Architecture Best Practices for Project and Technical Leaders

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11/5/14

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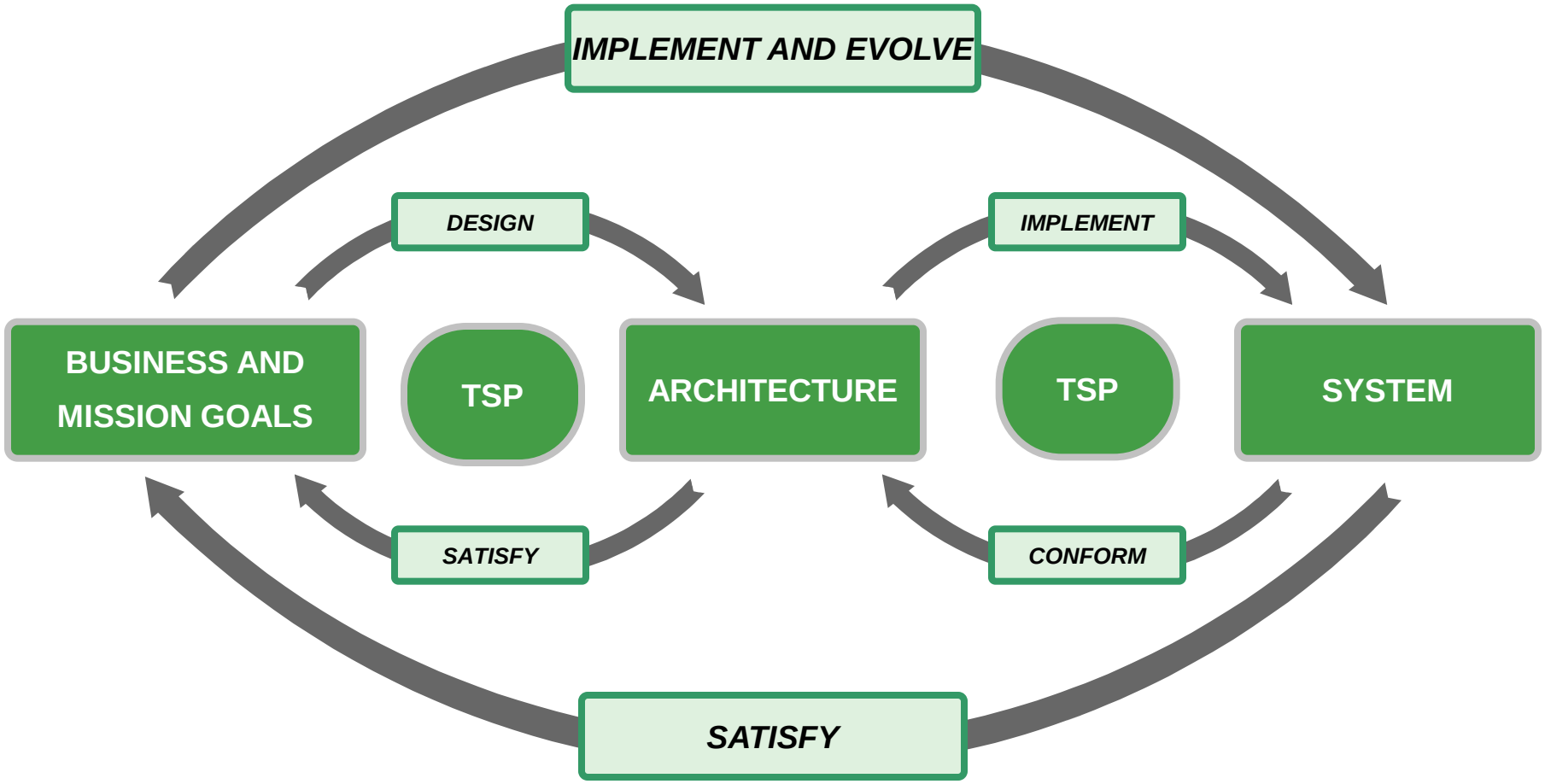
Architecture-Centric Engineering (ACE) Design and Analysis – with TSP



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What Drives Architectural Need?

There are no definitive studies or guidelines, probably because the answer is context dependent.

- More than 2 people
- More than 6 months effort
- More than 25-30 KLOC (thousands of lines of code; a VERY high number for 2 people over 6 months)
- Critical non-functional attributes (performance, safety, security, etc.)
- *No pre-existing architecture!* (…especially if someone other than the developer is attempting to maintain or enhance it)

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Why is Architecture Needed?

Represents *earliest* design decisions

- **hardest to change**
- **most critical to get right**
- **communication vehicle among stakeholders**

***First* design artifact addressing**

Quality attributes (i.e., performance, security, usability)

Key to systematic *reuse*

- **transferable, reusable abstraction**

What do I need to know?

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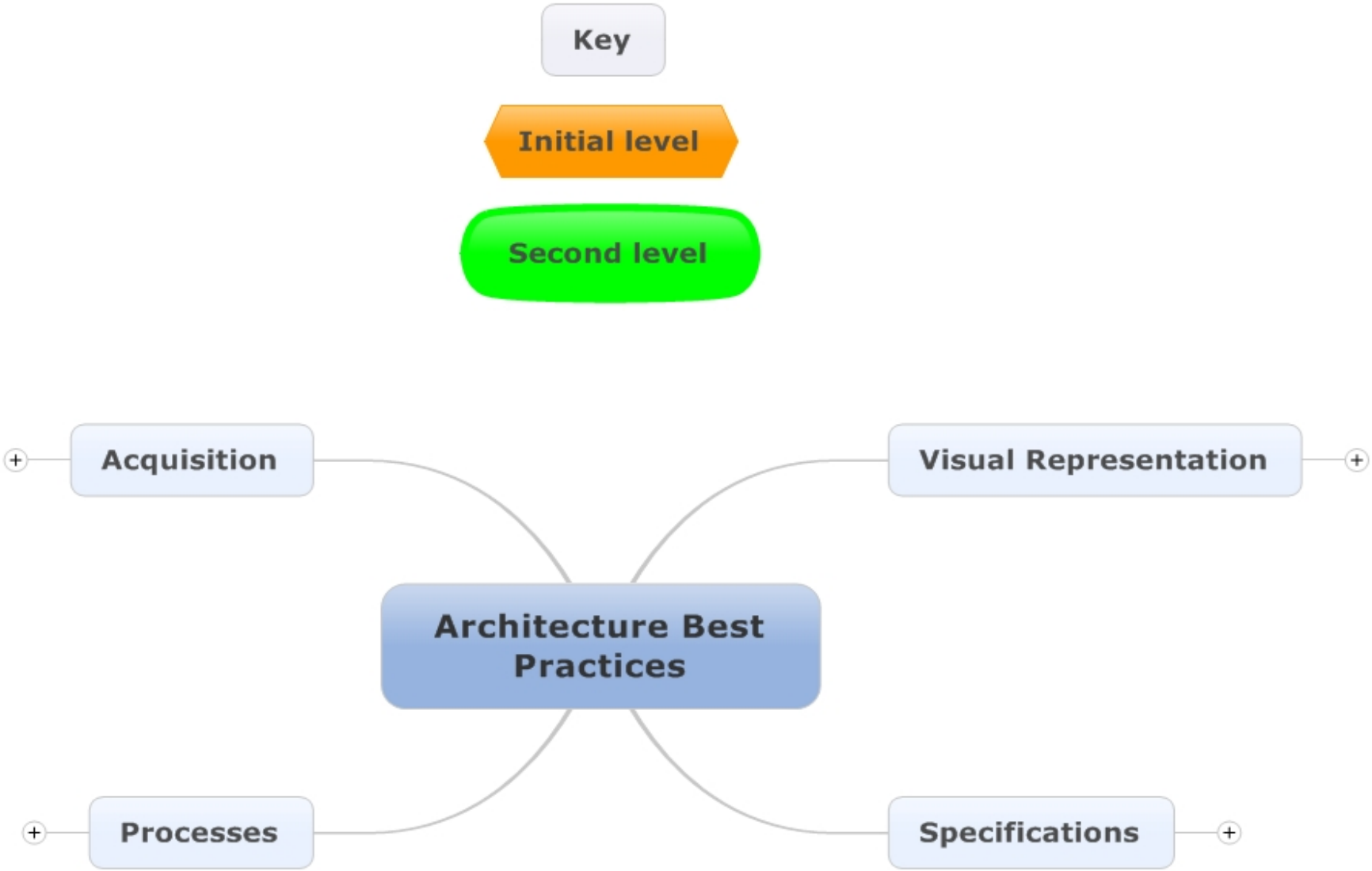

