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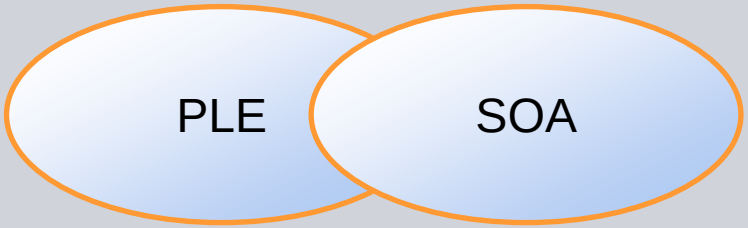
Corporate Technology

Combining Product Line Engineering and Service Oriented Architecture in Health Care Infrastructure Systems: Experience Report



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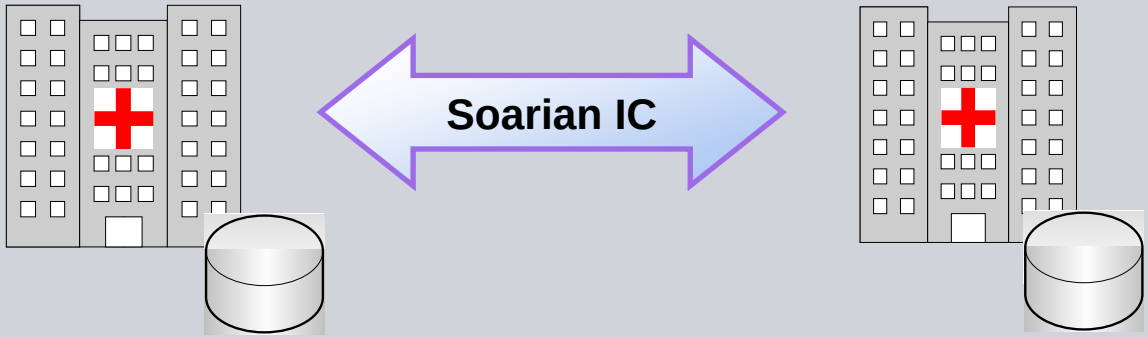
Business Case

Hospitals have a HIS (Hospital Information System).
Data is shared between departments (intra-hospital)

But what if it comes to transferring a patient to another hospital?
You carry your X-ray images with you

Soarian IC targets
- § inter-hospital communication
- § Special scenarios of external data integration



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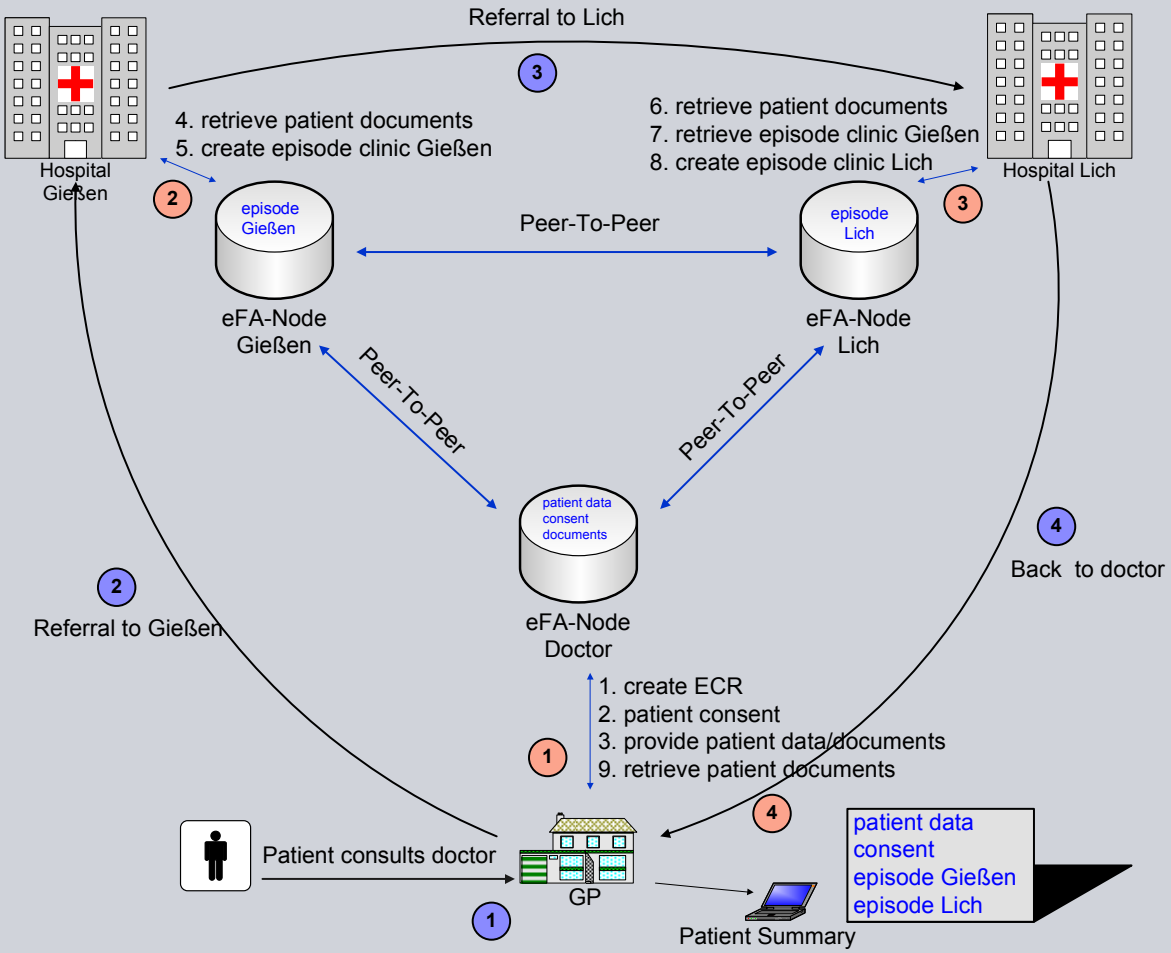
In future: target residential doctors, too



