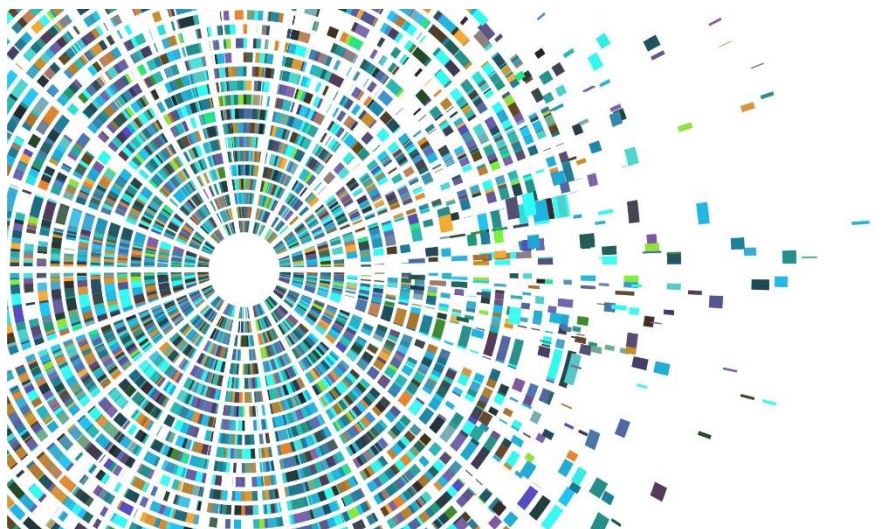


Delivering World Class Information Technology @ Imperial College London

A White Paper for staff consultation

29 May 2020



Version	Date	Author(s)	Reviewer	Change Summary
0.1	28 May 20	Team	JV, LL, MS	Draft for issue as version1
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1. Introduction

In February 2020, the College appointed its new Chief Information Officer (CIO), Juan Villamil, who set a series of objectives and an ambition for a 'new' Information Technology capability for Imperial College London. These include:

- Ensuring IT supports the College in being a world leader in research and teaching.
- Enhancing digital experience for research and education.
- Working to an Information Technology vision and strategy.
- Being a hub for delivering innovation.
- Achieving predictable outcomes.
- Leveraging modern flexible technology.
- Improving ways of working.
- Being the best at what we do irrespective of industry and sector.

ICT's mission, which underpins the College's mission is "to support the College in achieving enduring excellence in research and education in science, engineering, medicine and business for the benefit of society by providing world class information technology services."

The delivery of world class technology services is a critical enabler to delivering world class education and research. Knowledge creation, dissemination, and its products are inextricably bound to a strong ICT foundation. The College can only operate effectively when relevant underlying ICT technology, people and process capabilities are in place, planned and delivered in collaboration with the wider College, in an optimal manner.

In April 2020, the above vision, mission and strategic objectives were outlined in a Green Paper which was made available to ICT staff and interested stakeholders across the College, who were invited to comment and feedback on the proposed model and approach. A large proportion of the feedback was supportive towards the new model, with an overwhelming consensus that change was overdue for the department. The Green Paper feedback, amongst other sources, has been used to confirm the decision to proceed with the functional model and informs this "White Paper" consultation on the approach to the structure and resources required to deliver this model.

The "White Paper" sets out the proposal to change the ways of working, management structure, roles and staffing for the ICT department at Imperial College London.

Today the ICT department has a headcount of 281, with 247 staff in employed positions (excluding secondments, contingent/casual workers and contractors). There is a senior leadership team of nine who manage several functions. The major ICT functions, and related headcounts, include:

- Customer Services (73 staff)
- Digital Transformation (11 staff)
- Project Delivery and Development (47 staff)

- Service Operations (65 staff)
- Applications Support (34 staff)
- Office of the CIO (17 staff)

Over recent years ICT's performance and reputation has suffered from a multitude of reasons. Having consulted with both ICT and wider College stakeholders, the following key barriers to ICT's performance have been identified:

- Top heavy organisation in terms of management layers.
- Lack of strong and visible leadership.
- No defined strategy or technology roadmaps.
- Lack of a trusted partnership between ICT and its customers
- Silo based organisation, with overlap and duplication of effort.
- Fragmented customer engagement and delivery approach and model.
- Limited and ineffective governance, both within ICT and between ICT and its customers.
- Gaps in capability, and limited investments, in current and relevant technologies for the College.
- An extremely large Customer Service organisation, trying to be all things to all people.
- Lack of clear career development plans and opportunities for staff.

Principal sources of information that have been used as input for the above and the White Paper include:

- Interviews with, and documentation provided by, the current ICT Management Team and staff.
- Interviews with Heads of Department across the College.
- Lessons learnt sessions on Major Programmes.
- Feedback from ICT staff engagement platforms including Network Sessions and past documentation from the Staff Forum and Culture Working Group
- Feedback to the Green Paper: Delivering a world class information technology

In addition, an external benchmarking report performed by JISC, the *IT Financial X-Ray*, published in 2019, identified a number of areas of ICT as being over resourced versus peer universities, including deskside support and deployment services. At the same time, the recently appointed CIO identified a number of capability gaps. Examples include cloud infrastructure computing, data services for enterprise and research purposes, and new methods for application and data integration.

Table [1]: Benchmark Overview on Income and Beneficiary Data¹

University	Income £M	Income Rank	Number of Beneficiaries	Beneficiary Rank
Imperial College	£1,033,000,000	1	22,525	5
Manchester	£1,009,706,000	2	50,480	1
Sheffield	£635,700,000	3	36,165	3
Nottingham	£628,600,000	4	42,688	2
Warwick	£512,800,000	5	30,765	4

2. Change Drivers

a. Lessons Learnt

The following common key barriers to delivering the strategic vision and objectives have been identified.

Silo based organisation

Due to the way ICT is currently organised, and gaps in capabilities, ICT falls short of delivering world class services. Inefficient structures and processes result in suboptimal services being delivered to the College. These silos prevent change from being delivered at pace and increase delivery time and costs. Examples include technology governance being limited principally to a single team of architects, and applications development being separated from applications support. Another example is the split in commercial responsibilities between Alliance/Partnership and Contract Managers.

Focus is on the wrong things

Projects are mobilised when ICT should be building products and related capabilities. ICT is not currently orientated adequately around contributing towards departments and faculties delivering enhanced teaching and research engagements. There are no roadmaps or plans directly aligned with the business plans of the College. Teams do not have a robust technology roadmap with clear strategic direction that, where applicable, maps and aligns to required College business needs.

ICT supports anything and everything

ICT is expected to be 'jack of all trades', supporting a continued build-up of legacy desktop and other infrastructure technology across the College, and systems handed over from shadow ICT, some of which are extremely costly to manage and no longer supported by the vendor.

Organic development as opposed to strategic led roadmaps, plans and developments

Technology investments and changes are often planned and performed in an ad hoc, piecemeal way, as opposed to a joined-up plan that is benefits driven. Consequently, investments are made in the wrong technologies and costly customisation, leading to spiralling running costs. A key example is continued investment in SOA (Service Oriented Architecture), which is recognised as a 'sunset' platform. With no plan to migrate away, investments continue to be made in SOA.

Focus is on process and management, not on technology capability

Related to the lack of a strategic direction and technology roadmaps, there appears to be a general tendency to focus more on processes and management than on technology capability. In the IT sector, new technologies develop, emerge and mature at a rapid pace. The College is increasingly behind the curve across a number of technology areas.

Fragmentation of capabilities across teams

Due to the current structure and the lack of knowledge sharing across teams, capabilities are fragmented and there are single points of failure within the department. There needs to be a clear and logical structure to where capabilities sit to promote effective ways of working, both for ICT and customers and suppliers.

Duplication of effort across teams, with no transparent and consistent approach to reporting progress

Teams have grown organically, leading to duplication of effort. Moreover, the lack of transparent and consistent reporting processes allows for duplication of efforts to go by unknown until the work has already been performed. Examples include the overlap in second line support between Service Operations and Customer Services.

Lack the right tools and capabilities

ICT staff do not have the right tools, skills, knowledge and/or experience to tackle many of the existing problems, or, are impacted by processes that create unnecessary steps and sign offs, leading to many project and change activities being delivered late and outcomes falling short of needs and expectations.

ICT is behind the technology adoption curve

There has been under investment in the current and latest technologies that the College needs to deliver to change faster, deliver superior value for money, and support world class education and research. Examples of areas that receive too little attention relate to the cloud infrastructure, integration, and data services for enterprise and research purposes. Instead the

focus has been on supporting an increasing landscape of non-vendor support technologies, which have been customised, rather than defining of and transitioning to new capabilities.

Mounting technical debt

ICT has dealt with a growing project pipeline and too little structure to prioritise and deliver on those projects. This has resulted in mounting technical debt, which delays future developments, improvements and innovation in the product or the project. The accumulated technical debt adds to ICT operational costs and delays migrations, innovation, and product capabilities. In addition, this technical debt poses the risk of software not being updated and no longer being properly supported by ICT or external parties.

ICT is more reactive than proactive

Too much front-line focus is on fixing things as opposed to improving the overall service experience. Some staff who have been involved in successful customer interactions and building trust with IT users, have expressed the need for ICT to be more proactive. This has been shown to build trust with customers but happens too little across the organisation.

Culture needs positive change

Recent dialogue with ICT staff has identified that there is a 'fear' culture. Fear of doing the wrong thing, fear of getting something wrong, and fear of engaging with other teams, at risk of upsetting their line manager or colleagues. This promotes the silo culture and is a major barrier to change, collaboration and knowledge sharing.

Need for promotion and support of innovative ideas

The current culture does not support innovation within the department. Innovation requires a fail-fast, no-blame attitude, as well as knowledge sharing and collaboration: all things that are currently missing in large parts of ICT. Moreover, beyond research computing, there is limited evidence of ICT operating as the Innovation Technology Partner of the College's academic and research teams.

Lack of leadership

As the culture survey and other feedback mechanisms have identified, leadership needs to be improved and the leadership team needs to be more joined up and cohesive. Many problems, such as duplication of effort and silos have stemmed from this. As is well recognised, the current ICT leadership team of nine heads is also too big and consequently, ineffective.

Confidence in ICT's ability to deliver has been lost

As a result of the above points, trust and confidence in the ICT organisation's ability to deliver has been lost. This promotes the case for Departments and Faculties to develop their own shadow IT capabilities, diluting the value that a single technology function can deliver to the College.

b. Responding to the Changing Landscape

The College has been developing a programme of activity to address the inefficiencies of the support services model during the last two years. Prior to the COVID-19 pandemic, the College had agreed to increase its operating cashflow by £30m within five years. The crisis has added additional urgency to this challenge. It is through this lens and in response to the change drivers outlined above that this proposal has been developed.

3. Options Considered

Four principle options were assessed:

1. No change.
2. Introduce new capabilities and functions only.
3. Outsourcing.
4. Restructure ICT as a single change.

a. No Change

No change means no changes to the current organisation, including structure, capabilities and staff.

This option was discounted for the following principal reasons:

- Lessons learnt set out earlier in this paper: current structure and processes are not effective, nor sustainable.
- The ever-growing project backlog versus speed of delivery is unmanageable.
 - E.g. 2019 project stop further expanding the gap between the College's ICT needs versus deliveries.
 - The backlog hinders further systems development or migrations adding to costs due to required rework.
- Existing areas of the organisation need to be optimised in order to support and fund the new capabilities.
- Changes in ways of working and culture need to be made across the organisation.
 - Delivering them in isolation will not address current lessons learnt.

b. Introduce New Capabilities and Functions only

The second option explored was to introduce the new capabilities and functions required in ICT, addressing the capability gaps, including:

- Technology Office and Innovation.
- Shared Services.
- Apprentices.

This option was discounted for the same reasons as the 'No Change' option, plus:

- ICT costs will increase if other areas are not optimised. Savings will not fund new capabilities.
- There are dependencies on changes in existing functions in order to make new functions successful.
- New ways of working with respect to the Product delivery model would not be implemented, as the current fragmented delivery arrangements across applications support and projects would remain in place.

c. Outsourcing

Outsourcing (ICT as a whole) was considered due to its key strength: Speed of change, with respect to introducing new ways of working and capabilities, through selecting a provider that already has this capability ready to deploy.

Outsourcing was assessed and discounted for the following principal reasons:

- A very probable increase of costs in the delivery of ICT services.
- Time required to execute an outsource could take 12-18 months.
- Outsourcing typically is not suited to scenarios where a customer seeks innovation.
- It could promote an increase in shadow ICT services, where there is a concern of loss of control and cost, with risk of inefficiencies, data loss or compliance, security risks and an increase in College costs arising as a result.
- It is likely to discourage collaboration between ICT and Departments/Faculties, as services maybe on a chargeable basis.

d. Restructure ICT as a Single Change

The restructure of the ICT organisation as a single change has been identified as the preferred option. More details on this option and how it will be implemented are provided later on in this paper.

The key reasons for selecting this option are as follows:

- Addresses the lessons learnt set out in this paper.
- Implements the new function and people capabilities required.
- Optimises headcount in existing areas, to offset the increase in headcount and costs in new areas.
- Delivers change, including related training, across the whole organisation.
- Provides an opportunity for all staff to embrace new ways of working and develop an improved culture.
- Reduces time to execute, over options like outsourcing.

Key risks and drawbacks, which need to be managed, with this option are set out in the following table.

Table [2]: Identified risks related to the ICT restructure and suggestions for mitigation

Risk	Mitigation
Potential disruption to service due to transformational change.	Identify key roles which need to be prioritised in terms of recruitment and selection.
Changes to ways of working require time to bed in and disrupt delivery of change and operations.	Phase-in changes to ways of working. Staff upskilling/training and promotion of knowledge sharing and process feedback.
Length of time to perform recruitment increasing the timescales to implement change.	Prioritise key roles, identifying and interviewing staff who may be able to fill the roles. Put in place interim roles, where there are skills gaps.

