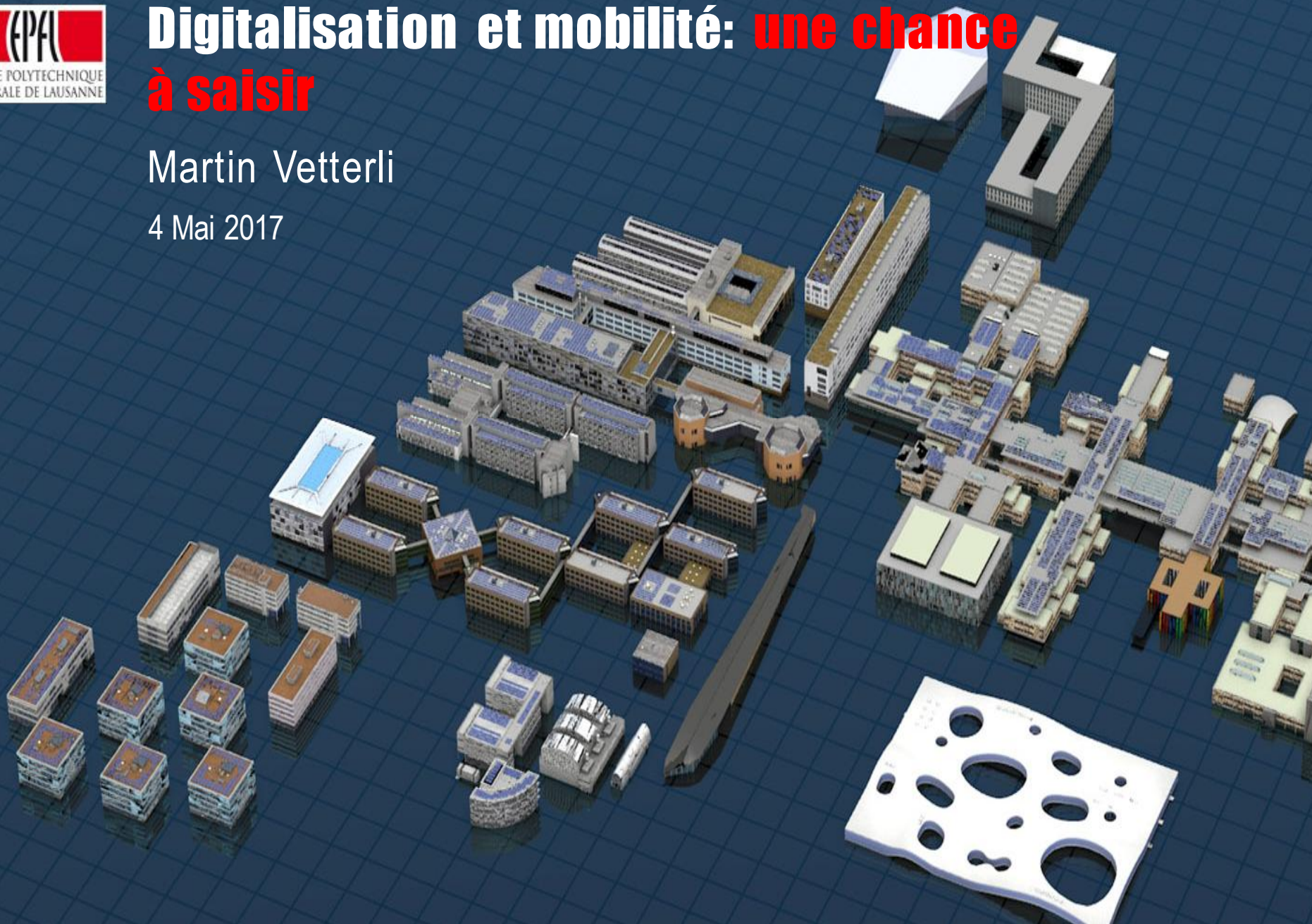




Digitalisation et mobilité: **une chance à saisir**

Martin Vetterli

4 Mai 2017



Cherchez les ressemblances...

Finde den Ähnlichkeiten...



