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I. SPL ... AND ITS ROLE FOR FINANCING R&D ...

- Substantive Patent Law (SPL) deals with novelty, nonobviousness, clarity/definiteness, usefulness/technicity of an invention by only 4-7 §§ of any National Patent Law, in the
  - US basically 35 USC §§ 101/102/103/112,
  - EU basically EPC §§ 52-57, 69,
  - C, J, ...
- An invention's SPL test is the simplest precise problem existing.
- Hunter/Farmer, manufacturing, industrial age – innovation age?
- Cost of generating a new transportation technology: ≥ 5 B€!
- Cost of generating a single life science drug: 0.1-5 B€!
- Where from comes the money in the US, EU, J, C, B, ...
- A society's investment into R&D is an "early productivity indicator" of this society – its protection by SPL hence indispensable!
- Innovation biz still in "Manufacturing Age"; "Industry Age" ahead!

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II. eKNOWLEDGE ABOUT SPL PRECEDENTS: TRAIL BLAZER ...

- But: Future of patent law is unclear in EU as well in US. Also in C?
- Also: Adapting patent law to technical development is too slow in EU, also in US (in spite of AIA, causing problems). How about C?
- Adapting SPL precedents seems to work in the US due to its two central Highest Courts, now copied by C. How about the EU????
- European refusal to foster inventivity as trail blazer of wealth:
  - No Grace Period – sending academic inventors to the US,
  - No open ended Patent Application Continuations – the same,
  - No Fast Track and No Examiner Interviews,
  - Strange misjudgment of needs of globalization,
  - Absurd discussion about "technicity" limitation,
  - Hysteric reservations as to genetics research and technologies.
  - Ignorance of raging economical competition in innovativity.

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III. SPL FOR EMERGING TECHNOLOGIES INVENTIONS

- Originally: Patents based on allegedly inventive devices submitted.
- Thereafter until today: Patents based on specifications of alleged inventions.
- But: With emerging technologies patents ought to be granted only based on their clear "usefulness" and "inventivity", the dominating reasons being:
  - emerging technologies – only these are lucrative for us – are all model based, as started in IT, went on in telecommunications, and now is ubiquitous in business/DNA/nano/life/green technologies,
  - the models being "intuitionless", thus needing higher preciseness, also for not being preemptive and thus compromising the patent system, and
  - unavoidable ethical reservations require political discussions.
- Increased scientific rationality of SPL caters for emerging technologies needs.
- In the US, the Supreme Court and the Court of Appeals of the Federal Circuit, CAFC move this way, whereby new notions introduced by the Supreme Court's precedents, e.g.: "inventive concepts", "abstract ideas", and "preemptive", caused clashes in the CAFC – parts of it practicing parts of them by rationales showing uncertainties about the requirements the Supreme Court stated by them.

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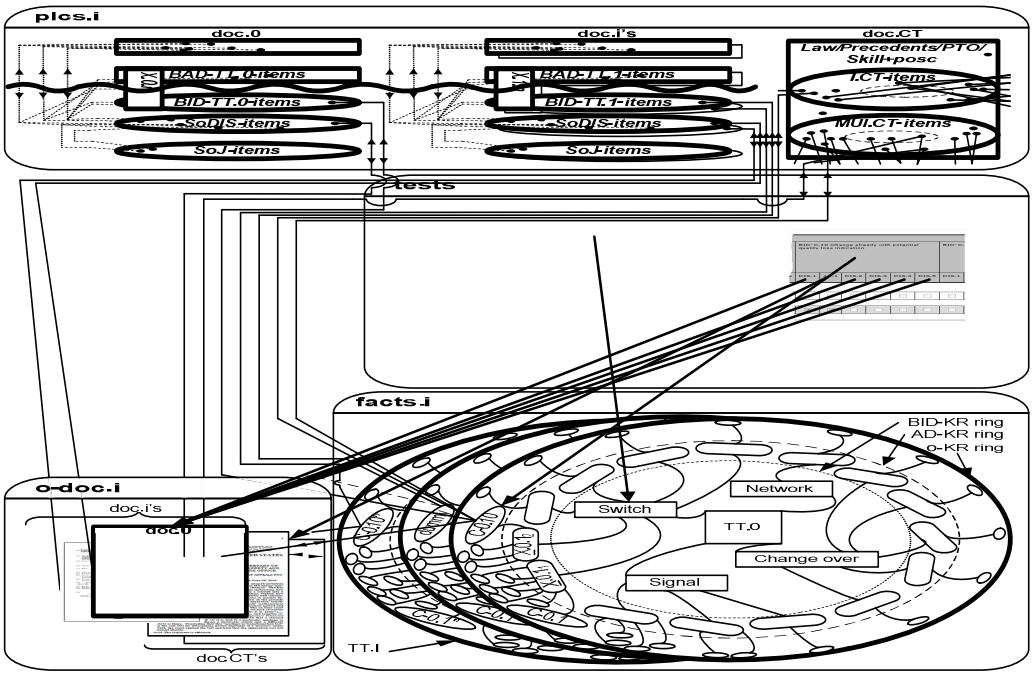
IV. KNOWLEDGE KINDS AND KKRs/KRs IN PATENT BUSINESS

