

# Inventive Step Argumentation Framework: Defeasible Inference Rules

September 11, 2025

## 1 Core Problem

Very briefly and succinctly the core problem under consideration can be described as - “An invention is considered to involve an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.” (G-VII-1).

## 2 Primary Sources

The primary source used and referenced in this document are the “**Guidelines for Examination in the European Patent Office**” - found at <https://www.epo.org/en/legal/guidelines-epc>.

## 3 Constraints

These aspects are so ubiquitous as to require overcomplicating the framework as they would be a constant presence in most inference rules. Hence, instead they are stated as constraints in either the computational implementation, and/or any prompts given to LLMs.

- The date of any documents used alongside this framework must be from before the priority date of the filed invention - “the date of priority counts as the date of filing for the European application being examined on condition that the priority is valid (Art. 89).” (G-VII-2)

## 4 Variables

- $I$  : Invention under examination

- $D$  : Prior art document
- $C$  : Corpus of common general knowledge candidates
- $P$  : Person or group (individual, research team, production team)
- $F = \{f_1, f_2, \dots, f_n\}$  : Features of the invention
- $N = \{n_1, n_2, \dots, n_n\}$  : Generally refers to the number of problems or solutions present

## 5 Rules

This section describes, explains and justifies the various defeasible inference rules proposed for the framework. These are not exhaustive, but capture most of the main concepts and arguments considered by the EPO guidelines.

### 5.1 Skilled Person

**Section Overview:** The “person skilled in the art”, or “skilled person”, is presumed to be a skilled practitioner in the relevant field of technology who has average knowledge and ability (average skilled person). It refers to a legal construct rather than a real person. Establishing the sub-factors enables a clearer explanation of what composes the skilled person and enables challenges against the concept in a given instance.

$$\begin{aligned}
 r_1 : & \text{SkilledIn}(P, \text{RelevantPriorArt}(D, I)) \wedge \text{Average}(P) \wedge \\
 & \text{Aware}(P, \text{CommonKnowledge}(C)) \wedge \\
 & \text{Access}(P, \text{RelevantPriorArt}(D, I)) \wedge (\text{Individual}(P) \vee \\
 & \text{ResearchTeam}(P) \vee \text{ProductionTeam}(P)) \Rightarrow \\
 & \text{SkilledPerson}(P)
 \end{aligned}$$

**Explanation:** The person who is skilled in the art is presumed a skilled practitioner in the relevant field of the prior art; to possess an average skill level/ knowledge; to have access to the relevant materials in the SOTA; and they need not be an individual person but can also be a research or production team.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_3.html)

$$\begin{aligned}
r_2 : & \text{Contested}(C) \wedge \neg \text{DocumentaryEvidence}(D) \Rightarrow \\
& \neg \text{CommonKnowledge}(C) \\
r_{2i} : & \neg \text{Contested}(C) \Rightarrow \text{CommonKnowledge}(C)
\end{aligned}$$

**Explanation:** These rules captures the idea that what is Common Knowledge can be taken for granted unless it is explicitly challenged, or perhaps if we have a reason to believe it ought to be challenged. If it is challenged then Documentary Evidence must be provided to back it up, as described below

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_3\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_3_1.html)

$$\begin{aligned}
r_3 : & \neg \text{SinglePublication}(D) \vee \text{Textbook}(D) \vee \\
& \text{TechnicalSurvey}(D) \vee (\text{Publication}(D) \wedge \text{NewField}(I)) \Rightarrow \\
& \text{DocumentaryEvidence}(D)
\end{aligned}$$

**Explanation:** This rule is about establishing what counts as Documentary Evidence for “Common General Knowledge”. A single publication can’t usually count as common general knowledge, a textbook is a typical example. In special cases technical journals can be used if they provide a broad review or survey of a topic. If the invention is in a field too new for textbooks then info from a patent specification or scientific publication can be used

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_3\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_3_1.html)

## 5.2 Problem-Solution Approach

**Section Overview:** Because ‘Obviousness’ is a rather subjective term defined as “The term “obvious” means that which does not go beyond the normal progress of technology but merely follows plainly or logically from the prior art, i.e. something which does not involve the exercise of any skill or ability beyond that to be expected of the skilled person.” (G-VII-4) there needs to be an objective and predictable way, or test, to assess this. This is known as the ‘problem-solution’ approach and consists of three main stages: determining the closest prior art; establishing the objective technical problem to be solved; and considering whether in light of these, the claimed invention would be obvious to the skilled person starting from the closest prior art and the objective technical problem.

### 5.2.1 Establishing the Closest Prior Art

**Section Overview:** “The closest prior art discloses, in one single reference, the combination of features which constitutes the most promising starting point for a development leading to the invention.” (G-VII-5.1)

$$\begin{aligned} r_4 : & (\mathbf{SimilarPurpose}(D, I) \vee \mathbf{SimilarEffect}(D, I)) \vee \\ & (\mathbf{SameField}(D, I) \vee \mathbf{SimilarField}(D, I)) \Rightarrow \\ & \mathbf{RelevantPriorArt}(D, I) \end{aligned}$$

**Explanation:** For a document to be considered within the relevant prior art, firstly, it must be directed towards a similar purpose/effect or belong to a similar field, as well as being part of the state of the art.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_1.html)

$$\begin{aligned} r_5 : & \mathbf{RelevantPriorArt}(D, I) \wedge \mathbf{SingleReference}(D) \wedge \\ & \mathbf{MinModifications}(D, I) \wedge \\ & \mathbf{AssessedBy}(D, I, \mathbf{SkilledPerson}(P)) \Rightarrow \\ & \mathbf{ClosestPriorArt}(D, I, P) \end{aligned}$$

**Explanation:** The closest prior art must be a single reference, which forms a part of the relevant prior art and requires minimal modifications to arrive at the claimed invention. This is assessed from the Skilled Person’s point of view prior to the priority date.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_1.html)

### 5.2.2 Combining the Prior Art

**Section Overview** It is sometimes permissible to combine the disclosure of 1+ documents, or parts of documents, with the closest prior art.

$$\begin{aligned}
r_6 : & \text{CombinationAttempt}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P)) \wedge \\
& (\text{SimilarField}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P)) \vee \\
& \text{SameField}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P))) \wedge \\
& \text{CombinationMotive}(\text{SkilledPerson}(P), \text{ClosestPriorArt}(D, I, P), D_1, \dots, D_n) \wedge \\
& \text{BasisToAssociate}(\text{SkilledPerson}(P), \text{ClosestPriorArt}(D, I, P), D_1, \dots, D_n) \Rightarrow \\
& \text{CombinationDocuments}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P))
\end{aligned}$$

**Explanation:** If there is an attempt to combine various prior art documents with the closest prior art then these must be in a similar or the same field to the closest prior art. The skilled person must also have a motive to want to combine these documents, and additionally there must be a reasonable basis for the skilled person to associate these parts with one another.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_6.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_6.html)

$$\begin{aligned}
r_7 : & \text{ClosestPriorArt}(D, I, P) \vee \\
& \text{CombinationDocuments}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P)) \Rightarrow \\
& \text{ClosestPriorArtDocuments}(D_1, \dots, D_n, I, P)
\end{aligned}$$

**Explanation:** This rule captures the idea that our set of closest prior art documents can come from the single closest prior art or the combination with other prior art. This rule makes it easier to refer to this in subsequent rules.

