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ESPACE: Building a Collaborative Workspace using Microsoft 365

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ESpace

Building a Collaborative Workspace using Microsoft 365

Project Report

Prepared by
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Executive Summary

Introduction

While the imperative to engage with external organisations is clear, approaches within third level institutions to ensuring a coordinated, professional and effective engagement presents significant challenges.

Communication across any large complex organisation has its challenges. Spatial, cultural, infrastructural and functional barriers often result in poor knowledge/information sharing and exchange, distorted content and extended timescales.

An approach to addressing this challenge is to seek to facilitate a dynamic and vibrant network of engaged people designed to allow the growth of a trusting and understanding environment within which data and information can be exchanged for the benefit of all involved.

Under the auspices of REAP II and with kind financial support from the Higher Education Authority, Dublin Institute of Technology in collaboration with Institute of Technology Tallaght and Institute of Technology Blanchardstown, set up the project 'ESpace' to determine if such an approach could play a role in supporting collaboration and communication amongst personnel engaging with industry and thereby providing a more professional and coordinated service to the external community.

ESpace sought to create a virtual collaboration workspace for selected staff involved in external engagement activities using Microsoft 365 cloud based applications, specifically SharePoint and Lync. In particular, it set out:

1. To create and test a virtual, coordinated, collaborative workspace using Microsoft 365 which supports improved engagement with industry and the community

2. To contribute to the creation of a National Platform for Engagement through trialling a collaboration and communication platform and documenting results

The project was led by Dublin Institute of Technology in partnership with Institute of Technology Tallaght and Institute of Technology Blanchardstown.

Approach

Using Microsoft Office 365 , the project established a virtual collaborative workspace with a view to (a) assessing basic application functionality using appropriate engagement process scenarios and (b) assessing the associated operational and adoption issues.

Based on chosen scenarios, a pilot group of 11 staff members from across the Institutes was selected. This group undertook to use and validate the virtual collaborative workspace as part of their ongoing engagement activity.

Key Outcomes

1. The project identified the importance for clarity as to the reason for deploying MS Office 365 within the organisation. This clarity assists in promoting the deployment process across functions and in mapping the nature of information to be used and how that information is to be used. This, in turn, helps ensure the development of an information architecture that can facilitate correct, timely and searchable information.
2. At the outset, it is vital that strong commitment and sponsorship is obtained at senior management level.
3. Given limited resources and to assist adoption, it is suggested that deployment take place on an iterative basis. As a starting point, it can be useful to identify a single functional area in which to deploy the system. This concentrates the effort and helps ensure an effective implementation. Once the system is normalised within one function, it can be progressively introduced across the wider Institute.
4. It is important to develop and articulate a robust business case for deployment. This helps ensure user 'buy in' and thus facilitate adoption.
5. All users should be trained on system functionality and provide a contact point for trouble shooting.
6. It is suggested that implementation be built around specific projects. This helps provide a real opportunity for users to engage and help drive the process. These projects can be small and can be created specifically for the implementation.
7. Early stage deployment needs to be driven and managed at a business level. This requires an individual to be assigned as 'business project manager' to ensure momentum is maintained. In addition, IT supports needs to be in place to assist with technical issues.
8. In the absence of design resources, modifying existing standard application site templates offers a quick and reliable option for creating a user friendly, professional interface. Once modified and agreed, this can become the template for additional sites.

1. Introduction

1.1 Project Context

The National Strategy for Higher Education in Ireland which was published in January 2011, drew attention to the need for higher education institutions to have strong engagement with individual students, communities, society and enterprise. It further highlighted the necessity for Institutions to embed engagement into their culture stating:

.... Higher education institutions should have open engagement with their community and wider society and this should infuse every aspect of their mission. Outward-facing systems and structures should be embedded into institutional activity, so that there are inward and outward flows of knowledge, staff, students and ideas between each institution and its external community....

In both the UK and US, proactive engagement with industry has increasingly formed an integral part of university mission and organisational structure and has been the focus of much research. The recent publication of the Council for Industry and Higher Education, and Centre for Business Research, '***Universities, Business and Knowledge Exchange***,' recognises that successful engagement with industry is not easy, often requiring organisational and strategic shifts by the Higher Education Institute.

Further research in this area in the UK has identified the complex and heterogeneous nature of industry/higher education interaction and the corresponding challenges for third level institutions requiring their industrial liaison offices to become increasingly professional and proactive in their interactions with industry.

However, while the imperative to engage with external organisations is clear, different approaches within third level institutions to ensuring a coordinated, professional and effective engagement present significant challenges. Communication across any large complex organisation has its challenges. Spatial, cultural, infrastructural and functional barriers often result in poor knowledge/information sharing and exchange, distorted content and extended timescales. While other activities within a third level institution are regularly planned, communication across functions is rarely afforded similar consideration. Accordingly, it tends to become ad hoc in nature, typically relying on phone calls, emails, and chance meetings.

In the context of engagement with enterprise and community, this unmanaged flow of information can result in stakeholder frustration resulting in missed potential opportunities, failure to optimise existing and new relationships and lack of 'team' spirit.

This communication/collaboration challenge has also been highlighted in the National Strategy for Higher Education in Ireland which states:

'Institutions need to be internally adaptive in order to be externally responsive, and strong engagement with the wider community will require:

Strong institutional leadership; Change in the culture and internal business processes of institutions; and Recognition of the importance of engagement activities in resource allocations, in promotion criteria and in the metrics used to assess progress at institutional, regional and national level. '

1.2 Project Background

One approach to addressing this challenge is to attempt to codify, and control information flows from a central point. Within a third level institution where schools and departments often have considerable flexibility and autonomy, this approach can often lead to distrust and animosity.

An alternative approach is to seek to establish a dynamic and vibrant network of engaged people that is designed to allow the growth of a trusting and understanding environment within which data and information can be exchanged for the benefit of all involved. Recognizing the often dispersed nature of third level functional units, technology can play an important role in supporting and driving such networks. For example, in the UK, cloud technologies and applications such as Microsoft Sharepoint have been widely adopted by the third level sector particularly to support team collaboration and research.

With kind financial support from the Higher Education Authority, Dublin Institute of Technology in collaboration with Institute of Technology Tallaght and Institute of Technology Blanchardstown, set up the project 'ESpace' to determine if such an approach could play a role in Irish higher education organizations in supporting collaboration and communication amongst personnel engaging with industry and thereby providing a more professional and coordinated service to the external community.

1.3 Project Objectives

ESpace set out to address the challenge of improving connectedness, communication and collaboration across a spatially disparate organisation with a view to improving the efficiency, coordination and value of external interaction. To achieve this it sought to create a virtual collaborative workspace for selected staff involved in external engagement activities using Microsoft 365 cloud based applications, specifically SharePoint and Lync. The project, within its very limited time and resource framework, attempted to determine if using such technology could support the creation of an active community of engagement knowledge and innovation.

Specifically, the project set out:

3. To create and test a virtual, coordinated, collaborative workspace using Microsoft 365 which supports improved engagement with industry and the community

4. To contribute to the creation of a National Platform for Engagement through trialling a collaboration and communication platform and documenting results

2 Project Management and Organisation

2.1 Project Team

Institution	Role	Contact
Dublin institute of Technology	Lead Partner	David Kirk (Head of Corporate Partnerships) Paul Reardon (IS Business Development Officer)
Institute of Technology Tallaght	Partner	Terry Maguire (Head of Life Long Learning) Pat Coman (Head of Development)
Institute of Technology Blanchardstown	Partner	Assumpta Harvey (Industrial Liaison Manager) Claire Mac Namee (Enterprise Manager)

2.2 Project Management

Day to day management of the project was undertaken by Dublin Institute of Technology with overall direction provided by the project steering group comprising representative of each collaborating Institute.