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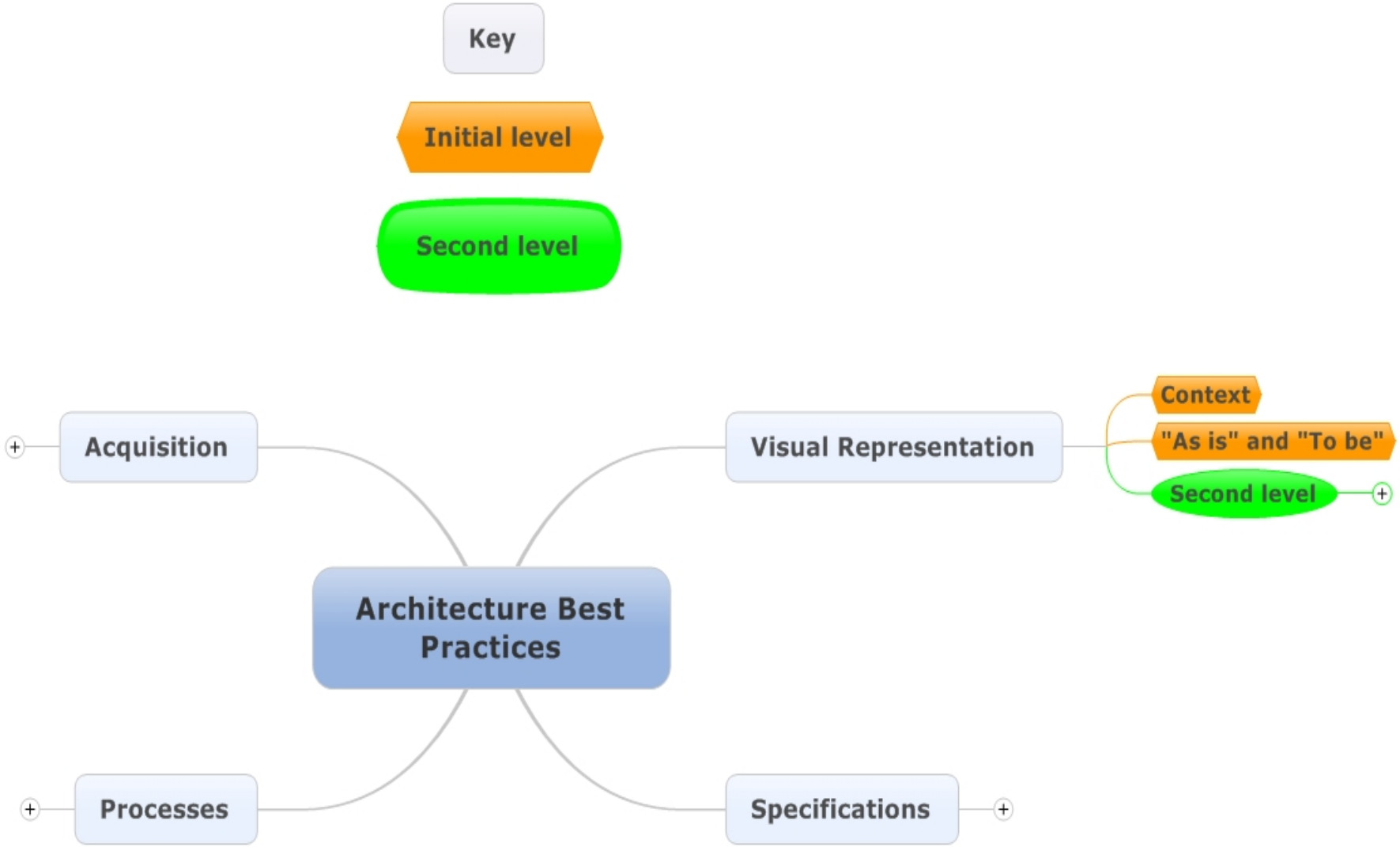

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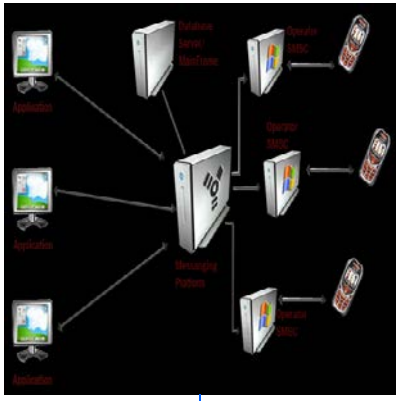
Carriers' Gateway