4. Future State Outcomes and Benefits Required

Required outcomes and benefits from the future ICT organisation are organised into the following categories:

- Strategy
- Governance
- Ways of Working
- Capability
- Finances

The outcomes are set out in the following tables. The Timescale field covers the start date, which commences from the end of the Consultation period that follows the publication of this White Paper.

The presented outcomes will be assigned, where relevant, to members of the leadership team and their related functions of the future organisation. This will be done through staff objectives within personal development plans, which shall also include further detail on how these outcomes will be measured. It is expected that some of the outcomes filter down into personal development plans for all staff or specific teams of staff.

Note that the below outcomes and benefits relate to various Green Paper feedback, where staff asked for:

- Articulation of business change deliveries with tangible benefits.

- Clarity around objectives, priorities and related timelines for ICT functions.
- Recognition of the need for development of technology roadmaps in a two-way dialogue with the College.
- Confirmation of lifecycle responsibilities of teams as Infrastructure Technology to define and agree roadmaps.

Table [3]: Strategy outcome and benefits

Outcome	Benefit	Timescale
Progress with addressing 'needs' and delivering the 'outcomes' reviewed with remedial actions progressed as required.	Ensure expected outcomes and benefits set out in this paper are realised.	Every two months
Technology roadmaps defined for all Products, and agreed with nominated senior College Stakeholders, and maintained and delivered to thereafter. Overall, across ICT investments in unplanned change and sunset technologies combined represent less than a total of 20% invested time.	College stakeholder prioritised requirements, and related measurable benefits, as set out in the roadmaps, are realised to plan. Direct and transparent linkage between IT spend and College priorities, and benefits secured from ICT. Investments to be focused on value-adding and future-proof activity.	Five months (formally reviewed quarterly, as a minimum thereafter)
Technology roadmaps defined for all new capabilities, including Cloud, Data, Integration and Identity & Trust, and maintained and delivered to thereafter. Overall, across ICT investments in unplanned change and sunset technologies combined represent less than a total of 20% invested time.	Directly measurable College benefits set out in roadmap are realised. Direct and transparent linkage between IT spend and College priorities and benefits secured from ICT. Investments to be focused on value-adding and future-proof activity.	Four months (formally reviewed quarterly, as a minimum thereafter)
Technology roadmaps defined for all Infrastructure Technology and maintained and delivered to thereafter. Overall, across ICT investments in unplanned change and sunset technologies combined represent less than a total of 20% invested time.	A recognised ICT direction to ensure alignment within ICT and the wider College and to enable a focus on current and future activity. Direct and transparent linkage between IT spend and College priorities and benefits secured from ICT. Investments to be focused on value-adding and future-proof activity.	Four months (formally reviewed quarterly, as a minimum thereafter)

Outcome	Benefit	Timescale
Defined and agreed plans to address the identified scope of outstanding technical debt and prioritised security risks across ICT services and delivered to thereafter.	ICT investment is focused on priorities. All prioritised risks are addressed to plan.	Four months (formally reviewed quarterly, as a minimum thereafter)
Service Operations strategy and roadmap defined and maintained and delivered to thereafter.	Improved customer service experience of ICT products and services aligned to customer needs. Delivery of new physical Service Desks (TechBars), reducing dependency on deskside support. Clarity on the scope of supported ICT services within ICT and with customers, ensuring focus is on the services that are critical to education and research of the College.	Three months (formally reviewed quarterly, as a minimum thereafter)
Business operations plan defined and maintained and delivered to thereafter.	Smooth day-to-day running of the operational ICT functions with improved transparency and purpose, e.g. with regards to finance and staff development.	Two months (formally reviewed quarterly, as a minimum thereafter)
Single ICT commercial and sourcing plan defined, including priorities, and maintained and delivered to thereafter. Priorities addressed and planned for, including: • Strategic procurements which needs to be executed to address capability gaps. • Contracts requiring renewal or retendering. • Contracts not delivering value for money or that have major performance issues that need addressing. • Exit from contracts where no longer required. Identify contracts requiring demand management.	A clear, up -to-date, managed overview of third-party contracts in place and what they deliver.	Three months (formally reviewed quarterly, as a minimum thereafter)

Outcome	Benefit	Timescale
Communications strategy and plan developed for ICT.	Clear plan as to how ICT will: • Communicate and engage within ICT, in terms of leadership, teams and individuals. • Draw on the wider ICT function will directly contribute to communications. • Communicate positive changes being delivered in ICT, keeping customers will be kept informed. • How comms will support the breakdown of current silos.	One month and updated monthly
Budget defined and agreed for ICT, with budgets devolved.	Providing clarity on budgets and empowering ICT functions and their heads. Increased transparency (within and outside of ICT) concerning ICT spend, across each function and for specific changes. Ensure investments are made on strategic roadmaps and change.	Two months (formally reviewed quarterly, as a minimum thereafter)

Table [4]: Governance outcome and benefits

Outcome	Benefit	Timescale
Consistent set of governance arrangement with all Departments and Faculties for the purposes of: - Defining technology roadmaps aligned to business plans. - Managing and reporting delivery performance. - Change control. - Demand management.	Roadmaps, investments and changes prioritised according to business need.	Three months
Demand management arrangements in place for ICT and agreed with senior College stakeholders.	Proper customer interaction enabled, building a trusted partnership, bringing ICT in a position to lead and guide customers as IT expert.	Two months
Revised technology governance in place for ICT, with participation of all technology related functions.	A shared understanding in ICT on technology design, development and support best practices, guidelines. Plus, synchronised technology developments.	One month
Portfolio management in place for Products, covering: - Resourcing. - Risk management. - Finance. - Delivery performance.	A transparent and up-to-date portfolio view enabling activity insights.	Six months
ICT risk management arrangements in place, with contributions from all functions, and monthly reporting in place to ICT senior leadership team.	Minimised and managed College IT risks.	Two months

Outcome	Benefit	Timescale
Monthly finance reporting and governance arrangements in place, covering ICT and devolved budgets across ICT functions.	Simple, regulated budgeting and spend in place across ICT, whilst empowering ICT functions to control budget for optimised efficiency.	Two months
Function heads managing to agree budgets.	Shared understanding of ICT investment needs and financially empowered ICT functions.	Two months then, reporting monthly thereafter

Table [5]: Ways of working outcome and benefits

Outcome	Benefit	Timescale
Agile ways of working embedded across all technology functions.	More flexible, faster and more efficient deliveries, improved alignment of dependencies, and allowing skill rotation where and when necessary.	Three months (Products) Six months (other Technology Functions)
Defined technology and security standards and guide rails and maintained and revised (as required) thereafter.	Synchronised, contemporary technology developments according to up-to-date, high security standards.	Five months
Budget defined for ICT, with budgets devolved.	Clear, planned, and dedicated budgets.	Two months
New service performance measures defined and agreed for all functions delivering operational support, plus measures and mechanisms for customer feedback and to drive down incident volumes.	Improved customer services experience, high quality resolutions and lower incident volumes.	Two month (implement) Two months+ (monthly reviews with remedial activity)
Common understanding of scope of 1 st line support versus 2 nd line support, between functions performing both levels of support.	Proper resource and work allocation and ownership in ICT, with smooth handovers and collaboration between teams.	One month

Outcome	Benefit	Timescale
80%+ Customer satisfaction score from Department and Faculty Heads, plus customers at the Service Desk, for overall service experience (services used and 1 st line support interaction).	Stable, high quality customer service experience and solutions, to customer trust.	Two month (implement) Two months+ (bimonthly reviews)
80%+ Customer satisfaction score from Department and Faculty Heads, for all ICT engagement (roadmaps and changes delivery).	Reliable, high quality delivery performance to customer needs and SLAs, to greater customer trust.	Six month (implement) Six months+ (quarterly reviews)
90% of change activity is delivered to plan and on time and budget (resourcing).	Realistic and proper expectations generated around well-organised change activity, with reliable performance.	Two months+
Definition and implementation of end to end commercial (including procurement processes), including: • Collaborative working between commercial team, group purchasing and other ICT functions. • Supplier management ways of working, with respect to commercials and group purchasing.	Ensuring ICT receives the best and fitting solutions and services for money from contractors. Ensuring contracts are managed timely in terms of renegotiations, or cancellations of contracts to avoid unnecessary spending. For ICT functions to remain empowered to own day-to-day supplier engagement and management.	Three months
Establish a Service and Security Experience Centre (SSXC) capability (MVP) performing proactive monitoring of the health and security of ICT delivered products and services.	To drive down incident volumes and health and security impact on end users.	Three months
Unplanned (non-roadmap) change activity is <10% of all change activity performed across all ICT functions.	Ensuring ICT activity mainly supports its strategic and tactical endeavors for valued IT services for the College.	Six months+
95% First time change success rate.	Effective change activity by ICT.	Day 1+ (monthly reviews)
30% of incidents proactively identified and resolved.	To drive down incident volumes and impact on end users.	Three months+ (monthly reviews)

Table [6]: Capability outcome and benefits

Outcome	Benefits	Timescale
New capability in place for Cloud, Data, Integration and Identity & Trust.	Contemporary, secure, flexible and synchronised IT services.	Three months (leads) Six months (teams)
Single commercial management capability implemented, covering all commercial lifecycle activity, with ways of working agreed and documented with purchasing.	A transparent, complete, up-to-date and manageable overview on commercial activities in ICT.	One month
Personal development plans written and agreed for all ICT staff, which link through to the outcomes set out in this paper.	Staff supported in their development, in line with ICT capability needs.	Three months for existing ICT staff and within 1 month of joining for all new staff
Learning & Development and Talent plans developed and delivered, for all staff and linked to Personal Development Plans.	Clear performance and development goals for ICT teams and staff that are planned and worked towards for proper career progressions.	Four months (plans) Every quarter (review progress)
Resourcing and Learning & Development Plan address all capability gaps.	Having in place ICT staff who together are fully capable of delivering all ICT required activity to high standards and latest trends.	Four months
ICT Innovation team built and has developed five major innovation nursery projects, of which a minimum of three are done with ICT research teams and/or academic teams.	Innovation to become part of ICT DNA. Contemporary, effective and efficient ICT solutions for customers allowing ICT to position itself as IT frontrunner and thought leader.	12 months
Migrate 1/3 servers hosted in the data centre to infrastructure to the cloud.	Enabling flexible and cost-effective IT solutions.	12 months

Table [7]: Finances outcome and benefits

Outcome	Benefit	Timescale
Reduction in operating costs of £2m.	Significant cost savings.	Academic Year 2020/21
All new capabilities delivered through savings secured elsewhere in ICT.	Balance in investments and costs in the future operating model.	Academic Year 2020/21
Benchmarking report demonstrates ICT has made material improvements in delivering value for money versus peers.	Performing to, or above industry standards in line with, or below average industry spending.	End of Academic Year 2020/21

5. Proposed Option for Implementation

a. Functional Models

The illustration below sets out the current functional model for the ICT organisation:

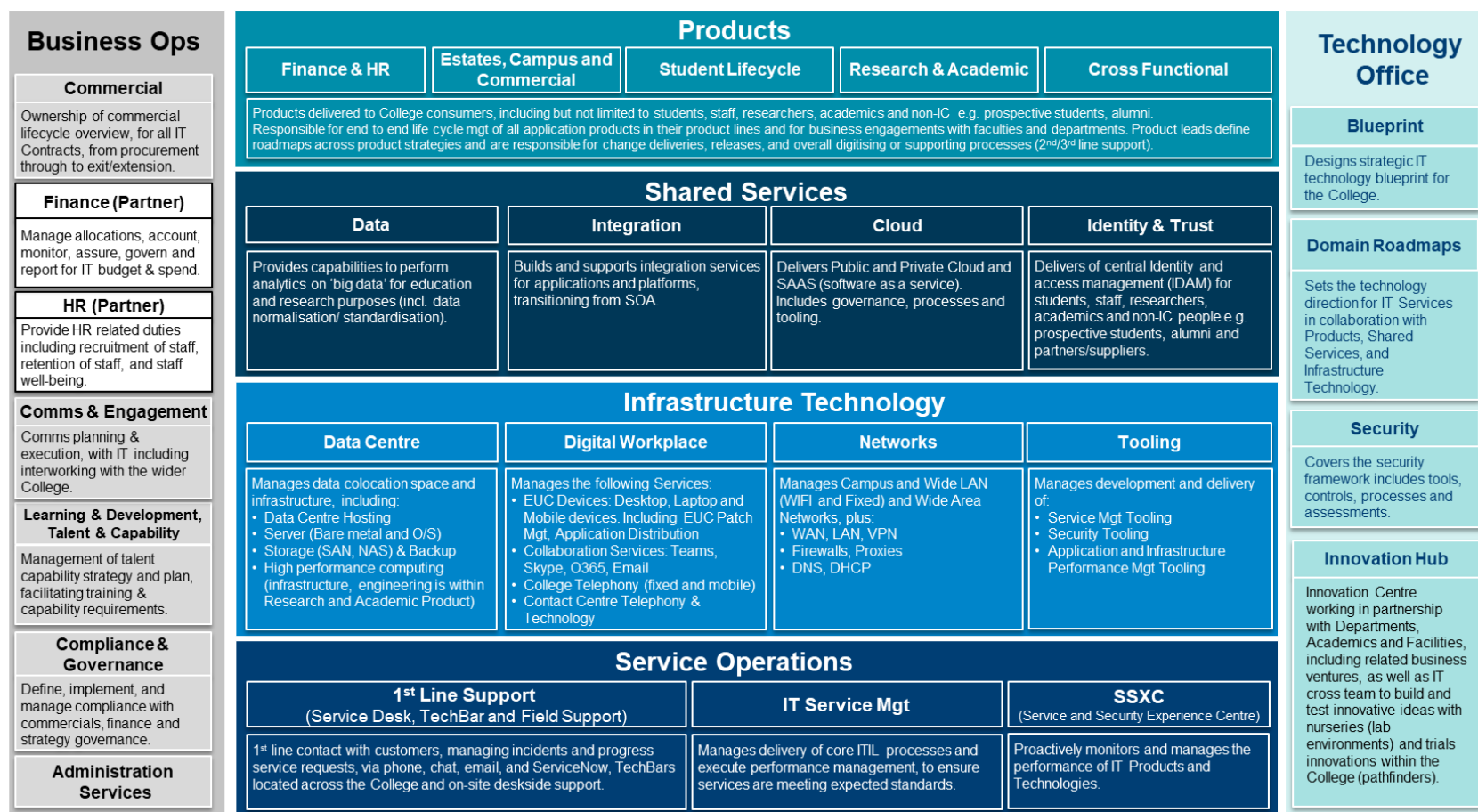
Figure [1]: Current functional model for ICT at Imperial College London

