Vision of
Knowledge Graph Lifecycle Management within
Hybrid Artificial Intelligence Solutions

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Ruud Mattheij, Frank Benders, Hubert van Beusekom and Freek Bomhof

Call AiNed Innovation Labs 2024, AiNed Foundation

Category: Knowledge and innovation base

AiNed is strengthening the Dutch knowledge and innovation base to promote the development of new AI applications by Dutch industry and public organizations. One of the instruments to this end is the call AiNed Innovation Labs. Public-private partnerships focused on the development of AI innovations and the associated knowledge transfer and application to business and guiding knowledge development. This call focuses on the following application areas:

- Energy and sustainability
- Health and care
- Mobility, transportation and logistics
- Technical industry

Purpose of Innovation Labs

The goal of InnovationLabs is to rapidly develop AI knowledge from the basic level to a stage of technology validation and demonstration in specific applications. In the AiNed InnovationLabs, AI knowledge and experience from knowledge institutions and (deep) tech companies is brought together into concrete and usable AI techniques, models, tools and prototypes for which there is a clear need among participating companies.
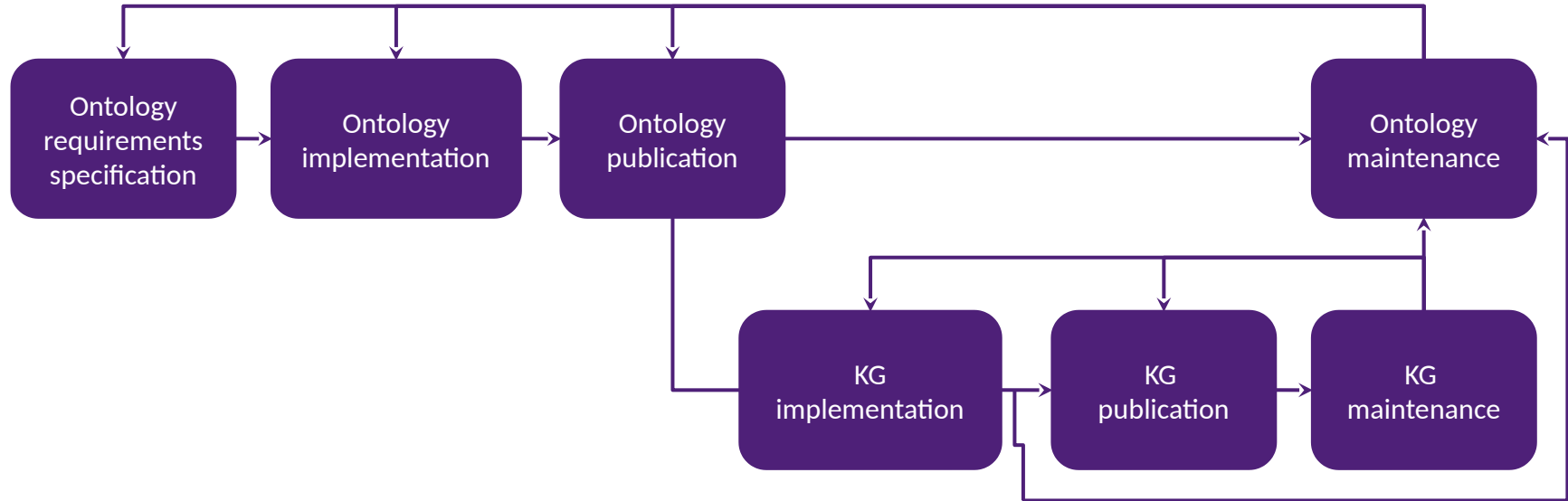
Motivation

