



Software Architecture in the Presales Process

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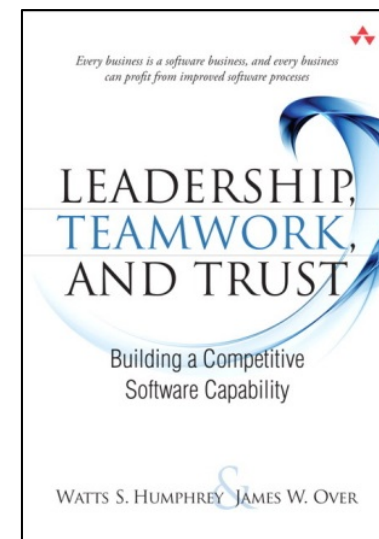
Universidad Autónoma Metropolitana – Iztapalapa /
Quarksoft

SATURN 2014

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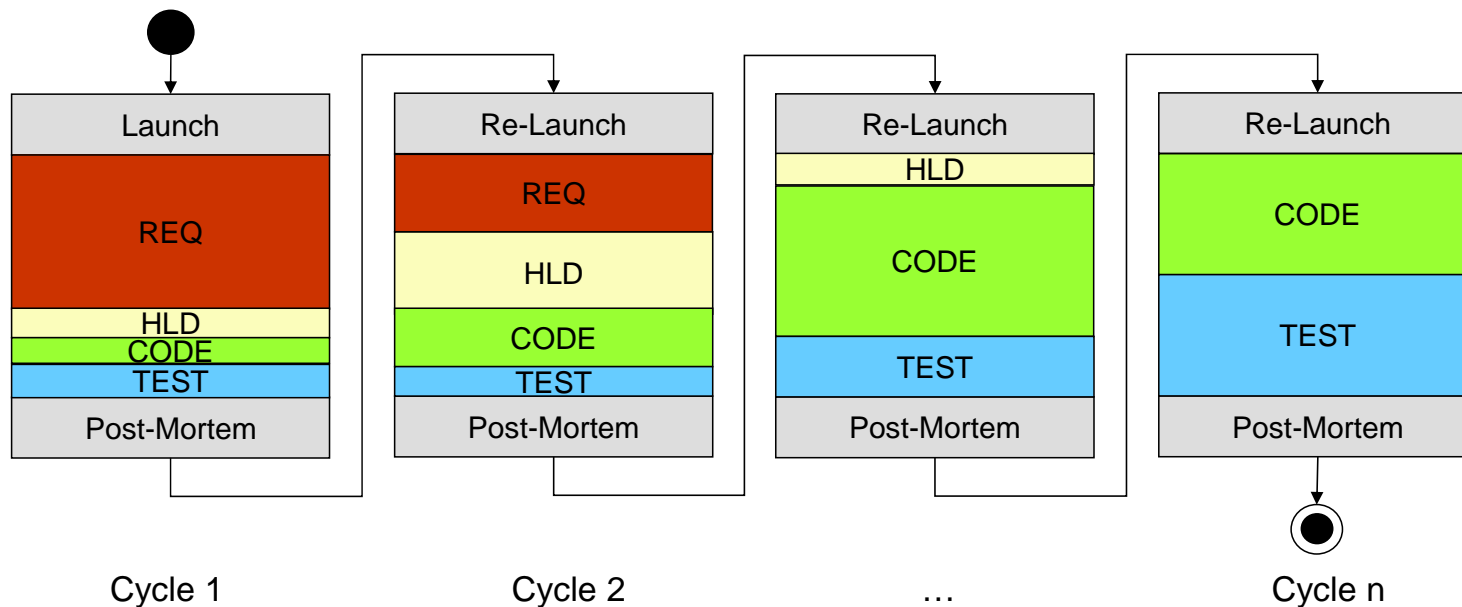


- A leading software development company based in Mexico City
 - Founded in 2001
 - Offices in Mexico, Spain and USA
- Quarksoft develops custom software for different domains
 - Insurance, Manufacturing, Telecommunication, Government Healthcare
 - Many projects are greenfield development of enterprise applications
- Rated at CMMI level 5
 - Development based on the Team Software Process (TSP)



