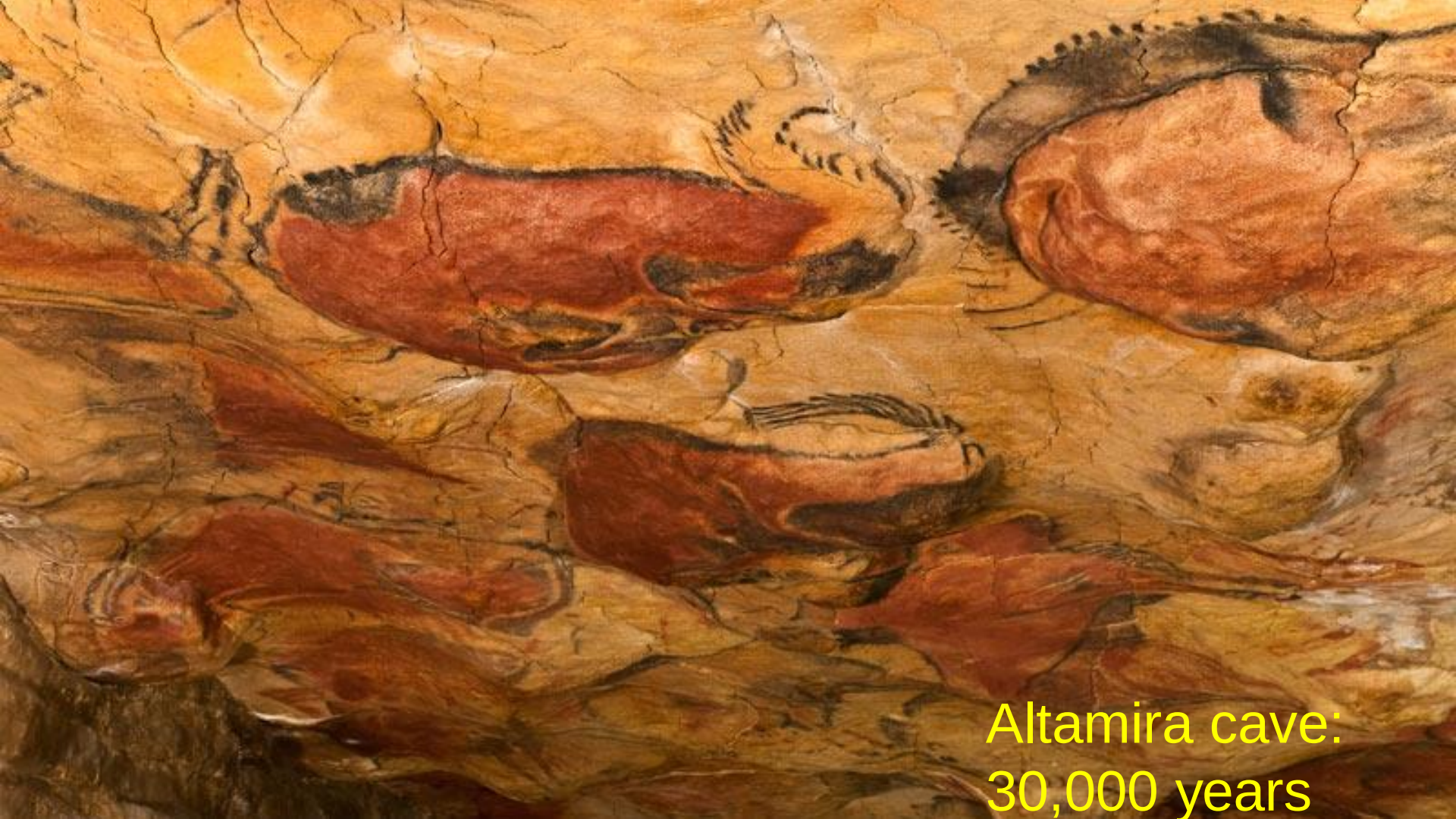
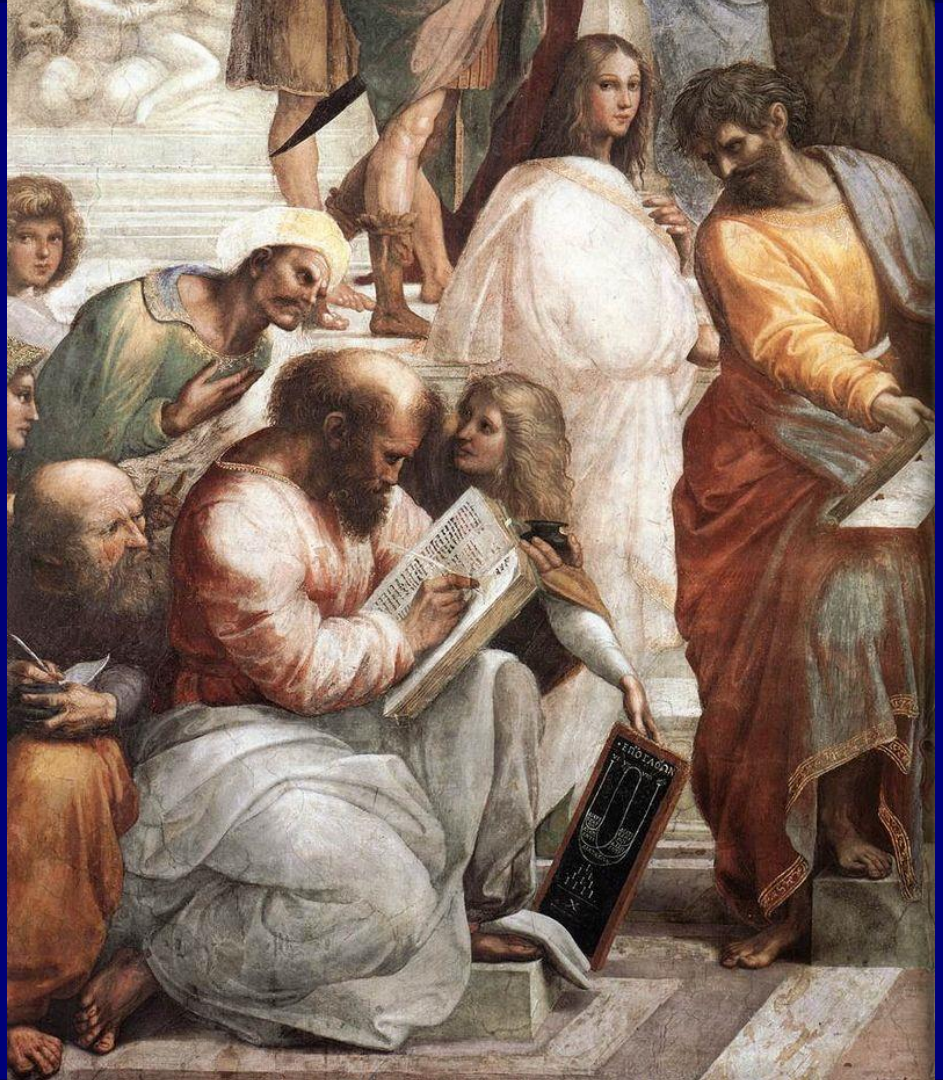
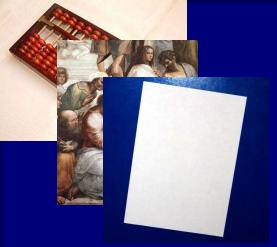

