

Build a Data Architecture Roadmap

Optimizing data architecture requires a plan, not just a data model.

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Build a Data Architecture Roadmap

Optimizing data architecture requires a plan, not just a data model.

EXECUTIVE BRIEF

Analyst Perspective

A modern and business-driven data environment is integral to an insight-driven enterprise.



As business and data landscapes change, an organization's data architecture must **keep pace** with these changes. It must be responsive not only to ensure the organization continues to operate efficiently but to support the organization's overall strategic direction.

In the dynamic marketplace of today, organizations are **constantly juggling** disruptive forces and are finding the need to be more proactive. As such, organizations are realizing their data is a source of competitive advantage where the data architecture must not only support the increasing amount, sources, and rate at which organizations are capturing and collecting data but also meet and deliver on changing business needs.

Data architecture optimization should, therefore, aid in breaking down data silos and creating a more **shared and all-encompassing data environment** to better empower the business.

Crystal Singh

Research Director, Data and Information Practice
Info-Tech Research Group

Our understanding of the problem

This research is designed for

- ✓ Data architects or their equivalent who intend to optimize and improve the efficiency of the capture, movement, and storage of data for a variety of business drivers.
- ✓ Enterprise architects intending to improve the backbone of the holistic approach of their organization's structure.

This research will also assist

- ✓ CIOs concerned with costs, benefits, and the overall structure of their organizations data flow.
- ✓ Database administrators tasked with monitoring crucial elements of the data architecture.

This research will help you

- ✓ Identify the business drivers that are impacted and improved by best-practice data architecture.
- ✓ Optimize your data architecture using tactical practices to address the business' pressing issues and drive modernization.
- ✓ Align the organization's data architecture with the greater enterprise architecture.

This research will also help you

- ✓ Get a handle on the current situation of data within the organization.
- ✓ Understand how data architecture affects the operations of the data sources within the enterprise.

Executive Summary

Your Challenge

Your organization is experiencing data challenges:

- Large data volume, variety, and velocity, if not properly managed, may result in unreliable data and unfavorable output.
- Business transformation shapes the modern data landscape. Organizations face a growing number of challenges when it comes to adopting modern technologies.

Data architects are at the center of this turmoil and must be able to translate high-level business requirements into specific instructions for data workers using complex data models.

Common Obstacles

- Data architects must account for constantly growing data and application complexity, and more demanding business needs.
- There is an ever-increasing number of data sources and a growing need to integrate components to ensure that performance isn't compromised.
- There isn't always a clearly defined data architect role, yet the responsibilities must be filled to get maximum value from data.

Info-Tech's Approach

- Identify and prioritize the business drivers in which data architecture changes would create the largest overall benefit and determine the corresponding data architecture tiers that must be addressed to customize your solution.
- Discover the best-practice trends, measure your current state, and define the targets for your data architecture tactics.
- Build a cohesive and personalized roadmap for restructuring your data architecture. Manage your decisions and resulting changes.

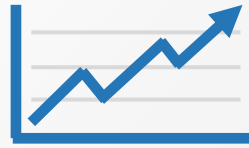
Info-Tech Insight

Data architecture is a cornerstone of significant business transformation (such as digital transformation, mergers and acquisitions, and emergence of new business models and innovations). Lubricate your business transformation with sound data architecture.

Your data is the foundation of your organization's knowledge and ability to make decisions

Data should be at the foundation of your organization's evolution.

The transformational insights that executives are constantly striving to leverage can be uncovered with a data practice that makes high quality, trustworthy information readily available to the business users who need it.



Business
Information

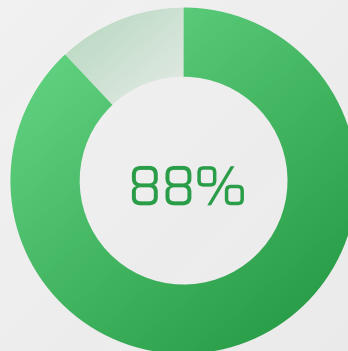


Actionable
Insights



Digital
Transformation

Whether you're hoping to gain a better understanding of your business or trying to become an innovator in your industry, any organization can get value from its data regardless of where you are in your journey to becoming a data-driven enterprise.



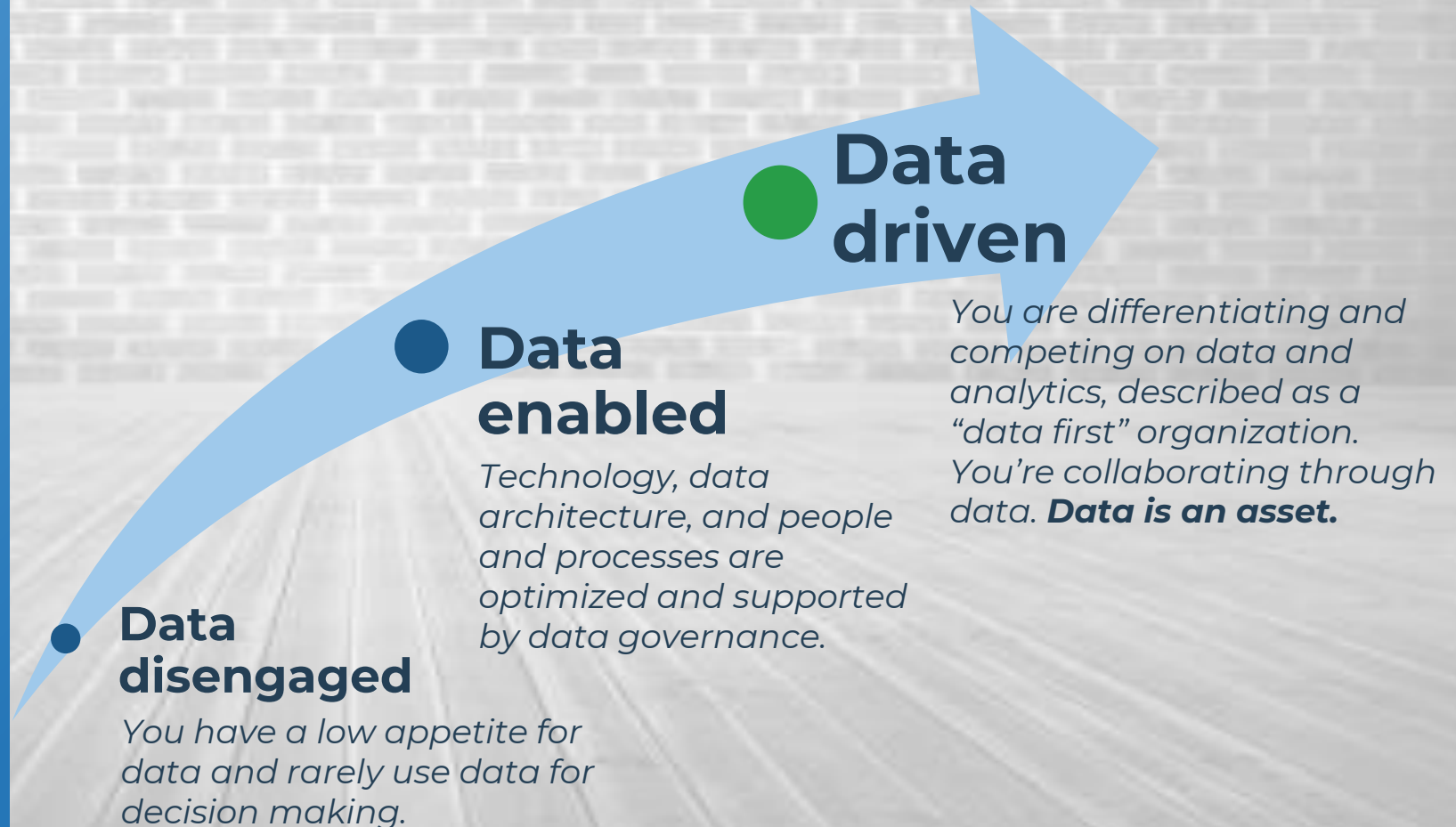
of respondents say that being data driven helps them stay on top of customer needs and market trends.

Source: Experian, 2022

The journey to being data-driven

The journey to becoming a data-driven organization requires a pit stop at data enablement.

The Data Economy



As organizations strive to become more data driven, it is imperative to better manage data for its effective use

Here comes the zettabyte era.

- Worldwide data creation is projected to increase to more than 180 zettabytes by 2025 (Statista, 2021), a challenge that is only compounded by the speed at which the data is expected to move.
- Arriving at the understanding that data can be the driving force of your organization is just the beginning. **The greater obstacles to overcome are in facing the challenges of today's data landscape.**

