SIEMENS

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Variability Modeling and Analysis of Value Networks in Software Ecosystems

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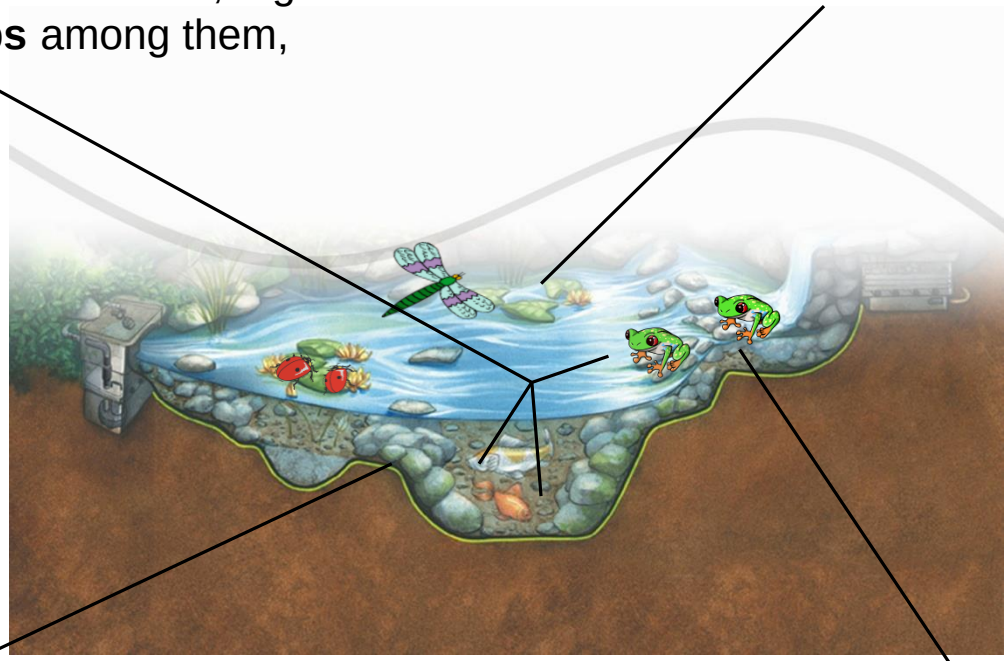
A Software Ecosystem consists of …

- a set of **interacting software and service providers and consumers**, together with the **relationships** among them,
- a **shared market** for software and services,



- a **common technological base** such as a reference architecture, core assets and/or standards.

