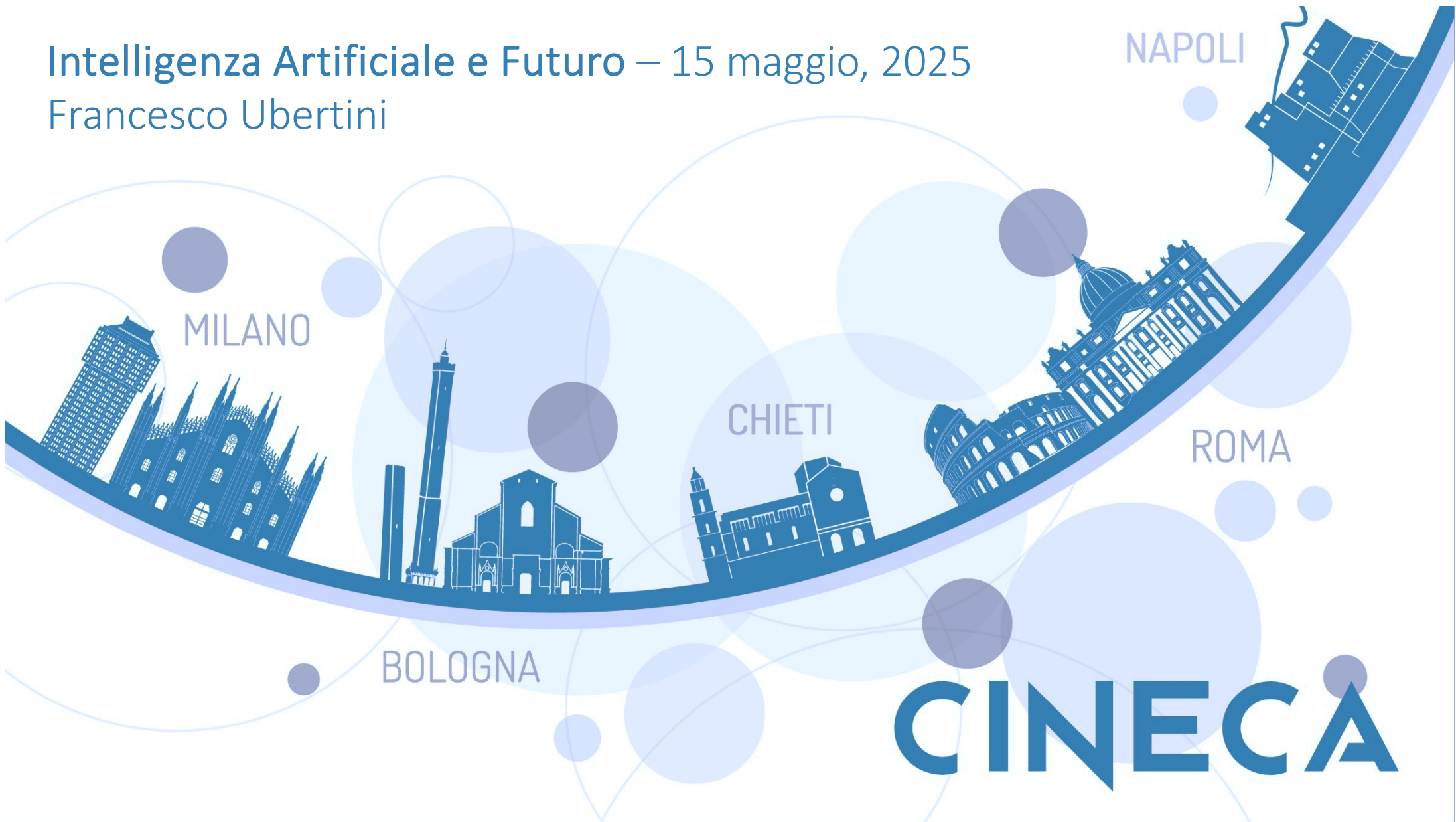


Intelligenza Artificiale e Futuro – 15 maggio, 2025

Francesco Ubertini



TOP COUNTRIES BY COMPUTING POWER

Based on the TOP500 ranking of supercomputers

MAXIMUM PERFORMANCE → **6.5M TFLOPS**
United States 
OF COMPUTERS IN TOP500 RANKING → 172



Where are specialized AI hubs emerging?

Countries outpacing the US on AI funding growth and headcount growth

Country	YoY change in AI equity funding	Median YoY headcount growth*	Select local AI startups gaining traction (recently funded + headcount growth)
 Italy	449%	15%	BENDING SPONS   iGenius
 Australia	174%	19%	SafetyCulture  InDebted  RDC
 Norway	151%	16%	 iX  THORVALD Findable*
 India	33%	11%	 GoKwik  Newspace  HABER
 Switzerland	33%	14%	 OLEM  NEURAL CONCEPT  LatticeFlow
 South Korea	29%	18%	42dot  rebellions_  upstage 

Source: CB Insights data as of 11/8/2024. Excludes countries that received < \$200M in AI funding over the last year. *To measure median headcount growth, we started with 15,000+ AI companies and filtered for those with disclosed change in headcount over the last year, grouped them by HQ, and filtered out countries with fewer than 10 companies meeting the criteria.





