

# Lotus Notes to SharePoint Migration

Understanding the Lotus Notes Application Landscape  
and the Transition to SharePoint

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## 1 Introduction

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Part of the widespread success of Lotus Notes was due to the fact that it encapsulates a broad range of components necessary in most IT environments. They include:

- Email
- Calendaring and scheduling
- Directory services
- Database
- Security
- Rapid application development
- Web server
- Replication
- Offline capability

So as the move away from Notes continues to gain momentum, many organisations will experience the challenges associated with the transitioning of these services to other platforms such as Microsoft.

Broadly speaking the three major areas involved in transitioning from Notes to Microsoft technologies are:

1. Notes Mail to Exchange migration
2. Domino Directory to Active Directory synchronisation
3. Notes/Domino to SharePoint/ASP.NET application migration

Whilst the Mail and Directory components pose their own unique challenges, the area which by far presents the biggest challenge in transitioning from Notes is in the area of application migration.

This paper discusses the issues and challenges around the migration of applications from Lotus Notes. The focus will be on providing a clear understanding of the Notes application environment and aims to identify the most important areas when considering this sometimes tricky transition.

## 2 Lotus Notes Application Migration – Two **BIG** questions

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In the late 90's when Lotus Notes became popular as an application development platform, there was a proliferation of applications created. Some were enterprise grade, but most were built to cater to ever changing departmental needs. The ease and rapidness of the development environment allowed for the production of a wide range of applications, varying in complexity, and deployed without the appropriate governance in place. This resulted in many organisations having Lotus Notes environments which contain applications that have little to no IT visibility.

So before the question of **how** we are going to migrate these applications is asked, we first need to get a clear picture of **what** applications need to be migrated.

### 3 Question 1: **WHAT** applications are to be migrated

Here are some of the challenges in identifying the **what** when it comes migrating Lotus Notes applications.

#### 3.1 Challenge 1: How many Lotus Notes databases do we actually have

Although Notes natively provides a way to determine what databases exist on each server, the information is not always accurate. This is primarily due to the fact that not all Notes Developers follow the same database cataloguing principles.

The other more significant complication is that some applications exist as replicas on a number of different Notes servers across the organisation, so a simple count is not always 100% accurate.

Assuming you can get a complete unique list of all databases across the organisation, there are a number of system databases that are specific to Notes that do not actually need to be considered, as there is no need for these to be migrated to the Microsoft platform.

#### 3.2 Challenge 2: Identifying Lotus Notes system databases

Most Notes Developers (with the help of an Administrator) will be able to identify those databases that are specific to the Notes environment. These would include:

- Address Book
- Calendar
- Administration
- Catalogue
- Anti-virus
- Reservation
- Configuration
- Help
- Mail
- Notes Template
- Log
- Code Library

These databases do not need to be considered as there is no need for these to be migrated to the Microsoft platform.

#### 3.3 Challenge 3: Identifying database usage

Most organisations have a number of databases that are used infrequently or have not been used for quite some time. In some cases this number can be quite high and has quite significant implications if these were to be considered for migration. The Notes User Activity feature would be where one would go to determine usage, and most Administrators would have this enabled as standard.

Although usage information is readily available, getting it into a form where sensible decisions can be made regarding actual usage can be tricky. This is mainly due to the fact that:

1. The database may have replica copies on other servers. Therefore all usage information needs to be merged together prior to actual usage being determined.
2. Notes server names, Administrator names and Developer names are considered users when it comes to User Activity. These need to be filtered out before the information can be used in determination of actual usage.

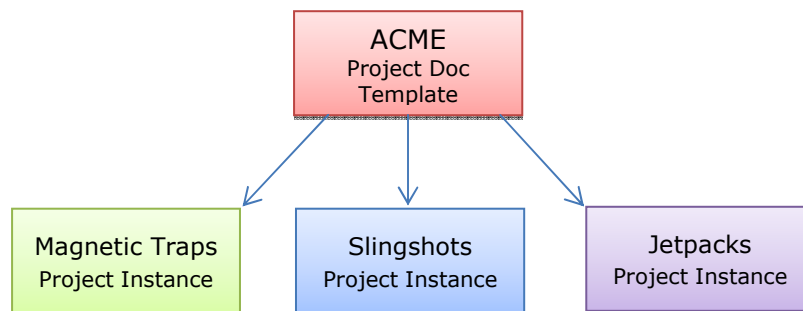
Even once the correct usage information has been collated, there is still no way to determine how the application is actually being used. For instance it may be a functionally retired application that is still being used for reference data. In this case no redevelopment would be necessary. The data could

either be migrated to the new platform and referenced there, or simply exported to another desktop application such as Excel.

