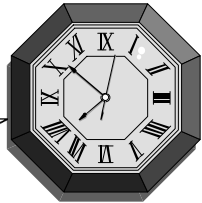


Defining technology of the past millennium  
**The clock.**

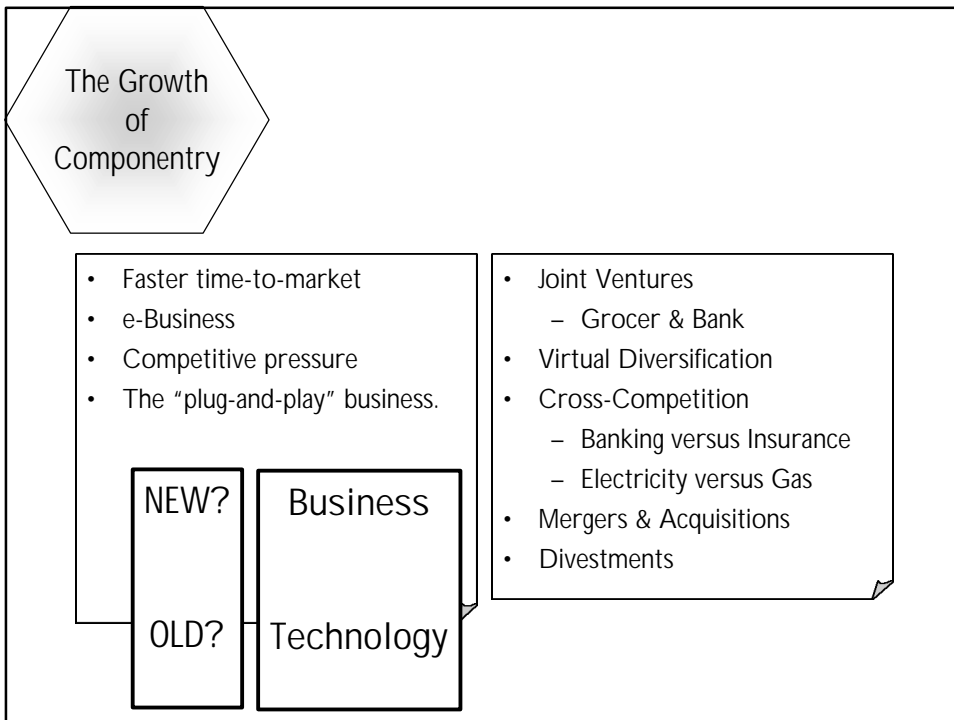
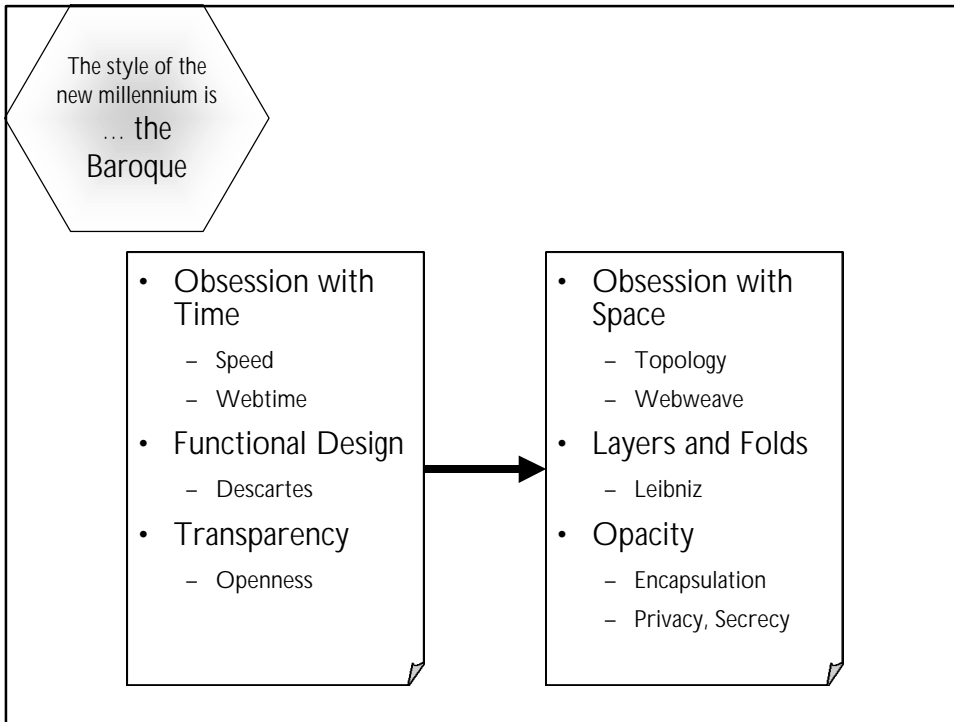