### 5.2.3 Establishing Objective Technical Problem

**Section Overview:** The second stage is to objectively establish the technical problem to be solved by studying the application (or the patent), the closest prior art and the differences (also called "the distinguishing features" of the claimed invention) in terms of features (either structural or functional) between the claimed invention and the closest prior art, identifying the technical effect resulting from the distinguishing features and then formulating the technical problem.

$$\begin{aligned}
r_8 : & \text{Features}(I) - (\text{Features}(I) \cap \\
& \text{Features}(\text{ClosestPriorArtDocuments}(D_1, \dots, D_n, I, P)) \Rightarrow \\
& \text{DistinguishingFeatures}(I, f_1, \dots, f_n)
\end{aligned}$$

**Explanation:** First, we identify the differences between the features in the invention and in the closest prior art. At this stage, we can ignore whether they are technical or non-technical. The reasoning supporting this is found in the COMVIK approach (an approach to mixed-type inventions with both technical and non-technical features).

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)

$$\begin{aligned}
r_9 : & \text{DistinguishingFeatures}(I, f_1, \dots, f_n) = 0 \Rightarrow \\
& \text{NoFeatures}(I) \\
r_{9i} : & \text{NoFeatures}(I) \Rightarrow \neg \text{Novelty}(I)
\end{aligned}$$

**Explanation:** If there are no differences regardless of whether they are technical, then the invention must not be novel since it is the same as a piece of prior art.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)

The following rules are run on a for loop checking this for each individual feature.

For  $F$  in  $\text{DistinguishingFeatures}(I, f_1, \dots, f_n)$ :

$$\begin{aligned}
r_{10} : & (\text{IndependentContribution}(F_i, \text{SkilledPerson}(P)) \vee \\
& \text{CombinationContribution}(F_i, F_j, \text{SkilledPerson}(P))) \wedge \\
& \neg(\text{CircumventTechProblem}(F_i) \vee \text{ExcludedField}(F_i)) \Rightarrow \\
& \text{TechnicalContribution}(f_1, \dots, f_n)
\end{aligned}$$

**Explanation:** For our features from  $r_8$  we must then check to see whether they make a technical contribution to the invention. This can be independent or in contribution with other features. If it is a technical implementation of a non-technical method i.e. game rules, if it just circumvents a technical problem rather than addressing it in a technical way it ought to be excluded as technical. Similarly they should not be part

of the excluded fields from patentability, though there are some notable exceptions dealt with in subsequent rules.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)  
and [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4_1.html)

$$r_{11} : \mathbf{ComputerSimulation}(F_i) \vee \mathbf{NumericalData}(F_i) \vee \\ \mathbf{MathematicalMethod}(F_i) \vee \dots \Rightarrow \mathbf{ExcludedField}(F_i)$$

**Explanation:** Excluded fields are listed in gii-3 and there are many. I have listed the main ones here for which there are notable exceptions subsequent rules will capture.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)  
and [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_3.html)

$$r_{12} : (\mathbf{ComputerSimulation}(F_i) \wedge (\mathbf{TechnicalAdaptation}(F_i) \vee \\ \mathbf{IntendedTechnicalUse}(F_i))) \vee (\mathbf{NumericalData}(F_i) \wedge \\ \mathbf{IntendedTechnicalUse}(F_i) \wedge \mathbf{TechUseSpecified}(F_i)) \Rightarrow \\ \mathbf{TechnicalContribution}(f_1, \dots, f_n)$$

**Explanation:** If the feature involves a computer simulation then there must either be a specific technical implementation or an intended technical use of the data resulting from the simulation. For numerical data, calculated numerical data may have a "potential technical effect", namely the technical effect that will be produced when the data is used according to an intended technical use. Such a potential technical effect may only be considered in the assessment of inventive step if the intended technical use is either explicitly or implicitly specified in the claim.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_3\\_3\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_3_3_2.html)

$$r_{13} : \mathbf{MathematicalMethod}(F_i) \wedge (\mathbf{AppliedInField}(F_i) \vee \\ \mathbf{TechnicalAdaptation}(F_i)) \Rightarrow \\ \mathbf{TechnicalContribution}(f_1, \dots, f_n)$$

**Explanation:** While abstract mathematical methods are excluded, if a claim is directed either to a method involving the use of technical means (e.g. a computer) or to a device, its subject-matter has technical character as a whole and is thus not necessarily excluded from patentability. Two criteria are given for assessing whether the mathematical method can contribute to producing a technical effect that serves a technical purpose - being applied in a field of technology and/or by being adapted to a specific technical implementation.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_3\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_3_3.html)

$$r_{14} : \text{SpecificPurpose}(F_i) \wedge \text{FunctionallyLimited}(F_i) \Rightarrow \\ \text{AppliedInField}(F_i)$$

**Explanation:** To say that a technical feature is applied in the field, it must have a specific technical purpose, i.e. produces a technical effect serving a technical purpose. This purpose cannot be 'generic' i.e. "controlling a technical system", it must be a specific technical purpose. The claim must also be functionally limited to the previously identified technical purpose either explicitly or implicitly, which can be achieved by establishing a sufficient link between the technical purpose and the mathematical method steps for instance.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_3\\_3\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_3_3_2.html)

$$r_{15} : \text{SpecificImplementation}(F_i) \wedge \text{SpecificAdaptation}(F_i) \Rightarrow \\ \text{TechnicalAdaptation}(F_i) \\ r_{15i} : \text{InternalFunctioningSystem}(F_i) \Rightarrow \\ \text{SpecificAdaptation}(F_i)$$

**Explanation:** To say a feature has been adapted into a specific technical implementation means that there must be a specific technical implementation, not a general one, and the mathematical method must be specifically adapted for that implementation in that its design is motivated by technical considerations relating to the internal functioning of the computer system or network.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_3\\_3\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_3_3_2.html)



### 5.3 Technical Effects

**Section Overview:** After establishing the technical contributions we must proceed to establishing the technical effects and the nature of these effects.

