2338 . . . {according to user specified instructions, e.g. user selection of reproduction mode}
- H04N 1/2346 . . . {according to a detected condition or state of the reproducing device, e.g. temperature or ink quantity}
- H04N 1/2353 . . . {Selecting a particular reproducing medium from amongst a plurality of media or from a particular tray, e.g. paper or transparency}
- H04N 1/2361 . . . {Selecting a particular reproducing device from amongst a plurality of devices, e.g. high or low resolution devices}
- H04N 1/2369 . . . {Selecting a particular reproducing mode from amongst a plurality of modes, e.g. paper saving or normal, or simplex or duplex}
- H04N 1/2376 . . . {Inhibiting or interrupting a particular operation or device ([preventing unauthorised reproduction \[H04N 1/00838\]\(#\)](#))}
- H04N 1/2384 . . . {for fitting data onto a particular reproducing medium without modifying the image data}
- H04N 1/2392 . . . {for displaying or indicating, e.g. a condition or state ([details of displaying or indicating means \[H04N 1/00405\]\(#\)](#))}
- H04N 1/27 . . involving production of a magnetic intermediate picture
- H04N 1/29 . . involving production of an electrostatic intermediate picture
- H04N 1/295 . . . {Circuits or arrangements for the control thereof, e.g. using a programmed control device, according to a measured quantity}
- H04N 1/31 . . Mechanical arrangements for picture transmission, e.g. adaptation of clutches, gearing, gear transmissions {contains no documents}
- H04N 1/32 . Circuits or arrangements for control or supervision between transmitter and receiver {or between image input and image output device ([H04N 1/38](#), [H04N 1/387](#) take precedence)}
- H04N 1/32005 . . {Automation of particular receiver jobs, e.g. rejecting unwanted calls (requesting a communication from a transmitter [H04N 1/32771](#); with picture signal storage for forwarding messages [H04N 1/32358](#))}
- H04N 1/3201 . . . {Rejecting unwanted calls}

- H04N 1/32016 . . . {according to the caller's identification, e.g. fax number ([H04N 1/3201](#) takes precedence)}
- H04N 1/32021 . . . {according to the type of received information}
- H04N 1/32026 . . . {Changing the receiver mode of operation, e.g. paper reception to memory reception or vice versa ([H04N 1/32673](#) takes precedence)}
- H04N 1/32032 . . . {Polling of transmitters}
- H04N 1/32037 . . {Automation of particular transmitter jobs, e.g. multi-address calling, auto-dialing}
- H04N 1/32042 . . . {with reading of job-marks on a page}
- H04N 1/32048 . . . {Auto-dialling or Auto-calling ([H04N 1/32053](#) to [H04N 1/32074](#) take precedence)}
- H04N 1/32053 . . . {Delayed transmission, e.g. to make use of reduced connection rates ([H04N 1/32074](#) takes precedence)}
- H04N 1/32058 . . . {Abbreviated dialing, e.g. one-touch dialing}
- H04N 1/32064 . . . {Multi-address calling}
- H04N 1/32069 {simultaneously to a plurality of destinations, e.g. multi-casting}
- H04N 1/32074 . . . {Redialing, e.g. after failure to make a connection}
- H04N 1/3208 . . . {Transmitting a plurality of separate messages to a common destination in a single transmission}
- H04N 1/32085 . . . {Automation of other tasks, e.g. repetitive execution or sequencing}
- H04N 1/3209 . . . {according to the called number}
- H04N 1/32096 . . . {Checking the destination, e.g. correspondence of manual input with stored destination}
- H04N 1/32101 . . {Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title}
- H04N 1/32106 . . . {separate from the image data, e.g. in a different computer file}
- H04N 1/32112 {in a separate computer file, document page or paper sheet, e.g. a fax cover sheet ([H04N 1/32122](#) takes precedence)}
- H04N 1/32117 {in a separate transmission or protocol signal prior to or subsequent to the image data transmission, e.g. in digital identification signal [DIS], in non standard setup [NSS] or in non standard field [NSF] ([for mode signalling H04N 1/333](#))}
- H04N 1/32122 {in a separate device, e.g. in a memory or on a display separate from image data}
- H04N 1/32128 . . . {attached to the image data, e.g. file header, transmitted message header, information on the same page or in the same computer file as the image ([for information embedded in the image H04N 1/32144](#))}
- H04N 1/32133 {on the same paper sheet, e.g. a facsimile page header}
- H04N 1/32138 {in an electronic device attached to the sheet, e.g. in an RFID tag}
- H04N 1/32144 . . . {embedded in the image data, i.e. enclosed or integrated in the image, e.g. watermark, super-imposed logo or stamp}
- H04N 1/32149 {Methods relating to embedding, encoding, decoding, detection or retrieval operations}
- H04N 1/32154 {Transform domain methods ([H04N 1/32309](#) takes precedence)}
- H04N 1/3216 {using Fourier transforms}

H04N 1/32165	. . . . .	{using cosine transforms}
H04N 1/3217	. . . . .	{using wavelet transforms}
H04N 1/32176	. . . . .	{using Walsh, Hadamard or Walsh-Hadamard transforms}
H04N 1/32181	. . . . .	{using Karhunen-Loeve transforms}
H04N 1/32187	. . . . .	{with selective or adaptive application of the additional information, e.g. in selected frequency coefficients}
H04N 1/32192	. . . . .	{according to calculated or estimated visibility of the additional information in the image}
H04N 1/32197	. . . . .	{according to the spatial domain characteristics of the transform domain components}
H04N 1/32203	. . . . .	{Spatial or amplitude domain methods (H04N 1/32309 takes precedence)}
H04N 1/32208	. . . . .	{involving changing the magnitude of selected pixels, e.g. overlay of information or super-imposition (H04N 1/32219 , H04N 1/32224 take precedence)}
H04N 1/32213	. . . . .	{Modulating the least significant bits of pixels}
H04N 1/32219	. . . . .	{involving changing the position of selected pixels, e.g. word shifting, or involving modulating the size of image components, e.g. of characters (H04N 1/32224 takes precedence)}
H04N 1/32224	. . . . .	{Replacing pixels of an image with other pixels from the same image, e.g. texture block coding}
H04N 1/32229	. . . . .	{with selective or adaptive application of the additional information, e.g. in selected regions of the image (H04N 1/32213 takes precedence)}
H04N 1/32235	. . . . .	{in highly textured regions}
H04N 1/3224	. . . . .	{in edge regions}
H04N 1/32245	. . . . .	{Random or pseudorandom selection of pixels}
H04N 1/32251	. . . . .	{in multilevel data, e.g. greyscale or continuous tone data}
H04N 1/32256	. . . . .	{in halftone data}
H04N 1/32261	. . . . .	{in binary data (H04N 1/32256 takes precedence)}
H04N 1/32267	. . . . .	{combined with processing of the image}
H04N 1/32272	. . . . .	{Encryption or ciphering}
H04N 1/32277	. . . . .	{Compression}
H04N 1/32283	. . . . .	{Hashing}
H04N 1/32288	. . . . .	{Multiple embedding, e.g. cocktail embedding, or redundant embedding, e.g. repeating the additional information at a plurality of locations in the image}
H04N 1/32293	. . . . .	{Repeating the additional information in a regular pattern}
H04N 1/32299	. . . . .	{using more than one embedding method}
H04N 1/32304	. . . . .	{Embedding different sets of additional information}
H04N 1/32309	. . . . .	{in colour image data}
H04N 1/32315	. . . . .	{Selecting a particular method from amongst a plurality of methods}
H04N 1/3232	. . . . .	{Robust embedding or watermarking}

H04N 1/32325	. . . . . {the embedded data being visible}
H04N 1/32331	. . . . . {Fragile embedding or watermarking}
H04N 1/32336	. . . . . {Informed embedding, i.e. the original image being known for the encoding or decoding method}
H04N 1/32341	. . . . . {Blind embedding, i.e. the original image not being known beforehand}
H04N 1/32347	. . . . . {Reversible embedding, i.e. lossless, invertible, erasable, removable or distortion-free embedding}
H04N 1/32352	. . . . . {Controlling detectability or arrangements to facilitate detection or retrieval of the embedded information, e.g. using markers (for decoding, detection or retrieval operations H04N 1/32149 and subgroups take precedence)}
H04N 1/32358	. . {using picture signal storage, e.g. at transmitter (H04N 1/17 takes precedence)}
H04N 1/32363	. . . {at the transmitter or at the receiver}
H04N 1/32368	. . . . {Functions of a still picture terminal memory associated with transmission}
H04N 1/32374	. . . . . {Storage subsequent to an attempted transmission}
H04N 1/32379	. . . . . {Functions of a still picture terminal memory associated with reception}
H04N 1/32384	. . . . . {Storage subsequent to an attempted output at the receiver, e.g. in case of printer malfunction}
H04N 1/3239	. . . . . {Forwarding image data, e.g. to an absent recipient}
H04N 1/32395	. . . . . {Informing an absent addressee of receipt}
H04N 1/324	. . . {intermediate the transmitter and receiver terminals, e.g. at an exchange}
H04N 1/32406	. . . . {in connection with routing or relaying, e.g. using a fax-server or a store-and-forward facility (stored and forward data switching systems H04L 12/54)}
H04N 1/32411	. . . . . {Handling instructions for routing or relaying}
H04N 1/32416	. . . . . {Storage of instructions or retrieval of prestored instructions}
H04N 1/32422	. . . . . {Reprocessing messages, e.g. in case the intended destination is busy}
H04N 1/32427	. . . . . {Optimising routing, e.g. for minimum cost}
H04N 1/32432	. . . . {in a particular memory file for retrieval by the user, e.g. in a facsimile mailbox}
H04N 1/32438	. . . . . {Informing the addressee of reception}
H04N 1/32443	. . . {with asynchronous operation of the image input and output devices connected to the memory}
H04N 1/32448	. . . . {Controlling data flow to or from the memory in relation to the available memory capacity}
H04N 1/32454	. . . . {Controlling data flow to or from the memory in relation to the amount of data, e.g. file size}
H04N 1/32459	. . . {for changing the arrangement of the stored data}
H04N 1/32464	. . . . {Changing the arrangement of pages or documents, e.g. for producing pages to be bound}

H04N 1/3247	. . . . {Changing the arrangement of data in a page, e.g. reversing the order to produce a mirror image}
H04N 1/32475	. . . . {Changing the format of the data, e.g. parallel to serial or vice versa}
H04N 1/3248	. . . {Storage of at least a part of one of two image bearing sides of a single sheet, e.g. for two sided copying}
H04N 1/32486	. . . {Storage for making a plurality of copies or reproductions}
H04N 1/32491	. . . {alternate storage in and retrieval from two parallel memories, e.g. using ping-pong buffers}
H04N 1/32496	. . {Changing the task performed, e.g. reading and transmitting, receiving and reproducing, copying (facsimile mode changing H04N 1/333)}
H04N 1/32502	. . {in systems having a plurality of input or output devices}
H04N 1/32507	. . . {a plurality of input devices}
H04N 1/32512	. . . . {of different type, e.g. internal and external devices}
H04N 1/32518	. . . . . {details of interfacing}
H04N 1/32523	. . . {a plurality of output devices}
H04N 1/32529	. . . . {of different type, e.g. internal and external devices}
H04N 1/32534	. . . . . {details of interfacing}
H04N 1/32539	. . . . {Detecting or indicating the status of the output devices}
H04N 1/32545	. . . {Distributing a job or task among a plurality of input devices or a plurality of output devices}
H04N 1/3255	. . . . {Hybrid jobs, i.e. performing different parts of the same job on different devices, e.g. colour and B/W pages on different devices}
H04N 1/32555	. . . . {Large jobs, i.e. performing identical parts of the same job on different devices}
H04N 1/32561	. . {using a programmed control device, e.g. a microprocessor}
H04N 1/32566	. . . {at the transmitter or at the receiver}
H04N 1/32571	. . . {Details of system components}
H04N 1/32577	. . . . {Input interface}
H04N 1/32582	. . . . {Output interface}
H04N 1/32587	. . . . {Controller}
H04N 1/32593	. . . {Using a plurality of controllers, e.g. for controlling different interfaces}
H04N 1/32598	. . . {Bus based systems}
H04N 1/32603	. . . . {Multi-bus systems}
H04N 1/32609	. . {Fault detection or counter-measures, e.g. original mis-positioned, shortage of paper}
H04N 1/32614	. . . {related to a single-mode communication, e.g. at the transmitter or at the receiver}
H04N 1/32619	. . . . {with retransmission (retransmission after changing the mode H04N 1/3333)}
H04N 1/32625	. . . {Fault detection}
H04N 1/3263	. . . . {of reading apparatus or transmitter, e.g. original jam}
H04N 1/32635	. . . . {of reproducing apparatus or receiver, e.g. out of paper}

H04N 1/32641	. . . .	{of transmission or transmitted data, e.g. interruption or wrong number of pages}
H04N 1/32646	. . .	{Counter-measures (inhibiting an operation H04N 1/00925 , interrupting an operation H04N 1/00915)}
H04N 1/32651	. . . .	{Indicating or reporting (details of user-machine interface H04N 1/0035)}
H04N 1/32657	. . . . .	{locally}
H04N 1/32662	. . . . .	{remotely, e.g. to the transmitter from the receiver}
H04N 1/32667	. . . .	{Restarting a communication or performing a recovery operation}
H04N 1/32673	. . . .	{Adjusting or controlling an operating mode, e.g. from paper reception to memory reception (H04N 1/32678 takes precedence; Inhibiting an operation H04N 1/00925)}
H04N 1/32678	. . . .	{Performing substitution, e.g. substitute reception or substituting a corrupted line of data (H04N 1/32384 takes precedence)}
H04N 1/32683	. . . .	{Preventive counter-measures, e.g. using redundant hardware, or anticipating a fault (arrangements for keeping a communication line open H04N 1/32795)}
H04N 1/32689	. . . . .	{Involving the use of error correction codes}
H04N 1/32694	. . . .	{Storing a fault condition in memory}
H04N 1/327	. .	Initiating, continuing or ending a single-mode communication; Handshaking therefor {(H04N 1/32614 takes precedence)}
H04N 1/32702	. . .	{using digital control signals (H04N 1/32704 , H04N 1/32614 , H04N 1/32771 take precedence)}
H04N 1/32704	. . .	{Establishing a communication with one of a facsimile and another telecommunication apparatus sharing a single line}
H04N 1/32706	. . . .	{Type of the other apparatus}
H04N 1/32708	. . . . .	{Telephone}
H04N 1/3271	. . . . .	{Telephone answering machine}
H04N 1/32713	. . . . .	{Data transmission device, e.g. switched network of teleprinters for the distribution of text-based information transceiver}
H04N 1/32715	. . . .	{Detecting}
H04N 1/32717	. . . . .	{a calling tone, e.g. CI}
H04N 1/32719	. . . . .	{a facsimile calling signal, e.g. CNG}
H04N 1/32721	. . . . .	{facsimile protocol signals, e.g. DCS or TSI}
H04N 1/32723	. . . . .	{speech signals}
H04N 1/32726	. . . . .	{signals other than facsimile protocol signals, e.g. DTMF signals}
H04N 1/32728	. . . . .	{an off-hook condition}
H04N 1/3273	. . . . .	{a loop current}
H04N 1/32732	. . . . .	{within a predetermined time}
H04N 1/32734	. . . . .	{Maintaining the detecting operation after an apparatus has been connected to the line}
H04N 1/32736	. . . . .	{a state or mode of the facsimile apparatus (H04N 1/32728 takes precedence)}
H04N 1/32739	. . . .	{Generating signals}

H04N 1/32741	. . . . .	{Generating ringing or calling signals or tones}
H04N 1/32743	. . . . .	{Generating ring-back signals or tones}
H04N 1/32745	. . . . .	{Generating messages, indications or warnings locally}
H04N 1/32747	. . . . .	{Controlling the connection of the apparatus}
H04N 1/3275	. . . . .	{Giving priority to one of the apparatus}
H04N 1/32752	. . . . .	{Manual connection of one of the apparatus other than by putting a telephone off-hook}
H04N 1/32754	. . . . .	{Automatically connecting another apparatus when a first one has finished}
H04N 1/32756	. . . . .	{Inhibiting connection of another apparatus when a first one is connected}
H04N 1/32758	. . . . .	{Sending a voice message other than from a telephone answering machine}
H04N 1/3276	. . . . .	{Ring suppression}
H04N 1/32763	. . . . .	{Supplying power to the apparatus}
H04N 1/32765	. . . . .	{Initiating a communication}
H04N 1/32767	. . . . .	{in response to a user operation, e.g. actuating a switch (H04N 1/32769 and H04N 1/32771 take precedence)}
H04N 1/32769	. . . . .	{in response to detection of an original}
H04N 1/32771	. . . . .	{in response to a request, e.g. for a particular document}
H04N 1/32773	. . . . .	{to capture an image, e.g. at a location or event remote from the requester}
H04N 1/32776	. . . . .	{using an interactive, user-operated device, e.g. a computer terminal, mobile telephone (H04N 1/32782 , H04N 1/32784 take precedence)}
H04N 1/32778	. . . . .	{using a mark-sheet or machine-readable code request}
H04N 1/3278	. . . . .	{using a protocol or handshaking signal, e.g. non-standard set-up [NSS]}
H04N 1/32782	. . . . .	{using a tone- or pulse-coded request}
H04N 1/32784	. . . . .	{using a voice request}
H04N 1/32786	. . . . .	{Ending a communication (H04N 1/32614 takes precedence)}
H04N 1/32789	. . . . .	{Details of handshaking (H04N 1/32793 , H04N 1/32795 and H04N 1/32797 take precedence)}
H04N 1/32791	. . . . .	{Arrangements for reducing the handshaking procedure or protocol time}
H04N 1/32793	. . . . .	{Controlling a receiver or transmitter non-communication function in response to a communication control signal}
H04N 1/32795	. . . . .	{Arrangements for keeping the communication line open}
H04N 1/32797	. . . . .	{Systems adapted to communicate over more than one channel, e.g. via ISDN (changing transmission mode according to type of channel H04N 2201/33364 ; multichannel or multilink communication protocols H04L 69/14)}
H04N 1/333	. . . . .	Mode signalling or mode changing; Handshaking therefor
H04N 1/33307	. . . . .	{prior to start of transmission, input or output of the picture signal only}

- H04N 1/33315 {reading or reproducing mode only, e.g. sheet size, resolution}
- H04N 1/33323 {transmission mode only, e.g. speed}
- H04N 1/3333 . . . {during transmission, input or output of the picture signal; within a single document or page}
- H04N 1/33338 . . . {adapting to particular facsimile group, e.g. G3}
- H04N 1/33346 . . . {adapting to a particular standardised protocol}
- H04N 1/33353 . . . {according to the available bandwidth used for a single communication, e.g. the number of ISDN channels used}
- H04N 1/33361 . . . {according to characteristics or the state of the communication line ([H04N 1/33353](#) and [H04N 2201/33371](#) take precedence)}
- H04N 1/33369 . . . {Storage of mode or retrieval of prestored mode}
- H04N 1/33376 . . . {according to characteristics or state of one of the communicating parties, e.g. available memory capacity}
- H04N 1/33384 {according to transient characteristics or state}
- H04N 1/33392 . . . {Details of handshaking}
- H04N 1/34 . . for coin-freed systems; {pay systems (telephonic metering [H04M 15/00](#), coin-freed or like apparatus per se [G07F](#))}
- H04N 1/342 . . . {Accounting or charging based on content, e.g. charging for access to a particular document}
- H04N 1/344 . . . {Accounting or charging based on type of function or service used, e.g. copying, faxing}
- H04N 1/346 . . . {Accounting or charging based on a number representative of the service used, e.g. number of operations or copies produced}
- H04N 1/348 . . . {Accounting or charging based on time or day}
- H04N 1/36 . . for synchronising or phasing transmitter and receiver
- H04N 1/38 . . Circuits or arrangements for blanking or otherwise eliminating unwanted parts of pictures ([H04N 1/387](#) takes precedence)
- H04N 1/387 . . Composing, repositioning or otherwise {geometrically} modifying originals (photoelectronic composing of characters [B41B 19/00](#); {image data processing or generation, in general [G06T](#)})
- H04N 1/3871 . . {the composed originals being of different kinds, e.g. low- and high-resolution originals}
- H04N 1/3872 . . {Repositioning or masking}
- H04N 1/3873 . . . {defined only by a limited number of coordinate points or parameters, e.g. corners, centre; for trimming}
- H04N 1/3875 {combined with enlarging or reducing (enlarging or reducing per se [H04N 1/393](#))}
- H04N 1/3876 . . {Recombination of partial images to recreate the original image}
- H04N 1/3877 . . {Image rotation}
- H04N 1/3878 . . . {Skew detection or correction}
- H04N 1/393 . . Enlarging or reducing
- H04N 1/3935 . . . {with modification of image resolution, i.e. determining the values of picture elements at new relative positions}
- H04N 1/40 . . Picture signal circuits ([H04N 1/387](#) takes precedence)

- H04N 1/40006 . . {Compensating for the effects of ageing, i.e. changes over time}
- H04N 1/40012 . . {Conversion of colour to monochrome}
- H04N 1/40018 . . {Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels}

WARNING

The group [H04N 1/40018](#) is no longer used for the classification of new documents as from April 1st, 2004. The backlog of this group is being continuously reclassified to [H04N 1/405](#) and sub-groups

- H04N 1/40025 . . {Circuits exciting or modulating particular heads for reproducing continuous tone value scales ([H04N 1/401](#), [H04N 1/407](#) take precedence)}
- H04N 1/40031 . . . {for a plurality of reproducing elements simultaneously}
- H04N 1/40037 . . . {the reproducing element being a laser}
- H04N 1/40043 . . . {using more than one type of modulation, e.g. pulse width modulation and amplitude modulation}
- H04N 1/4005 . . . {with regulating circuits, e.g. dependent upon ambient temperature or feedback control}
- H04N 1/40056 . . {Circuits for driving or energising particular reading heads or original illumination means ([H04N 1/401](#), [H04N 1/407](#) take precedence)}
- H04N 1/40062 . . {Discrimination between different image types, e.g. two-tone, continuous tone}
- H04N 1/40068 . . {Modification of image resolution, i.e. determining the values of picture elements at new relative positions ([H04N 1/3935](#) takes precedence)}
- H04N 1/40075 . . {Descreening, i.e. converting a halftone signal into a corresponding continuous-tone signal; Rescreening, i.e. combined descreening and halftoning}
- H04N 1/40081 . . {Soft dot halftoning, i.e. producing halftone dots with gradual edges}
- H04N 1/40087 . . {Multi-toning, i.e. converting a continuous-tone signal for reproduction with more than two discrete brightnesses or optical densities, e.g. dots of grey and black inks on white paper}
- H04N 1/40093 . . {Modification of content of picture, e.g. retouching ([geometric modifications H04N 1/387](#))}
- H04N 1/401 . . Compensating positionally unequal response of the pick-up or reproducing head ([H04N 1/403](#) takes precedence)
- H04N 1/4015 . . . {of the reproducing head}
- H04N 1/403 . . Discrimination between the two tones in the picture signal of a two-tone original ([shaping pulses by limiting or thresholding, in general H03K 5/08](#))
- H04N 1/405 . . Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels

WARNING

[H04N 1/405](#) and sub-groups, except for [H04N 1/4056](#) are not complete, see [H04N 1/40018](#)

- H04N 1/4051 . . . {producing a dispersed dots halftone pattern, the dots having substantially the same size ([different sizes H04N 1/4057](#))}
- H04N 1/4052 {by error diffusion, i.e. transferring the binarising error to neighbouring dot decisions}

- H04N 1/4053 {with threshold modulated relative to input image data or vice-versa}
- H04N 1/4055 . . . {producing a clustered dots or a size modulated halftone pattern}
- H04N 1/4056 {the pattern varying in one dimension only, e.g. dash length, pulse width modulation [PWM]}
- H04N 1/4057 {the pattern being a mixture of differently sized sub-patterns, e.g. spots having only a few different diameters ([multi-toning H04N 1/40087](#))}
- H04N 1/4058 {with details for producing a halftone screen at an oblique angle ([H04N 1/4056](#) takes precedence)}
- H04N 1/407 . . Control or modification of tonal gradation or of extreme levels, e.g. background level
- H04N 1/4072 . . . {dependent on the contents of the original}
- H04N 1/4074 {using histograms}
- H04N 1/4076 . . . {dependent on references outside the picture}
- H04N 1/4078 {using gradational references, e.g. grey-scale test pattern analysis}
- H04N 1/409 . . Edge or detail enhancement; Noise or error suppression
- H04N 1/4092 . . . {Edge or detail enhancement}
- H04N 1/4095 . . . {Correction of errors due to scanning a two-sided document, i.e. show-through correction}
- H04N 1/4097 . . . {Removing errors due external factors, e.g. dust, scratches}
- H04N 1/41 . . Bandwidth or redundancy reduction ([by scanning H04N 1/17](#); [H04N 19/00](#) takes precedence; for data acquisition [G06F 17/40](#); coding for image data processing in general [G06T 9/00](#); data compression in general [H03M 7/30](#))}
- H04N 1/4105 . . {for halftone screened pictures}
- H04N 1/411 . . for the transmission {or storage} or reproduction of two-tone pictures, e.g. black and white pictures
- H04N 1/4115 . . . {involving the recognition of specific patterns, e.g. by symbol matching}
- H04N 1/413 . . . Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information
- H04N 1/4135 {in which a baseband signal showing more than two values or a continuously varying baseband signal is transmitted or recorded}
- H04N 1/415 in which the picture-elements are subdivided or grouped into fixed one-dimensional or two-dimensional blocks
- H04N 1/417 using predictive or differential encoding
- H04N 1/4172 {Progressive encoding, i.e. by decomposition into high and low resolution components}
- H04N 1/4175 {involving the encoding of tone transitions with respect to tone transitions in a reference line}
- H04N 1/4177 {encoding document change data, e.g. form drop out data}
- H04N 1/419 in which encoding of the length of a succession of picture-elements of the same value along a scanning line is the only encoding step ([H04N 1/4135](#) to [H04N 1/417](#) take precedence)}
- H04N 1/42 . . Systems for two-way working {e.g. conference systems ([H04N 1/32](#) takes precedence)}

- H04N 1/44 . Secrecy systems
- H04N 1/4406 . . {Restricting access, e.g. according to user identity (mechanisms actuated by cards, PIN or the like in apparatus for dispensing [G07F 7/08](#))}
- H04N 1/4413 . . . {involving the use of passwords, ID codes or the like, e.g. PIN}
- H04N 1/442 . . . {using a biometric data reading device}
- H04N 1/4426 . . . {involving separate means, e.g. a server, a magnetic card}
- H04N 1/4433 . . . {to an apparatus, part of an apparatus or an apparatus function}
- H04N 1/444 . . . {to a particular document or image or part thereof}
- H04N 1/4446 . . {Hiding of documents or document information}
- H04N 1/4453 . . . {Covering, i.e. concealing from above, or folding}
- H04N 1/446 . . . {Enclosing, i.e. retaining in an enclosure, or locking up}
- H04N 1/4466 . . . {Enveloping, wrapping, or sealing, i.e. keeping the document closed}
- H04N 1/4473 . . . {Destruction, e.g. shredding of documents}
- H04N 1/448 . . {Rendering the image unintelligible, e.g. scrambling}
- H04N 1/4486 . . . {using digital data encryption}
- H04N 1/4493 . . . {Subsequently rendering the image intelligible using a co-operating image, mask or the like}
- H04N 1/46 . Colour picture communication systems {(colorimetry [G01J 3/46](#))}
- H04N 1/465 . . {Conversion of monochrome to colour}
- H04N 1/48 . . Picture signal generators (for halftone screening [H04N 1/52](#))
- H04N 1/482 . . . {using the same detector device sequentially for different colour components}
- H04N 1/484 {with sequential colour illumination of the original}
- H04N 1/486 . . . {with separate detectors, each detector being used for one specific colour component}
- H04N 1/488 {using beam-splitters}
- H04N 1/50 . . Picture reproducers (for halftone screening [H04N 1/52](#))
- H04N 1/502 . . . {Reproducing the colour component signals dot-sequentially or simultaneously in a single or in adjacent picture-element positions}
- H04N 1/504 . . . {Reproducing the colour component signals line-sequentially}
- H04N 1/506 . . . {Reproducing the colour component signals picture-sequentially, e.g. with reproducing heads spaced apart from one another in the subscanning direction}
- H04N 1/508 {using the same reproducing head for two or more colour components}
- H04N 1/52 . . Circuits or arrangements for halftone screening
- H04N 1/54 . . Conversion of colour picture signals to a plurality of signals some of which represent particular mixed colours, e.g. for textile printing
- H04N 1/56 . . Processing of colour picture signals ([H04N 1/52](#) takes precedence)
- H04N 1/58 . . . Edge or detail enhancement; Noise or error suppression, e.g. colour misregistration correction ([H04N 1/62](#) takes precedence)
- H04N 1/60 . . . Colour correction or control {(H04N 1/54 takes precedence)}
- H04N 1/6002 {Corrections within particular colour systems}

