Introduction Course N°1

Course - 01

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Course's Plan

- Aims
- Needs and expected of IT by management
- History
- Basis

IS in a Business Environment

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Aims of this courses …

- These courses are your first contact with IS in Business.
- IS Overview.
  - Main Choices
  - I will present you the layers, where all the IT are based
  - Tree main cases ERP, BI and WEB
- In IS there are many roles. Some of them belongs to you.
  - Your roles
    - Account Management
    - Auditor
  - IT roles
    - MOE Maîtrise d'oeuvre (They do the works)
    - MOA Maîtrise d'ouvrage (They order the works, they want)
    - AMOA Assistance à maitrise d'ouvrage (they control the good management of the work)
    - "Run" roles
    - "Change" roles

Purpose of an information system

- Allow the implementation of Strategies and Policies of Enterprise, on the design of products, Production, Distribution, Sales, Logistics, Human Resources, etc..
- Contribute to make the company a competitive advantage in a global economy in permanent evolution.
- Increase the information assets of the company and facilitate the use

Aims of IS…

- Improve, accelerate and make more productive operation of business processes: Administrative processes, Creation, Production, Financial, Logistics & Distribution, etc..
- Formalize, standardize, secure, Maintain and ensure the Integrity of Knowledge, data and referential in the company.
- Suggest to Clients and Sales Force new services promoting sales and customer satisfaction
- Providing approved Decision Makers, Designers, Managers and operational, the relevant information they need
- Facilitate communication between internal actors (Head office, Factories, Warehouses) and External Actors Company (Customers, Suppliers, Partners, Administrations)

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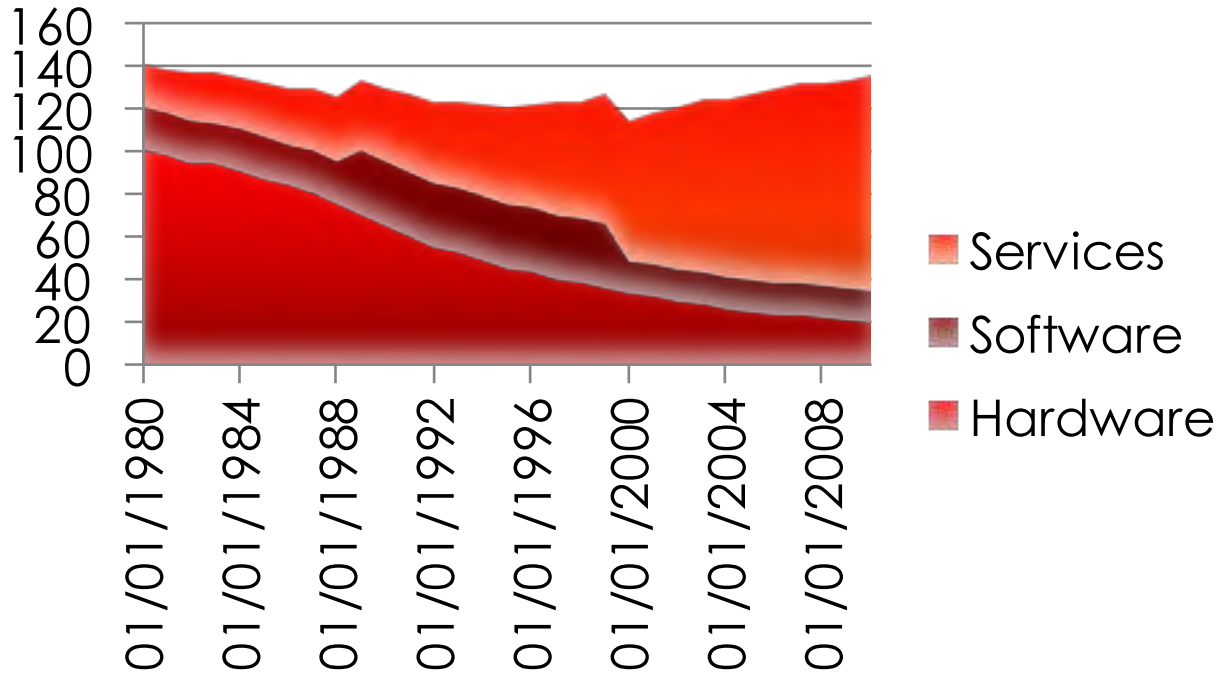
Evolution Between IT and IS

- Moore Law
- Budget Migration from hardware to software to services
  - Example IBM



Needs and expected of IT by management

- IT was a cost, IT becomes asset!
- Firm strategy and IS must be align
- Assume security of infrastructure and "Assets"
- Management and Value of resources
  - Technical
  - Human resources
- Management of Risk
- Assume the sustainability of IS
  - Referential
  - Control and audit
  - Activity

Alignment of strategy

- Enterprise Organisation
  - Federal, centralize
  - Referential creation.
  - ITIL/Cobit management
    - Process definition
- Objectives :
  - Create value
  - New way of commercialisation (WEB)
- Anticipation

