Solvay Pharmaceuticals: Extreme Migration Makeover!!!

Bas Ursem, Solvay Pharmaceuticals

Agenda

- Company Facts
- Things to Take Home with You
- The Job: Build a New Home for SOLID
- Why a Traditional Migration Would Not Work
- Key to the Success: Agile Migration
- Lessons Learned
- Summary

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Company Facts

- European owned, but globally-dispersed company with facilities worldwide
  - R&D
    - United States, Netherlands, Germany, France, Ireland, Belgium, Japan
  - Manufacturing
    - United States, Canada, Mexico, Brazil, Spain, Ireland, Belgium, Netherlands, Germany, France, Japan
- Therapeutic areas: Neuroscience, Cardiometabolic, Influenza vaccines, Gastroenterology, Men's & Women's Health
- 9,000 employees
- 2009 sales of EUR 2.9 billion
- Recently acquired by Abbott

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Things to Take Home with You

– Migrating a >2 Million objects system can be done with zero system downtime, even with moving data between data centers across Europe

– If you estimate your migration, count the documents and multiply them by at least 5

– Agile Migrations are the key

– For validation, use a risk-based focus on the process rather than the tool itself

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- ## SOLID 2.5 – The OLD House
  - SOLID (SOLvay Integrated Documentum) – launched October 2004
  - Single DocBase to replace 11 separate Solvay Pharmaceuticals systems
    - Included R&D, Manufacturing, Quality documents
    - FirstDoc 2.4, Core Dossier, AnnoDoc, PDFAqua, more apps
    - SOLID grew to 2,500 users, 500,000 documents, 500 GB content

- ## SOLID 3.0 – The NEW House
  - FirstDoc R&D & FirstDoc Q&M (split from single DocBase in previous version)
  - SharePoint 2007
    - Portal with view on Inbox, Subscribed Documents, News
    - Read Only, Training and Archive repository
    - PartnerXchange - Bulk loading of documents

Our Job: Migrate All Data

- From single docbase to multiple docbases + SharePoint

- Zero downtime of existing system

- Transfer data from Brussels (Belgium) to Copenhagen (Denmark)

- About 500,000 documents
  - (More on this later!)

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- RFP criteria
  - No downtime during cut-over
  - Able to export from Documentum to file share
  - Able to import into FirstDoc and use the "compliance" layer
  - Able to import into Microsoft SharePoint 2007
  - Able to migrate audit trails, print control records, training records, virtual documents, relationships
- RFP was sent to 2 providers
- Selected Migration Workbench from Blue Fish
  - Proven successful history
  - Introduced innovative approach

- Migration started 10-MAY-2008

    Tear that house down!!!

- Migration must be finished 31-DEC-2008

    Move that bus!!!

- 7.5 months to execute project from start to finish in a heavily regulated environment!
    - Minus holidays in July, August and December

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- New platform was still a moving target
- Writing mapping code is very complex and cannot be done in-house
- When errors are found, all migrated data must be deleted first
  – A lot of time would be lost during this phase
- Troubleshooting and debugging is very hard
- 2 weeks down time required during cut over
- We just did not have enough time!

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I WANT

Extreme MIGRATION MAKEOVER

- Traditional migration timeline, regardless of tool…

| Gather Req'ts | Configure Migration Tool | Run Migration | We will probably have 3 or 4 issues to fix | Business users are happy and cooperative | Finish. How hard can it be? |

Expected Activities

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Extreme MIGRATION MAKEOVER

- # Traditional migration timeline, regardless of tool…

Gather Req'ts	Configure Migration Tool	Run Migration	We will probably have 3 or 4 issues to fix	Business users are happy and cooperative	Finish. How hard can it be?

Expected Activities

Gather Req'ts	Configure Migration Tool	Supplement with custom code	Run it and It doesn't work	Delete and reconfigure	Run it and It doesn't work	Delete, Fix req'ts, reconfigure	Run it and crash due to data quality	Delete, fix data, reconfigure	Discover new req'ts	•••	Eventually finish late.

