Becoming One NTT - Enterprise Architecture as Strategy

Mark van Bavel

EVP Digital Platform Architecture

Note: A number of slides have been removed or blurred due to confidentiality. This deck is a high level summary only of the original presentation.

NTT Group at a glance

300,000+
Employees worldwide

AA-
in **S&P**

120+
Years heritage

$111 billion
in total revenue

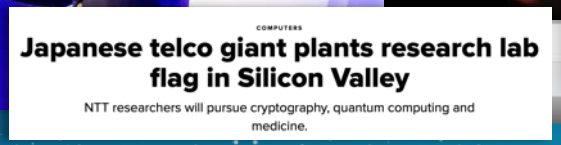
Top 100 Global Innovator
in Clarivate Analytics

Global presence in
88
countries and regions

$3.6B*
R&D Investment

We launched NTT Ltd

on July 1 2019



Largest integration in the ICT sector in 2019

To capitalize on the changes in the market, we're bringing together capabilities from over 30 leading companies to create a leading technology services provider

Enabling us to better serve our **clients and to differentiate ourselves in the changing technology market**

Our combined company has a **unique breadth of integrated service platform capabilities**

NTT

NTT DATA

Business Process Management for Digital Transformation

Application development

NTT

Managed Services Platform for Hybrid IT

Client Portal
(Infrastructure and Applications)

Managed Services Platform for Hybrid IT
(programmable & non-programmable infrastructure & applications)

Security

Cyber Security

ICT infrastructure

Connectivity, Data Center and Cloud infrastructure

AWS

Azure

Google

Other

As a leading global ICT Provider

Leading SI
Global Systems Integrator and
Elite 150 Managed Service Provider
(CRN 2018)

Leading MSP
Secure 24 –Top 3
“Pace-setter” MSP
(TSIA)

Top 3 MSSP
NTT Security – Managed
Security Service Provider
(MSSP Alert 2019)

Network Coverage in
190+
countries and regions

Cloud Services in
15 countries

Top 5
IP Backbone
(#1 in Asia)

#1
Data Center
outside the US

Structure Overview of Consolidation

NTT

Global Service CoE "Wholesale" / Factory

Transformation & Platform Services (TPS)

Managed Services

NTT Communications Managed Services
capside
Secure-24
SYMMETRY
dimension data

ICT Infrastructure Services (ICTI)

Global Data Centers

e-shelter
RagingWire DATA CENTERS
NTT Communications
netmagic
DPA
gyron
PT.NTT Indonesia Nexcenter
NTT Communications

Cloud Infrastructure

NTT Communications
NTT CIS

Cloud Communications

arkadin CLOUD COMMUNICATIONS
Applicable
dimension data

Global Networks

NTT GLOBAL Networks
NTT Communications
Global IP Network AS 2914
NTT INNOVATION INSTITUTE, INC.
transatel
PACIFIC CROSSING

Security (NTTS)

Security

NTT Security
WhiteHat SECURITY
dimension data

Global Business

Communications Lifecycle Management

CLM

Regional Sales Unit

Region AMs

dimension data
NTT Communications
MILLENNIUM 1 SOLUTIONS

Region AU

dimension data
NTT Communications
SQL SERVICES
VIEW

Digital Business

oakton

Region AP

dimension data
NTT Communications
EMERIO
DTSI GROUP

Region EU | Region UKI

dimension data
NTT Communications
e2v

Region MEA

dimension data
Nihilent
Britehouse
A DIVISION OF DIMENSION DATA
merchants
IS.

Blueprint Strategy Overview

Process Summary

Technology Strategy study across 34 businesses and 65 IT architectures

November

Stakeholder

Source Documents

Deliverable

Discovery

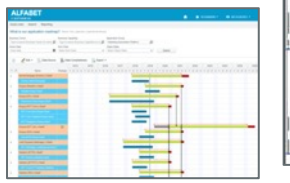
- Key Regional Stakeholders (~100)
- Global IT Owners
- NTT / GlOpCo Steerco

~100 Interviews

Meeting Note

Power BI

IT Portfolio Tool



Current States Analysis

- Key Regional/OpCo Individual
- Review and Validation

Of Processes, Apps, Integrations

Process | Apps | Infra. | Architectures

>100 Documents Collated
>50 Documents Created by team

6x Accenture NTT Com Architectures

Options Analysis

- Consultants (IBM) (5-10 people)
- External Analysts IBM (e.g. Gartner)

- Review and Options Analysis Workshop(s)
  - ERP Long List
  - ERP Short List
  - Application WS
  - Functional Lead WS
  - GWAN/SIB/Infra WS
  - Digital WS

Options Analysis ERP / IT Strategy

Capability Comparisons License/Usage Maturity Analysis

IBM Outputs Vendor Research

IBM Deliverables
25 Documents
456 Pages
Benchmarked to 47 Companies

Current Status Report

21 companies compared

Stakeholder

Deliverable

Build Blueprint

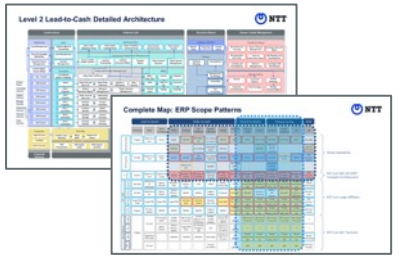
- Workshop with Core team and sponsors
- Review with Key Stakeholders
  - SteerCo
  - Other WS
  - OpCo IT

Operating Model

Architecture
- Core Diagram
- Functional Allocation
- Organization Rec.

Technology Blueprint V.0

Roadmap



Present and Review

- NTT Limited Exco

Summary Presentations

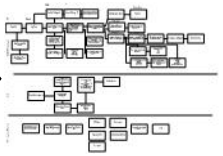
- Affiliate CIO / NTT Holdings Detailed Reviews

Detailed Deck
+ Output Documents
+ Database

Execute

- IMO Committee NTT Holdings
- Architecture Review Board Committee + Strategic Project Committee

Leader + Team Appointed



Execute Project-by-project

Discovery and End-state architecture are complete. We are building detailed Plans/VC

DISCOVERY

Discovery interviews (>100) have been completed with all in scope opco's and affiliates, 100+ documents collated

- ✓ **1st Phase:** DD, NTT Security (all regions), NTTE, NTTA, NTT Com Asia, NTT Singapore
- ✓ **2nd Phase:** Arkadin, Emerio, e-Shelter, Netmagic, NTT CIS, NTTC MS, Secure-24, NTT Global Networks
- ✓ **3rd Phase:** DTSI, Gyron, Viiew, Oakton and info captured for RagingWire, ICT Sol

Detailed ERP investigation and options review completed with three short list options defined

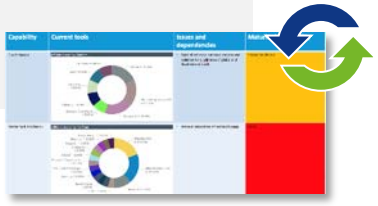
ANALYSIS

Consolidation and analysis of architecture discovery findings in progress

- Summarising current status, capability variance, key requirements and themes across all in scope opco's
- Review with IMO Functional WSs
- Options analysis to develop recommendations

ERP Strategy complete with recommendations, over 25 documents.

Technology Strategy Complete with recommendations

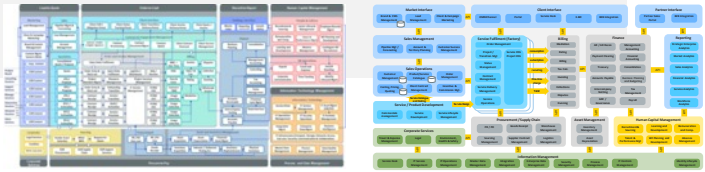


END STATE ARCHITECTURE

Definition of the 'To Be' IT Architecture and the Global OpCo IT Strategy Deck Complete with Roadmaps

- Operating model and deployment approach
- IT enterprise architecture strategy
- Target architecture
- Roadmaps and Value Capture
- Guiding Principles
- IT Portfolio Repository for 28 companies setup

Detailed Planning and Budgets in progress



Kick-off	ERP Options Review & short List	Architecture Analysis & Roadmap Workshop	Architecture and ERP Analysis and End State Definition	Final ERP Option Selection	End State Architecture Internal Review	NTT Ltd Exco Workshop	Global CIO Workshop	NTT Japan President and Board Exec Summary & Budget
4-6 Dec 2018	12-14 Feb 2019	4-7 Mar	March/April	16 Apr	End April	July 2/3rd	July 23-26th	October

Discovery — *Analysis* — *Review*

Architecture Analysis As-Is

Analysis

56 Companies, **1400+** Business Applications, **1000+** IT & Infrastructure Apps Captured and assessed

Applications mapped to **Business Framework per OpCo** based on **Capabilities**

All Business Applications mapped to **Architecture Capabilities** (processes) – full Drill in / Down

Application Comparison per Capability **per OpCo**

Domain Analysis - Application Scope

Domain Analysis - Users by Capability

License Analysis and Usage – Per Domain and Capability across OpCo's → Application adoption

Business Application Analytics (Usage, Web Pages, User Visits) → Change Impact

Infrastructure and Infrastructure Applications mapped per Domain/OpCo. Server and

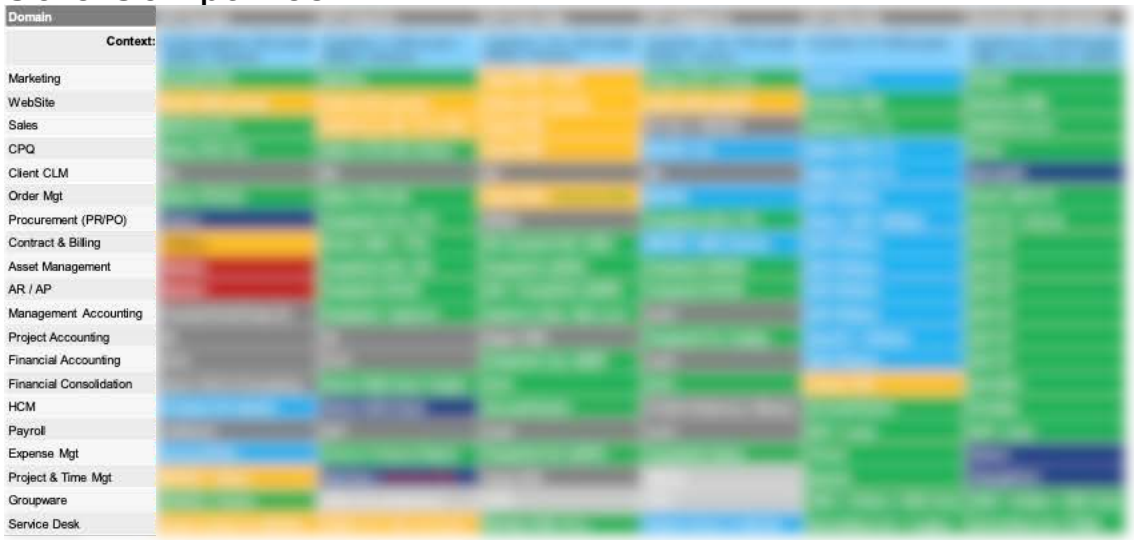
Infrastructure Analytics (Usage, IP Address Ranges)

Application Technology Recommendations per Domain

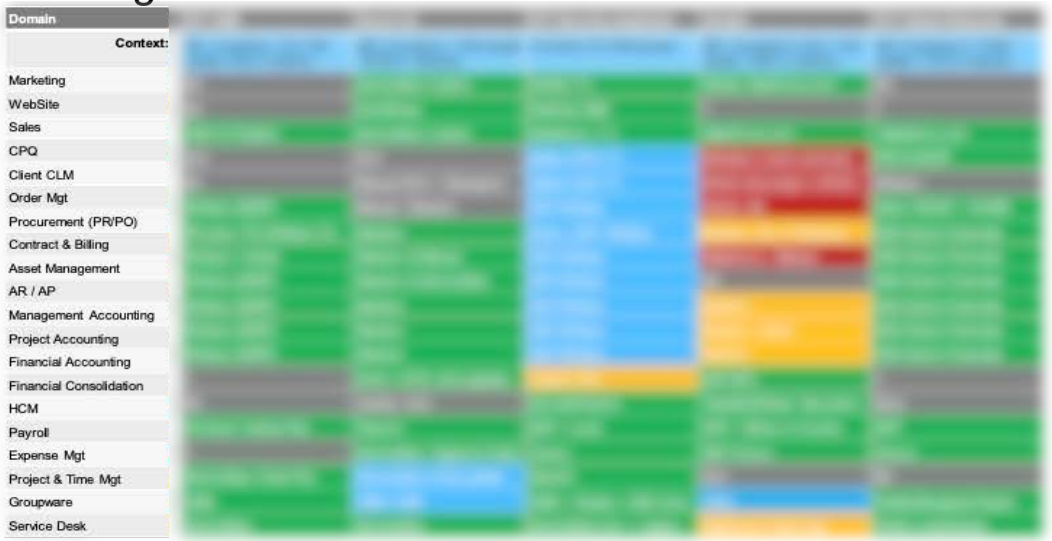
Infrastructure Technology Recommendations per Domain