Four project meetings were held during the start up stage of the project to guide the work plan and determine levels of interaction given resource constraints. Online meetings were held prior to project completion to review final report and capture general comments.

2.3 Overall Project Workplan

Using Microsoft Office 365 , the project established a virtual collaborative workspace with a view to (a) assessing basic application functionality using appropriate engagement process scenarios (see fig. 1) and (b) assessing the associated operational and adoption issues.

The key technology functions examined were:

Shared Calendar	**Shared Information Board**
Real Time Messaging	**Remote/Mobile Access**
Video/Voice Communication	**Inter Institutional Linkage**
Document Sharing	**Workgroup Set Up and security**
Amending Documents	

Two specific scenarios capturing an appropriate range of activities were identified:

1. **ESpace Project Management(Inter Institutions)**

2. **DIT Corporate Partnership Network(Intra Institution)**

Based on these scenarios, and additional criteria of an active engagement record with industry and the community and a willingness to participate, a pilot group of 11 staff members from across the Institutes was selected. The group undertook to use and validate the virtual collaborative workspace as part of their ongoing engagement activity.

Pilot members were briefed on the project objectives, the applications and their functionality. They were encouraged to use them as they saw appropriate to their requirements.

The project commenced in March 2012 and ended in December 2012.

Functionality/Scenario Matrix

Scenario	Function									
	Shared Calendar	**Real Time Messaging**	**Video/Voice Communication**	**Document Sharing**	**Amending Documents**	**Shared Information**	**Remote/Mobile Access**	**Inter Institutional Linkage**	**Workgroup Set Up and security**	**Telephony Linkage**
ESpace Project Management*	Arrange project meetings Arrange one to one Meetings	One to One communication - questionnaire, interviews, updates, queries Arrange Meetings Day to Day Communication	Strategic Interview preparation Post questionnaire preparation Project Meeting Day to Day Communication	Proposal/Project Plans Meeting Agendas Meeting Notes Progress Reports	Strategic Interview Preparation Post questionnaire preparation Meeting Notes	Project tasks Project Schedules Meeting agendas and notes Project Members	Day to Day Communication Document Access	All Activity	Restricted access	N/A
DIT Corporate Partnership Network**	Arrange project meetings Arrange one to one Meetings	Ongoing Communication Updates Event Planning Reporting Arrange Meetings	Event Planning Website maintenance CPN Project Development	Project Plans Meeting Agendas Meeting Notes Promotional Information	Project Documents Administration News /Press Items	Project Plans Meeting Agendas Meeting Notes Promotional Information CPN Updates/Industry Contacts	Day to Day Communication Document Access	N/A	Restricted access	N/A

Fig1: Functionality/Scenario Matrix

*ESpace Project Management: Day to day management of **ESpace** including linkages with partner Institutions, ITTD and ITB.

DIT Corporate Partnership Network: To further support the management of the Institutes external relationships, DIT recently established the **DIT Corporate Partnership Network, which offers an organised and structured portal to the Institute and drives the growth of meaningful strategic industry partnerships that support the optimisation of engagement opportunities for all stakeholders. The Network currently draws membership from the Tourism, Energy and ICT sectors and includes companies such as Microsoft, Intel, Radisson Hotel Group, Aramark Ireland, Bord na Mona, The Digital Hub and Google.

3 Project Set Up and Implementation

3.1 Introduction

The initial stage of the project focused on negotiating and acquiring the Microsoft 365 application package under Microsoft's Early Adopter Programme. Once achieved, Ward Solutions, a leading IT consultancy firm was contracted to tailor the applications to the specific requirements of the project group. These requirements were determined using a requirements gathering workshop session held in DIT and discussions with the project management team.

Based on these ascertained requirements Ward Solutions designed and developed the ESpace collaborative site. During the course of the project additional changes were introduced in response to the ongoing feedback from participants.

3.2 Establishment of Project Pilot Group

Guided by the scenarios, and the additional criteria of an active engagement record with industry and the community and a willingness to participate, a group of 11 individuals were selected to interact with, test and validate the technology as appropriate reflecting their function and day to day activities.

To reflect the range of functions engaging with industry, individuals were selected from across different departments in both DIT and ITTD (see Fig. 2).

	Functions Represented in Trial Group	Institution
1	Research	Dublin Institute of Technology
2	Lifelong learning	Institute of Technology Tallaght Dublin Institute of Technology
5	Graduate Relations	Dublin Institute of Technology
6	Public Relations	Dublin Institute of Technology
8	Access /Community	Dublin Institute of Technology
9	Development	Institute of Technology Tallaght
10	Lecturer	Dublin Institute of Technology
11	Marketing	
12	Technology Transfer/Enterprise Development	Dublin Institute of Technology/ Institute of Technology Blanchardstown

Fig 2: Functions Represented in Trial Group

Project objectives were discussed with each pilot group member and the business case behind the using the applications explained. Each was shown both SharePoint and Lync in operation and actively encouraged to utilize the applications in a manner that reflected their specific individual requirements and the nature of their industry engagement.

Once the project was running, assessment of impact, ease of use and future potential was captured through continual feedback and discussion on a one to one basis. This provided a real time picture of participant's attitude towards and impression of the applications and

thoughts on its future contribution to improving overall engagement with external organizations.

4 Cloud Computing

4.1 What is cloud computing?

Cloud computing (also called "software as a service", "SaaS" or "on-demand") is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). "Cloud computing" is a new way to access, use and pay for a huge range of business support systems and has quickly become an extremely popular and accepted model all around the world.

Cloud computing offers the promise of business systems that:

- are always available, easy to deploy and accessible anywhere

- are quick to set up and integrate

- need only minimal in-house IT infrastructure and support.

The particular responsibilities of any IT department include making sure that all of the organization's employees have the right hardware and software they need to do their jobs. Buying computers for everyone isn't enough -- software or software licenses have to be purchased in addition to give employees the tools they require. Additional hires usually mean more software or expansion to current software licenses to allow additional users.

With cloud computing the cloud provider hosts the software and allows users to log into a Web-based service which hosts all the programs the user would need for his or her job. Remote machines owned by another company would run everything from e-mail to word processing to complex data analysis programs (Fig. 3).

Users access cloud computing using networked client devices, such as desktop computers, laptops, tablets and smartphones. Some of these devices - *cloud clients* - rely on cloud computing for all or a majority of their applications so as to be essentially useless without it.

