

Evolution in AmI

Multidisciplinary Research Perspectives Enhancing
Dependability and Security in AmI

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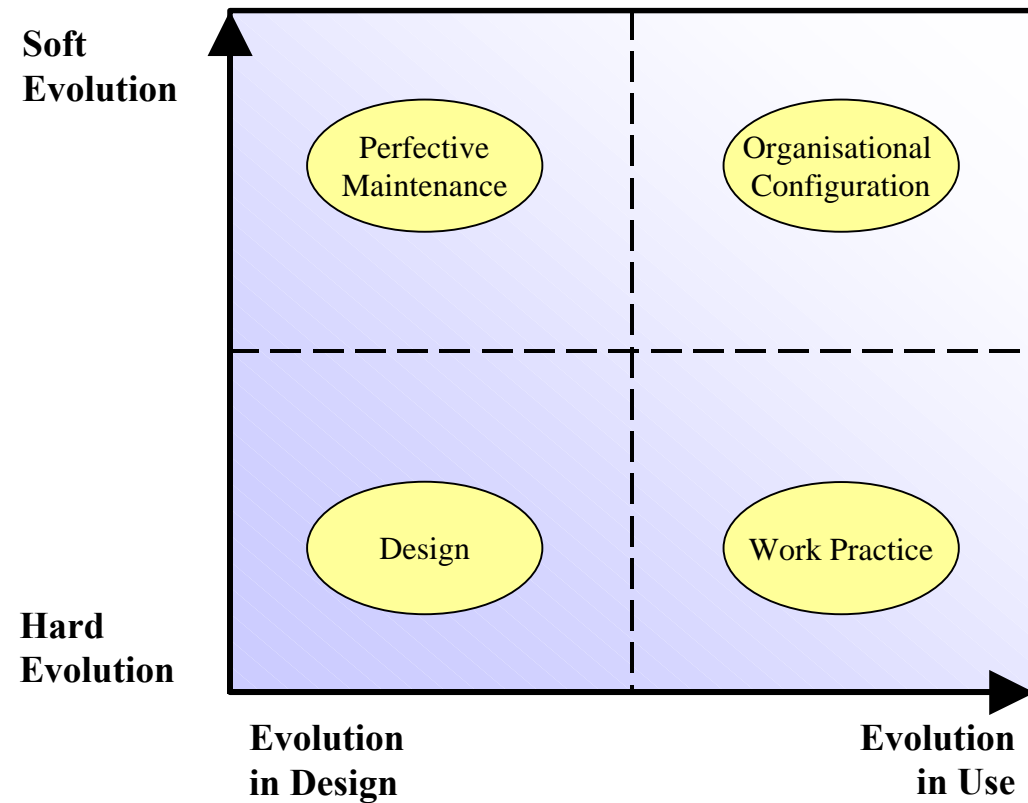
**Consultation Workshop on R&D Challenges for
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On Evolution...

- o Socio-technical failures are often failures to evolve. On the one hand evolution can give rise to failures. On the other hand evolution can mitigate failures.
- o Strong contingencies between evolution and dependability
- o Necessary further effort in understanding the evolution of socio-technical systems
 - o It is difficult to acquire a comprehensive viewpoint
 - o It is difficult to analyse long-term evolutionary information
 - o Evolutionary Information is distributed, often unrelated or apparently independent
- o Evolutionary Engineering limitations/issues:
 - o Cost, Culture, Methodology, etc.

