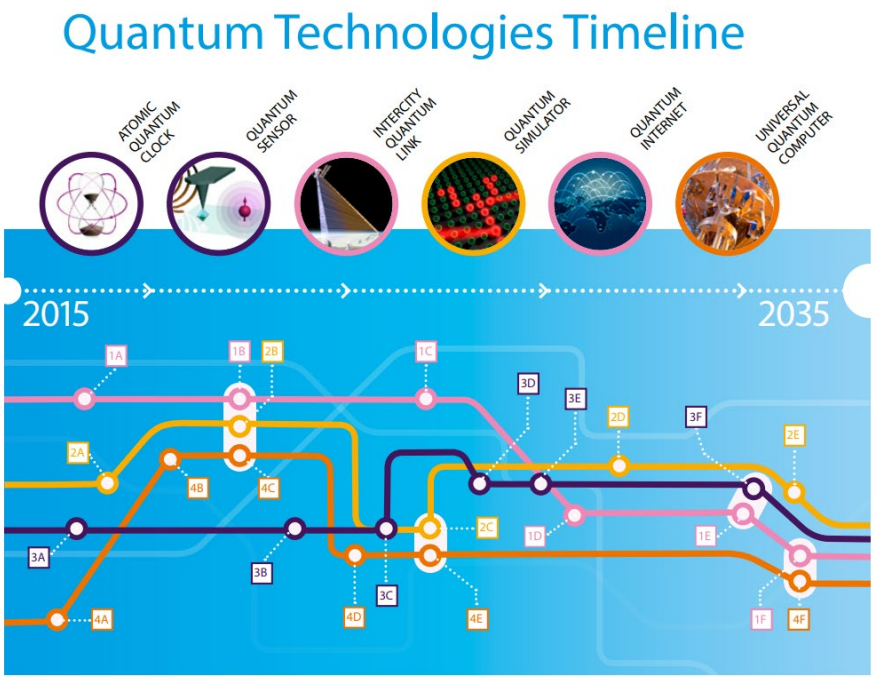
30 years of Poznan Supercomputing and Networking Center

61-139 Poznań
ul. Jana Pawła II 10
phone: (+48 61) 858-20-01
fax: (+48 61) 852-59-54
office@man.poznan.pl
www.psnc.pl

Piotr Rydlichowski

EuroQCI and EuroQCS activities - path toward unified quantum communication and computing research infrastructures