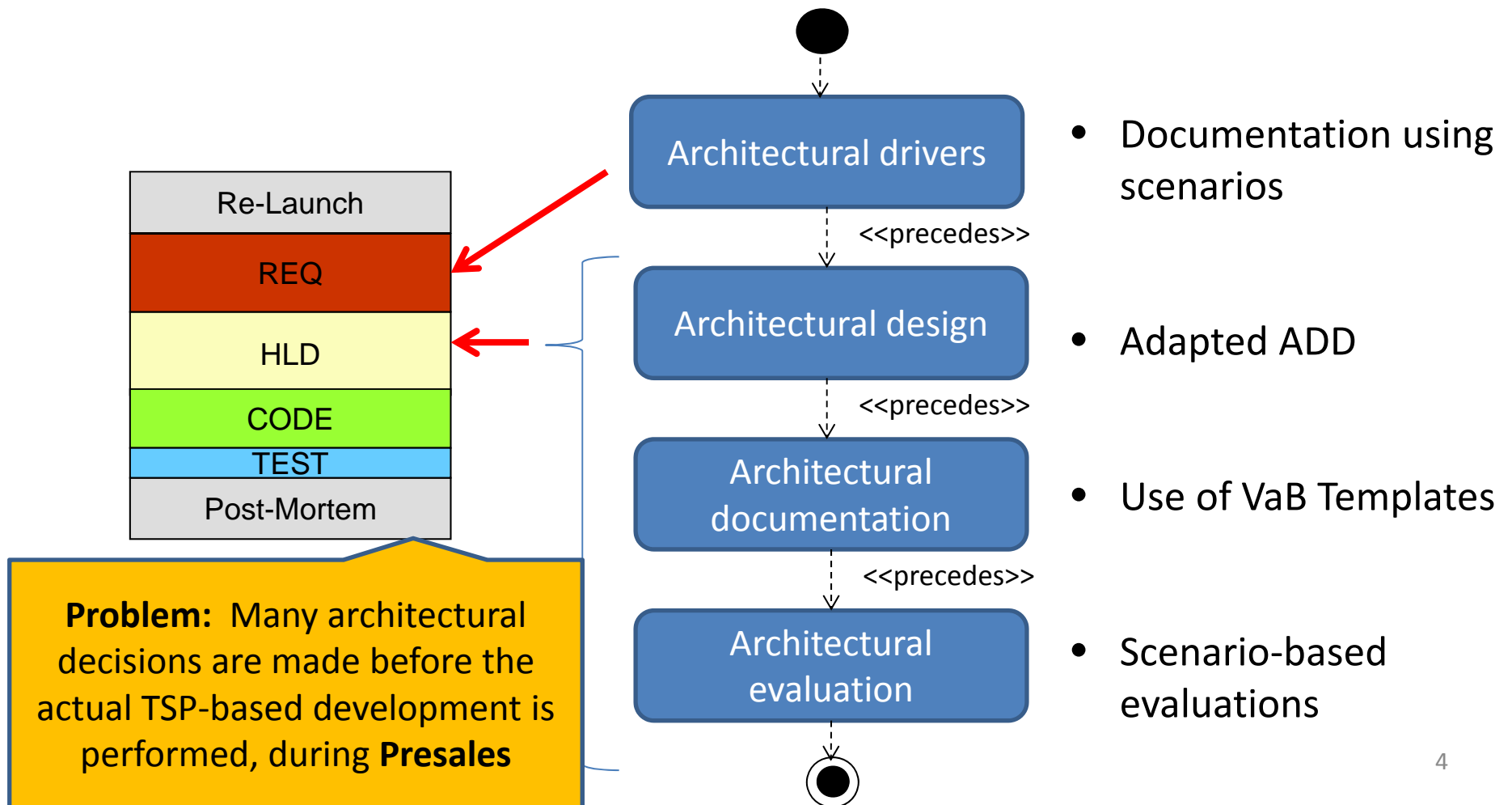
Team Software Process (TSP)

- Proven method that helps plan, evaluate, manage and control software development work
 - Focus on metrics-based project and quality management
 - Does not provide precise guidance on the engineering activities such as requirements or architectural design



