



DevOps Performance Engineering: A Quasi-Ethnographical Study

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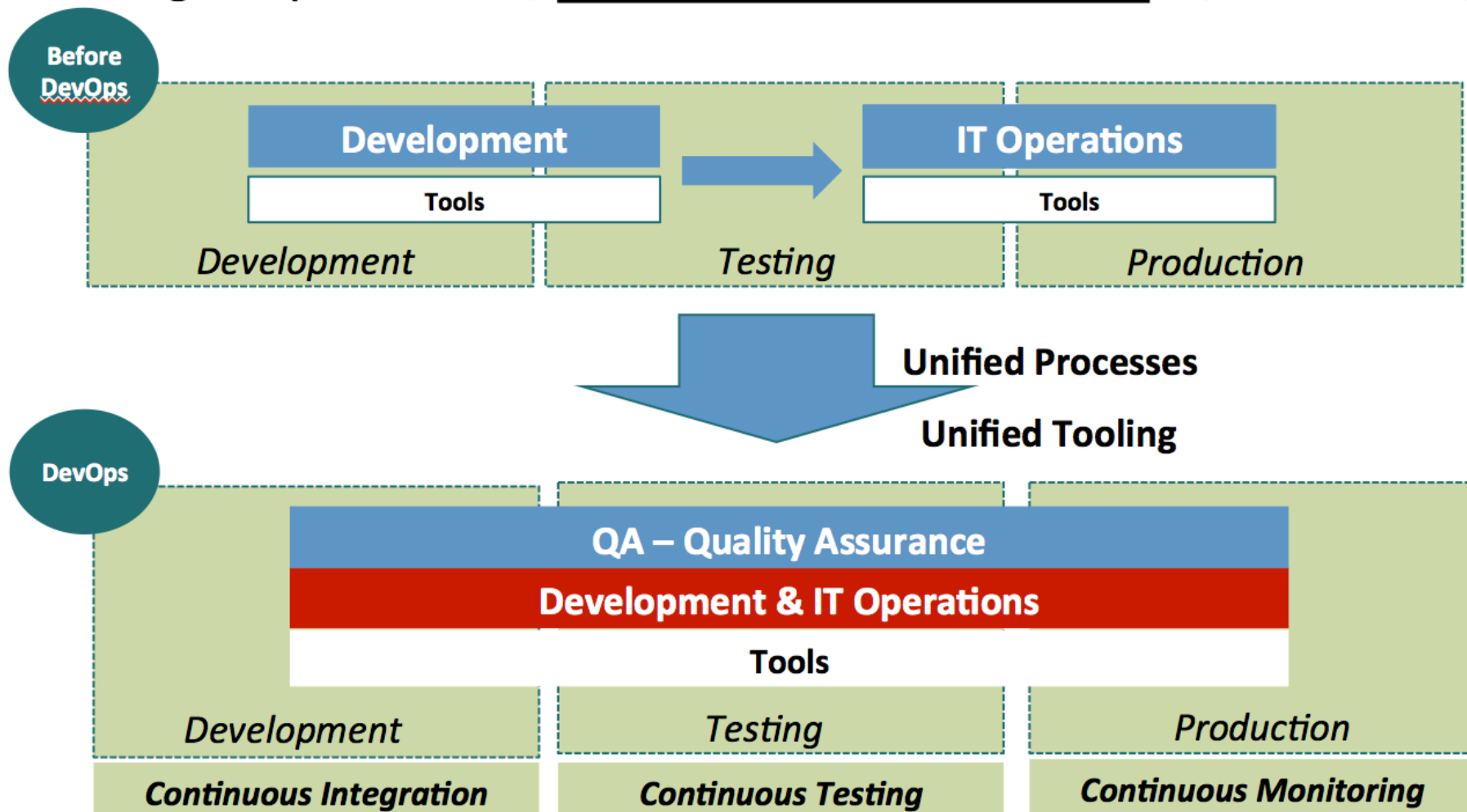


1. DevOps in pills and research problem
2. Research challenges and approach
3. Research Playground: The Phoenix Project
4. Results: 13 Processes in DevOps to be analysed
5. Conclusions and Research Agenda

DevOps in pills!