EuroHPC
Joint Undertaking



leonardo-supercomputer.cineca.eu

real time check: hpc.cineca.it

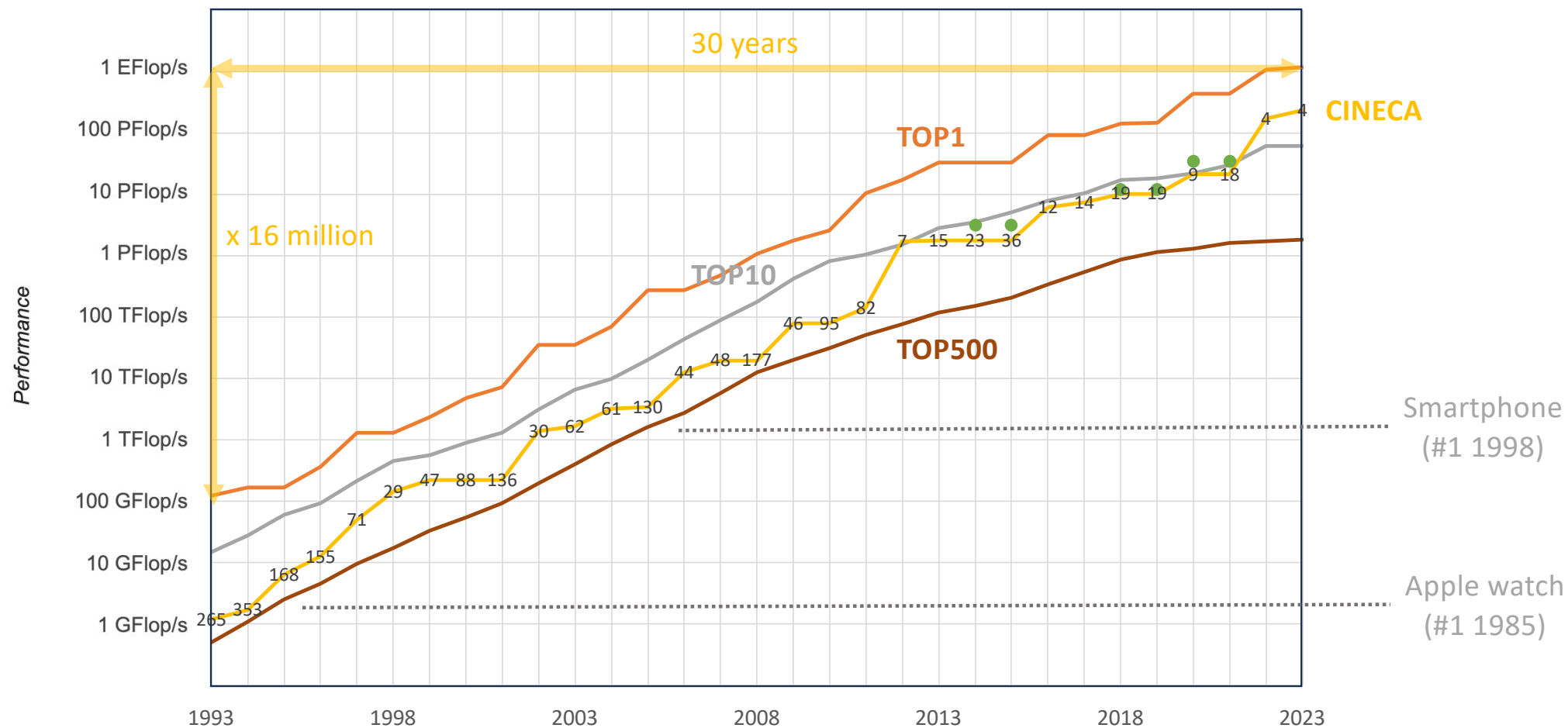
A large supercomputer facility with rows of server racks. The racks are labeled 'LEONARDO' and 'AtoS'. The facility has a high ceiling with exposed pipes and lights.

30	TRUCKS	2.800 TB	RAM
155	RACKS	160 KM	NETWORK LENGTH
600 M ²	FOOTPRINT	5.000	COMPUTING NODES
4.700	PEOPLE WEIGHT	14.000	NVIDIA GPU _s
110 PB	STORAGE	250 ME	TOTAL COST

