janet

Welsh Research and Education Network Requirements

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1. Introduction

Janet has a remit to deliver appropriate network services to all UK HE, FE and Research institutions in line with the policies and requirements of the relevant funding bodies. As such it has a responsibility to ensure that the PSBA continues to meet the requirements of the SLA in the delivery of Janet network services to institutions in Wales.

Janet has been working closely with the HE and FE sectors in Wales with the aim of understanding and capturing future network requirements, so as to inform the planning of future Janet services in Wales, including the continued use of the PSBA as an essential part of (and partner in) the delivery of these.

The purpose of this document is therefore twofold:

1. to present a summary of the context in which universities and colleges in Wales will continue to use the PSBA and Janet over the coming years, and to link this use into wider developments in government policy; and
2. to present a summary of the operational requirements that Janet, on behalf of the HE and FE sectors, will be seeking from a future PSBA, beyond the expiry in 2014 of the existing contract and funding agreement.

The work reported here did not seek to identify other services that the PSBA might provide to the HE and FE sectors, outside the context of Janet. This may be a worthwhile follow-on activity, depending on emerging thinking as to the evolution of the PSBA beyond the expiry of the present arrangements.

It is hoped that this document will not only help to inform the Welsh Government's work in defining future PSBA requirements through the PSBA Programme Board, but also serve to play back to and inform those responsible for ICT provision within the HE and FE sectors the results of the consultations to date. This process of consultation is not seen as a one-off exercise, and it is anticipated that further dialogue and consultation will take place as planning unfolds for the next stage of development of the PSBA.

Janet would like to thank all those that participated in this process for their time and contributions.

2. Summary of requirements

Janet customers in Wales require from Janet and therefore from a future PSBA:

- a highly reliable network service to support mission critical activity
- provision of an increased range of network connectivity products
- support for an increased range of partnerships, both within the public sector and between universities and colleges and industrial research and education partners
- flexible, anytime, anyplace network connectivity
- support for third party service providers
- continued funding for Janet
- support for carbon reduction

These requirements are no different from those of HE and FE in the UK as a whole. The PSBA is seen by both sectors as an essential strategic platform and key partner in delivery of their network requirements within Wales and, via Janet, across the UK and globally.

3.   Requirements gathering process

In anticipation of the expiry in 2014 of the existing PSBA (Public Sector Broadband Aggregation) network delivery contract, Janet has worked closely with all areas of the community to understand the context the HE and FE sectors are operating within, and their future plans and requirements.

A briefing paper was circulated throughout the Janet community and a consultation exercise was undertaken from May to August 2012.

Approach taken

Responses were invited and requirements gathered via a number of channels:

- Responses from individual organisations
- Meetings with management teams in universities and colleges
- Meetings with those with specific and strategic responsibility for research/funding
- Meetings with Janet customers that are not part of a university or college
- Workshops to identify consensus views

Meetings with representatives of individual organisations were conducted face-to-face. All-Wales Workshops with the ITSYSMAN (FE) and HEWIT (HE) groups were held by videoconference, so as to enable the widest possible involvement of institutions across Wales.

4.   Context affecting HE and FE in Wales

To understand the requirements fully, the broader strategic context surrounding research and education in Wales must be recognised.

Mission critical

Research and education need communications within Wales, the UK and globally. Reliable access to Janet and the Internet is essential to every institution and underpins their business strategy.

Consolidation and collaboration

Over the past decade, emanating from the Welsh Government HE Strategy *Reaching Higher*[1] (2002), the drive to ensure that HEIs in Wales are in a better position with respect to competing in the UK and internationally, winning external funding for research and improving their capacity to innovate, has demanded closer collaboration and consolidation between HEIs in Wales.

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[1] Welsh Assembly Government Strategy for HE - Reaching Higher, March 2002
http://wales.gov.uk/dcells/publications/policy_strategy_and_planning/furtherandhighereducation/reaching/reachinghighere.pdf?lang=en

This continues to be reflected in the Welsh Government HE Strategy: *For our Future*[2] (2009), the current HEFCW Strategy[3] and the recent Welsh Government Science Strategy: *Science for Wales*[4] (2012).

Similarly, although primarily to increase efficiency, the Webb Review[5] (2007) articulated a need for all 14-19 funding within Wales to be channelled through nine or ten commissioning consortia, each of which should have only one FEI.

