Preparing for enterprise systems transformation

"A Data Migration Primer"

DATA & ANALYTICS IN HEALTHCARE
AUCKLAND, NEW ZEALAND
August 2022

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Te Toka Tumai Auckland

Corinium
connected thinking

Te Whatu Ora
Health New Zealand
Te Toka Tumai Auckland

An introduction to your speakers

Data & Analytics Director

Te Toka Tumai Auckland

10+ Core Systems Migrations

Sponsor data transformation programme
Cloud data transformation SRO

Data Migration Lead

Te Toka Tumai Auckland

15+ Core Systems Data Migrations

Tu Pono Aroha (Hospital Administration System Replacement Programme)

Watercare
contact
RUBBERTRAX
Mercury
AMP
Southern Cross
Auckland Council
Te Kaunihera o Tāmaki Makaurau
Summerset
RETIREMENT VILLAGES
AT
Stats NZ
Tatauranga Aotearoa
ERoad
HEG
Horizon Energy Group
Telstra
CHORUS
healthAlliance
ALL STATES PARTS A.S.A.P. AG PARTS
INTERNATIONAL KEY SUPPLY LLC
Fonterra
Dairy for life
TelstraClear
life unlimited
PlaceMakers
CQ
printing for good
Auckland Transition Agency
Pokapū Whakakotahi o Tāmaki-makau-rau
PARLIAMENTARY SERVICE
Te Ratonga Whare Pāremata
Te Whatu Ora
Health New Zealand
Te Toka Tumai Auckland

Corinium
connected thinking

Welcome *Haere Mai* | Respect *Manaaki* | Together *Tūhono* | Aim High *Angamua*

A “Primer”

Google

A substance used as a preparatory coat on wood, metal, or canvas, especially to prevent the absorption of subsequent layers of paint or the development of rust. **"apply three coats of primer"**

A cosmetic applied to the face before another product, intended to improve the coverage and lasting effect of the second product.

"it's best to apply primer around the eye to help the make-up blend properly"

A small pump for pumping fuel to prime an internal combustion engine, especially in an aircraft.

"no more than four pumps of the primer usually suffice"

A molecule that serves as a starting material for a polymerization process.

"the duplex RNA primer cannot initiate DNA replication“

Our definition

A guide to help you prepare for a major core systems replacement and identify important data related activities required to deliver a successful outcome.

Why is data migration important ?

Some international and local horror stories

Target Canada: Garbage in, garbage out

Many companies rolling out ERP systems hit snags when it comes to importing data from legacy systems into their shiny new infrastructure. When Target was launching in Canada in 2013, though, they assumed they would avoid this problem: there would be no data to convert, just new information to input into their SAP system.

But upon launch, the company's supply chain collapsed, and investigators quickly tracked the fault down to this supposedly fresh data, which was riddled with errors— items were tagged with incorrect dimensions, prices, manufacturers, you name it.

Turns out thousands of entries were put into the system by hand by entry-level employees with no experience to help them recognize when they had been given incorrect information from manufacturers, working on crushingly tight deadlines. An investigation found that **only about 30 percent of the data in the system was actually correct**.

Impact: $2.5 billion in losses, the Minneapolis-based company shut down all of its 133 Canadian locations and laid off 17,600 employees

[Case Study 7: The $2.5 Billion Cross-Border Expansion Mistake by Target - Henrico Dolfing]

$2.5 billion in losses

$100 million in lost sales

The Nike Supply Chain Management Failure

Nike began installing the i2 SCM software in 2001. The goal was to automate certain parts of the supply chain for its footwear division, including inventory and order management. When the system went live, however, it was unable to match Nike product inventories with customer demand. As a result, the company experienced both excesses and shortages — both of which cut into their bottom line.

Why did fail? Many reasons but one of the primary reason was that Nike rushed the migration process, settling for data that insufficiently represented their company. This strained the software beyond its built-in capabilities and led to issues with data transfer.

Impact: This failure cost Nike more than $100 million in lost sales, depressed its stock price by 20 percent, triggered a flurry of class-action lawsuits. In fact, Nike announced that as a result of its failed SCM project, it would be unable to meet its third-quarter projections.

[i2-Nike fallout a cautionary tale (cnet.com)]

Why is data migration important ?

Some international and local horror stories … continued

lost revenue of around $400 million

Hewlett Packard: ERP Failure

Hewlett Packard, one of the leading computer hardware and IT companies, made a move from its disparate systems to a centralized ERP platform in 2004. Following a similar plan and architecture, Hewlett Packard had finished 34 successful projects. However, this 35th project was fated to fall flat from the beginning.

Before migration, each department in the company had its own system. The new system was a centralized one and required integration among departments – but employees had a hard time moving to the new way of doing things. In addition, while moving the data to the new ERP, they were losing data on orders. This caused a delay in fulfillment time, leading to customer frustration. Despite making quick decisions to fix the issues, HP's fourth-quarter backlog reached $120 million.

