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Learning path for patent examiners

Game rules:
Advanced level

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Introduction

This publication, "Game rules, Advanced level", is part of the "Learning path for patent examiners" series edited and published by the European Patent Academy. The series is intended for patent examiners at national patent offices who are taking part in training organised by the European Patent Office (EPO). It is also freely available to the public for independent learning.

Topics covered include novelty, inventive step, clarity, unity of invention, sufficiency of disclosure, amendments and search. Also addressed are patenting issues specific to certain technical fields:

- patentability exceptions and exclusions in biotechnology
- assessment of novelty, inventive step, clarity, sufficiency of disclosure and unity of invention for chemical inventions
- the patentability of computer-implemented inventions, business methods, game rules, mathematics and its applications, presentations of information, graphical user interfaces and programs for computers
- claim formulation for computer-implemented inventions

Each publication focuses on one topic at entry, intermediate or advanced level. The explanations and examples are based on the European Patent Convention, the Guidelines for Examination in the EPO and selected decisions of the EPO's boards of appeal. References are made to the Patent Cooperation Treaty and its Regulations whenever appropriate.

The series will be revised annually to ensure it remains up to date.

Disclaimer

All references to natural persons are to be understood as applying to all genders.

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1. Learning objectives

Participants to this course will learn:

- To develop the knowledge required for the examination of games applied to Video games.
- Assessing the POI or GUI arrangement in games will also be explained

2. Video games and gambling machines

Nowadays, many games, especially online gambling and video games, simply require a computer or computer network, a screen and a game controller or other input means.

These devices and technical infrastructures are as essential as counters and dice are in board games or money and payment services in gambling. They are highly interactive, often react in real-time and may simultaneously interact with numerous players ranging from a few individuals to many thousands. It is fair to assume that they would always have technical character as per the first hurdle, under which there has to be a technical means, e.g. a computer and a network.

Nonetheless, almost all would involve a technical implementation of otherwise abstract game rules that dictate how players or the casino are meant to conduct a game and proceed in-game, as well as implementations of other non-technical matter (e.g. visual artwork, animations, sound effects and business or administrative methods relating to a gambling site).

To examine inventive step in relation to the second hurdle, therefore, it is crucial to properly differentiate between the design and implementation aspects of a mixed invention when applying the COMVIK approach. Disentangling a complex mix of technical and non-technical features might end up being rather challenging and become a bit of a chicken-and-egg dilemma. For instance:

- Was football conceived of before the ball was invented?" (a ball being a technical artefact)
- Was a flick gesture, e.g. slashing fruits in a game like Fruit Ninja®, imagined before the touchscreen was invented?

The legal fiction of a game designer and a person of technical skill can usually solve this dilemma. In other words:

- Football is not a (technical) solution to the problem of getting the ball into the net.
- The slash gesture in Fruit Ninja® is not a solution to the problem of splitting or deleting a virtual object or to the problem of effortlessly selecting from
  among several moving targets that densely populate a screen.

These are in-game tasks designed deliberately to challenge players, i.e. their skill in kicking and controlling a ball with their foot or their hand-eye co-ordination and quick reaction in response to cluttered on-screen targets.

It is reasonable to assume that the game designers in the above situations have a basic understanding of a ball and a touchscreen.

Legal references:

Art. 56 EPC, GL G-II, 3.5.2; G-VII, 5.4, T 0641/00

3. Presentation of information (POI) and graphical user interfaces (GUI) in video games

Output

These modern genres of gameplay frequently rely on POI as defined in the exclusion under Article 52(2)(d) EPC. Hence, the criteria set out in GL G-II, 3.7 apply, along with G-II, 3.7.1, where user input in conjunction with a GUI is involved.

Along these lines, a presentation of information and its potentially technical effects are analysed in respect of the cognitive content conveyed to the user (the "what"), the way in which content is presented (the "how") and ultimately the purpose these may serve in the claimed context (the "why").