In a cloud computing system, there's a significant workload shift. The only thing the user's computer needs to be able to run is the cloud computing systems interface software, which can be as simple as a Web browser, and the cloud's network takes care of the rest. The best example of cloud computing is email e.g. Gmail. Instead of running an e-mail program on your computer, you log in to a Web e-mail account remotely. The software and storage for your account doesn't exist on your computer -- it's on the service's computer cloud.
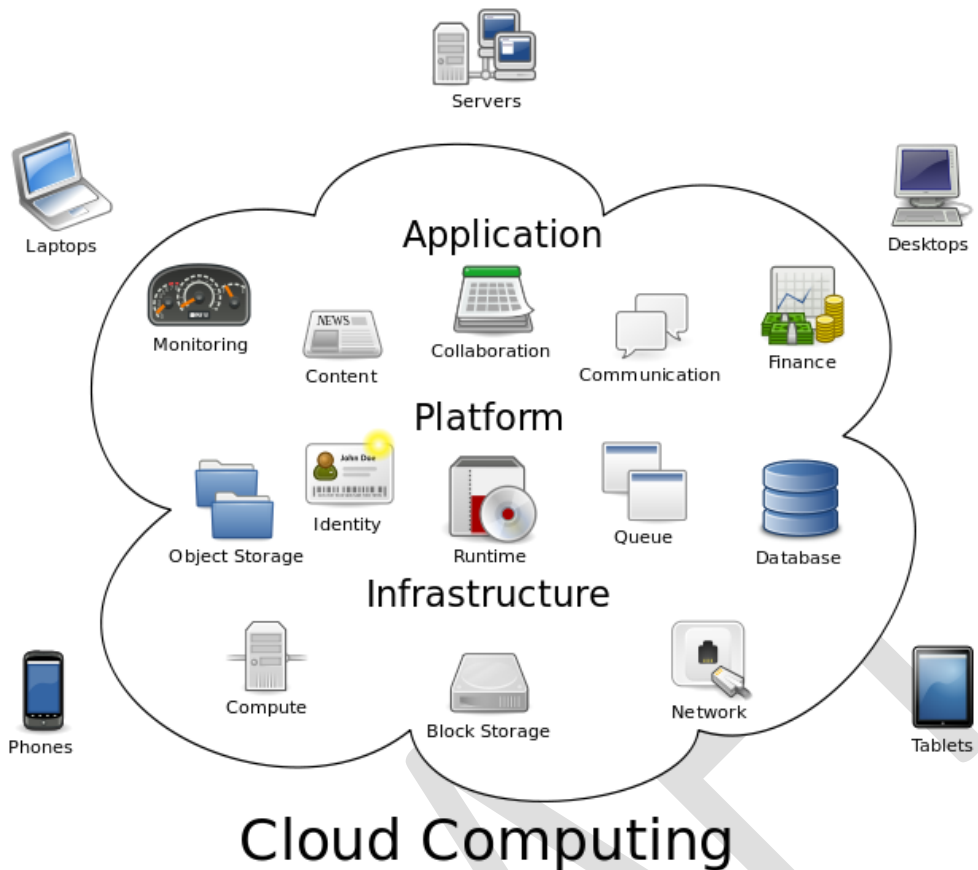
Fig.3: Cloud Computing

4.2   What is Cloud used for?

The applications of cloud computing are practically limitless. With the right middleware, a cloud computing system could execute all the programs a normal computer could run. Potentially, everything from generic word processing software to customized computer programs designed for a specific company could work on a cloud computing system.

Why would anyone want to rely on another computer system to run programs and store data? Here are just a few reasons:

- Clients would be able to access their applications and data from anywhere at any time. They could access the cloud computing system using any computer linked to the Internet. Data wouldn't be confined to a hard drive on one user's computer or even a corporation's internal network.
- It could bring hardware costs down. Cloud computing systems would reduce the need for advanced hardware on the client side. You wouldn't need to buy the fastest computer with the most memory, because the cloud system would take care of those needs for you. Instead, you could buy a desktop/laptop with just enough processing power to run the middleware necessary to connect to the cloud system. You wouldn't need a large hard drive because you'd store all your information on a remote computer.

- Corporations that rely on computers have to make sure they have the right software in place to achieve goals. Cloud computing systems give these organizations company-wide access to computer applications. The companies don't have to buy a set of software or software licenses for every employee. Instead, the company could pay a metered fee to a cloud computing company.
- Servers and digital storage devices take up space. Some companies rent physical space to store servers and databases because they don't have it available on site. Cloud computing gives these companies the option of storing data on someone else's hardware, removing the need for physical space on the front end.
- Corporations might save money on IT support. Streamlined hardware would, in theory, have fewer problems than a network of heterogeneous machines and operating systems.

4.3   How does Cloud Work

In the cloud computing model, cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. The cloud users do not manage the cloud infrastructure and platform on which the application is running. This eliminates the need to install and run the application on the cloud user's own computers simplifying maintenance and support.

The pricing model for cloud applications is typically a monthly or yearly flat fee per user so price is scalable and adjustable if users are added or removed at any point.

There are many different levels/types of cloud and briefly these are:

- **Infrastructure as a Service (IaaS)**
  In this most basic cloud service model, providers offer computers, as physical or more often as virtual machines, and other resources. To deploy their applications, cloud users then install operating system images on the machines as well as their application software. In this model, it is the cloud user who is responsible for patching and maintaining the operating systems and application software.

- **Platform as a Service (PaaS)**
  In the PaaS model, cloud providers deliver a computing platform typically including operating system, programming language execution environment, database, and web server. Application developers can develop and run their software solutions on a cloud platform without the cost and complexity of buying and managing the underlying hardware and software layers. With some PaaS offers, the underlying computer and storage resources scale automatically to match application demand such that cloud user does not have to allocate resources manually. Examples of PaaS include: Amazon Elastic Beanstalk, Cloud Foundry, Heroku, Force.com, Engine Yard, Mendix, Google App Engine, Windows Azure Compute

- **Storage as a Service (STaaS**)
  STaaS is a business model in which a large service provider rents space in their storage infrastructure on a subscription basis. The economy of scale in the service provider's infrastructure allows them to provide storage much more cost effectively

than most individuals or corporations can provide their own storage, when total cost of ownership is considered. Storage as a Service is often used to solve offsite backup challenges

- **Security as a service** (**SECaaS**) is a business model in which a large service provider integrates their security services into a corporate infrastructure on a subscription basis more cost effectively than most individuals or corporations can provide on their own, when total cost of ownership is considered. These security services often include authentication, anti-virus, anti-malware/spyware, intrusion detection, and security event management, among others.

- **Test Environment as a service** (**TEaaS**)
  Sometimes referred to as "on-demand test environment," is a test environment delivery model in which software and its associated data are hosted centrally (typically in the (Internet) cloud) and are typically accessed by users using a thin client, normally using a web browser over the Internet.

4.4   Cloud Computing Concerns

Perhaps the biggest concerns about cloud computing are security and privacy.

The idea of handing over important data to another company worries some people from a security perspective. Corporate executives might hesitate to take advantage of a cloud computing system because they can't keep their company's information under lock and key.

The counterargument to this position is that the companies offering cloud computing services live and die by their reputations. It benefits these companies to have reliable security measures in place. Otherwise, the service would lose all its clients. It's in their interest to employ the most advanced techniques to protect their clients' data.

Privacy is another concern. If a client can log in from any location to access data and applications, it's possible the client's privacy could be compromised. Cloud computing companies will need to find ways to protect client privacy. One way is to use authentication techniques such as user names and passwords. Another is to employ an authorization format whereby each user can access only the data and applications relevant to his or her job.

Some common questions regarding cloud computing include;
- Does the user or company subscribing to the cloud computing service own the data?
- Does the cloud computing system, which provides the actual storage space, own it?
- Is it possible for a cloud computing company to deny a client access to that client's data?

How Office 365 addresses Security and Privacy
The following section describes how Microsoft addresses security and privacy as is described on the Microsoft web site.

Privacy

- **No Advertising:** Office 365 does not build advertising products out of customer data. They don't scan your email or documents for building analytics, data mining, advertising, or improving the service.
- **Data Portability:** Office 365 customer data belongs to the customer. Customers can remove their data whenever they choose to.
- You own your data, and retain all rights, title and interest in the data you store with Office 365
You can download a copy of all of your data at any time and for any reason, without any assistance from Microsoft.

Upon expiration or termination, Microsoft will retain your data for 90 days. You may also disable your account and delete all of your data yourself.