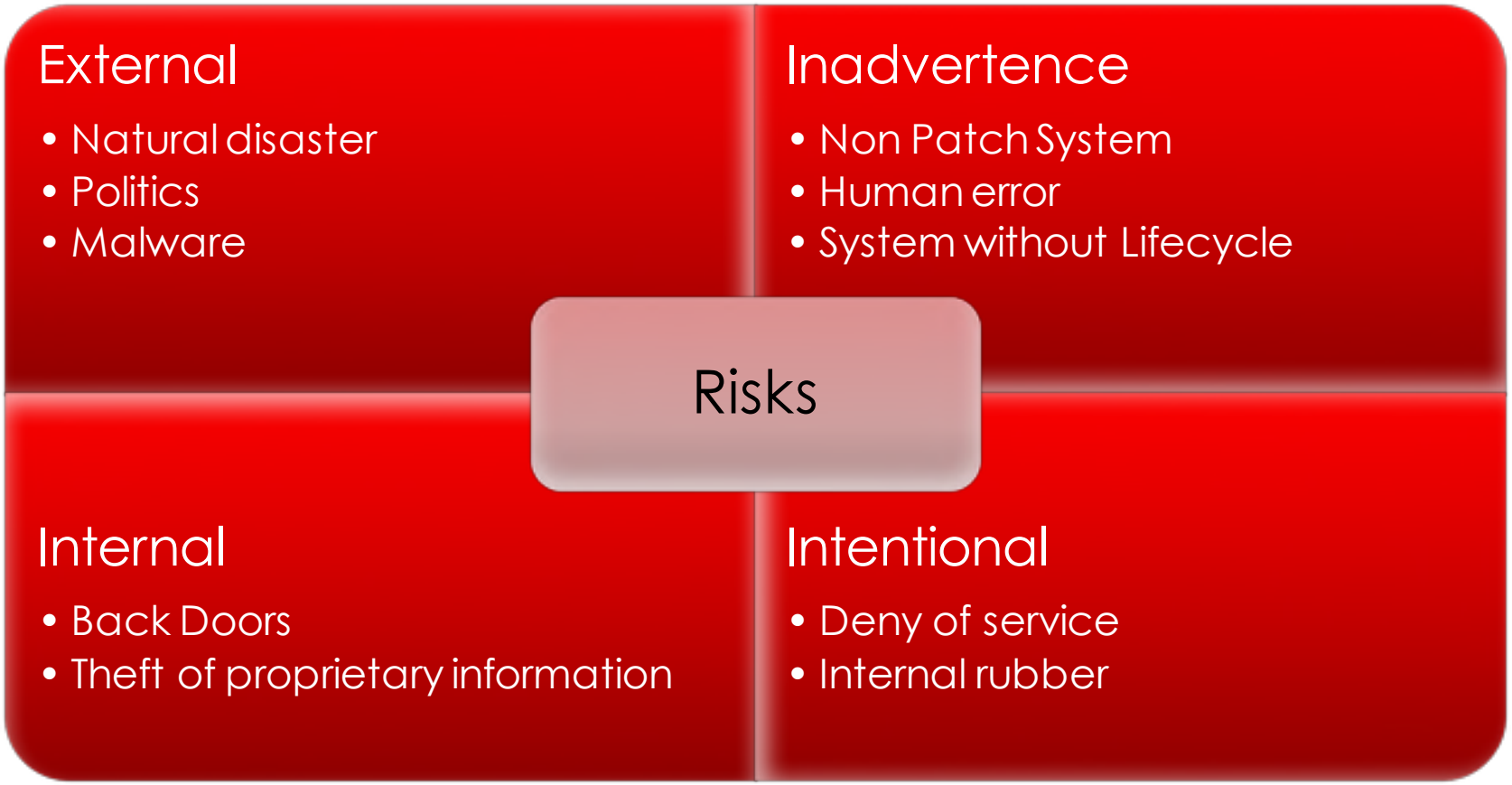
Ensure security of Infrastructure and “Assets”

- To ensure that everybody are able to work in good conditions : SLAs
- Find SPOF
- Define policies to Backup and archive
  - Two way to loose data, corruption, deletion.
- Define policies to be safely in network.
- Continue Activity Plan, Disaster recovery plan

