Presentation on (e-)learning

Maria Dimou
CERN IT/CDA

made in greek for the Hellenic Ministry of Digital Policy
Athens

Event details

Also in english

White Area lecture
25 February 2019 @ 3pm CET
CERN IT/CDA Social Room

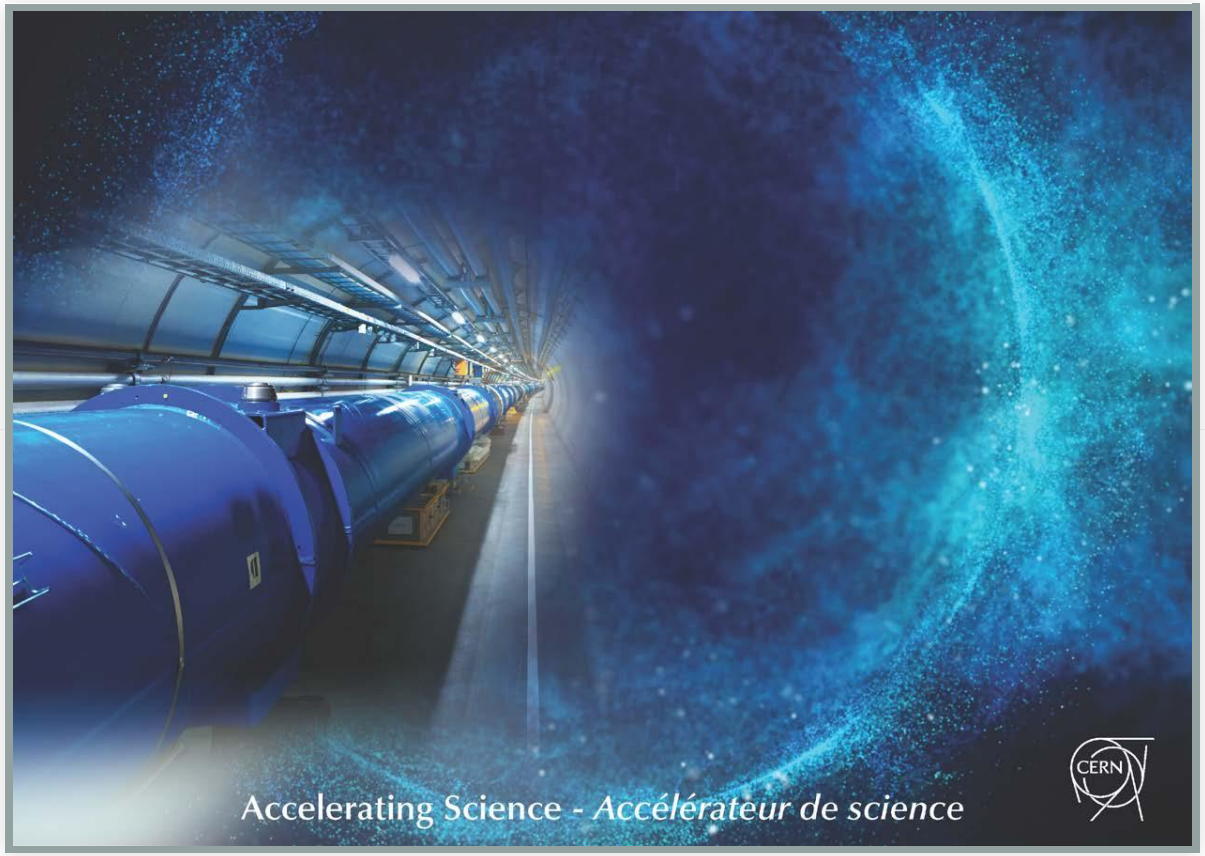
Outline

- Technical tools for making short e-learning videos
- Content rules for effective educational messages
- Experience from presenting science to schools
- The importance of arts & science collaboration

A few words about CERN

- CERN was founded in 1953. Greece was one of the 12 founding member states.
- Acronym stands for original “Conseil Européen pour la Recherche Nucléaire”. We do Particle Physics. No nuclear research.
- It is the biggest Particle Physics laboratory in the world.
- Member (22), Associate (8) and Observer (6) States + (50) International Collaboration Agreements sum up to about 9K people in the lab at any time

Mission 1: Research



Mission 2: Technology

Mission 3: Collaboration

Mission 4: Education

Many Educational programmes

- Seminars
- Colloquia
- Academic Training
- Summer Students' lectures
- Teach the Teachers programmes
- S'Cool lab
- Outreach activities (including 130K visitors per year)
- E-learning programmes for internal use… and much more

A few words about my current work

- IT e-learning project initiator in 2016.
- Academic Training Committee member since 2010 and chairperson since 2016.
- IT Documentation based on Open Solutions since 2017.
- CERN Guide - various interventions at CERN for >10 years and in local educational establishments since I got kids.
- Scientific partner of the Arts at CERN programme since 2011.