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE



SBB CFF FFS



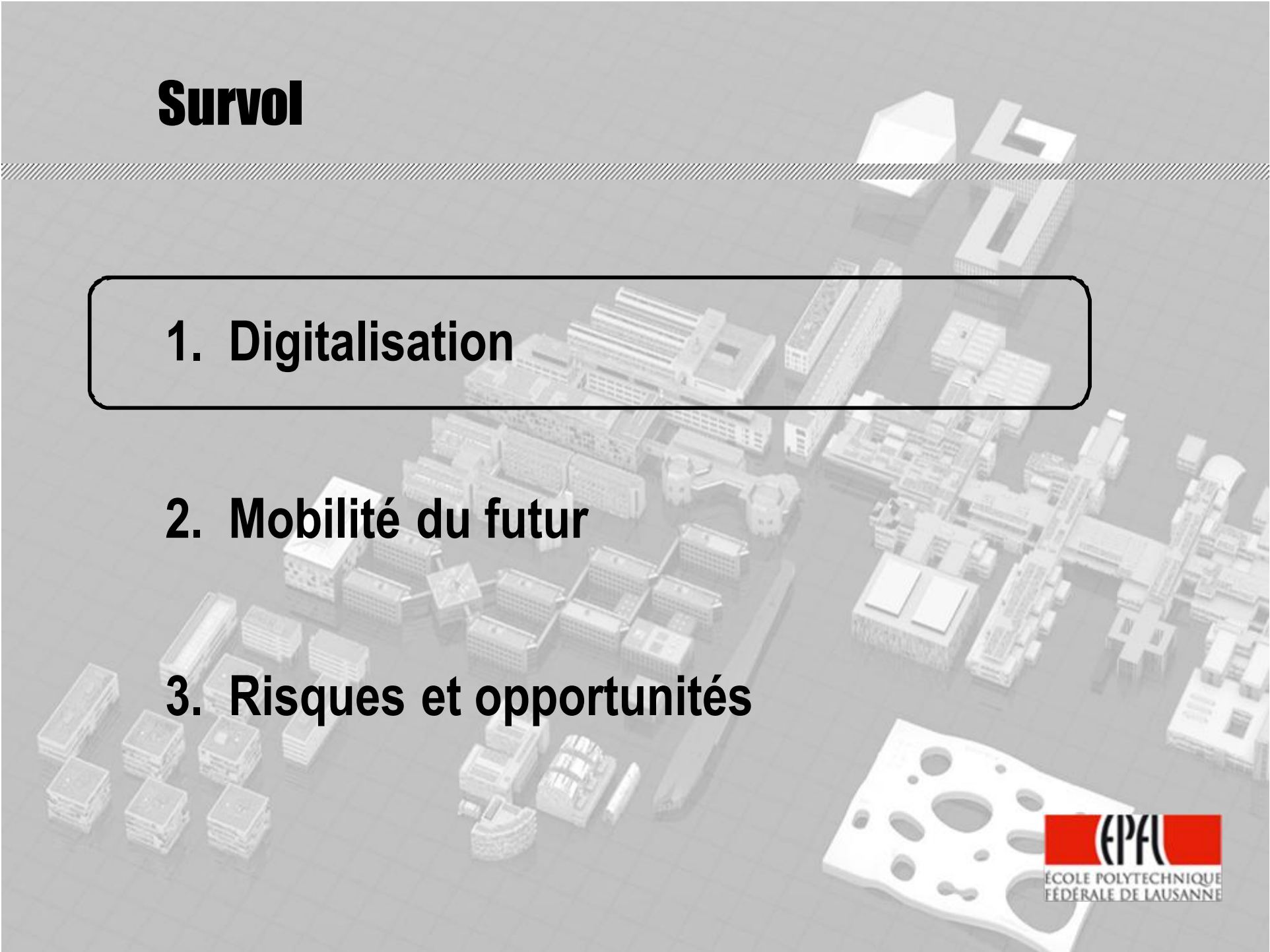
Survol

1. Digitalisation

2. Mobilité du futur

3. Risques et opportunités

Survol



1. Digitalisation

2. Mobilité du futur

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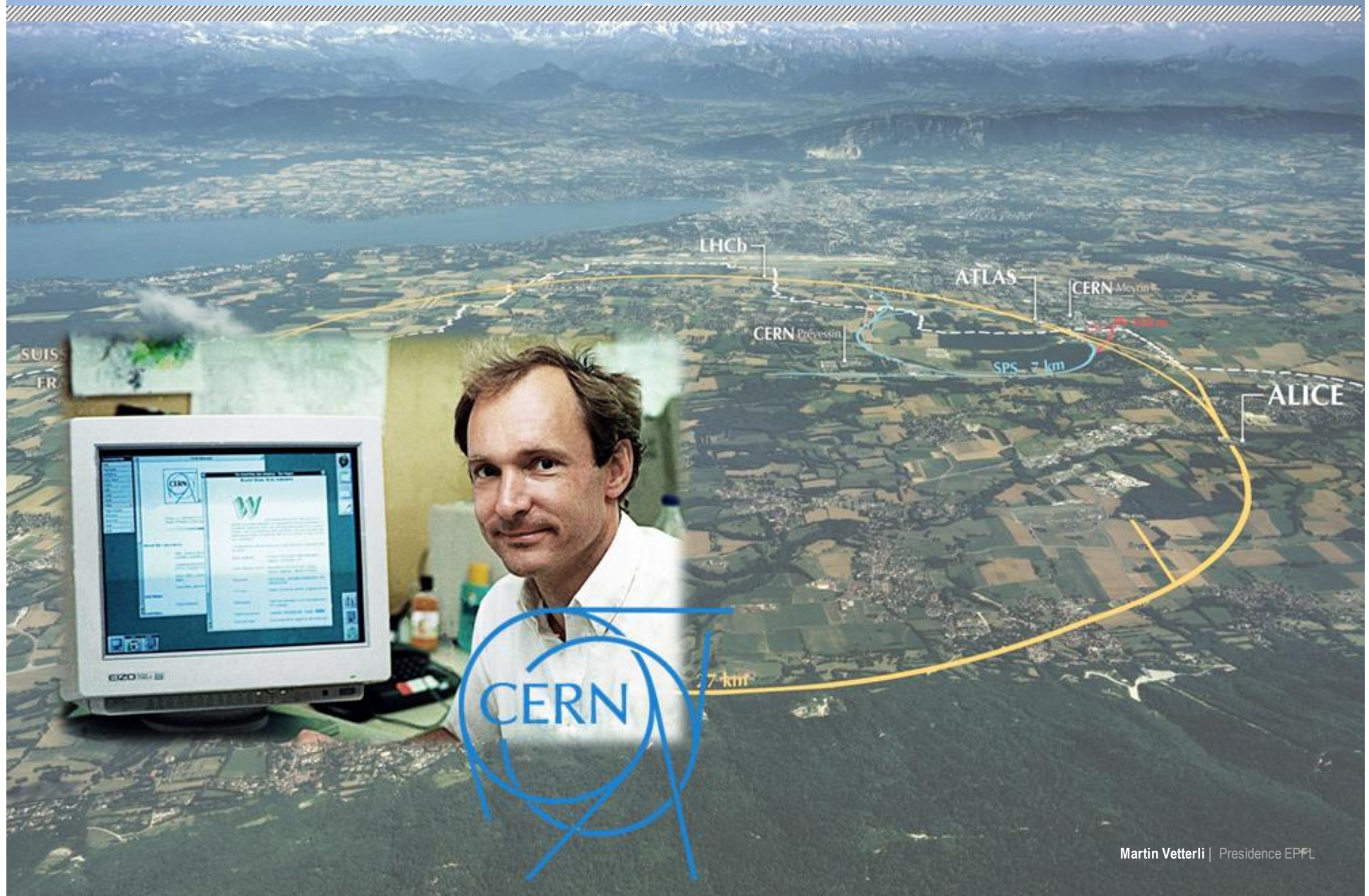
Du monde analogique au monde digital...



