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Digital Semantics for Enterprise Information Systems Development

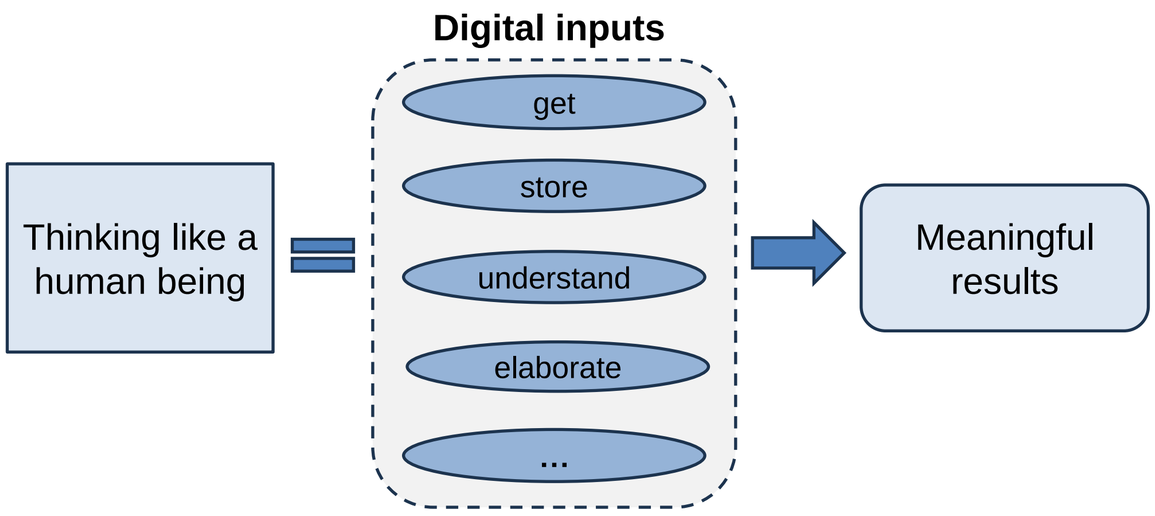
Gaetanino Paolone[1], Francesco Pilotti[1], Romolo Paesani[1]

[1]Gruppo SI S.c.a.r.l., Teramo (Italy); g.paolone@softwareindustriale.it, f.pilotti@softwareindustriale.it, r.paesani@softwareindustriale.it

INTRODUCTION & AIM

Artificial Intelligence (AI) is the most important paradigm shift of our time

AI purpose: to simulate human intelligence inside a machine



Aim of the work: express our vision about a new AI paradigm, additional to current AI approaches

Digital Semantics (DS)

within the Enterprise Information Systems (EIS) domain

METHOD

The pillars of our vision

DS: the new paradigm. DS is the proposed solution to define ontologies, which in turn will have to be implemented in automata. DS ≠ Semantic Web

Ontologies: a set of concepts and relationships representing a knowledge area

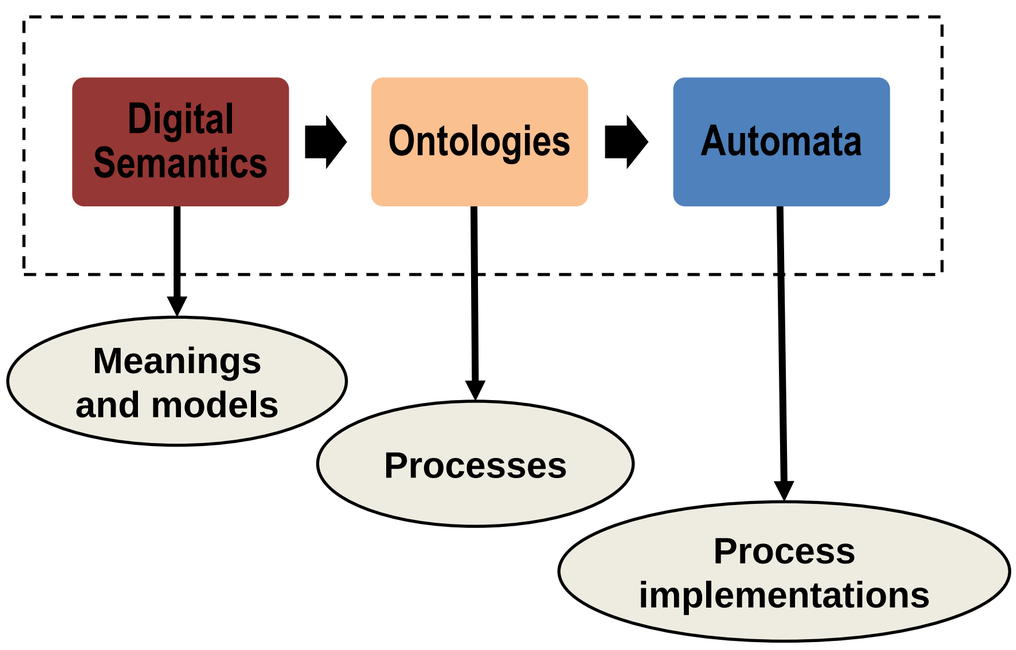
Automata: means for managing decision-making processes and control the information flow within a software system