Since 2002, the numbers of FEIs and HEIs in Wales have reduced significantly through mergers, although the numbers of sites where research and education are taking place remain substantially the same. The dramatic changes that have taken place in the FE and HE sectors have altered the dynamics with respect to the external connectivity required by institutions and the internal communications between campuses, while the overall bandwidth requirements continue to grow.

In this respect the PSBA has proved to be an invaluable resource, providing not only the connectivity between institutions and Janet, but also the connectivity to support the internal changes in institutional requirements. The widespread deployment of the PSBA has meant that cost-effective local links can be made available to support multi-campus connectivity.

Institutions also occasionally require support for point-to-point (Layer 2) connections between campuses in order to support their LAN services, and these need to continue to be available through the PSBA.

Experience has demonstrated that there is a need for a better understanding of Janet customer requirements on the part of the PSBA delivery partner, complemented by a continuing need for these requirements to be clearly articulated by Janet and the individual institutions. Close collaboration and transparency between Janet, the community and the PSBA is essential to ensure that appropriate services can be ordered easily and delivered promptly.

Funding and governance

The current economic downturn has clearly put further pressures on funding for research and education, leading to policy changes for higher education, such as the introduction of student fees.

Research and education institutions are all examining closely where they can make efficiency savings and in some cases refocus their activities.

In Wales, the funding responsibility for FE has been moved to the Welsh Government DfES. Meanwhile HEFCW and the JISC are undergoing significant changes.

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[2] Welsh Assembly Government Strategy for HE - For our Future, November 2009
http://wales.gov.uk/topics/educationandskills/publications/guidance/forourfuture/?lang=en

[3] HEFCW Strategy 2010-11 to 2012-13
http://www.hefcw.ac.uk/documents/publications/corporate_documents/Corporate%20strategy%202010%20-%20English.pdf

[4] Welsh Government Science Strategy - Science for Wales, March 2012
http://wales.gov.uk/topics/businessandeconomy/csaw/publications/120312sfw/?lang=en

[5] Webb Review, Promise and Performance - The Review of the Mission and Purpose of Further Education in Wales, December 2007
http://wales.gov.uk/topics/educationandskills/publications/wagreviews/webbreview/?lang=en

The McCormick Review[6] (2011) focused on recommending that changes in governance are also put in place. There is currently a cross-sector consultation underway following the release of a White Paper[7] in July 2012, in respect of the Further and Higher Education (Wales) Bill 2013, which focuses on governance and the level of autonomy.

Students as customers

Education has become very competitive nationally and globally. Students increasingly see themselves as 'customers' and their expectations of their accommodation, facilities and around where, when and how they learn are challenging traditional methods of delivery. For example, social software offers opportunities to improve all forms of learning, as well as the creation and sharing of knowledge.

To support these opportunities, Janet and its partners in Wales must continue to reach all levels of education – higher education, further education and schools – and be responsive in the development and delivery of new appropriate technologies to meet user needs.

Anytime, anyplace, any device

For some time, institutions have found themselves increasingly needing to support those who bring their own devices for study and work. This and the trend to move from desktop to laptop and now to tablet has led to the widespread deployment of wireless across institutions. *eduroam*[8] has been deployed widely within HE, and is increasingly being adopted by FE. Many institutions have expressed a need for *eduroam* to be available within partner organisations such as schools and hospitals and to eventually become ubiquitous. There is an opportunity for the PSBA to be instrumental in delivering an innovative service based on *eduroam* across the whole of the public sector in Wales.

Outsourcing and sharing services

One potential way of gaining efficiency savings and supporting a refocus on core business is to outsource services, or in some cases to share services with other organisations. Many organisations have started moving applications such as student e-mail to cloud-based providers (either private cloud or public cloud). Others have outsourced, or are considering outsourcing, services such as Finance, Human Resources, Management Information Systems and Learning Environments, and are seeking cost effective secure solutions irrespective of hosting locations.

In the area of shared services a number of organisations are working together to share data centre services. Noticeably increased collaboration as a result of efficiency drives across sectors is putting sharper focus on shared service solutions, with Janet in many cases underpinning or enabling these.

ICT in teaching, learning and research

The use of ICT in research and education is ubiquitous and increasingly many network-based applications are media rich, using high definition video which in turn has increasing demands on the network in terms of performance and capacity. Organisations which have engaged with new approaches have noted rapid uptake, with a linked increase in the reliance on network connectivity.

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[6] McCormick Review, Achievement and Accountability - The Independent Review of Higher Education Governance in Wales, March 2011.