H04N 1/6005	. . . . .	{with luminance or chrominance signals, e.g. LC1C2, HSL or YUV}
H04N 1/6008	. . . . .	{with primary colour signals, e.g. RGB or CMY(K)}
H04N 1/6011	. . . . .	{with simulation on a subsidiary picture reproducer (H04N 1/622 takes precedence; matching two or more picture reproducers H04N 1/6052)}
H04N 1/6013	. . . . .	{by simulating several colour corrected versions of the same image simultaneously on the same picture reproducer}
H04N 1/6016	. . . . .	{Conversion to subtractive colour signals}
H04N 1/6019	. . . . .	{using look-up tables (H04N 1/6025 takes precedence)}
H04N 1/6022	. . . . .	{Generating a fourth subtractive colour signal, e.g. under colour removal, black masking}
H04N 1/6025	. . . . .	{using look-up tables}
H04N 1/6027	. . . . .	{Correction or control of colour gradation or colour contrast (H04N 1/6058 takes precedence)}
H04N 1/603	. . . . .	{controlled by characteristics of the picture signal generator or the picture reproducer}
H04N 1/6033	. . . . .	{using test pattern analysis (H04N 1/6055 takes precedence)}
H04N 1/6036	. . . . .	{involving periodic tests or tests during use of the machine}
H04N 1/6038	. . . . .	{for controlling interaction among colorants}
H04N 1/6041	. . . . .	{for controlling uniformity of color across image area}
H04N 1/6044	. . . . .	{involving a sensor integrated in the machine or otherwise specifically adapted to read the test pattern}
H04N 1/6047	. . . . .	{wherein the test pattern is part of an arbitrary user image}
H04N 1/605	. . . . .	{for controlling ink amount, strike-through, bleeding soakage or the like}
H04N 1/6052	. . . . .	{Matching two or more picture signal generators or two or more picture reproducers}
H04N 1/6055	. . . . .	{using test pattern analysis}
H04N 1/6058	. . . . .	{Reduction of colour to a range of reproducible colours, e.g. to ink-reproducible colour gamut}
H04N 1/6061	. . . . .	{involving the consideration or construction of a gamut surface}
H04N 1/6063	. . . . .	{dependent on the contents of the image to be reproduced}
H04N 1/6066	. . . . .	{dependent on the gamut of the image to be reproduced}
H04N 1/6069	. . . . .	{spatially varying within the image}
H04N 1/6072	. . . . .	{adapting to different types of images, e.g. characters, graphs, black and white image portions}
H04N 1/6075	. . . . .	{Corrections to the hue}
H04N 1/6077	. . . . .	{Colour balance, e.g. colour cast correction}
H04N 1/608	. . . . .	{within the L, C1, C2 colour signals}
H04N 1/6083	. . . . .	{controlled by factors external to the apparatus}
H04N 1/6086	. . . . .	{by scene illuminant, i.e. conditions at the time of picture capture, e.g. flash, optical filter used, evening, cloud, daylight, artificial lighting, white point measurement, colour temperature}
H04N 1/6088	. . . . .	{by viewing conditions, i.e. conditions at picture output}

- H04N 1/6091 {by environmental factors, e.g. temperature or humidity
(H04N 1/6086, H04N 1/6088 take precedence)}
- H04N 1/6094 {depending on characteristics of the input medium, e.g. film type,
newspaper}
- H04N 1/6097 {depending on the characteristics of the output medium, e.g. glossy
paper, matt paper, transparency or fabrics}
- H04N 1/62 Retouching, i.e. modification of isolated colours only or in isolated
picture areas only
- H04N 1/622 {with simulation on a subsidiary picture reproducer}
- H04N 1/624 {Red-eye correction (control of camera based on recognised facial
parts H04N 5/23219)}
- H04N 1/626 {Detection of non-electronic marks, e.g. fluorescent markers}
- H04N 1/628 {Memory colours, e.g. skin or sky}
- H04N 1/64 Systems for the transmission or the storage of the colour picture signal;
Details therefor, e.g. coding or decoding means therefor {(H04N 19/00 takes
precedence)}
- H04N 1/642 {Adapting to different types of images, e.g. characters, graphs, black and
white image portions}
- H04N 1/644 {using a reduced set of representative colours, e.g. each representing a
particular range in a colour space}
- H04N 1/646 {Transmitting or storing colour television type signals, e.g. PAL, Lab;
Their conversion into additive or subtractive colour signals or vice versa
therefor (H04N 1/642, H04N 1/644 take precedence)}
- H04N 1/648 {Transmitting or storing the primary (additive or subtractive) colour
signals; Compression thereof (H04N 1/642 to H04N 1/646 take
precedence)}

H04N 3/00**Scanning details of television systems**

- H04N 3/02 by optical-mechanical means only (H04N 3/36 takes precedence; optical
scanning systems in general G02B 26/10)
- H04N 3/04 having a moving aperture {also apertures covered by lenses}
- H04N 3/06 having a moving lens or other refractor
- H04N 3/08 having a moving reflector
- H04N 3/09 for electromagnetic radiation in the invisible region, e.g. infra-red
- H04N 3/10 by means not exclusively optical-mechanical (H04N 3/36 takes precedence;
electro-, magneto- or acousto-optical modulation or deflection of light beams
G02F 1/00)
- H04N 3/12 by switched stationary formation of lamps, photocells or light relays
- H04N 3/122 {using cathode rays, e.g. multivision}
- H04N 3/125 {using gas discharges, e.g. plasma}
- H04N 3/127 {using liquid crystals}
- H04N 3/14 by means of electrically scanned solid-state devices (for picture generation
H04N 5/335)

WARNINGConstructional details **97DP12C2B**

H04N 3/15	. . . {for picture signal generation}
	<u>WARNING</u>
	This group is no longer used for classification of new documents as from December 1st, 2009. The backlog is continuously reclassified into group H04N 5/335 and subgroups]
H04N 3/1506	. . . . {with addressing of the image-sensor elements (H04N 3/1575 takes precedence)}
H04N 3/1512	. . . . . {for MOS image-sensors, e.g. MOS-CCD (H04N 3/1581 takes precedence)}
H04N 3/1518	. . . . . {using charge injection within the image-sensor}
H04N 3/1525	. . . . . {with charge transfer within the image-sensor, e.g. time delay and integration (H04N 3/1575 takes precedence)}
H04N 3/1531	. . . . . {using frame-interline transfer}
H04N 3/1537	. . . . . {using interline transfer}
H04N 3/1543	. . . . . {using frame transfer}
H04N 3/155	. . . . . {Control of the image-sensor operation, e.g. image processing within the image-sensor}
H04N 3/1556	. . . . . {for variable integration time}
H04N 3/1562	. . . . . {for selective scanning, e.g. windowing, zooming}
H04N 3/1568	. . . . . {for disturbance correction or prevention within the image-sensor, e.g. biasing, blooming, smearing (correction circuits H04N 5/2175)}
H04N 3/1575	. . . . . {Picture signal readout register, e.g. shift registers, interline shift registers}
H04N 3/1581	. . . . . {using linear image-sensor (time delay and integration H04N 3/1525)}
H04N 3/1587	. . . . . {the image being sequentially picked-up by one device at different imaging positions, e.g. by shifting the image-sensor}
H04N 3/1593	. . . . . {the image being simultaneously picked-up by more than one device, e.g. the scene being partitioned into subimages}
H04N 3/16	. . by deflecting electron beam in cathode-ray tube {also scanning corrections} (producing saw-tooth wave forms H03K 4/00 {for scanning and focusing devices H01J ; cathode ray oscillographs G01R 13/20 })
H04N 3/18	. . . Generation of supply voltages, in combination with electron beam deflecting
H04N 3/185	. . . . Maintaining dc voltage constant (regulation of dc voltage in general G05F)
H04N 3/1853	. . . . . {using regulation in parallel}
H04N 3/1856	. . . . . {using regulation in series}
H04N 3/19	. . . . Arrangements or assemblies in supply circuits for the purpose of withstanding high voltages
H04N 3/20	. . . Prevention of damage to cathode-ray tubes in the event of failure of scanning
H04N 3/22	. . . Circuits for controlling dimension, shape or centering of picture on screen
H04N 3/223	. . . . Controlling dimensions (by maintaining the cathode-ray tube high voltage constant H04N 3/185)

- H04N 3/227 Centering
- H04N 3/23 Distortion correction, e.g. for pincushion distortion correction, S-correction
- H04N 3/233 using active elements
- H04N 3/2335 {with calculating means}
- H04N 3/237 using passive elements, e.g. diodes
- H04N 3/24 . . . Blanking circuits
- H04N 3/26 . . . Modifications of scanning arrangements to improve focusing (focusing circuits in general H01J)
- H04N 3/27 . . . Circuits special to multi-standard receivers (circuitry of multi-standard receivers in general H04N 5/46)
- H04N 3/28 . . producing multiple scanning, i.e. using more than one spot at the same time
- H04N 3/30 . . otherwise than with constant velocity or otherwise than in pattern formed by unidirectional, straight, substantially horizontal or vertical lines
- H04N 3/32 . . . Velocity varied in dependence upon picture information
- H04N 3/34 . . . Elemental scanning area oscillated rapidly in direction transverse to main scanning direction
- H04N 3/36 . Scanning of motion picture films, e.g. for telecine
- H04N 3/38 . . with continuously moving film
- H04N 3/40 . . with intermittently moving film
- H04N 3/405 . . . {with film moving only during the field blanking interval}

H04N 5/00 **Details of television systems** (scanning details or combination thereof with generation of supply voltages H04N 3/00; specially adapted for colour television H04N 9/00; {servers specially adapted for the distribution of content H04N 21/20; client devices specially adapted for the reception of or interaction with content H04N 21/40})

NOTE

Groups H04N 5/341 to H04N 5/378 are based on IPC2012.01

- H04N 5/04 . Synchronising (for television systems using pulse code modulation H04N 7/24; in general H03L 7/00)
- H04N 5/05 . . Synchronising circuits with arrangements for extending range of synchronisation, e.g. by using switching between several time constants
- H04N 5/06 . . Generation of synchronising signals
- H04N 5/067 . . . Arrangements or circuits at the transmitter end
- H04N 5/0675 {for mixing the synchronising signals with the picture signal or mutually (electrical gates H03K 17/00)}
- H04N 5/073 for mutually locking plural sources of synchronising signals, e.g. studios or relay stations
- H04N 5/0733 {for distributing synchronisation pulses to different TV cameras}
- H04N 5/0736 {using digital storage buffer techniques}
- H04N 5/08 . . Separation of synchronising signals from picture signals
- H04N 5/10 . . . Separation of line synchronising signal from frame synchronising signal {or vice-versa}

- H04N 5/12
 - • Devices in which the synchronising signals are only operative if a phase difference occurs between synchronising and synchronised scanning devices, e.g. flywheel synchronising
- H04N 5/123
 - • • {whereby the synchronisation signal directly commands a frequency generator}
- H04N 5/126
 - • • {whereby the synchronisation signal indirectly commands a frequency generator}
- H04N 5/14
 - Picture signal circuitry for video frequency region ([H04N 5/222](#) takes precedence)
- H04N 5/141
 - • {Beam current control means}
- H04N 5/142
 - • {Edging; Contouring}
- H04N 5/144
 - • {Movement detection (for video coding [H04N 19/503](#); analysis of motion in general [G06T 7/20](#))}
- H04N 5/145
 - • • {Movement estimation (for video coding [H04N 19/51](#))}
- H04N 5/147
 - • {Scene change detection}
- H04N 5/148
 - • {Video amplifiers (amplifiers in general [H03F](#))}
- H04N 5/16
 - • Circuitry for reinsertion of dc and slowly varying components of signal; Circuitry for preservation of black or white level
- H04N 5/165
 - • • {to maintain the black level constant}
- H04N 5/18
 - • • by means of "clamp" circuit operated by switching circuit
- H04N 5/185
 - • • • {for the black level}
- H04N 5/20
 - • Circuitry for controlling amplitude response
- H04N 5/202
 - • • Gamma control
- H04N 5/205
 - • • for correcting amplitude versus frequency characteristic
- H04N 5/208
 - • • • for compensating for attenuation of high frequency components, e.g. crispening, aperture distortion correction
- H04N 5/21
 - • Circuitry for suppressing or minimising disturbance, e.g. moirè, halo, {even if the automatic gain control is involved} (suppression of noise in television recording [H04N 5/911](#))
- H04N 5/211
 - • • {Ghost signal cancellation ([H04N 5/217](#) takes precedence)}
- H04N 5/213
 - • • Circuitry for suppressing or minimising impulsive noise ([H04N 5/217](#) takes precedence)
- H04N 5/217
 - • • in picture signal generation {in cameras comprising an electronic image sensor, e.g. digital cameras, TV cameras, video cameras, camcorders, webcams, to be embedded in other devices, e.g. in mobile phones, computers or vehicles (noise reduction or noise suppression involving solid-state image sensors [H04N 5/357](#))}
- H04N 5/2171
 - • • • {Dust removal e.g. from surfaces of image sensor or processing of the image signal output by the electronic image sensor}
- H04N 5/2173
 - • • • {in solid-state picture signal generation}
- H04N 5/2175
 - • • • • {Suppression of exceedentary charges, e.g. blooming, smearing (within the image sensor [H04N 3/1556](#), [H04N 3/1568](#))}
- H04N 5/2176
 - • • • • {Correction or equalization of amplitude response, e.g. dark current, blemishes, non-uniformity}
- H04N 5/2178
 - • • • • • {by initial calibration, e.g. with memory means}

- H04N 5/222
 - Studio circuitry; Studio devices; Studio equipment; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles}
- H04N 5/2222
 - • {Prompting}
- H04N 5/2224
 - • {related to virtual studio applications}
- H04N 5/2226
 - • • {Determination of depth image, e.g. for foreground/background separation (determining depth by image analysis in general [G06T 7/0051](#); segmentation by image analysis in general [G06T 7/0079](#))}
- H04N 5/2228
 - • {Video assist systems used in motion picture production, e.g. video cameras connected to viewfinders of motion picture cameras or related video signal processing}
- H04N 5/225
 - • Television cameras; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles (optical systems [G02B](#); associated working of recording or reproducing apparatus with TV camera or receiver in which the television signal is not significantly involved [G11B 31/006](#); tubes [H01J](#))}
- H04N 5/2251
 - • • {Constructional details (arrangement comprising a plurality of cameras [H04N 5/247](#); stereoscopic cameras having a single image sensor [H04N 13/0207](#))}
- H04N 5/2252
 - • • • {Housings}
- H04N 5/2253
 - • • • {Mounting of pick-up device, electronic image sensor, deviation or focusing coils}
- H04N 5/2254
 - • • • {Mounting of optical parts, e.g. lenses, shutters, filters; optical parts peculiar to the presence of use of an electronic image sensor}
- H04N 2005/2255
 - • • {for picking-up images in sites, inaccessible due to their dimensions or hazardous conditions, e.g. endoscope, borescope}
- H04N 5/2256
 - • • {provided with illuminating means}
- H04N 5/2257
 - • • {Mechanical and electrical details of cameras or camera modules for embedding in other devices (mounting structure in mobile phone see [H04M 1/0264](#); optical details [G03B](#))}
- H04N 5/2258
 - • • {Cameras using two or more image sensors, e.g. a CMOS sensor for video and a CCD for still image (cameras having one image sensor for each colour [H04N 9/045](#), [H04N 9/09](#))}
- H04N 5/2259
 - • • {Means for changing the camera field of view without moving the camera body, e.g. nutating or panning optics or image-sensors (picture signal generation using shifting image-sensors [H04N 5/349](#); varying magnification e.g. angle of view for cameras using only optical means [G03B](#))}
- H04N 5/228
 - • • Circuit details for pick-up tubes
- H04N 5/2283
 - • • • {Beam current control}
- H04N 5/2286
 - • • • • {during retrace periods, e.g. circuits for ACT tubes, leg suppression}

H04N 5/232	• • •	Devices for controlling television cameras, e.g. remote control; {Control of cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in e.g. mobile phones, computers or vehicles} (H04N 5/235 takes precedence; {varying magnification for cameras, e.g. angle of view, by optical means only G02B 7/00}, G03B)
H04N 5/23203	• • • •	{Remote control signaling for cameras or for parts of camera, e.g. between main body and part of camera (distributing sync-signals to television cameras H04N 5/0733)}
H04N 5/23206	• • • • •	{using a network, e.g. internet}
H04N 5/23209	• • • • •	{for interchangeable parts of camera involving control signals based on electric image signals provided by an electronic image sensor (interchangeably mounting lenses on cameras not involving a control signal based on electric image signals provided by a main electronic image sensor G03B 17/14)}
H04N 5/23212	• • • • •	{Focusing based on image signal provided by the electronic image sensor (generation of focusing signals in general G02B 7/28)}
H04N 5/23216	• • • • •	{Control of parameters e.g. field/angle of view of camera via graphical user interface e.g. touchscreen}
H04N 5/23219	• • • • •	{Control of camera operation based on recognized human faces, facial parts, facial expressions or other parts of the human body (face recognition per se G06K 9/00221)}
H04N 5/23222	• • • • •	{Computer-aided capture of images, e.g. transfer from script file into camera, camera control checks quality of taken pictures, gives advices how to arrange picture composition or decides when to take image}
H04N 5/23225	• • • • •	{Input of new or changed control program into camera control means}
H04N 5/23229	• • • • •	{comprising further processing of the captured image without influencing the image pickup process (image processing in general G06T)}
H04N 5/23232	• • • • •	{by using more than one image in order to influence resolution, frame rate or aspect ratio (providing high dynamic range image H04N 5/2355)}
H04N 5/23235	• • • • •	{by using a single image in order to influence the resolution}
H04N 5/23238	• • • • •	{Control of image capture or reproduction to achieve a very large field of view, e.g. panorama (panoramic or widescreen photography G03B 27/00)}
H04N 5/23241	• • • • •	{Control of camera operation in relation to power supply, e.g. by reducing power consumption of electronic image sensor or image processor or by checking or displaying battery state (details of energy supply or management for digital still cameras not peculiar to the electronic image sensor G03B 2217/007)}
H04N 5/23245	• • • • •	{Operation mode switching of cameras, e.g. between still/video, sport/normal or high/low resolution mode}
H04N 5/23248	• • • • •	{for stable pick-up of the scene in spite of camera body vibration (image-sensor selective scanning per se H04N 3/1562)}
H04N 5/23251	• • • • •	{Motion detection}
H04N 5/23254	• • • • •	{based on the image signal (analysis of motion by image processing in general G06T 7/20)}

H04N 5/23258	. . . . .	{based on additional sensors (cameras when not peculiar to the use or presence of the EIS G03B 2217/005)}
H04N 5/23261	. . . . .	{by distinguishing pan/tilt from motion}
H04N 5/23264	. . . . .	{Vibration or motion blur correction}
H04N 5/23267	. . . . .	{performed by a processor, e.g. controlling the readout of an image memory}
H04N 5/2327	. . . . .	{performed by controlling the image sensor readout, e.g. by controlling the integration time (controlling the image sensor readout in general H04N 5/345 , H04N 5/353)}
H04N 5/23274	. . . . .	{by controlling the scanning position, e.g. windowing (windowed readout of image sensor in general H04N 5/3454)}
H04N 5/23277	. . . . .	{by combination of a plurality of images sequentially taken}
H04N 5/2328	. . . . .	{performed by mechanical compensation (stabilization for imaging systems using optical elements in general s G02B 27/646 ; cameras when not peculiar to the use or presence of the EIS G03B 2205/0007)}
H04N 5/23283	. . . . .	{with a variable apex prism}
H04N 5/23287	. . . . .	{by shifting the lens/sensor position}
H04N 5/2329	. . . . .	{Motion occurring during a rolling shutter mode}
H04N 5/23293	. . . . .	{Electronic Viewfinder, e.g. displaying the image signal provided by an electronic image sensor and optionally additional information related to control or operation of the camera}
H04N 5/23296	. . . . .	{Control of means for changing angle of the field of view, e.g. optical zoom objective, electronic zooming or combined use of optical and electronic zooming (optical details of zoom lenses G02B 15/14 ; optical zooming only for cameras G03B 5/00)}
H04N 5/235	. . .	Circuitry {or methods} for compensating for variation in the brightness of the object {based on an electric image signals provided by an electronic image sensor (exposure control for film cameras or cameras using an additional sensor G03B 7/00)}
H04N 5/2351	. . . . .	{Circuitry for evaluating the brightness variations of the object (within the image sensor H04N 5/351 ; photometry in general G01J 1/00)}
H04N 5/2352	. . . . .	{Combination of two or more compensation controls}
H04N 5/2353	. . . . .	{by influencing the exposure time, e.g. shutter (H04N 5/2352 takes precedence; within the image sensor H04N 5/353)}
H04N 5/2354	. . . . .	{by influencing the scene brightness using illuminating means (H04N 5/2352 takes precedence)}
H04N 5/2355	. . . . .	{by increasing the dynamic range of the final image compared to the dynamic range of the electronic image sensor , e.g. by adding correct exposed portions of short and long exposed images (image enhancement in general using more than one image G06T 5/50)}
H04N 5/2356	. . . . .	{Bracketing i.e. taking a series of images with varying, e.g. stepwise, exposure conditions or focusing conditions}
H04N 5/2357	. . . . .	{Detection of flicker frequency or flicker suppression, e.g. due to fluorescent tube illumination}

H04N 5/2358	. . . . {by influencing at least one of the pick-up tube voltages (H04N 5/2352 takes precedence)}
H04N 5/238	. . . . by influencing the optical part of the camera, {e.g. diaphragm, intensifier, fibre bundle (H04N 5/2352 takes precedence)}
H04N 5/243	. . . . by influencing the picture signal, {e.g. signal amplitude gain control (H04N 5/2352 takes precedence)}
H04N 5/247	. . . Arrangements of television cameras {(constructional details of cameras H04N 5/2251 ; stereoscopic picture signal generators H04N 13/0239 ; H04N 13/0242)}
H04N 5/253	. . Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (scanning details therefor H04N 3/36 ; {standard conversion therefor H04N 7/0112 })
H04N 5/257	. . Picture signal generators using flying-spot scanners (H04N 5/253 takes precedence)
H04N 5/262	. . Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effect ; {Cameras specially adapted for the electronic generation of special effects}
H04N 5/2621	. . . {Cameras specially adapted for the electronic generation of special effects during image pickup, e.g. digital cameras, camcorders, video cameras having integrated special effects capability}
H04N 5/2622	. . . {Signal amplitude transition in the zone between image portions, e.g. soft edges}
H04N 5/2624	. . . {for obtaining an image which is composed of whole input images, e.g. splitscreen}
H04N 5/2625	. . . {for obtaining an image which is composed of images from a temporal image sequence, e.g. for a stroboscopic effect (sequence generated by event triggered capturing H04N 7/188)}
H04N 5/2627	. . . . {for providing spin image effect, 3D stop motion effect or temporal freeze effect (2D image animation in general G06T 13/80)}
H04N 5/2628	. . . {Alteration of picture size, shape, position or orientation, e.g. zooming, rotation, rolling, perspective, translation}
H04N 5/265	. . . Mixing
H04N 5/268	. . . Signal distribution or switching (for broadcasting H04H 20/00)
H04N 5/272	. . . Means for inserting a foreground image in a background image, i.e. inlay, outlay
H04N 5/2723	. . . . {Insertion of virtual advertisement; Replacing advertisements physical present in the scene by virtual advertisement (data processing systems or methods specially adapted for marketing G06Q 30/02)}
H04N 2005/2726	. . . . {for simulating a person's appearance, e.g. hair style, glasses, clothes}
H04N 5/275	. . . . Generation of keying signals
H04N 5/278	. . . Subtitling
H04N 5/28	. . Mobile studios
H04N 5/30	. Transforming light or analogous information into electric information (H04N 5/222 takes precedence ; scanning details H04N 3/00 ; light transforming elements H01J , H01L)
H04N 5/32	. . Transforming X-rays {(image transformers H01J 31/00)}

- H04N 5/3205 . . . {using subtraction imaging techniques}
 - H04N 5/321 . . . with video transmission of fluoroscopic images
- WARNING**
- Not complete, for documents published prior to June 1996 see also [H04N 5/32](#)
- H04N 5/325 Image enhancement, e.g. by subtraction techniques using polyenergetic X-rays
- WARNING**
- Not complete, for documents published prior to June 1996 see also [H04N 5/32](#)
- H04N 5/33 . . Transforming infra-red radiation
 - H04N 5/332 . . . {Multispectral imaging comprising at least a part of the infrared region}
 - H04N 5/335 . . using solid-state image sensors [SSIS] ([H04N 5/32](#), [H04N 5/33](#) take precedence)
- NOTE**
- In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place
Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01
- H04N 5/3355 . . . {with digital output of the sensor cell, e.g. dynamic RAM image sensors}
 - H04N 5/341 . . . Extracting pixel data from an image sensor by controlling scanning circuits, e.g. by modifying the number of pixels having been sampled or to be sampled
 - H04N 5/3415 {for increasing the field of view by combining the outputs of a plurality of sensors, e.g. panoramic imaging ([linear arrays using abutted sensors H04N 5/3692](#))}
 - H04N 5/343 by switching between different modes of operation using different resolutions or aspect ratios, e.g. between still and video mode or between interlaced and non-interlaced mode
 - H04N 5/345 by partially reading an SSIS array, {i.e. by outputting a number of pixels less than the number of pixels present on the image sensor}
 - H04N 5/3452 {by reading contiguous pixels in one direction within a read portion of the array, e.g. without loss of resolution within the read portion, or every other field is skipped}
 - H04N 5/3454 {by reading contiguous pixels in two directions within a read portion of the array, e.g. without loss of resolution in two directions, windowing or electronic zooming}
 - H04N 5/3456 {by skipping some contiguous pixels within the read portion of the array, e.g. with loss of resolution, e.g. skipping or discarding pixels}
 - H04N 5/3458 {by preserving the color pattern with or without loss of information}
 - H04N 5/347 by combining or binning pixels in SSIS
 - H04N 5/349 for increasing resolution by shifting the sensor relative to the scene, {e.g. microscanning}

H04N 5/351	. . .	Control of the SSIS depending on the scene, e.g. brightness or motion in the scene {(circuitry for evaluating the brightness variations of the object H04N 5/2351)}
H04N 5/353	. . . .	Control of the integration time {(circuitry for compensating for variation in the brightness of the object by influencing the exposure time H04N 5/2353)}
H04N 5/3532	. . . . .	{by controlling rolling shutters}
H04N 5/3535	. . . . .	{with different integration times within the sensor}
H04N 5/3537	. . . . .	{depending on the spectral component}
H04N 5/355	. . . .	Control of the dynamic range
H04N 5/35509	. . . . .	{involving a non-linear response}
H04N 5/35518	. . . . .	{being of the logarithmic type}
H04N 5/35527	. . . . .	{with a response composed of multiple slopes}
H04N 5/35536	. . . . .	{involving multiple exposures (combination of exposures for increasing the dynamic range H04N 5/235)}
H04N 5/35545	. . . . .	{being simultaneously taken}
H04N 5/35554	. . . . .	{with different integration times}
H04N 5/35563	. . . . .	{with pixels having different sensibilities within the sensor, e.g. fast/slow pixels, pixels having different sizes}
H04N 5/35572	. . . . .	{sequentially taken, e.g. using the combination of odd and even image fields}
H04N 5/35581	. . . . .	{with different integration times, e.g. short and long exposures}
H04N 5/3559	. . . . .	{by controlling the amount of charge storable in the pixel, e.g. modification of the charge conversion ratio of the floating node capacitance}
H04N 5/357	. . .	Noise processing, e.g. detecting, correcting, reducing or removing noise
H04N 5/3572	. . . .	{the noise resulting only from the lens unit, e.g. flare, shading, vignetting or "cos4" (suppressing or minimizing noise in picture signal generation H04N 5/217)}
H04N 5/3575	. . . .	{involving a correlated sampling function, e.g. correlated double or triple sampling}
H04N 5/3577	. . . .	{for reducing electromagnetic interferences, e.g. EMI reduction, clocking noise}
H04N 5/359	. . . .	applied to excess charges produced by the exposure, e.g. smear, blooming, ghost image, crosstalk or leakage between pixels
H04N 5/3591	. . . . .	{for the control of blooming}
H04N 5/3592	. . . . .	{by controlling anti-blooming drains}
H04N 5/3594	. . . . .	{by evacuation via the output or reset lines}
H04N 5/3595	. . . . .	{for the control of smearing, e.g. CCD being still exposed during the charge transfer}
H04N 5/3597	. . . . .	{being the residual charges remaining after reading an image, e.g. ghost images or after images}
H04N 5/3598	. . . . .	{applied when a phenomenon of inverted contrast occurs, e.g. eclipse phenomenon}

H04N 5/361	. . . .	applied to dark current
H04N 5/363	. . . .	applied to reset noise, e.g. KTC noise {related to CMOS structures}
H04N 5/365	. . . .	applied to fixed-pattern noise, e.g. non-uniformity of response
H04N 5/3651	. . . . .	{for non-uniformity detection and correction}
H04N 5/3653	. . . . .	{between adjacent sensors or output registers for reading a single image}
H04N 5/3655	. . . . .	{by using a reference source}
H04N 5/3656	. . . . .	{the reference source being based on the scene itself, e.g. defocusing}
H04N 5/3658	. . . . .	{for reducing the column or line fixed pattern noise}
H04N 5/367	. . . . .	applied to defects, e.g. non-responsive pixels
H04N 5/3675	. . . . .	{by defect estimation performed on the scene signal, e.g. real time or on the fly detection}
H04N 5/369	. . .	SSIS architecture; Circuitry associated therewith
H04N 5/3692	. . . .	{Line sensors}
H04N 5/3694	. . . . .	{using abutted sensors forming a long line, e.g. for flat bed scanners}
H04N 5/3696	. . . .	{SSIS characterized by non-identical, non-equidistant or non-planar pixel layout, sensor embedding other types of pixels not meant for producing an image signal, e.g. fovea sensors, display pixels, pixels for focusing}
H04N 5/3698	. . . .	{Circuitry for controlling the generation or the management of the power supply}
H04N 5/372	. . . .	Charge-coupled device [CCD] sensors; Time delay and integration [TDI] registers or shift registers specially adapted for SSIS {(charge coupled imager structure H01L 27/148)}
H04N 5/37206	. . . . .	{TDI registers or shift registers specially adapted for SSIS}
H04N 5/37213	. . . . .	{Details of transfer/readout registers; Split readout registers and multiple readout registers}
H04N 5/3722	. . . . .	using frame interline transfer [FIT]
H04N 5/3725	. . . . .	using frame transfer [FT]
H04N 5/3728	. . . . .	using interline transfer [IT]
H04N 5/374	. . . .	Addressed sensors, e.g. MOS or CMOS sensors {(MOS imager structure H01L 27/14643)}
H04N 5/3741	. . . . .	{comprising control or output lines sharing a plurality of functions, e.g. output or driving or reset or power lines}
H04N 5/3742	. . . . .	{Details of transfer or readout registers; split readout registers and multiple readout registers}
H04N 5/3743	. . . . .	{using TDI registers}
H04N 5/3745	. . . . .	having additional components embedded within a pixel or connected to a group of pixels within a sensor matrix, e.g. memories, A/D converters, pixel amplifiers, shared circuits or shared components
H04N 5/37452	. . . . .	{comprising additional storage means (by controlling the amount of charges storable in the pixel H04N 5/3559)}