FAST, BIG & ENERGY INTENSIVE

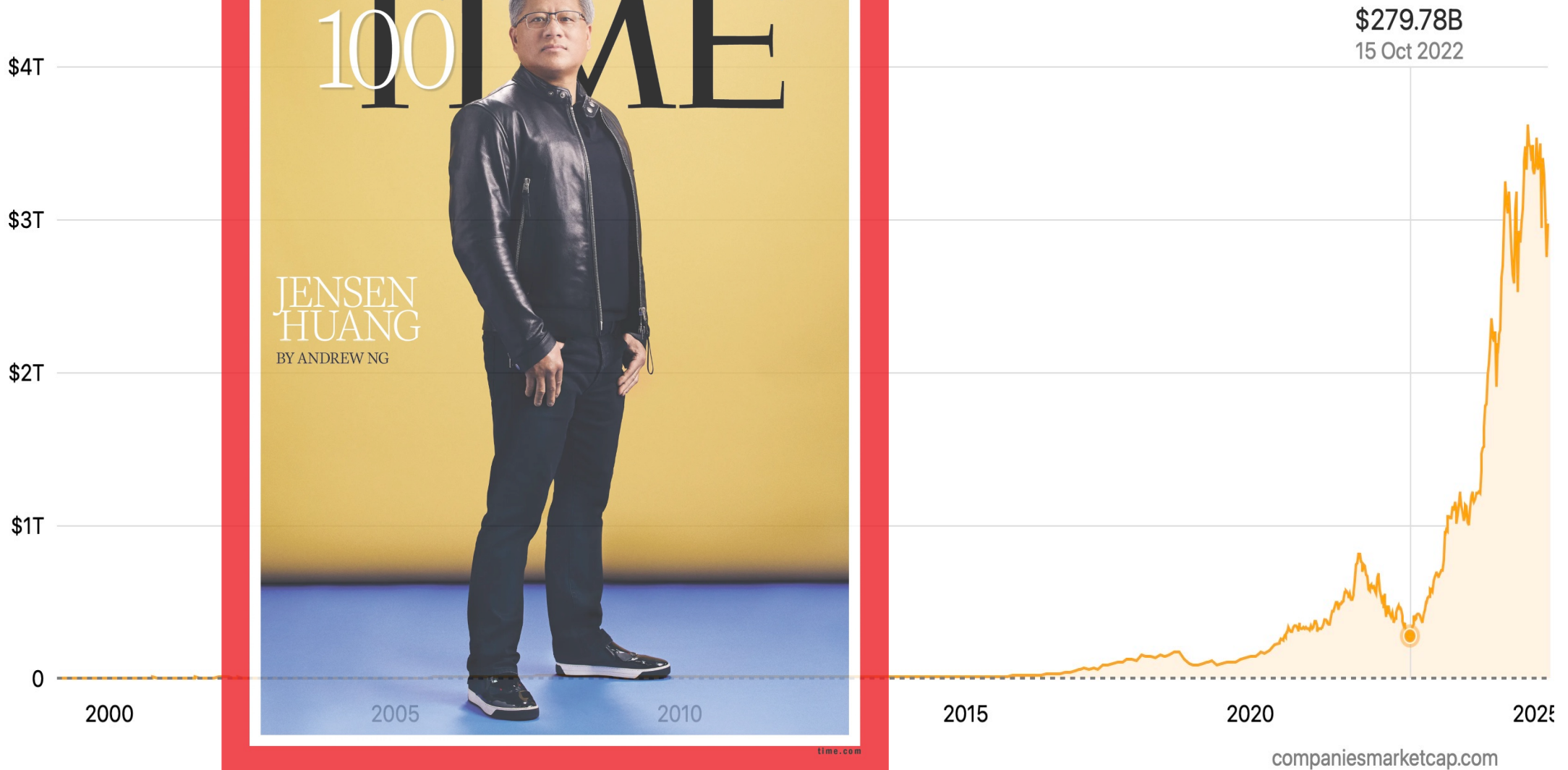
HOW FAST IS FAST?