The cognitive content quite often falls short of contributing to the technical character of a claim.

For instance, if any such presentation merely gives information about the state of a game at a non-technical level, e.g. game score, arrangement of playing cards, attributes of a game character or instructions on game boards, it would not be considered to solve a technical problem.

Despite being dealt with and conveyed technically, the information presented is inherent already to the game rules and is relevant only in the explicit context of playing the game. It does not inform the user about an internal state of the game system understood as a technical system, i.e. other than or beyond its role in providing an internal representation of the game state.

A specific manner of presentation may well make a technical contribution, especially if technical constraints and technical features of the manner associated therewith form in combination a part of the claims. Positive examples from case law are the pass guide marks of T 928/03 and the tackling marks of T 1793/07, both of which dealt with the manner of presenting information in a football video game and interactive, real-time control of manoeuvres in a constrained game world. In these cases, specific placement of additional indicators adapted to the limitations of a screen understood as a technical device, e.g. its resolution, its real-estate and central and boundary regions, was found to produce a technical effect in resolving conflicting technical requirements.

Lastly, the overarching principle of a technical effect contributing to a technical solution is the basic prerequisite also for a POI to establish an inventive step.

For a presentation of information, this means it should credibly support the user in performing a technical task by way of a continued and/or guided human-machine interaction process. This point may be revisited for the football game of T 928/03. The user was supported by indicating a teammate who is ready to receive a pass from the player and who, if off-screen, is pointed to by an arrow icon at the border of the screen while the screen centre remains unobstructed and maintains an enlarged perspective, zooming in on the player character, the ball and their surroundings.

This situation amounts to an apparent conflict between displaying a primary point of interest in an enlarged manner while keeping an overview of additional points of interest in a zone which is larger than the display area. On the other hand, providing information on teammates who can easily receive a pass was considered obvious within the non-technical framework of rules and in-game objectives that govern how football is played. In other words, the content of the presentation of information and its purpose, i.e. here supporting the player in passing a virtual ball, was not enough to establish a

technical solution. The manner in which the information was presented, however, did make a technical contribution.

Examples

POI that merely reflect given game rules:

- an instruction on a game board to "go back to square one"
- the appearance of a hint and its timing that narrow down the solution to a quest, e.g. finding a hidden treasure

Legal references:

Art. 52(2)(d) EPC, GL G-II, 3.7 G-II, 3.7.1, G-II, 3.5.2, T 0938/03, T 1793/07

Input

Features specifying how to acquire player input normally refer to a technical means and therefore have a technical character. Where input mechanisms are intertwined with POI, in particular graphical ones, they could indeed be regarded as a GUI.

Whether a GUI passes the second hurdle is assessed according to the criteria set out in G-II, 3.7.1. Among others, a GUI or an input mechanism may support the user in performing a technical task with a continuous and/or guided human-machine interaction process. This support must be credible in respect of the task.

Another common factor are ergonomic constraints relating to the user's anatomy. For instance, displaying input-related information in the vicinity of an input device operated under eyesight control may credibly serve the purpose of preventing operating errors. This would hold true irrespective of whether the input is for playing a game or for performing a genuinely technical task.

Input devices are often generally known and already disclosed in the prior art, so a video game might be distinguished merely on account of a specific association of otherwise known input parameters with some controllable parameters of the game.

For instance, the choice of whether a control lever is to be pulled backward or tilted upward in order to make a virtual aeroplane ascend further first and foremost amounts to a subjective decision that merely accommodates a player's preferences or individual "muscle memory". The resulting assistance goes no further than accommodating a subjective condition and is therefore not achieved with regard to a generic user in an objective or repeatable fashion.

Such associations of an input mechanism may well be understood as a game rule "in a wider sense", provided that a game designer would choose the input and game parameters for the purpose of conceptually defining a video game, e.g. to make it more interesting or challenging. The designer may well have a general understanding of the input that well-known devices may provide, e.g. a touchscreen or a mouse.

