NC STATE UNIVERSITY

ENGINEERING ONLINE

Lecture Notes

Course Number: CSC 513

Instructor: Dr. Singh

Lecture Number: 5

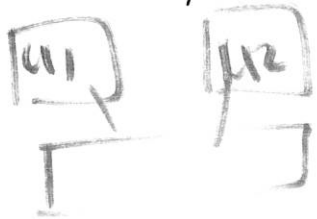
Understanding Protocols

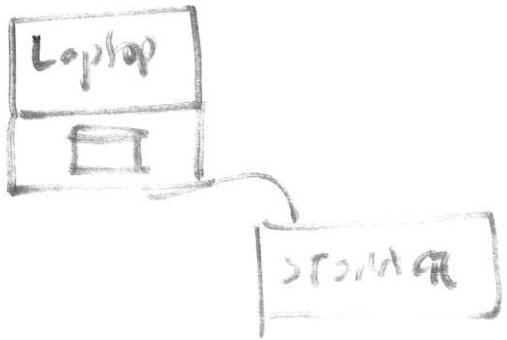
- Protocols encapsulate IT interactions, i.e., interconnections over which information is the main thing that flows
  - *Connect:* conceptual interfaces
  - *Separate:* provide clean partitions among logical components
- Wherever we can identify protocols, we can
  - Make interactions explicit
  - Enhance reuse
  - Improve productivity
  - Identify new markets and technologies
- Protocols yield standards; their implementations yield products

Examples of Logical Architectural Components

Each logical component class serves some important function

- Power: UPS
- Network connectivity
- Storage: integrity, persistence, recovery
- Policy management
- Decision-making
- Knowledge and its management





What are some products in the above component classes?

Outline

IT Architectures

The term *architecture* is used more broadly in IT settings

- The organization of an IT system
- The extensibility and modifiability of a system
- Even the governance of a system, which inevitably accommodates the human organization where the system is deployed