For Microsoft's white paper on Privacy please see http://www.microsoft.com/en-us/download/details.aspx?id=28540

Compliance
Microsoft Office 365 is compliant with world-class industry standards, including ISO-27001, EU Model clauses, HIPAA-BAA and FISMA, and verified by 3rd party auditors.

For white paper on Microsoft's Compliance Framework for online services please see MicrosoftComplianceFramework1009.pdf

Security
With over 15 years of online data security experience, Microsoft incorporates the tenets of security through the entire development lifecycle, and proactively monitors the Office 365 service for malicious behaviors.

- Microsoft have developed their practices and policies as a result of over 15 years of experience in providing security for online data.
- Microsoft's Secure Development Lifecycle ensures that security and privacy is incorporated into their products by design, from software development to service operations.
- Data is secured in 5 different layers – data, application, host, network and physical.
- Microsoft proactively monitors Office 365 services to identify potential known and unknown threats by predicting malicious behavior, and also monitors for irregular events that may indicate threats.
- Microsoft restricts their production server access to a short list of critical operations personnel.

To view white papers on Security, http://www.microsoft.com/en-ie/office365/security.aspx

5   Microsoft Office 365

Office 365 is Microsoft's web-based (or cloud) version of Office. This encompasses the new versions of its ubiquitous applications, namely Word, Excel, PowerPoint and Outlook, which are reasonably high-performing. But also, it includes SharePoint Online for document sharing and management, and Lync, for online collaboration.

Office 365 provides secure, anywhere access to email and calendars, Office web Applications, instant messaging, conferencing and file sharing.

The below sections explain the key applications selected for the Espace pilot trial.

5.1   Lync

Microsoft Lync Online is a next-generation cloud communications service that connects people anytime, from virtually anywhere. Lync Online provides intuitive communications capabilities across presence, instant messaging, audio/video calling and a rich online meeting experience including PC-audio, video and web conferencing.

5.1.1 Instant Messaging & Presence

Presence

Rich presence and instant messaging capabilities in Lync Online help people find and communicate with one another efficiently and effectively.

Presence establishes a user's personal availability through the use of common states such as "Available" or "Busy." A user's presence is a collection of information that includes availability, willingness to communicate, additional notes (such as location and status), and how the user can be contacted.

Lync provides an immediate, visual representation of a user's availability, or presence. By simply looking at the contact list, users can find everything they need at a glance. For example, a green icon means a contact is available, red means a contact is busy, Presence can be enhanced with physical locations relative to corporate network access points. Or, users can manually set their location information to let others know precise whereabouts when working from home, a coffee shop, or elsewhere.

Customized presence states can easily be created e.g. 'In a 'Client Consultation' or 'In Court', allows users to provide more relevant information about their status to others.

Presence information is consistently available in Outlook, SharePoint, and other Office applications by default. Hovering over the presence icon displays a menu that can be used for initiating a conversation from the application. From here you can access all the Lync functions- email, chat, phone, video call etc.

Contacts

Lync Online keeps a list of colleagues who are frequently contacted, giving users an easy way to stay in touch with the people they talk to most. Contacts can be sorted by groups, status, and relationships.

Instant Messaging (IM)

Lync's instant messaging enables users to communicate quickly and effortlessly. A full conversation history is kept and this enables users to keep track of old conversations, helping them retrieve important information that may have been communicated over IM months ago.

Federation

Server-to-server federation capabilities allow users to use presence and instant messaging with other Lync Online users outside the corporate network.

Group Chat

The Lync Online Group Chat console allows groups of users to participate in ongoing discussions on topics of shared interest. Group Chat enhances team communication and enables geographically distributed teams to work together efficiently.

Skill Search

Users can leverage Skill Search, based on information from SharePoint (user profiles created in SharePoint), to find needed expertise within the organization or just people with shared interests. Skill Search enables users to search for an expert using keywords that describe a skill set, expertise, area of interest, or group affiliation and get a list of colleagues that meet the criteria. Using presence information, the user can then choose the best way to contact the appropriate colleagues.

5.1.2   Unified Conferencing

From the simple one-way chat Lync can be escalated to an audio conference with desktop sharing among multiple team members instantly, easily, and without interrupting the conversation flow.

The voice and video capabilities of Lync Online can work from any location with an Internet connection.

Audio, video, and sharing of documents, desktops, and applications are incorporated into Lync Online client, accessible on demand and in the context of a typical workflow. For example, without switching applications, users can escalate a simple IM discussion to a multi-party application sharing session with voice and even video. All parties can see and edit presentations, documents, and other content without a single e-mail exchange.

Audio conferencing

Lync Online provides a user experience that is familiar to users of traditional audio bridge services including PSTN dial-in services with touch-tone call control commands. At the same time, it incorporates powerful scheduling, joining, and management features available only with an integrated Unified Communications platform.

5.1.3 Video

Lync Online incorporates video into the unified client so that scheduling an online meeting with video or escalating to video spontaneously is seamless and easy. In order to provide the most immersive communications experience possible, Lync Online supports a variety of video conferencing options.

5.1.4 Application & Document Sharing

Whiteboarding

A whiteboard is a blank page that allows presenters to draw, add text, and highlight information by using the annotation tools. For example, organizers can quickly create a flow chart to illustrate a point, insert a whiteboard, and then use the annotation tools to draw squares, lines, and other figures. The slide can be saved for future reference. This is great tool for documenting notes during a conference.

Desktop and Application Sharing

This feature allows presenters to broadcast any visuals, applications, Web pages, documents, software, or part of their desktops to remote participants in real time, right from Lync Online. Application sharing allows audience members to follow along with mouse movements and keyboard input. Presenters can choose to share the entire screen or only a portion to keep the audience focused on key information. By sharing their desktops, presenters are able to engage with their audiences in interactive product or software demos from any location.

Record Meetings

Users can create recordings of meetings as they take place, including content presented.

5.1.5 Voice Capabilities

Lync delivers a voice option to enhance or replace traditional PBX systems1, and extends these capabilities outside the office via Internet access without requiring a virtual private network (VPN) connection. This includes common calling features such as answer, forward, transfer, hold, divert and release.

5.2 SharePoint 365 Online

Microsoft SharePoint Online is a Microsoft Office 365 service for businesses of all sizes offering document management, record management, collaboration, workflow, search and reporting capabilities in the cloud.

5.2.1 Document Management

Document management features provide all the tools to manage your documents - document libraries and document centres to store your documents, versioning to keep control of the different versions of a document, workflows to manage workflow processes on documents such as review, provide feedback, approval etc.

Document Centres can be used if there are a large number of documents. Users can create folder structures as required to group documents. Permission and access to documents can be set right down to a document level.

Versioning

A lot of organisations face huge challenges with multiple versions of documents and locating the correct most current version. In some cases there can be a local copy, a copy on the file share and a further copy on the Intranet. SharePoint will help overcome this via its versioning and check-out/check-in capabilities.

Versioning can be configured for any document library. Versioning lets users track changes to documents, and it helps users manage content as they revise it. Versioning is especially helpful when several people work together on projects, or when information goes through several stages of development and review. With versioning turned on, users can restore an earlier version as their current document, or view an earlier version without overwriting the current document.

Check-in and check-out

A document library can be configured such that it requires that a document be checked-out by a user before it can be edited. While checked out it is not available to edit by other users.

Requiring check-out helps prevent conflicts and confusion over changes, because only one user can change a file at a time. When you require check-out, a file is checked out automatically when someone opens it for editing, unless another user already has it checked out.

5.2.2 Sites

Sites are created to hold data relating to a common topic/process etc. Within the site, sub-sites can also be set up.