Video recording - Basic principles

- If you plan to make a recording *lab* and have computer specialists, opt for Open Source cross-platform tools.
- If your video makers have no central support, suggest tools best-integrated with their working platform.
- Examples from our collection:
  - Tutorial made in a studio
  - Self-made tutorial

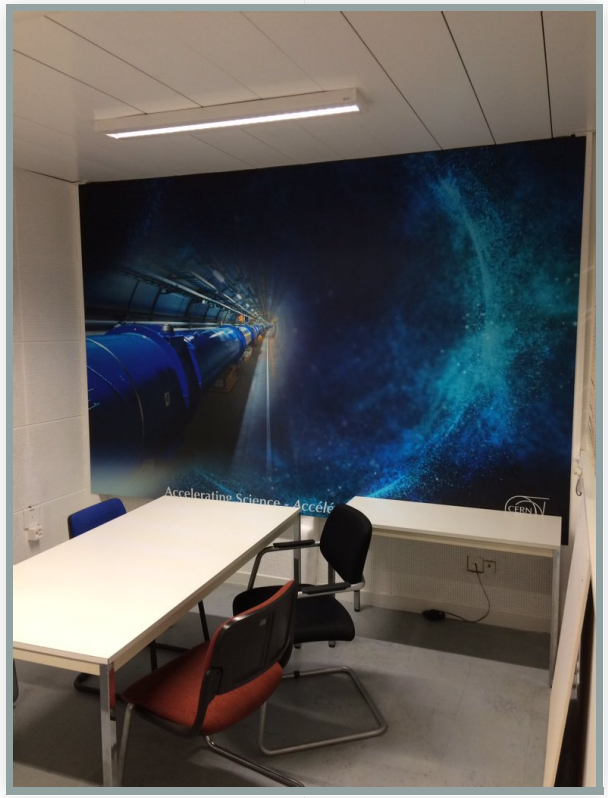
Video publishing - Basic principles

- If you are responsible for the final publishing, state clearly your requirements on the expected **format**.
- Ensure packaging homogeneity, to mark the *identity* of the project/organisation. Our examples:
  - e-learning collection intro
  - e-learning collection outro
  - Academic Training in YouTube intro
  - Academic Training in YouTube outro

Recording infrastructure costs

1. To make a proper studio: 100K-300K euros (see lightning talk) EPFL and CERN numbers.
2. To prepare and record a 7-week MOOC: 50-100K euros (EPFL numbers).
3. To equip a meeting room with the bare necessities (computer, screens, camera, microphone, corporate poster): 10K euros.
4. Cost of self-made videos (many free-of-charge products): all seems free-of-charge but the support effort and the rehearsing/editing time should be also measured

Our meeting room & studio



About MOOCs

The expensive solutions are justified by the fact that MOOCs (Massive Open Online Course):

- last for several weeks
- require more effort to answer questions
- involve engineers and designers with specific educational skills

  They can be valuable for *continuous education* and integration for newcomers and for creating a common *culture*, e.g. students from other disciplines, people recently installed in the country.

Linux tools for self-made videos

- Linux
  - ffmpeg free, open source and cross platform command line tool.
  - kazam specific for ubuntu.
  - shotcut for any OS.
  - OpenShot for any OS.
  - Avidemux video editor for any OS.

Mac & Windows tools for self-made videos

- Mac
  - QuickTime.
  - Kap (Open Source app)
  - a new screen recording feature in MacOS version, Mojave 10.14.2.
- Mac and Windows:
  - screencast-o-matic (web-based)
  - ActivePresenter
- For Windows 10, a built-in feature designed for games, can also be used for screen capture.

The facility temptation

- Be strict with computer security and educate the users to be security-aware.
- Remember: There is no free lunch! If a product is for free, then, **you** are the product.
- Choosing convenience of integrated solutions can be a trap - you eventually find yourself in a ghetto.

