

Digital Communications Infrastructure Strategy

Samsung Electronics UK Submission

1. About Samsung UK and Ireland

- 1.1 Samsung has been active in the UK since 1982 when we established the UK as one of our key sales subsidiaries. Over the years our presence and activity in the UK has grown as we utilise the significant growth and investment opportunities the UK offers. We have both our European Headquarters and design and innovation centre based in the UK.
- 1.2 The UK is an important European hub for Samsung. There are now 8 out of 9 Samsung Electronic functions based throughout the UK with a growing number of employees working in sales, R&D, and design and quality assurance.

2. The Growth of Connectivity: Fuelling Future Technologies

- 2.1 In global terms, Samsung now views the UK as a pace setter in welcoming and embracing innovation. It has moved from a cautious, late adopters stance, to a society where our relationship with technology is now increasingly confident, and importantly increasingly demanding.
- 2.2 A decade ago nations like Finland were seen as tech pioneers, but the UK has caught-up and whether it is our capital's transport, our children's classrooms or even just our weekly shopping, it is increasingly technology led and above all smart technology led.
- 2.3 Consumers want to create and consume content "Anytime, Anywhere" –creating a digital social environment. The variety and type of content we consume has exploded. We have new digital formats such as multiplatform gaming, interactive content, and user generated content.
- 2.4 Digitalisation has also allowed the consumer to gain more control of when and where content is consumed: time shifting of video content, for example, is revolutionising the video markets.
- 2.5 All of these services are supported by competing and cooperating broadband technologies, consumed on different technology and service platforms, which themselves interconnect and change based on where you are and how you want to consume them.
- 2.6 Connectivity is changing not just our everyday lives but also the way we do business, opening up new commercial and strategic opportunities for all kinds of companies. UK-based companies are making better use of digital platforms, whether through online interaction with customers or in-house digital processes, to boost sales and productivity.
- 2.7 The evolution of connectivity and specifically machine to machine communications is an important future development. Many businesses are well placed to harness this opportunity, and it's imperative that the UK's digital infrastructure is able to support and enable these opportunities.

3. Consultation Questions

Q1: Introduction

a) Is this an appropriate role for Government?

- 3.1 Government has an important role to play in creating the right regulatory and policy framework to incentivise and support continued private investment.
- 3.2 It should play a central role in ensuring a coordinated policy approach. It should demonstrate greater leadership in order to seize the growth potential of digital infrastructure, particularly the capacity for digital networks to deliver a range of benefits across the economy.
- 3.3 Government must also have a role in managing the regulatory bodies and ensuring they are delivering for businesses, whilst simultaneously undertaking the important role of consumer protection. The regulatory framework must support capital spending plans from industry that are central to rolling out new and improved networks.

b) What other high level principles the Government might adopt?

- 3.4 One of the most important principles is providing a coherent and coordinated policy environment. Although this Government has taken significant steps forward through the digital by default agenda, further steps could be taken to embed digital at the heart of decision-making in Whitehall - particularly in relation to infrastructure. This can be done by utilising existing forums such as Infrastructure UK.
- 3.5 Government should play close attention to discussions that are being had in existing policy forums such as the Information Economy Council. These forums are exploring the opportunities that will be available through future technologies, which will only be achieved if we have the necessary digital infrastructure.
- 3.6 Government must continue to work with industry to develop a clear delivery strategy that provides investment certainty beyond this Parliament and if possible have cross-party support.

Section 3: Scenarios

- 3.7 Samsung Electronics agrees that the technological development in wireless broadband technology will continue unabated. Already today industry players, research organisations and government stakeholders are pushing ahead to determine the next generation wireless technology development timetable for beyond 2020. Therefore Samsung Electronics agrees with the scenarios developed for consideration and particularly the most aggressive scenarios 2 and 3 considering the roll out of next generation networks. Samsung Electronics fully expects next generation 5G wireless broadband technology to support new high capacity operational and usage scenarios and that 5G networks will be supporting large scale M2M connectivity.

Section 5: Facilitating and Encouraging Investment

Q40: How can we maximise the current R&D and innovation UK landscape to help take advantage of the opportunities provided by future technologies? What needs to be done by Government and its agencies, and industry to tackle any gaps?

