Solution Options

Introduction

A 12-week Discovery Phase has been completed to identify the scope of a new digitised planning service for Northern Ireland, to be used by both the Department and local government.

In addition to the identification of system requirements for a refreshed digitised planning service, an assessment has been completed on the Solution Options for Delivery. Throughout Discovery we have held several Solution Design Workshops with participants from DfI (NIPP Project Manager, Product Owners and DSB) and IT Subject Matter Experts from a number of Councils.

The following document summarises the findings from this exercise and our recommended Solution Option.

Please note, this document is part of a set of deliverables produced during Discovery which have been agreed with DfI and PPGB during mobilisation and reviewed throughout Discovery. The deliverables should be considered as a whole and in the context of the agile Discovery phase that was completed over 12 weeks involving DfI, Product Owners, PPGB and DSB. The full set of deliverables can be viewed here: Discovery Deliverables

Potential Solution Options Overview

Throughout Discovery we have considered 12 potential solution options and examined the feasibility of each option for delivery. This includes 4 high level solution options, each of which could be a Commercial Off The Shelf (COTS) product, a bespoke product or a hybrid product.

	Shared System with Centralised control	**Shared System with Local Control**	**Shared Planning Permission Application Portal with Individual Decision Making Systems for each Authority**	**Individual Planning Permission Portals for each Authority**
COTS	✔	✔	✔	✔
Bespoke	✔	✔	✔	✔
Hybrid	✔	✔	✔	✔

The following section provides an overview of these 4 high level solution options together with an analysis of each option against the following key criteria:

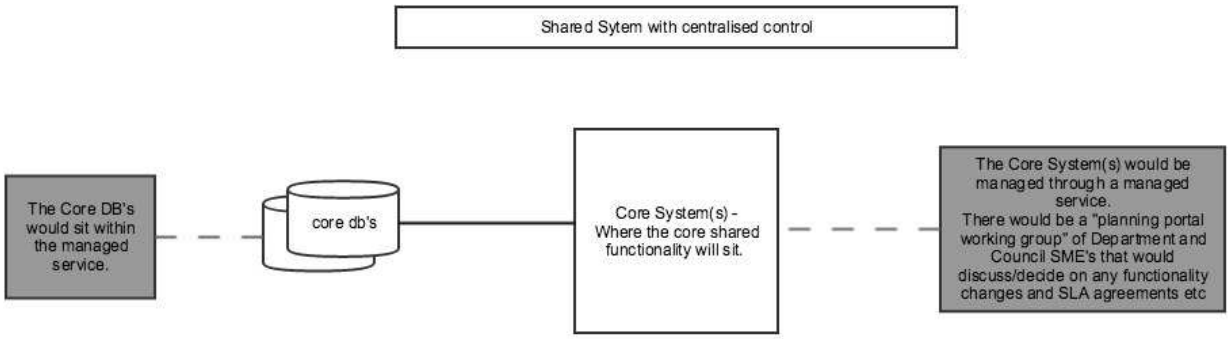
- **Governance:** the ease with which the new system can be managed during the implementation and operation phases
- **Functional Requirements:** the ability to meet the functional requirements established during the Discovery Phase
- **Integration:** the need for the user to have a full view of all planning data to inform high quality planning processes
- **User Experience:** the quality of the user experience
- **Support:** the ease with which the new system can be supported
- **Reporting & MIS:** the ability of the system to produce the required reports and MIS as defined in the Discovery Phase
- **Mapping** / **GIS:** the ability of the system to integrate with existing GIS data layers
- **Data Migration:** the ease with which data can be migrated from the existing system to a new planning system(s)

Following this analysis, a recommended solution option has been put forward that best fits the project's requirements.

Option 1: Shared System with Centralised control

This option is a shared system where each authority has to agree before any changes are made to functionality, releases etc. Each authority will share the same templates, reports, workflow etc and these can only be updated if full agreement from each authority (or an agreed %) is given.

High Level Design



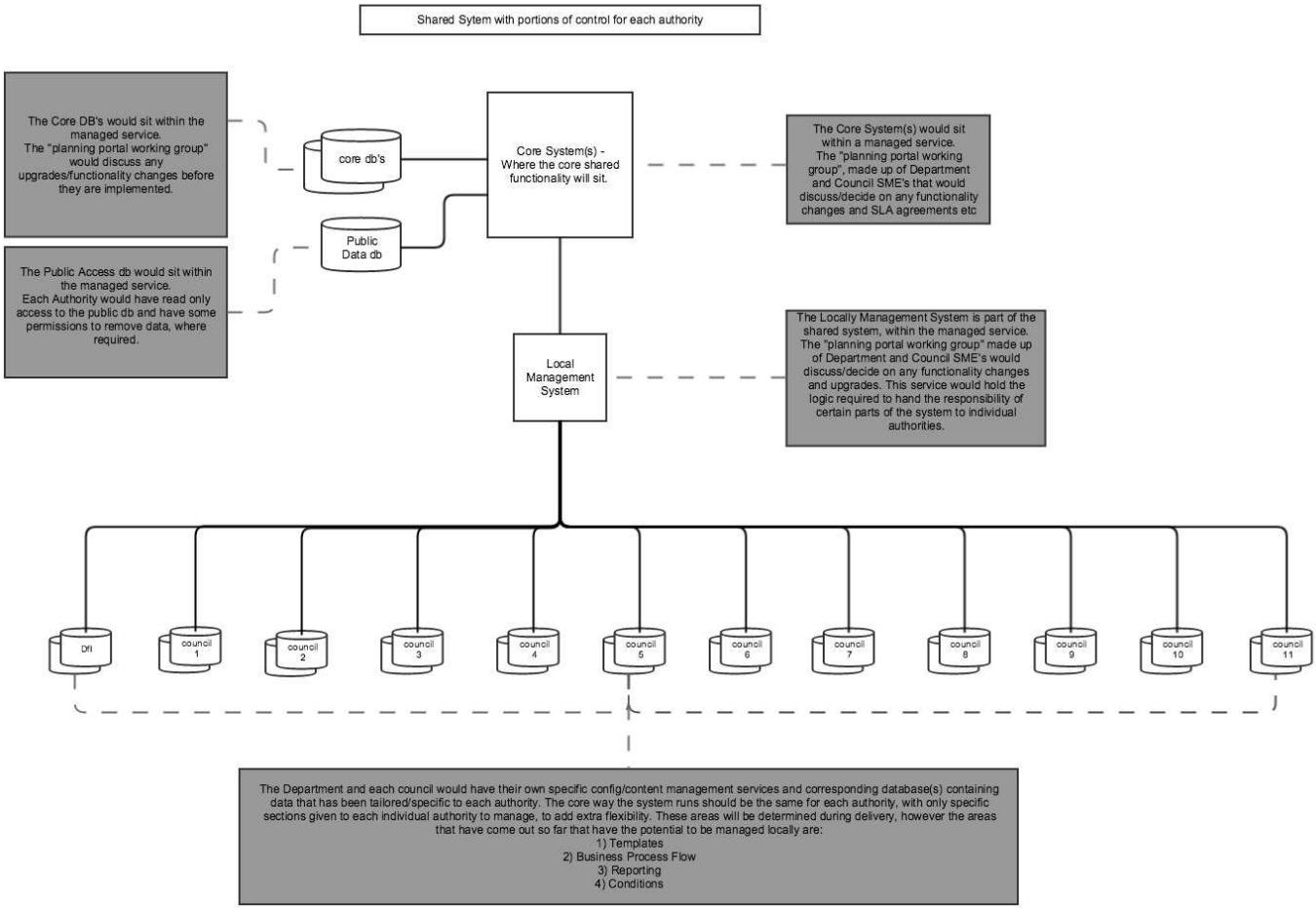
Advantages and Disadvantages

Criteria	Advantages	Disadvantages
Governance	Assumes a coordinated and cohesive governance model with each authority working together to continuously improve the planning service in Northern Ireland.	
Governance		Potentially lengthy change control/support – Everything needs to go through the change process and all changes need to be fully agreed by all 12 authorities (or agreed %) before any changes to the system can be made.
Functional Requirements	Efficiencies and economies of scale can be derived from implementing a shared system which satisfies a large number of business requirements.	Lack of flexibility to facilitate individual authority requirements.
Integration	A shared system provides more straight forward integration allowing all planning officers to access a full history of each site, regardless of which authority the site sits within, or how many authorities the site in question sits across.	
Integration	Cross-authority dependencies - Property Certs & called-in applications will be able to gain access to data via one central source, rather than having to integrate with multiple systems and data sources	
User Experience	Consistent user experience for each user group - system offers one central hub to access for public to search for applications, applicants to apply (Planning Agents account for c80% of applicants so this is particularly important), consultees to view and respond to consultations and a consistent approach for planning officers.	May not necessarily be a positive user experience for the planning officers due to restrictions in the user experience of manually updating templates, reports etc without the ability to save these changes for future use.
Support	Aligned to a single support model: one system to maintain and manage (through one managed service contract) leading to increased efficiency as changes / updates can be performed centrally.	One size fits all Service Level Agreement: each Authority would have a level of influence over the SLA, but it would be agreed across all authorities offering no flexibility.
Reporting & MIS	DfI will have access to statistical reporting & MIS in order to perform their oversight role effectively (multiple systems and data sources would require additional effort and complexity to gain access to the required data and information)	
Mapping / GIS	A shared system caters for a unified approach and service agreement with a mapping / GIS provider.	
Data Migration	Caters for a more straight-forward data migration given the architecture of a shared system.	

Option 2: Shared system with local control

This solution option is a shared service, but provides flexibility for some of the functionality to be managed by each individual authority. These individual aspects, such as templates, reporting and planning conditions can be customised by each authority, with each authority holding the responsibility to update and maintain them as they desire.

High Level Design



Advantages and Disadvantages

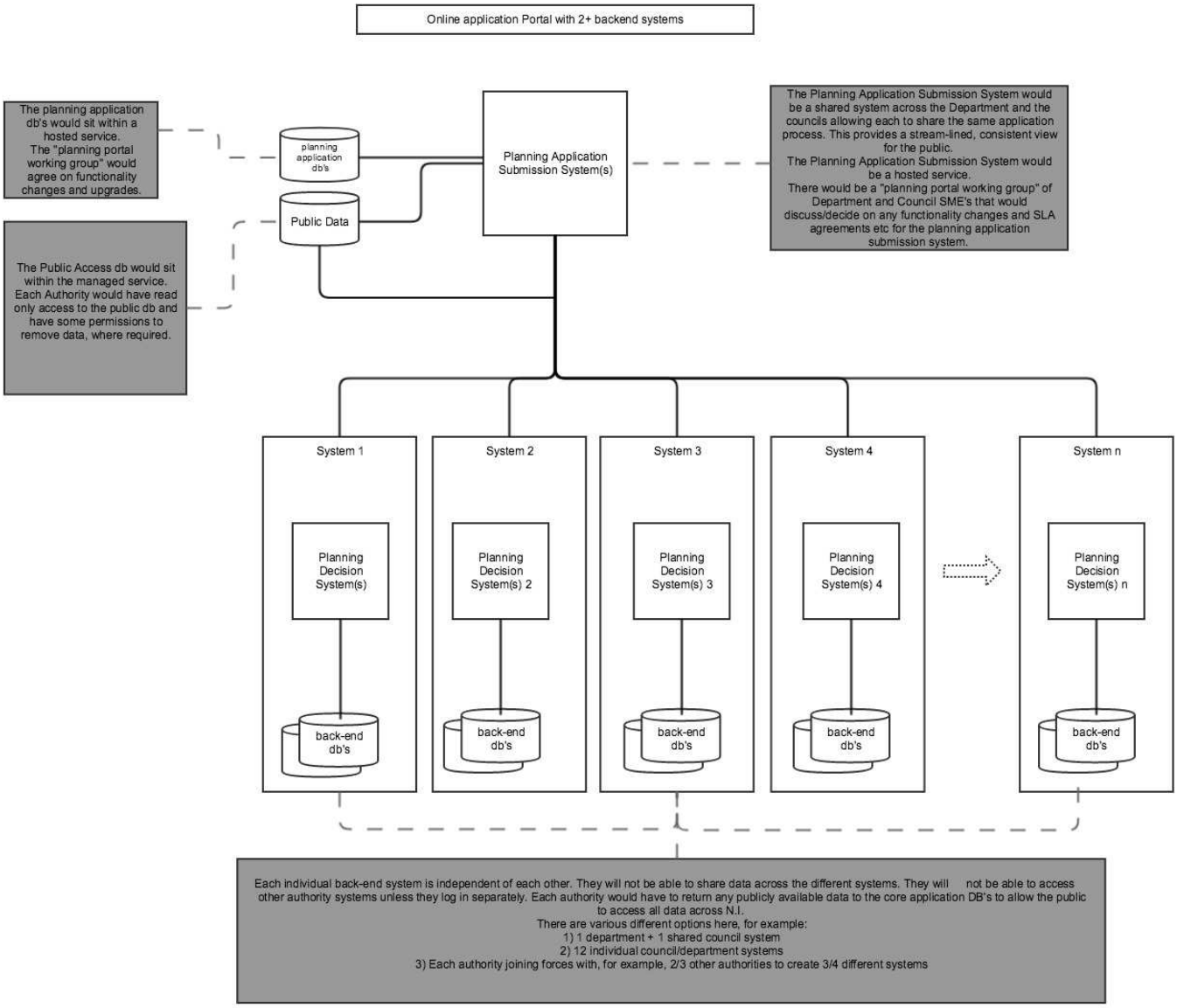
Criteria	Advantages	Disadvantages
Governance	Assumes a coordinated and cohesive governance model with each authority working together to continuously improve the planning service in Northern Ireland.	
Governance / Support		Each authority will be responsible for maintaining and updating their own agreed parts of the system, which may require additional resources
Governance / Support		Difficulty in agreeing a common level of local control that each authority will have and agreeing this across all authorities.