Content preparation

- Before recording: Write down every word you plan to say
- Prepare your script in a standard (.vtt) format. Good quality subtitles are important for viewers with hearing impediments.
- Use a teleprompter web-based free tool here.

Content structure

- Give a structure to your text and speech and emphasise where appropriate.
  - Tell them what you are going to tell them
  - Tell them
  - Tell them what you just told them.
  - Say where you are as you go on.

Words with impact

- Introduce yourself
- Clearly say:
  - "This tutorial/video is about …”,
  - “I will show you”
  - "We have just seen “How to …”
  - “We shall now go through “How to …”

The importance of choosing your words

Persuasion is achieved according to specific human perception principles. Examples from *this* book:

- Social Proof
- Liking
- Authority
- Scarcity

  Principles widely exploited by advertisers, salesmen, politicians, sects and emotional blackmailers.
  As always, the contrary is also possible, i.e. to use persuasive words to clarify, give choice and set free.

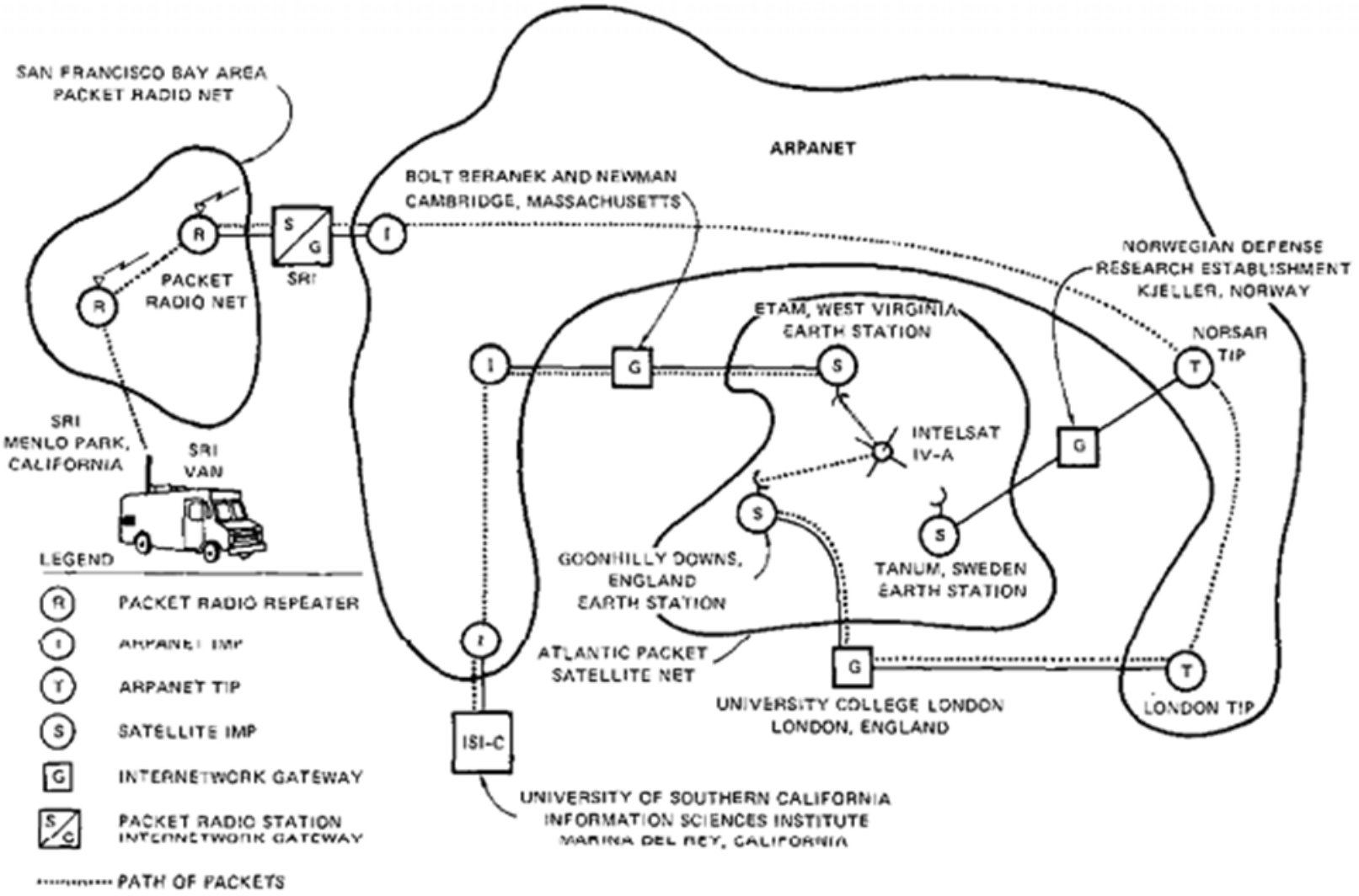
Talking to school kids

- UN International Day on Girls & Women in Science every February 11th since 2016.
- Women scientists from CERN, UniGe and EPFL speak to local schools. Touching discoveries:
  - 8-year-olds have profound and relevant questions.
  - 18-year-olds sincerely seek a meaning for life and *Knowledge* beyond *Information*.

World-changing projects: The Internet

Internet father Vint Cerf wrote, together with Robert Kahn, the TCP/IP protocols for USA ARPANET in late 1970ies.