Some of the rules are also run on a for loop checking this for each individual feature.

For  $F$  in **TechnicalContribution**( $f_1, \dots, f_n$ ):

$$\begin{aligned} r_{16} : & \text{TechnicalContribution}(f_1, \dots, f_n) = 0 \Rightarrow \text{TechnicalEmpty} \\ r_{16i} : & \text{TechnicalEmpty} \Rightarrow \neg \text{InvStep} \end{aligned}$$

**Explanation:** If there are no technical contributions from the differences, then it cannot possess an inventive step. If the differences do not make any technical contribution, an objection under Art. 56 is raised on the ground that the subject-matter of a claim cannot be inventive if there is no technical contribution to the prior art.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)

$$\begin{aligned} r_{17} : & \text{TechnicalContribution}(f_1, \dots, f_n) \Rightarrow \\ & \text{TechnicalEffect}(f_1, \dots, f_n) \end{aligned}$$

**Explanation:** This has a tautological element since by definition a technical contribution must have a technical effect. However, it also introduces the concept of reproducibility, “If an invention lacks reproducibility because its desired technical effect as expressed in the claim is not achieved, this results in a lack of sufficient disclosure, which has to be objected to under Art. 83.”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)

$$\begin{aligned} r_{18} : & \text{Credible}(\text{TechnicalEffect}(f_1, \dots, f_n)) \wedge \\ & \text{Reproducible}(\text{TechnicalEffect}(f_1, \dots, f_n)) \wedge \\ & \neg \text{BonusEffect}(f_1, \dots, f_n) \wedge \\ & \neg (\text{UnexpectedEffect}(f_1, \dots, f_n) \wedge \\ & \neg \text{Precise Terms}(f_1, \dots, f_n)) \Rightarrow \\ & \text{ReliableTechnicalEffect}(f_1, \dots, f_n) \end{aligned}$$

$r_{18i} : \mathbf{ReliableTechnicalEffect}(f_1, \dots, f_n) = 0 \Rightarrow \mathbf{ReliableEmpty}$   
 $r_{18ii} : \mathbf{ReliableEmpty} \Rightarrow \neg \mathbf{InvStep}$

**Explanation:** We must ensure that our technical effects are credible and reproducible if we are to rely on them for formulation of the objective technical problem. “The unexpected property or effect must be described in precise terms. A vague statement such as ”The new compounds have shown unexpectedly good pharmaceutical properties” cannot support inventive step.” (G-vii-10.2)

If we do not have any reliable technical effects then we have a reason to believe the invention does not have inventive step.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4_1.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_10\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_10_2.html)

$r_{19} : \neg \mathbf{Reproducible}(\mathbf{TechnicalEffect}(f_1, \dots, f_n)) \wedge$   
 $\mathbf{ClaimContainsEffect}(I) \Rightarrow \mathbf{SufficiencyOfDisclosure}$

**Explanation:** If the effects are not reproducible and the claim contains the effect i.e. if the claim says the invention achieve effect E, but this is not reproducible, this is a problem of sufficiency of disclosure which precludes inventive step until resolved.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/f\\_iii\\_12.html](https://www.epo.org/en/legal/guidelines-epc/2025/f_iii_12.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4_1.html)

$r_{20} : \mathbf{UnexpectedEffect}(\mathbf{ReliableTechnicalEffect}(f_1, \dots, f_n)) \wedge$   
 $\mathbf{OneWayStreet}(\mathbf{SkilledPerson}(P), \mathbf{ClosestPriorArt}(D, I, P),$   
 $\mathbf{ReliableTechnicalEffect}(f) \Rightarrow \mathbf{BonusEffect}$

**Explanation:** An unexpected technical effect can be indicative of inventive step but this must result from the claimed subject matter, not merely from some additional features only mentioned in the description. However, if a lack of alternatives created a ”one-way street” situation, the unexpected effect is merely a bonus effect which does not make the claimed subject-matter inventive. If the skilled person would have to choose from a range of possibilities, there is no one-way street situation and the unexpected effect may very well lead to the recognition of an inventive step. To clarify, more precisely, for the skilled person to achieve the technical effect in question from the closest prior art, they would not have to choose from a range of possibilities, because there is only one-way to do x thing, and that would result in unexpected

property y. If the skilled person would need to choose from a range of possibilities then this can contribute to inventive step.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_10\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_10_2.html)

$$r_{21} : \text{DistinguishingFeatures}(I, f_1, \dots, f_n) - \\ (\text{DistinguishingFeatures}(I, f_1, \dots, f_n) \cap \\ \text{TechnicalContribution}(f_1, \dots, f_n)) \Rightarrow \\ \text{NonTechnicalContribution}(f_1, \dots, f_n)$$

**Explanation:** While we can only base the objective technical problem itself on technical contributions, we can also use non-technical contributions as constraints to be given to the person skilled in the art i.e. business constraints. “However, where a claim refers to an aim to be achieved in a non-technical field, this aim may legitimately appear in the formulation of the problem as part of the framework of the technical problem to be solved, in particular as a constraint that has to be met ”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)

$$r_{22} : \text{FunctionalInteraction}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n) \wedge \\ \text{Synergy}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n)) \Rightarrow \\ \text{Combination}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n)))$$

**Explanation:** An invention should usually be considered as a whole. If a claim is a ‘combination of features’ arguing that individual features are obvious does not mean the combination is i.e. transistors which are effectively electronic switches but when combined have a synergistic and technical effect far beyond the sum of their parts. “A set of technical features is regarded as a combination of features if the functional interaction between the features achieves a combined technical effect which is different from, e.g. greater than, the sum of the technical effects of the individual features. In other words, the interactions of the individual features must produce a synergistic effect.”

$$r_{23} : \neg \text{Combination}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n)) \Rightarrow \\ \text{Aggregate}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n))$$

**Explanation:** Another implication from the previous rule is that if we do not have a synergistic combination, then we must have an aggregation of features. In this case - “it is enough to show that the individual features are obvious to prove that the aggregation of features does not involve an inventive step”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_7.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_7.html)

