Report on the Quantum Flagship kickoff

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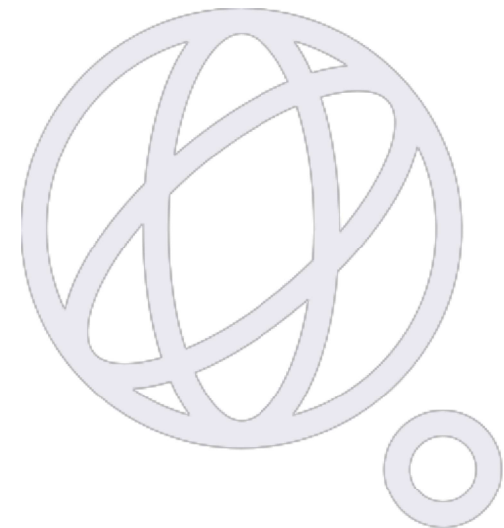
Videos available online

https://qt.eu/news/live-stream-for-quantum-technology-kickoff-meeting-in-vienna/

Quantum Flagship kickoff in numbers

- *Participants (based on the number of registration):*
  - Day 1: 439
  - Day 2: 320
- *Types:*
  - Paricipant of funded project: 175
  - Member of day 2 working groups: 91
  - European commission and institutions: 13
  - National government: 43
  - Press: 9
  - Other academia: 150
  - Other: 63

36 countries; 70 Industry participants
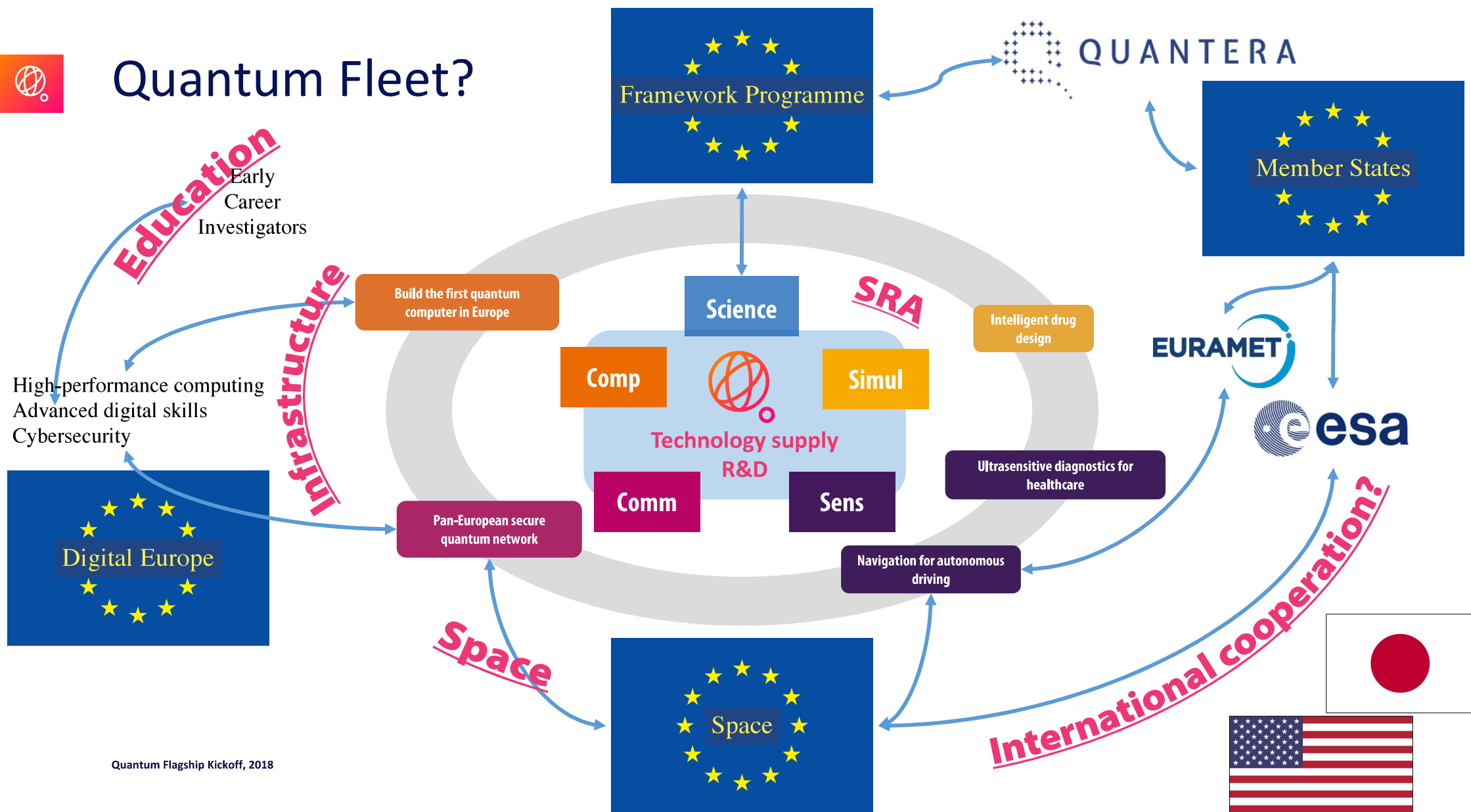
Open floor discussion, October 29th

