



QT Flagship

Ramp-up phase

Preparation of H2020 FET WP18-20

Dr. Gustav Kalbe

CNECT.C2

High Performance Computing and Quantum Technology

Context



QT Flagship = 10+ year duration

QT Flagship ramp-up phase in H2020 (2017-2020)

- QuantERA (33 M€) in 2017 (started)
 - CSA in 2017 (WP update)
- } **Transition period**
+ MS initiatives (?)

- RIA in 2018
 - CSA in 2018
 - ERANET cofund in 2020
- } **WP18-20**
=> Project start: 1/1/2019

QT Flagship "full" deployment in FP9 (2020 & beyond)



Commission Expert Group on Quantum Technologies – High Level Steering Committee

- Timing
 - Started in September 2016
 - **Intermediate report** in February 2017
 - => interacting since November 2016**
 - **Final report** in June 2017
- Mandate:
 - **Consult broadly** the community (academia+industry)
 - **Provide recommendations** on:
 - **Strategic research agenda => Input to WP**
 - **Implementation**
 - **Governance**

Indicative timeline



<i>1st half 2017</i>	<i>Drafting of H2020 WP18-20</i>
<i>Feb. 2017</i>	<i>Intermediate report by QT HLSC</i>
<i>Feb. 2017</i>	<i>MT Presidency event on QT</i>
<i>Jun. 2017</i>	<i>Final report by QT HLSC</i>
<i>Oct. 2017</i>	<i>FET WP adoption by FET PC</i>
<i>End Oct. 2017</i>	<i>H2020 WP adoption by EC</i>
<i>~Nov. 2017</i>	<i>Call open</i>
<i>Mar. 2018</i>	<i>Call deadline</i>
<i>Jan. 2019</i>	<i>Start of projects</i>

QT Flagship goals



Turning science into industrial success

- To the benefit of EU
- Technology transfer / value creation
- Maintain research excellence in EU
- Expand to engineering
- Stimulate innovation
- Stimulate industrial involvement
- Fostering products/markets
- Coordination / complementarity with national/regional initiatives

NOT Business as usual !

Key features (1)



Based on QT HLSC inputs

- QT HSLC inputs will form the initial version of the Strategic Research Agenda (SRA)
- Definition of targets in WP, referencing the SRA for details

Roadmap based approach

- Long term goals
- Intermediate milestones, platforms
- Technology decision points after ramp-up

Key features (2)