H04N 5/37455	. . . . . {comprising A/D, V/T, V/F, I/T or I/F converters}
H04N 5/37457	. . . . . {comprising amplifiers shared between a plurality of pixels, e.g. at least one part of the amplifier has to be on the sensor array itself}
H04N 5/376	. . . . . Addressing circuits
H04N 5/3765	. . . . . {Timing or clock signal generating circuits}
H04N 5/378	. . . . . Readout circuits, e.g. correlated double sampling [CDS] circuits, output amplifiers or A/D converters
H04N 5/38	. Transmitter circuitry (H04N 5/14 takes precedence)
H04N 5/40	. . Modulation circuits {(in general H03C 1/00 , H03C 3/00 , H03C 5/00)}
H04N 5/42	. . for transmitting at will black-and-white or colour signals
H04N 5/44	. Receiver circuitry (H04N 5/14 takes precedence)
H04N 5/4401	. . {for the reception of a digital modulated video signal}
H04N 5/4403	. . {User interfaces for controlling a television receiver or set top box [STB] through a remote control device, e.g. graphical user interfaces [GUI]; Remote control devices therefor (user interfaces for controlling a tuning device of a television receiver through a remote control H03J 9/00 ; constructive details of casings for the remote control device H01H 9/0235 ; remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver H04B 1/205 ; remote control devices in general G08C)}
H04N 2005/4405	. . . {Hardware details of remote control devices}
H04N 2005/4407	. . . . {concerning bidirectional operation of the remote control device}
H04N 2005/4408	. . . . {Display}
H04N 2005/441	. . . . . {for the display of non-command information, e.g. electronic program guide [EPG], e-mail, messages or a second television channel}
H04N 2005/4412	. . . . {Dedicated function buttons, e.g. for the control of an electronic program guide [EPG], subtitles, aspect ratio, picture-in-picture or teletext}
H04N 2005/4414	. . . . . {for controlling a communication function, e.g. e-mail, teleshopping or an Internet browser}
H04N 2005/4416	. . . . {Keyboard}
H04N 2005/4417	. . . . . {Data entry}
H04N 2005/4419	. . . . . {Alphanumerical data entry}
H04N 2005/4421	. . . . . {Measuring key press duration}
H04N 2005/4423	. . . . {Remote control device emulator integrated in a peripheral device}
H04N 2005/4425	. . . . {Remote control device emulator integrated into a non-television apparatus, e.g. a PDA, media center or smart toy (remote control device for a television receiver integrated into a mobile phone H04M 1/72533)}
H04N 2005/4426	. . . . {Transmission circuitry, e.g. infrared [IR] or radio frequency [RF]}
H04N 2005/4428	. . . . {Non-standard components, e.g. timer, speaker, sensors for detecting position, direction or movement of the remote control, microphone, battery charging device}
H04N 2005/443	. . . . {Touch pad or touch panel}

H04N 2005/4432	. . . .	{Remote control devices equipped or combined with PC-like input means, e.g. voice recognition or pointing device}
H04N 2005/4433	. . . .	{for the control of devices in remote rooms}
H04N 2005/4435	. . .	{Reprogrammable remote control devices}
H04N 2005/4437	. . . .	{capable of upgrading firmware, e.g. in case of hardware upgrades or bug fixes}
H04N 2005/4439	. . . .	{the keys being reprogrammable, e.g. soft keys}
H04N 2005/4441	. . . . .	{the reprogrammable keys being displayed on a display screen in order to reduce the number of keys on the remote control device itself}
H04N 2005/4442	. . .	{Remote control devices for a multi-user environment}
H04N 2005/4444	. . .	{Intelligent remote control devices capable of taking into account user habits, preferences or profiles}
H04N 5/4446	. .	{IF amplifier circuits specially adapted for B&W TV (RF amplifiers in general H03F 3/189)}
H04N 5/4448	. .	{for frame-grabbing}
H04N 5/445	. .	for displaying additional information (H04N 5/50 takes precedence)
H04N 5/44504	. . .	{Circuit details of the additional information generator, e.g. details of the character or graphics signal generator, overlay mixing circuits (graphics pattern generators for visual indicators G09G 5/36 ; generation of individual character patterns for visual indicators G09G 5/24)}
H04N 5/44508	. . .	{multiplexed with a digital video signal}
H04N 5/44513	. . .	{for displaying or controlling a single function of one single apparatus, e.g. TV receiver or VCR}
H04N 2005/44517	. . . .	{for displaying or controlling status parameters of the television receiver, e.g. brightness, contrast, sound volume, channel number, time, stereo or mono sound modes}
H04N 2005/44521	. . . .	{for displaying information which has no relation with a video programme, e.g. subliminal info, commercial messages, notebook, calendar, cooking recipes}
H04N 2005/44526	. . . .	{for displaying subtitles}
H04N 2005/4453	. . . .	{for displaying teletext characters}
H04N 2005/44534	. . . .	{for displaying information generated by a single external video device, e.g. VCR, set top converter}
H04N 2005/44539	. . . .	{involving multilingual on screen display [OSD] options}
H04N 5/44543	. . .	{Menu-type displays (H04N 5/44582 , H04N 5/44591 take precedence)}
H04N 2005/44547	. . . .	{for scheduling the TV programmes to be recorded by a video tape recorder or to be viewed on the TV receiver}
H04N 2005/44552	. . . . .	{involving the use of teletext programme scheduling codes, e.g. VPS codes, G-codes}
H04N 2005/44556	. . . .	{for programme selection}
H04N 2005/4456	. . . .	{as a user interface for communicating with the broadcast station via a return link, e.g. for subscription or transaction terminal, for teleshopping, or as an interactive entertainment terminal, e.g. for quiz, for interactive games}

- H04N 2005/44565 {the menu or graphical user interface display parameters being downloaded by the service provider or by the broadcast station}
- H04N 2005/44569 {whereby user selections, preferences, or profile have an impact on the menu content}
- H04N 2005/44573 {for using the television receiver as a multimedia terminal}
- H04N 2005/44578 {involving the communication via a network, e.g. local area network [LAN], wide area network [WAN], internet, intranet}
- H04N 5/44582 {the additional information being controlled by a remote control apparatus}
- H04N 2005/44586 {whereby remote controller buttons have been transferred to the on screen display [OSD] menu}
- H04N 5/44591 {the additional information being displayed in a separate window, e.g. by using splitscreen display}
- H04N 2005/44595 {the separate window being opened at the occurrence of a selection of a menu option or item}
- H04N 5/45 Picture in picture
- H04N 5/455 Demodulation-circuits ([demodulation in general H03D](#))
- H04N 5/46 for receiving on more than one standard at will ([deflecting circuits of multi-standard receivers H04N 3/27](#))
- H04N 5/50 Tuning indicators; Automatic tuning control ([tuning control in general H03J](#))
- H04N 5/505 {Invisible or silent tuning}
- H04N 5/52 Automatic gain control {(in [general H03G](#))}
- H04N 5/53 Keyed automatic gain control
- H04N 5/54 for positively-modulated picture signals ([H04N 5/53 takes precedence](#))
- H04N 5/56 for negatively-modulated picture signals ([H04N 5/53 takes precedence](#))
- H04N 5/57 Control of contrast or brightness
- H04N 5/58 in dependence upon ambient light
- H04N 5/59 in dependence upon beam current of cathode ray tube
- H04N 5/60 for the sound signals {(for silent tuning, i.e. [muting H04N 5/505](#))}
- H04N 5/602 {for digital sound signals}
- H04N 5/605 {according to the NICAM system}
- H04N 5/607 {for more than one sound signal, e.g. stereo, multilanguages ([H04N 5/602 takes precedence](#))}
- H04N 5/62 Intercarrier circuits, i.e. heterodyning sound and vision carriers {(H04N 5/607 takes precedence)}
- H04N 5/63 Generation or supply of power specially adapted for television receivers (generation of supply voltages in combination with electron beam deflecting [H04N 3/18](#); regulating of voltage or current in general [G05F](#); transformers [H01F](#); supplying or distributing electric power, in general [H02J](#); static converters [H02M](#))
- H04N 5/64 Constructional details of receivers, e.g. cabinets, dust covers ([furniture aspects A47B](#), e.g. [A47B 81/06](#))
- H04N 5/642 {Disposition of sound reproducers}
- H04N 5/645 Mounting of picture tube on chassis or in housing

- H04N 5/65 . . Holding-devices for protective discs or for picture masks
 - H04N 5/655 . . Construction or mounting of chassis, e.g. for varying the elevation of the tube
 - H04N 5/66 . Transforming electric information into light information ([scanning details H04N 3/00](#); {electro- or magneto optic devices [G02F 1/00](#); CRT's [H01J](#)})
 - H04N 5/68 . . Circuit details for cathode-ray display tubes ({[deviation circuits H04N 3/16](#), [H03K 4/00](#)})
 - H04N 5/70 . . Circuit details for electroluminescent devices
 - H04N 5/72 . Modifying the appearance of television pictures by optical filters or diffusing screens ([optical filters or diffusing screens per se G02B 5/00](#))
 - H04N 5/74 . Projection arrangements for image reproduction, e.g. using eidophor ([optical systems in general G02B](#))
- WARNING**
- [H04N 5/74](#) and subgroups are no longer used for the classification of new documents as from October 1, 2008. The backlog is being continuously reclassified to subgroups of [H04N 9/31](#)
- H04N 5/7408 . . {Direct viewing projectors, e.g. an image displayed on a video CRT or LCD display being projected on a screen}
 - H04N 5/7416 . . {involving the use of a spatial light modulator, e.g. a light valve, controlled by a video signal}
 - H04N 5/7425 . . . {the modulator being a dielectric deformable layer controlled by an electron beam, e.g. eidophor projector}
 - H04N 2005/7433 {Control circuits therefor}
 - H04N 5/7441 . . . {the modulator being an array of liquid crystal cells}
 - H04N 2005/745 {Control circuits therefor}
 - H04N 5/7458 . . . {the modulator being an array of deformable mirrors, e.g. digital micromirror device [DMD]}
 - H04N 2005/7466 {Control circuits therefor}
 - H04N 5/7475 . . {Constructional details of television projection apparatus}
 - H04N 2005/7483 . . . {for colour television}
 - H04N 5/7491 . . . {of head mounted projectors}
 - H04N 5/76 . Television signal recording ([diagnosis, testing or measuring for television signal recorders H04N 17/06](#); recording in connection with measuring [G01D](#); information storage {in which the television signal is not involved, driving, starting, stopping, head switching, editing, indexing} in general [G11](#), e.g. [G11B](#))
 - H04N 5/7605 . . {on discs or drums ([H04N 5/781](#), [H04N 5/805](#), [H04N 5/83](#), [H04N 5/85](#) take precedence)}
 - H04N 5/765 . . Interface circuits between an apparatus for recording and another apparatus (associated working of recording or reproducing apparatus with a television camera or receiver in which the television signal is not significantly involved [G11B 31/00](#))
 - H04N 5/77 . . . between a recording apparatus and a television camera
 - H04N 5/772 {the recording apparatus and the television camera being placed in the same enclosure}
 - H04N 5/775 . . . between a recording apparatus and a television receiver

- H04N 5/7755 {the recorder being connected to, or coupled with, the antenna of the television receiver}
- H04N 5/78 . . using magnetic recording ([H04N 5/91](#) takes precedence; {mechanical details in so far as non typical for television circuitry [G11B 5/00](#)})
- H04N 5/7805 . . . {Recording or playback not using inductive heads, e.g. magneto-optical, thermomagnetic, magnetostrictive, galvanomagnetic (electrostatic recording [H04N 5/80](#), photographic recording [H04N 5/84](#))}
- H04N 5/781 . . . on discs or drums
- H04N 5/782 . . . on tape
- H04N 5/78206 {Recording using a special track configuration, e.g. crossing, overlapping}
- H04N 5/78213 {involving recording in different depths of the magnetic tape}
- H04N 5/7822 with stationary magnetic heads
- H04N 5/7824 with rotating magnetic heads

WARNING

Not complete, see also [H04N 5/782](#)

- H04N 5/7826 involving helical scanning of the magnetic tape
- H04N 5/78263 {for recording on tracks inclined relative to the direction of movement of the tape}
- H04N 5/78266 {using more than one track for the recording of one television field or frame, i.e. segmented recording}
- H04N 5/7828 involving transversal scanning of the magnetic tape

WARNING

Not complete, see also [H04N 5/782](#)

- H04N 5/783 Adaptations for reproducing at a rate different from the recording rate
- H04N 5/784 . . . on a sheet
- H04N 5/80 . . using electrostatic recording ([H04N 5/91](#) takes precedence)
- H04N 5/805 . . . {on discs or drums}
- H04N 5/82 . . . using deformable thermoplastic recording medium
- H04N 5/83 on discs or drums
- H04N 5/84 . . using optical recording ([H04N 5/80](#), [H04N 5/89](#), [H04N 5/91](#) take precedence)
- H04N 5/843 . . . {on film}
- H04N 5/846 {the film moving intermittently}
- H04N 5/85 . . . on discs or drums
- H04N 5/87 . . . Producing a motion picture film from a television signal (scanning of motion picture films for television signal generation [H04N 3/36](#); television signal generation by scanning a motion picture film [H04N 5/253](#) [H04N 9/11](#); {standard conversion therefor [H04N 7/0112](#)})

- H04N 5/89
 - • using holographic recording ([H04N 5/91](#) takes precedence)
 - WARNING**
 - Not complete, see also [H04N 5/76](#), [H04N 5/7605](#), [H04N 5/84](#), [H04N 5/85](#)
- H04N 5/90
 - • • on discs or drums
- H04N 5/903
 - • using variable electrical capacitive recording ([H04N 5/91](#) takes precedence)
 - WARNING**
 - Not complete, see also [H04N 5/7605](#)
- H04N 5/907
 - • using static stores, e.g. storage tubes, semiconductor memories ([H04N 5/91](#) takes precedence; based on relative movement between record carrier and transducer [H04N 5/78](#) to [H04N 5/903](#))
- H04N 5/91
 - • Television signal processing therefor (of colour signals [H04N 9/79](#))
- H04N 5/911
 - • • for the suppression of noise ([H04N 5/932](#) takes precedence)
- H04N 5/913
 - • • for scrambling; {for copy protection} (scrambling of a television signal for transmission [H04N 7/167](#))
- H04N 2005/91307
 - • • • {by adding a copy protection signal to the video signal}
- H04N 2005/91314
 - • • • • {the copy protection signal being a pulse signal inserted in blanking intervals of the video signal, e.g. pseudo-AGC pulses, pseudo-sync pulses}
- H04N 2005/91321
 - • • • • {the copy protection signal being a copy protection control signal, e.g. a record inhibit signal}
- H04N 2005/91328
 - • • • • {the copy protection signal being a copy management signal, e.g. a copy generation management signal [CGMS]}
- H04N 2005/91335
 - • • • • {the copy protection signal being a watermark}
- H04N 2005/91342
 - • • • • {the copy protection signal being an authentication signal}
- H04N 2005/9135
 - • • • • {by superimposing the spectrally spread copy protection signal onto the video signal}
- H04N 2005/91357
 - • • • {by modifying the video signal}
- H04N 2005/91364
 - • • • • {the video signal being scrambled}
- H04N 2005/91371
 - • • • • {the video color burst signal being modified}
- H04N 2005/91378
 - • • • • {the video line number being modulated}
- H04N 2005/91385
 - • • • • {the video frame number being modulated}
- H04N 2005/91392
 - • • • {using means for preventing making copies of projected video images}
- H04N 5/915
 - • • for field- or frame-skip recording or reproducing
- H04N 5/9155
 - • • • {with sound multiplexing}
- H04N 5/917
 - • • for bandwidth reduction (bandwidth reduction [H04N 7/12](#); using pulse code modulation [H04N 7/24](#))
- H04N 5/919
 - • • • by dividing samples or signal segments, e.g. television lines, among a plurality of recording channels
- H04N 5/92
 - • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback {(transmitter circuitry [H04N 5/38](#); receiver circuitry [H04N 5/44](#))}

H04N 5/9201	. . . .	{involving the multiplexing of an additional signal and the video signal}
H04N 5/9202	. . . . .	{the additional signal being a sound signal (H04N 5/9155 , H04N 5/92 take precedence)}
H04N 5/9203	. . . . .	{using time division multiplex}
H04N 5/9204	. . . . .	{using frequency division multiplex}
H04N 5/9205	. . . . .	{the additional signal being at least another television signal}
H04N 5/9206	. . . . .	{the additional signal being a character code signal}
H04N 5/9207	. . . . .	{for teletext}
H04N 5/9208	. . . . .	{involving the use of subcodes}
H04N 5/921	. . . .	by recording or reproducing the baseband signal
H04N 5/923	. . . .	using preemphasis of the signal before modulation and deemphasis of the signal after demodulation {(volume compression or expansion in amplifiers in general H03G 7/00)}
H04N 5/926	. . . .	by pulse code modulation (H04N 5/919 takes precedence)
H04N 5/9261	. . . . .	{involving data reduction}
H04N 5/9262	. . . . .	{using predictive coding}
H04N 5/9264	. . . . .	{using transform coding}
H04N 5/9265	. . . . .	{with processing of the sound signal}
H04N 5/9267	. . . . .	{using time division multiplex of the PCM audio and PCM video signals}
H04N 5/9268	. . . . .	{with insertion of the PCM audio signals in the vertical blanking interval of the PCM video signal}
H04N 5/928	. . . .	the sound signal being pulse code modulated and recorded in time division multiplex with the modulated video signal
H04N 5/93	. . .	Regeneration of the television signal or of selected parts thereof
H04N 5/9305	. . . .	{involving the mixing of the reproduced video signal with a non- recorded signal, e.g. a text signal}
H04N 5/931	. . . .	for restoring the level of the reproduced signal
H04N 5/9315	. . . . .	{the level control being frequency dependent (H04N 5/923 takes precedence)}
H04N 5/932	. . . .	Regeneration of analogue synchronisation signals
H04N 5/935	. . . .	Regeneration of digital synchronisation signals
H04N 5/937	. . . .	by assembling picture element blocks in an intermediate store
H04N 5/94	. . . .	Signal drop-out compensation
H04N 5/945	. . . . .	for signals recorded by pulse code modulation (error detection or correction of digital signals for recording in general G11B 20/18)
H04N 5/95	. . . .	Time-base error compensation {(H04N 5/932 takes precedence)}
H04N 5/953	. . . . .	by using an analogue memory, e.g. a CCD shift register, the delay of which is controlled by a voltage controlled oscillator
H04N 5/956	. . . . .	by using a digital memory with independent write-in and read-out clock generators

H04N 7/00

Television systems (details [H04N 3/00](#), [H04N 5/00](#); methods or arrangements, for coding, decoding, compressing or decompressing digital video signals [H04N 19/00](#); selective content distribution [H04N 21/00](#))

- H04N 7/002
 - {Special television systems not provided for by [H04N 7/007](#) to [H04N 7/18](#) (still pictures via a television channel [H04N 1/00098](#))}
- H04N 7/005
 - • {using at least one opto-electrical conversion device}
- H04N 7/007
 - {Systems with supplementary picture signal insertion during a portion of the active part of a television signal, e.g. during top and bottom lines in a HDTV letter-box system}
- H04N 7/01
 - Conversion of standards {involving analogue television standards or digital television standards processed at pixel level (video transcoding [H04N 19/40](#); image scaling in general [G06T 3/40](#); adapting incoming signals to the display format of the display terminal [G09G 5/005](#))}
- H04N 7/0102
 - • {involving the resampling of the incoming video signal}
- H04N 7/0105
 - • {using a storage device with different write and read speed}
- H04N 7/0107
 - • • {using beam gun storage}
- H04N 7/011
 - • • {using magnetic recording}
- H04N 7/0112
 - • {one of the standards corresponding to a cinematograph film standard}
- H04N 7/0115
 - • • {with details on the detection of a particular field or frame pattern in the incoming video signal, e.g. 3:2 pull-down pattern}
- H04N 7/0117
 - • {involving conversion of the spatial resolution of the incoming video signal (for graphics images [G09G 2340/0407](#))}
- H04N 7/012
 - • • {Conversion between an interlaced and a progressive signal (for graphics images [G09G 2310/0229](#))}
- H04N 7/0122
 - • • {the input and the output signals having different aspect ratios}
- H04N 7/0125
 - • {one of the standards being a high definition standard}
- H04N 7/0127
 - • {by changing the field or frame frequency of the incoming video signal, e.g. frame rate converter}
- H04N 7/013
 - • • {the incoming video signal comprising different parts having originally different frame rate, e.g. video and graphics}
- H04N 7/0132
 - • • {the field or frame frequency of the incoming video signal being multiplied by a positive integer, e.g. for flicker reduction}
- H04N 7/0135
 - • {involving interpolation processes (interpolation-based image scaling [G06T 3/4007](#); interpolation for video coding [H04N 19/587](#), [H04N 19/59](#))}
- H04N 7/0137
 - • • {dependent on presence/absence of motion, e.g. of motion zones ([H04N 7/014](#) takes precedence; movement detection in television signals [H04N 5/144](#))}
- H04N 7/014
 - • • {involving the use of motion vectors (motion estimation and compensation in video coding [H04N 19/51](#))}
- H04N 7/0142
 - • • {the interpolation being edge adaptive (edge detection in television signals [H04N 5/142](#); edge-driven scaling [G06T 3/403](#))}
- H04N 7/0145
 - • • {the interpolation being class adaptive, i.e. it uses the information of class which is determined for a pixel based upon certain characteristics of the neighbouring pixels}
- H04N 7/0147
 - • • {the interpolation using an indication of film mode or an indication of a specific pattern, e.g. 3:2 pull-down pattern}

- H04N 7/015 . High-definition television systems
- H04N 7/0152 . . {using spatial or temporal subsampling}
- H04N 7/0155 . . . {using pixel blocks}
- H04N 7/0157 {with motion estimation, e.g. involving the use of motion vectors}
- H04N 7/025 . Systems for the transmission of digital non-picture data, e.g. of text during the active part of a television frame {(transmission of digital non-picture data during the vertical blanking interval only [H04N 7/088](#))}
- H04N 7/0255 . . {Display systems therefor}
- H04N 7/03 . . Subscription systems therefor
- H04N 7/035 . . Circuits for the digital non-picture data signal, e.g. for slicing of the data signal, for regeneration of the data-clock signal, for error detection or correction of the data signal
 - H04N 7/0352 . . . {for regeneration of the clock signal}
 - H04N 7/0355 . . . {for discrimination of the binary level of the digital data, e.g. amplitude slicers}
 - H04N 7/0357 . . . {for error detection or correction}
- H04N 7/04 . Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier {(H04N 7/084, [H04N 7/087](#) take precedence)}
- H04N 7/045 . . the carrier being frequency modulated
- H04N 7/06 . Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier {(H04N 7/084, [H04N 7/087](#) take precedence)}
- H04N 7/063 . . {Simultaneous transmission of separate parts of one picture}
- H04N 7/066 . . {the carriers being allocated to more than one television channel}
- H04N 7/08 . Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band, {e.g. by time division ([H04N 7/007](#) takes precedence)}
 - H04N 7/0803 . . {using frequency interleaving, e.g. with precision offset}
 - H04N 7/0806 . . {the signals being two or more video signals ([H04N 7/0803](#), [H04N 7/081](#) take precedence)}
 - H04N 7/081 . . the additional information signals being transmitted by means of a subcarrier
 - H04N 7/083 . . with signal insertion during the vertical and the horizontal blanking interval, {e.g. MAC data signals}
 - H04N 7/084 . . with signal insertion during the horizontal blanking interval {only}
 - H04N 7/085 . . . the inserted signal being digital
 - H04N 7/0855 {the signal being time-compressed before its insertion and subsequently decompressed at reception}
 - H04N 7/087 . . with signal insertion during the vertical blanking interval {only}
 - H04N 7/088 . . . the inserted signal being digital
 - H04N 7/0881 {the signal being time-compressed before its insertion and subsequently decompressed at reception}
 - H04N 7/0882 {for the transmission of character code signals, e.g. for teletext (circuits for the digital non-picture data signal [H04N 7/035](#))}

- H04N 7/0884 {for the transmission of additional display-information, e.g. menu for programme or channel selection}
- H04N 7/0885 {for the transmission of subtitles}
- H04N 7/0887 {for the transmission of programme or channel identifying signals}
- H04N 7/0888 {Subscription systems therefor}
- H04N 7/10 . Adaptations for transmission by electric cable ([H04N 7/12](#) takes precedence; {transmission by lines [H04B 3/00](#); wired broadcast systems [H04H 20/76](#); CATV [Community Antenna Television] systems [H04H 20/78](#)})
- H04N 7/102 . . {Circuits therefor, e.g. noise reducers, equalisers, amplifiers ([H04N 7/108](#) takes precedence)}
- H04N 7/104 . . . {Switchers or splitters}
- H04N 7/106 . . {for domestic distribution}
- H04N 7/108 . . {the cable being constituted by a pair of wires}
- H04N 7/12 . Systems in which the television signal is transmitted via one channel or a plurality of parallel channels, the bandwidth of each channel being less than the bandwidth of the television signal ([H04N 7/24](#) takes precedence; {by special scanning [H04N 3/00](#) ; high definition television systems [H04N 7/015](#)})
- H04N 7/122 . . {involving expansion and subsequent compression of a signal segment, e.g. a frame, a line}
- H04N 7/125 . . . {the signal segment being a picture element}
- H04N 7/127 . . {Systems in which different parts of the picture signal frequency band are individually processed, e.g. suppressed, transposed}
- H04N 7/14 . Systems for two-way working ({[H04N 7/12](#), } [H04N 7/173](#) take precedence)
- H04N 7/141 . . {between two video terminals, e.g. videophone (telephonic communication systems combined with television receiver for reception of entertainment or information matter [H04M 11/085](#))}
- H04N 7/142 . . . {Constructional details of the terminal equipment, e.g. arrangements of the camera and the display}
- H04N 7/144 {camera and display on the same optical axis, e.g. optically multiplexing the camera and display for eye to eye contact}
- H04N 2007/145 {Handheld terminals}
- H04N 7/147 . . . {Communication arrangements, e.g. identifying the communication as a video-communication, intermediate storage of the signals ([selecting H04Q](#))}
- H04N 7/148 . . . {Interfacing a video terminal to a particular transmission medium, e.g. ISDN}
- H04N 7/15 . . Conference systems ({video terminal details [H04N 7/141](#) ; telephonic conference arrangements [H04M 3/56](#); {computer conferencing [H04L 12/1813](#)})
- H04N 7/152 . . . {Multipoint control units therefor}
- H04N 7/155 . . . {involving storage of or access to video conference sessions ([tracking arrangements for later retrieval of a computer conference content or participants activities H04L 12/1831](#))}
- H04N 7/157 . . . {defining a virtual conference space and using avatars or agents ([computer conference optimisation or adaptation H04L 12/1827](#))}
- H04N 7/16 . Analogue secrecy systems; Analogue subscription systems

- H04N 7/161 . . {Constructional details of the subscriber equipment ([H04N 7/164](#) takes precedence; coin-freed and like apparatus in general [G07F](#))}
- H04N 7/162 . . {Authorising the user terminal, e.g. by paying; Registering the use of a subscription channel, e.g. billing}
- H04N 7/163 . . . {by receiver means only}
- H04N 7/164 {Coin-freed apparatus}
- H04N 7/165 . . . {Centralised control of user terminal (subsequent to an upstream request signal [H04N 7/17345](#)); Registering at central (by two-way working [H04N 7/17309](#))}
- H04N 7/166 . . {Passage/non-passage of the television signal, e.g. jamming, band suppression (scrambling and descrambling [H04N 7/167](#))}
- H04N 7/167 . . Systems rendering the television signal unintelligible and subsequently intelligible {(secret communication in general [H04K 1/00](#))}
- H04N 7/1675 . . . {Providing digital key or authorisation information for generation or regeneration of the scrambling sequence (pseudo-random number generators in general [G06F 7/58](#))}
- H04N 7/169 . . . Systems operating in the time domain of the television signal
- H04N 7/1693 {by displacing synchronisation signals relative to active picture signals or vice versa}
- H04N 7/1696 {by changing or reversing the order of active picture signal portions}
- H04N 7/171 . . . Systems operating in the amplitude domain of the television signal
- H04N 7/1713 {by modifying synchronisation signals}
- H04N 7/1716 {by inverting the polarity of active picture signal portions}
- H04N 7/173 . . with two-way working, e.g. subscriber sending a programme selection signal
- H04N 7/17309 . . . {Transmission or handling of upstream communications}
- H04N 7/17318 {Direct or substantially direct transmission and handling of requests}
- H04N 7/17327 {with deferred transmission or handling of upstream communications}
- H04N 7/17336 {Handling of requests in head-ends}
- H04N 7/17345 . . . {Control of the passage of the selected programme}
- H04N 7/17354 {in an intermediate station common to a plurality of user terminals}
- H04N 7/17363 {at or near the user terminal}
- H04N 2007/17372 . . . {the upstream transmission being initiated or timed by a signal from upstream of the user terminal}
- H04N 2007/17381 . . . {the upstream transmission being initiated by the user terminal}
- H04N 2007/1739 . . . {the upstream communication being transmitted via a separate link, e.g. telephone line}
- H04N 7/18 . Closed circuit television systems, i.e. systems in which the signal is not broadcast {(television transmission of measured quantities [G01D 5/39](#); intruder alarm or detection by television surveillance [G08B 13/196](#))}
- H04N 7/181 . . {for receiving images from a plurality of remote sources}
- H04N 7/183 . . {for receiving images from a single remote source}
- H04N 7/185 . . . {from a mobile camera, e.g. for remote control}
- H04N 7/186 . . . {Video door telephones}