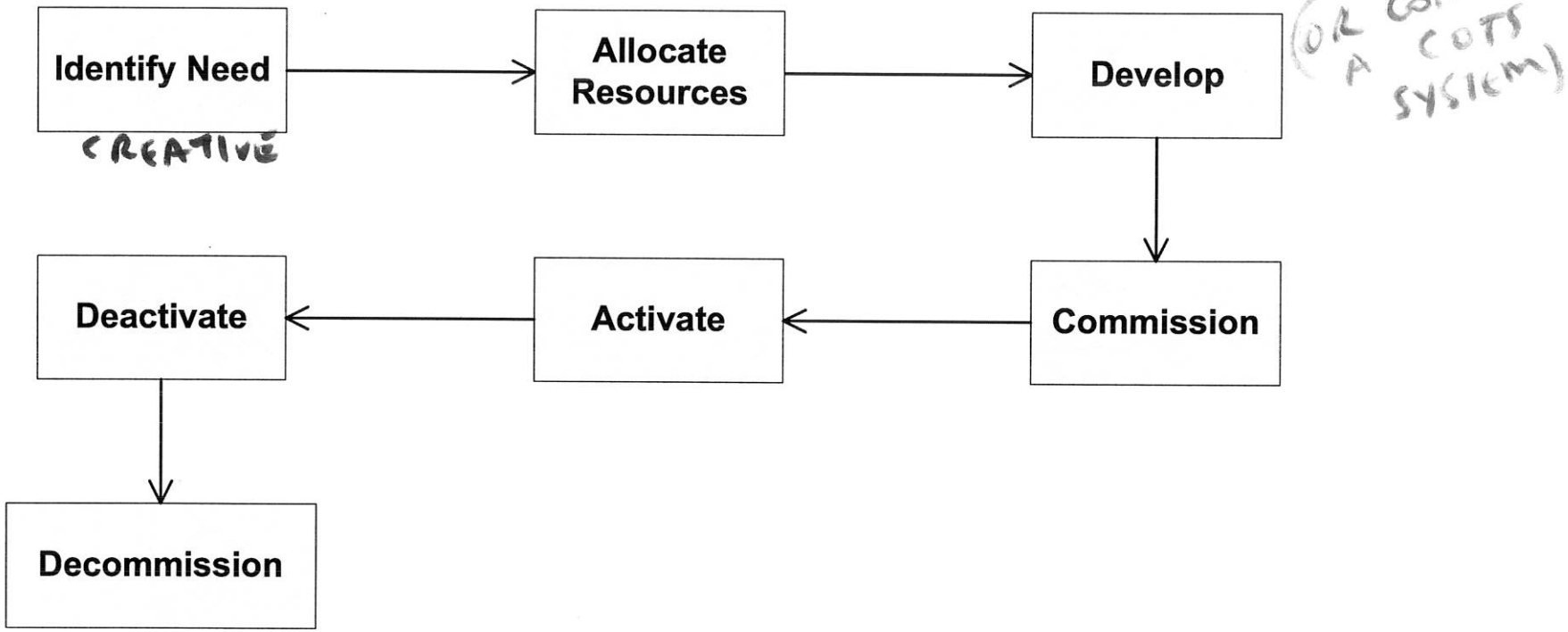
IT and SOA Governance

The human administration of an IT system

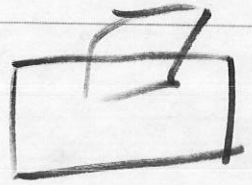
- IT Governance: How IT resources are administered
- SOA Governance: How services are created, deployed, removed, ...
- Goes hand-in-hand with architecture
  - Incorporates
    - The human organization of a system
    - The processes through which a system is updated or upgraded
    - Nontechnical aspects, such as flows of responsibility
  - Sometimes confused with architecture, but distinct

Governance in the Service Life Cycle

Key determinations



GRAD PROGRAM AREA



TISSUE BOX ← DELIVER VALUE TO THE END USER

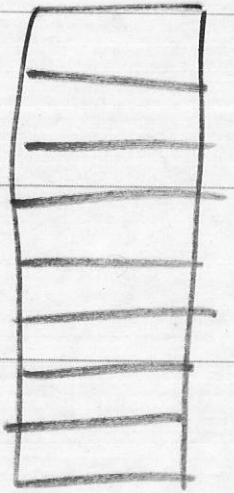
SERVER

WHAT ARE THE REPETITIONS?

- NUMBER OF USERS (DEMAND)
- BUDGET
  - RESOURCE
- STAFF: TO REPLACE TISSUE
- SPACE
- VENDOR SELECTION (BRAND)
- STAFF: CUSTODIAL
- ~~LOAD~~ DEMAND PROFILE
- TRASH CAN

RESOURCE PHYSICAL

STAFFING ADMIN)



NETWORK POWER COOLING

AUTONOMIC COMPUTING SELF ADAPTING

SELF SERVICE

Enterprise Models: Information Resources

Capture static and dynamic aspects

- Statically
  - Databases and knowledge bases
  - Applications, business processes, and the information they create, maintain, and use
- Through explicit representations, dynamically enable
  - Integrity validation
  - Reusability
  - Change impact analysis
  - Software engineering: Automatic database and application generation via CASE tools

Enterprise Models: Rationales

- Capture (human) organizational structure
- Document business functions
  - Rationales behind designs of databases and knowledge bases
  - Justifications for applications and business processes

WHY STUPID DO?
(ASSESS RISKS)