### 3.4 Challenge 4: Lotus Notes database design consolidation

Design consolidation is the task of determining those databases that have the same or similar underlying design. It is a vital step in the overall migration approach as it can vastly reduce the number of applications that need to be redeveloped.

For example the ACME organisation may have commissioned the development of a Project Documentation application to enable the authorisation and storage of project specific documents. It was initially developed for a single project, but is now widely used throughout the organisation.



With reference to the above figure, although there are 3 distinct project documentation databases, the underlying design has come from the same single source. Therefore from a migration perspective, application re-platforming will be singular (performed once), whilst the data migration would need to be performed for all 3 databases.

Depending on an organisation’s governance model, the Notes application environment may be in varying degrees of order. Governance refers to the specific processes, decision making authority and accountability in place to encourage developers to follow approved company methodologies and processes around the development and deployment of Notes applications.

Continuing the previous ACME example, the owner of the Jetpacks database decides that some minor changes are needed to his project instance, so requests a Notes Developer to make these simple, quite insignificant application changes. Although the changes may be simple enough, the significance is in the fact that this database is now no longer associated to a central design and in effect has spawned off a secondary design that will need to be considered separately from a re-platforming/redevelopment and potentially data migration perspective.

If the use of the Lotus Notes design template approach is correctly implemented, design consolidation can be quite easy. Identifying the same design for databases that have not correctly implemented the template approach can be quite difficult and time consuming.

More often than not it is quite possible to bring the similar designs back into line during the re-platforming stage. Identifying the wide variety of similar databases is often the bigger challenge.

The significance of this consolidation phase should not be underestimated and requires in-depth expertise in Lotus Notes application development.

## 4 Question 2: **HOW** applications are to be migrated

Once a unique list of valid, actively used applications has been identified, the question of **how** these applications will be migrated and where they will be migrated to becomes relevant.

### 4.1 Challenge 1: How complex are the applications

The Microsoft platform provides a variety of opportunities for the re-platforming or redeveloping of Notes applications, the obvious being SharePoint as it provides many of the collaboration features implemented in Notes.

SharePoint also has an out of the box template approach to applications that resembles (yet surpasses) what Lotus came up with years ago around commonly used applications. So when it comes to migrating basic document libraries or discussion forums, migration to SharePoint is quite straight forward. From a complexity perspective these types of databases would be quite low.

Not all Notes applications however were built using this template approach. In fact most organisations running Lotus Notes will have at some stage developed one or more complex Notes applications that required significant development effort. This may be a standalone application or a collection of databases each of which functionally contributes to an application suite. In fact most complex applications, from a technical perspective, comprise a number of Notes databases (NSFs).

Complexity can to a certain degree be gauged by assessment of the design elements. These include the:

- Number and size of forms
- Supported business process and major capabilities
- Data encryption requirements
- Width and depth of the workflow process
- Consideration of mail functionality
- Facility for document management
- Integration with other systems
- Reporting features
- Security and access needs
- Web enablement
- Overall code complexity

Although quite important, application “migratability” should not only be gauged by the complexity of the Notes application. The reason being is that there may be features built into the target platform which render some Notes application components redundant. For example Check In/Check Out features and Version Control functionality is available out of the box with SharePoint.

Applications may also have been over-engineered or forced down a particular design approach as a result of limitations inherent within Lotus Notes.

### 4.2 Challenge 2: What are the target platform options

The complexity of each Notes application has major relevance when it comes to selecting the appropriate target platform. Applications with low complexity typically have template equivalents within SharePoint. As application complexity increases however, the target solution becomes a lot more difficult to determine.