- H04N 7/188
 - • {Capturing isolated or intermittent images triggered by the occurrence of a predetermined event, e.g. an object reaching a predetermined position (signal generation from motion picture films [H04N 5/253](#))}
- H04N 7/20
 - Adaptations for transmission via a GHz frequency band, e.g. via satellite
- H04N 7/22
 - Adaptations for optical transmission
- H04N 7/24
 - Systems for the transmission of television signals using pulse code modulation ([H04N 21/00](#) takes precedence)
- H04N 2007/243
 - • {Bitstream control arrangements}
- H04N 2007/246
 - • {Bitstream transport arrangements}
- H04N 7/52
 - • Systems for transmission of a pulse code modulated video signal with one or more other pulse code modulated signals, e.g. an audio signal or a synchronizing signal (assembling of a multiplex stream by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetised elementary stream at server side [H04N 21/236](#); disassembling of a multiplex stream, remultiplexing of multiplex streams, extraction or processing of Service Information, disassembling of packetised elementary stream at client side [H04N 21/434](#))
- H04N 7/54
 - • • the signals being synchronous {([H04N 21/23602](#), [H04N 21/23614](#), [H04N 21/2365](#), [H04N 21/2368](#), [H04N 21/4341](#), [H04N 21/4342](#), [H04N 21/4347](#), [H04N 21/4348](#) take precedence)}
- H04N 7/56
 - • • • Synchronising systems therefor
- H04N 9/00**
 - Details of colour television systems**
- H04N 9/04
 - Picture signal generators
- H04N 9/045
 - • {using solid-state devices ([H04N 9/11](#) takes precedence ; solid state picture signal generators [H01L 31/00](#))}
- H04N 9/07
 - • with one pick-up device only
- H04N 9/077
 - • • whereby the colour signals are characterised by their phase
- H04N 9/083
 - • • whereby the colour signals are characterised by their frequency
- H04N 9/09
 - • with more than one pick-up device
- H04N 9/093
 - • • Systems for avoiding or correcting misregistration of video signals
- H04N 9/097
 - • • Optical arrangements associated therewith, e.g. for beam-splitting, for colour correction ([beam-splitting in general G02B 27/10](#))
- H04N 9/10
 - • using optical-mechanical scanning means only ([H04N 9/11](#) takes precedence; optical scanning systems in general [G02B 26/10](#))
- H04N 9/11
 - • Scanning of colour motion picture films, e.g. for telecine
- H04N 9/12
 - Picture reproducers (devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams [G02F](#))
- H04N 9/14
 - • using optical-mechanical scanning means only ([H04N 9/11](#) takes precedence; optical scanning systems in general [G02B 26/10](#))
- H04N 9/16
 - • using cathode ray tubes ([H04N 9/11](#) takes precedence; cathode-ray tubes [H01J 31/00](#))

- H04N 9/18 . . . using separate electron beams for the primary colour signals ([H04N 9/27 takes precedence](#))
- WARNING**
- This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#) and subgroups
- H04N 9/20 with more than one beam in a tube
- H04N 9/22 . . . using the same beam for more than one primary colour information ([H04N 9/27 takes precedence](#))
- H04N 9/24 using means, integral with, or external to, the tube, for producing signal indicating instantaneous beam position
- H04N 9/26 using electron-optical colour selection means, e.g. line grid, deflection means in or near the gun or near the phosphor screen
- H04N 9/27 . . . with variable depth of penetration of electron beam into the luminescent layer, e.g. penetrans
- H04N 9/28 . . . Arrangements for convergence or focusing
- H04N 9/285 using quadrupole lenses ([quadrupole lenses per se G21K 1/08](#), [H01J 3/14](#), [H01J 29/58](#), [H01J 37/10](#))
- H04N 9/29 . . . using demagnetisation or compensation of external magnetic fields
- H04N 9/30 . . using solid-state colour display devices ({[indicating devices using static means to present variable information G09G](#)})
- H04N 9/31 . . Projection devices for colour picture display {e.g. [using electronic spatial light modulators \[ESLM\]](#) (projection devices using film stock, photographic film or slides, [G03B 21/00](#) and subgroups)}
- H04N 9/3102 . . . {[using two-dimensional electronic spatial light modulators](#) (micromechanical modulators as such [G02B 26/0833](#); liquid crystal modulators as such [G02F 1/13](#))}
- H04N 9/3105 {for displaying all colours simultaneously, e.g. by using two or more [electronic spatial light modulators](#) (simultaneous projection in colour photography [G03B 33/10](#); beam splitting or combining systems per se [G02B 27/10](#))}
- H04N 9/3108 {by using a single [electronic spatial light modulator](#)}
- H04N 9/3111 {for displaying the colours sequentially, e.g. by using sequentially activated light sources ([sequential projection in colour photography G03B 33/08](#))}
- H04N 9/3114 {by using a sequential colour filter producing one colour at a time}
- H04N 9/3117 {by using a sequential colour filter producing two or more colours simultaneously, e.g. by creating scrolling colour bands}
- H04N 9/312 {Driving therefor ([driving of electronic spatial light modulators in displays other than projection devices G09G 3/34](#), [G09G 3/36](#); control of liquid crystal elements [G02F 1/133](#); control of micromechanical modulators [G02B 26/08](#))}
- H04N 9/3123 {using pulse width modulation}
- H04N 9/3126 {for spatial light modulators in series}

- H04N 9/3129 . . . {scanning a light beam on the display screen (scanning a light beam on a screen in displays other than projection devices [G09G 3/02](#); scanning systems in general [G02B 26/10](#); projectors using laser light sources in general [H04N 9/3161](#))}
- H04N 9/3132 {using one-dimensional electronic spatial light modulators}
- H04N 9/3135 {Driving therefor}
- H04N 9/3138 . . . {using arrays of modulated light sources (electroluminescent display devices [G09G 3/30](#))}
- H04N 9/3141 . . . {Constructional details thereof (details not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#))}
- H04N 9/3144 {Cooling systems (cooling of liquid crystal cells in general [G02F 1/133382](#); cooling of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/16](#))}
- H04N 9/3147 {Multi-projection systems (displays in general [H04N 9/12](#); video walls [G06F 3/1446](#), [G09G 2300/026](#))}
- H04N 9/315 {Modulator illumination systems (general applications of lighting devices [F21V](#); general optical systems [G02B](#); lamp houses for projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/20](#))}
- H04N 9/3152 {for shaping the light beam (beam shaping per se [G02B 27/09](#))}
- H04N 9/3155 {for controlling the light source (light source control per se [H05B 37/00](#), [H05B 41/00](#); control of an illumination source for displays in general [G09G 3/3406](#))}
- H04N 9/3158 {for controlling the spectrum}
- H04N 9/3161 {using laser light sources (using laser beams scanning the display screen [H04N 9/3129](#))}
- H04N 9/3164 {using multiple light sources}
- H04N 9/3167 {for polarizing the light beam (polarizing optical systems per se [G02B 27/28](#))}
- H04N 9/317 {Convergence or focusing systems (electronic adjustment of convergence [H04N 9/3185](#); convergence or focusing arrangements for cathode ray tubes [H04N 9/28](#); means for automatic focusing of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/53](#))}
- H04N 9/3173 {wherein the projection device is specially adapted for enhanced portability}
- H04N 9/3176 {wherein the projection device is incorporated in a camera (details of cameras adapted for combination with a projector not peculiar to the presence of an electronic spatial light modulator [G03B 17/54](#))}
- H04N 9/3179 . . . {Video signal processing therefor}
- H04N 9/3182 {Colour adjustment, e.g. white balance, shading or gamut (white balance per se [H04N 9/73](#); control of amplitude of colour signals [H04N 9/68](#); colour control circuits for displays in general [G09G 5/02](#), [G09G 3/2003](#), [G09G 3/3607](#))}

- H04N 9/3185 {Geometric adjustment, e.g. keystone or convergence (optical or mechanical adjustment of convergence [H04N 9/317](#); using scanning means [H04N 3/22](#); optical or mechanical adjustments of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#))}
- H04N 9/3188 {Scale or resolution adjustment (scaling in general [G06T 3/40](#); resolution modifying circuits for displays in general [G09G 5/391](#))}
- H04N 9/3191 . . . {Testing thereof (testing of displays in general [G09G 3/006](#))}
- H04N 9/3194 {including sensor feedback}
- H04N 9/3197 . . . {using light modulating optical valves}
- H04N 9/43 . Conversion of monochrome picture signals to colour picture signals for colour picture display
- H04N 9/44 . Colour synchronisation
- H04N 9/45 . . Generation or recovery of colour sub-carriers
- H04N 9/455 . . Generation of colour burst signals; Insertion of colour burst signals in colour picture signals or separation of colour burst signals from colour picture signals ([H04N 9/45](#) takes precedence)
- H04N 9/465 . . Synchronisation of the PAL-switch
- H04N 9/47 . . for sequential signals
- H04N 9/475 . . for mutually locking different synchronisation sources
- H04N 9/64 . Circuits for processing colour signals ([H04N 9/77](#) takes precedence)
- H04N 9/641 . . {Multi-purpose receivers, e.g. for auxiliary information ([H04N 9/642](#) takes precedence)}
- H04N 9/642 . . {Multi-standard receivers}
- H04N 9/643 . . {Hue control means, e.g. flesh tone control}
- H04N 9/645 . . {Beam current control means}
- H04N 9/646 . . {for image enhancement, e.g. vertical detail restoration, cross-colour elimination, contour correction, chrominance trapping filters}
- H04N 9/647 . . {I.F amplifiers, (amplifiers in general [H03F](#))}
- H04N 9/648 . . {Video amplifiers}
- H04N 9/65 . . for synchronous modulators
- H04N 9/66 . . for synchronous demodulators
- H04N 9/67 . . for matrixing
- H04N 9/68 . . for controlling the amplitude of colour signals, e.g. automatic chroma control circuits ([H04N 9/71](#), [H04N 9/73](#) take precedence)
- H04N 9/69 . . . for modifying the colour signals by gamma correction
- H04N 9/70 . . for colour killing
- H04N 9/71 . . . combined with colour gain control
- H04N 9/72 . . for reinsertion of dc and slowly varying components of colour signal
- H04N 9/73 . . colour balance circuits, e.g. white balance circuits, colour temperature control
- H04N 9/735 . . . {for picture signal generators}
- H04N 9/74 . . for obtaining special effects ([H04N 9/65](#) to [H04N 9/73](#) take precedence)

- H04N 9/75 . . . Chroma key
- H04N 9/76 . . . for mixing of colour signals ([H04N 9/75 takes precedence](#))
- H04N 9/77 . Circuits for processing the brightness signal and the chrominance signal relative to each other, e.g. adjusting the phase of the brightness signal relative to the colour signal, correcting differential gain or differential phase ([circuits for matrixing H04N 9/67](#))
- H04N 9/78 . . for separating the brightness signal or the chrominance signal from the colour television signal, e.g. using comb filter
- H04N 9/79 . Processing of colour television signals in connection with recording
- H04N 9/7904 . . {using intermediate digital signal processing}
- H04N 9/7908 . . {Suppression of interfering signals at the reproducing side, e.g. noise}
- H04N 9/7912 . . . {the interfering signals being intermodulation signals}
- H04N 9/7917 . . . {the interfering signals being cross-talk signals}
- H04N 9/7921 . . {for more than one processing mode}
- H04N 9/7925 . . . {for more than one standard}
- H04N 9/793 . . for controlling the level of the chrominance signal, e.g. by means of automatic chroma control circuits
- H04N 9/7933 . . . {the level control being frequency-dependent}
- H04N 9/7936 {by using a preemphasis network at the recording side and a deemphasis network at the reproducing side}
- H04N 9/797 . . for recording the signal in a plurality of channels, the bandwidth of each channel being less than the bandwidth of the signal ([H04N 9/804](#), [H04N 9/81](#), [H04N 9/82 take precedence](#))
- H04N 9/7973 . . . {by dividing the luminance or colour component signal samples or frequency bands among a plurality of recording channels ([H04N 9/804](#), [H04N 9/825 take precedence](#))}
- H04N 9/7976 . . . {by spectrum folding of the high frequency components of the luminance signal}
- H04N 9/80 . . Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback
- H04N 9/802 . . . involving processing of the sound signal ([H04N 9/806](#), [H04N 9/835 take precedence](#))
- H04N 9/804 . . . involving pulse code modulation of the colour picture signal components
- H04N 9/8042 {involving data reduction}
- H04N 9/8045 {using predictive coding}
- H04N 9/8047 {using transform coding}
- H04N 9/806 with processing of the sound signal
- H04N 9/8063 {using time division multiplex of the PCM audio and PCM video signals}
- H04N 9/8066 {with insertion of the PCM audio signals in the vertical blanking interval of the PCM video signal}
- H04N 9/808 . . . involving pulse code modulation of the composite colour video-signal
- H04N 9/8081 {involving data reduction}
- H04N 9/8082 {using predictive coding}

H04N 2009/8084	. . . . .	{using transform coding}
H04N 9/8085	. . . . .	{with processing of the sound signal}
H04N 9/8087	. . . . .	{using time division multiplex of the PCM audio and PCM video signals}
H04N 9/8088	. . . . .	{with insertion of the PCM audio signals in the vertical blanking interval of the PCM video signal}
H04N 9/81	. . .	the individual colour picture signal components being recorded sequentially only
H04N 9/82	. . .	the individual colour picture signal components being recorded simultaneously only
H04N 9/8205	. . . . .	{involving the multiplexing of an additional signal and the colour video signal}
H04N 9/8211	. . . . .	{the additional signal being a sound signal (H04N 9/835 takes precedence)}
H04N 9/8216	. . . . .	{using time division multiplex}
H04N 9/8222	. . . . .	{using frequency division multiplex}
H04N 9/8227	. . . . .	{the additional signal being at least another television signal}
H04N 9/8233	. . . . .	{the additional signal being a character code signal}
H04N 9/8238	. . . . .	{for teletext}
H04N 9/8244	. . . . .	{involving the use of subcodes}
H04N 9/825	. . . . .	the luminance and chrominance signals being recorded in separate channels
H04N 9/8255	. . . . .	{with sound processing}
H04N 9/83	. . . . .	the recorded chrominance signal occupying a frequency band under the frequency band of the recorded brightness signal
H04N 9/831	. . . . .	{using intermediate digital signal processing}
H04N 9/832	. . . . .	{using an increased bandwidth for the luminance or the chrominance signal}
H04N 9/833	. . . . .	{with selection of the conventional or the increased bandwidth signal, e.g. VHS or SVHS signal selection}
H04N 9/835	. . . . .	involving processing of the sound signal
H04N 9/8355	. . . . .	{the sound carriers being frequency multiplexed between the luminance carrier and the chrominance carrier}
H04N 9/84	. . . . .	the recorded signal showing a feature, which is different in adjacent track parts, e.g. different phase or frequency
H04N 9/85	. . . . .	the recorded brightness signal occupying a frequency band totally overlapping the frequency band of the recorded chrominance signal, e.g. frequency interleaving
H04N 9/86	. . .	the individual colour picture signal components being recorded sequentially and simultaneously, e.g. corresponding to SECAM-system
H04N 9/87	. .	Regeneration of colour television signals (H04N 9/80 takes precedence)
H04N 9/8707	. . .	{using a demodulator and a remodulator, e.g. for standard conversion}
H04N 9/8715	. . .	{involving the mixing of the reproduced video signal with a non-recorded signal, e.g. a text signal}

- H04N 9/8722 . . . {Regeneration of a colour reference signal, e.g. the colour synchronisation burst signal, the chrominance signal carrier}
- H04N 9/873 . . . for restoring the colour component sequence of the reproduced {chrominance} signal
- H04N 9/877 . . . by assembling picture element blocks in an intermediate memory
- H04N 9/88 . . . Signal drop-out compensation
- H04N 9/882 the signal being a composite colour television signal
- H04N 9/885 using a digital intermediate memory
- H04N 9/888 for signals recorded by pulse code modulation (error detection or correction of digital signals for recording in general [G11B 20/18](#))
- H04N 9/89 . . . Time-base error compensation
- H04N 9/893 using an analogue memory, e.g. a CCD shift register, the delay of which is controlled by a voltage controlled oscillator
- H04N 9/896 using a digital memory with independent write-in and read-out clock generators
- H04N 9/898 . . . using frequency multiplication of the reproduced colour signal carrier with another auxiliary reproduced signal, e.g. a pilot signal carrier {(H04N 9/83 takes precedence)}

H04N 11/00**Colour television systems** (details [H04N 9/00](#))

- H04N 11/002 . {High definition systems}
- H04N 11/004 . . {involving two-channel transmission}
- H04N 11/006 . . {involving bandwidth reduction, e.g. subsampling}
- H04N 11/008 . . {with transmission of the extra information by means of quadrature modulation}
- H04N 11/02 . with bandwidth reduction {(H04N 11/002, } H04N 11/04 takes precedence)
- H04N 11/04 . using pulse code modulation {(H04N 11/002 takes precedence; pulse code modulation in general [H03K](#), [H03M](#))}
- H04N 11/042 . . {Codec means}
- H04N 11/044 . . . {involving transform coding}
- H04N 11/046 . . . {DPCM}
- H04N 11/048 . . . {Sub-Nyquist sampling}
- H04N 11/06 . Transmission systems characterised by the manner in which the individual colour picture signal components are combined
- H04N 11/08 . . using sequential signals only (dot sequential systems [H04N 11/12](#))
- H04N 11/10 . . . in which colour signals are inserted in the blanking interval of brightness signal
- H04N 11/12 . . using simultaneous signals only
- H04N 11/14 . . . in which one signal, modulated in phase and amplitude, conveys colour information and a second signal conveys brightness information, e.g. NTSC-system
- H04N 11/143 {Encoding means therefor (H04N 11/16 takes precedence)}
- H04N 11/146 {Decoding means therefor (H04N 11/16 takes precedence)}
- H04N 11/16 the chrominance signal alternating in phase, e.g. PAL-system

- H04N 11/162 {Encoding means therefor ([H04N 11/167](#) takes precedence)}
- H04N 11/165 {Decoding means therefor ([H04N 11/167](#) takes precedence)}
- H04N 11/167 {a resolution-increasing signal being multiplexed to the PAL-system signal, e.g. PAL-PLUS-system}
- H04N 11/18 . . using simultaneous and sequential signals, e.g. SECAM-system
- H04N 11/183 . . . {Encoding means therefor}
- H04N 11/186 . . . {Decoding means therefor}
- H04N 11/20 . . Conversion of the manner in which the individual colour picture signal components are combined, e.g. conversion of colour television standards
- H04N 11/22 . . . in which simultaneous signals are converted into sequential signals or vice versa

H04N 13/00 Stereoscopic {or multiview} television systems; Details thereof

NOTE

This group covers systems where a three-dimensional effect or different views according to the viewpoint location are provided to one or more viewers by means of electronic signals representing a plurality of images or signals including depth information, e.g. taken from different viewpoint locations representing the interocular distance (optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))]

- H04N 13/0003 . {Stereoscopic image signal coding, multiplexing, processing, recording or transmission (television signal bandwidth reduction [H04N 19/00](#); image coding for general purpose image data processing [G06T 9/00](#); transformation of the video signal for recording, including multiplexing of another television signal [H04N 5/9205](#); for colour signals, [H04N 9/8227](#); selective content distribution, e.g. interactive television, VOD [H04N 21/00](#); assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#))}
- H04N 13/0007 . . {Processing stereoscopic image signals ([H04N 19/597](#), [H04N 13/004](#) take precedence; image processing as such [G06T](#))}
- H04N 13/0011 . . . {Transformation of stereoscopic image signals corresponding to virtual viewpoints, e.g. spatial image interpolation}
- H04N 13/0014 {the virtual viewpoint location being selected by the observer, e.g. observer tracking with look around effect ([H04N 13/0278](#) takes precedence)}
- H04N 13/0018 . . . {Improving the 3D impression of a stereoscopic image by modifying the image content, e.g. with filtering or addition of monoscopic depth cues}
- H04N 13/0022 . . . {Aspects relating to depth or disparity adjustment}
- H04N 13/0025 . . . {Equalizing the characteristics of different image components in stereoscopic images, e.g. average brightness or colour balance}

- H04N 13/0029
 - • • {Format conversion of stereoscopic images, e.g. frame-rate or size (standards conversion per se [H04N 7/01](#); reformatting operations at client side of video signals for household redistribution, storage or real-time display [H04N 21/4402](#); reformatting operations at server side of video signals for distribution or compliance with end-user requests or end-user device requirements [H04N 21/2343](#))}
- H04N 13/0033
 - • • {Aspects relating to flicker and/or eyestrain reduction}
- H04N 13/0037
 - • {Colour aspects (processing of colour signals per se [H04N 9/64](#))}
- H04N 13/004
 - • {Mixing stereoscopic image signals}
- H04N 13/0044
 - • {Switching stereoscopic image signals}
- H04N 13/0048
 - • {Encoding, multiplexing or demultiplexing different image signal components in stereoscopic image signals ([H04N 19/597](#) takes precedence; assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#); demultiplexing of several video streams [H04N 21/4347](#))}
- H04N 13/0051
 - • {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#); control signals issued by server directed to the network components or client [H04N 21/633](#); control signals issued by the network directed to the server or the client [H04N 21/64746](#); control signals issued by the client directed to the server or network components [H04N 21/637](#); transmission of management data between client and server [H04N 21/65](#))}
- H04N 13/0055
 - • {Recording or reproducing stereoscopic image signals}
- H04N 13/0059
 - • {Transmission of stereoscopic image signals (selective content distribution, e.g. interactive television, VOD [H04N 21/00](#); assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#); interfacing the downstream path of the transmission network for selective content distribution at server side [H04N 21/238](#); interfacing the downstream path of the transmission network originating from a server for selective content distribution at client side [H04N 21/438](#))}
- H04N 13/0062
 - • {the image signal comprising non-image signal components, e.g. metadata, headers, format information or subtitles (multiplexing of additional data and video streams [H04N 21/23614](#); demultiplexing of additional data and video streams [H04N 21/4348](#))}
- H04N 13/0066
 - • • {metadata (generation or processing, within selective content distribution, of descriptive data, e.g. content descriptors [H04N 21/84](#))}
- H04N 13/007
 - • • {subtitles or other OSD information, e.g. menu (data services within selective content distribution, e.g. news ticker [H04N 21/488](#); data services for displaying subtitles [H04N 21/4884](#))}

- H04N 2013/0074 . {Stereoscopic image analysis}
- H04N 2013/0077 . . {Colour aspects}
- H04N 2013/0081 . . {Depth or disparity estimation from stereoscopic image signals}
- H04N 2013/0085 . . {Motion estimation from stereoscopic image signals}
- H04N 2013/0088 . . {Synthesising a monoscopic image signal from stereoscopic images, e.g. synthesising a panoramic or high resolution monoscopic image}
- H04N 2013/0092 . . {Image segmentation from stereoscopic image signals}
- H04N 2013/0096 . . {Synchronisation or controlling aspects}
- H04N 13/02 . Picture signal generators
- H04N 13/0203 . . {using a stereoscopic image camera (endoscopes with stereoscopic vision [A61B 1/00193](#); stereoscopic photography [G03B 35/00](#))}
- H04N 13/0207 . . . {involving a single 2D image pickup sensor}
- H04N 13/021 {using temporal multiplexing, i.e. alternatively capturing several geometrical viewpoints separated in time ([H04N 13/0221](#) takes precedence)}
- H04N 13/0214 {using spectral multiplexing, i.e. simultaneously capturing several geometrical viewpoints separated by different spectral characteristics}
- H04N 13/0217 {using spatial multiplexing, i.e. simultaneously capturing several geometrical viewpoints on different parts of the image pickup sensor}
- H04N 13/0221 {using the relative movement between camera and object}
- H04N 13/0225 {having a parallax barrier}
- H04N 13/0228 {having a lenticular screen ([H04N 13/0232](#) takes precedence)}
- H04N 13/0232 {having a fly-eye lenticular screen}
- H04N 13/0235 {having a varifocal lens or mirror}
- H04N 13/0239 . . . {having two 2D image pickup sensors representing the interocular distance}
- H04N 13/0242 . . . {having more than two 2D image pickup sensors}
- H04N 13/0246 . . . {Calibration aspects relating to the control of a stereoscopic camera (processing of captured images to determine and compensate stereo camera misalignment, e.g. stereo camera calibration [G06T 7/002](#))}
- H04N 13/025 . . . {having several image pickup sensors with different characteristics other than location or field of view, e.g. different resolution, colour pickup characteristic or additional depth information or, where the image signals of one image pickup sensor are used to control the characteristics of at least one other image pickup sensor}
- H04N 13/0253 . . . {in combination with an electromagnetic radiation source for illuminating the subject}
- H04N 13/0257 . . {Colour aspects (processing of color signals per se [H04N 9/64](#))}
- H04N 13/026 . . {with monoscopic to stereoscopic image conversion ([H04N 13/0221](#) takes precedence)}
- H04N 13/0264 . . . {using the relative movement of objects in two video frames or fields}
- H04N 13/0267 . . . {by scanning a film}
- H04N 13/0271 . . {wherein the generated image signal comprises a depth map or a disparity map (depth map generation as such [G06T 7/0075](#))}

H04N 13/0275 . . {from a 3D object model, e.g. computer generated stereoscopic image signals}

H04N 13/0278 . . . {the virtual viewpoint location being selected by the observer, e.g. observer tracking}

H04N 13/0282 . . {for generating stereoscopic image signals corresponding to more than two geometrical viewpoints, e.g. multiview systems}

H04N 13/0285 . . {having a monoscopic mode and a separate stereoscopic mode}

WARNING

this group is not complete, pending a reorganization. Documents classified before 6/10/2011 which, in the present scheme, should be classified in this group can be found in [H04N 13/0292](#).

H04N 13/0289 . . . {details relating to the switching between said modes}

WARNING

this group is not complete, pending a reorganization. Documents classified before 6/10/2011 which, in the present scheme, should be classified in this group can be found in [H04N 13/0292](#).

H04N 13/0292 . . {generating mixed monoscopic/stereoscopic images, e.g. a stereoscopic image overlay window in a monoscopic image background}

NOTE

this group provisionally includes documents classified before 6/10/2011 which, in the present scheme, should be classified in [H04N 13/0285](#) and [H04N 13/0289](#).

H04N 13/0296 . . {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#))}

NOTE

control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)

H04N 13/04 . Picture reproducers {(optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))}

H04N 13/0402 . . {using an autostereoscopic display, i.e. viewing by the user without the aid of special glasses}

H04N 13/0404 . . . {using a lenticular screen ([H04N 13/0406](#) takes precedence)}

H04N 13/0406 . . . {using a fly-eye lenticular screen}

H04N 13/0409 . . . {using a parallax barrier, e.g. spatial light modulator}

H04N 13/0411 {the parallax barrier being placed behind the spatial light modulator, e.g. between backlight and SLM}

H04N 13/0413 {the parallax barrier being time-variant}

H04N 13/0415 . . . {with slanted parallax optics}

H04N 13/0418 . . . {using an array of controllable light sources or a moving aperture or light source}

H04N 13/042 . . . {using a varifocal lens or mirror}

- H04N 13/0422 . . {Colour aspects (processing of colour signals per se [H04N 9/64](#))}
- H04N 13/0425 . . {Calibration aspects}
- H04N 13/0427 . . {using a digital micro mirror device [DMD]}
- H04N 13/0429 . . {for viewing by the user with the aid of special glasses or head mounted displays [HMD], i.e. stereoscopic displaying (spectacles or goggles insofar as they have the same features as spectacles [G02C](#))}
- H04N 13/0431 . . . {with spectral multiplexing, i.e. simultaneously displaying left and right images separated using glasses with different spectral characteristics, e.g. anaglyph method or Pulfrich method}
- H04N 13/0434 . . . {with polarisation multiplexing, i.e. simultaneously displaying left and right images separated using glasses with different polarising characteristics}
- H04N 13/0436 . . . {with spatial multiplexing, i.e. simultaneously displaying left and right images on different parts of the display screen and using glasses to optically recombine the stereoscopic image, e.g. with prisms or mirrors ([H04N 13/0434](#) takes precedence)}
- H04N 13/0438 . . . {with temporal multiplexing, i.e. alternatively displaying left and right images separated in time and using glasses to alternatively block the right and left eye}
- H04N 13/044 . . . {with head mounted left-right displays (optical head mounted displays [G02B 27/017](#))}
- H04N 13/0443 . . {using a half transparent mirror or prism}
- H04N 13/0445 . . {for displaying more than two geometrical viewpoints without observer tracking, i.e. multiview displays}
- H04N 13/0447 . . . {simultaneously}
- H04N 13/045 . . . {sequentially}
- H04N 13/0452 . . {having a monoscopic mode and a separate stereoscopic mode}

WARNING

this group is not complete, pending a reorganization. Documents classified before 6/10/2011 which, in the present scheme, should be classified in this group are provisionally classified in [H04N 13/0456](#).

- H04N 13/0454 . . . {details of mode switching}

WARNING

this group is not complete, pending a reorganization. Documents classified before 6/10/2011 which, in the present scheme, should be classified in this group are provisionally classified in [H04N 13/0456](#).

- H04N 13/0456 . . {generating mixed monoscopic or stereoscopic images, e.g. a stereoscopic image overlay window on a monoscopic image background}

NOTE

this group provisionally includes documents classified before 6/10/2011 which, in the present scheme, should be classified in [H04N 13/0452](#) and [H04N 13/0454](#).

- H04N 13/0459 . . {using an image projection screen ([H04N 13/0493](#), [H04N 13/0495](#) take precedence; projection devices per se [H04N 9/31](#))}

- H04N 2013/0461 . . {Privacy aspects, i.e. devices showing different images to different viewers, the images not being viewpoints of the same scene (not used, see subgroups)}
- H04N 2013/0463 . . . {the images being monoscopic}
- H04N 2013/0465 . . . {the images being stereoscopic or three dimensional}
- H04N 13/0468 . . {using observer tracking (computer input or output arrangements in interaction with the human body [G06F 3/011](#))}
- H04N 13/047 . . . {for several observers}
- H04N 13/0472 . . . {for tracking with variable interocular distance or rotational head movements around the vertical axes}
- H04N 13/0475 . . . {for tracking forward-backward translational head movements, i.e. longitudinal movements}
- H04N 13/0477 . . . {for tracking left-right translational head movements, i.e. lateral movements}
- H04N 13/0479 . . . {for tracking rotational head movements in a plane parallel to the screen}
- H04N 13/0481 . . . {for tracking vertical translational head movements}
- H04N 13/0484 . . . {for tracking with gaze detection, i.e. detecting the lines of sight of the observers eyes}
- H04N 13/0486 . . {alternating rapidly the location of the left-right image components on the display screen}
- H04N 13/0488 . . {Volumetric display, i.e. systems where the image is built up from picture elements distributed over a volume}
- H04N 13/049 . . . {the picture elements emitting light where a pair of light beams intersect in a transparent material}
- H04N 13/0493 . . . {the volume being generated by a moving, e.g. vibrating or rotating, surface}
- H04N 13/0495 . . . {with depth sampling, i.e. the volume being constructed from a stack or sequence of 2D image planes}
- H04N 13/0497 . . {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#))}

NOTE

control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)

H04N 17/00**Diagnosis, testing or measuring for television systems or their details**

- H04N 17/002 . {for television cameras}
- H04N 17/004 . {for digital television systems}
- H04N 2017/006 . {for television sound}
- H04N 2017/008 . {for television teletext}
- H04N 17/02 . for colour television signals
- H04N 17/04 . for receivers
- H04N 17/045 . . {Self-contained testing apparatus}
- H04N 17/06 . for recorders

H04N 19/00**Methods or arrangements for coding, decoding, compressing or decompressing digital video signals**

H04N 19/10

- using adaptive coding

NOTE

When classifying in this group, each aspect relating to adaptive coding should, inasmuch as possible, be classified in each one of subgroups [H04N 19/102](#), [H04N 19/134](#), [H04N 19/169](#) and [H04N 19/189](#).