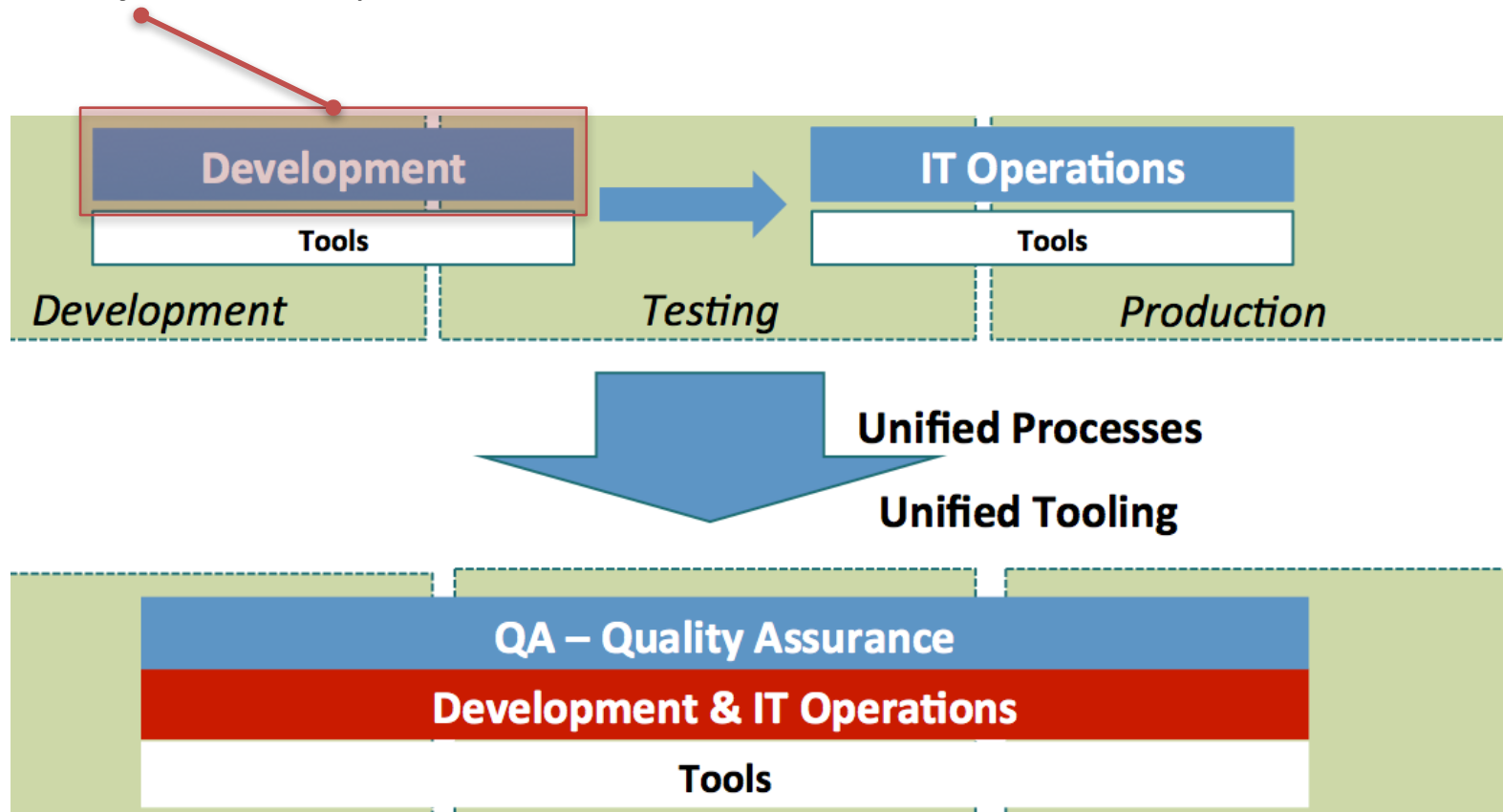
- DevOps is “A set of practices and tools to reduce the time to commit a change to production, while ensuring high-quality.” (*Bass et al., '15*)



DevOps in pills!



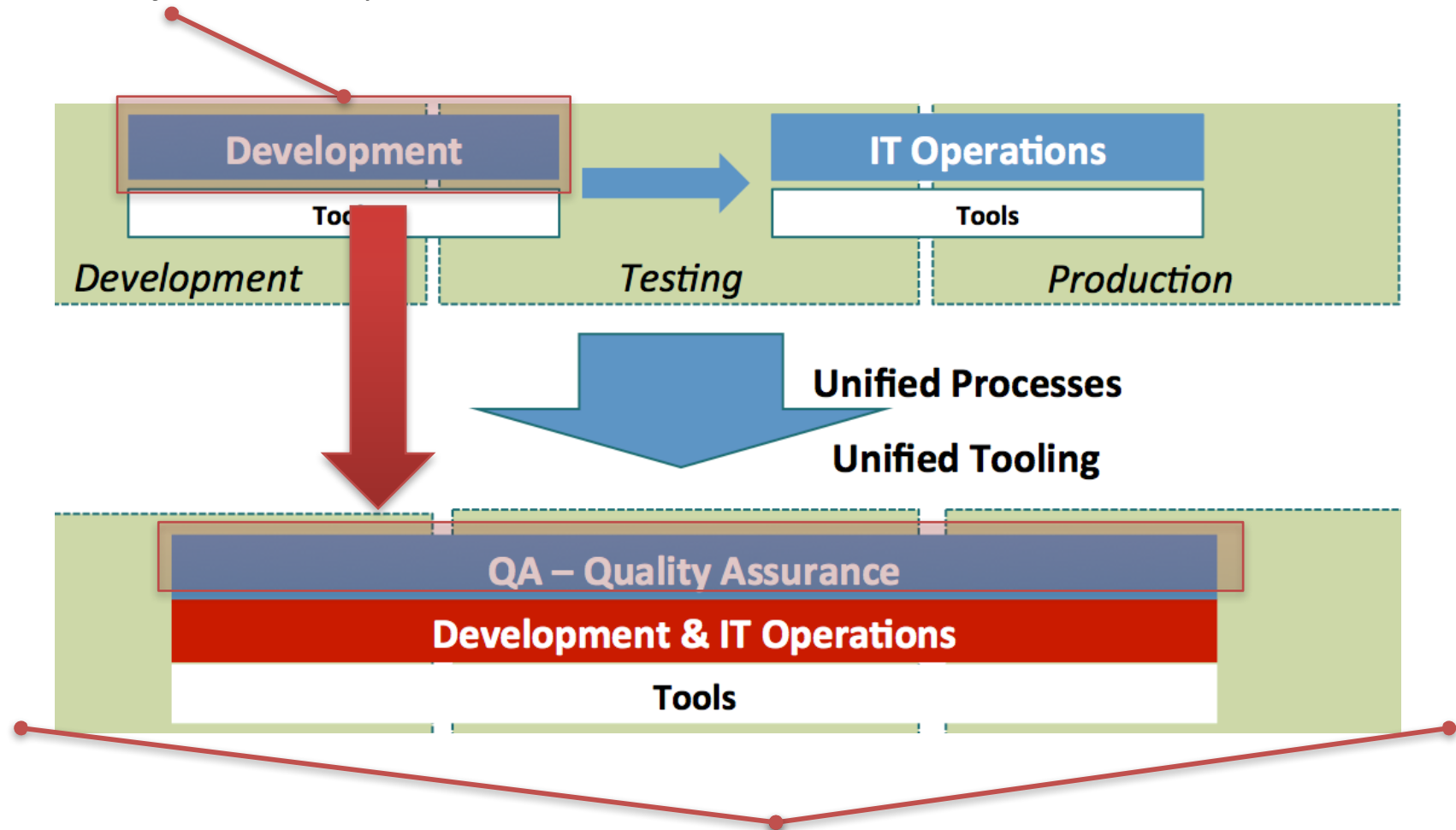
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DevOps in pills!