La Suisse au 18ème

Les Jaquet D'oz
et Les chat
a neuchâtel

La Suisse au 20ème



AI : From DeepBlue to Watson and AlphaGo



et aujourd'hui



Tous les départements sont concernés **(Mobilité)**

Affaire étrangères/migrations

ie. digital residency

Recherche

ie. open science

Finances

ie. blockchain

Environnement

ie. Sensorscope

Education

ie. MOOCs

Culture

ie. VR, VOD



communications

ie. Skype

Développement du territoire

ie. Google maps

Défense

ie. robots, drones

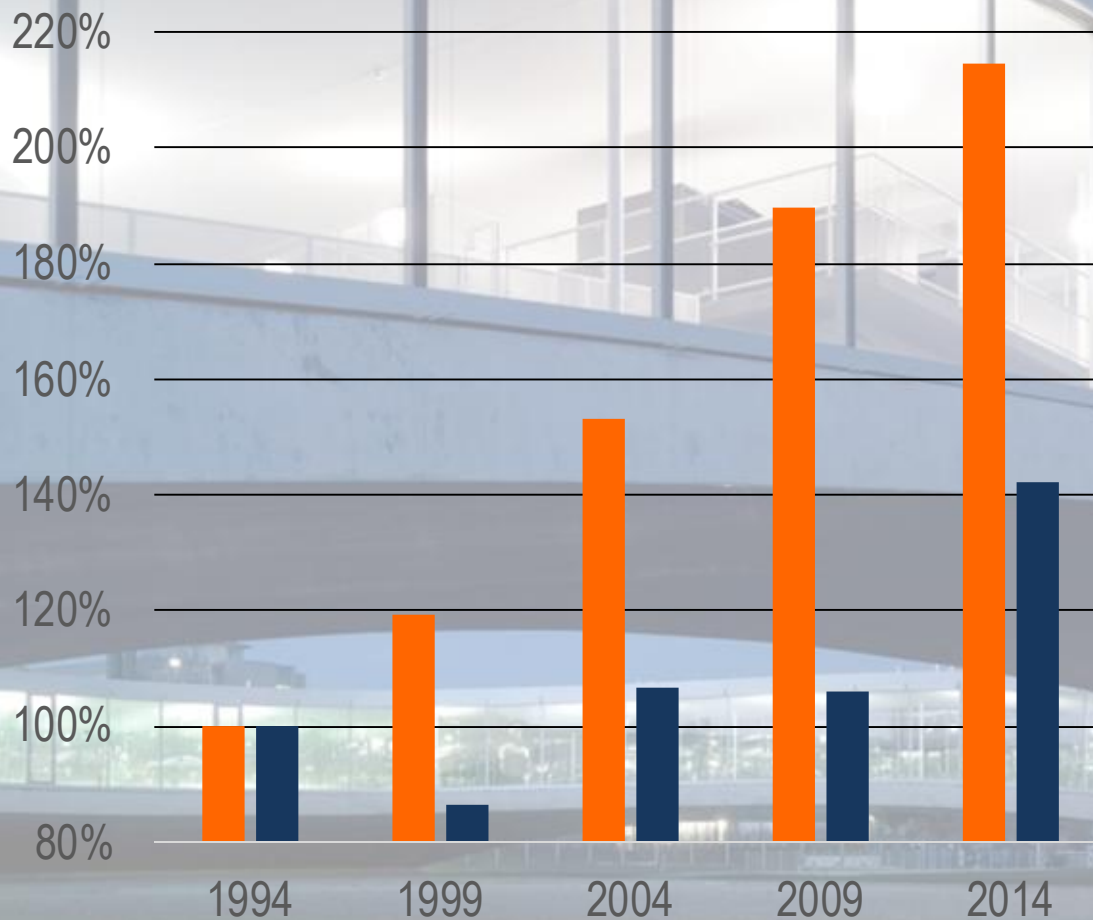
Energie

ie. smart grids

Circulation

ie. self-driving cars

Faculty in "Digital Science"



■ EPFL Faculty (IC & EL) ■ ETHZ Faculty (EE & INF)