CIO								
IT Director								
Project Delivery and Development	Customer Services	Service Operations	Application Support	Digital Transformation	Transformation Communications	Information and Relationship Management	Alliances and Partnerships	Governance
• Manage and deliver ICT projects • Perform Project Portfolio Mgt • Perform Project Management • Perform business analysis • Perform application development and engineering	• Provide Service Desk • Provide Desk Side Support • Provide Technical Escalation Services • Provide a variety of IT Service Management services e.g. Change management, asset management • Deliver Technology Store and Deployment Services • Perform ICT Communications • Performs Tooling integration • Provides Administration Services and Office Support • Performs Billing and Recharging to other Departments and Faculties for ICT services • Performs Customer Service Management	• Deliver and support the infrastructure services covering: • End user computing • Servers, Storage • Networks • Research Computing • Databases • Security • Tooling • Provide some IT Service Management services e.g. Availability, Release and Configuration Management	• Operation support for line of business applications across the College • Perform application development and engineering (functional specialists)	• Own ICT Services Roadmap • Service Strategy and Planning • Engagement with College (Digital Partners) to strategically understand customer requirements • Engagement with College to ensure the quality of the end to end ICT service line and the future road maps of the ICT Service Lines	• Communications and market strategy development and delivery for driving adoption of innovative digital solutions	• Information Insight Analysis • Relationship Management with College, understanding current and future details ICT needs	• Strategic Commercial Relationship Management • Strategic Vendor Management Strategy, Plans and Reviews • Reviews Procurement Process, Vendor Statements, projects, plans and delivery • Vendor Benchmarking	• Learning and Development • Contract & License Management • Finance Services (Partner) • HR Services (Partner) • External Regulatory and Legal Information Compliance

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The illustration below sets out the functional model for the ICT department proposed in the Green Paper.

Figure [2]: Proposed functional model for ICT at Imperial College London



At the heart of how ICT will operate moving forwards, is a **product-based approach**. Not only in terms of the products that ICT delivers to its customers, but also the Shared Services and Infrastructure that underpins them, the way ICT develops blueprints and roadmaps in the Technology Office, and the way that ICT supports services in Service Operations.

A product-based approach enables:

- A customer driven engagement and delivery model, reflecting how the College is organised.
- Driving change to a product based on business need and benefit.
- End to end accountability in a single team for product roadmaps, costs, benefits, risks, issues, change activity and operational deliveries.
- Building of Subject Matter Technology Experts for each product and related systems.
- Set agile ways of working, to enable features and changes to be delivered more effectively and efficiently.
- Innovation and step changes within capabilities to deliver efficiencies and improve service quality.
- Simplification, removing duplication of effort across IT, operating more efficiently.
- Operating a successful, efficient and effective 'strategy to execution' cadence of interactions and governance.

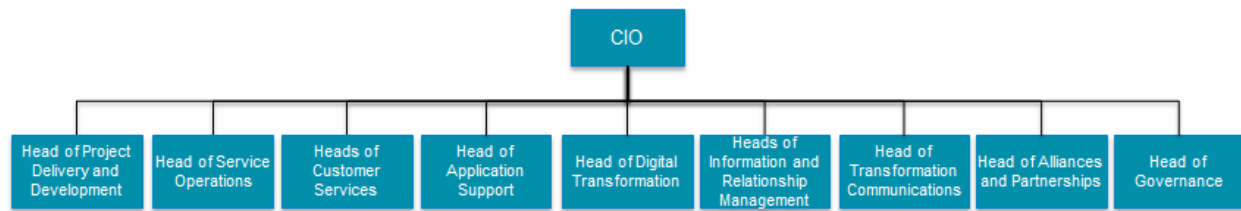
The functional model will require in a change in the way line management is undertaken. We will move away from the hierarchical based line management model towards a matrix management approach. Staff will have a 'pastoral' connection that will focus on wellbeing and development via PRDP's as well as an operational connection into the functional area the member of staff is based (Communities of Practice). The mechanics of how we implement this approach will be developed during the transition phase. You will therefore notice that the proposed functional model indicative illustrations below show a reporting line between same grades. This reflects the functions not necessary the pastoral connection.

The revised functional model does not seek to change the current location of the ICT department. The core physical presence will remain at the South Kensington Campus, with suitable support at all other campuses. The flexible, agile, smart working approach that Team Members currently adopt to their work will continue. The proposal supports staff to actively work together to deliver change or operations support activity.

CIO and Senior Management Team

At the time of publishing this consultation paper, the CIO is supported by a management team of nine, some of whom lead functions and teams.

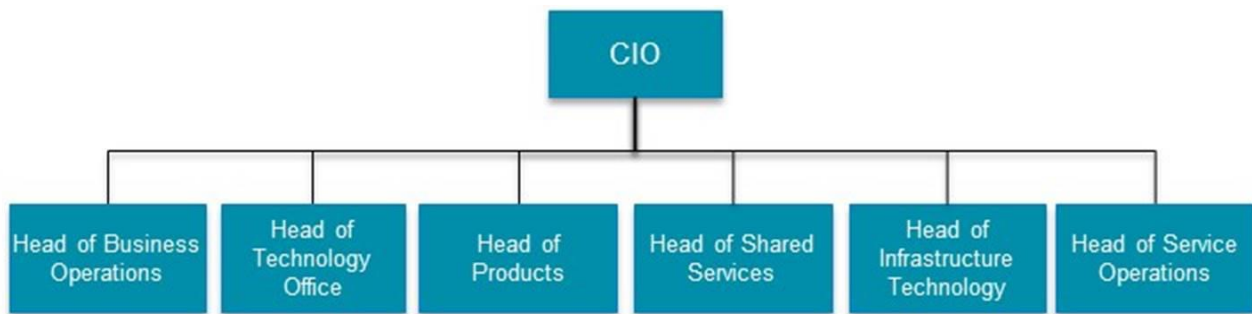
Figure [3]: Current Senior Management Team



Proposed CIO and Senior Management Team

The proposed CIO and senior management structure is presented in the figure below:

Figure [4]: Future Senior Management Team



Principles and objectives for proposed function

- Reduce the size of the senior management team, creating a more effective decision-making body.
- The senior management team should only include ICT Heads of Functions.

The following sub sections contain an outline of each of the proposed functions. The details are indicative, and feedback is encouraged via the itvision@imperial.ac.uk address. An outline of the proposed roles has been provided in this document. Draft Job descriptions and personal specifications will be hosted on the [“Reshaping our Future” web page](#), sub section White Paper. The Job Descriptions and Personal Specifications are under development at the point of publishing this paper. The website will contain details of those draft job descriptions that are available and the timeline for the entire collection.

Business Operations functional model

The Current Business Operations related activities are currently performed across a range of functions and teams within ICT, including teams under management of:

- Governance, including elements of legal and regulatory compliance, plus third-party contract management and commercial management of licenses, plus a Learning & Development function.
- Customer Services, performing communications, some commercial management related to licenses, administrative support, office support and billing and recharging activity.
- (Head of) Transformation Communications, performing transformation communications.
- (Head of) Alliances and Partnerships, performing commercial management of strategic vendors.
- HR, Employee Services and Finance providing partner services.

Key challenges with the current structure

- No overall joined up leadership and management of the operational support capability within ICT.
- Fragmentation of effort leading to duplication of effort, with multiple functions engaged in delivering business operation services.
- Fragmentation of commercial activities across multiple functions, including sourcing activity. No overall ownership and leadership or evidence of strategy/plan.
- Fragmentation of communications across multiple functions. Digital Communications reside in Customer Services, as opposed to being part of ICT wide communications capability and duplication of effort with Transformation Communications.
- A large number of business operations services sit within a function (Customer Services) intended to provide front line support services to consumers of ICT Services.
- The Governance and Compliance role focuses principally on data regulation and compliance, and not on the wider governance requirements of ICT. Currently, there is no effective governance operating within ICT.
- There is no organisation wide focus on risk management. Risk management is sporadically performed across ICT and in some areas, there is no evidence that it is performed.
- Focus is on recruitment and training, whereas skill, talent and career development are neglected.
- There is limited administrative support for senior leadership team and their teams, meaning staff focus more time on administration and less on their core role.
- Focus is on billing and recharging to manage demand, as opposed to other methods to drive consumption behaviours in a more efficient way.
- Finances are not transparent with respect to budgets and allocations across ICT.
- Performance and success of delivery is often down to individuals, as opposed to organisation and process.

Proposed Business Operations Function

The proposed Business Operations structure is presented in the figure below:

Figure [5]: Proposed Business Operations functional model (blue numbers indicate anticipated job grades)



Rationale for proposed functional model

To implement a Business Operations function which will enable ICT to perform to a high standard, unifying operational day to day running of ICT. The scope of the function shall cover:

- **Commercials:** Ownership, leadership and management of the commercial lifecycle overview, for all ICT contracts, from procurement through to exit/extension, to enable ICT to deliver against its technology plans, providing flexibility where required and driving suppliers to deliver maximum value for money. With day-to-day supplier engagement and management resting with the relevant delivery teams (Products, Shared Services and Infrastructure Technology).
- **Finance:** Responsible to manage allocations, account, monitor, assure, govern and report for ICT budget and spend, including delegating budgets to functions in ICT.
- **Human Resources (HR):** Continue to support recruitment and capability needs across ICT.
- **Learning and Development, Talent and Competency Management:** Management of ICT staff development and capability requirements, providing access to opportunities for Learning and Development (L&D), and identifying of talent and performance requirements with respect to staff development, retention and recruitment. Ensuring ICT wide objectives filter down into individual personal development plans.
- **Communications and Engagement:** Keeping staff, the wider College and external stakeholders informed of ICT updates, initiatives and achievements through various communications channels.
- **Office and Management Administrative Support:** Provide administration services and office support within ICT. Additionally, providing senior management and related team administrative support.

- **Demand and Recharge Services:** Ensure through demand management and recharging that the College's ICT consumption-based service resources are used effectively, and that mechanisms are implemented to influence consumption as and where required.
- **Compliance & Governance:** Define, implement, maintain and manage compliance with commercials, finance and strategy governance arrangements. Ensures ICT has a managed and co-ordinated approach to the implementation of such governance, covering both internal needs and compliance with external laws and regulations, as well as managing and coordinating the audit and risk processes for the whole of ICT.

Outline description of proposed roles

- **1 x Head of Business Operations (Grade 6):** The role builds, manages and continuously enhances the ICT function's core internal operating capabilities including communications, commercial management, financial management, learning and development, recruitment and talent management and governance and compliance management.
- **1 x Commercial Lead (Grade 5):** Accountable for strategic and operational management, from procurement through to exit, for all of ICT's technology contracts spanning multiple third parties. Enabling ICT to deliver against its technology plans, providing flexibility where required and driving suppliers to deliver maximum value for money. Many new technologies and services are emerging, and therefore keeping up to date with industry trends is a key element of the role.
- **2 x Commercial Support Officer (Grade 4):** Assists the Commercial Lead, managing and performing commercial lifecycle management of all ICT procured hardware, software and services arrangements, and related commercial agreements. Performing specific groups of commercial activity, as required and directed by the Commercial Lead.
- **1 x Learning and Development Officer (Grade 3b):** Facilitates the commitment to Learning and Development opportunities through an end to end process of planning, communication, delivery, monitoring, and evaluation of the programme and the tools to support ICT staff.
- **1 x Talent and Competency Officer (Grade 3a):** Supports the Learning and Development Officer, owning the development of a talent plan that covers talent requirements, staff development, retention planning and management, succession planning and recruitment.
- **1 x Communications Lead (Grade 4):** Leads, directs and manages the strategic and operational communications support for ICT. This includes setting objectives for and ensuring success of the planning and delivery of a compelling suite of communications activities to ICT staff, College staff, students and external media organisations.
- **1 x Communications Assistant (Grade 3a):** The role supports the Communications Lead with operational communications support for ICT. This includes producing content for ICT internal purposes or College wide purposes, as well as maintaining the current communications channels.

- **1 x Administrative Lead (Grade 3b):** Manages the planning and delivery of administration services within ICT. Key administrative services include developing administrative policies and procedures, providing office admin support, administrative support to senior leadership team and their teams. Additionally, the team manages the demand management and recharge management of consumption-based ICT Services.
- **1 x Office Support (Grade 2b):** Working as part of the Administration team, the role is responsible for the front of house reception services for staff and visitors, alongside performing office administration and supporting new members of staff with their induction.
- **3 x Management and Team Assistants (Grade 3a):** Provides administrative support to members of the senior leadership team and their teams, to help the leadership and their teams running smoothly and efficiently.
- **1 x Demand and Recharge Officer (Grade 3a):** Working as part of the administration team, the role ensures that the College's ICT resources are used effectively, implementing mechanisms to influence consumption as and where required. These can be mechanisms to control demand, consumption and recharge for it. The recharging scope includes but is not limited to end-user hardware and software, printing, telephony and other services delivered by ICT. The role is accountable for the provision of all office services including the management of the smart working floor and ICT offices, executive support to the senior management team and administrative support to all ICT staff.
- **1 x Compliance and Governance Office (Grade 4):** Ensures ICT has a managed and co-ordinated approach to the implementation and operation of governance, covering both internal needs (ICT and College engagement) and compliance with external laws and regulations, as well as managing and coordinating the audit and risk processes for the whole of ICT, including certifications such as ISO 9001 (quality management), 27001 (security management), Cyber Essentials, etc.