### 5.3.1 Formulating the Objective Technical Problem

**Section Overview:** “The second stage is to objectively establish the technical problem to be solved by studying the application (or the patent), the closest prior art and the differences (also called ”the distinguishing features” of the claimed invention) in terms of features (either structural or functional) between the claimed invention and the closest prior art, identifying the technical effect resulting from the distinguishing features and then formulating the technical problem. The objective technical problem identified in this way may not be what the applicant presented as ”the problem” in the application. That problem may need to be reformulated, since the objective technical problem is based on objectively established facts, in particular those apparent from the prior art revealed over the course of the proceedings, which may be different from the prior art of which the applicant was actually aware at the time the application was filed.” (GVII-5.2)

$$\begin{aligned}
 r_{24} : & \text{Encompassed}(\text{Combination}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n), I, \\
 & \text{SkilledPerson}(P))) \wedge \\
 & \text{Embodied}(\text{Combination}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n), I, \\
 & \text{SkilledPerson}(P))) \wedge \\
 & \text{ScopeOfClaim}((\text{Combination}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n), I, \\
 & \text{SkilledPerson}(P)))) \\
 & \Rightarrow \text{PossibleFormulationOTP}
 \end{aligned}$$

**Explanation:** For our initial formulation of the objective technical problem, in which we have a single synergistic technical effect, we require this effect to be - “as a rule, any effect provided by the invention can be taken as a basis for reformulating the technical problem, provided the skilled person, having the common general knowledge at the effective date of filing in mind, and based on the application as originally filed, would consider the effect in question to be encompassed by the technical teaching

and embodied by the same originally disclosed invention”. (G-vii-5.2) “the technical effects used for formulating the objective technical problem have to be derivable from the application as filed when considered in the light of the closest prior art.” (G-vii-5.4.1) Also SCOPE OF CLAIM “They must be achieved over the whole scope of the claim. A claim must therefore be limited in such a way that substantially all embodiments encompassed by the claim show these effects” (G 1/19, G VII, 5.2).

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4_1.html)

$$r_{25} : \mathbf{Aggregate}(\mathbf{ReliableTechnicalEffect}(f_1, \dots, f_n) \Rightarrow \mathbf{PartialProblems}(n_1, \dots, n_n))$$

**Explanation:** “Sometimes, the objective technical problem must be regarded as an aggregation of several ”partial problems”, e.g. where no technical effect is achieved by all the distinguishing features taken in combination, but rather several partial problems are independently solved by different sets of distinguishing features”. My interpretation is that there is an implication that if we have a ‘mere aggregate’ of technical effects then we must treat these problems as partial problems.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_6.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_6.html)

Running a for loop over the partial problems we need at least one to be non-obvious

For  $i$  in  $\mathbf{PartialProblems}(n_1, \dots, n_n)$ :

$$r_{26} : \mathbf{Encompassed}(\mathbf{PartialProblems}(n_1, \dots, n_n)) \wedge \mathbf{Embodied}(\mathbf{PartialProblems}(n_1, \dots, n_n)) \wedge \mathbf{ScopeOfClaim}(\mathbf{PartialProblems}(n_1, \dots, n_n)) \Rightarrow \mathbf{PossibleFormulationOTP}(n_1, \dots, n_n)$$

**Explanation:** Same reasons as r20.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)

Running a for loop over the possible formulations to come to our objective technical problems

For  $i$  in **PossibleFormulationOTP**( $n_1, \dots, n_n$ ):

$$r_{27} : \mathbf{WrittenFormulation}(\mathbf{PossibleFormulationOTP}(n_1, \dots, n_n)) \wedge \\ \neg \mathbf{Hindsight}(\mathbf{PossibleFormulationOTP}(n_1, \dots, n_n), \mathbf{SkilledPerson}(P)) \Rightarrow \\ \mathbf{OTP}(n_1, \dots, n_n)$$

**Explanation:** We must construct a written formulation of our OTP and this must be formulated without the benefit of hindsight. “The objective technical problem must be formulated in such a way that it does not contain pointers to the technical solution, because including part of a technical solution offered by an invention in the statement of the problem must, when the state of the art is assessed in terms of that problem, necessarily result in an ex post facto view of inventive activity.” Also, Hindsight - It must not be formulated in such a way as to refer to matters of which the skilled person would only have become aware by knowledge of the solution claimed (G VII, 5.2).

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_8.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_8.html) [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)

$$r_{28} : \mathbf{OTP}(n_1, \dots, n_n) \wedge \\ \mathbf{NonTechnicalContribution}(f_1, \dots, f_n) \Rightarrow \\ \mathbf{OTPConstrained}(n_1, \dots, n_n)$$

**Explanation:** In addition, if the differences include features making no technical contribution, these features, or any non-technical effect achieved by the invention, may be used in the formulation of the objective technical problem as part of what is “given” to the skilled person, in particular as a constraint that has to be met (see G-VII, 5.4.1).

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html) [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4_1.html)

$$r_{29} : \mathbf{OTP}(n_1, \dots, n_n) \vee \mathbf{OTPConstrained}(n_1, \dots, n_n) \Rightarrow \\ \mathbf{ObjectiveTechnicalProblem}(n_1, \dots, n_n)$$

**Explanation:** Our final objective technical problem can either have non-technical constraints or not.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_4.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_4.html)  
& [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_7.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_7.html)

### 5.3.2 Solving Objective Technical Problem & the Could-Would Approach

**Section Overview:** “At the third stage, the question to be answered is whether there is any teaching in the prior art as a whole that would (not simply could, but would) have prompted the skilled person, when faced with the objective technical problem, to modify or adapt the closest prior art in the light of that teaching in such a way as to arrive at something falling within the terms of the claims and thus achieve what the invention achieves” (G-vii-5.3)

Running a for loop over the objective technical problems, for instances in which there are multiple.