Governance / Support		This option is potentially more complex to manage and maintain that Option 1, if strict control is not maintained on the level of flexibility i.e. if flexibility is offered around core aspects of the system.
Integration	A shared system provides more straightforward integration allowing all planning officers to access a full history of each site, regardless of which authority the site sits within, or how many authorities the site sits across.	
Integration	Cross-authority dependencies - Property Certs & called-in applications will be able to gain access to data via one central source, rather than having to integrate with multiple systems and data sources.	
Functional Requirements	Flexible to the individual authority requirements.	
Functional Requirements	Record deletion and content/configuration changes can be managed quickly and easily by each individual authority.	
Functional Requirements	Efficiencies and economies of scale can be derived from implementing a shared system which satisfies the business requirements.	
User Experience	Consistent user experience for each user group - System offers one central hub to access for public to search for applications, applicants to apply (Agents are ~80% of applicants so this is particularly important), consultees to view and respond to consultations and a consistent approach for the planning officers.	
Reporting & MIS	DfI will have access to Statistical Reporting & MIS in order to perform their oversight role effectively (multiple systems and data sources would require additional effort and complexity to gain access to the required data and information).	
Mapping / GIS	A shared system caters for a unified approach and service agreement with a mapping / GIS provider.	
Support	One system to maintain and manage (through one managed service contract) leading to increased efficiency as changes / updates can be performed centrally.	
Data Migration	Caters for a more straight-forward data migration given the architectural design of a shared system.	

Option 3: Shared Portal for online applications and individual Authority/Department systems

This solution option is for a single shared portal that handles planning permission submission for all applicants, with each individual authority responsible for their own decision making system that integrates into the online application system. These individual systems manage the application from the point of submission to approval/refusal.

High Level Design



Advantages and Disadvantages

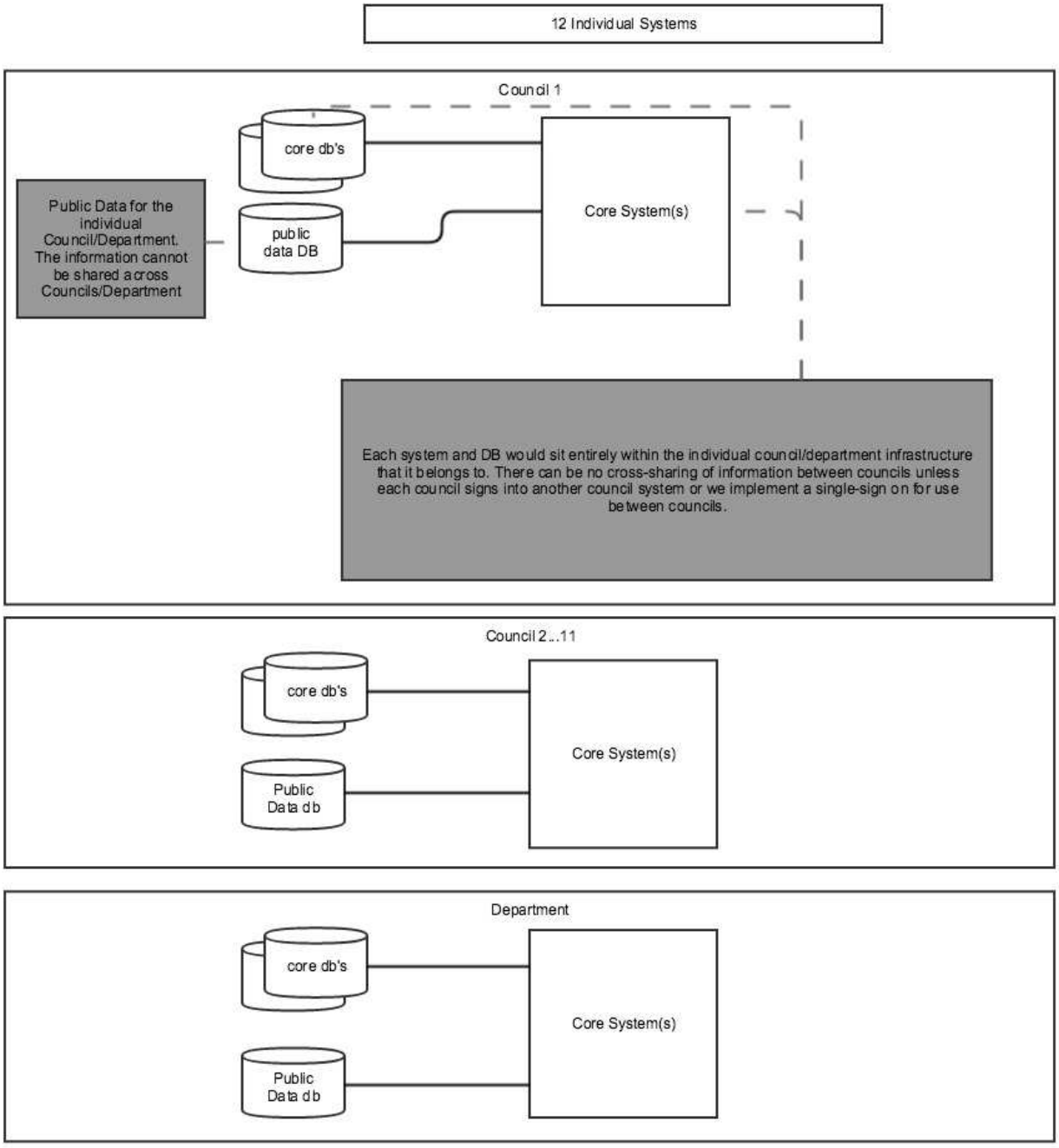
Criteria	Advantages	Disadvantages
Governance		Unclear governance implications e.g. central governance for front-end and multiple governance groups for multiple back-end systems? These would need to be agreed by each authority.
Governance	Each authority has the flexibility to implement their own systems from the point of application submission.	Potential for lack of consistency between each authority in the validity, assessment and decision making processes.
User Experience	Consistent user experience for public users as applicants have one common system to submit planning permission application forms.	
User Experience	Consistent planning permission application process across NI.	
Functional Requirements		Diseconomies of scale to build multiple systems for the same set of core requirements.

Integration		Increased complexity for cross-sharing of data between systems - planning officers will only be able to view the history on sites that sit within their authorities, rather than being able to view a full history of each site within a single system. Would have to implement workarounds for accessing data from other authorities that would be more costly and complex.
Integration		Multiple back-end systems mean that back-end processes are at risk of becoming out of sync e.g. consultees would have to log into different back-end systems and may experience inconsistencies depending on application boundaries and business processes adopted by individual authorities.
Integration		Increased complexity for future system integrations e.g. Building Control, DAERA etc.
Delivery Dependencies		Potentially multiple providers for delivery, increasing overall delivery dependencies and risk.
Data Migration		Significant complexity and effort required to migrate data into multiple back-end systems with different target data architectures and data validation rules.
Reporting & MIS		Significant integration effort will be required to integrate multiple systems and data sources in order to provide DfI access to Statistical Reporting & MIS in order to perform their oversight role effectively.
Mapping / GIS		Does not cater for a unified approach and service agreement with a mapping / GIS provider, therefore each authority may be required to negotiate their own mapping supplier and / or approach for integrating mapping functionality.

Option 4: 12 individual systems

Each authority would have their own planning portal (up to 12 in total) and be responsible for the planning applications within their Council, with the Department responsible for any regionally significant applications and any major applications, where applicable. Applicants would have to apply to the correct authority in order for their application to be taken into consideration as each authority would have their own online planning application portal, totally separate from the other authorities.

High Level Design



Advantages and Disadvantages

Criteria	Advantages	Disadvantages
Governance		Unclear governance implications e.g. will each authority have their own governance e.g. how will the Department retain oversight and discuss any issues that affect all authorities?
Governance		Unclear mechanism for cohesion / coordination / collaboration between each authority.

User Experience		No common system for the public to submit planning applications - causing an inconsistent and potentially confusing user experience.
User Experience		Public has to access 12 individual systems to search for public data across NI rather than through a single planning hub.
User Experience		Consultees and Agents have to access 12 individual and potentially different systems.
Functional Requirements	Full flexibility over how each authority implements their system including the ability to tailor their own individual 'branding'.	
Functional Requirements		Diseconomies of scale to build multiple systems for the same core set of requirements.
Reporting & MIS		Difficult and costly to share data between authorities.
Reporting & MIS		Difficult for Planning Officers accessing all essential planning data - i.e have to contact other authorities to get all of the necessary data to make fully informed decisions.
Integration		Increased complexity for cross-sharing of data between systems - planning officers will only be able to view the history on sites that sit within their authorities, rather than being able to view a full history of each site
Integration		Increased complexity for future integrations e.g. Building Control, DAERA etc.
Delivery Dependencies		Potentially multiple providers for delivery, increasing overall delivery dependencies and risk.
Data Migration		Significant complexity and effort required to migrate data into multiple systems.
Reporting & MIS		Significant integration effort will be required to integrate multiple systems and data sources in order to provide DfI access to Statistical Reporting & MIS in order to perform their oversight role effectively.
Mapping / GIS		Does not cater for a unified approach and service agreement with a mapping / GIS provider, therefore each authority may be required to negotiate their own mapping supplier and / or approach for integrating mapping functionality.

Analysis of 4 Solution Options

Functional Requirements

The following table shows the requirements that each option **will not** fulfil (see Appendix for full details).

Option 1 There are 20 User Stories that will not be fulfilled with this system 20 issues	**Option 2** Meets all MVP Requirements gathered

Option 3	Option 4
There are 33 User Stories that will not be fulfilled with this system 33 issues	There are 27 User Stories that will not be fulfilled with this system 27 issues

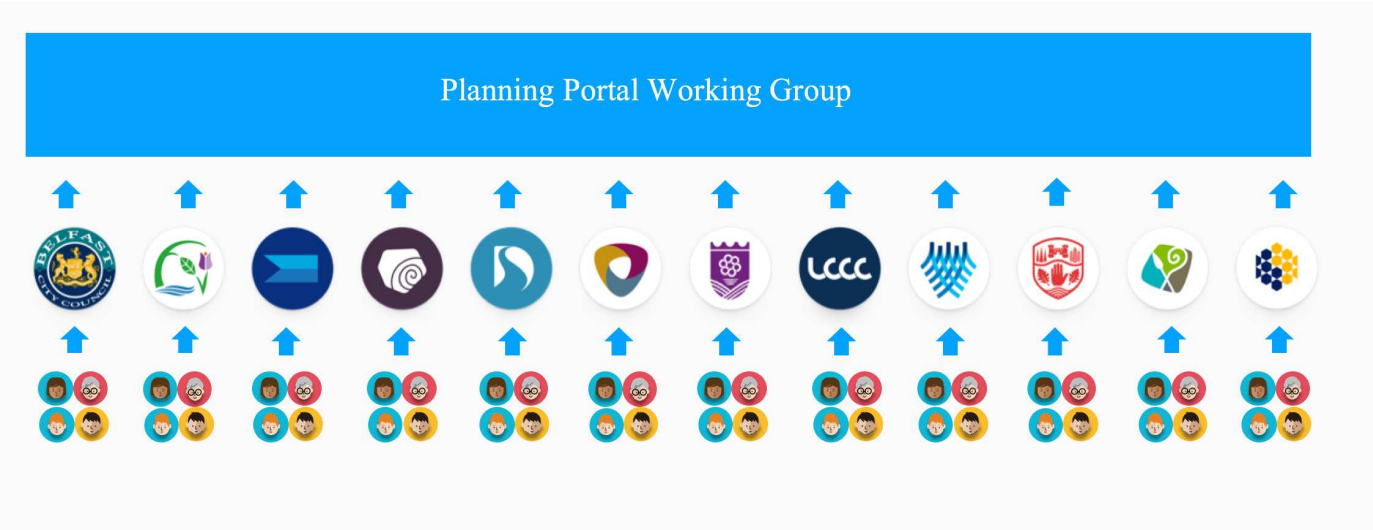
User Experience

Option 1	Option 2
This option provides a consistent user experience for the general public, consultees, agents & Property Certificates Unit. However, it does not provide a good user experience for the planning officers, due to the lack of control they will have around certain elements of functionality e.g. templates, user management.	This option provides a consistent user experience for the general public, planning officers, consultees, agents and Property Certificates Unit.
Option 3	**Option 4**
This option provides a consistent user experience for the general public and agents, providing one central place to apply for and submit planning applications. However, it does not provide a consistent way for consultees to view consultation requests across the different authorities. It also fails to provide a consistent user experience for Property Certificates.	This option does not provide consistent user experience for the general public, agents, planning officers or consultees. It does not provide a central place to apply for and submit planning applications. It also does not provide a consistent way for consultees to view consultation requests across the different authorities. Finally, it fails to provide a consistent user experience for Property Certificates.