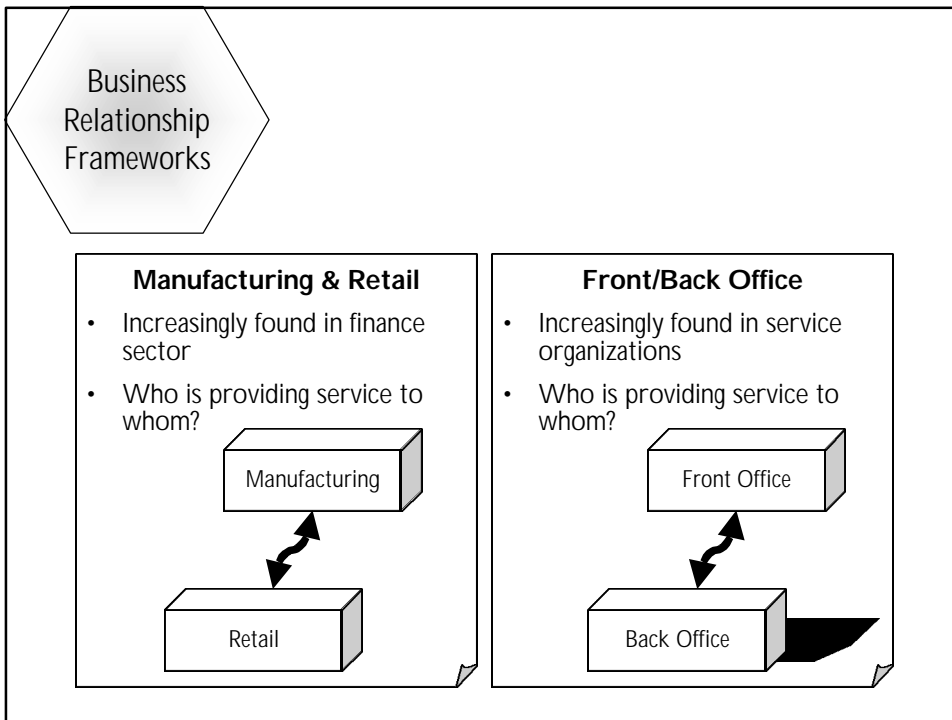
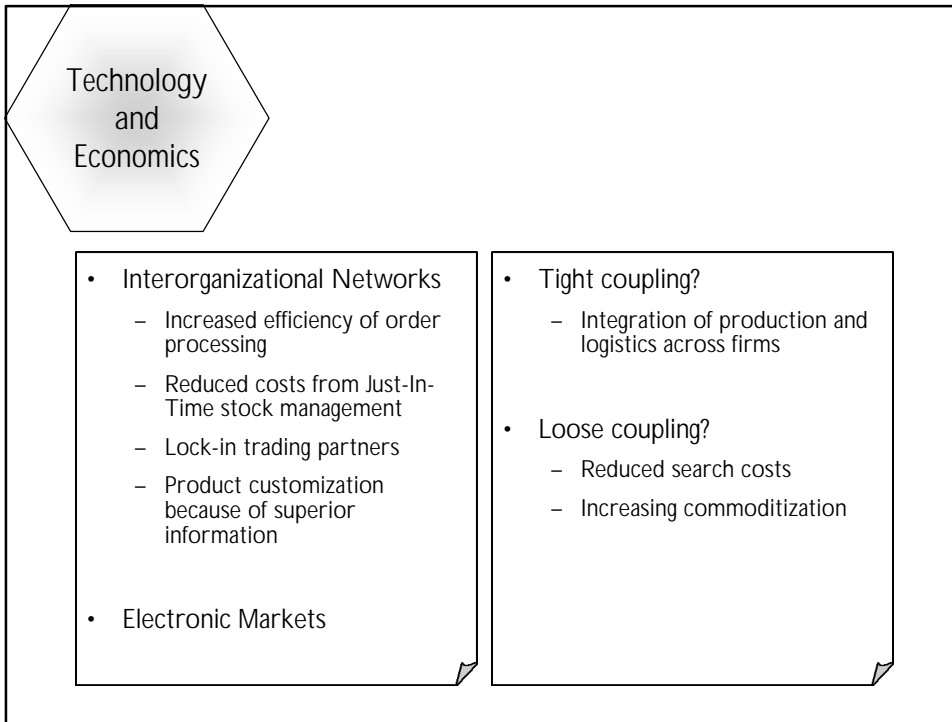
"I was your slave, now you are mine, I am Time."