Challenges of the Modern Data Landscape

Data at rest

Data movement

Greater amounts

Different types

Uncertain quality

Faster rates

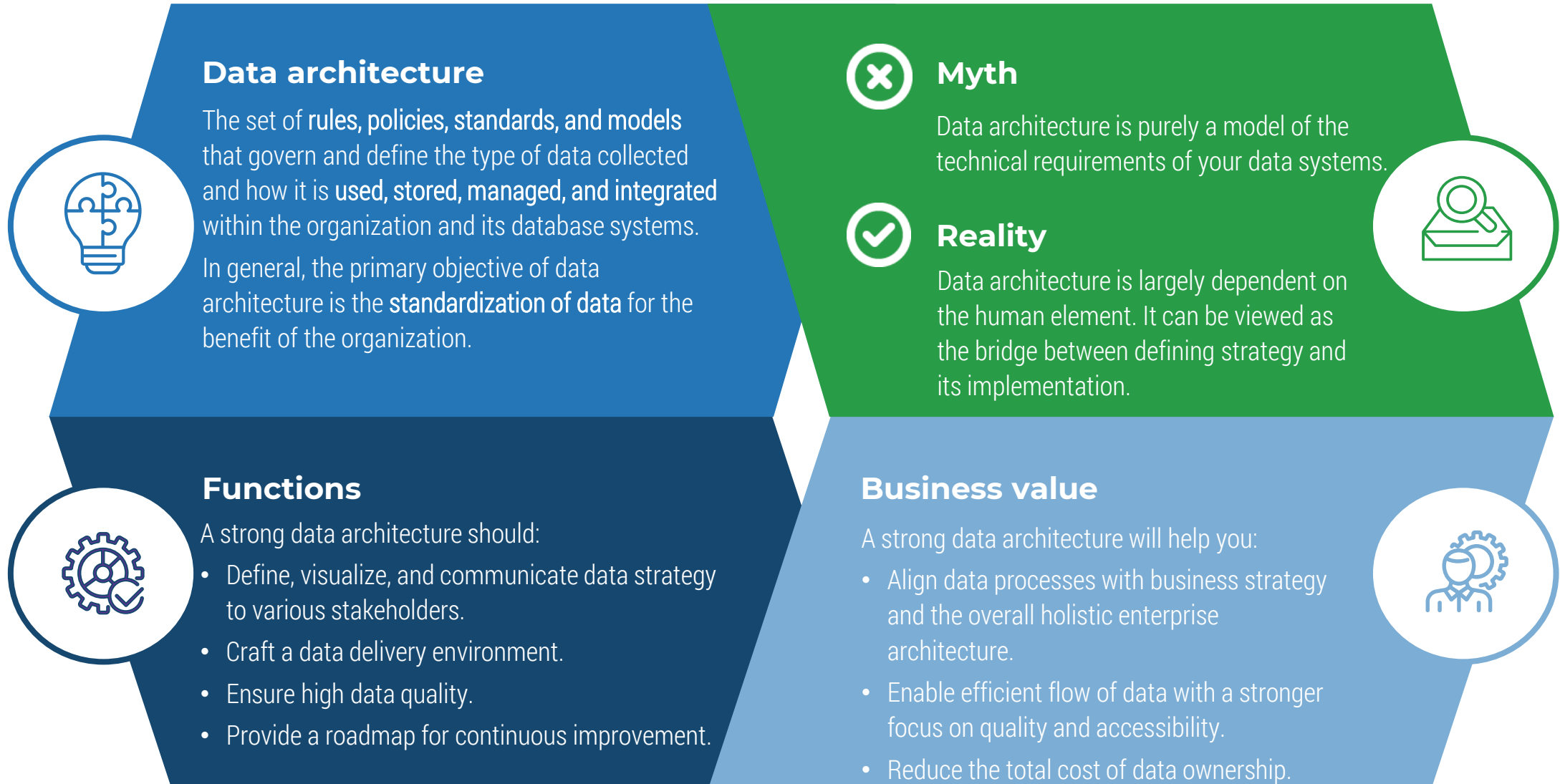
Higher complexity

Solution

Well-defined and structured **data management** practices are the best way to mitigate the limitations that derive from these challenges and leverage the **most possible value from your data.**

Refer to Info-Tech's capstone [Create a Data Management Roadmap](#) blueprint to understand data quality in the context of data disciplines and methods for improving your data management capabilities.

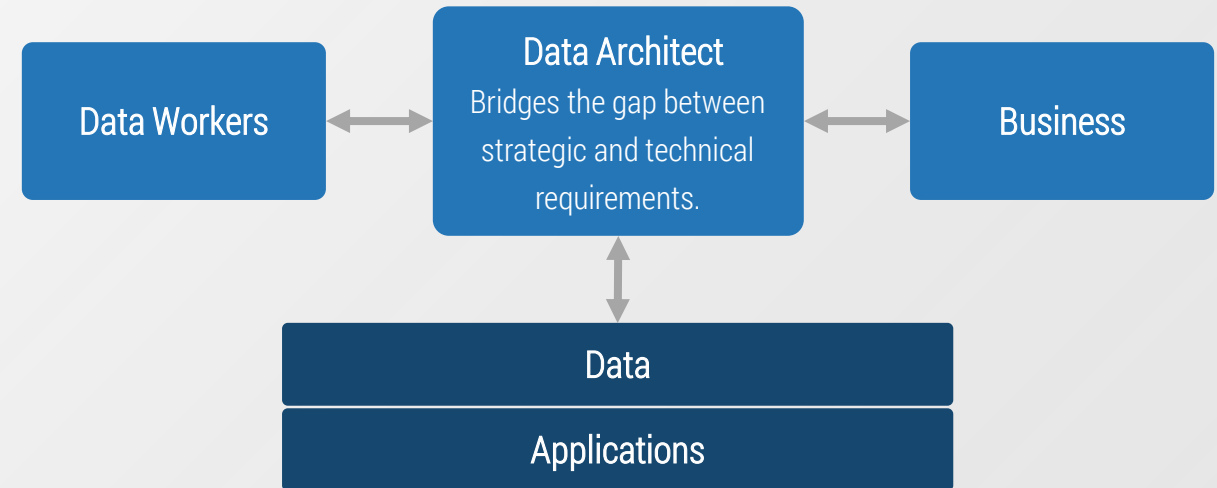
Data architecture is an integral aspect of data management



Data architects must maintain a comprehensive view of the organization's rapidly proliferating data

The data architect:

- Acts as a **translator** between the business and data workers to communicate data and technology requirements.
- Is proactive in **partnering** with the business to facilitate the alignment of IT and business systems.
- **Facilitates** the creation of the data strategy.
- **Manages** the enterprise data model.
- Has a greater **knowledge** of operational and analytical data use cases.
- **Recommends** data management policies and standards and maintains data management artifacts.
- **Reviews** project solution architectures and identifies cross impacts across the data lifecycle.
- Is a **hands-on expert** in data management and warehousing technologies.
- Is not necessarily its own designated position, but a role that can be filled by a variety of IT professionals.

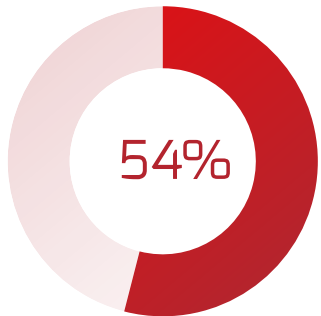


“Fundamentally, the role of a data architect is to understand the data in an organization at a reasonable level of abstraction.”

– Andrew Johnston, Independent Consultant

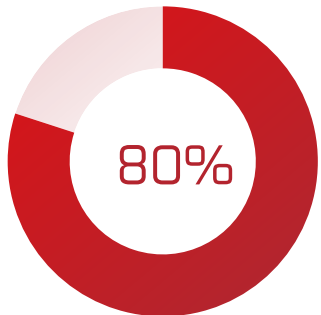
Many are experiencing the pains of poor data architecture, but leading organizations are proactively addressing these issues

Outdated and archaic systems and processes limit the ability to access data in a timely and efficient manner, ultimately **diminishing the value** your data should bring.



of respondents say it can take a day or up to a month to add new data to their platforms due to heterogeneous data systems used for their business intelligence and analytics, and constraints from traditional applications.

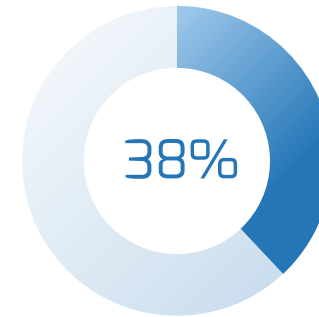
Source: Qlik, 2022



of enterprise architects surveyed say that their company still suffers from too many manual processes.

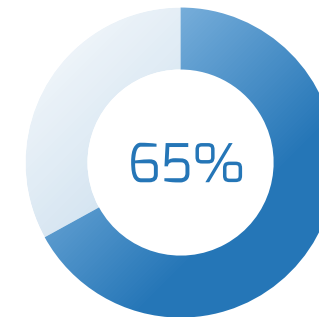
Source: MEGA, 2022

Intuitive organizations who have recognized these shortcomings have already begun the transition to modernized and optimized systems and processes.



of organizations' top foundational drivers to become data-driven include the ability to establish an effective data architecture and technology infrastructure.

Source: MicroStrategy, 2020

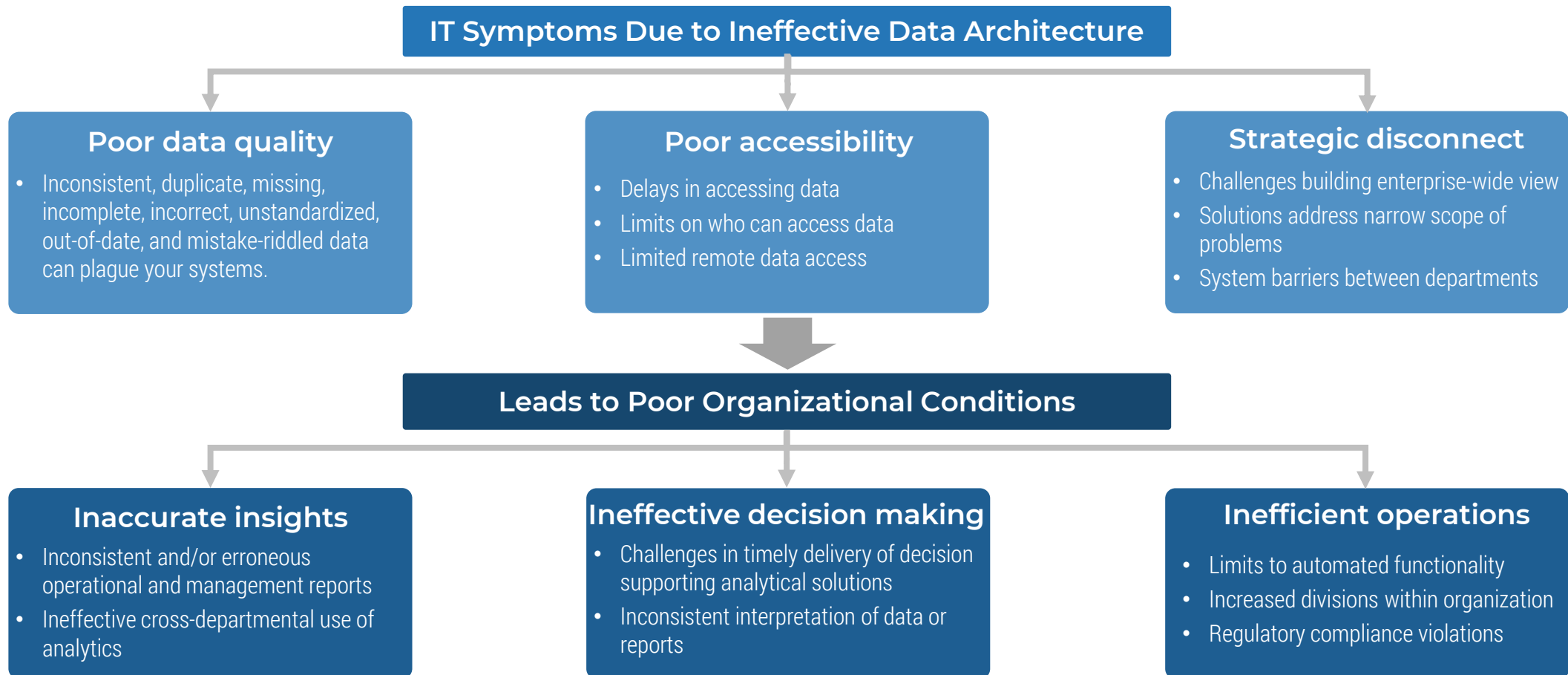


of respondents increased the funding of digital and technology initiatives, while 44% increased the number of full-time equivalents in digital and technology roles.