Governance Structure and Service Management

Governance Structure

The governance structure proposed is a Planning Portal Working Group. The Working Group will be made up of members of all authorities. Four user groups have been identified through the User Experience work (see more details within the User Experience Deliverable) carried out as part of the Discovery. It has been assumed that each authority will maintain these groups and use them to provide insight into the current operation and future development of the system. This can then be fed into the Planning Portal Working group. The diagram below outlines how this might operate in practice.



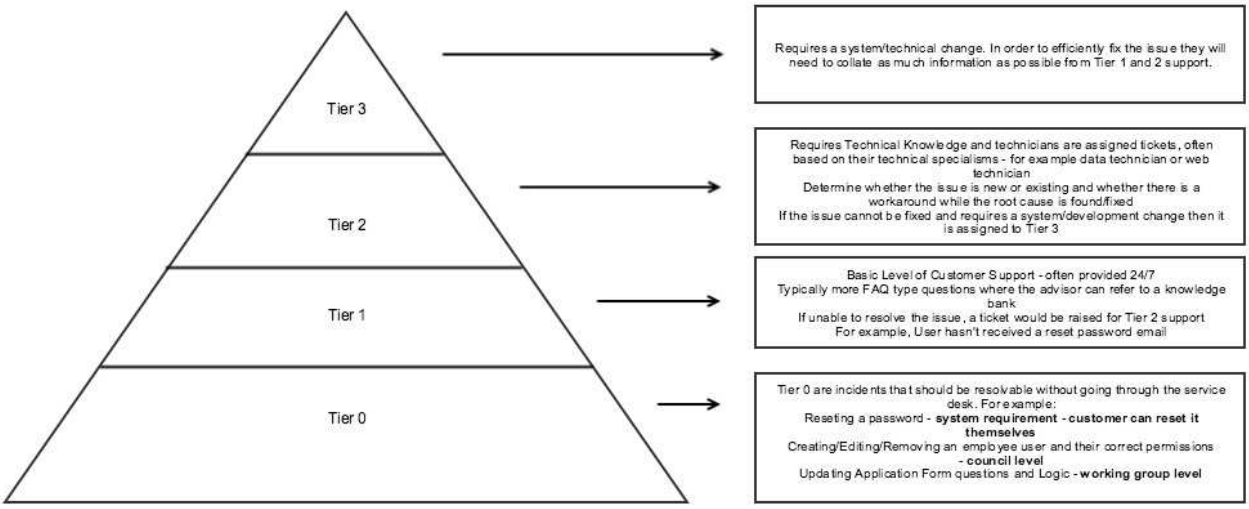
The authorities have asked for several elements of ‘self-service’ in a replacement Planning Portal, which will provide them with additional control and reduce the reliance on a centralised service desk model.

These findings can be grouped into 3 categories:

- Authority Control – system features that authorities have asked for more control over i.e. the ability to perform these functions without the need for a centralised service desk
- System Managed– system features that can be provided by offering enhanced system functionality
- Managed Service – System features that authorities are content to be provided centrally by a managed service function

Authority Control	System Managed	Managed Service
Create, edit and delete new users and their permissions	Reset passwords	Defect fixes
Delete Consultations sent in error	Advanced search functionality	Functionality updates
Report Design - functionality for defining custom reports		Database restoration/updates
Delete data / documents added to public data-store incorrectly/by accident		Disaster recovery
Customise templates		Contract Management
		Global Performance Statistics

From these findings we have outlined the below the High Level Service Management Model (to be refined in detail during Delivery):



Data Migration

See Data Migration for summary of data migration options, recommendation and estimated cost. The table below summarises what the data migration options are for each solution option.

Option 1 Big Bang Phased by Authority - recommended	**Option 2** Big Bang Phased by Authority - recommended
Option 3 Big Bang - as each system needs to turned on at the same time in order to use the shared online application portal.	**Option 4** Big Bang - each Authority would move data to their own system. Therefore, the only option here is to implement a Big Bang approach

Conclusions

The table below outlines where each solution option does/does not meet the requirements that we have gathered over the last 12 weeks. Based on the analysis we have undertaken, we believe that Option 2: Shared system with local control provides the best technical solution for the twelve authorities. It provides the flexibility to meet all requirements gathered without having to compromise on user experience. A detailed analysis of the costs, benefits, risks and Value for Money of these options will need to be tested through the development of an Outline Business Case.

- **Governance:** the ease with which the new system can be managed during the implementation and operation phases
- **Functional Requirements:** the ability to meet the functional requirements established during the Discovery Phase
- **Integration:** the need for the user to have a full view of all planning data to inform high quality planning processes
- **User Experience:** the quality of the user experience
- **Support:** the ease with which the new system can be supported
- **Reporting & MIS:** the ability of the system to produce the required reports and MIS as defined in the Discovery Phase
- **Mapping / GIS:** the ability of the system to integrate with existing GIS data layers
- **Data Migration:** the ease with which data can be migrated from the existing system to a new planning system(s)

	Option 1 - Shared System with Centralised control	Option 2 - Shared system with local control	Option 3 - Shared portal for online applications and individual Authority/Department systems	Option 4 - 12 individual systems
Governance	✓✓	✓✓✓	✗✗	✗✗
Functional Requirements	✓	✓✓✓	✗	✗✗✗
Integration	✓✓✓	✓✓✓	✗✗	✗✗✗
User Experience	✓	✓✓✓	✓	✗✗✗
Support	✓✓	✓	✗	✗
Reporting & MIS	✓✓	✓✓✓	✗	✗✗
Mapping / GIS	✓✓✓	✓✓✓	✗	✗✗
Data Migration	✓✓✓	✓✓✓	✗✗	✗✗

Off the Shelf vs Bespoke vs Hybrid

Once we established which solution option we believe best met the requirements gathered for a new planning portal, we looked at whether this system would be best implemented as a Commercial Off The Shelf (COTS) solution, a bespoke solution or a hybrid solution. Below we have outlined a definition of each and some of the advantages and disadvantages that should be taken into consideration when assessing which option is most appropriate.

Commercial Off The Shelf

A COTS solution is a product that already exists and is fully functional. It is generally made up of a common set of functionality, ideal for a broad business requirement such as a building a general planning portal. A COTS solution has the ability to be customised or extended, however that comes with both its benefits and limitations depending on how these changes are implemented (see Hybrid option below). A COTS solution rarely matches 100% of the business requirements, but should aim to satisfy around 80% of the requirements. The business can then either agree that they are happy that 20% of the requirements will not be satisfied or customise the solution so that it meets 100% of all requirements - this becomes a hybrid solution.

Advantages and Disadvantages

Advantages	Disadvantages

Lower initial costs - a COTS product will cost comparatively less initially than a Hybrid/Bespoke product	System may be over-complicated for the needs of the business - it may provide more functionality than is required and used by the authorities
May be easier to implement than a Bespoke or Hybrid solution option	Solution may be written in legacy language making it difficult to update and upgrade
Potential for lower training costs - often a COTS product is well supported with strong documentation	Potential to drift into a Hybrid solution if the service provider/client does not have strong control over requirements
Faster to implement - As no bespoke development is done, a COTS product will be compartively faster to implement than a Hybrid or Bespoke solution	Business may have to change their requirements or business processes to fit the COTS product - we believe that the best approach is to find a solution that meets the business needs, rather than fit the business needs into a chosen solution (Business led rather than technology led)
Supported by the managed service provider - as the solution will be a managed service regardless of the solution option, this is an advantage of each solution option examined	May not meet 100% of requirements - therefore the business will have to compromise on what the solution offers
	Lack of Flexibility - The solution will only offer what the product offers and the business will have to rigidly stick to this

Bespoke

A Bespoke solution is a solution that has been built from the ground up to specifically suit a particular set of business requirements. It is tailor made to work exactly with a client's functional and non functional requirements. A Bespoke solution can be updated and upgraded when required due to new functionality or legislative requirements.

Advantages and Disadvantages

Advantages	Disadvantages
Designed to meet all business requirements so provides the business with exactly what they want	Longer to develop than a COTS solution - as the system has to be built for a particular client, it will take longer to initially build than a COTS solution
Business led rather than technology led - the solution is designed around the business requirements rather than the business having to sacrifice requirements based on what the solution can offer	Often more expensive up-front costs than a COTS solution. However, if you decide to develop the COTS product in the future, this can often cost more in the long run.
Integration ease - A bespoke solution can be built to integrate with whichever systems it needs to	Can be difficult to maintain if the right expertise is not available - As all solution options will be managed through a managed service this should not be an issue, providing the managed service has the required expertise
Efficient workflow	If not properly planned, specified and designed, costs and time can escalate
Easy to use - If built optimally a bespoke solution can offer a great user experience making it easy and intuitive to use for all user groups	Risk of over-engineering - Does every part of the system need to be a bespoke build?
Flexibility - the solution can be updated and upgraded whenever it is required, offering a flexible system	

Hybrid

A Hybrid solution aims to offer the best of both world - a COTS solution with modifications to give the flexibility and customisation of a bespoke system.

The main focus with a hybrid solution is on the COTS solution and what functionality it does and does not offer and which business requirements it fulfils. The aim is to find a COTS solution that satisfies the maximum requirements and then add customisations to fill the gaps in the requirements.

Advantages and Disadvantages

Advantages	Disadvantages
Often quicker to implement than Bespoke option as part of the system is an COTS product and so already built.	Have to pay to maintain both COTS product and the bespoke customisations or manage these in-house
Depending on level of customisation, a hybrid solution is often cheaper than a bespoke option (heavily dependant on how much customisation is required).	Reliant on COTS solution to integrate the bespoke customisations
Agility - can update the COTS product without waiting for the vendor to release new versions of the product - however, need to be aware of the consequences of doing this and whether you will lose support for the COTS product by doing this.	Licensing restrictions controlling the customisations and interactions with the COTS system
'Best of Breed' functionality - allows the client to use the best of each COTS product to build the end solution	Risk loss of support from Vendor if patches/customisations are made to core system
	Risk of drifting into Bespoke

Recommendation

Taking into account all of the functional requirements, the user experience requirements and a thorough analysis of each solution option, we believe that a bespoke system would best fulfil the requirements gathered through the discovery. The requirements are complex and differ from what we know existing products offer. However, we recommend that a market sounding activity is carried out to find out more about the specific planning portal products on the market.

Implementation Time and Cost

For Delivery, we propose an 18-month implementation categorised into 4 main phases:

- Phase 1 – Discovery & Alpha: The Discovery phase will review Product Backlog Prioritisation and define the Solution Architecture & Infrastructure requirements. The Alpha phase will build core screens from the Online Application flow and test key integrations & technical assumptions.
- Phase 2 – Beta 1 – Online Applications: This phase will complete a private BETA focusing on the Online Application Journey.
- Phase 3 – Beta 2 – Operational Journeys: This phase will complete all remaining MVP requirements and facilitate go-live for the new solution.
- Phase 4 – Post MVP: This phase will deliver non-MVP functionality as per Product Backlog Prioritisation.

The following plan outlines how these phases will be delivered and highlights key activities and milestones:

Indicative costs to deliver this programme are as follows:

No.	Phases	Indicative Cost Range
1	MVP Requirements (Phases 1, 2 & 3)	£4 - 6m
2	MVP & Non-MVP Requirements (Phases 1, 2, 3 & 4)	£6 - 9m

Costs are based on the following team profiles / resource model assumptions:

Discovery Phase – 4-week duration:

Management	UX
Delivery Partner - Part Time	UX x 2
Delivery Lead - Part Time	
Tech Lead	
UX Lead	
BA Lead	
Test Lead	
Cloud Architect	
DevOps/Cloud Engineering lead	
PMO	
Security / Compliance	

Alpha Phase – 8-week duration

Management	Team 1 (light)	Team 2 (light)	UX Alpha
Delivery Partner - Part Time	BA x 1	BA x 1	UX x 2 [1x interaction designer, 1x content designer]
Delivery Lead - Part Time	Developer x 2	Developer x 2	
Tech Lead			
UX Lead - research expert			
BA Lead			
Test Lead			
DevOps lead			
PMO			
Cloud Architect			
Security / Compliance			
Managed Service Architect			

Beta 1 Private beta - Online Applications – 16-week duration

Management	Team 1	Team 2	Team 3
Delivery Partner - Part Time	BA x 1	BA x 1	BA x 1
Delivery Lead - Part Time	Developer x 3	Developer x 3	Developer x 2
Tech Lead	Test x 1	Test x 1	Test x 1
UX Lead	UX x 1	DevOps x 1	UX x 1
Test Lead	DevOps x 1		DevOps x 1
Performance Test Engineer			
BA Lead			
DevOps/Cloud Engineering lead			
PMO			
Cloud Architect			
Security / Compliance			
Managed Service Transition Manager			
Managed Service Architect - Part Time			
Managed Service Tooling Engineer - Part Time			

Beta 2 - Remaining MVP Functionality 20-week duration

Management	Team 1	Team 2	Team 3
Delivery Partner - Part Time	BA x 1	BA x 1	BA x 1
Delivery Lead - Part Time	Developer x 3	Developer x 3	Developer x 2
Tech Lead	Test x 1	Test x 1	Test x 1
UX Lead	UX x 1	DevOps x 1	UX x 1
Test Lead	DevOps x 1		DevOps x 1
Performance Test Engineer			
BA Lead			
DevOps/Cloud Engineering lead			
PMO			
Cloud Architect			
Security / Compliance			
Managed Service Transition Manager	Managed Service Transition Analyst		

Non-MVP Functionality - 24-week duration

Management	Team 1	Team 2	Team 3
Delivery Partner - Part Time	BA x 1	BA x 1	BA x 1
Delivery Lead - Part Time	Developer x 3	Developer x 3	Developer x 2
Tech Lead	Test x 1	Test x 1	Test x 1
UX Lead	UX x 1	DevOps x 1	UX x 1
Test Lead	DevOps x 1		DevOps x 1
Performance Test Engineer			
BA Lead			
DevOps/Cloud Engineering lead			
PMO			
Cloud Architect			
Security / Compliance			

Additional Assumptions:

- Indicative costs do not include specific software licencing costs. These will need to be reviewed once the architectural design is complete and solution components are confirmed.

