



***Especialitat Tecnologies de la
Informació***

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Information Technologies (IT): branch of engineering that deals with the use of devices (computers, smart-phones, sensors, ...) and communications (Internet) to store, retrieve, transmit and manipulate data.

That means that an **IT engineer** has a good technical and practical knowledge to manage the technological infrastructure related to information and systems development.

An IT engineer is specialized in integrating information technologies more than in the information itself.

This implies a good knowledge on

- Hardware,
- Operating Systems,
- Programming,
- Communication Protocols and Distributed Systems and
- System Architectures.

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Examples:

- Data Centers design
- ISP (Internet Service Providers)
- Mobile Internet (Smart-phones, ...)
- Cloud Computing
- Corporative Networks
- Operating Systems for any system
- Information Security
- Multimedia and Distrib. applications
- Distributed Systems and overlays
- Internet of Things (Smart-cities)
- Big Data infrastructures
- ...



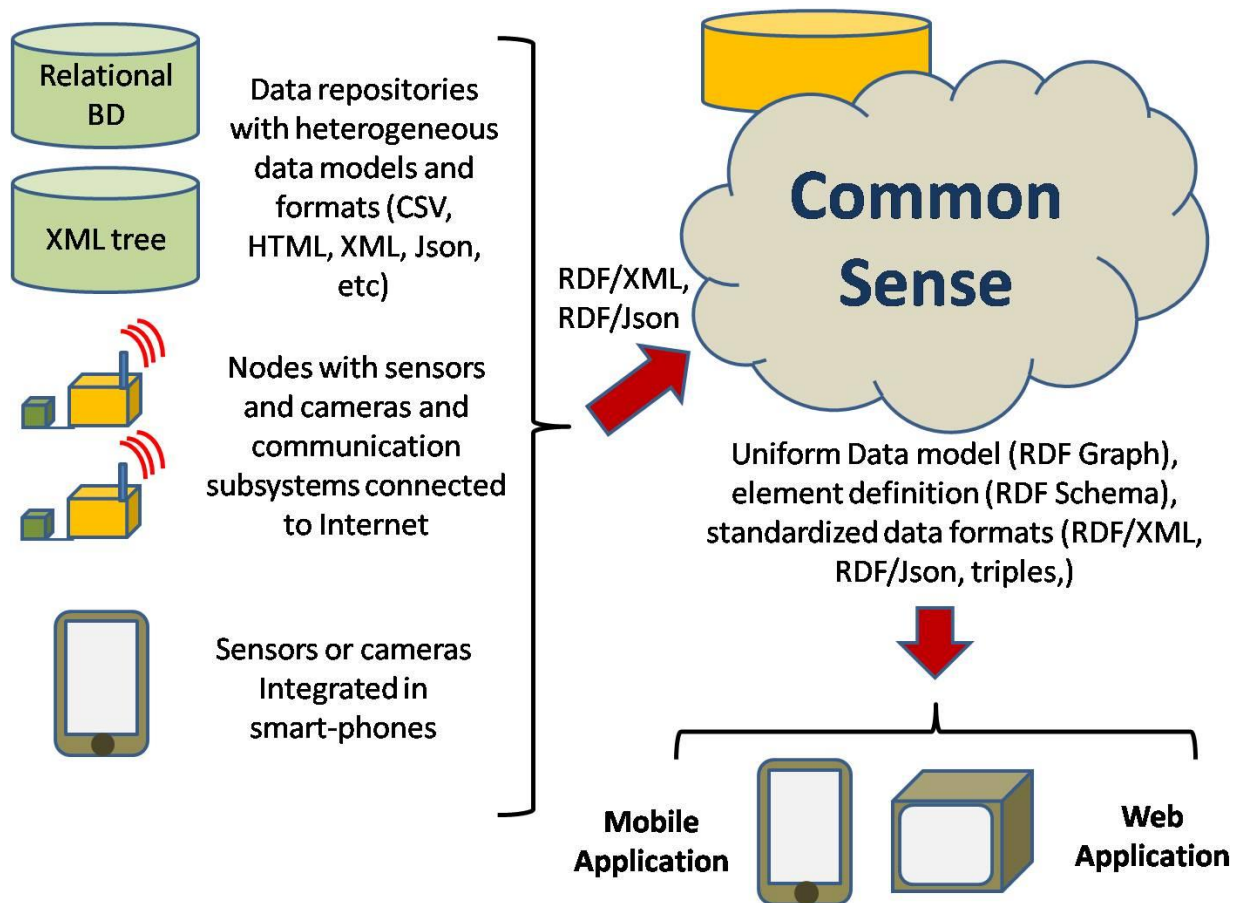
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Technical Competences:

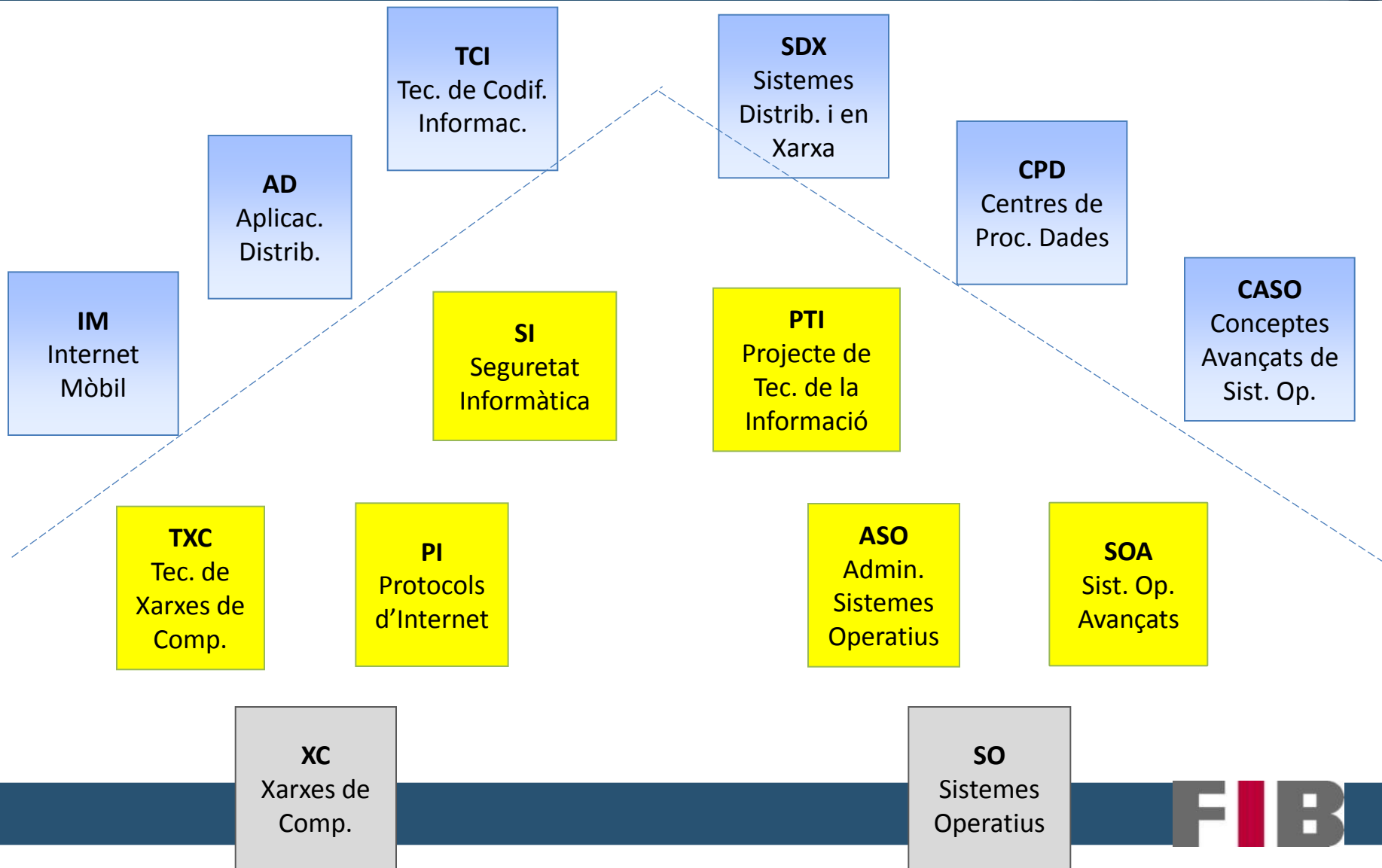
- CTI1 To define, plan and manage the installation of the ICT infrastructure of the organization.**
- CTI1.1** To demonstrate understanding the environment of an organization and its needs in the field of the information and communication technologies.
 - CTI1.2** To select, design, deploy, integrate and manage communication networks and infrastructures in a organization.
 - CTI1.3** To select, deploy, integrate and manage information system which satisfy the organization needs with the identified cost and quality criteria.
 - CTI1.4** To select, design, deploy, integrate, evaluate, build, manage, exploit and maintain the hardware, software and network technologies, according to the adequate cost and quality parameters.
- CTI2 To guarantee that the ICT systems of an organization operate adequately, are secure and adequately installed, documented, personalized, maintained, updated and substituted, and the people of the organization receive a correct ICT support.**
- CTI2.1** To manage, plan and coordinate the management of the computers infrastructure: hardware, software, networks and communications.
 - CTI2.2** To administrate and maintain applications, computer systems and computer networks (the knowledge and comprehension levels are described in the common technical competences).
 - CTI2.3** To demonstrate comprehension, apply and manage the reliability and security of the computer systems
- CTI3 To design solutions which integrate hardware, software and communication technologies (and capacity to develop specific solutions of systems software) for distributed systems and ubiquitous computation devices.**
- CTI3.1** To conceive systems, applications and services based on network technologies, taking into account Internet, web, electronic commerce, multimedia, interactive services and ubiquitous computation.
 - CTI3.2** To implement and manage ubiquitous systems (mobile computing systems).
 - CTI3.3** To design, establish and configure networks and services.
 - CTI3.4** To design communications software.
- CTI4 To use methodologies centered on the user and the organization to develop, evaluate and manage applications and systems based on the information technologies which ensure the accessibility, ergonomics and usability of the systems.**