Reality… Is Not Fun

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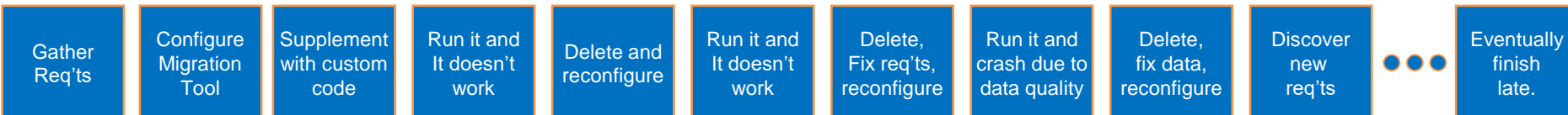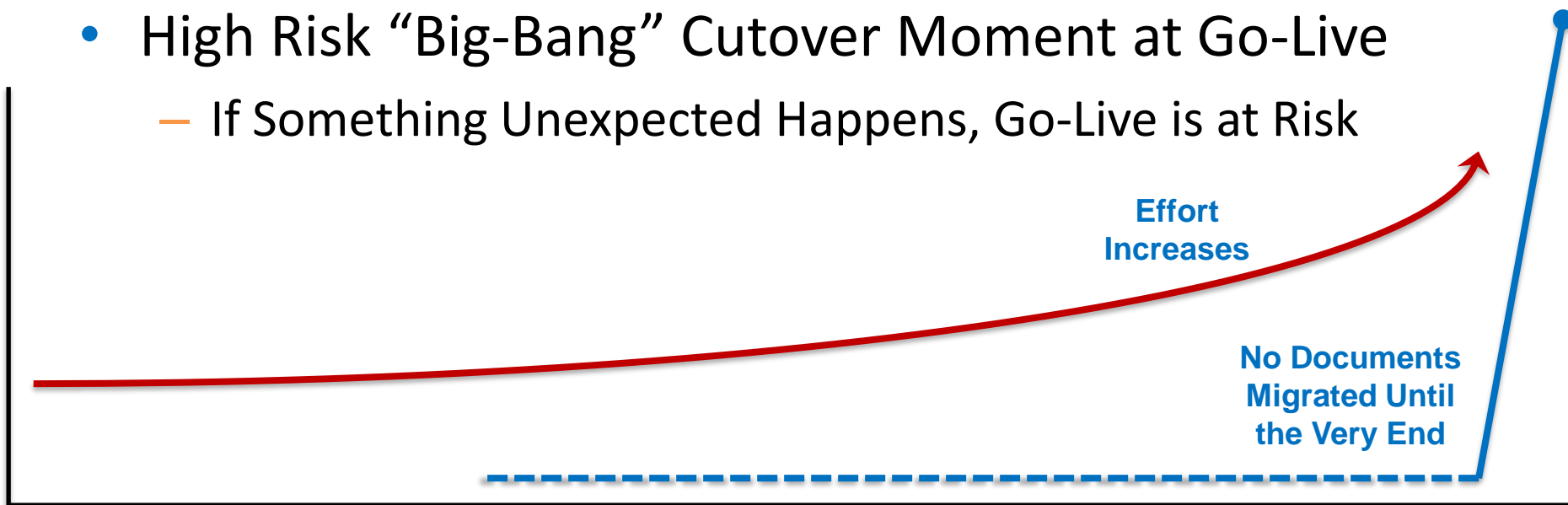
Timelines with Traditional Migrations

Momentum

Extreme MIGRATION MAKEOVER

- Effort and Pain Increases

- High Risk "Big-Bang" Cutover Moment at Go-Live
  - If Something Unexpected Happens, Go-Live is at Risk

Effort Increases

No Documents Migrated Until the Very End

| Gather Req'ts | Configure Migration Tool | Supplement with custom code | Run it and It doesn't work | Delete and reconfigure | Run it and It doesn't work | Delete, Fix req'ts, reconfigure | Run it and crash due to data quality | Delete, fix data, reconfigure | Discover new req'ts | • • • | Eventually finish late. |