Altamira cave:
30,000 years

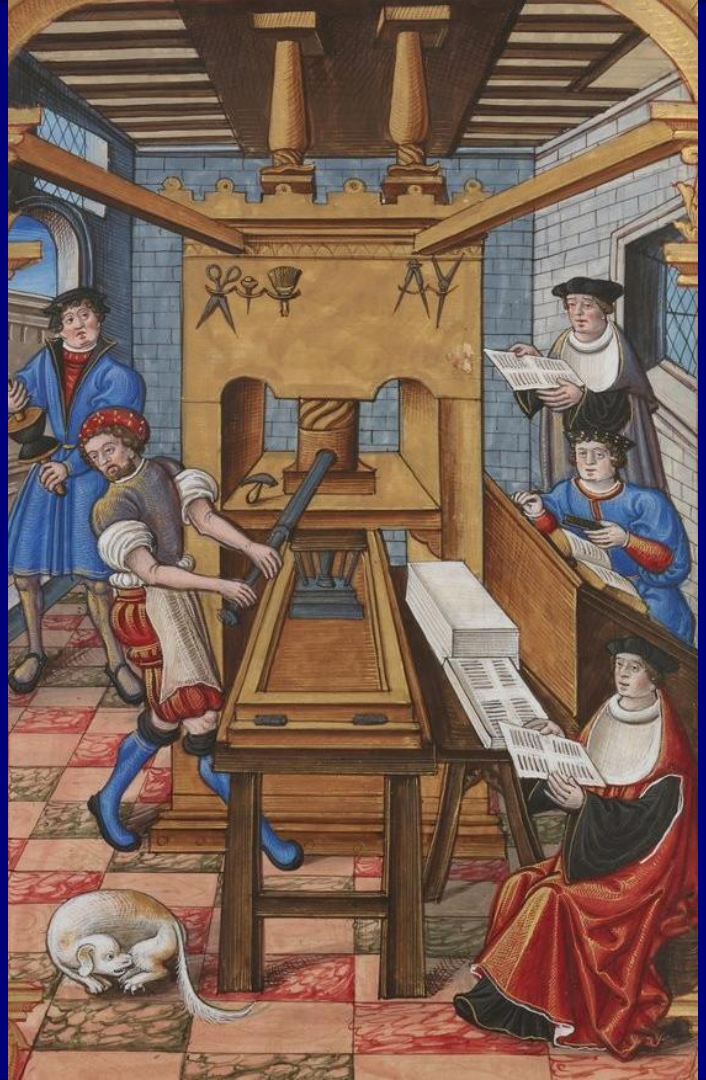
2,000 B.C



510 B.C

105

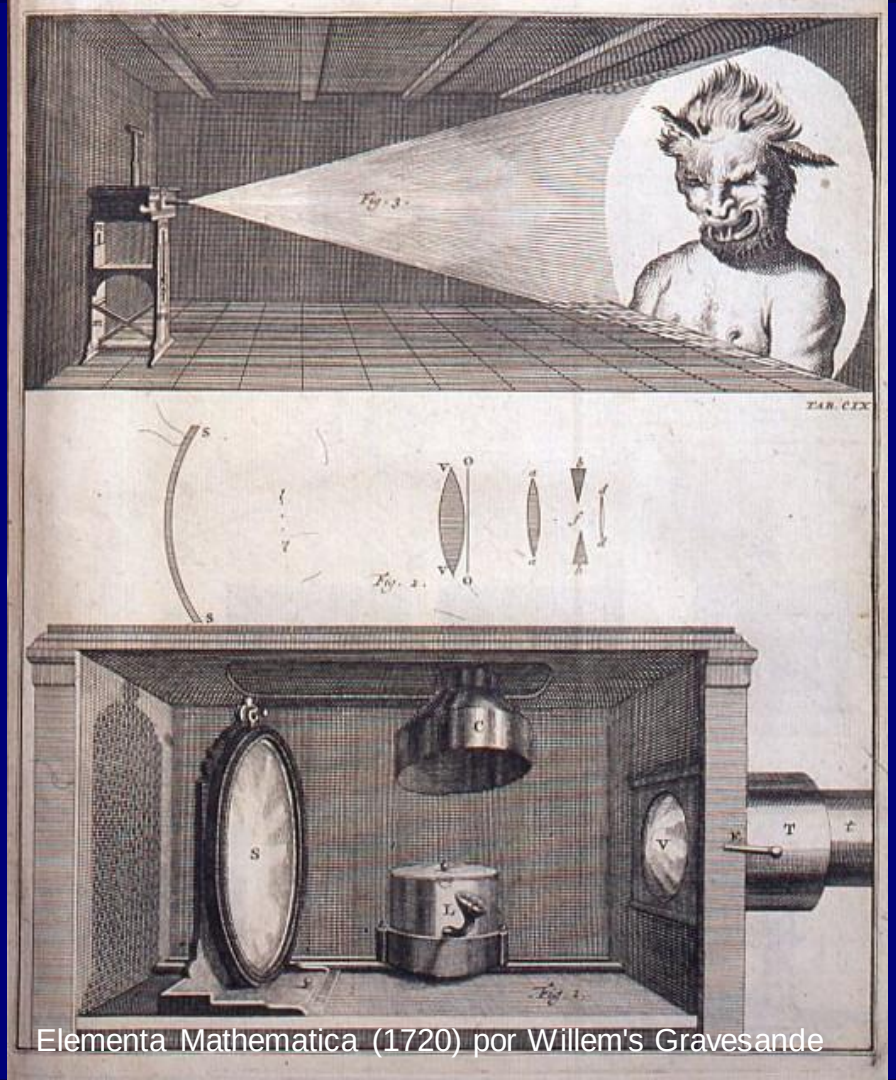




1450


XVII c.

XVII c.



Elementa Mathematica (1720) por Willem's Gravesande

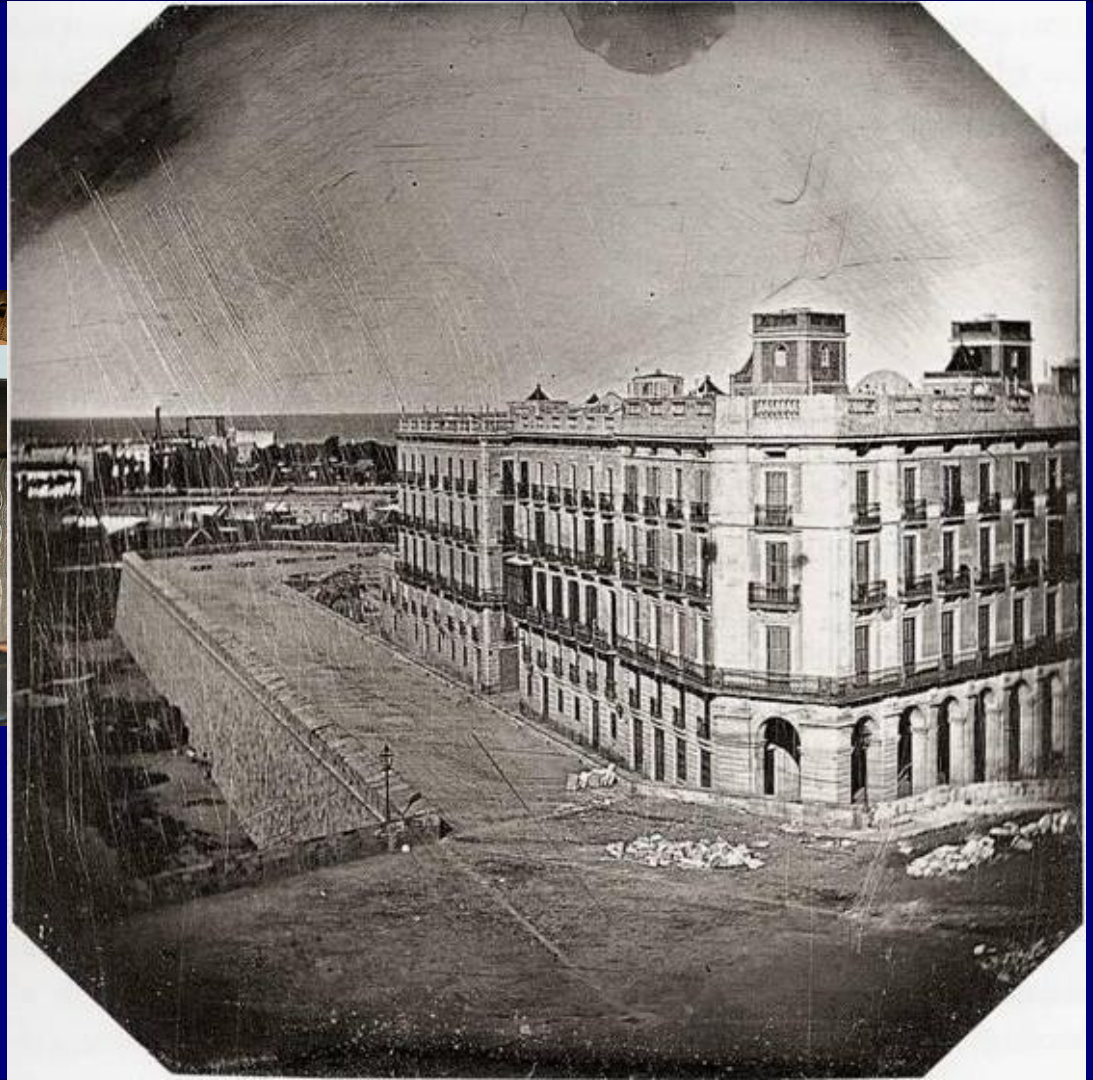

XVIII c.

