**Problem Statement**

Partial models are effective for automated reasoning. [ICSE’12, RE’12, …]

Are Partial Models effective for human communication?

What we did:
- Developed a new notation: MAV-Vis
  “Physics of Notations” [Moody, 2009]
- Evaluated our implementation of the theory with user study

**Designing MAV-Vis**

**Partial Models: Modeling Design Uncertainty with MAVO**

Uncertainty about design decisions – the contents of a model [FASE’12]
- Represent choice among many possibilities
- Can be refined to many different classical models

- May: Element is optional.
- Abs: Element can be multiplied to many copies.
- Var: Element can be merged with others.
- OW: Model is incomplete.

**Limitations**

- Portability:
  - Annotation language: cannot guarantee symbols won’t conflict!
  - Implemented for Class Diagrams, E-R Diagrams.
  - Porting to other notations not easily automatable.
- But can use with any abstract syntax (MOF)

**Expressive Power:**
- Less powerful than propositional logic (of course)
- But dependency sub-language can be extended.

**No OW:**
- OW annotates entire model.
- Need megamodeling or tight tooling integration

**No tooling:**
- Out of scope here: focus on ideal notation.

**Assessment Based on [Moody, 2009]**

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**User Study**

**Goal:**
Evaluate our implementation of the principles in [Moody, 2009].

**Setup**

**Design:**
- Within subjects to allow comparison and minimize selection bias
- 2x2 Latin square to control for:
- Order of syntaxes (MAV-Vis, MAV-Text)
- Modeling scenario
  - “Hotel Admin” in UML
  - “School Personnel” in E-R

**Procedure:**
- Tutorial
- Freeform exercise
  - [Reading, Writing] x2
- Questionnaire

**Participants:**
- 12 unpaid participants, with Bach or CS higher
- Average experience in MAVO: 2.2/5

**确认或否决：**
“MAV-Vis improves Ease, Speed, Accuracy for reading and writing compared to MAV-Text”

**Measurements:**
- Ease: Questionnaire responses
- Speed: Task completion time
- Accuracy: Error counts and comprehension scores

**Confirm or refute:**

**References**


**Conclusion**

**Next Steps:**
- Focus on tooling
- Dependencies sub-language
- MAVOisation of arbitrary languages
- MAV-O three more efficient, overall, more writing errors.
- Solution not necessarily universal: principle of Cognitive Fit (learning styles, expertise)