An example from the case law relates to inputting a virtual golf strike using a pen or a finger (see T 1385/12). The co-ordinates of the starting point of an otherwise known slide gesture are determined and are mapped to various parameters that determine the ball's in-game trajectory.

In this case, mapping the positive and negative y-values relative to an on-screen reference onto a value representing the bias of a curveball to the left or right was found to define a game rule "in the

wider sense". The player would have had to know about this relationship in order to make an informed input of the intended spin.

Legal references:
Art. 52(2)(d) EPC, G-II, 3.7.1, G-II 3.5.2, T 1385/12

4. Video games – other exclusions

The exclusion of game rules is central to non-technical matter in video games. We have just discussed the exclusion of POI and how it relates to the input mechanism of a video game, but there may also be significant overlap with other exclusions.

Video games typically involve **aesthetic creations (Article 52(2)(b) EPC)** in the form of visual artwork, music and sound effects, narrated storylines and dialogue, as well as the narratives and dialogue as such. The corresponding creative or artistic contributions in game productions are thus provided by graphical artists, composers, voice actors and other performers, sound or stage designers, writers and editors, etc.

Many games require players to perform **mental acts (see also Article 52(2)(c) EPC)**, such as making informed decisions, choosing a game move or just guessing, as well as discovering, exploring and evaluating options in-game. Effects that support the player in performing the mental tasks that make up the concept of a game usually cannot be understood as technical effects, e.g. providing hints or detecting or correcting violations of game rules.

Video games are software. Hence the provisions of GL G-II, 3.6 apply in respect of the **program exclusion** in **Article 52(2)(c) EPC** along with the requirement of a further technical effect. Aside from programs as such, the condition that a "further" technical effect must be present comes up for video game and gambling systems in a transferred sense, namely that any technical effect must go beyond what is already inherent to the game rules, even if the rules are applied by a computer.

Mathematical methods are excluded from patentability if claimed as such **(Article 52(2)(a) and (3) EPC)**. Video games almost always make use of mathematical methods. If a computer-implemented mathematical method first and foremost serves to achieve a non-technical purpose in the context of the game, there is no solution to a technical problem, so no inventive step. Examples are mathematical methods for accurately and reliably scoring a large population of players, unbiased ranking of players over time, i.e. despite a lack of directed encounters or consistent player performance, or matching them to form balanced teams and competitions.

Many game genres involve pseudo-realism in **simulations** of a real-world setting or a real-world game, such as simulations in car racing games. Mathematical methods are crucial to the underlying models, describing a virtual world mirroring a real world, or rather define mathematically how they correspond. The state of a game world thus evolves in accordance with numerical data and equations that model physical principles or pseudo-physical behaviour, especially in video games.

Systematically calculating updates to such game states amounts to a computer-implemented simulation (G 1/19) based on these models. For the purpose of assessing inventive step in this context, the models are to be understood as defining a given constraint for a corresponding implementation on a computer (G-VII, 5.4). In contrast to effects that reside within the virtual game

world or are otherwise already inherent to the model, a specific implementation of a simulation, if adapted to the internal functioning of a computer system, produces a technical effect.

For instance, merely predicting the virtual trajectory of a billiard ball shot by the player, even if highly accurate, fails to solve a technical problem beyond its implementation. By contrast, adjusting the step sizes used in the distributed simulation of bullets fired in a multi-player online game based on current network latencies may well produce a technical effect. It goes without saying that conceiving of a fantasy world is not a technical task, even if mathematical models are involved.

Artificial intelligence has long been a major part of computer games – think of chess computers or the automatic control of non-player characters. The most recent advances in large-scale machine learning have also gained significant interest in the field of video games. The immense amount of high-quality data available in a cloud-gaming platform – which is often already annotated with metadata – lends itself favourably to providing the training data required for machine learning techniques, such as reinforcement learning, adversarial learning or statistical data-mining. Since there are barely any T- decisions that deal specifically with machine learning in the field of computer games, the relevant section of the Guidelines is subsection G-II, 3.3.1 of the section on mathematical methods.