*SPE has **focused** mostly **in** analyzing **products** and at self-contained phases*



Can SPE span the entire DevOps process? To what degree? how/where?...

Research Problem



- SPE, typically product-scoped discipline...
 - Can we enlarge its scope? E.g., to encompass:
 - Tasks
 - People
 - Organizational structure
 - Multiple phases
 - Multiple views
 - ...

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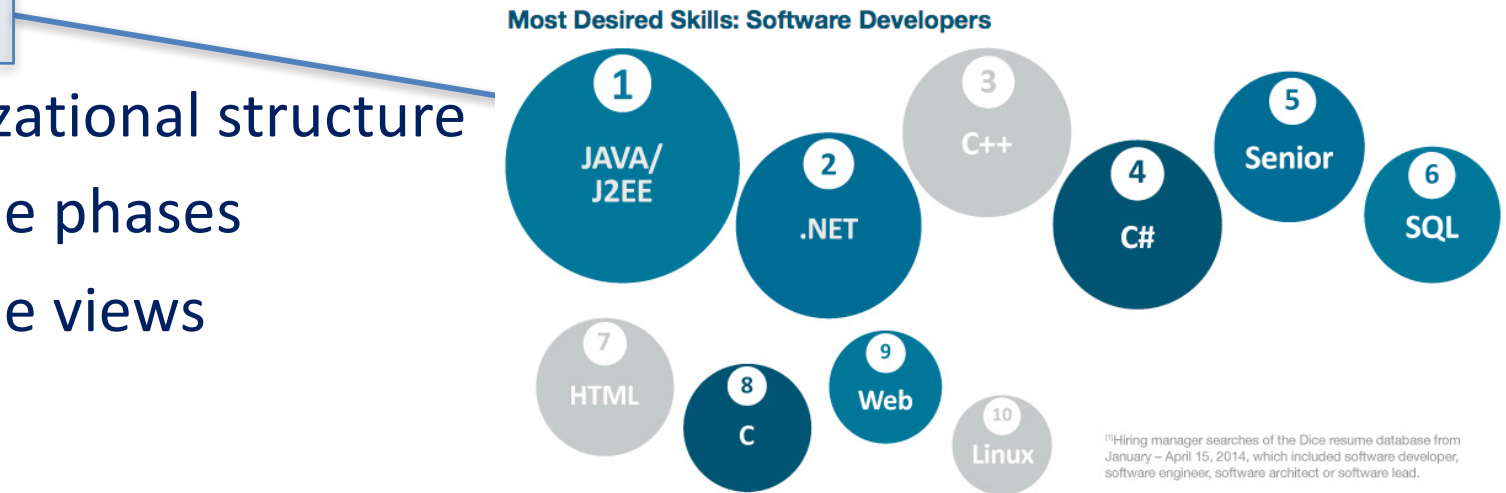
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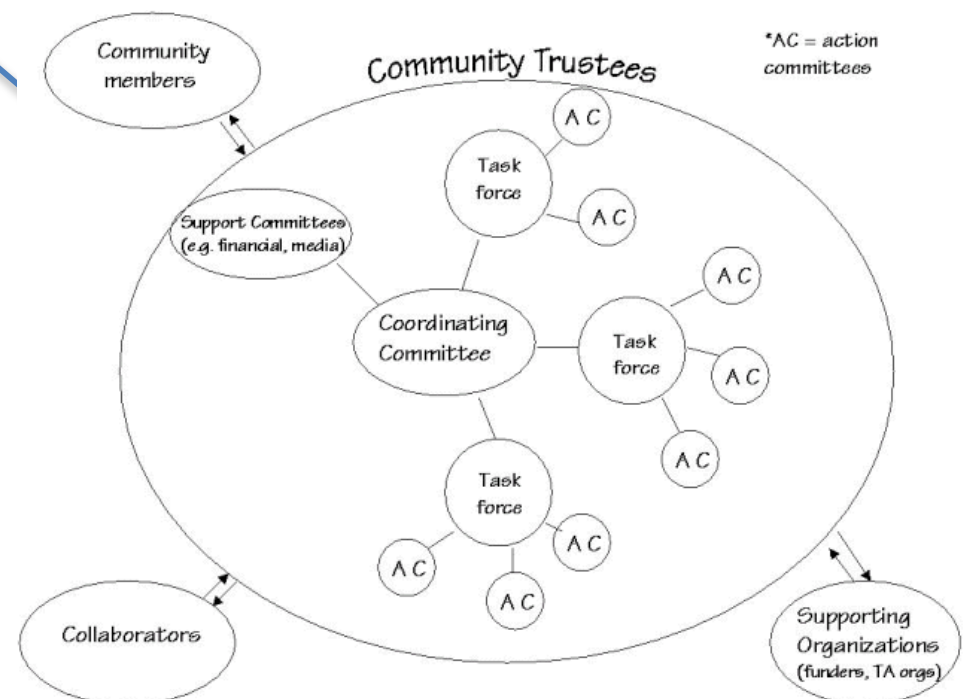
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Research Challenges