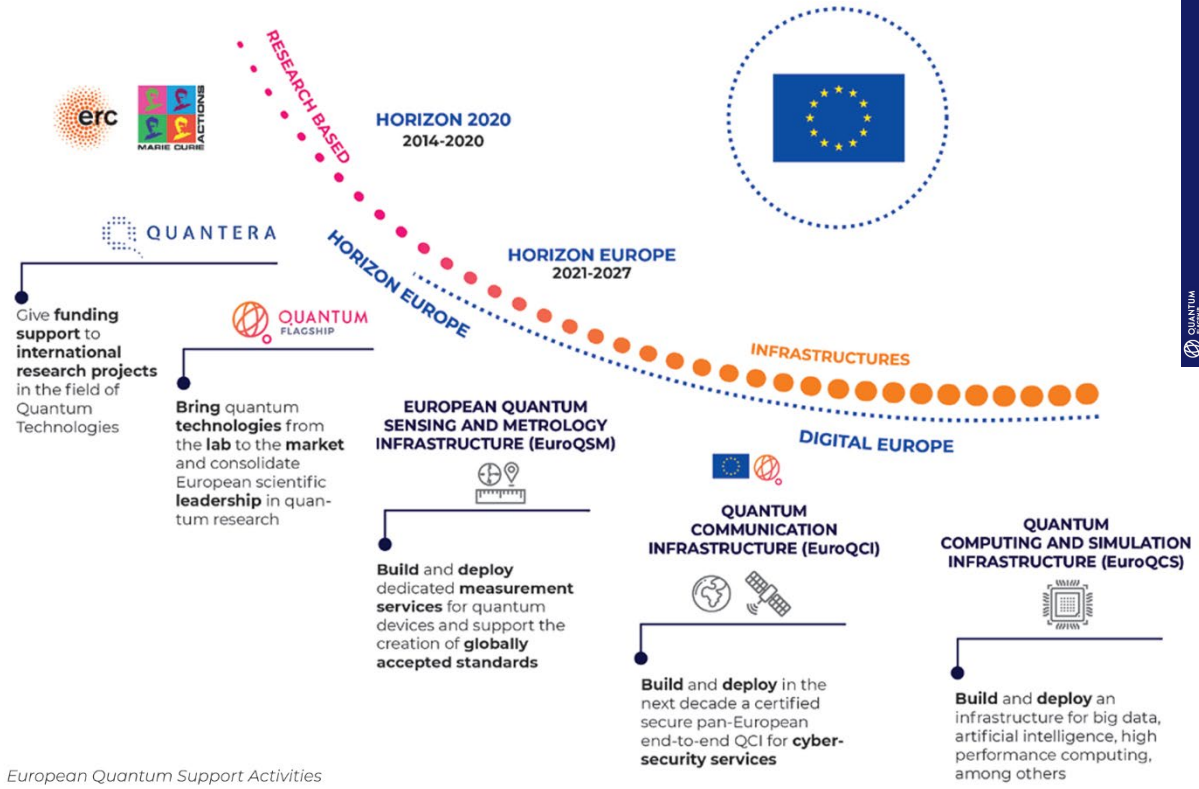
Quantum Technologies



https://qt.eu/app/uploads/2018/04/93056_Quantum-Manifesto_WEB.pdf

	1. Communication	2. Simulators	3. Sensors	4. Computers
0 – 5 years	A Core technology of quantum repeaters B Secure point-to-point quantum links	A Simulator of motion of electrons in materials B New algorithms for quantum simulators and networks	A Quantum sensors for niche applications (incl. gravity and magnetic sensors for health care, geosurvey and security) B More precise atomic clocks for synchronisation of future smart networks, incl. energy grids	A Operation of a logical qubit protected by error correction or topologically B New algorithms for quantum computers C Small quantum processor executing technologically relevant algorithms
5 – 10 years	C Quantum networks between distant cities D Quantum credit cards	C Development and design of new complex materials D Versatile simulator of quantum magnetism and electricity	C Quantum sensors for larger volume applications including automotive, construction D Handheld quantum navigation devices	D Solving chemistry and materials science problems with special purpose quantum computer > 100 physical qubit
> 10 years	E Quantum repeaters with cryptography and eavesdropping detection F Secure Europe-wide internet merging quantum and classical communication	E Simulators of quantum dynamics and chemical reaction mechanisms to support drug design	E Gravity imaging devices based on gravity sensors F Integrate quantum sensors with consumer applications including mobile devices	E Integration of quantum circuit and cryogenic classical control hardware F General purpose quantum computers exceed computational power of classical computers

Quantum Technologies



European Quantum Support Activities

https://qt.eu/app/uploads/2020/04/Strategic_Research-_Agenda_d_FINAL.pdf

Quantum Communication

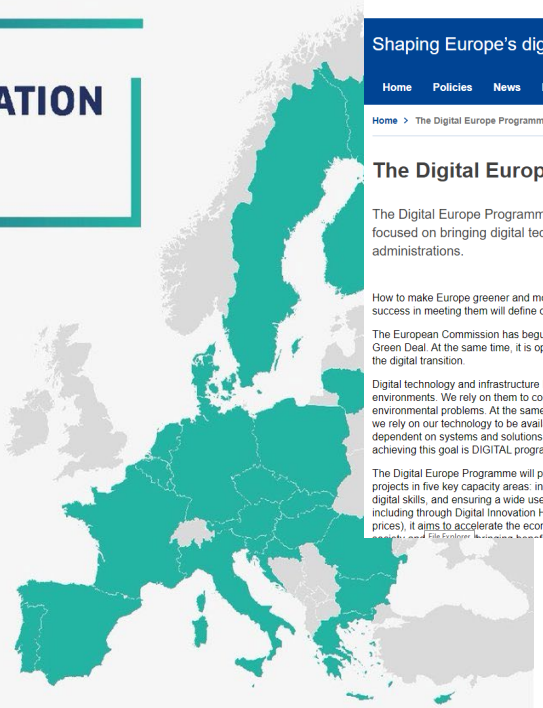
EuroQCI and Digitial Europe – start of projects in January 2023

DECLARATION ON A
QUANTUM COMMUNICATION INFRASTRUCTURE
FOR THE EU

24 Member States
have signed a declaration agreeing to **work together** to explore how to **build a quantum communication infrastructure** (QCI) across Europe, boosting European capabilities in **quantum technologies, cybersecurity and industrial competitiveness.**

The countries taking part in the initiative are **Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.**