For  $i$  in **ObjectiveTechnicalProblem**( $n_1, \dots, n_n$ ):

$$r_{30} : \neg(\text{WouldModify}(\text{SkilledPerson}(P), \text{RelevantPriorArt}(D, I), \\ \text{ObjectiveTechnicalProblem}(n_1, \dots, n_n), \text{ClosestPriorArt}(D, I, P), I) \vee \\ \text{WouldAdapt}(\text{SkilledPerson}(P), \\ \text{RelevantPriorArt}(D, I), \\ \text{ObjectiveTechnicalProblem}(n_1, \dots, n_n), \text{ClosestPriorArt}(D, I, P), I) \Rightarrow \\ \text{WouldNotHaveArrived}(n_1, \dots, n_n)$$

**Explanation:** To solve the objective technical problem we need to establish “not whether the skilled person could have arrived at the invention by adapting or modifying the closest prior art but whether the skilled person would have done so because the prior art provided motivation to do so in the expectation of some improvement or advantage” (G-vii-5.3). If the skilled person would not have had a motivation then we can say apply the factor **WouldNotHaveArrived** implying the invention may not be obvious.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_3.html)

$$r_{31} : \neg \text{WouldNotHaveArrived}(n_1, \dots, n_n) \geq 1 \Rightarrow \\ \text{OTPObvious}$$

**Explanation:** If we don't have at least 1 WouldNotHaveArrived factor (the number is only relevant for the partial problem otherwise it will always be 1 or 0) or if we don't have a solution from the invention for the objective technical problem i.e. does the invention actually do what is claimed. "The expression "technical problem" is interpreted broadly; it does not necessarily imply that the technical solution is an improvement to the prior art. This means that the problem could be simply to seek an alternative to a known device or process which provides the same or similar effects or is more cost-effective. A technical problem may be regarded as solved only if it is credible that substantially all claimed embodiments exhibit the technical effects on which the invention is based." (G-vii-5.2). Additionally we must have a solution for the objective technical problem from the invention.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_3.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_5\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_5_2.html)

## 5.4 Secondary Indicators

$$r_{32} : \text{DisadvantageousMod}(I, \text{ClosestPriorArt}(D, I, P)) \wedge \\ \text{Foreseeable}(\text{SkilledPerson}(P)) \wedge \\ \neg \text{UnexpectedAdvantage}(I) \Rightarrow \text{PredictableDisadvantage}$$

**Explanation:** "If an invention is the result of a foreseeable disadvantageous modification of the closest prior art which the skilled person could clearly predict and correctly assess, and if this predictable disadvantage is not accompanied by an unexpected technical advantage, then the claimed invention does not involve an inventive step" (G-vii-10.1). A foreseeable worsening of the prior art does not itself have an inventive step unless accompanied by an unexpected technical advantage.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_10\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_10_1.html)

$$r_{33} : \text{BioTech}(I) \wedge \\ \neg \text{UnexpectedEffect}(\text{ReliableTechnicalEffect}(f_1, \dots, f_n)) \wedge \\ ((\text{PredictableResults}(I) \vee \text{ReasonableSuccess}(I)) \Rightarrow \\ \text{BioTechObvious})$$

**Explanation:** For inventions in the biotech field, a solution is considered obvious not only when the results are clearly predictable, but also when there is a reasonable



expectation of success. “However, a ”reasonable expectation of success” is not to be confused with a ”hope of success”. If researchers are aware when starting their research that, in order to reach a technical solution, they will need not only technical skill but also the ability to make the right non-trivial decisions along the way, this cannot be regarded as a ”reasonable expectation of success”. (G-vii-13)

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_vii\\_13.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_vii_13.html)  
[https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_6\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_6_2.html)

$$\begin{aligned}
 r_{34} : & \text{SubjectMatterAntibody}(I) \wedge \\
 & \text{KnownTechnique}(I, \text{RelevantPriorArt}(D, I)) \wedge \\
 & \text{OvercomeTechDifficulty}(I) \Rightarrow \text{AntibodyObvious} \\
 r_{34i} : & \text{BioTech}(I) \wedge \text{Antibodies}(I) \Rightarrow \\
 & \text{SubjectMatterAntibody}(I)
 \end{aligned}$$

**Explanation:** If an invention concerns antibodies, including binding antigens and antibodies together, then inventive step “cannot be established solely on the basis that an antibody is structurally different from the prior-art antibodies. Arriving at alternative antibodies exclusively by applying techniques known in the art is considered to be obvious to the skilled person. The fact that an antibody’s structure, i.e. its amino acid sequence, is not predictable is not a reason for considering the antibody to be non-obvious. Nevertheless, antibodies can be inventive if the application overcomes technical difficulties in generating or manufacturing them. A novel type of functional antibody format may also be considered inventive.”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_ii\\_6\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_ii_6_2.html)

$$\begin{aligned}
 r_{35} : & \text{PredictableDisadvantage} \vee \text{BonusEffect} \vee \\
 & \text{BioTechObvious} \vee \text{AntibodyObvious} \Rightarrow \\
 & \text{SecondaryIndicator}
 \end{aligned}$$

**Explanation:** The conditions for providing a secondary indicator.

## 5.5 Attacks on Inventive Step

**Section Overview:** These are not exhaustive and provide reasons to help in identifying what is obvious or not but should not be forced to fit

**Application of known measures:**

$$\begin{aligned}
 r_{36} : & \text{FillGap}(\text{SkilledPerson}(P), I, \text{RelevantPriorArt}(D)) \Rightarrow \\
 & \text{GapFilled}
 \end{aligned}$$

**Explanation:** This rule concerns the application of known measures in an obvious way and this counts against inventive step. The first part states that if the teaching of a prior art document is incomplete and at least one of the possible ways which would naturally occur to the skilled person is to 'fill the gap' then it is obvious - "Example: The invention relates to a building structure made from aluminium. A prior-art document discloses the same structure and says that it is of light-weight material but does not mention the use of aluminium."

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_1.html)

$$r_{37} : \text{KnownEquivalent}(I, \text{RelevantPriorArt}(D)) \Rightarrow \\ \text{WellKnownEquivalent}$$

**Explanation:** The second part is whether the invention differs from the known art in the use of well-known equivalents i.e. mechanical, electrical or chemical - "Example: The invention relates to a pump which differs from a known pump solely in that its motive power is provided by a hydraulic motor instead of an electric motor."

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_1.html)

$$r_{38} : \text{KnownProperties}(I) \vee \text{AnalogousUse}(I) \vee \\ (\text{KnownDevice}(I) \wedge \text{AnalogousSubstitution}(I)) \Rightarrow \\ \text{KnownUsage}$$

**Explanation:** If an invention is merely the new use of the known properties of a well-known material then this does not have inventive step. "Example: Washing composition containing as detergent a known compound having the known property of lowering the surface tension of water, this property being known to be an essential one for detergents."

If the invention relies within a known device, simply in substituting a recently developed material which is suitable for that use it cannot have inventive step. "Example: An electric cable comprises a polyethylene sheath bonded to a metallic shield by an adhesive. The invention lies in the use of a particular newly developed adhesive known to be suitable for polymer-metal bonding."