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Example:



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Expectations for Future Engineers:

TFG in the specialization:

- Modalidad A: realizados en la UPC
- Modalidad B: realizados en empresa
- Modalidad C: realizados en movilidad (Nacional/Internacional)
- Modalidad D: realizados en empresas en el extranjero

Los TFG's tienen que realizarse sobre una tematica relacionada con la especialidad.

Cerca de un 60% de los TFG's de la especialidad de TI se realizan en empresa (modalidad B).

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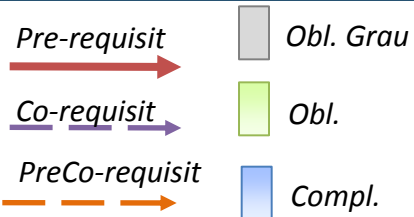
Expectations for Future Engineers:

- **TI Departments** (Corporative Networks): any company has a department that handles his business model
- **CPD (data centers)**, server hosting and housing,
- **Consulting companies** that design and maintain CN design
- **Internet Service Providers (ISP's)**, Exchange Point providers, **Internet Content Providers companies** (Akamai)
- **Telecom Operators** and network technologies
- **Cellular**: smart-phone apps, wireless technologies, mobile technologies
- **Social networks** (twenty, facebook, ...)
- **Security** in Informatics and secure applications
- **Cloud Computing** networks: data in the net, OS, ...
- **Software Defined Networks (SDN)**, **Virtualization**, ...
- **Distributed Systems**: overlays, crowd-computing, crowd-sensing,
- **Web services** and **distributed applications**
- Coding applications: range from **Multimedia** (surveillance networks) to **Voice applications** (e.g. skype)
- New Challenge networks: **smart-cities**, **smart vehicles**, **DTN's**, ...
- **Internet of Things (IoT)** - sensors
- **Big Data** infrastructures and analysis.

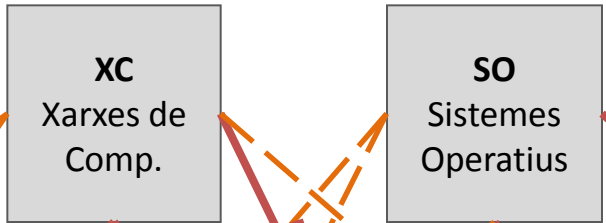
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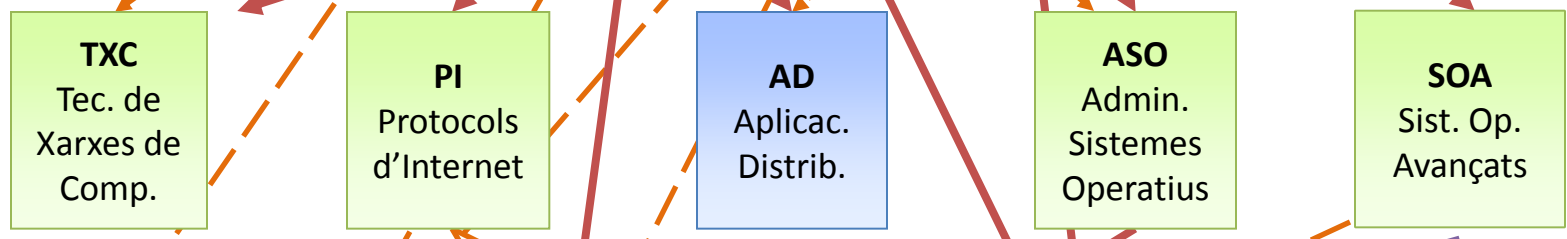
FM, M1, M2
Assigs. Matemàt.



Q3-Q4



Q5



Q6