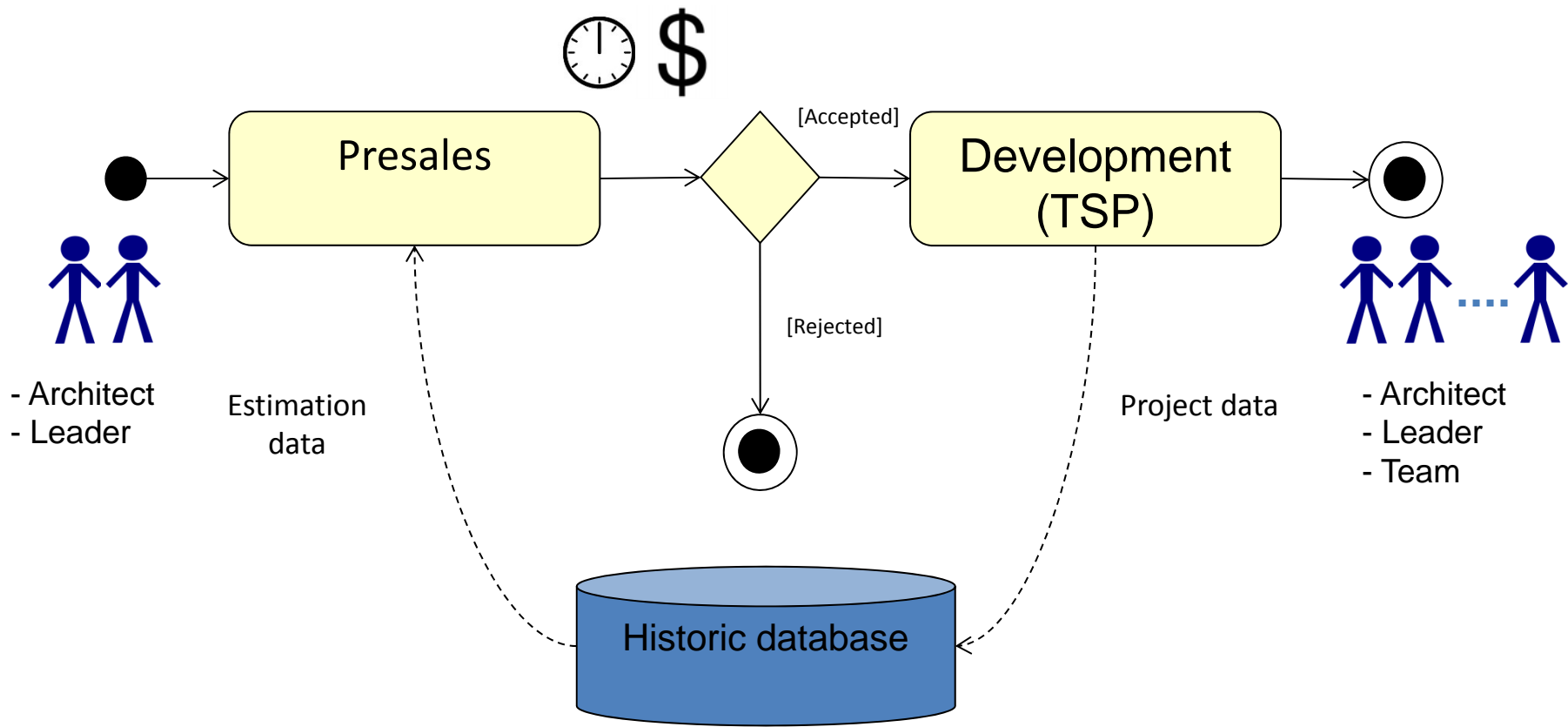
Previous work

- *“Introducing Software Architecture Development Methods into a TSP-Based Development Company” (SATURN 2010)*