IPAWS

Integrated Public Alert and Warning System

www.fema.gov/emergency/ipaws

First Responders

Local govt

Emergency Alerting System

Message Recipient

Emergency Management Organization

Social media

Citizen calls 911

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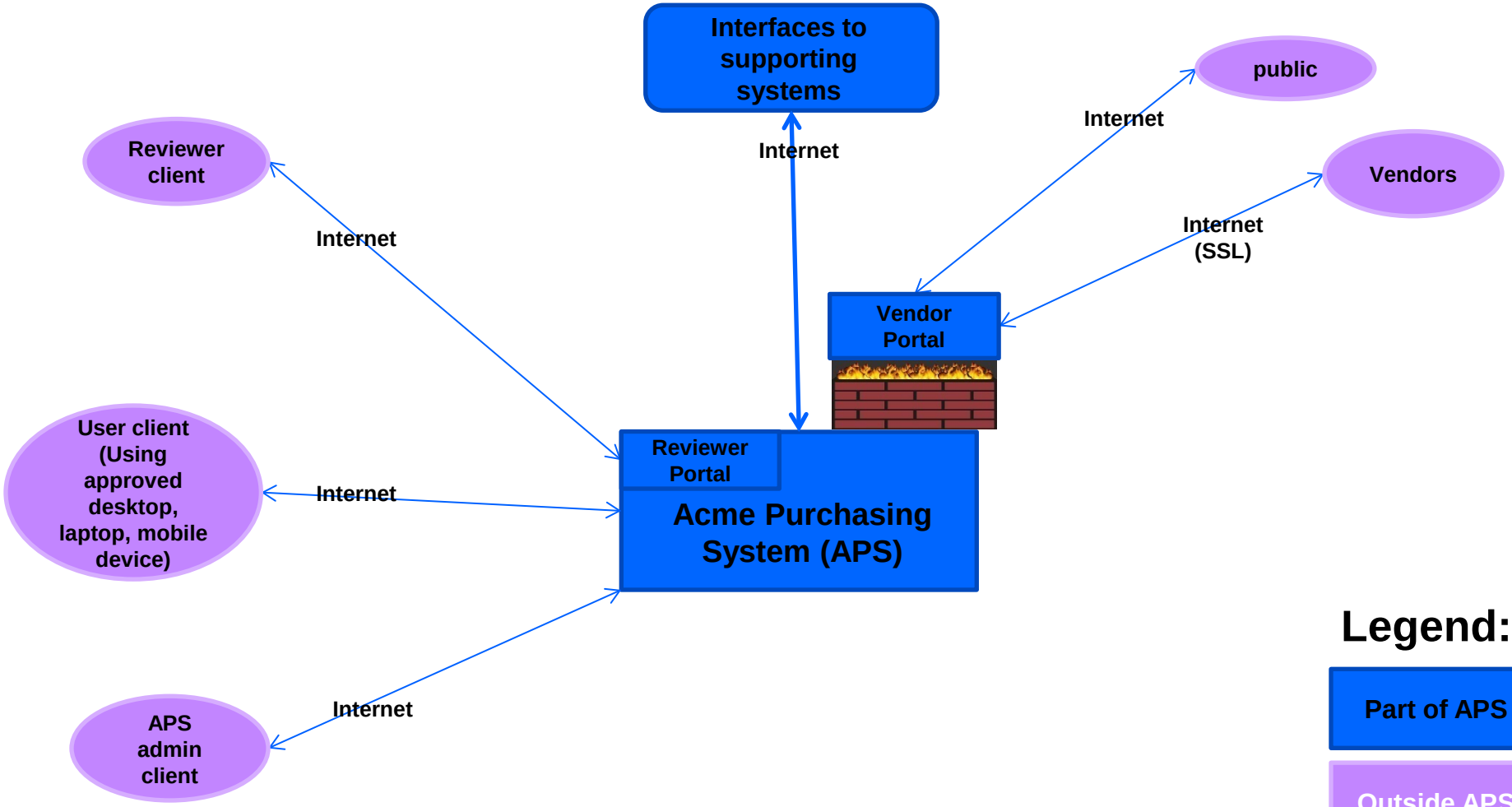
“As-Is” Standalone Implementation



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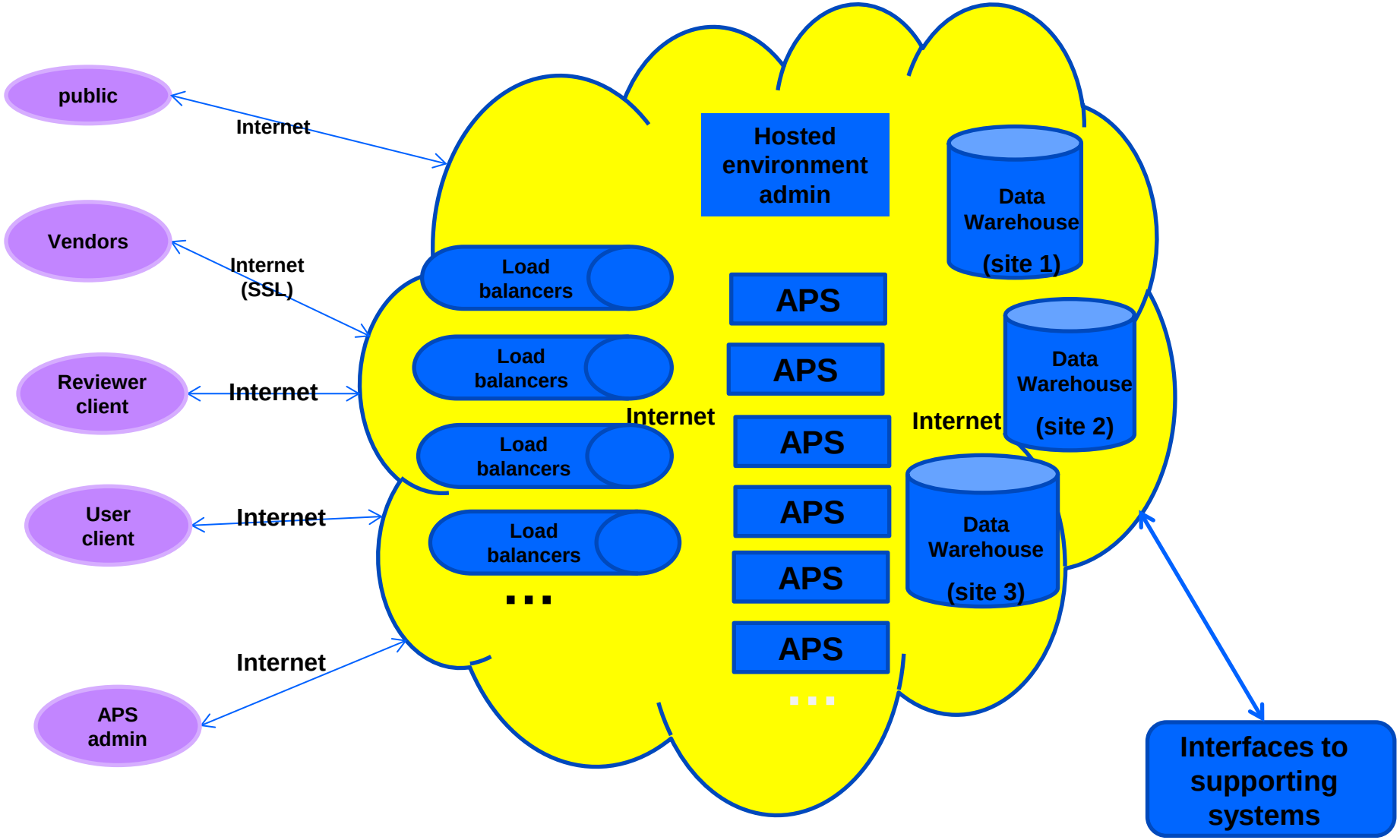
“To-be” Hosting view



