

Appendix: Table of proposed recommendations

Recommendation	Challenges/opportunities addressed	Anecdotal evidence	Type (Organisational, Short, Medium, Longer-term)*	SAM Component
<b>1. Service delivery model</b>				
1. Adopt a 'Shared by default, bespoke by exception' service delivery model across the University	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Reliance on small teams in departments creates poor resilience, single points of knowledge and high workload and stress for staff</li> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Introduction of a more structured and collaborative model for infrastructure service delivery to realise opportunities for resilience and cost savings</li> <li>Ensuring that only necessary 'duplication of effort' is supported and that opportunities for shared platforms and technologies are standard</li> </ul>	<ul style="list-style-type: none"> <li>- Stop locally reinventing the wheel</li> <li>- Data is currently stored everywhere</li> <li>- Lack of consistency, for example in the use of network drives, OneDrive, SharePoint etc.</li> </ul>	Organisational	Service Delivery
<b>2. New leadership &amp; governance</b>				
2.1 Appoint Heads of Technology	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Management of IT experts by non-IT experts creates difficulties for both parties</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>	<ul style="list-style-type: none"> <li>- We lack some form of professional reporting line that would be immensely helpful to review IT work.</li> </ul>	Organisational	People
2.2 Establishment of a University Technology Leadership Group	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Inability to leverage economies of scale due teams operating in silos</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Ensuring that only necessary 'duplication of effort' is supported and that opportunities for shared platforms and technologies are standard</li> <li>To improve focus on customer needs and consistency of service, now and into the future.</li> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>	<ul style="list-style-type: none"> <li>- Services and structures are drastically different from industry norms. There is a lack of consistency which has been exacerbated by a culture of exceptionalism.</li> </ul>	Organisational	Organisation & Funding

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3.1 Enhance understanding of existing IT infrastructure landscape within Divisions				
3.1.1 Common service catalogue	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>	- Consistent standards between/across multiple teams	Medium-term	Service Delivery
3.1.2 Identify priority API or self-service interface investments	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Introduction of standard approaches where appropriate</li> <li>Removing the 'blockers' to collaborative working</li> </ul>		Medium-term	Technology
3.1.3 Embed management reporting against agreed SLAs	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Difficulty in accessing IT infrastructure specialists for local IT Managers due lack to of SLAs (Service Level Agreements) and clarity on roles and responsibilities</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Introduction of standard approaches where appropriate</li> </ul>	- We don't have clear SLAs for some services. For example, recovery times in the case of network outages.	Medium-term	Service Delivery
3.2 Improve user experience through empowering local IT Staff				
3.2.1 Allow ITSS fast track access to IT infrastructure expertise	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>End user experience is negatively impacted by insufficient 'trust' arrangements in local IT access levels to support day to day operations (particularly in buildings shared by multiple departments/divisions)</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Removing the 'blockers' to collaborative working</li> </ul>	<p>- the helpdesk can be a huge barrier – can't email them anymore</p> <p>- lack of SLAs and clarity on roles and responsibilities create confusion and formal helpdesk arrangements do not fully support the role of the local IT manager</p>	Short-term	Service Delivery
3.2.2 Increase devolution of access for local IT staff to expand and improve the support they can provide	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>End user experience is negatively impacted by insufficient 'trust' arrangements in local IT access levels to support day to day operations (particularly in buildings shared by multiple departments/divisions)</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future.</li> </ul>	<p>- IT Managers not having named contacts in IT Services doesn't help; and having to fill in individual SRs for bulk requests – the process/approach should be for different for ITSS than it is for end users.</p> <p>- New cloud service does not give local team privileges they need to manage the service as they did before.</p>	Short-term	Customers & Partners