Findings: Application Variance and Lifecyle Stage - Overview

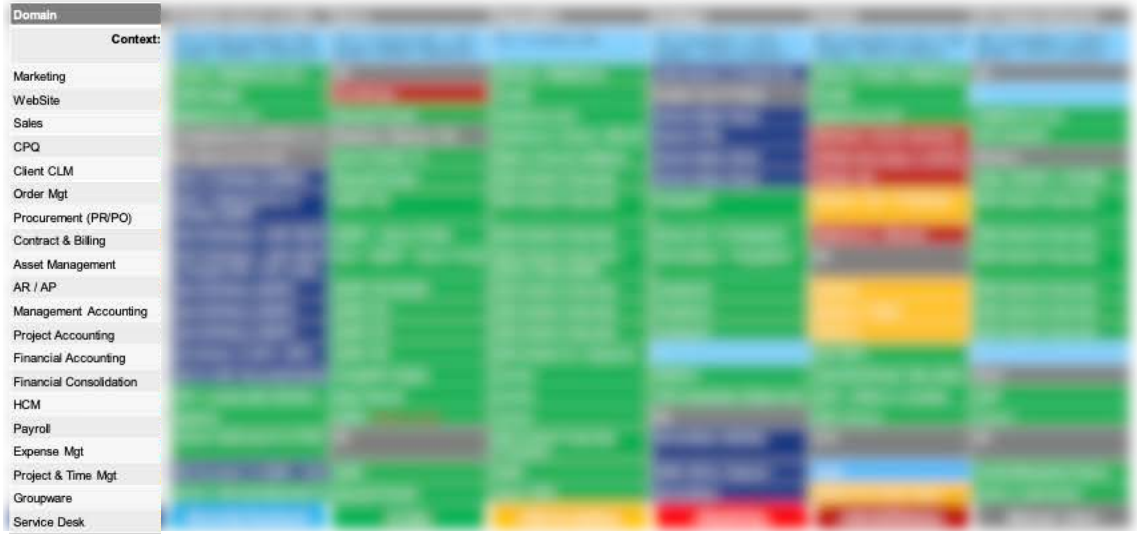
Core Companies



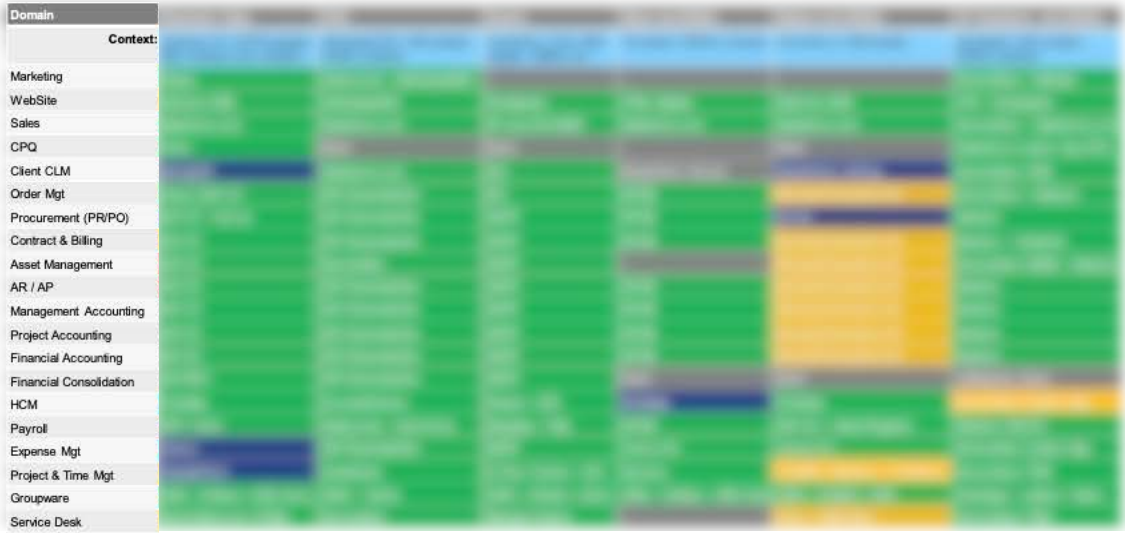
Managed Services Affiliates



Infrastructure Services Affiliates



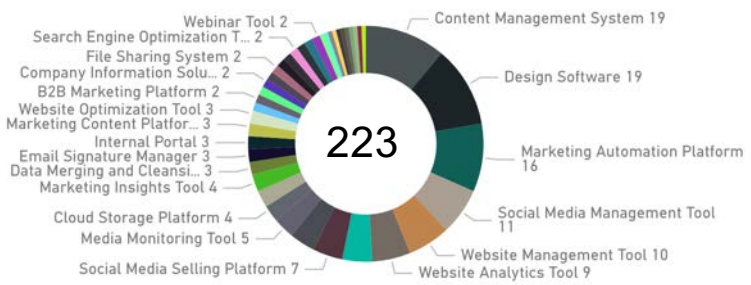
Smaller SI Affiliates



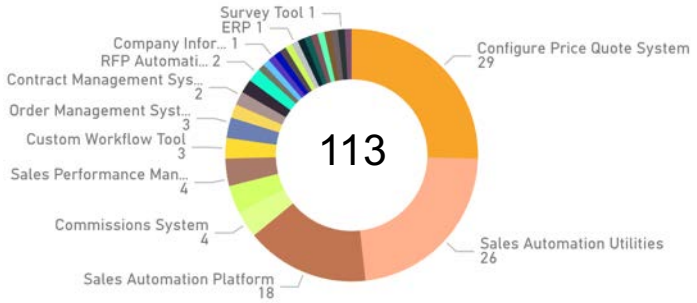
In deployment | Recently Deployed | In Use | Plan to replace | Replacing | EOL/EOS/Issue | Manual / other

Domain Analysis

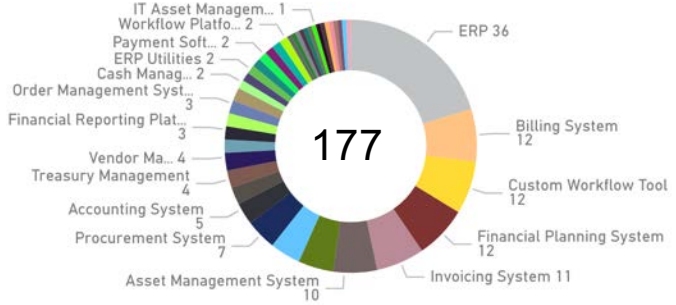
Marketing Management



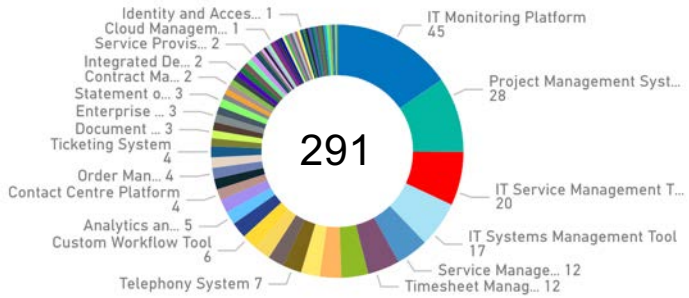
Sales Management



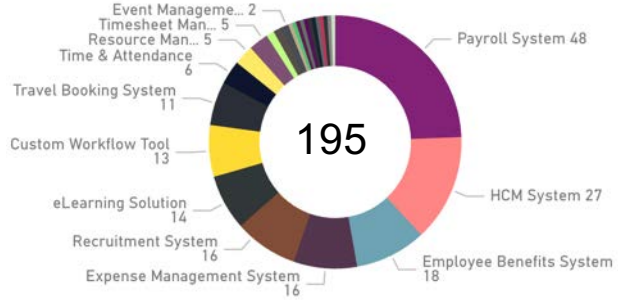
Finance & Procurement Management



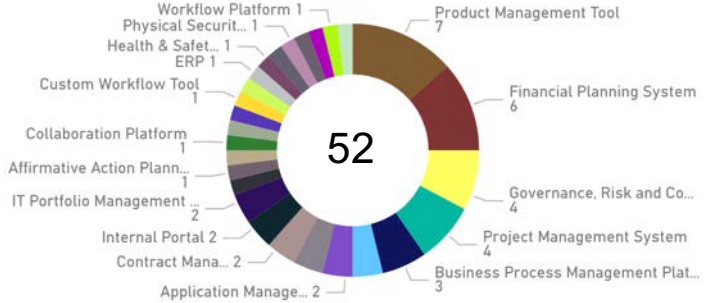
Service Fulfilment



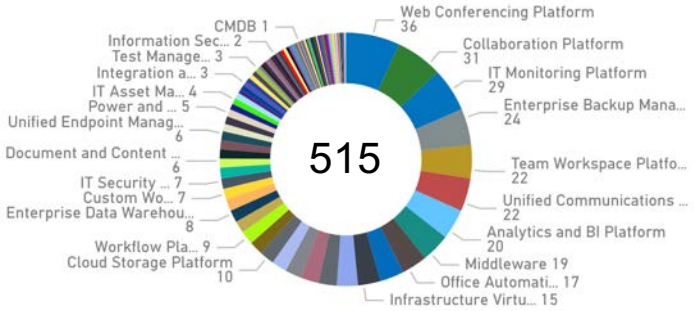
Human Capital Management



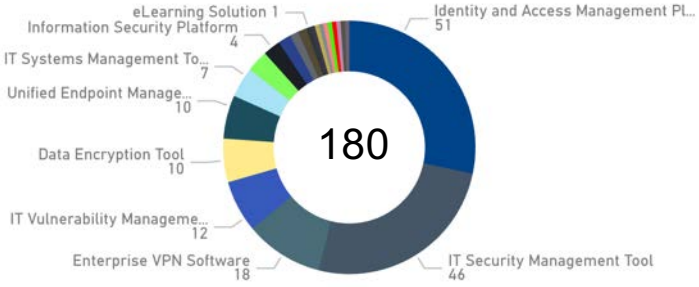
Corporate (Legal, Risk, Legislative)



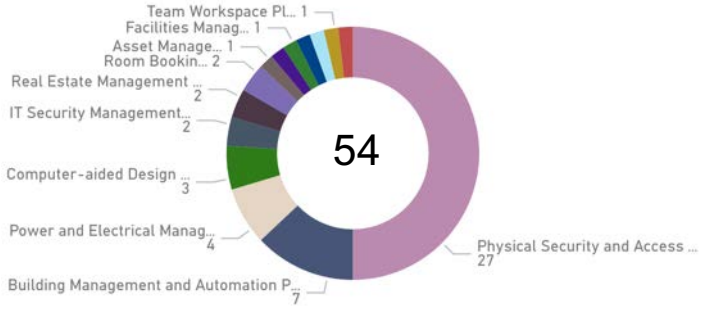
IT Management and Infrastructure



Security Management



Facilities Management



Quote-to-Cash Patterns

ERP used more extensively in the Systems Integration business

Global Subsidiaries

Global Data Centre

NTT Com Larger Affiliates

More of a Telco Driven approach Where ERP is Financial focused and OSS/BSS systems core

NTT Com Global Standard Services

Capability Analysis scope of ERP

Notes:

This chart reflects what functions are executed in the ERP. It does not mean the function is not done (may be manual, XLS or on a point solution).

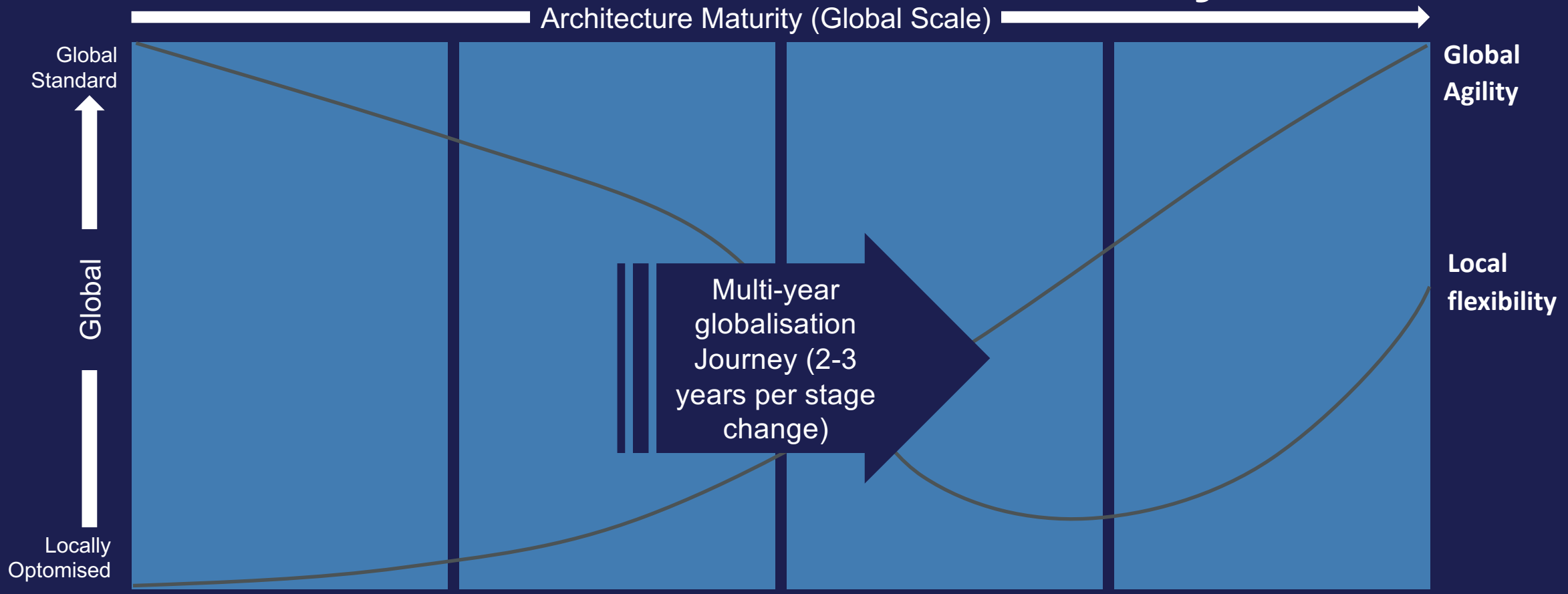
This provides a capability view of how extensively the ERP is used as a core platform in that organisation

While Dimension Data ERP is most global, mature and integrated (105 companies, 44 countries), it is designed for a re-seller model and based on older process design.

Decision is to implement a new template on SAP S/4 Hana (Greenfield Model Company)

Strategy Summary

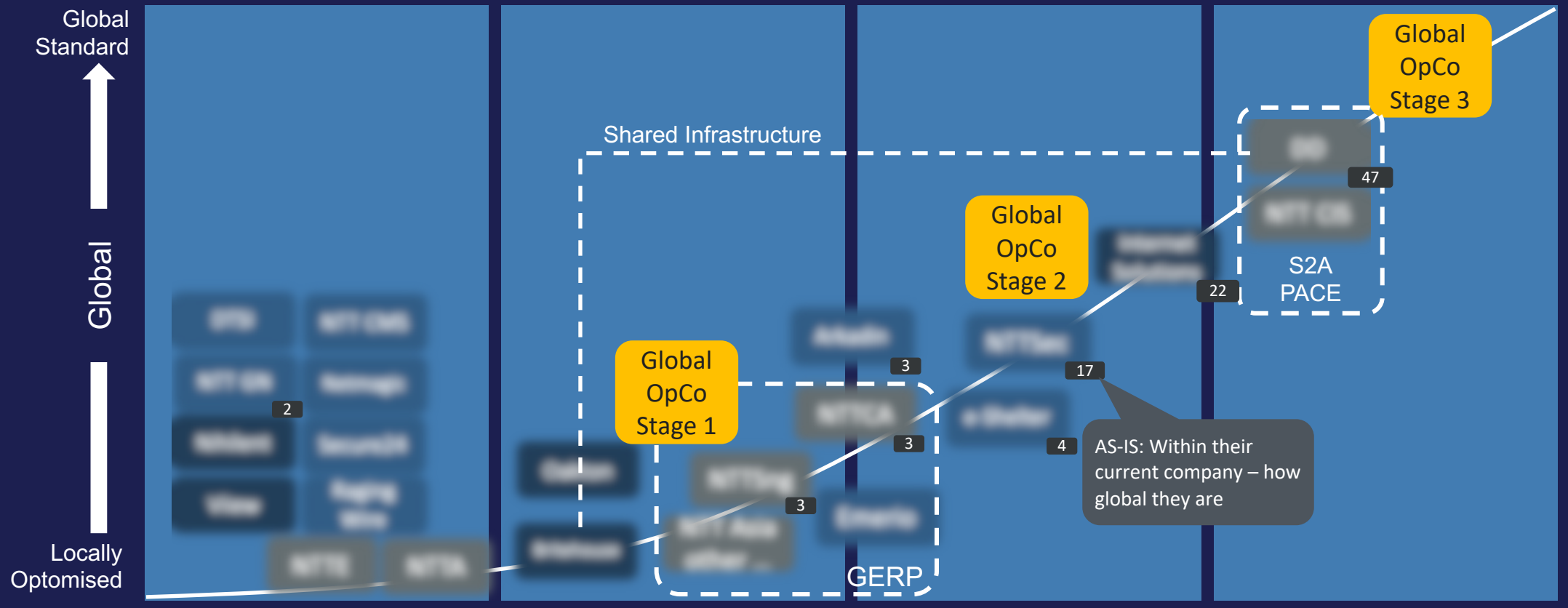
Global Architectural Journey



	Local Business Silos	Standardised Technology	Optimised Core	Digital Business
Focus	Locally Optimal Business Solutions	Enterprise-wide Technology Standards	Standard Enterprise Processes / Data (Global Template)	Data Driven, Open APIs, Architecture, Inner-sourcing
Motivation	Functional Optomisation	IT Efficiency	Operational Efficiency, Business Transparency	Strategic Choice, Innovation, Agility (Smart Edge/ Smart Centre)
Benefit	Shared Services for Basic Infrastructure	↓ Costs (-10%) ↓ Risk	↓ Costs (-15%) ↑ Responsiveness	↑ Agility (local and global) ↑ Reuse of IP (Innersourcing)