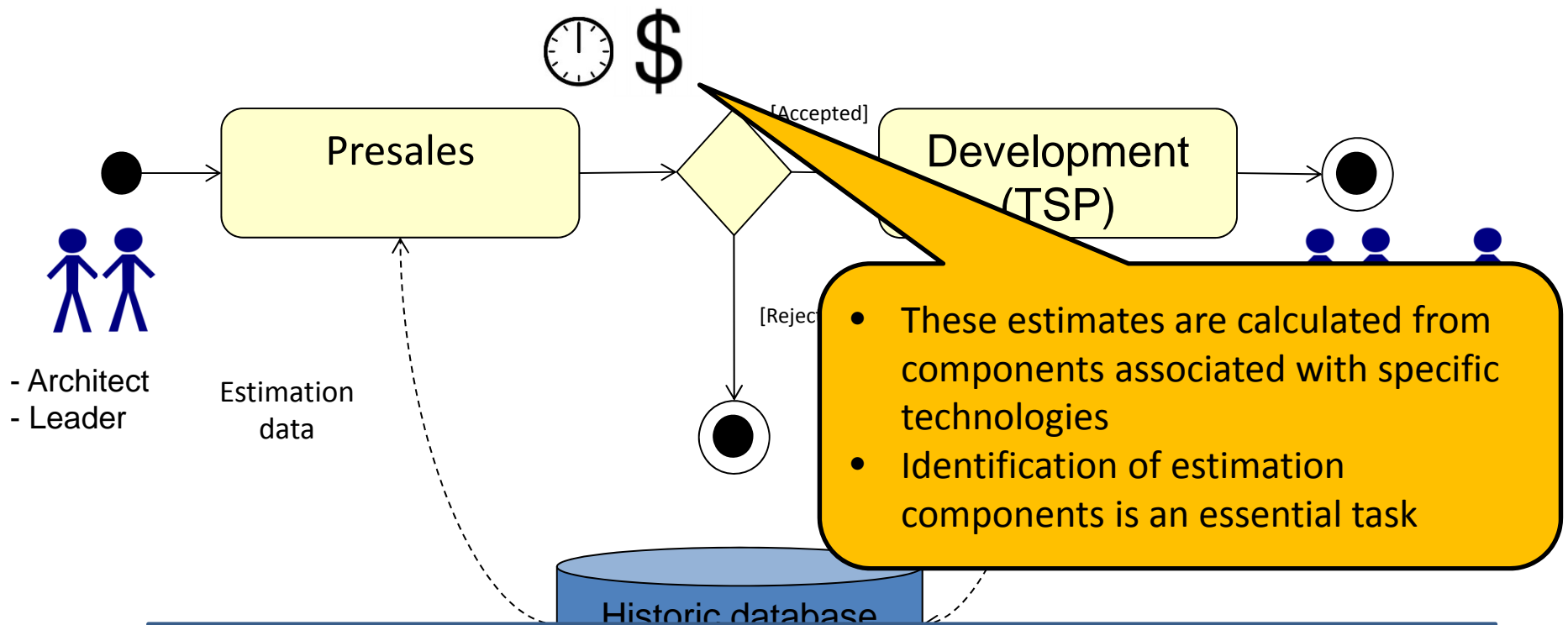
Project development

- 2 important phases



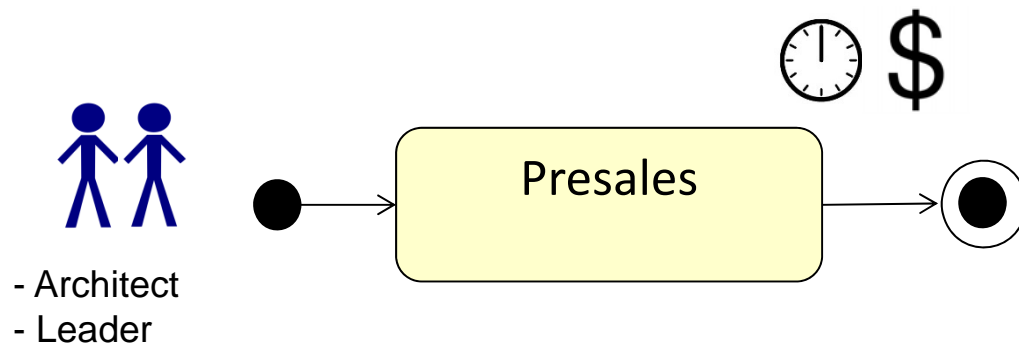
Project development

- 2 important phases

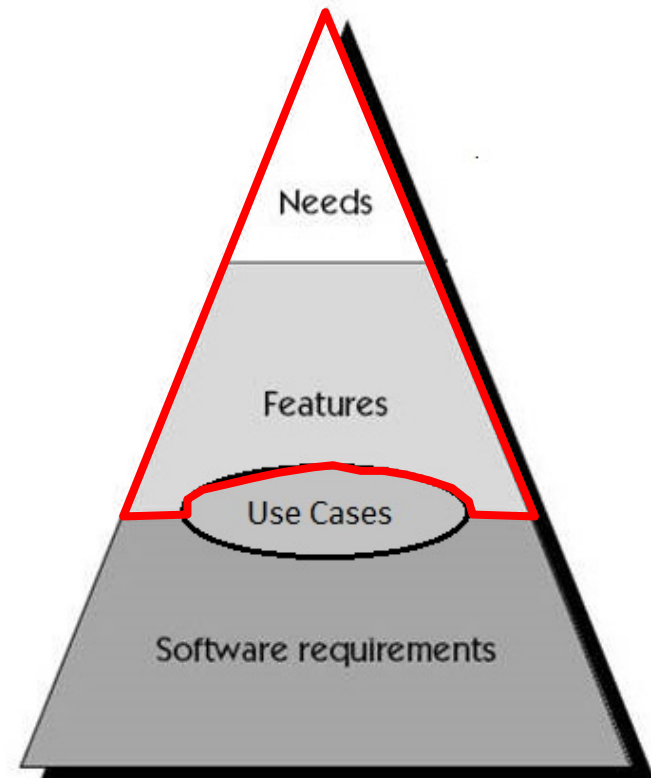


Architecture development starts in presales

The presales context



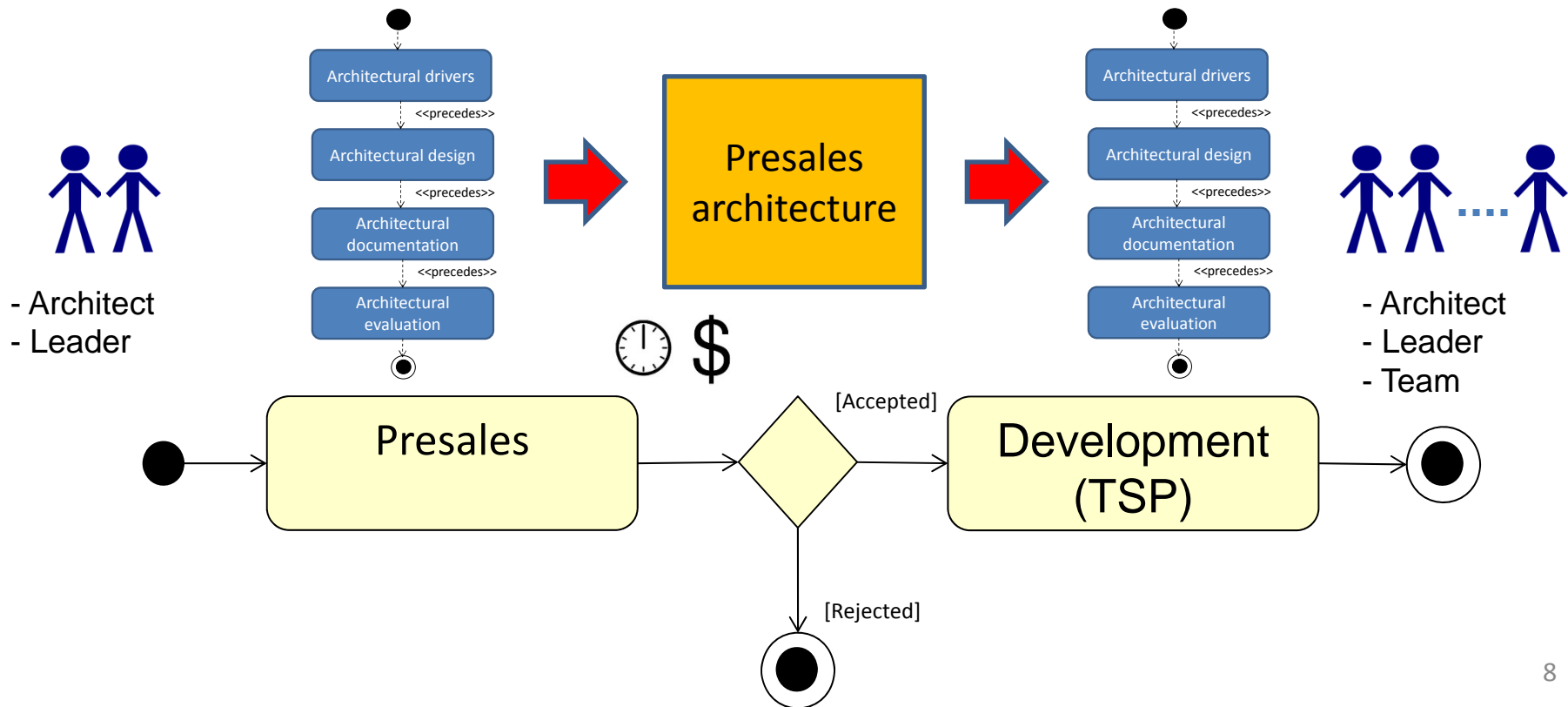
- Limited information
- Short time
- Internal constraints
- Competition with other providers