Below is a list of possible target solutions:

1. Standard SharePoint Site (based on a pre-defined template)
2. SharePoint list
3. Customised SharePoint list
4. Document Library
5. SharePoint and InfoPath
6. ASP.Net and SharePoint solution
7. ASP.NET and SQL solution
8. Lotus/Domino web enabled solution
9. Third party application
10. Existing company system (eg ERP)

### 4.3 Challenge 3: Migrating application data

Assuming that the target application has been determined, whether it be an out of the box solution, a customised solution, or a solution developed from the ground up, application data from the existing Notes application will probably need to be migrated across.

Migrating existing data in itself poses a range of challenges, some of which are generic data migration challenges and other are related specifically to the way data is stored in a Notes application.

Some data migration challenges are:

- Field mapping
- Data conversion
- Date and time formats
- Multi-value fields
- Attachments
- Rich Text
- Document Links
- HTML
- Maintaining relational integrity
- The Notes response document feature
- Merging multiple data records into one (and conversely splitting one into many)
- Data quality
- Data validation / verification (pre and post migration)
- Name fields
- The time it takes to migrate large sets of data and the impact to the go live strategy

## 5 What do we do now?

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As we have seen, there are a number of things that need to be considered to successfully migrate applications from Notes to a SharePoint platform. By far the most important stage, just like any other significant IT project, is planning. This can often comprise as much as 60% of the total project timeframe. Getting the right people involved at the correct stage in the project is also extremely important; from the stakeholders to technical resources. When it comes to the actual migration mechanics and re-platforming there are a variety of approaches that can be taken. A key point here would be to utilise methods that have been tried and tested and where possible to not reinvent the wheel.

### 5.1 Planning and preparation is essential

Being clear about what is needed, what is expected and what actually can be delivered is essential in any IT related project, and there is no exception when it comes to migration projects. In section 3 we discussed the challenges around what applications are to be migrated. In addition to this, the question of what is actually functionally required needs to be raised. Many Notes applications include redundant features no longer required by the current business process; features that were valid at some point in the lifecycle of the application, but that are no longer relevant.

There may also be certain features that do not have a logical equivalent in SharePoint and would require significant development to reproduce the identical behaviour. However with a slight adjustment to functional expectations, a SharePoint orientated solution could be developed to take advantage of the strengths of SharePoint rather than depending on expensive customisations or work arounds. In essence, like for like is not the aim of the game.

### 5.2 Stakeholder buy in and Change Management

When it comes to migrating applications from one platform to another, well considered change management is vital to ensure successful uptake of the new platform. Led by solid stakeholder involvement and a well-executed communications plan, change can be an opportunity for realignment and focus. The alternative is a missed opportunity to create IT solutions that are well considered and empower the end user community. At Satsuma we have seen time and time again how damaging feedback from disgruntled staff can seriously destabilise the success of these types of projects.

Change Management, stakeholder backing and a good communications plan does not have to be difficult. The benefits gained culturally and from an IT perspective cannot be overstated. Satsuma consultants use a specific methodology at the heart of its approach to eliciting quality feedback during periods of change.

### 5.3 Assemble the right team

As is with other IT related projects, assembling the right mix of personnel is very important. The requirement however to understand both the Lotus Notes environment, as well as the Microsoft environment does pose a unique skills challenge.

Resources with experience in both IBM Lotus and Microsoft SharePoint are rare, so assembling a team with the right mix of people will be necessary. In addition to the development resources, people with business analysis skills and data migration skills are also crucial.

Depending on the size of your organisation the size of the assembled team may vary. The most important thing to keep in mind is that the right roles are taken into account, even if it is the same person wearing two hats.

The other important note is that the team work as a team. Migrating applications is not a linear sequence of events. The Business Analyst needs to understand the basis of each Notes application and also have an understanding of SharePoint essentials when undertaking the analysis. This is unlike traditional business analysis where aspects of the target application are not considered. With SharePoint development there are many ways to cater for application requirements. Managing user expectation in the early stages allows for higher adoption rates and therefore overall project success.