- Indicative costs do not include Environment / Infrastructure costs. These will need to be reviewed once the architectural design is complete and the preferred method of hosting is agreed e.g. cloud/on premise or hybrid model. The potential to host the solution with the Public Sector Shared Data Centre should also be considered.
- Indicative costs do not include ongoing Service Management / Run costs. These will need to be negotiated with the supplier once a programme governance model is confirmed and a solution design has been confirmed.

Solution Design Assumptions

Several Solution Design Assumptions were identified during the Solution Design workshops. These have been called out separately below for convenience.

Key Project Assumptions have been captured and shared with PPGB: Assumptions

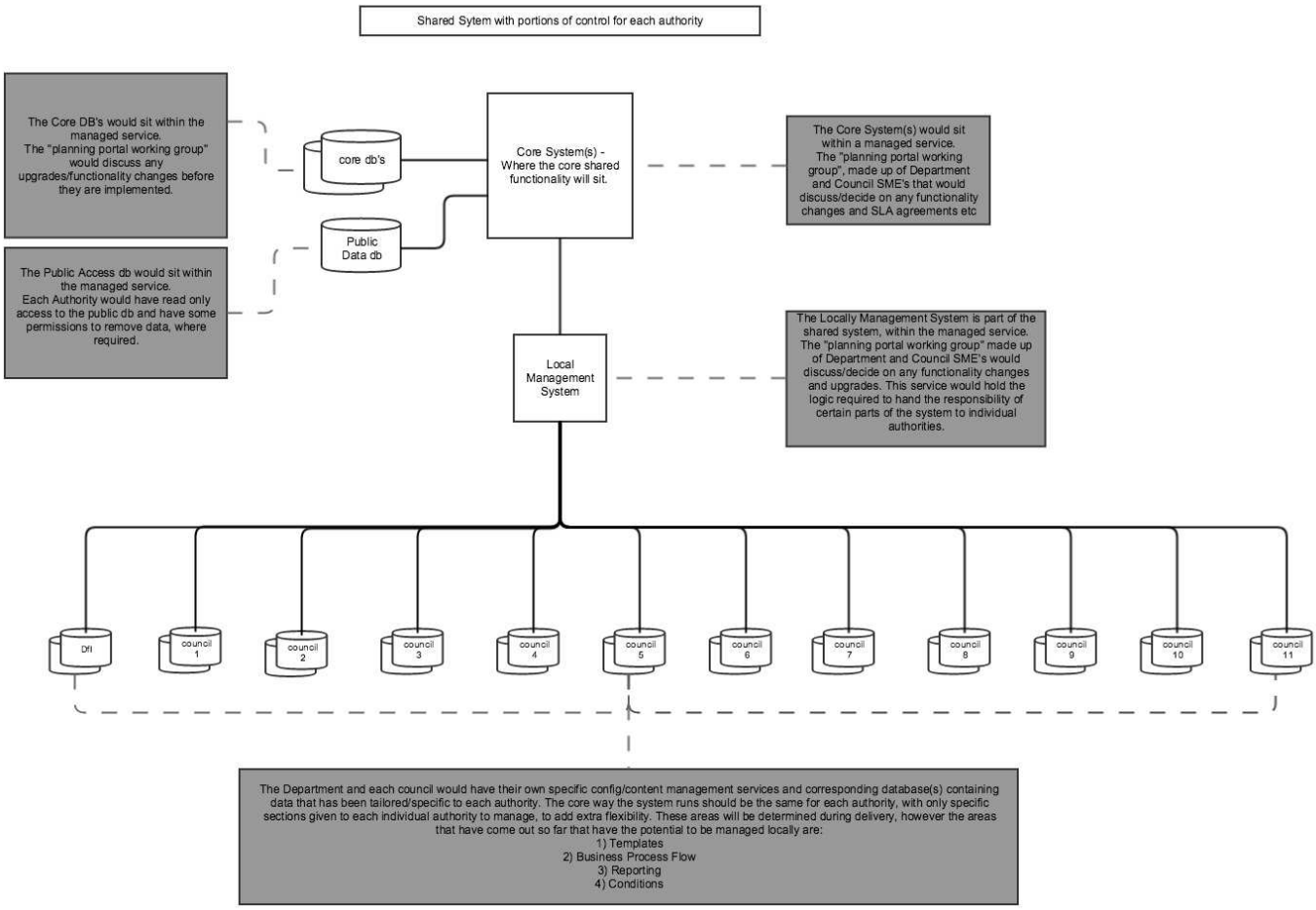
Functional Assumptions have also been captured for each Solution Theme: Themes

ID	Solution Design Assumptions
1	The application will be mobile friendly and responsive
2	The application will be AAA Accessible (or at least to the standard mandated collectively by the authorities)
3	The application process can be completed and submitted online
4	The application can be digitally signed
5	The department and local government will continue to accept offline applications
6	The official planning record will be digital
7	The GIS base maps will be positionally improved prior to implementation of a replacement Planning Portal
8	The application will adhere to security industry standards
9	The solution will be a managed service
10	Data will be cleansed before it is migrated
11	The solution will cater for new GDPR regulations coming into effect in 2018.
12	The Authorities would access the planning portal through VPN access
13	Users will be required to use multi-factor authentication to access the system

Recommended Option

Below is a more detailed look at what the recommended option could look like, from high level design to a potential architecture and a series a sequence diagram showing the journey the data takes through the system to provide a consistent user experience for the users.

High Level Design



Proposed Architecture

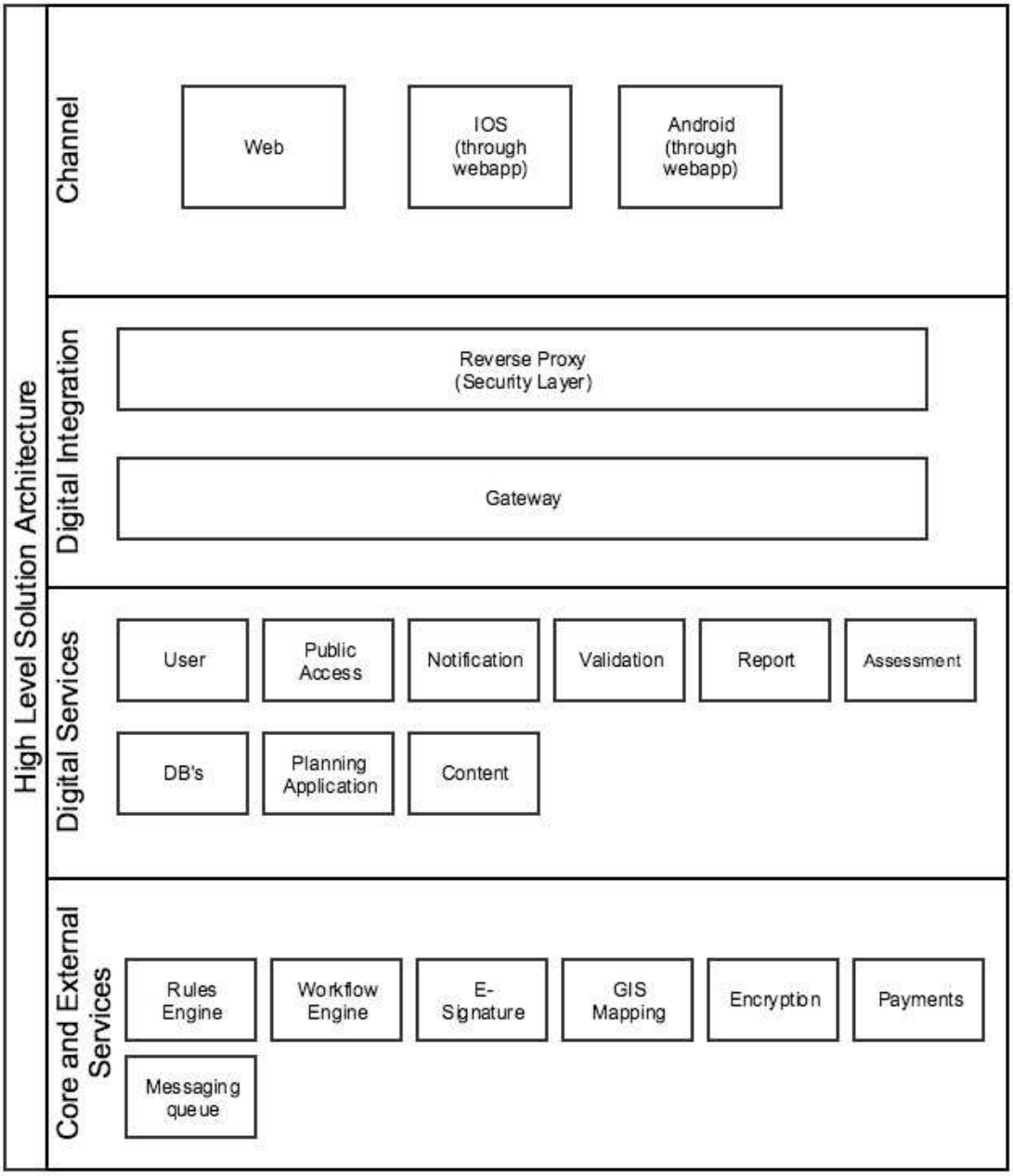
Solution Architecture

The target solution architecture is still evolving and the choices of components and technologies will continue to evolve through the early stages of delivery with the delivery team. The delivery team should shape the detailed solution architecture, and have the breadth of skills to be able to adapt as it evolves.

The front end apps (iOS, Android, and web, where applicable), are the tip of the iceberg. The effort expended on these these will focus on iterating and refining the user experience, rather than complex logic.

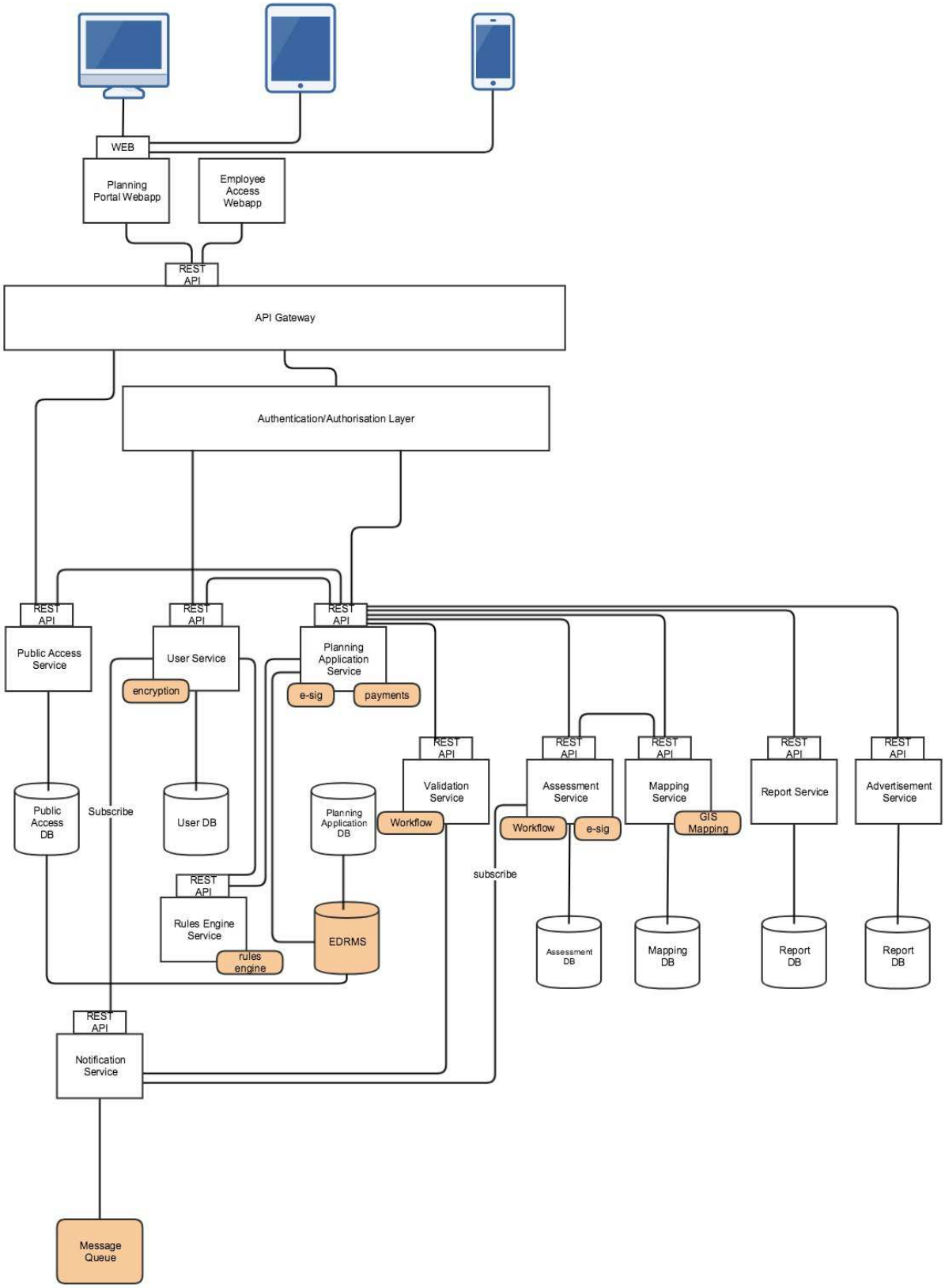
A shared gateway will expose APIs for the app and web clients to consume, secured behind an authenticating reverse proxy.Some elements will be best served with new off-the-shelf products. We expect the delivery team to support formal product selection to choose these.