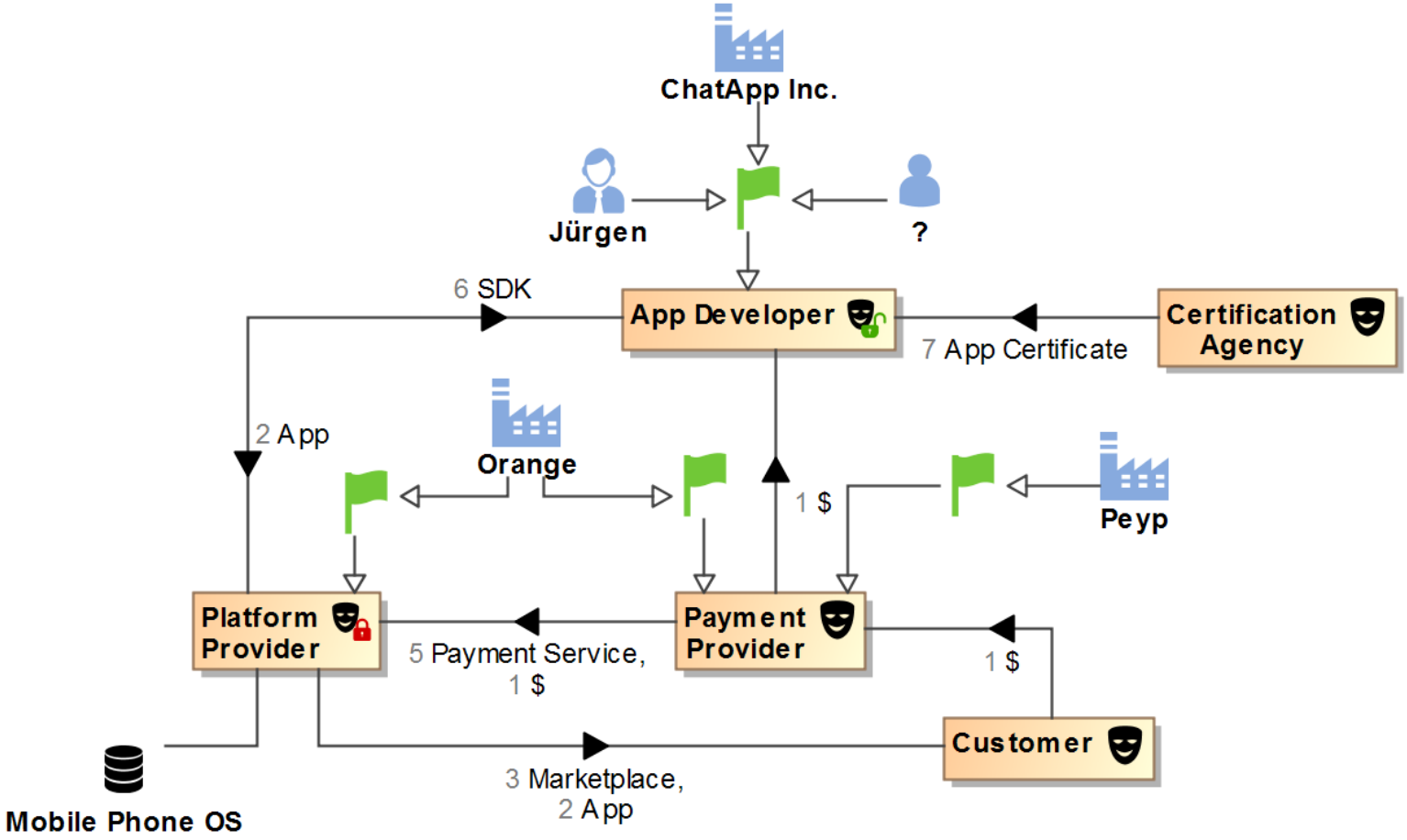
Members of a software ecosystem **may or may not** be part of the **same organization**.