1800

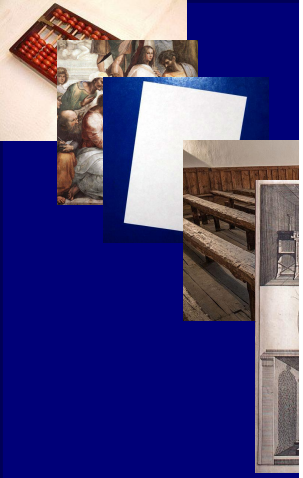
$$\begin{cases} \frac{dN}{dt} = \frac{1}{q V_{act}} - g_0 (N - N_0)(1 - \varepsilon S) S + \frac{N_e}{\tau_n} - \frac{N}{\tau_p} \\ \frac{dS}{dt} = \Gamma_b q_0 (N - N_e)(1 - \varepsilon S) S + \frac{\beta_{sp} N}{\tau_n} - \frac{S}{\tau_p} \\ \frac{S}{P_t} = \frac{\Gamma \tau_p \lambda^0}{V_{act} \eta_c} = \textcircled{2} \end{cases} \quad \begin{cases} N = N \\ P_t = (\eta \end{cases}$$

$$S \leq \frac{1}{\varepsilon}$$


1800



1826



1900

4,000 YEARS

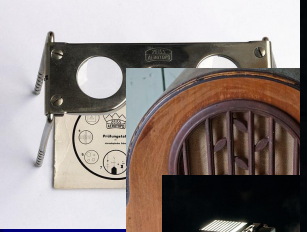
4,000 YEARS

The fundamentals of classroom as we know it

1905


ZEISS
AEROTOPO
ZEISS
AEROTOPO
Prüfungstafel
ZEISS
AEROTOPO
Prüfungstafel
306

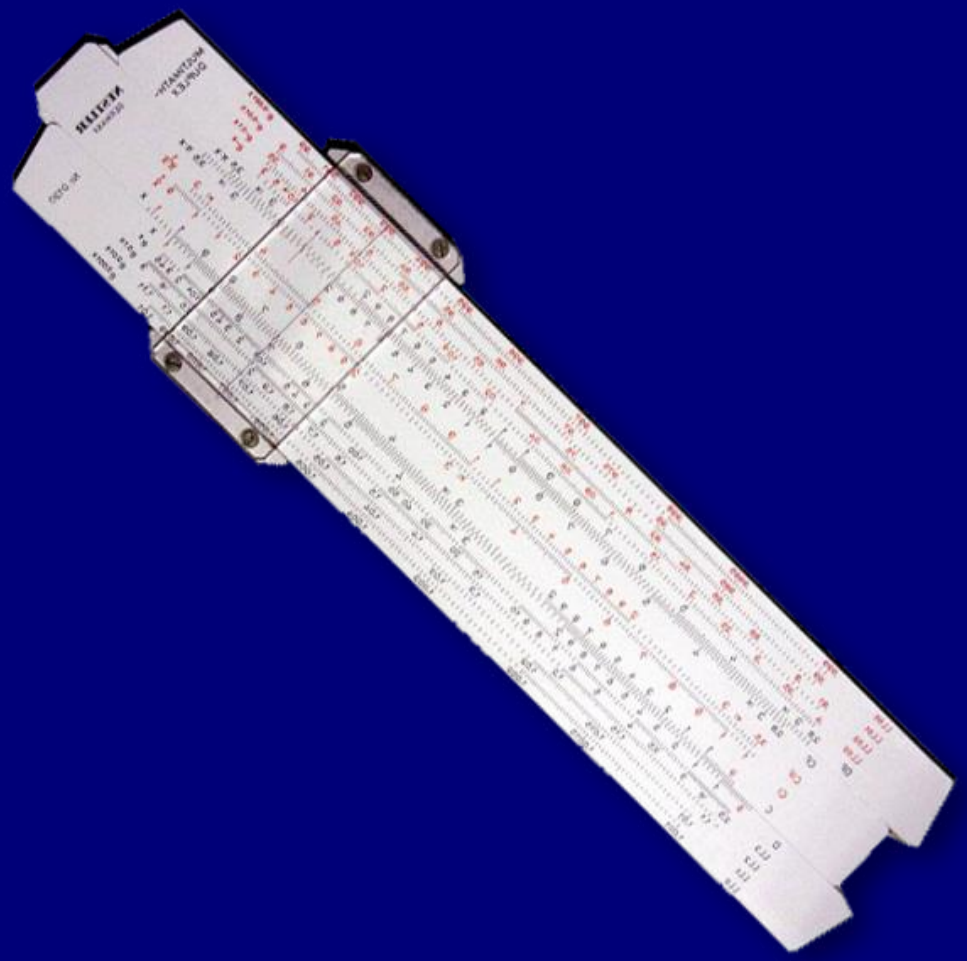
1905



30’s

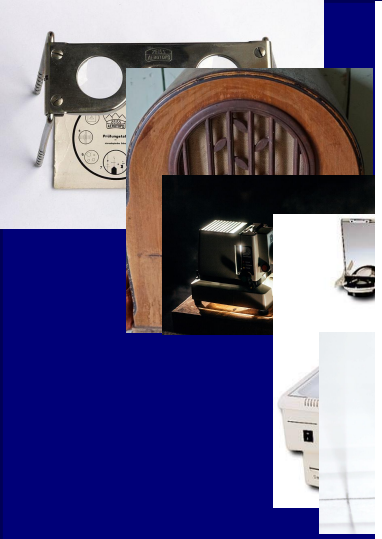
40’s

40’s



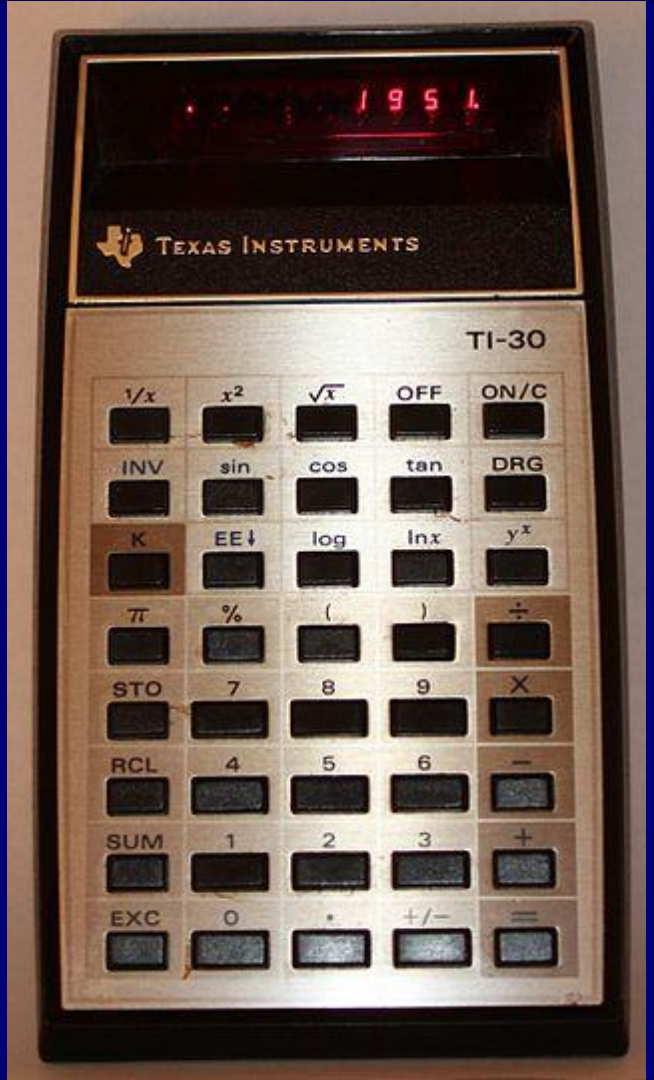
50’s

60’s



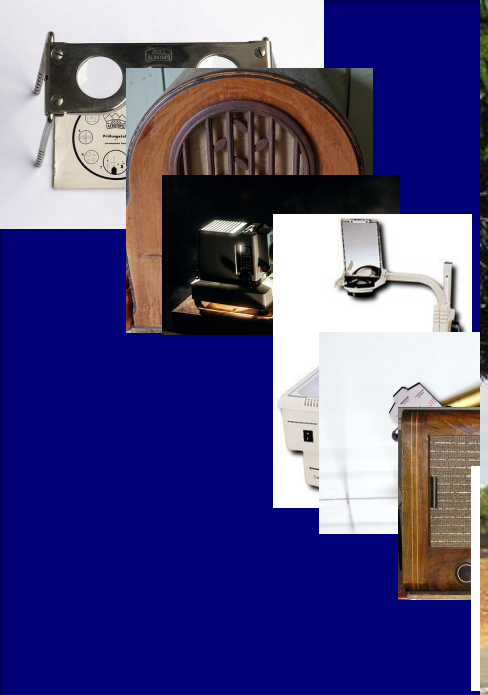
70’s


Scotch
videocassette
VC 22
Scotch
videocassette
VC 22
TRACKING
AUDIO
EJECT
REWIND
WIND
START
STOP


