What the Assassins' Guild taught me about Distributed Computing

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ICCS2006
These people know something…

Photo courtesy of Joe Foley
Live Action Role-Playing = Distributed Computing

• The imaginary world is simulated through actions in the real world.

• Execution is often distributed due to complexity
  – Physical size
  – Number of people
  – Time sensitivity
  – Game complexity

Example: simulating an economy by exchanging cards representing bulk trade goods
Challenging Network Conditions

- Small computational capacity
- Small working memory
- Slow communication
- Partially synchronous execution
- Poor connectivity
- Byzantine failure
- Differing incentives
The Tea Impossibility Result

How does this man know if he's just been poisoned?

• No distributed algorithm exists such that:
  – Tea is homogenous
  – Ingredients are secret
  – Ingredients can be added
  – Effects fit on a slip of paper under a cup
Recovery of Destroyed Tunnel State

What happens if a janitor tears down the envelope?

- Layered defensive design
  - Long-term prevention
  - Short-term prevention
  - Error Tolerance
  - Monitoring
  - Narrowed Scope
Consensus in Ranged Combat

How do they agree without stopping to discuss?

- Exploit belief and asymmetry in consequences
  - Physical projectile, Shooter calls, halt for dispute
Conclusions

• Similar problems, very different solutions
  – Ecological analysis
  – Layered defensive design
  – Mitigation of failure consequences

*Can the ideas be transported?*