Each site consists of a collection of pages for content, document libraries to hold documents relative to the project and collaboration tools such as announcement boards, discussion

boards which help members of the project communicate and keep up to date on project tasks and activities.

5.2.3   Collaboration

Discussion boards

Discussionn boards can be used to host discussions on various topics. A user posts a item and then other users can post replies to this. The full discussion is available for all authorized users to view and interact. Within ESpace, a disccussion board was used to create "The Coffee Dock" in the Corporate Partnership Network site. This facility kept members up to date on current topics, allowed quick and easy communication and storage of non structual information. Hence, it contributed to a knowledge base as all posts were fully searcheable.

Wiki's

A Wiki is an ideal way to build a knowledge base of unstructured information. Wikis are a useful living repository of information, allowing a build-up of shared knowledge in an easily managed and accessed format. A Wiki is thought of as a growing body of content that can be edited and updated by users freely, accumulating expertise in a non-structured manner. A typical Wiki application is a repository of technical information, much like Wikipedia, but dedicated to a particular project.

As Wiki's are based on a site template a search scope can be defined for the Wiki. Thus, when performing a search the user can limit the search to just the Wiki site for a speedy search with relevant results.

Blogs

Blogs are similar to Wikis in that they allow users to add information, but unlike a Wiki, a Blog's entries are dated and arranged in reverse chronological order (newest first). Under SharePoint, Blogs can contain any type of information including text, links, pictures, and other multimedia files.

5.2.4   Search

One of the top challenges facing many organizations is searching for and retrieving documents. SharePoint Search provides a very powerful search engine using a combination of relevance and refinement.

To help further refine searches ensuring complete relevancy in your results, Search Scopes can be defined. A search scope defines a subset of information in the search index. Users can select a search scope when performing a search to restrict search results to the subset of information that they want.

5.2.5 Design and Customization

Branding

Customizing an intranet site with your organisation's identity and branding can help create a more effective collaboration experience. SharePoint Online allows customization of the look and feel of a site. This can range from simple changes like setting a site logo and theme to completely changing the user experience with custom styles and master pages.

There are 3 levels of branding capable in SharePoint online

- **Basic- Themes**

    SharePoint provides many out-of-the-box themes. This is the simplest form of branding and allows users to set colours and fonts on sites.

    Within the theme there is scope for limited customization e.g. customize hyperlink color, foreground text colour.

    The use of themes is the simplest method but only provides capabilities to change the colours and fonts used to render the pages.

- **Intermediate – SharePoint Designer**

    More detailed branding of the SharePoint site can be achieved by modifying it's master page. The master page is the template that is used to render the look, feel, and content of a SharePoint site. By modifying the master page it is possible to reconfigure the web part zones, change the layout of the standard controls, and modify the default styles.

    SharePoint Designer is a free product and is a great tool for making complex branding changes. However, those changes are only applied to a single site collection. To use the same brand across all of the site collections would require that the master page file along with any supporting images, scripts and style sheets be manually copied to each site collection. Although this is not a complex process it does introduce the potential for mistakes.

- **Advanced**

    For more complex branding for application to every site collection Microsoft recommend creating a sandboxed solution using Visual Studio 2010. This would require a resource with software development skills and experienced SharePoint development.

5.2.6 Permissions

SharePoint comes with a set of pre-defined permission groups and for most setups these suffice. However, if there are situations where a requirement does not fall into one of the pre-defined groups then custom groups can be set up easily.

Each group has defined permission levels, a permission level being a set of individual permissions. The list of available permissions is also defined by SharePoint.

Groups

The standard permission groups available in SharePoint are:

Group name	Default permission level	Description
Visitors	Read	Use this group to grant people Read permissions to the SharePoint site.
Members	Edit	Use this group to grant people Edit permissions to the SharePoint site.
Owners	Full Control	Use this group to grant people Full Control permissions to the SharePoint site.
Viewers	View Only	Use this group to grant people View Only permissions to the SharePoint site.

Additional groups for publishing sites are:

Group name	Default permission level	Description
Restricted Readers	Restricted Read to the site, plus Limited Access to specific lists	Members of this group can view pages and documents, but cannot view historical versions or review user rights information.
Style Resource Readers	Read to the Master Page Gallery and Restricted Read to the Style Library.	Members of this group are given Read permission to the Master Page Gallery and Restricted Read permission to the Style Library. By default, all authenticated users are a member of this group.
Designers	Design, Limited Access	Members of this group can to view, add, update, delete, approve, and customize the layout of site pages by using the browser or SharePoint Designer 2013.
Approvers	Approve, plus Limited Access	Members of this group can edit and approve pages, list items, and documents.
Hierarchy Managers	Manage Hierarchy, plus Limited Access	Members of this group can create sites, lists, list items, and documents.

Default Permission levels

The following default permission levels exist in SharePoint;

- **View Only** Includes permissions that enable users to view pages, list items, and documents.
- **Limited Access** Includes permissions that enable users to view specific lists, document libraries, list items, folders, or documents, without giving access to all the elements of a site. You cannot edit this permission level directly.
- **Read** Includes permissions that enable users to view items on the site pages.
- **Edit** Includes permissions that enable users to add, edit and delete lists; can view, add, update and delete list items and documents.
- **Contribute** Includes permissions that enable users to add or change items on the site pages or in lists and document libraries.
- **Design** Includes permissions that enable users to view, add, update, delete, approve, and customize the layout of site pages by using the browser or SharePoint Designer 2013.
- **Full Control** Includes all permissions.

The following additional permission levels are provided with the publishing template by default:

- **Approve** Includes permissions to edit and approve pages, list items, and documents.
- **Manage Hierarchy** Includes permissions to sites and edit pages, list items, and documents.
- **Restricted Read** Includes permissions to view pages and documents, but not historical versions or permissions information.

User permissions

SharePoint online includes 33 permissions, which are used in the default permission levels.

The default groups and permission levels provide a general framework for permissions, covering many organization types and roles within those organizations. However, they might not map exactly to how the users are organized or to the many different tasks that the users perform on your sites. If the default groups and permission levels do not suit the organisation, custom groups and permissions can be created.

SharePoint is very flexible when it comes to permissions. Permissions can be applied at a top/high level e.g. apply across an entire site or, right down to a granular level –individual permissions can be set at the document level for a specific user or group of users.

5.2.7   Information Architecture Features

Information architecture in SharePoint relates to the organisation of information in an enterprise — its documents, lists, Web sites, and Web pages — to maximize the information's usability and manageability.

A portal Web site's information architecture determines how the information in that site — its subsites, Web pages, documents, lists, and data — is organized and presented. An enterprise can increase the return on its portal investment by creating a governance body that develops and enforces information architecture standards and policies. A well-governed architecture makes information in the enterprise easy to find, share, and use.

This section describes SharePoint features that govern the usage of an enterprise's information architecture.

- **Content types**
  Content types enable enterprises to organize, manage, and handle content in a consistent way. They define the attributes of a type of list item, document, or folder. Each content type can specify metadata properties to associate with items of its type, available workflows, templates, and information management policies. Use content types to encourage consistent information management policies, metadata requirements, and other policies. To govern content types, consider associating event receivers and workflows with the forms that are used to modify the content types.

- **Site Content and Structure page**
  The site content and structure page in the top-level site of a site collection manages the content and structure of a SharePoint site collection. Because site navigation in SharePoint is based by default on the hierarchy of sites and subsites, this feature can also be used to configure site navigation. When porting a Web site to SharePoint, you can use the Site Content and Structure page to restructure the site to match your enterprise's needs.

