

Flex - 5G

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**UK
5G**

**Innovation
Network**

Flex-5G project in a nutshell

Project name: Flexible, Efficient and High Performance 5G Open RAN (Flex-5G)

Project's main outcomes:

- End-to-end Open RAN compliant, UK-developed 5G SA network
- Groundbreaking approach to Software Defined Radio, addressing flexibility, economies of scale, and other benefits
- Ultra-flexible radio chipsets and radio boards, covering entirety of 5G NR Frequency Range 1
- Support for maximal MIMO scaling and Massive MIMO performance, efficiency and practicality enhancement addressing vast range of high-performance scenarios
- Integration and building on a custom in-house 5G core network
- Creation and integration of AI-driven spectrum and network management framework, leveraging the spatial/temporal and other flexibilities made possible by Flex-5G
- Integration of packet-based synchronisation technology serving areas without satellite coverage for synchronisation, such as for private networks with indoor base stations
- Creation and validation of a rigorous security framework

Benefits of final deliverables:

- Efficiency, performance
- Range of form factors, e.g., “Network in a Box”
- Ease of mass-deployment, maintenance, upgrades, etc.
- Automation
- Others (“Impacts on the Market” slide)...

Who is most positively impacted?

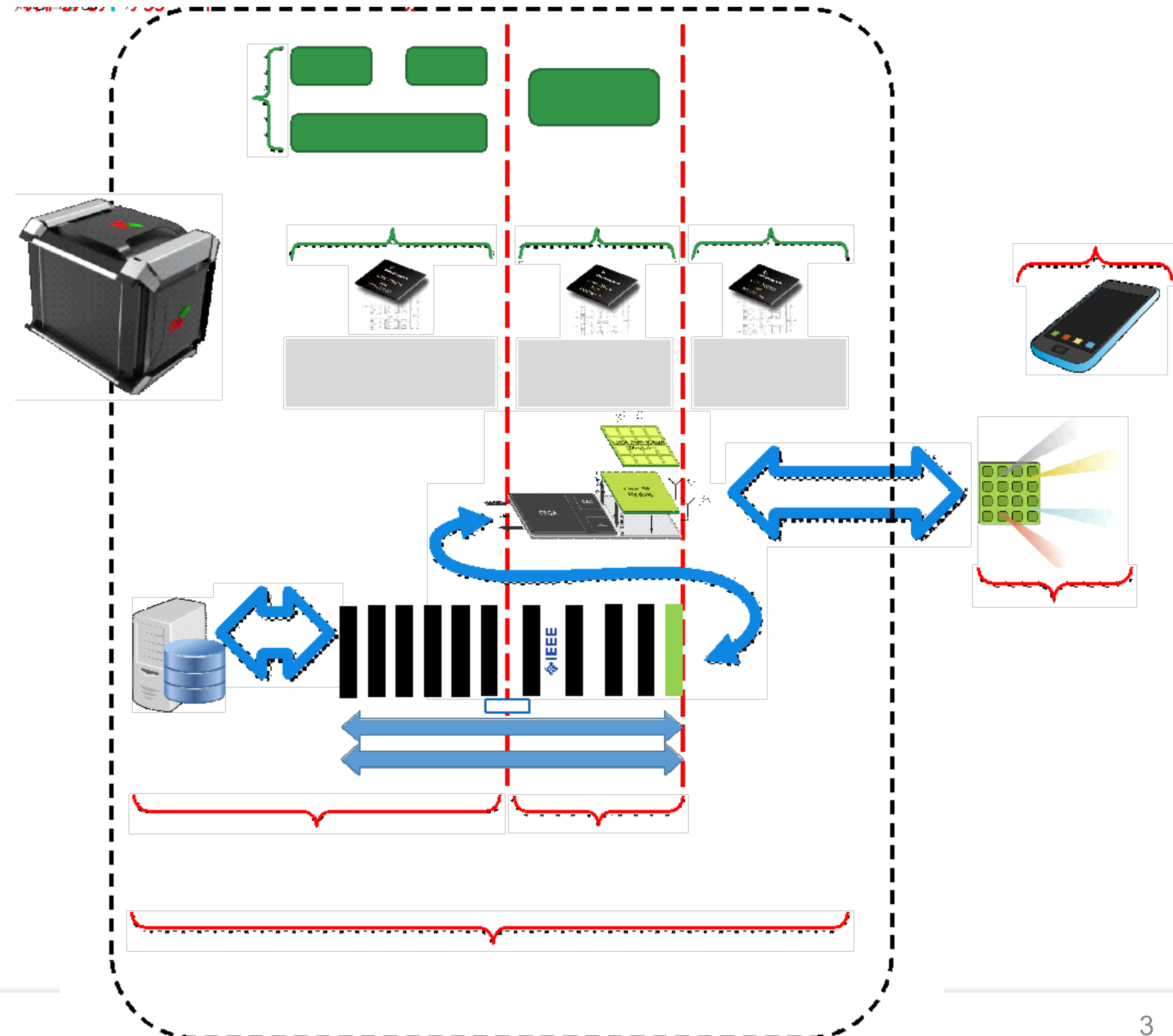
- Operators, end-users (incl., e.g., private network scenarios)
 - ✓ Choice; options (scenarios, use cases)
 - ✓ Energy saving (cost reduction)
 - ✓ Performance, ease of deployment, equipment access
- Manufacturers, software providers—equipment, apps, etc.
- Various others (“Impacts on the Market” slide)

Flex-5G project in a nutshell

“Key Project Partners”



“Project Partners”



Our impacts on the market

- **Economies of scale**

Software-based, GPP. Easier creation, upgrades, adaptability/specialization of capabilities, etc.

- **Reduction in number of necessary network elements**

Each base station can be adapted to serve given purpose, spatially, temporally. Not, e.g., extra components for each (possible/covered) band by the site

- **“Democratisation” of the radio**

Ability to adapt, build on the capabilities, further bringing down costs, increasing performances, equipment options, etc.

- **Modularity/diversification—enhancement in range/capabilities of market offerings**

A given... interoperability, smaller “bite-size” components hence more players in market, etc., better choice, performance, again cost reduction, ultimate flexible platform for Open RAN modules

How are we doing it?

- **Unique software-defined radio approach**
 - ✓ **Open Source, Open APIs**
 - ✓ **General accessibility**
- **MIMO processing innovation and MIMO scalability**
- **Management platform and RIC, integration and automated optimisation**
- **Support for timing/synchronization (far more accurate than required by 5G NR, even to level of phase synch possible—WR-PTP—distributed antennas, COMP, beyond-5G, etc.)**
- **UK/in-house basis (chipsets, RF boards and hardware, also Core, etc.)**

Collaboration possibilities with Secure 5G, 5G Drive, ...

- **Sharing of software-defined radio hardware/capabilities/platform, eventually software developments, etc.**
- **Management platform integration with other projects' hardware (already integrated with Lime/Flex-5G, and with major manufacturers—used in deployments globally)—enables mass deployment**
- **Private networks and use cases**
- **Collaborative trialing**
- **Wide-bandwidth front-end/RF**
- **Again, Flex-5G is UK-based technology. Let's build on the UK strengths and ecosystem!**