@FutureTechEU #EuroQCI



PSNC 30
30 YEARS OF POZNAŃ SUPERCOMPUTING AND NETWORKING CENTER

Quantum Communication

EuroQCI and Digitial Europe – start of projects

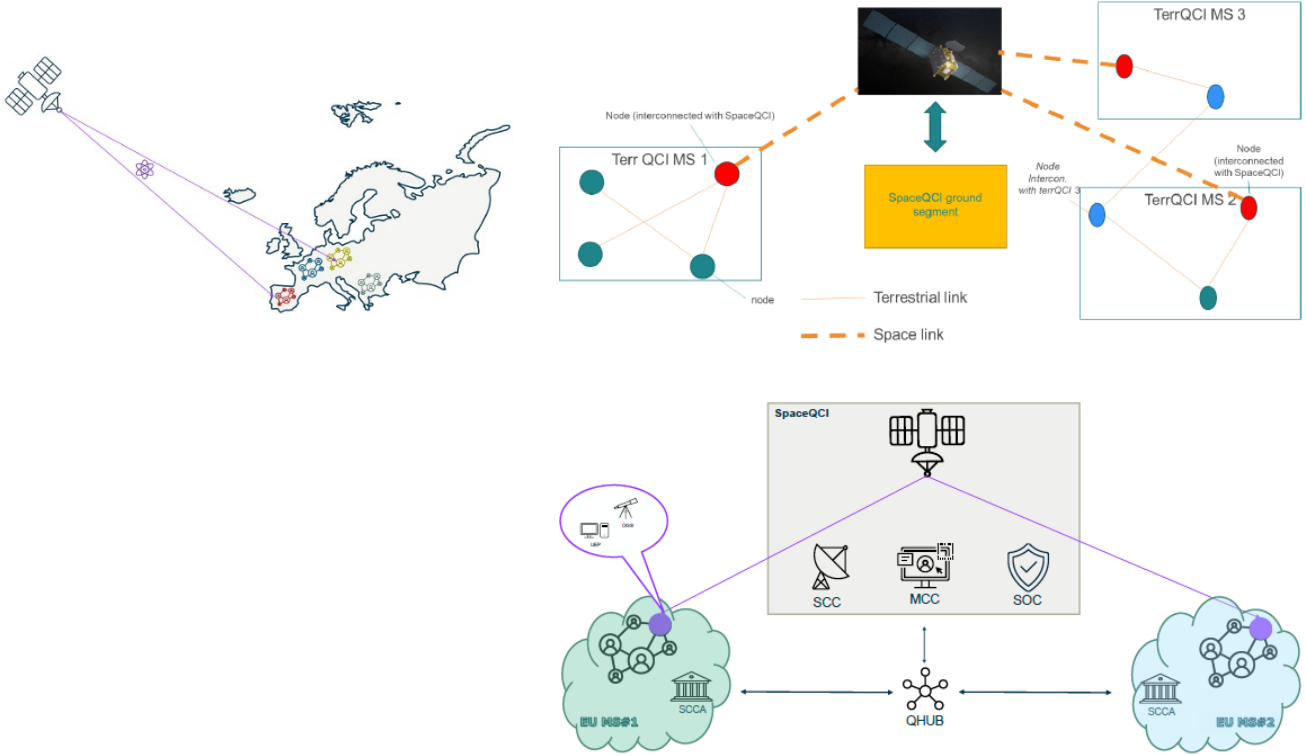
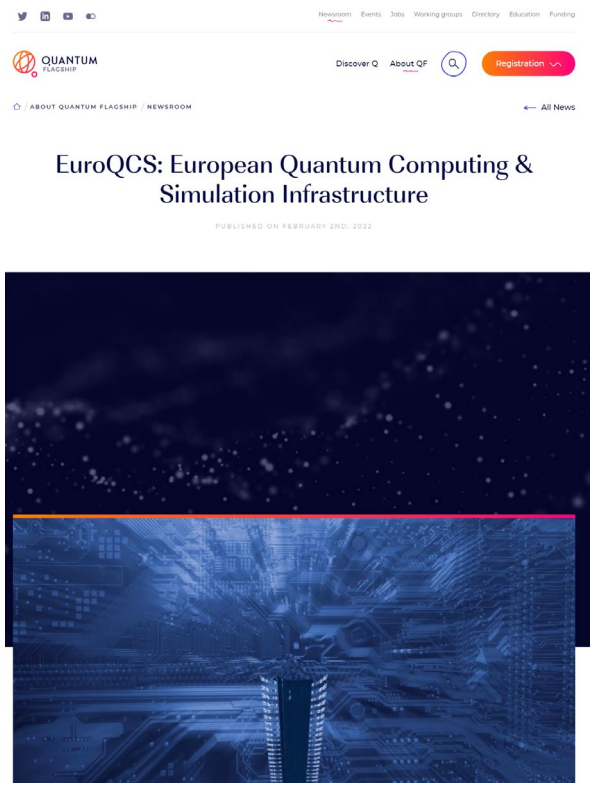