Architecture State – Pre-NTT Limited

Architecture Maturity (Global Scale)



GTM Affiliate

M&A "Factory" Affiliate

DD M&A Out of Scope

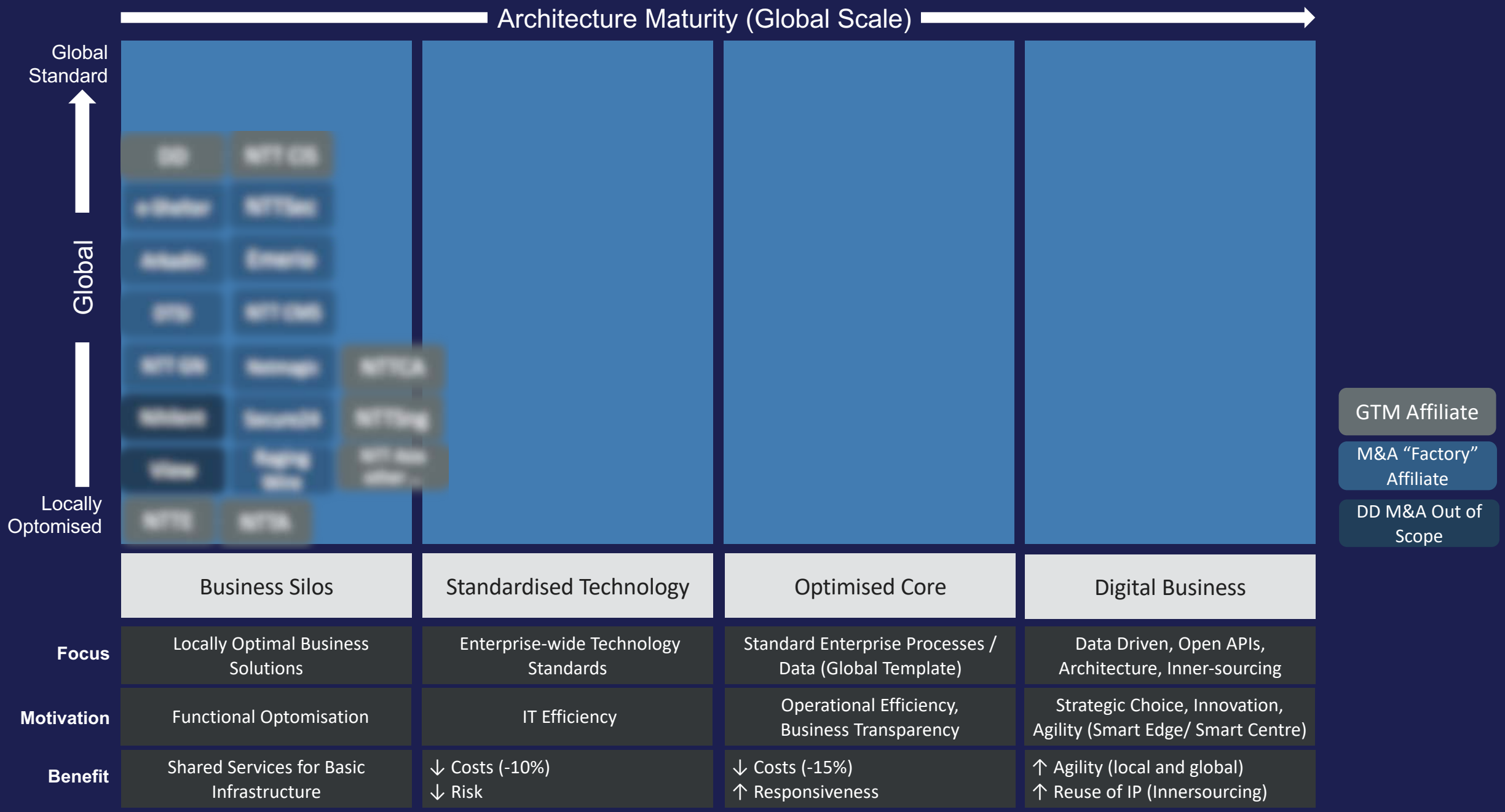
Countries

	Business Silos	Standardised Technology	Optimised Core	Digital Business
Focus	Locally Optimal Business Solutions	Enterprise-wide Technology Standards	Standard Enterprise Processes / Data (Global Template)	Data Driven, Open APIs, Architecture, Inner-sourcing
Motivation	Functional Optomisation	IT Efficiency	Operational Efficiency, Business Transparency	Strategic Choice, Innovation, Agility (Smart Edge/ Smart Centre)
Benefit	Shared Services for Basic Infrastructure	↓ Costs (-10%) ↓ Risk	↓ Costs (-15%) ↑ Responsiveness	↑ Agility (local and global) ↑ Reuse of IP (Innersourcing)

Model from the book: Enterprise Architecture as Strategy

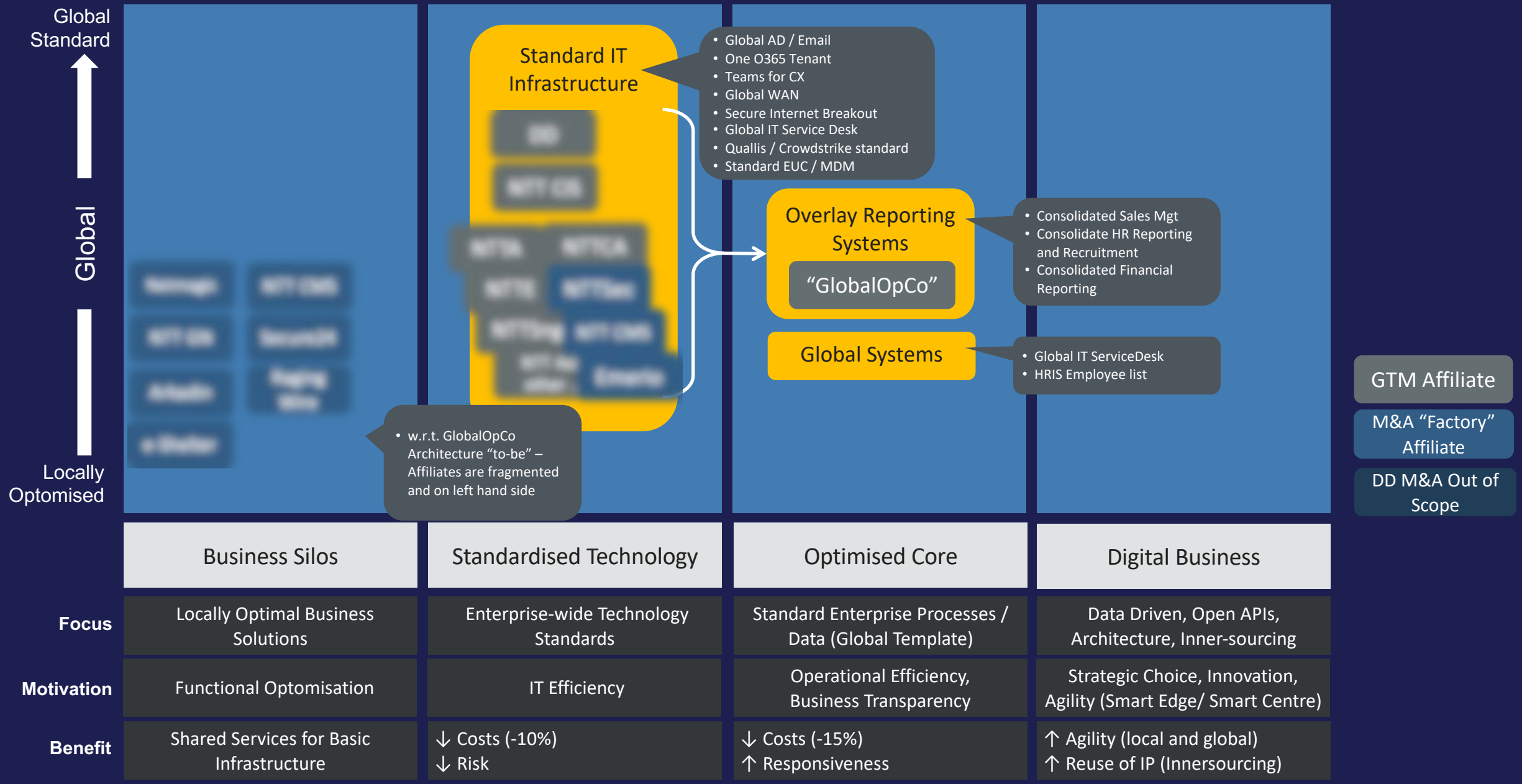
David Robertson, Jeanne W. Ross, and Peter Weill

Architecture – Day 0



Architecture - Stage 1 (Year 1)

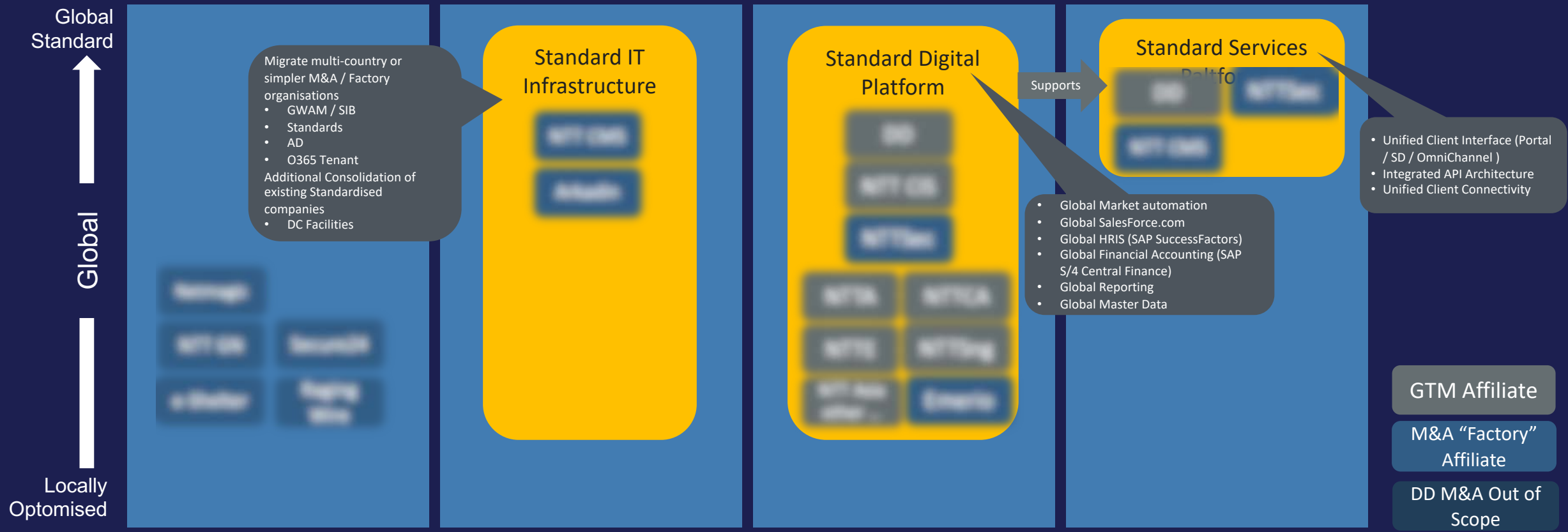
Architecture Maturity (Global Scale)



	Business Silos	Standardised Technology	Optimised Core	Digital Business
Focus	Locally Optimal Business Solutions	Enterprise-wide Technology Standards	Standard Enterprise Processes / Data (Global Template)	Data Driven, Open APIs, Architecture, Inner-sourcing
Motivation	Functional Optomisation	IT Efficiency	Operational Efficiency, Business Transparency	Strategic Choice, Innovation, Agility (Smart Edge/ Smart Centre)
Benefit	Shared Services for Basic Infrastructure	↓ Costs (-10%) ↓ Risk	↓ Costs (-15%) ↑ Responsiveness	↑ Agility (local and global) ↑ Reuse of IP (Innersourcing)

Architecture - Stage 2 (2 yrs)

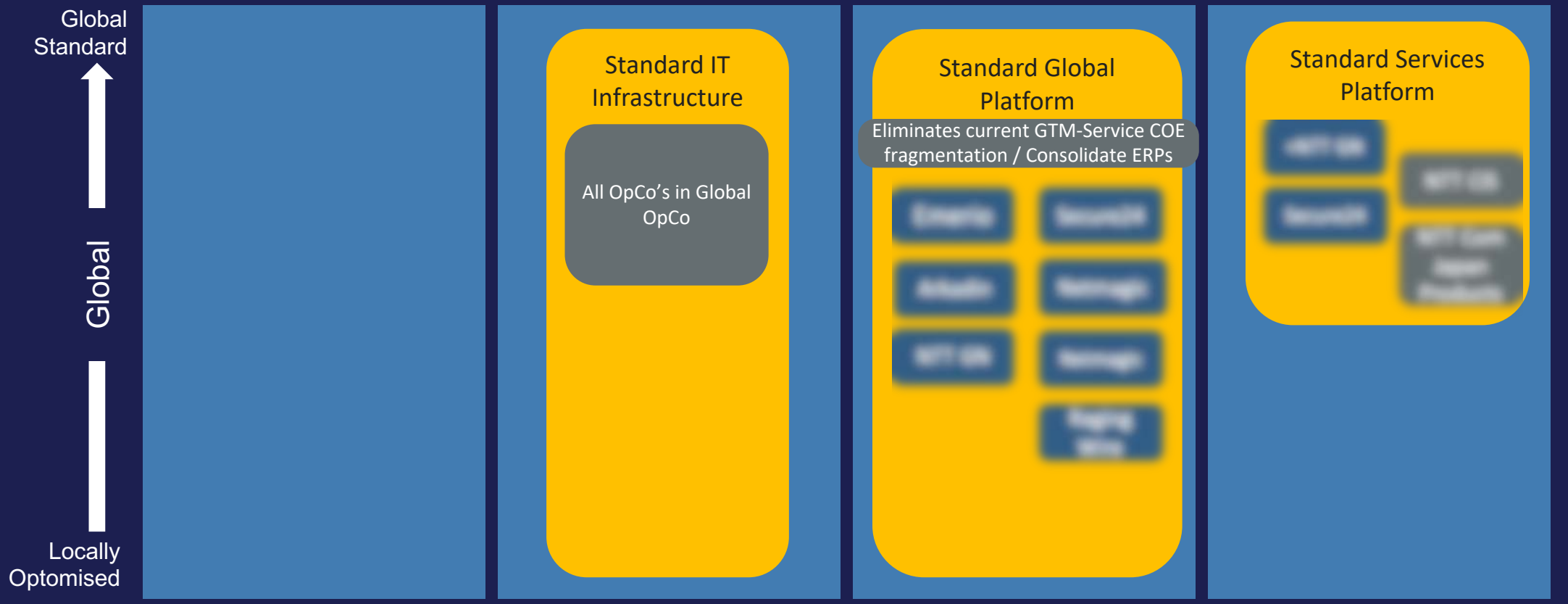
Architecture Maturity (Global Scale)



