

## **OPEN Networks - Future Worlds Consultation**

Developing change options to facilitate energy decarbonisation, digitisation and decentralisation

### **Executive Summary**

The Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation and as an active member of the stakeholder workshops has been directly involved in the detailed preparation work in establishing the 'Future Worlds.'

We concentrate our response on sections 5 – 8 inclusive and summarise our key observations below;

#### **Stakeholder Insights**

JRC observes the identification of the Data Communications Company as a stakeholder at the heart of the Smart Metering arrangement. It is worth considering how the significant data resulting from widespread digitisation of the energy networks will be harnessed and exploited to promote efficiency and competition particularly in the context of neutral market facilitation.

Acknowledging the very high-level approach to defining the core actors in the context of the 'Future Worlds' we suggest that as the work moves into a more detailed phase of analysis the role of JRC as a stakeholder co-ordinating the communications needs of the Energy Industry, both Electricity and Gas, should be captured.

#### **Impact Assessment**

JRC anticipates that the operational integrity of the various approaches will need to be established within assessment criteria '5. Management case.' It is assumed that this will require a high-level perspective on how the energy networks will be designed and optimised to serve the different 'Future World' operating models. With the expectation that operational telecommunications systems will be key to the new operating models we are keen to understand how such enhanced functionality will be factored into the analysis.

#### **Key enablers**

JRC welcomes the emphasis on Communications Systems Capability as a 'Key Enabler' for the 'Future Worlds.' It is worth noting that a key input on which operational telecommunications systems depend is radio spectrum. To this end and as part of the 'Future Worlds' analysis we encourage ENA and Government to explore the Operational Telecommunications (OT) needs of the Industry and in so doing seek to understand how to best serve these needs through access to both fixed and wireless networks.

#### **Least Regrets**

JRC endorses the proposed next steps and welcomes the identification of 'key areas of no regrets' that depend on the extensive deployment of enhanced operational telecommunications capability.

Overall, JRC welcomes the breadth of stakeholder engagement that has been central to the establishment of the 'Future Worlds' and the acknowledgement of Communications as a 'Key



Enabler.' We are committed to working with all stakeholders to better understand and define the Communications capability that will need to be deployed to realise the Smart Grid future thus establishing a more dynamic, flexible and lower cost energy system in the UK.



## Background

Joint Radio Company Ltd is a wholly owned joint venture between the UK electricity and gas industries specifically created to manage the radio spectrum allocations for these industries used to support operational, safety and emergency communications.

JRC manages blocks of VHF and UHF spectrum for Private Business Radio applications, telemetry & telecontrol services and network operations. JRC created and manages a national cellular plan for co-ordinating frequency assignments for several large radio networks in the UK.

The VHF and UHF frequency allocations managed by JRC support telecommunications networks to keep the electricity and gas industries in touch with their field engineers. These networks provide comprehensive geographical coverage to support installation, maintenance and repair of plant in all weather conditions on 24 hour/365 days per year basis.

JRC's Scanning Telemetry Service is used by radio based Supervisory Control And Data Acquisition (SCADA) networks which control and monitor safety critical gas and electricity industry plant and equipment throughout the country. These networks provide resilient and reliable communications capability 24x365 to unmanned sites and plant in remote locations to maintain the integrity of the UK's energy generation, transmission and distribution.

JRC supports the European Utility Telecommunications Council's Radio Spectrum Group, and participates in other global utility telecom organisations. JRC participates in European Telecommunications Standards Institute (ETSI) working groups developing new radio standards, and European telecommunications regulatory groups and workshops.

JRC also manages microwave fixed link and satellite licences on behalf of the utility sector.

JRC works with the Energy Networks Association's Future Energy Networks Groups assessing ICT implications of Smart Networks, Smart Grids & Smart Meters and is an acknowledged knowledge source for cyber-security in respect of radio networks.

## JRC's detailed response

The JRC's response is focused on sections 5 – 8 of the consultation and provided below;

### 1. Section 5 - Stakeholder Insights, Enabling Digitisation & Decentralisation

JRC is working alongside its Member companies (Electricity & Gas Network and Transmission Operators) to establish the operational telecommunications capability to support future Smart Grid developments which will be central to enabling both the digitisation and decentralisation components of the Future Worlds. However, in terms of the actors, only one has been identified with responsibility for Data Communications and that specifically relates only to the existing Smart Metering provisions. The harnessing, co-ordination and exploitation of operational Smart Grid data resulting from the widespread digitisation of the energy networks is worthy of further consideration particularly in terms of the need for neutral market facilitation – it is likely that real time visibility of network performance and availability on a local basis may be necessary to enable such activities as local trading.

When referencing Mobile data providers in the context of the Data Communications Company is this specifically to capture the providers, i.e. Telefonica and Arqiva, tasked with collecting the Smart Meter data via their wireless networks or does it have a different meaning?

