# Information Systems

A.Y. 2018/19

01PDWOV


## Instructor

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# WhoAmI

- Electronic engineer, Polito, 1986
- PhD 1989, Polito, OO technology for industrial automation (simulation)
- Consultant OO technology, Paris, F, 1989-91
- Researcher, U Maryland, USA 1999-2001
- Professor, Polito
  - Software process, software metrics
  - Experimentation in Software Engineering
  - Mobile application development
  - Green software

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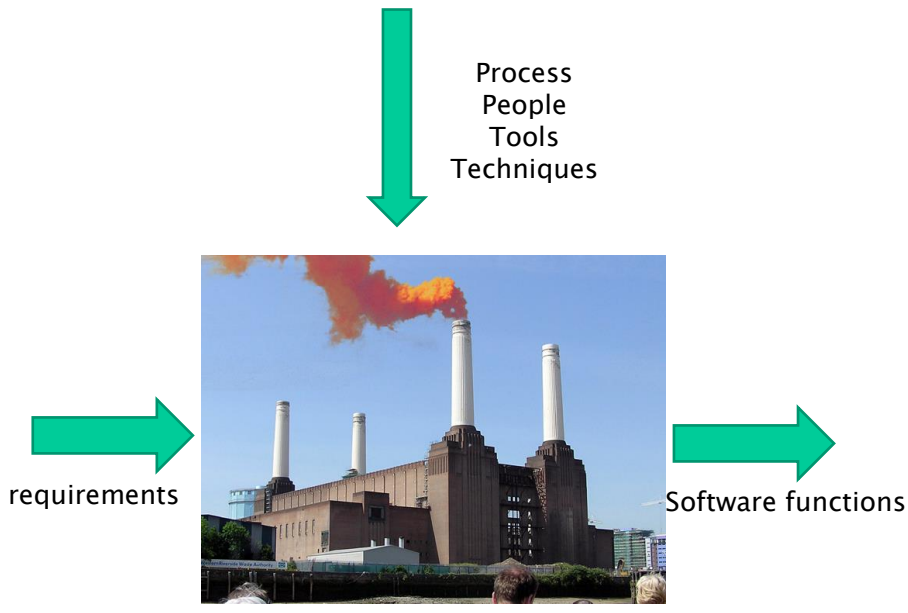

## Office hours

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

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## Course focus

Analysis and design of

*IT support*

to

*Business processes and activities*

in

*organizations*

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# Is it important?

Our civilization runs on software

[Bjarne Stroustrup]

In short, software is eating the world

[Marc Andreessen]

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# Is software a commodity?

- Commodity:
  - product with no differentiation
  - 'infinite' availability
    - Oil, gas, electricity, water, wheat
  - One single market that makes the price
    - As low as possible

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Commodities **appear**
when they disappear

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WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Insight Report

# The Global Risks Report 2018
## 13th Edition

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# 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 |

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# British airways IT fail 2017

- 1000 flights canceled
- 75.000 people affected
- 200 million USD compensation
- 220 million USD share drop at stock exchange

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# Course goals

- 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

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# Course mind map


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## Course goals

- This class is NOT about technology and programming
- This class is about how technology can be used to build information systems
  - Interaction among IS, organizations, management, business processes
- Technology (Internet, DBs, web apps, etc.) is the enabler

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## Prerequisite courses

- Techniques and tools to build software and software systems
  - ASM, C, C++, Java, C#, PHP
  - Html, asp, jsp,
  - TCP/IP, http,
  - SQL, xml

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## Prerequisite courses

- Methods and processes to build software and software systems
  - Requirements, design, implementation, testing, verification validation, ..
  - Waterfall, prototyping, iterative
- Languages to model software and software systems
  - UML

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## Previous courses

- Scope
  - Any application domain
    - Telecom, banking,..
  - Any level
    - Application, network, operating system

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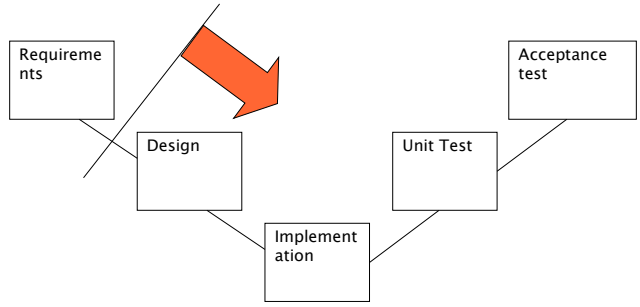
# So..

- From previous courses you know HOW to build ANY software system (or part of it) given the requirements

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- ANY software
  - Stand alone
    - Platform: OS, DB, network,
    - Applications:
      - Browser, Email, ..
      - Word processor, spreadsheet, image processing, ..
      - Game
  - Embedded in product
    - Camera, car
  - Embedded in business

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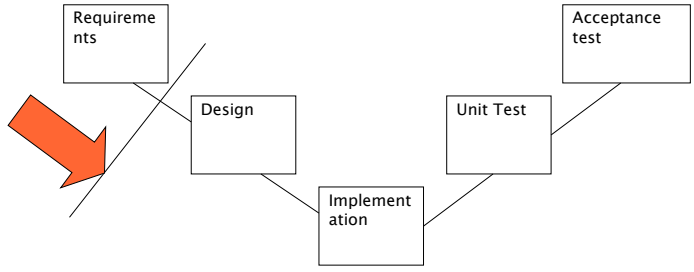
# This course

- Is about WHAT software system to build /buy / adapt
  - Limiting the scope to software systems that support BUSINESS PROCESSES

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# THE message

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

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## Typical questions about IS

- 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?

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## Classware

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

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## Web site

- http://softeng.polito.it/courses/01PDWOV
- News about the course
- Material
  - Slides, exercises, links

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## 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

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