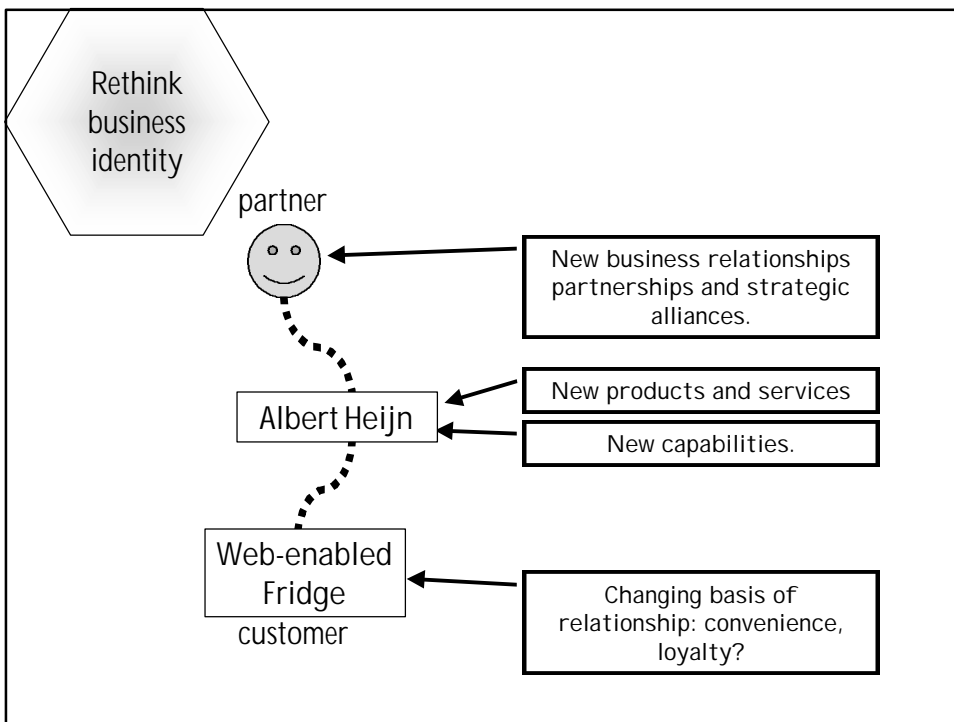
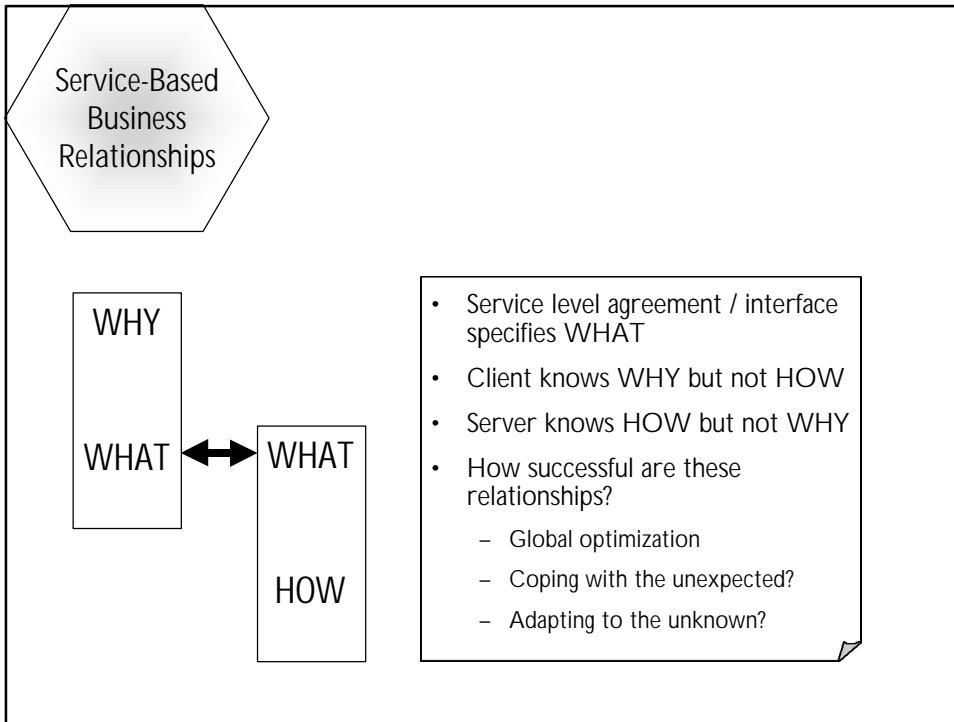
- Mechanical clocks were invented around 1000 CE.
  - *Pope Sylvester II*
- Monasteries used the clock to control work and prayer. Early factories took over the clock-based work ethic. The industrial revolution was regulated by the clock.
  - *Lewis Mumford*
- Clocks are now everywhere. Clocks have transformed our conception of time.

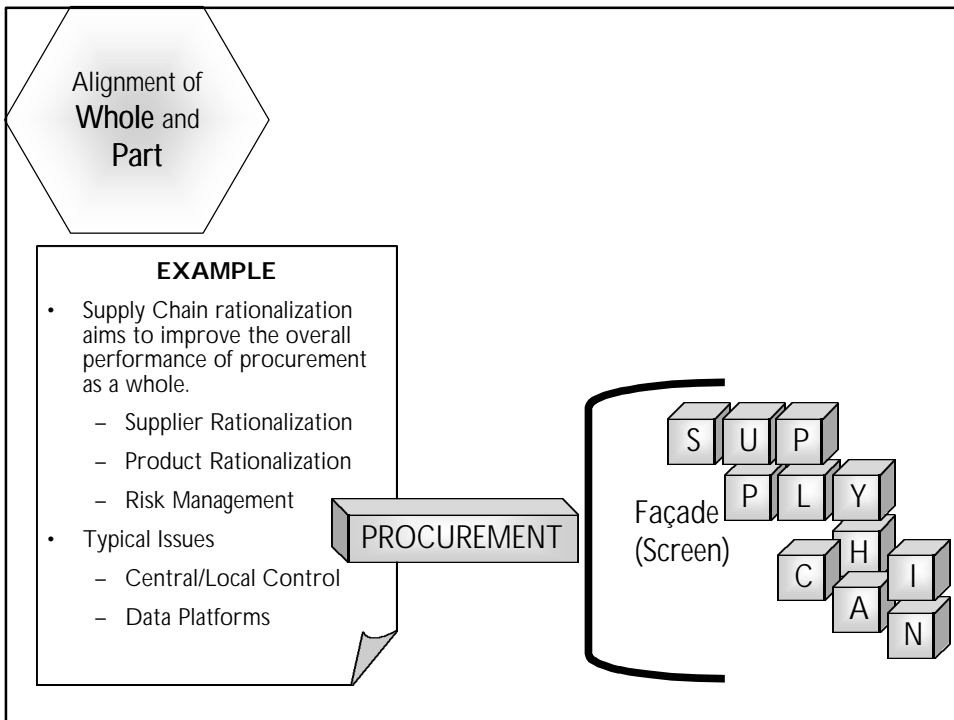
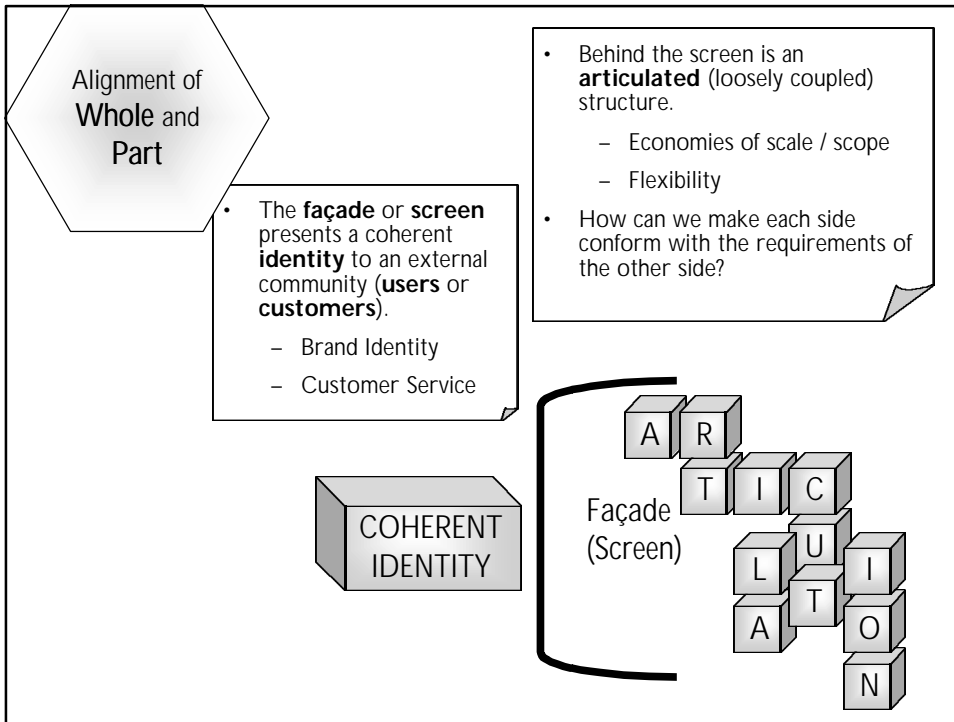
- Business obsession with time: productivity, time to market, just-in-time, cycle time, ...
- Technological obsession with time: frequency, speed, acceleration, ...
- Sometimes this obsession equates to a foreshortening of **distance**.
- These drivers will remain relevant, but ...