Implementation

The following activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of Business Operations, Commercial Lead, Commercial Support, Compliance and Governance Officer roles are priorities.
- Defining an overall Business Operations plan, to ensure the team and its stakeholders understanding the priorities for the Academic Year 2020/21.
- Performing a review of all commercial arrangements and developing a single sourcing plan that prioritises actions based on legal, cost and/or service risks and issues and dependent changes required to support future strategy.
- Moving any current staff, whose roles are not materially changed, into the business operations function with immediate effect and performing a transition of knowledge from other functions and teams.
- Simplifying current recharging arrangements and managing consumption behaviours through other more cost (and resource) -effective mechanisms.

- Overseeing the implementation of effective and robust governance within ICT (finance, commercial, technology, delivery) and with the College (planning, demand, delivery) as soon as possible, in direct and strong collaboration with other functions across ICT, which is consistently adopted, supported and valued by all stakeholders.
- Building top to bottom recruitment, learning and development and talent plans, to ensure all capability gaps are addressed with priority and timing requirements properly. Ensuring staff personal development plans directly align with overall ICT strategic plans.
- Securing continued support from HR, Employee Services and Communications to help in driving the culture change, instilling new positive values across ICT.

Technology Office functional model

Currently technology architecture and design is led and performed by Digital Transformation and in some instances by other functions with a technology capability across ICT (Service Operations – Infrastructure, Applications Support – Applications, Project Delivery and Development). With governance arrangements in place and owned by Digital Transformation called START.

Key challenges with the current structure

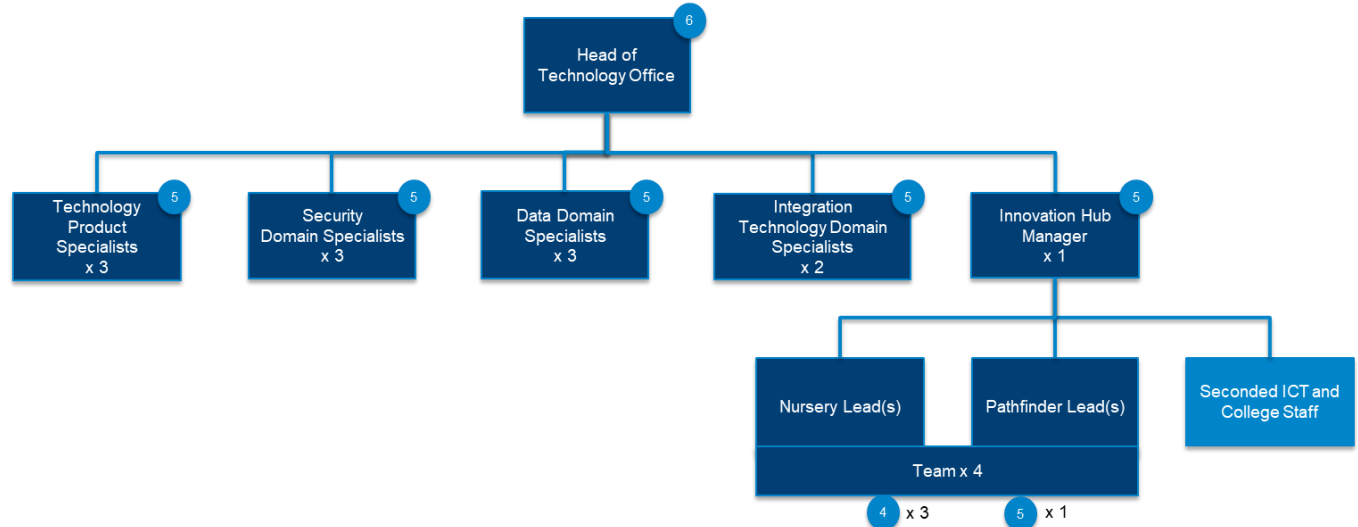
- Technology governance is not consistently applied across ICT and not all stakeholders participate (ICT and Business), meaning the value is diminished.
- Evidence indicates Technology planning is often constrained to architecture and does not consider the wider requirements, including standards, financial and non-financial benefits, security, operations, TCO (total cost of ownership).
- There is no evidence of the widespread adoption of Technology roadmaps and how they align to customer business requirements and needs. Thought leadership can in some instances be led by the customer as opposed to ICT.
- Solutions can often be organically developed, with limited evidence of strategies, roadmaps, plans, or a wider variety of ICT and business stakeholders being engaged in development and support.
- ICT lacks a governed blueprint defining what the future state technology landscape should look like upon which products and services are built and delivered. As a result, solutions can be developed on 'sunset' technologies.
- There is no lifecycle ownership for products and solutions, meaning the definition and ongoing assurance of what they are meant to deliver is not performed.
- There is a lack of a technology partnership with the College with respect to research and ICT technology support, except in particular areas e.g. Research Computing.
- There are capability (and in some cases resource) gaps, in full or part, with respect to current technology trends and needs, covering Security, Data, Cloud Computing and Integration.

- There is insufficient focus on innovation, which frequently occurs in isolation, lacks guidance, financing opportunities and structured support.

Proposed Technology Office functional model

The proposed Technology Office functional model is presented in the figure below:

Figure [6]: Proposed Technology Office functional model (blue numbers indicate anticipated job grades)



Rationale for proposed functional model

The proposal is to establish a new Technology Office, which owns, defines, manages and oversees realisation of ICT's Technology Strategy setting strategic technology direction, through roadmaps, standards, blueprints and respected thought leadership. ICT's technologists will require not only deep hands on experience, but also broader knowledge of the use of technology covering, but not limited to operation management, total cost of ownership, service and business impact and benefit.

Additionally, it will provide a focused environment to identify, develop and trial new ICT innovations through the establishment of an Innovation Hub, collaborating with Academics and Research Groups, and third parties. This hub will operate nurseries (lab environments), with isolated environments, and pathfinders across the College.

The scope of the function shall cover:

- **Defining and maintaining the ICT blueprint:** The strategic IT technology blueprint for the College around which College facing products and other technology capabilities should be built.
- **Preparing and maintaining domain roadmaps:** For Products, Shared Services and Infrastructure Technology, in collaboration with the related functions. Roadmaps should go beyond pure technology and address risk (including technical debt), operation management, total cost of ownership, service and business impact and benefit.

- **Setting out guide rails:** Defines technology and security guide rails and standards that IT and the wider College stakeholders adopt when building and supporting IT services, ensuring good technology design practice and creating governance of technology decisions across ICT. Ensuring all technology solutions work effectively within the College and can interoperate and integrate.
- **Preparing and maintaining a security framework:** Covering the technology, tools, controls, processes and assessments, to manage security risk and compliance for all ICT products and services in the College, i.e. should be applied by other functions building and delivering technology.
- **Delivering an Innovation Hub:** Works in partnership with Departments, Academics and Faculties, including related business ventures, as well as third parties and ICT cross team to build and test innovative ideas with nurseries. Discovering and promoting new technologies that yield competitive advantage to the College. Trailing innovations within the College that have been successful in nurseries.

Outline description of proposed roles

- **1 x Head of Technology Office (Grade 6):** The role enables ICT and the wider College to define, build, exploit and directly benefit from new technologies, drawing upon a strong and varied experience in a CTO (Chief Technology Officer) -like role and direct 'hands on' experience. The role owns, defines and manages the realisation of ICT's technology strategy and blueprint, through the coordination, orchestration and collaboration of multiple stakeholders both inside and outside ICT, to ensure that ICT's customers have an evolving technology capability that meets their current and future needs and that services are aligned with, and support the College's overall business strategy.
- **3 x Technology Product Specialist (Domain) (Grade 5):** The role supports the Head of Technology Office, develop the overall strategy, blueprint and roadmaps, coupling multiple technologies together. Drawing upon a deep understanding of current IT design and awareness of future trends, contributing to the overall direction, design, development and enhancement of ICT service architectures. The role will have direct hands on, deep experience of at least three technologies, such that domain experts combined cover all domains, including:
 - Data and Analytics,
 - IT Security
 - End User Computing (EUC)
 - Networking
 - Tooling
 - Communications and Collaboration
 - Cloud Computing
 - Automation, including Robotics
 - Integration

Exploiting new technologies as they emerge to enable the delivery of world class teaching and research.

- **3 x Security Domain Specialist (Grade 5):** The role of Security Specialists within the Technology Office, with one of the roles operating as Chief Security Officer, are responsible for designs and overseeing the implementation of IT security for the organisation. Covering the technology, tools, controls, processes and assessments, to manage security risk and compliance. Across the College they deal with complex sets of security requirements, needs and solutions, and ensure that they work. Protecting the College data, systems and users from accidental or malicious attack and ensuring the College meets all its regulatory obligations with respect to protection of data. The role needs to support the major step changes that will take place with respect to the IT products and services that the College will deliver in the future, ensuring that the security architecture and capabilities are transformed to reflect new delivery models and evolve to address further technical change and new threats.
- **3 x Data Domain Specialist (Grade 5):** The role enables the College to embrace the beneficial use of data for enterprise (College) and research purposes. Defines, in collaboration with ICT Product Owners and wider College stakeholders including but limited to Research teams, technology capabilities required, roadmap, plans, platforms, integration, guide rails and governance. Governs and assures delivery, maintaining roadmaps and plans.
- **2 x Integration Technology Domain Specialist (Grade 5):** The role defines, owns, manages and governs the strategic integration of application and data technology standards, frameworks, platforms, principles and roadmaps to be employed across all of the College's ICT, ensuring all systems and applications are adaptable as technology evolves and changes. Enabling the current sunset integration platforms to be retired and keep related investment to a minimum until retirement. Keeping abreast, and adopting where applicable, the latest technology trends.
- **1 x Innovation Hub Manager (Grade 5):** The role leads, establishes and manages the Innovation Hub, working very closely with applicable College stakeholders and third-party vendors. Enabling Imperial College London ICT to become IT leader in the higher education industry and create solutions which create a sustainable advantage for the College in education and research.
- **4 x Innovation Subject Matter Expert (Grade 4, Grade 5):** Design, build and evolve innovation products and solutions within nurseries (controlled environment) and the wider College (pathfinder). The role works in close collaboration with the Technology Office, College stakeholders and third-party vendors, and have strong hands on experience in the latest technologies used in higher education for education and research purposes.

Implementation

The following implementation activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of the Technology Office with recent experience as CTO (Chief Technology Officer) or in an equivalent role in a large organisation, along with a

minimum of one role in each of the specialist areas with the prerequisite hands on experience required.

- Developing the Technology Blueprint defining the future state model that all future ICT products (across Products, Infrastructure Technology, Shared Services and Service Operations) should work towards.
- Building a complete picture of the current technology landscape and assets, defining, agreeing and overseeing execution of plans to address prioritised outstanding technical debt and security risks across ICT services.
- Implement revised technology governance arrangements to assure and approve technology solutions roadmaps, designs and release plans for Products, Shared Services, Infrastructure Technology and Service Operations.
- Establish the ICT Innovation team, including defining ways of working with the Research and Academic community, commencing with nursery activity.
- Coach and provide oversight on the development of roadmaps across Products, Shared Services and Infrastructure Technology.
- Pausing any 'cul-de-sac' investments in technology, across ICT.

Products functional model

Currently engagement with College customers for LOB 'line of business applications' is spread across a number of ICT functions, including:

- Strategic planning performed by Digital Transformation and Information & Relationship Management.
- Solution design performed across Digital Transformation, Projects Delivery and Development, and Application Support.
- Change delivery management, performed by Projects Delivery and Development, Application Support and Customer Services.
- Application support performed across Projects Delivery and Development (development), Applications Support and Customer Services.

Overall, there is strong talent base of delivery managers, engineers (functional specialists), developers, business analysts and research computing specialists.

Key challenges with the current structure

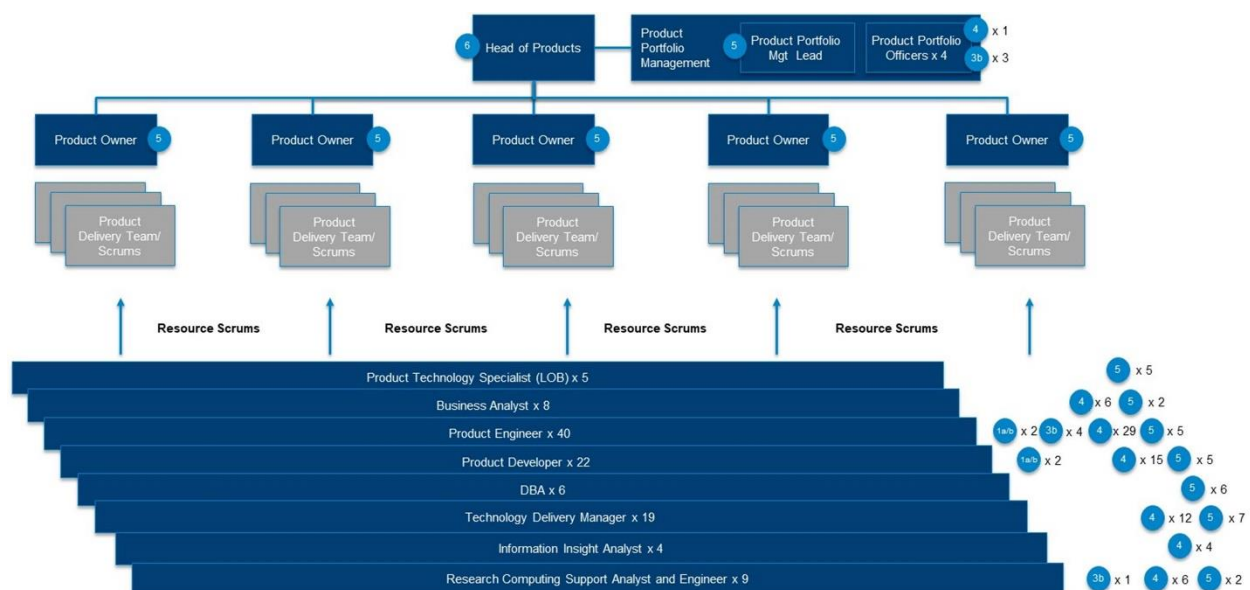
- A highly fragmented delivery model is in place. There is no single individual responsible for the lifecycle of a product (or application), instead there are too many decision makers. Additionally, current culture interferes with collaboration.
- There is a high management overhead, with a high number of Grade 6s and 5s across Digital Transformation and Information & Relationship Management, and Projects Delivery and Development, and Application Support, all performing 'management' roles, whilst delivery teams have insufficient engineers and developers to deliver.