Impact: Due to ERP implementation fallout, HP's ESS segment lost revenue of around $400 million and operating profit of $275 million. The failure of ERP led to a decrease in value by 5% in the company's revenue for its Enterprise Servers and Storage (ESS) group.

https://dynamics.folio3.com/blog/erp-implementation-failure

New Zealand : Novapay

Novopay was an IT solution that pays 110,000 teachers and others employed by 2, 500 schools, on 15 different employment agreements, a total of around $3.4 billion annually. Novopay went live and performed its first pay run in September 2012. While many of the payees received the correct pay, a significant number did not, causing serious reputational damage and further costs to the Ministry of Education. Failure to satisfactorily resolve the issues quickly caused ministers to initiate an inquiry in 2013.

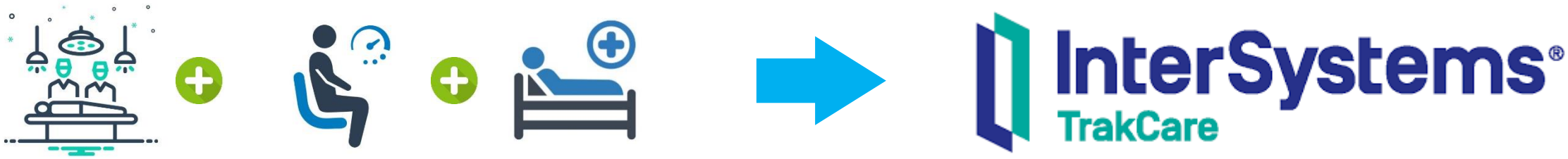
Impact: Service Centres had received significantly more payroll instructions than expected; 5000 people had been underpaid and 15 not paid at all. This occurred for various reasons: system defects, user errors, unexpected school practices and an unexpected large number of timesheets. 700 people were overpaid (one by $15000) due to data entry errors.

https://www.wgtn.ac.nz/__data/assets/pdf_file/0011/1866602/digital-government-case-study-novopay-3.pdf

5000 people underpaid

In the Northern Region, Te Toka Tumai Auckland (Auckland DHB) has started core systems transformation

- We are implementing a modern Patient Administration System to replace a number of our legacy systems
- The solution will replace three patient management systems containing interactions with over 1.5 million patients
- Will be used at Auckland City Hospital, Starship Children's Hospital and multiple community organisations
- Once implemented, likely to be the northern district patient administration system



Theatre **Outpatients** **In-Patients**

This is part of a new phase of transformative change

The core objective of the transformation is to create a more equitable, accessible, cohesive and people-centred system which will improve the health and wellbeing of all New Zealanders.

This transition requires a connected digital eco-system in order to work effectively. We need to progressively adopt :-

- **Modern, connected patient administration systems** to allow care teams to optimise patient flow across multiple care settings.

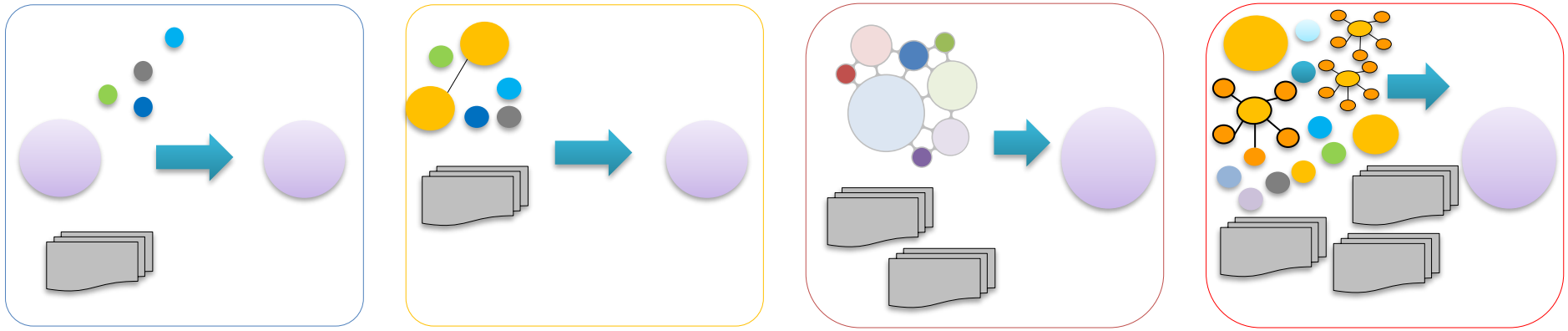
- Enable systems **enable the digital capture and presentation of clinical patient data** before, during and after a care event to enable the improvement of clinical outcomes.

- **Safe, easy to access integrated health records** available across all approved patient care settings with patient consent.