Patent eKnowledge is the key blue print of any precise eKnowledge in any business area – such as medicine, education, industry, transportation, security, show biz, …. And: It is **FOL + FINITE!!!**

- Knowledge kinds, KKs, in patent business:
  - Legal kinds – Nat./Internat. patent and other laws, PTOs' and other bodies' directives, corporate/market rules, ..., mostly case independent.
  - Technical kinds – patent at issue, prior art, marketing/user/maintenance information, ..., mostly case specific.
  - Business kinds – R&D, Prosecution, Litigation, Licensing, Marketing.
- Knowledge kinds' representations, KKRs, in patent business:
  - documentRs – in any doc.i, as known from everyday life.
  - logicRs – to be marked-up in doc.i's as identified by the inventor/posc,
  - brainRs – showing what our brains do, though we don't know how,
  - argumentRs – sequences of mixtures of the above KKRs.
- KRs are instantiations of KKRs. From the above said follows: Any KR item is a "universe" of its own – **THE** issue in today's Geometry!

V. OVERVIEW ABOUT A PATENT IES'es GUI – STRUCTURE-KR



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VI. OVERVIEW ABOUT A PATENT IES'es GUI – ARGUMENTS-KR

test.1 The **FSTP-Test** is executed for the set ∀ claim interpretations, SoI, selected in **(b)/(c)**, comprising the steps:

- **(a)** It prompts the user for the claim(ed invention)'s and prior art's docs with their "**marked-up items, MUIs**";
- **(b)** It prompts ∀SoI and for any SoI's $\forall AD^{SoI}\text{-}\underline{X}in::=\wedge^{1\le Sol.in\le Sol.IN}AD\text{-}crCin^{Sol.in}$ in doci-MUI's, $0\le i\le I, 1\le n\le N$;
- **(c)** It prompts for the **definiteness justification of ∀ compound inCs in SoI,** i.e. of $\forall AD\text{-}crCin^{Sol.in}$;
- **(d)** It prompts to disaggregate $\forall AD\text{-}crCin^{Sol.in}\ \forall 0\le i\le I \wedge 0\le n\le N$ into $\{BED\text{-}cr\underline{C}ink^{Sol.in} \mid 1\le k^{Sol.in}\le K^{Sol.IN}\}$:
  $AD\text{-}crCin^{Sol.in} = \wedge^{1\le kSol.in\le KSol.IN}BED\text{-}cr\underline{C}ink^{Sol.in} \wedge BED\text{-}cr\underline{C}ink^{Sol.in} \neq BED\text{-}cr\underline{C}ink^{Sol.in'}\ \forall\ k^{Sol.in} \neq k^{Sol.in'}$;
- **(e)** It prompts for the **definiteness justification of its disaggregation in (d)**;
- **(f)** It automatically sets $K^{Sol}::=\sum^{1\le 0n\le 0N}K^{0N}$, $S^{Sol}::=\{BED\text{-}cr\underline{C}0nk^{Sol.0n}|1\le k^{0n}\le K^{0N}\}$, with $K^{Sol}=|\{BED\text{-}cr\underline{C}0nk^{Sol.0n}|1\le k^{0n}\le K^{0N}\}|$;

test.2 It prompts for justifying ∀ BED-crCs in S^{Sol}: Their **lawful disclosures**;

test.3 It prompts for justifying ∀ BED-inCs in S^{Sol}: Their **definiteness** under § 112.6;

test.4 It prompts for justifying ∀ BED-inCs in S^{Sol}: Their **enablement**;

test.5 It prompts for justifying ∀ BED-inCs in S^{Sol}: Their **independence**;

test.6 It prompts for justifying ∀ BED-inCs in S^{Sol}: Their **posc-nonequivalence**:

- **(a)** It automatically sets if $|RS|=0$ then BED*-inC0k ::= "dummy" else performing **c-f** $\forall\ 1\le i\le|RS|$;
- **(b)** It prompts to disaggregate ∀ BAD-Xin into $\wedge^{1\le kn\le Kn}BED\text{-}in\underline{C}ik^{n}$;
- **(c)** It automatically sets $BED^*\text{-}inCik^{n}$ **::=** either $BED\text{-}i\text{-}C0k^{n}$ iff $BED\text{-}inCik^{n} = BED\text{-}inC0k^{n} \wedge$ disclosed ∧ definite ∧ enabled, else "dummy(ik^{n})";
- **(d)** It prompts for $JUS^{posc}(BED^*\text{-}inCik^{n})$.

test.7 It prompts for justifying by NAIO test*) on (S^{Sol}:$P.0^{Sol}$): TT.0 is **not an abstract idea only**;

test.8 It prompts for justifying on ∀ BED-inCs in S^{Sol}: TT.0 is **not natural phenomena solely**;

test.9 It prompts for justifying ∀ BED-inCs on (S^{Sol}:$P.0^{Sol}$): TT.0 is **novel and nonobvious** by NANO test**) on the pair
(S, if $|RS|= 0$ then $\{BED^*\text{-}inC0k|1\le k\le K\}$ else $\{BED^*\text{-}inCik|1\le k\le K, 1\le i\le|RS|\}$);

test.10 It prompts for justifying ∀ BED-inCs in S^{Sol}: TT.0 is **not idempotent** by NANO test**) on the pair $S' \subset S$

*) The **"Not an Abstract Idea Only, NAIO"** test basically comprises 4 steps, ignoring any prior art's inventions:

1) It prompts to justify the specification discloses a problem, $P.0^{Sol}$, to be solved by the claim(ed invention) as of S^{Sol};
2) It prompts to justify, using the inventive concepts of S^{Sol}, that the claimed invention solves $P.0^{Sol}$;
3) It prompts to justify that $P.0^{Sol}$ is not solved by the claim(ed invention), if a BED-inC of S^{Sol} is removed or relaxed;
4) if all verifications 1)-3) apply, then this pair <claim(ed invention), SoI> is "not an abstract idea only".

) The **"Novel And Not Obvious, NANO" test basically comprises 3 steps, checking all "anticipation combinations, AC^{Sol}s" of S^{Sol}:

1) It automatically generates the ANC^{Sol} matrix, its lines representing for any prior art document.i, i=1,2,...,I, the relations between its $invention^{i.Sol}$'s BED-inCs to their peers of $TT.0^{Sol}$, represented by its columns, whereby S^{Sol} derivable from any prior art documents' invention in SoI;
2) It automatically derives from the ANC^{Sol} matrix the set of {AC^{Sol}s} with the minim. number $Q^{plcs/Sol}$;
3) It automatically determines and delivers <$Q^{plcs/Sol}$,{AC^{Sol}}>,being the creativity of the pair <claim(ed invention, SoI>.

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VII. CAPABILITIES OF INNOVATION EXPERT SYSTEMS (IESes)

Increasingly powerful capabilities, explained by the following ladder, its "high end" known from science fiction, its spokes not being consecutive.

- *Graphics/Acoustic prompting* through *legal q-a*
- Graphics/Acoustic prompting through *all reasonable q-a*
- *Assessing legal correctness capability* – all being "self-catalytic systems"
- *Self-contained interactive graphics/acoustic "responsitivity"*
- *Realtime* self-contained interactive graphics/acoustic responsitivity
- *Personalizable/Moderatable* realtime self-contained interactive graphics/acoustic responsitivity
- *In-/Extrinsic user-counseling* in realtime self-contained graphics/acoustic interactive responsitivity = self-inflammable self-catalytic system = HAL

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VIII. KR ORIENTED FUNCTIONS OF A PATENT IES

- Most IES functions are KR oriented for its "calibration", few for its "engagement" mode – working step/stream wise, also overlapping.
- Today, all the information eventually output by the IES in engagement mode is input before in calibration mode by an IES user – i.e., is already marked-up/linked or marked-up and linked during calibration by a user,
- In a Patent IES all the invention independent information should already carry its "mark-up information, MUIs". MUIs to be provided by the inventor/posc are vastly stereotypic – once the invention's inventive concepts are identified – as then the FSTP-Test [URL see below] prompts the user through the complete check whether it satisfies SPL.
- Perspective for "FFOL problems": Adapted FSTP-Tests may check "any document for its satisfying any directive" – e.g. a new drug specification for satisfying a FDA directive, not just a patent's invention the SPL.

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