H04N 19/102

- . characterised by the element, parameter or selection affected or controlled by the adaptive coding

H04N 19/103

- . . Selection of coding mode or of prediction mode

H04N 19/105

- . . . Selection of the reference unit for prediction within a chosen coding or prediction mode, e.g. adaptive choice of position and number of pixels used for prediction

H04N 19/107

- between spatial and temporal predictive coding, e.g. picture refresh

H04N 19/109

- among a plurality of temporal predictive coding modes

H04N 19/11

- among a plurality of spatial predictive coding modes

H04N 19/112

- according to a given display mode, e.g. for interlaced or progressive display mode

H04N 19/114

- Adapting the group of pictures [GOP] structure, e.g. number of B-frames between two anchor frames ([H04N 19/107 takes precedence](#))

H04N 19/115

- . . . Selection of the code volume for a coding unit prior to coding

H04N 19/117

- . . . Filters, e.g. for pre-processing or post-processing ([sub-band filter banks H04N 19/635](#))

H04N 19/119

- . . . Adaptive subdivision aspects e.g. subdivision of a picture into rectangular or non-rectangular coding blocks

H04N 19/12

- . . . Selection from among a plurality of transforms or standards, e.g. selection between discrete cosine transform [DCT] and sub-band transform or selection between H.263 and H.264

NOTE

When classifying in this group, each compression algorithm is further classified in the relevant subgroups of groups [H04N 19/60](#) or [H04N 19/90](#).

H04N 19/122

- Selection of transform size, e.g. 8x8 or 2x4x8 DCT; Selection of sub-band transforms of varying structure or type

H04N 19/124

- . . . Quantisation

H04N 19/126

- Details of normalisation or weighting functions, e.g. normalisation matrices or variable uniform quantisers

H04N 19/127

- . . . Prioritisation of hardware or computational resources

H04N 19/129

- . . . Scanning of coding units, e.g. zig-zag scan of transform coefficients or flexible macroblock ordering [FMO]

H04N 19/13

- . . . Adaptive entropy coding, e.g. adaptive variable length coding [AVLC] or context adaptive binary arithmetic coding [CABAC]

- H04N 19/132 . . . Sampling, masking or truncation of coding units, e.g. adaptive resampling, frame skipping, frame interpolation or high-frequency transform coefficient masking
- H04N 19/134 . . characterised by the element, parameter or criterion affecting or controlling the adaptive coding
- H04N 19/136 . . . Incoming video signal characteristics or properties
- H04N 19/137 Motion inside a coding unit, e.g. average field, frame or block difference
- H04N 19/139 Analysis of motion vectors, e.g. their magnitude, direction, variance or reliability
- H04N 19/14 Coding unit complexity, e.g. amount of activity or edge presence estimation ([H04N 19/146 takes precedence](#))
- H04N 19/142 . . . Detection of scene cut or scene change
- H04N 19/146 . . . Data rate or code amount at the encoder output
- H04N 19/147 according to rate distortion criteria ([rate-distortion as a criterion for motion estimation H04N 19/567](#))
- H04N 19/149 by estimating the code amount by means of a model, e.g. mathematical model or statistical model
- H04N 19/15 by monitoring actual compressed data size at the memory before deciding storage at the transmission buffer
- H04N 19/152 by measuring the fullness of the transmission buffer
- H04N 19/154 . . . Measured or subjectively estimated visual quality after decoding, e.g. measurement of distortion ([use of rate-distortion criteria H04N 19/147](#))
- H04N 19/156 . . . Availability of hardware or computational resources, e.g. encoding based on power-saving criteria
- H04N 19/157 . . . Assigned coding mode, i.e. the coding mode being predefined or preselected to be further used for selection of another element or parameter
- H04N 19/159 Prediction type, e.g. intra-frame, inter-frame or bidirectional frame prediction
- H04N 19/16 for a given display mode, e.g. for interlaced or progressive display mode
- H04N 19/162 . . . User input
- H04N 19/164 . . . Feedback from the receiver or from the transmission channel
- H04N 19/166 concerning the amount of transmission errors, e.g. bit error rate [BER]
- H04N 19/167 . . . Position within a video image, e.g. region of interest [ROI]
- H04N 19/169 . . characterised by the coding unit, i.e. the structural portion or semantic portion of the video signal being the object or the subject of the adaptive coding
- H04N 19/17 . . . the unit being an image region, e.g. an object
- H04N 19/172 the region being a picture, frame or field
- H04N 19/174 the region being a slice, e.g. a line of blocks or a group of blocks
- H04N 19/176 the region being a block, e.g. a macroblock
- H04N 19/177 . . . the unit being a group of pictures [GOP]
- H04N 19/179 . . . the unit being a scene or a shot

- H04N 19/18 . . . the unit being a set of transform coefficients
- H04N 19/182 . . . the unit being a pixel
- H04N 19/184 . . . the unit being bits, e.g. of the compressed video stream
- H04N 19/186 . . . the unit being a colour or a chrominance component
- H04N 19/187 . . . the unit being a scalable video layer
- H04N 19/188 . . . {the unit being a video data packet, e.g. a network abstraction layer [NAL] unit}
- H04N 19/1883 . . . {the unit relating to sub-band structure, e.g. hierarchical level, directional tree, e.g. low-high [LH], high-low [HL], high-high [HH]}
- H04N 19/1887 . . . {the unit being a variable length codeword}
- H04N 19/189 . . characterised by the adaptation method, adaptation tool or adaptation type used for the adaptive coding
- H04N 19/19 . . . using optimisation based on Lagrange multipliers
- H04N 19/192 . . . the adaptation method, adaptation tool or adaptation type being iterative or recursive
- H04N 19/194 involving only two passes
- H04N 19/196 . . . being specially adapted for the computation of encoding parameters, e.g. by averaging previously computed encoding parameters ([processing of motion vectors H04N 19/513](#))
- H04N 19/197 {including determination of the initial value of an encoding parameter ([H04N 19/56 takes precedence](#))}
- H04N 19/198 {including smoothing of a sequence of encoding parameters, e.g. by averaging, by choice of the maximum, minimum or median value}
- H04N 19/20 . using video object coding
- H04N 19/21 . . with binary alpha-plane coding for video objects, e.g. context-based arithmetic encoding [CAE]
- H04N 19/23 . . with coding of regions that are present throughout a whole video segment, e.g. sprites, background or mosaic
- H04N 19/25 . . with scene description coding, e.g. binary format for scenes [BIFS] compression
- H04N 19/27 . . involving both synthetic and natural picture components, e.g. synthetic natural hybrid coding [SNHC]
- H04N 19/29 . . involving scalability at the object level, e.g. video object layer [VOL]
- H04N 19/30 . using hierarchical techniques, e.g. scalability ([H04N 19/63 takes precedence](#))
- H04N 19/31 . . in the temporal domain
- H04N 19/33 . . in the spatial domain
- H04N 19/34 . . Scalability techniques involving progressive bit-plane based encoding of the enhancement layer, e.g. fine granular scalability [FGS]
- H04N 19/36 . . Scalability techniques involving formatting the layers as a function of picture distortion after decoding, e.g. signal-to-noise [SNR] scalability
- H04N 19/37 . . with arrangements for assigning different transmission priorities to video input data or to video coded data
- H04N 19/39 . . involving multiple description coding [MDC], i.e. with separate layers being structured as independently decodable descriptions of input picture data

- H04N 19/395
 - • {involving distributed video coding [DVC], e.g. Wyner-Ziv video coding or Slepian-Wolf video coding}
- H04N 19/40
 - using video transcoding, i.e. partial or full decoding of a coded input stream followed by re-encoding of the decoded output stream
- H04N 19/42
 - characterised by implementation details or hardware specially adapted for video compression or decompression, e.g. dedicated software implementation ([H04N 19/635](#) takes precedence)
- H04N 19/423
 - • characterised by memory arrangements ([H04N 19/433](#) takes precedence)
- H04N 19/426
 - • • using memory downsizing methods
- H04N 19/427
 - • • • {Display on the fly, e.g. simultaneous writing to and reading from decoding memory}
- H04N 19/428
 - • • • {Recompression, e.g. by spatial or temporal decimation}
- H04N 19/43
 - • Hardware specially adapted for motion estimation or compensation
- H04N 19/433
 - • • characterised by techniques for memory access
- H04N 19/436
 - • using parallelised computational arrangements
- H04N 19/439
 - • {using cascaded computational arrangements for performing a single operation, e.g. filtering}
- H04N 19/44
 - Decoders specially adapted therefor, e.g. video decoders which are asymmetric with respect to the encoder
- H04N 19/45
 - • {performing compensation of the inverse transform mismatch, e.g. Inverse Discrete Cosine Transform [IDCT] mismatch}
- H04N 19/46
 - Embedding additional information in the video signal during the compression process ([H04N 19/517](#), [H04N 19/68](#), [H04N 19/70](#) take precedence)
- H04N 19/463
 - • by compressing encoding parameters before transmission
- H04N 19/467
 - • characterised by the embedded information being invisible, e.g. watermarking
- H04N 19/48
 - using compressed domain processing techniques other than decoding, e.g. modification of transform coefficients, variable length coding [VLC] data or run-length data ([motion estimation in a transform domain H04N 19/547](#); [processing of decoded motion vectors H04N 19/513](#))
- H04N 19/50
 - using predictive coding ([H04N 19/61](#) takes precedence)
- H04N 19/503
 - • involving temporal prediction ([adaptive coding with adaptive selection between spatial and temporal predictive coding H04N 19/107](#); [adaptive coding with adaptive selection among a plurality of temporal predictive coding modes H04N 19/109](#))
- H04N 19/507
 - • • using conditional replenishment
- H04N 19/51
 - • • Motion estimation or motion compensation
- H04N 19/513
 - • • • Processing of motion vectors
- H04N 19/517
 - • • • • by encoding
- H04N 19/52
 - • • • • by predictive encoding
- H04N 19/521
 - • • • • {for estimating the reliability of the determined motion vectors or motion vector field, e.g. for smoothing the motion vector field or for correcting motion vectors}
- H04N 19/523
 - • • • with sub-pixel accuracy
- H04N 19/527
 - • • • Global motion vector estimation

H04N 19/53	. . . . Multi-resolution motion estimation; Hierarchical motion estimation
H04N 19/533	. . . . Motion estimation using multistep search, e.g. 2D-log search or one-at-a-time search [OTS]
H04N 19/537	. . . . Motion estimation other than block-based
H04N 19/54	. . . . . using feature points or meshes
H04N 19/543	. . . . . using regions
H04N 19/547	. . . . Motion estimation performed in a transform domain
H04N 19/55	. . . . Motion estimation with spatial constraints, e.g. at image or region borders
H04N 19/553	. . . . Motion estimation dealing with occlusions
H04N 19/557	. . . . Motion estimation characterised by stopping computation or iteration based on certain criteria, e.g. error magnitude being too large or early exit
H04N 19/56	. . . . Motion estimation with initialisation of the vector search, e.g. estimating a good candidate to initiate a search
H04N 19/563	. . . . Motion estimation with padding, i.e. with filling of non-object values in an arbitrarily shaped picture block or region for estimation purposes
H04N 19/567	. . . . Motion estimation based on rate distortion criteria
H04N 19/57	. . . . Motion estimation characterised by a search window with variable size or shape
H04N 19/573	. . . . Motion compensation with multiple frame prediction using two or more reference frames in a given prediction direction
H04N 19/577	. . . . Motion compensation with bidirectional frame interpolation, i.e. using B-pictures
H04N 19/58	. . . . Motion compensation with long-term prediction, i.e. the reference frame for a current frame not being the temporally closest one (H04N 19/23 takes precedence)
H04N 19/583	. . . . Motion compensation with overlapping blocks
H04N 19/587	. . involving temporal sub-sampling or interpolation, e.g. decimation or subsequent interpolation of pictures in a video sequence
H04N 19/59	. . involving spatial sub-sampling or interpolation, e.g. alteration of picture size or resolution
H04N 19/593	. . involving spatial prediction techniques
H04N 19/597	. . specially adapted for multi-view video sequence encoding
H04N 19/60	. using transform coding
H04N 19/61	. . in combination with predictive coding
H04N 19/615	. . . using motion compensated temporal filtering [MCTF]
H04N 19/619	. . . {the transform being operated outside the prediction loop}
H04N 19/62	. . by frequency transforming in three dimensions (H04N 19/63 takes precedence)
H04N 19/625	. . using discrete cosine transform [DCT]
H04N 19/63	. . using sub-band based transform, e.g. wavelets
H04N 19/635	. . . characterised by filter definition or implementation details
H04N 19/64	. . . characterised by ordering of coefficients or of bits for transmission

- H04N 19/645 by grouping of coefficients into blocks after the transform
- H04N 19/647 {using significance based coding, e.g. Embedded Zerotrees of Wavelets [EZW] or Set Partitioning in Hierarchical Trees [SPIHT]}
- H04N 19/649 . . {the transform being applied to non rectangular image segments}
- H04N 19/65 . using error resilience
- H04N 19/66 . . involving data partitioning, i.e. separation of data into packets or partitions according to importance
- H04N 19/67 . . involving unequal error protection [UEP], i.e. providing protection according to the importance of the data
- H04N 19/68 . . involving the insertion of resynchronisation markers into the bitstream
- H04N 19/69 . . involving reversible variable length codes [RVLC]
- H04N 19/70 . characterised by syntax aspects related to video coding, e.g. related to compression standards
- H04N 19/80 . Details of filtering operations specially adapted for video compression, e.g. for pixel interpolation ([H04N 19/635](#), [H04N 19/86](#) take precedence)
- H04N 19/82 . . involving filtering within a prediction loop
- H04N 19/85 . using pre-processing or post-processing specially adapted for video compression
- H04N 19/86 . . involving reduction of coding artifacts, e.g. of blockiness
- H04N 19/865 . . . {with detection of the former encoding block subdivision in decompressed video}
- H04N 19/87 . . involving scene cut or scene change detection in combination with video compression
- H04N 19/88 . . involving rearrangement of data among different coding units, e.g. shuffling, interleaving, scrambling or permutation of pixel data or permutation of transform coefficient data among different blocks
- H04N 19/89 . . involving methods or arrangements for detection of transmission errors at the decoder
- H04N 19/895 . . . in combination with error concealment
- H04N 19/90 . using coding techniques not provided for in groups [H04N 19/10-H04N 19/85](#), e.g. fractals
- H04N 19/91 . . Entropy coding, e.g. variable length coding [VLC] or arithmetic coding
- H04N 19/93 . . Run-length coding
- H04N 19/94 . . Vector quantisation
- H04N 19/96 . . Tree coding, e.g. quad-tree coding
- H04N 19/97 . . Matching pursuit coding
- H04N 19/98 . . Adaptive-dynamic-range coding [ADRC]
- H04N 19/99 . . {involving fractal coding}

H04N 21/00 **Selective content distribution, e.g. interactive television, VOD [Video On Demand]** (broadcast communication [H04H](#); arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol [H04L 29/06](#); {broadcast or conference over packet-switching networks [H04L 12/18](#), } real-time bi-directional transmission of motion video data [H04N 7/14](#))

NOTES

1. This group covers :
 - interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.
 - such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.
 - typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.
 - processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content.
2. In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place
3. In this main group, the following terms and expressions are used with the meaning indicated:
 - additional data - designates still pictures, textual, graphical or executable data such as software. It is used to convey supplemental information and can be generated prior to or during the distribution process itself, e.g. metadata, keys.
 - content designates video or audio streams, which may be combined with additional data. Video data will always be present and occupy most of the downlink bandwidth in the distribution process
 - server - designates an apparatus designed for adapting the content received from the content provider to the distribution network. It also manages the distribution to client devices or intermediate components over a network. Further servers may also be present for gathering or generating additional data, e.g. rights management server
 - additional data server - designates a server, which sole purpose is the distribution or management of additional data. It is not in charge of the distribution of video or audio data
 - client - designates an apparatus such as a TV receiver, a set-top-box, a PC-TV, a mobile appliance (e.g. mobile phone or receiver in a vehicle), for receiving video, audio and possibly additional data from one or several servers or intermediate components via a network for further processing, storing or displaying. It can also transmit this data on a home-based local network to further devices, e.g. a home server transmitting video to PCs and set-top-boxes within a home.
 - local network - pertains to a restricted area, e.g. a home or a vehicle, and designates the link between a client and its peripheral devices
 - network - is to be distinguished from "local network": "network" designates the link between the server and the clients, or between the server and the intermediate components, or between the intermediate components and the clients, or between remotely located clients

H04N 21/00
(continued)

distribution - encompasses broadcasting, multicasting and unicasting techniques for transmitting content from one or more sources to one or more receiving stations. The distribution follows a request by a receiving station to the source, e.g. VOD or from a customization of the content by the source, e.g. targeting advertisements to a demographic group in a unidirectional or bidirectional system. Additionally, distribution encompasses techniques where the client acts as a source and another client acts as a receiving station, e.g. a peer-to-peer system for sharing video among client devices

end-user - designates a physical person, e.g. a TV viewer, who consumes the content using the client device. He is the final recipient of the content distributed by the server

interaction - covers actions occurring between or among two or more objects that have an effect upon one another, wherein objects comprise users, system operators, system elements, or content. The user may interact with content locally at the client device, e.g. for requesting additional data stored within the client device. The user may interact with content remotely through a server e.g. for VOD playback control or for uploading video to a server. The client device may interact with the content e.g. selecting content based upon the user profile. The client device may interact with a server using a return channel, e.g. for authenticating client or uploading client hardware capabilities. The server may interact with a client device, e.g. to force a client to tune to an advertisement channel

upstream - designates the direction of data flow towards the source, e.g. a server receiving a request via a mobile phone network

downstream - designates the direction of data flow towards a client, e.g. a client receiving data originating from a server elementary stream

An elementary stream (ES) as defined by the MPEG system layer designates the output of an audio or video encoder

- H04N 21/20
 - Servers specifically adapted for the distribution of content, e.g. VOD servers; Operations thereof
- H04N 21/21
 - . Server components or server architectures
- H04N 21/214
 - . . Specialised server platform, e.g. server located in an airplane, hotel, hospital {arrangements specially adapted for local area broadcast systems [H04H 20/61](#)}
- H04N 21/2143
 - . . . {located in a single building, e.g. hotel, hospital or museum (arrangements specially adapted for plural spots in a confined site in broadcast systems [H04H 20/63](#); adaptations for transmission by electric cable for domestic distribution in television systems [H04N 7/106](#))}
- H04N 21/2146
 - . . . {located in mass transportation means, e.g. aircraft, train or bus (flight-deck installations for entertainment or communications [B64D 11/0015](#); arrangements specially adapted for transportation systems in broadcast systems [H04H 20/62](#); moving wireless networks [H04W 84/005](#))}
- H04N 21/218
 - . . . Source of audio or video content {, e.g. local disk arrays (details of retrieval in video databases [G06F 17/30843](#))}
- H04N 21/21805
 - {enabling multiple viewpoints, e.g. using a plurality of cameras}
- H04N 21/2181
 - {comprising remotely distributed storage units, e.g. when movies are replicated over a plurality of video servers (distributed storage of data in a network [H04L 29/08549](#))}

H04N 21/21815	. . . .	{comprising local storage units}
H04N 21/2182	. . . . .	{involving memory arrays, e.g. RAID disk arrays (RAID arrays per se G06F 3/0689 ; use of parity to protect data in RAID systems G06F 11/1008)}
H04N 21/21825	. . . . .	{involving removable storage units, e.g. tertiary storage such as magnetic tapes or optical disks}
H04N 21/2183	. . . .	Cache memory {(caches in web servers or browsers G06F 17/30902 ; intermediate storage and caching in data networks H04L 29/08801)}
H04N 21/2187	. . . .	Live feed
H04N 21/222	. . .	Secondary servers, e.g. proxy server, cable television head-end {(intermediate processing or storage in data networks H04L 29/08702)}
H04N 21/2221	. . . .	{being a cable television head-end (CATV in broadcast systems H04H 20/78)}
H04N 21/2223	. . . .	{being a public access point, e.g. for downloading to or uploading from clients (arrangements specially adapted to plural spots in a confined site in broadcast systems H04H 20/63)}
H04N 21/2225	. . . .	local VOD servers
H04N 2021/225	. . . .	{local VOD servers}
H04N 21/226	. . .	{Characteristics of the server or} Internal components of the server
H04N 21/2265	. . . .	{Server identification by a unique number or address, e.g. serial number (addressing and naming in data networks H04L 29/12009)}
H04N 21/23	. .	Processing of content or additional data; Elementary server operations; Server middleware
H04N 21/231	. . .	Content storage operation, e.g. caching movies for short term storage, replicating data over plural servers, prioritizing data for deletion
H04N 21/23103	. . . .	{using load balancing strategies, e.g. by placing or distributing content on different disks, different memories or different servers (storage management G06F 3/0604 ; allocation of resources considering the load in multiprogramming arrangements G06F 9/505 ; techniques for rebalancing the load in a distributed system G06F 9/5083 ; access to distributed or replicated servers, e.g. load balancing, in data networks H04L 29/08144)}
H04N 21/23106	. . . .	{involving caching operations (prefetching while addressing of a memory level in which the access to the desired data or data block requires associative addressing means within memory systems or architectures G06F 12/0862 ; caching at an intermediate stage in a data network H04L 29/08801)}
H04N 21/23109	. . . .	{by placing content in organized collections, e.g. EPG data repository (details of retrieval of video data and associated meta data in video databases G06F 17/30843)}
H04N 21/23113	. . . .	{involving housekeeping operations for stored content, e.g. prioritizing content for deletion because of storage space restrictions (storage management, e.g. defragmentation G06F 3/0604 ; snloading stored programs G06F 9/445 ; housekeeping operations in file systems, e.g. deletion policies G06F 17/30067 ; buffering arrangements in a network node or in an end terminal in packet networks H04L 49/90)}

H04N 21/23116	. . . .	{involving data replication, e.g. over plural servers (synchronization of replicated data G06F 11/1658 ; error detection or correction by means of data replication G06F 11/2053 ; replication in distributed file systems G06F 17/30067 ; replication in distributed file systems G06F 17/30283 ; replication or mirroring of data in data networks H04L 29/0854)}
H04N 21/2312	. . . .	Data placement on disk arrays {(data placement in general G06F 3/0604)}
H04N 21/2315	. . . . .	using interleaving
H04N 21/2318	. . . . .	using striping
H04N 21/232	. . .	Content retrieval operation {locally} within server, e.g. reading video streams from disk arrays {(storage management G06F 3/0604 ; details of querying and searching of video data from a database G06F 17/30843)}
H04N 21/2323	. . . .	{using file mapping}
H04N 21/2326	. . . .	{Scheduling disk or memory reading operations}
H04N 21/233	. . .	Processing of audio elementary streams {(details of formatting and decoding of an encoded audio signal representation into a data stream for transmission or storage purposes G10L 19/167 ; arrangements characterised by components specially adapted for monitoring, identification or recognition of audio in broadcast systems H04H 60/58)}
H04N 21/2335	. . . .	{involving reformatting operations of audio signals, e.g. by converting from one coding standard to another (details of audio signal transcoding G10L 19/173)}
H04N 21/234	. . .	Processing of video elementary streams, e.g. splicing of {content} streams, manipulating MPEG-4 scene graphs {(video encoding or transcoding processes per se H04N 19/00)}
H04N 21/23406	. . . .	{involving management of server-side video buffer}
H04N 21/23412	. . . .	{for generating or manipulating the scene composition of objects, e.g. MPEG-4 objects}
H04N 21/23418	. . . .	{involving operations for analysing video streams, e.g. detecting features or characteristics (filtering for image enhancement G06T 5/00 ; methods or arrangements for recognising scenes G06K 9/00624 ; arrangements characterised by components specially adapted for monitoring, identification or recognition of video in broadcast systems H04H 60/59 ; television picture signal circuitry for scene change detection H04N 5/147)}
H04N 21/23424	. . . .	{involving splicing one content stream with another content stream, e.g. for inserting or substituting an advertisement}
H04N 21/2343	. . . .	involving reformatting operations of video signals for distribution or compliance with end-user requests or end-user device requirements {(media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications H04L 29/06489 ; video transcoding H04N 19/40)}
H04N 21/234309	. . . . .	{by transcoding between formats or standards, e.g. from MPEG-2 to MPEG-4 or from Quicktime to Realvideo (conversion of standards in analog television systems H04N 7/01)}
H04N 21/234318	. . . . .	{by decomposing into objects, e.g. MPEG-4 objects}
H04N 21/234327	. . . . .	{by decomposing into layers, e.g. base layer and one or more enhancement layers}

H04N 21/234336	. . . . .	{by media transcoding, e.g. video is transformed into a slideshow of still pictures or audio is converted into text}
H04N 21/234345	. . . . .	{the reformatting operation being performed only on part of the stream, e.g. a region of the image or a time segment}
H04N 21/234354	. . . . .	{by altering signal-to-noise ratio parameters, e.g. requantization}
H04N 21/234363	. . . . .	{by altering the spatial resolution, e.g. for clients with a lower screen resolution}
H04N 21/234372	. . . . .	{for performing aspect ratio conversion}
H04N 21/234381	. . . . .	{by altering the temporal resolution, e.g. decreasing the frame rate by frame skipping}
H04N 21/23439	. . . . .	{for generating different versions}
H04N 21/2347	. . . . .	involving video stream encryption (arrangements for secret or secure communication H04L 9/00 , analogue secrecy systems H04N 7/16 {; Arrangements using cryptography for the use of broadcast information or broadcast-related information H04H 60/23 ; arrangements for preventing the taking of data from a data transmission channel without authorisation H04L 12/22 ; security arrangements in wireless networks H04W 12/00 })
H04N 21/23473	. . . . .	{by pre-encrypting}
H04N 21/23476	. . . . .	{by partially encrypting, e.g. encrypting the ending portion of a movie}
H04N 21/235	. . . . .	Processing of additional data, e.g. scrambling of additional data, processing content descriptors {(arrangements for simultaneous broadcast of plural pieces of information H04H 20/28)}
H04N 21/2351	. . . . .	{involving encryption of additional data (arrangements using cryptography for the use of broadcast information or broadcast-related information H04H 60/23)}
H04N 21/2353	. . . . .	{specifically adapted to content descriptors, e.g. coding, compressing or processing of metadata}
H04N 21/2355	. . . . .	{involving reformatting operations of additional data, e.g. HTML pages (optimising the visualization of content for information retrieval from the Internet G06F 17/30905 ; message adaptation based on network or terminal capabilities in stored and forward packet switching H04L 12/5825 ; media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications H04L 29/06489)}
H04N 21/2356	. . . . .	{by altering the spatial resolution}
H04N 21/2358	. . . . .	{for generating different versions, e.g. for different recipient devices}
H04N 21/236	. . . . .	Assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, e.g. inserting a Uniform Resource Locator [URL] into a video stream, multiplexing software data into a video stream; Remultiplexing of multiplex streams; Insertion of stuffing bits into the multiplex stream, e.g. to obtain a constant bit-rate; Assembling of a packetized elementary stream {(multiplexing of data packets for data networks, e.g. RTP/UDP H04L 65/00 ; stereoscopic image multiplexing or transmission H04N 13/0003)}

H04N 21/23602	. . . .	{Multiplexing isochronously with the video sync, e.g. according to bit-parallel or bit-serial interface formats, as SDI}
H04N 21/23605	. . . .	{Creation or processing of packetized elementary streams [PES]}
H04N 21/23608	. . . .	{Remultiplexing multiplex streams, e.g. involving modifying time stamps or remapping the packet identifiers}
H04N 21/23611	. . . .	{Insertion of stuffing data into a multiplex stream, e.g. to obtain a constant bitrate (synchronisation arrangements in time-division multiplex systems using bit stuffing for systems with different or fluctuating information rates H04J 3/073)}
H04N 21/23614	. . . .	{Multiplexing of additional data and video streams (arrangements for simultaneous broadcast of plural pieces of information H04H 20/28)}
H04N 21/23617	. . . .	. {by inserting additional data into a data carousel, e.g. inserting software modules into a DVB carousel (arrangements for broadcast or for distribution of identical information repeatedly in broadcast distribution systems H04H 20/16)}
H04N 21/2362	. . . .	Generation or processing of Service Information [SI]
H04N 21/2365	. . . .	Multiplexing of several video streams
H04N 21/23655	. . . .	. {Statistical multiplexing, e.g. by controlling the encoder to alter its bitrate to optimize the bandwidth utilization}
H04N 21/2368	. . . .	Multiplexing of audio and video streams
H04N 21/237	. . . .	Communication with additional data server
H04N 21/238	. . . .	Interfacing the downstream path of the transmission network, e.g. adapting the transmission rate of a video stream to network bandwidth; Processing of multiplex streams {(hybrid Fiber Coaxial HFC networks for downstream channel allocation for video distribution H04L 12/2801 ; flow control in packet networks H04L 12/569 ; formation of RTP packets H04L 29/06176 ; application layer Quality of Service and content dependent routing H04L 29/08945)}
H04N 21/23805	. . . .	. {Controlling the feeding rate to the network, e.g. by controlling the video pump}
H04N 21/2381	. . . .	. Adapting the multiplex stream to a specific network, e.g. an Internet Protocol [IP] network {(transmission of MPEG streams over ATM H04L 12/5601)}
H04N 21/2383	. . . .	. Channel coding {or modulation} of digital bit-stream, e.g. QPSK modulation (arrangements for detecting or preventing errors in the information received by adapting the channel coding H04L 1/0009 ; analogue front ends or means for connecting modulators, demodulators or transceivers to a transmission line H04L 27/0002)
H04N 21/2385	. . . .	. Channel allocation (H04N 21/266 takes precedence); Bandwidth allocation (H04N 21/24 takes precedence {; allocation of channels according to the instantaneous demands of the users in time-division multiplex systems H04J 3/1682 ; arrangements for maintenance or administration in data switching networks involving bandwidth and capacity management H04L 12/2439 ; Admission control, resource allocation in open networks H04L 12/5692 ; negotiating bandwidth in wireless networks H04W 28/16)}
H04N 21/2387	. . . .	. Stream processing in response to a playback request from an end-user, e.g. for trick-play
H04N 21/2389	. . . .	. Multiplex stream processing, e.g. multiplex stream encrypting