#### Specific responses to questions

1. *Which SGAM actor(s) best describes your future role(s)?*

JRC's activities are not obviously reflected in the actors defined. As outlined in the background section of our response we work with our Members to ensure that their existing operational telecommunications systems continue to be fit for purpose. In addition, we are committed to securing their long-term operational telecommunications system needs by ensuring that they have access to the appropriate type, quantity and quality of radio spectrum to ensure that their network assets can be monitored and controlled in a resilient manner.

2. *Do you have any thoughts on the insights gained on this role(s) in each of the Worlds?*

Our existing role is directly applicable to all Future Worlds as the need for the co-ordination, design and deployment of enhanced telecommunications capability is relevant to all.

3. *Do you have any comments on the insights drawn on any of the other roles described?*

As noted above the harnessing, co-ordination and exploitation of operational data resulting from the widespread digitisation of the energy networks is worthy of further consideration particularly in terms of the need for neutral market facilitation – it is likely that real time visibility of network performance and availability on a local basis may be necessary to enable such activities as local trading. Furthermore, a collaborative approach to the exploitation of operational data may offer benefits in terms of whole network efficiency.

4. *If you do not feel represented by any of the actors, how do you believe we should capture your role?*

The energy sector depends on operational telecommunications networks for network visibility and control. The telecommunications networks are either owned and operated by the utility itself or leased via third parties. Whilst the level of data collection and autonomy of current networks is somewhat limited it is anticipated that in the future the number of active assets will increase by two or three orders of magnitude resulting in a dramatic increase in the number and scale of interactions. This profound change in traffic aligned to the expansion in the number of active assets will be subject to the design and deployment of new resilient operational telecommunications networks by the industry. To this end we suggest that due consideration be given to the need for this activity when establishing the actors involved in the 'Future Worlds.'

## 2. Section 6 - Impact Assessments, Ensuring Operational Integrity

In terms of appraising how the 'Future Worlds' will perform, JRC anticipates that the operational integrity of the various approaches will need to be established within assessment criteria '5. Management case.' It is assumed that this will require a high-level perspective on how the energy networks will be redesigned and optimised to serve the different 'Future World' operating models. With the expectation that operational telecommunications systems will be key to this new operating model we are keen to understand how such enhanced functionality will be factored into the analysis.

### Specific responses to questions

1. *Do you agree with the proposed approach and timescales for delivering the assessment? Are there any improvements you would suggest?*

Response

The proposed approach appears well structured whilst the timescales appear quite short and may limit the analysis to only a High-Level appraisal resulting in the conclusions / observations being overly sensitive to the core assumptions behind the Future Worlds.

2. *Do you agree with the proposed assessment criteria and allocation into cases? What further development would you suggest to the criteria (e.g. any additional criteria) or structure and content of the Impact Assessment?*

Whilst the approach suggested seems robust the timescales are likely to impact the depth to which the data gathering / analysis will be undertaken.

3. *Is there any data you could provide or suggest we collect to support the assessment?*

Response

Yes, subject to having a better understanding of the information being sought.

4. *Do you believe that there are any tensions between different criteria and if so how should priority be built into the assessment?*

Response

There is likely to be a tension between the Economic, Commercial and Financial case. Perhaps the Financial Case could be considered sub-ordinate to the Economic and Commercial cases, since it is likely that Funding issues will be addressed for those Future Worlds that satisfy both the Economic and Commercial criteria.

5. *Are there any functions / roles that need to be considered as a priority area for assessment?*

Response

No response

6. *We are considering forming a sub-group to assist with the collation of data for the Impact Assessment; do you think this would be worthwhile and if so would you volunteer to be part of the sub-group?*

Response

Yes. We think there is merit in forming a sub-group to aid the identification of data needs and make the impact assessment that much more efficient. JRC would be interested in joining the sub-group.

### 3. Section 7 – Key Enablers

JRC welcomes the emphasis on Communications Systems Capability as a ‘Key Enabler’ for the ‘Future Worlds’ It is worth noting here the output from a recent joint study initiative between the US and UK Governments focused on Smart Grid developments<sup>1</sup> where it was agreed;

*“Telecommunication infrastructure will be at the heart of the smart grid. Rapid digital communication networks will facilitate the necessary two-way communication and rapid feedback and monitoring that enable smart grids. Therefore, there is the requirement for smart grid and telecommunication networks to grow in tandem to take advantage of all available opportunities. When power infrastructure is being developed, e.g. laying of underground cables, the potential for telecommunications equipment to be laid at the same time should be considered.” and*

*“There are unique hardware and software challenges facing development of the smart grid. The underlying communications infrastructure of the smart grid needs be an order of magnitude more reliable than existing public communications infrastructure to ensure fast and reliable real time operability. This is a constraint that many governments and utilities are yet to fully acknowledge.”*

Moreover, a key input on which operational telecommunications systems depend is radio spectrum. To this end and as part of the ‘Future Worlds’ analysis JRC are keen to work with ENA and Government to explore the Operational Telecommunications (OT) needs of the Industry and in so doing seek to understand how to best serve these needs through access to both fixed and wireless networks.