This is what we mean with **DevOps Performance Engineering**: *“SPE applied to entire Dev- -Ops Organisational Structure and Community’s Socio-Technical Processes”*

- RQ1: can model-based SPE support DevOps ***processes***? If so, ***how***?

➔ *Performance Metrics Matching*

- RQ2: what **variables** and **processes** should be modeled?

➔ *Input Information Matching*



- What are we looking for?
 - Typical DevOps Processes
 - Typical DevOps roles and variables



Exploratory Industrial Research:

1. Case-study;
2. Ethnomethodological Study;
3. ...

Research Approach



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The Phoenix Project!

The Phoenix Project



Insights and ethnographical reference into the “three ways”:

1. FTL Dev-to-Ops;
2. Continuous Feedback;
3. Fine-grained Risks management & trouble-shooting;

- 32 People Involved
- Big Product
- Continuous Everything

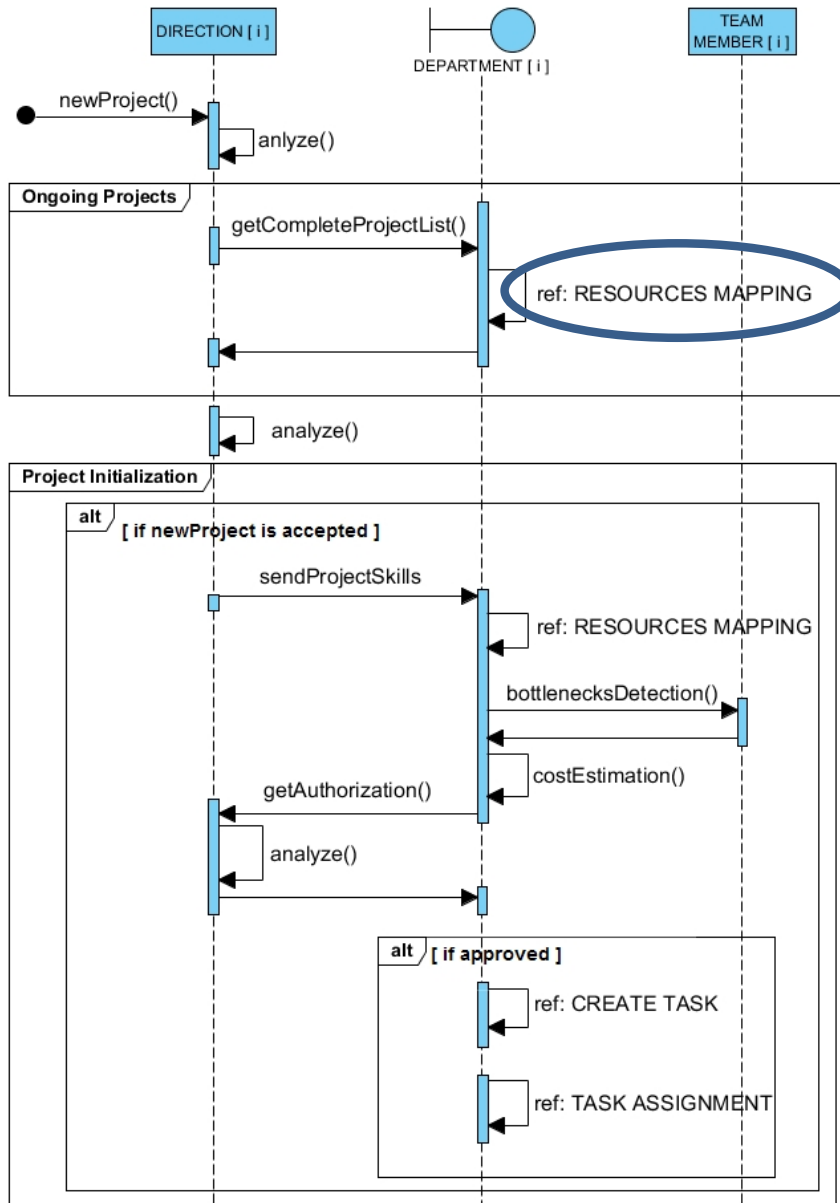
- Plenty of DevOps processes
- Large Timeline
- ...

