

Lessons Learned on Systematic Metric System Development at a large IT Service Provider

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Executive Summary

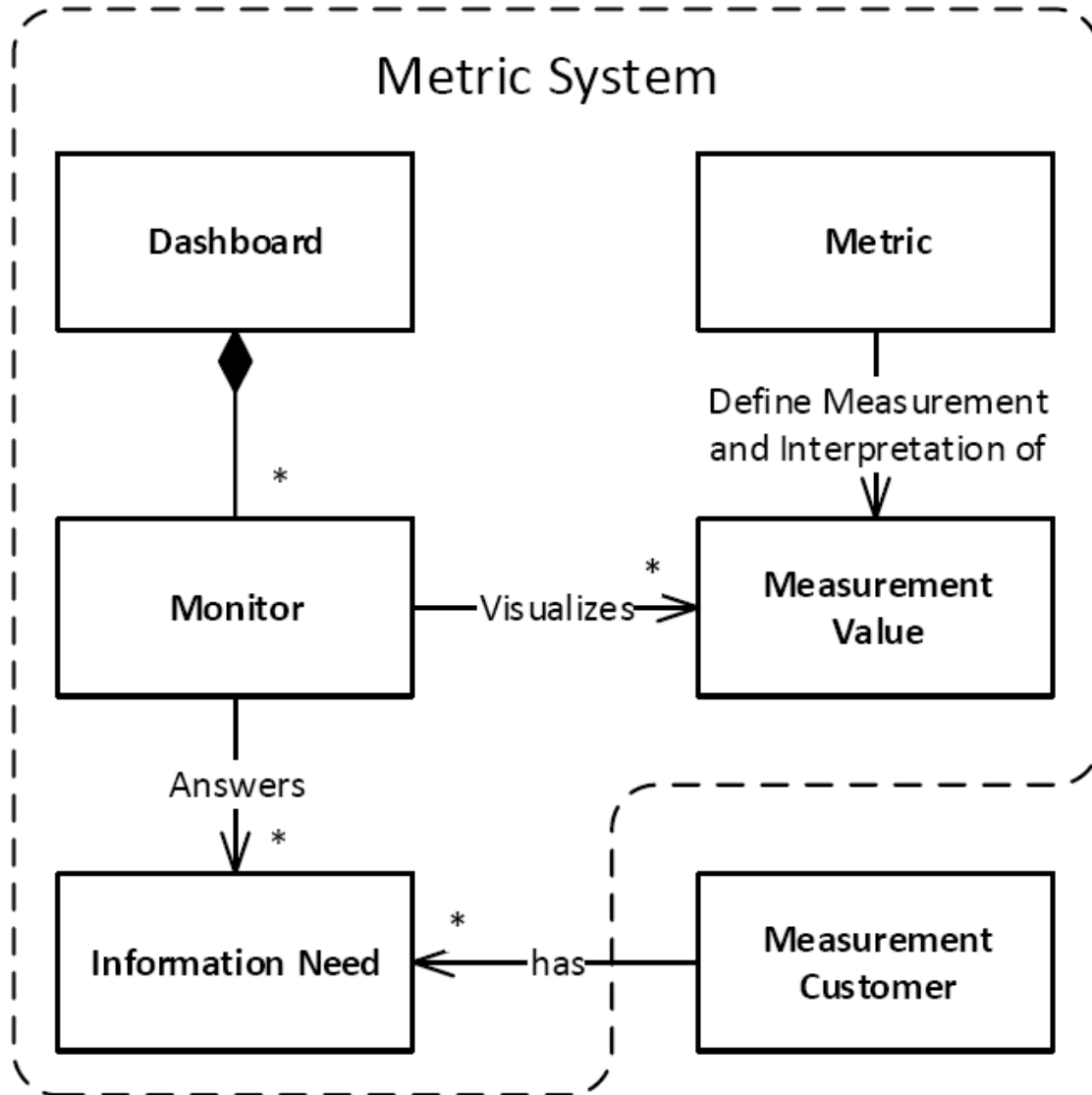
- Problem
 - Metric systems are often developed chaotically.
- Contribution
 - Reference architecture for Enterprise Measurement Infrastructures (EMIs)
 - Field study with a large IT provider revealing development process, framework (FW) and recommendations
- Consequence
 - A solid dedicated metric system engineering approach is established!