Software Ecosystem Examples I

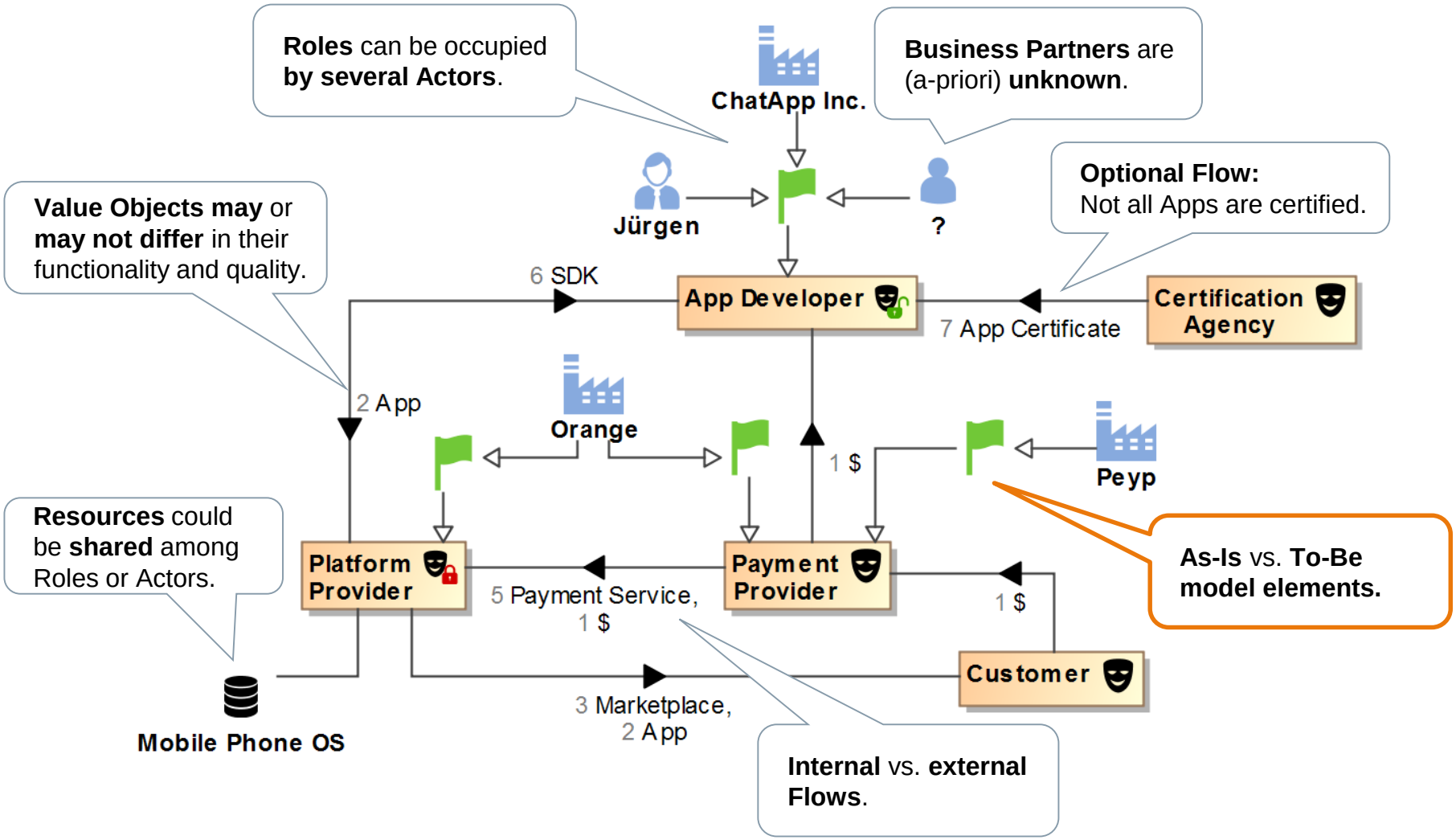
Software Ecosystem Examples II

Software Ecosystem Value Network

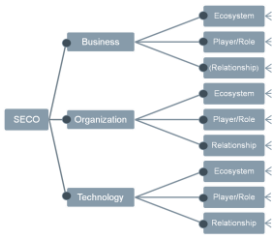
Fictional Sample Value Network



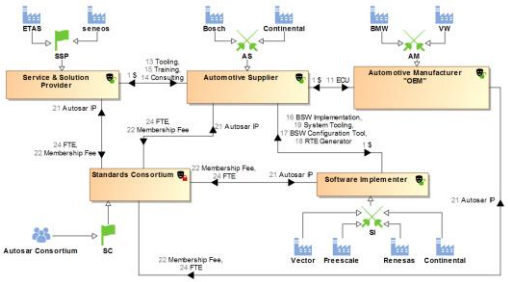
Variability Aware Value Networks



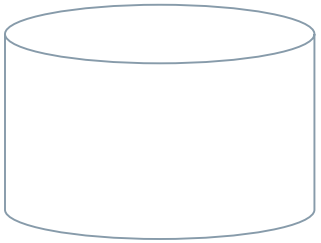
Approach



SECO C/V Analysis



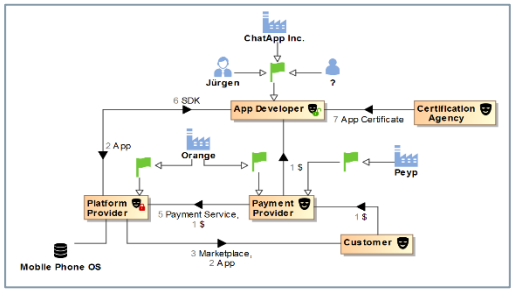
Siemens Case Studies



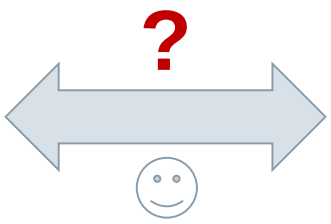
Literature Review