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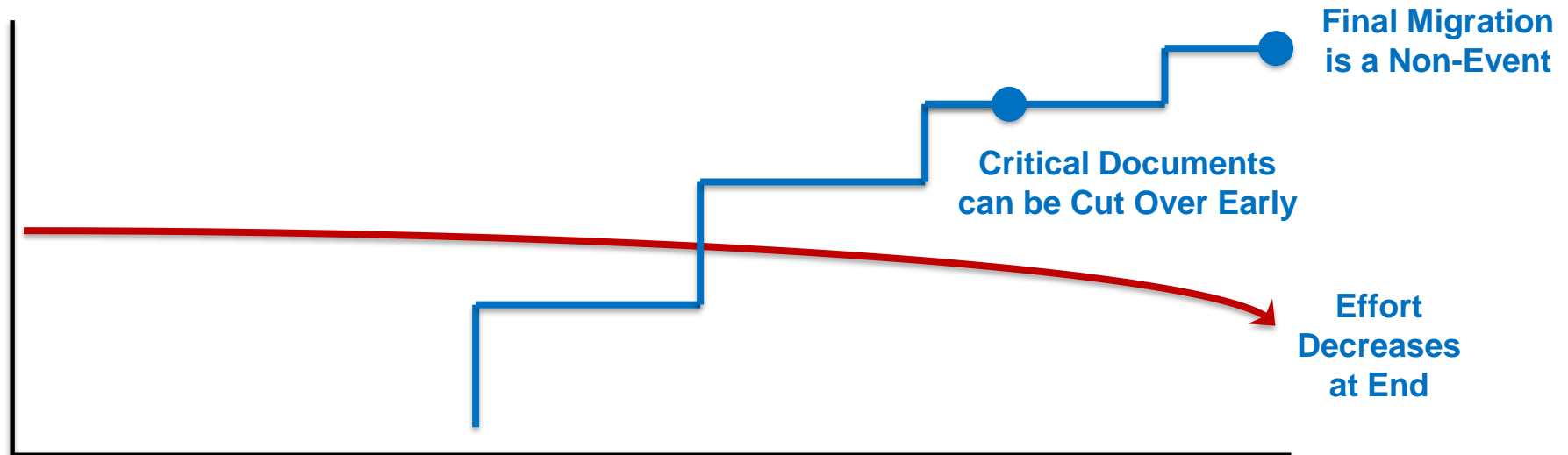- Summary

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- # Incremental Migrations
  - Content is not remigrated unless it needs to be
  - Batch runs get progressively smaller and faster
  - Users can still update and add content to the source
  - The last migration is tiny instead of huge

- # Rules-Based Migration Engine
  - Make mapping, transformations and validations simple and easy to adjust

- # Dynamic Cutover
  - Cutover no longer risk for Go-live

Timelines with Agile Migrations

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- Project Gets Easier Toward End
- Cutover Moment No Longer Risk for Go-live

Final Migration is a Non-Event

Critical Documents can be Cut Over Early

Effort Decreases at End

Migration Strategy & Planning	Gather Req'ts	Configure and Write Rules	Initial Run	Fix Data or Req'ts Issues	Incre-mental Run	Fix Fewer Data or Req'ts Issues	Run	Cutover	Fix Few	Run	Final Cutover

Agile Migrations = Strategy and Planning + Exception Processing

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- Rules development could be developed in-house and understood by the business

```
/*
Exclusion rule for documents in specific folders in the Legacy Documents cabinet.
*/
rule "[ER-4.2.1] Exclude documents in the following folders in the /Legacy Documents/US Regulatory Submission,
when
    doc : Document( )
        eval(RdUtils.anyMatches(doc.source.mwb_folder_path, "/Legacy Documents/US Regulatory Submissions.*")
        RdUtils.anyMatches(doc.source.mwb_folder_path, "/Legacy Documents/.*CLINDOC.*") ||
        RdUtils.anyMatches(doc.source.mwb_folder_path, "/Templates/.*") ||
        RdUtils.anyMatches(doc.source.mwb_folder_path, "/Legacy Documents/.*CARS.*")
        == true)
then
    doc.do_not_migrate = true;
end
```

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So Why did Agile Migration Work for Us?