[7] White Paper on the Further and Higher Education (Wales) Bill 2013 http://wales.gov.uk/docs/dcells/consultation/120629whitepaperfehebillen.pdf

[8] https://www.ja.net/products-services/janet-connect/eduroam

Research and education is global

Education in Wales and the UK has a very strong global brand value. Universities are establishing overseas campuses and partnerships with universities worldwide. Universities and colleges in Wales are establishing a specific presence in Cardiff or London to attract overseas students, while the delivery of distance teaching is being offered globally. Some institutions are looking explicitly at international presences through remote campuses.

Institutions are increasingly partnering with businesses and industries across Wales, the UK and internationally, in line with Janet's Business and Community Engagement[9] policy. Not all of these partner organisations have appropriate connectivity and in these cases ways need to be found to enable effective collaboration. For instance, where research groups are collaborating closely with commercial or industrial partners in Wales, it may be desirable to connect these partners via the PSBA and Janet, rather than rely on the significantly less reliable public Internet. This would fit with the aspirations of the Science Strategy[4] to "*work to deepen academic-business partnerships*" and may require some increased flexibility in government policy.

Research Grids and the data challenge

The total output generated by the UK research community ranks third in the world, behind only that of the US and China. In science disciplines such as particle physics, networks have been vital in bringing together Grids of distributed resources such as computing power, data storage and experimental facilities for researchers.

One such Grid is High Performance Computing (HPC) Wales[10]; an innovative collaboration which gives businesses and researchers access to world-class, secure and easy to use high performance computing technology. This and other research projects may need guaranteed bandwidth and/or point-to-point connections between sites across the PSBA and on to the Janet backbone, and it is essential that the PSBA continues to support such requirements.

Research groups have highlighted the occasional need to be able to burst very high volumes of data. They also require enough sustained bandwidth to enable periods of real-time analysis and visualisation of data. Meeting both of these demands requires significant flexibility in service provision.

In the research context the nature of network services is and will continue to be very specialised, whether through the delivery of large amounts of capacity between research resources within Wales, the UK and internationally, or creating specialist network testbeds. Rapid technological developments and the increasing use of research Grids has meant that in recent years the volume of data generated in research and by scientific instruments now far exceeds all the technical and scientific data collected in the history of research. This trend is set to continue, with data being produced at an increasingly rapid rate.

The long-term storage of research project data, as required by some research councils, is now a major concern. Individual projects are generally responsible for the long-term storage of their own data and this is one area where shared services or dedicated data centres could provide cost effective solutions.

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[9] https://www.ja.net/sites/default/files/Janet_BCE_factsheet.pdf
[10] http://www.hpcwales.co.uk/

The PSBA clearly has an ongoing role in enabling high speed access to data centres within Wales, and its development must include the flexibility to ensure that there are no barriers to accessing such resources. There is substantial support within the Janet community for the concept of data centres connected directly to the PSBA and Janet. However, these resources must not only have sufficient and appropriate connectivity, but must also be cost effective to use.

5.   The UK context and its implications for a future PSBA

The Welsh context summarised above is in turn affected by UK-wide developments in HE and FE funding and ICT services provision. As noted above, tertiary education and research is a global business and much of the use of the PSBA and Janet by these sectors will be in pursuit of activities and collaborations with service providers and partners outside Wales. Some developments of particular significance are summarised below.

The Janet6 programme

The Janet6 programme has the overall purpose of ensuring that the UK-wide Janet backbone is developed and upgraded so that it remains fit for purpose for the next five to ten years or more; and that the regional networks that it feeds are also upgraded as necessary to deliver the capabilities of the backbone to individual universities, colleges and research centres wherever they may be located.

The main objectives of the programme as set out in the Janet6 business case are:

- To provide a highly reliable network – to support improved levels of assurance of service availability at the level of individual institutions. This implies that all elements of the delivery chain – the "last mile" access link, the regional network and the national backbone – must provide the appropriate levels of resilience.

- To provide a network that is flexible in terms of meeting future demand – the network should be designed to allow capacity to be expanded, tuned or trimmed to match demand. There should be minimal reliance on telecommunications companies and contract negations to effect future provisioning at the optical layer as well as at the IP layer.

- To provide a network that is more agile in dealing with change – there should be an increase in the speed of delivering customer requirements and an increase in the speed of delivering internal networking requirements both for operational or development purposes.

- To support an increased range of partnerships and collaboration – both within the 'traditional' education and research community as well as Health and Local Government which should support efficiency drives across these sectors. This should be achieved within the overall framework of the Cabinet Office PSN programme.