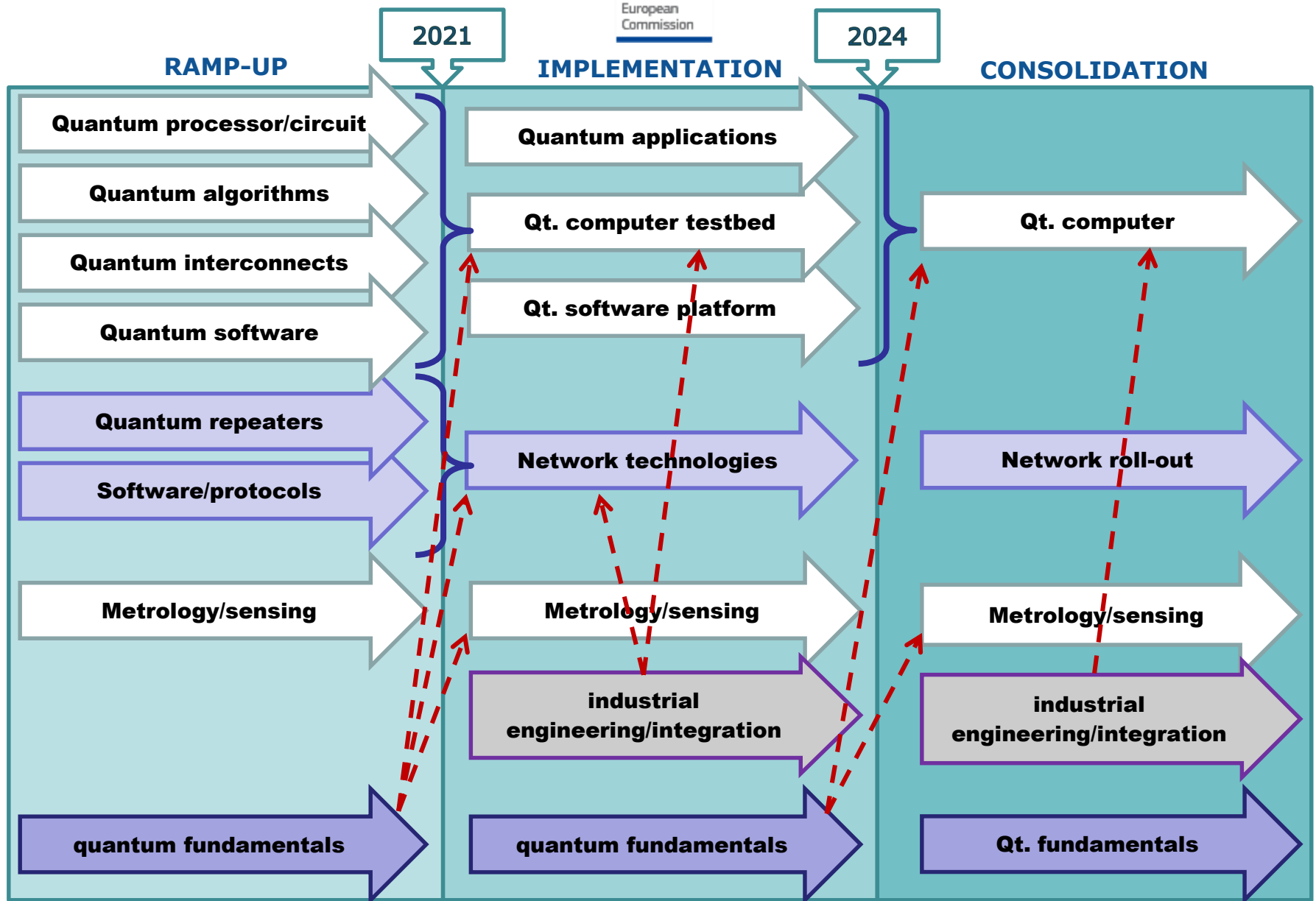
Integrated approach

- Break-out the traditional silos
- Integrate physics, engineering, computer science, theory, algorithms, software,...
- No pre-selection of application area / technology
- Underpinned by x-cutting activities (e.g. quantum fundamentals)
- Small number of projects – connected