- There are concerns that delivery commitments are made by 'pre-sales' teams, with limited consultation with Projects Delivery and Development, and Application Support teams.
- There are no roadmaps in place which define technology plans that directly align to College business (change plans), along with demand management to prioritise work.
- There are limited dedicated technology solution specialists aligned to the functions of the College, with a deep knowledge of the College ways of working coupled with up to date knowledge on relevant technology trends and offerings.
- Where they exist, many teams are not bought into the current governance arrangements.
- Delivery projects use traditional ways of working, using a waterfall approach, as opposed to incorporating agile methods, to deliver change more efficiently, more effectively and on time.
- Some of the engineers (functional specialists), developers, business analysts and research computing specialists may not have prerequisite skills required with respect to future ways of working.
- No evidence of effective portfolio management being in place, transparently covering as a minimum all resource, finance, delivery performance, risks and issues.

Proposed Products functional model

The proposed Products functional model is presented in the figure below:

Figure [7]: Proposed Products functional model (blue numbers indicate anticipated job grades)



Rationale for proposed functional model

The proposal is to implement a Products function, with single lifecycle ownership for products delivered to the College, organised into groups (Product Portfolios) based on sets of business processes/functions. Each Product Portfolio would be led by an owner who would own the roadmap, technology selection, release of new products, change activity on current products, ongoing support for products, technical debt and retirement of sunset products.

Product groupings are expected to evolve over time, reflecting changes in priorities and demand of the College. As the Green Paper set out, the Product Owner grouping structure will be as follows:

- Finance and HR: Covers technology products related to the College's Finance and HR processes and activities of the College.
- Estates, Campus and Commercial: Covers all technology products related to the running of building, accommodation, retail (include food and beverage), sports, the physical library, event and conferencing, health & safety and security.
- Student Lifecycle: Covers all technology products related to the student lifecycle, from recruitment and admission to studying and alumni contact, plus all the IT services which support teaching and learning.
- Research and Academic: Covers all technology products that specifically support research and academic activity.
- Cross functional: Covers all current and future technology products that are/can be used across the College e.g. CRM systems.

A portfolio function will perform a number of activities on behalf of each of the products including:

- Demand management (new change activity).
- Performance management of change activity.
- Resource management (for current and future change activity).
- Business case and benefits (for current change activity).
- Financial management (for planned and future change activity).

Delivery of change will be done by squads, self-organising teams, containing (as required) Product Developers, Product Engineers, DBAs, Business Analysts and Technical Delivery Managers.

Research Computing will move into this function, instead of moving into the Infrastructure Technology function, as this is deemed a line of business product directly supporting the research teams with their research.

Outline Description of Proposed Roles

- **1 x Head of Products (Grade 6)**: The role is accountable for the Products function, which covers the product strategies, delivery to a delegated budget, delivery to plan and define requirements of all change activity, delivery of operational support to agreed

performance targets and complying with required ICT and College interfacing governance. Responsible for setting and maintaining the strategy for the Product functions, evolving the organisation to ensure it remains relevant to the College and its priorities.

- **1 x Product Portfolio Manager (Grade 5):** The role sets up and manages the portfolio management function, which provide effective oversight, governance and support across all Product Lines, covering risk management, staff management, resource management, benefits and business case management, performance management, finance management and reporting. Ensuring the product teams are delivering within agreed bounds, plans and standards. The role also deputises for the Head of Products.
- **4 x Product Portfolio Support Officer (Grade 3b/4):** The role provides day to day support to the Product Portfolio Manager and wider Products teams, taking responsibility for one or more of the portfolio management capabilities: risk management, staff management, resource management, benefits and business case management, performance management, finance management and reporting. The role directly interacts with Product teams and College stakeholders.
- **5 x Product Owner (Grade 5):** The role owns a dedicated group of applications under a product line, aligned to a set of business processes or functions of the College, which covers the full lifecycle of product management including roadmap, technology selection, release of new products, change activity on current products, ongoing support for products, supplier management, technical debt and retirement of new products.
- **5 x Product Technology Specialist (LOB) (Grade 5):** The role supports the Product Owners to develop the overall strategy, blueprint and roadmaps for the Product Owner's portfolio and work on designs for particular solutions and changes. They draw upon a deep understanding of current and relevant application technologies and development methods, defining the overall direction, design, development and enhancement of line of business applications. They also manage that the technical changes meet ICT's customers' needs, deliver the benefits required and are economically supportable.
- **40 x Product Engineer (Grade 1a/b, Grade 3b, Grade 4 and Grade 5):** The role is development and operations support engineer for a diverse range of applications. Their responsibilities cover analysing, defining, configuring and testing innovations, enhancements and fixes to meet customer requirements, in collaboration with ICT SMEs/Suppliers, and providing 2nd/3rd line operational support. They have knowledge of business processes and technical understanding with respect to the applications they support.
- **22 x Product Developer (Grade 1a/b, Grade 4 and Grade 5):** The role is design, develop, tests and support line of business applications implementing innovations and enhancements to meet customer requirements. They have knowledge of business processes and technical understanding with respect to the applications they develop and support.
- **8 x Business Analyst (Grade 4 and Grade 5):** The role analyses and defines strategic, tactical and operational requirements for line of business applications, ensuring any recommended solutions and related changes meet the customers' requirements/on-going support requirements, are in line with the product strategy/roadmap, leverage ICT strategic capabilities and deliver measurable business benefit.

- **19 x Technology Delivery Manager (Grade 4 and 5):** The role to manage and control the delivery of activities, taking responsibility for delivering solutions which address business needs. To manage resources to ensure delivery to agreed business plans and roadmaps within cost, quality and timescale objectives. Ensuring that the business outcomes and benefits identified in the business case can be realised. To ensure that ICT's customers have an evolving suite of products that meet their current and future needs and that these products are aligned with and support the College's overall business strategy.
- **4 x Information Insight Analyst (Grade 4):** The role will be principally concerned with the design and specification of management information and business intelligence solutions in liaison with stakeholders, from initial analysis of the problem, through to the delivery and ongoing monitoring and support both within and outside of the project lifecycle.
- **6 x Database Administrator (Grade 5):** The role provides database development and administration, as well as providing database and broader architectural and technical skills to project teams and production support teams. To ensure that ICT's customers, including business, research and academic users, have databases that meet their current and future needs and that these products are optimised, up to-date, secure and meet desired performance and availability levels in line with Service Level Agreements.
- **4 x Research Computing Support Analyst (Grade 4):** The role serves as a technical lead, setting up and running HPC (high performance computing) equipment for the scientific, engineering medical and business research communities within College. To participate in systems development work, including systems analysis and implementation, and the evaluation and integration of new technology.
- **5 x Research Computing Engineer (Grade 3b/Grade 4/Grade 5):** The role researches the use of new and emerging technologies for the development of innovative, best-practice software solutions. To design and implement a state-of-the-art RSE (research software engineering) service, supported by the resources of ICT and working in partnership with the academic research community. To develop RSE activity through tactical involvement in on-going research projects and strategic engagement with PIs, with the aim of establishing RSE expertise as a core resource employed in research activities.

Implementation

The following implementation activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of Products, Product Owners, Product Portfolio Manager, Product Technology Specialists.
- Developing the Product Roadmaps in collaboration with the College stakeholders and the Technology Office.
- Identify and confirming the support applications and those which need to be retired with an agreed retirement date.

- Implement a Product Portfolio management function and related capabilities, to provide oversight of performance, support Product Owners with day to day management and embed new ways of working across the function.
- Implement revised governance arrangements with the College and business change stakeholders, consistency across all products.
- Embed the new ways of working, as set out in the Green paper.
- Transition of Applications Support staff, Project Delivery and Development staff with immediate effect.
- Pausing any 'cul-de-sac' investments.
- A number of hands on engineering roles, mainly called functional specialists today, will evolve further and be titled Product Engineers. Capability assessments shall be performed to confirm they have the required skills and knowledge to perform the Product Engineer role.
- Technical Delivery Managers and Business Analysts will be required to understand business processes, related technology impacts and have a technical understanding of how the technology they deliver is implemented and supported. They need to be increasingly hands-on and apply agile methods to delivery.

Shared Services functional model

There are currently limited shared services capabilities in place, demonstrated by the following examples:

- With respect to data, there is single data integration analyst.
- Shadow ICT has been leveraging off the shelf cloud tools e.g. Box, for data purposes, but these are not fit for purpose and costs has arisen astronomically over time.
- There is limited cloud capability in Service Operations.
- Integration capability sits within Projects Delivery and Development and is focused on SOA.
- Research computing appears to be an exception and does provide high capacity (compute and storage) on premise (data centre hosted) services for research purposes.

Key challenges with the current structure

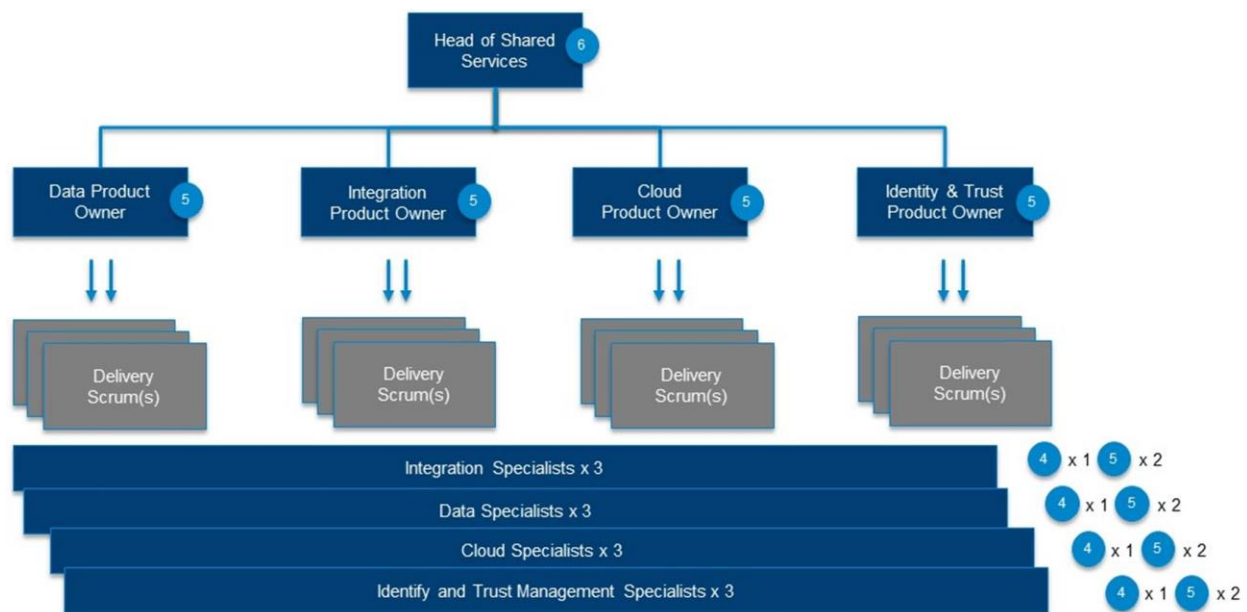
- ICT is behind the curve with respect to exploiting new technologies in the domains of data (enterprise and research), cloud infrastructure and applications.
- Investments continue to be made in SOA, despite the platform being complex and identified as 'sunset', as opposed to more cost effective and agile integration technologies.
- There is no big data capability for enterprise (College data) and research purposes.

- Shadow ICT has been leveraging off the shelf cloud tools e.g. Box, for data purposes, but these are not fit for purpose and costs has arisen astronomically over time.
- Investments in cloud have been limited to Microsoft Office 365 (SharePoint, Teams and Skype for Business).

Proposed Shared Services functional model

The proposed Shared Services functional model is presented in the figure below:

Figure [8]: Proposed Shared Services functional model (blue numbers indicate anticipated job grades)



Rationale for the proposed functional model

The proposal is to establish a new Shared Services capability, which owns strategy and the delivery of ICT 'accelerators' to enable step changes in the College's ICT capabilities, products and services. These 'accelerators' will provide ICT and the wider College with the tools to deliver technology change faster and cheaper, and in the majority of cases whilst reducing operating costs versus current technologies in place.

The Shared Services capabilities will include:

- Data: Provide 'big data' technologies to support analytics education and research purposes.
- Integration: Implement modern agile integration capabilities for applications and data.
- Cloud: Migrate to and host from agile cloud-based platforms, both infrastructure and applications.

- Identity and Trust: Deliver unified zero trust capability to support the secure access to, and protection of College applications and data by College and external consumers e.g. prospective students.

