Business Transformation Programme

Technology & Enterprise Integration Blueprint
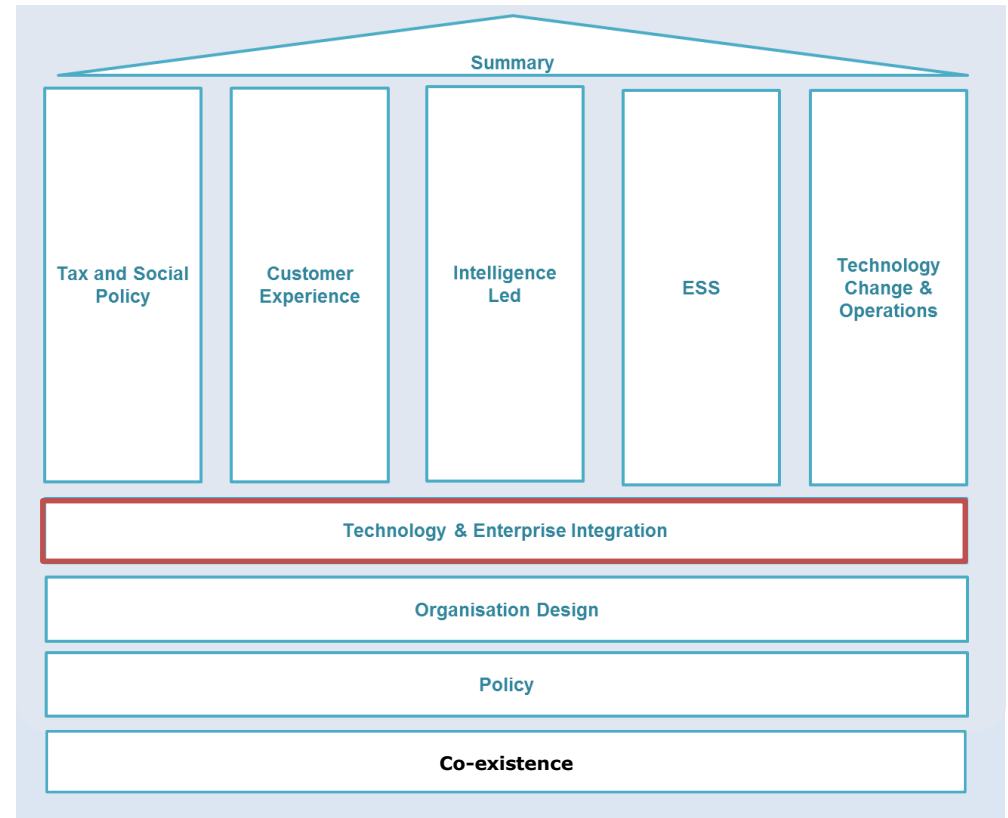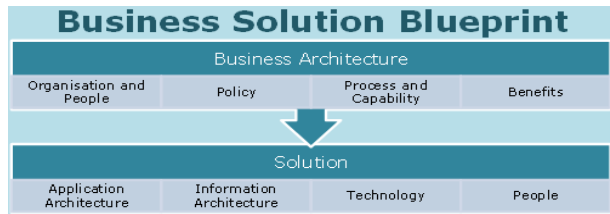*Executive Summary*

Version 1.00

Technology & Enterprise Integration Blueprint
Blueprint Context

- The Technology and Enterprise Integration section of the Blueprint contains the high-level design of the Application Architecture, Integration Architecture, Technical Architecture and Security Architecture associated with the Business Transformation Programme.

- This blueprint is one chapter in the overall Business Transformation high level design blueprint.

- The blueprint outlines the technology components required to support the direction in the business blueprints.

- The Analytics, Data Warehouse, Reporting and Enterprise Content Management logical architecture will be addressed in the design phase.

- Key Design Decisions that inform the blueprint content will be revisited in detailed design to assess cost benefit and impact of the chosen core tax system.