The complexity of migrations can vary significantly

Source systems, business process & data quality are all indicators of migration complexity and should guide your approach

Simple

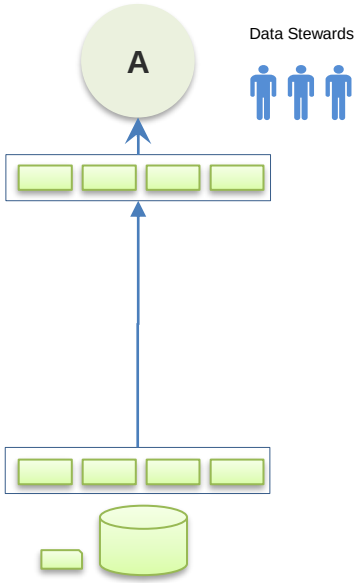
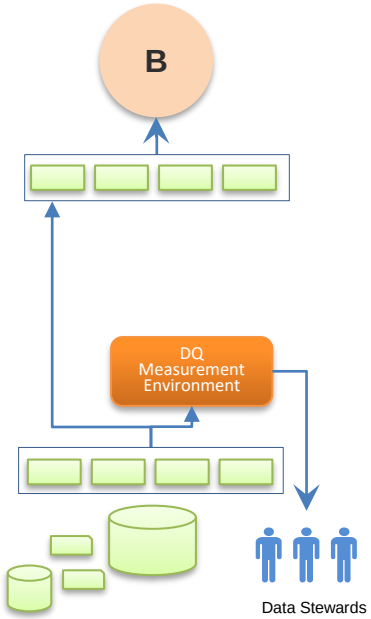
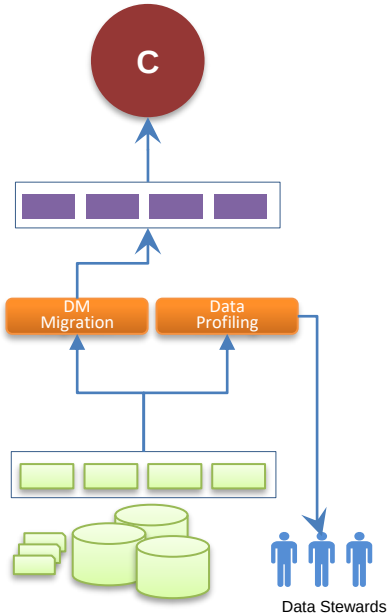
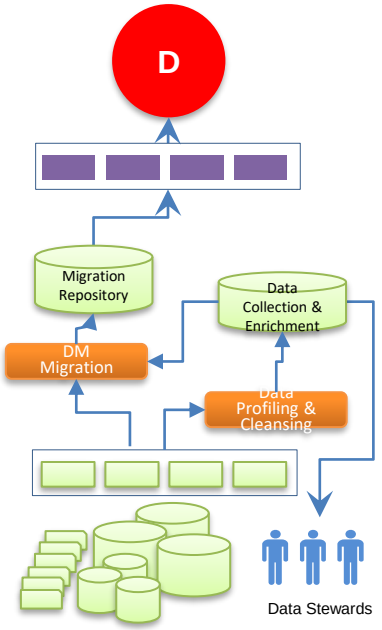


Complex

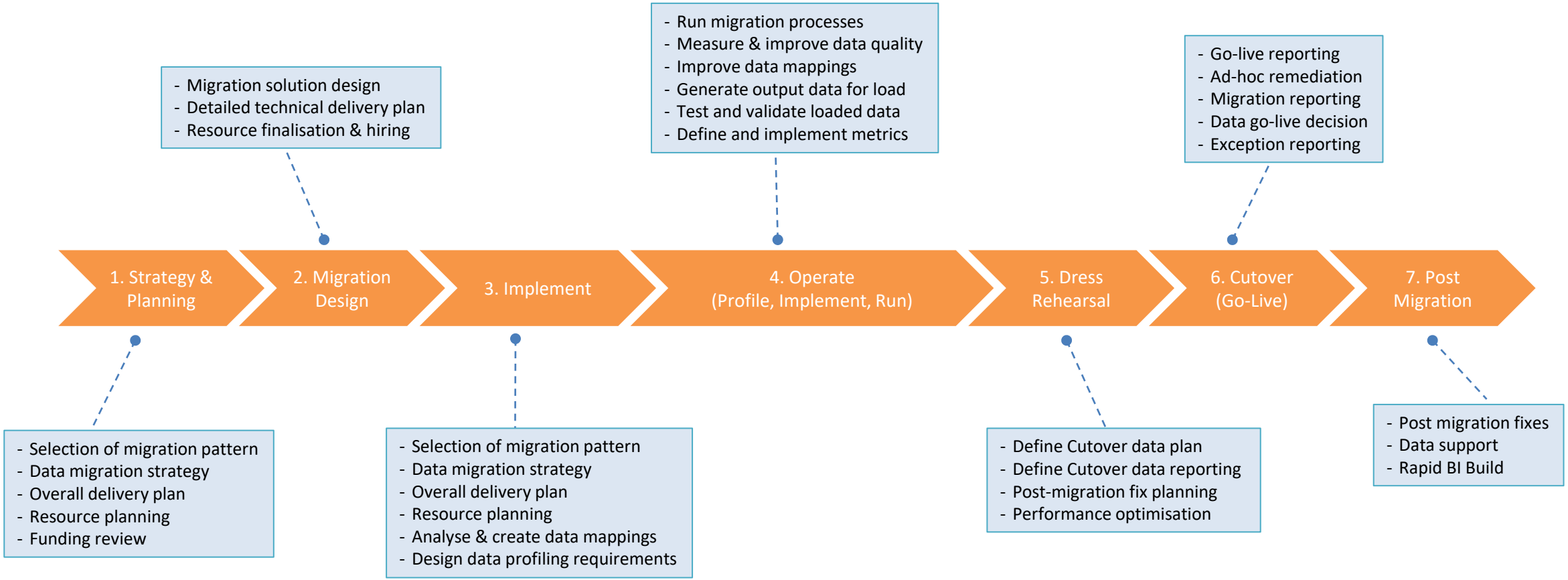
Misunderstanding or underestimating complexity can result in the wrong approach and a world of pain, potentially failure