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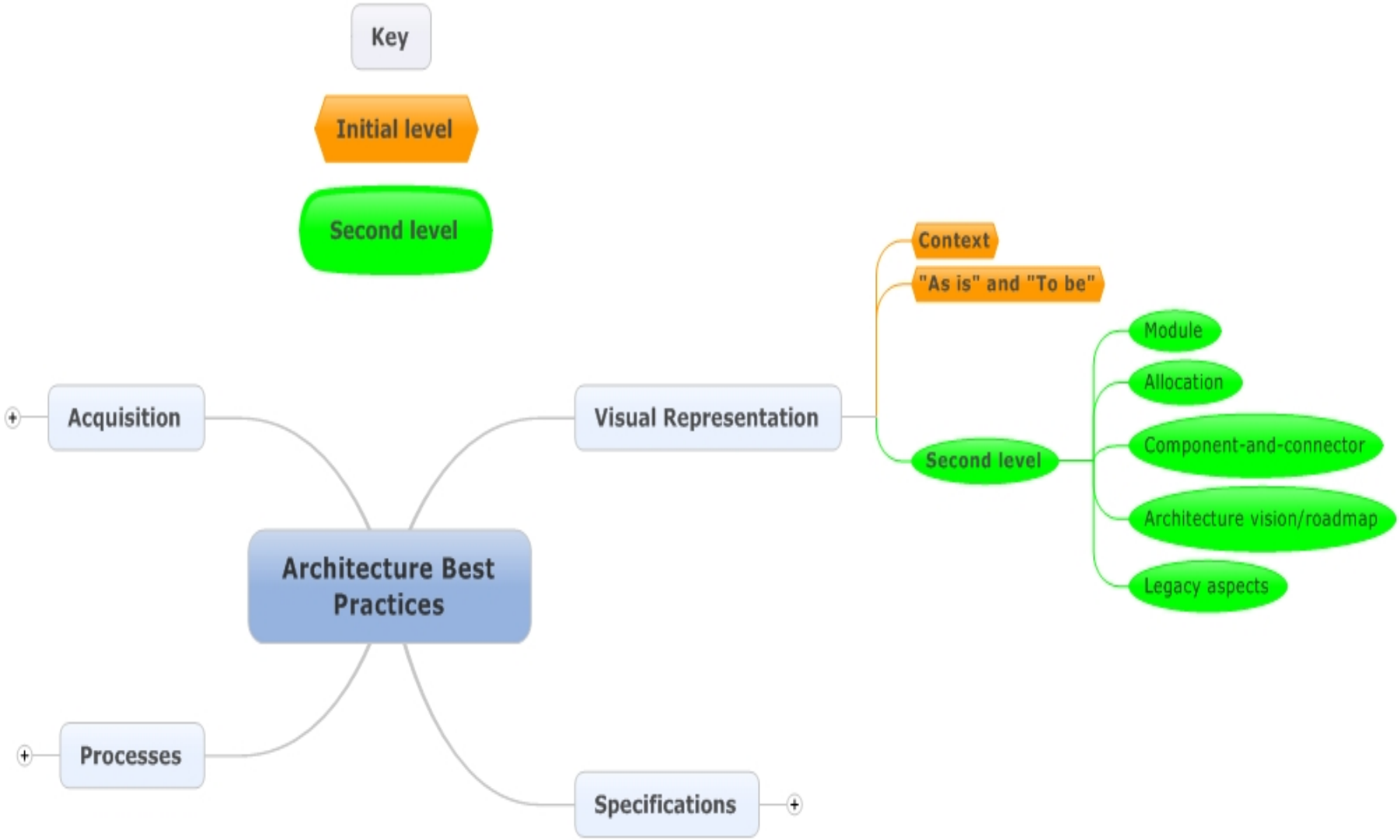

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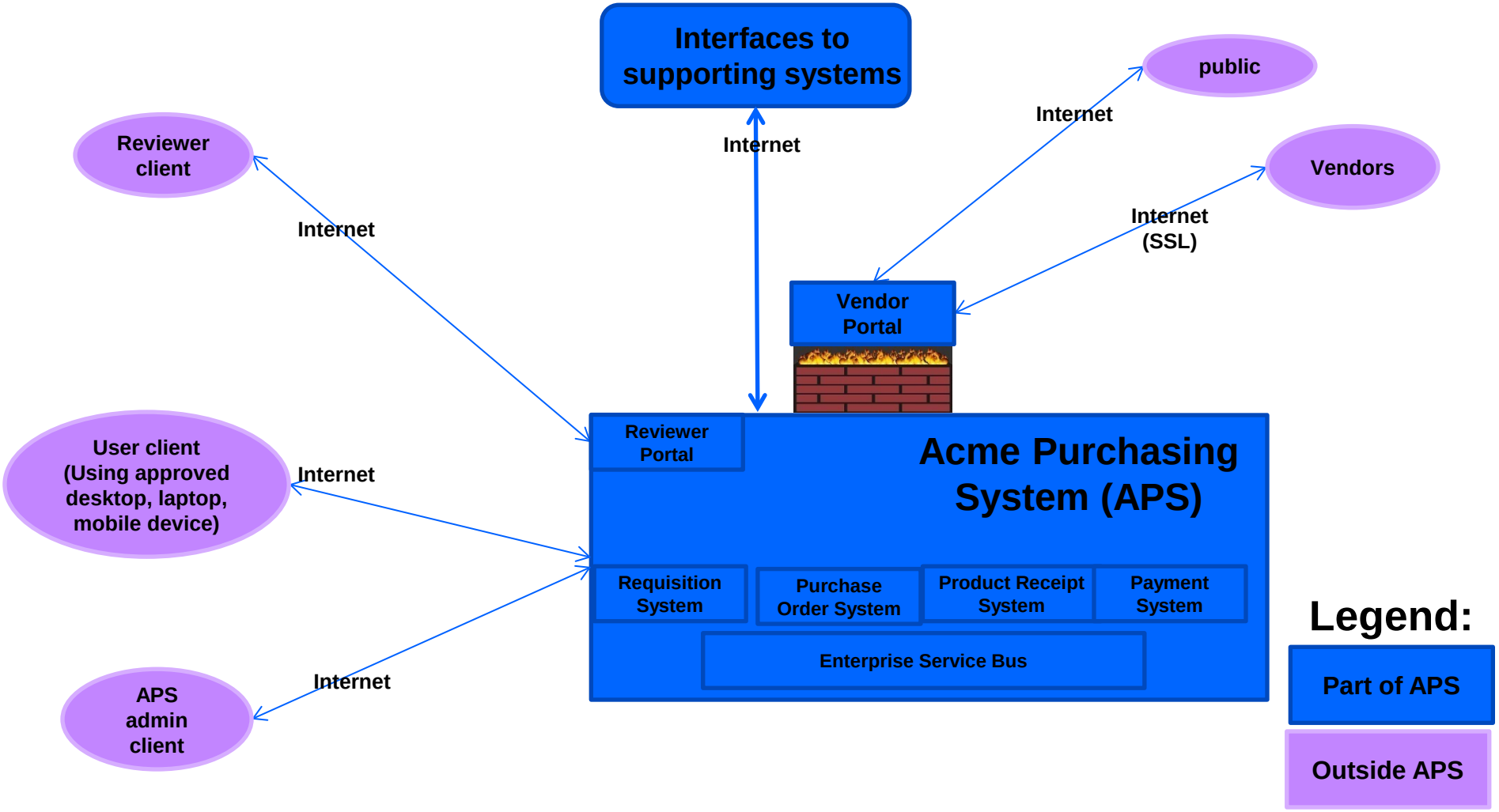
APS Decomposition View