Metric Approaches and Problems

- Metrics are important for objective process and product optimization
- How to find “right” metrics?
 - GQM [3]
 - Metric dashboard [4-5]
- Problems in existing approaches
 - Following a waterfall processes model
 - NOT utilizing modern software engineering ideas such as incremental/iterative development and SOA
 - Maintenance and operation phase is not addressed

Core Concepts

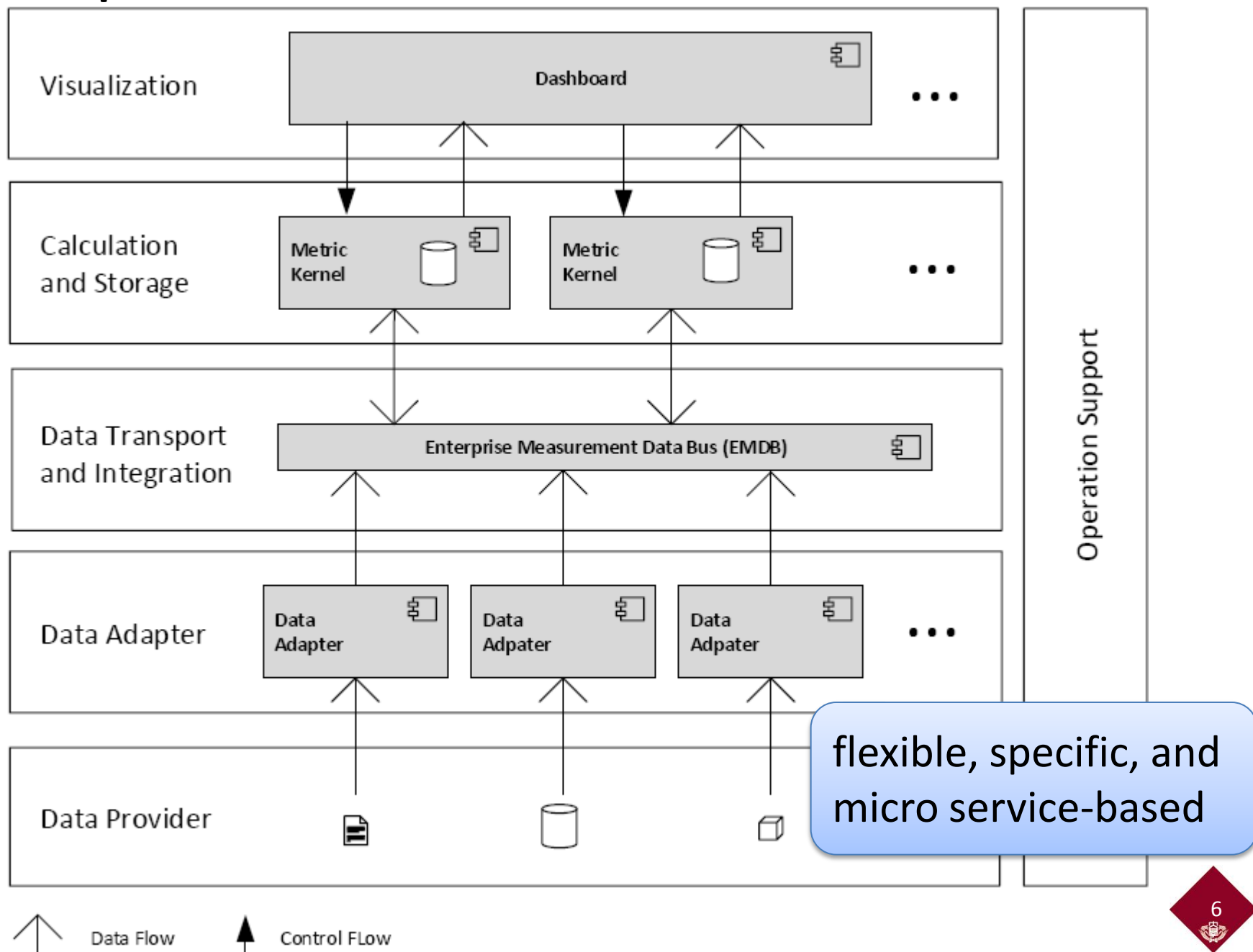
- Simplified Ontology adopted from [6-10]
- Information needs are not necessarily distinct
- Different monitors can answer the same need



Stakeholders (and Requirements)

