HNDIT1042 Information Management and Information Systems

Advanced Technological Institute

sociotechnical systems

- Information systems are sociotechnical systems.
- Though they are composed of machines, devices, and “hard” physical technology, they require substantial social, organizational, and intellectual investments to make them work properly.

sociotechnical system..

- Inside a sociotechnical system (STS), you'll find people, software, hardware, the organization, and any number of other systems functioning together as a whole.

Socio-technical system

- Socio-technical system is a mixture of people and technology.
- It consists of many items. These items are difficult to distinguish from each other because they all have close inter-relationships.

components

- The system include non-technical elements such as people, processes, regulations, goals, culture, etc.,
- as well as technical components such as computers, software, infrastructure, etc.

Socio Technical System in Action...

The unattended patient is leaving the room...

The caretaker gets a mobile alert (via the sensor in the door).

The patient has a fall before the attender can act (camera catches it)!

The closest nursing care unit is notified.

The treating doctor is also sent an alert.

The patient's kin is also informed of the fall.

The report is automatically generated based on the data.

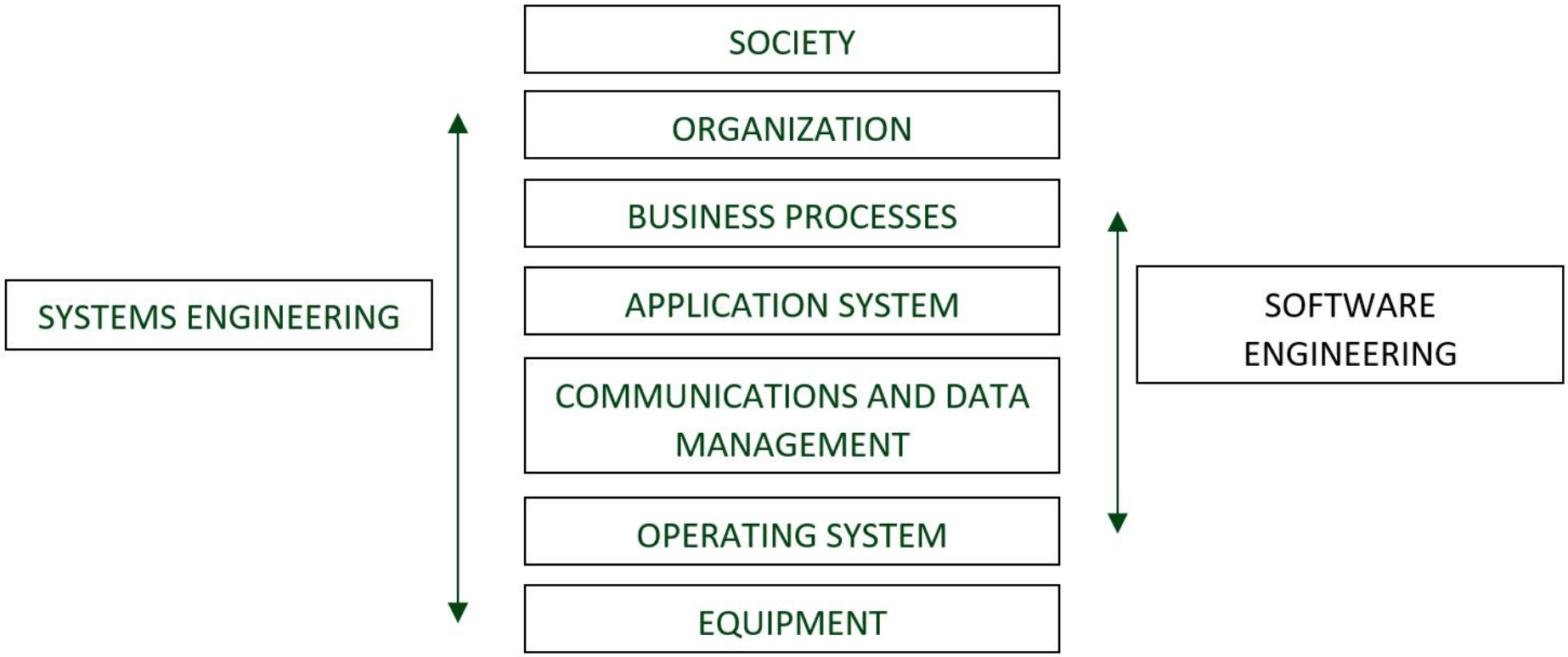
The patient undergoes treatment and nursing care.

Monitoring System

Alerting System

Reporting System

Sociotechnical system layers



Sociotechnical system layers

1. **Organizational layer:** Strategy, management, and internal regulations and processes
2. **Social layer:** The broader culture, regulatory environment, and laws outside of the organization as well as the people who are end-users and customers

3. **Business process layer:** Business activity-supported processes that define how technology is used internally and how the business operates
4. **Equipment layer:** Hardware the business relies upon for development and operations
5. **Operating system layer:** Systems that bring hardware and other software together

6. **Data management and communications layer:** Layer that bridges the operating system and the application so information can be used and managed appropriately
7. **Application layer:** Software that customers or end-users see and interact with. It provides the user interface and is often the most visible layer of the STS

Let’s use email providers as examples of STSs.

- Consider how Gmail, Hotmail, Outlook, and other email systems could be described and analyzed. Each of these systems is distinct, but they also interact with other systems in an STS to form a functional email program:
- **Development team and the organization:** Developers, in creating and maintaining email software, must interact with technology systems as well as other human systems.
- **Hardware:** Used along with software by developers and ultimately by end-users.
- **Software:** Uses hardware and is created by and maintained by developers and other teams within the company. End-users of the software also interact with it.
- **Users:** Interacting with and influencing the other systems through their behaviors as customers and consumers, users are another critical part of an email STS.
- When you elevate the entire sociotechnical system over managing your business in disparate parts, it’s easier to grow and respond to change. Sociotechnical systems are an effective way to bring technology and people together while managing risks and improving the human experience of today’s technologies.

benefits for organizations

- Easy management of sophisticated human challenges:
  - the system's ability to manage human relationships allows organizations to respond more effectively
- Self-regulation and error detection:
  - With a flat hierarchy and responsive structure, teams inside an STS can quickly recognize problems and deploy resources to resolve them.

- Trust and responsibility:
  - Since groups are autonomous, they can take responsibility for fixing problems and can supervise the process from start to finish. By design, teams are trusted to do their work effectively.

disadvantages

- Limited systems understanding and blind spots:
  - A poor understanding of how different layers interact may increase your organization's risk of accidents, result in a less effective response to environmental changes, or other issues.

- Wrong or inaccurate information:
  - Good information is essential for business decision-making inside an STS. If the information is not precise enough to be helpful or contains inaccuracies, teams within the system are at risk of acting incorrectly based on the information they have.

- Human-machine challenges:
  - Given that the technical systems rely on human systems working with them as operators and users, errors can show up without an easily discovered cause or origin.
- Complexity that outgrows organizational design:
  - Some technologies and new systems created through STSs can themselves become too big or complex for their companies to manage. In such a situation, the organizational structure may need to adapt and change somewhat in response.

- Less control:
  - Managers don’t always have direct control over every aspect of a sociotechnical system.
  - For example, a company can’t necessarily control how customers respond to a new rebranding or how an evolving regulatory environment will directly impact the long-term viability of their brand.

END