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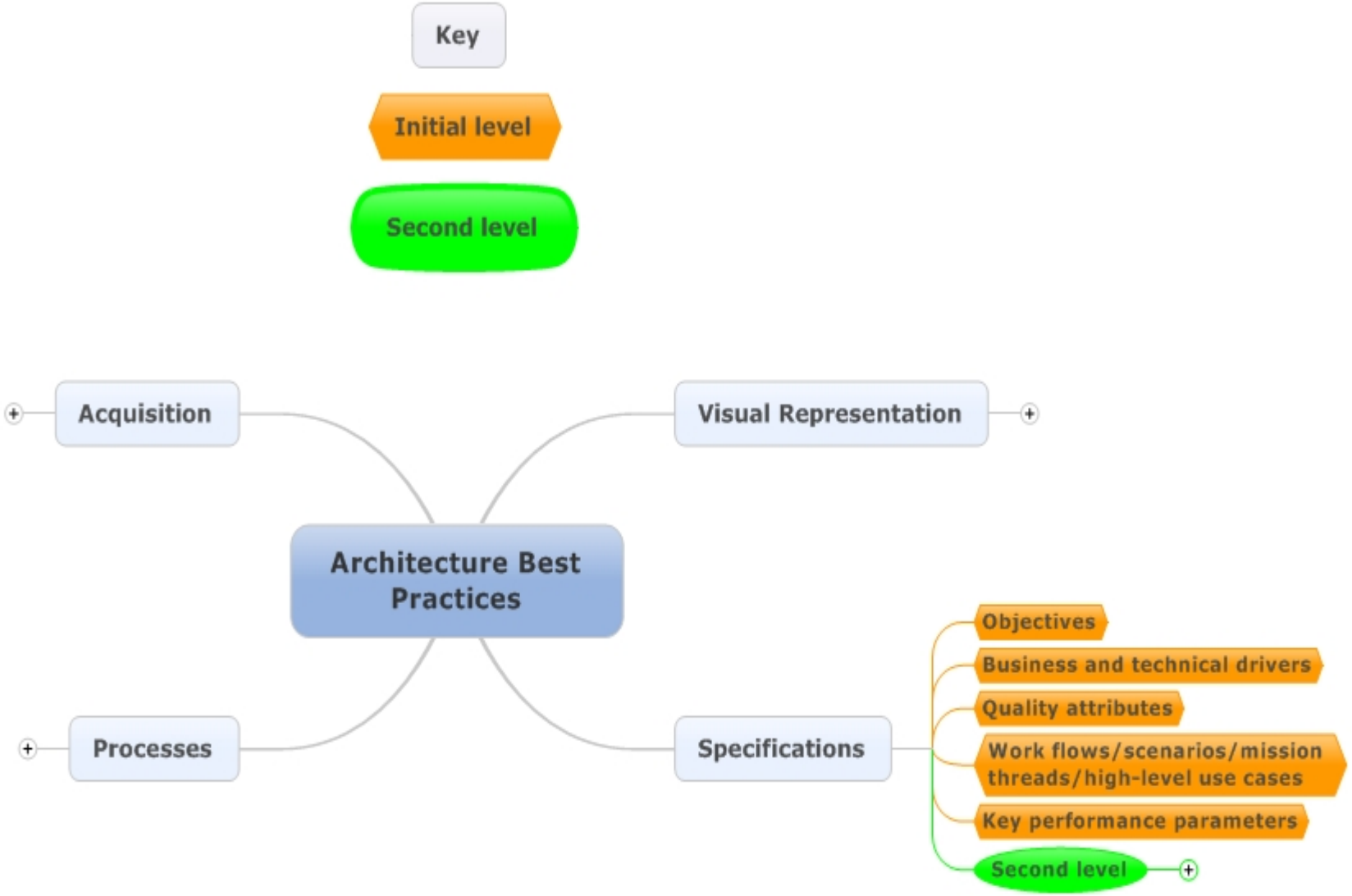

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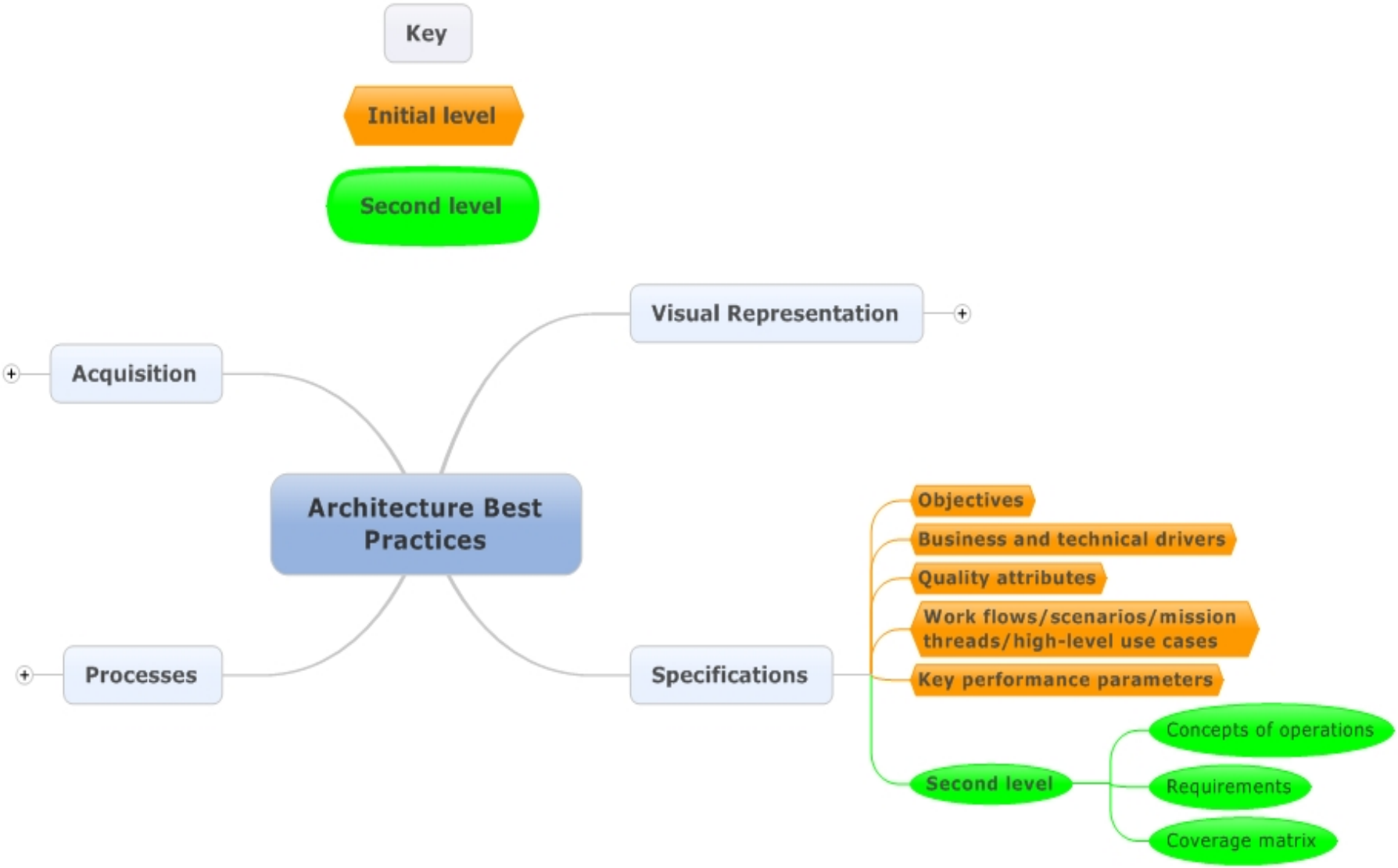

