Multi-System Testing
... and what to do about it

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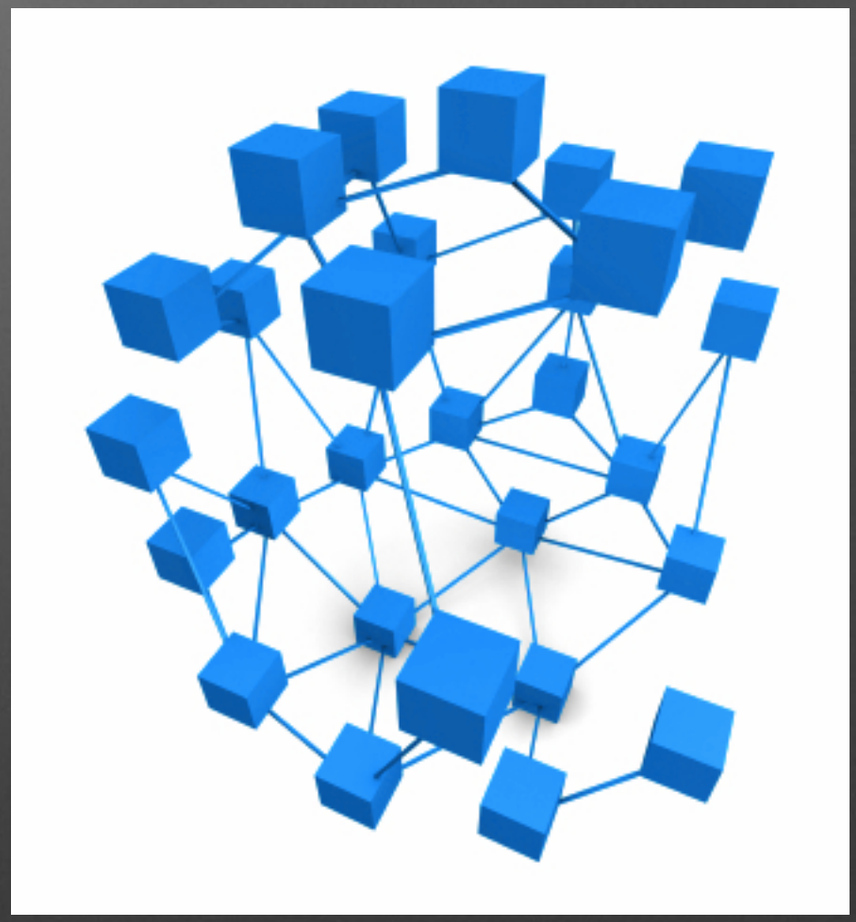
Our Problem

- Many systems need to implement coordinated change
- They have been individually tested (or not)
- We now need to prove that all of the systems work together
- One system with problems renders the entire change useless