Finally, a multitude of wholly new components will be required to support proposition-specific features.



High Level Technical Architecture

Below is outlined a potential high level technical architecture. This is an example of what the recommended solution could look like and is meant as guidance/suggestion only. The delivery team will outline, in detail, what the technical architecture of the new system will look like. The parts coloured in orange are the aspects of the system we envisage you should use 3rd party solutions for.



Component Breakdown

The below outlines how we have broken down the particular components illustrated above and what logic would sit within each service.

Public Access Webapp

The Public Access Webapp is the entry point to the Planning Portal for non employees of the authorities. For MVP we are only looking at a webapp, not native mobile apps. The reasoning behind this is that currently the different authorities do not believe that there is an appetite to submit planning permission applications on a mobile or tablet. However, as there is currently no online application process this may become a more viable requirement in the future.

Intranet

The intranet is the entry point for employees of the authorities. Again, this will only be a webapp as at this point the authorities do not have access to modern mobile/tablets for use at work. Some authorities are keen to see this evolved, however we believe that at this point a responsive webapp will suit the MVP needs of the authorities. There are requirements for the planning officers to access the planning portal while assessing an application, at the application site. We also need to consider the potential for offline assessment and image upload while on-site with limited internet connection.

API Gateway

The API Gateway provide the single entry point to the system. The API Gateway is responsible for request routing, composition, and protocol translation. All requests from clients first go through the API Gateway. It then routes requests to the appropriate micro-service.

Authentication Service

The Authentication Service is where a User is authenticated. This service ensures that a user has entered the correct credentials to view the part of the portal that they wish to view.

The Authentication Service is also used to validate if a user has an account or not.

The Authentication Service looks after Authentication (you are a valid user) and Authorisation (this user has the correct permissions to view this part of the portal).

User Service

The User Service is used for all logic in relation to the user, other than authentication. For example, the logic related to what applications a user is tracking, which applications they have started or submitted and the status of these.

This could potentially be split into multiple, smaller micro-services during delivery.

User DB

The User Database is where all the data related to the User is held. For example, the applications that a user is tracking, the User's profile information etc. Information on the status of a submitted application is not held here.

Public Access Service

The Public Access Service is where the logic for an unauthenticated (any member of the public) user's view of the portal lies. For example, the results of a search on an application. A new user can request to create an account from here.

Public Access DB

The Public Access DB stores all the data on applications that is ready for public consumption. This includes all data held in any public registers. This data is all redacted.

Planning Application Service

The planning application service holds the logic for different application forms for the different types of planning application. It links into the Rules Engine to dynamically update the questions on the application form based on the answers supplied.

Planning Application DB

The Planning Application DB holds completed planning application forms. These are versioned.

Validation Service

The validation service holds the logic for assessing whether an application form is valid or not. This communicates with the Notification Service to send notifications to the applicant regarding any queries to the planning application.

Notification Service

The Notification Service handles what notifications need to get sent to who, and when. It puts the messages onto a message queue where the receiver can pick it up.

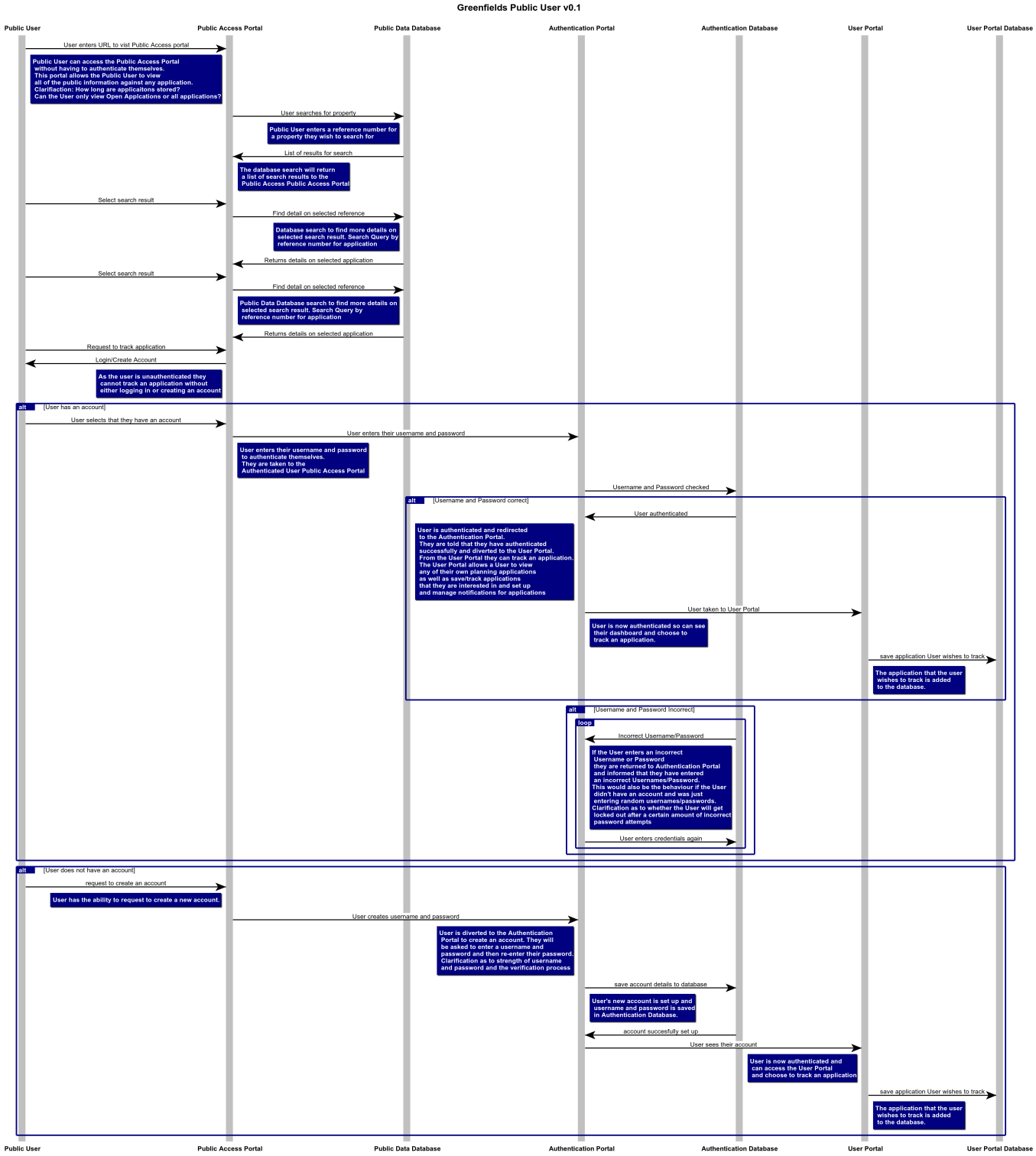
Assessment Service

The Assessment Service manages the assessment process for the application form. Once the application form has been submitted and validated, it is assigned to a planning office to assess.

Sequence Diagrams

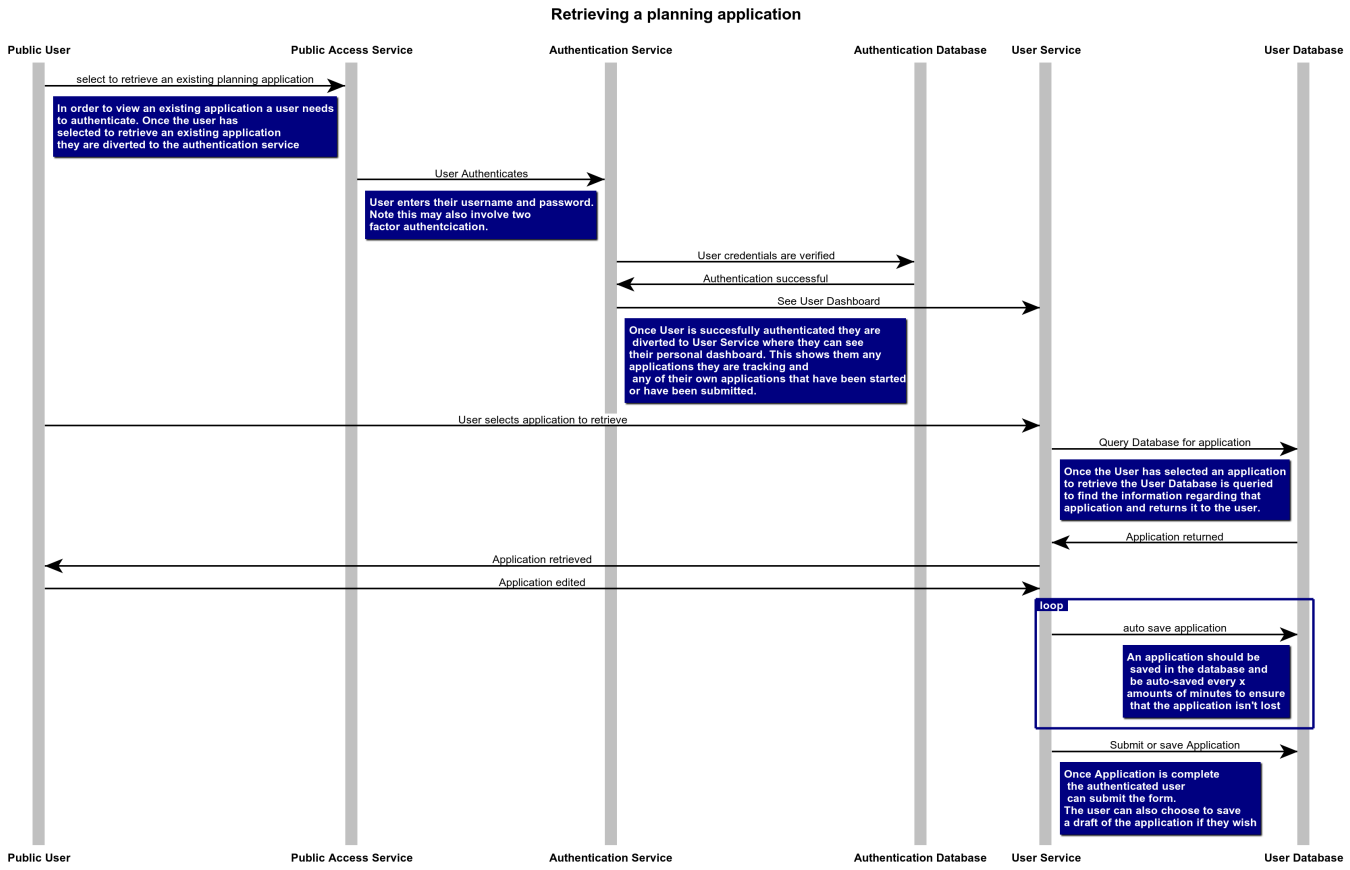
Public Access - Viewing public application

The below sequence diagram documents a potential journey a Public User's request to view an application would take in a bespoke system. This links the Business Requirements to the Architecture diagram above.



Retrieving an existing application

The below sequence diagram shows the journey a User's request to authenticate and retrieve an existing application could take through a bespoke system.