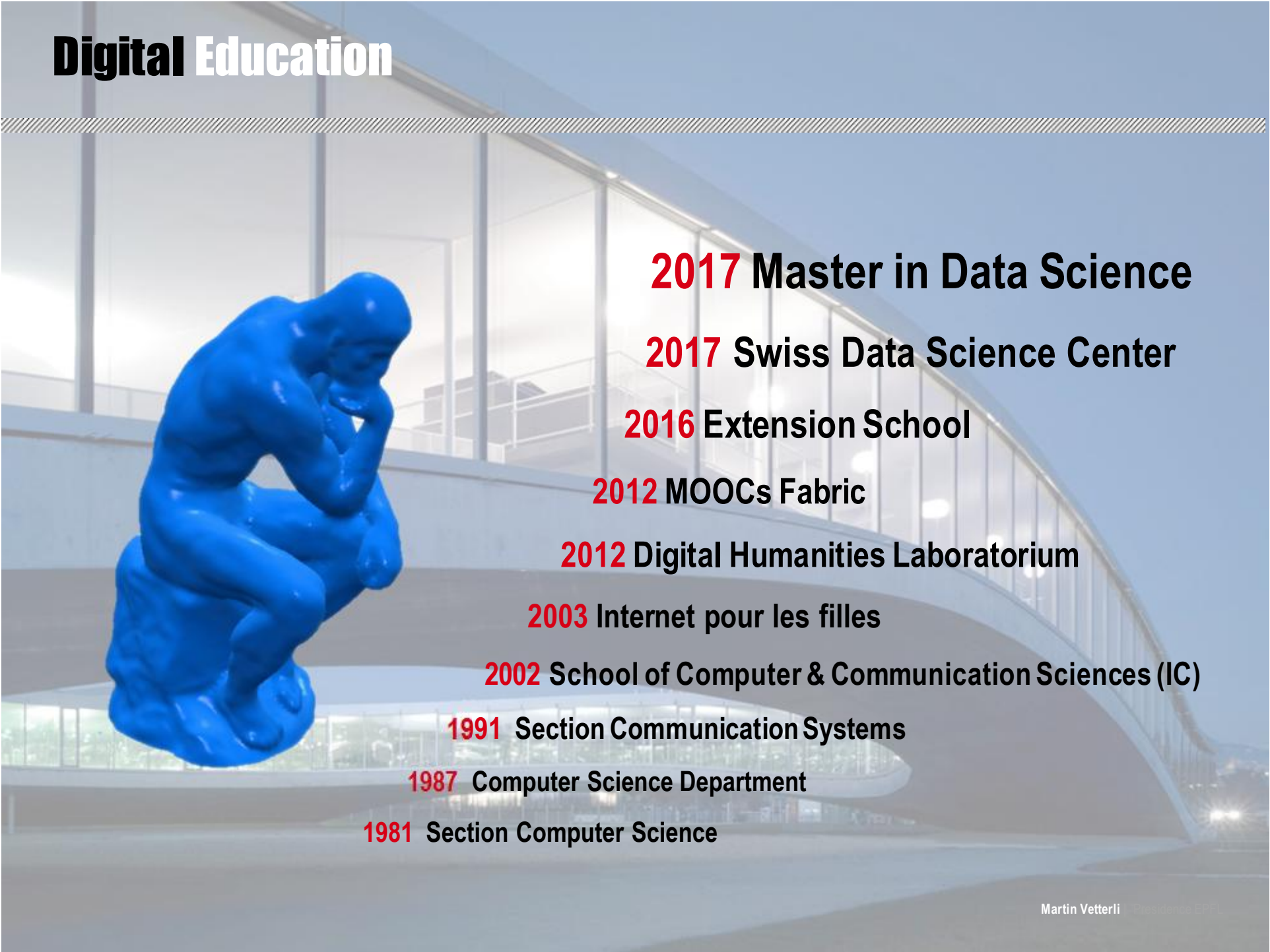
**25 chercheurs en
Computer Sciences
avec h-index >40**

**Numéro 1 en PE7* et
Numéro 2 en PE6**
ERC Grants Ranking**

*Systems & Communication Engineering

**Computer Science & Informatics

Digital Education



2017 Master in Data Science

2017 Swiss Data Science Center

2016 Extension School

2012 MOOCs Fabric

2012 Digital Humanities Laboratorium

2003 Internet pour les filles

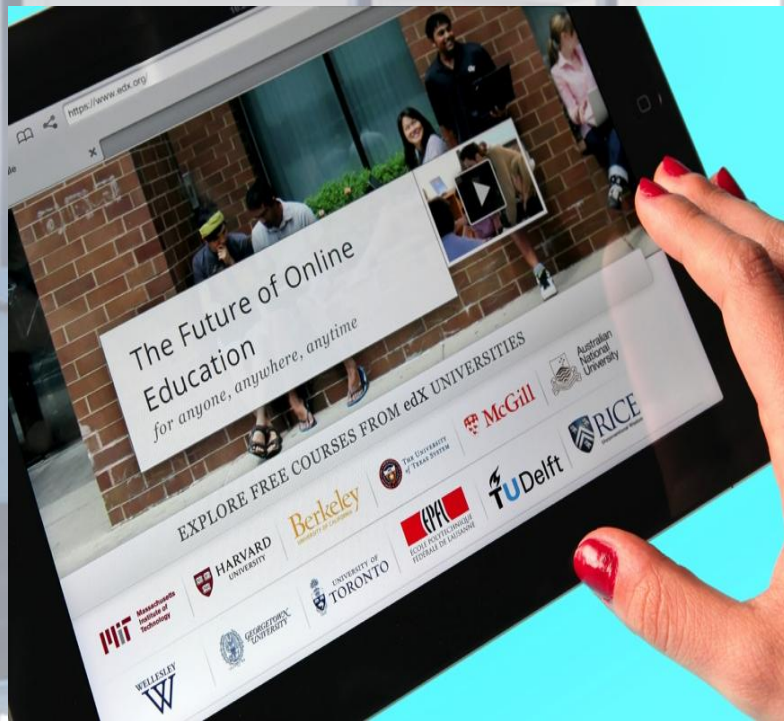
2002 School of Computer & Communication Sciences (IC)

1991 Section Communication Systems

1987 Computer Science Department

1981 Section Computer Science

Digital Education: MOOCs



70 EPFL MOOCs online
(+ 29 en construction)

> 1,6 Mio utilisateurs
inscrits depuis 2012

> 82'000 ont terminé un
MOOC avec succès!