- **Blocked file types**
  You can restrict files from being uploaded or downloaded to a server by basing the restriction on their file name extension. For example, you can block files that have the .exe extension, because such files can be run on a client computer and may contain malicious software.

  By default, many file types are blocked, including file types treated as executable by Windows Explorer.

- **Taxonomy and Managed Metadata**
  Managed metadata is a hierarchical collection of centrally managed terms that you can define and then use as attributes for items in Microsoft SharePoint. A user's role determines how the user can work with managed metadata.

  Users can see only global term sets and term sets that are local to the user's site collection. Local term sets are created within the context of a site collection. Global term sets are created outside the context of a site collection. If there are term sets that some users should be unable to view, assign these term sets to separate groups.

5.3   Microsoft Exchange Online

Microsoft Exchange Online is a hosted messaging solution that delivers the capabilities of Microsoft Exchange Server as a cloud-based service. It gives users rich and familiar access to email, calendar, contacts, and tasks across PCs, the web, and mobile devices.

For a comparison between exchange Online and Exchange Server 2013 see
http://blogs.technet.com/b/exchange/archive/2012/09/19/comparing-exchange-online-and-exchange-server-2013.aspx

It does not have to be an either/or choice when considering cloud vs. on-premises deployments as Exchange Online supports hybrid deployments. You can opt to host archived mailboxes in the cloud with primary mailbox on-premises with Exchange Online Archiving or support users whose mailboxes are hosted on Exchange Online with other users hosted on Exchange Server 2013. This allows sharing calendars and scheduling meetings between online and on-premises users with minimal user disruption when mailboxes are migrated across environments. With these hybrid capabilities, this could allow organizations to migrate over time to help meet your scheduling and business requirements or maintain a hybrid Exchange environment for a longer term.

5.4   Governance

Governance is the set of policies, roles, responsibilities, and processes that guide, direct, and control how an organization's business divisions and IT teams cooperate to achieve business goals.

5.4.1 Governance Elements

Every organization has unique needs and goals that influence its approach to governance. A successful SharePoint deployment requires the following elements;

- **Information architecture**

  The goal of information architecture is to create a system that helps users collect, store, retrieve, and use the information that is needed to achieve business objectives. A Web site's information architecture determines how the information in that site — its Web pages, documents, lists, and data — is organized and presented to the site's users.

  A comprehensive assessment of the Institutes architecture will help identify potential inefficiencies, such as the following:

  - Inconsistent use of metadata that can make it difficult to search for and compare related data or content.
  - Poorly designed and managed storage of content that can result in multiple versions of documents with no way to identify the authoritative version.
  - Poorly designed navigation or poorly presented information that can make it difficult to find important sites and information.

For effective and manageable SharePoint solutions, organisations should consider governing one or more of the following additional areas:

- **Customization policy**

  The highly customizable design of SharePoint products enables you to provide the look, behaviour, or functionality that meets your business needs. Customizations can introduce risk to your environment, whether that risk is to the environment's performance, availability, or supportability. Conversely, a "no customizations" policy severely restricts your organization's ability to take advantage of the SharePoint platform.

  All customizations are not the same. You must decide carefully which kinds of customizations to allow in your environment. Account for the kind of customization and the skill level of the people doing the customizations so that you can ensure the performance, availability, and supportability that you must have for your environment. Your governance policy should balance a level of acceptable risk against the business needs for your organization.

  What is considered a customization? All of the following are considered kinds of customizations in SharePoint products:

  - **Configuration** - using the SharePoint user interface or SharePoint Designer to configure SharePoint products.
  - **Branding** - changing logos, styles, colours, master pages and page layouts, and so on to create a custom look for your SharePoint sites.
  - **Custom code** - using developer tools to add or change functionality in SharePoint products or to interact with other applications. Risk can vary depending on kind of functionality and level of trust (full trust or sandboxed solution).

  Some customizations have very little risk or impact on your environment. Others have the potential for much higher risk and impact. The following table provides examples of different kinds of customizations, the risk level associated with that kind of customization, and potential issues that you might face if you allow that kind of customization.

- **Branding**

  If you are designing an information architecture and a set of sites for use across an enterprise, consider including branding in your governance plan. A formal set of branding policies helps ensure that sites consistently use enterprise imagery, fonts, themes, and other design elements.

- **Training**

  Although SharePoint has an intuitive, Web-based interface and includes online help, using and especially administering sites based on SharePoint can be a challenge for

some users. Additionally, the set of governance policies your IT and business divisions implement may require explanation. By training your user community appropriately, you can increase satisfaction with your implementation of SharePoint online and reduce support costs.

5.4.2   Information Management

Information management in SharePoint comprises organizing, retrieving, acquiring, and maintaining information.

This section describes SharePoint Online features that are useful for managing documents, records, and digital assets. While not all may be relevant to DIT those that aren't now may be in the future.

- **Document management**
  Document management controls the lifecycle of documents in an organization — how they are created, reviewed, and published, and how they are ultimately disposed of or retained. It includes policies that implement auditing, document retention, labelling, and barcodes (to ensure that printed content can be correlated with corresponding electronic versions). Policies can be implemented to help an organization comply with legally mandated requirements, such as the need to retain records.

- **Content approval**
  The content approval process gives site members who have approver permissions control of the publication of content. An owner of a document library can enable content approval for a document library or Web pages library and can optionally associate a workflow with the library to run the approval process.
  Use content approval to formalize and control the process of making content available to an audience. For example, an enterprise that publishes content might require a legal review and approval before publishing the content.

- **Versioning**
  Versioning is the method by which successive iterations of a document are numbered and saved in SharePoint Server. As a governance tool, versioning prevents users with read permissions from viewing drafts of documents.

- **Records management**
  Records management is the process by which an organization determines the types of information that should be considered records, how records should be managed while they are active, and for how long each type of record should be retained. Records management includes the performance of records-related tasks such as disposing of expired records, or locating and protecting records that are related to external events such as lawsuits

- **Digital Asset Library**
  The digital asset library feature in SharePoint Server 2010 provides a specialized repository for storing and managing digital assets, for example, images, audio files,

or video files. A centralized repository for managing digital assets enables an organization to exert tighter control over brand-sensitive content, and helps to ensure that only approved assets for products are made available to the appropriate users.

- **Information Management Policies**
  An information management policy is a set of rules for a type of content, or for a location where content is stored. Each rule in a policy is a policy feature. For example, an information management policy feature could specify how long a type of content should be retained, or it could provide document auditing. Information management policies enable you to control who can access organizational information, what they can do with it, and how long the information should be retained. You can associate a policy with a list, document library, or content type.
  When you configure an information management policy, you can optionally write a policy statement that is displayed in Microsoft Office 2010 client programs to inform document authors about the policies that are enforced on a document. This is a recommended best practice.

  SharePoint Server 2010 includes the following information management policy features:

  - The Auditing policy feature logs events and operations that are performed on documents and list items. You can configure Auditing to log events such as editing documents, viewing them, or changing a document's permissions level.

  - The Expiration policy feature helps dispose of content in a consistent way that can be tracked and managed. For example, the policy can delete a document, or define a workflow task to have SharePoint Server route the document for permission to destroy it.

  - The Labelling policy feature specifies a label to associate with a type of document or list item. Labels are searchable text areas that SharePoint Server generates based on metadata properties and formatting that you specify.

  - The Barcode policy feature enables you to track a physical copy of a document. You create a unique identifier value for a document and then insert a barcode image of that value in the document. By default, barcodes are compliant with the common Code 39 standard (ANSI/AIM BC1-1995, Code 39), and you can use the object model of the policies to plug in other barcode providers.