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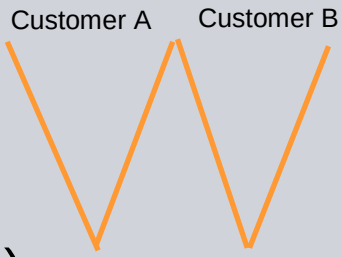
History

Product development was serialized
Previous version forms the bases for the next version (architecture erosion)
Results in monolithic application, interwoven dependencies



Assumptions:
Increased customer base (no serialization possible anymore)
Focus on main selling assets
Make system ready for integration

Goal:
Introduce SOA-approach: import/export via interfaces, composition of features via service chaining
Introduce PLE: focus on core assets, allow for customer specific variations, introduce new features in core if proven at one customer

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Challenges

1. *Increasing variability*
2. *Configurability/Subset-ability*
3. *Extensibility*
4. *Increased testability*
5. *Outsourcing*
6. *Risk effect mitigation*
7. *Exploitation of COTS (Common-Off-The-Shelf) products*
8. *Prioritization of features to be integrated in the platform*
9. *Positioning in the market (guide the customer)*
10. *Acceleration of tender preparation*
11. *Clinical workflows*
12. *Traceability*

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Approach

1. Scoping (2,8,9,10):
   - § Increasing customer base requires focus on most profitable features
   - § Starting point: Group current requirements to features
   - § Use feature model for reasoning with product mgmt, sales, development, etc („common language“)
2. Variability Management (1,3,4,12):
   - § Reduce variability points (expensive!) pre-configurations
3. Building re-use culture (1,2,4,10):
   - § Keep clear product portfolio strategy
   - § Focus to market commonalities
   - § Quick hacks forbidden in the core assets

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Approach

4. Self-containment (2,3,4,5,6,12):
   - § Fosters decoupling of components
   - § Allows for exchange to third-party components
   - § Allows to be used as a system, not only by humans via Web-Interface
   - § Improves testability
5. Integration (2,7):
   - § More freedom to tailor to customer needs
   - § Face the fact that Siemens is not the only supplier
6. Flexibility (5,11):
   - § Adding workflow or rule engines
   - § support specifics of each customer (ideally by the customer)
   - § Late (dynamic) binding

