

# Learning path for patent examiners

## Presentations of information (POI) and graphical user interfaces (GUI): Advanced level

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## Introduction

This publication, "Presentations of information (POI) and graphical user interfaces (GUI), 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.

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## 1. Learning objectives

Participants to this course will:

- Learn to distinguish technical and non-technical features in a POI or a GUI in order to correctly apply the practice of the EPO regarding assessment of inventive step.

## 2. Applying the problem-solution approach (PSA) for mixed type inventions to POI and GUI: credibly assisting the user

Once the claimed subject-matter as a whole has been deemed to not be excluded from patentability under [Article 52\(2\) and \(3\) EPC](#), it is examined in respect of the other requirements of patentability, in particular novelty and inventive step.

During the assessment of inventive step, features related to the presentation of information are analysed to determine if, in the context of the invention, they contribute to producing a technical effect serving a technical purpose. A presentation of information that at first sight may appear to reflect a mere design choice could nonetheless prove technical after closer reading of the application documents.

A feature defining a presentation of information produces a technical effect if it **credibly** assists the user in performing a **technical task** by means of a continued and/or guided **human-machine interaction process**.

This kind of technical effect is considered to be credibly achieved if the assistance to the user in performing the technical task is objectively, reliably and causally linked to the feature. This is not the case if the effect depends on user preferences.

### Examples

1. Example of a presentation of information that appears to be a mere design choice at first sight but is nonetheless technical:
  - It may become clear from the description that a particular colour combination for the top of a refugee shelter facilitates detection by a camera on a satellite. Any such feature then cannot be rejected as an aesthetic design choice.
2. Example of a presentation of information that merely accommodates user preferences:
  - For some users it is easier to understand data when it is displayed as numerical values, whereas others might prefer a colour-coded display. The choice of one or other is thus not considered to have a technical effect ([T 1567/05](#)).

### Legal references:

[G-II, 2](#), [G-II, 3.7](#), [G-VII, 5.4](#), [T 336/14](#), [T 1802/13](#)

### 3. Applying the PSA for mixed-type inventions to POI and GUI: technical effect of POI; the "what" and the "how"

POI as per Article 52(2)(d) EPC are understood as the conveying of information to a user. They concern both the **cognitive content** of the information presented and the **manner** in which it is presented.

The information can be considered a presentation of information only if it is directed to a **human being**. Data representations directed to a technical system, such as encoding schemes, QR codes/barcodes, data structures and electronic communication protocols, are not considered to be POI.

#### Legal references:

G-II, 3.7, T 1143/06; T 1741/08; T 1194/97.

### 4. Applying the PSA for mixed-type inventions to POI and GUI: technical effect of the "what"

If the cognitive content of the information presented to the user relates to an internal state prevailing in a technical system that enables the user to properly operate this technical system, it has a technical effect. Examples of internal states are an operating mode, the technical condition or events relating to the internal functioning of a system. These states are **dynamic** and automatically detected. When the state is conveyed to the user, it is typically aimed at a user intervention with the system, for example to repair a technical malfunction.

In contrast, the presentation of **static** or predetermined information generally does not make a technical contribution, even if this information relates to a technical device. The effect of displaying this kind of static information is merely that the user does not have to memorise it. This is considered to be a non-technical task prior to the technical task and does not make a technical contribution.

The dynamic state of a **non-technical** system does not qualify as an internal state prevailing in a technical system. Presenting that information does not contribute to the technical character of the invention since doing so is linked not to a technical task but instead to non-technical decision-making.

#### Examples

1. Static information not making a technical contribution:
  - showing the washing machine operating instructions from the user manual on the display
  - displaying a static warning message such as: "Check if the switch on the back of the TV set is in the left position"
2. Dynamic information making a technical contribution:
  - displaying the current load or temperature of the washing machine, or operating advice based on the current conditions
  - displaying the current gear and the optimal gear of a vehicle gearbox
3. Dynamic information not making a technical contribution:
  - state of a casino game, such as the current betting and pay-out information for the casino game of roulette

- new business opportunities on a business-to-business relationship portal
- state of an abstract simulation model

#### Legal references:

G-II.3.7, T.528/07, T.0115/85

## 5. Applying the PSA for mixed-type inventions to POI and GUI: technical effect of the "how"

The manner of presenting information, i.e. "how" the information is presented, typically defines the form, arrangement or timing of the information presented to the user, such as a particular diagram or layout. The information can be presented in any form, e.g. visual, audio or haptic. However, the technical features relating to the generation and transmission of audio or video signals are not considered a presentation of information.

When a manner of presenting information produces in the user's mind an effect that depends not on psychological or other subjective factors but on physical parameters which are based on human **physiology** and can be precisely defined, that effect may qualify as a technical effect.

If information (e.g. a visual or audio stimulus) is presented to a person for the purpose of producing in that person a physiological reaction (e.g. involuntary eye gaze) which can be measured in the context of assessing a medical condition (e.g. eyesight, hearing impairment or brain damage), that POI may be considered to produce a technical effect.

Features defining a visualisation of information in a particular diagram or layout are normally not considered to make a technical contribution, even if the diagram or layout arguably conveys information in a way which a viewer may intuitively regard as particularly appealing, lucid or logical.