The Internet in 1977

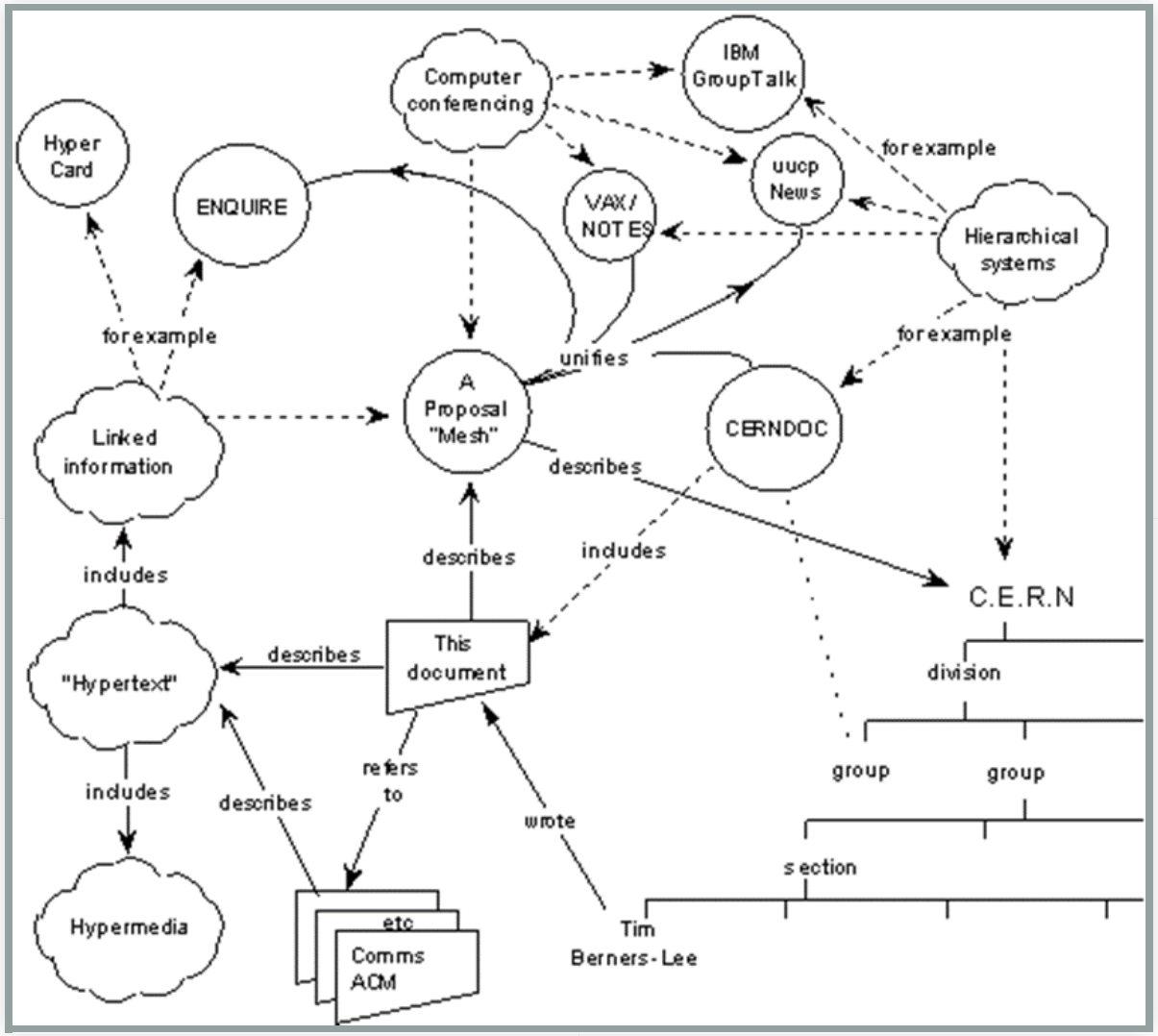


November 22, 1977

World-changing projects: The Web

The Web inventor Sir Tim Berners-Lee wrote and showed working the http protocol and html code at CERN in 1991

His original proposal in 1989


Computer conferencing
IBM GroupTalk
Hyper Card
ENQUIRE
VAX/ NOTES
uucp News
for example
Hierarchical systems
for example
for example
unifies
A Proposal "Mesh"
CERNDOC
Linked information
describes
includes
describes
includes
C.E.R.N
"Hypertext"
describes
This document
division
group
group
includes
describes
refers to
wrote
section
Hypermedia
etc
Comms ACM
Tim Berners-Lee

The meaning of Education

- These inventions gave access to a wealth of knowledge,
- … but also to superficial fashion, lies and propaganda.
- For the student & citizen to remain lucid, critical and free to make a choice of life's priorities, Education should be:
  - continuous (all ages, genders, regions)
  - raising awareness of the all-connected and largely robotised future (big data, AI, nanotechnology, ethics of new biomedical and genetics' research, etc)
  - asking questions on the model of society it wishes to promote.
  - exciting and worth the effort, like a "serious game"

A few words on serious games

Serious games are an effective way to teach young people to be:

- aware of influencers
- cautious with social media
- alert for gender and other stereotypes
- open-minded with minorities
- …

  Of course, attractive serious games require serious preparation!

A few free serious games' examples

- On personal data protection
- To learn how to code with Javascript
- To show the dangers of harrassment
- To be environmental-impact aware
- On a Syrian refugee's survival (free but 3.49 euros' fee for the Android or iOS versions)
- On another Syrian refugee's journey
- On corruption and ethics in politics
- On the challenges for people with accessibility problems

Cross-discipline collaborations

- Every discipline is a closed community. Cross-fertilisation generates good ideas by exploring different brain algorithms.
- Merging with experts from another discipline helps re-wiring the brain and opening-up.
- New ideas are born out of what we cannot think of.
- Wisdom is everywhere, so collaborations are valuable no matter which the discipline is.
  A creative adult is a child who survived (Ursula K. Le Guin)