The Shared Services function will include specialists in each of the areas above. Self-organising teams will operate in an agile manner, like the other functions across ICT.

Sunset Technology - To ensure focus remains on future technologies, no equivalent 'sunset' technology (e.g. SOA) will be delivered through the Shared Service function.

Outline Description of Proposed Roles

- **1 x Head of Shared Services (Grade 6):** The role, with current knowledge and experience across all technology products of shared services, is accountable for the Shared Services function, covering product strategies and roadmaps, delivery of change plans, operational support to agreed performance targets, and complying with required ICT and College interfacing governance.
- **1 x Data Product Owner (Grade 5):** The role, with deep data domain subject matter expertise, leads the roadmap definition and evolution, build and operational support, of the College's next generation data capabilities covering warehousing, integration, workflow, automation and analytics capabilities. Addressing both enterprise and research needs.
- **3 x Data Specialist (Grade 4 and Grade 5):** The role, with deep data domain subject matter expertise, supports the Data Product Owner, selecting, designing, building, supporting and evolving the College's next generation data capabilities covering warehousing, integration, workflow, automation and analytics capabilities.
- **1 x Integration Product Owner (Grade 5):** The role, with deep data domain subject matter expertise, leads the roadmap definition and evolution, build and operational support, of the College's next generation application and data integration capabilities, transitioning away from the current 'sunset' capabilities.
- **3 x Integration Specialist (Grade 4 and 5):** The role, with deep subject matter expertise, supports the Integration Product Owner, selecting, designing, building, supporting and evolving the College's next generation application and data integration capabilities.
- **1 x Cloud Product Owner (Grade 5):** The role, with deep data domain subject matter expertise, leads the roadmap definition and evolution, build and operational support, of the College's next generation cloud infrastructure and SAAS (Software as a Service) services, enabling the transition away from current on premise solutions where the case can be justified.
- **3 x Cloud Specialist (Grade 4 and Grade 5):** The role, with deep subject matter expertise, supports the Cloud Product Owner, selecting, designing, building, supporting and evolving the College's next generation cloud capabilities.
- **1 x Identity and Trust Product Owner (Grade 5):** The role will define and deliver the next generation of Identity and Trust capabilities to provide a agile zero trust capability to

support the secure access to and protection of College applications and data by students, staff, researchers, academics and non-IC stakeholders e.g. prospective students, alumni and partners/suppliers.

- **3 x Identity and Trust Management Specialist (Grade 4 and Grade 5):** The role, with deep subject matter expertise, supports the Identity and Trust Product Owner, selecting, designing, building, supporting and evolving the College's next generation Identity and Trust Management capabilities.

Implementation

The following activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of Shared Services and Product Owners.
- Maintaining current Identity and Trust services, moving current staff across.
- Developing the technology blueprint and roadmaps for each Shared Service, in collaboration with the Technology Office, Products and Infrastructure Technology.
- Work to revised technology governance arrangements as set out by the Technology office.
- Assessment of additional shared capabilities maybe required to address upcoming technology.

Infrastructure Technology functional model

Currently infrastructure capabilities currently primarily reside under Service Operations and provide lifecycle management services for the following:

- Data centre colocation, servers, storage and backup.
- Research computing, including infrastructure and software engineering services.
- WAN, LAN (including Wi-Fi) and VPN infrastructure.
- EUC devices, including software deployment and maintenance, hardware support and
- Managed Print Service.
- Telephony and base Contact Centre infrastructure.
- Identity Access Management.
- Database administration services (DBAs).
- Office 365 and collaboration tools including Skype for Business and Teams.
- Security consultancy and support.
- Availability and configuration management.
- Project and change delivery for the above.

Overall, there is strong talent base of 'hands on' technologists.

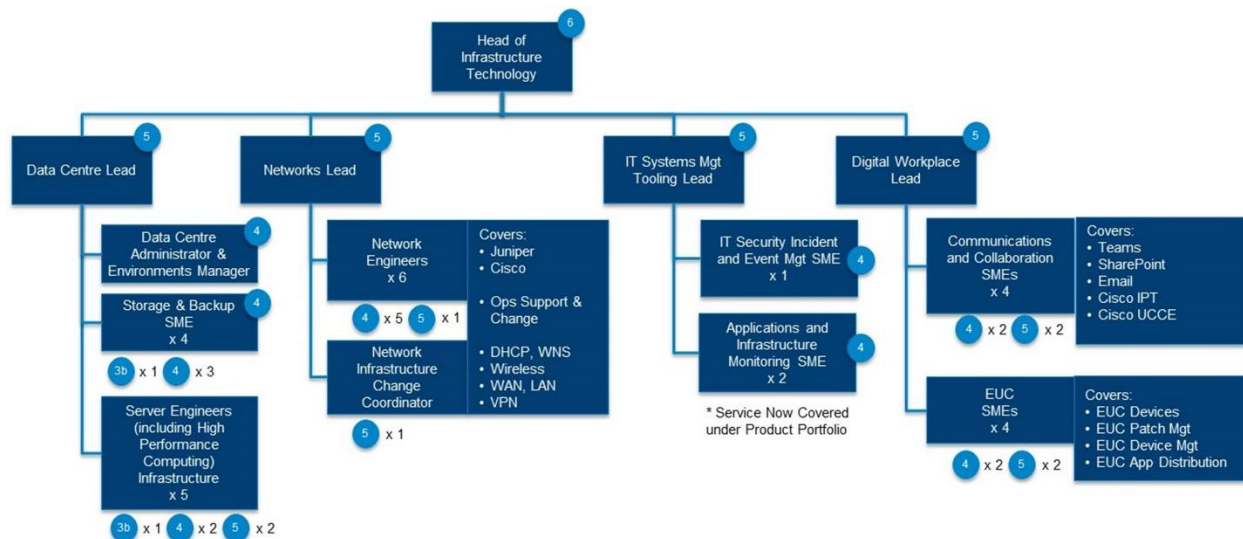
Key challenges with the current structure

- Limited technology leadership, with no roadmaps and plans in place.
- Reactive approach to improvements and addressing technical debt.
- High management overhead.
- There is an overlap with Customer services, with respect to 2nd line support and some core service management processes split between the two functions.
- Server and storage infrastructure services remain hosted on premise, with the exception of Office 365, instead of migrating to more agile platforms in the cloud.
- Continue to support an increasingly expanding legacy desktop estate, as a result of the limited hardware asset management and College staff recycling equipment, which material increases ICT support costs

Proposed Infrastructure Technology functional model

The proposed Infrastructure Technology functional model is presented in the figure below:

Figure [9]: Infrastructure Technology functional model (blue numbers indicate anticipated job grades)



Rationale for the proposed functional model

The Infrastructure Technology functional model will principally focus on the following four College wide infrastructure products:

- **Digital Workplace**, covering EUC (mobile, laptop, desktop devices) including device management, software packaging and software distribution, managed print, Office

software, plus communications and collaboration solutions (telephony, contact centre, Skype and Teams).

- **Data Centre Services**, covering data centre colocation, servers (bare metal O/S), Storage and backup, including also increasing support for researching computing infrastructure by the server engineers.
- **Networks** covering IP addressing (including DNS and DHCP), LAN (including WIFI), WAN (including Janet) and VPN.
- **Tooling**, covering tools used by ICT to manage the systems it delivers. Tool types include, but are not limited to:
 - product systems performance and monitoring,
 - security incident and event monitoring.
 -

All technology capability will work in one of the above four teams. Capability development will happen within teams, by cross training and setting related personal development plan objectives. The function will be led by technologists, performing lifecycle management, covering design, build, test, onboarding, 2nd and 3rd line support and refresh/retire. The leads and teams will work in close collaboration with the Technology Office to agree the roadmaps for each domain.

Other capabilities in the existing Service Operations will be impacted as follows:

- Database Administration Services (DBAs) are better suited in the Products functional model, working as part of the teams on change activity and providing operational support.
- Research computing will move into the Products functional model, as it is a product directly funded by the research community.
- Security (including IAM) will be removed from the infrastructure technology functional model and seen as broader capability with strategic focus. Hence there is a CISO-like function in the Technology Office, and technology delivery capability within Shared Services (Identity and Trust Services) and security forms part of the first line monitoring capability of SSXC (Service and Security Experience Centre).
- Availability and release management will move into the new Service Operations function. The configuration management scope will be revised and will be covered under the Asset Management capability.

Outline Description of Proposed Roles

- **1 x Head of Infrastructure Technology (Grade 6):** The role is accountable for the Infrastructure Technology function, which covers the infrastructure product strategies and roadmaps, delivery of related changes plans and activity, addressing technical debt and risk, delivery of operational support to agreed performance targets and complying with required ICT and College interfacing governance. Working in collaboration with the Technology Office, the role is responsible for developing and evolving the technology strategy for the function. Drawing upon deep subject matter expertise of infrastructure

technologies, including historic hands on expertise. The role is to ensure that infrastructure remains relevant to the College and its priorities.

- **1 x Digital Workspace Lead (Grade 5):** The role is responsible for and leads the strategic technology development, roadmaps, change delivery and operational delivery of Digital Workplace products, working in collaboration with the Technology Office. Drawing upon deep and current subject matter, supported by historic hands on expertise, of end user computing technologies and, communications and collaboration technologies. The role leads a team of subject matter experts and ensures that Digital Workplace products deliver and operate to defined performance standards.
- **4 x End User Computing Subject Matter Expert (Grade 4 and 5):** The role provides the day to day hands on delivery and support of End User Computing technologies, delivered and supported by ICT. Contributing directly to roadmaps, and building, delivering and supporting all end user technologies including related management tools. The EUC SME has deep and current subject matter and is a hands-on technical expert. The role delivers and operates to defined performance standards.
- **4 x Communications and Collaboration Subject Matter Expert (Grade 4 and 5):** The role provides the day to day hands on delivery and support of Communications and Collaboration technologies, delivered and supported by ICT across the College. Contributing directly to roadmaps, and building, delivering and supporting all end user technologies including related management tools. The Communications and Collaboration SME has deep and current subject matter and is a hands-on technical expert. The role delivers and operates to defined performance standards.
- **1 x Network Lead (Grade 5):** The role is responsible for and leads the strategic technology development, roadmaps, change delivery and operational delivery of Network product, working in collaboration with Technology Office. Drawing upon deep and current subject matter expertise of networking technologies. The role leads a team of engineers. The role ensures that Networks deliver and operate to defined performance standards.
- **6 x Network Engineer (Grade 4, Grade 5):** The role provides the day to day hands on delivery and support of networks technologies, delivered and supported by ICT across the College including across all teaching and research locations. Contributing directly to roadmaps, and building, delivering and supporting all end user technologies including related management tools. The Network SME deep and current is the subject matter and is a technical expert in networking and at least two related technologies. The engineers also perform change activity and operational throughout the College defined performance standards.
- **1 x Network Infrastructure Change Coordinator (Grade 5):** The role manages and coordinates the provision and development of the cabling and network infrastructure and the delivery of network connectivity over it, coordinating both ICT resources and 3rd party suppliers.
- **1 x IT Systems Management Tooling Lead (Grade 5):** The role is responsible for the strategic technology development, roadmaps, change delivery and operational delivery of tooling used by ICT to deliver products and services. Drawing upon deep and current subject matter expertise of tooling. The role leads a team of tooling SMEs.

- **1 x IT Security Incident and Event Management Subject Matter Expert (Grade 4):** The role is a subject matter expert in security SIEM (Security Incident and Event Management) tooling, who contributes direct to tooling roadmaps, and build, deliver and support the tools. The role directly collaborates with SSXC (Service and Security Experience) team, ensuring their requirements are continuously delivered.
- **2 x Applications and Infrastructure Monitoring Subject Matter Expert (Grade 4):** The role is a subject matter expert in Applications and Infrastructure Monitoring, who contributes direct to tooling roadmaps, and build, deliver and support the tools. The role directly collaborates with the SSXC (Service and Security Experience) team, ensuring their requirements are continuously delivered.
- **1 x Data Centre Lead (Grade 5):** The role is responsible for the strategic technology development, roadmaps, change delivery and operational delivery of the Data Centre product. Drawing upon deep and current subject matter expertise of data centre related services, including physical hosting, servers, storage and backup. The role leads a team of engineers and administrator of the data centre.
- **1 x Data Centre Administrator and Environments Manager (Grade 4):** The role coordinates the maintenance of resilient data centre facilities that support the College's 'on premise' infrastructure technology. This includes College and 3rd party hosted facilities, and the optimal use of space, 3rd party maintenance and break fix services and responses to incidents, technical debt.
- **4 x Storage and Backup Subject Matter Expert (Grade 3b, Grade 4):** The role is a subject matter expert in Storage and Backup, who contributes direct to related roadmaps, and build, deliver and support the ICT storage and backups. The role provides storage and a data/system backup and restore engineering services for the related ICT supported storage and backup infrastructure, with respect to change and operational support. Drawing upon deep and current subject matter expertise of storage and backup technologies.
- **5 x Server Engineer (Grade 3b, Grade 4, Grade 5):** The role is a subject matter expert in Server technologies, contributing directly to related roadmaps, and building, delivering and supporting server hardware and software. Drawing upon deep and current subject matter expertise of storage and backup technologies.

Implementation

The following activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of Infrastructure Technology and placement of the majority of existing staff.
- Transition of staff, where applicable, no longer in Infrastructure Technology (formerly service operations) into other relevant functions.
- Developing the roadmaps Infrastructure Technology products, in collaboration with the Technology Office and Product teams, including agreeing approaches and priorities to address technical debt.

- Develop and communicate scope of supported and unsupported end user computing.
- Working with Shared Services team to identify what infrastructure could be migrated to the cloud.
- Cross skills training with Research Computing team, to enable server and storage engineers to provide more infrastructure support for the Research Computing environment.
- Adopting and complying revised technology governance arrangements.
- Pausing any 'cul-de-sac' investments.