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<p>3.2.3 Provide local ITSS with permissions needed to support wider groups of end users</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>End user experience is negatively impacted by insufficient 'trust' arrangements in local IT access levels to support day to day operations (particularly in buildings shared by multiple departments/divisions)</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future</li> </ul>	<p>- Local ITSS don't have access to be able to support all the users around them (where departments/divisions share buildings)</p>	<p>Short-term</p>	<p>Customers &amp; Partners</p>
<p>3.2.4 Scope a project to deliver a consistent support experience for end users, agnostic of organisational structures</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Reliance on small teams in departments creates poor resilience, single points of knowledge and high workload and stress for staff</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>	<p>- IT should be less fragmented</p> <p>- Patchy Help desk and on the ground support</p>	<p>Medium-term</p>	<p>Customers &amp; Partners</p>
<p>3.2.5 Review, and where necessary enhance, non-technical (user friendly) guidance on common IT issues (relating to the scope of this review)</p>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future.</li> </ul>	<p>- Technical language - creates an impression of smoke and mirrors when things go wrong - we just want to know, if it's broke, when will it be fixed.</p>	<p>Short-term</p>	<p>Customers &amp; Partners</p>
<p>3.2.6 Deploy single sign-on authentication as a shared service across a wider set of IT services in the University</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Varying Information Security baselines create risk for others</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Ensuring that only necessary 'duplication of effort' is supported and that opportunities for shared platforms and technologies are standard</li> </ul>	<p>- What could be better? - more staff using SSO</p>	<p>Longer-term</p>	<p>Information security</p>
<p><b>3.3 Improve collaborative working to capitalise on existing expertise</b></p>				
<p>3.3.1 Establish a formalised community of practice with clear terms of reference, aims and objectives</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Reliance on small teams in departments creates poor resilience, single points of knowledge and high workload and stress for staff</li> <li>Inability to leverage economies of scale due teams operating in silos</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future</li> <li>Introduction of standard approaches where appropriate</li> </ul>	<p>- Departments would rather 'do their own thing', leading to duplication of effort and larger departmental teams than would otherwise be needed</p>	<p>Short-term</p>	<p>People</p>

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3.3.2 Improve the guidance and support information that is currently available to ITSS via the ITSS wiki, Teams site, or similar	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Increasing burden on IT staff in smaller departments to have specialist knowledge in multiple areas</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Introduction of standard approaches where appropriate</li> </ul>		Short-term	Customers & Partners
3.3.3 Establish working groups to enable hybrid cloud integration across departments / divisions	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future</li> </ul>	- Too much bespoke code / glue	Short-term	Customers & Partners
3.3.4 Create an environment conducive to the formation of specialist, fast response teams to target specific issues	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Difficulty in accessing IT infrastructure specialists for local IT Managers due to of SLAs (Service Level Agreements) and clarity on roles and responsibilities</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Introduction of a more structured and collaborative model for infrastructure service delivery to realise opportunities for resilience and cost savings</li> </ul>	- Local IT support is hampered by the broad range of services it is required to support	Medium-term	Customers & Partners
<b>3.4 Attract, develop and retain IT infrastructure staff</b>				
3.4.1 Develop an IT Infrastructure skills matrix with underpinning career pathways, training plans and skills gap analysis	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Reliance on small teams in departments creates poor resilience, single points of knowledge and high workload and stress for staff</li> <li>Increasing burden on IT staff in smaller departments to have specialist knowledge in multiple areas</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunities to support staff development and progression and capability to do a good job</li> </ul>	- People are being asked to do things beyond their experience and ability	Medium-term	People
3.4.2 Undertake a project to investigate the recruitment and retention issues surrounding IT Infrastructure staff, with the aim of making recommendations to remedy the identified issues	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Difficulty to recruit due to competition with private sector</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunities to support staff development and progression and capability to do a good job</li> </ul>	- It is hard to recruit as in competition with private sector who pay more, and management of IT experts by non-IT experts creates difficulties for both parties	Medium-term	People