- The Technology Change and Operations blueprint will outline the process, governance and organisational elements of Technology.

Business Solution Blueprint

Business Architecture			
Organisation and People	Policy	Process and Capability	Benefits

Solution			
Application Architecture	Information Architecture	Technology	People

Summary

Tax and Social Policy	Customer Experience	Intelligence Led	ESS	Technology Change & Operations

Technology & Enterprise Integration

Organisation Design

Policy

Co-existence

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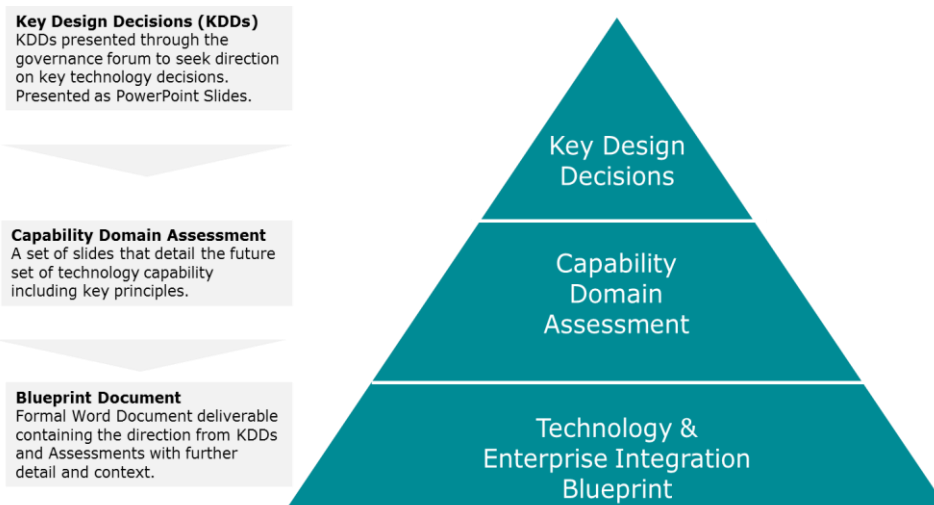# Technology & Enterprise Integration Blueprint
Approach to Content Development

The Technology and Enterprise Integration blueprint content will be developed by capability domains, each capability domain will be documented as a section in the blueprint.

The diagram below illustrates the approach to developing the Technology & Enterprise Integration Technology Blueprint.

For each capability domain a reference architecture assessment will be performed to identify the future state technology capability, this will take input from current IR reference models and [Information redacted] Reference Architectures for each capability domain.

The capability domain assessments and directions then form the content for the Technology & Enterprise Integration Blueprint.

Key Design Decisions (KDDs)
KDDs presented through the governance forum to seek direction on key technology decisions. Presented as PowerPoint Slides.

Capability Domain Assessment
A set of slides that detail the future set of technology capability including key principles.

Blueprint Document
Formal Word Document deliverable containing the direction from KDDs and Assessments with further detail and context.