Source: McKinsey & Company, 2021

Once on your path to redesigning your data architecture, neglecting the strategic elements may leave you ineffective

Focusing only on data models without the required data architecture guidance may cause harmful symptoms in your IT department, which will lead to organization-wide problems.



You need a solution that will prevent the pains.

Despite investments in data initiatives, organizations are carrying high levels of data debt

Data debt is “the accumulated cost that is associated with the sub-optimal governance of data assets in an enterprise, like technical debt” (Experian, 2020).

Data debt is the problem for **78%** of organizations.

Think of all the time your organization spends on non-value-add activities such as cleaning and massaging data, discussing and disagreeing on the proper definition of business data terms, etc.

Data debt is the cost of fixing things instead of gathering value when your data architecture is not efficient.

40%

of organizations say individuals within the business do not trust data insights.

66%

of organizations say a backlog of data debt is impacting new data management initiatives.

33%

of organizations are not able to get value from a new system or technology investment.

30%

of organizations are unable to become data-driven.

Source: Experian, 2020

Build a Data Architecture Roadmap

Follow this methodology to optimize data architecture in your organization.

Key Insight

Data architecture is a cornerstone of significant business transformation (such as digital transformation, mergers and acquisitions, and the emergence of new business models and innovations).

Ease your business transformation with sound data architecture.

1

Align data architecture priorities to business drivers

Prioritize your core business objectives and identify your business drivers.



Becoming More Data Driven
Managing and utilizing data as a high-value business asset



Mergers and Acquisitions
Implementing changes arising from mergers and acquisitions



New Functionality or Business Rule
Implementing new products and services



Risk and Compliance
Supporting audit, compliance, regulatory, and legal requirements

Understand how Info-Tech's four-tier data architecture model relates to business drivers

1

Data Creation

3

Data Augmentation

2

Data Ingestion & Accumulation

4

Data Delivery & Consumption

Determine actionable tactics to optimize data architecture.

2

Personalize your tactics to optimize your data architecture

Select appropriate four-tier data architecture tactical patterns

2 3 4

Becoming More Data Driven

1 2 3 4

Mergers and Acquisitions

1 2

New Functionality or Business Rule

1 2 3 4

Risk and Compliance

Measure your current state

Determine where you stand with the data architecture capabilities.

Set targets for your desired optimized state.

3

Create your tactical data architecture roadmap

Roadmap your personalized tactics

Manage and communicate change

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Data architecture is not a standalone concept: it fits into the more holistic design of enterprise architecture

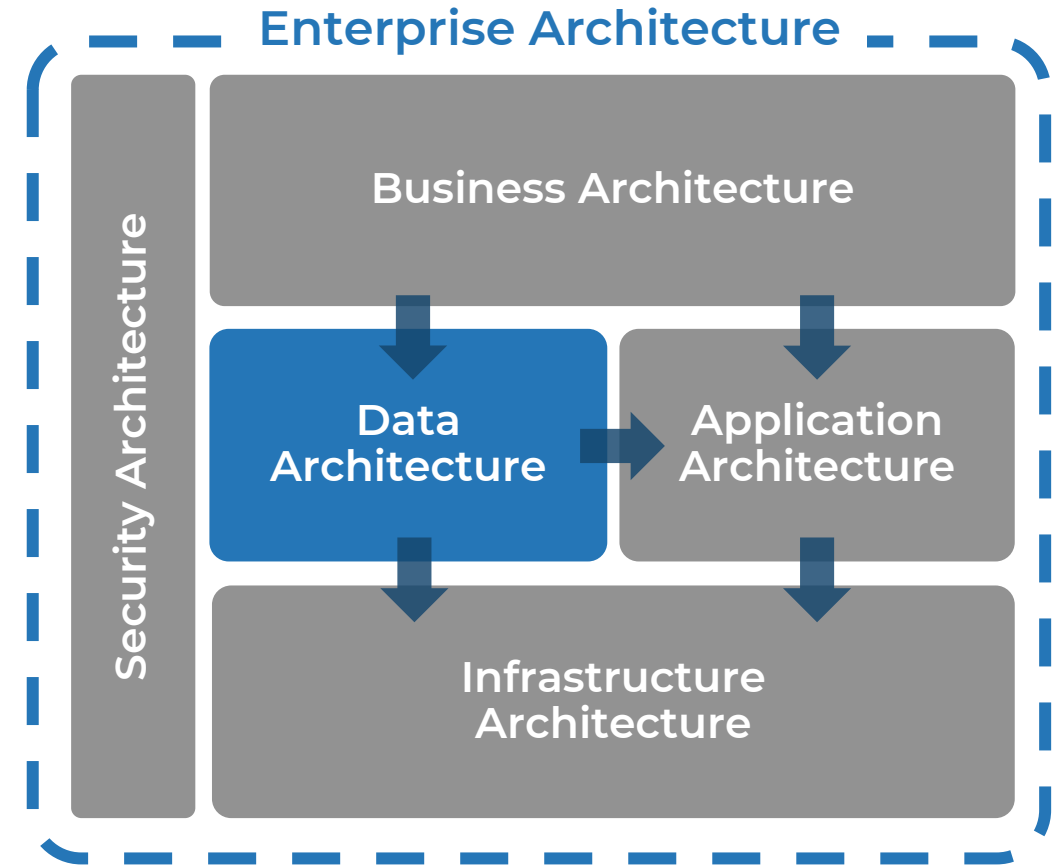
Data architecture in alignment

- Data architecture cannot be designed to simply address the focus of data specialists or even the IT department.
- It must act as a key component in the all-encompassing **enterprise architecture** and reflect the strategy and design of the entire business.
- Data architecture **collaborates** with application architecture in the delivery of effective information systems and informs technology architecture on data related infrastructure requirements/considerations.

Please refer to the following blueprints for the full picture of enterprise architecture:

[Design an Enterprise Architecture Strategy](#)

[Agile Enterprise Architecture Operating Model](#)



Adapted from TOGAF

Refer to Phase C of TOGAF and Bizbok for references to the components of business architecture that are used in data architecture.

Executive Brief Case Study

Monetary authority

The monetary authority is responsible for monitoring the financial situation of a country that takes in revenue from foreign incorporation. Due to increased pressure from international regulatory bodies, the monetary authority became responsible for generating multiple different types of beneficial ownership reports based on corporation ownership data within 24 hours of a request.

A stale and inefficient data architecture prevented the monetary authority from fulfilling external regulatory requirements.

Normally, the process to generate and provide beneficial ownership reports took a week or more. This was due to multiple points of **stale data architecture**, including a dependence on outdated legacy systems and a broken process for gathering the required data from a mix of paper and electronic sources.

Results

Info-Tech helped the monetary authority identify the business need that resulted from regulatory pressures, the challenges that needed to be overcome, and actionable tactics for addressing the needs.



As you go through this blueprint, you will find additional case studies that elaborate on how Info-Tech helped this monetary authority.

INDUSTRY
Financial

SOURCE
Info-Tech Consulting

Info-Tech's methodology was followed to optimize the areas of data architecture that address the business driver.

Business Driver

External requirements



Diagnose Data Architecture Problems

Outdated architecture
(paper, legacy systems)

Incomplete
data

Stale data from
other agencies



Data Architecture Optimization Tactics

1

Optimized source databases

2

Data warehouse optimization

3

Improved integration

4

Data marts for reports, report delivery efficiency

Build a Data Architecture Roadmap Project Overview

	1. Prioritize Your Data Architecture With Business-Driven Tactics	2. Personalize Your Tactics to Optimize Your Data Architecture	3. Create Your Tactical Data Architecture Roadmap
Best-Practice Toolkit	<p>1.1 Identify your business driver for optimizing data architecture</p> <p>1.2 Determine actionable tactics to optimize data architecture</p>	<p>2.1 Measure your data architecture capabilities</p> <p>2.2 Set a target for data architecture capabilities</p> <p>2.3 Identify the tactics that apply to your organization</p>	<p>3.1 Personalize your data architecture roadmap</p> <p>3.2 Manage your data architecture decisions and the resulting changes</p>
Guided Implementations	<p>Call 1</p> <p>Call 2</p> <p>Call 3</p>	<p>Call 4</p> <p>Call 5</p> <p>Call 6</p>	<p>Call 7</p> <p>Call 8</p>
Phase Outcomes	<p>Determine where you need to focus your efforts as a data architect (or equivalent).</p> <p>Optimize the holistic data architecture environment based on the drivers of the business.</p>	<p>Understand the essential capabilities that your organization needs from its data architecture to develop a tactical plan for optimizing data architecture across its people, processes, and technology.</p>	<p>Build a personalized roadmap and plan for optimizing data architecture in your organization.</p> <p>Ease the change management process while carrying out this roadmap.</p>

Insight summary



Overarching insight

Data architecture is a cornerstone of significant business transformation (such as digital transformation, mergers and acquisitions, and emergence of new business models and innovations). Lubricate your business transformation with sound data architecture.

Insight 1

Data architecture is not just about models. Viewing data architecture as just technical data modeling can lead to a data environment that does not aptly serve or support the business. Identify the priorities of your business and adapt your data architecture to those needs.

Insight 2

Changes to data architecture are typically driven by four common business driver patterns. Use these as a shortcut to understand how to evolve your data architecture.

Insight 3

Data is used differently across the layers of an organization's data architecture. Therefore, the capabilities needed to optimize the use of data change with it. Architecting and managing data from source to warehousing to presentation requires different tactics for optimal use.

Tactical insight

Focus on early alignment. Assessing capabilities within specific job functions can result in disagreement or debate, especially between business and IT people. Objectively facilitate any debate and only finalize capability assessments when there is full alignment. Remind everyone that data architecture should ultimately serve business needs wherever possible.

Tactical insight

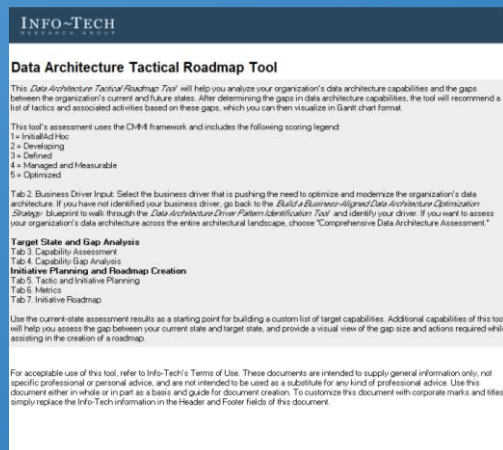
Optimizing data architecture requires a tactical approach, not a passive one. The demanding task of optimization requires the ability to heavily prioritize. After you have identified **why**, determine **how** using our prebuilt roadmap to address the four common drivers.