Leffingwell, D. "Features, Use Cases, Requirements, Oh My!", Rational Software White Paper, 2000

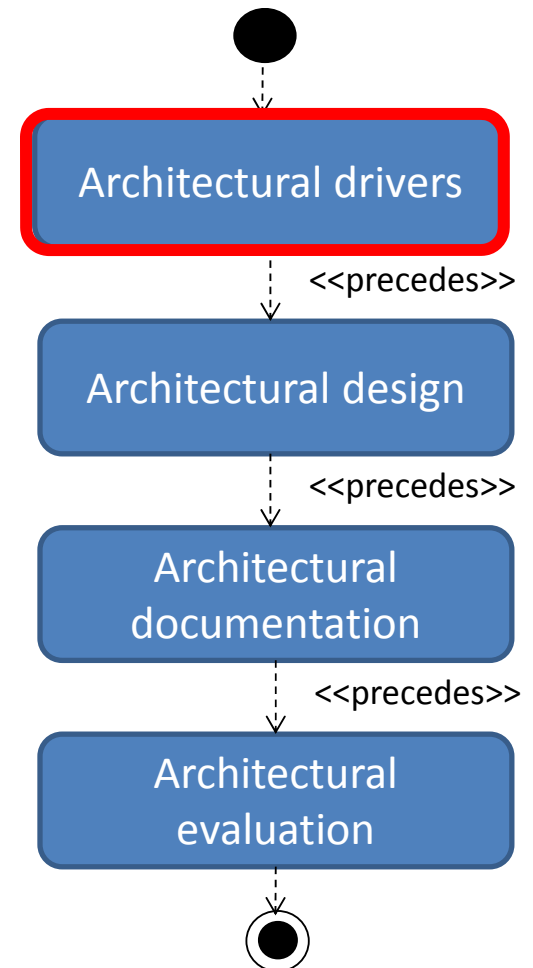
Architecture in Presales

- We had to adapt architectural methods to the presales context



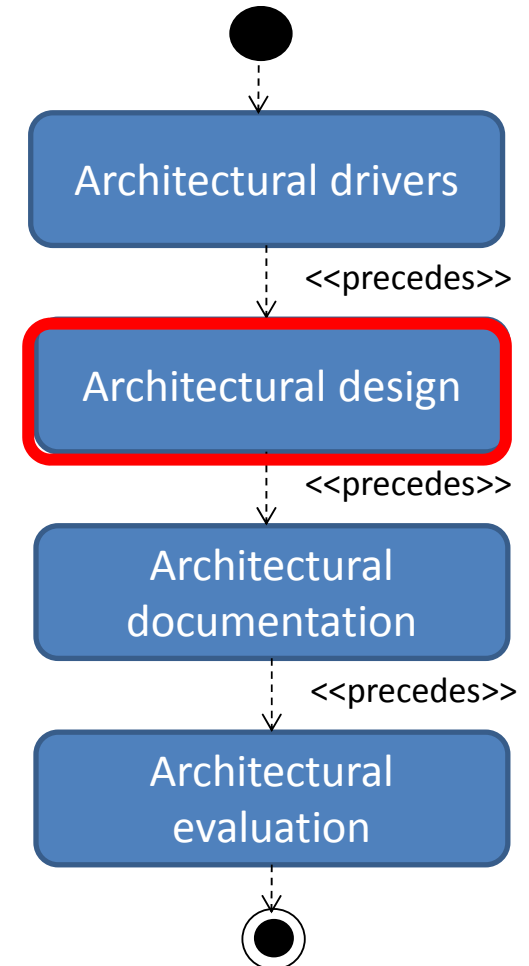
Presales architectural drivers

- We shifted the focus from purely functional features to an architectural drivers approach
 - Primary features
 - “The kiosk system shall allow birth certificates to be visualized and printed”
 - Early quality attributes
 - “100% of the information that is stored in the kiosk system shall be protected (Security)”
 - Constraints
 - “The operating system of the kiosks is windows XP”