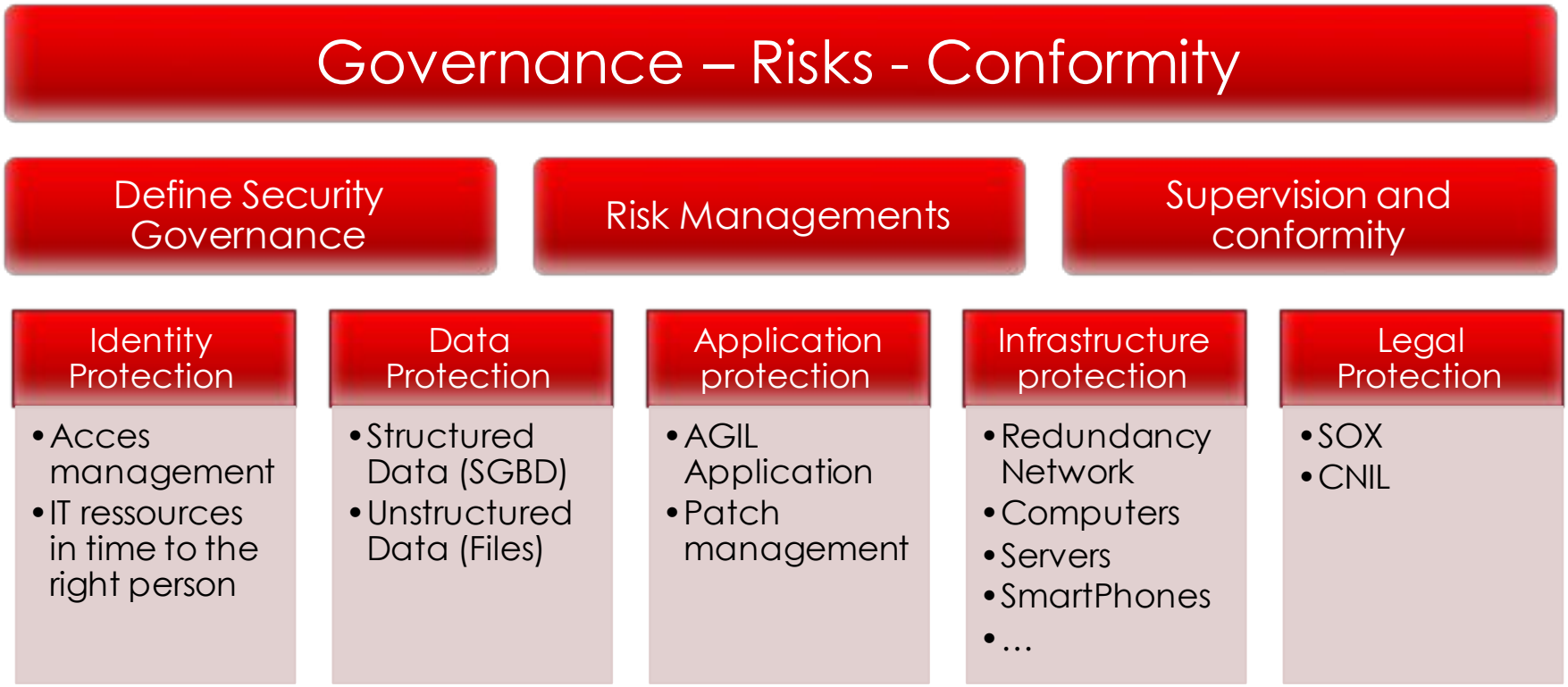
Management of value and resources

- Following budget and manage it.
  - CAPEX/OPEX
- Organisation of your IT
  - RUN
  - BUILD
- Human Resources
  - Training,
  - Non Working Hour
- Technical Resources