1951
TEXAS INSTRUMENTS
TI-30
1/x x² √x OFF ON/C
INV sin cos tan DRG
K EE↓ log lnx yˣ
π % ( ) ÷
STO 7 8 9 ×
RCL 4 5 6 −
SUM 1 2 3 +
EXC 0 • +/− =

70’s

80’s



90’s

1994

Universitat Oberta de Catalunya


Scalex
1954
TEXAS INSTRUMENTS

100 YEARS


Universitat
Oberta
de Catalunya

100 YEARS

Audiovisual support come into the classroom and access to information is faster

2001

2004

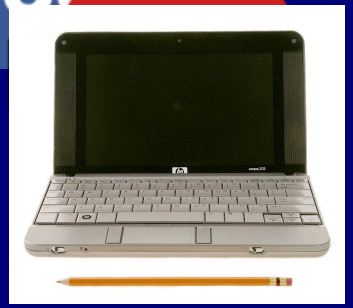
facebook

2005

YouTube

2007

2007



2008

MOOC

2009


facebook
Yo
M
2010


facebook
10 YEARS

10 YEARS

Information is anywhere and easy to access

Communication is synchronous and immediate

Technology is personal

- **Education is facing an exponential progress: 4,000 – 100 – 10**
- **Always looking for:**
  - To access knowledge
  - To keep knowledge to remember

Broadband Internet smartphones and better communication ways add:

- Synchronous
- New way of sharing Information
- Lifelong learning
- Relationships have evolved from the near spaces to worldwide
- Students can get “formal” learning out of the university

There is no more stationary state:

CHANGE IS THE RULE

Video: history of technology in education

"Knoc, knoc! from the future: are universities opening the door to changes?

Dr. A. Perez-Navarro

WHY INNOVATION CAN BE THE ANSWER?

WHO ARE THE ACTORS OF INNOVATION?

WHAT IS THE PLOT OF INNOVATION?

HOW CAN INNOVATION BE MANAGED?

CONCLUSION AND EVALUATION

WHY INNOVATION CAN BE THE ANSWER?

DEFINITION 1:

It goes far beyond the confines of research labs to users, suppliers and consumers everywhere – in government, business and non-profit organisations, across borders, across sectors, and across institutions.

The Oslo Manual for measuring innovation defines four types of innovation: product innovation, process innovation, marketing innovation and organisational innovation.

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Education???

DEFINITION 2:

Innovation refers to the creation of new or significantly improved:
Products, processes, marketing, organization that add value to markets, governments and society.
Innovation is everywhere, for example:

- In the private sector: Companies placing design at the heart of their practices
- In the public sector: Online public services saving people time and money
- In the third sector: Quality care for the elderly by social innovators

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Education???

INNOVATION IS AN ALIEN TERM IN EDUCATION

DEFINITION 3: John Kao

Innovation is the ability of individuals, companies and entire nations to continuously create their desired future

John Kao, “Innovation Nation” (2007)

DEFINITION 4:

Making changes to the learning/training process to produce improvements in the learning outcomes. However, to be considered as educational innovation, the process needs to respond to needs, should be effective and efficient, plus being sustainable over time and with transferable results beyond the particular context in which emerged.

Sein-echaluce Lacleta, M. L., Fidalgo Blanco, Á., & García-Peñalvo, F. J. (2014). Buenas prácticas de Innovación educativa: Artículos seleccionados del II congreso Internacional sobre Aprendizaje, Innovación y competitividad, CINAIC 2013. RED. Revista de Educación a Distancia, 44. Retrieved from http://www.um.es/ead/red/44/

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OK

INNOVATION IS A DIFFERENT WAY TO SATISFY OR SOLVE A NEED AND/OR TO ADAPT TO A NEW SCENARIO

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WHO ARE THE ACTORS OF INNOVATION?
(IN HIGH EDUCATION)


Decision makers
OPERATIONS/TECHNOLOGY DEPT.
Teachers
Facilitators
“Innovators”

DECISION MAKERS: THE CHIEF

- Strategic view
- Have the power of giving resources

DECISION MAKERS: THE CHIEF

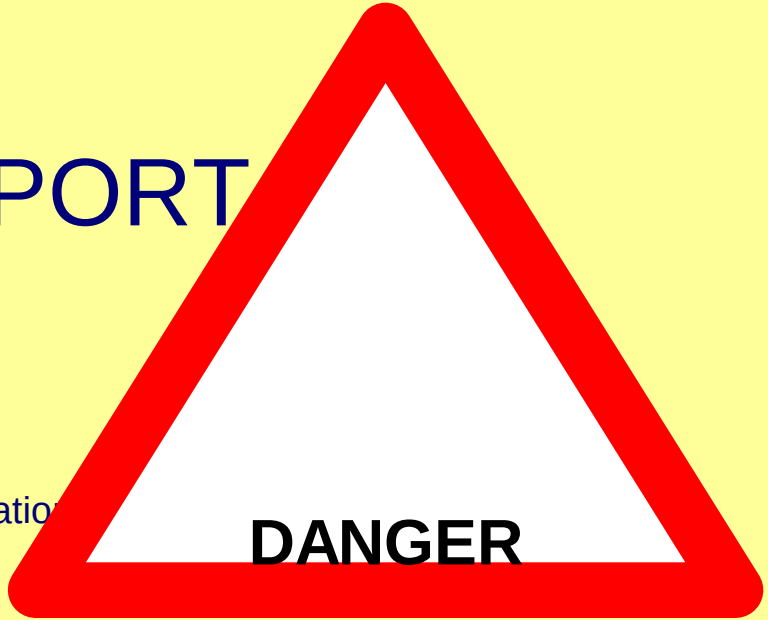
- Strategic view
- Have the power of giving resources
- Can make mistakes: like not taking risk of making mistakes

TEACHERS AND SUPPORT STAFF

- Implement the innovations from the decision makers
- Know the needs and propose bottom-up innovations
- Fight for getting resources
- Innovate for innovating

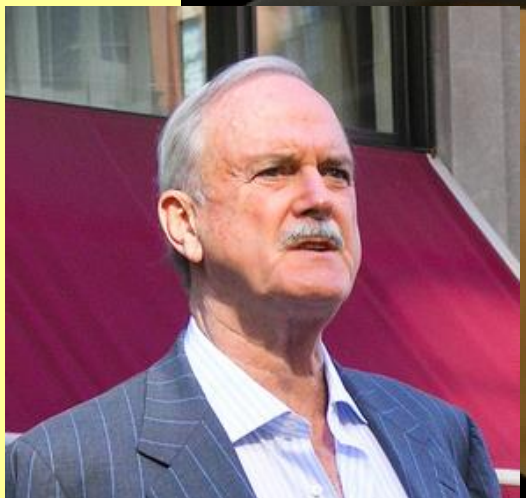
TEACHERS AND SUPPORT STAFF

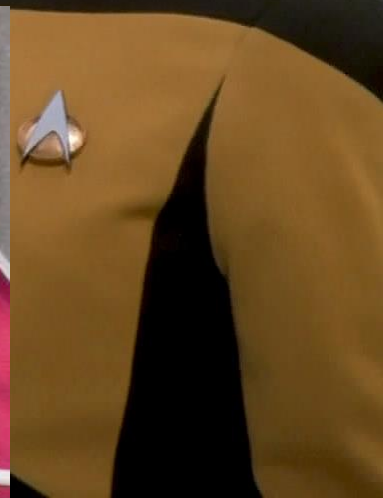
- Implement the innovations from the decision makers
- Know the needs and propose Propose bottom-up innovatio
- Innovate for innovating
- Fight for getting resources.
- Ignore previous evidences
- Deny results and think that are right.
- Opinatic dangers



FACILITATORS

- Innovation managers
- Can decide what will be considered as innovation
- Can link bottom and up





FACILITATORS

- Innovation managers
- Can decide what will be considered as innovation
- Can link bottom and up
- Can think as themselves as teachers or decision makers

INNOVATORS

INNOVATORS

- Think that “new is good”
- Start many different projects and finishing none
- Can destroy innovation because of “false innovation” saturation
- Waste resources

TECHNOLOGY

- Were Disruptive
- Innovation is a risk
- Need innovation
- Key role in technological innovations
- They act as top-down, and also as bottom-up within the department
- Focused on keep everything working.

