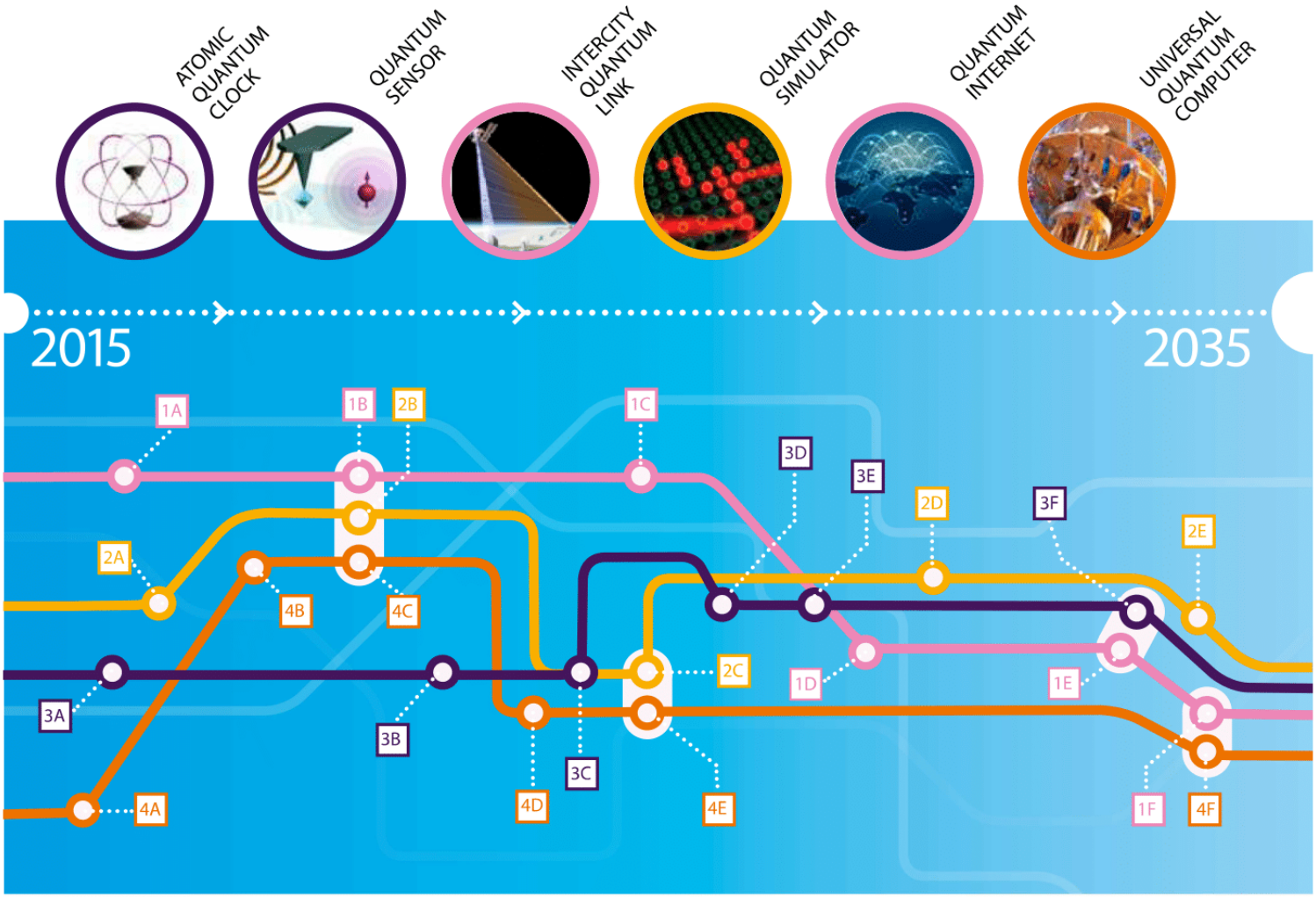
Quantum Technologies Timeline



1. Communication

0 – 5 years

- A Core technology of quantum repeaters
- B Secure point-to-point quantum links

5 – 10 years

- C Quantum networks between distant cities
- D Quantum credit cards

> 10 years

- E Quantum repeaters with cryptography and eavesdropping detection
- F Secure Europe-wide internet merging quantum and classical communication

2. Simulators

0 – 5 years

- A Simulator of motion of electrons in materials
- B New algorithms for quantum simulators and networks

5 – 10 years

- C Development and design of new complex materials
- D Versatile simulator of quantum magnetism and electricity

> 10 years

- E Simulators of quantum dynamics and chemical reaction mechanisms to support drug design

3. Sensors

0 – 5 years

- 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

5 – 10 years

- C Quantum sensors for larger volume applications including automotive, construction
- D Handheld quantum navigation devices

> 10 years

- E Gravity imaging devices based on gravity sensors
- F Integrate quantum sensors with consumer applications including mobile devices

4. Computers

0 – 5 years

- 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

- D Solving chemistry and materials science problems with special purpose quantum computer > 100 physical qubit

> 10 years

- E Integration of quantum circuit and cryogenic classical control hardware
- F General purpose quantum computers exceed computational power of classical computers