	Business Silos	Standardised Technology	Optimised Core	Digital Business
Focus	Locally Optimal Business Solutions	Enterprise-wide Technology Standards	Standard Enterprise Processes / Data (Global Template)	Data Driven, Open APIs, Architecture, Inner-sourcing
Motivation	Functional Optomisation	IT Efficiency	Operational Efficiency, Business Transparency	Strategic Choice, Innovation, Agility (Smart Edge/ Smart Centre)
Benefit	Shared Services for Basic Infrastructure	↓ Costs (-10%) ↓ Risk	↓ Costs (-15%) ↑ Responsiveness	↑ Agility (local and global) ↑ Reuse of IP (Innersourcing)

Architecture - Final State (Years 2→5+)

Architecture Maturity (Global Scale)

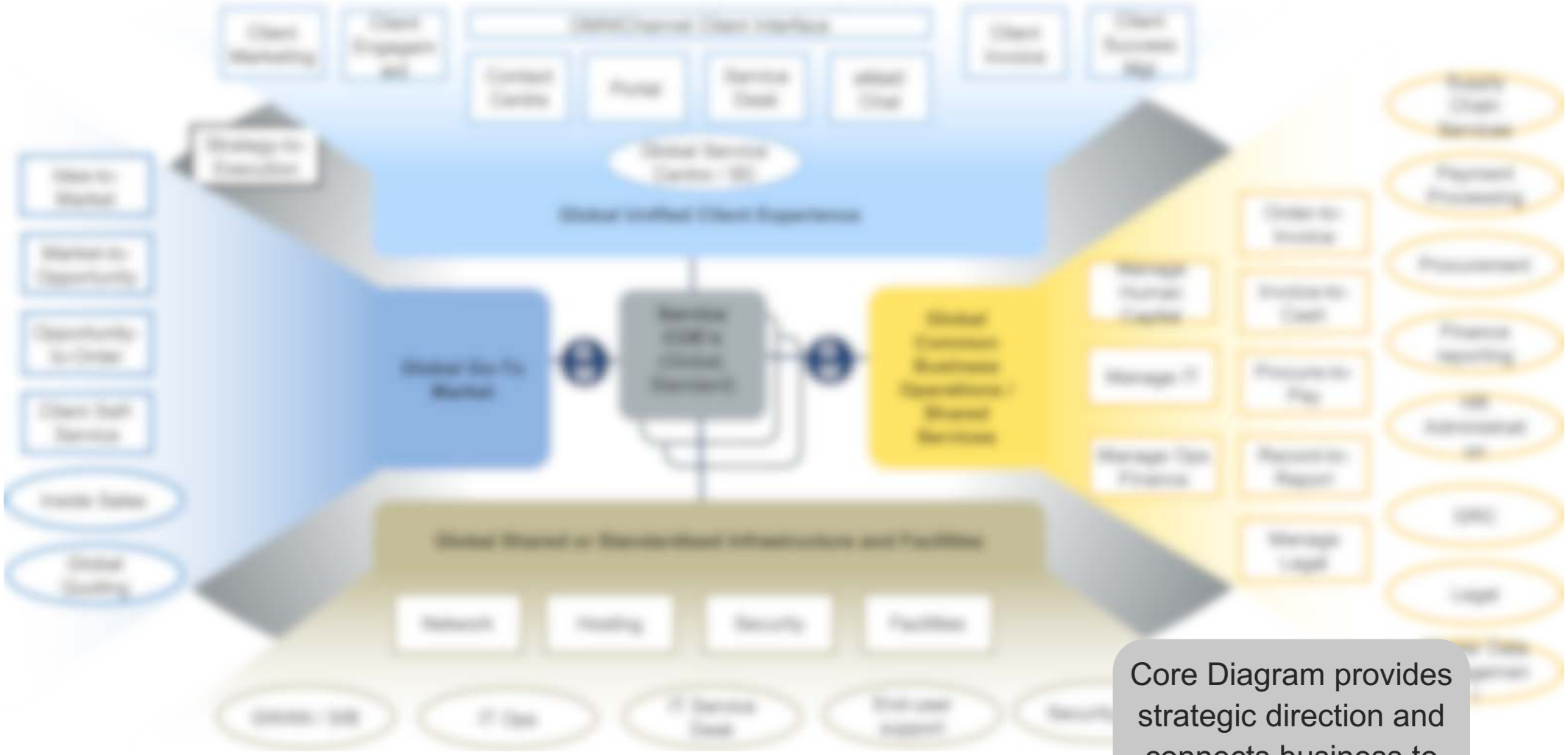


	Business Silos	Standardised Technology	Optimised Core	Digital Business
Focus	Locally Optimal Business Solutions	Enterprise-wide Technology Standards	Standard Enterprise Processes / Data (Global Template)	Data Driven, Open APIs, Architecture, Inner-sourcing
Motivation	Functional Optomisation	IT Efficiency	Operational Efficiency, Business Transparency	Strategic Choice, Innovation, Agility (Smart Edge/ Smart Centre)
Benefit	Shared Services for Basic Infrastructure	↓ Costs (-10%) ↓ Risk	↓ Costs (-15%) ↑ Responsiveness	↑ Agility (local and global) ↑ Reuse of IP (Innersourcing)

Architecture Blueprint

Target Operating Model – Shared Services Based

"Core Diagram"



Core Diagram provides strategic direction and connects business to IT strategy

Global Shared Service

Global Standard Core Capability

Architecture Guiding Principles

Platform based Architecture

We will establish a **secure, compliant, platform-based architecture**. Platforms will be established through modular components built on common environments (**suite based approach**) with master data and integration shared between platforms.

Fit-to-Standard

We will look to adopt the **out-of-the box configurations** as far as possible. Particularly for non-differentiating processes.

Modular

We will look for technologies that come in **modular, loosely coupled and API driven designs** over the closed and monolithic systems

Leverage Cloud

We will first look to **cloud technologies** hosted in our Cloud or approved Hyper-scalar clouds over on-prem solutions.

Secure by Design

We will select technologies and design **security, GDPR/PII** and other controls up front and not as a later bolt-on.

Innovate around the Core

We will ensure **stability at the core** while seeking **innovative solutions at the edge** in areas of significant change and innovation.

Design for Mobility and Usability

We will look to technology solutions that run on **mobile** and other devices as a **responsive design** and enable UI/UX alignment to align to **brand and usability**

Showcase

We will look to **showcase NTT Technologies and Services** where available, followed by strategic partner technologies. Our goal is to be a reference customer for our clients

Design Thinking

We will look to put the **user at the center of design**. We seek to continuously improve client and employee experience as a means to digitise processes, drive adoption and reduce cost.

How did we choose the to-be technology?

NTT will invest tens of billions of yen by 2023 to introduce "SAP S / 4HANA" throughout the group

Hiroko Kaneko = Nikkei xTECH / Nikkei Computer

日経 XTECH

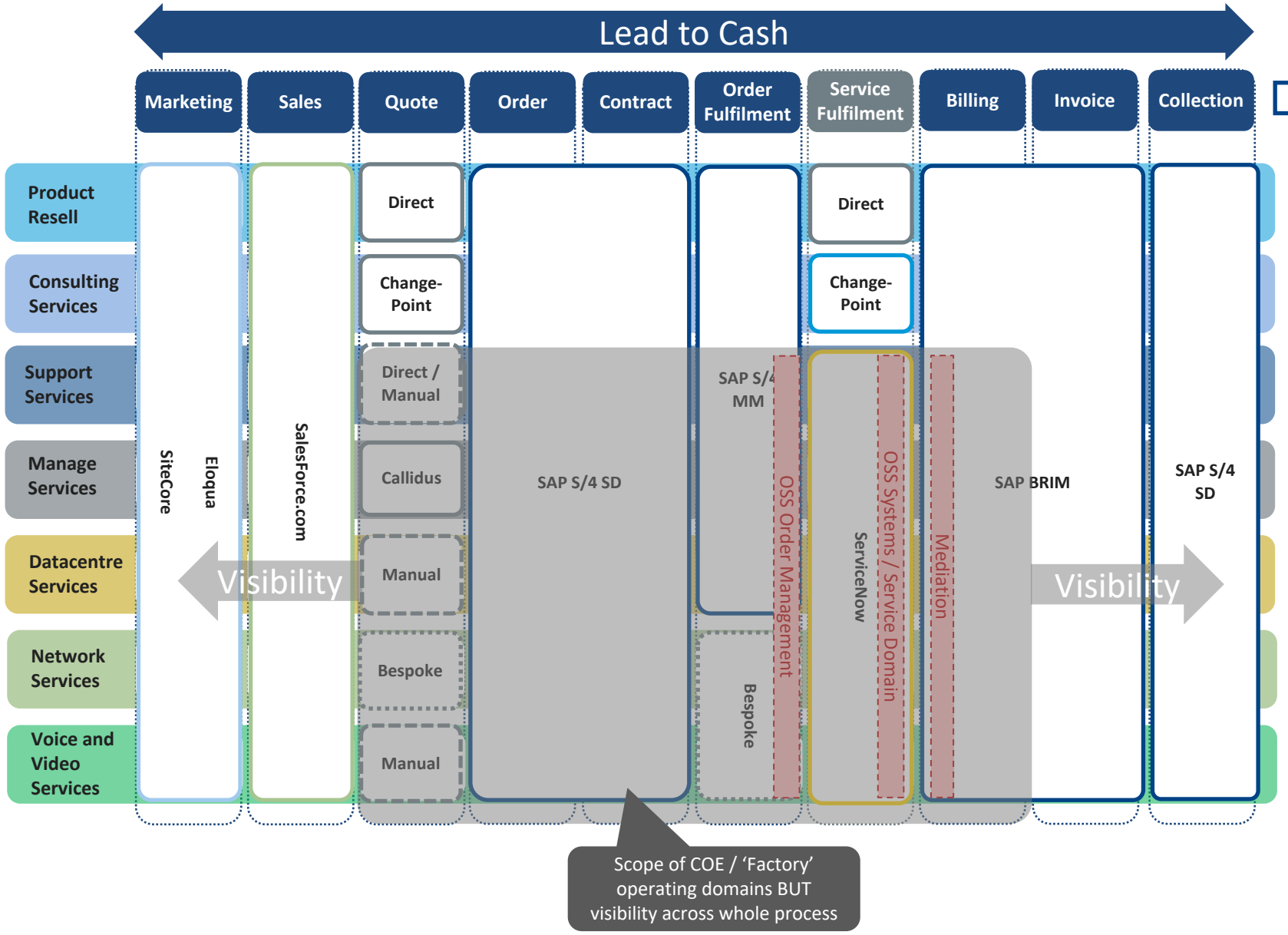
On November 5, 2019, NTT announced that it would integrate the ERP (Integrated Core Business Package) used by all group companies in Japan and overseas into the SAP "SAP S / 4HANA" in Europe. The overseas investment will be several tens of billion yen by the end of 2021, and the domestic investment will be up to 100 billion yen to complete the introduction by the end of 2023.

NTT President Jun Sawada announces ERP integration plan at the April-September 2019 financial results meeting

[Click to enlarge image]

1. Holdings **Directive** (overrides other criteria)
2. Alignment to GTM **technology partners** where applicable
3. Adherence to **architecture principles**
4. **Cost** (write-offs, migration, #users impacted, licensing model, integrations)
5. Relative **Scale/Span** capabilities used versus other options (#users or other criteria)
6. Level of customisation / **technical dept** → refresh
7. **Application lifecycle** (new, old, End-of-Life)

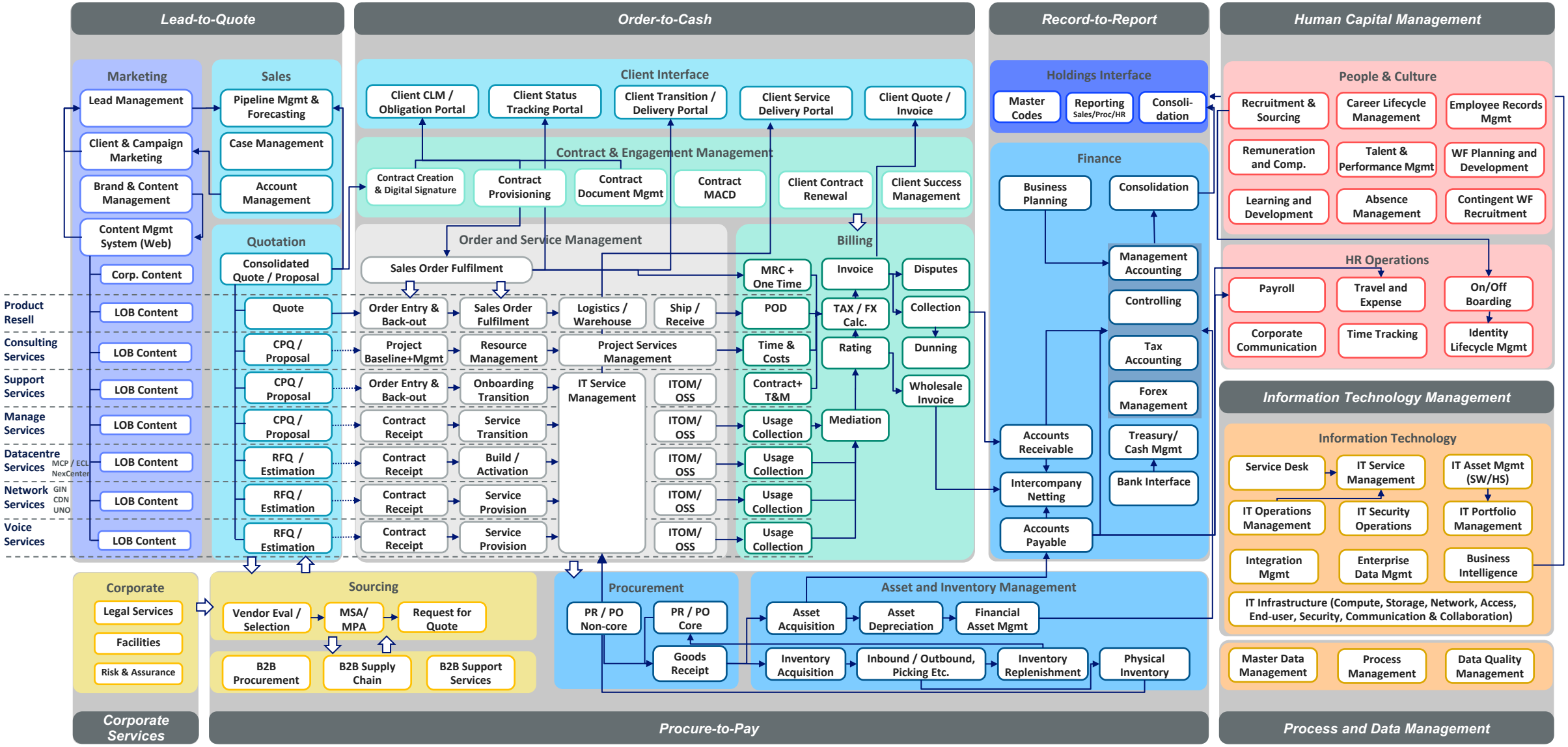
Lead-to-Cash 2C across Product Offerings