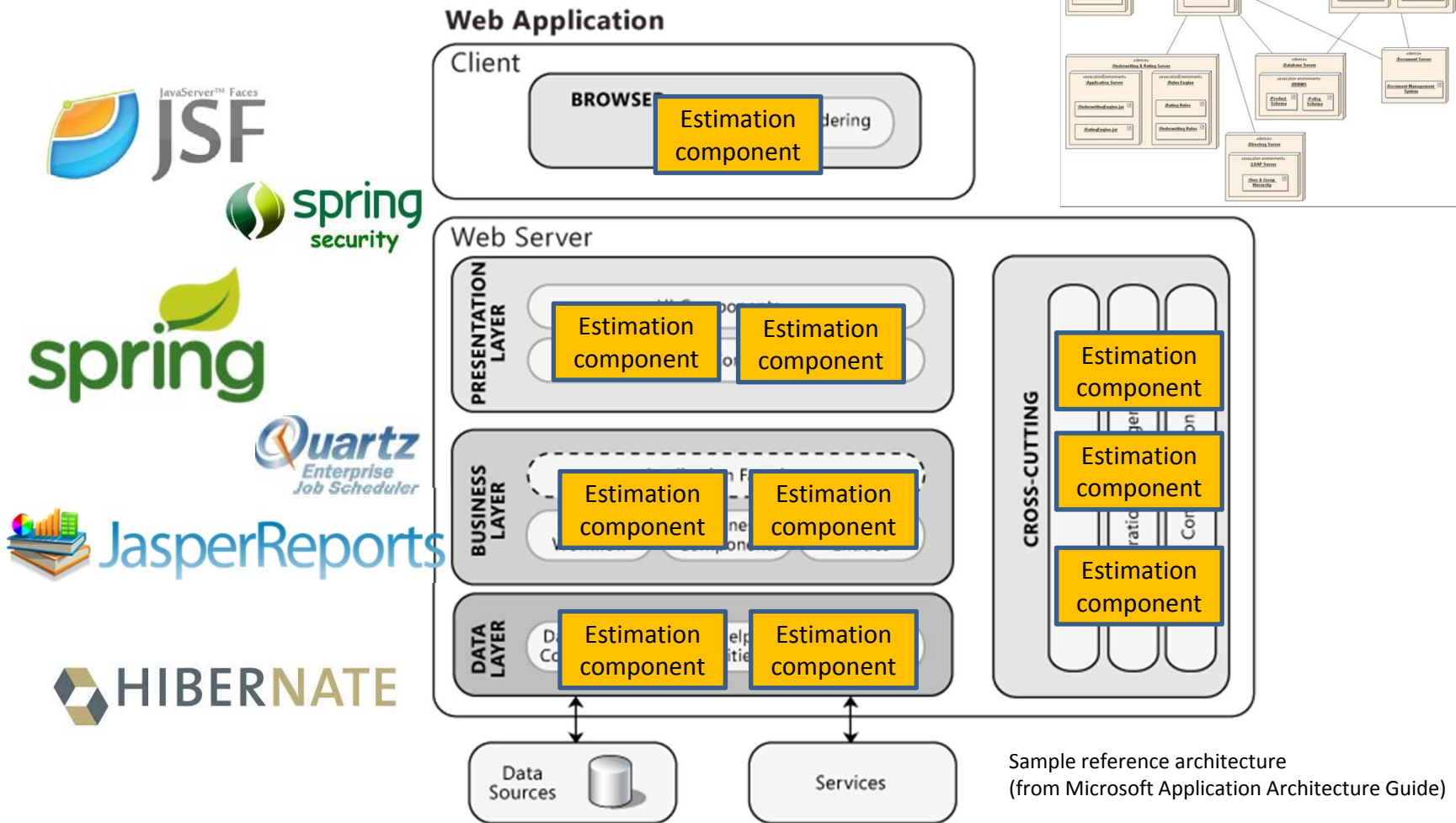


Presales architectural design

- Goals:
 - Estimation
 - Project planning
 - Satisfying drivers
- Design decisions for the presales architecture
 - Selection and adaptation of a reference architecture
 - Selection of technologies
 - Establishment of deployment layout
 - Identification of components for estimation
- The equivalent of performing initial iterations of ADD