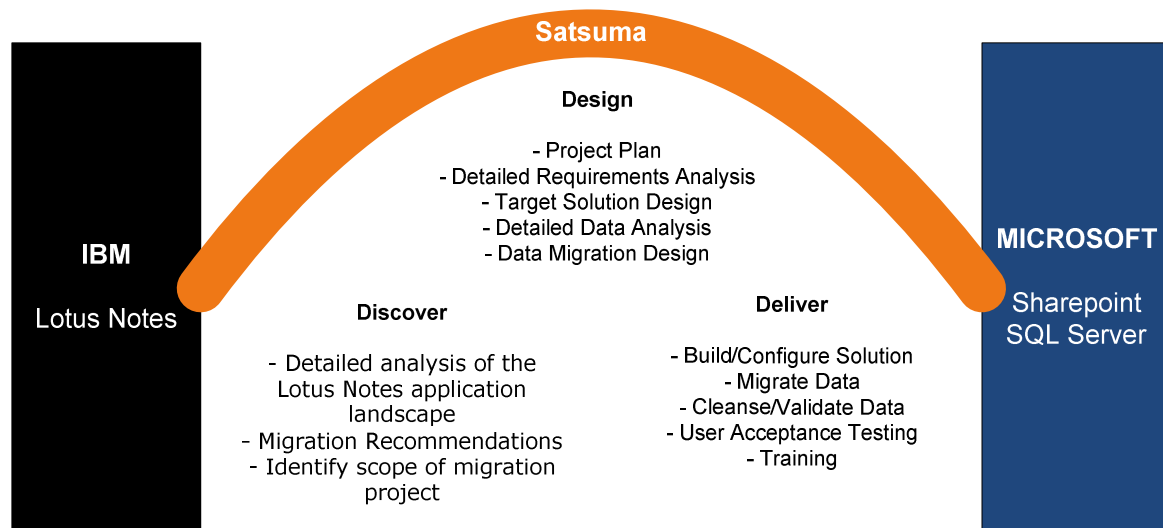
Specialist Notes to Sharepoint migration experts, should be used to complement and or supplement internal resources, providing a faster, more efficient and effective transition.

#### **5.4 Consider migration tools**

In the area of data migration there are a number of tools that can greatly assist with the migration of data from Notes to SharePoint. For anything other than the simplest of migration tasks, the use a proven migration tool is essential. Dealing with attachments, doc links, multi-value fields, and the translation of rich text is quite tricky. Sophisticated tools on the market cater for this and many other scenarios.

## 6 The Answer: A Migration Methodology

At Satsuma we believe that utilising a migration methodology will significantly increase the chance of success. Whether it be hundreds or thousands of applications, our well-considered methodology delivers a well-planned and measured approach that also uncovers many of the pitfalls associated with application migration projects.



Our methodology is comprised of 3 phases; Discover, Design and Deliver. Each phase addresses specific aspects of the migration and produces specific deliverables.

### 6.1 Discover

Before any Notes to SharePoint migration is embarked on, there should be a period of time committed to understanding the nature of the problem. This is the single most important phase and will ultimately determine the success or otherwise of the project.

Questions that need to be asked are:

- How many applications do we have
- Which ones are being used
- How complex are they
- Which ones can be consolidated
- What are the migration platform options
- Which ones will require significant development effort

For organisations that do not have an extensive Notes application deployment, the Discover phase can be accomplished utilising the in-house skills of the Notes team (if the team exists). Manually establishing a Notes application inventory register is quite feasible if the number of servers and databases is small.

### 6.1.1 How many applications do you have?

If however the number of applications is in the hundreds or thousands, a Notes environment analysis tool should really be utilised. There are several good tools currently on the market which can scan the complete Notes environment and provide quantitative information about the deployed databases. The key benefit of using an analysis tool to obtain the initial inventory listing is to obtain a unique list that takes into consideration replica copies that may exist on multiple Notes servers.

From this initial inventory point, the intention is to try and reduce the number of applications that will need to be considered for migration, and a good analysis tool should be able to automatically identify all the Lotus Notes system databases. These databases are only relevant in a Notes environment and need not be considered for migration.

### 6.1.2 Which ones are still being used?

The next stage is to determine which of these applications are actually still being utilised. A typical scenario is: together with the business, come up with a last used cut-off date that will be used in determining which applications are still active. For example, if a database has not been used in the past 6 months it will be deemed as “not actively being used”. Performing this task without the use of an analysis tool (or some pretty good scripting skills) is pretty much impossible. The benefit however is not trivial as this quite often reduces the applications considered for migration by a significant number.

Then there are those applications that although they have been accessed recently are either in very limited use, or used by a couple of people for reference purposes only. Is the cost of migrating these applications out-weighted by the benefit they provide? Will exporting the data to an Excel spread sheet provide a similar outcome? It is at this stage that correspondence with the business or user community is essential. There is nothing worse than alienating the user community by removing tools that are still relevant, let alone putting at risk the positive outcomes of the migration effort.