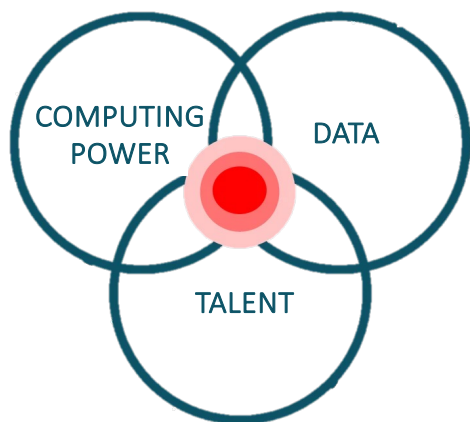
250.000.000.000.000.000 FLOPS



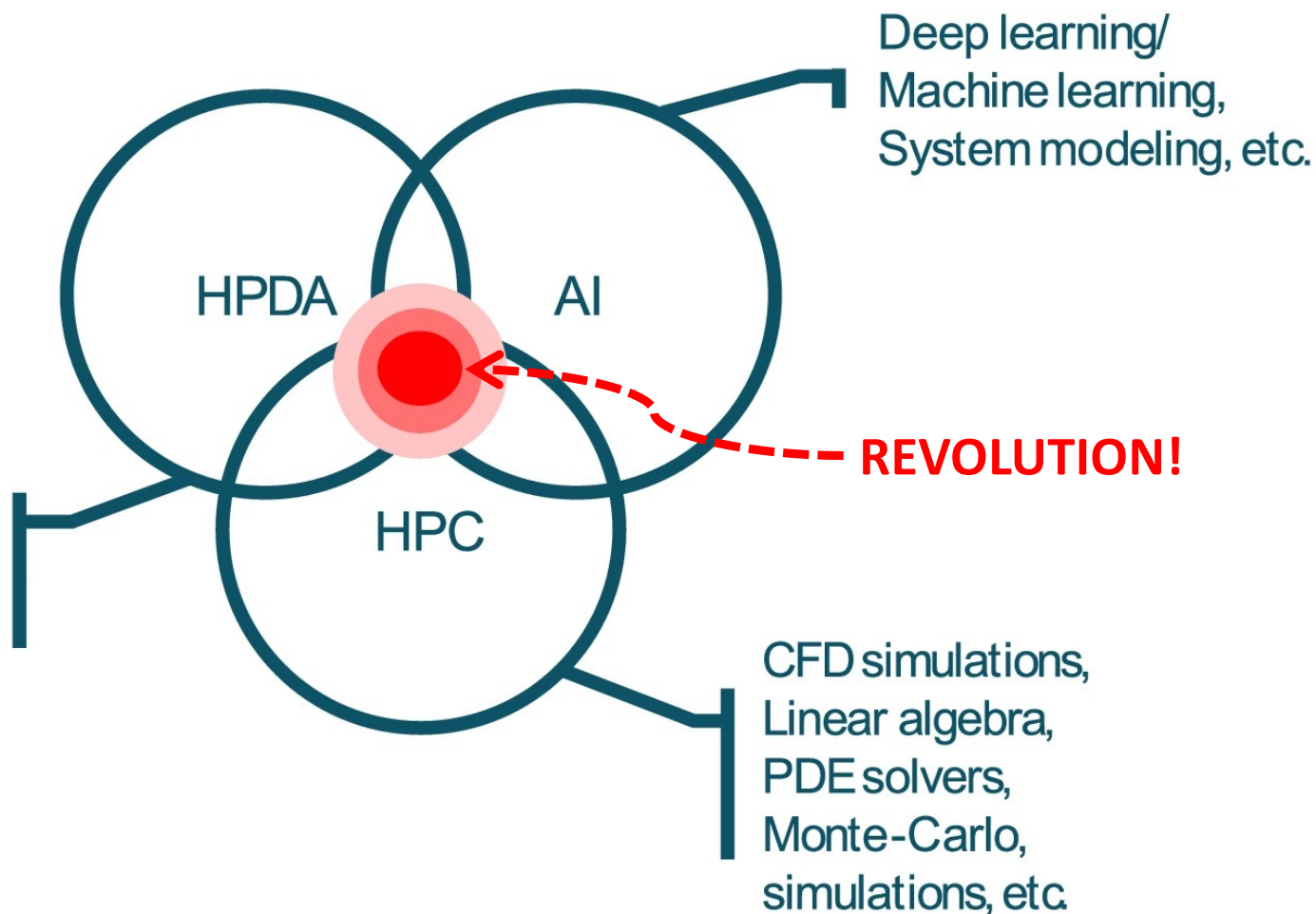
simulation
big
ai
digital
twins
data
design
climate
precision
material
observations
molecular
in-silico
fraud
quantum
vehicle
sustainability
finance
cybersecurity
urban
extreme
detection
space
engineering
health
neuroscience
astrophysics
urgent
medicine
arts
language
science
cosmo
fluid
planning
earth
models
humanities
forecasts
smart
future
disasters
energy
cities
geophysics
drug
agriculture
cultural
heritage
society
particle
large
weather
renewable
genomics
manufacturing
predictive
environment
natural
chips
computing
physics
mobility
nuclear
fusion
biodiversity
dynamics

EPOCA DI CAMBIAMENTI
CAMBIAMENTO D'EPOCA





Monitoring, Classification,
Anomaly detection,
Hypothesis testing,
Clustering, Optimization,
Signal processing, etc.



QUESTION ANSWERING

ARITHMETIC



LANGUAGE UNDERSTANDING

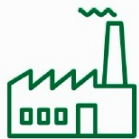
8 billion parameters

HPC system / AI model	Meluxina - LU (18 petaflops peak performance)	LUMI - FI (550 petaflops peak performance)	Leonardo – IT* (323 petaflops peak performance)
Falcon 40 bn parameters	50 days	4 days	3 days
LLaMA (META) 65 bn parameters	80 days	7 days	5 days
GPT-4 (OpenAI) Hundreds of bn parameters	6 years	6 months	4 months

“Le tecnologie digitali stanno facendo per il cervello umano quello che la macchina a vapore e le relative tecnologie hanno fatto per la forza muscolare umana durante la Rivoluzione Industriale.”