# Component-Based Business Workshop









Reasoning about Wholes and Parts

- Complexity demands parallel consideration of wholes and parts.
  - Whole is too complex, so we sometimes have to think about parts as if they were independent of the whole.
  - Parts don't make sense without appreciating larger context.
- We understand systems by dividing them into components.
- System properties often cannot be located in components.
- Change programmes are divided into increments
  - These can also be regarded as components.

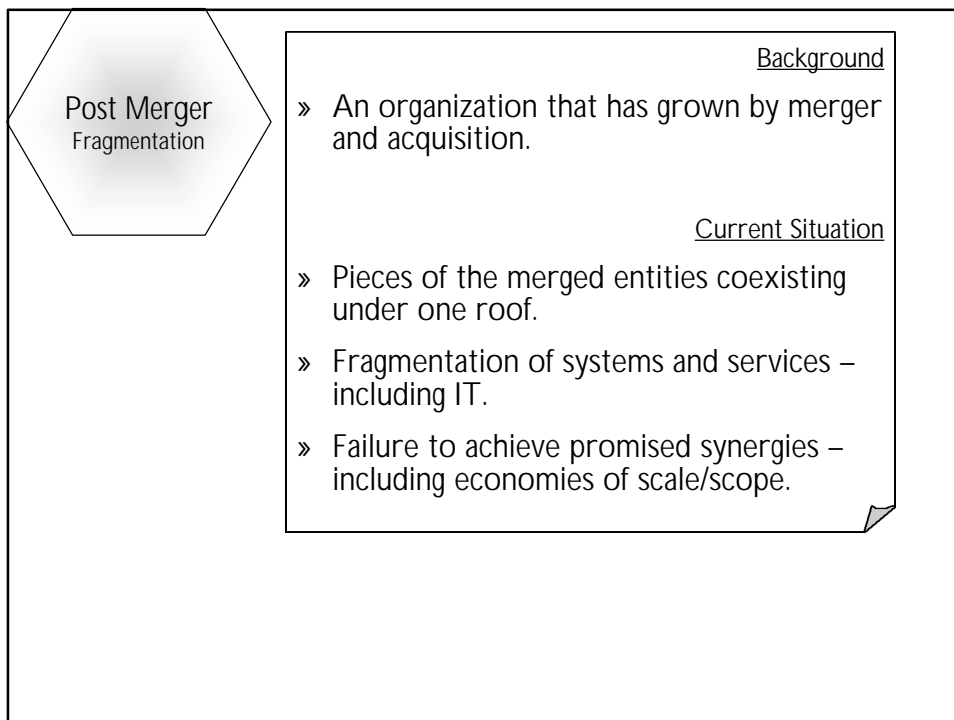
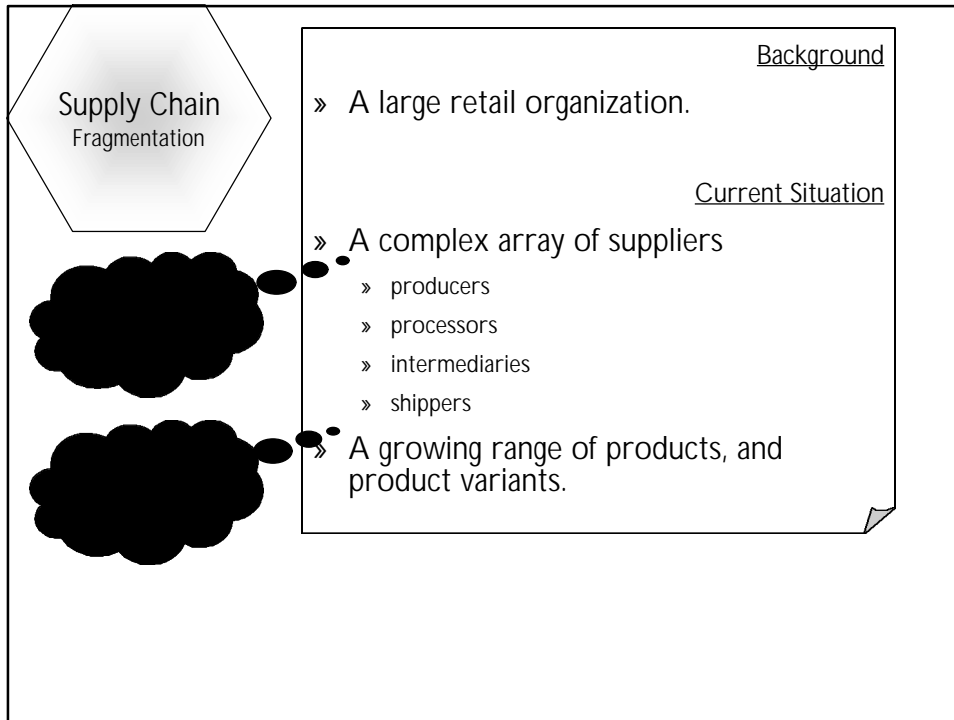
Network Fragmentation