- 3.8 Given the potential of 5G spectrum we have joined with the University of Surrey in its ambitions to deliver a specialised 5G Innovation Centre (5GIC) on its main campus in Guildford. Together with the University of Surrey, and other technology companies, we are conducting research into the development of advanced technologies for a 5G network of the future, to establish a world-leading position in mobile broadband communications and internet innovations. The project includes the development of a 5G “test bed”, based on the University campus, on which to test technologies in a real-world environment.
- 3.9 We welcome the Prime Minister’s announcement at CeBIT regarding the new collaboration to develop 5G between the University of Dresden, King’s College University in London and the University of Surrey. We also welcome the partnership with Germany to explore the potential benefits of this technology. We have always stressed the importance of working in the international arena and identifying globally or at least regionally, harmonised spectrum especially for mobile broadband applications.
- 3.10 We are supporting these initiatives because a vibrant and dynamic mobile broadband infrastructure serving consumer and business devices will be essential for continued economic growth. Already in recent years the rapid take up of Smart devices illustrates the eagerness of consumers to take up ever more complex, valuable and interconnected services. This is leading to increasing expectations from consumers regarding service delivery, accessibility and quality.
- 3.11 To maximise the output of the research it is important that Government takes a role in sharing research data and linking businesses with universities. This will ensure that there are no duplications in projects and will clarify where the gaps are. A research technology map or audit would help businesses identify universities leading the way in research on key developments such as 5G and the ‘internet of things’. It would also help to identify emerging clusters and indicate where there are gaps.

Q41 In which future communications technologies do you consider the UK has, or could achieve, an international leadership position?

- 3.12 Given the on-going proliferation of new forms of digital technology, the way we interact either as business-to-business or business-to-consumer will continue to change. The UK is already in good position to capitalise on this opportunity.
- 3.13 The UK is leading the way in mobile deployment across Europe, with more mobile devices deployed per organisation and more support for employee-owned devices. Only 22% of UK businesses do not support mobile devices, compared to 35% of European companies.
- 3.14 Cloud computing is coming to the fore as a growing sector and is revolutionising the way we manage, store, and retrieve services, solutions, entertainment and life experiences that we can no longer live without. This is driving the proliferation of multiscreen consumption: never before have we used so many screens in our home, work and on the go, all carefully adapted to what we want to do and when.
- 3.15 Samsung is particularly excited about the possibilities for our business and for the UK presented by machine to machine communication - otherwise known as the Internet of things. We believe the next few years will be a pivotal time for us as a technology industry leader and as a major business in the UK.

Internet of Things: The Opportunities in the UK

3.16 Samsung sees the UK as a key market and importantly, as the best place for innovation in Europe. The UK has been the research and development hub for Europe since 1991 and it is leading on key research projects such as 5G (which will be the foundation of the IoT opportunity).

3.17 As a business we are looking at the current and future opportunities made available by the internet of things. We are focused on how this connectivity can make people's lives easier through innovative technology.

Creating New Markets

Wearables

3.21 Machine to machine (M2M) technology and the Internet of Things is enabling a new market for wearable devices to take off in the consumer space. Samsung is a leading player in the fast growing global wearable market and it is a significant growth opportunity.

3.22 The wearables market is an exciting new growth area not just because of the improvements it can make to consumers lives but the technological ecosystem that is needed to make it happen. This is why we have a dedicated team at our innovation centre in London recruiting and encouraging developers for mobile and wearables to use our software development kits and platforms.

3.23 The benefits wearables can deliver span a number of key areas:

- Health and fitness
- GPS and pedestrian navigation
- Social networking
- Messaging
- Transportation
- Travel
- Mobile payment & banking
- Music
- Sports

3.24 The majority of this work will come to fruition in the consumer market. However, while there are no mainstream productivity applications yet in place for smart watches such as Samsung Gear, sensors such as Jawbone, or heads-up displays such as Google Glass (any applications in existence have very niche use cases) it can be expected that applications will be found in the workplace.

3.25 Just as smartphones, tablets and mobile apps all reached a mass consumer market before finding importance in the workplace, the same can be expected of wearables over the coming years.

Smart Home

3.26 Samsung Smart Home's unique functionality enables users to control and manage their home devices through a single application by connecting personal and home devices, from

refrigerators and washing machines to Smart TVs, digital cameras, smartphones and even the wearable device Galaxy Gear, through an integrated platform and server.

- 3.27 Samsung has also developed a dedicated Smart Home software protocol (SHP) to enable connectivity between all Samsung Smart Home products as well as those from other device and appliance manufacturers. Through this strategy, Samsung aims to create a foundation for an emerging ecosystem of connected home services in collaboration with its partners.
- 3.28 Samsung also plans to expand the Smart Home service to cover home-energy, secure home access, healthcare, and eco home applications through the partnerships with third-party service providers in these sectors, helping foster joint commercial opportunities and grow the connected home service marketplace.