  Information management policy reports help you monitor how consistently your organisation uses policies. Because information management policies are often implemented to help an organization comply with regulations, frequent monitoring of policy usage can help you ensure that an organisation is compliant.

6   Key Findings

6.1   Technical

6.1.1   Set Up

During the ESpace pilot a few connection issues arose due to different platforms being used across the different Institutes. Specifically;

- ITTD experienced issues with getting Lync up and running as they had a version of Lync server previously installed on their server. Their Internal firewall had not allowed Port 443 so Lync client could not connect to the server. However, this was resolved by opening the port.

- Installing Lync mobile Client on some android devices was an initial problem which was subsequently resolved by downloading and installing 2010 apk file for Lync on the tablet.

6.1.2   System/Resources Requirements

Minimum requirements for Office 365 include Office 2007+, IE 8+ and Windows 7.

Operating system requirements
- Windows 7
- Mac OS X 10.5 (Leopard), 10.6 (Snow Leopard), 10.7 (Lion)
- Windows Server 2008
- *Support Ending*
  - Windows Server 2003 on January 1, 2013
  - Windows XP on January 1, 2014 (currently requires SP3)
  - Windows Vista on January 1, 2014 (currently requires SP2)

Office Client requirements
- Office 2010 SP1
  - Service Pack 1 must be deployed by June 1, 2012
- Office 2007 SP2
- Office 2011 for Mac and Outlook 2011 for Mac
- Outlook 2003 via POP and IMAP only
- .NET 2.0 or later
- Lync 2010
- *Support Ending*
  - Office 2008 for Mac on April 9, 2013
  - Entourage 2008 Web Services Edition on April 9, 2013
  - Outlook 2003 on April 8, 2014

Browser requirements
- Internet Explorer 8 or above
- Latest Firefox "Release" version

- Safari 5 or above
- Latest Chrome "Stable" version
- *Support Ending*
    - Internet Explorer 7 on October 1, 2012
    - Safari 4 on October 1, 2012

Resource Requirements

- **Servers**
Cloud computing systems reduce the need for advanced hardware on the client side. You wouldn't need to buy the fastest computer with the most memory, because the cloud system would take care of those needs for you. Instead, all you need to purchase is the terminal to run the software. The terminal could include a monitor, input devices like a keyboard and mouse and just enough processing power to run the middleware necessary to connect to the cloud system. You wouldn't need a large hard drive because you'd store all your information on a remote computer.

- **Internet connection**
An internet connection is required to access cloud software over the internet.

- **IT Resources**
IT resources would be needed for the following
    - To manage user accounts – Lync, SharePoint, Exchange
    - SharePoint – Governance of the portal
    - User support
    - Administrators - to administer the system

- **HA, Backup and DR**
None required as this is all taken care of by the cloud provider

- **Webcam and microphone**
A webcam and microphone are required to use the audio/visual functions of Lync.

6.2   Development and Implementation

6.2.1   Design and Customisation

Design

To ensure a continuity of appearance across all sites belonging to the CPN site collection, a standard Microsft 365 site template was chosen, modified and subsequently adopted for each new site created (Fig. 4). This was a simple process, easlity acheived without extensive design/technical knowledge.

Fig.4: Classic Theme

While all the wepparts held useful information the landing page became somewhat cluttered.

Site Architecture

Once the overall design was established, the next phase focussd on the site architecture namely, how best to organize data on the site and how to design the site hierarchy. This involved considering what sites and subsites would be required, site layout, what webparts should be displayed and where.

Each scenario site contained a number of collaboration webparts on its main landing page and, where appropriate, a number of sub sites as needed.

For example, the CPN site made use of the following collaboration tools;

- Document library
- Task list – to track CPN main activities
- Discussion board – "The Coffee Dock"
- Lists – Other lists displaying various member information

6.3   Functionality

6.3.1   Shared Calendar

As DIT does not currently use Microsoft Exchange, it was not possible to link the cloud based calendar function to existing outlook calendars. Accordingly, a practical assessment of the function was not undertaken. However, the functionality is a key component of the overall application and certainly would be of particular interest to all Institutes involved in the project.

6.3.2   Real Time Messaging

Real time messaging was provided through the Lync application and proved both useful and beneficial with the user group. At one level it offered a quick and unobtrusive form of communication where the objective is a simple question or transfer of a discreet piece of data/information. At another level, however, it prompted some individuals to make contact with a colleague where in normal circumstances they might not have bothered. Thus, indirectly, the availability of the real messaging function was helping to improve communication amongst colleagues and a starting point for knowledge sharing.

In terms of the communication applications being assessed, the real time messaging function was the most widely utilised.

6.3.3   Video/Voice Communication

Lync offers a very strong video /voice communication function which facilitates sharing and real time editing of documents, group meetings, presentations. Throughout the project, this application was tried in three different situations

1. General Updates – Reporting
2. Project proposal development
3. Formal Meetings
4. General Updates

The capability to review and edit documents in real time was of particular interest for some members of the ESpace group.

In one instance, Lync was used by three ESpace participants to finalise and agree a specification prior to publication. On another occasion, it was used, in conjunction with Sharepoint, to edit and finalise a research project submission.

On both of these occasions, there were considerable time savings due to not having to email documents back and forth between individuals. There was also a sense of stronger collaboration due to each participants being able to contribute to a single shared virtual meeting.

6.3.4   Project proposal Development

During the trial period, the Office of Corporate Partnerships and Dublin Energy Lab used the facility to assist in the development of a research project proposal.

Located on different sides of the city, both parties were able to hold discussions, share data and edit in real time which helped remove some of the pressure associated with trying to establish contact with people across a large spatial fragmented organisation. It also helped create a project team spirit despite the spatial disconnect. The presence element of the application by which users can see the presence status of other individual was particularly useful in this regard.

6.3.5   Meetings

The final ESpace project meeting was conducted online using the application. The meeting brought together individuals from across three different organisations, each in different locations. Lasting approximately 40minutes, the meeting included a presentation, sharing of draft reports and some real time editing. All participants expressed satisfaction with the approach and felt that they would certainly consider using it to reduce the number of meetings requiring travel.

6.3.6   Document Sharing

SharePoint, a major component of Microsoft 365, provides a very robust document sharing facility. Primarily trialed on the DIT Corporate Partnership SharePoint site, it allowed key documents to the shared in an effective and easy to access manner. Importantly, varying degrees of security could be attached to documents restricting access as needed. The application was easy to use, effective and beneficial.

Typical documents shared on the ESpaces site included briefing documents, action plans, project proposals, spreadsheets and presentations.

To facilitate document management, document libraries were set up for some of the main sites and for the project sites within the CPN site collection. Below are details of some document management tools in SharePoint 365 which would be very beneficial to organisations in managing project related documentation and collaboration on documents.

Document libraries can be set up within sites, as many or few as are needed. For large sites that have much activity a Document Centre could be used to store all the libraries for a specific site.

A Document Centre site provides features for creating and managing large sets of documents. The Document Centre site template has the recommended document management features enabled by default. The advantage of using a Document Centre is that it keeps all documents for a site in one easy-to-access location.

The following sections briefly describe the main features which are available within document libraries, some of which were used and others which were not but would be recommended based on outcomes of the pilot.

Upload/Download Documents

Within each library there is the ability for users to upload and download documents based on their privileges within the portal.

Emailing a link to a document

This will alleviate the necessity to send an actual document as an attachment when emailing. Within any document library there is a property against a document to "email a link". This will create a new email and place in the body of the mail, a link to the document in the library.