Service Operations functional model

Currently service operations are principally performed by teams within the current Customer Services function.

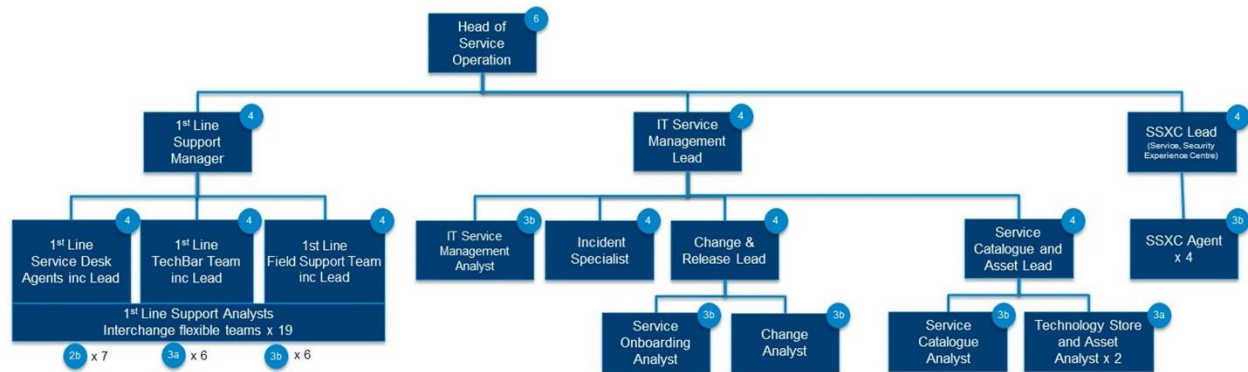
Key challenges with the current structure

- Customers Services has an extremely high headcount versus industry peers, representing nearly 30% of the overall ICT headcount.
- Duplication of effort with 2nd line support performed across Applications Support, Service Operations and Customer Services.
- There is a heavy emphasis on closing incidents, rather than proactively reducing the volumes which arise addressing the wider service performance requirements.
- Current monitoring capability is not exploited as much as it could be with respect to proactively managing the health and the security of the estate.
- Asset management is skewed towards software, with limited hardware asset management performed.
- There is no evidence of service onboarding being performed, to ensure all the prerequisite requirements are to successfully rollout a new or material amended product or service. Focus is solely on managing groups of and individual technical changes, rather than the wider service wrap and customer experience.

Proposed Service Operations functional model

The proposed Service Operations functional model is presented in the figure below:

Figure [10]: Service Operations functional model (blue numbers indicate anticipated job grades)



Rationale for proposed functional model

- Focus on 1st line support, proactive service monitoring and delivering optimal first-class core service management processes, including: (Major) Incident, service request, change, release, service onboarding, asset, service catalogue. Move other capabilities, from current Customer Services team, into relevant functions.
- Reduce the management overhead of the current Customer Services team.
- Shift the balance from a large desk side support team, to drop in TechBars where support can be more efficient and a better service experience for (portable) EUC devices, incidents can be handled and service requests can be fulfilled (new devices, application installs etc) and deliver a better service experience.
- Support ICT delivered technologies first and foremost, improving service experience and performance, through working to high service standards. Becoming more transparent regarding the need to costs and effort of providing reasonable endeavours supported for unsupported devices and applications, working to a lower set of performance targets.
- Rework service levels and performance standards introduce service onboarding and build a formalised proactive management capability – implementing SSXC, to place more emphasis on improving the service experience and reliability of services.
- Rotate 1st line support staff across the different channels (Service Desk, TechBars, Field Engineering) to give them a broad experience, help them understand how the College operates and perform more effectively. For example, hands on experience at TechBars helps 1st line support staff be better placed to handle calls and emails when on the Service Desk.
- Enable staff to build careers from performing 1st line support roles, moving into specific technology subject matter roles elsewhere in ICT.

Outline description of proposed roles

- **1 x Head of Service Operations (Grade 6):** Owning the strategic plans, and managing the related operational delivery, to provide:

- 1st line support services for incidents, requests and queries through service desk, field engineering (deskside) support and TechBars,
- a proactive security and service experience monitoring capability covering security and performance of ICT Services.
- the delivery of a core set of ICT wide service management disciplines covering major incident, change, release, service onboarding, service request, service catalogue, and asset management services.

The role will lead on providing world class customer service to agreed performance standards, proactively improving service performance and driving down incidents volumes and increasing the service experience and productivity of the College staff and students.

- **1 x 1st Line Support Manager (Grade 4):** The role will lead the strategic planning and management of all 1st line support services for >30,000 users. Providing 1st line services through the Service Desk, TechBars and Field Engineering (deskside support). With the primary objective of proactively improving service performance, including meeting service levels and performance standards, whilst driving down incident volumes and increasing the productivity of the College staff and students, through continuously exploiting new methods, tools, trends and knowledge.
- **4 x 1st Line Support Lead (Grade 4):** This role performs day to day management one of 1st line support teams (TechBar, Service Desk or Field Engineering Support) which includes eight to ten 1st line support analysts, meeting defined service levels and performance standards. The job holder, as part of their role, will be expected to spend some of their time doing hands on 1st line support. The role holder will be rotated across Service Desk, TechBar and Field Engineering Support, ensuring they develop a full understanding of how the College uses the products and services delivered by ICT, common incidents and queries they have, and how 1st line can deliver a better service experience across all engagement channels.
- **19 x 1st Line Support Analyst (Grade 2a, 3a and 3b):** This role provides 1st line support to ICT's customers in accordance to agreed service levels and performance standards. 1st line support covers incidents, queries and service requests. 1st Line Support Analysts are rotated from time to time across the following three teams:
 - **Service Desk**, handling calls, emails, chat and service management tool raised incidents, service requests and queries.
 - **TechBar**, providing face to face support to College staff and students to help resolve incidents, fulfil service requests and address queries, at specific locations around the College.
 - **Field Engineering Support**, providing desk side support to College staff and students to help resolve incidents, fulfil service requests and address queries.

Delivering world class customer experience is critical.

- **1 x IT Service Management Lead (Grade 4):** This role leads the strategic development and day to day delivery of a number of core and critical Service Management capabilities that must be run across ICT by a central team. The capabilities include Incident Management, Service Performance Improvement, New Service Onboarding, Release

Management, Change Management, Service Lifecycle Management, IT Service Continuity and Knowledge management. To ensure the stability and continuity of ICT services, and the consistent adoption of best practices.

- **1 x IT Service Management Analyst (Grade 3b):** This role, supporting the IT Service Management Lead, delivers high quality service operations management information to ICT leaders and College stakeholders. The role is responsible for the data analysis and reporting of Service Management related information to identify service achievements, service improvement opportunities, service data quality issues, service performance, service trends and to support incident and problem investigation. The role also supports the IT Service Management Lead prepare and maintain IT Service Continuity teams, working in collaboration with all the ICT functions and teams who will contribute input.
- **1 x Incident Specialist (Grade 4):** This role is responsible for developing and enhancing the incidents management processes, performing the role of major incident manager. Performing related major crisis management steps, handling and coordination of the resolution of major incidents, through to completion of root cause analysis. Major incidents cover those classified as severity 1, severity 2 or high volumes of the same type of incidents.
- **1 x Change and Release Lead (Grade 4):** Responsible for the planning, execution and enhancement of service change processes, covering service onboarding, change management and release management. Ensuring disruption to the College is kept to an absolute minimum. The role also performs day to day release management, managing the processes, systems and functions to package, coordinate and deploy changes and updates (which are bounded as “releases”), from across ICT, into a live environment.
- **1 x Change Analyst (Grade 3b):** The role is responsible for change management processes, with respect to all operational changes that need to be implemented by ICT and its suppliers. This includes defining, enhancing over time and coordinating the execution of the change management. Ensuring all changes adhere to the process and related requisite information and standards, and that tooling is setup to support change management and running the CAB (Change Advisory Board).
- **1 x Service Onboarding Analyst (Grade 3b):** To ensure all new or revised products and services, delivered by ICT or their 3rd parties, are smoothly introduced into service to College consumers. The scope of service onboarding includes but is not limited: 1st line support readiness, security controls being in place, user training, 2nd/3rd line support readiness, configuration documentation being up to date, SSXC.
- **1 x Service Catalogue and Asset Lead (Grade 4):** The role plans, implements, and performs ongoing improvement of the lifecycle planning, control and management of the ICT assets of the organisation, including hardware, software and service assets, including documentation and information relating to those assets and their relationships. The information support, the procurement, and management of software licenses, deployment of software, acquisitions, compliance, maintenance, renewal, and life cycle planning.
- **1 x Service Catalogue Analyst (Grade 3b):** The role creates, maintains and continuously improves the service catalogue, which covers the catalogue hierarchy and items of ICT Product and Services delivered to the College and its consumers, the service requests associated with service catalogue items and asset and configuration

items. The role works closely with the Service Onboarding Analyst, technology delivery teams and suppliers, to ensure new services are incorporated into the catalogue and existing services are updated in the catalogue. The role promotes the service catalogue as the single source of truth concerning the products and services ICT delivers, plus the related applications, infrastructure and assets which underpin these products and services.

- **2 x Technology Store and Asset Analyst (Grade 3a):** The role has two main responsibilities:
 - Creates, maintains and continuously improves the Technology Store, including: Defining hardware and software instalment needs of ICT customers and making these standard store items, assuring that customer impact of changes to their day to day activities remain minimal through bundling of changes, managing software delivered through the Technology Store and for related communication between ICT and its customers, handling the phasing out and retirement of Technology Store items no longer required, ensuring asset and software license information requirements are met by the Technology Store.
 - Performs lifecycle planning, control and management of the ICT assets of the organisation, such as hardware, software and service assets, including documentation and information relating to those assets and their relationships.
- **1 x Service & Security Experience Centre Lead (Grade 4):** The role leads the build, management and evolution of the SSXC (Service and Security Experience Centre), which provides a service health check and proactive security monitoring and triage capability to minimise disruption to IT products and services. Endeavouring an improved service experience to consumers of ICT products and services and protecting the College from internal and external ICT related security threats, whilst reducing incident volumes. SSXC Capabilities shall include:
 - Proactive security and performance dashboards and eyes on glass monitoring of ICT supported products, applications and infrastructure.
 - Escalating incidents to 1st, 2nd and 3rd line support, and suppliers, as required.
- **4 x Service & Security Experience Centre Agent (Grade 3b):** The role performs proactive 'eyes on glass' monitoring of the health of ICT products and services using SSXC dashboards and tools. The agent performs research to troubleshoot and resolve the issue or, depending upon complexity, escalates the issue 2nd and 3rd line support.

Implementation

The following implementation activities are key to the successful implementation of the new delivery arrangements for ICT, including:

- Recruitment of the Head of Service Operations and Service Management Lead.
- Restructure of the current 1st line support arrangements, ensuring the retained capability has support and deployment capabilities across EUC devices, Audio Visual Technologies and 'smart hands' for other technologies requiring hands on support.

- Redefining the performance targets (including service levels) to focus more on proactive support, reducing incident volumes, increasing service reliability and improving the service experience.
- Clarifying the general split of 1st line support responsibilities versus 2nd/3rd line support within the Products, Infrastructure Technology and Shared functions.
- Identifying College campus locations which would benefit from a TechBar, to reduce the dependency on field engineering support.
- Communicating to the wider College on the core products and services that ICT support.
- Establishing the SSXC, to delivering an evolving set of proactive service performance and security monitoring services.

b. Progression Routes and Apprentice Scheme

The proposed functional model will provide more progression routes for staff than in the current structure. Examples include but are not limited to:

- 1st Line Support Analysts progressing into engineering roles across Products and Infrastructure Services or Service Management and leadership roles.
- Technologists of different skills and experience being seconded into the Innovation Hub.
- Product Technology Specialists, Product Engineers, Product Developers and Infrastructure Technology SMEs and Engineer moving into the Technology Office.
- Product Engineers and Developers becoming Product Technology Specialists.

The proposed functional model will introduce an apprenticeship scheme. Initial for four FTEs, with a target of 12 apprentices when the functional model is fully implemented. This scheme will provide opportunities for talented individuals both within and outside of the College to gain experience, skill and formal qualifications, equipping them to progress to technology positions including:

- Product Engineers
- Product Developers
- Business Analysts
- Information Insight Analysts

c. Current Functions No Longer Required

The following functions are in the current structure but will not be required in the proposed functional model:

- **Digital Transformation** activities, in particular strategic engagement with key College stakeholders and architecture will be absorbed into the wider roles of product and technology leadership in the Technology Office, Infrastructure Technology, Shared Services and Products.

- **Information and Relationship Management** activities, in particular information insight analyst capabilities (including roles) will be transferred into the Product teams. The Digital Partner activities will be absorbed into the wider roles of product and technology leadership in Technology Office, Infrastructure Technology, Shared Services and Products, through the development of roadmaps.
- **Applications Support** will be absorbed into the Products function. Though as ICT moves to a product-based model, the team structure will be replaced by communities of practice led by subject matter leads.
- **Project and Delivery Development** will be largely absorbed into the Products team, with the senior portfolio management roles no longer required.
- **Alliance and Partnerships** as a dedicated function is no longer required and the responsibility for managing partnerships will pass across to the Technology Office, with the commercial management activity being transferred into Business Operations.
- **Transformation Communications** will be absorbed into central and local communications activities.
- **Governance** will be absorbed into Business Operations and broadened as a capability.

6. Financial Costs

The current gross ICT staff costs are £19,771,308. The proposed functional model is estimated to provide an annual saving of circa £2,692,000 when fully operational.

Currently there is a reliance on a relatively large contingent workforce. The proposed functional model will look to utilise the Imperial resource pool and limit reliance and associated costs with contingent labour and Corporates such as Atkins.