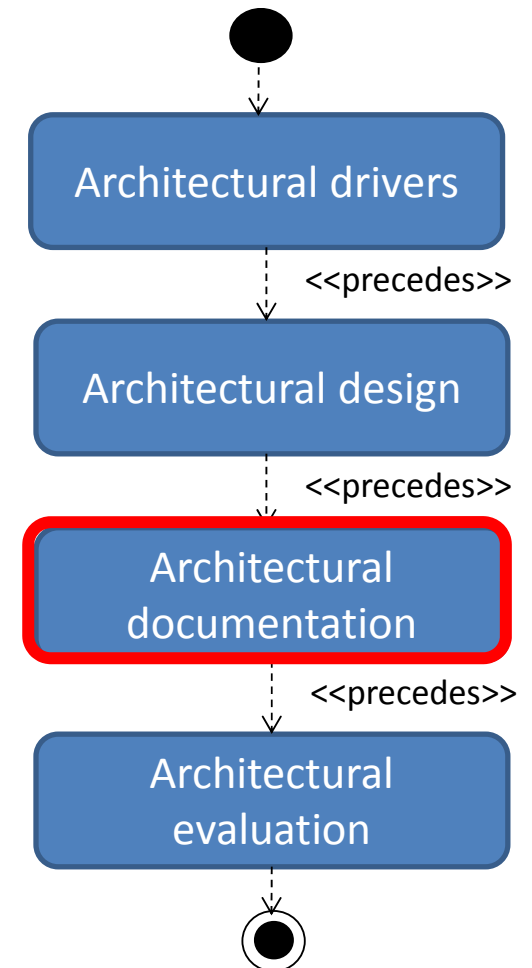


Example



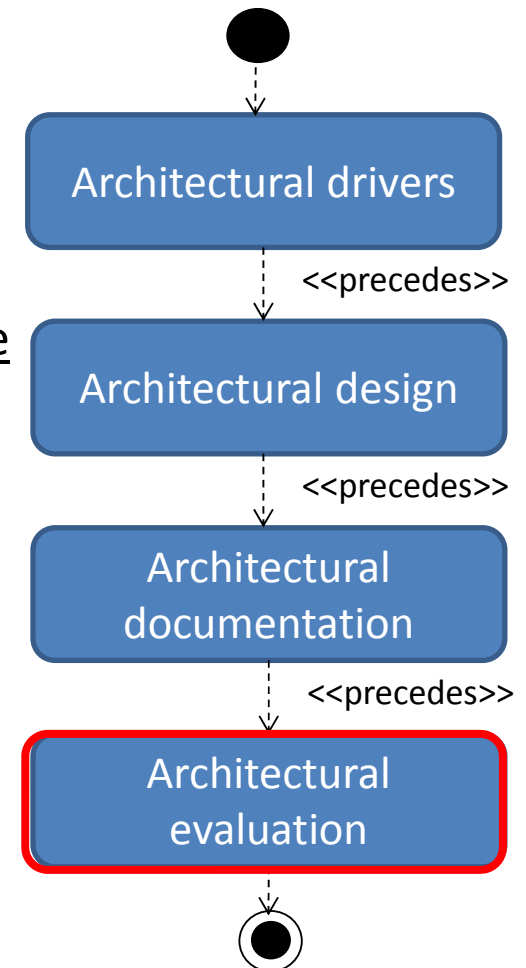
Presales architectural documentation

- The “primary presentation” and element catalog sections from the VaB template are used
- The diagrams that represent the architecture are included in the project proposal
 - Module view
 - Layers / Technologies
 - Deployment view



Presales architectural evaluation

- 2 – 4 hours peer review process that analyzes design decisions with respect to the drivers
 - Performed before estimation
 - 3 architects
 - Seeks to identify risks both in the design decisions of the technical solution but also in the project strategy
- Some types of risks
 - Requirements, for example
 - Quality Attributes not quantified
 - Design decisions, for example
 - Inappropriate deployment layout
 - No expertise in selected framework
 - Strategy
 - The selected lifecycle is not appropriate to the level of technical risks in the project

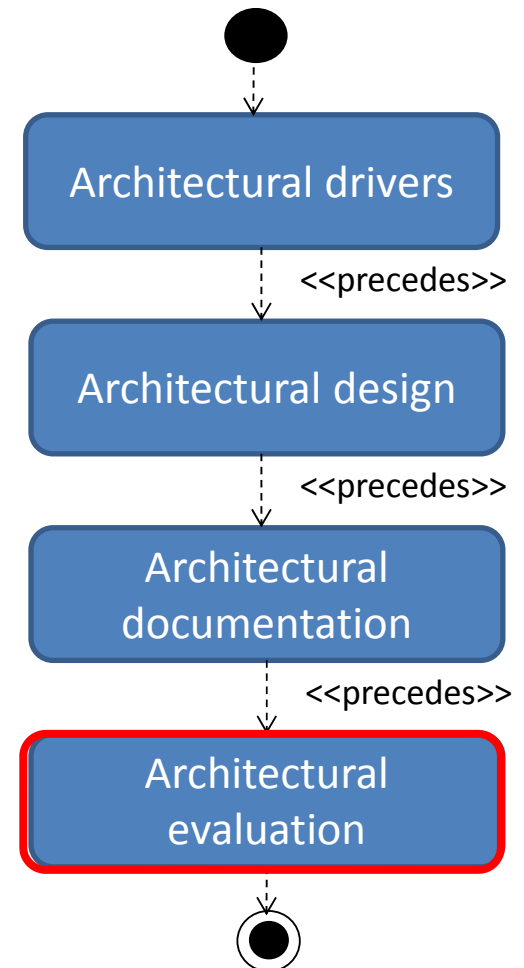


Current results: General

- Architecture is now taken into account from the very beginning of the project's development life cycle
- Early requirement gathering is driven by the architectural drivers
- The approach ensures that the presales architecture design is well aligned to the drivers, but also that the project strategy supports architectural development
- The proposals that are provided to the customer reflect this architectural-centric focus