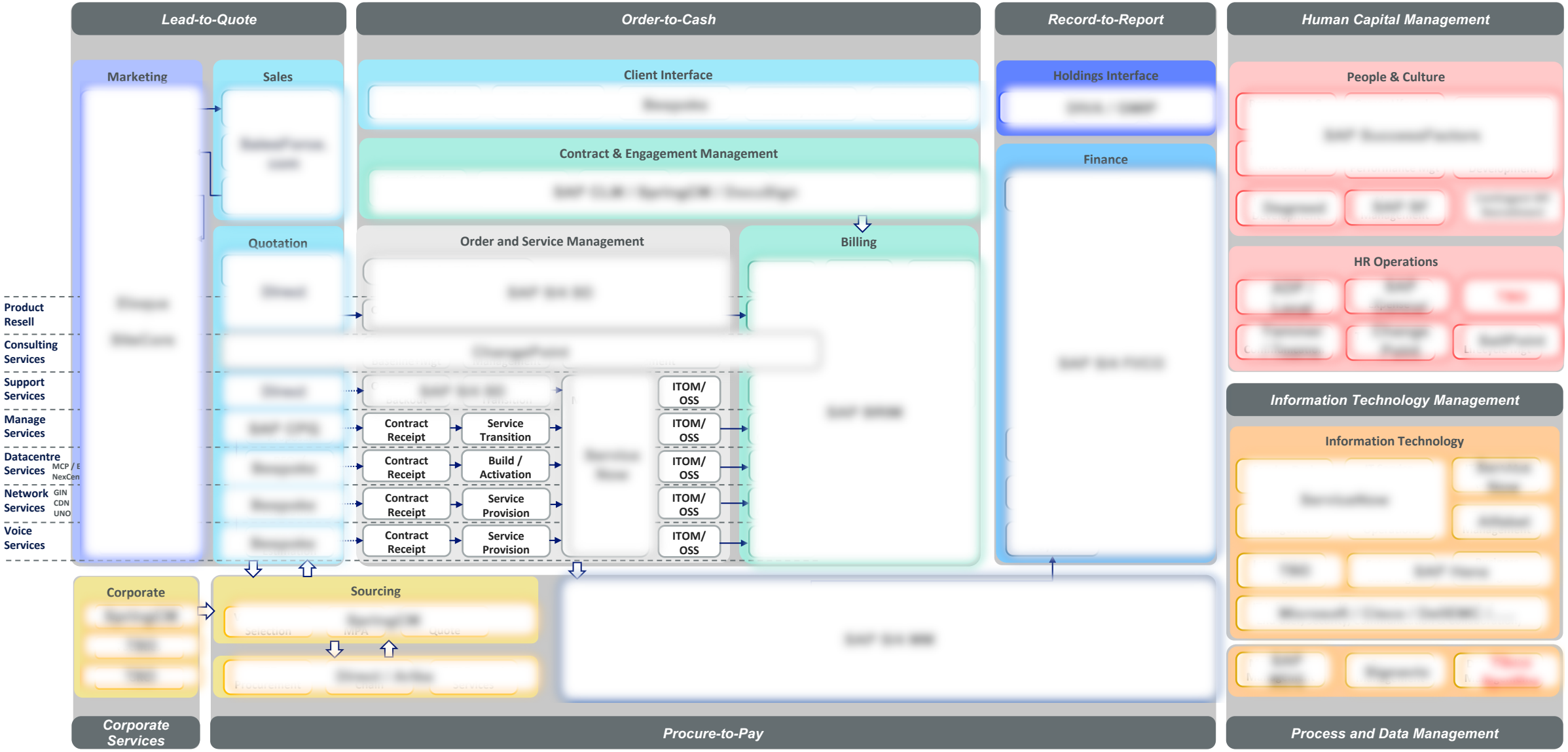
Lead-to-Cash Solution **Proposed** Selection:

- Unified GTM and Sales across all offerings requiring single sales management tools across all services
- Unified Client Interface (Service Desk, OMNIChannel, Portal)
- Fore Order-to-Cash on a single global ERP (SAP S/4 Hana) solution with a BSS capability (SAP BRIM)
- Domain specific tools and architectures for the core service domains
  - Quoting systems for complex solutions
  - Service Activation Orchestration systems
  - OSS Systems
- Global cross process (application), cross BU Enterprise Data Warehouse and BI reporting

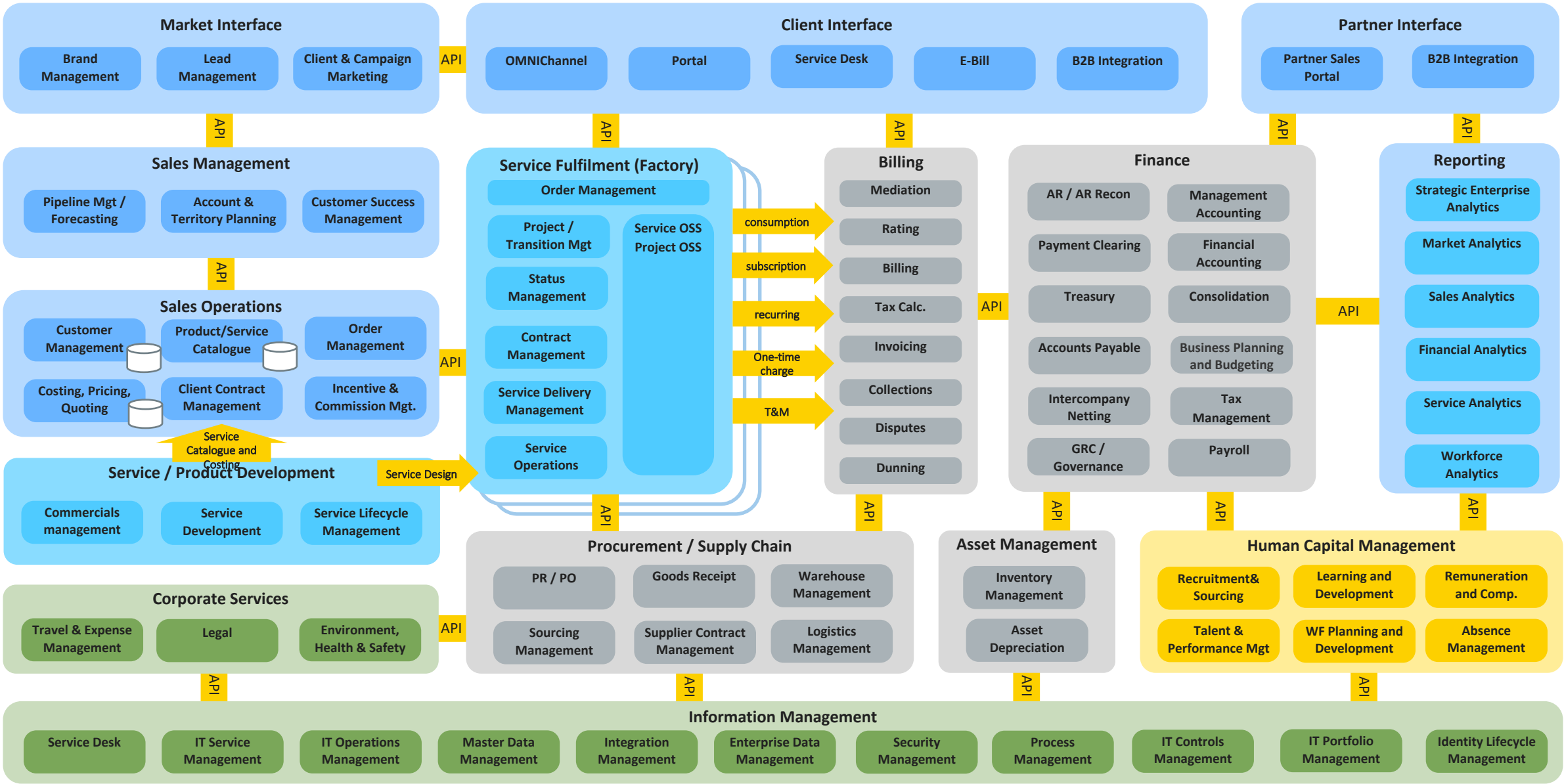
Level 2 Lead-to-Cash Process Model



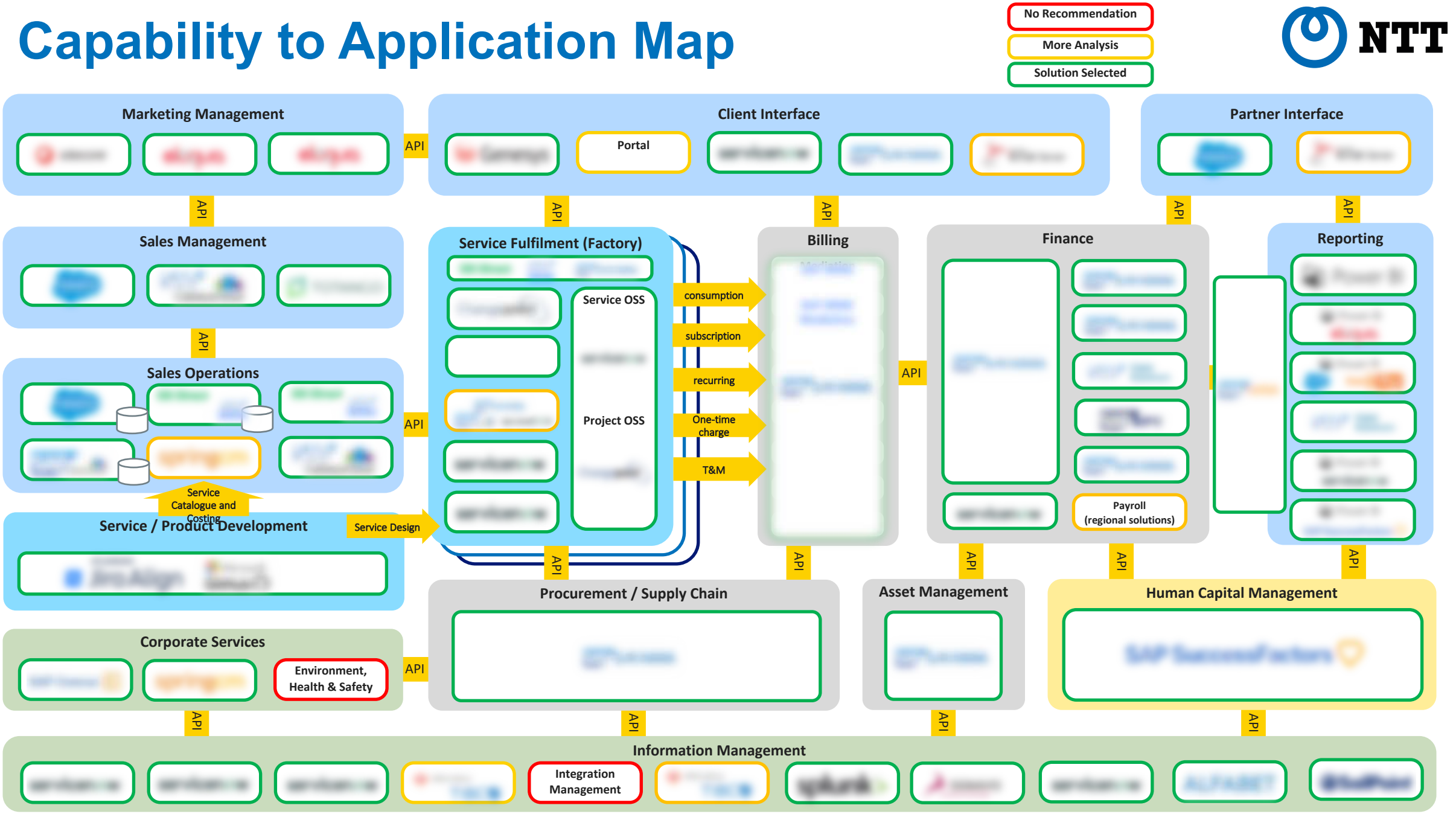
Process to Application Mapping



Capability Model



Capability to Application Map



Execution

Implementation

By Domain

Offence Strategy

Defense Strategy

Light Weight Business Case

SPECIAL PROJECTS BOARD

BAU – Continuous Improvement

Execution and Value Realisation

Delivery of strategic initiative SDP vs maintenance of BAU platforms such as S2A – ERP ECC6.0

- **Strategic Initiatives:** Implementation of the Technology Blueprint in alignment with the Offence and Defence initiatives

  → Group Companies first
- **BAU:** Continue to deploy S2A – ERP ECC6.0 **Q2C Architecture** as part of the integration phase for **Regional Sales entities.**
- **Value Realisation:** Drive effective **Change Management and migration to Global Shared Services**
- **Data focus:** Align master data and transactional data quality via Master Data Management.

I&T Exec Council	Global Roadshow / Review	NTT Inc Budget Approval	Launch Decks & Detailed Planning				
26-29 Nov 2019	Day 3 Jan 2020	Day 4 April 2020	Day 5 July 2020	Day 6 Oct 2020	Day 7 Jan 2021	Day 8 April 2021	Day 9 July 2021

Business Case — *Roadshow* — *Planning* — *Implementation*

Rationalization Planning

Based on "To-Be" Blueprint:

Review per Region/Country

- Americas
- Australia
- Asia-Pac
- Europe

Review per Service COE

- Managed Services
- Data Centre Services
- Cloud Communications
- Network Services

Review Group HQ (7 companies)

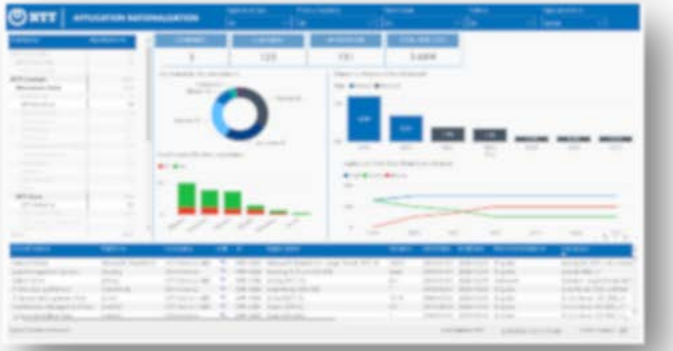
Map each application lifecycle, based on contract information, Blueprint, regional strategies.