TECHNOLOGY UNIVERS

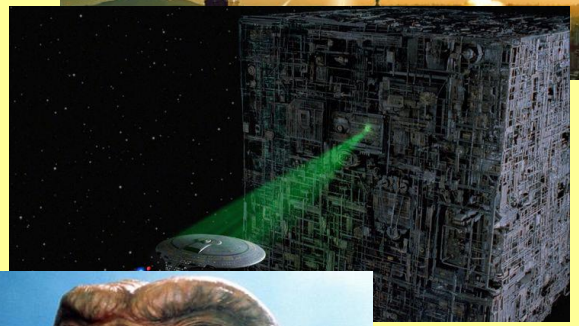
- Companies that offer solutions useful for eLearning Universities
- Allow to have the last technology for a single prize.
- Proven technology
- Changes are faster

TECHNOLOGY UNIVERS

- Companies that offer solutions useful for eLearning Universities
- Allow to have the last technology for a single prize.
- Proven technology
- Changes are faster
- Can kill internal innovation
- Loose of personality: institution adapt to technology, instead of adapting technology to institution.
- Can substitute Academy

ALIENS

- Bring disruption
    - Smartphones were born in a computer (not a phone) manufacturer,
    - Roomba was born in a robot (not a vacuum cleaner) manufacturer,
    - Bulbs were born from a scientist (not from a candle manufacturer)
    - Train’s were born from a steam machines manufacturer (not from a horse breeder)



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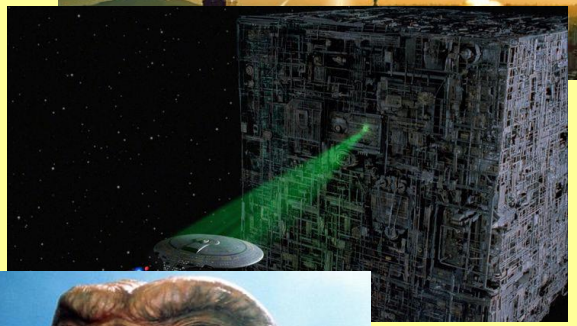

ALIENS

We do not know who they are, not where they are,
but, sure, they are there…
And they will invade us if we are not prepared…

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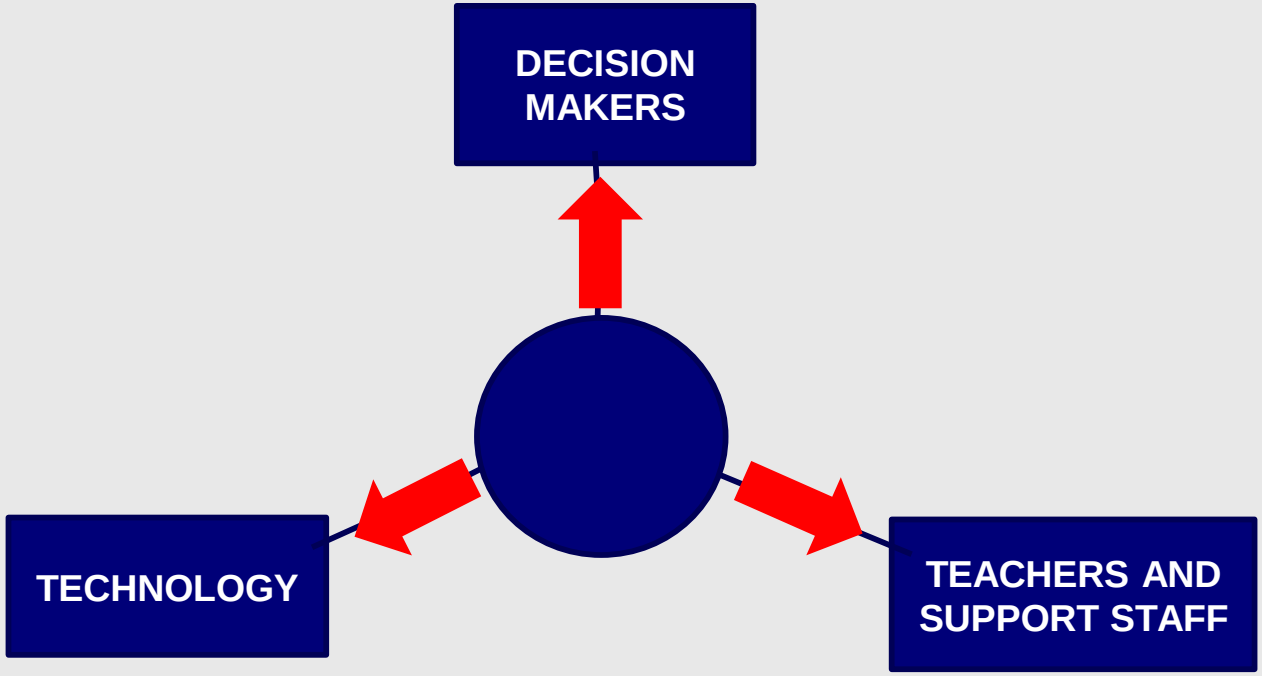
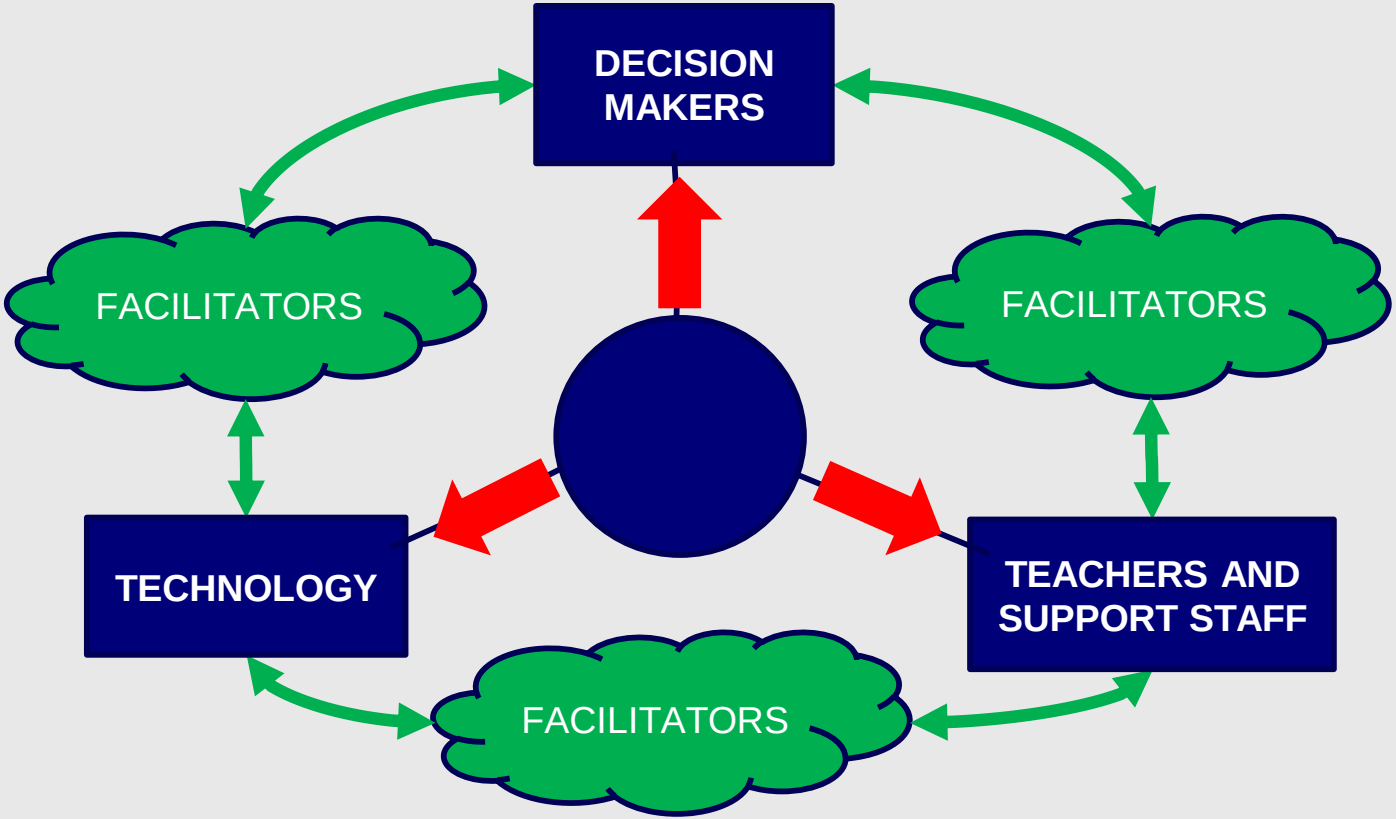