Your migration approach needs to match complexity

There is no “correct” migration approach. Complexity, automation and approach can vary significantly.

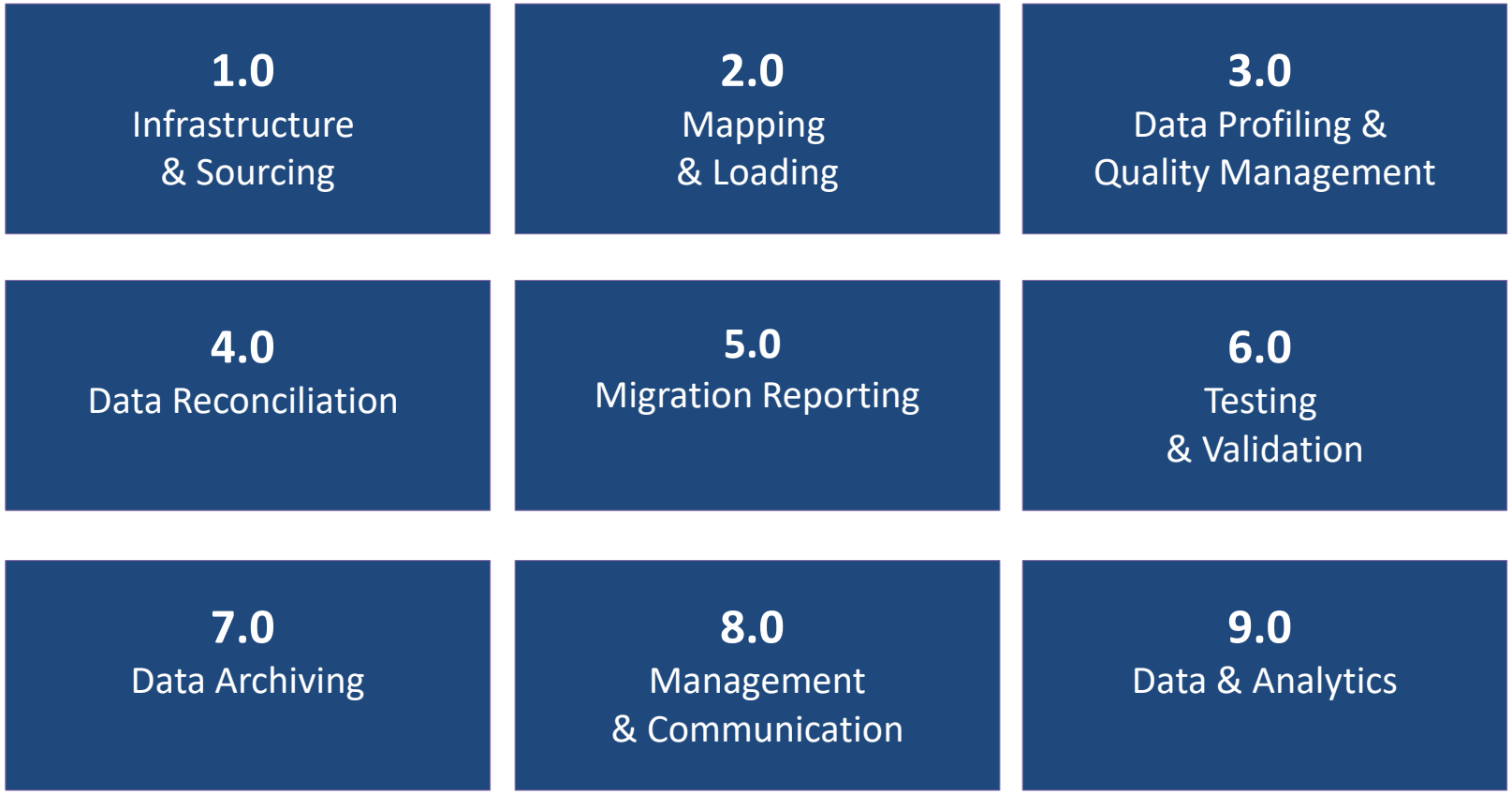
Migration Style	A	B	C	D
				
Source System Complexity	Low	Low	Medium	Medium - High
Data Volumes	Low - Medium	Low - Medium	Medium - High	High
Data Quality	High	Medium	Medium	Low - Medium
Process Transformation	Low	Low	Low - High	Low – High
Cutover Window	Short - Medium	Short	Short	Short - Large

What does a typical data migration journey look like ?



A comprehensive data migration activity model

Depending on the complexity of data migration, you may need to consider activities across 9 areas of focus (possibly more)