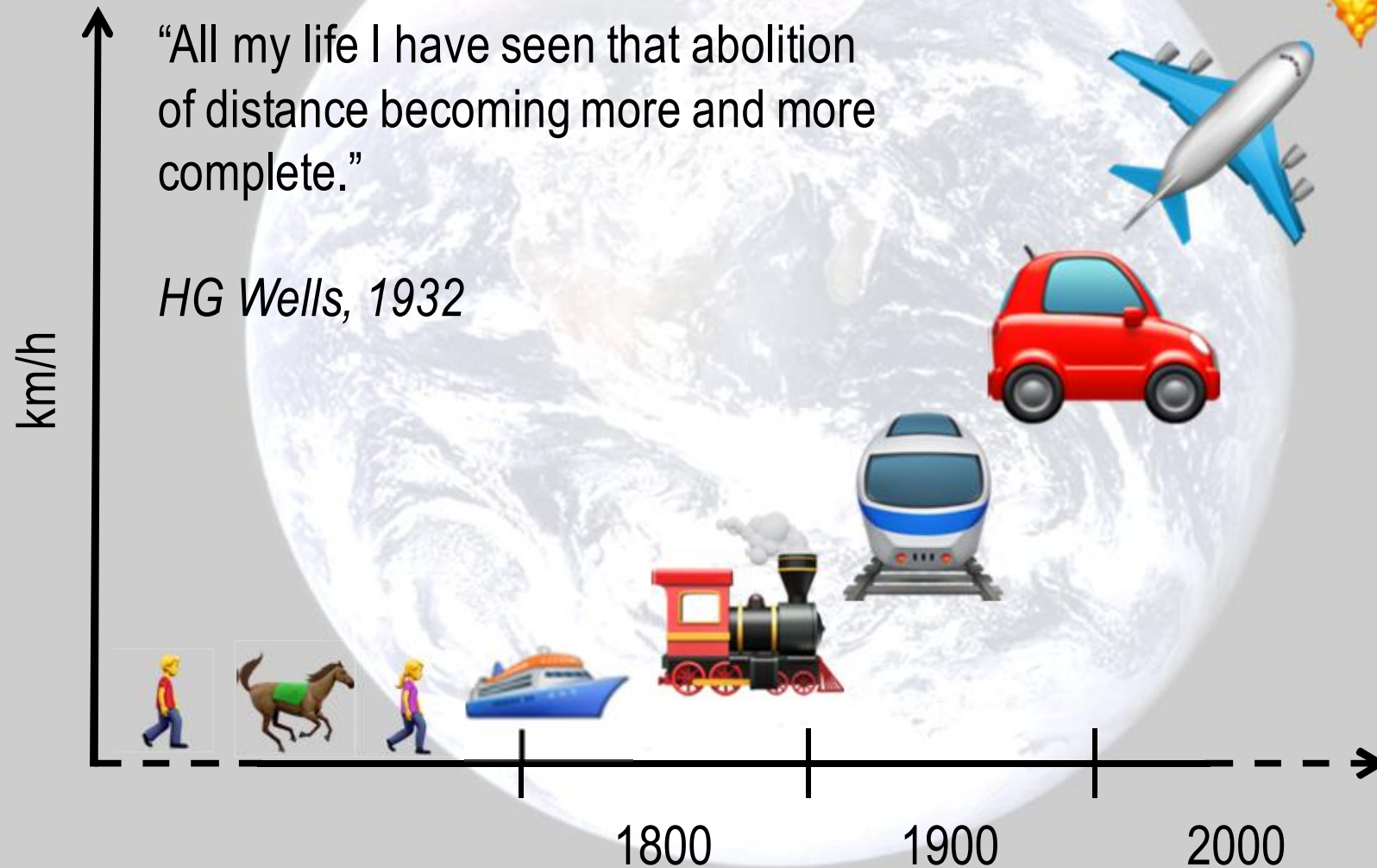
Survol

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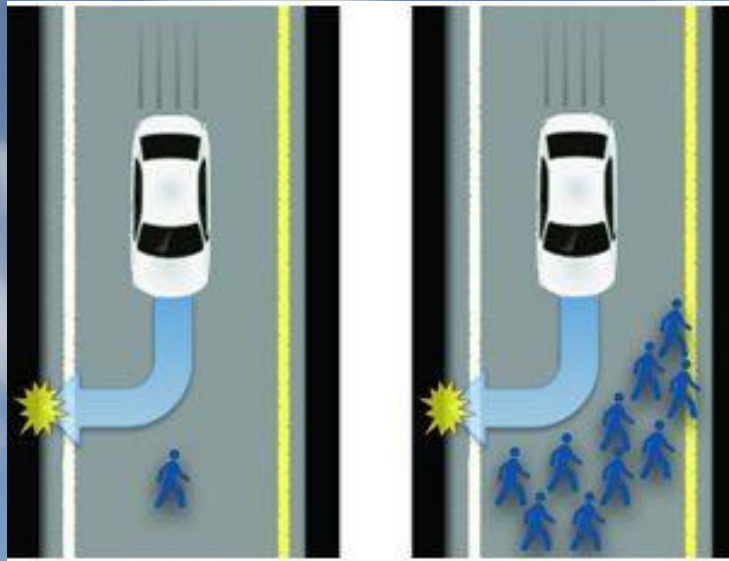
2. Mobilité du futur