Appendix

The below table summarises the user stories that cannot be built with each system option. Please note, the product backlog can be viewed in full here: Discovery Deliverables

Option 1

Key	Summary
GF-558	As an Officer, I can maintain, update and manage a list of solicitors so that I can communicate with them regarding property certificates
GF-537	As an Officer, I can only see templates relevant to my Authority so that I do not have access to other Authorities template letters and notices
GF-435	As an Officer, I can see the pre-set mapping layers for each Authority so that I can analyse the plotted polygon based on my Authorities preferred mapping layers
GF-399	As a Senior Officer, I can save an allocation filter as default so that I can see the filter applied each time I view the allocation queue
GF-314	As an Officer, I can set default mapping layers so that they are always set on my account and I can override the preset mapping layers set by for my Authority
GF-241	As an Officer, I can share a saved search criteria so that other officers can see and use my results
GF-240	As an Officer, I can save search criteria I have used so that I can easily re-use it in the future
GF-215	As a System Administrator, I can add sections to the application so that I can group questions of an application form
GF-213	As a System Administrator, I can create new templates so that new required correspondence can be easily created
GF-206	As a System Administrator, I can update templates upon request for my Authority so that templates remain up to date with Officer needs
GF-197	As an Officer, I can preview templates for my Authority so that I do not have to open the template letter or notice to see the detail of the template
GF-189	As a System Administrator, I can set "for review" flags so that Officers are aware they should review the content
GF-181	As a System Administrator, I cannot edit the published online application so that there are no changes to the live application
GF-180	As a System Administrator, I can publish my changes to the online application form so that they are reflected online
GF-179	As a System Administrator, I can edit questions, answers and sections so that updates can be made
GF-178	As a System Administrator, I can add rules to the display of answers so that applicants do not have to see irrelevant answers
GF-177	As a System Administrator, I can add rules to the display of questions and sections so that applicants do not have to see irrelevant questions
GF-176	As a System Administrator, I can add guidance text to the application so that the applicant can provide informed answers
GF-174	As a System Administrator, I can add a question to the application form so that the application form can be configured

19 issues

Option 2

Meets all MVP Requirements gathered

Option 3

Key	Summary
GF-600	As a Public User, I can see all information classified as Public so that I can find all information available to me in the system
GF-597	As an Officer, I can move an application from a Council work queue to a Department work queue so that called-in applications can be retrieved and processed by the relevant authority
GF-558	As an Officer, I can maintain, update and manage a list of solicitors so that I can communicate with them regarding property certificates

Option 4

Key	Summary
GF-600	As a Public User, I can see all information classified as Public so that I can find all information available to me in the system
GF-597	As an Officer, I can move an application from a Council work queue to a Department work queue so that called-in applications can be retrieved and processed by the relevant authority

GF-546	As a Requester, I can request a property certificate by submitting a property enquiry form so that the Property Certificate Unit can process my request
GF-545	As a Requester, I can save a draft of my property enquiry form before I have submitted it so that I can complete the request at a time suitable to me
GF-544	As a Requester, I have the ability to pay for my request online so that my property certificate request is valid to be processed
GF-543	As a Requester, I am presented with a fee required amount that reflects the number of sites or properties I have included in my request so that I can pay the correct amount upon submission
GF-542	As a Requester, I must complete all mandatory fields before submitting the property enquiry form so that the Property Certificate Unit have all the information they need to process the property certificate request
GF-541	As a Requester, I can plot a polygon that indicates the site for which I am requesting information so that it verifies the details completed in my application
GF-500	As a Department Officer, I can reassess any called-in applications so that I can produce a fully informed assessment
GF-498	As an Officer, I can track the progress of any application called-in from my work queue so that I am aware of the result
GF-488	As an Officer, I can send consultations to Consultees in other Council Areas so that I can contact them when a proposed development relates to their area
GF-479	As a Consultee, I can generate a KPI report for my organisation so that I can make informed management decisions and fulfill statutory reporting requirements
GF-474	As an Officer, I can access central search criteria consistent across all authorities so that common searches are can be easily executed
GF-473	As a Consultee, I can access the plotted polygon for a proposed development so that I can investigate the applications site history
GF-444	As a Public User, I can search all planning applications in Northern Ireland so that I can find the information I need in one place
GF-440	As an Officer, I have read-only access of another council's data, so that I can view, but not amend data that I am not responsible for
GF-435	As an Officer, I can see the pre-set mapping layers for each Authority so that I can analyse the plotted polygon based on my Authorities preferred mapping layers
GF-356	As an Applicant, I can access in-portal communication with the Planning Authority so that I can quickly find answers to any questions I may have
GF-338	As an Officer, I can track the application history of online users so that I can identify any patterns emerging in the submission of applications
GF-321	As an Applicant, when I receive feedback on my application, I can amend my application responses so that the information provided is accurate and complete for further validation
GF-281	As an Officer, I can see extended planning history generated by the plotted polygon so that I can view the planning history of the surrounding area of the application
GF-278	As an Officer, I can add and remove neighbour notifications to an assessment so that I know who must be informed and when this has occurred
GF-277	As an Officer, I can query data relating to the application so that I can validate statistical reports
GF-261	As an Officer, I can review validation updates from an applicant so that the application can be reconsidered by the planning authority
GF-259	As an Applicant, I am notified that my submitted application requires updates during validation so that I am aware of changes suggested by the Planning Authority

GF-558	As an Officer, I can maintain, update and manage a list of solicitors so that I can communicate with them regarding property certificates
GF-546	As a Requester, I can request a property certificate by submitting a property enquiry form so that the Property Certificate Unit can process my request
GF-545	As a Requester, I can save a draft of my property enquiry form before I have submitted it so that I can complete the request at a time suitable to me
GF-544	As a Requester, I have the ability to pay for my request online so that my property certificate request is valid to be processed
GF-543	As a Requester, I am presented with a fee required amount that reflects the number of sites or properties I have included in my request so that I can pay the correct amount upon submission
GF-542	As a Requester, I must complete all mandatory fields before submitting the property enquiry form so that the Property Certificate Unit have all the information they need to process the property certificate request
GF-541	As a Requester, I can plot a polygon that indicates the site for which I am requesting information so that it verifies the details completed in my application
GF-488	As an Officer, I can send consultations to Consultees in other Council Areas so that I can contact them when a proposed development relates to their area
GF-479	As a Consultee, I can generate a KPI report for my organisation so that I can make informed management decisions and fulfill statutory reporting requirements
GF-474	As an Officer, I can access central search criteria consistent across all authorities so that common searches are can be easily executed
GF-473	As a Consultee, I can access the plotted polygon for a proposed development so that I can investigate the applications site history
GF-449	Individual aspects of the system should be managed by each local council/department
GF-444	As a Public User, I can search all planning applications in Northern Ireland so that I can find the information I need in one place
GF-440	As an Officer, I have read-only access of another council's data, so that I can view, but not amend data that I am not responsible for
GF-435	As an Officer, I can see the pre-set mapping layers for each Authority so that I can analyse the plotted polygon based on my Authorities preferred mapping layers
GF-338	As an Officer, I can track the application history of online users so that I can identify any patterns emerging in the submission of applications
GF-281	As an Officer, I can see extended planning history generated by the plotted polygon so that I can view the planning history of the surrounding area of the application
GF-278	As an Officer, I can add and remove neighbour notifications to an assessment so that I know who must be informed and when this has occurred
GF-277	As an Officer, I can query data relating to the application so that I can validate statistical reports
GF-269	As a Public User, I can advance search the system so that I can find information
GF-168	As a Public User, I can search application documentation so that I can find information easily
GF-147	As an Officer, I can view a planning history record when completing an assessment so that I consider historic planning applications on the proposed development site during the assessment
GF-146	As an Officer, I can select a historic site reference so that I can view the history summary of the proposed development and use the site information during the assessment
GF-124	As an Officer, I can select an individual result of a search so that I can view the development case in full detail

GF-258	As an Officer, I can send an application back to an applicant during validation so that they can verify the suggested updates I have made
GF-215	As a System Administrator, I can add sections to the application so that I can group questions of an application form
GF-189	As a System Administrator, I can set "for review" flags so that Officers are aware they should review the content
GF-174	As a System Administrator, I can add a question to the application form so that the application form can be configured
GF-168	As a Public User, I can search application documentation so that I can find information easily
GF-147	As an Officer, I can view a planning history record when completing an assessment so that I consider historic planning applications on the proposed development site during the assessment
GF-146	As an Officer, I can select a historic site reference so that I can view the history summary of the proposed development and use the site information during the assessment

33 issues

GF-120	As an Officer, I can perform a basic search on the system so that I can see all relevant search results

27 issues

Data Migration

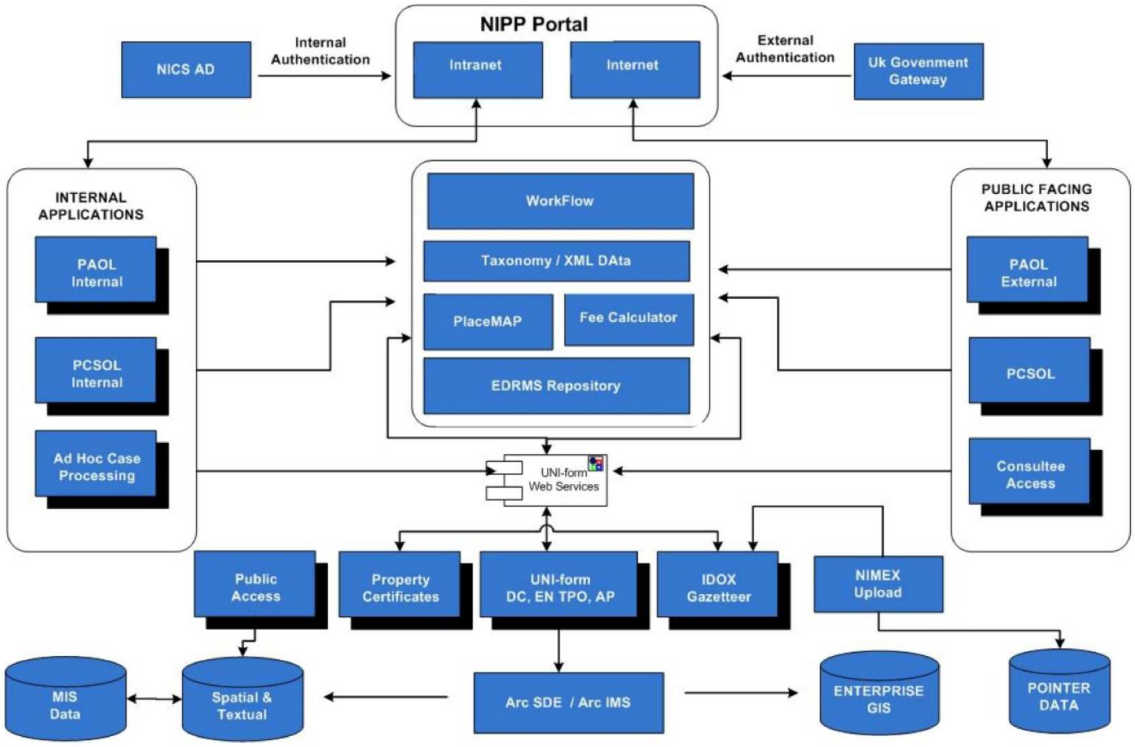
Introduction

A 12-week Discovery Phase has been completed to identify the scope of a refreshed digitised planning service for Northern Ireland, to be used by both the Department and local government.

In addition to the identification of system requirements for a refreshed digitised planning service, an assessment has been completed on Data Migration. Throughout Discovery we held several workshops on Data Migration with participants from DfI (NIPP Project Manager, Product Owners and DSD) and IT Subject Matter Experts from a number of councils. The following report summarises the findings from this exercise and our recommendations for a Data Migration Approach.

Overview

Northern Ireland Planning Portal - Current Architecture Diagram



The existing Planning Portal interacts with a number of interfaces (see above diagram). In order to complete a detailed data migration approach and costing it is necessary to understand how the existing raw data is structured. This includes application data, schemas, tables, indexes, and constraints. It also requires an understanding of the associated infrastructure for data migration which includes migration of stored procedures, database triggers, SQL queries, and functions.

Data infrastructure is the IPR of DXC (current service providers) and cannot be shared therefore information on raw data or the associated data infrastructure has been unavailable throughout Discovery. Whilst the data is owned by the Department, DXC is required to provide details of the data held as part of an Exit Plan which would be executed in transferring the service to another provider. However, the plan only kicks in 6 months prior to the contract expiry.

Where data migration is required to a new solution, DXC has committed to providing the required details of the data held and an extract of the data as part of a data migration exercise.