Ontology Evolution

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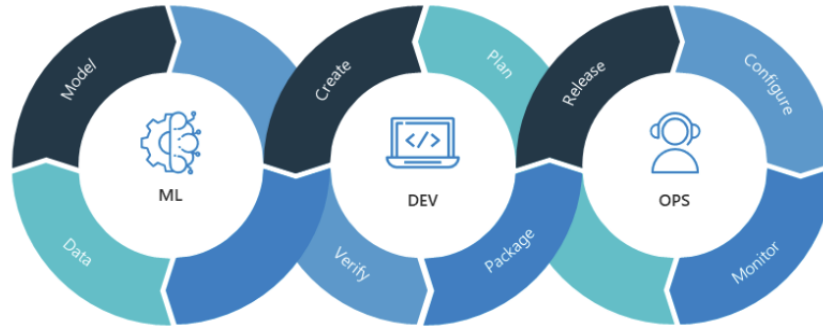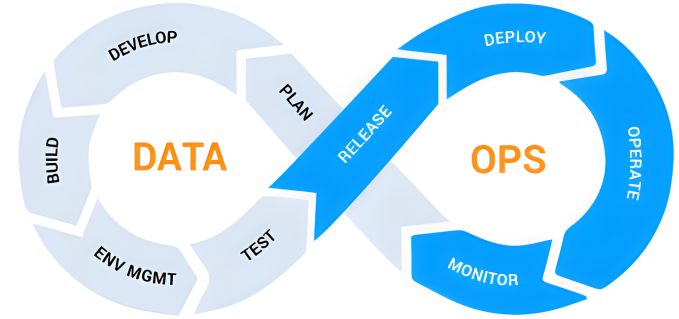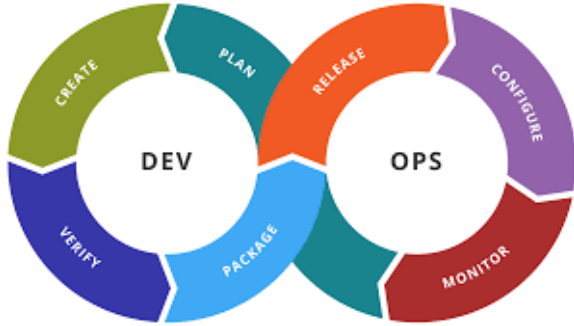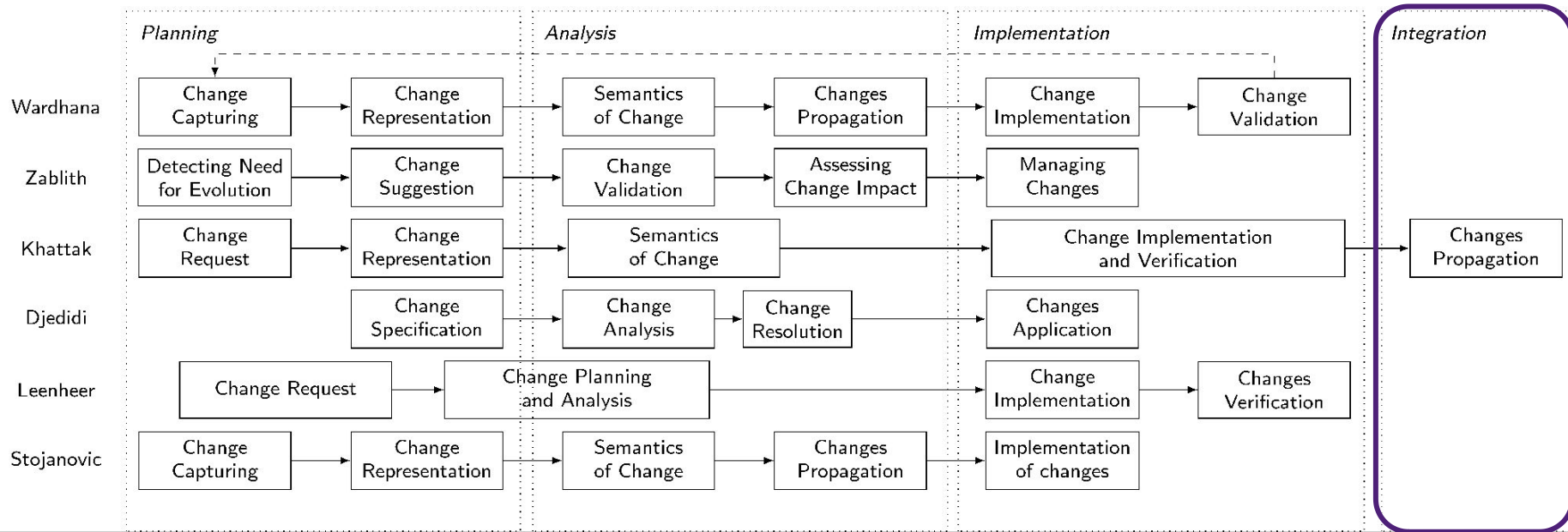
KG Evolution?