Key Design Decisions

Capability Domain Assessment

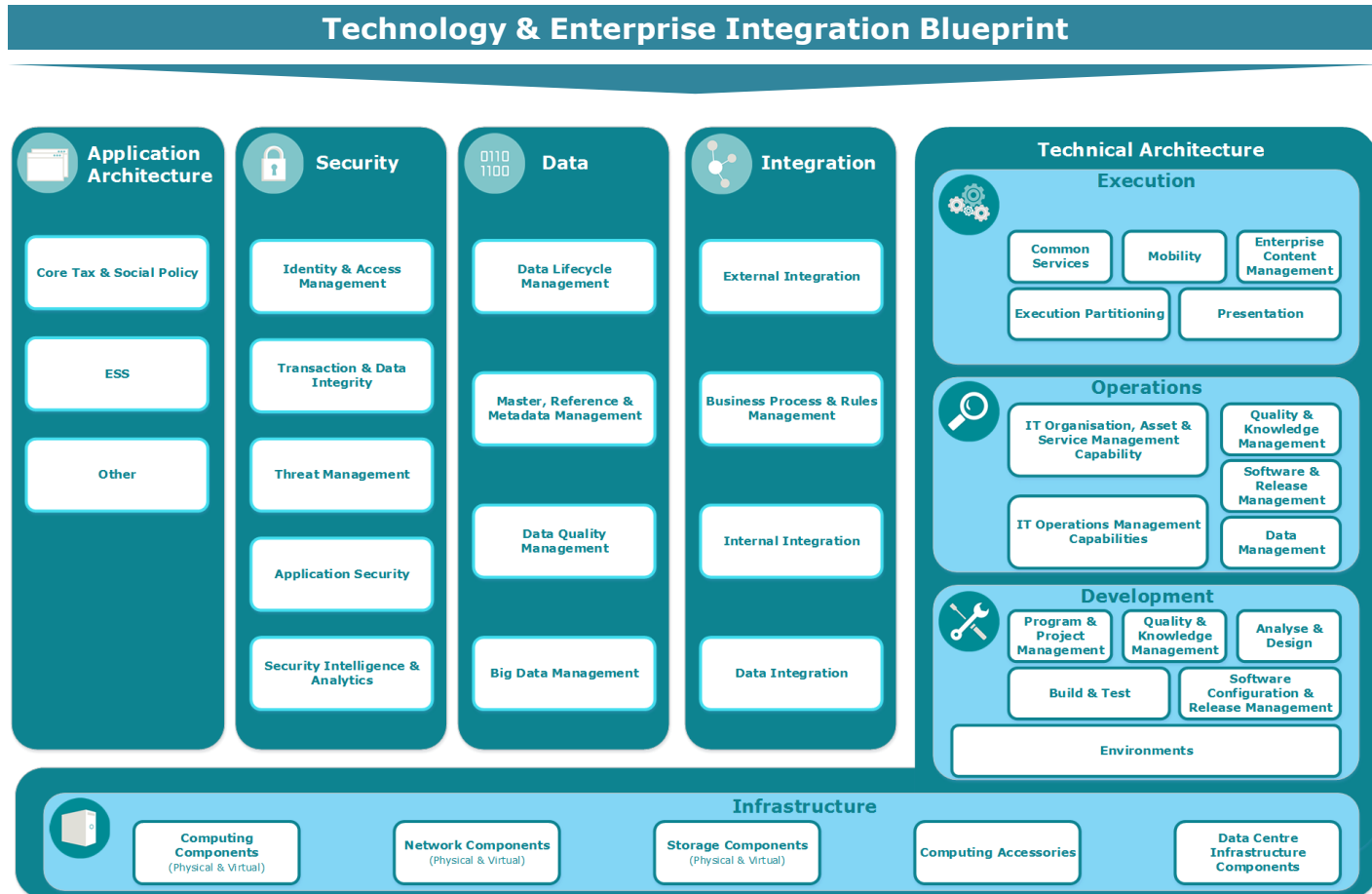Technology & Enterprise Integration Blueprint

In addition, the development of this Blueprint is aligned with the following principles:

- The existing IR Reference Architectures are not to be replaced by this Blueprint. It is, however, possible that the outcome of the Blueprint will trigger updates to those architectures, adjusting them to Programme's needs. Any changes to approved reference architectures will be called out as separate decisions and will be submitted to the Technical Architecture Design Council (TADC) for approval

- The recommendations contained in this Blueprint are aligned with the IR Enterprise Architecture (EA) and Information and Communication Technology (ICT) Principles

- Future state recommendations have looked to adopt "as a Service" solutions and the utilisation of the available "All of Government (AoG)" services where appropriate.
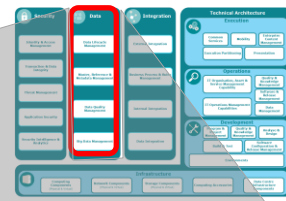
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Technology & Enterprise Integration Blueprint
Blueprint Outline