A comprehensive data migration activity model

1.0 Sourcing & Infrastructure

2.0 Mapping & Load

3.0 Data Profiling & Quality Management

4.0 Data Reconciliation

5.0 Migration Reporting

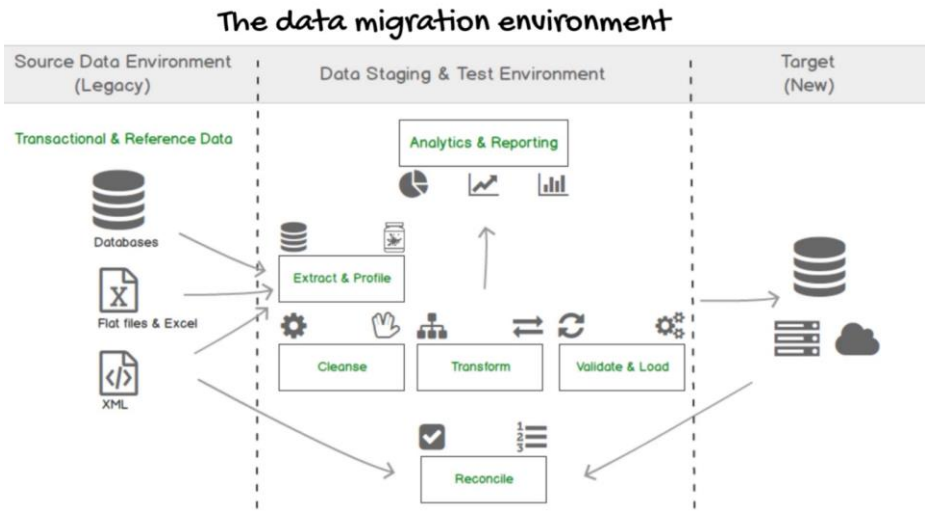
6.0 Testing & Validation

7.0 Data Archiving

8.0 Management & Communication

9.0 Data & Analytics

1.1 Source System Analysis
1.2 Source Extracts Programs
1.3 Manual Data Sourcing & Augmentation
1.4 Infrastructure Setup
1.5 Migration Environment Management



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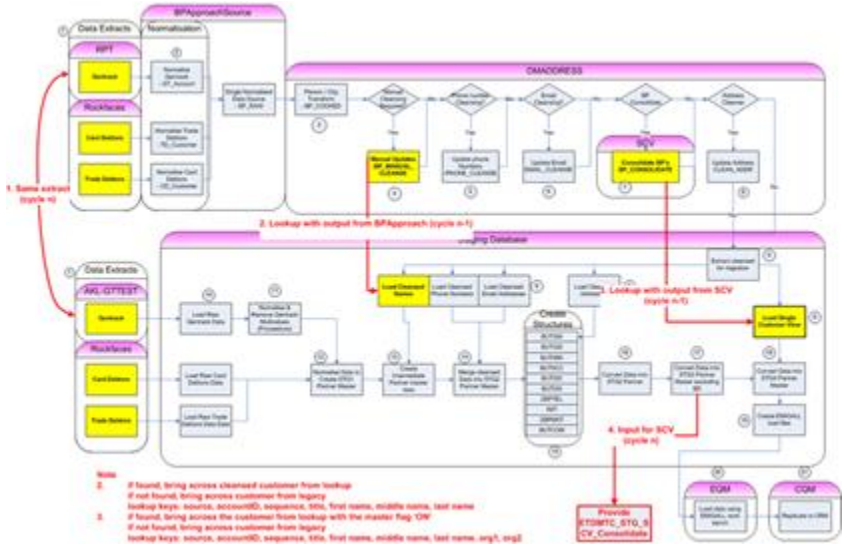
2.1 Analysis & Data Mapping
2.2 Load, Transform, Export (LTE)
2.3 Data Load & Validate
2.4 Exception Management
2.5 Performance & Optimisation
2.6 Post Migration Load / Fix