- Great reporting tool to troubleshoot and debugging of rules

Batch Status: SLD3RD_doc_import_1

Batch 1 for importing RD documents from the round-trip adapter to SOLID3 RD

Objects Processed:	18204
Objects Successfully Migrated:	18095
Objects Partially Migrated:	0
Objects Not Migrated	
Objects In Error:	0
Objects Excluded By Rules:	109
Objects Failed Validation:	0

Batch Status

● Imported ○ Partially Imported ● In Error
● Excluded Per Rules ● Failed Validation
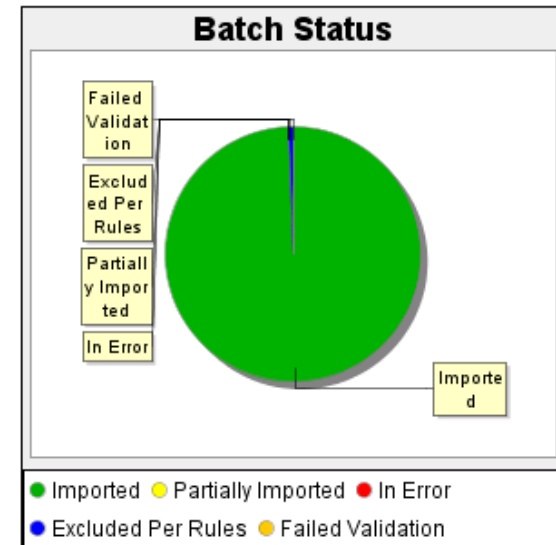
Execution	Start Time	End Time	Created	Updated	Deleted	Imported	Partial	Not Migrated	-
12	01-12-2009 07:59:37	01-12-2009 08:45:48	0	0	0	0	0	0	Matched Rules
11	01-10-2009 05:52:27	01-10-2009 07:16:15	0	97	0	97	0	0	Matched Rules
10	01-06-2009 09:42:10	01-06-2009 10:23:42	0	0	0	0	0	0	Matched Rules
9	01-05-2009 09:32:12	01-05-2009 10:19:34	0	3	0	29	0	3	Matched Rules
8	12-30-2008 12:49:43	12-30-2008 03:33:43	0	0	0	17726	1	108	Matched Rules
7	12-30-2008 12:35:02	12-30-2008 12:40:04	0	0	0	151	0	0	Matched Rules

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- Incremental imports only changes affected documents by changed rules

- Initial migration performed a week before go-live. Afterwards performed incremental imports.

- No system down time

  "The family" did not have to leave town for a week!!

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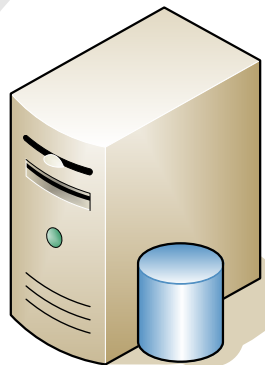- Key to the Success: Agile Migration
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- You need power!
  - We used 2 identical servers to mirror the data
  - Recommend to use physical servers
  - Direct attached storage, do not use NAS
- Initial physical data transfer, WAN synchronization afterwards