Technology & Enterprise Integration Blueprint

Application Architecture
- Core Tax & Social Policy
- ESS
- Other

Security
- Identity & Access Management
- Transaction & Data Integrity
- Threat Management
- Application Security
- Security Intelligence & Analytics

Data
- Data Lifecycle Management
- Master, Reference & Metadata Management
- Data Quality Management
- Big Data Management

Integration
- External Integration
- Business Process & Rules Management
- Internal Integration
- Data Integration

Technical Architecture

Execution
- Common Services
- Mobility
- Enterprise Content Management
- Execution Partitioning
- Presentation

Operations
- IT Organisation, Asset & Service Management Capability
- Quality & Knowledge Management
- Software & Release Management
- IT Operations Management Capabilities
- Data Management

Development
- Program & Project Management
- Quality & Knowledge Management
- Analyse & Design
- Build & Test
- Software Configuration & Release Management
- Environments

Infrastructure
- Computing Components (Physical & Virtual)
- Network Components (Physical & Virtual)
- Storage Components (Physical & Virtual)
- Computing Accessories
- Data Centre Infrastructure Components

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Data Architecture
Domain Summary

The purpose of data architecture is to provide coverage of known data, both structure and unstructured. This allows IR to effectively support their business intelligence and analytics initiatives.

Future Characteristics

▸ **Data Lifecycle Management**
- IR will identify and implement a dedicated end to end data migration toolset to support the BT data migration.
- IR will implement multiple archiving solutions based on requirements

▸ **Master, Reference & Meta Management**
- IR will leverage existing COTS solution (eg, Core Tax, ESS) as the platform for Master Data Management.
- Metadata management will be incorporated at the COTS solutions level (eg, Core Tax, ESS), as required.

▸ **Data Quality Management**
- Data Quality will be incorporated in the Data Migration toolset to support the BT programme.
- This data quality toolset will be expanded to be used to support on-going Data Quality as part of the broader Enterprise Approach to Data Governance.

▸ **Big Data Management**
- IR will approach Big Data cautiously, and will implement solutions where real business benefits can be shown.
- IR's technology approach to Big Data is to utilise open source product solutions.
- Among the possible deployment scenarios, IR will examine leveraging Public Cloud infrastructure to support its Big Data Platform where data sovereignty, and privacy concerns can be addressed.

Data Architecture Reference Model

Data Lifecycle Management	Master, Reference & Metadata Management
Data Quality Management	Big Data Management

Key Design Decisions

KDD#114 – Data Lifecycle Management
- IR will implement a hybrid archiving approach. This will utilise the most appropriate archiving solution on a case by case basis, e.g. a single solution will not implemented to satisfy all archiving needs.

**KDD #218 – Big Data Platform**
- Where business value has been proven, IR will approach Big Data based on Open Source products.
- This allows a cost effective, and low risk approach to examine the value of any Big Data initiative.

BT KDD #219 - Master Data Management Platform
- IR will leverage existing COTS solutions (eg, Core Tax, ESS) as the platform for Master Data Management
- A separate stand alone Enterprise-wide Master Data Management solution will not be implemented

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Integration Architecture
Domain Summary
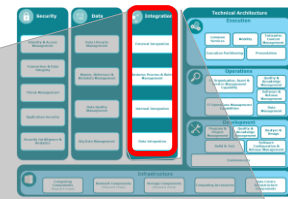
Enterprise Integration is the technology function that connects applications and enables requests for actions to be carried out and data to be transferred between them.

Future Characteristics

▸ **External Integration**
- IR will implement a best of breed Business to Business (B2B) Gateway and leverage it for all the new B2B interactions.
- IR will implement a best of breed API Gateway to deliver API capability to support future digital services.
- IR will implement a Data Cache capability (May be part of the capability of B2B or API solution).