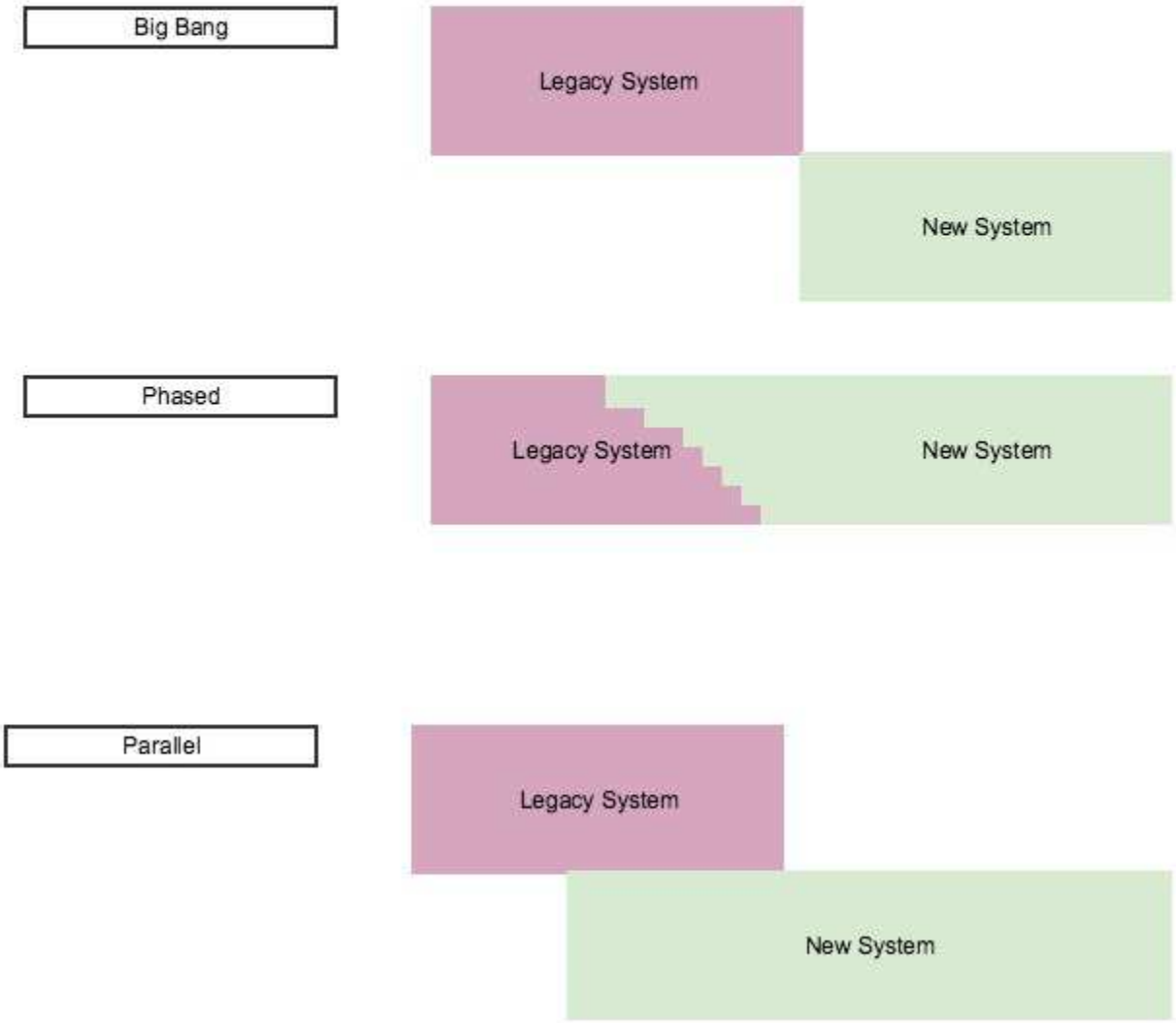
Operating within these constraints, we have focused on outlining several Data Migration Strategy Options which should be considered for any Data Migration from the existing DXC databases to a new solution. Below we outline the Data Migration strategy options and our recommended approach together with an indicative cost, timeline and assumptions. We have also included a set of recommended next steps for the Department

and local government to follow in conjunction with the procurement for delivery of a refreshed planning service.

Data Migration Strategy Options

High Level Options

There are three main options available for data migration:



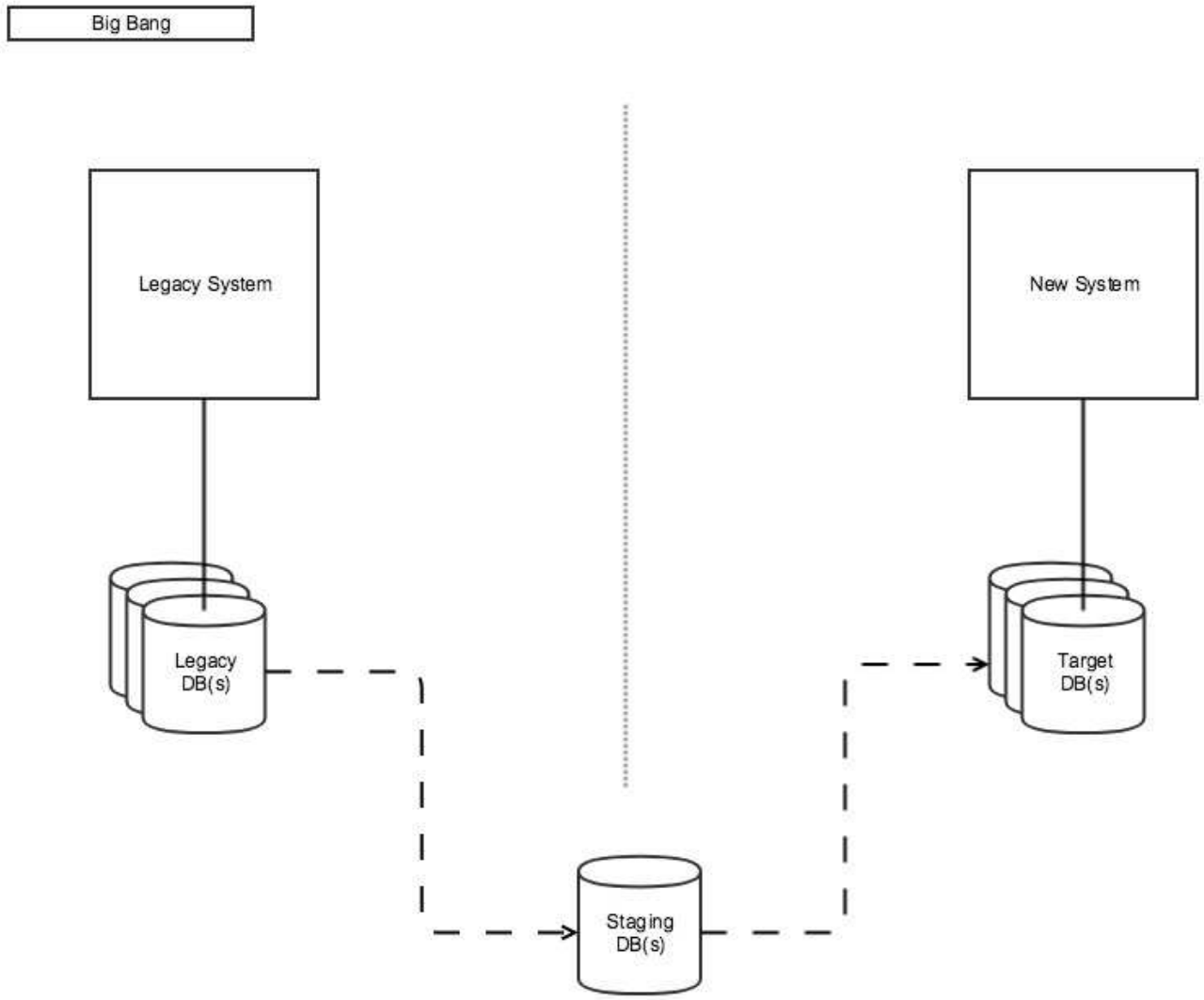
1) Big Bang

A big bang data migration involves an entire dataset being transferred from the source system to the target system in one operation, resulting in the existing application and databases being turned off immediately.

Advantages and Disadvantages

Advantages	Disadvantages
Migration is completed in the shortest possible time	Business may be without access to their data while the migration takes place
Mitigates the risk that something unexpected happens during the migration	Risk of damage to reputation if there is significant down-time or failure to the system
Lower resource costs for migration team as migration completed over a shorter duration	Higher risk of migration issues without time to pilot on a smaller user base
Business does not have to operate with two different database systems	All users of the system have to know how to use the new system immediately, raising a risk in low performance by employees as they get up to speed on how the new system works.
No training will be required for the "changeover" process. The only training required will be for the new system	Greater likelihood of compromises being made to facilitate completion of Big Bang Migration.
The whole business moves to the new system at the same time	Require a fallback/rollback strategy, which can often be complex and resource intensive to implement
No synchronisation issues. With a big bang migration there is no need to keep the old environment up to speed with any record updates.	Failures in one part of the system can spiral and result in problems/failures in other parts of the system
No need to operate on more than one system	Elements of training can be easily forgotten by users (full system to learn)

High Level Design



Please note: A **staging database** or area is used to load data from the sources, modify & cleanse them before the final data migration load.

2) Phased

A phased migration strategy involves the data being migrated in smaller increments, until the whole dataset has been migrated from the source system to the target system.

Advantages and Disadvantages

Advantages	Disadvantages
Lower risk than Big Bang migration strategy as it allows you to test the solution incrementally on a smaller user group or subset of functionality	Longer implementation than Big Bang approach therefore likely to incur higher resource costs for the migration team
Training can be staggered resulting in less time between training and deployment for some users. This also allows for more effective change management and communication strategies.	Can cause disruption if change process isn't strictly followed
Issues and defects can be identified and fixed as you progress fostering a continuous improvement cycle throughout implementation	NIPP contract may need be continued for a longer period of time as migrating through phasing requires the legacy to system to be running for a longer period of time

Lower risk of system downtime	Legacy and Target would need to know where to source information from if the data is migrated in modules. As we are suggesting that a phased migration should be done by council, this will not be an issue
Experience and learning is gained with each phase of the migration - the skills picked up during each phase can be instrumental in a successful migration.	Requires a thorough understanding of landscape to determine what gets migrated at each phase - this is both an advantage and a disadvantage. It forces a higher level of understanding, but is a disadvantage if this isn't available as more errors will be made, increasing the cost and time to implement of the data migration
Small issues and defects can be fixed as you go	Potential for public confusion - if only certain geographical areas are on the new system this needs to be clearly articulated to those using the system so everyone is aware of which system they should be using.
Easier to rollback a smaller dataset if something goes wrong during one phase of the migration	
Forces a thorough understanding of landscape to determine what gets migrated at each phase	

High Level Design

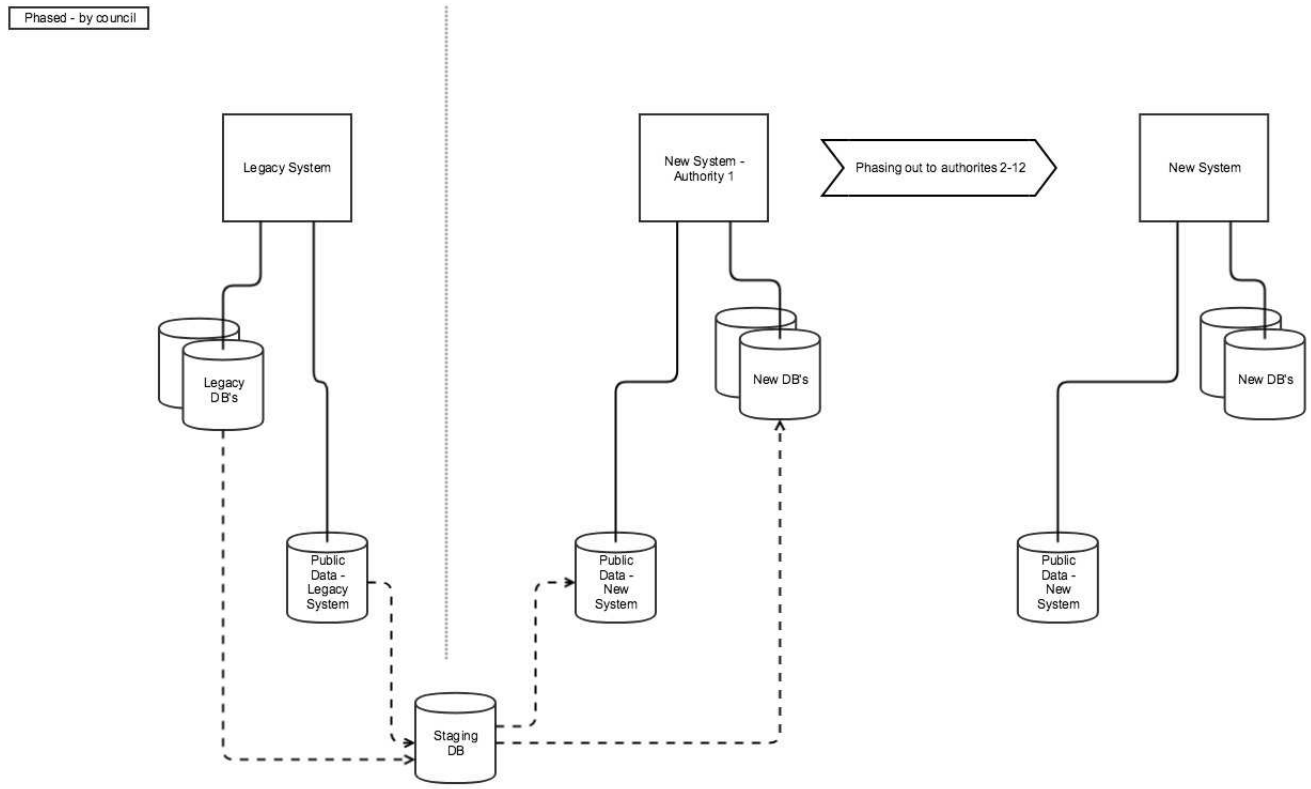
Phasing Data Migration could either have been done by module or by council.