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<sup>1</sup> Smart Grids, UK – US Smart Grid Commercialisation Summit, University of Cambridge Maxwell Centre, 30-31 January 2018.

## Specific responses to questions

1. *This is the list of key enablers that we have identified:*

- *Regulatory changes*
- *Organisational changes*
- *Communications infrastructure*
- *IT systems*
- *Network visibility and control*
- *Market engagement*
- *Contract requirements*
- *Funding*

*Are there more key enablers that we should be considering?*

### Response

In the context of Communication's Infrastructure it is important to note that a key enabler in terms of communications systems is access to the appropriate type and amount of radio spectrum to allow resilient operational telecommunications systems to be deployed to support both narrowband and wideband applications. The industry is already experiencing a frequency crunch in terms of lack of availability and this will be exacerbated as the industry migrates to much more data intensive applications and the more extensive deployment of active assets in the energy networks to support increased visibility, control and responsiveness.

In recognition of the critical importance of enhanced operational telecommunications capability to enable the transition of future energy networks the ENA has established 'The Strategic Telecommunications Group' to orchestrate the needs of the industry and raise awareness amongst Policy Makers. To this end, JRC encourages engagement at a cross Government level to establish the future radio spectrum needs of the energy utilities and from this identify the appropriate policy approach to enable such spectrum to be made available to the industry in a timely and cost-effective manner. Without adequate spectrum access it is unlikely that the full benefits of Communications Infrastructure, IT systems and Network Visibility & Control will be realised.

2. *Do you agree with our short-term investment priorities relating to the key enablers of*

- *Communications;*
- *IT; and*
- *Network visibility & control?*

### Response

Yes, but rather than identify them as 'short term' which implies that they have a near term investment horizon it would be better to characterise them as 'immediate' priorities to emphasise both the urgency of enabling investment whilst at the same time it is important to acknowledge that these investments will be ongoing over the long term and will be central to the managed transition of the UK Energy Networks.

The components identified are central to enabling the responsive and controllable energy networks of the future. However, as noted above these future enhancements will not be

fully realised without access to additional radio spectrum. Furthermore, to establish the enhanced operational telecommunications capability needed to support the transition to the energy networks of the future a significant step change in communications network functionality will be necessary. Such investment should be justified by the increased availability, responsiveness and utilisation of the energy networks alongside the potential for enhanced competition and the development of real-time trading scenarios.

3. *Given our short-term priorities, what actions do you consider need to be taken now to address them?*

Response

As has already been noted above JRC encourages a cross Government initiative involving industry to define and co-ordinate the operational communications needs of the Energy Network Operators.

4. *Considering the different DSO model Worlds that Workstream 3 has considered, do you think the key enablers differ materially between the Future Worlds?*

Response

In terms of the development of enhanced operational telecommunications capability JRC notes that the underlying need to have enhanced visibility and control throughout the Energy Networks is common to all 'Future Worlds.' As such this further justifies the need for Industry and Government engagement in this aspect of the 'Future Worlds' transition.

#### 4. Section 8 – Proposed Next Steps

JRC endorses the proposed next steps and welcomes the identification of 'key areas of no regrets' that depend on the extensive deployment of enhanced operational telecommunications capability. We are keen to work with Government, Industry and our Members to establish the enhanced communications capability necessary to enable the 'Future Worlds.'

##### Specific responses to questions

1. *Do you agree with proposed next steps?*

Response

Yes.

2. *The Open Networks Project is prioritising areas of least regrets to deliver the benefits of a smart grid as soon as possible. Is there a specific activity within the functions that we have prioritised that you would like us to focus on for short-term delivery?*

Response

As we have noted in response to the 'Key Enablers' section enhanced operational telecommunications capability will be central to facilitating the transition to 'Smart Grid'

energy networks. Considering the 'least regrets' analysis it is worth acknowledging that there are areas of no regrets defined in Figure 8.6, e.g. Real-time network monitoring, Development of smart grid solutions, Black Start, etc. which are dependent on enhanced operational telecommunications capability. In light of this emphasis on communications capability JRC encourages the Industry and Government to explore both the near- and long-term communications requirements to establish the appropriate Policy Interventions and enable key system inputs, such as radio spectrum, to be available in sufficient quantity and type.

3. *Is there any additional work that we need to undertake?*

Response

No Response.

### Conclusion

JRC has been an active participant in the process of establishing the 'Future Worlds' contributing to the SGAM workshops to define the roles of the 'actors.' We welcome the breadth of stakeholder engagement that has been central to the establishment of the 'Future Worlds' and the acknowledgement of Communications as a 'Key Enabler.' We are committed to working with all stakeholders to better understand and define the Communications capability that will need to be deployed to realise the Smart Grid future thus establishing a more dynamic, flexible and lower cost energy system in the UK.