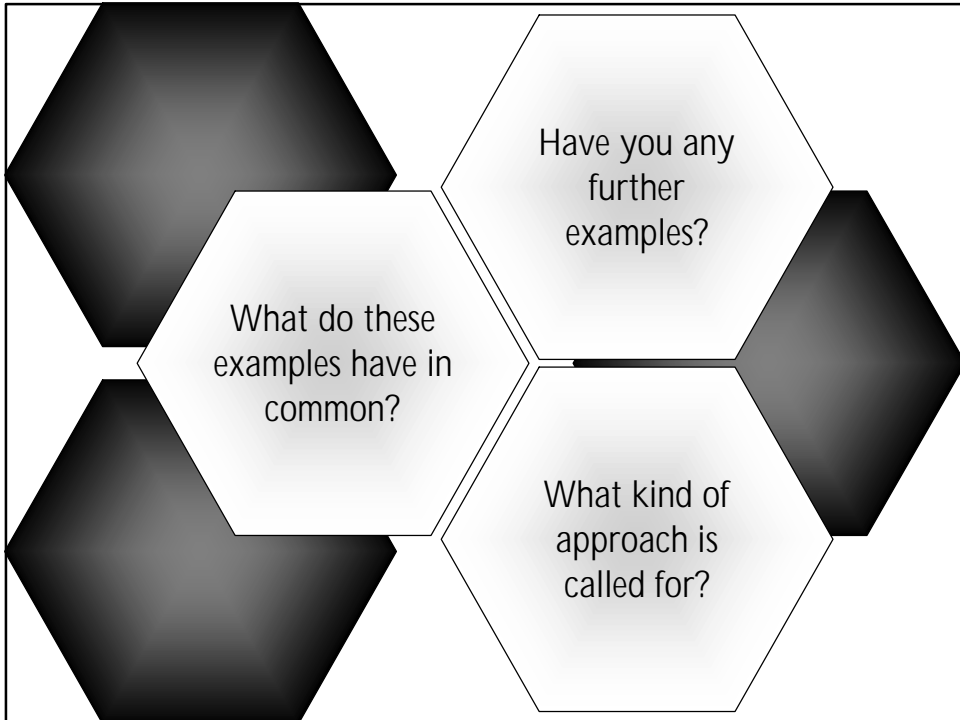
History

- » A clumsy attempt to deregulate a large monopoly.

Current Situation

- » A complex network of independent commercial entities, providing services to one another.
- » Several different regulators - each responsible for a different aspect of the whole system:
  - » safety
  - » customer service
  - » value-for-money





Working Pieces Together

- Create new connections
- Tighten existing connections
  - reduce interaction distance
  - increase bandwidth
  - promote trust

Repair

- Merge and simplify overlapping or conflicting parts
- Discard broken or non-contributing parts
- Smooth rough edges

Refine



**Utility Deregulation**

Background

- » Large legacy organizations with regulated networks.

