A Metric-Based Approach to Managing Architecture-Related Impediments in Product Development Flow

An Industry Case Study from Cisco

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We want early warning **leading indicators** to identify architecture-related problems.

By focusing on two questions, we can get a good understanding of where impediments influence architecture, and vice versa:

1. **How does work (value) flow** through your team and organization?
2. **What is impeding the flow** of work (value)?
Architecture can be an enabler of flow

1. Computer-controlled sensors in road detect increased traffic and feed data back to control centre
2. Mandatory speed limit imposed to protect queuing traffic and smooth flows
3. Information signs warn or advise drivers of hazards/lane use
4. Overhead signal indicates when hard shoulder is open to traffic
5. Hard shoulder to be used for travel between consecutive junctions
6. Broken-down vehicles use emergency refuge areas to ensure hard shoulder remains clear
7. Controllers use CCTV and sensors to monitor hard shoulder for obstructions/debris and can manually override ATM system
8. Other safety improvements include highly visible roadside emergency phones (8) located behind safety barriers, and lighting (9) at more frequent intervals along entire stretch of motorway

http://news.bbc.co.uk/2/hi/uk_news/7508776.stm
Primary Issues

- Naïve approaches to agility discount the value of architecture
  - The impact of this scales non-linearly with the size of the system and the organization
- “Definition of Ready” not met
- Recognizing “non-functional requirements” / *ilities
- Maintaining alignment across multiple products and solutions
- Follow-through: From definition to implementation, and incorporating new learning

Other Issues

- Dependencies!
- Architecture in isolation
- Architecture Debt
- Role of types of architect
- Articulating architecture as an investment
- Balancing emergent and upfront architecture
  - BDUF ➔ EDFU
- Balancing centralized and distributed decision making
Questions for Further Discussion

What specific architecture issues can be addressed by focusing on Flow, and on removing impediments?

What other metrics serve as leading indicators?

What does this reveal about hidden architecture debt?

How can this help with the balance between alignment and autonomy in large systems and organizations?
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