These were constructed as a result of an extensive requirements gathering activity conducted across the UK during the latter half of 2010[11]. Unsurprisingly, the requirements identified then are very similar to those expressed by the HE and FE sectors in Wales during this exercise.

The implementation of the new Janet backbone is a UK-wide optical platform based on leased dark fibre and DWDM equipment owned by Janet and operated by its Network Operations Centre. This will operate at 100

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[11] The Janet6 page on the Janet website contains the results of this work alongside other public documents: https://www.ja.net/products-services/janet-futures/janet6

Gbps at the outset with the expectation that it will utilise 400 and 1,000 Gbps technologies during its lifetime. The technologies used and the operational model will ensure maximum flexibility, agility and cost-control to meet the demands of the UK's HE and FE sectors, and the research part of the HE sector in particular. At present universities across the UK are increasingly moving from the use of 1 Gbps to 10 Gbps access link bearers, and FE colleges from 100 Mbps to 1 Gbps bearers.

Reflecting the global nature of both research and higher education, Janet maintains extensive high-capacity links to other research and education networks globally, and to the Internet generally. As now, it will be essential that HE and FE users of the PSBA continue to obtain their global and Internet connectivity via the Janet backbone. Any future PSBA architecture will therefore need to recognise this requirement, albeit that architecture may provide other sectors with other routes to the Internet, for example via gateways to commercial ISP services[12].

Although the Janet6 requirements gathering and analysis identified a number of service needs above network connectivity, the core requirement continues to be highly-reliable bandwidth from an uncongested network. In order best to serve the interest of Welsh HE research, the future PSBA will need to provide this along with the flexibility and agility to adapt to increasing demand at controllable cost. Janet provides a number of services above connectivity, either itself or via arrangements with third parties, or increasingly via brokerage activities.

Of these, cloud-based services are increasingly being taken up by universities and colleges and it is this that is leading to demand for greater resilience of Janet connectivity. The providers of third-party services will also in general be located either on the Janet backbone or off-net via Janet's links to other networks. Therefore resilience of the interconnectivity between the PSBA and Janet will come under greater scrutiny, and the present arrangement whereby connectivity is concentrated solely in Cardiff is unlikely to remain an acceptable trade-off between risk and cost.

e-Infrastructure

In 2011 BIS announced an e-Infrastructure initiative[13] with £145m of initial capital funding. This initiative has two aims: to bring the disparate components of infrastructure that support data and compute-intensive research (HPC, data storage, networks, software, skills development) together into a coherent whole; and to make the result available to industrial R&D as well as academic research. The intention behind the latter aim is to increase UK competitiveness by making use of these tools a matter of routine business. Similar initiatives are underway in many other countries, and e-infrastructure capabilities and its exploitation is a major theme within the European Commission's Horizon2020 thinking.

Janet received £26m of the initial funding, in part as a contribution to the new backbone and in part to extend its reach to sites of strategic research importance that are not yet connected directly to the Janet backbone. The rationale for this is the amounts of data that it is expected will be moved into and out of these sites. This is often referred to as the "data deluge" and it is widely anticipated that emerging technologies and techniques will result in a much stronger growth in demand for bandwidth than hitherto.

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[12] At present Janet provides Internet connectivity for a number of other sectors using the PSBA, alongside HE and FE and benefitting commercially from the aggregation of demand involved. There is no policy reason preventing this continuing, if the economic case continues to justify this.

[13] http://www.bis.gov.uk/policies/science/science-funding/elc

To date no such sites have been identified within Wales, but as the drive towards ever more data-intensive research continues it is likely be necessary to arrange direct fibre access to the Janet backbone from a small number of sites within Wales. This might be done by bringing the backbone directly into Wales, to the relevant locations and in parallel with the PSBA, or by the PSBA being able to support direct optical-level access from the site to the Janet backbone nationally. An important underlying principle of Janet is that it should, to the extent possible within budgetary constraints, deliver a universal service and thereby provide equality of opportunity to research and education irrespective of geographic location. Delivering this within Wales, as in the rest of the UK, in the context of the e-infrastructure agenda will remain a key objective.