LOT4KG:

Way of working

AI teams tend to not follow the proven "DevOps" and Agile approaches.

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Tool support

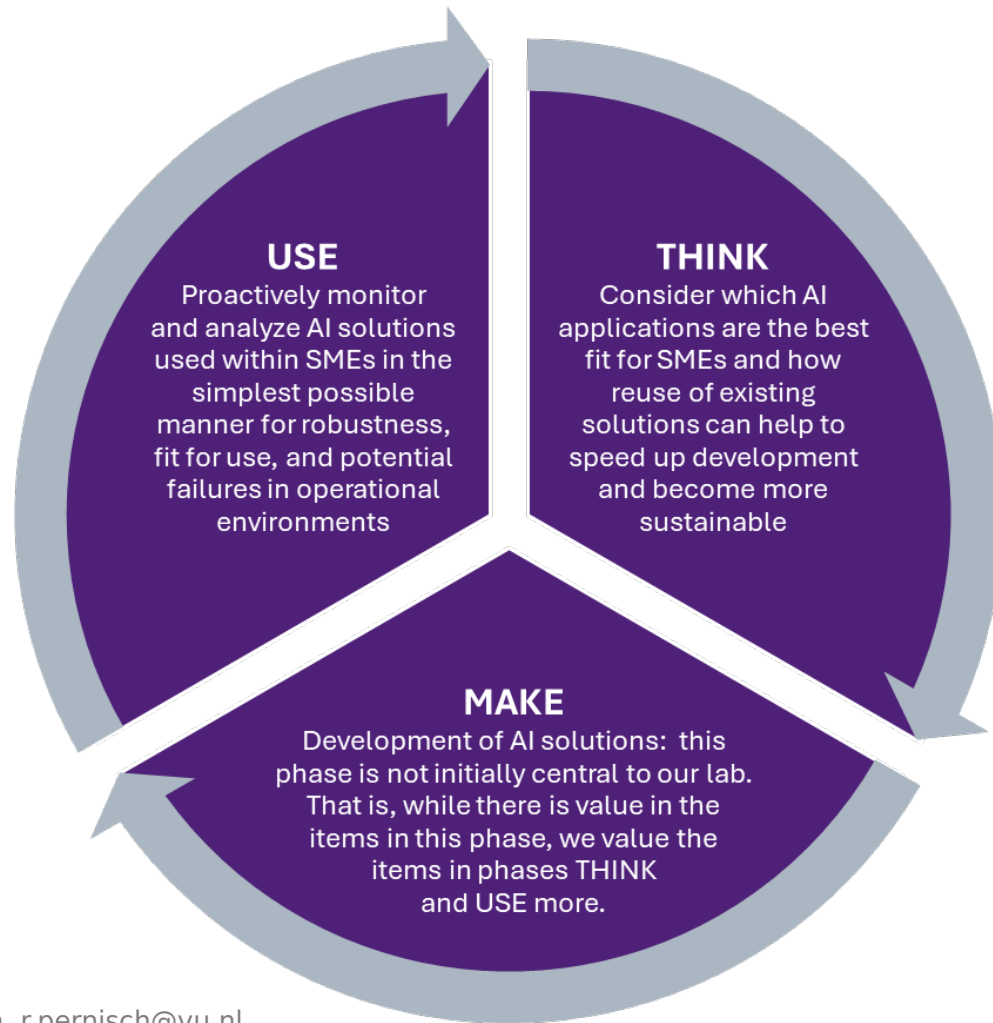Tool support for hybrid AI solutions is lacking today.

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Missing expertise

In SMEs, missing expertise to try AI solutions is a hindrance.

Establish robust lifecycle management practices for hybrid AI, as well as develop methodologies and tools which support it, which integrate continuous updates, validation, and monitoring, to enable easy adaptation.