Phase 1 – integration

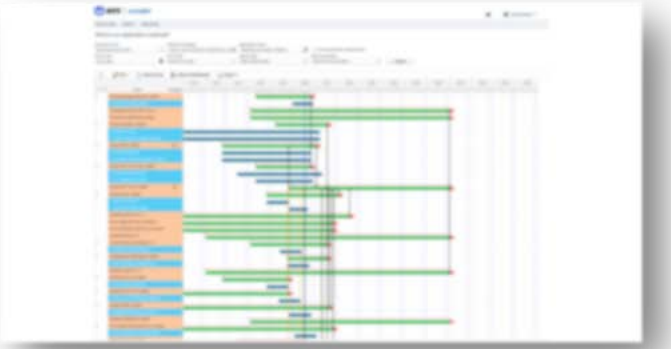
Phase 2 - consolidation

Contract Information informs timing

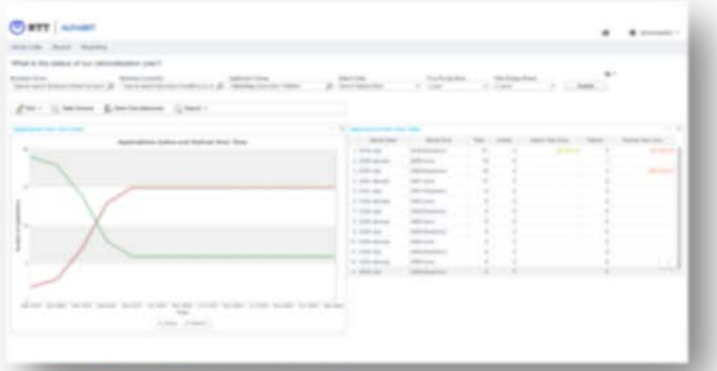
Application Migration reviewed with short and long term solutions



Application Rationalisation with cost summary



Application Rationalisation with roadmap



Application Rationalisation Plan

Marketing Domain - example

Scope and Objectives

Context:

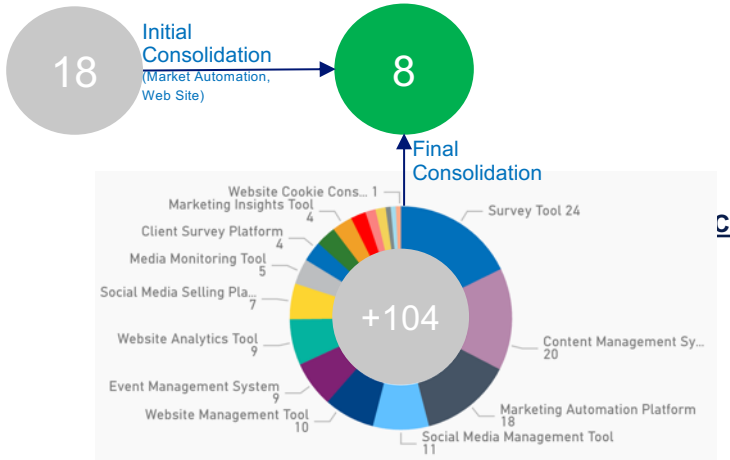
- Disparate Market Automation platforms across NTT Ltd
- Multiple Client Sentiment and Feedback systems
- Proliferation of Tier 2 / 3 application (>400)
- Old content and structure
- Multiple Web Sites

The Plan:

- Consolidate onto a single Global Marketing Automation Platform and Website to execute marketing strategy
- Integrate to a Single Customer Engagement Management Platform to get a 360 degree view of customer feedback and sentiment
- Implement a consistent marketing approach across the business

Rationalisation

Currently there are >400 Marketing Applications



Core Market Automation Platforms:

7 Eloqua
2 Marketo
5 Pardot
1 Lead Squared
2 ServiceNow
2 SugarCRM

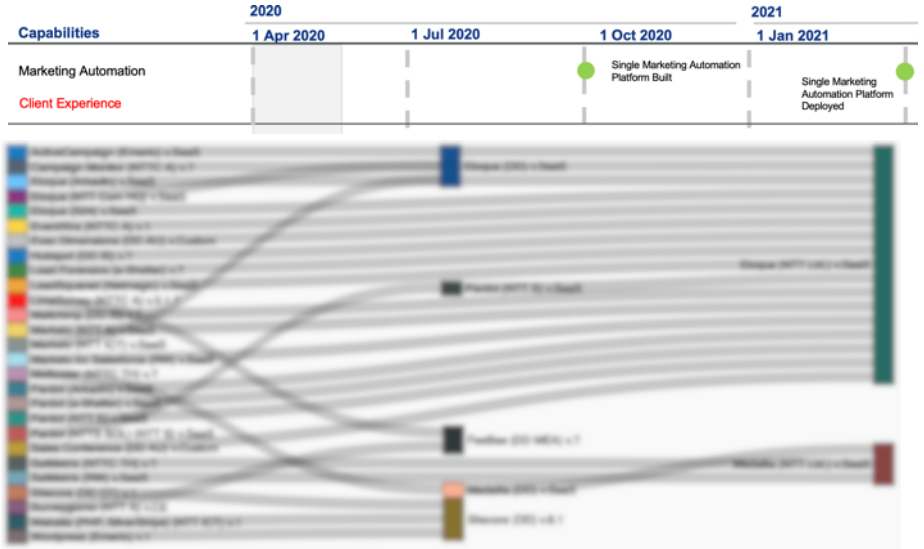
→ 1 NTT Limited Marketing Automation

Core Content Management Systems:

3 Adobe AEM
8 Wordpress
2 Drupal
1 SiteFinity
2 Sitecore
+5 Others

→ 1 CMS system

Roadmap

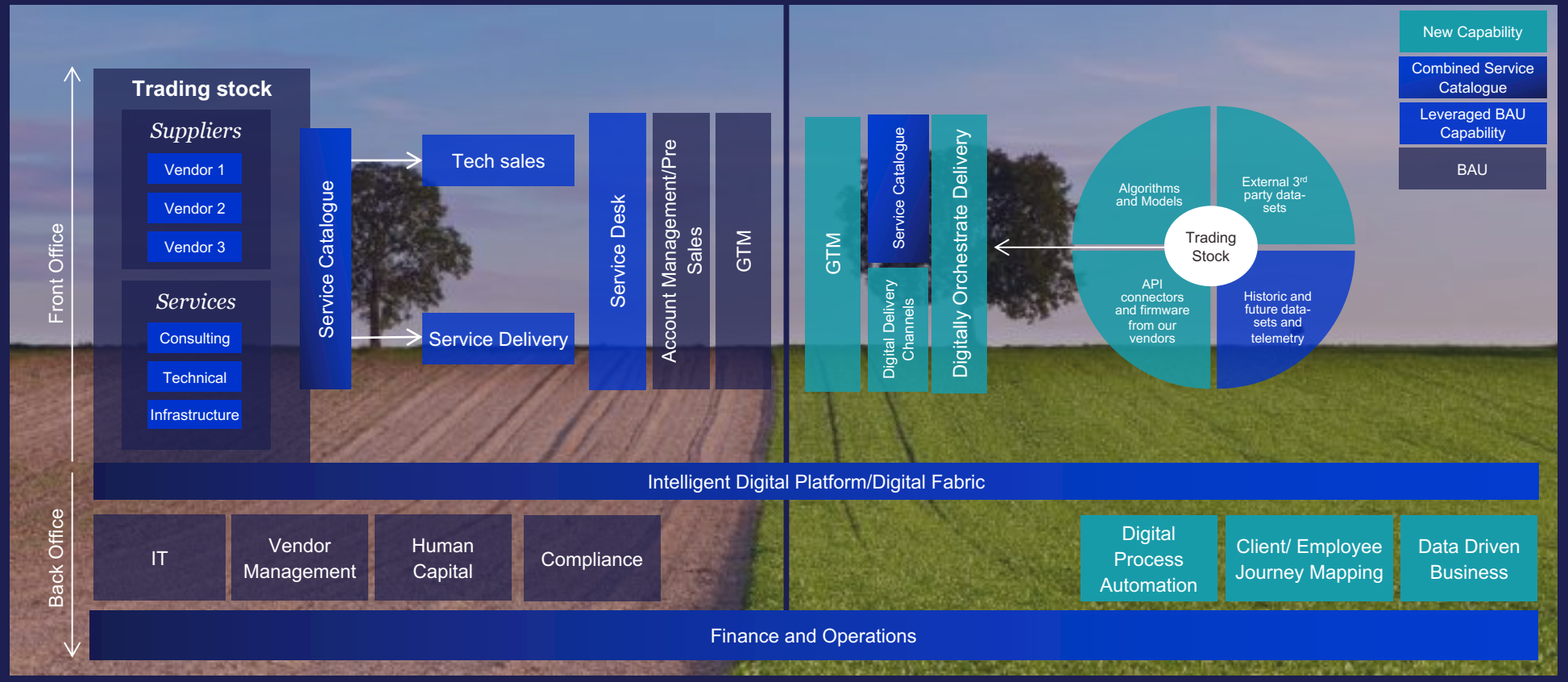


Core Technologies

Digital Transformation

Creating a Dual, Brownfield and Greenfield Operating Model

A functional view of the two modes of operation we must simultaneously adopt moving forward

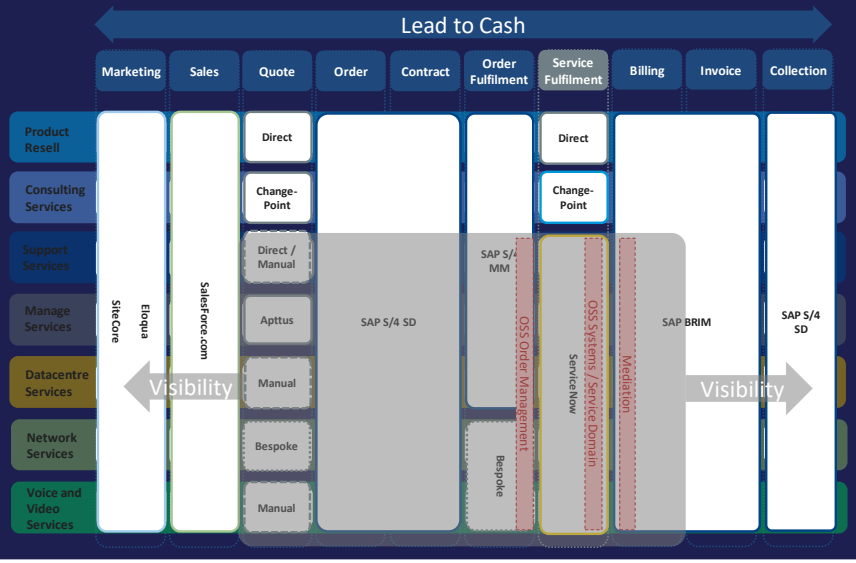


We use our expertise (people) as well as best of breed technologies to design, procure, install and configure IT assets on behalf of our customers.

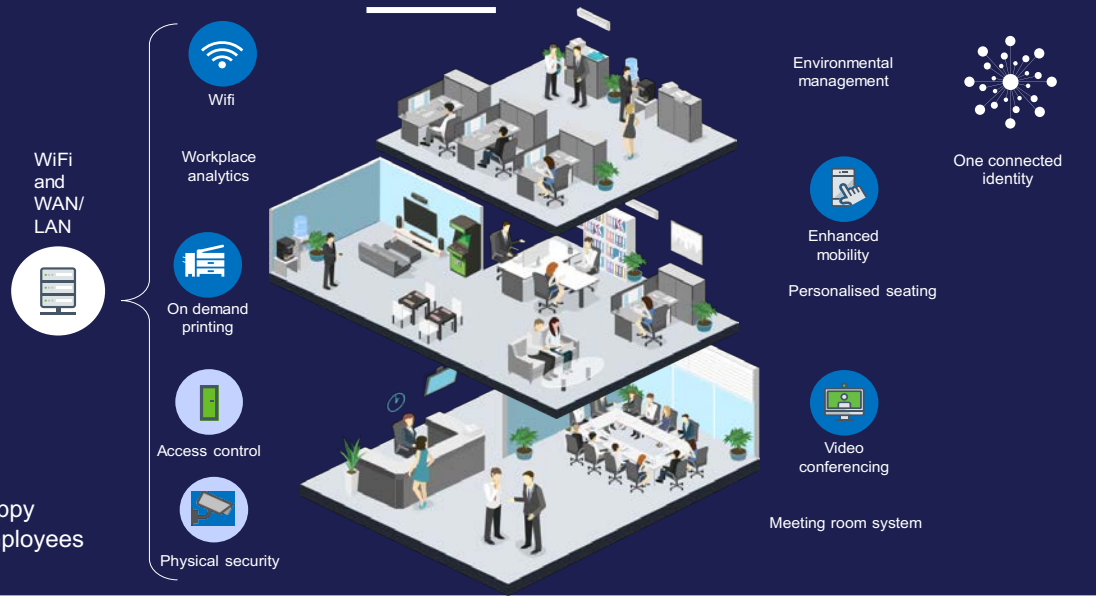
We use our historical data as well as an aggregation of live telemetry from our clients Digital Estate to optimize our clients asset utilization in a Digital World by reducing cost and risk as well as improving efficiencies across the board from their IT assets to their Human Capital all the way their consumer base.