▸ **Internal Integration**
- Leverage [Information redacted] as the platform to deliver the future state Enterprise Service Bus (ESB) for internal integration

▸ **Business Process & Rules Management**
- [Information redacted] will continue to be the centralised reference solution of business rules until Stage 1 of BT.
- This platform decision will be evaluated during Detailed Design in line with the COTS vendor.

▸ **Data Integration**
- A single toolset will be selected and implemented to support end to end data migration activities to support the BT Programme. This includes profiling, cleansing, enrichment and conversion.
- This toolset will be used for on going capability requirements around bulk data migration and integration.

Integration Architecture Reference Model

| External Integration	Internal Integration
Business Process & Rules Management	Data Integration

Key Design Decisions

Key Decision Paper #9 - BT Internal Integration Platform
- The Foundation sub-Programme includes an upgrade of the current JCAPS integration platform to [Information redacted] to deliver a transitional EAI integration capability.
- This KDD recommends the use of [Information redacted] and the foundation integration layer as the technology platform to implement the end state internal integration layer (ESB)

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Execution Architecture
Domain Summary
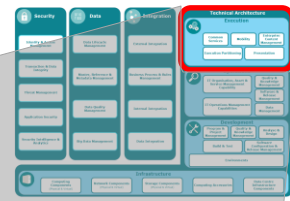
The Execution Architecture lists the capabilities that underpin business applications at run-time.

Future Characteristics

▸ **Common Services**
- The NSP will leverage existing Voice, Email, SMS, Print (including bulk printing) and Integration services where these are fit for purpose and align with the core COTS solution.

▸ **Mobility**
- A Mobile Device Management platform will be implemented to securely manage ALL mobile devices used to access services on the IR network.
- Both IR and non-IR staff will be able to access mobility resources from devices across a range of platforms.

▸ **Enterprise Content Management**
- IR will implement an Enterprise Content Management solution.
- IR will implement a Social Media Management solution that can be used to interact with customers using a range of social media channels

▸ **Presentation & Execution Partitioning**
- The core COTS solution will be implemented with High Availability in the Production data centre, with data replication to support secondary site recovery.
- IR's web presence will be largely based on the capabilities of the COTS solution, with a potential need for additional capability in the Web content space.

Execution Architecture Reference Model

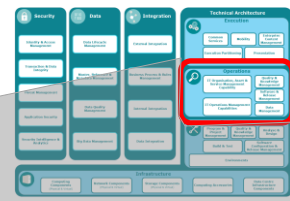| Common Services	Mobility
Enterprise Content Management	Execution Partitioning
Presentation	

Key Design Decisions

There were no specific Key Design decisions in this area during High Level Design.

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Operations Architecture
Domain Summary

Operations architecture describes the services, tools, standards and control structures required to keep the application production or development environment running at a desired service level.

Operations Architecture Reference Model

Future Characteristics

▶ **IT Organisation, Asset & Service Management**
- Inland Revenue will implement a robust asset & configuration management capability.
- Inland Revenue will expand on existing ITIL based Service Management capabilities.
- A range of these capabilities around Service Management will be discussed within the **Technology Change & Operations** Blueprint document.

▶ **IT Operations Management**
- IR will implement a monitoring event aggregating solution, delivering a centralised monitoring dashboard.
- IR will use the automation & scheduling capability within core COTS solutions.
- A consistent backup and restore strategy will be implemented based on the criticality and volatility of the information to be backed up. This will include regular test cycles.

Key Design Decisions

Design Decision #137 - Monitoring & Reporting

- Individual domains (eg Network, Storage etc.) will utilise specialist tools. A consolidated monitoring 'dashboard' will be implemented to consolidate monitoring and events from all these sources. Inland Revenue will NOT setup up a single integrated solution for all monitoring capabilities.

Design Decision #216 - Automation and Scheduling Tool

- Inland Revenue to leverage the Out of the Box (OOTB) COTS Products scheduling capabilities for BT.

