Information Systems

A.Y. 2019/20

01PDWOV

SOftEng

http://softeng.polito.it

Instructor

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Office hours

- Class-time (break, end of lesson)
- Or send e-mail to schedule an appointment

Course topic

What is this?

- Clay tablet
- 3500 BC, Uruk (Iraq)
- Sumer cuneiform language
- First evidence of writing

What does it mean?

i gur 2 ka of barley, 6 gur 210 ka of dusig the total amounts of food for 2 fat oxen 3 at 6 ka of barley 30 ka of dustg each per day, for a period of 20 days ;

Date : 2nd year of Ibi-Sin ; month e-kar-ra-gdl.

What is this?

- Information system
  - Organisation: kingdom of Uruk
  - Storage: clay tablets
  - Processing: scribes
  - Business process: handle tax payments (tax accounts) and expenses

What if today?

- Information system
  - Organisation: kingdom of Uruk
  - Storage: ~~clay tablets~~ DB on computer
  - Processing: scribes + computers
  - Business process: handle tax payments (tax accounts) and expenses

Course focus

Analysis and design of

IT support

to

Business processes and activities

in

organizations

Is it important?

Our civilization runs on software

我们的文明运行在软件上

[Bjarne Stroustrup]

In short, software is eating the world

[Marc Andreessen]

总之，软件正在占据这个世界

Is software a commodity?

软甲是一个商品吗

- Commodity:
  - product with no differentiation 产品没有区别
  - 'infinite' availability 无穷性
    - Oil, gas, electricity, water, wheat
  - One single market that makes the price
    - As low as possible

一个单一的市场决定价格

Commodities **appear**
when they disappear

WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Insight Report

The Global Risks Report 2018

13th Edition

Technological risks

Technological	**Adverse consequences of technological advances**	Intended or unintended adverse consequences of technological advances such as artificial intelligence, geo-engineering and synthetic biology causing human, environmental and economic damage
	Breakdown of critical information infrastructure and networks (**Critical information infrastructure breakdown**)	Cyber dependency that increases vulnerability to outage of critical information infrastructure (e.g. internet, satellites, etc.) and networks, causing widespread disruption
	Large-scale **cyberattacks**	Large-scale cyberattacks or malware causing large economic damages, geopolitical tensions or widespread loss of trust in the internet
	Massive incident of **data fraud/ theft**	Wrongful exploitation of private or official data that takes place on an unprecedented scale

British airways IT fail 2017

- 1000 flights canceled
- 75.000 people affected
- 200 million USD compensation 2亿美元的补偿金
- 220 million USD share drop at stock exchange

股票市场2.2亿美元的蒸发

Course goals

课程目标

- Make you capable of
  - Understanding how an organization works
    - Goals, strategy
    - Structure, roles, business processes
  - Analyzing how business processes can be improved via IT (and ICT)
  - Analyzing costs and benefits of IT
  - Distinguish commodity / strategic IT services

区分商品/战略 IT服务

Capability acquired 能力获得

- Given an organization:
  - Being able to analyze the organization and the IT support to it 能够分析组织，并通过IT支持
  - (Being able to assess IT support, find critical points) 能够通过IT的支持，发现关键的东西
- Given a process
  - Being able to identify options in improving current IT support to the process 能够识别选项，在改进当前IT，支持过程
    - Evaluation and selection of IT tools

估计和选择IT工具

Typical questions about IS

IS的典型问题

- How much does it cost to automate (a certain business activity) and what is the advantage?
- What software could we use to automate it?
- Should we buy it? From whom? Should we build it?

Course main topics

- Organizations
  - Models of (processes, functions, org structure) （处理，功能，组织架构模型）
    - High level models (T model, Anthony ..)
    - Mode detailed models (BPMN, UML, org charts)
  - Strategy, BMC, management loop, KPIs, SLAs 关键业绩指标
  - Process redesign

流程重新设计

Course main topics

- IT in organizations
  - ERP, CRM and core IT offering
  - IT economics, cost and value of IT
  - Selection and adaptation of IT, outsourcing
  - ITIL COBIT

ERP：企业资源计划
CRM：客户关系管理

信息技术基础架构，信息及相关技术控制目标

THE message

- To build an effective IS you need to understand the organization and its processes
  - Technology is (usually) not the main problem

Course goals

- This class is NOT about technology and programming
- This class is about how technology can be used to build information systems IS，组织，管理，商业流程之间的交互
  - Interaction among IS, organizations, management, business processes
- Technology (Internet, DBs, web apps, etc.) is the enabler

Course scope

- Software embedded in organizations

- Out of scope
  - Software embedded in products
    - Cars, homes, devices
  - Software stand alone
    - Platform: OS, DB, network
    - Application: email, word processing, ..

Classware

- O'Brien, Marakas, Management Information System
  - High level 高阶
- Dumas, LaRosa, Fundamentals of BPM
  - Business processes 商业流程
- Osterwalder Pigneur, Business Model Generation
- Daft, Organizational theory and design.
- (Bracchi, Francalanci, Motta, "Sistemi informativi d'impresa", McGraw Hill 2010)
  - No english translation available

Web site

- http://softeng.polito.it/courses/01PDWOV

- News about the course
- Material
  - Slides, exercises, links

Final, projects

- Final exam – max grade 30
  - Written paper, 2 hours
    - Most about a (small) BPR case, examples are available on web site
    - Few mnemonic questions
- Project – not mandatory, up to 3 points
  - Groups max 4 people
  - Analyze a business case
    - Report
    - Presentation and discussion