The other major implication of the e-infrastructure initiative will be a need for industrial access to academic e-infrastructure facilities located on Janet. This will take place in the context of individual academic-industrial collaborations of the sort noted elsewhere in this document, and more systematically via the development of sector-specific centres of expertise dedicated to increasing industrial R&D use of compute and data-intensive techniques. Janet will evolve its eligibility, funding and charging policies to meet this need, to the extent permitted by state-aid legislation. If it is to support this development, alongside the other missions of both sectors in technology transfer and in the delivery of education and training into the workplace, the PSBA will also need to support industrial connectivity for these specific purposes.

PSN

As part of gaining approval of the Janet6 business case, a positioning of Janet in the context of the Government's PSN initiative[14] has been agreed. It is recognised that the Janet backbone is a special-purpose network that has needed to be procured outside the context of the PSN commercial model. It is also recognised that the PSN commercial model, and the frameworks now in place, are relevant to future procurement of Janet regional networks. In this context the PSBA is regarded as a regional network within the Janet operation model, albeit it is clearly much more than this and itself now needs to be fitted into the overall PSN model of public-sector network services provision.

As is noted elsewhere, the HE and FE sectors will not in general require the IL2 level of information assurance that the PSN technical standards mandate. It is possible that over time there will be take-up of PSN-compliant services from third-party suppliers. Where this is the case, the security model will be transactional: the required assurance will be limited to the systems involved and possibly persisting only for the period of the transaction. This model of mixed information assurance requirements is increasingly being recognised within the PSN initiative.

An area of strategic importance where PSN services may have a future role is in the promotion of interworking between research and education and other parts of the public sector, and in particular with the NHS. Janet and the NHS (Connecting for Health – CfH) currently co-fund a gateway between Janet and N3. Although it has facilitated access from N3 to services and users on Janet, the converse has not to any significant extent proved possible to date. Janet and CfH are together investigating how a PSN-compliant successor to N3 might move this strategic requirement forward. While there has been some provision for interworking between UAs and Health via the PSBA Extranet, it would be useful to develop a more formal and secure solution within a future PSBA context or via a UK-level PSN approach.

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[14] http://www.cabinetoffice.gov.uk/content/public-services-network

Governance and capability

The management and governance of research and education networking is becoming more complex as its criticality to the research and education missions of universities and colleges increases, and as the range of external interactions grows as new collaborations are pursued and new services mounted. This in turn is leading to a need for stronger and more effective governance models than have been necessary in the past. This is reflected in recent reviews such as HEFCE's Wilson review into the JISC[15] which has argued for a more focussed delivery of services with stronger ownership by the consumers of those services than hitherto. In Europe, the European Commission has called for governance reform amongst National Research and Education Networks[16] to prepare for wider and more complex services provision such as those demanded by the e-infrastructure agenda.

The governance of the PSBA to date has struggled to meet growing demand, operational and strategic, from HE and FE. Although it has provided high-quality services valued by universities and colleges, it has not always delivered the customer focus and responsiveness required to support both day-to-day operational and strategic change within the HE and FE sectors. Nor has it delivered new services to these sectors other than IP connectivity services. Going forward there is a real opportunity to deliver increased benefit to the HE and FE sectors via governance that delivers increased customer focus and responsiveness to change.

As a result of the present funding climate, it is expected that individual universities and colleges will be asked to contribute more to funding Janet over the coming years than is presently the case. This will bring with it a greater expectation of value for money in service delivery. Equally, Janet is at present in-sourcing other regional network operations to improve cost-effectiveness and ensure greater end-to-end technical coherence across the network. With respect to network operations within Wales, Janet has a responsibility to ensure that the PSBA is meeting the requirements of the SLA. Via its evolving governance, the PSBA will need to meet these challenges to allow it to remain and develop as the means of delivering Janet services to HE and FE in Wales, and for these sectors to have the confidence to take up other, non-Janet services that the PSBA might offer.

6. Operational requirements identified

Set in the Welsh and UK contexts outlined above, the operational requirements of the Welsh HE and FE sectors can be summarised as follows.

A highly reliable network service to support mission critical activity

All organisations stressed the importance of high availability network connectivity in underpinning their missions, which are increasingly moving to the use of offsite services. Resilience of network connectivity, in particular dual diverse connections into each Janet connected organisation, was stressed as a key requirement to support high availability.

In the context of end-to-end delivery and consistent high performance of services across Janet, research communities, including those using the distributed HPC facilities both within Wales and across the UK, require the ability to burst very high volumes of data. They also require enough sustained bandwidth to enable periods of real-time analysis and visualisation of data.