Key deliverable:



Data Architecture Tactical Roadmap Tool

This *Data Architecture Tactical Roadmap Tool* will help you analyze your organization's data architecture capabilities and the gaps between the organization's current and future states.



Blueprint deliverables

Each step of this blueprint is accompanied by supporting deliverables to help you accomplish your goals:



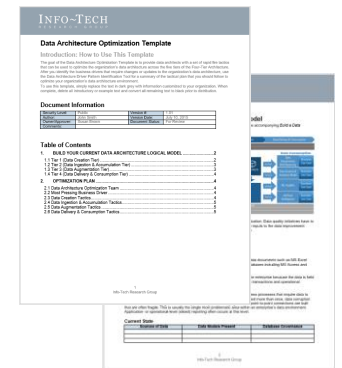
Data Architecture Driver Pattern Identification Tool



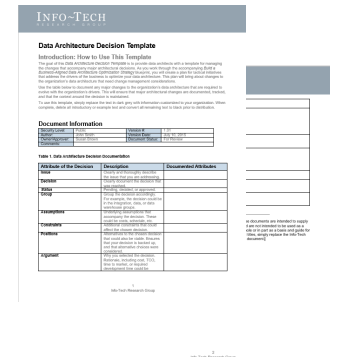
Data Architecture Trends Presentation



Data Architecture Optimization Template



Data Architecture Decision Template



Info-Tech offers various levels of support to best suit your needs

DIY Toolkit

"Our team has already made this critical project a priority, and we have the time and capability, but some guidance along the way would be helpful."

Guided Implementation

"Our team knows that we need to fix a process, but we need assistance to determine where to focus. Some check-ins along the way would help keep us on track."

Workshop

"We need to hit the ground running and get this project kicked off immediately. Our team has the ability to take this over once we get a framework and strategy in place."

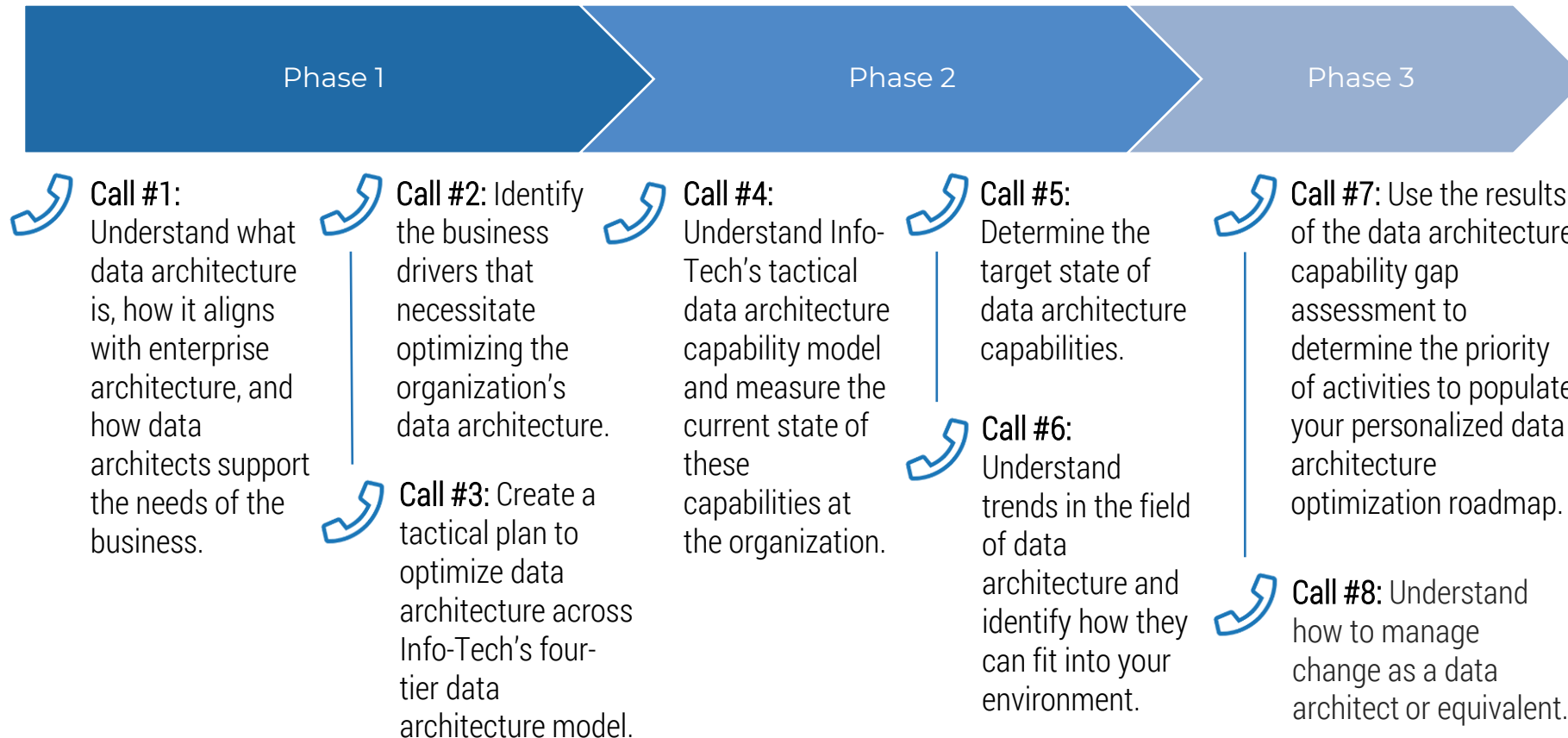
Consulting

"Our team does not have the time or the knowledge to take this project on. We need assistance through the entirety of this project."

Diagnostics and consistent frameworks are used throughout all four options.

Guided Implementation

What does a typical GI on this topic look like?



A Guided Implementation (GI) is a series of calls with an Info-Tech analyst to help implement our best practices in your organization.

A typical GI is 8 to 12 calls over the course of 4 to 6 months.

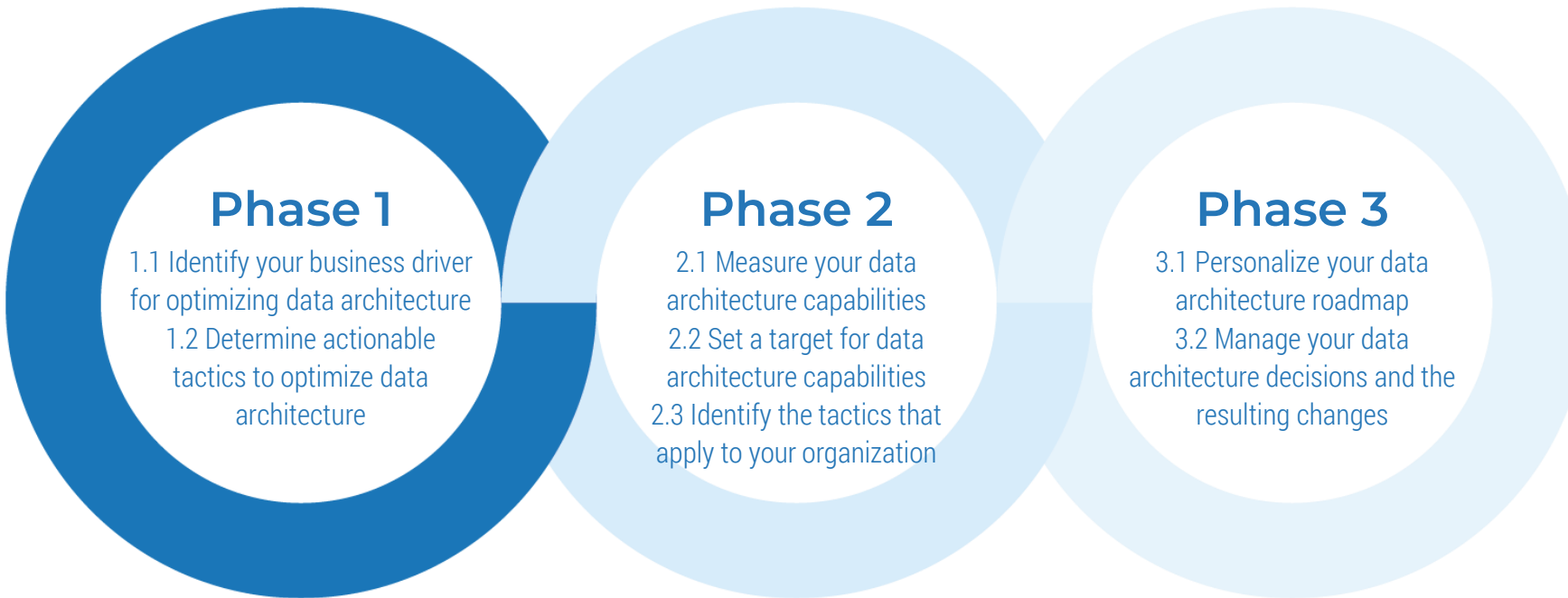
Workshop Overview

Contact your account representative for more information.
workshops@infotech.com 1-888-670-8889

	Day 1	Day 2	Day 3	Day 4	Day 5
Activities	Identify the drivers of the business for optimizing data architecture <ol style="list-style-type: none"> 1.1 Explain the approach and value proposition. 1.2 Review the common business drivers and how the organization is driving a need to optimize data architecture. 1.3 Understand Info-Tech's <i>Four-Tier Data Architecture</i>. 1.4 Determine the pattern of tactics that apply to the organization for optimization. 	Determine the tactics for optimizing data architecture <ol style="list-style-type: none"> 2.1 Create your data architecture optimization plan. 2.2 Interview key business stakeholders for input on business drivers for data architecture. 2.3 With input from the business and enterprise architect, determine the current data architecture capabilities. 	Create your roadmap of optimization activities <ol style="list-style-type: none"> 3.1 Align with the enterprise architecture by interviewing the enterprise architect for input on the data architecture optimization roadmap. 3.2 With input from the business and enterprise architect, determine the target data architecture capabilities. 	Create your personalized roadmap <ol style="list-style-type: none"> 4.1 As a group, determine the roadmap activities that are applicable to your organization and brainstorm applicable initiatives. 4.2 Determine the timing and effort of the roadmap activities. 	Create a plan for change management <ol style="list-style-type: none"> 5.1 Use the <i>Data Architecture Decision Documentation Template</i> to document key decisions and updates. 5.2 Review best practices for change management. 5.3 Present roadmap and findings to the business stakeholders and enterprise architect.
Deliverables	<ol style="list-style-type: none"> 1. <i>Four-Tier Data Architecture Model</i> 2. <i>Data Architecture Tactic Plan</i> 	<ol style="list-style-type: none"> 1. <i>Four-Tier Data Architecture Capability Model</i> 	<ol style="list-style-type: none"> 1. <i>Data Architecture Tactical Roadmap</i> 	<ol style="list-style-type: none"> 1. <i>Data Architecture Tactical Roadmap</i> 	<ol style="list-style-type: none"> 1. <i>Data Architecture Decision Template</i>

Phase 1

Prioritize Your Data Architecture With Business-Driven Tactics



Build a Data Architecture Roadmap

This phase will walk you through the following activities:

- Complete the *Data Architecture Driver Pattern Identification Tool*.
- Create a tactical data architecture optimization plan based on the business driver input.