Figure 2: Overview of EuroQCI and its main elements

https://digital-strategy.ec.europa.eu/en/euroqci-conops-concept-operations

Quantum Computing

EuroQCS – start of projects in 2023



EuroQCS

European Quantum Computing & Simulation Infrastructure

Authors: D. Binosi[1,2], T. Calarco[2*], G. Colin de Verdière[3], S. Corni[4], A. Garcia-Saez[5], M.P. Johansson[6], V. Kannan[7], N. Katz[8], I. Kerenidis[9], J.I. Latorre[5], Th. Lippert[2*], R. Mengoni[10], K. Michielsen[2*], J.P. Nominé[3], Y. Omar[11], P. Öster[6], D. Ottaviani[10], M. Schulz[12,13], L. Tarruell[14].

1. European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Italy
2. Forschungszentrum Jülich (FZJ), Germany
3. Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France
4. University of Padua and CNR Institute of Nanoscience, Modena, Italy
5. Barcelona Supercomputing Centre (BSC), Spain
6. CSC – IT Center for Science, Finland
7. Irish Centre for High-End Computing (ICHEC), Ireland
8. The Hebrew University of Jerusalem, Israel
9. Centre National de la Recherche Scientifique (CNRS), France
10. Consorzio Interuniversitario del Nord est Italiano Per il Calcolo Automatico (CINECA), Italy
11. University of Lisbon, Portugal
12. Leibniz Supercomputing Centre (LRZ), Germany
13. Technical University of Munich (TUM), Germany
14. Institute of Photonics Science (ICFO), Spain

* Editing authors

https://qt.eu/about-quantum-flagship/newsroom/european-quantum-computing-simulation/

Quantum Computing

EuroQCS and EuroHPC

EuroHPC Joint Undertaking

Search

The European High Performance Computing Joint Undertaking (EuroHPC JU)

Home | About | Participate | News | Events | Media | Documents | Contact

Home > About > Our supercomputers

Our supercomputers

Today the EuroHPC JU has procured eight supercomputers, located across Europe.

PAGE CONTENTS

- LUMI
- LEONARDO
- MARENOSTRUM 5
- VEGA
- MELUXINA
- KAROLINA
- DISCOVERER
- DEUCALION

LUMI

LUMI is a pre-exascale EuroHPC supercomputer located in Kajaani, Finland. It is a Cray EX supercomputer supplied by Hewlett Packard Enterprise (HPE) and hosted by CSC – IT Center for Science.

LUMI supercomputer
CSC (Image credits: Fade Creative)

375 petaflops	550 petaflops
Sustained performance	**Peak performance**

Compute partitions:	GPU partition (LUMI-G), x86 CPU-partition (LUMI-C), data analytics partition (LUMI-D), container cloud partition (LUMI-K)
Central Processing Unit (CPU):	The LUMI-C partition features 64-core next-generation AMD EPYC™ CPUs
Graphics Processing Unit (GPU):	LUMI-G based on the future generation AMD Instinct™ GPU

https://eurohpc-ju.europa.eu/about/our-supercomputers_en

Quantum Computing

EuroQCS and EuroHPC

EuroHPC Joint Undertaking

Search

The European High Performance Computing Joint Undertaking (EuroHPC JU)

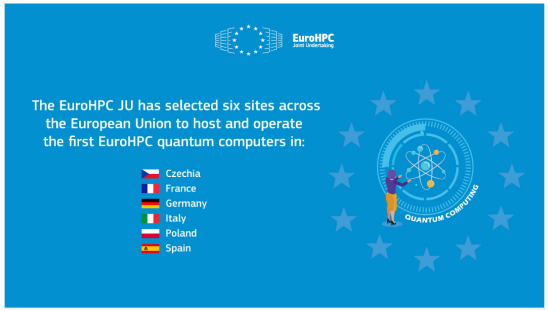
Home | About | Participate | News | Events | Media | Documents | Contact

Home > Selection of six sites to host the first European quantum computers

PRESS RELEASE | 4 October 2022 | European High-Performance Computing Joint Undertaking

Selection of six sites to host the first European quantum computers

The European High Performance Computing Joint Undertaking (EuroHPC JU) has selected six sites across the European Union (EU) to host and operate the first EuroHPC quantum computers: Czechia, Germany, Spain, France, Italy, and Poland.



EuroHPC JU

https://eurohpc-ju.europa.eu/selection-six-sites-host-first-european-quantum-computers-2022-10-04_en

Poznań Supercomputing and Networking Center

61-139 Poznań
ul. Jana Pawła II 10
phone: (+48 61) 858-20-01
fax: (+48 61) 852-59-54
office@man.poznan.pl
www.psnc.pl