A phased approach

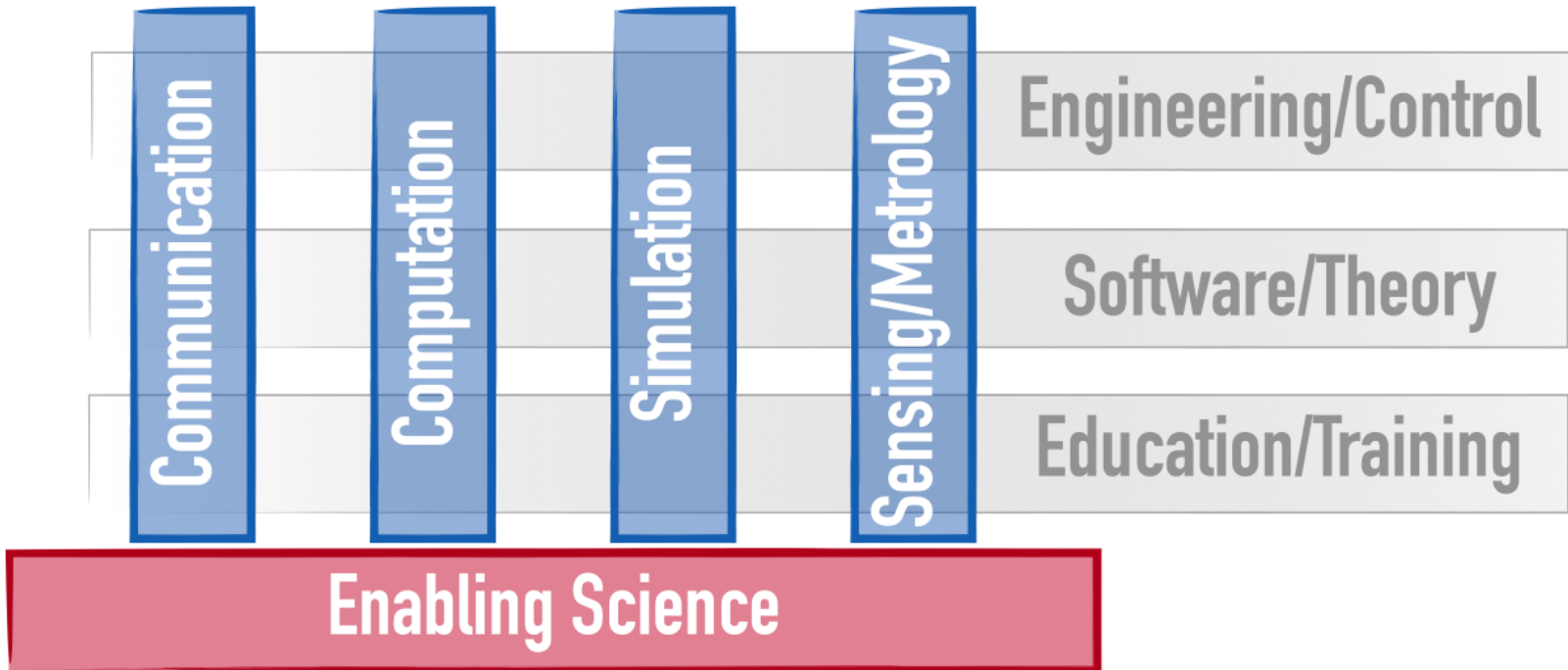


DRAFT



From SRA to the Flagship WP text

European
Commission



=> Starting point for WP
=> ramp-up coverage?

Big "complementary" projects, higher TRL, addressing cross-cutting aspects

- **Quantum Communications**
Preparing QKD testbed network
- **Quantum Metrology and Sensing**
Exploiting quantum properties in industrial relevant environments
- **Quantum Computing**
Building-block co-design, proof-of-concept
- **Quantum Simulation**
Stand-alone or combined with Computing?

Smaller projects, lower TRLs, horizontal topics

- **Fundamental/enabling science**

*A **coordination and support action** is foreseen, to:*

- **Facilitate dialogue between stakeholders**
(communication platform)
- **Promote objectives & monitor progress**
- **Support the Flagship Governance**
- **Help shaping the Flagship in the long term + update the Strategic Research Agenda**
- **Organise outreach events**
- **Link the Flagship with relevant national and regional activities**



*A continuation of the **QuantERA** ERANET cofund is foreseen in 2018.*

Objectives:

- **Closer coordination** and greater mobilisation and pooling of resources between regional, national and EU.
- **Increased transnational collaboration**, especially on topics that are **complementary** to the EU workprogramme.
- **Establishment and alignment** of national and regional research and innovation plans and initiatives.

Some open issues for discussion...



- Creating a single Flagship initiative (as opposed to a set of individual projects)
- strengthening coherence, synergies & collaborations between projects (across application areas, ...)
- EU added value of the Flagship activities: asking for projects that build on top of existing initiatives
- Linking to national programmes & initiatives
- Opening existing platforms for EU research
- How to maximize benefit of EU industry
- IPR sharing



16 February (pm)

- **Meeting of the QT HLSC group**
- VIP Dinner (speakers + HLSC members)

17 February (am)

- **High Level Conference**
- Networking lunch

Venue: Corinthia Palace Hotel & Spa, Malta



High Level Conference agenda

- **Opening**

Hon. Chris Agius, Parliamentary Secretary for Research, Innovation, Youth and Sport, Ministry for Education and Employment Malta

- **Why quantum technologies?**

Nobel Prize Prof Serge Haroche, Collège de France

- **Panel discussion on the Quantum Technology Flagship – Prof Tommaso Calarco (Moderator)**

Prof. Jürgen Mlynek, Chair of the Commission Expert Group on Quantum Technologies

Dr Iñigo Artundo, VLC Photonics;

Dr. Maria Luisa Rastello, National Institute of Metrological Research

(members of the Commission Expert Group on Quantum Technologies)

- **Panel discussion on National Quantum Technology initiatives and their complementarities with the Quantum Technology Flagship – MEP Cora Van Nieuwenhuizen (Moderator)**

Dr Wolf Diete Lukas, Bundesministerium für Bildung und Forschung (BMBF)

Mrs. Barbara Weitgruber, Federal Ministry of Science, Research and Economy (BMWFW)

Prof Massimo Inguscio, President of the Italian National Research Council (CNR)

Sir Peter Knight, Imperial College London

Dr. József Pálincás, President of the Hungarian National Research, Development and Innovation Office

Paul Indelicato, Ministère de l'Education nationale, de l'enseignement supérieur et de la Recherche

- **Formal handing over of recommendations from the Expert Group on Quantum Technologies to European Commission representative**

- **Closing remarks**

- **Networking lunch**