3. Risques et opportunités

Mobilité hier

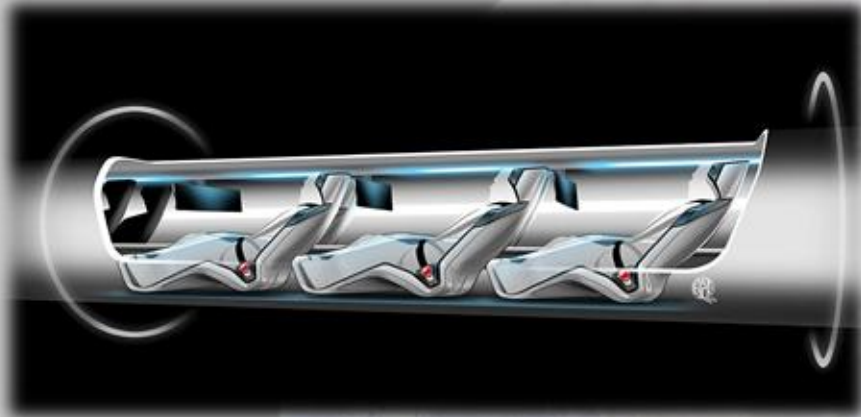


Mobilité aujourd'hui



Science, 24 Jun 2016

Mobilité **demain?**



Mobilitéé @ EPFL



Port
Operations



Electric
busses



Route
choice



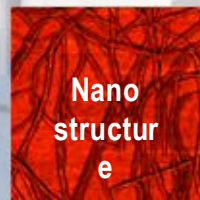
Train
timetable



Electric vehicle market



Transport regulation



Nano
structur
e



Brain interface & Image processing



Pedestrian
activity
chains



Acoustics



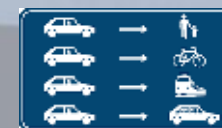
Activity choice



Smart vehicles



Smart
cities



Model Choice



Smart grids



Bridge
construction



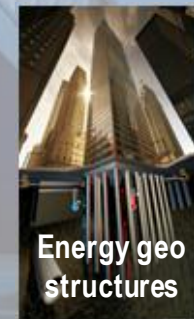
Traffic
management



Drones & robotics



Multimodality



Energy geo
structures

Mobilitéé @ EPFL: quelques projets



Drones: develop advanced “Detection & Tracking” and collision-avoidance algorithms for unmanned aircrafts

Air-rail physical intermodality:
Development of an innovative solution to enable air-ground mobility



Brain-Machine Interface (BMI) for drivers: Adapt existing BMI approaches to cars



Exemple de collaboration avec les TP



Mobility analysis in Zürich:
Analyze the spatial effects of the development of the regional train system/supply in Zürich

Energy and reserve management: Provide enough reserve services to ensure a secure and reliable operation of the system



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

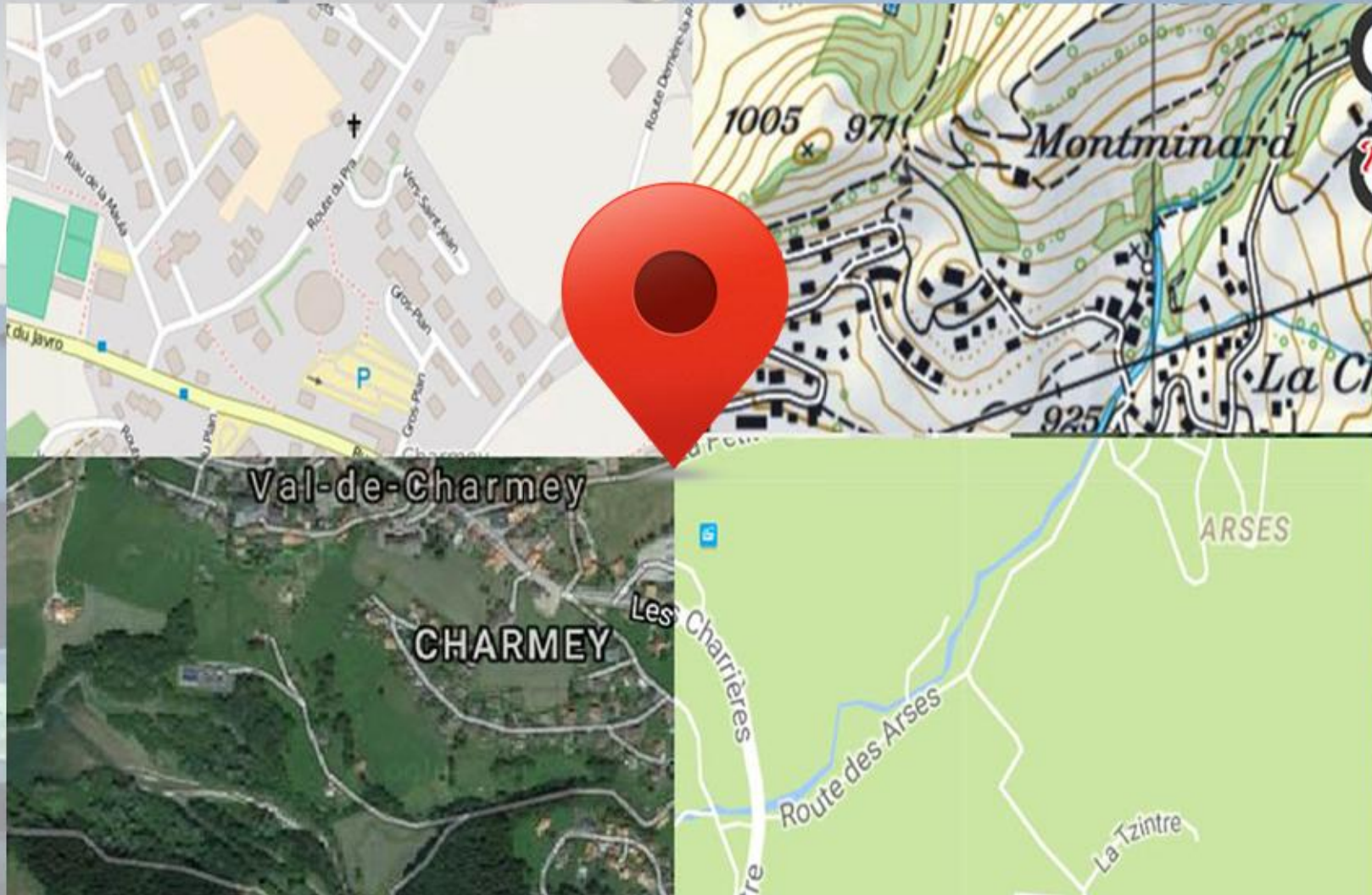
Classe de complexité NP...