This phase involves the following participants:

Data Architect



Enterprise Architect



Database Administrator



Step 1.1

Identify your business driver for optimizing data architecture

Activities

1.1.1 Identify the business drivers for improving your data architecture.

1.1.2 Interview the business to get clarity on business objectives and drivers.

1.1.3 Interview the enterprise architect to get input on the drivers of the business.

Prioritize Your Data Architecture With Business-Driven Tactics

Step 1.1

Step 1.2

This step involves the following participants:

Data Architect



Enterprise Architect



Outcomes of this step

A starting point for the many responsibilities of the data architect role. Balancing business and technical requirements can be challenging, and to do so you must first understand what is driving the need for data architecture improvements.

A holistic understanding of the organization's architecture environment, including enterprise, application, data, and technology architectures and how they interact.

Data architecture involves planning, communication, and understanding of technology

Definitions vary slightly across major architecture and management frameworks.

However, there is a consensus that data architecture provides organizations with:

- Alignment
- Planning
- Roadmapping
- Change management
- A guide for the organization's data management program

Data architecture

A description of the structure and interaction of the enterprise's major types and sources of data, logical data assets, physical data assets, and data management resources (TOGAF, 2018).

The subject area of data management that defines the data needs of the enterprise and designs the master blueprints to meet those needs (DAMA, 2009).

Data architecture must be based on business goals and objectives developed within the technical strategies, constraints, and opportunities of the organization in support of providing a foundation for data management.

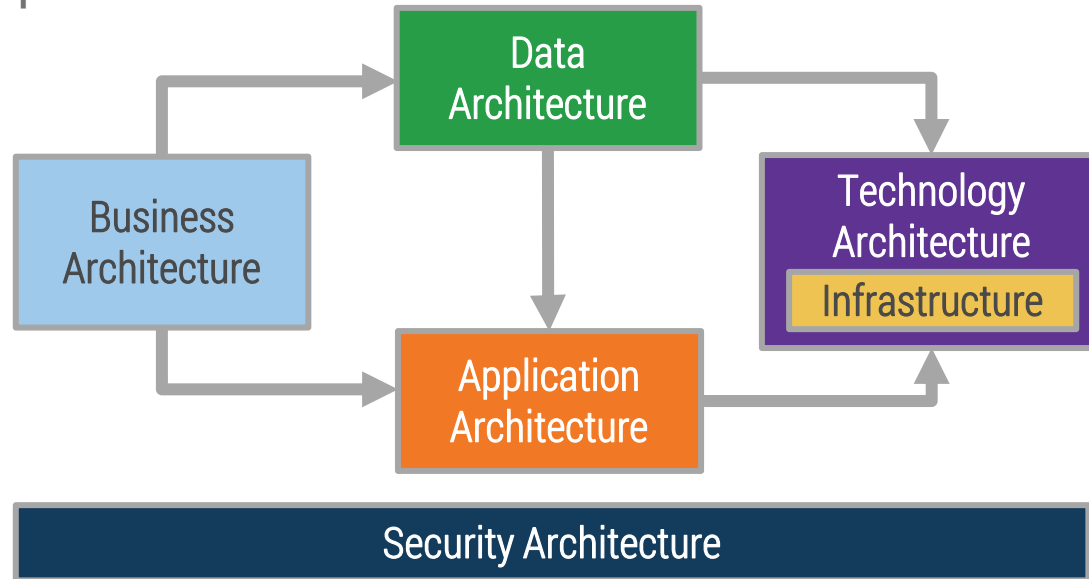
Info-Tech Insight

Data architecture is not just data models. Data architects must understand the needs of the business, as well as the existing **people** and **processes** that already exist in the organization to effectively perform their job.



Review how data architecture fits into the broader architectural context

Enterprise Architecture



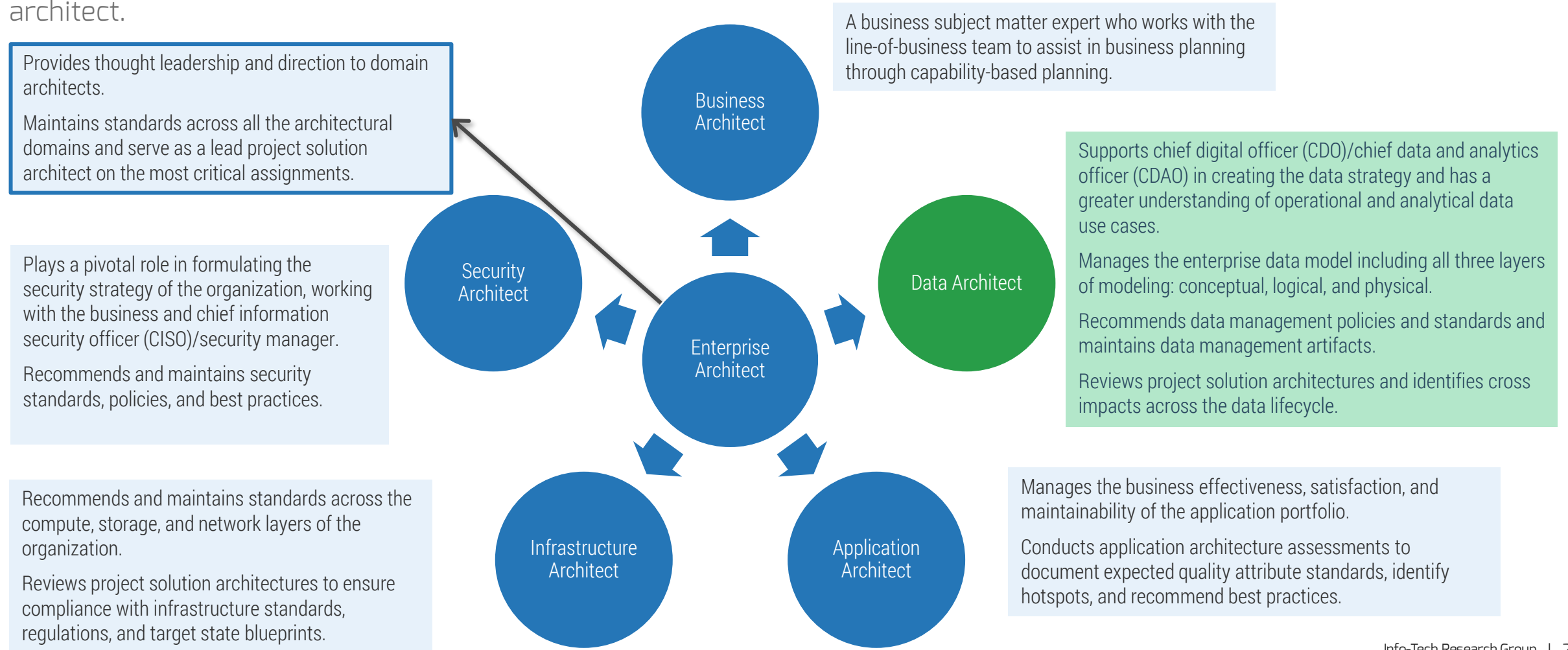
- Each layer of architecture informs the next. Each has components that execute processes and offer services to the next layer. For example, **data architecture** can be broken down into more granular activities and processes that inform how the organization's technology architecture should be arranged.

- Data does not exist on its own. It is informed by business architecture and used by other architectural domains to deliver systems, IT services, and to support business processes. As you build your practice, you must consider how data fits within the broader architectural framework.
- The [Zachman Framework](#) is a widely used enterprise architecture framework. Within it, data is identified as the first domain. The framework aims to standardize artifacts (work-products) within each architectural domain, provides a cohesive view of the scope of enterprise architecture and clearly delineates data components. Use the framework to ensure that your target data architecture practice is aligned to other domains within the enterprise architecture framework.

Source: Zachman International

Data architects operate in alignment with the other various architecture groups

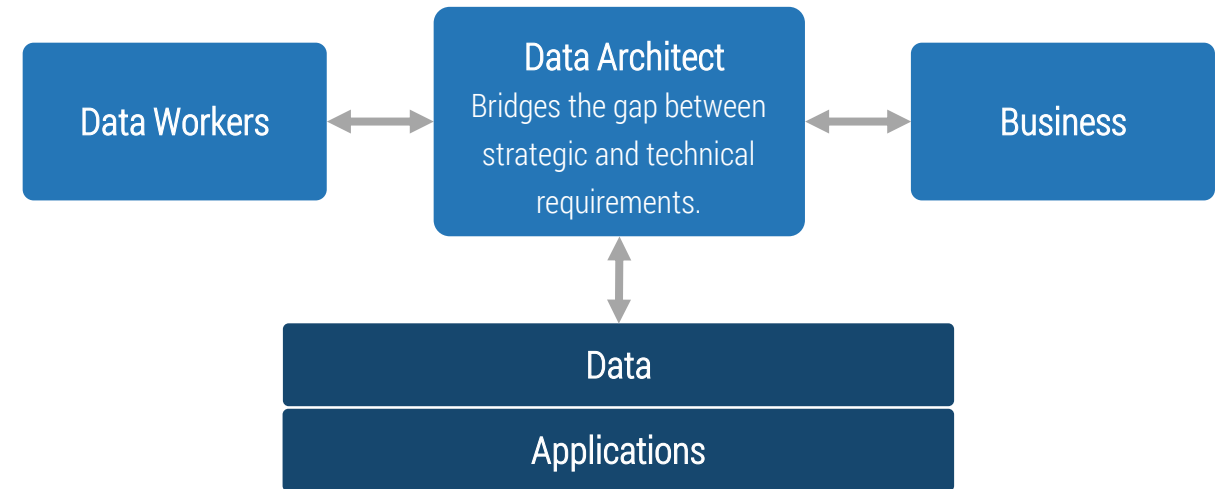
Data architects operate in alignment with various other architecture groups, with coordination from the enterprise architect.



As a data architect, you must maintain balance between technical and business requirements

The data architect role is integral to connecting the long-term goals of the business with how the organization plans to manage its data for optimal use.