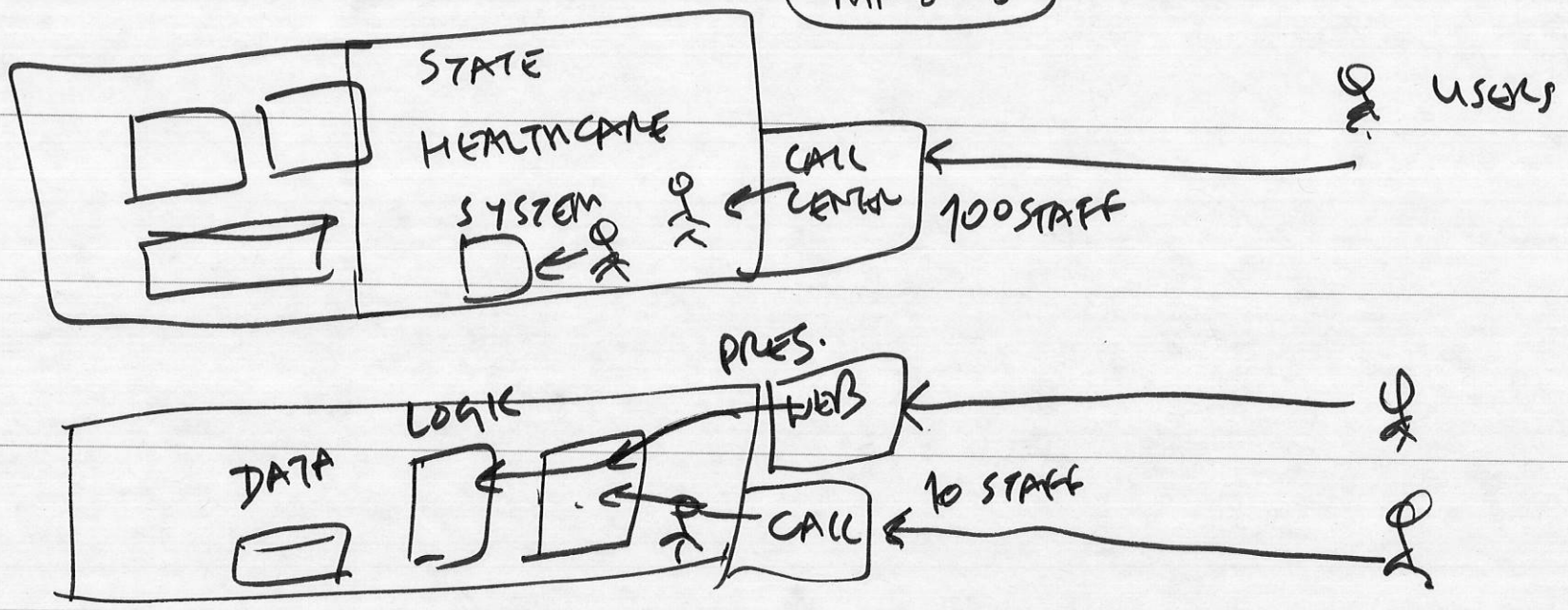
COMPLEXITY ⇒ (WITHOUT SUFFICIENT UNDERSTANDING)
SAFER TO LEAVE THINGS ALONE

Enterprise Architecture Objectives

At the top-level, to support the business objectives of the enterprise; these commonly translate into

- Accommodating *change* by introducing new
  - Users
  - Applications
  - Ways of interaction (e.g., ongoing push toward mobility)
- Managing information resources
  - Preserving prior investments by interoperating with legacy systems
  - Upgrading resources
- Developing blueprints to guide resource and application installation and decommissioning

MF 8-5



BENEFITS: - FEWER CALL CENTER STAFF
- FEWER TRANSCRIPTION ERRORS
- REDUCE WAIT (TRANSACTION)
- 24X7

ASSUME LITERACY
ACCESSIBILITY
CONNECTIVITY

CHALLENGES

- POTENTIAL BOTTLENECK IF NEW VARIANT BREAKS (PERCEPTION OF) RELIABILITY
- STAFFING & OTHER RESOURCES FOR WEB
- DEMAND PROFILE
- TESTING ON MANY BROWSERS
- WHEN TO UPGRADE