VU

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USE
Proactively monitor and analyze AI solutions used within SMEs in the simplest possible manner for robustness, fit for use, and potential failures in operational environments

THINK
Consider which AI applications are the best fit for SMEs and how reuse of existing solutions can help to speed up development and become more sustainable

MAKE
Development of AI solutions: this phase is not initially central to our lab. That is, while there is value in the items in this phase, we value the items in phases THINK and USE more.

VU

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4 Track approach

1. **THINK**: recommender system for AI application

2. **THINK**: Exploratory study into the aspects of reuse of existing AI applications

3. **USE**: investigate monitoring and analysis approaches using KR

4. **USE**: continuous experimentation in an operational setting through A/B testing

Potential Impact

- Easier hybrid AI but especially KG adaptation

- Promotion of FAIR principles for AI

- Better support in initial stages and maintenance

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KG in AI and maintaining it all together:
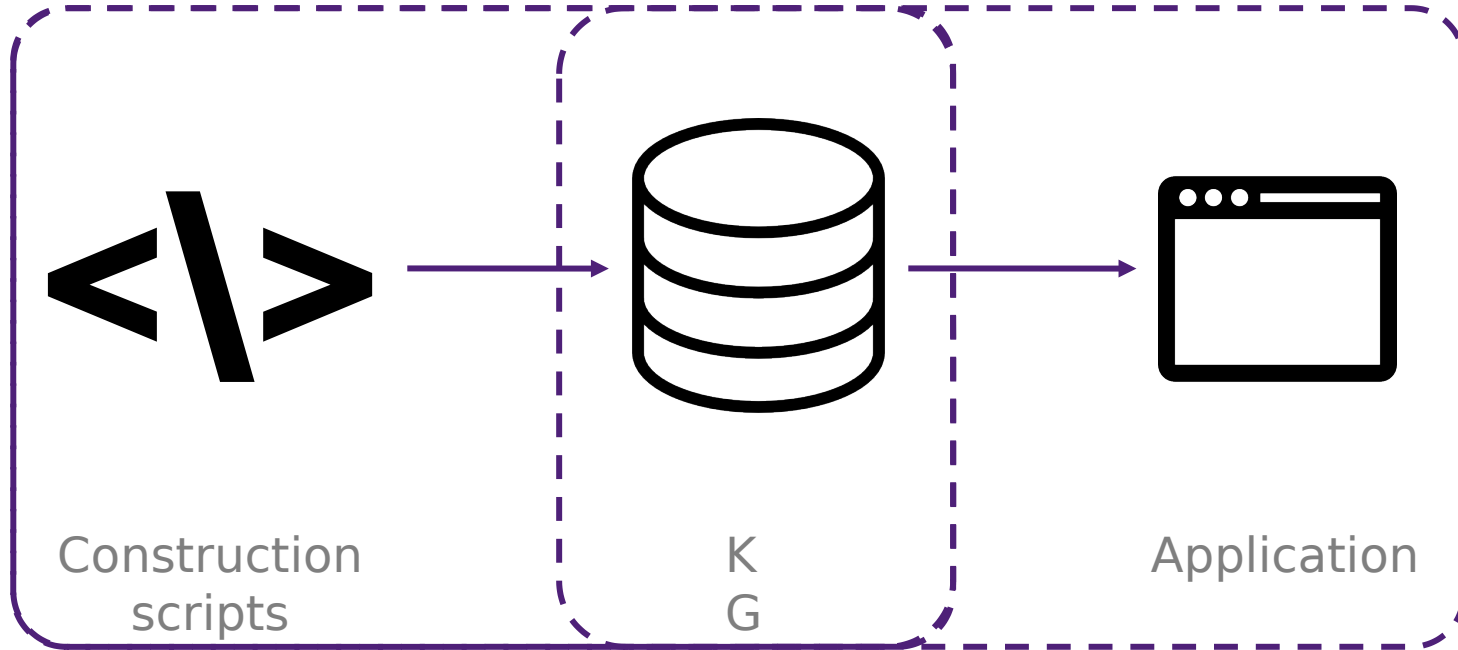
Construction scripts

K G

Application

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