If the invention just uses a known technique in a closely analogous situation "Example: The invention consists in the application of a pulse control technique to the

electric motor driving the auxiliary mechanisms of an industrial truck, such as a fork-lift truck, the use of this technique to control the electric propulsion motor of the truck being already known.”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_1.html)

$r_{39} : \mathbf{GapFilled} \vee \mathbf{WellKnownEquivalent} \vee \mathbf{KnownUsage} \Rightarrow$   
 $\mathbf{KnownMeasures}$

**Explanation:** Establishes what counts as known measures.

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_1.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_1.html)  
**Obvious Combination of Features:**

$r_{40} : \mathbf{Association}(\mathbf{KnownDevices}(D)) \wedge \mathbf{NormalFunction} \Rightarrow$   
 $\mathbf{ObviousCombination}$

**Explanation:** If an invention consists of a juxtaposition or association of known devices or processes which are functioning in their normal way then inventive step is not present. “Example: A machine for producing sausages that consists of a known mincing machine and a known filling machine disposed side by side.”

**Source:** [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_2.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_2.html)

$r_{41} : \mathbf{ChooseEqualAlternatives}(I) \vee$   
 $\mathbf{NormalDesignProcedure}(I) \vee$   
 $\mathbf{SimpleExtrapolation}(I, \mathbf{RelevantPriorArt}(D)) \vee$   
 $\mathbf{ChemicalSelection} \Rightarrow \mathbf{ObviousSelection}$

**Explanation:** If the invention consists in simply picking from equally likely alternatives that it does not have inventive step. “Example: The invention relates to a known chemical process in which it is known to supply heat electrically to the reaction mixture. There are a number of well-known alternative ways of so supplying the heat, and the invention resides merely in choosing one of those alternatives.”

If the invention consists in choosing parameters from a limited range of possibilities that could be arrived at by normal design procedures then it is precluded

from inventive step. “Example: The invention relates to a process for carrying out a known reaction and is characterised by a specified rate of flow of an inert gas. The prescribed rates are merely those which the skilled person would necessarily arrive at.”

If the invention can be arrived at by simple extrapolation in a straightforward way from the known art. “Example: The invention is characterised by the use of a specified minimum content of a substance X in a preparation Y in order to improve its thermal stability, and this characterising feature can be derived by mere extrapolation on a straight-line graph obtainable from the known art and relating thermal stability to the content of substance X.”

If the invention consists just in selecting a particular chemical compound or composition from a broad field. “Example: The prior art includes the disclosure of a chemical compound characterised by a specified structure including a substituent group designated ”R”. This substituent ”R” is defined so as to embrace entire ranges of broadly-defined radical groups such as all alkyl or aryl radicals either unsubstituted or substituted by halogen and/or hydroxy, although for practical reasons only a very small number of specific examples are given. The invention consists in the selection of a particular radical or particular group of radicals from among those referred to as the substituent ”R” (the selected radical or group of radicals not being specifically disclosed in the prior-art document since the question would then be one of lack of novelty rather than obviousness). The resulting compounds:

(a) are neither described as having nor shown to possess any advantageous properties not possessed by the prior-art examples; or

(b) are described as possessing advantageous properties compared with the compounds specifically referred to in the prior art, but these properties are ones which the skilled person would expect such compounds to possess, so that they are likely to be led to make this selection. ”

Source: [https://www.epo.org/en/legal/guidelines-epc/2025/g\\_viia\\_3.html](https://www.epo.org/en/legal/guidelines-epc/2025/g_viia_3.html)

## 5.6 Obviousness Conclusions

$$\begin{aligned}
 r_{42} &: \text{OTPObvious} \vee \text{SecondaryIndicator} \vee \text{KnownMeasures} \vee \\
 &\quad \text{ObviousCombination} \vee \text{ObviousSelection} \Rightarrow \text{Obvious} \\
 r_{42i} &: \neg(\text{OTPObvious} \vee \text{SecondaryIndicator} \vee \\
 &\quad \text{KnownMeasures} \vee \text{ObviousCombination} \vee \\
 &\quad \text{ObviousSelection}) \Rightarrow \neg\text{Obvious}
 \end{aligned}$$

**Explanation:** Captures the previous issues into the main issue of obviousness. 45i describes the corollary of non-obviousness.

$$r_{43} : \neg(\mathbf{Obvious} \vee \mathbf{SufficiencyOfDisclosure} \vee \mathbf{TechnicalEmpty} \vee \mathbf{ReliableEmpty}) \wedge \mathbf{Novelty} \Rightarrow \mathbf{InvStep}$$

**Explanation:** Generally we will be assuming that the inventions we are considering in our initial experiments are indeed novel, and similarly that they also do not suffer sufficiency of disclosure issues. But regardless these are important aspects to model as they are necessary preconditions for inventive step to be present.

$$r_{44} : \mathbf{Obvious} \Rightarrow \neg \mathbf{InvStep}$$

**Explanation:** If we have Obviousness then we do not have inventive step. This is a strict, non-defeasible rule.

## 6 Glossary of factors

1.  $\text{SinglePublication}(D)$  :  $D$  is a single publication
2.  $\text{Textbook}(D)$  :  $D$  is a textbook
3.  $\text{TechnicalSurvey}(D)$  :  $D$  is a technical survey
4.  $\text{Publication}(D)$  :  $D$  is a publication
5.  $\text{NewField}(I)$  :  $I$  is part of a new field
6.  $\text{DocumentaryEvidence}(D)$  :  $D$  can be said to constitute documentary evidence
7.  $\text{Contested}(C)$  :  $C$  is contested
8.  $\text{CommonKnowledge}(C)$  :  $C$  is part of common general knowledge
9.  $\text{SkilledIn}(P, \text{RelevantPriorArt}(D, I))$  :  $P$  is skilled in the relevant prior art of  $I$  as demonstrated with  $D$
10.  $\text{Average}(P)$  :  $P$  has average skill/ knowledge
11.  $\text{Aware}(P, \text{CommonKnowledge}(C))$  :  $P$  is aware of knowledge  $C$
12.  $\text{Access}(P, \text{RelevantPriorArt}(D, I))$  :  $P$  has access to the relevant prior art  $D$
13.  $\text{Individual}(P)$  :  $P$  is an individual