Business methods are quite common among the various commercial aspects of gaming, such as monetisation concepts, in-game purchases, billing, wagering and pay-out schemes, etc. They clearly fall under the business method exclusion in **Article 52(2)(c) EPC**. By analogy, features relating to an **in-game economy** fail to qualify as a technical means that serves a technical purpose, even if they are computer-implemented. Typical examples are virtual trading, scarcity and value of virtual items, and the balance and stability of these frameworks. Because they define a conceptual framework for doing business in-game or for achieving business effects in-game, a technical contribution is not present, no matter how important or difficult the design of a game of this genre might be.

Legal references:
Art. 52(2)(a), (b), (c), (d) EPC, GL G-II, 3.3, GL G-II, 3.4, GL G-II, 3.5, GL G-II, 3.6, GL G-II 3.7, T 1281/10, T 0042/10, T 1543/06, T 1331/12, T 0414/12

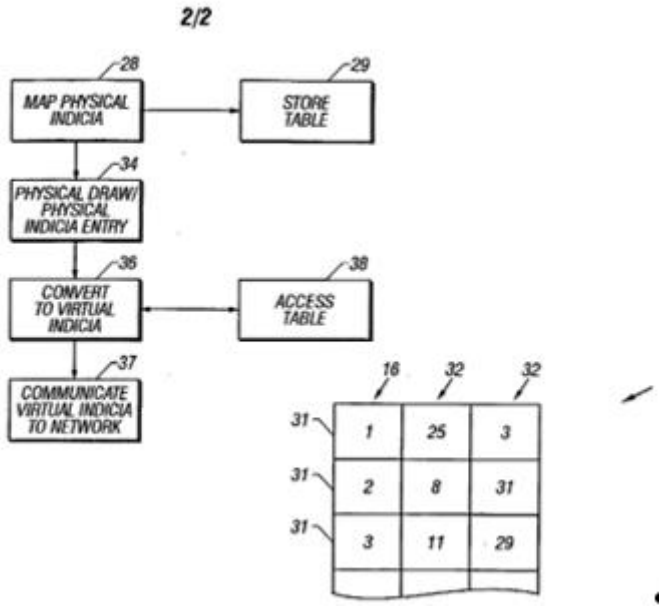
5. Examples of games

Example: game security – remote gambling

This example draws from appeal case T 1644/06, which concerns the security of remote gambling. We will only mention a few specific aspects of the case here.

In a nutshell, players may bet on a number or have obtained a lottery ticket, such as in bingo. The winning number(s) is/are drawn physically at a remote host of the game, where a human operator enters the results manually for further notification, i.e. electronic transmission to the players.

As a result of this set-up and procedure, there is a risk of fraud or collusion on the host's side since the remote players cannot monitor the operator, who might collude with a partner and enter a fake number, e.g. the partner's number, to cheat to their benefit.



The problem of increasing security and reducing exposure to fraud is solved by a computer that "scrambles" the entered number before transmission, in this case in line with a random mapping, in order to obtain a scrambled "virtual number".

The virtual number – not the one initially drawn – is ultimately transmitted to the players. Since the mapping is not accessible to the operator, the risk of fraud and collusion is eliminated. It is important to note that gameplay is agnostic to this scrambling step, i.e. players can proceed according to the game rules as if the winning number were not subject to scrambling, or rather without realising that it is. That is to say, the realm of the game rules remains unaffected.

The decision reads (see 5.4):

"[T]he Board also holds both the underlying problem as well as its claimed solution to be technical in nature. Both must be seen within the specific technical context of a bingo system where a computer communicates draw results to a player input by an operator. Within that context the problem of preventing fraud between player and operator at input and output ends respectively of the computer acquires technical character.