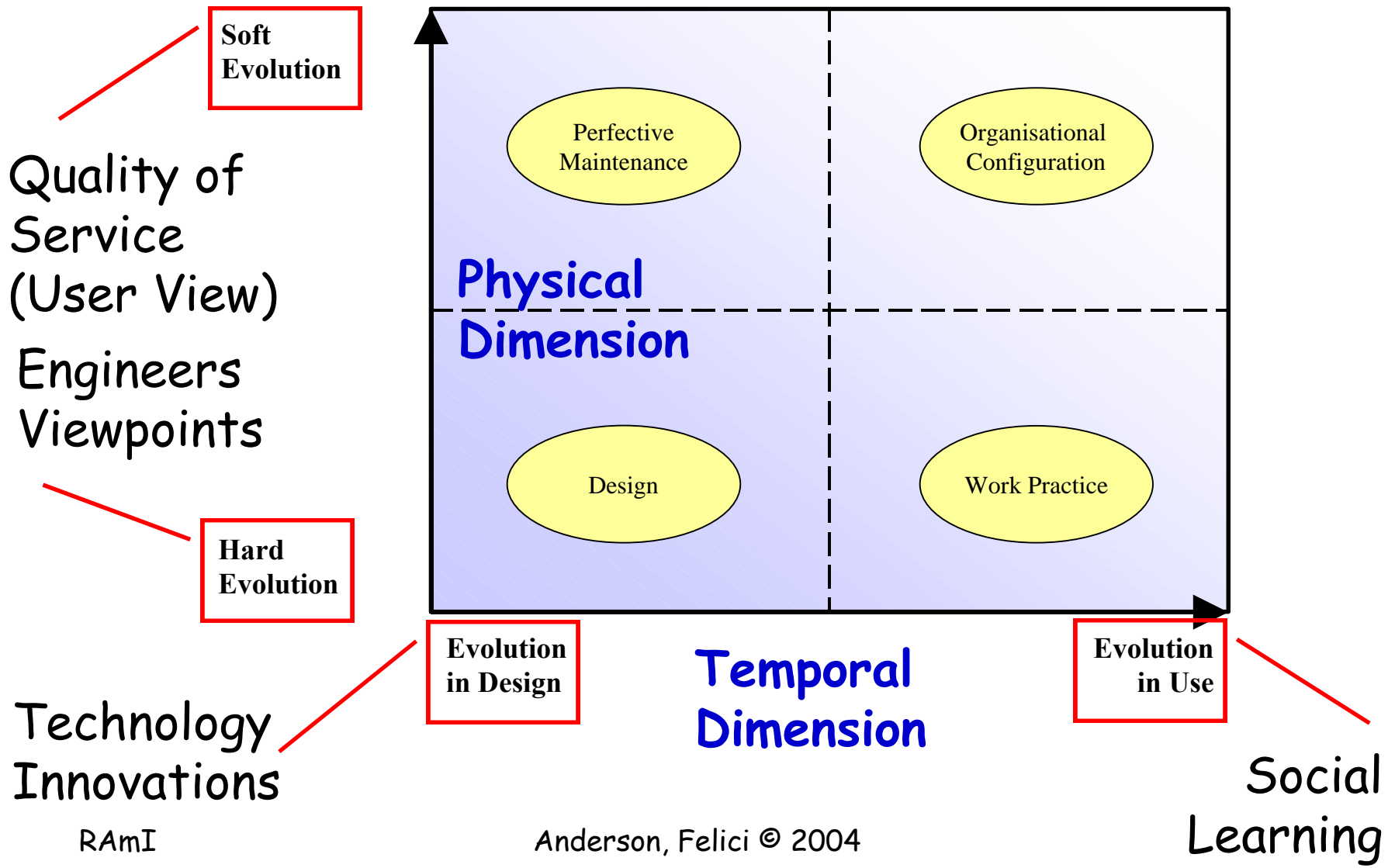
On Socio-technical Evolution...

- Evolution provides a comprehensive account of socio-technical systems
- It is possible to analyse/capture the evolution of socio-technical systems