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[15] http://www.hefce.ac.uk/pubs/year/2011/201104/

[16] http://ec.europa.eu/information_society/newsroom/cf/itemlongdetail.cfm?item_id=7352

The new Janet backbone is due to be delivered by the end of 2013. This will support improved levels of service availability and continue to build on the technology advances of the last five years. Organisations in Wales will need to be able to take advantage of the improved services that the Janet6 programme will deliver to Janet customers throughout the UK, in order to remain competitive within the UK and the global education and research community. Underpinning this is the requirement that all Janet organisations in Wales continue to deliver and receive all off-net traffic via Janet and therefore via the PSBA.

Currently, the PSBA is seen as the appropriate vehicle to deliver these services to Janet customers in Wales and needs to be ready and able to meet this challenge in 2014.

Provision of an increased range of network connectivity products

Many Janet connected organisations recognise the significant benefits of bringing together an organisation's communications requirements and delivering these via a common underpinning infrastructure. To support this there is a requirement for a richer range of network connection services. Examples of these are support for:

- transmission of network traffic securely at higher assurance levels;
- LAN connection services for use by Janet-connected organisations that are geographically distributed;
- guaranteed bandwidth and point-to-point Layer 2 connections, as well as standard Layer 3 connections;
- applications that have strict parameters associated with bandwidth, latency, jitter etc. (e.g. IP telephony, videoconferencing, real-time visualisation and data centre connectivity).
- data intensive applications such as research Grids.
- Test-beds and user-configurable dedicated bandwidth for research and development.

To support the global activities of education and research there is a growing requirement for good international connectivity, with many organisations viewing this as a natural extension to Janet. In order to ensure that appropriate and sufficient end-to-end services continue to be available, there is an ongoing need for Janet to have access to monitor independently the network status and performance on behalf of its customers.

Support for an increased range of partnerships

There is growing collaboration both within and across the sectors that use Janet, and also into other parts of the public sector such as Health and Local Government. In the context of the PSN agenda there is a requirement to support the transmission of information securely (IL2 and above) on an individual transaction basis.

Whilst it is widely recognised that the opportunity for significant efficiency savings exists through many elements of the public sector working together on the provision of shared services over the network, where these are centrally provisioned they need to be made available to all organisations without a high compliance burden.

HEIs and FEIs in Wales do not currently anticipate having a general requirement for network services with formal information assurance. There is a broad requirement for general connectivity and network services without PSN compliance.

Universities and colleges are increasingly partnering with businesses and industries across Wales, the UK and internationally. There is a requirement for improved connectivity with these partners, via the PSBA and Janet rather than the public Internet. Any existing barriers to enabling this, such as government policies, may need to be reviewed.

Flexible, anytime, anyplace network connectivity

Janet organisations in Wales are increasingly seeking flexible and rapid responses to changing network requirements, especially bandwidth. Many sites are seeking to diversify their estates with the use of additional campus or office presences within Wales and beyond. Organisations need Janet and the PSBA to respond promptly and flexibly to their changing requirements.

At the same time, the use of personal portable devices has increased enormously in recent years, bringing with it an 'anytime, anyplace' network connectivity requirement. Coupled with the increase in distance learning, home working and workplace learning, and the general internationalisation of education and research, this also means that the reach of Janet beyond the traditional fixed campus environment is important. To support this, an increase in the coverage of *eduroam* was encouraged, coupled with the provision of a range of other Janet services.

Support for third party service providers

In the context of the trend in outsourcing services, a consideration of Janet connected organisations is how the services are connected to Janet to ensure better reliability and performance. Within Wales, a PSBA architecture coupled with appropriate connectivity, cost effective data centres, and hosting products that facilitate third party suppliers is welcomed. These services may need to be accessed by Janet customers and their partners wherever they are located.

Continued funding for Janet

In the context of constrained public finances, it was noted that funding for Janet should be seen as a priority due to the importance of the services that it provides. Organisations recognised that their requirement for resilience would impact the funding requirements for the network, and expressed a desire that this requirement was taken account of in funding decisions.

However, it was also recognised that the funding model for Janet will need to become less reliant on central funding in the coming years, which in turn is likely to see funding contributions coming directly from Janet connected organisations.

Support for carbon reduction

Support for the carbon reduction commitment requirements placed on Janet connected organisations by their funding bodies. Janet and the PSBA can each play an important role in supporting institutional carbon reduction by promoting and delivering shared services, for example videoconferencing services and access to large, energy efficient data storage services.

7.   Further information

If you wish to discuss the findings in this document or the consultation process, please contact one of the following Janet staff:

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