Results Summary

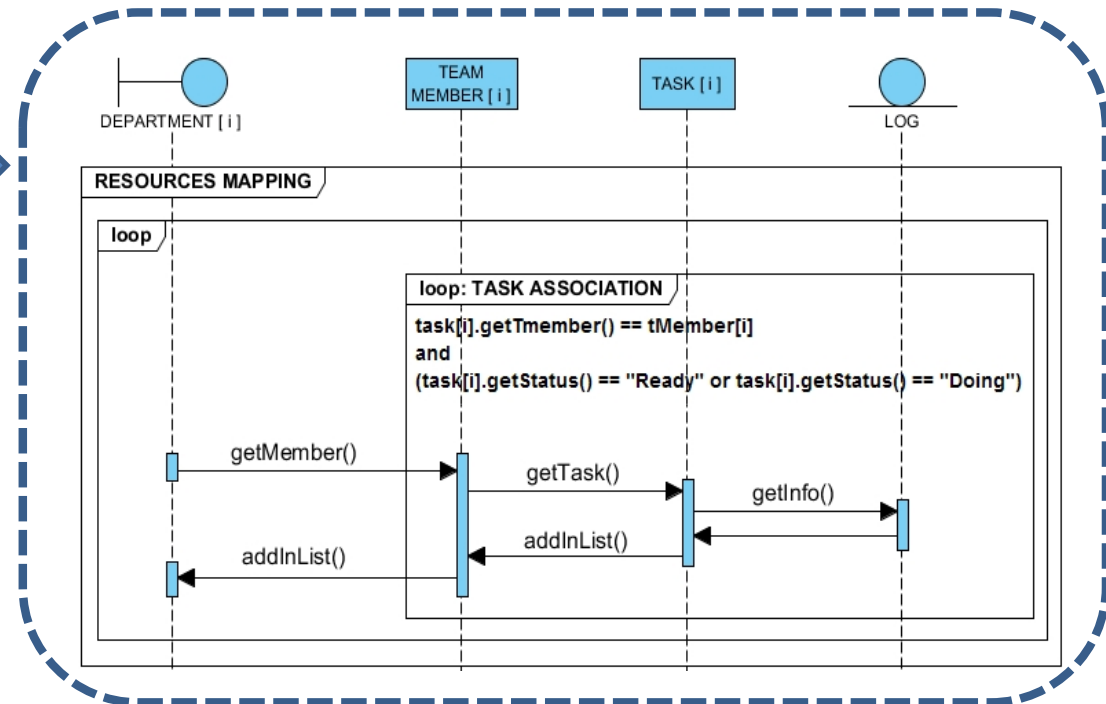


- 13 interlinked organisational processes (e.g., increment planning, task allocation, risk analysis & prioritization) ;
- 6 new roles (e.g., continuous architect);
- SPE may play a role in supporting all of them

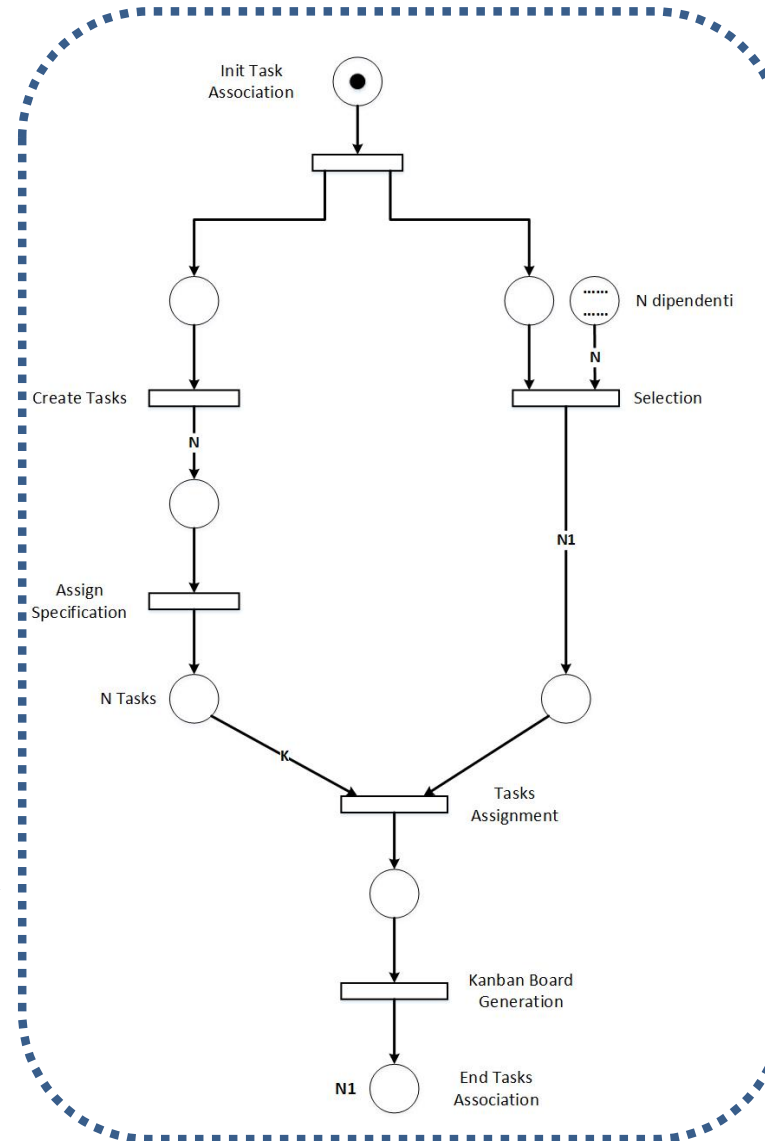
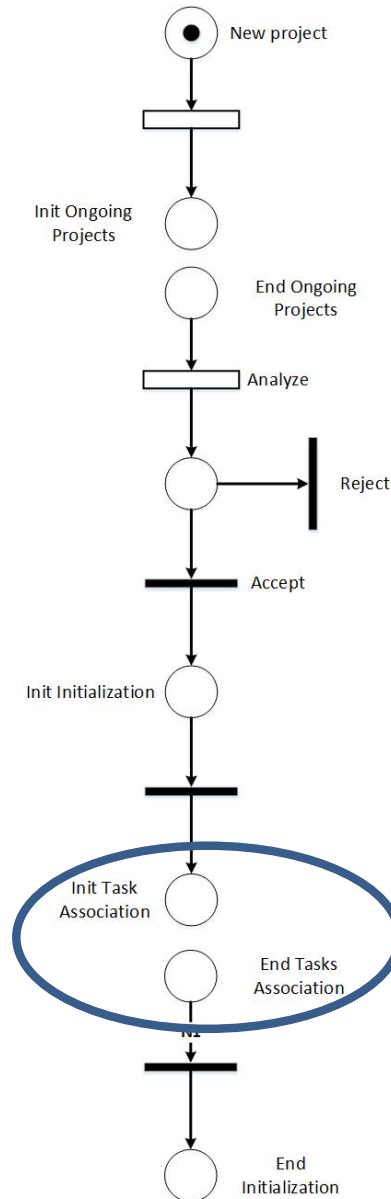
Results (cont'd)