Management of Risk



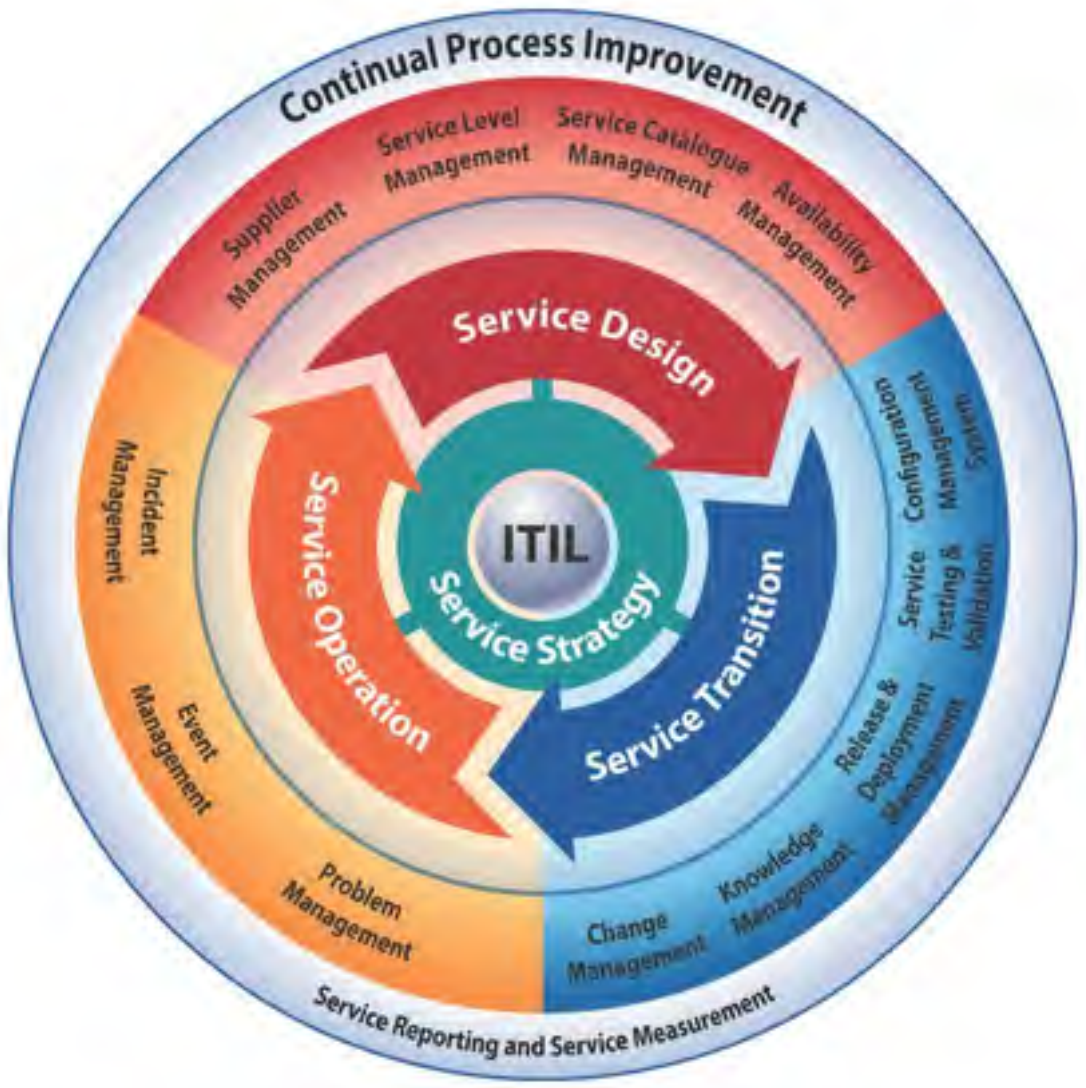
Management of Risk



Sustainability of IS

- Are you using best Practice ?
- Are you sure that your partners or your internal team is you using common methods.
- Making Audit
  - Security (but you manage it in the Risk)
  - About process
- Making referential
- Follow the maturity of your IS

Sustainability of IS ➔Itil



IS in a Business Environment

- Aims
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Small History

- 700 Abacus
- 1642 Pascal Blaise Invented the first tool to add and soustract
- 1820 first machine for +-*/
- 1838 : Z3 first computer using base 2 and relay
- 1943 Eniac 1500 m^2 for H Bomb, no more mechanical system!
- 1948 Bell Labs Invented the transistor
- 1960 First computer based on transistor
- 1971 Intel create first Micro Processor
- 1973 First Processor of 8080 family ➔ Pentium
- 1976 Creation of Apple By Steeve Jobs and Steeve Wozniak
- 1981 IBM PC

Moore's Law : Transistors that can be placed on a chip double every two years !

IS in a Business Environment

- Courses Organization
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Base 2

- Remember !
- We use Base 10 every day but we can use other Base, and in a computer it's Base 2.
- We have electricity or not!

Base 10	Base 2		Numbers of digit
1	1	$1*2^0$	1
2	10	$1*2^1$	2
3	11	$1*2^0+1*2^1$	2
4	100	$1*2^2+0*2^1+0*2^0$	3
8	1000	$1*2^3+0*2^2+0*2^1+0*2^0$	4
16	10000	...	5
32	100000	...	6
64	1000000	...	7
128	10000000	...	8
255	11111111	$1*2^8+1*2^7+1*2^6+1*2^5+1*2^4+1*2^3+1*2^2+1*2^1+1*2^0$	8

Electricity in a computer

- With electricity it's 1
- Without it's 0

- Transistor is a switch
- Two kinds of switch
  - Pointing
  - Not Pointing

Transistors

- Pointing

A	B	C
1	0	1
1	1	0
0	0	0
0	1	0

- Not Pointing

A	B	C
1	0	0
1	1	1
0	0	0
0	1	0

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Transistors

- Pointing

A	B	C
1	0	1
1	1	0
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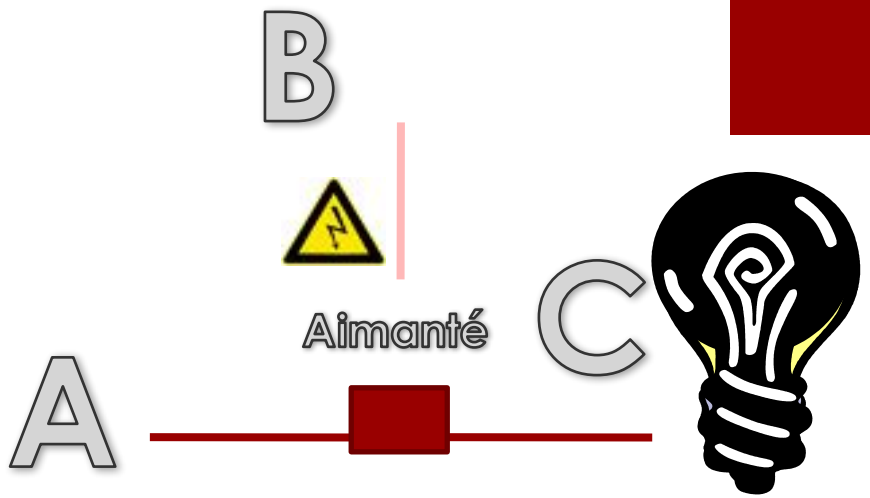
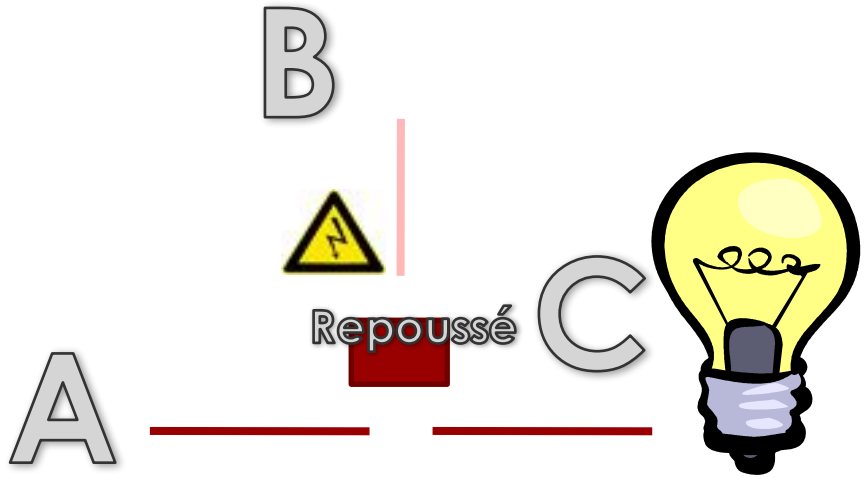