Erik Brynjolfsson and Andrew McAfee

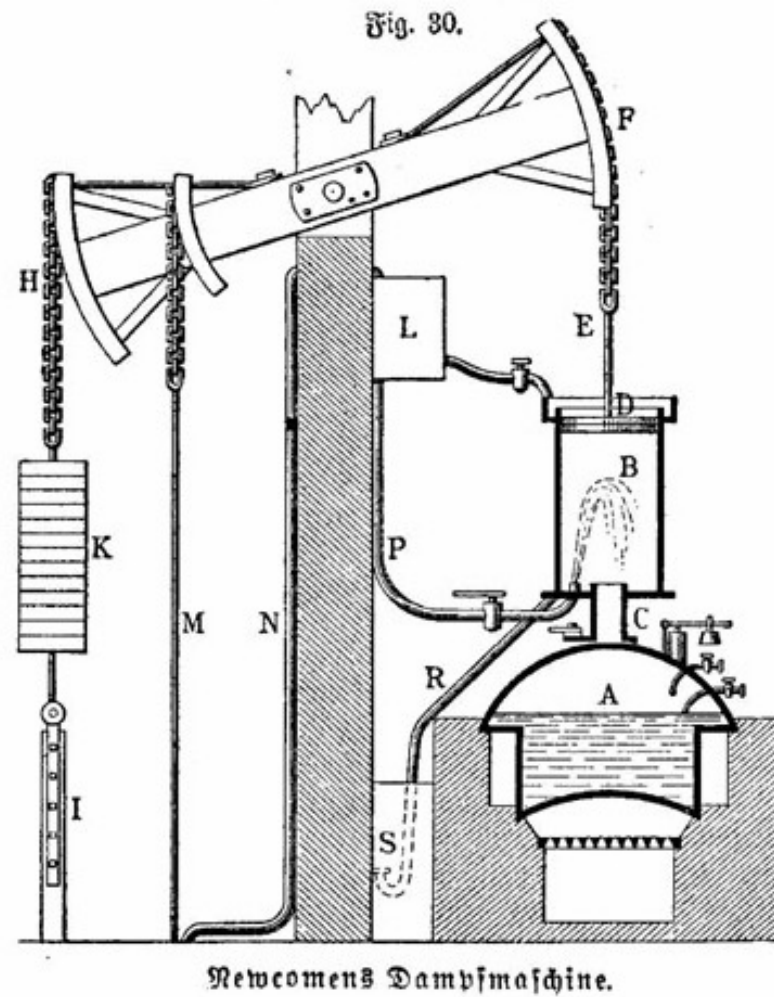
VELOCITÀ!



Rivoluzione industriale	Prima	Seconda	Terza	Quarta
Periodo storico	1784-1840	1870-1914	1969-2000	Adesso
Driver tecnologico	Macchina a vapore	Elettrificazione	Elettronica e sistemi informativi	Sistemi cibernetici
Cambiamento organizzativo	Nascita delle fabbriche	Divisione del lavoro	Lean manufacturing	Platform-thinking
Impatto industriale	Meccanizzazione	Produzione di massa	Automazione	Fabbrica intelligente

Macchine che
sostituiscono i
muscoli

Macchine che
coadiuvano il
cervello



SIAMO SOLO
ALL'INIZIO ...