Digital twin technology



Mobilité: Rôle de la géolocalisation



Rôle de la **communication**



“A really perfect system of communications would have an inhibiting effect on transportation. ... The future will have to choose between competing superlatives.” *Arthur C. Clarke*

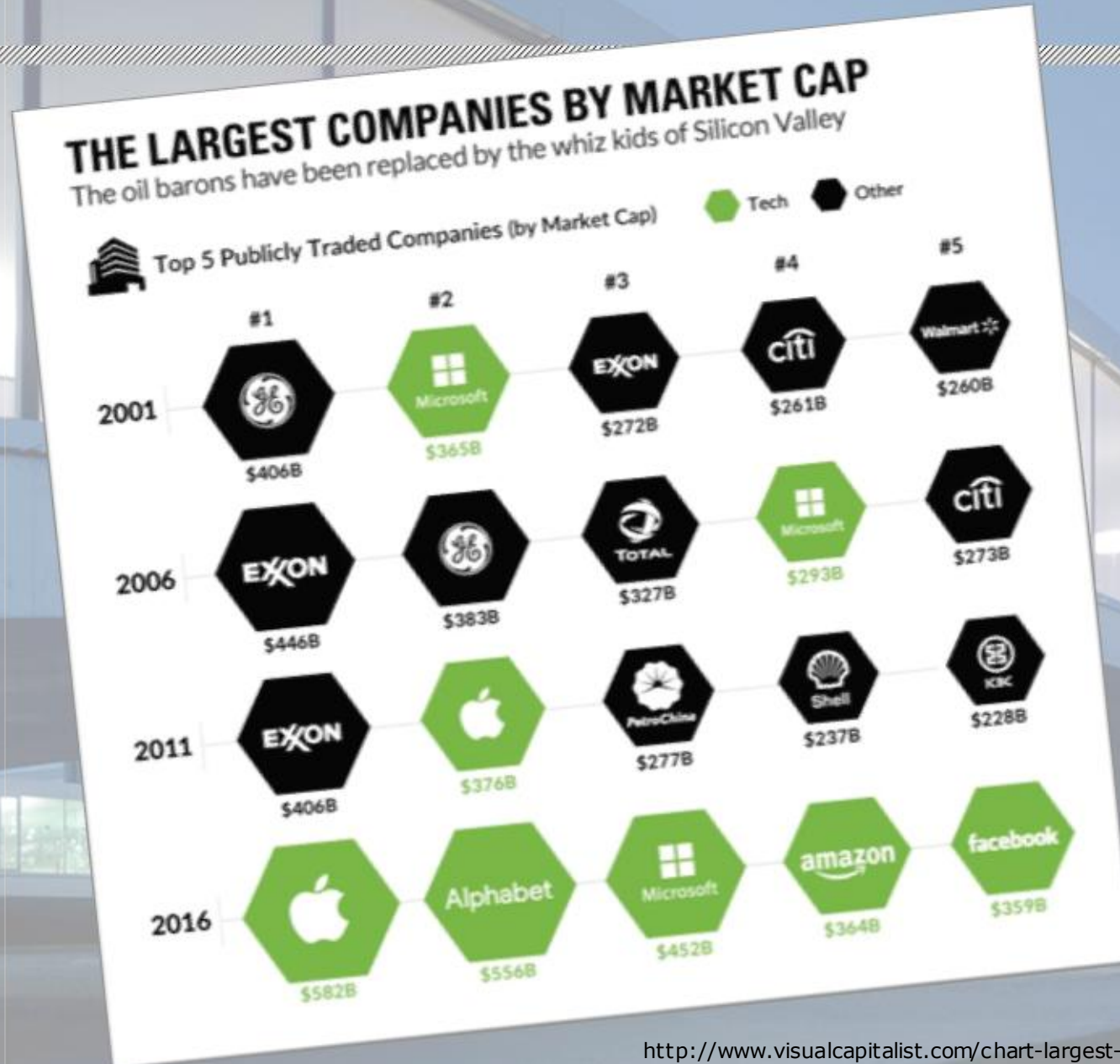
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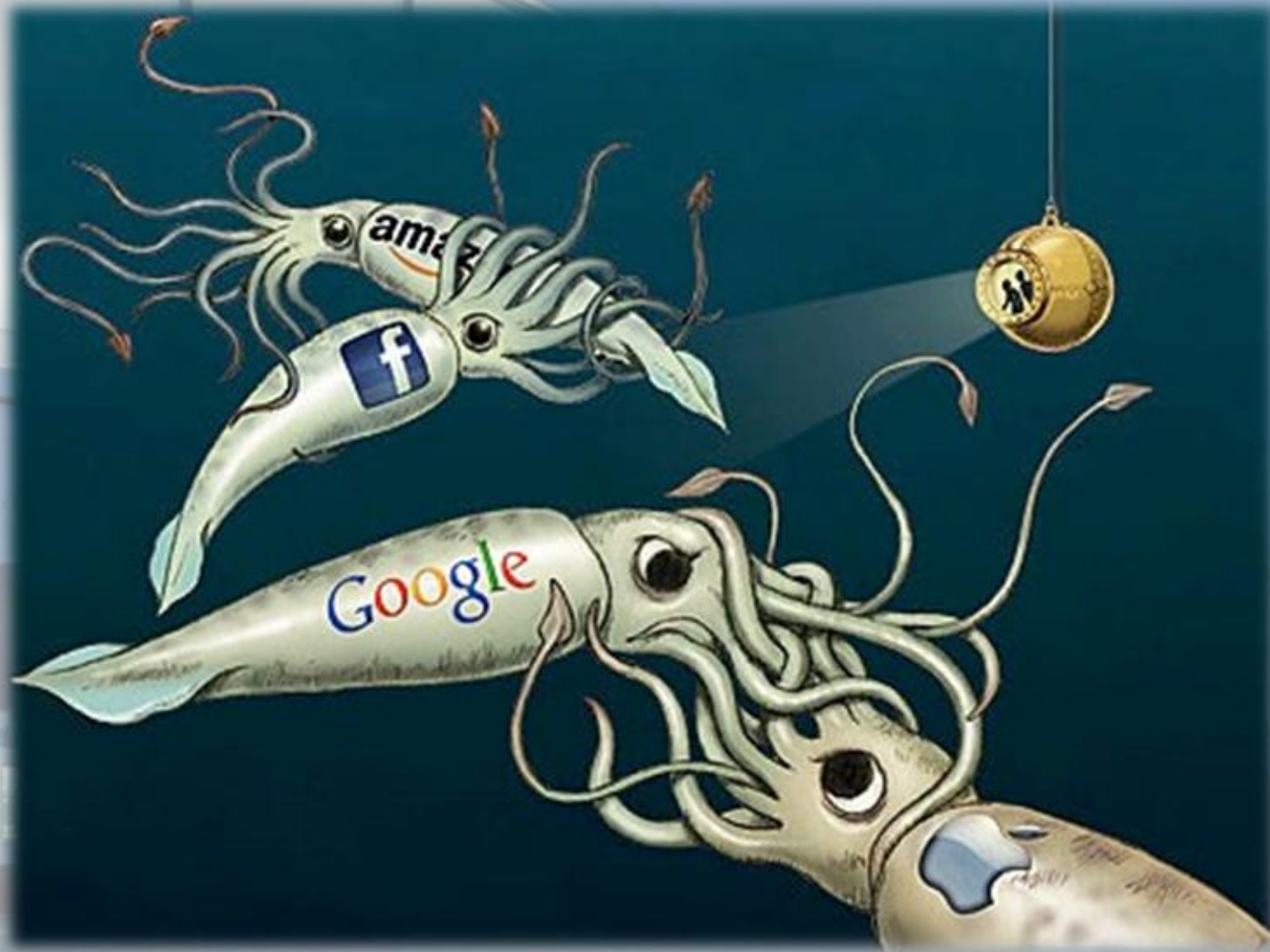
2. Mobilité