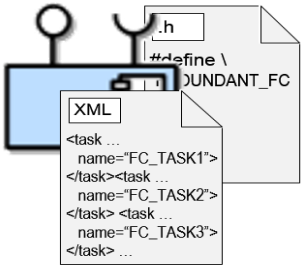
RQ1

Variable Value Network Modeling Approach



Value Network of Selected Case Study





SW Architecture (Same Case Study)

RQ2

Discussion

Pick any question or ask your own!

1. Does the assumption hold that the value network has an impact on the software architecture?

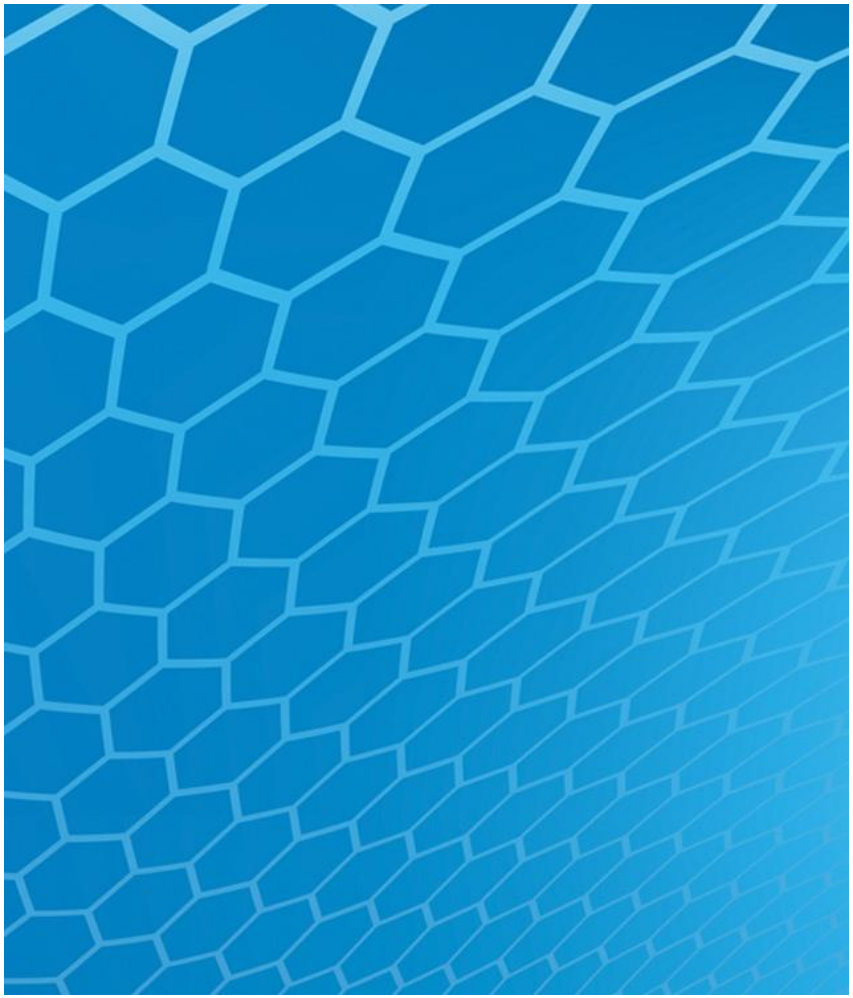
2. In the value network, should the As-Is and To-Be aspect be treated in the same way as the other variability kinds? If not, how else?