H04N 21/23892	. . . . .	{involving embedding information at multiplex stream level, e.g. embedding a watermark at packet level}
H04N 21/23895	. . . . .	{involving multiplex stream encryption}
H04N 21/23897	. . . . .	{by partially encrypting, e.g. encrypting only the ending portion of a movie}
H04N 21/239	. . .	Interfacing the upstream path of the transmission network, e.g. prioritizing client {content} requests (hybrid Fiber Coaxial [HFC] networks for upstream channel allocation for video distribution H04L 12/2801 ; flow control in data networks H04L 12/569 ; formation of RTP packets H04L 29/06176 ; application layer Quality of Service and content dependent routing of client requests H04L 29/08945)
H04N 21/2393	. . . . .	{involving handling client requests (scheduling and organising the servicing of requests in data switching networks H04L 29/08945)}
H04N 21/2396	. . . . .	{characterized by admission policies (admission control, resource allocation in open networks H04L 12/5692 ; arrangements for network security using user profiles for access control H04L 29/06836 ; access security in wireless networks H04W 12/08)}
H04N 21/24	. . .	Monitoring of processes or resources, e.g. monitoring of server load, available bandwidth, upstream requests {(monitoring of server performance or load G06F 11/34 ; arrangements for observation, testing or troubleshooting for broadcast or for distribution combined with broadcast H04H 20/12)}
H04N 21/2401	. . . . .	{Monitoring of the client buffer}
H04N 21/2402	. . . . .	{Monitoring of the downstream path of the transmission network, e.g. bandwidth available (traffic monitoring in data switching networks H04L 12/2418 ; monitoring data switching networks utilization H04L 12/2668)}
H04N 21/2404	. . . . .	{Monitoring of server processing errors or hardware failure (error or fault detection G06F 11/07 ; monitoring in general G06F 11/30)}
H04N 21/2405	. . . . .	{Monitoring of the internal components or processes of the server, e.g. server load (allocation of resources in multiprogramming arrangements G06F 9/50 ; performance measurement of computer activity G06F 11/34)}
H04N 21/2407	. . . . .	{Monitoring of transmitted content, e.g. distribution time, number of downloads (arrangements for monitoring programmes for broadcast or for distribution combined with broadcast H04H 20/14)}
H04N 21/2408	. . . . .	{Monitoring of the upstream path of the transmission network, e.g. client requests (monitoring data switching networks utilization H04L 12/2668 ; protocols for scheduling and organising the servicing of requests in network applications in communication control or processing H04L 29/08945)}
H04N 21/241	. . .	Operating System [OS] processes, e.g. server setup (arrangements for programme control G06F 9/00 {; program loading or initiating in general G06F 9/445 ; multiprogramming arrangements G06F 9/46)}

- H04N 21/242 . . . Synchronization processes, e.g. processing of Program Clock References [PCR] {(synchronisation arrangements in time-division multiplex systems [H04J 3/06](#); arrangements for synchronising broadcast or distribution via plural systems in broadcast distribution systems [H04H 20/18](#); arrangements for synchronising receiver with transmitter [H04L 7/00](#); synchronising circuits with arrangements for extending range of synchronisation at the transmitter end [H04N 5/067](#))}
- H04N 21/25 . . Management operations performed by the server for facilitating the content distribution or administrating data related to end-users or client devices, e.g. end-user or client device authentication, learning user preferences for recommending movies {(maintenance or administration in data networks [H04L 12/24](#))}
- H04N 21/251 . . . {Learning process for intelligent management, e.g. learning user preferences for recommending movies (details of learning user preferences for the retrieval of video data in a video database [G06F 17/30843](#); computer systems using learning methods [G06N 3/08](#))}
- H04N 21/252 {Processing of multiple end-users' preferences to derive collaborative data}
- H04N 21/254 . . . Management at additional data server, e.g. shopping server, rights management server {(arrangements for maintenance or administration in data networks [H04L 12/24](#); Protocols involving third party service providers for network applications in communication control or processing [H04L 29/08666](#))}
- H04N 21/2541 {Rights Management (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#); security in data switching network management [H04L 12/2461](#); security management or policies for network security [H04L 29/06986](#); access security in wireless networks [H04W 12/08](#))}
- H04N 21/2542 {for selling goods, e.g. TV shopping (payment schemes, payment architectures or payment protocols for electronic shopping systems [G06Q 20/12](#))}
- H04N 21/2543 Billing {e.g. for subscription services (payment schemes, architectures or protocols [G06Q 20/00](#); e-commerce [G06Q 30/00](#); arrangements for billing for the use of broadcast information or broadcast-related information [H04H 60/21](#); charging arrangements in data networks [H04L 12/14](#))}
- H04N 21/25435 {involving characteristics of content or additional data, e.g. video resolution or the amount of advertising}
- H04N 21/2547 Third Party Billing, e.g. billing of advertiser
- H04N 21/258 . . . Client or end-user data management, e.g. managing client capabilities, user preferences or demographics, processing of multiple end-users preferences to derive collaborative data {(arrangements for services using the result on the distributing side of broadcast systems [H04H 60/66](#); data switching network applications involving user or terminal profiles [H04L 29/08918](#))}
- H04N 21/25808 {Management of client data (protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#))}

H04N 21/25816	. . . . .	{involving client authentication (restricting access to computer systems by authenticating users using a predetermined code G06F 21/33 ; authentication mechanisms for network security in communication control or processing H04L 29/06755 ; authentication in wireless network security H04W 12/06)}
H04N 21/25825	. . . . .	{involving client display capabilities, e.g. screen resolution of a mobile phone (optimising the visualisation of content during browsing in the Internet G06F 17/30905 ; processing of terminal status or physical abilities in wireless networks H04W 8/22 ; authentication in wireless network security H04W 12/06)}
H04N 21/25833	. . . . .	{involving client hardware characteristics, e.g. manufacturer, processing or storage capabilities (allocation of resources considering hardware capabilities in multiprogramming arrangements G06F 9/5044 ; allocation of resources considering software capabilities in multiprogramming arrangements G06F 9/5055)}
H04N 21/25841	. . . . .	{involving the geographical location of the client (retrieval from the Internet by querying based on geographical locations G06F 17/3087 ; Arrangements for identifying locations of receiving stations in broadcast systems H04H 60/51 ; protocols in which the network application is adapted for the location of the user terminal in communication control or processing H04L 29/08657 ; services making use of the location of users or terminals in wireless networks H04W 4/02 ; locating users or terminals in wireless networks H04W 64/00)}
H04N 21/2585	. . . . .	{Generation of a revocation list, e.g. of client devices involved in piracy acts}
H04N 21/25858	. . . . .	{involving client software characteristics, e.g. OS identifier}
H04N 21/25866	. . . . .	{Management of end-user data (customer care in data networks H04L 12/249)}
H04N 21/25875	. . . . .	{involving end-user authentication (restricting access to computer systems by authenticating users using a predetermined code G06F 21/33 ; arrangements for secret or secure communication including means for verifying the identity or authority of a user of the system H04L 9/32 ; authentication mechanisms for network security in communication control or processing H04L 29/06755 ; authentication in wireless network security H04W 12/06)}
H04N 21/25883	. . . . .	{being end-user demographical data, e.g. age, family status or address (arrangements for identifying locations of users in broadcast systems H04H 60/52)}
H04N 21/25891	. . . . .	{being end-user preferences (retrieval of video data in a video database based on user preferences G06F 17/30843 ; arrangements for recognizing users' preferences H04H 60/46 ; protocols involving user profiles for network applications in communication control or processing H04L 29/08936 ; processing of user preferences or user profiles in wireless networks H04W 8/18)}

- H04N 21/262 . . . Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission, generating play-lists [{\(scheduling strategies for dispatcher in multiprogramming arrangements G06F 9/4881; arrangements for scheduling broadcast services or broadcast-related services H04H 60/06; flow control in packet networks H04L 12/569; protocols for scheduling and organising the servicing of requests, whereby a time schedule is established for servicing the requests in network applications in communication control or processing H04L 29/08963\)}](#)
- H04N 21/26208 {the scheduling operation being performed under constraints}
- H04N 21/26216 {involving the channel capacity, e.g. network bandwidth (flow control in packet networks [H04L 12/569](#); admission control, resource allocation in open networks [H04L 12/5692](#); protocols for scheduling and organising the servicing of requests, whereby quality of service and priority requirements are taken into account in network applications in communication control or processing [H04L 29/08954](#))}
- H04N 21/26225 {involving billing parameters, e.g. priority for subscribers of premium services}
- H04N 21/26233 {involving content or additional data duration or size, e.g. length of a movie, size of an executable file}
- H04N 21/26241 {involving the time of distribution, e.g. the best time of the day for inserting an advertisement or airing a children program}
- H04N 21/2625 {for delaying content or additional data distribution, e.g. because of an extended sport event}
- H04N 21/26258 {for generating a list of items to be played back in a given order, e.g. playlist, or scheduling item distribution according to such list (retrieval of multimedia data based on playlists [G06F 17/30017](#))}
- H04N 21/26266 {for determining content or additional data repetition rate, e.g. of a file in a DVB carousel according to its importance (arrangements for broadcast or for distribution of identical information repeatedly in broadcast distribution systems [H04H 20/16](#))}
- H04N 21/26275 {for distributing content or additional data in a staggered manner, e.g. repeating movies on different channels in a time-staggered manner in a near video on demand system}
- H04N 21/26283 {for associating distribution time parameters to content, e.g. to generate electronic program guide data}
- H04N 21/26291 {for providing content or additional data updates, e.g. updating software modules, stored at the client (deployment, distribution, installation, update of software [G06F 8/65](#); error detection or correction during software upgrading [G06F 11/1433](#); arrangements for updating broadcast information or broadcast-related information [H04H 60/25](#))}
- H04N 21/266 . . . Channel or content management, e.g. generation and management of keys and entitlement messages in a conditional access system, merging a VOD unicast channel into a multicast channel
- H04N 21/26603 {for automatically generating descriptors from content, e.g. when it is not made available by its provider, using content analysis techniques}

- H04N 21/26606 {for generating or managing entitlement messages, e.g. Entitlement Control Message [ECM] or Entitlement Management Message [EMM] (arrangements for conditional access to broadcast information or to broadcast-related services [H04H 60/14](#))}
- H04N 21/26609 {using retrofitting techniques, e.g. by re-encrypting the control words used for pre-encryption}
- H04N 21/26613 {for generating or managing keys in general (key distribution for secret or secure communication, using a key distribution center, a trusted party or a key server [H04L 9/0802](#); key management for security in wireless networks [H04L 29/06707](#); key management for network security in communication control or processing [H04W 12/04](#))}
- H04N 21/26616 {for merging a unicast channel into a multicast channel, e.g. in a VOD application, when a client served by unicast channel catches up a multicast channel to save bandwidth (data multicast over packet-switching network [H04L 12/18](#))}
- H04N 21/2662 Controlling the complexity of the video stream, e.g. by scaling the resolution or bitrate of the video stream based on the client capabilities
- H04N 21/2665 Gathering content from different sources, e.g. Internet and satellite
- H04N 21/2668 Creating a channel for a dedicated end-user group, e.g. insertion of targeted commercials based on end-user profiles {(information retrieval from the Internet by querying with filtering and personalisation [G06F 17/30867](#); arrangements for replacing or switching information during the broadcast [H04H 20/10](#); push services over packet-switching network [H04L 12/1859](#); adaptation of message content in packet-switching networks [H04L 12/583](#))}
- H04N 21/27 . . Server based end-user applications
- H04N 21/274 . . . Storing end-user {multimedia} data in response to end-user request {, e.g. network recorder}
- H04N 21/2743 Video hosting of uploaded data from client
- H04N 21/2747 Remote storage of video programs received via the downstream path, e.g. from the server
- H04N 21/278 . . . Content descriptor database or directory service for end-user access {(details of content or meta data based information retrieval of video data in video databases [G06F 17/30843](#))}
- H04N 21/40 . Client devices specifically adapted for the reception of or interaction with content, e.g. set-top-box [STB]; Operations thereof {(arrangements for distribution where lower stations, e.g. receivers, interact with the broadcast [H04H 20/38](#); arrangements specially adapted for receiving broadcast information [H04H 40/00](#))}
- H04N 21/41 . . Structure of client; Structure of client peripherals
- H04N 21/4104 . . . {using peripherals receiving signals from specially adapted client devices}
- H04N 21/4108 {characterized by an identification number or address, e.g. local network address (protecting specific internal or external computer components used for computing or processing information by creating or determining hardware identification [G06F 21/73](#); addressing and naming in data networks [H04L 29/12009](#))}
- H04N 21/4113 {PC}

H04N 21/4117	• • • •	{for generating hard copies of the content, e.g. printer, electronic paper (interfaces to printers G06F 3/12 ; printing data G06K 15/02)}
H04N 21/4122	• • • •	{additional display device, e.g. video projector (digital output for controlling a plurality of local displays G06F 3/1423)}
H04N 21/4126	• • • •	{portable device, e.g. remote control with a display, PDA, mobile phone (constructional details of equipment or arrangements specially adapted for portable computer application G06F 1/1626)}
H04N 21/4131	• • • •	{home appliance, e.g. lighting, air conditioning system, metering devices (home automation data switching networks exchanging configuration information on appliance services H04L 12/2807)}
H04N 21/4135	• • • •	{external recorder (interface circuits between an apparatus for recording television signals and a television receiver H04N 5/775)}
H04N 21/414	• • •	Specialised client platforms, e.g. receiver in car or embedded in a mobile appliance
H04N 21/41407	• • • •	{embedded in a portable device, e.g. video client on a mobile phone, PDA, laptop (constructional details of equipment or arrangements specially adapted for portable computer application G06F 1/1626 ; arrangements specially adapted for mobile receivers in broadcast systems H04H 20/57)}
H04N 21/41415	• • • •	{involving a public display, viewable by several users in a public space outside their home, e.g. movie theatre, information kiosk}
H04N 21/41422	• • • •	{located in transportation means, e.g. personal vehicle (arrangements specially adapted for transportation systems in broadcast systems H04H 20/62)}
H04N 21/4143	• • • •	{embedded in a} Personal Computer [PC]
H04N 21/4147	• • • •	Personal Video Recorder [PVR] (H04N 5/76 takes precedence {; arrangements for broadcast specially adapted for accumulation-type receivers H04H 20/40)}
H04N 21/418	• • •	External card to be used in combination with the client device, e.g. for conditional access
H04N 21/4181	• • • •	{for conditional access}
H04N 21/4182	• • • •	{for identification purposes, e.g. storing user identification data, preferences, personal settings or data (restricting access to computer systems by authenticating users using a predetermined code in combination with an additional device, e.g. dongle or smart card G06F 21/123)}
H04N 21/4183	• • • •	{providing its own processing capabilities, e.g. external module for video decoding}
H04N 21/4184	• • • •	{providing storage capabilities, e.g. memory stick}
H04N 21/4185	• • • •	for payment {(mechanisms actuated by coded identity card or credit card to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus G07F 7/08 ; payment schemes, architectures or protocols G06Q 20/00 ; e-commerce G06Q 30/00 ; charging arrangements in data networks H04L 12/14)}
H04N 21/422	• • •	{using} Input-only peripherals (i.e. input devices connected to specially adapted client devices (input devices also receiving signals from specially adapted client devices H04N 21/4104), e.g. Global Positioning System [GPS] (input arrangements or combined input and output arrangements for interaction between user and computer G06F 3/01)

H04N 21/42201	. . . .	{biosensors, e.g. heat sensor for presence detection, EEG sensors or any limb activity sensors worn by the user (Input arrangements for interaction with the human body based on nervous system activity detection G06F 3/015)}
H04N 21/42202	. . . .	{environmental sensors, e.g. for detecting temperature, luminosity, pressure, earthquakes}
H04N 21/42203	. . . .	{sound input device, e.g. microphone}
H04N 21/42204	. . . .	{User interfaces specially adapted for controlling a client device through a remote control device; Remote control devices therefor (interaction techniques for graphical user interfaces in general, see G06F 3/048 ; computer pointing devices in general, see G06F 3/033 ; user interfaces for controlling a tuning device of a television receiver through a remote control H03J 9/00 ; constructive details of casings for the remote control device H01H 9/0235 ; remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver H04B 1/205 ; remote control devices in general G08C)}
H04N 21/42206	. . . . .	{characterized by hardware details}
H04N 21/42207	. . . . .	{Interfaces providing bidirectional communication between remote control devices and client devices}
H04N 21/42208	. . . . .	{Display device provided on the remote control}
H04N 21/42209	. . . . .	{for displaying non-command information, e.g. electronic program guide [EPG], e-mail, messages or a second television channel}
H04N 21/4221	. . . . .	{Dedicated function buttons, e.g. for the control of an EPG, subtitles, aspect ratio, picture-in-picture or teletext}
H04N 21/42212	. . . . .	{Specific keyboard arrangements}
H04N 21/42213	. . . . .	{for facilitating data entry}
H04N 21/42214	. . . . .	{using alphanumerical characters}
H04N 21/42215	. . . . .	{by measuring the time interval during which a key is pressed, e.g. for inputting sequences of digits when selecting a television channel}
H04N 21/42216	. . . . .	{for quick navigation, e.g. through an EPG}
H04N 21/42218	. . . . .	{for mapping a matrix of displayed objects on the screen to the numerical key-matrix of the remote control}
H04N 21/42219	. . . . .	{Remote control device emulator integrated in a peripheral device}
H04N 21/4222	. . . . .	{Remote control device emulator integrated into a non-television apparatus, e.g. a PDA, media center or smart toy (remote control device for a television receiver integrated into a mobile phone H04M 1/72533)}
H04N 21/42221	. . . . .	{Transmission circuitry, e.g. infrared [IR] or radio frequency [RF]}
H04N 21/42222	. . . . .	{Additional components integrated in the remote control device, e.g. timer, speaker, sensors for detecting position, direction or movement of the remote control, microphone or battery charging device}

H04N 21/42224	. . . . .	{Touch pad or touch panel provided on the remote control (touch pads in general G06F 3/03547)}
H04N 21/42225	. . . . .	{characterized by types of remote control, e.g. universal remote control}
H04N 21/42226	. . . . .	{Reprogrammable remote control devices}
H04N 21/42227	. . . . .	{the keys being reprogrammable, e.g. soft keys}
H04N 21/42228	. . . . .	{the reprogrammable keys being displayed on a display screen in order to reduce the number of keys on the remote control device itself}
H04N 21/4223	. . . . .	Cameras (H04N 5/225 takes precedence)
H04N 21/4227	. . . . .	{Providing} Remote input by a user located remotely from the client device, e.g. at work
H04N 21/426	. . . . .	{Characteristics of or} Internal components of the client (H04N 5/44 takes precedence)
H04N 21/42607	. . . . .	{for processing the incoming bitstream}
H04N 21/42615	. . . . .	{involving specific demultiplexing arrangements}
H04N 21/42623	. . . . .	{involving specific decryption arrangements}
H04N 21/4263	. . . . .	{involving specific tuning arrangements, e.g. two tuners}
H04N 21/42638	. . . . .	{involving a hybrid front-end, e.g. analog and digital tuners}
H04N 21/42646	. . . . .	{for reading from or writing on a non-volatile solid state storage medium, e.g. DVD, CD-ROM}
H04N 21/42653	. . . . .	{for processing graphics}
H04N 21/42661	. . . . .	{for reading from or writing on a magnetic storage medium, e.g. hard disk drive}
H04N 21/42669	. . . . .	{the medium being removable}
H04N 21/42676	. . . . .	{for modulating an analogue carrier signal to encode digital information or demodulating it to decode digital information, e.g. ADSL or cable modem}
H04N 21/42684	. . . . .	{Client identification by a unique number or address, e.g. serial number, MAC address, socket ID (addressing and naming in data networks H04L 29/12009)}
H04N 21/42692	. . . . .	{for reading from or writing on a volatile storage medium, e.g. Random Access Memory [RAM]}
H04N 21/43	. . . . .	Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network, synchronizing decoder's clock; Client middleware {(demultiplexing of data packets for data networks, e.g. RTP/UDP H04L 29/06176)}
H04N 21/4302	. . . . .	{Content synchronization processes, e.g. decoder synchronization}
H04N 21/4305	. . . . .	{Synchronizing client clock from received content stream, e.g. locking decoder clock with encoder clock, extraction of the PCR packets (arrangements for synchronising receiver with transmitter by comparing receiver clock with transmitter clock H04L 7/0012 ; arrangements for synchronising receiver with transmitter wherein the receiver takes measures against momentary loss of synchronisation H04L 7/0083)}

H04N 21/4307	. . . .	{Synchronizing display of multiple content streams, e.g. synchronisation of audio and video output or enabling or disabling interactive icons for a given period of time}
H04N 21/431	. . .	Generation of visual interfaces {for content selection or interaction}; Content or additional data rendering (receiver circuitry for displaying additional information H04N 5/445 ; interaction techniques for graphical user interfaces G06F 3/048)
H04N 21/4312	. . . .	{involving specific graphical features, e.g. screen layout, special fonts or colors, blinking icons, highlights or animations}
H04N 21/4314	. . . . .	{for fitting data in a restricted space on the screen, e.g. EPG data in a rectangular grid}
H04N 21/4316	. . . . .	{for displaying supplemental content in a region of the screen, e.g. an advertisement in a separate window}
H04N 21/4318	. . . .	{by altering the content in the rendering process, e.g. blanking, blurring or masking an image region (image enhancement or restoration in general G06T 5/00)}
H04N 21/432	. . .	Content retrieval operation from a local storage medium, e.g. hard-disk {(details of retrieval of video data and associated meta data in video databases G06F 17/30843)}
H04N 21/4325	. . . .	{by playing back content from the storage medium (reproduction of recorded television signals H04N 5/76 ; reproduction of recorded television signals H04N 9/79)}
H04N 21/433	. . .	Content storage operation, e.g. storage operation in response to a pause request, caching operations
H04N 21/4331	. . . .	{Caching operations, e.g. of an advertisement for later insertion during playback}
H04N 21/4332	. . . .	{by placing content in organized collections, e.g. local EPG data repository (interfaces, Database management systems or updating for information retrieval G06F 17/30002 ; details of retrieval of video data and associated meta data in video database G06F 17/30843)}
H04N 21/4333	. . . .	{Processing operations in response to a pause request}
H04N 21/4334	. . . .	{Recording operations (recording of a television signal H04N 5/76 ; arrangements for recording or accumulating broadcast information or broadcast-related information H04H 60/27)}
H04N 21/4335	. . . .	Housekeeping operations, e.g. prioritizing content for deletion because of storage space restrictions {(storage management, e.g. defragmentation G06F 3/0604 ; unloading stored programs G06F 9/445 ; storage management in file systems G06F 17/30067 ; buffering arrangements in a network node or in an end terminal in packet networks H04L 49/90)}
H04N 21/434	. . .	Disassembling of a multiplex stream, e.g. demultiplexing audio and video streams, extraction of additional data from a video stream; Remultiplexing of multiplex streams; Extraction or processing of SI; Disassembling of packetized elementary stream {(demultiplexing of data packets for data networks, e.g. RTP/UDP H04L 65/00 ; stereoscopic image multiplexing or transmission H04N 13/0003)}
H04N 21/4341	. . . .	{Demultiplexing of audio and video streams}
H04N 21/4342	. . . .	{Demultiplexing isochronously with video sync, e.g. according to bit-parallel or bit-serial interface formats, as SDI}

H04N 21/4343	. . . .	{Extraction or processing of packetized elementary streams [PES]}
H04N 21/4344	. . . .	{Remultiplexing of multiplex streams, e.g. by modifying time stamps or remapping the packet identifiers}
H04N 21/4345	. . . .	{Extraction or processing of SI, e.g. extracting service information from an MPEG stream}
H04N 21/4346	. . . .	{involving stuffing data, e.g. packets or bytes (synchronisation arrangements in time-division multiplex systems with different or fluctuating information rates H04J 3/073)}
H04N 21/4347	. . . .	{Demultiplexing of several video streams}
H04N 21/4348	. . . .	{Demultiplexing of additional data and video streams}
H04N 21/4349	. . . . .	{by extracting from data carousels, e.g. extraction of software modules from a DVB carousel}
H04N 21/435	. . .	Processing of additional data, e.g. decrypting of additional data, reconstructing software from modules extracted from the transport stream
H04N 21/4351	. . . .	{involving reassembling additional data, e.g. rebuilding an executable program from recovered modules}
H04N 21/4353	. . . .	{involving decryption of additional data (arrangements using cryptography for the use of broadcast information or broadcast-related information H04H 60/23)}
H04N 21/4355	. . . .	{involving reformatting operations of additional data, e.g. HTML pages on a television screen (optimising the visualization of content for information retrieval from the Internet G06F 17/30905 ; adaptation of message content in packet-switching networks H04L 12/5835 ; Media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications H04L 29/06496)}
H04N 21/4356	. . . . .	{by altering the spatial resolution e.g. to reformat additional data on a handheld device, attached to the STB}
H04N 21/4358	. . . . .	{for generating different versions, e.g. for different peripheral devices}
H04N 21/436	. . .	Interfacing a local distribution network, e.g. communicating with another STB, inside the home {; Interfacing an external card to be used in combination with the client device} (arrangements specially adapted plural spots in a confined site in broadcast systems H04H 20/63)
H04N 21/43607	. . . .	{Interfacing a plurality of external cards, e.g. through a DVB Common Interface [DVB-CI]}
H04N 21/43615	. . . .	{Interfacing a Home Network, e.g. for connecting the client to a plurality of peripherals (home Audio Video Interoperability [HAVI] data switching networks H04L 12/2805)}
H04N 21/43622	. . . .	{Interfacing an external recording device}
H04N 21/4363	. . . .	Adapting the video {or multiplex} stream to a specific local network, e.g. a IEEE 1394 or Bluetooth® network
H04N 21/43632	. . . . .	{involving a wired protocol, e.g. IEEE 1394 (high-speed IEEE 1394 serial bus H04L 12/40052)}
H04N 21/43635	. . . . .	{HDMI}

- H04N 21/43637 {involving a wireless protocol, e.g. Bluetooth or wireless LAN (IEEE 802.11; arrangements for wireless networking or broadcasting of information in indoor or near-field type systems [H04B 10/114](#); wireless local area data switching networks [H04W](#); flow control in wireless networks [H04W 28/10](#))}
- H04N 21/4367 Establishing a secure communication between the client and a peripheral device or smart card (arrangements for secret or secure communication [H04L 9/00](#); security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#) ; security arrangements in wireless networks [H04W 12/00](#))
- H04N 21/437 Interfacing the upstream path of the transmission network, e.g. for transmitting client requests to a VOD server {(flow control in data networks [H04L 12/569](#); formation of RTP packets [H04L 29/06176](#); application layer Quality of Service and content dependent routing of client requests [H04L 29/08945](#))}
- H04N 21/438 Interfacing the downstream path of the transmission network originating from a server, e.g. retrieving MPEG packets from an IP network {(transmission of MPEG streams over ATM [H04L 12/5601](#); flow control in data networks [H04L 12/569](#); processing of real-time packets [H04L 29/06176](#))}
- H04N 21/4381 {Recovering the multiplex stream from a specific network, e.g. recovering MPEG packets from ATM cells (transmission of MPEG streams over ATM [H04L 12/5601](#))}
- H04N 21/4382 {Demodulation or channel decoding, e.g. QPSK demodulation (analog front ends or means for connecting modulators, demodulators or transceivers to a transmission line [H04L 27/0002](#))}
- H04N 21/4383 {Accessing a communication channel, e.g. channel tuning (tuning indicators; automatic tuning control [H04N 5/50](#))}
- H04N 21/4384 {involving operations to reduce the access time, e.g. fast-tuning for reducing channel switching latency}
- H04N 21/4385 Multiplex stream processing, e.g. multiplex stream decrypting
- H04N 21/43853 {involving multiplex stream decryption (arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#))}
- H04N 21/43856 {by partial decryption, e.g. decrypting a multiplex stream that has been partially encrypted}
- H04N 21/439 Processing of audio elementary streams
- H04N 21/4392 {involving audio buffer management}
- H04N 21/4394 {involving operations for analysing the audio stream, e.g. detecting features or characteristics in audio streams (arrangements characterised by components specially adapted for monitoring, identification or recognition of audio in broadcast systems [H04H 60/58](#))}
- H04N 21/4396 {by muting the audio signal}
- H04N 21/4398 {involving reformatting operations of audio signals (details of audio signal transcoding [G10L 19/173](#))}
- H04N 21/44 Processing of video elementary streams, e.g. splicing a video clip retrieved from local storage with an incoming video stream, rendering scenes according to MPEG-4 scene graphs