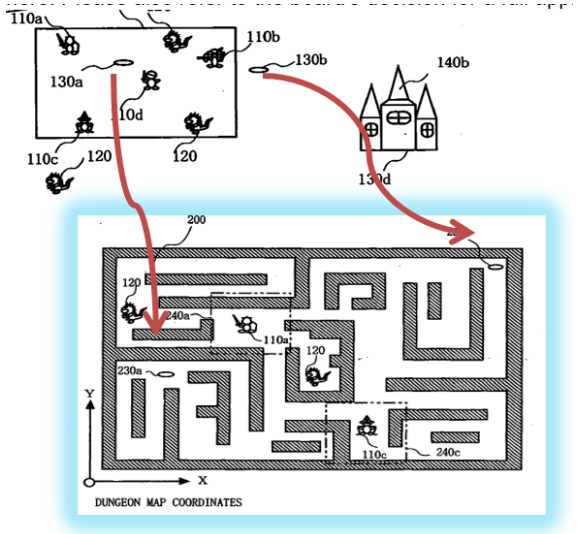
Likewise, the solution, which relates to the manner in which random numbers are generated by manipulating data input into the computer, is undoubtedly technical. Forms of mapping may be conceivable which could be carried out in a traditional (non-computer based) bingo scheme, and which might therefore arguably lie within the domain of game rules. However, the Board is convinced that the substantially random mapping carried out by a computer for the purposes of a bingo-type game as claimed cannot be so seen as a game rule, but is rather a solidly technical measure contributing to the solution of the above technical problem."

Legal references:
T 1644/06

Example: game set-up – connected game spaces

This example draws from appeal case **T 2321/12**, which concerns the set-up of the virtual world of a video game, namely virtual interconnections between the game spaces in the game world. We will

only mention a few specific aspects of the case here. Please also refer to the board's decision for a full appreciation of the case.



In a nutshell, a video game is played on networked game devices, involving small, mobile screens associated with the individual players and a common, big screen that provides an overview of the game world. These kinds of systems were known. The main difference was how game characters could in-game reach different "game spaces", e.g. dungeons, floors, buildings, aside from just walking there. The game world offered "portals" which, when a game character entered them, would directly transition ("beam") the player from one game space to another game space – which could be potentially quite far away – owing to their interconnection via these portals".

Alleged technical effects as to efficient or simplified navigation in-game were rejected. The provision of "portals", which amounts to a specific set-up of the game world and of game actions by the set-up, were considered to be game rules. Even if these game rules allowed players to reach a game space more quickly, involving potentially fewer or less complex human-machine interactions, these benefits were deemed inherent to the set-up of the game world, not the set-up of the (known) game system. Providing in-game portals at best circumvents allegedly technical problems in the field of user interfaces or computational requirements. The presence of a technical solution was not acknowledged.

The board's reasoning regarding inventive step is summarised as follows (see Reasons 6.1-6.3).

It identified the rules of the video game:

- "Game spaces, as shown in the game maps, interconnect at connecting points.
- In order for a player to move their character to a different game space, their character must arrive at a connecting point."

It analysed the claim in respect of these non-technical features:

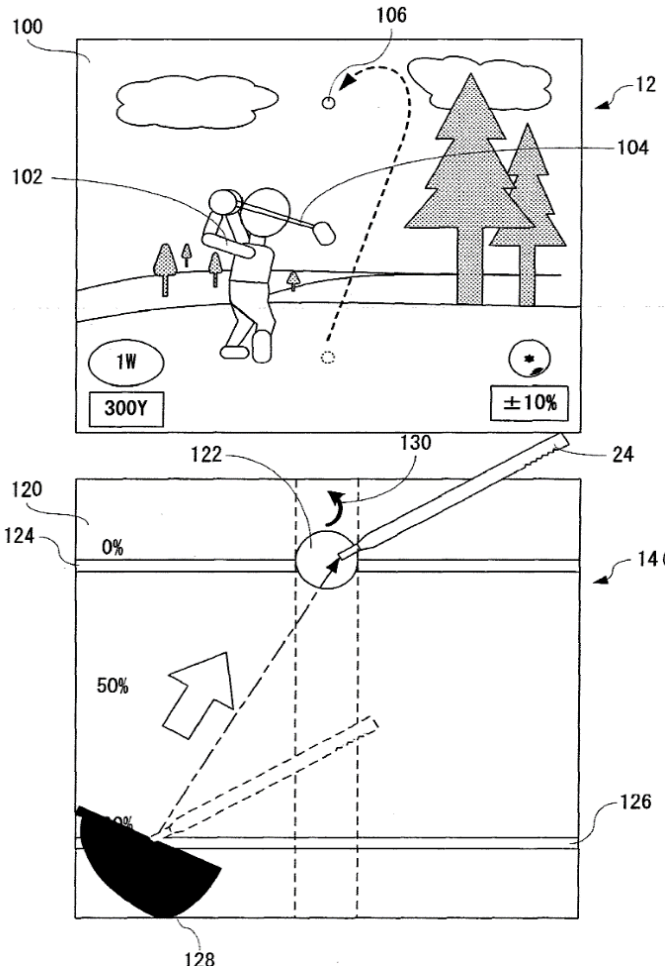
"[H]owever efficient it may be to move characters between maps once connecting points are defined, this does not exclude that the final claim feature expresses underlying game rules. The player will be fully aware that they are playing a game whose structure requires them to arrive at connecting points in order for their character to move between different mapped game spaces. Thus, in the Board's view, the feature can but relate to game rules."

It assessed allegedly technical effects and rejected any that were inherent to game rules or were, due to circumventions, non-solutions to a technical problem:

"Any efficiency gain is inherent in the game rules themselves defining a mapped connecting point, whose coordinates on different maps have a simple correspondence, when compared to some other game space/map changing rule which might entail more complex computations. Thus, rather than the above game rules solving the technical problem of increasing efficiency, at best they merely circumvent this technical problem."

Lastly, the board applied the problem-solution approach to the (remaining) objective technical problem, which in this case was merely the implementation problem:

"Applying again the approach outlined above, the objective technical problem associated with the differing features […] can be formulated as: how to modify the system of D1 to implement all the above game rules."



Legal references:
T 2321/12

Example: game input – golf strike

This example draws from appeal case T 1385/12, which concerns a golf video game and a gesture for inputting a golf strike on a touchscreen. We will only mention a few specific aspects of the case here. Please also refer to the board's decision for a full appreciation of the case.

In a nutshell, a player is meant to swipe a pen or a finger from a start position at the bottom of a touchscreen and hit a ball shown at the top of the screen. The start position serves to enter several parameters of the strike. Similar mouse gestures for performing a virtual "back-swing" were known, and using a pen or a finger to control a cursor instead of a mouse was deemed obvious.

The primary differences were which (input) co-ordinates of the start-position (x,y) were mapped to which (output) parameters of a golf strike (e.g. strength/travel, speed, spin), and that co-ordinates were relative to a reference on the display. The applicant's arguments were twofold:

a. A more powerful user interface was put forward, since two parameters could be entered via the claimed gesture.
b. Since the same gestures could be applied across games of different genres, according to the applicant, programming resources could be saved, irrespective of the game rules involved.

The board's main reasons are summarised as follows:

Regarding (a) (see Reasons 3.3.1, 3.3.2):

" […] interacting with the apparatus generates a further parameter used in game play from the y coordinate of the start of a slide action.

The Board holds it unlikely that such an idea would be conceived of by an engineer tasked with designing a new interface, which could then be used in developing new games.