How to create DS?

Retracing the cognitive process of the human mind

- The starting point → **natural language semantics**
- Useful hints → **formal semantics**
- Limiting complexity → **focus on EIS domain**

How to implement DS?



RESEARCH QUESTIONS (RQs)

RQ1→ Is it possible to define DS as a metamodel based on the semantics of natural languages?

RQ2 → Is it possible to define ontologies with DS?

RQ3 → Can automata be the solution to implement ontologies defined with DS?

Possible answers

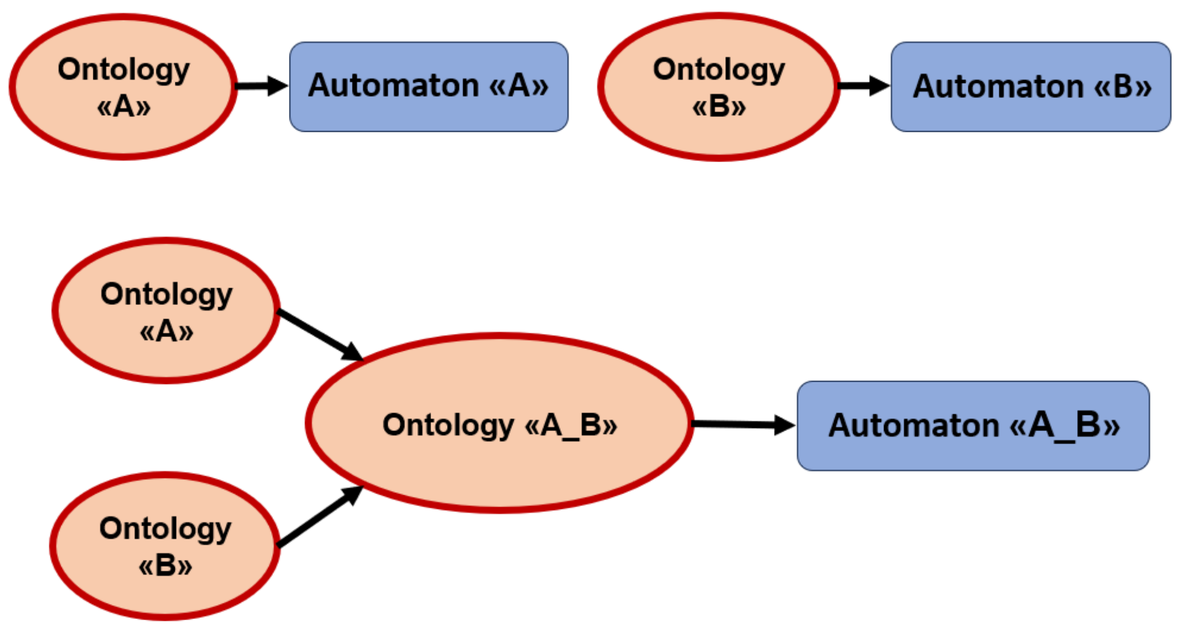
RQ1 → Natural language is infinite and constantly evolving. However, we can asbtract and formalize processes and techniques its semantics is based on to define a metamodel

RQ2 → Our mind creates ontologies based on natural language semantics. If DS can be based on natural language semantics, then the same process can be applied to creating ontologies based on DS

RQ3 → One-to-one correlation between ontologies (atomic elements) and automata

Combining the atomic elements to create complex ontologies, and thus complex automata

Example



CONCLUSION

The aim of the work is ambitious. To the best of our knowledge, there are no approaches or paradigms similar to our proposal.

Need

Feedback from the international scientific community on our vision and ideas

FUTURE WORK

The work is at an early stage. We need to verify the soundness of our solution through further R&D activities.

- First next step: **definition of the DS metamodel**