#### Examples

1. Examples of POI features yielding *physiological* effects:
  - displaying a notification on the computer screen near the user's current visual focus of attention
  - displaying a stream of images in which the parameters for delay and change in the content between successive images are computed on the basis of physical properties of human visual perception in order to achieve a smooth transition (considered to make a technical contribution)
  - presenting an audio stimulus to a patient to produce a physiological reaction for assessing hearing impairment
  - providing a 3D localised sound perceived as emanating from the position of the displayed object
2. Examples of POI features yielding only *psychological* effects:
  - showing only urgent notifications to minimise information overload and distraction
  - providing strength levels in a building using colour coding instead of numerical values
3. Non-technical visualisations/layout design:
  - giving an overview of a plurality of images in a limited display area by displaying a single image and sequentially replacing it with other images

- arranging objects within available screen space by eliminating "white space" between window panes
4. Examples that credibly assist the user in performing a technical task by means of a continued and/or guided human-machine interaction process:
- displaying several images side by side in low resolution and making it possible to select and display an image at a higher resolution (allowing the user to perform the technical task of interactively searching for and retrieving stored images more efficiently)

**Legal references:**

G-II, 3.7, T.1237/10, T.1562/11, T.1143/06, T.1741/08, T.1802/13

## **6. Applying the PSA for mixed-type inventions to POI and GUI: technical task**

A feature defining a presentation of information produces a technical effect if the following criteria are met:

1. It assists the user in performing a technical task.
2. The assistance is credibly achieved.
3. It involves a continued and/or guided human-machine interaction process.

Meeting all three of these criteria is sufficient for establishing that a technical effect is present. That said, not meeting all the criteria does not automatically mean that a technical effect is absent.

It is generally easier to determine whether a technical task (as opposed to e.g. facilitating a business method) and a human-machine interaction process (as opposed to presenting predetermined invariable information) are involved than whether the assistance is "credible".

For this, it needs to be established that the improvement is objectively achieved and does not merely accommodate user preferences.

### **Examples**

1. **POI not producing a technical task:**
  - a lucid diagram showing properties of cars to help the buyer choose one to buy
  - an intuitive display of stock market information that allows the trader to make a quicker trading decision
  - colour-coding pricing information to enable a customer to conduct a price-sensitive travel query more efficiently
2. **POI not credibly assisting the user (i.e. merely accommodating user preferences):**
  - displaying stress values for a building in colour coding instead of numerical values
  - helping a blind person operate a mobile phone by conveying audio information related to a currently selectable menu option as a musical scale instead of spoken words
  - displaying a TV program list by program type (as opposed to other sorting criteria)
3. **POI not involving a human-machine interaction process:**
  - showing a blinking message when a washing machine is turned on warning against washing coloured clothing at 90 degrees

- displaying the code required to unlock a medical device

**Legal references:**

G-II.3.7

## **7. Applying the PSA for mixed-type inventions to GUI: user input – technical**

User interfaces, in particular GUIs, involve outputting information (i.e. a presentation of information) and receiving input in response from the user. This user input may be entering text, making a selection or submitting a command.

Features defining a user input are more likely to have a technical character than those solely concerning data output and display. This is because input requires compatibility with a machine's predetermined protocol whereas output may be largely dictated by a user's subjective preferences.

### **Examples**

1. Examples of user interfaces having a technical character:
  - a user interface for a printer, where the number of copies can be set by dragging a "document icon" to a "printing icon" and performing a reciprocating movement according to the number of copies desired
  - a predictive text input mechanism (i.e. auto-filling a text box with suitable suggestions)
  - performance-oriented changes to input detection, such as gesture recognition that is faster, requires less computing power or is more accurate, i.e. less likely to lead to erroneous inputs
  - a particular keyboard definition for a smartphone that enables a size reduction compared with a standard keyboard

**Legal references:**

G-II.3.7.1, T.1629/08

## **8. Applying the PSA for mixed-type inventions to GUI: user input – non-technical**

When the user input is supported by providing information that only helps the user decide what they want to input, this is not deemed to be making a technical contribution. Similarly, rules that only specify which suggestions to present in a predictive text input on the basis of linguistic considerations do not make a technical contribution.

Where subjective user abilities or preferences are the sole determining factor for whether effects like simplifying the user's actions or providing more user-convenient input functions are achieved, these effects may not form the basis of an objective technical problem to be solved. For example, reducing the number of interactions required to perform the same input is not credibly achieved if it materialises only for some usage patterns that occur depending on the user's level of expertise or subjective preferences.

## Examples

1. Examples of user interfaces not having a technical character:
  - a text input mechanism that only differs from the prior art on account of linguistics-based rules specifying how likely it is that the user will later input specific words
  - a user interface for a computer game (such as golf) which differed from the prior art only in that a further game parameter was generated from a sliding gesture on a touchscreen (T. 1385/12)

### Legal references:

G-II. 3.7.1, T.1741/08, T.58/11, T.1398/05, T.1385/12

## 9. POI and GUI – examples

### Examples

1. Examples of GUI with a technical contribution:
  - displaying several images side by side in low resolution, making it possible to select and display an image at higher resolution and allowing an image to be more easily retrieved from a larger set of images
  - displaying the current orientation of a medical ball joint implant more precisely to a surgeon, credibly allowing them to position the implant more precisely

### Legal references:

G-II. 3.7.1, T.643/00

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