Current Situation

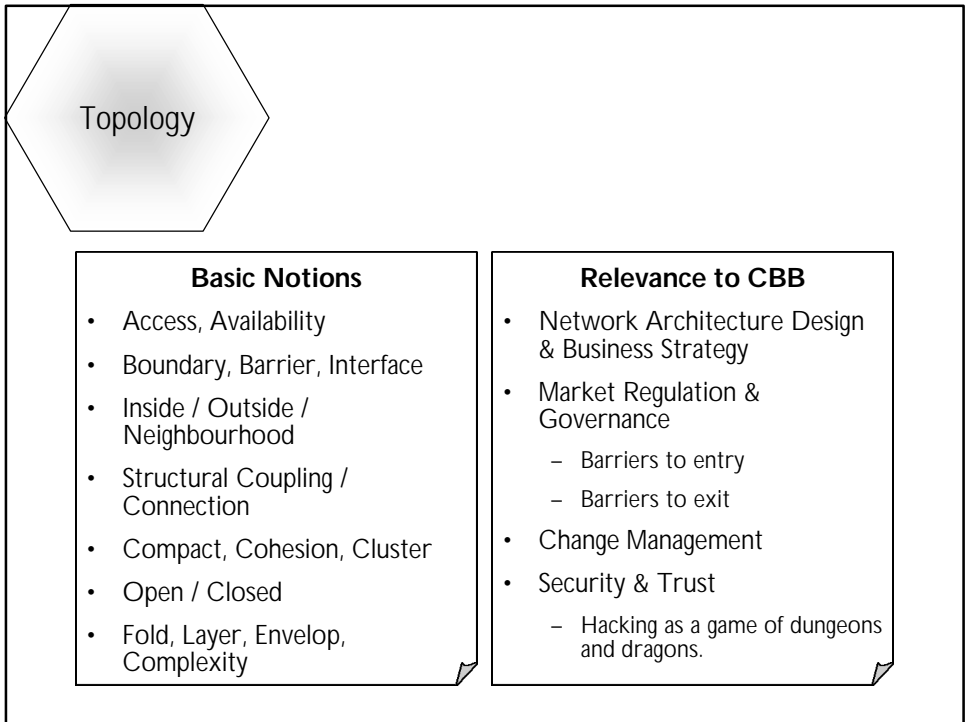
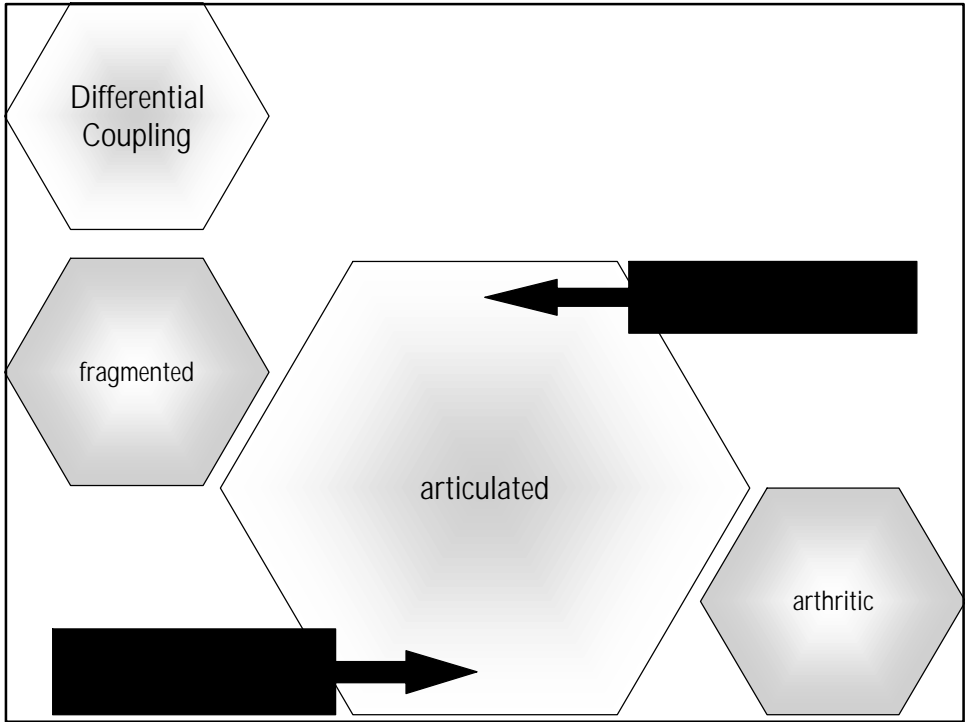
- » Demerger
  - » mmO<sub>2</sub> (wireless business split from British Telecom)
  - » Lattice (pipeline business split from British Gas)
- » Service ReBundling
  - » Centrica / Goldfish
  - » Innogy
  - » Powergen

**Working Pieces Apart**

Restructure

- Loosen existing connections
  - increase interaction distance
  - reduce bandwidth
  - promote tolerance
- Insert and interpose interfaces
- Tease apart the lumps
  - separation of concerns
  - separation of responsibilities

*(Two large blacked-out areas are present on the left side of the diagram, one above and one below the main list items.)*