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3.4.3 Create a library of generic job descriptions where possible	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Reliance on small teams in departments creates poor resilience, single points of knowledge and high workload and stress for staff</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunities to support staff development and progression and capability to do a good job</li> </ul>		Medium-term	People
3.4.4 Develop a graduate apprenticeship scheme as an integral part of career pathways and including mobility between departments	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Difficulty to recruit due to competition with private sector</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Opportunities to support staff development and progression and capability to do a good job</li> </ul>		Medium-term	People
<b>3.5 Remove unnecessary duplication to reduce information security risks</b>				
3.5.1 Extend the scope of the existing, core network services to encompass local area networking across the University	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future.</li> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>		Longer-term	Technology
3.5.2 Deliver University-wide managed desktop services (Linux, Windows, Apple) as shared services, utilising existing good practice and expertise	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>To improve focus on customer needs and consistency of service, now and into the future.</li> <li>Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>		Longer-term	Technology

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<p>3.5.3 Investigate a 'zero trust' access management framework to improve security and potentially phase out the use of Virtual Private Networks</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• To improve focus on customer needs and consistency of service, now and into the future.</li> <li>• Opportunity to create a feeling of a single service/team for the IT Infrastructure service</li> </ul>	<p>- Remove the confusing barrier to some services (e.g. must be on VPN to access payslips even though it is a secure web service)</p>	<p>Scoped as part of Digital Transformation</p>	<p>Information security</p>
<p>3.5.4 Implement a central monitoring service to improve incident alerting and reporting for common or shared systems</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Unnecessary duplication of effort in many areas</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Introduction of standard approaches where appropriate</li> </ul>	<p>- We need one central monitoring service, rather than delegating this to dozens of teams</p>	<p>Longer-term</p>	<p>Technology</p>
<p>3.5.5 Ensure that the information security baseline is assessed and applied consistently to reduce risk</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Varying Information Security baselines create risk for others</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• IT service providers think Information Security offers the most opportunities for improvement</li> </ul>		<p>Medium-term</p>	<p>Information security</p>
<p><b>3.6 Standardisation to improve value and efficiency</b></p>				
<p>3.6.1 Implement a funding model for IT infrastructure with minimal cross-charging and, wherever possible, remove internal recharging for IT services</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Removing the 'blockers' to collaborative working</li> </ul>	<p>- Lack of financial transparency means that units prefer to run services themselves as they can see the cost/ benefit for themselves.</p>	<p>Longer-term</p>	<p>Organisation and Funding</p>
<p>3.6.2 Work with the central purchasing team to actively manage key and underperforming suppliers</p>	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Inability to leverage economies of scale due to teams operating in silos with insufficient consideration for the overlapping requirements of other areas when engaging with suppliers</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Introduction of a more structured and collaborative model for infrastructure service delivery to realise opportunities for resilience and cost savings</li> </ul>	<p>- Whilst the benefits of the preferred supplier approach are appreciated, e.g. contracts in place, quality of product, the disbenefits include restricted choice and lack of flexibility to meet organisational needs.</p>	<p>Medium-term</p>	<p>Organisation and Funding</p>

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3.6.3 Establish common protocols for hardware lifecycle management	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Introduction of standard approaches where appropriate</li> </ul>	- Reliance on old kit due to lack of clarity around replacement cycle.	Medium-term	Environmental sustainability
3.6.4 Implement University-wide managed WiFi Service	<p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>• Unnecessary duplication of effort in many areas for example, cloud services, back up services leads to higher cost of services</li> </ul> <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Introduction of standard approaches where appropriate</li> </ul>	- Properly sort out Wifi in 'difficult/older' buildings	In-flight as part of Digital Transformation	Customers & Partners
3.6.5 Resolve issues with identity management including the separation of the University card from system access	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Introduction of a more structured and collaborative model for infrastructure service delivery to realise opportunities for resilience</li> </ul>	- IT staff able to create accounts without tie to University card (delays) - University card is wrong source of primary data	Scoped as part of Digital Transformation	Customers & Partners

**\*NOTE:**

1. Short-term – is not expected to require the co-ordination of the new programme team or Heads of Technology, or additional resource and can be delivered within 0-12 months.
2. Medium-term – will require co-ordination /or additional programme funded resource. Could be started within 12 months but is unlikely to finish in that timeframe
3. Longer-term – will require significant co-ordination, programme funded resource and may require additional capital or revenue funding to deliver. Could be scoped within 12 months but unlikely to begin delivery until year 2. Will need significant alignment with Digital Transformation activity