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Development Architecture
Domain Summary
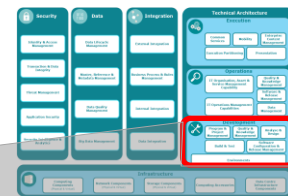
The Development Architecture supports the design, build, test and deployment of applications, as well as the tools and standards that support these activities.

Development Architecture Reference Model

Program & Project Management	Analysis &Design
Build & Test	Quality & Knowledge Management
Software Configuration & Release Management	Environments

Future Characteristics

▶ **Tools**
- BT will utilise a robust toolbox to support the Development Architecture capabilities
- The toolbox, in most cases, will be assembled by leveraging tools that already exist in IR and that are considered best of breed. While this approach may increase variance (multiple vendors) in the project toolbox, it will focus on leveraging knowledge already existent in IR
- When necessary, BT will re-implement the tools (ie, stand them up in a separate environment), or upgrade, to ensure robustness in the BT environment.

▶ **Environments**
- BT will implement and manage a range of environments to support delivery of the programme.
- Migration between environments will follow a strict governance process.
- Leverage Service Virtualisation (stubs) capability for testing integration scenarios as soon as possible.
- BT Programme will participate in the governance process of any heritage environments required for integrated testing.

Key Design Decisions

Key Decision Paper #146 - Development Tools

- [Information redacted]

Design Decision #148 - Environment Strategy
- BT environments will include Sandpit, all the way to Production / Disaster Recovery (during HLD a total of 11 environments have been identified).
- In the case where there are insufficient heritage environments to support testing, additional environments will be established.
- When BT obtains agreement to leverage an existing BAU (Heritage) environment for integrated testing, BT will participate in the governance process for that application environment (eg, communicating what changes are allowed).

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Infrastructure Architecture
Domain Summary
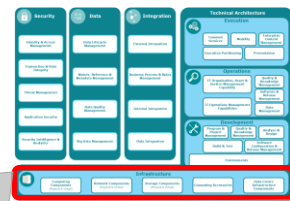
Infrastructure Architecture describes the hardware, network and system software infrastructure services required to support the application software and enterprise business systems.

Future Characteristics

▸ **Computing Components**
- IR will continue to deliver the end-user compute (desktop) via VDI through a (DaaS) provider. This will be [Information redacted] up until at least 2017
- Core COTS solution will be deployed on commodity hardware, and IR will retire all Mainframe infrastructure.

▸ **Network Component**
- Inland Revenue will retain control of the network structure from Governance to Strategy.
- Any new network design will include Network Segmentation to support Security.

▸ **Storage Component**
- Future storage will be largely dependent on both COTS selection and Infrastructure Services provider.

▸ **Computing Accessories**
- The current state for peripherals is fit for purpose and IR should leverage existing capabilities for the future.

▸ **Data Centre Infrastructure Components**
- Primary Data Centre (Auckland) will host Production services only.
- Secondary Data Centre (Wellington) will host Non-Production Services (Dev, Test, DR etc.)
- The infrastructure service will follow 6 tiers of service from Platinum Plus, Platinum, Gold, Silver, Bronze and Plastics.

Key Design Decisions

Design Decision #140 - DaaS Continuation
- Inland Revenue will continue to adopt DaaS to manage all desktop related services.
- Primary delivery mechanism for desktop services will continue to be through virtual desktop.

Design Decision Paper #139 - BT Future State Network Architecture
- Inland Revenue will retain detailed knowledge of the network structure and operation from Governance to Strategy.
- The new network design will support network segmentation.

Key Decision #28 - Hosting Data Centre Guiding Principles
- IR will implement a dual data centre strategy. Primary data centre will be located in the Auckland Region. Secondary Data Centre will be location in Wellington region.

Design Decision #136 - Infrastructure Service Level Agreement & High Availability Discussion
- There will be 6 tiers of services (from highest to lowest): Platinum Plus, Platinum, Gold, Silver, Bronze and Plastics.

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