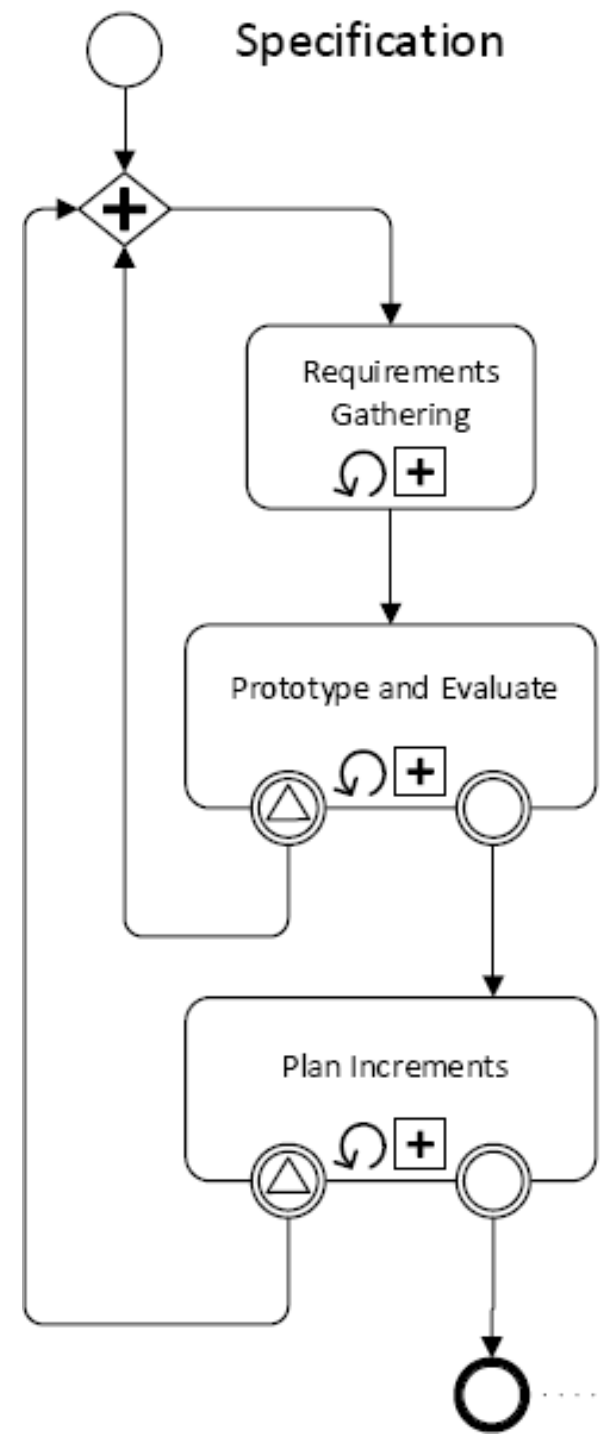
- Measurement Customer
 - Interested in status of project
 - Data for info needs often stored in different tools.
 - Info needs change over.
- Metric Expert
 - Supports customers: right metrics, practices, management
- Architect
 - Designs metric services, EMI and concepts
 - Requires tools, concepts, and architecture guidelines
- Developer
 - Implements metrics, visualizations and tools gathering data
 - Requires clear structure of tasks, dev. supports and core services
- Operator
 - Guarantees all metric systems are working
 - Requires operation tools