- *What is the role of Basic Science in the flagship? Is it going to disappear?*
  - Basic Science is vital for the initiative but is not its main focus.
  - Basic Science is an integral part of every proposal that has been funded: key resource within each project in any of the application pillar, so it is definitely not going to disappear in the Flagship
  - Evaluation of the ramp-up phase projects: usual EU peer-review process (assessing excellence, impact and implementation) with no strategic criteria factored in; this can be changed

- *Is there a European official policy on international cooperation on QTs, especially given the current international situation?*
  - No official EU policy on International cooperation in QT; very complex problem starting to be addressed
  - Differences in investments:
    - US: federal investments (DARPA, IARPA, DOE and the likes) and National Labs, plus private companies (Intel, IBM, Google, etc.) which can pour resources in the field without fearing failure
    - China: money is not even an issue; expertise might be, but they are closing the gap
  - EC aware of this and not willing to depend on non-EU providers for critical components, being hardware and/or software, of the future Digital Single Market
  - EC is willing to listen to the ideas from the QT community to setup asap a strategy

Open floor discussion, October 29th

- *Around 100 ideas were not funded in this call; what can be done for not wasting the relevant ones? And, connected to this, how can new partners be included in the existing efforts?*
  - Details of the submitted proposals not disclosed
  - QT Community should come up with a list of topics (per pillar) that for strategic reasons are considered to be a must for the success of the QT Flagship
    - Example: scalability/miniaturization of quantum systems compatible with the fabrication techniques of the semiconductor industry being considered for an additional call under the QT Flagship
  - QT Community should discuss and propose additional instruments/approaches/measures that could be implemented in future calls (post ramp-up phase)

- *Are there new measures foreseen for Small and Medium Enterprises?*
  - EU double role of SMEs and start-ups: create new jobs; convert QTs into commercially viable products, ultimately bringing the flagship results to the EU citizens
  - QT industry community should propose new measures to help and stimulate SMEs, and push for them to be implemented.

Strategic Research Agenda Working Group, October 30th

- *Presentation and discussion on*
  - Where we are at and what is missing after the announcement of first FS projects
  - Relevance of 3, 6, 10 year challenges
  - The role and added value of Basic Science and cross cutting activities
- *Outcomes relevant for the BoF*
  - Key areas are missing underlining the need for strategic decision making in the process (SAB in the future)
  - 2-stage proposal submission proposed as mechanism to help ensure SRA is addressed. Could also allow grouping of proposals/partners.
  - Need to facilitate inclusion of non-funded community. e.g. EU/National programmes but also QuantEra can not do everything.
  - Engineering, materials, fabrication and packaging facilities are fragmented - needs federation to scale up QT across all areas.
  - Startup accelerator programmes needed for fast and flexible funding to bring in new capabilities and grow the supply chain
  - Certification & standards across all areas is required. This is a long term process and needs dedicated effort and funding.
  - Education and training seen as key tasks to ensure the needed quantum aware workforce
  - Need for more societal engagement, not just outreach, to understand how QT services will be accepted - improve technology uptake.
  - Academic and Industry communities agree that basic science is necessary for sustainable QT industries and markets.
  - Synergies need to be found and instruments developed for the FS to work with other programmes and initiatives

Innovation Working Group, October 30th

- *Connect with existing trade or professional associations*
  - Connection with new platforms and organizations were suggested:
    - professional associations in communication, computing, medicine
    - Scientific societies (IOP, EPS)
    - EU programs on process industry (EPOS), Embedded Intelligent Systems (Artemis)
    - Organizations from the end-user side
  - Classify the platforms depending on whether they are transverse or focused to a specific field
- *Promote workshops with sessions devoted to applications*
  - dedicated to a specific sector
  - to support start-ups/spin-offs,
  - at non-quantum industry events,
  - showcase day for venture capitalists with start-ups from the Quantum Flagship
- *Connect potential start-up creators with business incubators / accelerators / innovation boot camps / venture capital*
  - Provide training/education for young professionals: entrepreneurship, write a business plan
  - Help VCs invest in start-ups. Run showcase events for start-ups with VCs
  - Make access to facilities easier for start-ups
  - Address the shortage of skills that start-ups face (Issue with young talents setting up their businesses abroad)