H04N 21/44004	. . . .	{involving video buffer management, e.g. video decoder buffer or video display buffer}
H04N 21/44008	. . . .	{involving operations for analysing video streams, e.g. detecting features or characteristics in the video stream (arrangements characterised by components specially adapted for monitoring, identification or recognition of video in broadcast systems H04H 60/59)}
H04N 21/44012	. . . .	{involving rendering scenes according to scene graphs, e.g. MPEG-4 scene graphs}
H04N 21/44016	. . . .	{involving splicing one content stream with another content stream, e.g. for substituting a video clip}
H04N 21/4402	. . . .	involving reformatting operations of video signals for household redistribution, storage or real-time display {(adapting incoming signals to the display format of the display terminal G09G 5/005 ; media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications H04L 29/06496 ; details of conversion of video standards at pixel level H04N 7/01 ; video transcoding H04N 19/40)}
H04N 21/440209	. . . . .	{for formatting on an optical medium, e.g. DVD}
H04N 21/440218	. . . . .	{by transcoding between formats or standards, e.g. from MPEG-2 to MPEG-4 (conversion of standards in analogue television systems H04N 7/01)}
H04N 21/440227	. . . . .	{by decomposing into layers, e.g. base layer and one or more enhancement layers}
H04N 21/440236	. . . . .	{by media transcoding, e.g. video is transformed into a slideshow of still pictures, audio is converted into text}
H04N 21/440245	. . . . .	{the reformatting operation being performed only on part of the stream, e.g. a region of the image or a time segment}
H04N 21/440254	. . . . .	{by altering signal-to-noise parameters, e.g. requantization}
H04N 21/440263	. . . . .	{by altering the spatial resolution, e.g. for displaying on a connected PDA}
H04N 21/440272	. . . . .	. {for performing aspect ratio conversion}
H04N 21/440281	. . . . .	{by altering the temporal resolution, e.g. by frame skipping (television signal recording using magnetic recording on tape for reproducing at a rate different from the recording rate H04N 5/783)}
H04N 21/44029	. . . . .	{for generating different versions}
H04N 21/4405	. . . .	involving video stream decryption (arrangements for secret or secure communication H04L 9/00 {; arrangements using cryptography for the use of broadcast information or broadcast-related information H04H 60/23 })
H04N 21/44055	. . . . .	{by partially decrypting, e.g. decrypting a video stream that has been partially encrypted}
H04N 21/4408	. . . .	involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network (arrangements for secret or secure communication H04L 9/00 {; arrangements using cryptography for the use of broadcast information or broadcast-related information H04H 60/23 })

- H04N 21/441 . . . Acquiring end-user identification {(authentication in wireless communication networks [H04W 12/06](#))e.g. using personal code sent by the remote control or by inserting a card (restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#))}
- H04N 21/4415 using biometric characteristics of the user, e.g. by voice recognition or fingerprint scanning {(methods or arrangements for recognising patterns [G06K 9/00](#); restricting access to computer systems by authenticating users using biometric data [G06F 21/32](#); authentication mechanisms using biometrical features for network security [H04L 29/06809](#); authentication in wireless network security [H04W 12/06](#))}
- H04N 21/442 . . . Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed, the storage space available from the internal hard disk {(arrangements for monitoring broadcast services or broadcast-related services [H04H 60/29](#); arrangements for identifying or recognising characteristics with a direct linkage to broadcast information [H04H 60/35](#); monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); monitoring in wireless networks [H04W 24/00](#))}
- H04N 21/44204 {Monitoring of content usage, e.g. the number of times a movie has been viewed, copied or the amount which has been watched (monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); Protecting generic digital content where the protection is independent of the precise nature of the content [G06F 21/10](#); arrangements for monitoring the use made of the broadcast services in broadcast systems [H04H 60/31](#))}
- H04N 21/44209 {Monitoring of downstream path of the transmission network originating from a server, e.g. bandwidth variations of a wireless network (arrangements for maintenance or administration in data switching networks involving bandwidth and capacity management [H04L 12/2439](#))}
- H04N 21/44213 {Monitoring of end-user related data (arrangements for monitoring the users' behaviour or opinions in broadcast systems [H04H 60/33](#))}
- H04N 21/44218 {Detecting physical presence or behaviour of the user, e.g. using sensors to detect if the user is leaving the room or changes his face expression during a TV program (methods or arrangements for acquiring or recognising human faces, facial parts, facial sketches, facial expressions [G06K 9/00221](#); methods or arrangements for recognising movements or behaviour [G06K 9/00335](#); methods or arrangements for recognising human body or animal bodies or body parts [G06K 9/00362](#); arrangements for identifying users in broadcast systems [H04H 60/45](#))}
- H04N 21/44222 {Monitoring of user selections, e.g. selection of programs, purchase activity (monitoring of user selections in data processing systems [G06F 11/34](#); monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); tracking the activity of the end-user [H04L 29/08675](#); arrangements for monitoring the user's behaviour or opinions in broadcast systems [H04H 60/33](#))}

H04N 21/44227	. . . .	{Monitoring of local network, e.g. connection or bandwidth variations; Detecting new devices in the local network (configuring of peripheral devices in general G06F 9/4411 ; monitoring connectivity in data switched networks H04L 12/2639)}
H04N 21/44231	. . . .	{Monitoring of peripheral device or external card, e.g. to detect processing problems in a handheld device or the failure of an external recording device (configuring of peripheral devices in general G06F 9/4411 ; monitoring the status of connected device in data switched networks H04L 12/2642 ; reporting information sensed by appliance or service execution status of appliance services in a home automation network H04L 12/2823)}
H04N 21/44236	. . . .	{Monitoring of piracy processes or activities (protecting computer platforms against harmful, malicious or unexpected behaviour or activities using intrusion detection and counter measures G06F 21/566 ; computer virus detection and handling G06F 21/56)}
H04N 21/4424	. . . .	{Monitoring of the internal components or processes of the client device, e.g. CPU or memory load, processing speed, timer, counter or percentage of the hard disk space used (error monitoring in general G06F 11/30 ; arrangements for monitoring conditions of receiving stations in broadcast systems H04H 60/32 ; diagnosis, testing or measuring for television receivers H04N 17/04)}
H04N 21/44245	. . . .	{Monitoring the upstream path of the transmission network, e.g. its availability, bandwidth}
H04N 21/4425	. . . .	Monitoring of client processing errors or hardware failure (monitoring in electrical digital data processing G06F 11/00 {; error detection in general G06F 11/07 ; monitoring in general G06F 11/30)}
H04N 21/443	. . . .	OS processes, e.g. booting a STB, implementing a Java virtual machine in a STB, power management in a STB (arrangements for program loading or initiating G06F 9/445 {; boot device selection; loading of operating system G06F 9/4406 ; program loading or initiating in general using non-volatile memory from which the program can be directly executed G06F 9/44568)}
H04N 21/4431	. . . .	{characterized by the use of Application Program Interface [API] libraries}
H04N 21/4432	. . . .	{Powering on the client, e.g. bootstrap loading using setup parameters being stored locally or received from the server (resetting in general G06F 1/14 ; program loading or initiating in general G06F 9/445 ; bootstrapping in general G06F 9/4401 ; secure boots of computer platforms G06F 21/57)}
H04N 21/4433	. . . .	{Implementing client middleware, e.g. Multimedia Home Platform [MHP]}
H04N 21/4435	. . . .	{Memory management (allocation of memory to service a request G06F 9/5016 ; addressing or allocating within memory systems or architectures G06F 12/02)}
H04N 21/4436	. . . .	{Power management, e.g. shutting down unused components of the receiver (power management in computer systems G06F 1/3203 ; Hibernate or awake process in computer systems G06F 9/4418)}
H04N 21/4437	. . . .	{Implementing a Virtual Machine [VM] (virtual machines in general G06F 9/45533)}
H04N 21/4438	. . . .	{Window management, e.g. event handling following interaction with the user interface}

- H04N 21/45
 - • Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies, resolving scheduling conflicts
- H04N 21/4508
 - • • {Management of client or end-user data}
- H04N 21/4516
 - • • • {involving client characteristics, e.g. Set-Top-Box type, software version, amount of memory available (allocation of resources considering software capabilities [G06F 9/5055](#); Allocation of resources considering hardware capabilities [G06F 9/5044](#); message adaptation based on network or terminal capabilities in packet switching networks [H04L 12/5825](#); protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#); processing of terminal status or physical abilities in wireless networks [H04W 8/22](#))}
- H04N 21/4524
 - • • • {involving the geographical location of the client (retrieval from the Internet by querying based on geographical locations [G06F 17/3087](#); Systems specially adapted for using geographical information in broadcast systems [H04H 60/70](#); protocols in which the network application is adapted for the location of the user terminal in communication control or processing [H04L 29/08657](#); services making use of the location of users or terminals in wireless networks [H04W 4/02](#); Locating users or terminals in wireless networks [H04W 64/00](#))}
- H04N 21/4532
 - • • • {involving end-user characteristics, e.g. viewer profile, preferences (monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); protocols involving user profiles for network applications in communication control or processing [H04L 29/08936](#); processing of user preferences or user profiles in wireless networks [H04W 8/18](#))}
- H04N 21/454
 - • • Content or additional data filtering, e.g. blocking advertisements {(filtering and selective blocking of messages over packet-switching networks [H04L 12/585](#))}
- H04N 21/4542
 - • • • {Blocking scenes or portions of the received content, e.g. censoring scenes}
- H04N 21/4545
 - • • • Input to filtering algorithms, e.g. filtering a region of the image {(filtering for image enhancement or restoration [G06T 5/00](#))}
- H04N 21/45452
 - • • • • {applied to an object-based stream, e.g. MPEG-4 streams}
- H04N 21/45455
 - • • • • {applied to a region of the image}
- H04N 21/45457
 - • • • • {applied to a time segment}
- H04N 21/458
 - • • Scheduling content for creating a personalized stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules {; time-related management operations (arrangements for replacing or switching information during the broadcast or during the distribution [H04H 20/10](#))}
- H04N 21/4583
 - • • • {Automatically resolving scheduling conflicts, e.g. when a recording by reservation has been programmed for two programs in the same time slot}

- H04N 21/4586 {Content update operation triggered locally, e.g. by comparing the version of software modules in a DVB carousel to the version stored locally (deployment, distribution, installation, update of software [G06F 8/65](#); program updating while running in general [G06F 8/67](#); error detection or correction of the data by redundancy during software upgrading [G06F 11/1433](#); arrangements for updating broadcast information or broadcast-related information [H04H 60/25](#))}
- H04N 21/462 . . . Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end, controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities
- H04N 21/4621 {Controlling the complexity of the content stream or additional data, e.g. lowering the resolution or bit-rate of the video stream for a mobile client with a small screen (arrangements for using the results of monitoring on user's side in broadcast systems [H04H 60/65](#); flow control in packet networks [H04L 12/569](#))}
- H04N 21/4622 {Retrieving content or additional data from different sources, e.g. from a broadcast channel and the Internet (web site content organization and management for information retrieval from the Internet [G06F 17/3089](#); transmission by internet of broadcast information [H04H 60/82](#); stock exchange data over packet-switching network [H04L 12/1804](#); push services including data channel over packet-switching network [H04L 12/1859](#))}
- H04N 21/4623 Processing of entitlement messages, e.g. Entitlement Control Message [ECM], Entitlement Management Message [EMM] {(arrangements for conditional access to broadcast information or to broadcast-related services [H04H 60/14](#))}
- H04N 21/4627 Rights management {associated to the content (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#); security in data switching network management [H04L 12/2461](#); security management or policies for network security [H04L 29/06986](#); access security in wireless networks [H04W 12/08](#))}
- H04N 21/466 . . . Learning process for intelligent management, e.g. learning user preferences for recommending movies {(monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); computer systems using learning methods [G06N 3/08](#); services using the results of monitoring in broadcast systems [H04H 60/61](#))}
- H04N 21/4661 {Deriving a combined profile for a plurality of end-users of the same client, e.g. for family members within a home (data switching network applications using user profiles [H04L 29/08936](#))}
- H04N 21/4662 {characterized by learning algorithms}
- H04N 21/4663 {involving probabilistic networks, e.g. Bayesian networks}
- H04N 21/4665 {involving classification methods, e.g. Decision trees}
- H04N 21/4666 {using neural networks, e.g. processing the feedback provided by the user}
- H04N 21/4667 {Processing of monitored end-user data, e.g. trend analysis based on the log file of viewer selections}
- H04N 21/4668 {for recommending content, e.g. movies}

- H04N 21/47
 - • End-user applications (interaction techniques for graphical user interfaces [G06F 3/048](#); receiver circuitry for displaying additional information [H04N 5/445](#) ; software engineering for user interfaces [G06F 8/20](#); services or applications for real-time multimedia communications [H04L 29/06387](#))
- H04N 21/472
 - • • End-user interface for requesting content, additional data or services; End-user interface for interacting with content, e.g. for content reservation or setting reminders, for requesting event notification, for manipulating displayed content {(end-user interfaces for retrieving video data from a database [G06F 17/30843](#); content on demand in one way streaming for real-time multimedia communications [H04L 29/06462](#))}
- H04N 21/47202
 - • • • {for requesting content on demand, e.g. video on demand}
- H04N 21/47205
 - • • • {for manipulating displayed content, e.g. interacting with MPEG-4 objects, editing locally}
- H04N 21/47208
 - • • • {for requesting near-video-on-demand content}
- H04N 21/47211
 - • • • {for requesting pay-per-view content (payment schemes payment architectures or payment protocols [G06Q 20/00](#), [G07F](#))}
- H04N 21/47214
 - • • • {for content reservation or setting reminders; for requesting event notification, e.g. of sport results or stock market (notification of incoming messages in packet switching networks [H04L 12/587](#); stock exchange data over packet-switching network [H04L 12/1804](#); push services over packet-switching network [H04L 12/1859](#))}
- H04N 21/47217
 - • • • {for controlling playback functions for recorded or on-demand content, e.g. using progress bars, mode or play-point indicators or bookmarks (specific graphical features in visual interfaces [H04N 21/4312](#))}
- H04N 21/4722
 - • • • for requesting additional data associated with the content
- H04N 21/4725
 - • • • • using interactive regions of the image, e.g. hot spots {(details of information retrieval from the Internet by using URLs [G06F 17/30876](#); processing chained hypermedia data for information retrieval [G06F 17/30014](#))}
- H04N 21/4728
 - • • • for selecting a Region Of Interest [ROI], e.g. for requesting a higher resolution version of a selected region
- H04N 21/475
 - • • End-user interface for inputting end-user data, e.g. personal identification number [PIN], preference data
- H04N 21/4751
 - • • • {for defining user accounts, e.g. accounts for children}
- H04N 21/4753
 - • • • {for user identification, e.g. by entering a PIN or password (authentication mechanisms using passwords for network security [H04L 29/06782](#))}
- H04N 21/4755
 - • • • {for defining user preferences, e.g. favourite actors or genre (retrieval personalisation and generation of user profiles for the retrieval of video data [G06F 17/30843](#); Data switching network applications using user profiles [H04L 29/08936](#))}
- H04N 21/4756
 - • • • {for rating content, e.g. scoring a recommended movie}
- H04N 21/4758
 - • • • {for providing answers, e.g. voting}
- H04N 21/478
 - • • Supplemental services, e.g. displaying phone caller identification, shopping application
- H04N 21/47805
 - • • • {Electronic banking (banking in general [G06Q 30/02](#))}
- H04N 21/4781
 - • • • {Games}

H04N 21/47815	. . . .	{Electronic shopping (payment schemes, payment architectures or payment protocols for electronic shopping systems G06Q 20/12)}
H04N 21/4782	. . . .	Web browsing {, e.g. WebTV (information retrieval from the Internet G06F 17/30861 ; protocols for network applications involving the use of web-based technology H04L 29/0809)}
H04N 21/4784	. . . .	receiving rewards {(payment schemes, architectures or protocols G06Q 20/00 ; e-commerce G06Q 30/00 ; charging arrangements in data networks H04L 12/14)}
H04N 21/4786	. . . .	e-mailing {(message switching systems, e.g. electronic mail systems H04L 12/58)}
H04N 21/4788	. . . .	communicating with other users, e.g. chatting {(arrangements for providing for computer conferences, e.g. chat rooms, to substation in data switching networks H04L 12/1813 ; protocols for peer-to-peer networking in communication control or processing H04L 29/08306)}
H04N 21/482	. . .	End-user interface for program selection {(systems specially adapted for using EPGs in broadcast systems H04H 60/72)}
H04N 21/4821	. . . .	{using a grid, e.g. sorted out by channel and broadcast time}
H04N 21/4823	. . . .	{using a channel name}
H04N 21/4825	. . . .	{using a list of items to be played back in a given order, e.g. playlists}
H04N 21/4826	. . . .	{using recommendation lists, e.g. of programs or channels sorted out according to their score}
H04N 21/4828	. . . .	{for searching program descriptors (retrieval of video data G06F 17/30843)}
H04N 21/485	. . .	End-user interface for client configuration
H04N 21/4852	. . . .	{for modifying audio parameters, e.g. switching between mono and stereo}
H04N 21/4854	. . . .	{for modifying image parameters, e.g. image brightness, contrast}
H04N 21/4856	. . . .	{for language selection, e.g. for the menu or subtitles}
H04N 21/4858	. . . .	{for modifying screen layout parameters, e.g. fonts, size of the windows}
H04N 21/488	. . .	Data services, e.g. news ticker {(systems specially adapted for using meteorological information in broadcast systems H04H 60/71)}
H04N 21/4882	. . . .	{for displaying messages, e.g. warnings, reminders (arrangements for providing short real-time information to substation in data switching networks H04L 12/1895)}
H04N 21/4884	. . . .	{for displaying subtitles}
H04N 21/4886	. . . .	{for displaying a ticker, e.g. scrolling banner for news, stock exchange, weather data}
H04N 21/4888	. . . .	{for displaying teletext characters}

- H04N 21/60
 - {using} Network structure or processes {specifically adapted} for video distribution between server and client or between remote clients (data switching networks [H04L 12/00](#); wireless communication networks [H04W](#)); Control signaling {specific to video distribution} between clients, server and network components {, e.g. to video encoder or decoder}; Transmission of management data between server and client {e.g. sending from server to client commands for recording incoming content stream}; Communication details between server and client (Protocols for communication control and processing in data networks [H04L 29/06](#); Protocols for client-server architecture [H04L 67/42](#))
- H04N 21/61
 - . Network physical structure; Signal processing ([H04B](#) takes precedence)
- H04N 21/6106
 - . . {specially adapted to the downstream path of the transmission network}
- H04N 21/6112
 - . . . {involving terrestrial transmission, e.g. DVB-T}
- H04N 21/6118
 - . . . {involving cable transmission, e.g. using a cable modem}
- H04N 21/6125
 - . . . {involving transmission via Internet (transmission by internet of broadcast information [H04H 60/82](#))}
- H04N 21/6131
 - . . . {involving transmission via a mobile phone network (wireless downlink channel access [H04W 74/006](#))}
- H04N 21/6137
 - . . . {involving transmission via a telephone network, e.g. POTS}
- H04N 21/6143
 - . . . {involving transmission via a satellite}
- H04N 21/615
 - . . {Signal processing at physical level (signal processing in analog two-way television systems [H04N 7/173](#))}
- H04N 21/6156
 - . . . {specially adapted to the upstream path of the transmission network}
- H04N 21/6162
 - . . . {involving terrestrial transmission, e.g. DVB-T}
- H04N 21/6168
 - . . . {involving cable transmission, e.g. using a cable modem}
- H04N 21/6175
 - . . . {involving transmission via Internet (broadcast-related systems characterised by the transmission system being the Internet [H04H 60/82](#))}
- H04N 21/6181
 - . . . {involving transmission via a mobile phone network (arrangements for providing broadcast or conference services to substation in data switching networks in combination with wireless systems [H04L 12/189](#); wireless uplink channel access [H04W 74/004](#))}
- H04N 21/6187
 - . . . {involving transmission via a telephone network, e.g. POTS}
- H04N 21/6193
 - . . . {involving transmission via a satellite (arrangements for data linking, networking or transporting, or for controlling an end to end session in a satellite broadcast system [H04B 7/18526](#))}
- H04N 21/63
 - . Control signaling {related to video distribution} between client, server and network components; Network processes for video distribution between server and clients {or between remote clients}, e.g. transmitting basic layer and enhancement layers over different transmission paths, setting up a peer-to-peer communication via Internet between remote STB's; Communication protocols; Addressing (signalling, control or architecture for real-time multimedia communications [H04L 29/06183](#); arrangements for peer-to-peer communications [H04L 29/08306](#))
- H04N 21/631
 - . . {Multimode Transmission, e.g. transmitting basic layers and enhancement layers of the content over different transmission paths or transmitting with different error corrections, different keys or with different transmission protocols}

H04N 21/632	. . .	{using a connection between clients on a wide area network, e.g. setting up a peer-to-peer communication via Internet for retrieving video segments from the hard-disk of other client devices (broadcast-related systems characterised by transmission among terminal devices H04H 60/80; protocols for peer-to-peer networking in communication control or processing H04L 29/08306)}
H04N 21/633	. . .	Control signals issued by server directed to the network components or client {(management of faults, events, alarms in data networks H04L 12/2419)}
H04N 21/6332	. . . .	directed to client
H04N 21/6334	. . . .	for authorization, e.g. by transmitting a key (arrangements for secret or secure communication H04L 9/00 {; wireless communications network key management H04W 12/04; wireless communications network access security H04W 12/08})
H04N 21/63345	. . . . .	{by transmitting keys (key distribution for secret or secure communication H04L 9/08; arrangements for network security key management H04L 29/06707)}
H04N 21/6336	. . . . .	directed to decoder
H04N 21/6338	. . . . .	directed to network
H04N 21/637	. . .	Control signals issued by the client directed to the server or network components
H04N 21/6371	. . . .	directed to network
H04N 21/6373	. . . .	for rate control {e.g. request to the server to modify its transmission rate (flow control in packet networks H04L 12/569)}
H04N 21/6375	. . . .	for requesting retransmission {, e.g. of data packets lost or corrupted during transmission from server} (ARQ protocols H04L 1/18; Transmission Control Protocol / Internet Protocol [TCP/IP] H04L 29/06095)
H04N 21/6377	. . . .	directed to server {(control of source by destination in one way streaming for real-time multimedia communications H04L 29/06469)}
H04N 21/63775	. . . . .	{for uploading keys, e.g. for a client to communicate its public key to the server (arrangements for network security key management H04L 29/06707)}
H04N 21/6379	. . . . .	directed to encoder {, e.g. for requesting a lower encoding rate}
H04N 21/64	. . .	Addressing {(multicast or broadcast in one way streaming for real-time multimedia communications H04L 29/06455; arrangements for addressing and naming in data networks H04L 29/12009)}
H04N 21/6402	. . . .	Address allocation for clients {(address allocation in data networks H04L 29/12207)}
H04N 21/6405	. . . .	Multicasting {(data broadcast and multicast in packet switching networks H04L 12/18)}
H04N 21/6408	. . . .	Unicasting
H04N 21/643	. . .	{using dedicated} Communication protocols (streaming protocols for real-time multimedia communications H04L 29/06517)
H04N 21/64307	. . . .	{ATM}
H04N 21/64315	. . . .	{DVB-H}
H04N 21/64322	. . . .	{IP}

H04N 21/6433	. . . .	Digital Storage Media - Command and Control Protocol [DSM-CC]
H04N 21/6437	. . . .	Real-time Transport Protocol [RTP]
H04N 21/647	. . .	Control signaling between network components and server or clients; Network processes for video distribution between server and clients, e.g. controlling the quality of the video stream, by dropping packets, protecting content from unauthorized alteration within the network, monitoring of network load, bridging between two different networks, e.g. between IP and wireless {(signalling, control or architecture for real-time multimedia communications H04L 29/06183)}
H04N 21/64707	. . . .	{for transferring content from a first network to a second network, e.g. between IP and wireless}
H04N 21/64715	. . . .	{Protecting content from unauthorized alteration within the network (verifying the information received for network security in communication control or processing H04L 29/06857; integrity in wireless network security H04W 12/10)}
H04N 21/64723	. . . .	{Monitoring of network processes or resources, e.g. monitoring of network load (traffic related reporting in data switching networks H04L 12/2626)}
H04N 21/6473	. . . . .	{Monitoring network processes errors (counter-measures to a fault in communication control or processing H04L 29/14)}
H04N 21/64738	. . . . .	{Monitoring network characteristics, e.g. bandwidth, congestion level (data switched network analysis H04L 12/2414; monitoring functioning in data switched networks H04L 12/2642; flow control in packet networks H04L 12/569)}
H04N 21/64746	. . . .	{Control signals issued by the network directed to the server or the client}
H04N 21/64753	. . . . .	{directed to the client}
H04N 21/64761	. . . . .	{directed to the server}
H04N 21/64769	. . . . .	{for rate control (flow control in packet networks H04L 12/569)}
H04N 21/64776	. . . . .	{for requesting retransmission, e.g. of data packets lost or corrupted during transmission from server (ARQ protocols H04L 1/18; Transmission Control Protocol / Internet Protocol [TCP/IP] H04L 29/06095)}
H04N 21/64784	. . . .	{Data processing by the network (data processing in packet switching systems H04L 12/56; flow control in packet networks H04L 12/569; intermediate storage or scheduling H04L 12/5694; protocols involving intermediate processing or storage in communication networks H04L 29/08702)}
H04N 21/64792	. . . . .	{Controlling the complexity of the content stream, e.g. by dropping packets (media manipulation, adaptation or conversion at an intermediate station in one way streaming for real-time multimedia communications H04L 29/06503; arrangements for reducing the amount or size of exchanged application data in the network H04L 29/08783; negotiation of resources in wireless networks H04W 28/16)}
H04N 21/65	. .	transmission of management data between client and server
H04N 21/654	. . .	transmission by server directed to the client
H04N 21/6543	. . . .	for forcing some client operations, e.g. recording {(remote booting in general G06F 9/4416)}

- H04N 21/6547 comprising parameters, e.g. for client setup
- H04N 21/658 transmission by the client directed to the server
- H04N 21/6581 {Reference data, e.g. a movie identifier for ordering a movie or a product identifier in a home shopping application}
- H04N 21/6582 {Data stored in the client, e.g. viewing habits, hardware capabilities, credit card number (arrangements where receivers interact with the broadcast [H04H 20/38](#))}
- H04N 21/6583 Acknowledgement
- H04N 21/6587 Control parameters, e.g. trick play commands, viewpoint selection
- H04N 21/80 Generation or processing of content or additional data by content creator independently of the distribution process; Content per se {(arrangements for generating broadcast information [H04H 60/02](#))}
- H04N 21/81 Monomedia components thereof
- H04N 21/8106 {involving special audio data, e.g. different tracks for different languages}
- H04N 21/8113 {comprising music, e.g. song in MP3 format}
- H04N 21/812 {involving advertisement data (advertising per se [G06Q 30/02](#))}
- H04N 21/8126 {involving additional data, e.g. news, sports, stocks, weather forecasts}
- H04N 21/8133 {specifically related to the content, e.g. biography of the actors in a movie, detailed information about an article seen in a video program}
- H04N 21/814 {comprising emergency warnings (arrangements specially adapted for emergency or urgency in broadcast systems [H04H 20/59](#); arrangements for providing alarms, notifications, alerts to substation in data switching networks [H04L 12/1895](#))}
- H04N 21/8146 {involving graphical data, e.g. 3D object, 2D graphics}
- H04N 21/8153 {comprising still images, e.g. texture, background image}
- H04N 21/816 {involving special video data, e.g. 3D video}
- H04N 21/8166 {involving executable data, e.g. software (arrangements for executing specific programs [G06F 9/44](#); broadcasting computer programmes in broadcast systems [H04H 20/91](#); movement of software or configuration parameters, in data networks [H04L 29/08981](#))}
- H04N 21/8173 {End-user applications, e.g. Web browser, game}
- H04N 21/818 {OS software}
- H04N 21/8186 {specially adapted to be executed by a peripheral of the client device, e.g. by a reprogrammable remote control}
- H04N 21/8193 {dedicated tools, e.g. video decoder software or IPMP tool}
- H04N 21/83 Generation or processing of protective or descriptive data associated with content; Content structuring
- H04N 21/835 Generation of protective data, e.g. certificates {(protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#))}
- H04N 21/8352 involving content or source identification data, e.g. Unique Material Identifier [UMID]
- H04N 21/8355 involving usage data, e.g. number of copies or viewings allowed
- H04N 21/83555 {using a structured language for describing usage rules of the content, e.g. REL}

- H04N 21/8358 involving watermark {(protecting executable software by watermarking [G06F 21/16](#); image watermarking in general [G06T 1/0021](#); watermarks inserted in still images for transmission purposes [H04N 1/32144](#); inserting watermarks during video coding [H04N 19/467](#))}
- H04N 21/84 Generation or processing of descriptive data, e.g. content descriptors {(systems specially adapted for using meta-information in broadcast systems [H04H 60/73](#))}
- H04N 21/8402 {involving a version number, e.g. version number of EPG data (arrangements for version control in computers [G06F 8/71](#))}
- H04N 21/8405 represented by keywords
- H04N 21/845 Structuring of content, e.g. decomposing content into time segments
- H04N 21/8451 {using Advanced Video Coding [AVC]}
- H04N 21/8453 {by locking or enabling a set of features, e.g. optional functionalities in an executable program}
- H04N 21/8455 {involving pointers to the content, e.g. pointers to the I-frames of the video stream}
- H04N 21/8456 {by decomposing the content in the time domain, e.g. in time segments}
- H04N 21/8458 {involving uncompressed content}
- H04N 21/85 Assembly of content; Generation of multimedia applications
- H04N 21/854 Content Authoring
- H04N 21/85403 {by describing the content as an MPEG-21 Digital Item}
- H04N 21/85406 {involving a specific file format, e.g. MP4 format}
- H04N 21/8541 involving branching, e.g. to different story endings
- H04N 21/8543 using a description language, e.g. Multimedia and Hypermedia information coding Expert Group [MHEG], eXtensible Markup Language [XML] {(information retrieval of semistructured data, the underlying structure being taken into account, e.g. mark-up language structure data [G06F 17/30908](#))}
- H04N 21/8545 for generating interactive applications
- H04N 21/8547 involving timestamps for synchronizing content
- H04N 21/8549 Creating video summaries, e.g. movie trailer {(retrieval in video databases by using presentations in form of a video summary [G06F 17/30843](#))}
- H04N 21/858 Linking data to content, e.g. by linking an URL to a video object, by creating a hotspot
- H04N 21/8583 {by creating hot-spots}
- H04N 21/8586 {by using a URL (processing chained hypermedia data for information retrieval [G06F 17/30014](#); information retrieval from the Internet by using URLs [G06F 17/30876](#); URL in broadcast information [H04H 20/93](#); protocols for network applications involving the use of web-based technology [H04L 29/0809](#))}