La macchina di Newcomen, 1705

The future of European competitiveness

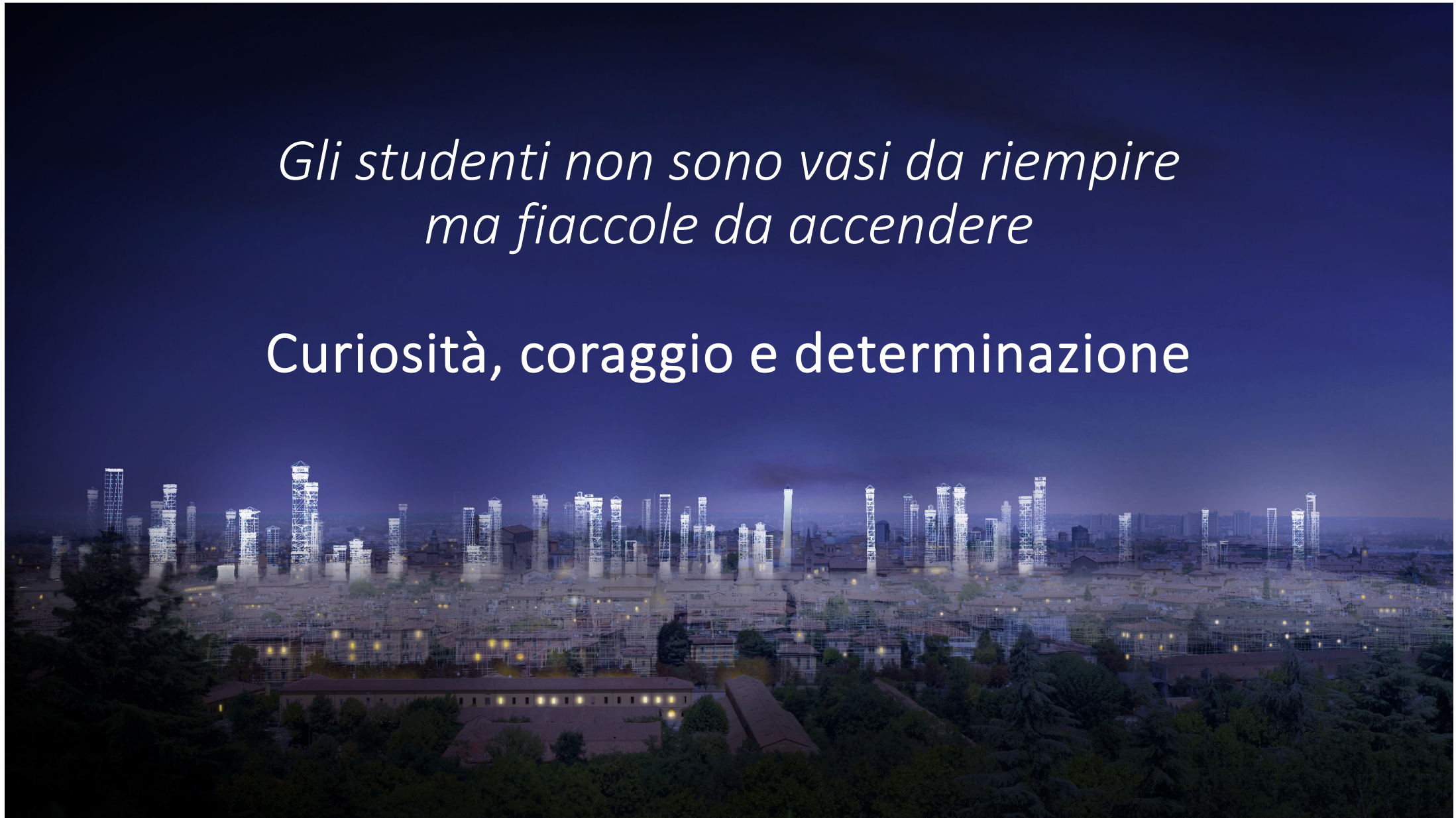
Part A | A competitiveness strategy for Europe