3. Risques et opportunités

Economie : 2001 versus 2016



Le combat des géants de la nouvelle économie



Battle of the internet giants
Economist 2012

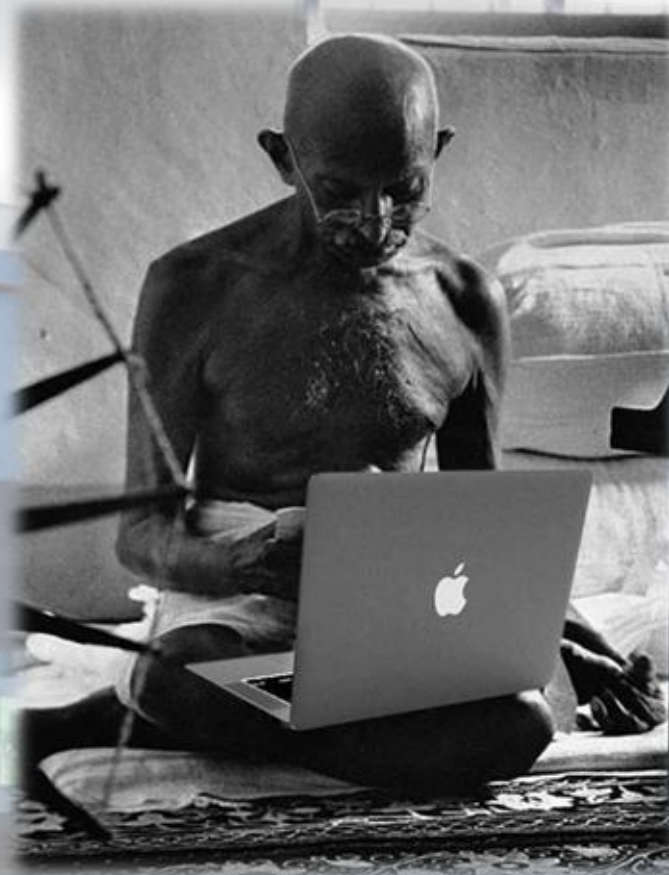
Et pendant ce temps en Europe...



Taming the beasts
Economist, Mai 2016



Le temps du changement est arrivé !



Economie

Renforcer l'innovation
locale et les succès
régionaux.

Formation

IT: Le plus tôt, le mieux!

Recherche

Notre force !

New Management @ EPFL



Merci beaucoup !



"Every day I live in fear that our jobs will be replaced by pillows."

New Yorker