Brussels, Belgium

Copenhagen, Denmark

Objects imported into systems
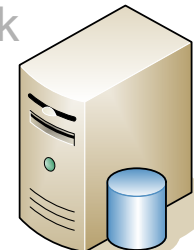
SOLID 3.0 Q&M
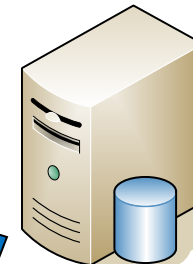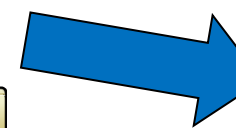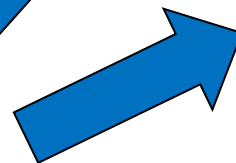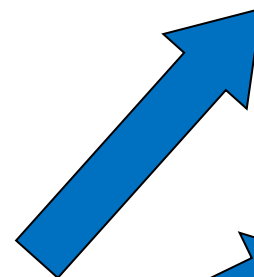
Objects exported to File system in batches

SOLID 2.5

SOLID 3.0 R&D

Round-Trip Adapter

WAN Data Synchronization

Round-Trip Adapter

SOLID 3.0 MOSS 2007

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- Moving 500 GB of data over the WAN isn't going to work
- FedEx-ing drives was not an option
  - Disks contained all regulated documents from Solvay
  - Both R&D and Manufacturing & Quality documents!!
- 2 secret agents ☺ flew to Copenhagen with the disks as carry-on items
- After first physical synchronization, migrating changes over the WAN was then possible and efficient

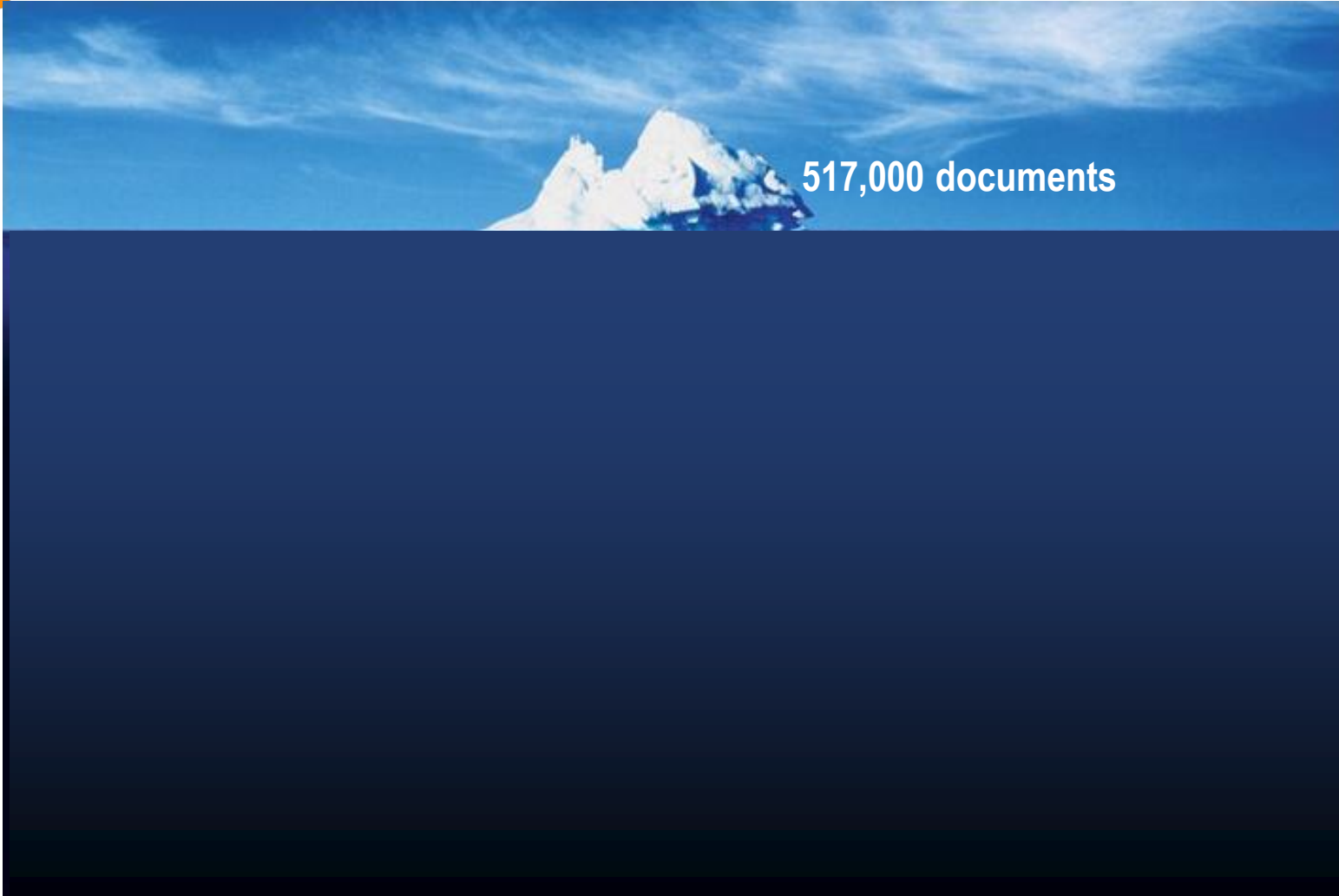**EMC²**
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- Migration is serious business
  - Do not underestimate differences in object model, even on the same platform
  - Create a dedicated project team with IT, Business and QA
- So you think a document is only a document?