One technique we have found quite useful is in the use of an online survey which allows users to “have a say” in the future of their dearly loved Notes applications. We have found that the positive effect of involving the user community in these decisions has a noticeable benefit from a change management perspective.

Here are some ideas and benefits of using a survey tool:

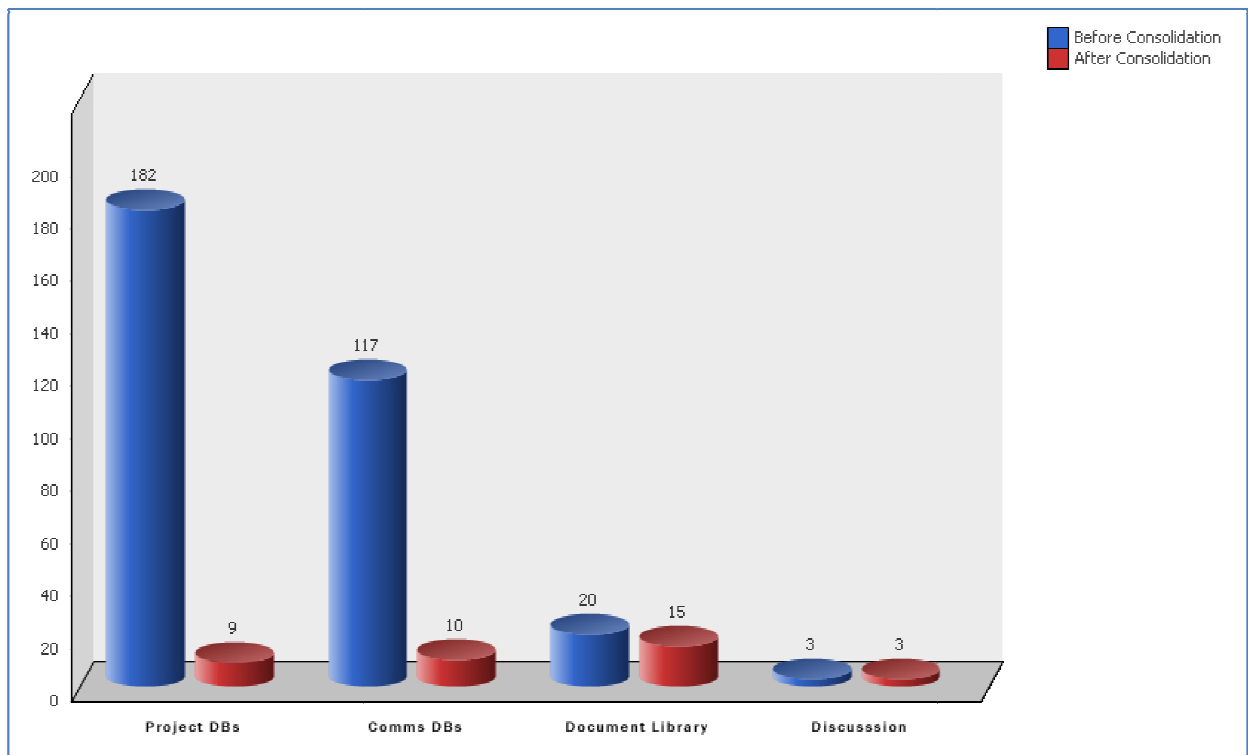
- Be clear with the communications accompanying the survey invitation and ask for feedback before a certain date.
- If possible use an automated tool that issues the online survey automatically and also centrally captures the results.
- Provide a link to the application so that the recipient is clear on which application they are responding about.
- If you know an application is highly used, no need to send a survey. Use this tool for the fringe apps that have limited use or limited users.
- Only send the survey to the power user(s) of the application. Too much feedback can also be difficult to deal with.
- Be specific with the questions: eg. How often do you use the application.
- Post the cut-off date, re-issue the survey to all that have not responded.
- You can tell those people who are passionate about their applications from the timing and depth of response,. These people can turn out to be your greatest allies.

- Don't expect a 100% response rate.
- The information collected can be used to justify decisions in the Design and Deliver phases.