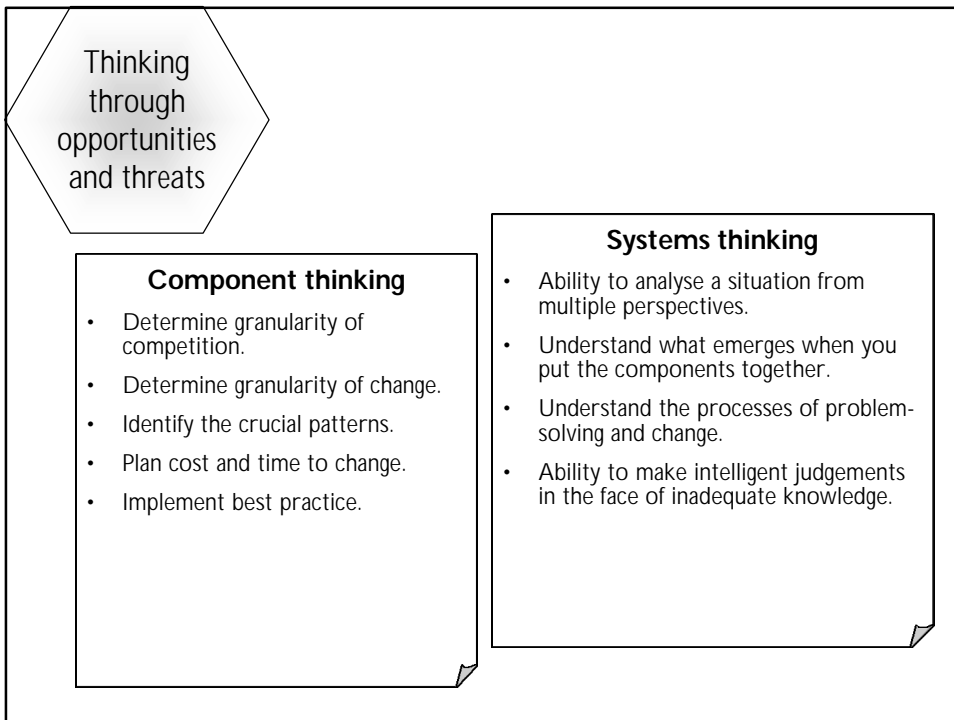
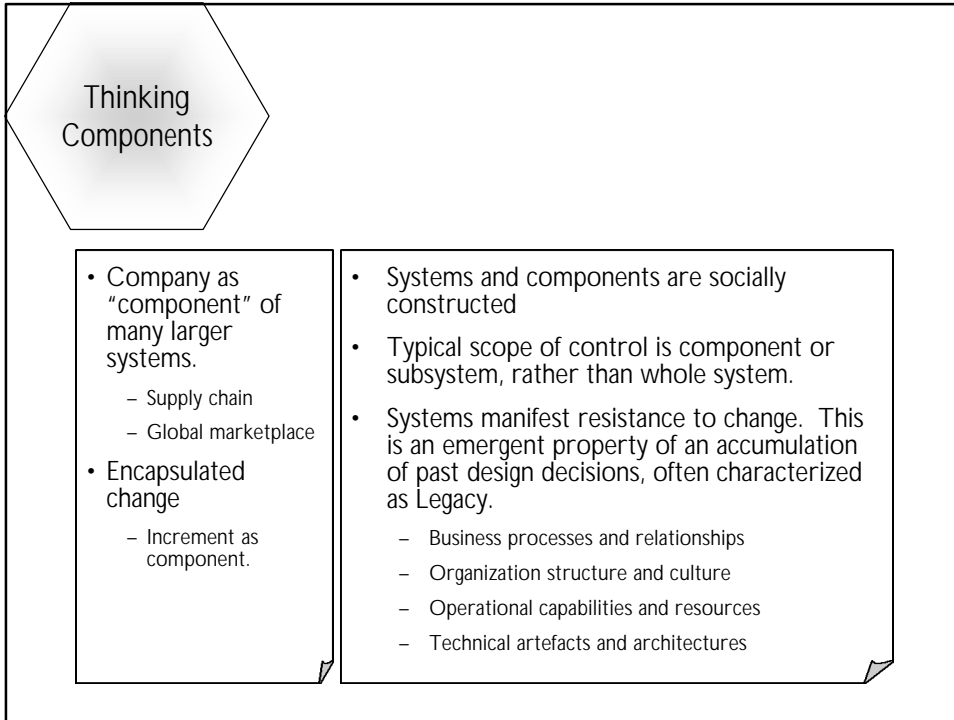


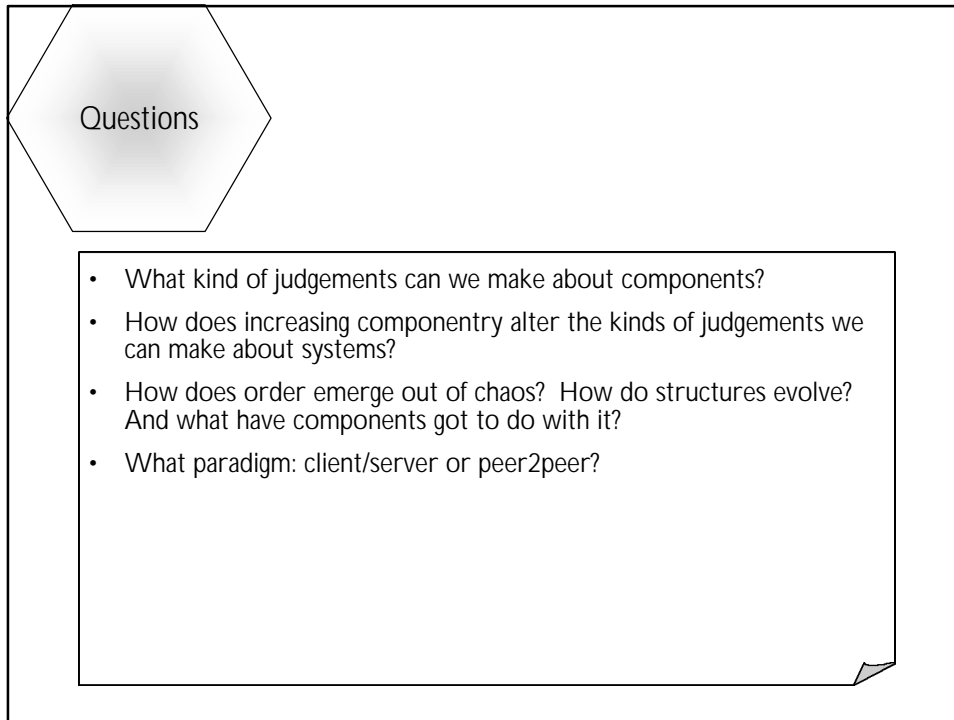
Quick Sketch of Topology

<p><b>Open</b></p> <ul style="list-style-type: none"><li>• An open set contains a <b>neighbourhood</b> of every point.</li><li>• <b>Joining</b> any number of open sets together produces a new open set.</li></ul> <p><b>Closed</b></p> <ul style="list-style-type: none"><li>• An closed set contains its own <b>boundary</b>, and the <b>boundary</b> of every <b>neighbourhood</b>.</li><li>• <b>Intersecting</b> any number of closed sets together produces a new closed set.</li></ul>	<p><i>Open and Closed are not opposites.</i></p> <ul style="list-style-type: none"><li>– Some sets can be both <b>open and closed</b>.</li><li>– Some sets can be <b>neither open nor closed</b>.</li></ul>
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Interference