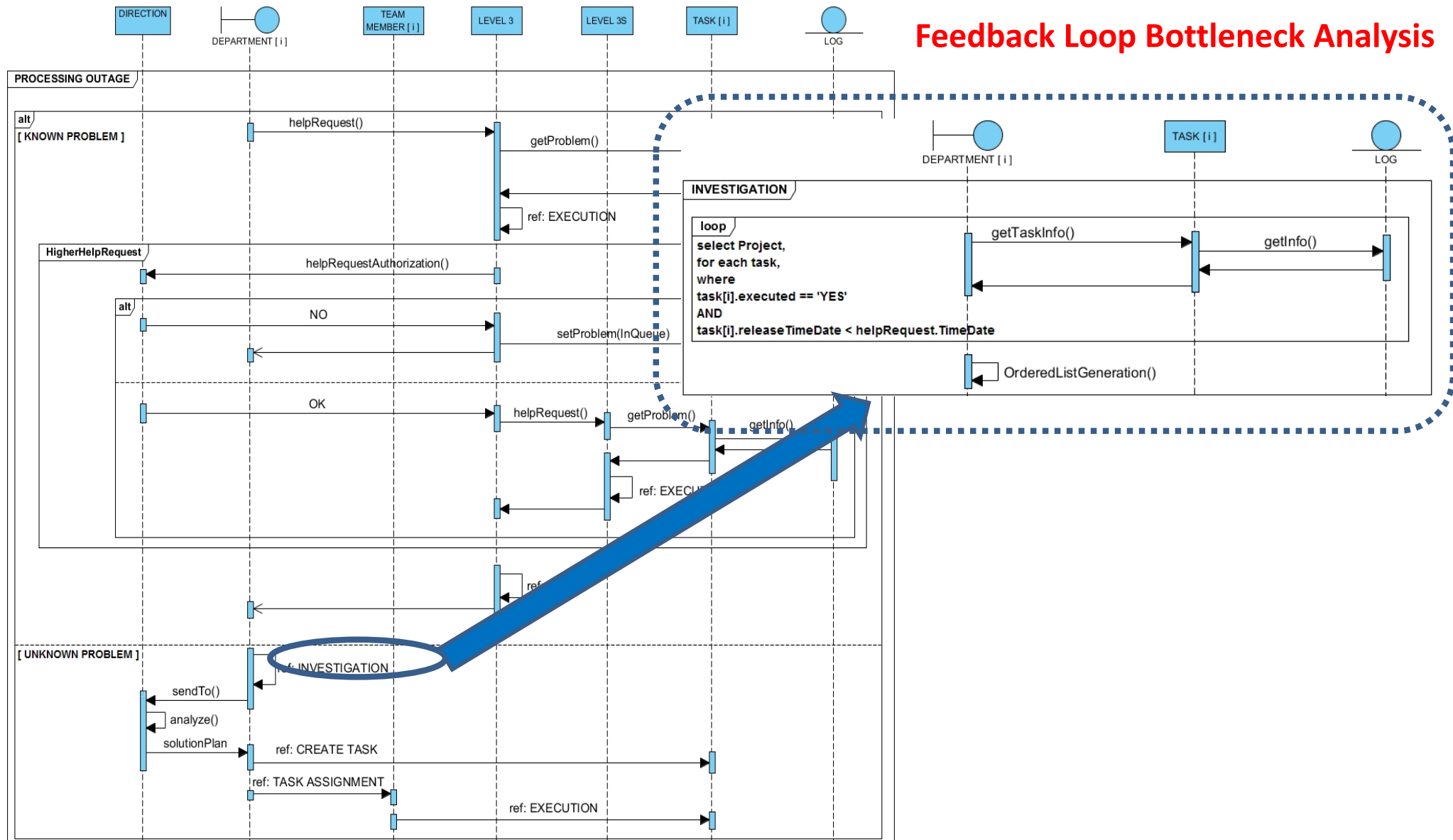
Resource Mapping & Task Allocation