At each stage the intention is to knock out more applications from the “considered list” thus reducing the overall migration effort. It is important therefore to keep your records up to date and provide reasons if exclusion has occurred.

### 6.1.3 Are any of these applications similar in design?

Another aspect to consider in reducing this number, is design consolidation. That is, determining those databases that have the same or similar underlying design. The Notes platform utilises a template based approach to development. This means that most Notes environments have multiple databases utilising the same underlying designs. Identifying these applications and others that have similar underlying design will significantly reduce the application development effort required for the overall migration. Without the use of a specialised Notes analysis tool design consolidation can be extremely difficult. Below is an example of how significant design consolidation can be.



### 6.1.4 How difficult will it be to migrate them?

The next area to be considered is the complexity of the application. Complexity is one of the key determiners of the cost of migration. That is, the simple applications, or the applications that are closely aligned with SharePoint's out of the box functionality, can be migrated at a lesser cost than the applications that may contain complex logic or workflow processes.

Once again, manually determining complexity for more than a small number of applications is almost impossible. The use of a Notes analysis tool is essential for this task. It scans the entire environment

and produces a preliminary complexity ranking which allows early identification of those applications that may warrant further evaluation.

There are several methods for evaluating the complexity of Notes applications and each tool provides different measures. In effect the complexity rating gives an indication of the potential difficulty of the migration effort. Generally speaking the most important factors that determine complexity are:

- Sections and tables in forms as well as the overall number of forms.
- The number of Notes agents and whether they have been written in Java.
- Security features
- Workflow
- The use of web design elements
- In place LotusScript or JavaScript
- Integration with other systems

#### 6.1.5 What kind of skills do we need?

Whether this Discover phase is performed by the internal Notes team or a specialist Notes to Sharepoint migration service provider the key skills needed are:

- Solid Notes application development background
- Analytical and organisational skills
- Competency in the workings of SharePoint

Once the Discover stage has been completed, the overall scope of the migration project should be well understood, reducing risk associated with the overall project.

## 6.2 Design

Having identified the scope of the project, the applications that will undergo migration provide the scope for the Design phase. The design phase is comprised of three aspects:

1. The target solution design
2. The migration strategy
3. Completion of the planning phases

### 6.2.1 The Target Solution Design

Continuing the theme of planning and preparation, target solution design is key to the overall success of the migration project. Although the Discover phase will have broadly determined the target solution, this should be verified by the appropriately skilled personnel. The first task is to review the existing Notes applications and provide a summary of each of the functional components. This should include security requirements and any workflow processes. For the less complex applications the solution design will be quite simple and straight forward and should not require much effort. For the more complex applications the investigation may need to be quite detailed. As an example, a database who's primary function is to store attachments together with some metadata, will only require a cursory functional analysis. This stage is not about the creation of unnecessary documentation, but about functional understanding and clarification.

This review is important no matter how clever an analysis tool may be, decisions regarding complexity that are made at the Discover stage may not always be correct and reviewing the application provides an opportunity to re-evaluate the target solution alternatives. For example, there may be a custom

Notes application that took months to develop and has multiple forms. There are also a number of agents built to implement a workflow approval process, version control and document level security. This may have been classified as a complex application requiring some custom development, however since all of these are now checkbox features in SharePoint, the migration may be simpler than anticipated.

This presents another key point; the team performing the functional analysis of Notes applications should work closely with the SharePoint Architect to make sure that the functionality can be achieved within SharePoint. It is also important to note that this exercise is not about trying to achieve like for like between Notes applications and the SharePoint solution. It is more about understanding what is required and then determining how best this can be fulfilled by SharePoint.

If an application requires data to be migrated, the solution design should take into consideration existing data structures as well as migration capability. There is no point creating a SharePoint solution if the existing application data cannot be made to fit. The SharePoint Architect must work closely with the Data Migration expert to ensure the existing data can be migrated to the suggested solution.

At this stage there exists the opportunity to enhance existing functionality to gain greater business benefit or to remove redundant functionality which will simplify the migration process. This needs to be addressed using a common sense approach, as most organisations “just want to get there”.