SEPTEMBER 2024



*Gli studenti non sono vasi da riempire
ma fiaccole da accendere*

Curiosità, coraggio e determinazione



November 2023



UNITED NATIONS
UNIVERSITY

INFRA-
STRUCTURE

RESEARCH
EDUCATION

INNOVATION

T

HPDA

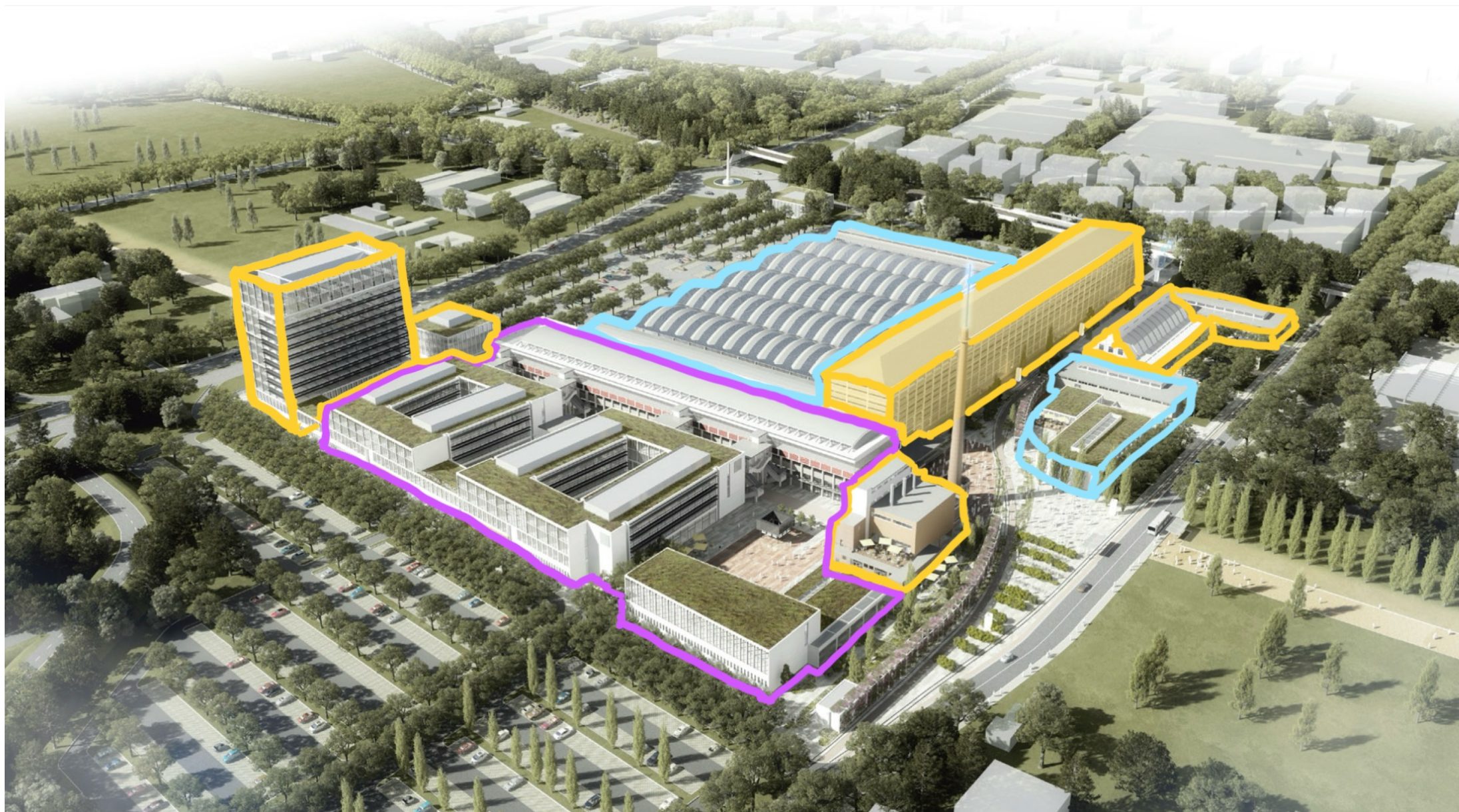
AI

HPC



Comune
di Bologna

Regione Emilia-Romagna



NOT-FOR-PROFIT CONSORTIUM

SINCE 1969 CINECA SUPPORTS THE ITALIAN HE&R SYSTEM



117 MEMBERS

2 Ministries, 70 Universities, 9 University Hospitals-IRCCS