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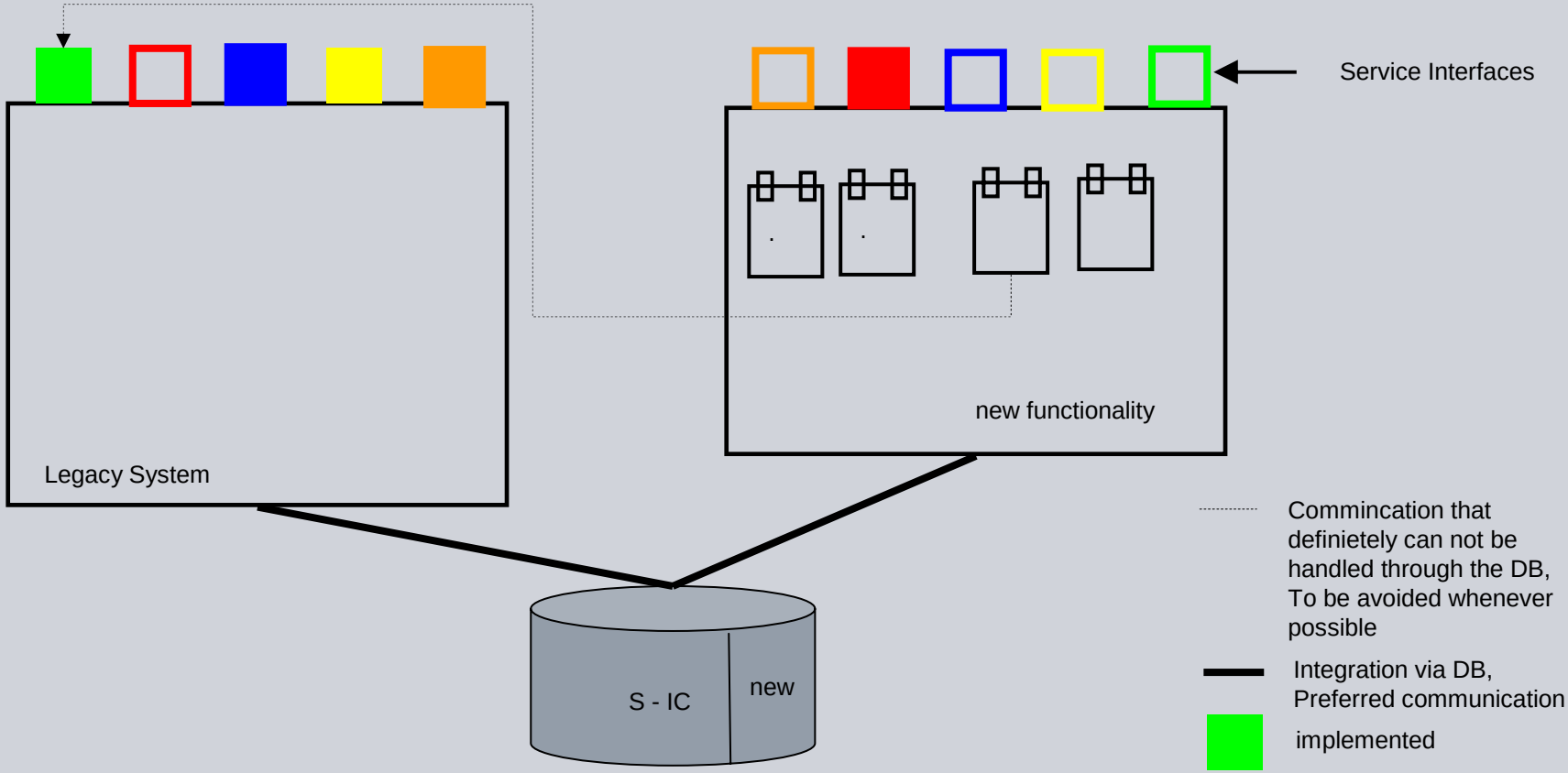
Approach

Other projects showed the likelihood of failure in a big-bang approach
We favor a migration strategy



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Conclusion

- SOA build a prominent, natural variation point with late (dynamic) binding capabilities
- Services as a variation point means flexible tooling available (Workflow engines, BPEL)
- Self-containment reduces coupling and fosters variation
- We will not follow the total unawareness of the usage context implied by SOA protagonists.

Future challenges

- Data model can not be changed as long as old application components exist
- Restructure the organization (nobody wants to loose influence, learning-curve)
- Wrap legacy system with new service interface without side-effects

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Questions & Answers

Now, or later …

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