3. Does the inclusion of variability aspects in the value network add unnecessary complexity or is it actually useful for real world scenarios? What do you think?

...

Contact

You can message me using the following contact information:



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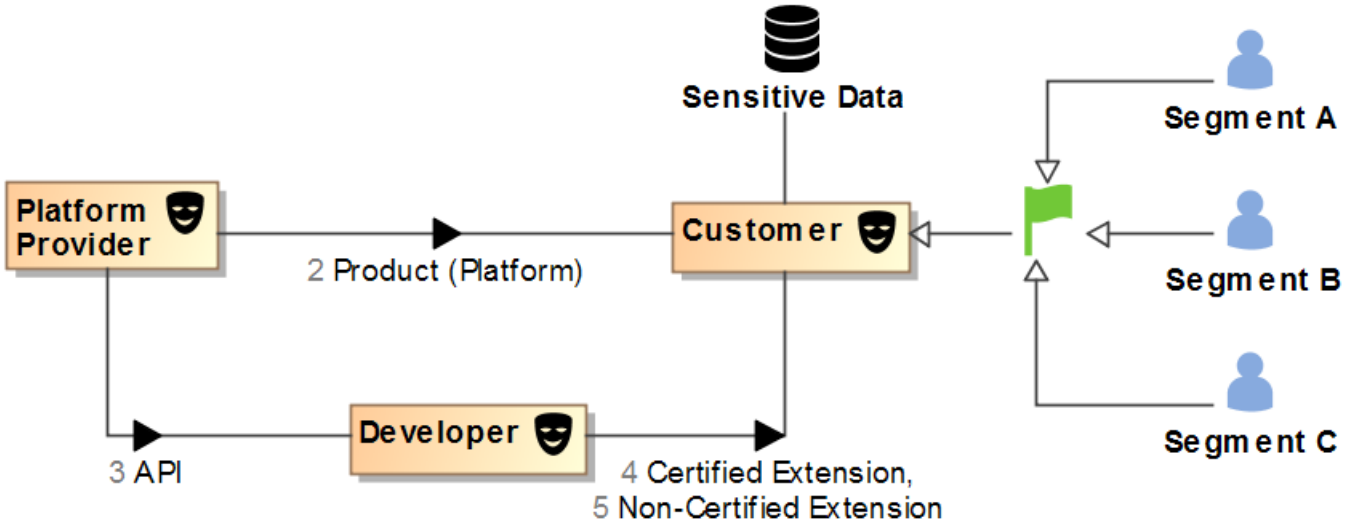
Research Questions

1. **What kinds of variability exist in software ecosystem value networks?**
   - Which kinds of variability can be deduced or observed?
   - Which ones are relevant?
   - Can they be categorized (e.g. “network variety”, “collaboration variety”, ...)?
   - How can variability be added to the SECO value network modeling approach?

2. **(How) Does the value network and its variability influence the software architecture definition process and the resulting artifacts?**
   - Which steps of the architecture definition process can use the value network as valuable input?
   - Can architectural design decisions be linked to pattern types in the value network?
   - How do changes in the value network impact the software architecture?

Proof of Concept[1]



The Platform Provider realized **many customer segments** existed **with unique and specific needs** the product itself could not satisfy.
An **ecosystem API** to the product was introduced. The API was **multi-layered** to support the need for protection of **sensitive data**. **Certified extensions** had greater access than **non-certified** ones.
Internally, the rest of the **product** had to **adapt** to support the differentiation of extensions.

1 Adapted from Bosch, J. & Bosch-Sijtsema, P., ESAO: A Holistic Ecosystem-Driven Analysis Model (2014)