[…]

[T]he choice [of this interaction, coordinate mapping] is not driven by the engineer who is seeking to develop new touch-screen technology [for] gaming applications. Rather, it originates with the game developer [i.e. designer] who wishes to make a more interesting game, and who does so by modifying the conditions and criteria that govern game play and which form part of the set of game rules in the wider sense. In a computer game, the conditions and criteria will include game input and how this is used to generate game parameters. […] [G]iven that these coordinates [of the input] are necessarily already available in a touch screen interface […], [this choice] is a pure games choice, made by the games developer [i.e. designer] specializing in developing computer games. That games developer will have some understanding of the hard- and software of a computer game console to the extent that they affect game play, and can thus make informed choices as to which of those available coordinates to use, and how these will influence game-play."

Regarding point (b) (see Reasons 3.3.3, 3.3.5):

"Although the claim does not relate to any one particular game, selecting the y coordinate of the start of a slide action determines how the player influences game-play in whichever game is being played. Furthermore, the player will be fully aware of how their slide action determines game play in that particular game.

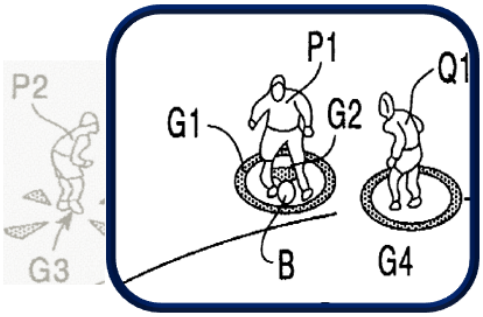
[…]

However ingenious or powerful it may be for the game developer or player to have common elements in different games as this scheme offers, advantages resulting from this idea, are inherent to the non-technical scheme itself."

Legal references:
T 1385/12

Example: game output – pass guide marks

This example draws from appeal case T 928/03, which concerns a football video game. We will only mention a few specific aspects of the case here. Please also refer to the board's decision for a full appreciation of the case.



In a nutshell, a player controls game characters that may move on the football field and shoot the ball to play a pass or score a goal. A virtual camera tracks the character in close-up perspective. Additional on-screen indicators are superimposed onto the views taken by a virtual camera, the indicators pointing to a free teammate of the player's character and thus representing pass guide marks.

Numerous features in the claim were deemed to reflect or be a consequence of the rules of football, e.g. the player actions, the role of opponents and teammates, and the interest in spotting a free teammate.

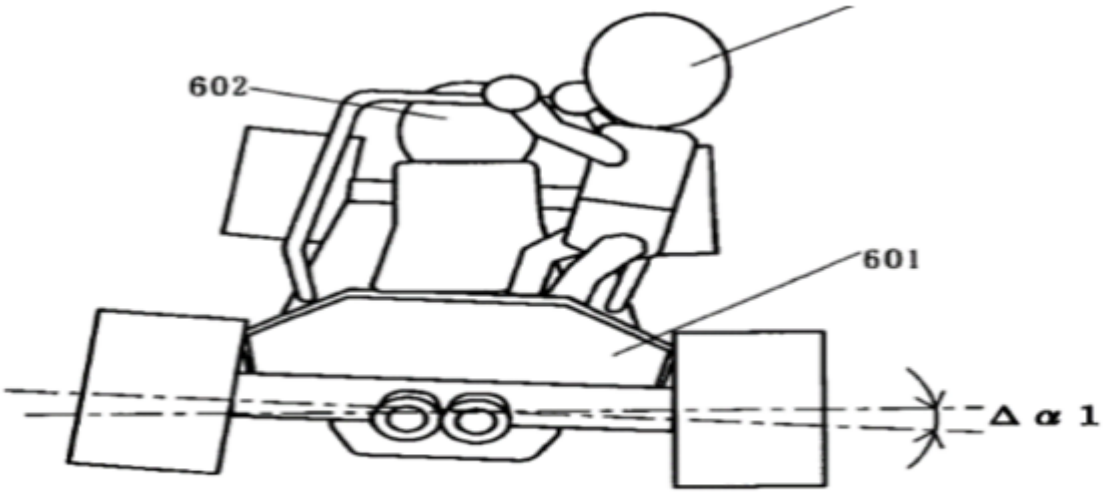
These implications were considered insufficient to suggest the display of the claimed pass guide marks, i.e. an on-screen indicator at the screen boundaries when the teammate is outside the field of view of the virtual camera, pointing in the direction a pass may be played.