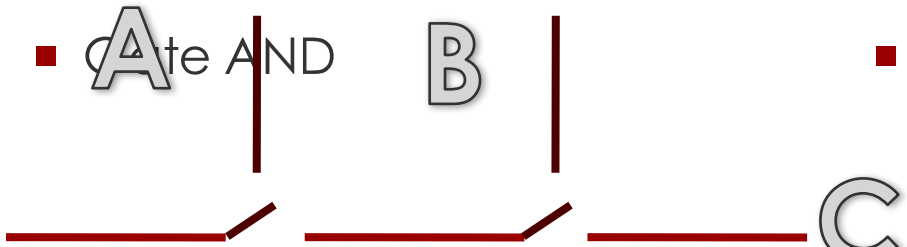
- Not Pointing

A	B	C
1	0	0
1	1	1
0	0	0
0	1	0

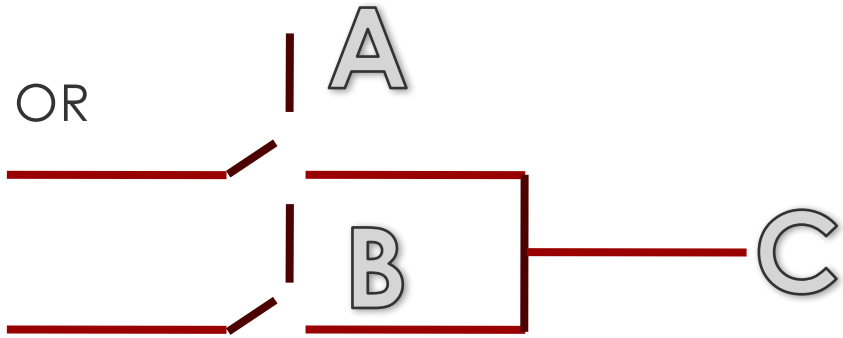


Gates AND/OR

- Gate AND



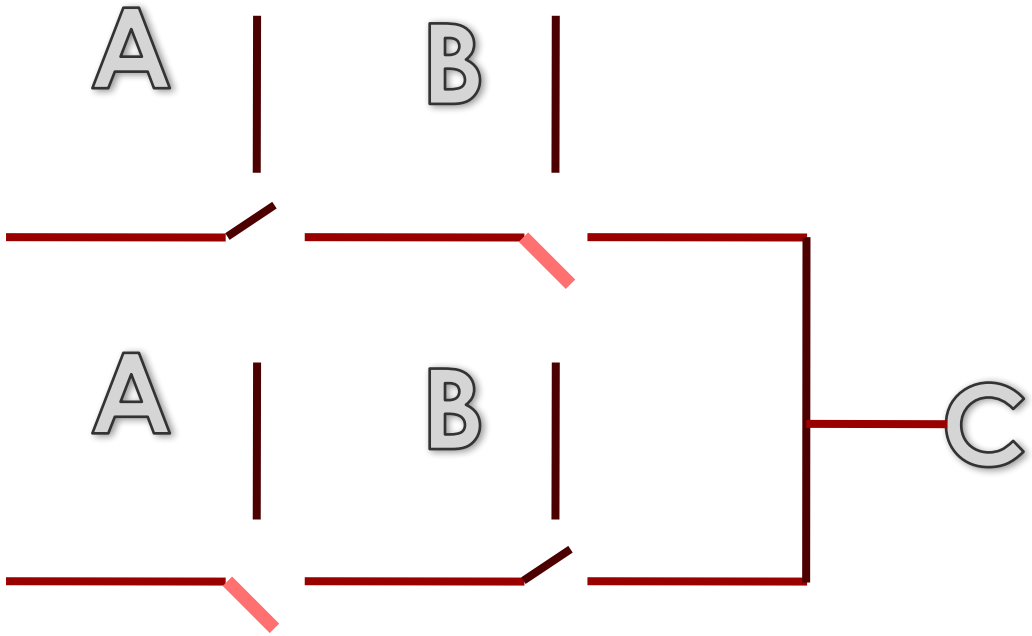
- Gate OR



A	B	AND C
1	0	0
1	1	1
0	1	0
0	0	0

A	B	OR C
1	0	1
1	1	1
0	1	1
0	0	0

Just more difficult Gate XOR…

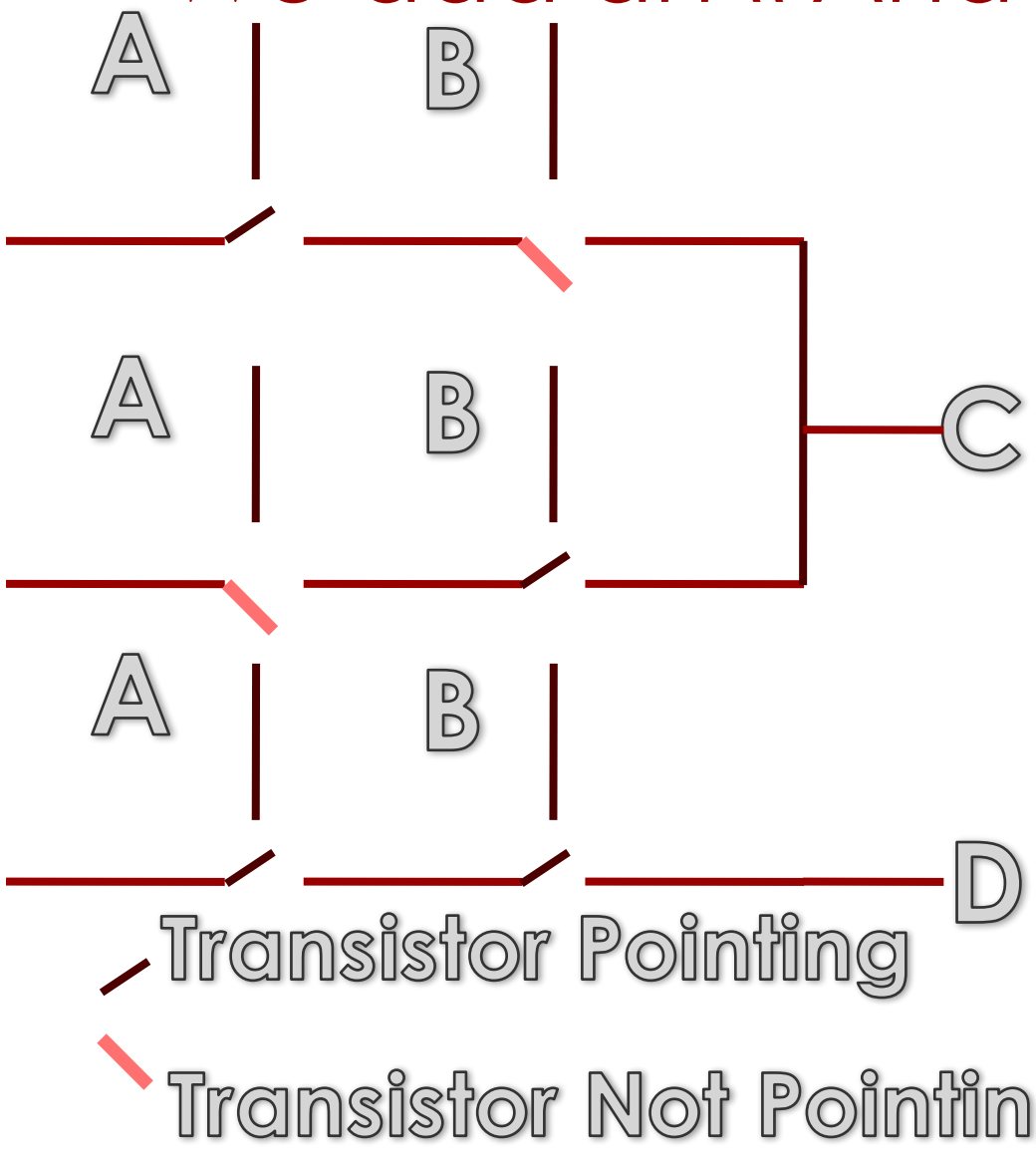


A	B	XOR : C
1	0	1
1	1	0
0	1	1
0	0	0

Transistor Pointing

Transistor Not Pointing

We add an « And Gate », we ge… addition…



A	B	XOR : C	AND : D	Base 10
1	0	1	0	$1*2^0+0*2^1=1$
0	0	0	0	$0*2^0+0*2^1=0$
0	1	1	0	$1*2^0+0*2^1=1$
1	1	0	1	$0*2^0+1*2^1=2$

Resume

- With transistors, and small electricity we can create « logical gates » working as switches. Combining them, we see taht we can make an addition.
- In the same way we can imagine substractions, multiplications, divisions.
- Then we can imagine other gates : NAND, NOR then XAND and XOR…
- All these operations are in a part of the Microprocessor That are Call

ALU

- In 1971, 4004 Processor had 2300 transistors and its capacity was about 0,06 Mips
- In 2012, Core 2 Quad Heart Processor has 820.000.000 of transistors and 48.200 Mips

From bit to Byte

It was too difficult to calculate in bit so we imagined Bytes.