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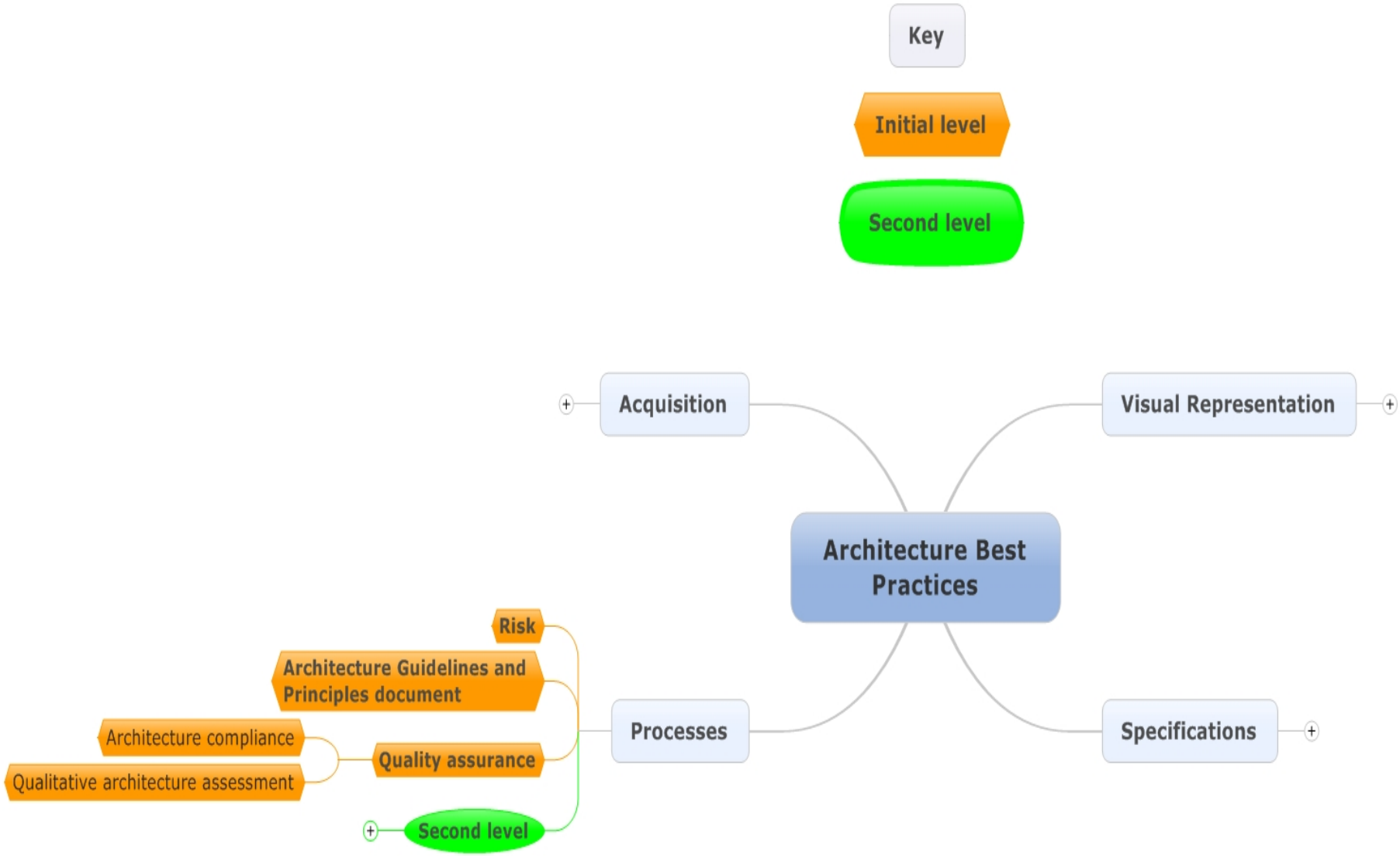

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Architecture Guidelines & Principles Document

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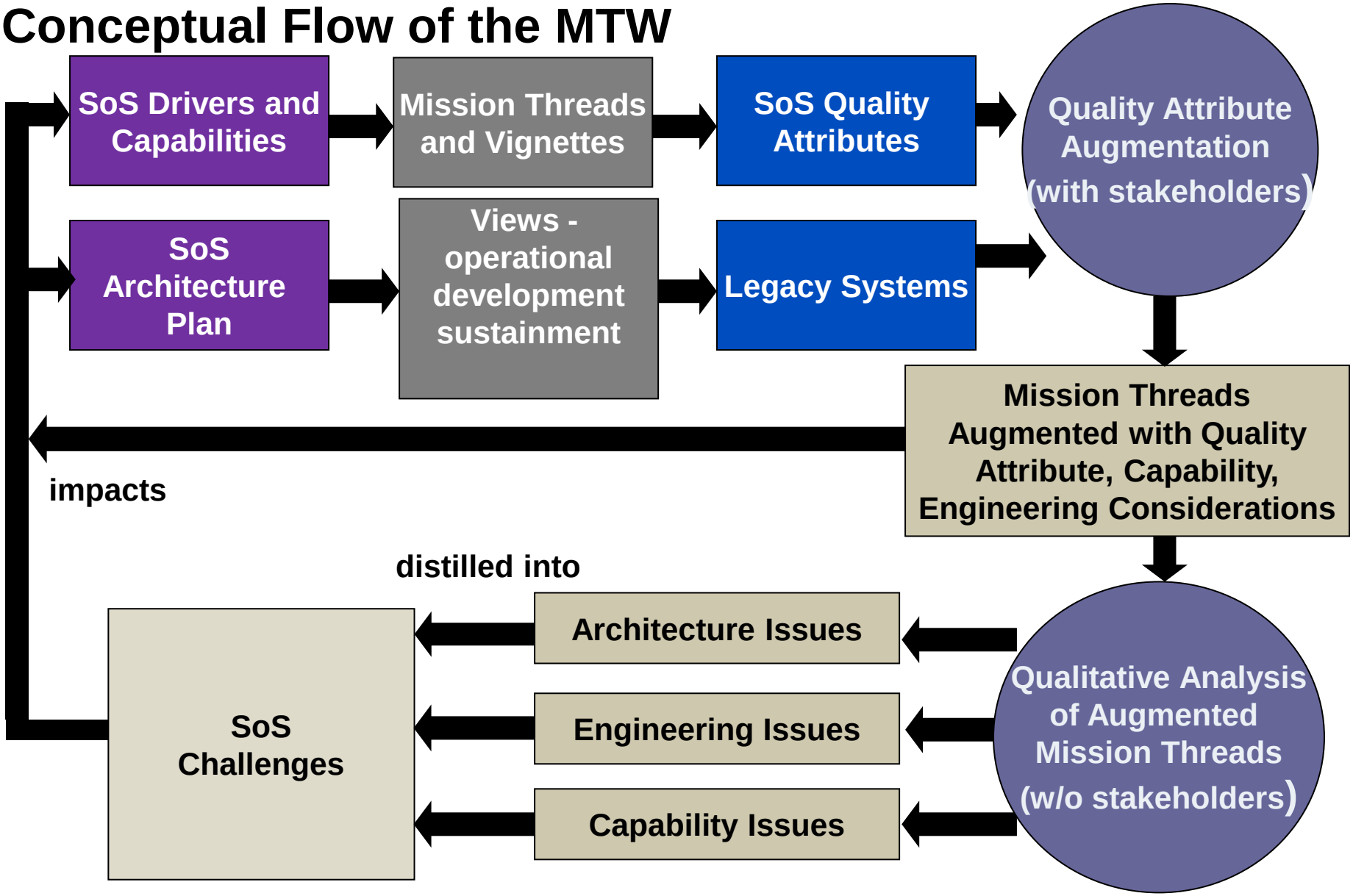
Conceptual Flow of the MTW