- Data architects must have deep experience in data management, data warehousing, and analytics technologies. At a high level, the data architect plans and implements an organization's data, reporting, and analytics roadmap.
- Some of the role's primary duties and responsibilities include:
 - Data modeling
 - Reviewing existing data architecture
 - Benchmarking and improving database performance
 - Fine tuning database and SQL queries
 - Leading on extract, transform, and load (ETL) activities
 - Validating data integrity across all platforms
 - Managing underlying framework for data presentation layer
 - Ensuring compliance with proper reporting to bureaus/partners
 - Advising management on data solutions



Info-Tech Insight

The data architect role is not always clearly defined. Many organizations do not have a dedicated data architect resource and may not need one. However, the duties and responsibilities of the data architect must be carried out to some degree by a combination of resources as appropriate to the organization's size and environment.

Understand the data architect role to ensure that essential responsibilities are covered in the organization

A database administrator (DBA) is not a data architect, and data architecture is not something you buy from an enterprise application vendor.

Data architect role description

- The data architect must develop (along with the business) a short-term and long-term vision for the enterprise's data architecture.
- They must be able to create processes for governing the identification, collection, and use of accurate and valid metadata, as well as for tracking data quality, completeness, and redundancy.
- They need to create strategies for data security, backup, disaster recovery, business continuity, and archiving, and ensure regulatory compliance.

Skills necessary

- Hands-on experience with data architecting and management, data mining, and large-scale data modeling
- Strong understanding of relational and non-relational data structures, theories, principles, and practices
- Strong familiarity with metadata management
- Knowledge of data privacy practices and laws

Define policies, processes, and priorities

- Policies
 - Boundaries of the data architecture
 - Data architecture standards
 - Data architecture security
 - Responsibility of ownership for the data architecture and data repositories
 - Responsibility for data architecture governance
- Processes
 - Data architecture communication
 - Data architecture change management
 - Data architecture governance
 - Policy compliance monitoring
- Priorities
 - Align architecture efforts with business priorities
 - Close technology gaps to meet service level agreements (SLAs)
 - Determine impacts on current or future projects

Leverage data architecture frameworks to understand how the role fits into the greater enterprise architecture framework

Enterprise data architectures are available from industry consortiums such as The Open Group Architecture Forum (TOGAF), and open-source initiatives such as Method for an Integrated Knowledge Environment (MIKE2.0).

- The TOGAF [enterprise architecture model](#) is a detailed framework of models, methods, and supporting tools to create an enterprise-level architecture.



- TOGAF was first developed in 1995 and was based on the Technical Architecture Framework for Information Management (TAFIM) developed by the US Department of Defense.
 - TOGAF includes application, data, and infrastructure architecture domains providing enterprise-level, product-neutral architecture principles, policies, methods, and models.
 - As a member of The Open Group, it is possible to participate in ongoing TOGAF development initiatives.
- The wide adoption of TOGAF has resulted in the mapping of it to several other industry standards including Control Objectives for Information and Related Technologies (CoBIT) and Information Technology Infrastructure Library (ITIL).

- MIKE2.0 is an open-source method for enterprise information management providing a framework for information development.



- Strategic Architecture for the Federated Enterprise (SAFE) provides the technology solution framework for MIKE2.0.
 - SAFE includes application, presentation, information, data, Infrastructure, and metadata architecture domains.

Info-Tech Insight

If an enterprise-level IT architecture is your goal, [TOGAF](#) is likely a better model. However, if you are an information and knowledge-based business then MIKE2.0 may be more relevant to your business.

The data architect must identify what drives the need for data from the business to create a business-driven architecture

- As the business landscape evolves, new needs arise. An organization may undergo new compliance requirements, or attempt to improve their customer intimacy, which could require a new functionality from an application and its associated database.
- There are four common scenarios that lead an organization to require optimization of its data architecture and all present unique challenges for a data architect:

<div>1</div> <div>Becoming more data driven</div> <p>As organizations hope to get more from their data, there is a push for more accurate and timely data from applications. Data-driven decision making requires verifiable data from trustworthy sources.</p> <p>Result: Replace decisions made on gut or intuition with real and empirical data – make more informed and data-driven decisions.</p>	<div>2</div> <div>New functionality or business rule</div> <p>To succeed as business landscapes change, organizations find themselves innovating on products or services and the way they do things. Changes in business rules, product or service offering, and new functionalities can subsequently demand more from the existing data architecture.</p> <p>Result: Prepare yourself to successfully launch new business initiatives with an architecture that supports business needs.</p>	<div>3</div> <div>Mergers and acquisitions</div> <p>If an organization has recently acquired, been acquired, or is merging with another, the technological implications require careful planning to ensure a seamless fit. Application consolidation, retirement, data transfer, and integration points are crucial.</p> <p>Result: Leverage opportunities to incorporate and consolidate new synergistic assets to realize the return on investment (ROI).</p>	<div>4</div> <div>Risk and compliance</div> <p>Data in highly regulated organizations must be kept safe and secure. Architectural decisions around data impact the level of compliance within the organization.</p> <p>Result: Avoid the fear of data audits, regulatory violations, and privacy breaches.</p>
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Info-Tech Insight

These are just the four most common scenarios, but not the only reasons why data architects need to optimize the organization’s data architecture. However, other business needs can be addressed using the same concept as these four common scenarios.

Use the *Data Architecture Driver Pattern Identification Tool* to identify your focus for data architecture

Follow Info-Tech's process of first analyzing the needs of the business, then determining how best to architect your data based on these drivers. Data architecture must be able to rapidly evolve to support the strategic goals of the business, and the *Data Architecture Driver Pattern Identification Tool* will help you prioritize your efforts to best accomplish this.

Tab 2: Driver Identification

Objective: Objectively assess the most pressing business drivers.

[illegible]

Step:

- Evaluate **business drivers** to determine the data architecture optimization priorities and tactics.

Tab 3: Tactic Pattern Plan, *Section 1*

Objective: Review your business **drivers** that require architectural changes in your environment.

Based on the questionnaire, your main business driver is:	Based on your business drivers, you should focus on the following Data Architecture Areas:										
Mergers and Acquisitions	<table border="1"> <thead> <tr> <th>Data Architecture Tier</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Data Creation</td><td>Operational data produced from business applications such as CRM/ERP, data documents such as MS Excel spreadsheets, manual extractions from other document types, user-level database inquiries (e.g. Access and Sybase log files, data feeds, big datasets, etc.) reside here. This is also the layer where transactions and optional event source and where data is first created or ingested.</td></tr> <tr> <td>Data Ingestion & Accumulation</td><td>Data ingestion is the process of moving and replicating raw data from sources to target destination such as a data lake or data warehouse. Data accumulation is where data rests (long-term storage) and also where an enterprise's information, documents, digital documents, and other key content types are stored.</td></tr> <tr> <td>Data Augmentation</td><td>This is where data is transformed into business purpose and will also be moved to a place of rest or a place specific use: Data integration, masking, scrubbing, aggregation, cleansing and matching, and other data related tasks occur at this layer.</td></tr> <tr> <td>Data Delivery & Consumption</td><td>This is where data moves back into action. Data is brought together in unique combinations to support reporting, analytics and self-service solutions.</td></tr> </tbody> </table>	Data Architecture Tier	Description	Data Creation	Operational data produced from business applications such as CRM/ERP, data documents such as MS Excel spreadsheets, manual extractions from other document types, user-level database inquiries (e.g. Access and Sybase log files, data feeds, big datasets, etc.) reside here. This is also the layer where transactions and optional event source and where data is first created or ingested.	Data Ingestion & Accumulation	Data ingestion is the process of moving and replicating raw data from sources to target destination such as a data lake or data warehouse. Data accumulation is where data rests (long-term storage) and also where an enterprise's information, documents, digital documents, and other key content types are stored.	Data Augmentation	This is where data is transformed into business purpose and will also be moved to a place of rest or a place specific use: Data integration, masking, scrubbing, aggregation, cleansing and matching, and other data related tasks occur at this layer.	Data Delivery & Consumption	This is where data moves back into action. Data is brought together in unique combinations to support reporting, analytics and self-service solutions.
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Data Delivery & Consumption	This is where data moves back into action. Data is brought together in unique combinations to support reporting, analytics and self-service solutions.										

Step:

- Understand how each business driver relates to data architecture and how each driver gives rise to a specific pattern across the four-tier data architecture.

Tab 3: Tactic Pattern Plan, *Section 2*

Objective: Determine a list of tactics that will help you address the business drivers.

[illegible]

Step:

- Review the list of high-level tactics presented to optimize your data architecture across the four tiers.



Download the *Data Architecture Driver Pattern Identification Tool*

1.1.1 Identify the business drivers for improving your data architecture

Data architecture improvements need to be driven by business need.

Instruction:

In **Tab 2** (Driver Identification) of the *Data Architecture Driver Pattern Identification Tool*, assess the degree to which the organization is feeling the pains of the four most common business drivers:

1. Is there a present or growing need for the business to be making **data-driven** decisions?
2. Does the business want to explore a **new functionality** and hence require a new application?
3. Is your organization **acquiring** or **merging** with another entity?
4. Is your organization's **regulatory** environment quick to change and require stricter reporting?



Data Driver Assessment		
Use this tab to objectively identify the most pressing drivers of the business. Indicate whether or not the organization is feeling the indicated "symptoms" of the associated driver in each of the four driver categories. After you have answered the questionnaire, go to tab 3, "Tactic Pattern Scorecard" to review the driver pattern that you fit into as well as the recommended tactics to optimize data architecture across the five tiers of the organization's data environment.		
Driver	Symptoms of Driver	Yes/No
Becoming More Data-Driven	The organization is increasingly looking to make data the basis for strategic and operational thinking.	
	Business decisions are made for seemingly no reason and without rationale.	
	Data is not shared easily between departments, and silos exist.	
	Decisions are consistently delayed due to a lack of information.	
New Functionality	The business does not trust the data it receives.	
	A new application is being brought on board.	
	The business wants to add a new functionality to an existing application that requires a change in the data integration environment.	
	Database connections need to be updated due to stale integration practices.	
Mergers and Acquisitions	Current integration architecture is inflexible, not reusable, and interfaces are not at a minimum.	
	The organization is looking to add new data entry fields in existing internal or external applications.	
	Your organization recently acquired or merged with another organization.	
	The organization is looking to acquire a line of business from another organization.	
Risk and Compliance	A large volume of new data is being integrated into the organization's business processes.	
	The organization is looking to leverage IoT or other big data sources that will require incorporating large amounts of new data.	
	There is a need for applications to be rationalized and/or consolidated.	
	Your organization is in a highly regulated industry.	
	There have been changes in the existing regulatory/compliance landscape.	
	Current data architecture is inadequate to support the management of risk in the organization.	
	The organization has been having trouble keeping up with compliance requirements.	
	The organization's data architecture is outdated and potentially stale, leading to potential exposure to risk.	