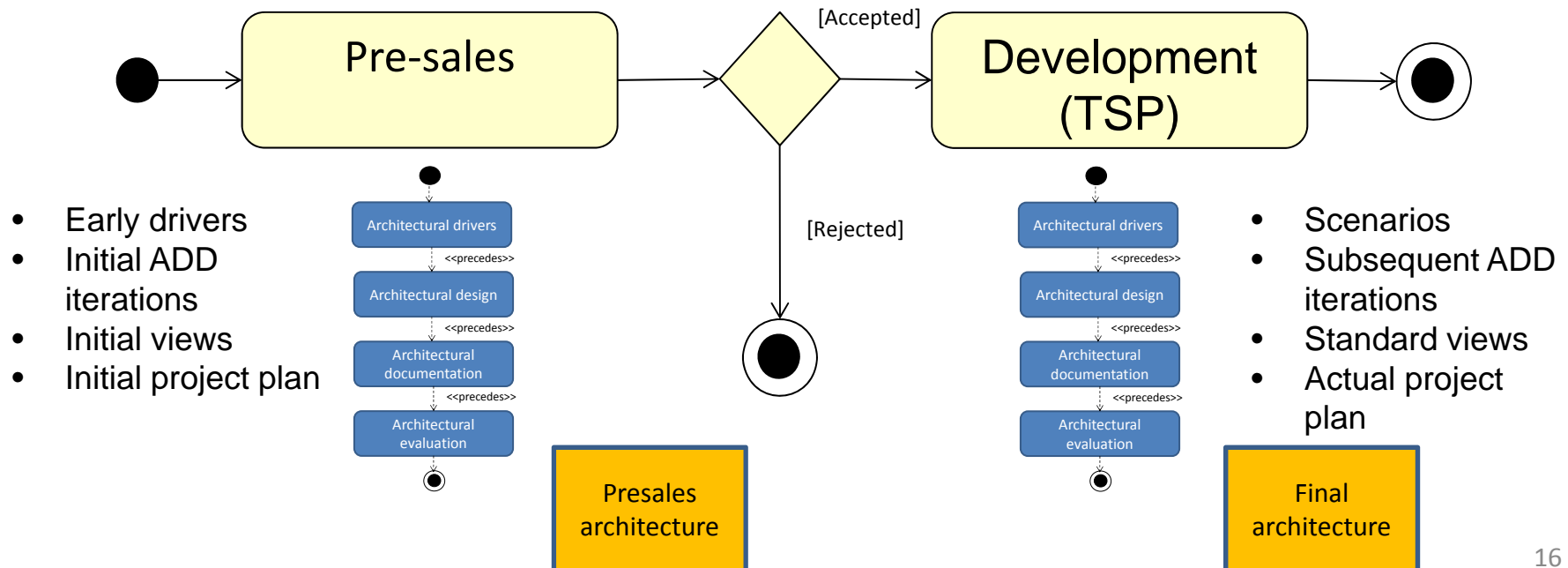
Current results: Evaluation

- We have conducted 18 evaluations since July 2013
- On average the evaluations uncover between 6 and 7 risks (60% technical)
- Good (internal) customer satisfaction
 - “In general, the evaluation was useful”: 4.2 / 5
 - “The observations made by the evaluation team were valuable”: 4.6 / 5
- Good response time: 2.9 work days on average



Lessons learned

- Starting architectural activities from the beginning of project development is very valuable in this context
 - Results in iterative architectural development

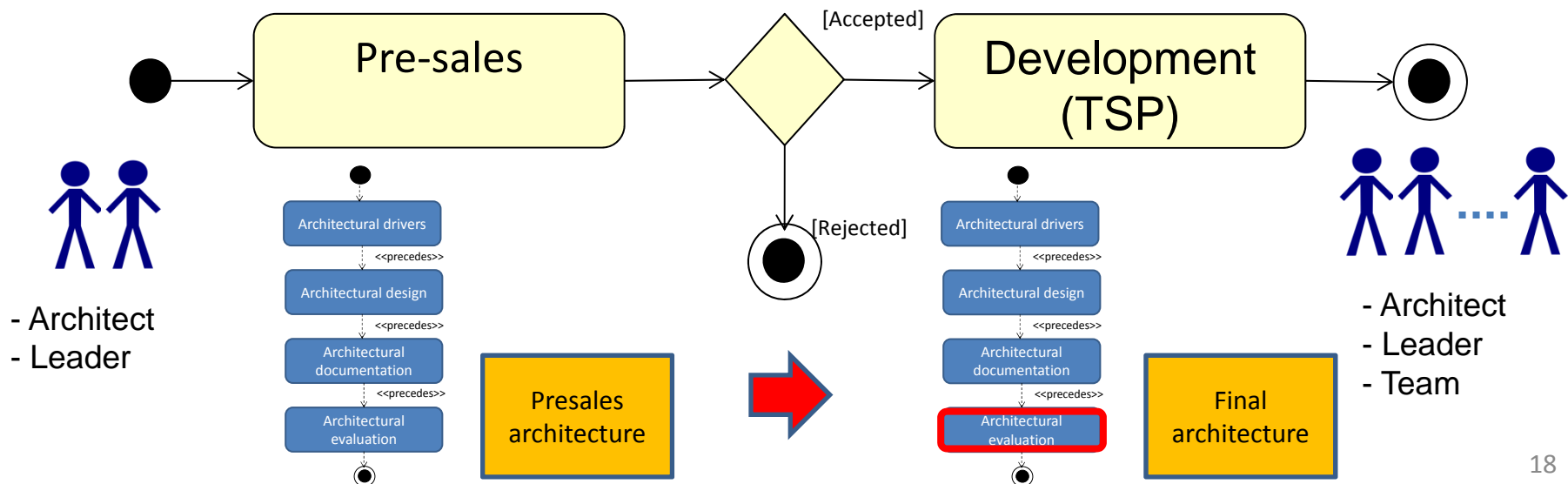


More lessons learned

- Major challenges are related to logistics
 - Being able to respond quickly to evaluation requests is essential
 - Training of architects
 - The organization must also be adapted in order to support evaluations
- The presales phase is a great place to experiment with new approaches
 - Frequent evaluations are great for helping the architects gain maturity

Future work

- Evaluate the impact
 - We are starting to conduct evaluations on projects that use the new methods in presales but data needs to be gathered to evaluate the improvements



Thank you!

- Questions?
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