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Technology & Information Services

# Enterprise Architecture Roadmap Strategy 2016

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### Document Control

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0.1	Craig Douglas	Enterprise Architect	Initial Document	04/10/2016			
1.0	Craig Douglas	Enterprise Architect	Approval Received	11/10/2016	Adrian Hollister	Head of Strategy and Architecture	11/10/2016

# Enterprise Architecture Roadmap Strategy 2016

## Introduction

Annually, the enterprise architecture practice, led by the enterprise architect produces a roadmap which sets out, from an enterprise architecture perspective the journey ahead and highlights the areas of focus for IT in the months and years ahead. This roadmap takes into account intelligence gathered by the TIS Business Partners from all quarters of the organisation into the aspirations and goals of individual schools, departments, faculties and directorates as to their current and future direction and requirements.

This document, along side the Enterprise Architecture Roadmap radar plot (appendix A) forms the basis of the architectural recommendations for the next three years of activity within IT.

## Retrospective

This 2016 edition of the roadmap is the third edition as issued by the Enterprise Architect, the first (of this style being produced mid 2014 (Appendix B) the aim at the time being to set the University on a trajectory of embracing cloud computing platforms by 2015 and enhancing business activities through modernisation following adoption. This 2014 edition was in essence nothing more than a reskinning exercise to the approved 2013 "Pervasive Service Consumption" model roadmap from 2013 (appendix C).

Uptake on the proposed roadmap, at the time was modest. Some movement in certain areas is evident such as a movement to Office 365 email for staff. This is reflected in the 2015 (appendix D) radar plot where very few of the identified business capabilities had changed state from "Not Started" to "Underway" or indeed "Delivered", instead the plot shows a move in terms of time of delivery with most items moving further into the future.

It is regretful that the same is true for the latest edition, although the Network and Collaboration Projects are making a difference in the areas of Communications and Collaboration.

## Roadmap 2016

All iterations of this roadmap to date have been focussed around getting our house in order and providing a sound foundation from which to build, flexible solutions which are able to add real value to individual business units and the University as a whole. This version is no different, there are still foundations to be laid in the provision of a reliable, modern, flexible, secure and useable IT service. As with all previous versions, the capabilities to be realised are streamed into seven segments, each playing its part in driving the delivery of IT towards meeting the digital goals and ambitions of the University and its component parts:

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|---|--|
| <ul style="list-style-type: none"><li>• Data Centre</li><li>• Communications</li><li>• Collaboration</li><li>• Application Management</li></ul> | <ul style="list-style-type: none"><li>• Information Management</li><li>• Security</li><li>• Governance</li></ul> |
|---|--|

## Data Centre

Recognising existing strategy and policy within Technology and Information Services, this roadmap promotes the "Cloud First" approach. As such, and in order to support the "In to the cloud" project ambitions, the majority of our serve and store infrastructure shall be moved to community cloud Infrastructure as a Service (IaaS) during 2017, this also includes backup, archiving and disaster recovery capabilities. By the end 2019

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our applications shall be transitioned into solutions supported by Software as a Service (SaaS) or Platform as a Service (PaaS), any that cannot make this transition will remain as IaaS supported systems or applications. In undertaking this transformation we will introduce business continuity and disaster recovery capabilities currently not present within our environments.

### Communications

During 2016 significant progress has been made by the Network project with, at the time of writing, the project nearing completion of a complete network redesign and hardware refresh for wired and wireless networking, including boundary firewalls which will allow us to realise a wi-fi dominant campus by 2018.

Our telephony infrastructure has also been upgraded to the latest version offering a long overdue increase in reliability. We must not allow this good work to stagnate however, moving forward we mustn't settle for a simply modernised version of traditional telephony, we must introduce a modern alternative by then end of 2018 to allow members of the organisation to communicate they way they want to, in simplistic terms we must invest in a single unified communication platform incorporating voice, video, presence etc. For both fixed and mobile workers.

Audio visual and content capture projects have also provided an uplift in hardware reliability, during 2017 we must ensure that this aligns to the needs of the university and its teaching and learning strategies to best deliver good outcomes for our students.