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- **3.0 Data Profiling & Quality Management**
- 4.0 Data Reconciliation
- 5.0 Migration Reporting
- 6.0 Testing & Validation
- 7.0 Data Archiving
- 8.0 Management & Communication
- 9.0 Data & Analytics

3.1 Data Profiling & Assessment (auto & manual)
3.2 Data Governance
3.3 Automated Data Cleansing
3.4 Manual Data Cleansing
3.5 Data Cleansing Co-ordination

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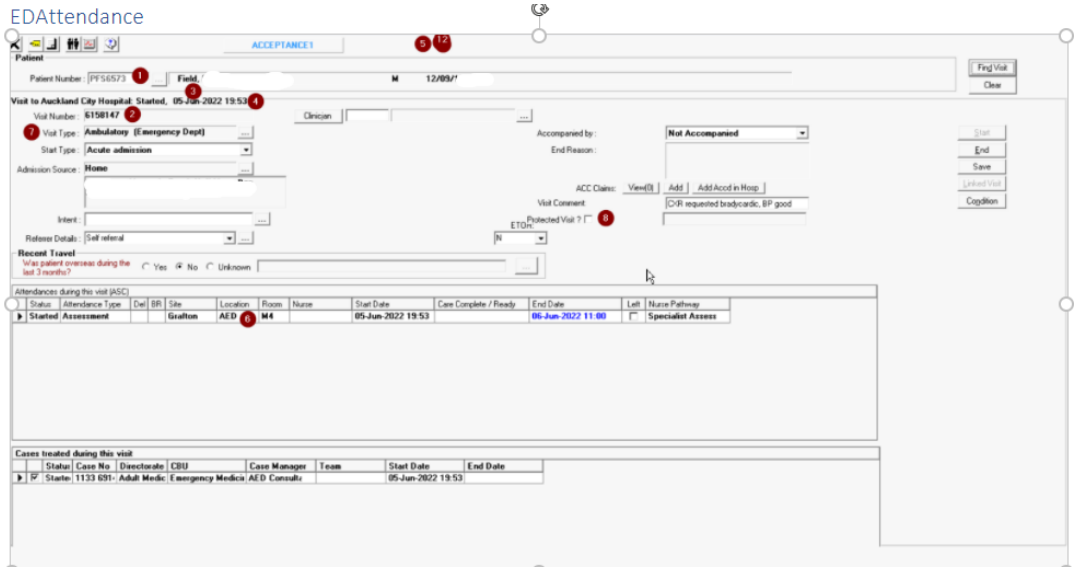
4.1 Technical Reconciliation
4.2 Business & Financial Reconciliation
4.3 External Reconciliation
4.4 Screen by Screen Comparison (scenario based)



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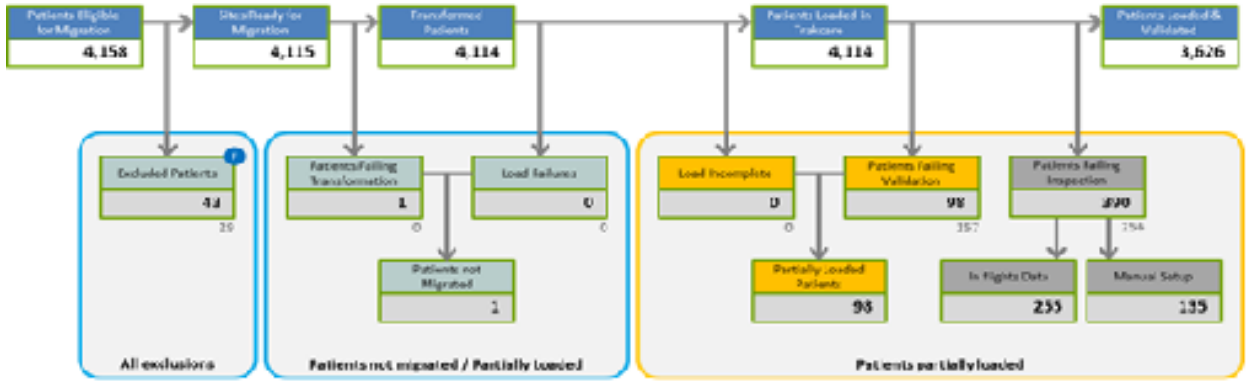
5.1 Transformation Exception Reporting
5.2 Load Exception Reporting
5.4 Business KPI Reporting
5.5 Cutover Reporting
5.6 Data Cleansing Reporting
5.7 Program Progress & Forecast Reporting