Work

- 3.29 Mobility has already had a significant impact on how and where we work. The UK is leading the way in mobile deployment across Europe, with more mobile devices deployed per organisation and more support for employee-owned devices. Only 22% of UK businesses do not support mobile devices, compared to 35% of European companies.
- 3.30 The business environment is not restricted to the office anymore. The future of work is going to be shaped by the tools we use, and these tools are becoming ever more mobile, smart and inter-connected. New connected screens keep us constantly connected to cloud services, meaning that it is becoming possible to do work anytime, anywhere – as long as there is a connection. This flexibility and agility offers a step-change in terms of making the average worker more productive and efficient, both inside and outside the office.
- 3.31 But it also creates a range of challenges for enterprise IT – which must proactively embrace the pace of innovations and engage with lines of business to make the most of the opportunities that these new technologies provide around improving or completely transforming business processes.

Transport

- 3.32 Metropolitan public transport infrastructures have to contend with growing capacity demands from increasingly urbanised populations. Personalised mobile services will be vital to enable not just the transport systems, but also the passengers themselves, to be adaptive to real time events such as delays, weather, or major event-driven usage spikes.
- 3.33 Technology is fuelling a dramatic acceleration in the pace of change within the transport industry. Traditional planning and investment cycles used to be measured in decades, but with the advent of mobile technology coupled with a marked change in user behaviour and expectations on one hand, and major demographic shifts on the other, the industry is being forced to adapt to a far faster pace of change. There are also key challenges that the industry will have to face over the coming years:

1. Urbanisation creating massive and rapid pressure on mass transit systems
2. Growing middle classes have new demands and shifting patterns of car ownership
3. Air travel to double in demand by 2032

3.34 Transport systems have the opportunity to address these challenges by exploiting the ability to reach a transport user that has never been so connected and information enabled.

Internet of Things: Revitalising Existing Markets

TV

3.35 Our consumers now expect more from the technologies in their lives. The growing SMART TV business is a good example of this and is why as the major player we have to continually innovate.

3.36 In the past three years the TV industry has gone from fear, uncertainty and doubt about its overall future through to major radical change leading to it regaining its central role in our lives.

3.37 Smart TVs have been pivotal because we have dramatically improved the experience and the resulting possibilities have allowed the industry to successfully adapt with streaming and catch up now everyday options.

3.38 Our TVs, phones and tablets can already connect with each other, allowing us to have interactive experiences with either live or time shifted content. You can access films, social networking sites, games and even skype your friends all from your TV.

Smartphones

3.39 Our new Galaxy S5, launched this year, shows how we are changing the role of the ever more sophisticated mobile phone. The phone is now taking on new functions as our 'life companion' – for instance as a substitute doctor and personal trainer.

3.40 For example the 'S Health 3.0' software on the S5 allows you to track changes in activity and health over time. It can also develop a fitness regime for you. Never before has it been so easy to monitor key aspects of your health, including 'Exercise, food, sleep, stress, and weight'. The future impact this connectivity and sophisticated monitoring applications can have on health care services is significant.

Retail

3.41 Technology can make the shopping experience faster, easier and more personal in a multitude of ways. For example, digital signage makes it easy for retailers to promote product information and location-based mobile vouchers directly to customers, as they browse the store. Tablets can give sales assistants instant access to the information that they need to answer any customer query on the spot. And mobile point-of-sale devices let you take payment without customers having to queue.

3.42 For shoppers this means greater personalisation, information at their fingertips and seamless integration between what they do online and in-store.

Realising the Internet of Things Opportunity

3.43 As outlined previously, the internet of things (IoT) promises to transform numerous industries – such as utilities, healthcare, public safety and transportation, etc - whilst fuelling GDP, creating new jobs, and delivering major societal benefits.

- 3.44 To ensure that the opportunities become a reality a cohesive approach must be taken to drive activities that stimulate and deliver on both the supply and demand side of the fast moving and socio-economic IoT opportunity.
- 3.45 A coordinated, cohesive UK IoT Programme should be established in order to maintain the UK's place as a world leading country for IoT development.
- 3.46 The UK will not be a leader in IoT without having world leading digital networks in place. The UK needs to remain a good place to invest in appropriate network infrastructure to support IoT requirements in cost-effective ways. Government and industry must work together to support the roll out of fixed, broadband, mobile and wireless infrastructure to achieve this.

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