In addition, visual communications with the wider organisation and beyond is in need of some enhancement, digital signage currently supplied by the SIA service is currently beyond end of life, we will work with External Relations to deliver a suitable replacement by the end of 2017 and develop a strategy to move forward with.

### Collaboration

Also within 2016, the collaboration project has completed the migration of all user email into Office 365, introduced Skype for Business and access to One Drive, this work must continue through 2017 to introduce Team Sites and an effective Document Management System (DMS) fronted by a new intranet portal. Work must also complete in migrating our in house mail filtering solution to the Office 365 offering in it's entirety simplifying mail flow and reducing areas of risk and load on our infrastructure.

### Application Management

During 2017 we will continue along the path to facilitate an IT service which may be consumed on a personal computing device if so desired. There is a common misconception that this means that everybody will be forced into supplying their own computer, that is not the intention, rather, those that wish to can (and be able to consume services which they currently cannot), and those that don't wish to, cannot, or for those where it is not appropriate will have a corporate style machine provided for them.

The biggest change in this theme is the way services are delivered to computers and their users. Applications will be virtualised and delivered through a jukebox style interface, the first of these appearing during 2017. In order to support these changes, it would make sense to examine how computers are sourced and delivered to members of the organisation, and in keeping with the flexible theme of delivery, buying this service along with the management and hardware itself from a service provider offers benefits in

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terms of cost transparency, flexibility and user satisfaction by the right device being with the right user at the right time for a pre-defined duration.

### Information management

The use of an Enterprise Service Bus (ESB) has long been talked about within TIS. The 2016 business planning exercise for the university identified that the majority of IT related strategic ambitions across the organisation would benefit greatly from using such a platform. Additionally, it has been identified as a necessity for successful migration to cloud infrastructure. During 2017 an ESB capability will be introduced and the process of migrating systems to use it will begin.

Previous versions of the roadmap identified an Enterprise Resource Planning (ERP) capability, within this edition this has been replaced by three separate transitioned capabilities for finance, human resource and student record systems in alignment with the In to the Cloud strategy and recommendations from Gartner that applications are loosely coupled together through the use of an ESB, this work will also begin in 2017.

The impact this has is to force the movement of other value add capabilities further along the timeline, as such work for placement, assessment and reporting capabilities are moved into 2018 and 2019 being identified as a suitable point in time for IP and royalties management capability to be introduced.

Learning analytics, although supported by IT infrastructure is very much a business focussed capability, and as such we will be guided heavily by the organisation, within our roadmap 2017 has been identified but with recommendation that the capability is positioned to make best use of the ESB.

### Security

Once again the Network Project have delivered or are in the process of delivering capabilities previously identified in this stream during 2016. For example, new next generation firewalls have been introduced as has the capability to use a demilitarised zone (DMZ) and virtual private network (VPN) although at the time of writing the latter has not been successfully configured. Other capabilities within this stream were not implemented as part of the project, such as Role Based Access Control (RBAC) and Network Access Protection (NAP) we will address this shortfall within 2017.

Also 2017 will see essential work around authentication in the cloud and improved identity to support the move to consuming cloud services. Security will continue to be enhanced with the addition of enterprise encryption and physical access capabilities being introduced and enhanced over this period.

In recognition of a more mobile workforce and student body taking advantage of BYOD service offering, mobility management will be introduced in 2018 to compliment NAP and allow better protection of our data on more mobile devices. Further off, 2019 will see work to introduce digital rights management to compliment and support the IP and royalties management work as well as the use of micro credentials being investigated.