Why Arts at CERN

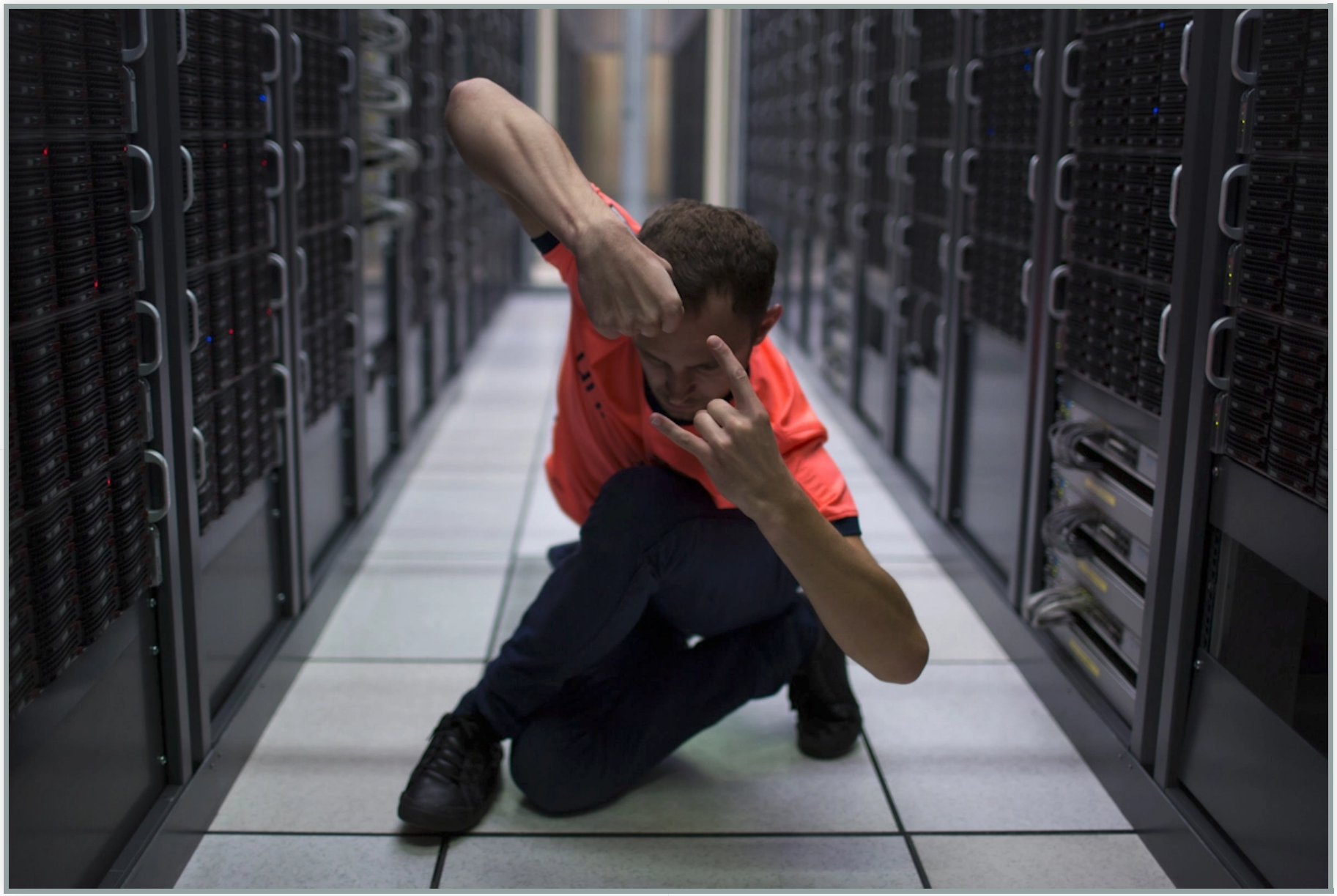
- The programme was launched by its former director, Ariane Koek, in 2011.
- It raises funds to sponsor artists' residency at CERN for a variable amount of months.
- The artists (dancers, musicians, performers, installation artists) are immersed in the lab's environment.
- Scientists are skillfully Analytic; Artists are admirably Synthetic.
- The Arts at CERN example showed good solidarity between the scientists' *analytic* and the artists' *synthetic* minds. *Science enables a person to live free while Art makes life worth living.*

CERN through the artists' eyes

Cassandre Poirier-Simon


2016
Salle
d'Equipement
AD
Equipement Room

Gilles Jobin & dancers - Strangels



Gilles Jobin,
Julius von Bismarck
& dancers
QUANTUM

Links

- D.F.Wallace speech on Education
- Programmers' learning methods today
- All about serious games with examples
- The CERN Document Server
- Edutech - a collection of Educational links
- Video as a medium for learning & Teaching - lecture
- A reflection on MOOCs
- CERN-centered documentation on self-made educational videos
- Tips for content preparation
- An article in "The Economist" on the value of philosophy for business management.

I am grateful within CERN

- All my colleagues in CERN IT/CDA group members for expert advice and managers T.Baron & T.Smith, for supporting these objectives.
- T. Basaglia and the CERN Library for the obtaining all the books.
- L.Alvarez who supported me for the chair of the CERN Academic Training.
- M.Bello for appreciating my partnership with the arts at cern programme.

I am grateful outside CERN

- My students (A.Racine,P.deFreitas,A.Manzoni,K.Dawson,G.Tourpetas, M.Bernies,C.Vieira) and collaborators (Professors A.Ailamaki,P.Dillenbourg, R.Schneider & D.Schneider) from EPFL, HESGe & UniGe for bringing-in extra knowledge from other disciplines.
- The artists I worked most with G.Jobin and C.Poirier-Simon for their phenomenal questions & inventive spirit.

THANK YOU
for your attention!