First approaches on knowledge representation of Elementary (patent) Pragmatics

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Background:
The FSTP/-Innovation Expert System

Knowledge Representation of an invention

**Elements:** characterizing aspects of invention

**Attributes:**
- Properties of the identified elements

**Binary Inventive Concepts:**
- Elementary properties referred by attributes

Prior Art

Creative height "Q_pics"

Pragmatic/Innovative height "Q_pmgp"
Binary Inventive Concepts: Elementary properties referred by attributes

Elementary Pragmatics (EP): Disclosures (explicit/implicit) of certain art which can be easily understood by a person of pertinent skill.

Arguments for examination/cross-examination
KR’s of Elementary (patent)Pragmatics (EP)

- Patent EP’s Knowledge can be represented on different layers of abstraction
- Notion: “separation of concerns”
Knowledge Representation contd...

Each test/law (or portions) represented as workflow models, which are then modeled using LegalRuleML.

LegalRuleML : a rule interchange language for the legal domain.

35 USC § 112 6th Paragraph

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.”
Similarly, patent precedents (or portions) are also represented as workflow models, which are then modeled using LegalRuleML.
Knowledge Representation \textit{contd...}

Each decision point in the workflow are \textit{currently} modeled using \textit{ReactionRuleML}.

\textbf{ReactionRuleML}: XML-serialized language and rule interchange format for the family of reaction rules.
Example

Decision re-explained the norms within the 6th Para of § 112 (35 U.S.C Patent Law).

The patented technology relates to control and protection circuits for electronic lighting ballasts commonly used in fluorescent lighting. The district court construed the term “voltage source means” as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. ..........Means-plus-function limitations are governed by 35 U.S.C. § 112, ¶ 6.............. The presumption triggered by use of the word “means” may be rebutted if the claim itself recites sufficient structure for performing the function. ..........By contrast, when a term only indicates what the recited means “does, not what it is structurally,” the claim is properly construed under § 112, ¶ 6.............. For example, _Biomedino, LLC v. Waters Techs. Corp., 490 F.3d 946, 949 (Fed. Cir. 2007)_ we construed the phrase “control means for automatically operating said valving,” 490 F.3d at 949. We held that the term “control” ..... Lighting Ballast points to case law in which this Court declined to apply means-plus-function claiming in view of expert testimony and other extrinsic evidence showing that certain claimed elements implied sufficient structure. In those cases, however, ..at means-plus-function claiming did not apply because the claim limitations at issue did not include the word “means.” See _MIT v. Abacus Software, 462 F.3d 1344, 1353 (Fed. Cir. 2006)_ ......_Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1583 (Fed. Cir. 1996)_ (construing the term “detent mechanism”; “means” did not appear in the claim.). In this case, we start with the presumption that means-plus function claiming does ..........he claim limitation includes the word “means.” ULT failed to ........ evidence to overcome that presumption.

35 U.S.C. §112 6th paragraph
Proposed Framework

(Future directions...)

Environment

- FSTP User’s
  - Inventor
  - Patent examiner
  - Person skilled in art
- National Patent Systems
  - USPTO
  - JPO
  - EPO...
- FSTP ES
  - Basic Facts
  - Semantic Facts
  - Relation to external contexts

Research

- Develop/Build
  - Artifacts
  - Inference rules
  - Complex rules
  - Legal reasoner
- Assess
- Justify/Evaluate
  - Expressiveness
  - Extensibility
  - Evolvability
  - Interchangeability
- Refine

Knowledge Base (KB) for norms

- Foundations
  - Syntax
  - Semantics
  - Instantiations
  - Pragmatics
  - Skill
- Methodologies
  - Formalisms
  - Validation Criteria
  - Constraints

Application of EP’s in The FSTP Environment

Additions to the KB for Life cycle management

Relevance

Rigor

FSTP/NPS facts

EP’s as rules
Evaluation for adequacy of knowledge representation
e.g. expressiveness vs. complexity,
soundness and completeness,
decidability, consistency…)

Connecting current formal representation with real-world resources.

Non-functional requirements like:
  Interoperability ?
  Evolvability ?
  Reusability & Interchangeability ?
Summary

- **Legal representation format** for legal reasoning.
  - To support a semi-automated legal **decision support system**
- A platform-independent rule standardization in **LegalRuleML XML**
  - Support for **reusability, life cycle management** of the knowledge
- Transformations into executable representation language and **automated execution** (Prova rule engine + ontology reasoner)
- Basis for legal argumentations / justifications
Thank you

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