Tree view navigation

The tree view is a familiar navigation element for most Microsoft Windows users. Document libraries can have many levels of folders and subfolders, so the tree view will help users to quickly browse to the documents for easy retrieval.

The Relevant Documents Web Part

The Relevant Documents Web Part can be implemented to create a personalized view of the documents that users create, check out, and change. In a large Document Centre, this Web Part can save significant time and effort by making files easier to find and use. Below is an illustration of the Web Part:

The Relevant Documents Web Part provides a link to the folder containing the document and the document's properties.

Recently Updated Documents Webpart

This is a key asset for any knowledge management system to bring to users attention, documents that were recently updated e.g. policies, standards etc. The **Recently Updated Documents Webpart** could be placed on each site landing page to bring to the users attention what documents have been uploaded say in the last week. It can be configured to span all document libraries on a site or Site collection wide.

For example, placed on the CPN landing page it could show only those docs uploaded in say the last week. In this way users are exposed to it when they log on and ensured that they are focused on just the relevant documents.

6.3.7   Amending Documents

Two options exist for document amendments:

a. Real time editing using Lync
b. Amending documents on SharePoint

The real time editing function proved very successful and for simple, small amendments, is a very useful tool. For more significant document amendments or document development, the use of the shared document facility provides the preferred solution. Through SharePoint, documents can be specifically 'checked out 'to individuals allowing changes to be made safe in the knowledge that the older version is not be used elsewhere. In addition, the application provides document versioning which is useful in providing a clear development path for documents.

6.3.8 Shared Information Board

One of the key objectives of the Espace project was to determine if technology could facilitate a sharing of information across a spatially fragmented organisation. In this regard, there was a focus on testing the concept of linking individuals with access to information rather than attempting to directly codify the data. To this end, part of the ESpace portal included a discussion board which was designed to function as a virtual coffee shop and onto which individuals could share/discuss relevant information relating to their engagement activities. For example, a note would be posted by a member of the ESpace group that they had or were going to meet a particular company to discuss an engagement opportunity. Other members could respond to this post by sharing any existing links they might have with this company. By capturing company linkage information from across the organsiation in this way, a more comprehensive and searchable engagement picture of that company is built up over time.

While the concept was warmly welcomed by participants, in reality, few were active in posting information which perhaps reflects broader organisational issues which were beyond the scope of this project. Notwithstanding this, it was felt that the approach is worth exploring further as a mechanism to capture engagement information from across different academic units.

It was suggested that a blog element rather than a discussion element would be preferable as it would offer more enhanced options for discussion and feedback.

6.3.9 Remote /Mobile Access

As a cloud based application, no difficulties were experienced in accessing the ESpace portal from remote devices which included laptops, PCs and both ipad and android tablets. Connectivity via iPhone was shown to be possible.

6.3.10 Inter Institutional Linkage

Significant difficulties were experienced in linking across Institute partners due, it would seem, to existing Lync and SharePoint applications sitting on Institute servers and the associated firewalls. In relation to DIT and ITTD, these difficulties were eventually solved and full integration with the system was achieved. However, the issue in ITB continually caused connection problems and due to the very short time frame of the trial, attempting to

establish the link had to be abandoned. Nevertheless, the team was confident that the difficulties could be surmounted given resources and time.

6.3.11   Workgroup Set Up and Security

SharePoint allows for the setting up of specific work areas designed for purpose and with restricted access. During the trial, functional, project and management areas were created with differing security settings and permissions appropriate to their purpose. Separate permissions were also set for specific documents.

6.3.12   Telephony Linkage

The version of Microsoft 365 being trialed did not have this functionality.

6.4   Application Roll Out and Adoption

During the early part of the pilot, adoption of the applications was slow with participants citing time pressure as a reason for not investigating the technology functionalities. This prompted consideration of how the technology was being presented to potential users.

Initial briefings had focused on the functionality of the technology but it was realised that the business case for using it was not as clearly demonstrated. To address this, a mentoring approach was devised to assess if that would improve adoption.

Selecting five of the pilot group, the project coordinator initiated a series of face to face meetings with participants with a view to:

a. demonstrating the business aspects and advantages of ESpace
b. encouraging participants to explore the different functionalities
c. identifying particular functionality relevant to their specific needs

Following the meetings, the project coordinator ensured that he regularly contacted the selected group using the technology, requesting feedback, encouraging use, answering queries and identifying specific work elements that could be enhanced using the technology. The result of this approach greatly improved adoption and highlighted the importance of clearly articulating the business case when implementing a new support application.

6.5   Organisational Impact

6.5.1   Intradepartmental Communication and Collaboration

One of the key challenges facing large dispersed organisations is how to facilitate communication between colleagues in an effective manner. Lync proved a very valuable mechanism in this regard by offering a simple, interactive form of communication supplemented by a visual interface. This , in particular, provided a richness to communications and while not quite offering all the advantages of a face to face meeting, certainly created a similar experience.

It is difficult to accurately assess the degree to which Lync and SharePoint contributed to improved communication across department boundaries but anecdotally, there was a tendency to connect more regularly with colleagues using Lync that say by telephone thus suggesting that it may be a catalyst for improved dialogue amongst colleagues.

6.5.2 Time Utilisation

As the trial progressed, the adoption of Lync became more widespread for short meetings. These meetings allowed for quick and effective transfer of information without the need for travel or use of cumbersome email.

6.5.3 Document management and utilisation

SharePoint offers an excellent vehicle for document sharing and utilisation. However, this was only minimally used during the trial primarily due to the broad nature of the scenarios where documents were largely for information purposes only. However, where ESpace was used to facilitate a specific project proposal development, document sharing was more prevalent as might have been expected. Its use in this situation proved very beneficial and demonstrated potential for further exploration.

6.5.4 Team Building

Creating a better linked community of colleagues helps establish a feeling of belonging, shared purpose and team membership. For colleagues active in different spheres of operation and in different locations taking a collegial approach to tasks can be fraught with difficulties. SharePoint and especially Lync did go some way to bridging this gap particularly when used on a specific project. In those instances, connectivity helped maintain a momentum to ensure successful completion of the project.

7   Key Proposals for Improved Microsoft Office 365 Implementation

Issues	Suggestions
Starting Off	• In the first instance, it is important to be clear as to the reason for deploying MS Office 365 within the organisation. This clarity assists in promoting the deployment process across functions and in mapping the nature of information to be used and how that information is to be used. This, in turn, helps ensure the development of an information architecture that can facilitate correct, timely and searchable information.
Design Issues	• In the absence of design resources, modifying existing site templates offers a quick and reliable option for creating a user friendly, professional interface. Once modified and agreed, this can become the template for additional sites.
Deployment	• At the outset, it is vital that strong commitment and sponsorship is obtained at senior management level. Given limited resources and to assist adoption, it is suggested that deployment take place on an iterative basis. As a starting point, it can be useful to identify a single functional area in which to deploy the system. This concentrates the effort and helps ensure an effective implementation. Once the system is normalised within one functional area, it can be progressively introduced across the wider Institute. • It is important to develop and articulate a robust business case for deployment. This helps ensure user 'buy in' and thus facilitate adoption. • Ensure all users are trained on system functionality and provide a contact point for trouble shooting. • It is suggested that implementation be built around specific projects. This helps provide a real opportunity for users to engage and help drive the process. These projects can be small and can be created specifically for the implementation. • Early stage deployment needs to be driven and managed at a business level. This requires an individual to be assigned as 'business project manager' to ensure momentum is maintained. In addition, IT supports need to be in place to assist in technical issues.

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