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Observations

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On Infrastructure

- (Not defined at the workshop)
- The definition I like: “An underlying set of general purpose facilities, with connotations of being reusable by different individuals/organizations for different purposes on different occasions. Typically not all of these uses are known to, or even the concern of, the designer(s) of the infrastructure, who therefore must create something that will respond to and support types of use that have not yet been conceived. Moreover infrastructures will typically have to be ‘capacity-engineered’, so that the amount of resource can be changed to meet current and expected demand.”
- Thus interestingly and challengingly different to ordinary (computer) systems

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Why use the term?

- Ideally, when the term ‘system’ does not capture the above characteristics.
- So why use it when the term ‘system’ would suffice:
  - Following fashion
  - Accessing new research funding sources
  - Wanting to recycle existing ideas and papers
- It’s been interesting to see which presentations here:
  - recycled old computer system (typically distributed system) ideas:
    - without demonstrating specific relevance to infrastructure
    - or instead demonstrated interesting relevance to infrastructures
  - deliberately and interestingly addressed issues specific to infrastructure (as opposed to some particular application)

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Infrastructure Interdependencies

- To me a particularly interesting issue
- Can one reuse existing ideas from work on analyzing dependencies within computer systems (equally, between component systems in a distributed computer system)?
- Or is there something particularly new interesting and different?
- To what extent is the real problem that of unknown interdependencies
  - and how does this differ from the ‘feature interaction’ problem that the telecomms world treat very seriously?
  - i.e. is a regrettable but (now) unavoidable lack of design and implementation discipline?

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The paper I found most interesting

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Jean-Claude's because:

- It was a valiant attempt to clarify and classify the dependability consequences of inter-relationships (without mentioning the words 'taxonomy' and 'ontology'! :-)
- I found several interesting aspects that I felt were worth challenging:
  - The concentration on the special case of just two 'infrastructures'.
  - The consequent decision to introduce different sets of nouns, as opposed to adjectives
  - The graphical representation - which didn't easily answer questions such as
    - Are there are any suspiciously missing lines
    - Is there any missing symmetry
- But the planned development of analysis techniques sounded very worthwhile
- And the papers and statistics he cited and quoted very interesting

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Other Comments

- The (relative) lack of reference to socio-technical issues, leave alone research
- The discussions of interdisciplinary challenges, albeit among (types of) engineer
- The extent of the legacy challenge, in industries with a 20 year replacement cycle
- The fact that the electrical power industry in the USA spends less on R&D than the petfood industry!
- How to do research on interconnected infrastructures generally, as opposed to onone (or more) application domains?
- In summary, an interesting workshop, but one which has not done as much as I'd hoped to further my undertanding of, or sympathy for, the critical interconnected infrastructures field