Tab 2: Driver Identification

1 hour

Input	Output
<ul style="list-style-type: none">• <i>Data Architecture Driver tool</i> assessment prompts	<ul style="list-style-type: none">• Identified business driver that applies to your organization
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Driver Pattern Identification Tool</i>	<ul style="list-style-type: none">• Data architect• Enterprise architect

Download the *Data Architecture Driver Pattern Identification Tool*

1.1.2 Interview the business to get clarity on business objectives and drivers

Data architecture improvements must be driven by business need.

Instruction:

- Identify two to three business units that demonstrate enthusiasm for or a positive attitude on improving how organizational data can help them in their role and as a unit.
- Conducting a deep-dive interview process with these key stakeholders will help further identify high-level goals for the data architecture strategy within each business unit. This process will help to secure their support throughout the implementation process by giving them a sense of **ownership**.

Key interview questions:

1. What are your primary activities? What do you do?
2. What challenges do you have when completing your activities?
3. How is poor data impacting your job?
4. If your selected domain's data is improved, what business issues would this help solve?

Request background information and documentation from stakeholders regarding the following:

- What current data management policies and processes exist (that you know of)?
- Who are the data owners and end users?
- Where are the data sources within the department stored?
- Who has access to these data sources?
- Are there existing/ongoing issues within those data sources?

1 hour per Interview

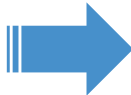
Input	Output
<ul style="list-style-type: none">• Sample questions targeting the activities, challenges, and opportunities of each business unit	<ul style="list-style-type: none">• Identified business objectives and drivers of each business unit
Materials	Participants
<ul style="list-style-type: none">• Interview questions	<ul style="list-style-type: none">• Data architect• IT representatives• Business representatives

1.1.3 Interview the enterprise architect to get input on the drivers of the business

Data architecture improvements must be driven by business need.

Instruction:

As you work through **Tab 2** (Driver Identification) of the *Data Architecture Driver Pattern Identification Tool*, consult with the enterprise architect or equivalent to assist you in rating the importance of each symptom of the business drivers. This will help you provide greater value to the business and more aligned objectives.



Data Driver Assessment		
Use this tab to objectively identify the most pressing drivers of the business. Indicate whether or not the organization is feeling the indicated "symptoms" of the associated driver in each of the four driver categories. After you have answered the questionnaire, go to tab 3, "Tactic Pattern Scorecard" to review the driver pattern that you fit into as well as the recommended tactics to optimize data architecture across the five tiers of the organization's data environment.		
Driver	Symptoms of Driver	Yes/No
Becoming More Data-Driven	The organization is increasingly looking to make data the basis for strategic and operational thinking.	
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	The business does not trust the data it receives.	
New Functionality	A new application is being brought on board.	
	The business wants to add a new functionality to an existing application that requires a change in the data integration environment.	
	Database connections need to be updated due to stale integration practices.	
	Current integration architecture is inflexible, not reusable, and interfaces are not at a minimum.	
	The organization is looking to add new data entry fields in existing internal or external applications.	
Mergers and Acquisitions	Your organization recently acquired or merged with another organization.	
	The organization is looking to acquire a line of business from another organization.	
	A large volume of new data is being integrated into the organization's business processes.	
	The organization is looking to leverage IoT or other big data sources that will require incorporating large amounts of new data.	
	There is a need for applications to be rationalized and/or consolidated.	
Risk and Compliance	Your organization is in a highly regulated industry.	
	There have been changes in the existing regulatory/compliance landscape.	
	Current data architecture is inadequate to support the management of risk in the organization.	
	The organization has been having trouble keeping up with compliance requirements.	
	The organization's data architecture is outdated and potentially stale, leading to potential exposure to risk.	

Tab 2: Driver Identification

2 hours

Input	Output
<ul style="list-style-type: none"><i>Data Architecture Driver tool</i> assessment prompts	<ul style="list-style-type: none">Identified business driver that applies to your organization
Materials	Participants
<ul style="list-style-type: none"><i>Data Architecture Driver Pattern Identification Tool</i>	<ul style="list-style-type: none">Data architectEnterprise architect

→ Once you know what that need is, go to Step 2.

Step 1.2

Determine actionable tactics to optimize data architecture

Activities

1.2.1 Determine your tier priority pattern and the tactics that you should use based on the business drivers.

Prioritize Your Data Architecture With Business-Driven Tactics

Step 1.1

Step 1.2

This step involves the following participants:

Data Architect



Enterprise Architect



Database Administrator



Outcomes of this step

A tactical and prioritized plan for optimizing the organization's data architecture according to the needs of the business.

To plan a business-driven architecture, data architects must keep the organization's big picture in mind

Architecting an organization involves alignment, planning, road mapping, design, and change management functions.

- Data architects must be heavily involved with:
 - Understanding the short- and long-term **visions** of the business to develop a vision for the organization's data architecture.
 - Creating **processes** for governing the identification, collection, and use of accurate and valid data, as well as for tracking data quality, completeness, and redundancy.
 - Creating **strategies** for data security, backup, disaster recovery, business continuity, and archiving, and ensure regulatory compliance.
- To do this, you need a **framework**. A framework provides you with a holistic view of the organization's data environment that you can use to design short- and long-term tactics for improving the use of data for the needs of the business. Use **Info-Tech's four-tier data architecture** to model your environment in a logical, consumable fashion.

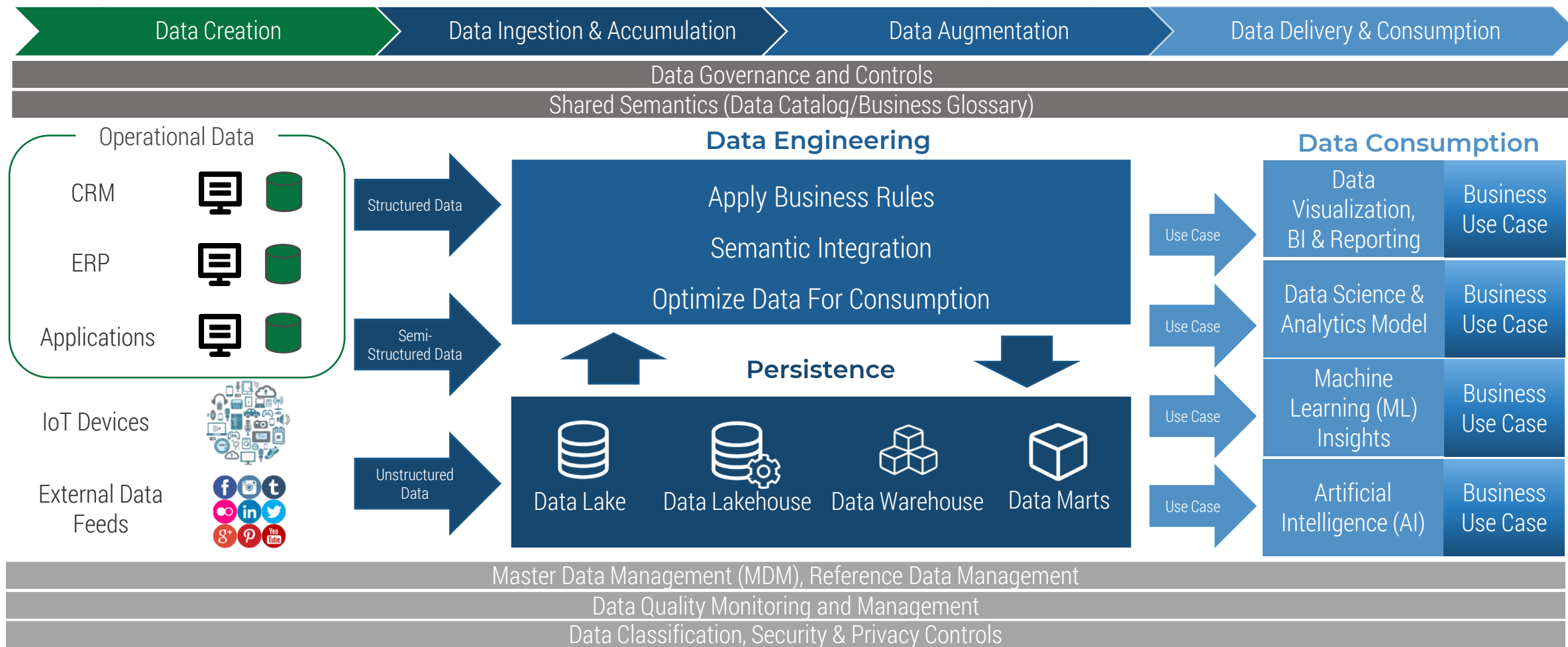
Info-Tech Best Practice

The more complicated an environment is, the more need there is for a framework. Being able to pick a starting point and prioritize tasks is one of the most difficult, yet most essential, aspects of any architect's role.



The four tiers of an organization's data architecture support the use of data throughout its lifecycle

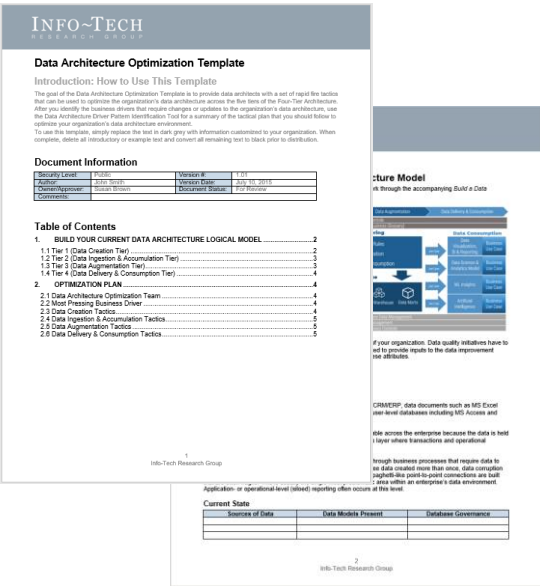
Info-Tech's four-tier data architecture model summarizes an organization's data environment at a conceptual level. Data flows from left to right but can also flow from the consumption layer back to the accumulation layer for repatriation of data.



Use the *Data Architecture Optimization Template* to build your improvement roadmap

Overview:

- Use this template to support your team in creating a **tactical strategy for optimizing your data architecture** across the four tiers of the organization’s architecture. This template can be used to document your organization’s most pressing business driver, the reasons for optimizing data architecture according to that driver, and the tactics that will be employed to address the shortcomings in the architecture.