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So you think an object is only a document?

517,000 documents

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- Mapping can be a lot more complex than you think, even on the same platform (i.e.: FirstDoc to FirstDoc)

- Define rules/decisions

  - What to do with checked out documents; documents in a workflow; annotations???

Momentum

- # Solid 2 Migration (Traditional)

  - ## 24 Months

  - ## About 225,000 Documents (No Additional Data Objects)

- # Solid 3 Migration (Agile)

  - ## 8 Months (1/3rd the time)

  - ## >2MM Objects (9 times the number of objects)

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Momentum

- Quality of the migration depends on the process, not on the tool

- Use risk based approach to determine records to be tested – one size does not fit all

- Provide property sheets to compare meta data

Validation Approach

- Perform minimal qualification on the tool
  - Installation Qualification (IQ) to validate installation and limited testing of the tool incl. the data synchronization tool

- Perform qualification on the process
  - Operational Qualification (OQ) to validate the migration process itself incl. the data transfer

- Perform risk-based User Acceptance Testing (UAT) through classification of document types
  - High, Medium, Low risk determines amount of documents to test and level of testing

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- For selected documents the following was tested:

    - Verify that all mandatory attributes were migrated correctly

    - Provide property sheets to ease comparison of meta data.

	SOLID 3.0	**SOLID 2.5**
Object ID:	0901e4e38016a06f	090069bf816fbb5e
SOLID Number	SOLID 0000082824	SOLID 0000082824
Version label:	Approved,1.0,CURRENT,LATEST	Approved,CURRENT,1.0
Document Type	Regulatory	Regulatory
Document Subtype	Administrative	Correspondence
Document Unit	Agency Contact Reports	Contact Report
Title	2006-12-20: FDA Contact Report	2006-12-20: FDA Contact Report
Authors	Hare Michael,Kapcala, Leonard Dr. FDA	Kapcala, Leonard Dr. FDA,Hare Michael
Language	English	English

- For each set, 1 document was extra tested
  - Check the Audit Trail, Renditions, Relations, Virtual Documents for these documents
  - Check if a workflow can be applied to these documents
  - Verify that the content was migrated correctly by comparing the content of the document

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- ## The Bus Got Moved at Jan 11th, 2009 ☺
  - Only 2 weeks later than originally planned in May 2008

- ## Lessons to take away:
  - Migrating a >2 Million objects system can be done with zero system downtime, even with moving data between data centers across Europe
  - If you estimate your migration, count the documents and multiply them by at least 5
  - Agile Migrations are the key
  - For validation, use a risk-based focus on the process rather than the tool itself

Questions???

Thank you for your attendance

I am interested in your story!

Contact me via LinkedIn
http://nl.linkedin.com/in/basursem