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- 3.0 Data Profiling & Quality Management
- 4.0 Data Reconciliation
- 5.0 Migration Reporting
- **6.0 Testing & Validation**
- 7.0 Data Archiving
- 8.0 Management & Communication
- 9.0 Data & Analytics

6.1 Unit Testing
6.2 Functional Testing
6.3 Performance Testing
6.4 Load Verification Testing

```
SELECT distinct CPN.[ProfessionalId]
      ,CPN.[CommonPersonNumber],[Prefix]
      ,[GivenName]
      ,[SecondAndFurtherGivenNamesOrInitialsThereOf]
, pat.lpatientid
  FROM [HPIAE].[dbo].[HPI_Professionals] CPN
      join [HPIAE].dbo.HPI_ProfessionalName name on cpn.[ProfessionalID] = name.[ProfessionalID]
      join prodorgunit.dbo.HpHealthPractitioner as HP on hp.CommonPersonNumber = CPN.[CommonPersonNumber]
      join prodpatient.dbo.Related patR on patR.lHPId = hp.lHealthPractitionerId
      join prodpatient.dbo.alias as pat on patR.lPatientId = pat.lPatientId
      --we have duplicates in prod.orgunit
```

sults | Messages

ProfessionalId	CommonPersonNumber	Prefix	GivenName	SecondAndFurtherGivenNamesOrInitialsThereOf	lpatientid
204800475272	15AAAR	DR	William	****	175319
204800475272	15AAAR	DR	William	****	392756
204800475272	15AAAR	DR	William	****	874308
204800475272	15AAAR	DR	William	****	880242
204800475272	15AAAR	DR	William	****	904220

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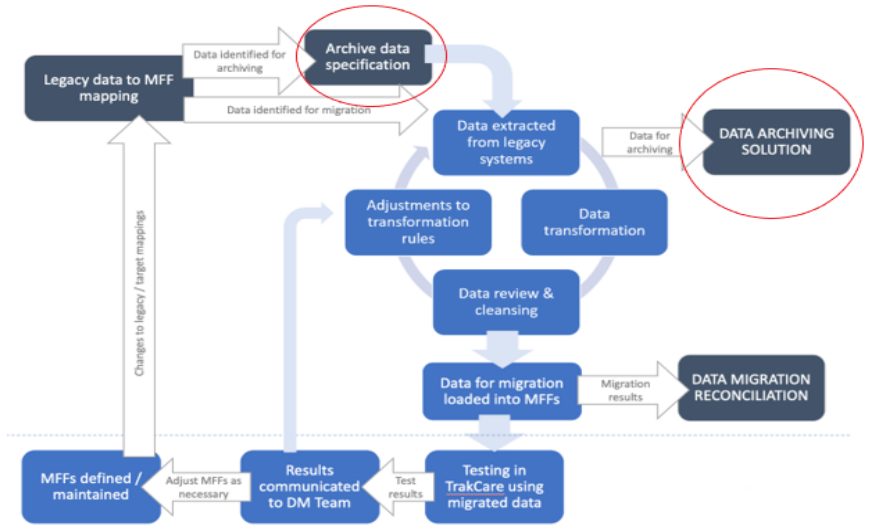
7.1 Data Archiving Strategy
7.2 Archiving Design & Implementation
7.3 Data Load & Verification