- 1 byte = 8 bits= 2^8=256
- Sometimes we speak in Hexa: 0123456789ABCDEF
  - 0000 0000 = 00 and 1111 1111=FF
- Everything are in Bytes
  - Alphabet is code in Byte and it belongs to Code ASCII
    - A=65 =01000001= 41H; B=66= 01000010=42H…
    - a=97=01100001=61H…
  - Colors are defined with 3 Bytes RGB (red green blue)

  …

After they use standard measurment system to define sets of Bytes :

- Kilo Bytes : 2^{10} Bytes =1024 Bytes : 1 KB
- Mega Bytes : 2^{20} Bytes= 1024 KB=**1 048 576 Bytes =1 MB**
- **Giga Bytes : 2^{30} Bytes= 1024 MB= 1 048 576 KB = 1 073 741 824 Bytes =1GB**
- **Tera Bytes,Peta Bytes,Exa Byte**

A microprocessor

- It is based on :
  - Registry
    - Very small and rapid memory
  - Sequential Logic
    - The Clock Rate
  - ALU
  - Command Unit

Computer

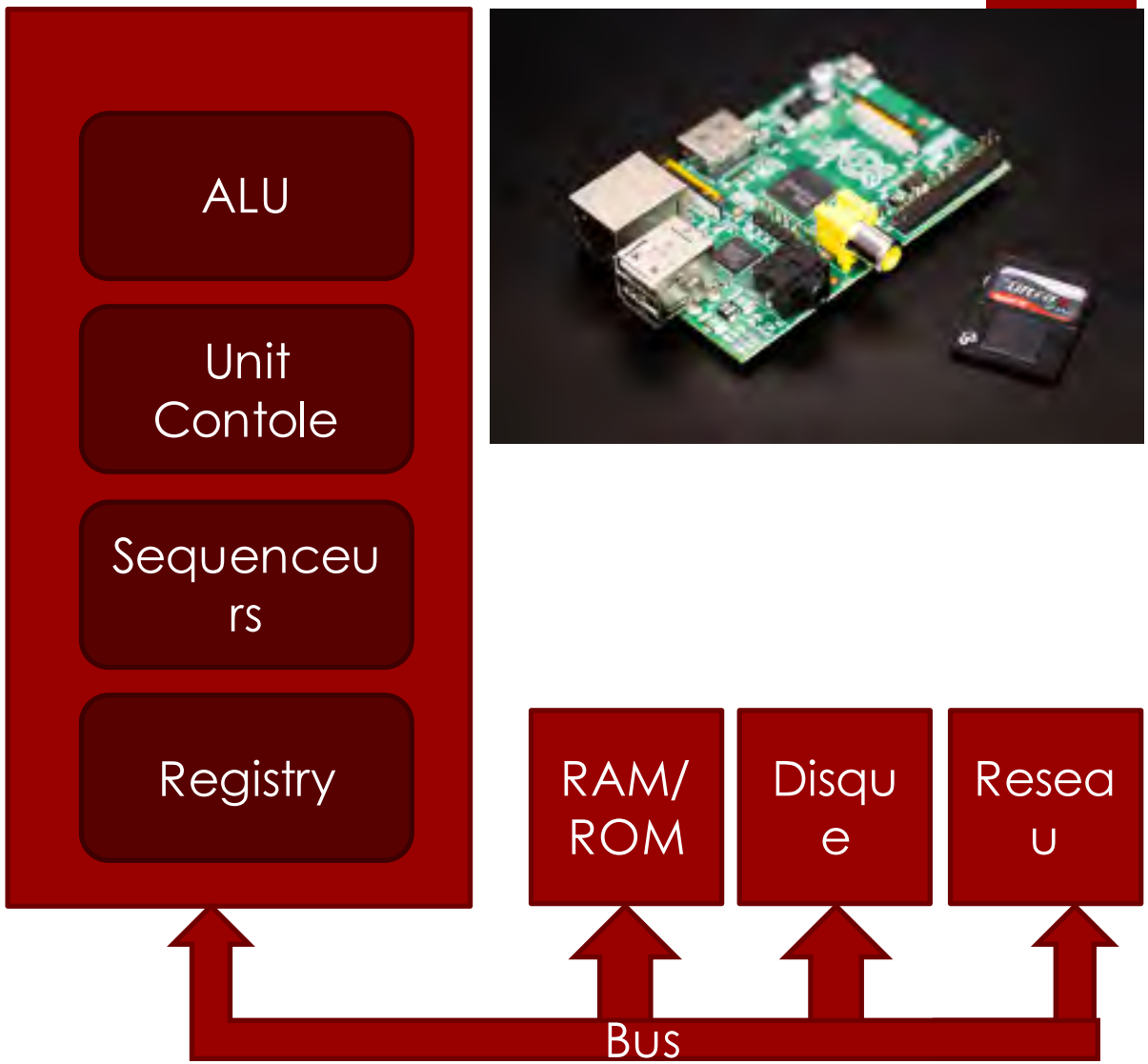
Bus is in relation with all the parts of computers Information transit by it.