Migrating by module in a phased approach will not work for the planning portal because

- Each module relies on historical site data
- Each module is dependant on data from other modules

Phasing the data migration by module would add extra complexity and cost to the migration. Due to the nature of the planning portal, each module will be connected to the other modules. For example, phasing just TPOs initially will require the legacy system to interact with the new system via a link service. Each application will rely on data from both the new system and the legacy system, adding to the cost and complexity of migrating across to the new system.

Phasing by council has the added advantage that it would allow testing of End to End functionality for a subset of users. This is vital in reducing delivery risk and identifying issues early on. Phasing out a new system council by council would involve moving each council to the new system one at a time over a period of approximately 6 months, as highlighted in the below high level design



Parallel

A Parallel migration strategy results in migrating the dataset to the new target system, while keeping the source system up to date and active. Operating both the legacy and target system in parallel can be done when implementing either a Big Bang or Phased Data Migration.

Choosing not to run the legacy system in parallel increases the risk of system downtime and may complicate the data migration.

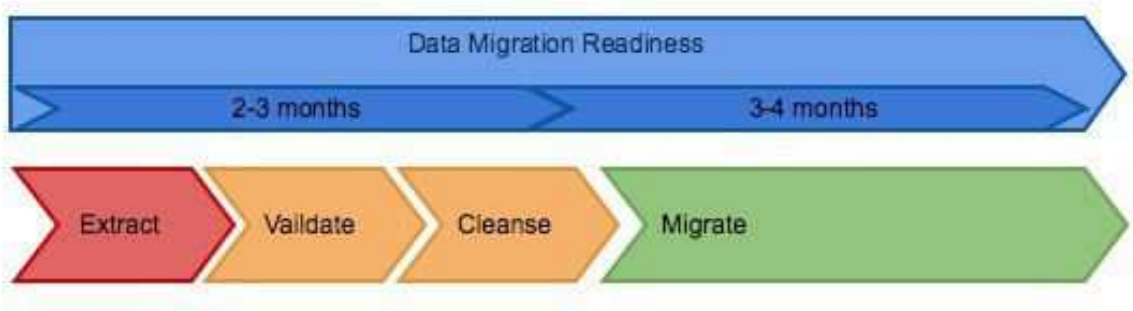
Advantages and Disadvantages

Advantages	Disadvantages
Data can be migrated using either big bang or phased approach	Costs may be incurred for extension of legacy contract to facilitate running legacy and target system in parallel
Lower delivery risk in retaining access to legacy systems and data	Data synchronisation - having to keep both legacy and target dataset up to date can be challenging and time consuming if not planned effectively
Both systems can be run in parallel, allowing the target system to be validated without downtime if there are system failures	
Business can ensure that the target system fully meets requirements before shutting down the legacy system (subject to contractual negotiations with existing supplier)	

Our Preferred Option

Based on our recommended solution design option being a shared service with localised control we are recommending that a Phased approach with the legacy system being run in parallel.

We recommend extracting the data from the legacy system into a staging database where it can be validated and cleansed before it is migrated to the new system. This will allow the legacy system to continue to run in parallel without any disruption to the legacy system. The diagram below illustrates the steps we believe the data needs to go through before it is ready to migrate.



Step 1: Extract

Extracting the data from the source system before cleansing it requires transporting the data to a staging database and performing validation checks on the dataset before then moving it to the target system.

Advantages

- Due to the agile process that should be followed, extracting the data before it is cleansed will allow the process to remain as flexible as possible when it comes to the data structure of the different target databases
- Within the staging database, the data can be validated against the validation rules developed based on the target system and target business requirements to ensure the data is valid for the target system before it is migrated.

- Can continue to use the source system until data cleansing/migration is complete, limiting the down-time users experience.

Step 2: Validate

Often the legacy system and the target system share little common structure or definitions and were not designed to interact with each other. This makes data migration a complex task, made ever more complex by data quality issues. The legacy system could already be dealing with issues caused by poor data quality with fixes and patches put in over the years to help overcome these issues. However, in order for the target system to be as performant and efficient as possible it is key for the data to be validated and cleansed before it is migrated.

Therefore, validating the legacy data against validation rules based on the functional and non-requirements of the new system allows for an efficient data-cleansing stage where the data that is wanted/needed in the new system is prepared.

Step 3: Cleanse

Data cleansing is the process of preparing the validated data from the legacy system before migrating it to the target system.

This involves:

- Detecting corrupt records and removing them
- Detecting inaccurate records and removing or updating them
- Determining how long data needs to be held and removing data passed this date from our target dataset
- Identify incomplete records and completing them or removing them from the target dataset
- Identify data that is irrelevant to the target system and removing it from the target dataset
- The legacy system and the target system may have differing requirements and as such some data that was necessary in the legacy system may no longer be important or useful in the target system.

Advantages of Data Cleansing

There are many advantages to cleansing data before migrating it.

- Increases integrity of the data in the system
- Improves performance of system
- Reliable, trust worthy data in the new system
- Consistency of data
- Improves Customer relationship and User experience
- Reduced security risk of holding too much data/corrupt data

Risks of not carrying out Data Cleansing

- Data pollution in the new system
- Prevention of data being successfully migrated to the target system
    - Data that doesn't meet minimum data quality may be rejected during migration to the new system
    - Duplicate entries may not be accepted, without any knowledge of which entry should be kept
    - Data may not be in the correct format for the target system
- Manual fixes may need to be applied, which leads to:
    - Increased costs
    - Increased timelines for completion
- Extra costs of storing unnecessary data
- Performant issues related to storing poor/corrupt data

Step 4: Migrate

Finally the newly validated and cleansed data is migrated from the staging database to the new system in a phased approach (authority by authority)

Indicative Costs and Timeline

The recommended data migration approach will cost in the region of £400k - £600k and will take approximately 6 months to complete. However, this is an indicative figure and is subject to change once more information is available on the current data structure. We have been significantly constrained in our analysis due to the lack of information on what the source system looks like.

The indicative cost includes the 4 activities outlined above; extracting the data, validating the data, cleansing the data and migrating the data. These activities can take place in parrallel to building the new system, however the optimal time to carry out each of these tasks should be defined during delivery.

Assumptions

Assumption
There is no transfer of the data back to the legacy system once the data has been moved from the staged system to the target system. The only data that would be required to move back to the legacy system would be public data. Legislatively there is a requirement that the public can see all public data against all applications in NI. However, adding some simple content informing the users that if they are searching for an application in council x,y etc to use the new system will greatly reduce the cost and complexity of the data migration.
Our Data Migration approach is based on our recommended target Solution Design Option i.e. a shared solution with localised control – any variation on this (i.e. multiple back-end systems and data stores) may introduce greater complexity and associated cost
Excludes costs of running the legacy system in parallel
Indicative costs have been provided based on our analysis during Discovery. These are subject to change when further information is provided around raw data and associated data infrastructure
During Data Migration, adequate resource from the Department, DXC (existing solution providers) and local government resources will be provided to assist with data extraction and understanding of existing environments and data structures
During Data Migration there will be no restriction on access to raw data and associated data infrastructure
Excludes any specific licensing costs for software required to perform data extraction and cleansing
A dedicated environment will be available for Data Migration and there will not be any contention issues resulting from stakeholders using the existing application or environments
Up to date versions of legacy databases will be in place (i.e. no database upgrades required before extraction)
Excludes hosting costs for staging environment – this may be an on-premise environment provided by the Department or may be an external cloud environment, however is not possible to provide a view on cost without access to raw data and associated data infrastructure
During Data Cleansing a significant effort will be made to increase the quality of data from legacy systems, however if an unacceptable amount of poor/corrupt data exists, this may incur additional effort/cost during Data Cleansing – it is not possible to provide a view on this without access to raw data and associated data infrastructure

Recommended Next Steps

Following the completion of the above analysis we recommend that a Phased Approach by Authority be adopted for Data Migration, whilst continuing to operate the legacy system in parallel throughout.

This approach has the key advantages of being able to test end to end functionality on a small subset of users (by Authority) and feed learning and improvements into subsequent roll-outs. This also has the advantage of staggering training and readiness activities to complete a more focused roll-out per council.

Operating the legacy system in parallel also reduces delivery risk by retaining a stable fallback option in the event of any major issues.

In terms of next steps, there are two options for consideration:

1. Complete procurement exercise to confirm a supplier for the delivery of the Planning Portal refresh before confirming detailed Data Migration Approach:

- Allows for confirmation of the target environment to design the most efficient Data Migration Process
- Geared towards a more collaborative process involving legacy system providers, target system providers and key business resources required to make Data Migration a success
- Reduced risk of delay/stoppage during the Data Migration process and possible loss of resources/knowledge

2. Formally engage with existing legacy provider (prior to selection of a supplier for delivery) to complete a data extraction exercise into a temporary staging environment, facilitating an open market procurement for Data Migration:

- Allows for the initial Data Migration step to be completed in isolation, facilitating a more open procurement for Data Migration (providing that all required information around raw data and associated data infrastructure is made publically available)
- Risk of a less efficient Data Migration process as target solution is unknown and re-work may be required during later stages
- Risk of delay during the Data Migration process and the loss of resources and associated knowledge, particularly if the legacy provider will not be available for the entire Data Migration process
- Risk of commercial inefficiencies if legacy provider is required to return to provide additional services during later stages

- Risk of commercial inefficiencies if legacy provider is chosen for the delivery of the Planning Portal refresh

In consideration of these options, we recommend that Option 1 is the optimal approach. In addition, we recommend that the following activities are kicked off as soon as possible in order to pave the way for faster mobilisation of Data Migration once a supplier for the delivery of the Planning Portal refresh is confirmed:

- Completion of Programme Plan to map out key activities and dependencies in advance of expiry of existing engagement (March 2019)
- Engage with legacy provider to understand detailed scope of Exit plan which would be executed in transferring the service to another provider, together with commercial arrangement around this.
- Engage with legacy provider to understand costs and obligations around extending the current service beyond March 2019.

Appendix

Below is the information we requested and received from DXC. Without further clarity on what the source data looks like we cannot make a more accurate estimate.

Source Data

DXC has provided the following information on the source data.

Data Source	DB Size	DB Source
Portal DB (Livelink) Internal External	 8.16GB 1.94GB	SQL
Uniform Back Office (includes all Uniform modules, PCS, GMS & Spatial datasets)	254GB	Oracle (Textual & Spatial Data)
ePIC DB	15GB	SQL
Workflow (Including historical data)	215GB	SQL
EDRMS DB	65GB	SQL
EDRMS Document Store	2.2 TB	File System
Mapping DB	118GB	Oracle (Textual & Spatial Data)
Reporting	1GB	SQL

Information Requested on Source Data

Below we have mapped the questions, and resulting responses we have received, around data migration that we have asked the Department and DXC. These questions will allow us to outline an accurate data migration approach.

Question	DfI Response	DXC Response
Are there any Performance Metrics that we can gather from DXC on the current system?	The only available Performance metric is the % of availability and it remains consistently at 100%, we have a monthly service review at which high lights, low lights, defects, service requests and Change controls are discussed however DXC are reluctant to provide this information for the purposes of discovery!	DXC are reluctant to provide this information for the purposes of discovery

Could you please provide a snapshot of the current data?	N/A	Whilst the data is owned by the Department, we are required to provide details of the data held as part of an Exit plan which would be executed in transferring the service to another provider. Where data migration is required to a new solution, we would provide the required details of the data held and an extract of the data as part of a data migration exercise.
Could you provide the schema(s) for the data held please?	N/A	Schema details for the above DB sources is considered to be proprietary information. Therefore we are unable to provide any such schema details for DXC owned or any third party owned data sources.
How much of the current dataset needs to be migrated?	Unable to provide this answer	N/A
Is there any geographical restrictions on where the data can be stored for legal/compliance reasons?	None apart from normal NICS data restrictions	N/A
Retention Disposal – Do you have a view on the legal/compliance rules around how long we have to keep the data for (initial believed timeframes added below)? Is there anyone from the councils that I can talk to about how long they would like to store data for? 1. Paperwork: 5 years 2. Financial data: 7 years	**The following redaction schedule has been collated through conversations with both the Dfl and the councils.** Historical digitisation of paper applications is not being considered as part of Discovery. This will need to be considered separately by individual councils. Disposal Schedule Requirements: • Any information published on registers (in the public domain) will be kept indefinitely e.g. • Registers: EIA, Enforcement, TPO, Planning Application • Any non-register data e.g. Neighbor notifications, Consultations and Representations will be kept in line with current RAD (Retention and Disposal) policy (subject to current discussions with PRONI) plus 4 months to allow for the possibility of Appeals • Working documents e.g. Case Officer notes / site photos will be kept in line with current RAD (Retention and Disposal) policy (subject to current discussions with PRONI).	N/A
What is the full size of the dataset you hold?	N/A	See above table
Will EDRM remain in place after the contract with DXC is over or will the data need to be fully migrated before this date?	While the Department own the licence for EDRMS the content is structured and managed by DXC so after the contract the information will only be available as part of an Exit strategy	N/A