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4.0 Data Reconciliation

5.0 Migration Reporting

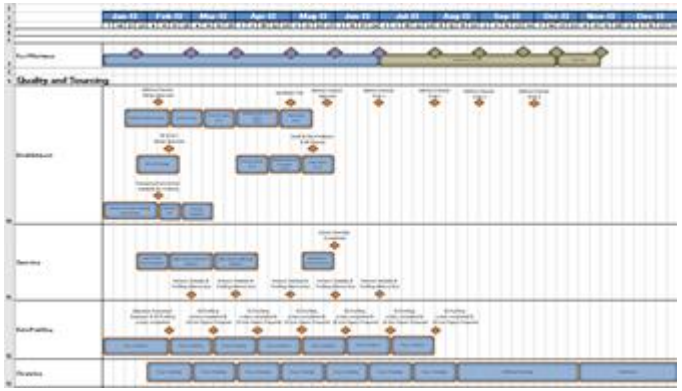
6.0 Testing & Validation

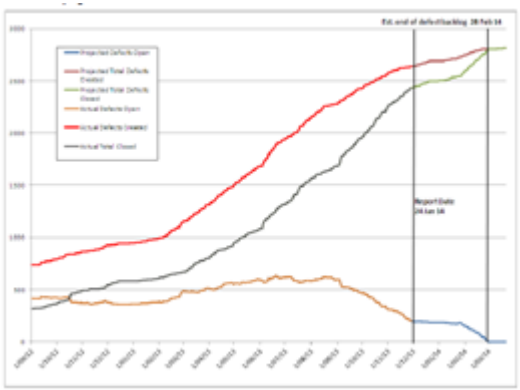
7.0 Data Archiving

8.0 Management & Communication

9.0 Data & Analytics

8.1 Migration Strategy & Planning
8.2 Financial Management
8.3 Resourcing
8.4 Migration Estimation
8.5 Cutover Planning





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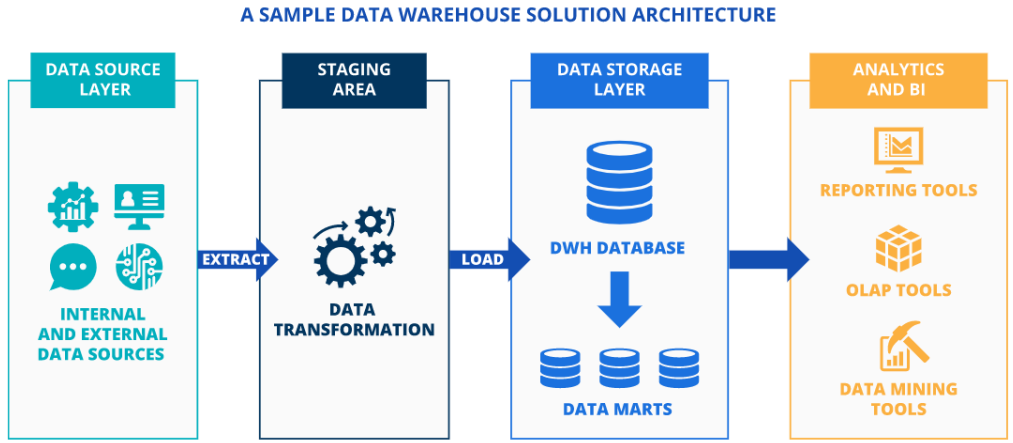
9.1 Data Platforms
9.2 Business Intelligence & Analytics
9.3 Finance & Operational Intelligence (outside BI teams)
9.4 Data Sharing (internal, external)



A comprehensive data migration activity model

Regardless of the size of your transformation programme, you will formally or informally carry out most of these activities. The key is repeatability.

1.0 Sourcing & Infrastructure	2.0 Mapping & Load	3.0 Data Profiling & Quality Management	4.0 Reconciliation	5.0 Migration Reporting	6.0 Testing & Validation	7.0 Data Archiving	8.0 Management & Communication	9.0 Data & Analytics
1.1 Source System Analysis	2.1 Analysis & Data Mapping	3.1 Data Profiling (auto)	4.1 Technical Reconciliation	5.1 Transformation Exception Reporting	6.1 Unit Testing	7.1 Data Archiving Strategy	8.3 Migration Strategy & Planning	9.1 Data Platforms
1.2 Source Extracts Programs	2.2 ETL Build	3.2 Data Profiling (manual)	4.2 Financial Reconciliation	5.2 Load Exception Reporting	6.2 Functional Testing	7.2 Archiving Design & Implementation	8.2 Financial Management	9.2 Business Intelligence & Analytics
1.3 Manual Source Data Management	2.3 Data Load	3.3 Data Governance	4.3 External Reconciliation	5.4 Business KPI Reporting	6.3 Performance Testing	7.3 Data Load & Verification	8.3 Resourcing	9.3 Finance & Operational Intelligence
1.4 Infrastructure Setup	2.4 Exception Management	3.4 Automated Cleansing	4.4 Screen by Screen Comparison (scenario based)	5.5 Cutover Reporting	6.4 Load Verification Testing		8.4 Migration Estimation	9.4 Data Sharing
1.5 Migration Environment Management	2.5 Performance & Optimisation	3.5 Manual Data Cleansing		5.6 Data Cleansing Reporting			8.5 Cutover Planning	
	2.6 Post Migration Load / Fix			5.7 Program Progress & Forecast Reporting				

Conclusion & Recommendations

People

- Find people with data migration experience
- Ensure appropriate business teams are engaged
- Always have good technical data capabilities in a migration team

Migration Technology

- Implement repeatable migration processes using appropriate technology
- Build repeatable migration solutions you can augment and rerun easily to reflect new knowledge
- Use technology to connect and automate teams

Data

- Use real data for all your migration and load where possible
- Use real data to drive testing & UAT
- Build data selection processes to allow focus switches to support functional teams

Strategy & Governance

- Define a clear strategy which matches your need
- Educate and onboard your stakeholders
- Establish governance to articulate and resolve data issues

Test & Rehearse

- Load and test as much as possible
- Practice data loading into target systems as often as possible
- Connect end to end activities through multiple dress rehearsals before migrating

THANK YOU