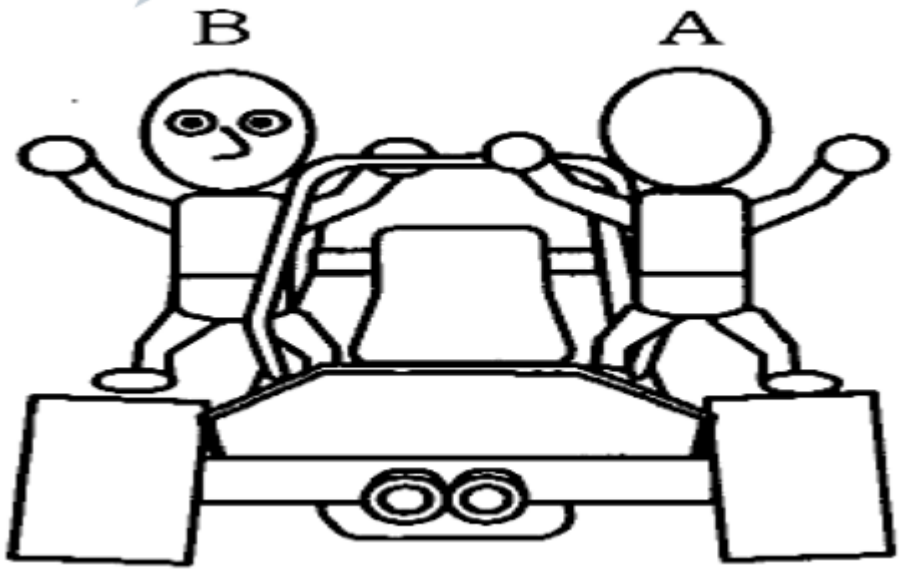
The board found (Reasons 5.3) that conflicting technical requirements were present, namely displaying an enlarged portion in close-up versus keeping an overview of a zone of interest which is larger than the display area. This conflict was resolved by a simple pass guide mark at the boundaries of the display area which occupied a minimal peripheral display area and still enabled the user to maintain orientation when viewing an enlarged portion of an image.

Legal references:
T 0928/03

Example: game loop – racing simulation

This example draws from appeal case T 188/11, which concerns a cart racing video game. We will only mention a few specific aspects of the case here. Please also refer to the board's decision for a full appreciation of the case.





In a nutshell, two players controlling a driver and a co-pilot can pilot the cart by steering or shifting their body weight, respectively. In addition, players can command their characters to swap roles on the cart.

The applicant argued that swapping roles increased the video game's excitement and appeal, especially since the player characters have differing body weights, which introduced an additional tactical element to the gameplay. It argued that these body weights represented a meaningful physical parameter and provided a more realistic simulation of cart racing.

The board rejected these arguments and found that swapping roles was an abstract game idea and that excitement and tactical appeal were not technical effects. Body weight was evidently a virtual weight, not a physical one, and took effect primarily by altering the (virtual) response in the virtual world to interactions by the players.

The board reasoned that (see Reasons 3.4.3-3.4.4) the change in dynamics of the driver/co-pilot/cart body at the time the characters swapped roles was a direct consequence of swapping characters having differing weights. It was in fact also inherent in the very idea of cart movement simulation, and therefore followed directly from the rules themselves rather than from their implementation.

In turn, it was concluded that the implementation features followed in an obvious manner when the skilled person, a software engineer specialising in gaming software, is asked to implement the new game scheme to make it possible to choose different characters with different characteristics in the different roles and to swap roles in the game space during game play.

Legal references:
T 0188/11

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