DECISION MAKERS
TECHNOLOGY
TEACHERS AND SUPPORT STAFF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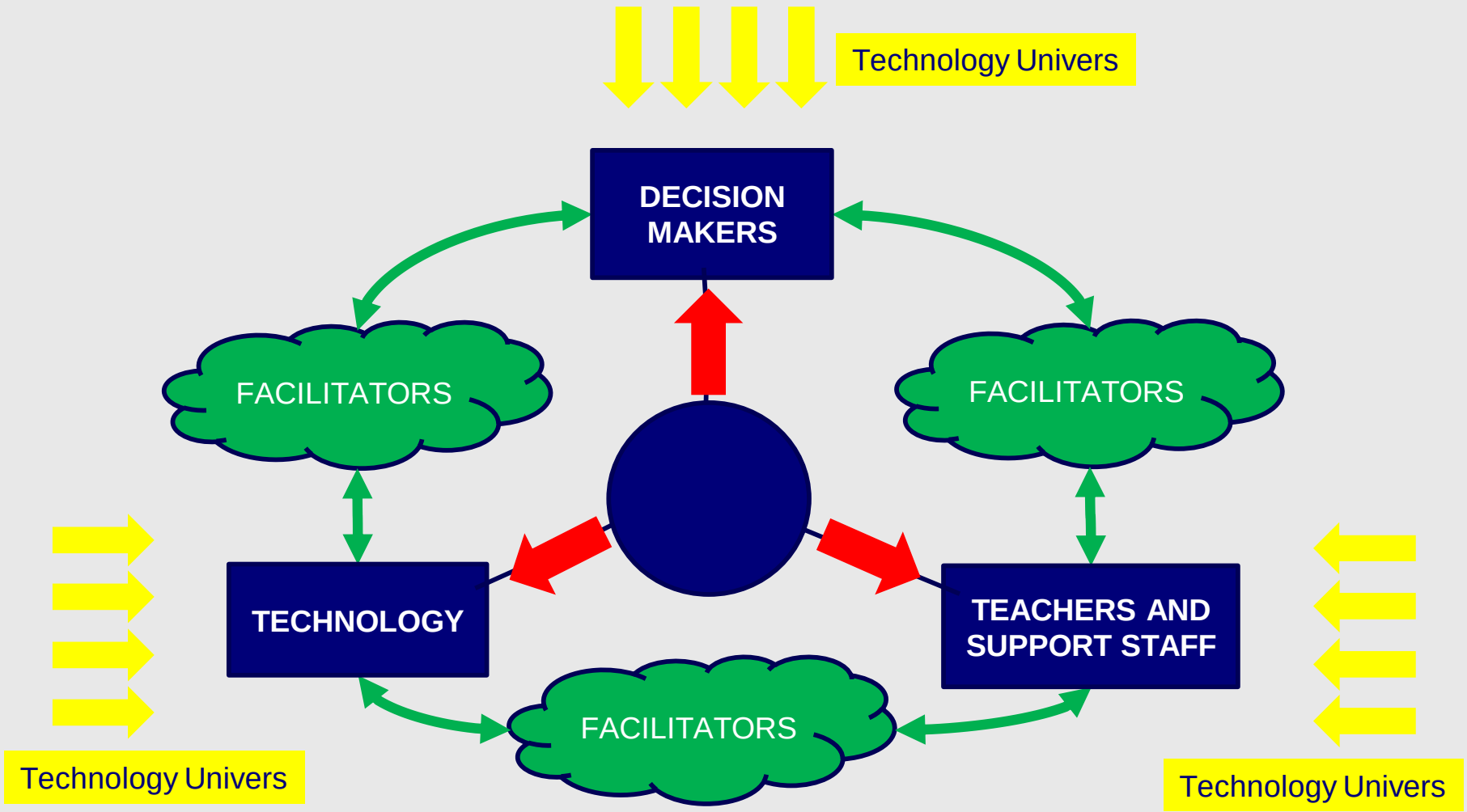
Technology Univers
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