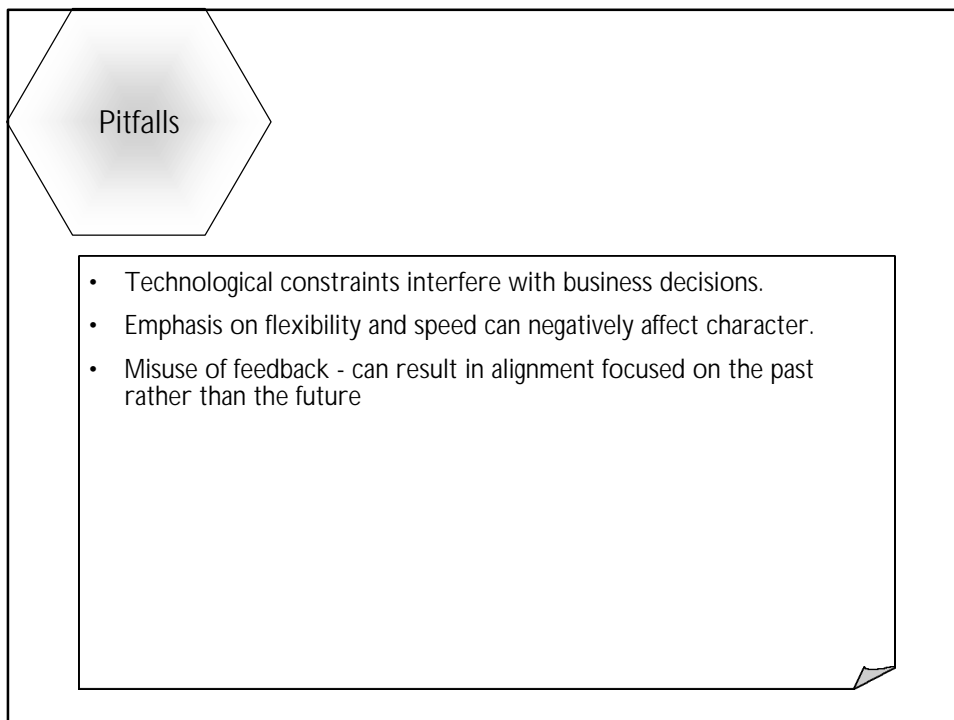
<p><b>Basic Notion</b></p> <ul style="list-style-type: none"><li>• Failure of simple addition / composition between two components.<ul style="list-style-type: none"><li>– Example: interaction between two beams of light</li></ul></li><li>• Implications for the composition of large complex systems from autonomous components and services.<ul style="list-style-type: none"><li>– Example: feature interaction</li></ul></li><li>• Implications for predicting / testing the emergent properties of large systems.</li></ul>	<p><b>Relevance to CBB</b></p> <ul style="list-style-type: none"><li>• Information Interference<ul style="list-style-type: none"><li>– Epistemological Interference</li><li>– Ontological Interference</li></ul></li><li>• Management / Regulation Interference</li><li>• Interference between multiple attempts at sensemaking</li></ul>
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Questions

- What kind of judgements can we make about components?
- How does increasing componentry alter the kinds of judgements we can make about systems?
- How does order emerge out of chaos? How do structures evolve? And what have components got to do with it?
- What paradigm: client/server or peer2peer?



Pitfalls

- Technological constraints interfere with business decisions.
- Emphasis on flexibility and speed can negatively affect character.
- Misuse of feedback - can result in alignment focused on the past rather than the future

Mediaeval Thinking

- **Knights** chase around the forest after mythical beasts, encumbered by heavy armour and ancient weapons.
- **Wizards** camp in the clearings, selling silver bullets and magic potions.
- **Kings** build castles to assert their unshakeable power.
- And **lovers** attach themselves to unattainable dreams.

- **System engineers** try to capture The Business Requirements, to which they can develop an ageless Solution.
- **Vendors and users** quibble about the magical powers of one or other Device.
- **Businessmen and investors** try to build a permanent position of Competitive Advantage or Profit, from which they can be safe from the dragons of Uncertainty and Risk.
- And **customers** dream of Frustrations finally Alleviated, Demands Satisfied at last.

Beyond Mediaeval Thinking

- The landscape for business and IT has changed.
- The traditional goals are increasingly meaningless.
  - What good are Efficiency or Control or Integration, if you've sacrificed Flexibility?
  - How important is Certainty or even Identity, in a fluid world where "stationary" apparently means "stagnant"?
  - What Trust can be invested in business relationships and software artefacts?
- But many people attempt to erect the same old defences against the same old monsters.

- *We're still in the Middle Ages. The forest is still full of knights lumbering about with lances.*
- *At some point you may decide to discard your own lance altogether – but you might need it for a little while longer. Don't suddenly stop doing things in the old ways – the old ways are often convenient, sometimes even necessary – but you may start loosening your attachment to them.*
- *And if your competitors are still firmly attached to the old ways, it should be easy to get the better of them, by paying attention to some of the things they are overlooking.*