As target solution options go there are a number that can be catered for by SharePoint including Office documents, content types and lists, web parts, InfoPath documents as well as custom development. While most Notes applications will be able to be migrated to a SharePoint solution, some applications that have very specific business centric processes or deal with high volumes of data, may not be suitable. The Microsoft alternative for such applications would be to develop a straight .Net application with a SQL server back-end, however presented to the end user via a SharePoint interface.

Another alternative may be to simply web enable the Notes application and have it run on a centralised Domino web server. The advantage being that there is no data migration cost, however keeping Domino in the IT stack may not achieve the organisations IT infrastructure objectives. Where possible seek advice from specialist providers, to avoid many of the potential pitfalls that do exist.

### 6.2.2 The Migration Strategy

Once the application design aspects have been considered it is then time to look at what to do with the existing data, and more specifically will the data need to be migrated into SharePoint. More often than not the answer will be yes. There are however some instances where the business is happy to start clean.

Again, there are a number of tools on the market that can assist significantly with the migration of data from the Notes application to the SharePoint application.

The first step however is to undertake a data analysis. Obtaining a clear understanding of the data types in the current application, and mapping to a SharePoint equivalent is extremely important. Data related issues can appear insignificant, but can cause concern when it comes to data migration considerations. For example:

- Date formats and lengths
- Multi value fields
- Encrypted data
- Fields with mixed data (Rich Text fields)
- Read only fields

- Fields containing multiple attachments
- Name fields
- Auto created fields

The migration of data may on the surface appear to be a simple case of mapping source fields to target fields, however depending on the way each side handles the differing data types, there may need to a number of intermediate conversion steps put in place before the data can be migrated.

The data considerations can also have a bearing on how the SharePoint application will be designed. It is therefore important that the person conducting the data analysis be in constant communication with the SharePoint Architect during this process.

### 6.2.3 Completion of the planning phases

With the target solution design in place and the migration strategy established, completion of the planning components can be performed. These include the Test Plan and the Training Plan.

The Test Plan contains details on the test environment configuration, method of deploying applications and migrating data, how issues will be managed and the criteria for success.

The Training Plan contains details on the training environment configuration, method of deploying the application and data, the level of training required (eg Train the Trainer or End User), personnel to be involved, how feedback will be managed and any documentation requirements.

## 6.3 Deliver

The Deliver stage is where all the preparation and planning is executed. There are a number of areas involved at this stage:

1. Data Migration
2. SharePoint Development
3. User Acceptance Testing and End User Training
4. Migration and Deployment

### 6.3.1 Data Migration

A complete migration of all data should be performed to identify data issues and migration process timings. Data issues should be raised as soon as possible to prompt decisions on how they should be resolved. This process should also generate a migration checklist of all tasks required to migrate the data from Notes to the target application. A log containing record counts and checksums should also be established to validate the data migration results.

### 6.3.2 SharePoint Development

Although a SharePoint Development methodology is outside the scope of this document, there are elements that need be considered because of the migration factors.

The target application is built as per Design Specifications and any changes to the design are discussed to ensure the design is still valid and to identify if there are any changes to data migration requirements. There may be specific tasks required during or after the migration of data into the new application and such tasks should be included in the Migration Checklist.

### **6.3.3 User Acceptance Testing and End User Training**

A UAT environment including migrated data should be established as per the test plan. Standard UAT practises, test case execution and appropriate training should be performed as with most application development projects.

### **6.3.4 Migration and Deployment**

The deployment of the new application and the migration of data needs to occur in a highly coordinated fashion as per the Migration Strategy and Migration Checklist. Record and attachment counts should be provided to determine the validity of the migrated data.

## 7 Summary

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For an organisation to have success with their Notes to SharePoint application migration projects there are certain key areas that should be considered, the most important being planning and preparation. Diving straight into the development is fraught with danger and will often lead to challenges during development, deployment, data migration or user acceptance/uptake.

It should also be made clear that planning and preparation does not necessarily mean endless time performing analysis and producing documentation. The intention is simply to encourage a considered approach to the migration of applications as there are a number of factors involved.

The key points to take away are:

- Planning and preparation is vital
- Assemble the right team with the right mix of skills
- Seek assistance from specialists to reduce the learning and deployment curve
- Don't work in isolation
- Like for like development is not the aim of the game
- Engage the business users early and often. Application migration is just as much about change management as it is about application development
- Use a tool to assist with the Discovery and data migration (if appropriate)