Proposal: EMI Reference Architecture

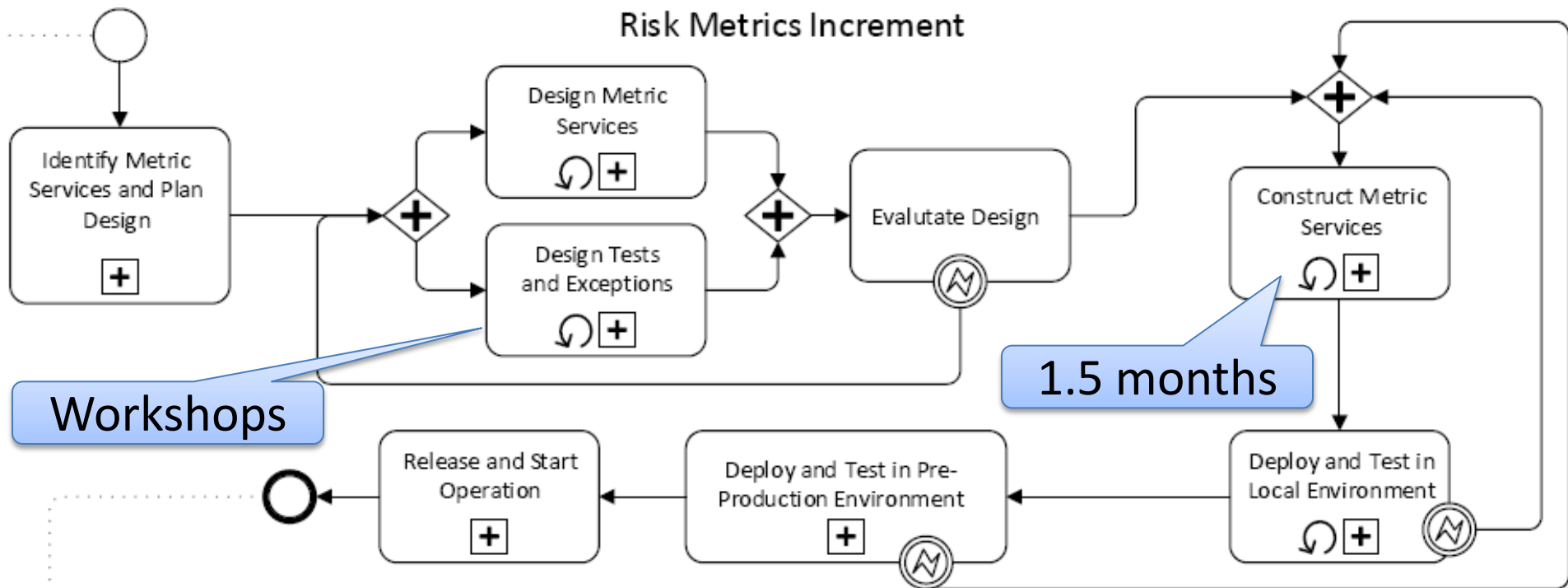


Development Process in Field Study

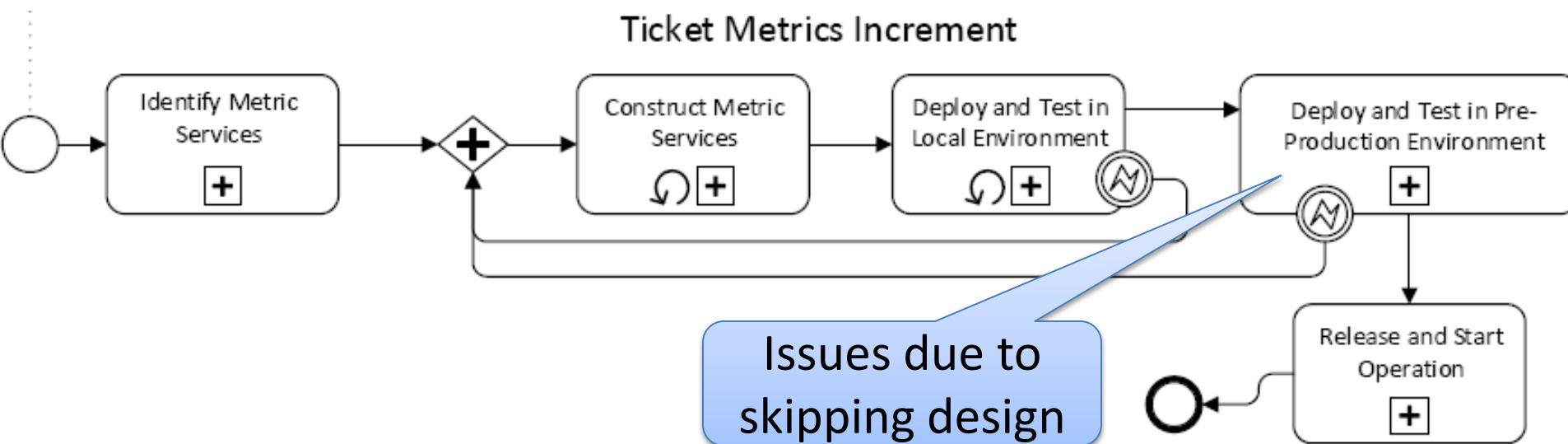
- Large IT provider for insurance companies (CMMI Lv3)
 - Worked with engineering process group supported by metric experts
 - Started a metric infrastructure development project
- 1. Specification
- 2. Risk Metrics Increment
 - metrics to analyze project risks
- 3. Ticket Metrics Increment
 - metrics based on error and enhancement tickets
 - Implementing dashboard for monitoring ticket-based metrics



Risk Metrics Increment



Ticket Metrics Increment



Recommendations

- Apply appropriate requirements gathering techniques!
 - Mind map
- Involve metric experts from the beginning!
 - In interviews and workshops
- Apply best practices to identify metrics!
 - GQM, but not formalizing goal definitions
 - Measurement info model ISO 15939
 - Keep metrics as simple and small as possible
- Develop prototypes iteratively and incrementally!
- Always perform a design phase!
- Provide tool support and FWs!
 - Hot spots and pre-fabricated solutions

Conclusion and Future Work

- Proposal of reference architecture for EMI
- Field study revealing development process and recommendations
 - Requirements gathered ease increment planning, design and construction
 - Design phase is important
 - Reference architecture, FW, ready-to-use services ease and streamline development even without a solid design
- Ongoing work
 - Further field studies to improve the approach
 - Enhancing FW to a full-fledged software development kit (SDK) for multiple development platforms

Thanks!