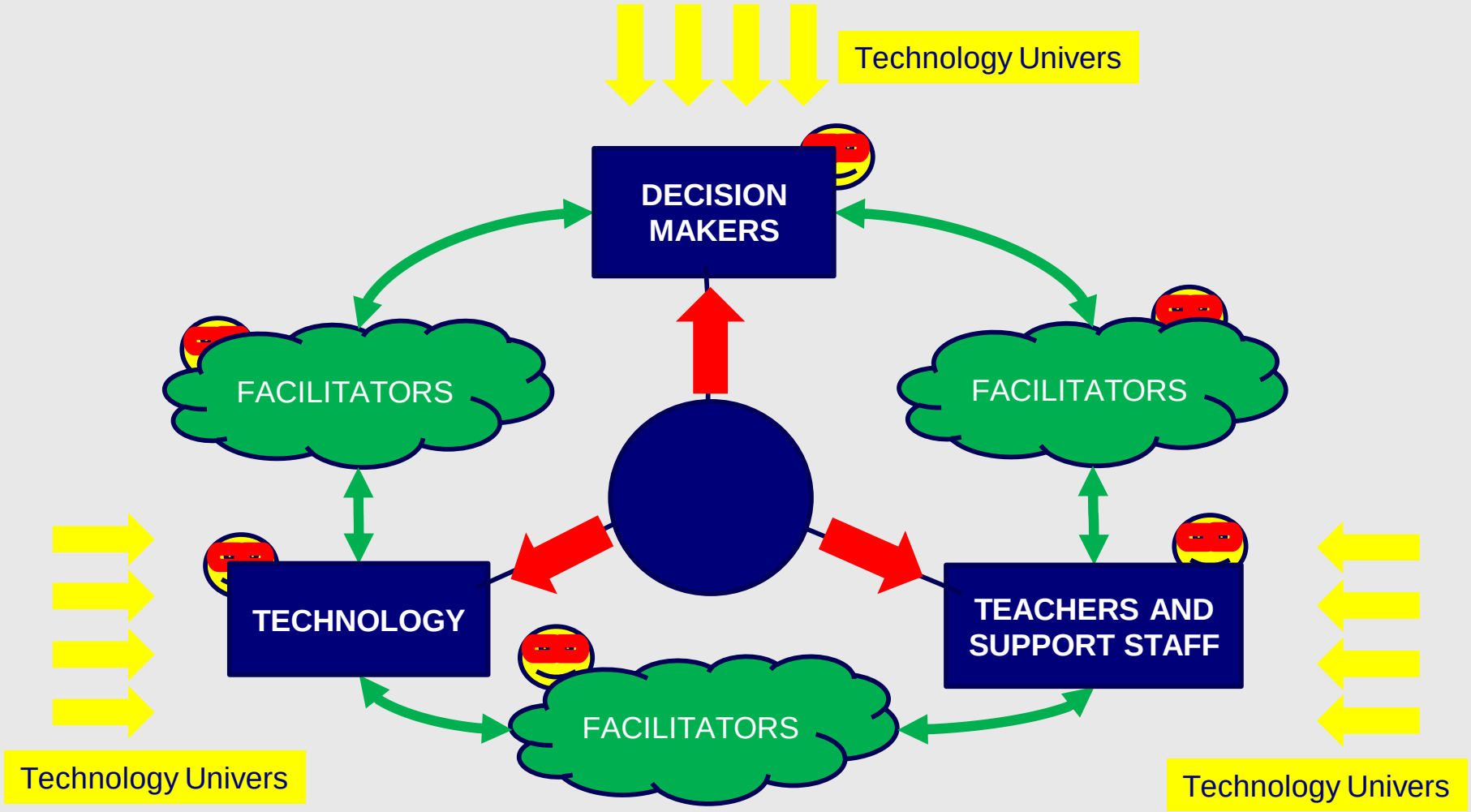
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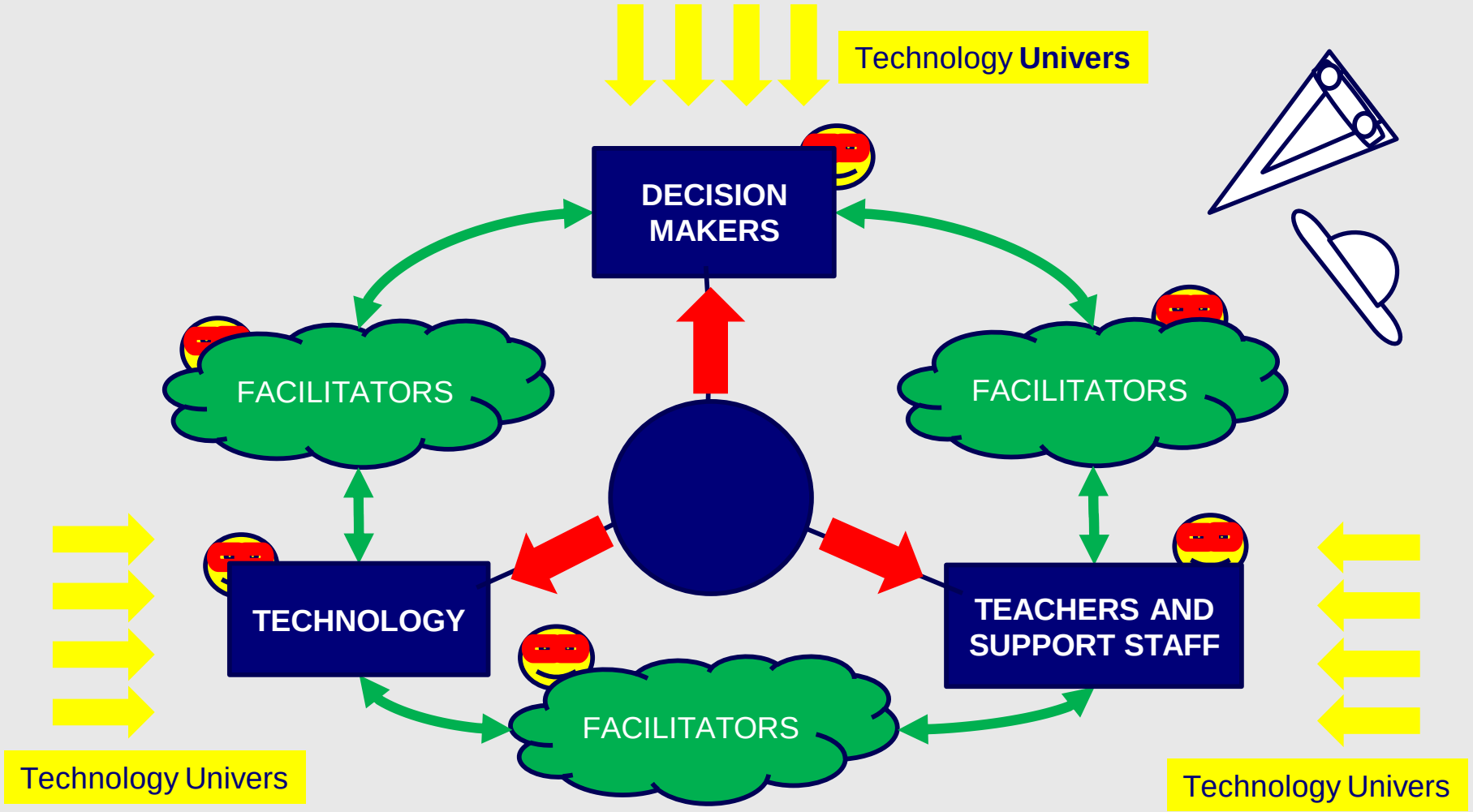
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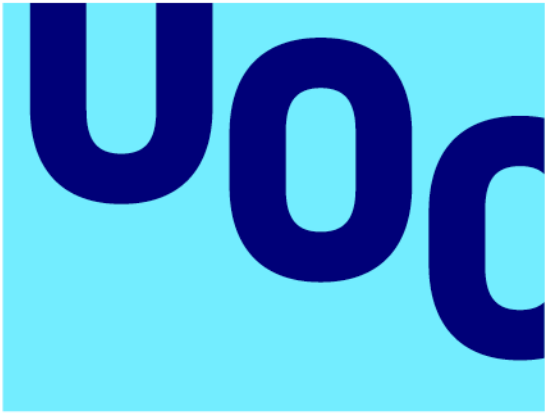