31 Research and HE Institutions, 5 National Agencies



5 OFFICES

Bologna, Milan, Rome, Naples, Chieti



1000+

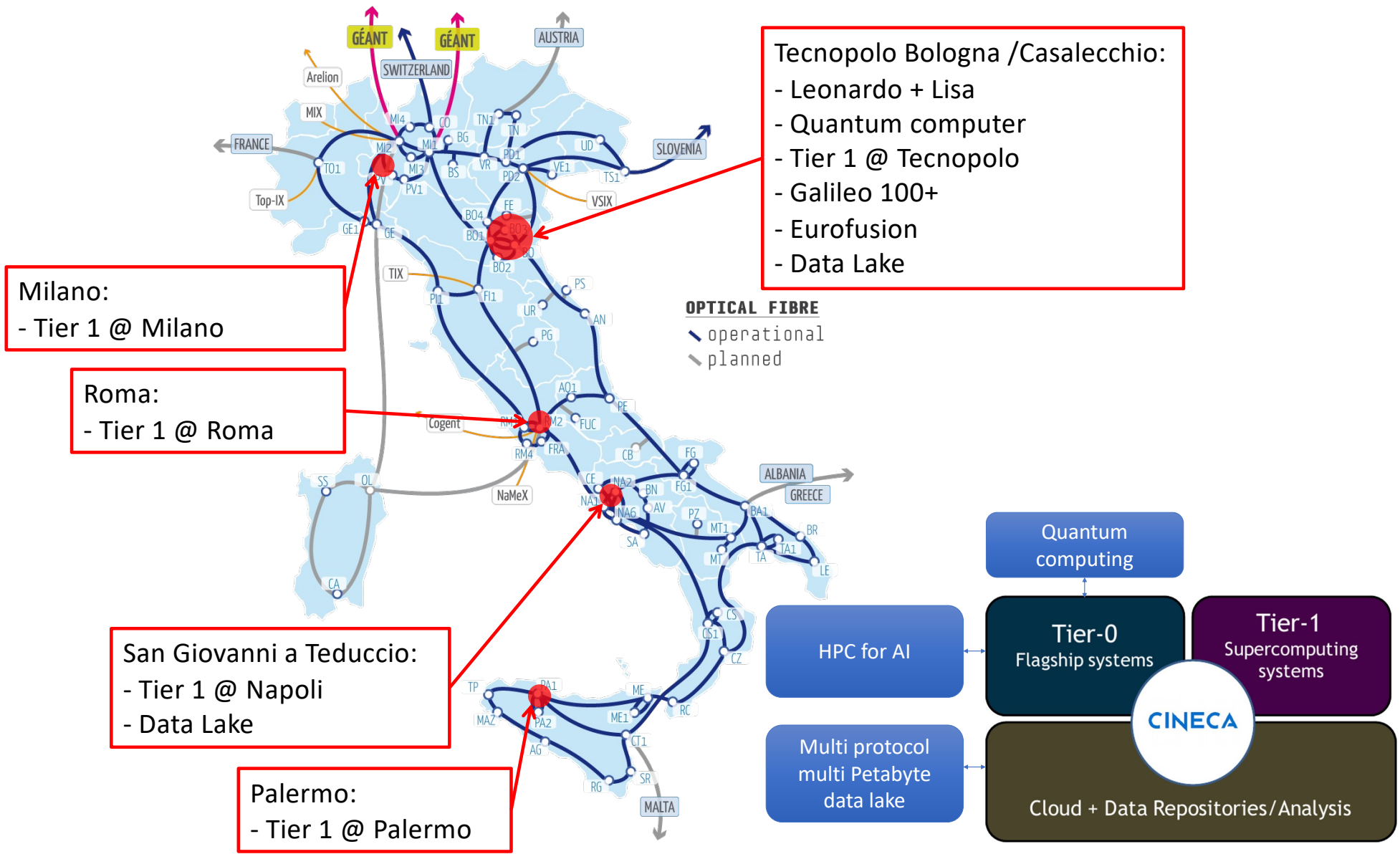
Employees



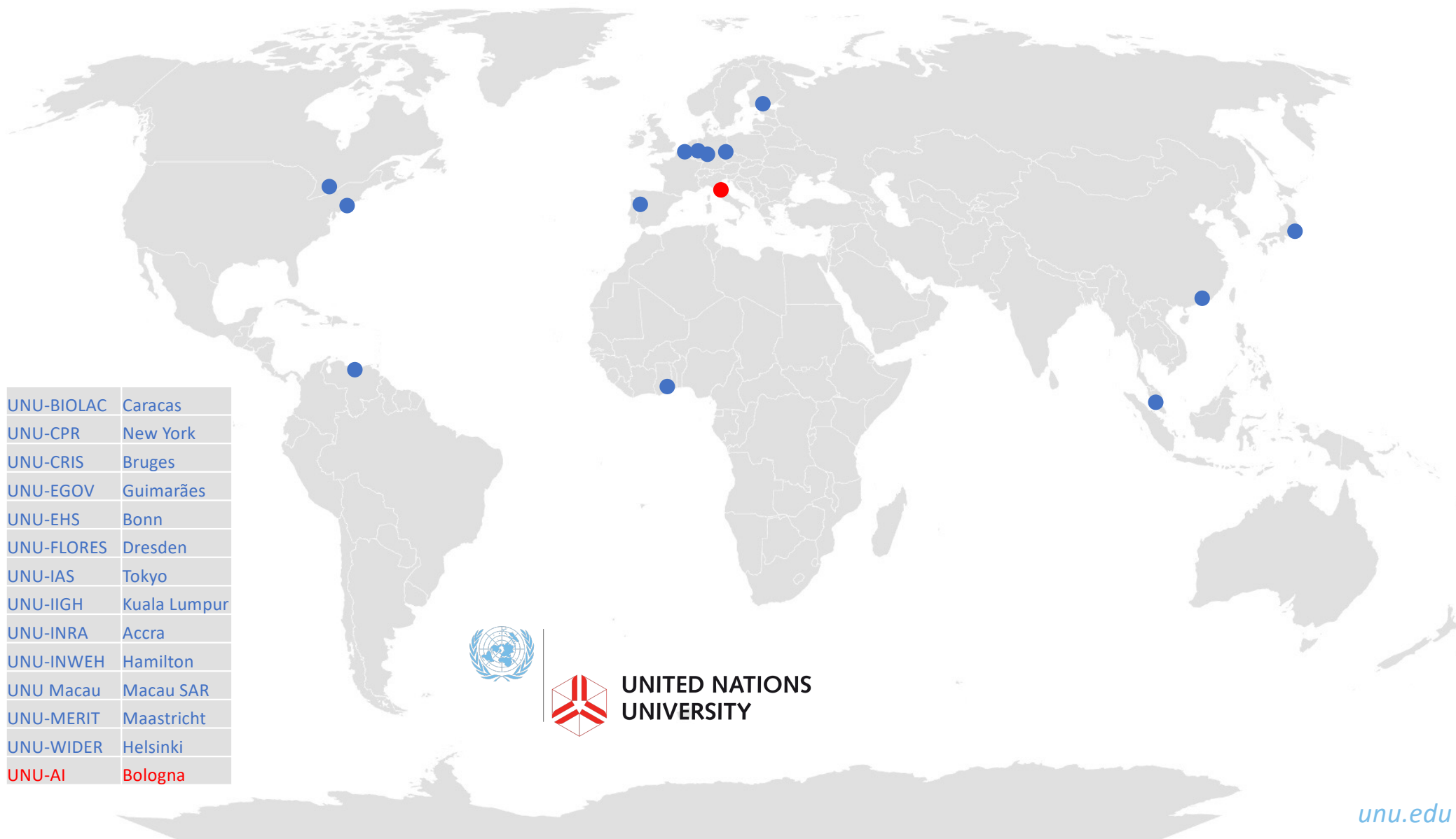
140+ MLN €

Yearly Revenue









UNU-BIOLAC	Caracas
UNU-CPR	New York
UNU-CRIS	Bruges
UNU-EGOV	Guimarães
UNU-EHS	Bonn
UNU-FLORES	Dresden
UNU-IAS	Tokyo
UNU-IIGH	Kuala Lumpur
UNU-INRA	Accra
UNU-INWEH	Hamilton
UNU Macau	Macau SAR
UNU-MERIT	Maastricht
UNU-WIDER	Helsinki
UNU-AI	Bologna