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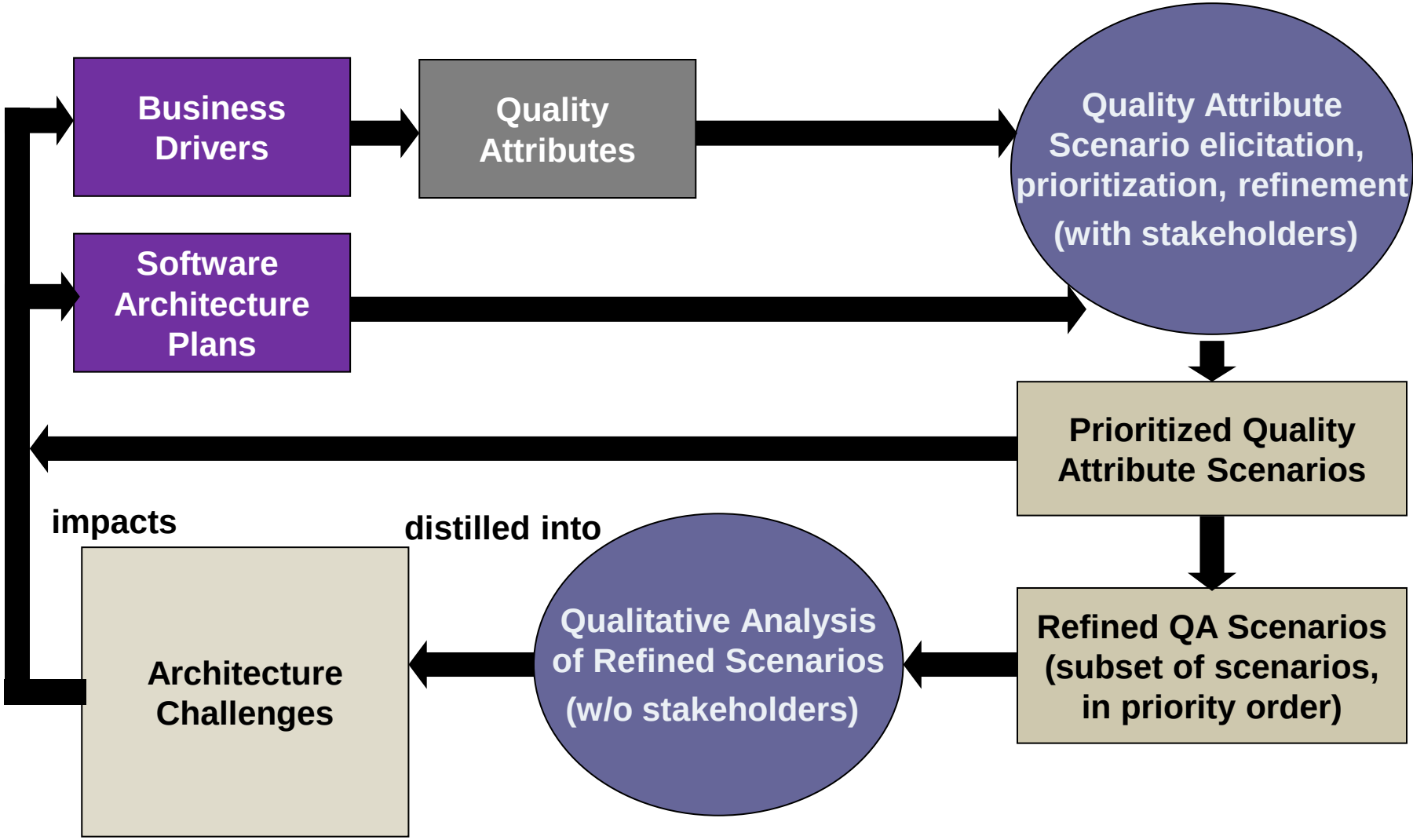
Conceptual Flow of the QAW



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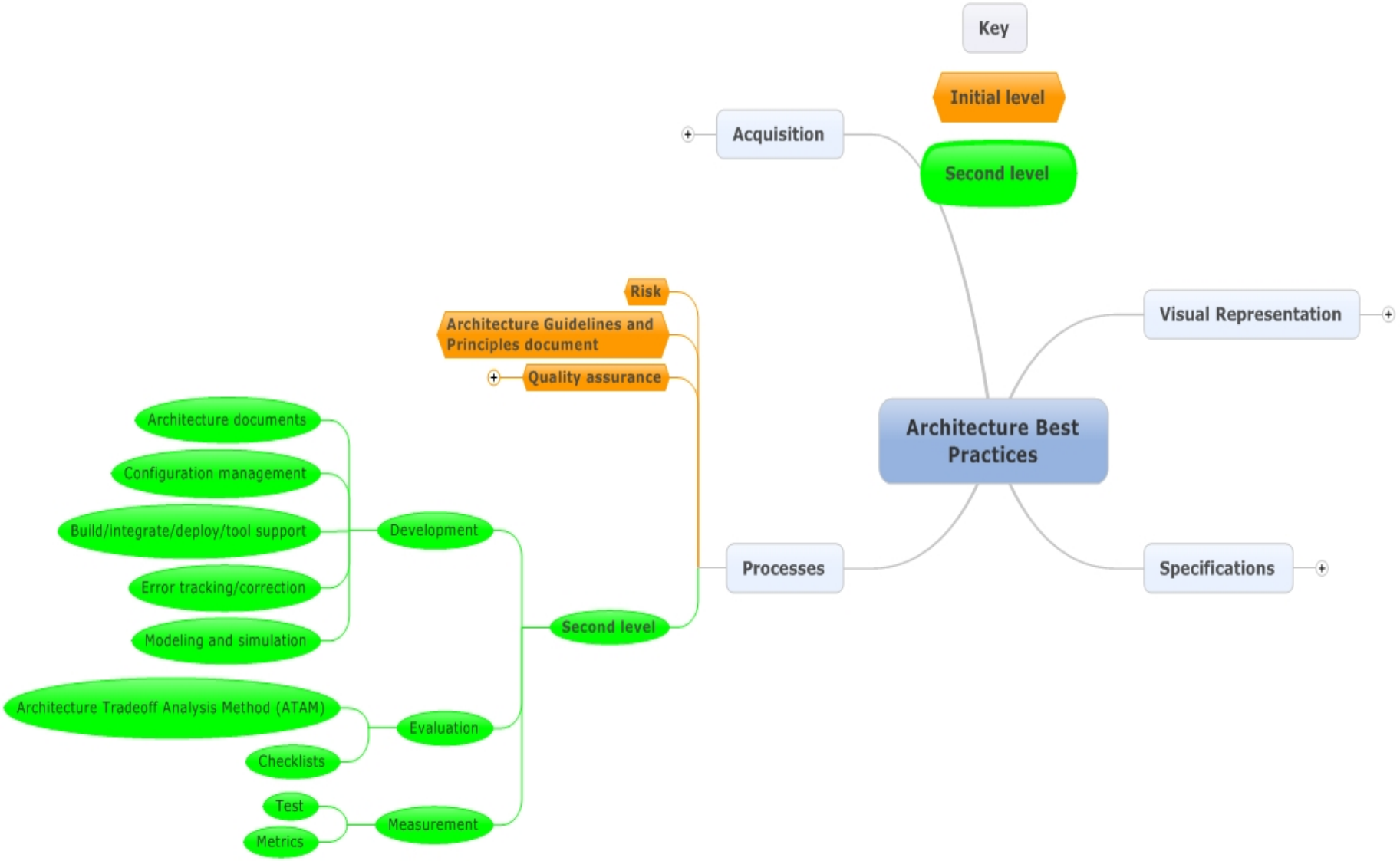