14.  $\text{ResearchTeam}(P)$  :  $P$  denotes a research team
15.  $\text{ProductionTeam}(P)$  :  $P$  denotes a production team
16.  $\text{SkilledPerson}(P)$  :  $P$  is a person skilled in the art
17.  $\text{SimilarPurpose}(D, I)$  :  $D$  has a similar purpose to  $I$
18.  $\text{SimilarEffect}(D, I)$  :  $D$  has a similar effect to  $I$
19.  $\text{SameField}(D, I)$  :  $D$  is from the same field as  $I$
20.  $\text{SimilarField}(D, I)$  :  $D$  is from a similar field to  $I$
21.  $\text{RelevantPriorArt}(D, I)$  :  $D$  is part of the relevant prior art to  $I$
22.  $\text{SingleReference}(D)$  :  $D$  is a single reference
23.  $\text{MinModifications}(D, I)$  :  $D$  requires minimal modifications to reach  $I$
24.  $\text{AssessedBy}(D, I, \text{SkilledPerson}(P))$  :  $D$  would be assessed to be the closest prior art to  $I$  from the perspective of  $P$
25.  $\text{ClosestPriorArt}(D, I, P)$  :  $D$  is the closest prior art to  $I$  from the perspective of  $P$
26.  $\text{CombinationAttempt}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P))$  : There is an attempt to combine various prior art documents with the closest prior art
27.  $\text{CombinationMotive}(\text{SkilledPerson}(P), \text{ClosestPriorArt}(D, I, P), D_1, \dots, D_n)$  : Skilled person has a motive to combine the closest prior art with the various proposed prior art documents
28.  $\text{BasisToAssociate}(\text{SkilledPerson}(P), \text{ClosestPriorArt}(D, I, P), D_1, \dots, D_n)$  : There is a reasonable basis for the skilled person to associate these documents together
29.  $\text{CombinationDocuments}(D_1, \dots, D_n, \text{ClosestPriorArt}(D, I, P))$  : Combination of multiple documents with the closest prior art
30.  $\text{ClosestPriorArtDocuments}(D_1, \dots, D_n, I, P)$  : The closest prior art, either as a combination or the standalone closest prior art document
31.  $\text{Features}(I)$  : Features of invention  $I$
32.  $\text{DistinguishingFeatures}(I, f_1, \dots, f_n)$  : Distinguishing features of invention  $I$
33.  $\text{NoFeatures}(I)$  : No distinguishing features

34.  $\text{IndependentContribution}(F_i, \text{SkilledPerson}(P))$  : Feature  $F$  makes an independent technical contribution from the pov of the skilled person
35.  $\text{CombinationContribution}(F_i, F_j, \text{SkilledPerson}(P))$  : Features  $F_i, F_j$  make a technical contribution in combination from the pov of the skilled person
36.  $\text{CircumventTechProblem}(F_i)$  : Feature  $F$  circumvents a technical problem
37.  $\text{ExcludedField}(F_i)$  : Feature  $F$  is part of an excluded field
38.  $\text{TechnicalContribution}(f_1, \dots, f_n)$  : Features  $f_i$  make a technical contribution
39.  $\text{ComputerSimulation}(F_i)$  : A feature involving the use of a computer simulation
40.  $\text{NumericalData}(F_i)$  : A feature involving calculated numerical data
41.  $\text{MathematicalMethod}(F_i)$  : A feature defined as a mathematical method (e.g., algorithms, formulae)
42.  $\text{TechnicalAdaptation}(F_i)$  : The feature is adapted to a specific technical implementation, ensuring its design is motivated by technical considerations of the system
43.  $\text{IntendedTechnicalUse}(F_i)$  : A feature where the use of data is explicitly or implicitly directed toward a technical purpose (e.g., controlling a technical process)
44.  $\text{TechUseSpecified}(F_i)$  : Indicates that the claim specifies, either expressly or implicitly, the technical use of numerical data
45.  $\text{AppliedInField}(F_i)$  : The feature is applied in a specific technical field, i.e., it achieves a concrete technical purpose rather than a generic or abstract one
46.  $\text{SpecificPurpose}(F_i)$  : The feature has a concrete technical purpose (not merely generic), directly serving a technical aim
47.  $\text{FunctionallyLimited}(F_i)$  : The feature is functionally restricted to the specific technical purpose it serves, establishing a link between purpose and method steps
48.  $\text{SpecificImplementation}(F_i)$  : The feature is implemented in a particular technical way, not merely a general one
49.  $\text{SpecificAdaptation}(F_i)$  : The feature has been specifically adapted to a technical implementation, showing technical motivation in its design

50.  $\text{InternalFunctioningSystem}(F_i)$  : A feature where the adaptation relates to the internal functioning of a computer system or network (e.g., architecture, memory, processing considerations)
51.  $\text{TechnicalEmpty}$  : No technical contribution present
52.  $\text{TechnicalEffect}(f_1, \dots, f_n)$  : Technical effects of the technical contributions of  $f_i$
53.  $\text{NonTechnicalContribution}(f_1, \dots, f_n)$  :  $f_i$  make a non-technical contribution to the invention
54.  $\text{FunctionalInteraction}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : A relationship between technical features that produces an interdependent effect
55.  $\text{Synergy}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : A combined effect of features that is greater than the sum of their individual effects
56.  $\text{Combination}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : A set of features whose functional interaction achieves a new, combined technical effect
57.  $\text{Aggregate}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : A collection of independent technical effects without synergy; obviousness is assessed feature by feature
58.  $\text{Encompassed}(X)$  : Indicates that a claimed effect falls within the technical teaching disclosed in the application in  $I$  as filed, and judged in regard to  $P$
59.  $\text{Embodied}(X)$  : Shows that the claimed feature, combination, or problem is actually realized by the disclosed invention  $I$ , and judged in regard to  $P$
60.  $\text{ScopeOfClaim}(X)$  : A claim must therefore be limited in such a way that substantially all embodiments encompassed by the claim show these effects
61.  $\text{PossibleFormulationOTP}$  : A candidate formulation of the Objective Technical Problem, derived from effects encompassed, embodied, and achieved across the claim scope.
62.  $\text{PartialProblems}(n_1, \dots, n_n)$  : Multiple independent technical problems identified when features only solve separate effects in aggregate.
63.  $\text{WrittenFormulation}(\text{PossibleFormulationOTP})$  : The explicit written expression of an OTP
64.  $\text{Hindsight}(\text{PossibleFormulationOTP}, \text{SkilledPerson}(P))$  : The OTP must be formulated in such a way as to not refer to matters of which the skilled person would only have become aware by knowledge of the solution claimed
65.  $\text{OTP}(n_1, \dots, n_n)$  : A formally stated Objective Technical Problem, derived from a written formulation free of hindsight bias