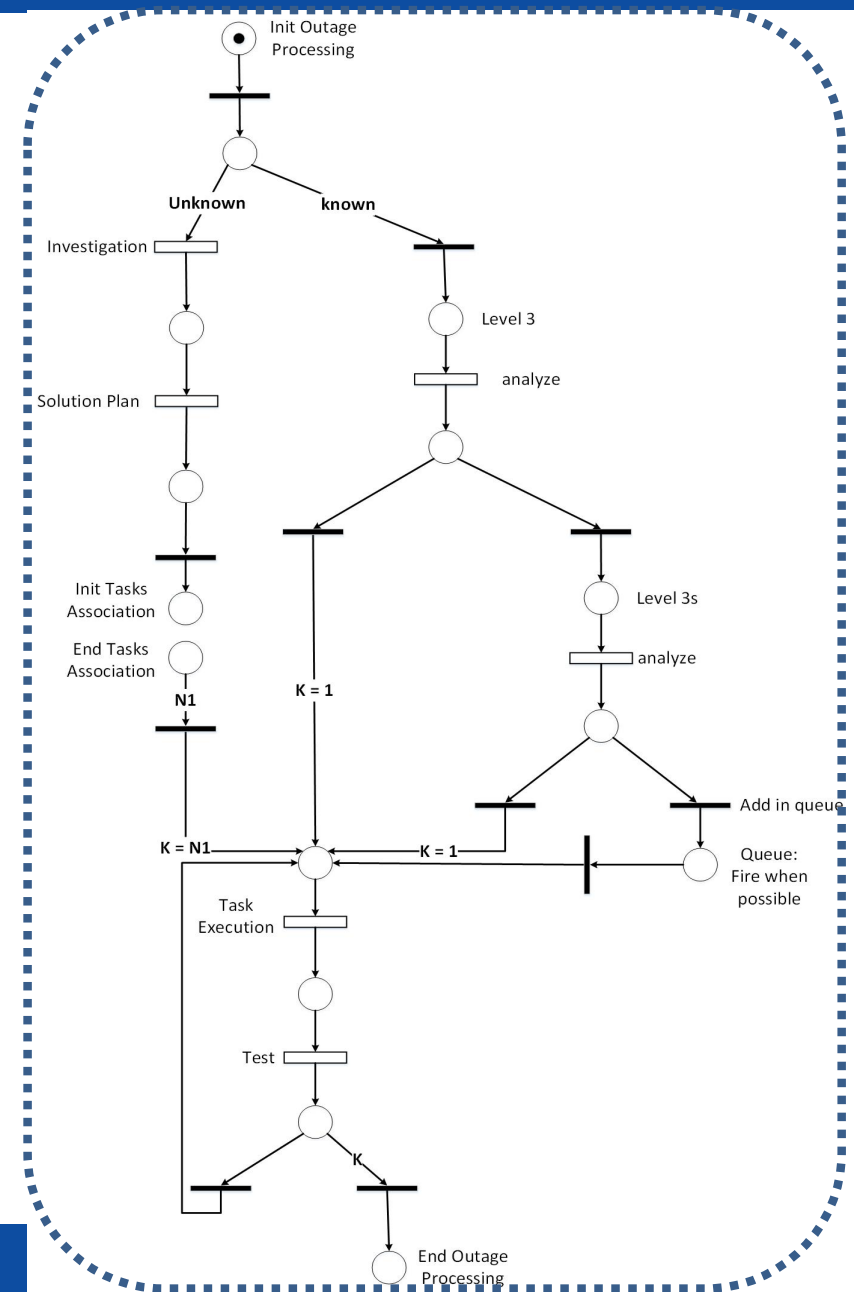
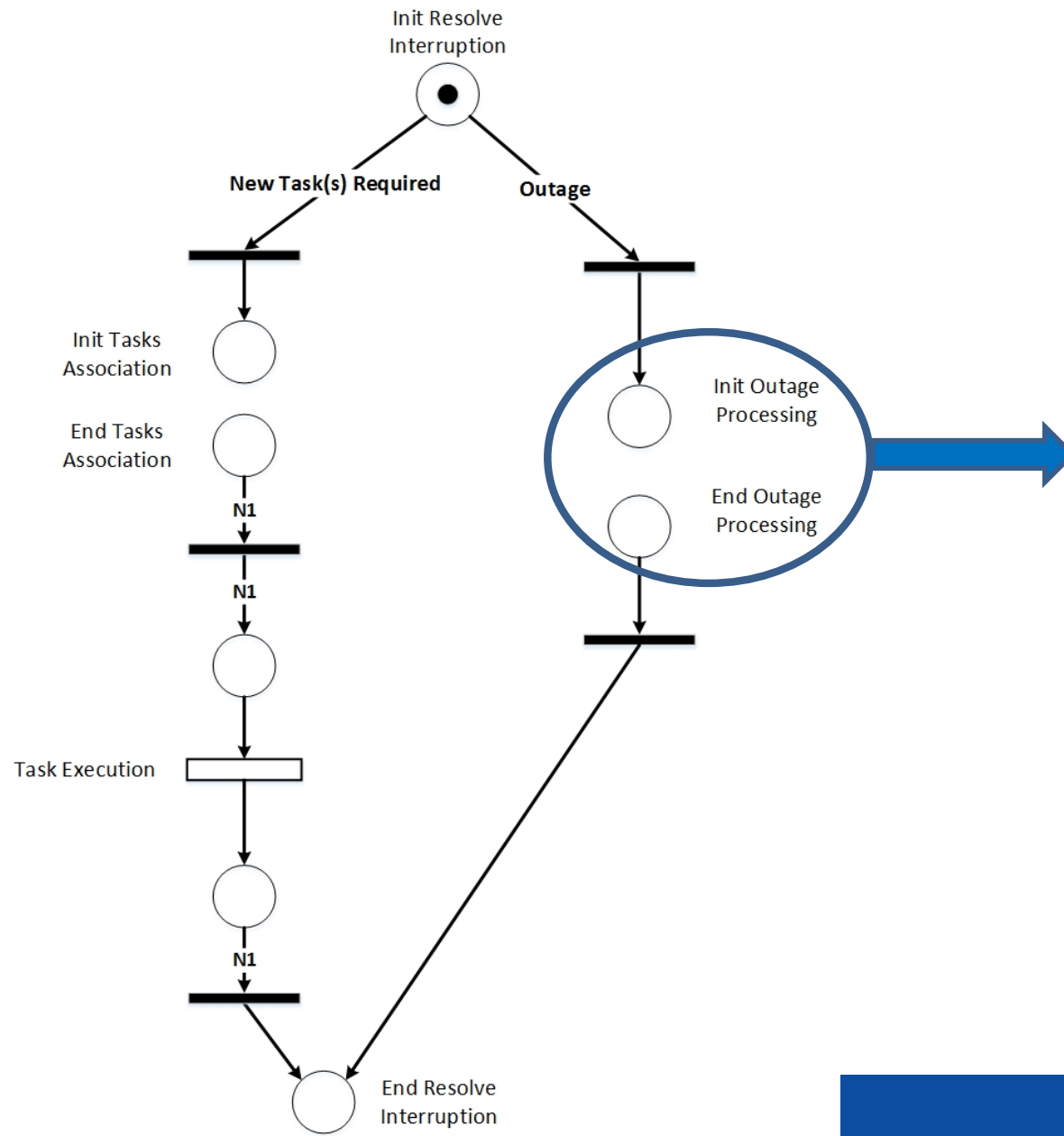
Results (cont'd)