Digital Building Blocks

Digital Core



Digital Workspace



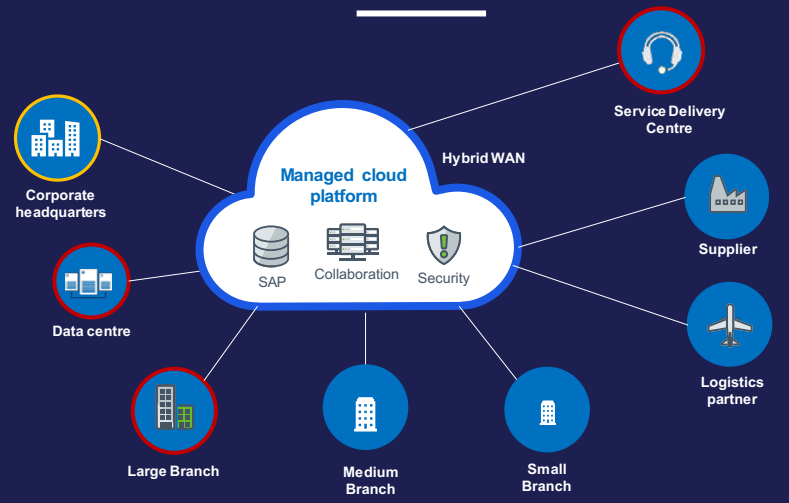
Happy Employees

Happy Clients

Digital Experience

Client Journey Mapping (Lifecycle)

Digital Infrastructure



Infrastructure-as-a-Service (from NTT):

- Compute
- Connectivity
- Communications

Standard Patterns:

- Small
- Medium
- Lager Datacentre

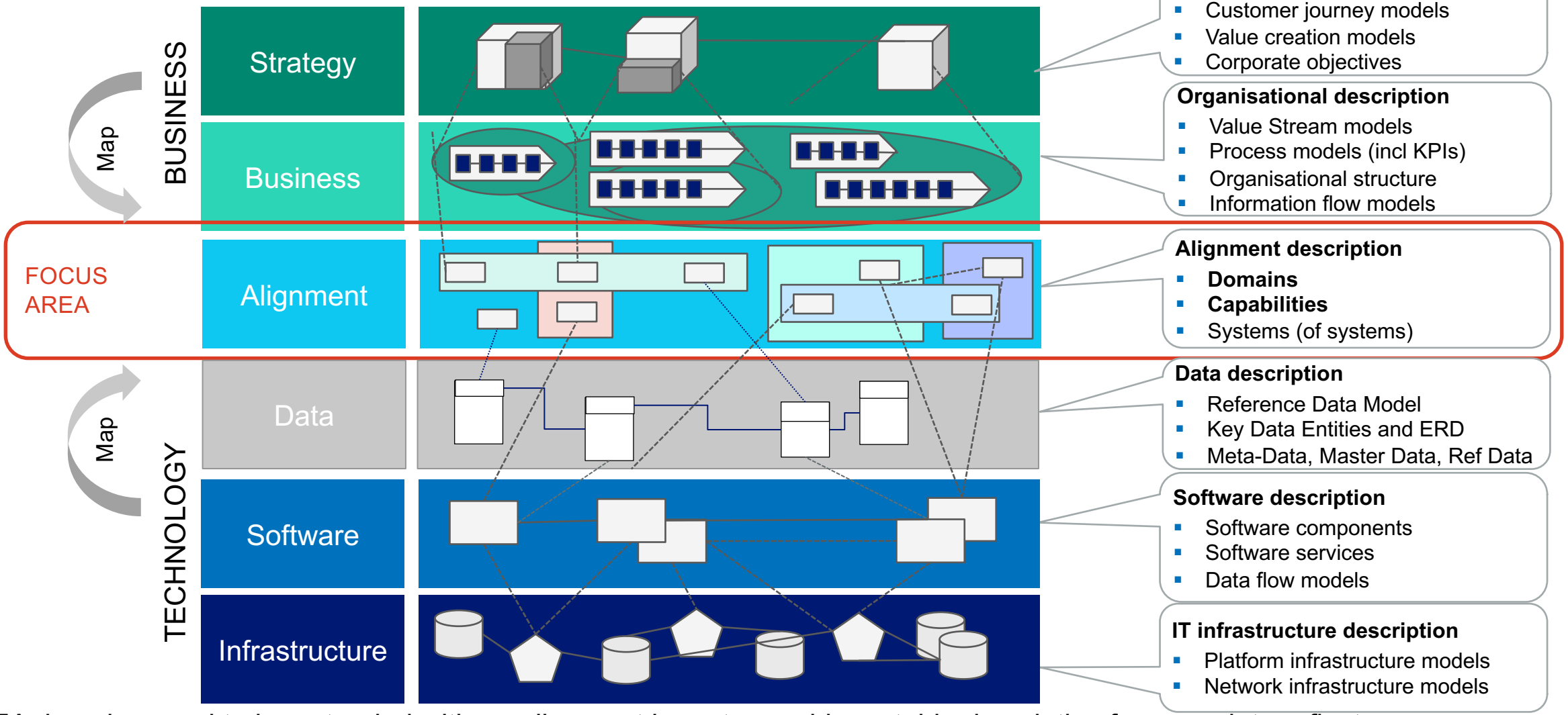
400 → 300 sites

31 DC → 8 DC → 2 DC → Zero (eventual)

Tools, Methodology and Take-aways

Capability as an EA alignment model

Typical EA descriptive models



Strategy description
- Business ecosystem
- Customer journey models
- Value creation models
- Corporate objectives

Organisational description
- Value Stream models
- Process models (incl KPIs)
- Organisational structure
- Information flow models

Alignment description
- **Domains**
- **Capabilities**
- Systems (of systems)

Data description
- Reference Data Model
- Key Data Entities and ERD
- Meta-Data, Master Data, Ref Data

Software description
- Software components
- Software services
- Data flow models

IT infrastructure description
- Platform infrastructure models
- Network infrastructure models

EA domains need to be extended with an alignment layer to provide a stable descriptive framework to reflect relationship between the rapidly changing business environment and the slow moving technology environment

Alfabet – IT Portfolio Management

Alfabet is one of the leading IT Portfolio Management and Architecture tools in the market

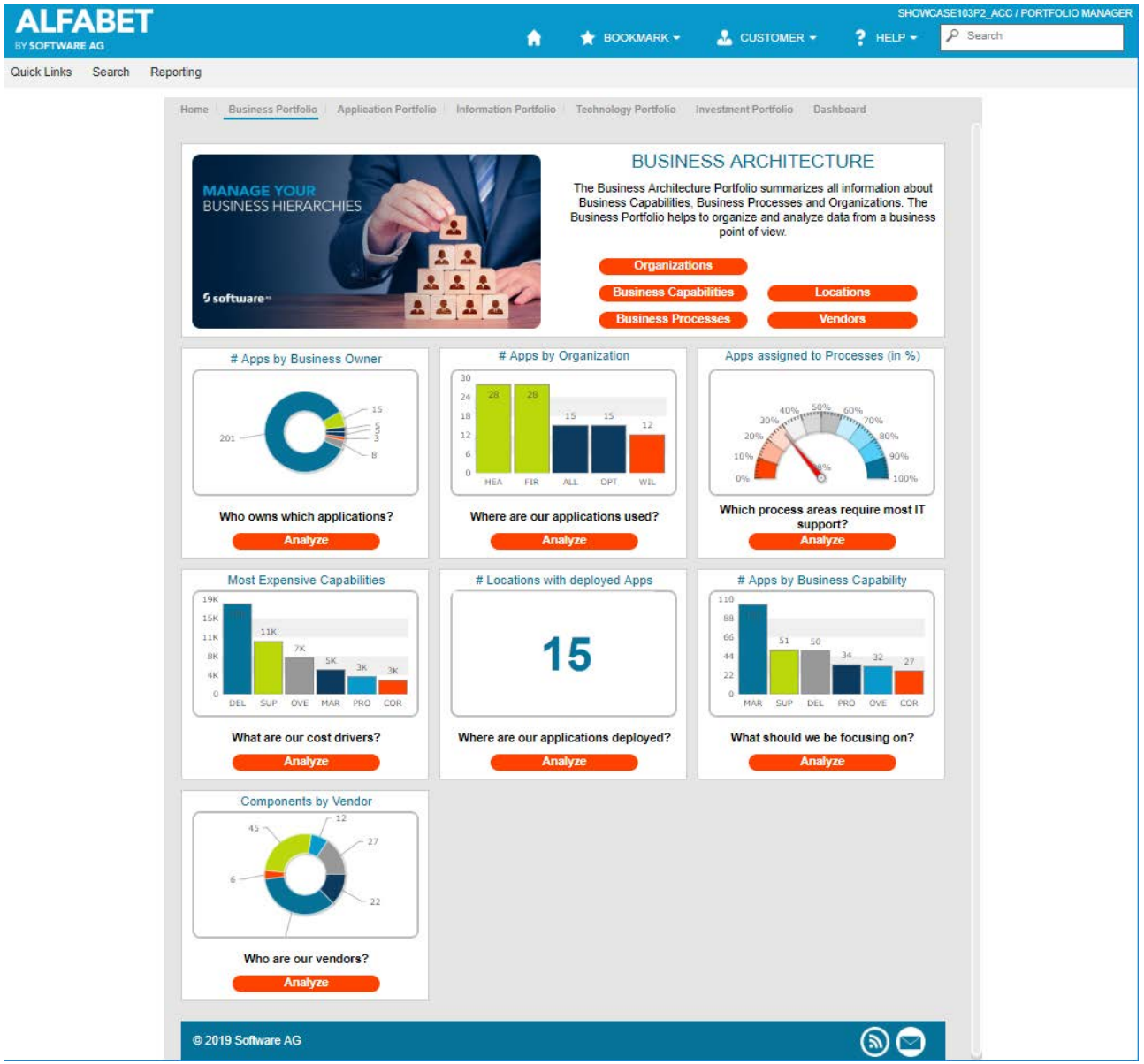
IT Portfolio Management and Architecture Modelling Tools both form part of the overall architecture repository and play different, but complementary roles

IT Portfolio Management Tool

Used to define IT and Enterprise Architecture artefacts and assists with the planning and management of the IT landscape

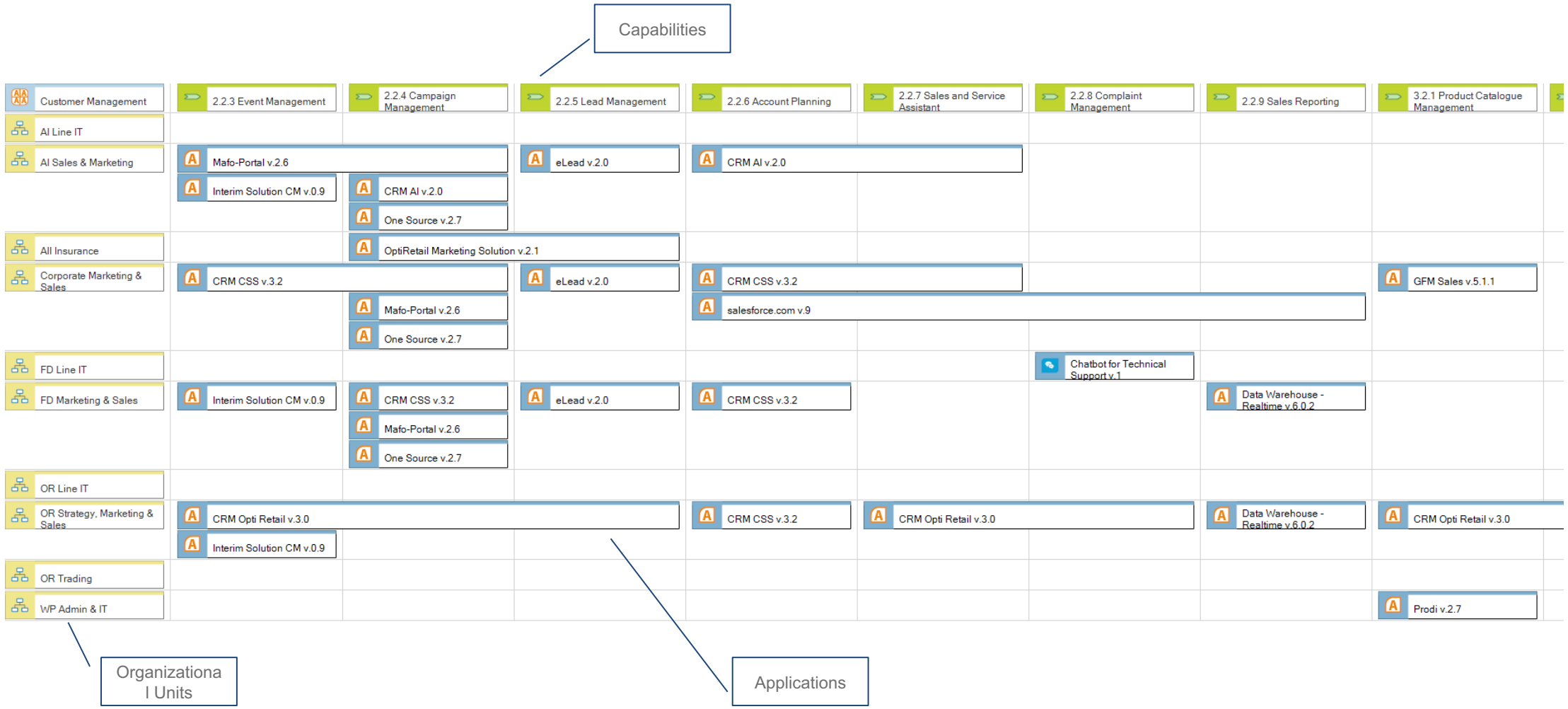
Modelling Tool

Enables the creation of architecture and solution design models in a object based repository through the use of a modelling notation



Application Capability Mapping

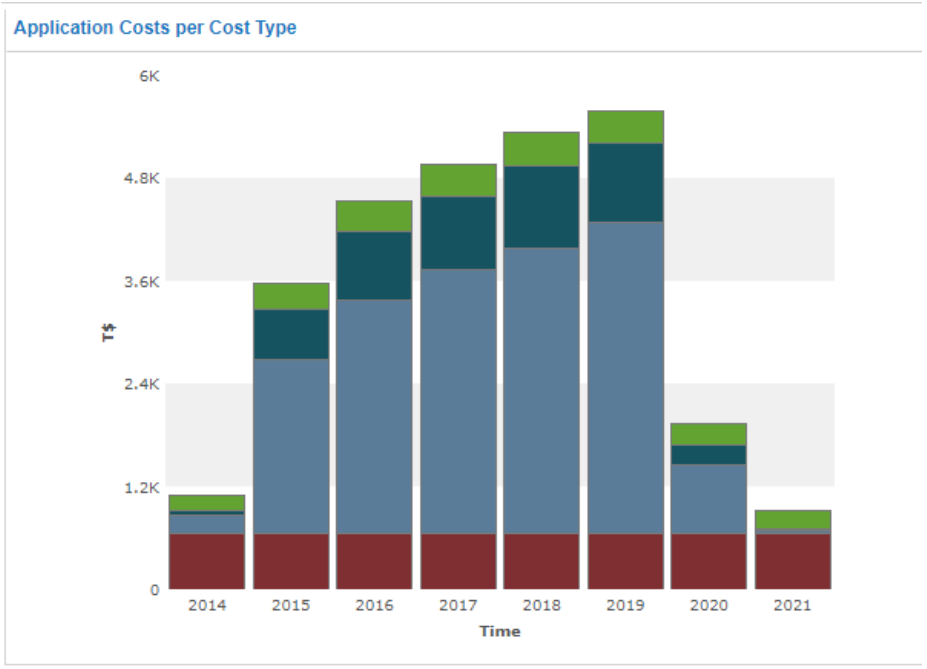
Alfabet generates views of the applications that support the various organizational units for different business processes.