Innovation Working Group, October 30th

- *Connect European technology/ nanofabrication and nano-manipulation platforms amongst each other and with Start-ups and SMEs*
  - Consider platforms able to develop new processes specific to quantum technologies
  - Identify specialists who can act as broker between the quantum community and facilities/ platforms
  - Use organisations that are working with different platforms to gain access to them
  - Look at the foundries roadmap, which already include ideas/strategies to include quantum technologies
- *Develop criteria / methodology for identifying use-cases*
  - Use case that are early adopters but low volume: e.g. Gravitational Waves Project
  - Clarify what the user community need and what the quantum community can provide (e.g. in QSim)
  - Publish use cases for the community to be able to access them.
  - We should not go too far as overselling
  - Look for existing matching software's and evaluate their use to find new use-cases.
- *Standardization (QFLAG)*
  - Standardisation should be a stand-alone project and not part of innovation WG.
- *Intellectual property (QFLAG)*
  - Prepare guidelines for the flagship that consortia can use to deal with IP agreements
 - Joint effort is required

Quantum Community Network, October 30th

Country		QCN member	QCN member's proxy	Country		QCN member	QCN member's proxy
Austria	AT	Aspelmeyer, Markus		Latvia	LV	Ambainis, Andris	Belovs, Aleksandrs
Belgium	BE	Nesladek, Milos	Remacle, Francoise	Lithuania	LT	Alkauskas, Audrius	Anisimovas, Egidijus
Bulgaria	BG	Vitanov, Nikolay		Luxembourg	LU	Schmidt, Thomas	
Croatia	HR	Ban, Ticijana	Buljan, Hrvoje	Malta	MT	Apollaro, Tony	Xuereb, André
Cyprus	CY	Skourtis, Spiros		Netherlands	NL	Terhal, Barbara	Buhrman, Harry
Czech Rep.	CZ	Dusek, Miloslav	Lazar, Josef	Norway	NO	Viefers, Susanne	Borkje, Kjetil
Denmark	DK	Polzik, Eugene	Ulrik Lund Andersen	Poland	PL	Banaszek, Konrad	Pawlowski, Marcin
Estonia	EE	Unruh, Dominique		Portugal	PT	Omar, Yasser	Salema, Carlos
Finland	FI	Merimaa, Mikko	Pekola, Jukka	Romania	RO	Ionicioiu, Radu	Zarbo, Liviu
France	FR	Grangier, Philippe	Tanzilli, Sebastien	Slovakia	SK	Ziman, Mario	Grajcar, Miroslav
Germany	DE	Calarco, Tommaso		Slovenia	SI	Mihailovic, Dragan	Zitko, Rok
Greece	GR	Angelakis, Dimitris	Savvidis, Pavlos	Spain	ES	Acín, Antonio	Garcia Ripoll, Juan José
Hungary	HU	Domokos, Peter	Gali, Ádám	Sweden	SE	Wendin, Göran	Zwiller, Val
Ireland	IE	Vala, Jiri	Fagas, Georgios	Switzerland	CH	Home, Jonathan	Ensslin, Klaus
Israel	IL	Katz, Nadav	Stern, Avinoam	Turkey	TR	Gedik, Zafer	Hasekioglu, Atilla
Italy	IT	De Natale, Paolo	Macchiavello, Chiara	U. Kingdom	GB	Walmsley, Ian	Bongs, Kai

QCN Chair: Tommaso Calarco, QCN Vice-Chair: Yasser Omar

Light brown color: not yet nominated or not yet officially confirmed.
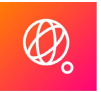
Engaging with Education

- Need to educate and train engineers and IT specialists to enable them to deal with quantum concepts on a more applied level.

- To keep Education in focus it should be addressed in explicit calls for projects.

- Development and evaluation of teaching concepts for non-specialists (especially engineers and computer scientists)

- An Education & training link between the Digital Europe and the Quantum Flagship was mentioned at the meeting. More links to other programs will be helpful, e.g.

  - EU programme for the Competitiveness of Small and Medium-Sized Enterprises ,

  - Connecting Europe Facility

  - European Earth observation program

  - European Satellite navigation system

  - Youth Employment Initiative

- Unified coordination of education & training project calls within the Quantum Flagship.

Closing remarks

- Role of basic science is important, however, the goal of the Flagship is to bring technology into markets.
- Suggestion: in Grenoble results of kickoff event should be disseminated
- We should have a clear selection rule and a clear evaluation and decision processes
- Strategy is important. Benchmark against rest of the world – what is our strength, where are we weak?
- Link to national activities and also strengthen bilateral and multilateral funding