Results (cont'd)



Results (cont'd)



Imagine...



- ... What if you could populate those PNs, QNs, ... with quantities? You could:
 - Compute best fit task-to-skill allocation suggestions;
 - Test an organizational structure's "performance";

What's Missing



- Quantities!
 - Velocity, e.g., task arrival rates, ...
 - People, e.g., skill-descriptors and their “weight”, ...
 - Structure, e.g., quantifiers for organisational characteristics
 - ...

Conclusions & Research Agenda

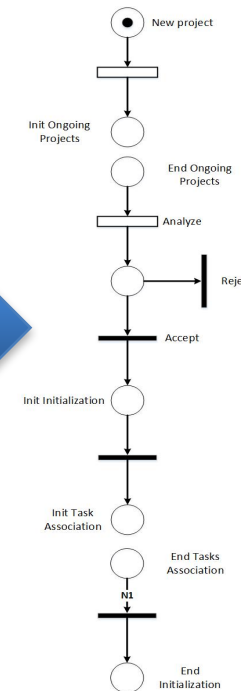
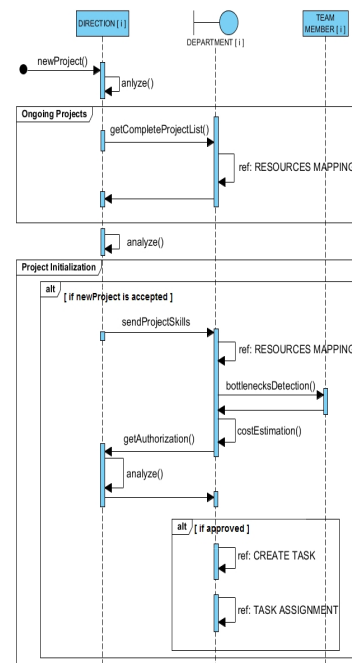


- SPE & DevOps organisational structure → **Synergy!**
 - There's plenty to do with SPE:
 - CH1: Modelling concurrency of people, skills, processes, ... ;
 - CH2: jointly analyzing complex processes, products, people;
 - ...
- Ref. Work, e.g., Joel Spolsky's Evidence-Based Scheduling;
- We'll try the following:
 - Proceed with Performance metrics & input information matching;
 - Multi-View Modelling of DevOps for SPE;
 - Uncertainty analysis in DevOps;

Questions?



○ Thanks!



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