### Governance

2016 has brought about a major milestone in both enterprise architecture and enterprise security architecture, both areas have reached a point where the architecture is understood well enough to move forward. That is not to say everything is known, rather we are able to make a difference to the future state

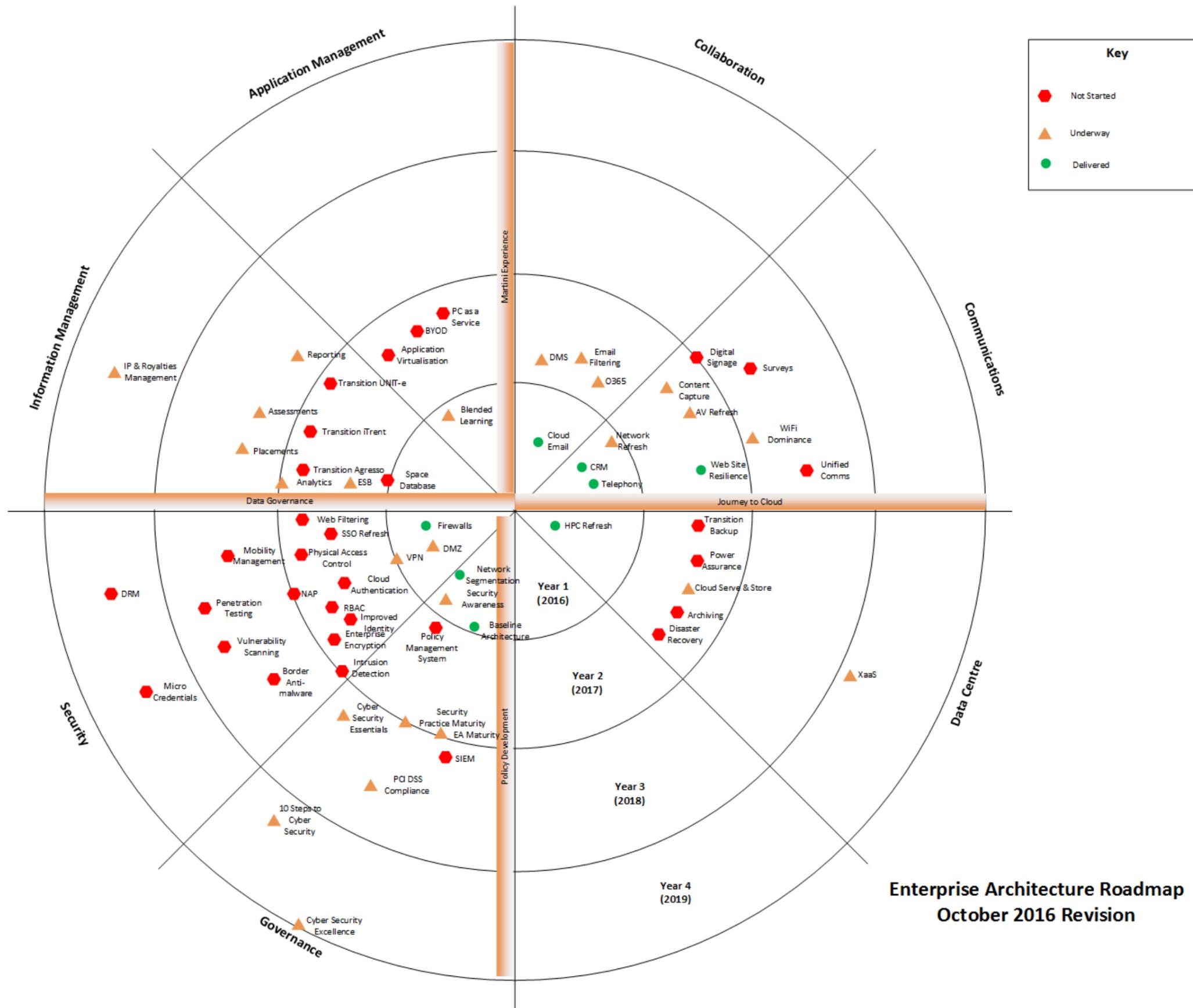
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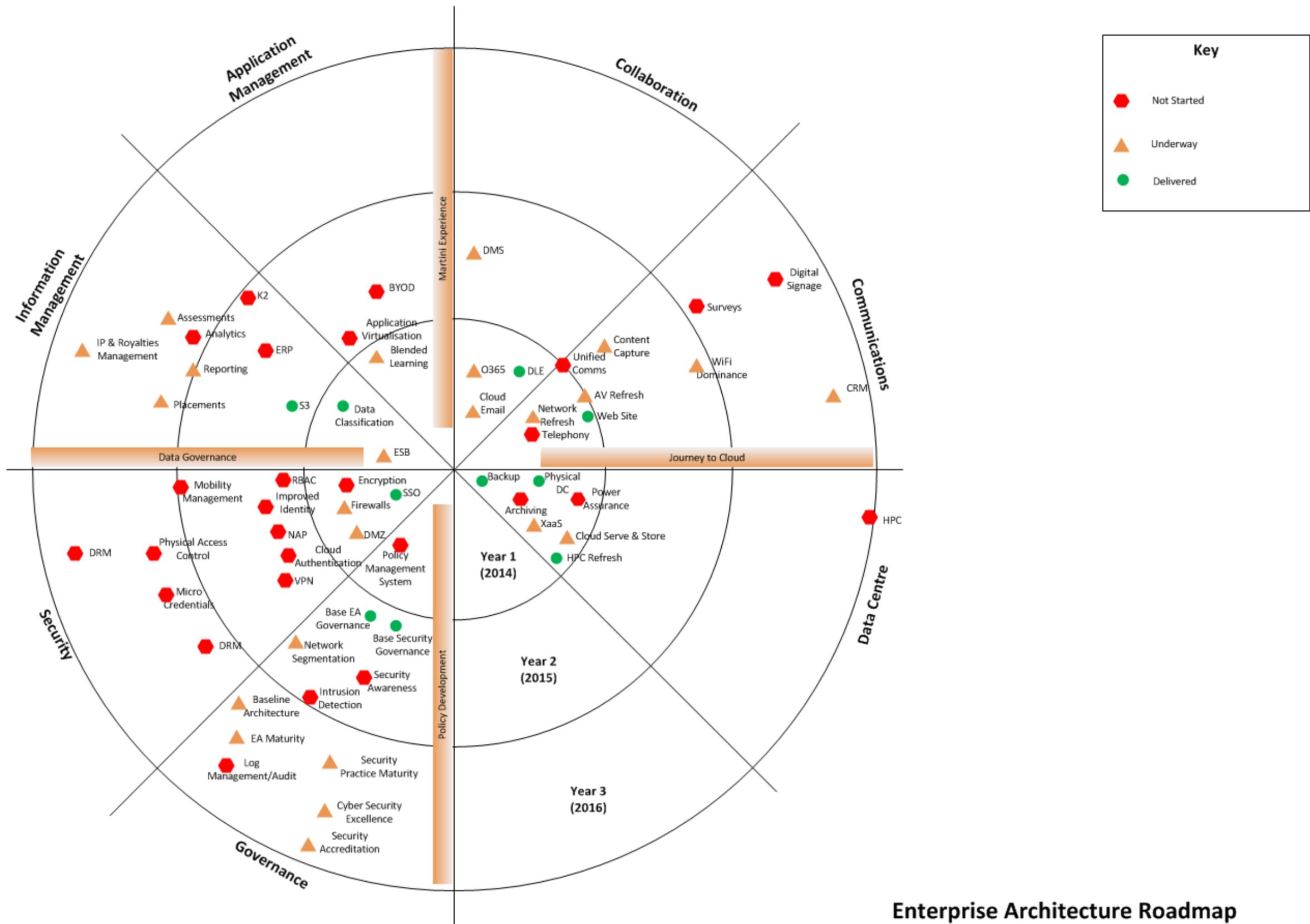
based on a known understanding of today. The next steps here are to mature our practices which should be achieved by the end of 2017.

That said there is still a great deal of work to do continuing the piece around raising security awareness. Looking forward to 2017, we will look to introduce a policy management solution for the organisation to help improve governance compliance and audit.

A little further out 2018 will see intrusion detection and SIEM logging capabilities being introduced to support our mission of achieving CESG 10 Steps to Cyber Security accreditation in 2019 as directed by the University's Information Security Group, a stepping-stone for which will be achieving CESG Cyber Essentials accreditation in 2018. We will also be seeking to regain PCI DSS compliance in 2018.

The ultimate aim here being to be recognised for cyber security excellence by 2020.





Enterprise Architecture Roadmap  
October 2013

# Appendix C