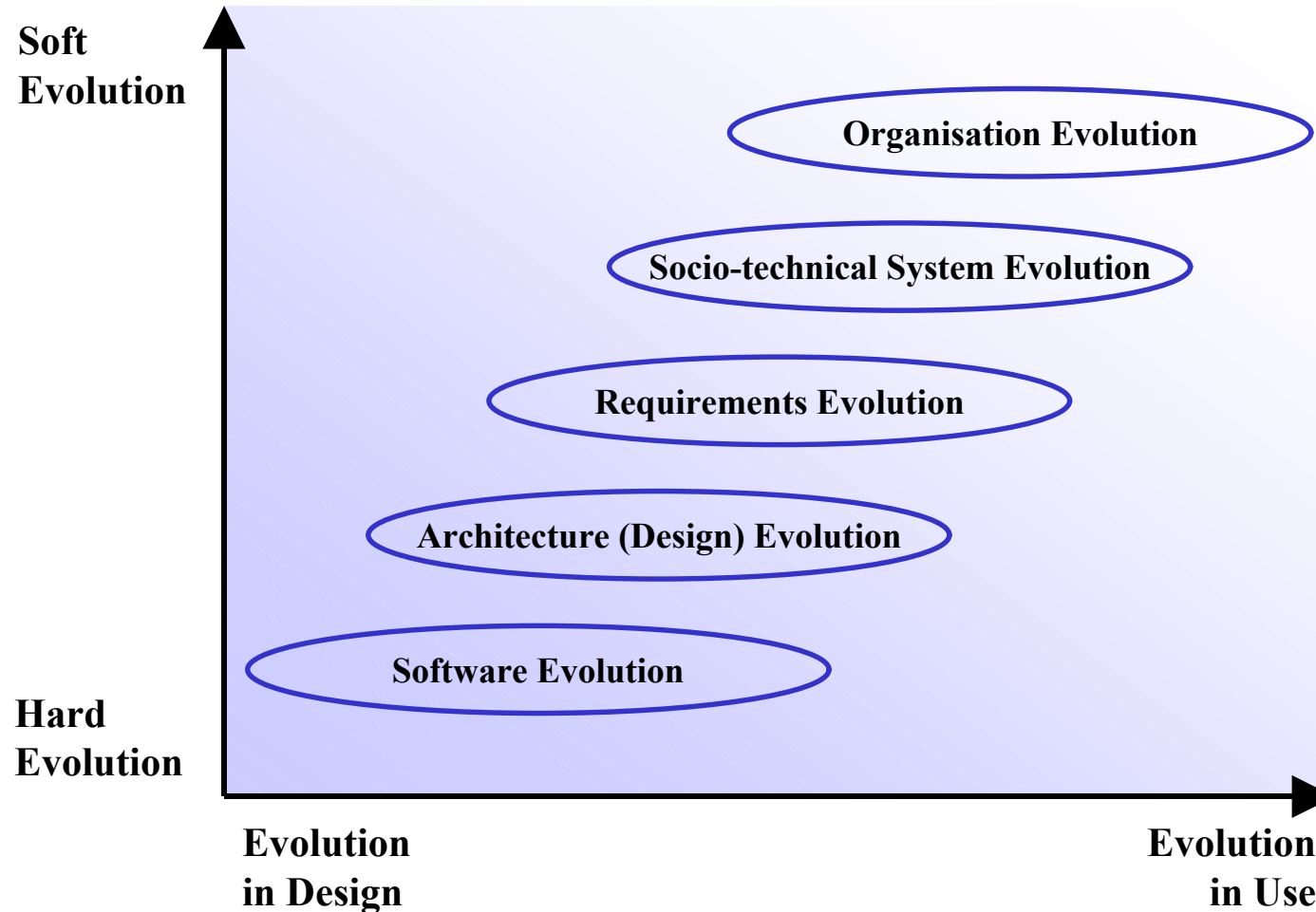


Evolutionary Space
for Socio-technical Systems

Samples of Socio-technical Evolution...

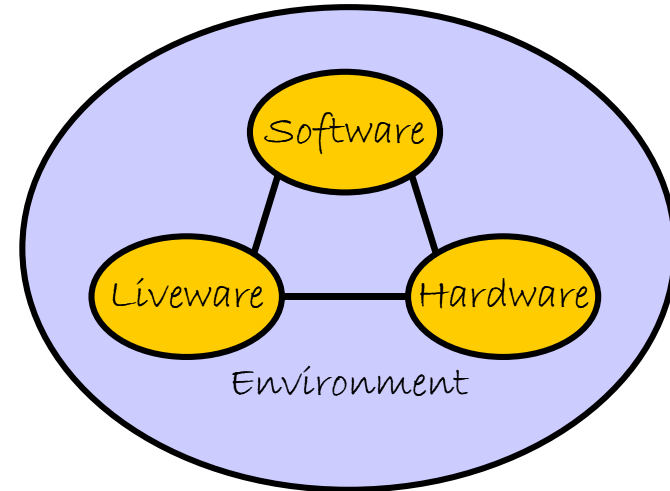


Samples of Socio-technical Evolution... (a software-centric view)

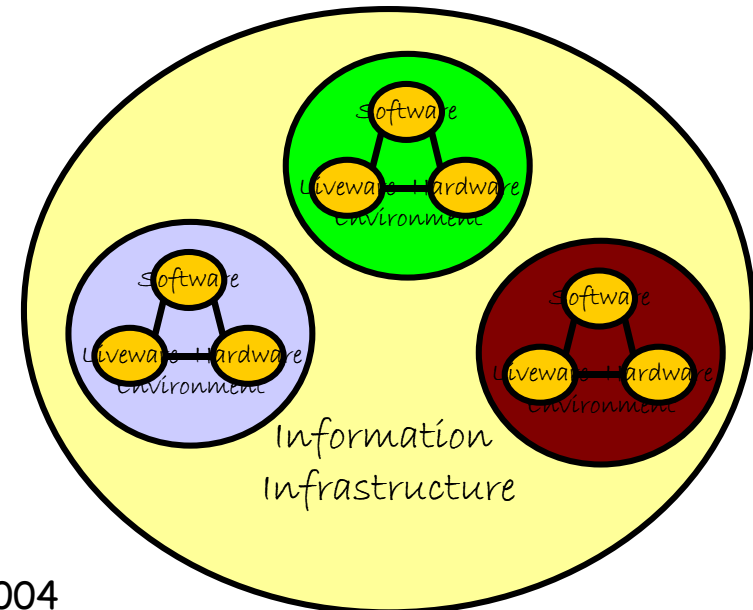


From Socio-technical Systems to AmI

- o (Interaction in the) Environment shapes socio-technical systems



- o Evolution (of Interaction) shapes AmI



Evolutionary Dependability in AmI

- o Evolution as a strategy to enhance Dependability and Security of AmI
 - o Formal investigation of **observational models**
 - o Long-term investigations
 - o Analysis of **Critical Information Infrastructures** (e.g., GRIDs, e-Health, ATM, etc.)
 - o Evolution presents a challenge for future R&D
 - o **Multidisciplinarity**
 - o (Multidisciplinary) **Informed design**
 - o Transfer of (multidisciplinary) **knowledge**
 - o Evolution has a pivotal role in addressing dependability and security in AmI
 - o Investigate and address **contingencies** between evolution and dependability