Systems of Systems

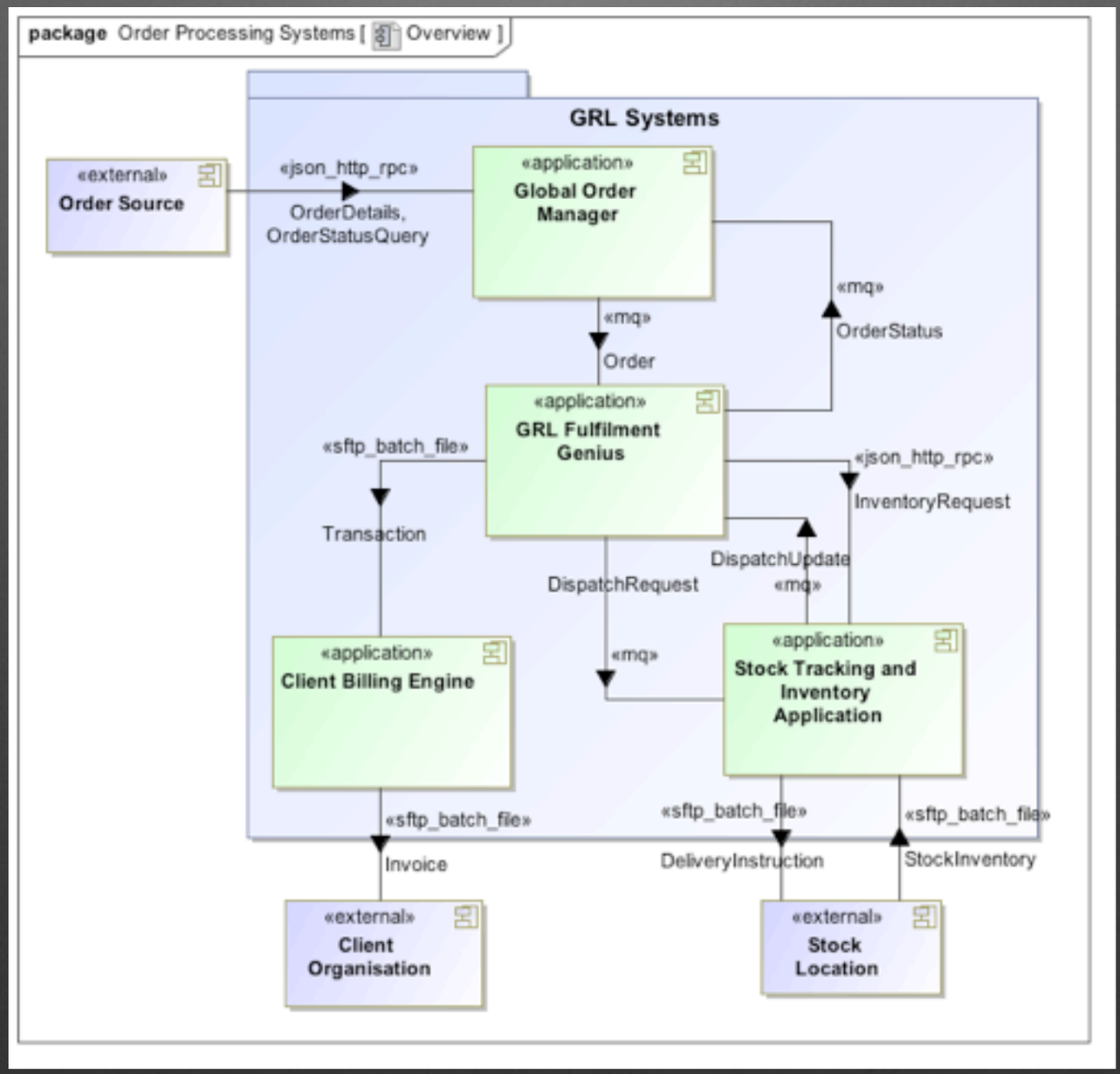
- Our problem is one of testing a “system of systems” (“front-to-back” testing)
- A System of Systems is an assemblage of components which individually may be regarded as systems, and which possesses the additional properties of:
  - operational independence
  - managerial independence
  - evolutionary development

(and perhaps emergent behaviour and geographical distribution)

Definition based on Mark Maier's criteria (http://en.wikipedia.org/wiki/system_of_systems)

Exercise 1: Role Play

Role Playing SoS Testing



Role Playing SoS Testing

- To get us to think about the problems
- We have a 4 system scenario (order fulfilment)
- Split into 4 groups, one per system
  - Each group gets the overall scenario description
  - Each group gets a more detailed description of their system
- In your group, identify what you will do to prepare for front-to-back scenario testing
  - what do you need to do?
  - what do you need others to do?
- Report back on flip-charts

Testing Systems of Systems

Testing SoS
some initial thoughts

- Development resource constraints and timing
  - who will work on it? test envs? priorities
- Interface problems
  - understanding, ambiguity, assumptions, …
- Everyone understands part of the problem
  - no one understands the end-to-end process fully
- Reference data, reference data, reference data
  - multi-point setup, inconsistency, forgotten items
- Calendars
  - how to get consistent starting point for testing across systems?
  - what business date can we all use? is it the same in all systems?

Exercise 2:
What's the Problem?

Exercise 2

- The simulation illustrated the problem
  - Now can we describe it accurately?
- Working in your groups …
  - Brainstorm the problems with SoS testing (enterprise environment)
  - Refine the list into general categories and classes
  - Report back via flip-charts

Exercise 3: Finding Solutions

Exercise 2

- You've guessed it …now we understand the problem, what can we do about it?
- In your groups:
  - For each class of problem what are the practical mitigation strategies that we can employ for each
    - A technology, a technique, a management approach, or simply an avoidance strategy
  - How would these have solved the problems in the simulation?
    … or a situation at work that you have been involved in
  - Report back on flip-charts again

Presentations

Presentations

- Describe what problem classes you identified
- Describe what solutions you found
- Tell us anything else you think you've learned

Wrapping Up

Conclusions

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