Universitat Oberta de Catalunya

52.000
students

58.000
graduates

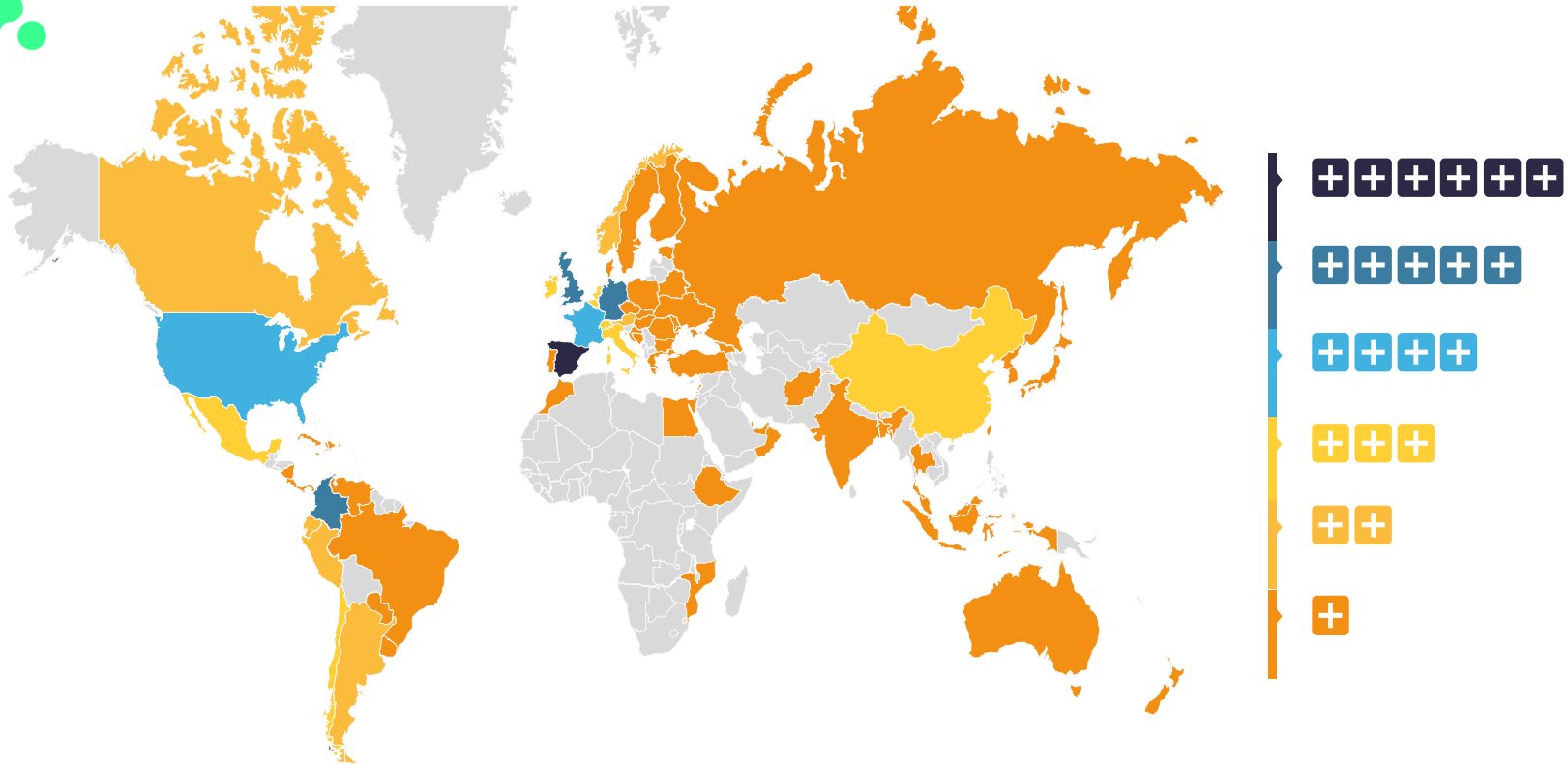
3.000
Collaborators

300
Lecturers

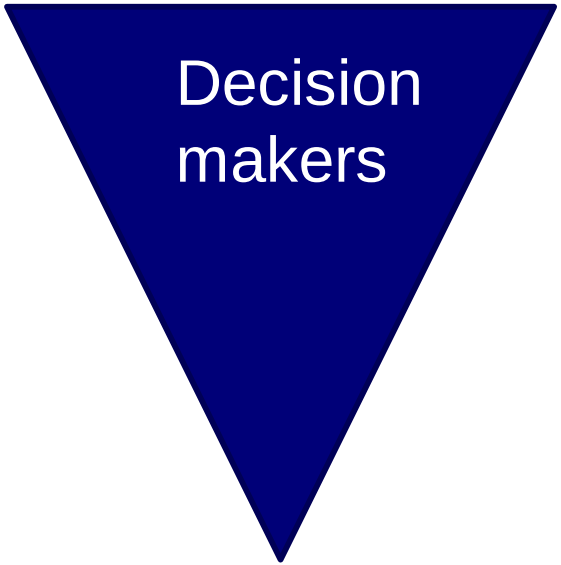
98 %
Study and work

70 %
Previous grade

64 %
Older tan 30

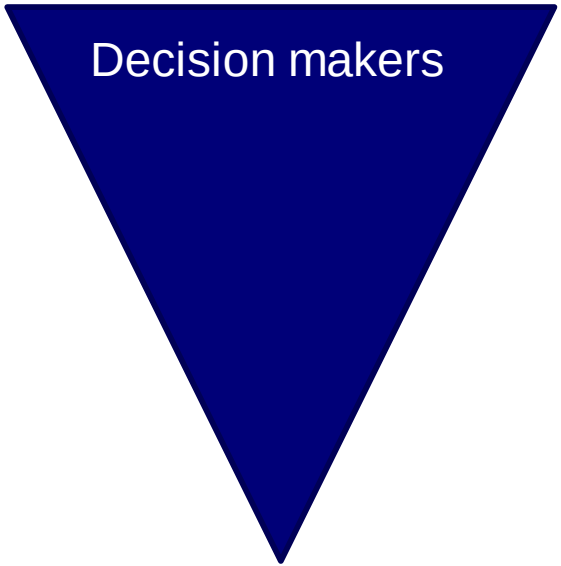


Directions



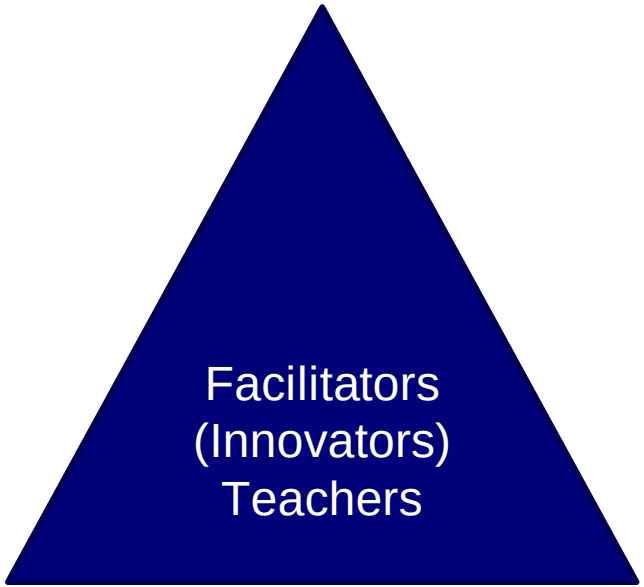
- Strategic plan collaborative constructed
- Research and innovation commission where decision about both items are taken
- Office specialized in management of projects, although nowadays is only devoted to research

eLearn Center



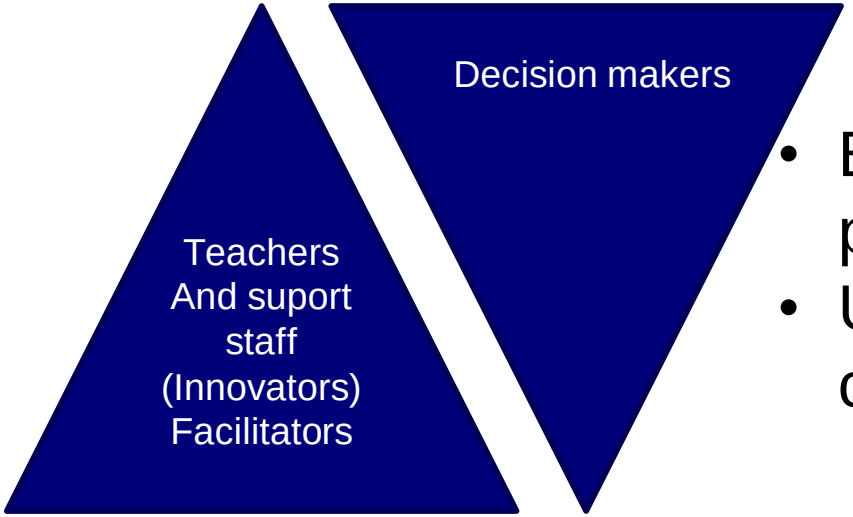
- Translational research
- Prioritary lines
- Agreements and negotiation with Technology Department
- Observatory

eLearn Center



- Proposal from teachers and support staff
- Competitive projects
- Coordination with other departments.
- Diffusion is required
- Laboratory of innovation to make tests
- DataMart to learning analítics
- Agreements and negotiation with Technology Department

Departments

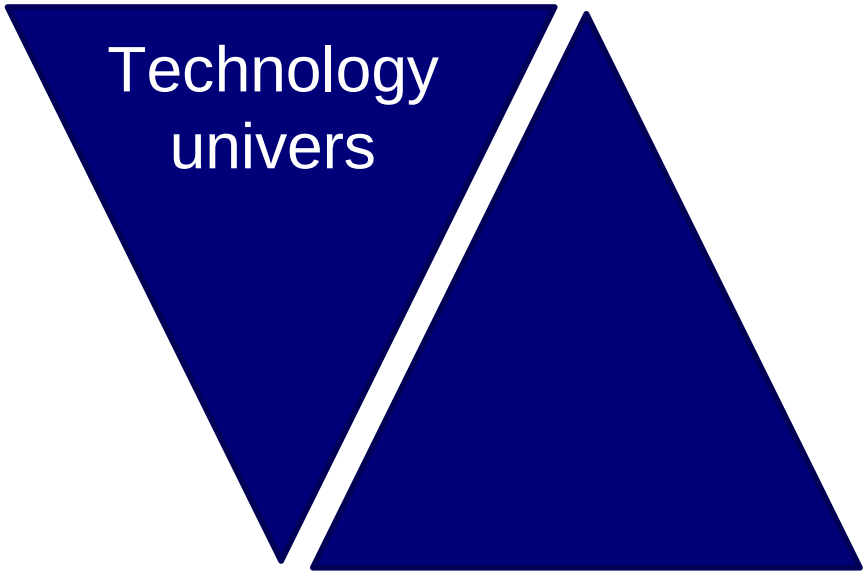


- Bottom-up innovation paths are not structured
- Use facilitators (eLearn center)

Department of Computer Science Multimedia and Telecommunication

- Promotion of innovation
- Observatory
- Definition of what will be considered as innovation → Diffusion and Evaluation is required
- Teachers will receive badges and time for innovating

Externalisation



- External companies act as consultants, developers and integrators

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Kahoot.it

https://play.kahoot.it/#/k/00416e2f-d43c-474b-9a5a-222a5da07990

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