Bus is composed of a flot small electric lines

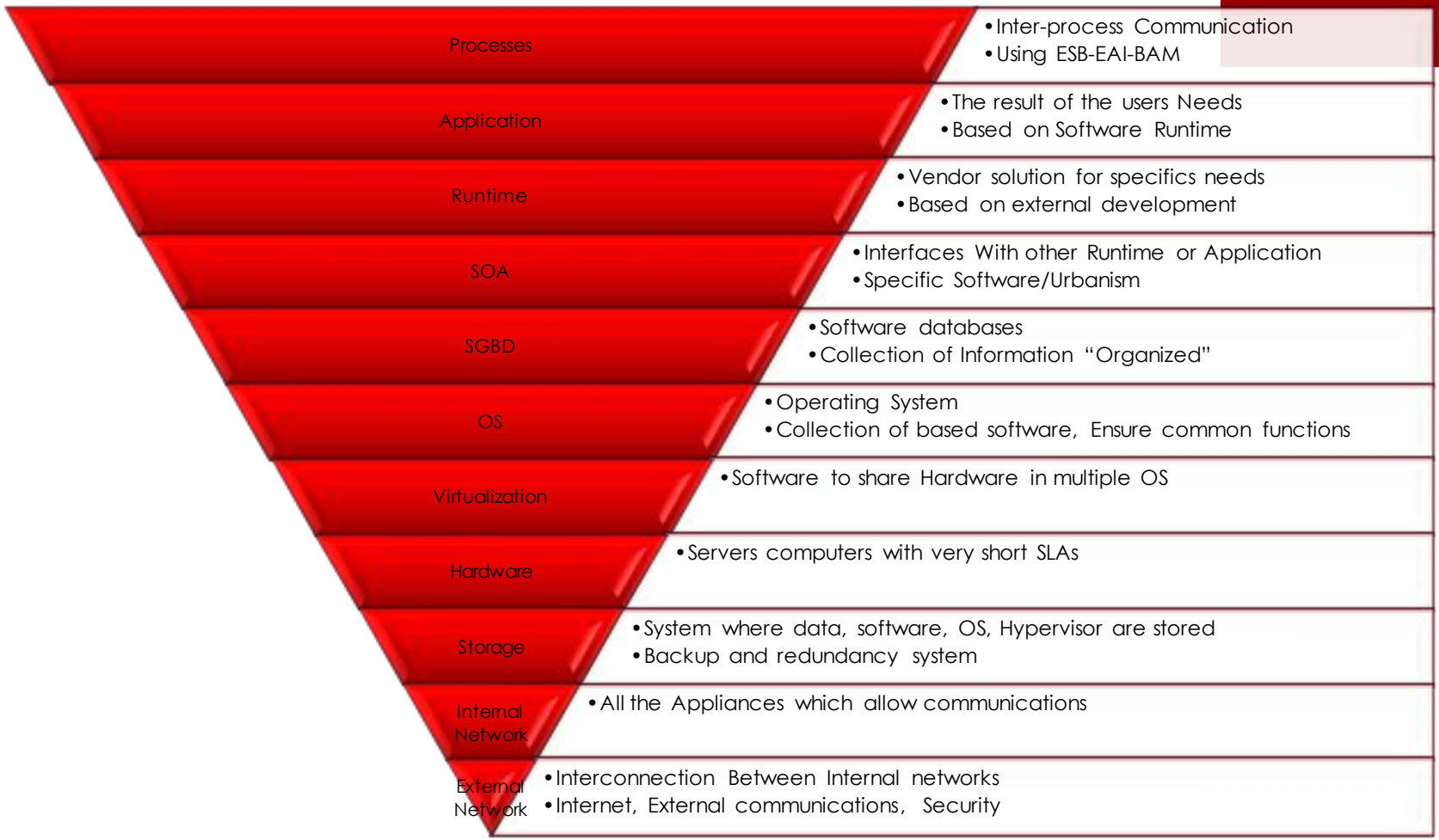
Bus drains information to the CPU in parallel.

Size of registry is based

- 8 bits
- 16 bits
- 32 bits
- 64 bits



The layers


Processes
•Inter-process Communication
•Using ESB-EAI-BAM
Application
•The result of the users Needs
•Based on Software Runtime
Runtime
•Vendor solution for specifics needs
•Based on external development
SOA
•Interfaces With other Runtime or Application
•Specific Software/Urbanism
SGBD
•Software databases
•Collection of Information "Organized"
OS
•Operating System
•Collection of based software, Ensure common functions
Virtualization
•Software to share Hardware in multiple OS
Hardware
•Servers computers with very short SLAs
Storage
•System where data, software, OS, Hypervisor are stored
•Backup and redundancy system
Internal Network
•All the Appliances which allow communications
External Network
•Interconnection Between Internal networks
•Internet, External communications, Security