66.  $\text{OTPConstrained}(n_1, \dots, n_n)$  : An OTP restricted by non-technical constraints that must nevertheless be satisfied
67.  $\text{ObjectiveTechnicalProblem}(n_1, \dots, n_n)$  : The final form of the problem to be solved, possibly with or without non-technical constraints
68.  $\text{WouldModify}(\text{SkilledPerson}(P), \text{RelevantPriorArt}(D, I), \text{ObjectiveTechnicalProblem}(n_1, \dots, n_n))$  : Indicates whether the skilled person, faced with the OTP, would (not just could) have motivation to modify prior art
69.  $\text{WouldAdapt}(\text{SkilledPerson}(P), \text{RelevantPriorArt}(D, I), \text{ObjectiveTechnicalProblem}(n_1, \dots, n_n))$  : Indicates whether the skilled person, faced with the OTP, would (not just could) have motivation to adapt prior art
70.  $\text{WouldNotHaveArrived}(n_1, \dots, n_n)$  : A condition where the skilled person would not have been motivated by prior art to arrive at the claimed invention.
71.  $\text{Solution}(I, \text{ObjectiveTechnicalProblem}(n_1, \dots, n_n))$  : Confirmation that the invention actually solves the identified OTP
72.  $\text{OTPObvious}$  : The situation where solving the OTP would have been obvious from the prior art
73.  $\text{CredibleTechnicalEffect}(f_1, \dots, f_n)$  : A technical effect that is credible in the sense that it is achievable from the invention
74.  $\text{Reproducible}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : The effect can be reproduced
75.  $\text{ClaimContainsEffect}(I)$  : The claim text itself asserts the technical effect
76.  $\text{SufficiencyOfDisclosure}$  : Requirement under Art. 83 EPC that the invention is disclosed in a way that allows the skilled person to reproduce the claimed technical effect
77.  $\text{DisadvantageousMod}(I, \text{ClosestPriorart}(D, I, P))$  : Modification of CPA is disadvantageous
78.  $\text{Foreseeable}(\text{SkilledPerson}(P))$  : Effect is foreseeable by the skilled person
79.  $\text{UnexpectedAdvantage}$  : Advantage was unexpected
80.  $\text{PredictableDisadvantage}$  : Disadvantage was unexpected and counts against inventive step
81.  $\text{UnexpectedEffect}(\text{TechnicalEffect}(f_1, \dots, f_n))$  : A surprising technical effect not anticipated from the invention

82.  $\text{OneWayStreet}(\text{TechnicalEffect}(f))$  : A situation where the skilled person has only one realistic path to achieve the effect from the prior art
83.  $\text{BonusEffect}$  : An unexpected effect that arises in a one-way street context and does not contribute to inventive step
84.  $\text{LackOfAlternatives}(\text{SkilledPerson}(P), \text{ClosestPriorArt}(D, I, P), \text{TechnicalEffect}(f))$  : Condition establishing a one-way street due to no meaningful choice of alternatives
85.  $\text{PreciseTerms}(\text{UnexpectedEffect})$  : Requirement that an unexpected effect must be clearly and specifically described, not vague
86.  $\text{BioTech}(I)$  : Denotes that the invention belongs to the biotechnology field
87.  $\text{PredictableResults}(I)$  : Results that can be reasonably foreseen by the skilled person
88.  $\text{ReasonableSuccess}(I)$  : The presence of a reasonable expectation of success when applying prior art methods
89.  $\text{BioTechObvious}$  : A biotech invention that is obvious due to predictable results or reasonable expectation of success
90.  $\text{SubjectMatterAntibody}(I)$  : Identifies inventions directed to antibodies
91.  $\text{KnownTechnique}(I, \text{RelevantPriorArt}(D))$  : The claimed invention can be derived using techniques already known in the field
92.  $\text{OvercomeTechDifficulty}(I)$  : Demonstrates that technical hurdles in generating or manufacturing an invention have been successfully resolved
93.  $\text{AntibodyObvious}$  : An antibody invention that is obvious when produced by known techniques without overcoming technical difficulties
94.  $\text{Antibodies}(I)$  : A subclass of biotech inventions specifically concerning antibodies
95.  $\text{SecondaryIndicator}$  : A category of indicators relevant to assessing inventive step and providing reason to believe that it is not present
96.  $\text{FillGap}(\text{SkilledPerson}(P), I, \text{RelevantPriorArt}(D))$  : Completing missing but obvious details in prior art, which if they would occur to the skilled person in line with the relevant prior art suggest obviousness
97.  $\text{GapFilled}$  : The state when a missing element in prior art has been filled by obvious means

98. KnownEquivalent(*RelevantPriorArt*) : Use of a known mechanical, electrical, or chemical equivalent in place of another
99. WellKnownEquivalent : Use of a known equivalent which is well known from the relevant prior art
100. KnownProperties(*I*) : Use of a material based solely on its already-known properties
101. AnalogousUse(*I*) : Applying a known technique to a closely similar technical situation
102. KnownDevice(*I*) : An established device or apparatus already available in the prior art
103. AnalogousSubstitution(*I*) : Replacing a component with a new material plainly suitable for the same purpose
104. KnownUsage : Collective category for known properties, analogous use, or analogous substitution
105. KnownMeasures : Category encompassing gap-filling, well-known equivalents, and known usages
106. Association(*KnownDevices*) : Association or juxtaposition of known devices, each performing its normal role
107. NormalFunction : The situation where devices or processes perform in their conventional, expected way
108. ObviousCombination : A combination of features that is obvious due to being a simple juxtaposition or association with normal functioning
109. ChooseEqualAlternatives(*I*) : Selecting one option from a set of equally likely choices, without inventive contribution.
110. NormalDesignProcedure(*I*) : Outcome derived from routine design choices of the skilled person i.e. hyper-parameter tuning
111. SimpleExtrapolation(*I, RelevantPriorArt*) : Deriving claimed features by straightforward extension of known data or trends
112. ChemicalSelection : Selection of a compound or composition from a broad known group
113. ObviousSelection : Selection from known options, design choices, extrapolation, or chemical groups that is obvious

- 114. Obvious : The conclusion that the invention lacks inventive step
- 115. SufficiencyOfDisclosure : The invention must be disclosed clearly enough to enable reproduction by a skilled person
- 116. Novelty : Requirement that the claimed invention is new compared to the prior art
- 117. InvStep : Presence of inventive step; invention is both novel and non-obvious