7. Staffing Implications

a. Summary of Affected Roles

The major impacts of the proposed functional model are as follows:

- Overall headcount reduction from 281 to 246 staff members
- Circa 91 staff members will be slotted into roles
- Reduction in number of line managers and support roles
- Initially four new apprenticeship roles will be created with the overall objective of this increasing to 12.
- It is estimated that overall 156 staff will be directly impacted by this change in so far as they will need to compete for roles either internally and in some instances against applicants both internally and externally. Consequently, it is estimated that approximately 75 staff will be at risk of redundancy. However, we will work to keep this number to a minimum.

- The table below summarises the change in staff structure by grade from the current structure to the proposed functional model:

Table [8]: Proposed functional model versus current structure

	Level 7	Level 6	Level 5	Level 4	Level 3b	Level 3a	Level 2b	Level 1a/1b (Apprentices)	Number of FTEs
Current Organisation	2	24	64	116	55	12	8	0	281
Future Organisation	1	6	76	111	26	14	8	4	246
Future Org vs. Current Org	-1	-18	12	-5	-29	2	0	4	-35

Careful consideration across the ICT department was given to identify the appropriate pool of staff from which the selection for redundancy is to be made. The pool of staff at risk of redundancy were objectively applied in a fair and consistent way.

b. Voluntary Redundancy

At the College's discretion and due to the number of posts available in the new structure we will seek volunteers among those staff at risk of redundancy with the offer of enhanced voluntary redundancy. The opportunity to be considered for voluntary redundancy will be open during the consultation and until 31 July 2020, following which a compulsory redundancy process will be considered which will attract statutory redundancy terms only.

The offer of an enhanced severance sum will be made available based on two weeks' pay for each year of service up to a maximum of 20 weeks. Payment will be tax-free up to £30,000. The enhanced severance sum will include relevant entitlement to statutory redundancy pay. Any payments in lieu of notice will be paid in addition and will be subject to tax and NI deductions.

Any staff who are eligible to take early retirement by reason of redundancy, and wish to be considered for voluntary redundancy, will be advised that their reference for voluntary severance will not be guaranteed to be accepted but will be taken into consideration based on the cost of severance and pension strain costs incurred by the Department, together with the staffing requirements for the remaining positions.

All voluntary severance payments will be made effective at an agreed date of leaving based on the business requirements and will be subject to signing a settlement agreement.

c. Notice Period

Staff are entitled to contractual or statutory notice (whichever is the greater) for every completed year of service up to a maximum of 12 weeks.

Staff may be required to work their notice. Payment in lieu of notice will be made for any notice not worked by an agreed leaving date, which shall be paid subject to income tax and National Insurance contributions at the appropriate rate.

d. Statutory Redundancy

If there are any instances where voluntary severance or redeployment is not agreed, then compulsory redundancy will be considered. In this situation statutory redundancy payments only will be paid for staff with two years continuous service.

The redundancy payment due to each member of staff under the statutory redundancy payment scheme depends on their age and length of service (subject to a maximum service limit of 20 years). A week's pay is subject to a maximum cap of £538.

Statutory redundancy payments are based on the following formula:

- 0.5 week's pay for each full year of service where age during the year is less than 22
- 1 week's pay for each full year of service where age is 22 or above for the full year, but less than 41
- 1.5 weeks' pay for each full year of service where age is 41 or above for the full year.

Staff are also entitled to contractual or statutory notice (whichever is the greater) for every completed year of service up to a maximum of 12 weeks.

8. Timescale and Consultation Process

a. Timescale

The College is committed to a period of full consultation on the above changes. The distribution of this paper marks the start of a 30-day consultation period (29 May 2020). The 30-day consultation period has been set with the intention of balancing both a desire to bring an end to the period of uncertainty which staff are facing versus a length of time which allows people due consideration of the paper. The consultation period will conclude on 27 June 2020.

b. What am I being consulted on?

The Green Consultation Paper confirmed the proposed functional model should be pursued. The purpose of the White Consultation Paper is to review proposed roles within this model and the approach to implementing the new structure. The consultation period is also an opportunity for staff to ask questions and to learn more about, and be considered for, the options and opportunities available to them in the proposed model.

c. How do I participate in the consultation?

A group consultation meeting will take place on 29 May 2020. At this meeting the CIO will outline the proposal. The presentation, a link to the consultation paper (The White Paper) and a recording of the presentation will be made available to all staff.

As part of the consultation process staff will be invited to specific group meetings, the first of which are scheduled for the 3 June 2020. At these meetings the potential impact this proposal will have on roles will be discussed. Next steps, deadlines for submitting applications and other decision making will also be outlined.

Individual consultation meetings will be available from 8 June 2020. The process to request an individual consultation meeting will be discussed at the group meetings.

Following the group consultation meeting, staff will have the opportunity to submit their views on:

- The proposed functional model
- The proposed new roles in the new structure
- Any other matters relevant to the proposals

All responses will be confidential and will be anonymised as necessary if the content is re-used in a response document or similar. Any comments or questions about the proposals from staff and trade unions are welcome and will be given full consideration.

The White Paper and associated documents, guidance and support information will be available on the “Reshaping our future” web pages under a subpage called “White Paper and Consultation”. Details will be emailed to staff directly after the consultation meeting on 29 May 2020.

d. Implementing the new functional model

The consultation period will conclude on 27 June 2020. After which the CIO, CFO and Director of HR will then review the feedback and confirm the basis on which the functional model will be implemented. If the decision is taken to proceed with the proposed structure, the current organisational structure will cease on 31 July 2020. The transition to full implementation of the new structure is likely to take circa six months as some changes will be dependent upon a suitable period for recruitment and selection of staff.

9. Selection and Recruitment Process

Whilst there is a high skill base amongst the existing ICT staff cohort, as a department we do not believe we have all the required skills, knowledge and experience to deliver the vision. The following options will be considered:

- Where role matches are deemed possible, slot ins will be suggested.
- There will be an internal competitive based process for staff to apply to roles. This will most likely involve paper-based applications followed by an interview.
- Some senior roles will be open to external applicants if the roles are not considered to be suitable alternative employment for existing staff. Internal staff will have priority consideration.
- Promotion and development opportunities will be provided for ICT staff where possible.

a. Matching and Slotting process

It is estimated that approximately 91 posts in the current structure could be ‘matched’ into the proposed functional model. This assessment is based on the objective comparison of the proposed role with the current roles based on grade, the overall job purpose, key principle responsibilities and essential person specification criteria.

b. Staff at risk of redundancy

Staff at risk of redundancy will, where possible, be redeployed into another role created by the implementation of the proposed functional model following a selection and interview process. Depending on the role, the selection process will range from submitting a statement of interest highlighting how the candidate’s skills, knowledge and experience make them suitable to the role and/or, a traditional recruitment campaign that seeks external as well as internal candidates to apply via the College’s recruitment portal.

Where appropriate, roles will be ring-fenced to enable those at risk of redundancy to apply, the selection criteria will be non-discriminatory, objective based and will be applied consistently so that selection is done fairly.

For those individuals not able to be accommodated within the new functional model, alternative roles will be sought elsewhere in the College. As part of this we will consider flexible working, part time and job share opportunities.

The College currently has a recruitment pause with only business critical roles (as approved by ‘Silver Group’) being recruited to. The Recruitment Hub will follow College guidelines to ensure any technology-based roles located in other College-wide departments are reviewed considering this proposal.

The proposed timeline for the recruitment and selection process will be shared at the Group Meetings on Wednesday 3 June 2020. It is our intention to begin to explore and assess skills and experience during the consultation period to support the matching of individuals into the proposed functional model. No decisions will be taken until the consultation period has closed.

10. Support

There will be a range of internal and external support mechanisms in place for all staff to support them in navigating the consultation and recruitment/selection process. These include but are not limited to:

- Guidance for Line Managers
- Group consultation meetings
- Individual consultation meetings
- Career coaching
- CV and application support
- Interview skills training
- Confidential care

Access to all support packages will be available via our [“Reshaping our Future” web page](#).

11. Glossary

Definition/Abbreviation	Meaning
Agile	Agile refers to methods for project management and is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans as opposed to high-level, upfront designs.
Application	A computer software program (or group of programs) that performs a specific function directly for an end user or, in some cases, for another application.
Backlog	A backlog is an accumulation of uncompleted work or matters needing to be dealt with in prioritised order.
BAU	Business as usual, meaning the normal execution of standard functional operations. This is in contrast to projects or activities that introduce change.
Blueprint	A blueprint is a planning document for existing and future IT solutions.
Business Continuity	The advance planning and preparation undertaken to ensure that ICT will have the capability to operate its critical business functions during emergency events that result in a disruption of our business operations. Business continuity plans include identifying and planning how to: • Ensure ICT services and products can still be provided. • Prioritise requirements and timelines to continue business, incl. business impact assessment, analysis of dependencies and risks. • Relocate staff and processes, incl. set-up of a (virtual) crisis team and workarounds. • Support staff during the emergency event. • Communicate with our customers, vendors and other 3rd parties. • Restore business processes through business recovery planning: document actions taken during the emergency event. • Validate that plans and actions will be/are functional during an actual crisis.
Change	The addition, modification, or removal of anything in a live environment that could have an impact on ICT services, including retirements. Change Management behind a change concerns a governance process, whereby change is reviewed, authorised and scheduled.
Cloud	The Cloud refers to servers accessible over the Internet to run software and host data, without managing physical servers yourself.
DBA	Database administrator

DevOps	DevOps refers to a set of practices that combines software development and information technology operations which aims to shorten the systems development lifecycle and provide continuous delivery with high software quality.
DHCP	The Dynamic Host Configuration Protocol is a network management protocol used on Internet Protocol (IP) networks whereby a DHCP server dynamically assigns an IP address and other network configuration parameters to each device on a network so they can communicate with other IP networks.
DNS	Domain Name Servers are the Internet's equivalent of a phone book. They maintain a directory of domain names and translate them to Internet Protocol (IP) addresses.
EUC	End user computing refers to computer systems and platforms that are meant to allow non-programmers to create working computer applications.
Guide Rails	Guide rails refers to mechanisms to direct products, or developments through a channel or route to guarantee certain principles are followed/characteristics are implemented.
HPC	High Performance Computing
IC	Imperial College London
IAM	Identity and Access Management refers to methods for handling identity information used to authenticate users, and enforcement of secure policies and principles.
IP	Internet Protocol
IT	Information Technology
ITIL	Information Technology Infrastructure Library is a set of detailed practices for IT service management that focuses on aligning IT services with the needs of business.
IT Services	the application of business and technical expertise to enable organizations in the creation, management and optimization of or access to information and business processes.
JISC	Joint Information Systems Committee, a party providing advice and practical assistance for universities, Colleges and learning providers in the UK.
LAN	A local-area network is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings.

Lean	Lean refers to a business strategy that strives to eliminate waste in products and processes while satisfying customer needs.
LOB	Line of business
MVP	Minimal viable product is a version of a product with just enough features to satisfy early customers and provide feedback for future iterations of the product.
OS	Operating system is system software that manages computer hardware/software resources and provides common services for computer programs.
Product	ICT Products are considered to be functions or processes that ICT takes ownership over for the College and maintains communications on.
Product Line	A product portfolio that falls under a particular ICT service category for the College. The product portfolio includes an overview and description of both current and future products, as well as a product roadmap for change deliveries within the domain.
Release	The actual implementation of 'bundles of change' that relate to the distribution and management of all hardware and software versions provided by ICT to its customers. Release Management is an installation process whereby it bears the responsibility for the correct construction, planning, testing, assembly and distribution of both hardware and software aims to guarantee the quality of the production environment. Throughout the phases leading up to the release, checks are in place to ensure that versions meet the required level of service to ensure a coordinated release
Roadmap	A roadmap is a strategic plan that defines a goal or desired outcome and includes the major steps or milestones needed to reach it. The roadmap is defined based on business needs and benefits, with changes normally organised into a series of releases.
RSE	Research Software Engineering
SAN	Storage Area Network
Scrum	Scrums are engaged to define, build, and implement major changes and releases. Led by a scrum master or delivery lead, they are made up a mix of subject matter expertise (e.g. Business Analysts, Product Engineers, DBAs, Developers, Testers, Automation Specialists, Infrastructure Specialists, Information Insight Analysts, ...). Scrums are facilitators for an agile delivery team; managing the process of the team's information exchange in accordance with agile principles to allow the team to self-organise and enable quick changes through iterative project management. Responsible for how work is being done with collaborative project team members and what realistic workloads are within scope of performance.

SIEM	Security Incident and Event Management
SME	Subject matter expert
SOA	Service-oriented architecture is a collection of services that communicate with each other, e.g. simple data passing or two or more services coordinating some activity. The services need to be properly connected for those purposes.
Sprint	A sprint is one timeboxed iteration of a continuous development cycle. Within a Sprint, planned amount of work has to be completed by the team and made ready for review.
Squad	The individual teams that make up a company in agile management are known as squads. The idea is that each squad has its own defined goal, which they work towards autonomously.
TechBar	A TechBar is a walk-in service desk.
Technical Debt	Technical debt reflects the implied cost of additional rework caused by deficiencies in internal system quality that challenges modification and further extension of systems. Often, technical debt is the result of adopting short-term technical fixes, that create responsiveness hindrances for future developments, improvements and innovation in the product or the project. Hence, accumulated technical debt adds to the College's operating and ICT costs and delays migrations, innovation, and product capabilities. In some cases of urgent technical debt, certain software may not be updated and can no longer properly be supported by ICT.
UI	User interface is the space where interactions between IT and IT users occur.
UX	User experience, is a focus in IT design to create products that provide meaningful and relevant experiences to users.
VPN	A Virtual Private Network allows users to create a secure connection to another network over the Internet. VPNs enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network or can be used for instance to access region-restricted websites.
WAN	A wide area network is a telecommunications network that extends over a large geographical area for the primary purpose of computer networking.