H04N 2101/00 **Still video cameras**

H04N 2201/00**Indexing scheme relating to scanning, transmission or reproduction of documents or the like, and to details thereof**

- H04N 2201/0001 Diagnosis, testing or measuring; Detecting, analysis or monitoring not otherwise provided for
- H04N 2201/0003 Method used
- H04N 2201/0005 using a reference pattern designed for the purpose, e.g. a test chart
- H04N 2201/0006 details of the reference pattern (DM 1105)
- H04N 2201/0008 Connection or combination of a still picture apparatus with another apparatus (not used)
- H04N 2201/001 Sharing resources, e.g. processing power or memory, with a connected apparatus or enhancing the capability of the still picture apparatus

NOTE

Subgroups [H04N 2201/001](#) to [H04N 2201/0075](#) are for use with subgroups [H04N 1/00127](#) to [H04N 1/00347](#)

- H04N 2201/0012 Use of shared folders, i.e. folders or directories accessible by all connected apparatus
- H04N 2201/0013 Arrangements for the control of the connected apparatus by the still picture apparatus (arrangements for the control of a still picture apparatus by the connected apparatus [H04N 2201/0074](#); control of image communication with the connected apparatus [H04N 2201/0015](#))
- H04N 2201/0015 Control of image communication with the connected apparatus, e.g. signalling capability
- H04N 2201/0017 Notifying a communication result
- H04N 2201/0018 via a non-image communication channel, e.g. via a computer network
- H04N 2201/002 Selecting or switching between an image communication channel and a non-image communication channel
- H04N 2201/0022 Selecting or switching between an image communication mode and a non-image communication mode ([H04N 2201/002](#) takes precedence)
- H04N 2201/0024 Converting image communication control signals, e.g. group 3 facsimile protocol signals, to non-image communication control signals or vice versa
- H04N 2201/0025 Adapting an image communication to a non-image communication or vice versa, e.g. data rate-conversion
- H04N 2201/0027 Adapting to communicate with plural different types of apparatus
- H04N 2201/0029 Avoiding duplicate transfer of image data
- H04N 2201/0031 where the still picture apparatus acts as the master
- H04N 2201/0032 where the still picture apparatus acts as the slave
- H04N 2201/0034 Details of the connection, e.g. connector, interface
- H04N 2201/0036 Detecting or checking connection
- H04N 2201/0037 Topological details of the connection
- H04N 2201/0039 Connection via a network
- H04N 2201/0041 Point to point ([H04N 2201/0039](#) takes precedence)
- H04N 2201/0043 Point to multipoint ([H04N 2201/0039](#) takes precedence)

- H04N 2201/0044 . . . Connecting to a plurality of different apparatus; Using a plurality of different connectors ([connection via a network H04N 2201/0039](#))
 - H04N 2201/0046 . . . Software interface details, e.g. interaction of operating systems
 - H04N 2201/0048 . . . Type of connection
 - H04N 2201/0049 By wire, cable or the like
 - H04N 2201/0051 Card-type connector, e.g. PCMCIA card interface
 - H04N 2201/0053 Optical, e.g. using an infra-red link
 - H04N 2201/0055 By radio
 - H04N 2201/0056 Using mechanical couplings, e.g. mating elements ([H04N 2201/0049](#), [H04N 2201/0051](#), [H04N 2201/0058](#) take precedence)
 - H04N 2201/0058 Docking-station, cradle or the like
 - H04N 2201/006 Using near field communication, e.g. an inductive loop
 - H04N 2201/0062 . . . Stand-alone interface device
 - H04N 2201/0063 . . . Constructional details
 - H04N 2201/0065 . . . Converting image data to a format usable by the connected apparatus or vice versa
 - H04N 2201/0067 Converting to still picture data
 - H04N 2201/0068 Converting from still picture data
 - H04N 2201/007 . . . Selecting or switching between a still picture apparatus or function and another apparatus or function ([H04N 2201/0022](#) takes precedence)
 - H04N 2201/0072 . . . Detecting the status of a connected apparatus
 - H04N 2201/0074 . . . Arrangements for the control of a still picture apparatus by the connected apparatus ([arrangements for the control of the connected apparatus by the still picture apparatus H04N 2201/0013](#); [control of image communication with the connected apparatus H04N 2201/0015](#))
 - H04N 2201/0075 by a user operated remote control device, e.g. receiving instructions from a user via a computer terminal or mobile telephone handset
 - H04N 2201/0077 . . . Types of the still picture apparatus
- NOTE**
- [Subgroups H04N 2201/0077 to H04N 2201/0094](#) are for use with [H04N 1/00](#) and subgroups
- H04N 2201/0079 . . . Medical imaging device
 - H04N 2201/0081 . . . Image reader ([H04N 2201/0091](#) to [H04N 2201/0094](#) take precedence)
 - H04N 2201/0082 . . . Image hardcopy reproducer ([H04N 2201/0091](#) to [H04N 2201/0094](#) take precedence)
 - H04N 2201/0084 . . . Digital still camera
 - H04N 2201/0086 . . . Image transceiver ([H04N 2201/0093](#) and [H04N 2201/0094](#) take precedence)
 - H04N 2201/0087 . . . Image storage device
 - H04N 2201/0089 . . . Image display device
 - H04N 2201/0091 . . . Digital copier; digital 'photocopier' ([H04N 2201/0093](#) and [H04N 2201/0094](#) take precedence)
 - H04N 2201/0093 . . . Facsimile machine ([H04N 2201/0094](#) takes precedence)

- H04N 2201/0094 . . Multifunctional device, i.e. a device capable of all of reading, reproducing, copying, facsimile transception, file transception
- H04N 2201/0096 . Portable devices
- H04N 2201/0098 . User intervention not otherwise provided for, e.g. placing documents, responding to an alarm
- H04N 2201/024 . deleted
- H04N 2201/02402 . . Arrangements for positioning heads, e.g. with respect to other elements of the apparatus

NOTE

Subgroups [H04N 2201/02402](#) to [H04N 2201/02404](#) and [H04N 2201/02487](#) to [H04N 2201/02497](#) are for use with subgroups [H04N 1/024](#) to [H04N 1/0318](#)

- H04N 2201/02404 . . Arrangements for mounting or supporting heads ([H04N 2201/02402](#) takes precedence)

NOTE

Indexing codes of group [H04N 2201/02406](#) can be used in combination, i.e. a code followed by additional codes preceded by a "+" sign, or in isolation

- H04N 2201/02406 . . Arrangements for positioning elements within a head ([H04N 1/02409](#) takes precedence; arrangements for positioning heads [H04N 2201/02402](#))
- H04N 2201/02408 . . . Translational positioning
- H04N 2201/0241 in a direction parallel to the main-scanning direction
- H04N 2201/02412 in a direction parallel to the sub-scanning direction
- H04N 2201/02414 in a direction perpendicular to the plane of the photodetector elements, e.g. in the direction of the optical axis ([H04N 1/02409](#) takes precedence)
- H04N 2201/02416 . . . Rotational positioning, i.e. with respect to an axis
- H04N 2201/02418 Rotation about the optical axis
- H04N 2201/0242 Rotation about an axis in the plane of the scanning elements orthogonal to the optical axis, the axis of rotation extending in the main-scanning direction, e.g. the longitudinal axis of a linear array
- H04N 2201/02422 Rotation about an axis in the plane of the scanning elements orthogonal to the optical axis, the axis of rotation extending in the sub-scanning direction, e.g. the transverse axis of a linear array
- H04N 2201/02425 . . . Self-adjusting arrangements, e.g. compensating for temperature fluctuations
- H04N 2201/02427 . . . Element positioned
- H04N 2201/02429 Photodetector element, e.g. CCD array
- H04N 2201/02431 Lens or optical system
- H04N 2201/02433 Reflective element, e.g. mirror
- H04N 2201/02435 Illuminating means
- H04N 2201/02437 Transparent cover
- H04N 2201/02439 . . . Positioning method

- H04N 2201/02441 using screws
- H04N 2201/02443 using adhesive
- H04N 2201/02445 using clips or the like
- H04N 2201/02447 using elastic means, e.g. springs ([H04N 2201/02445 takes precedence](#))
- H04N 2201/02449 using a reference element, e.g. a stop

NOTE

Indexing codes of group [H04N 2201/02452](#) can be used in combination, i.e. a code followed by additional codes preceded by a "+" sign, or in isolation

- H04N 2201/02452 . . Arrangements for mounting or supporting elements within a scanning head ([H04N 2201/02406](#), [H04N 2201/03154](#) take precedence)
- H04N 2201/02454 . . . Element mounted or supported
- H04N 2201/02456 Scanning element, e.g. CCD array, photodetector
- H04N 2201/02458 Lens or optical system
- H04N 2201/0246 Mirror, reflecting element or beam splitter
- H04N 2201/02462 Illuminating means
- H04N 2201/02464 Transparent cover or window
- H04N 2201/02466 . . . Mounting or supporting method
- H04N 2201/02468 using screws
- H04N 2201/0247 using adhesive
- H04N 2201/02472 using clips
- H04N 2201/02474 Clamping; Clamping ([H04N 2201/02472 takes precedence](#))
- H04N 2201/02477 using elastic means, e.g. springs ([H04N 2201/02472 takes precedence](#))
- H04N 2201/02479 . . . Mounting or supporting means
- H04N 2201/02481 Single piece support, e.g. molded plastic support
- H04N 2201/02483 Housing or part of the housing, e.g. bottom plate ([H04N 2201/02481 takes precedence](#))
- H04N 2201/02485 Dedicated element, e.g. bracket or arm
- H04N 2201/02487 . . Manufacturing details ([H04N 2201/02406](#), [H04N 2201/02452 take precedence](#))
- H04N 2201/02489 . . Arrangements for allowing access to the scanning head, e.g. for service or repair
- H04N 2201/02491 . . Arrangements for reducing the effects of vibrations
- H04N 2201/02493 . . Additional optical elements not otherwise provided for, e.g. filters, polarising plates, masks or apertures
- H04N 2201/02495 . . Constructional details not otherwise provided for, e.g. for ease of assembly, allowing access to the scanning elements, integrated reinforcing members
- H04N 2201/02497 . . Additional elements, e.g. sheet guide plates, light shields ([H04N 2201/02489 to H04N 2201/02495 take precedence](#))
- H04N 2201/028 . . for picture information pick-up ([not used](#))

H04N 2201/03	. . .	deleted
H04N 2201/031	. . . .	deleted
H04N 2201/03104	. . . . .	Integral pick-up heads, i.e. self-contained heads whose basic elements are a light source, a lens and a photodetector supported by a single-piece frame
H04N 2201/03108	. . . . .	Components of integral heads
H04N 2201/03112	. . . . .	Light source
H04N 2201/03116	. . . . .	Light source lens
H04N 2201/0312	. . . . .	Reflecting element upstream of the scanned picture elements
H04N 2201/03125	. . . . .	Light guide upstream of the scanned picture elements
H04N 2201/03129	. . . . .	Transparent cover or transparent document support mounted on the head
H04N 2201/03133	. . . . .	Window, i.e. a transparent member mounted in the frame
H04N 2201/03137	. . . . .	Reflecting element downstream of the scanned picture elements
H04N 2201/03141	. . . . .	Photodetector lens
H04N 2201/03145	. . . . .	Photodetector
H04N 2201/0315	. . . . .	Details of integral heads not otherwise provided for
H04N 2201/03154	. . . . .	Additional internal supporting or reinforcing member
H04N 2201/03158	. . . . .	Heat radiator
H04N 2201/03162	. . . . .	Original guide plate
H04N 2201/03166	. . . . .	Additional light shielding member
H04N 2201/0317	. . . . .	Shape
H04N 2201/03175	. . . . .	Position
H04N 2201/03179	. . . . .	Frame
H04N 2201/03183	. . . . .	Material
H04N 2201/03187	. . . . .	Additional optical element
H04N 2201/03191	. . . . .	Adhesive element
H04N 2201/03195	. . . . .	Coating, e.g. light adsorbing layer
H04N 2201/04	. . . . .	Scanning arrangements (not used)
H04N 2201/0402	. . . . .	Arrangements not specific to a particular one of the scanning methods covered by groups H04N 1/04 to H04N 1/207 (not used)
H04N 2201/0404	. . . . .	Scanning transparent media, e.g. photographic film

NOTE

Subgroups [H04N 2201/0404](#) to [H04N 2201/0468](#) are for use with subgroups [H04N 1/04](#) to [H04N 1/207](#)

H04N 2201/0406	. . . . .	Scanning slides
H04N 2201/0408	. . . . .	Scanning film strips or rolls
H04N 2201/041	. . . . .	Scanning microfilms or microfiches
H04N 2201/0412	. . . . .	Scanning X-ray films

- H04N 2201/0414 . . . Scanning an image in a series of overlapping zones
- H04N 2201/0416 . . . Performing a pre-scan
- H04N 2201/0418 . . . capable of scanning transmissive and reflective originals at a single scanning station
- H04N 2201/042 . . . capable of using different scanning methods at a single scanning station
- H04N 2201/0422 . . . Media holders, covers, supports, backgrounds; Arrangements to facilitate placing of the medium ([H04N 2201/0406](#) to [H04N 2201/0412](#), [H04N 2201/0434](#) take precedence)
- H04N 2201/0424 . . . Scanning non-straight lines
- H04N 2201/0426 . . . Scanning an image in a series of contiguous zones
- H04N 2201/0428 . . . Stabilising the scanning parts; Preventing vibrations
- H04N 2201/043 . . . Viewing the scanned area
- H04N 2201/0432 . . . Adjusting the orientation of the scanning elements relative to the scanned sheet, e.g. changing from longitudinal to lateral scanning
- H04N 2201/0434 . . . specially adapted for scanning pages of a book
- H04N 2201/0436 . . . Scanning a picture-bearing surface lying face up on a support ([H04N 2201/0434](#) takes precedence; using cylindrical picture bearing surfaces [H04N 1/06](#); with manual scanning [H04N 1/107](#))
- H04N 2201/0438 . . . Scanning displays; Scanning large surfaces, e.g. projection screens, writing boards
- H04N 2201/044 . . . Moving a scanning element into cooperation with a calibration element, e.g. a grey-wedge mounted on the document support, or vice versa
- H04N 2201/0442 . . . Details of scanning carriage or moving picture-bearing surface support, e.g. bearing contact with guide rails
- H04N 2201/0444 . . . for securing moveable scanning components, e.g. for transportation
- H04N 2201/0446 . . . Constructional details not otherwise provided for, e.g. mounting of scanning components ([H04N 2201/0448](#) takes precedence)
- H04N 2201/0448 . . . for positioning scanning elements not otherwise provided for; Aligning, e.g. using an alignment calibration pattern ([arrangements for positioning elements within a scanning head H04N 2201/02406](#))
- H04N 2201/045 . . . Mounting the scanning elements in a collapsible or foldable structure, e.g. for ease of transportation
- H04N 2201/0452 . . . Indicating the scanned area, e.g. by projecting light marks onto the medium
- H04N 2201/0454 . . . for increasing the scanning speed
- H04N 2201/0456 . . . for maintaining a predetermined distance between the scanning elements and the picture-bearing surface
- H04N 2201/0458 . . . Additional arrangements for improving or optimising scanning resolution or quality
- H04N 2201/046 . . . Actively compensating for disturbances, e.g. vibrations
- H04N 2201/0462 . . . for reducing inactive scanning periods, e.g. increasing speed of carriage during return movement
- H04N 2201/0464 . . . Self-propelled scanners, e.g. robotic scanners, means for propulsion integrated in the scanner carriage

H04N 2201/0466	. . .	Selectively scanning in one or the other of two opposite directions, e.g. in the forward or the reverse direction
H04N 2201/0468	. . . .	Scanning in both of the two directions, e.g. during the forward and return movements
H04N 2201/047	. .	Detection, control or error compensation of scanning velocity or position (not used)
H04N 2201/04701	. . .	Detection of scanning velocity or position (not used)
H04N 2201/04703	. . . .	using the scanning elements as detectors, e.g. by performing a prescan
H04N 2201/04705	. . . . .	using inactive scanning elements, e.g. elements outside the scanning area
H04N 2201/04706	. . . . .	which undergo the same scanning as the active elements in at least one direction
H04N 2201/04708	. . . . .	which remain outside the scanned image area
H04N 2201/0471	. . . .	using dedicated detectors
H04N 2201/04712	. . . . .	using unbroken arrays of detectors, i.e. detectors mounted on the same substrate
H04N 2201/04713	. . . . .	Details of the detector arrangement, e.g. non-standard position, optical details (H04N 2201/04712 takes precedence)
H04N 2201/04715	. . . . .	by detecting marks or the like, e.g. slits
H04N 2201/04717	. . . . .	on the scanned sheet, e.g. a reference sheet
H04N 2201/04718	. . . . .	outside the image area
H04N 2201/0472	. . . . .	on or adjacent the sheet support
H04N 2201/04722	. . . . .	on a photoconductive drum or belt
H04N 2201/04724	. . . . .	on a separate encoder wheel
H04N 2201/04725	. . . . .	connected to the sub-scanning drive means
H04N 2201/04727	. . . . .	on a linear encoder
H04N 2201/04729	. . . . .	in the main-scan direction
H04N 2201/04731	. . . . .	in the sub-scan direction
H04N 2201/04732	. . . . .	Detecting at infrequent intervals, e.g. once or twice per line for main-scan control
H04N 2201/04734	. . . . .	Detecting at frequent intervals, e.g. once per line for sub-scan control
H04N 2201/04736	. . . . .	with varying intervals between consecutive detections
H04N 2201/04737	. . . . .	by detecting the scanned medium directly, e.g. a leading edge
H04N 2201/04739	. . . . .	by detecting the scanning head or scanning carriage
H04N 2201/04741	. . . . .	by detecting the sheet support or the photoconductive surface directly
H04N 2201/04743	. . . . .	by detecting the image directly (detecting reference images H04N 2201/04717)
H04N 2201/04744	. . . . .	by detecting the scanned beam or a reference beam
H04N 2201/04746	. . . . .	after modulation by a grating, mask or the like
H04N 2201/04748	. . . . .	by detecting synchronisation signals or driving signals, e.g. page sync
H04N 2201/04749	. . . . .	Detecting position relative to a gradient, e.g. using triangular-shaped masks, marks or gratings

H04N 2201/04751	. . . .	Detecting position relative to a step, e.g. using L-shaped masks, marks or gratings
H04N 2201/04753	. . .	Control or error compensation of scanning position or velocity (not used)
H04N 2201/04755	. . . .	by controlling the position or movement of a scanning element or carriage, e.g. of a polygonal mirror, of a drive motor
H04N 2201/04756	. . . .	by controlling the position or movement of the sheet, the sheet support or the photoconductive surface
H04N 2201/04758	. . . .	by controlling the position of the scanned image area (H04N 2201/04755 , H04N 2201/04756 take precedence)
H04N 2201/0476	. . . . .	using an optical, electro-optical or acousto-optical element
H04N 2201/04762	. . . . .	using a reflecting element (H04N 2201/04765 takes precedence)
H04N 2201/04763	. . . . .	using a refracting element
H04N 2201/04765	. . . . .	using a solid-state deflector, e.g. an acousto-optic deflector
H04N 2201/04767	. . . . .	by controlling the timing of the signals, e.g. by controlling the frequency or phase of the pixel clock
H04N 2201/04768	. . . . .	Controlling the frequency of the signals
H04N 2201/0477	. . . . .	using a clock signal composed from a number of clock signals of different frequencies
H04N 2201/04772	. . . . .	using a phase-locked loop
H04N 2201/04774	. . . . .	using a reference clock or oscillator (H04N 2201/04772 takes precedence)
H04N 2201/04775	. . . . .	using a counter (H04N 2201/04772 takes precedence)
H04N 2201/04777	. . . . .	using a voltage controlled oscillator (H04N 2201/04772 takes precedence)
H04N 2201/04779	. . . . .	using a clock signal composed from a number of clock signals of different phase
H04N 2201/04781	. . . . .	Controlling the phase of the signals
H04N 2201/04782	. . . . .	using a clock signal composed from a number of clock signals of different frequencies
H04N 2201/04784	. . . . .	using one or more clock signals selected from a number of clock signals of different phases
H04N 2201/04786	. . . . .	Controlling a start time, e.g. for output of a line of data (H04N 2201/04784 takes precedence)
H04N 2201/04787	. . . . .	by changing or controlling the addresses or values of pixels, e.g. in an array, in a memory, by interpolation
H04N 2201/04789	. . . . .	in the main-scan direction
H04N 2201/04791	. . . . .	in the sub-scan direction
H04N 2201/04793	. . . . .	using stored control or compensation data, e.g. previously measured data
H04N 2201/04794	. . . . .	Varying the control or compensation during the scan, e.g. using continuous feedback or from line to line
H04N 2201/04796	. . . . .	Varying the sub-scan control during the main-scan, e.g. for correcting skew, tilt or bow of a scanning beam

H04N 2201/04798 Varying the main-scan control during the main-scan, e.g. facet tracking

H04N 2201/21 . Intermediate information storage ([not used](#))

H04N 2201/212 . . Selecting different recording or reproducing modes, e.g. high or low resolution, field or frame

NOTE

Subgroups [H04N 2201/212](#) to [H04N 2201/218](#) are for use with subgroups [H04N 1/21](#) to [H04N 1/2195](#)

H04N 2201/214 . . Checking or indicating the storage space

H04N 2201/216 . . Arrangements for recording on different types of storage medium, e.g. IC card or magnetic tape; Recording on a plurality of storage media

H04N 2201/218 . . Deletion of stored data; Preventing such deletion

H04N 2201/32 . Circuits or arrangements for control or supervision between transmitter and receiver or between image input and image output device ([not used](#))

H04N 2201/3201 . . Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title

H04N 2201/3202 . . . of communication or activity log or report

NOTE

Subgroups [H04N 2201/3202](#) to [H04N 2201/3284](#) are for use with subgroups [H04N 1/32101](#) to [H04N 1/32352](#)

H04N 2201/3204 . . . of data relating to a user, sender, addressee, machine or electronic recording medium ([H04N 2201/3256](#) and subgroups take precedence)

H04N 2201/3205 of identification information, e.g. name or ID code ([H04N 2201/3209](#) takes precedence)

H04N 2201/3207 of an address

H04N 2201/3208 of an e-mail or network address

H04N 2201/3209 of a telephone number

H04N 2201/3211 of a company logo or the like

H04N 2201/3212 . . . of data relating to a job, e.g. communication, capture or filing of an image

H04N 2201/3214 of a date

H04N 2201/3215 of a time or duration

H04N 2201/3216 of a job size, e.g. a number of images, pages or copies, size of file, length of message

H04N 2201/3218 of a confirmation, acknowledgement or receipt

H04N 2201/3219 of a job status, e.g. successful execution

H04N 2201/3221 of a job number or identification, e.g. communication number

H04N 2201/3222 of processing required or performed, e.g. forwarding, urgent or confidential handling

H04N 2201/3223 of type information, e.g. reception or copy job

H04N 2201/3225 . . . of data relating to an image, a page or a document

H04N 2201/3226 of identification information or the like, e.g. ID code, index, title, part of an image, reduced-size image

H04N 2201/3228	. . . . .	further additional information (metadata) being comprised in the identification information
H04N 2201/3229	. . . . .	further additional information (metadata) being comprised in the file name (including path, e.g. directory or folder names at one or more higher hierarchical levels)
H04N 2201/323	. . . . .	for tracing or tracking, e.g. forensic tracing of unauthorized copies
H04N 2201/3232	. . . . .	of a page, copy or picture number
H04N 2201/3233	. . . . .	of authentication information, e.g. digital signature, watermark
H04N 2201/3235	. . . . .	Checking or certification of the authentication information, e.g. by comparison with data stored independently
H04N 2201/3236	. . . . .	Details of authentication information generation
H04N 2201/3238	. . . . .	using a coded or compressed version of the image data itself
H04N 2201/3239	. . . . .	using a plurality of different authentication information
H04N 2201/324	. . . . .	Selecting a particular authentication information from amongst a plurality of different authentication information
H04N 2201/3242	. . . . .	of processing required or performed, e.g. for reproduction or before recording (H04N 2201/3256 and subgroups take precedence)
H04N 2201/3243	. . . . .	of type information, e.g. handwritten or text document
H04N 2201/3245	. . . . .	of image modifying data, e.g. handwritten addenda, highlights or augmented reality information
H04N 2201/3246	. . . . .	of data relating to permitted access or usage, e.g. level of access or usage parameters for digital rights management [DRM] related to still images
H04N 2201/3247	. . . . .	Data linking a set of images to one another, e.g. sequence, burst or continuous capture mode
H04N 2201/3249	. . . . .	data relating to a linked page or object, e.g. hyperlink
H04N 2201/325	. . . . .	Modified version of the image, e.g. part of the image, image reduced in size or resolution, thumbnail or screennail
H04N 2201/3252	. . . . .	Image capture parameters, e.g. resolution, illumination conditions, orientation of the image capture device (H04N 2201/3256 and subgroups take precedence)
H04N 2201/3253	. . . . .	Position information, e.g. geographical position at time of capture, GPS data
H04N 2201/3254	. . . . .	Orientation, e.g. landscape or portrait; Location or order of the image data, e.g. in memory
H04N 2201/3256	. . . . .	colour related metadata, e.g. colour, ICC profiles (for use made of colour related metadata see the appropriate place, e.g. H04N 1/60, H04N 1/60 and subgroups)
H04N 2201/3257	. . . . .	relating to the original, the input device or the input process, e.g. scanner profile
H04N 2201/3259	. . . . .	relating to the image, page or document, e.g. intended colours
H04N 2201/326	. . . . .	relating to the rendering or output medium, device or process, e.g. monitor, paper or printer profile
H04N 2201/3261	. . . . .	of multimedia information, e.g. a sound signal
H04N 2201/3263	. . . . .	of a graphical motif or symbol, e.g. Christmas symbol, logo (H04N 2201/3211 takes precedence)

- H04N 2201/3264 of sound signals
- H04N 2201/3266 of text or character information, e.g. text accompanying an image
(H04N 2201/3226 takes precedence)
- H04N 2201/3267 of motion picture signals, e.g. video clip
- H04N 2201/3269 of machine readable codes or marks, e.g. bar codes or glyphs
- H04N 2201/327 which are undetectable to the naked eye, e.g. embedded codes
- H04N 2201/3271 Printing or stamping
- H04N 2201/3273 Display
- H04N 2201/3274 Storage or retrieval of prestored additional information
- H04N 2201/3276 of a customised additional information profile, e.g. a profile specific to a user ID
- H04N 2201/3277 The additional information being stored in the same storage device as the image data
- H04N 2201/3278 Transmission
- H04N 2201/328 Processing of the additional information
- H04N 2201/3281 Encryption; Ciphering
- H04N 2201/3283 Compression
- H04N 2201/3284 for error correction
- H04N 2201/3285 . . . using picture signal storage, e.g. at transmitter (not used)
- H04N 2201/3287 Storage of at least one complete document page or image frame

NOTE

Subgroups [H04N 2201/3287](#) to [H04N 2201/3298](#) are for use with subgroups [H04N 1/32358](#) to [H04N 1/32491](#)

- H04N 2201/3288 Storage of two or more complete document pages or image frames
- H04N 2201/329 Storage of less than a complete document page or image frame
- H04N 2201/3291 of less than a complete line of data
- H04N 2201/3292 of one or two complete lines
- H04N 2201/3294 of several complete lines, e.g. a band of data
- H04N 2201/3295 Deletion of stored data; Preventing such deletion
- H04N 2201/3297 Simultaneous use of a single memory for different image storage purposes
- H04N 2201/3298 Checking or indicating the storage space
- H04N 2201/333 . . . Mode signalling or mode changing; Handshaking therefor (not used)
- H04N 2201/33307 of a particular mode

NOTE

Subgroups [H04N 2201/33307](#) to [H04N 2201/33392](#) are for use with subgroups [H04N 1/333](#) to [H04N 1/33392](#)

- H04N 2201/33314 of reading or reproducing mode
- H04N 2201/33321 Image or page size, e.g. A3, A4
- H04N 2201/33328 Resolution

- H04N 2201/33335 Presentation, e.g. orientation, simplex, duplex
- H04N 2201/33342 of transmission mode
- H04N 2201/3335 Speed or rate
- H04N 2201/33357 Compression mode
- H04N 2201/33364 Type of modulation; Type of channel, e.g. digital or analog; Type of communication, e.g. half-duplex or full-duplex
- H04N 2201/33371 using test signals, e.g. checking error occurrences
- H04N 2201/33378 Type or format of data, e.g. colour or B/W, halftone or binary, computer image file or facsimile data
- H04N 2201/33385 Line- or page- scan or transmission time, e.g. minimum line-scan time
- H04N 2201/33392 Non-standard capability, e.g. relay, mail-box

H04N 2209/00 **Details of colour television systems (not used)**

- H04N 2209/04 . . . Picture signal generators (not used)
- H04N 2209/041 . . . using solid-state devices (not used)
- H04N 2209/042 having a single pick-up sensor
- H04N 2209/043 using an alternating colour separation filter, e.g. colour wheel or colour LCD
- H04N 2209/044 using sequential colour illumination
- H04N 2209/045 using mosaic colour filter
- H04N 2209/046 Colour interpolation to calculate the missing colour values
- H04N 2209/047 using multispectral pick-up elements
- H04N 2209/048 having several pick-up sensors
- H04N 2209/049 having three pick-up sensors

H04N 2213/00 **Details of stereoscopic systems (not used, see subgroups)**

- H04N 2213/001 . . . Constructional or mechanical details
- H04N 2213/002 . . . Eyestrain reduction by processing stereoscopic signals or controlling stereoscopic devices
- H04N 2213/003 . . . Aspects relating to the "2D+depth" image format
- H04N 2213/005 . . . Aspects relating to the "3D+depth" image format
- H04N 2213/006 . . . Pseudo-stereoscopic systems, i.e. systems wherein a stereoscopic effect is obtained without sending different images to the viewer's eyes
- H04N 2213/007 . . . Aspects relating to detection of stereoscopic image format, e.g. for adaptation to the display format
- H04N 2213/008 . . . Aspects relating to glasses for viewing stereoscopic images