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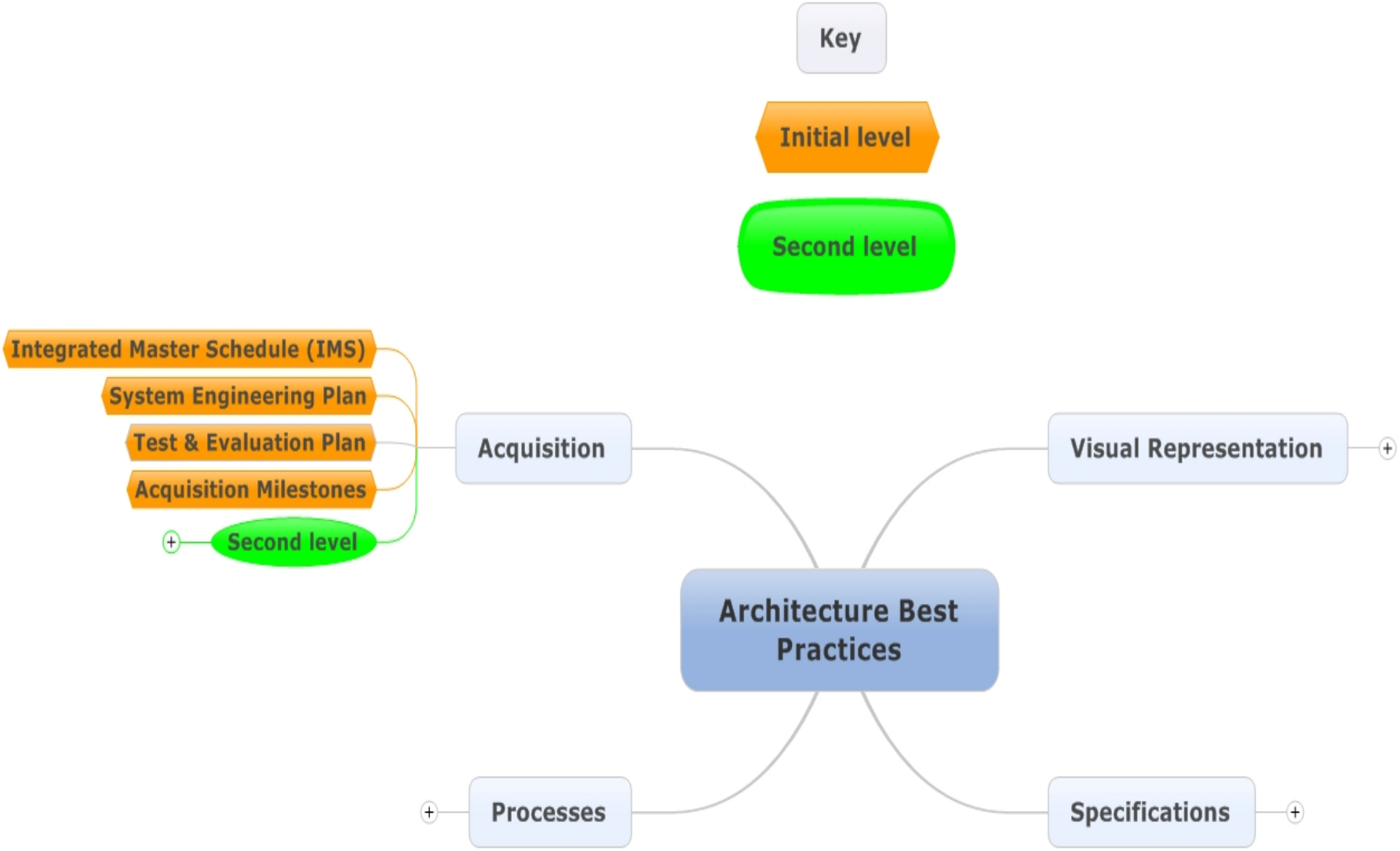

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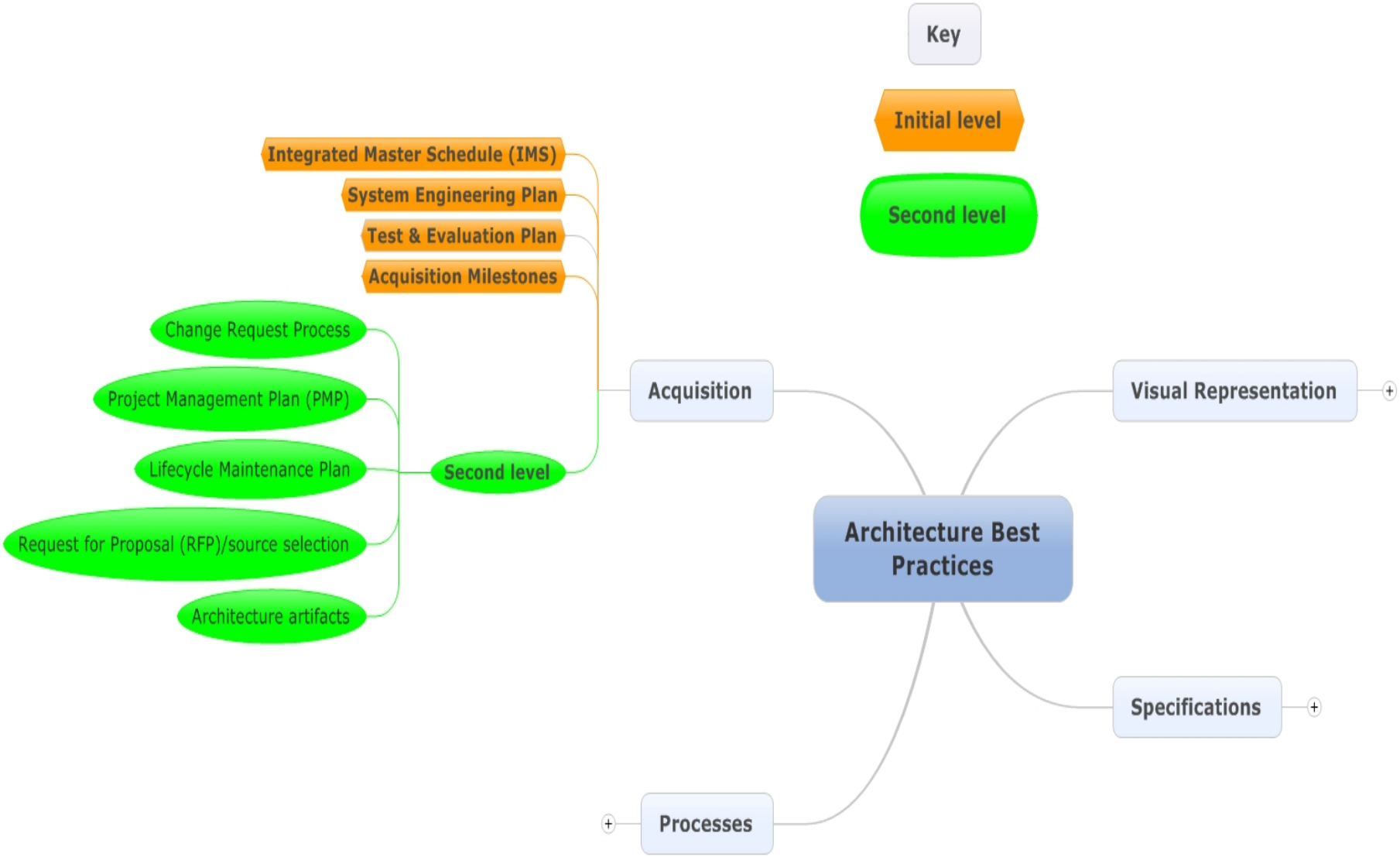

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System Engineering Timeline

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