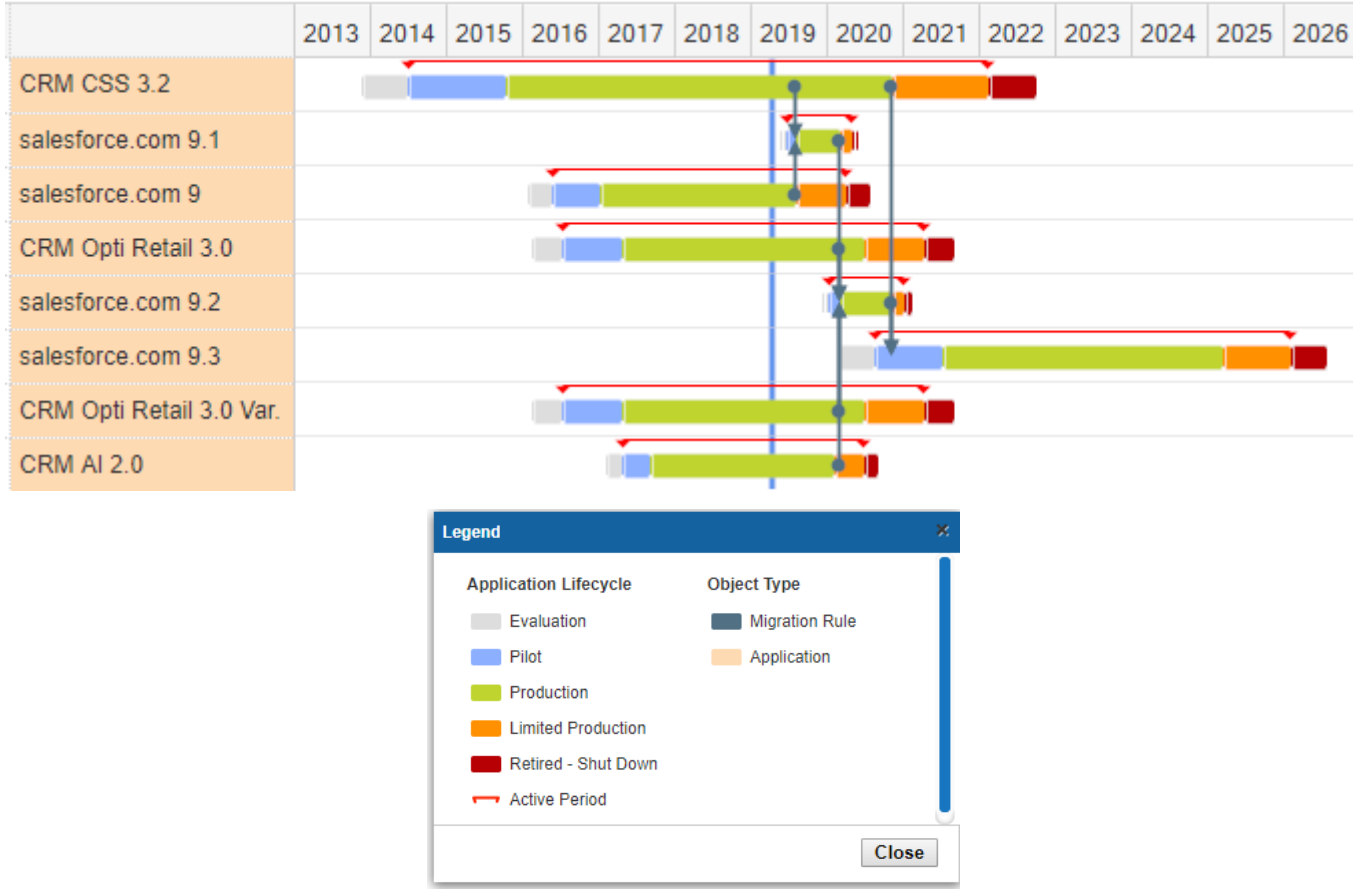
Migration Planning

Alfabet allows plan the migration paths between applications and specify the migration plan per organisational unit, per capability

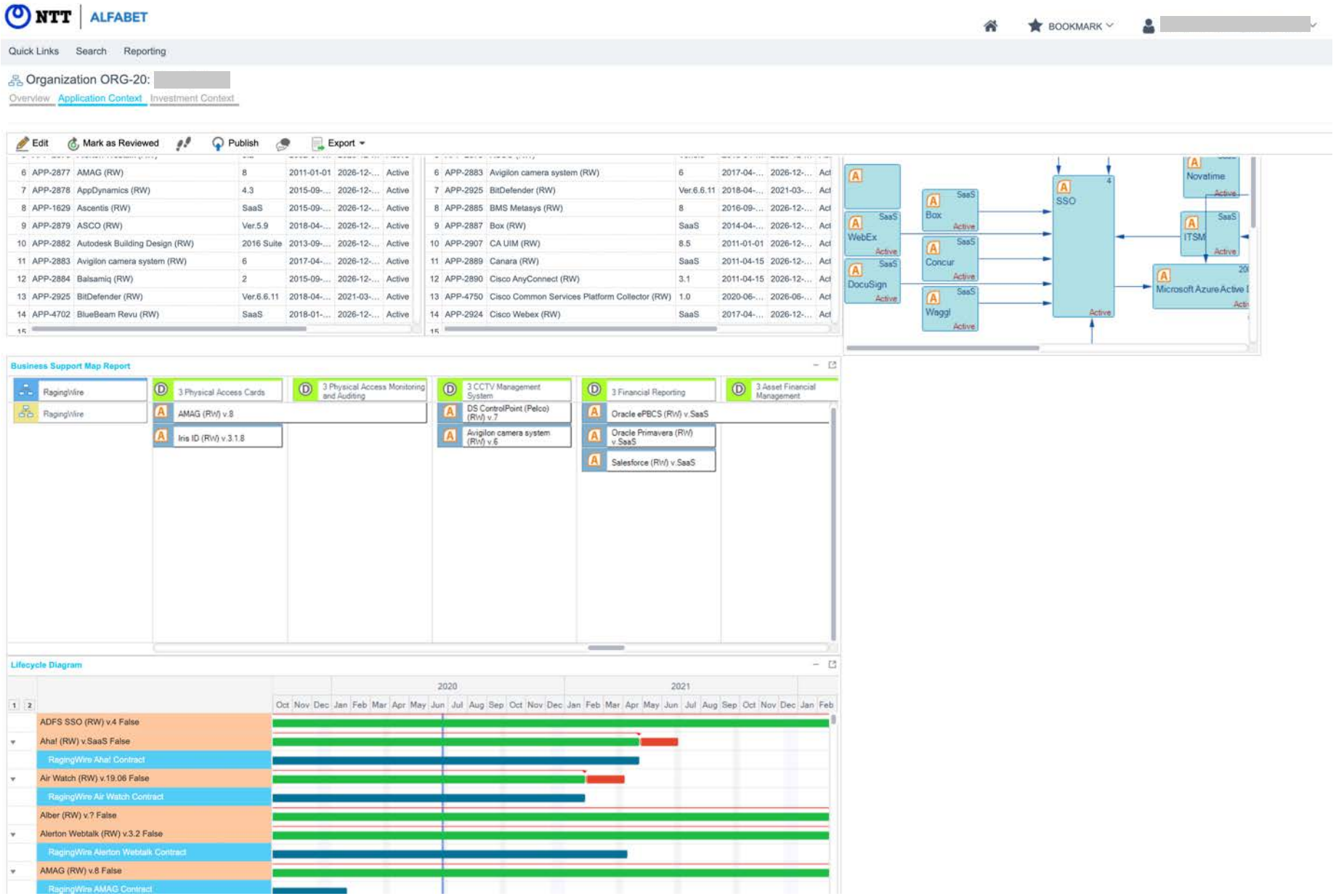
Cost and Contract Management



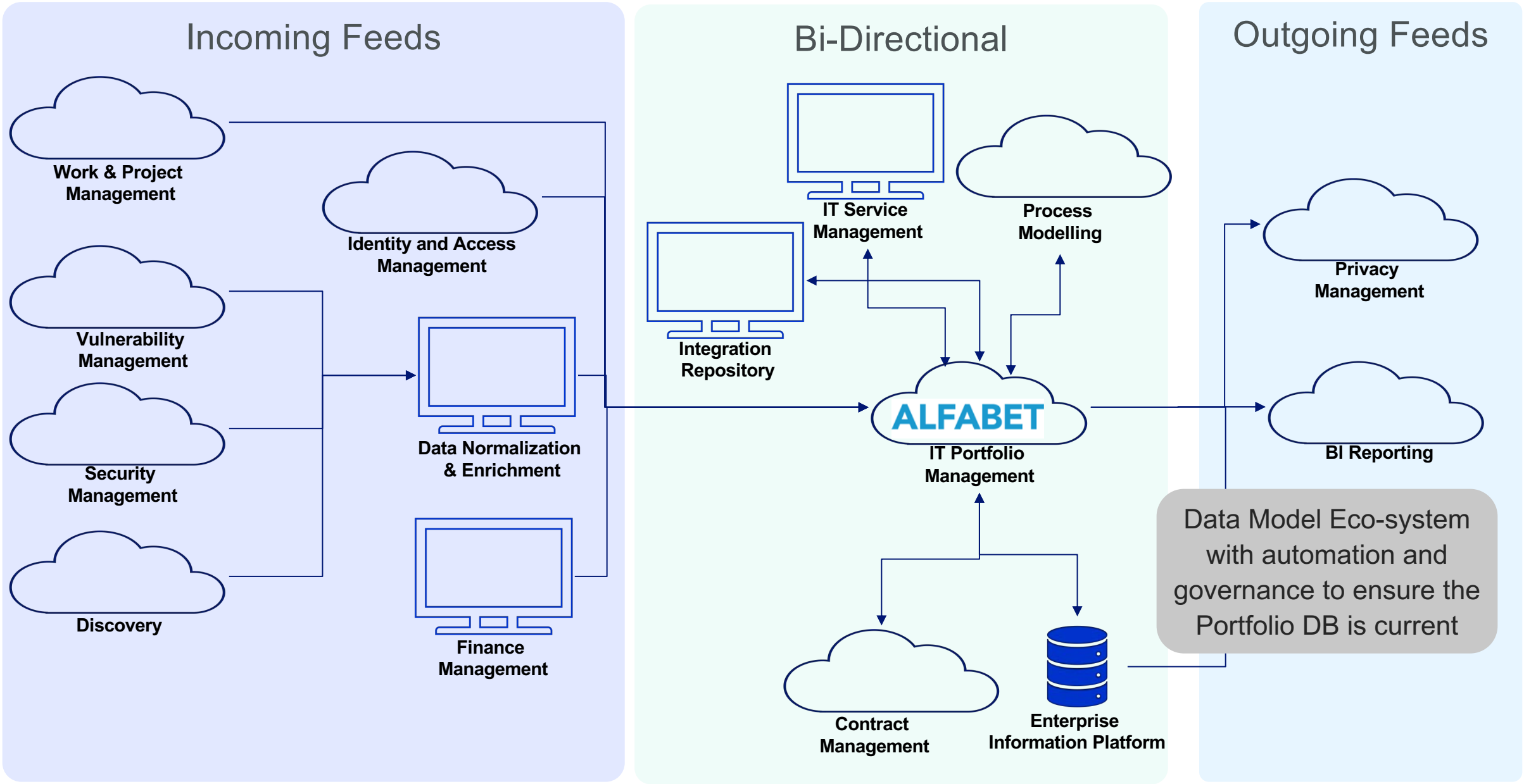
Application Migration Gantt



Example


NTT | ALFABET
BOOKMARK
Quick Links
Search
Reporting
Organization ORG-20:
Overview
Application Context
Investment Context
Edit
Mark as Reviewed
Publish
Export
6 APP-2877 AMAG (RW) 8 2011-01-01 2026-12-... Active
7 APP-2878 AppDynamics (RW) 4.3 2015-09-... 2026-12-... Active
8 APP-1629 Ascentis (RW) SaaS 2015-09-... 2026-12-... Active
9 APP-2879 ASCO (RW) Ver.5.9 2018-04-... 2026-12-... Active
10 APP-2882 Autodesk Building Design (RW) 2016 Suite 2013-09-... 2026-12-... Active
11 APP-2883 Avigilon camera system (RW) 6 2017-04-... 2026-12-... Active
12 APP-2884 Balsamiq (RW) 2 2015-09-... 2026-12-... Active
13 APP-2925 BitDefender (RW) Ver.6.6.11 2018-04-... 2021-03-... Active
14 APP-4702 BlueBeam Revu (RW) SaaS 2018-01-... 2026-12-... Active
6 APP-2883 Avigilon camera system (RW) 6 2017-04-... 2026-12-... Act
7 APP-2925 BitDefender (RW) Ver.6.6.11 2018-04-... 2021-03-... Act
8 APP-2885 BMS Metasys (RW) 8 2016-09-... 2026-12-... Act
9 APP-2887 Box (RW) SaaS 2014-04-... 2026-12-... Act
10 APP-2907 CA UIM (RW) 8.5 2011-01-01 2026-12-... Act
11 APP-2889 Canara (RW) SaaS 2011-04-15 2026-12-... Act
12 APP-2890 Cisco AnyConnect (RW) 3.1 2011-04-15 2026-12-... Act
13 APP-4750 Cisco Common Services Platform Collector (RW) 1.0 2020-06-... 2026-06-... Act
14 APP-2924 Cisco Webex (RW) SaaS 2017-04-... 2026-12-... Act
SaaS
WebEx
Active
DocuSign
Box
Concur
Waggl
SSO
Novatime
ITSM
Microsoft Azure Active
Business Support Map Report
RagingWire
3 Physical Access Cards
3 Physical Access Monitoring and Auditing
3 CCTV Management System
3 Financial Reporting
3 Asset Financial Management
AMAG (RW) v.8
Iris ID (RW) v.3.1.8
DS ControlPoint (Pelco) (RW) v.7
Avigilon camera system (RW) v.6
Oracle ePBCS (RW) v.SaaS
Oracle Primavera (RW) v.SaaS
Salesforce (RW) v.SaaS
Lifecycle Diagram
2020
2021
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
ADFS SSO (RW) v.4 False
Aha! (RW) v.SaaS False
RagingWire Aha! Contract
Air Watch (RW) v.19.06 False
RagingWire Air Watch Contract
Alber (RW) v.? False
Alerton Webtalk (RW) v.3.2 False
RagingWire Alerton Webtalk Contract
AMAG (RW) v.8 False
RagingWire AMAG Contract

IT Portfolio Management tool Integrated



Key Takeaways

1. **Data Driven Decision Making**
   Information is powerful. This level of due diligence and data driven insights and decisions reduces the arguments and builds rapid alignment

2. **Strawman Capability and Operating Models**
   Starting with a Capability model to frame the information gathering was very important. Using various operating models

3. **Impartial**
   Every business had something to contribute to the “to be”. Reflecting the good, and not just the issues, is important to link back to the individuals and build buy-in on the strategy. This shows impartiality

4. **Constant Business Partner Engagement**
   Cannot built the “to be” in a Silo. Constant engagement and review with the business is needed. This is reflected in the capability model that needs to reflect their “language”

5. **Database Driven Analysis**
   This level of complexity cannot be managed manually. A IT Portfolio tool is needed

6. **Clear Definitions and Taxonomy**
   A clear definition upfront on what is a application, a system, a process and a capability would have helped. This evolved over time

Thank you

hello.global.ntt