Info-Tech's *Data Architecture Optimization Template*

Table of Contents	
1. Build Your Current Data Architecture Model	Use this section to document the current data architecture situation, which will provide context for your plan to optimize your data architecture.
2. Optimization Plan	Use this section to document the tactics that will be employed to optimize the current data architecture according to the tactic pattern identified by the business driver.



Fill out as you go:

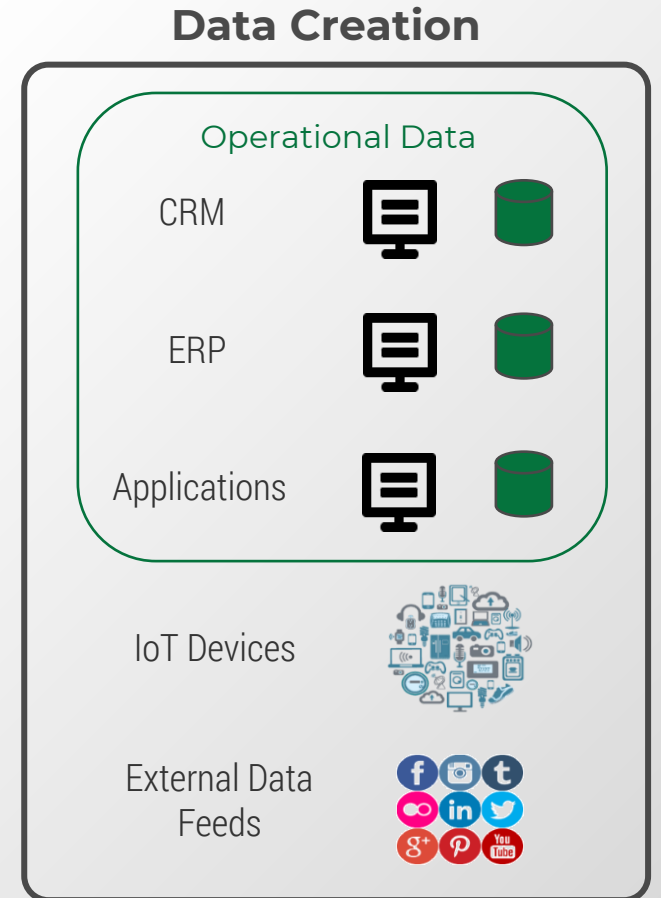
- As you read about the details of the four-tier data architecture model in the following slides, start building your current data architecture model by filling out the sections that correspond to the various tiers. For example, if you identified that the most pressing business driver is adding a new functionality to an application, document the sources of data required for compliance, as well as the warehousing strategy currently being employed. This will help you to understand the organization’s data architecture at a logical level.

 [Download the *Data Architecture Optimization Template*](#)

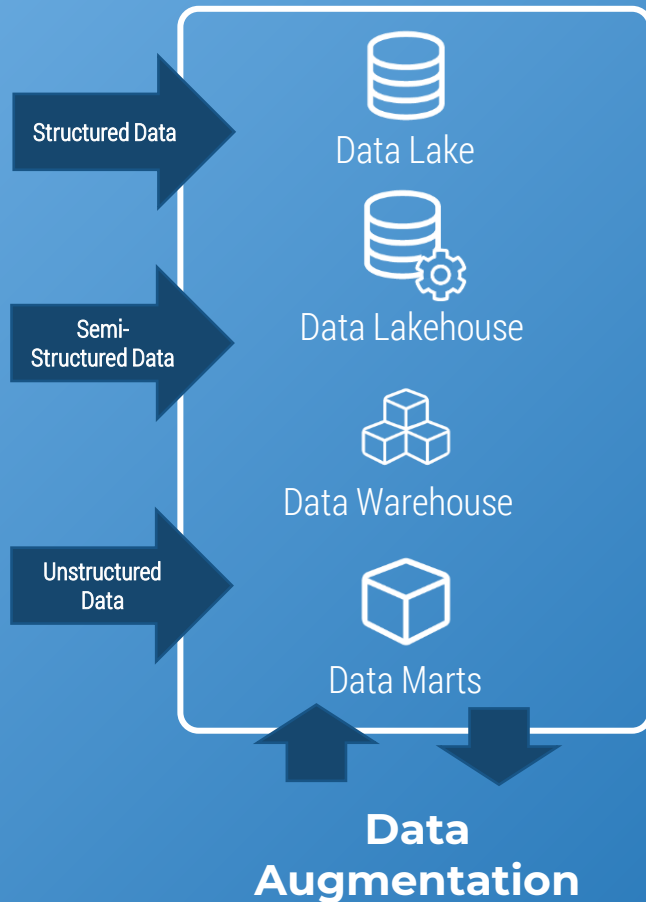
Tier 1 represents all the sources of your organization's data

Tier 1 is where the data is created.

- Operational data produced from business applications such as content resource management (CRM)/enterprise resource planning (ERP), data documents such as MS Excel spreadsheets, manual extractions from other document types, user-level databases including MS Access and MySQL, log files, data feeds, big data sets, etc. reside here.
- This tier typically holds the siloed data that is often not available across the enterprise because the data is held within department-level applications or systems. This is also the layer where transactions and operational activities occur and where data is first created.
- There are any number of business activities from transactions through business processes that require data to flow from one system to another, so it is often at this layer we encounter data duplication, data corruption, manual re-keying of data from system to system, and spaghetti-like point-to-point connections being built that are often fragile. This is usually the single most problematic area within an enterprise's data environment. Application- or operational-level (siloed) reporting often occurs at this level.



Data Ingestion & Accumulation

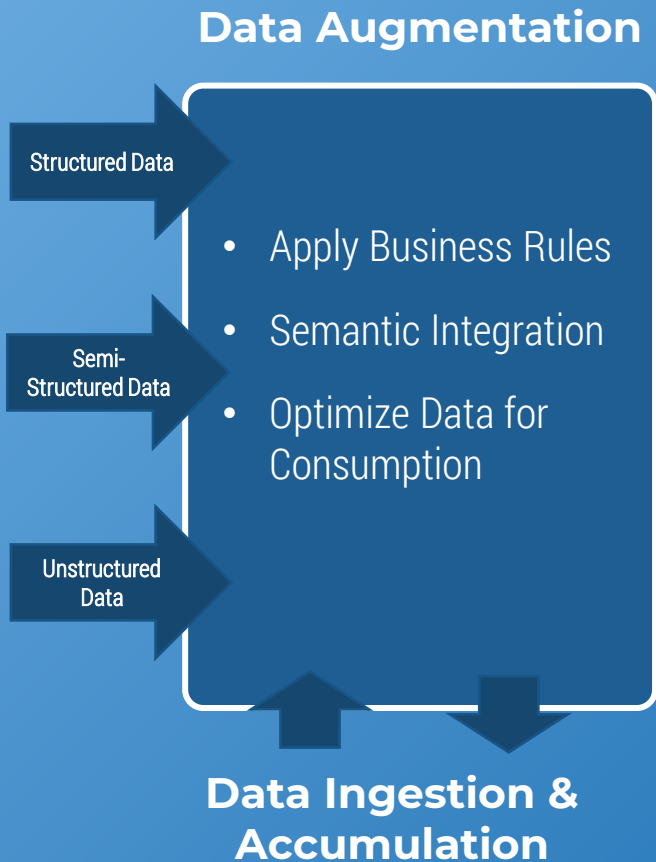


Find out more

For more information on data warehousing, refer to Info-Tech's [Build an Extensible Data Warehouse Foundation](#) and [Build a Data Warehouse](#) blueprints.

Tier 2 is where data comes together from all sources to be stored in a central environment

- Data accumulation is where data rests (long-term storage) and also where an enterprise's information, documents, digital assets, and any other content types are stored. This is also where derived and contrived data creations (Tier 3) are stored for reuse, and where formulas, thought models, heuristics, algorithms, report styles, templates, dashboard styles, and presentation-layer widgets are all stored in the enterprise information management system.
- The data typically comes from multiple sources (Tier 1), and may be structured, semi-structured, or unstructured. This movement of data from Tier 1 to Tier 2 in its purest form means we move raw data to storage locations in an overall data warehouse environment reflecting any security, compliance and other standards in our choices for how to store. This is also the layer where data lakes exist as well as traditional relational databases, enterprise database systems, enterprise content management systems, and simple user-level databases.



Tier 3 is where transformation and aggregation occur

- Businesses hold tremendous volumes of data generated from different sources and applications. The purpose of this layer is to understand and process raw data for unique business purposes that will also be moved to a place of rest (Tier 2) or a place of specific use, such as business intelligence and ML insights (Tier 4).
- By transforming data, organizations can convert the format or structure of a data set to match that of a target system or use and improve data quality through activities such as cleansing and matching. Techniques such as data masking and scrambling can be used to support security and privacy requirements. Aggregation and other data related blending tasks are used to enrich data for multiple consumption purposes, such as reporting and business intelligence.
- Data transformation is a part of any data pipeline. This can include extract, transform, and load (ETL) and extract, load, transform (ELT) pipelines.
- This tier can happen before loading into a data lake or data warehouse (Tier 2), in a traditional ETL approach. You can also persist the data onto a target system such as data lake and have it transformed on an as-needed basis later, in an ELT approach. The sequences of the two tiers are applied interchangeably to meet various business needs.

Tier 4 is where knowledge and insight are born

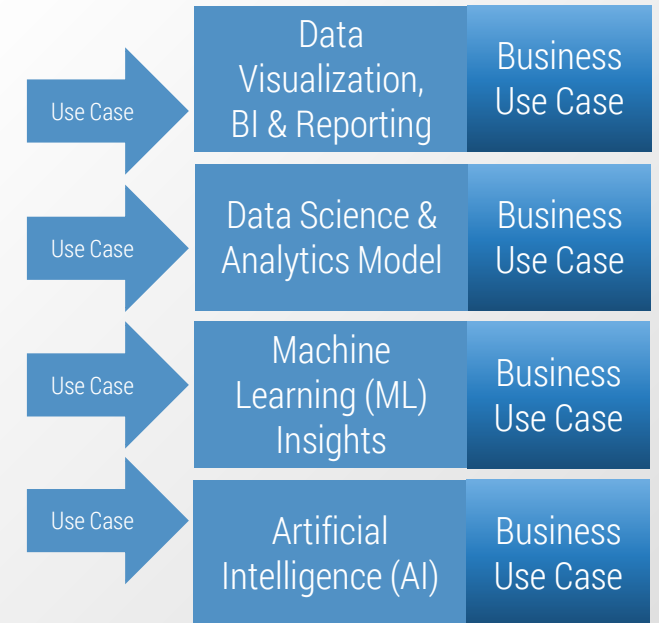
Tier 4 represents data being consumed for a purpose.

- Unlike Tier 2 where data is at rest, this tier is where data moves back into action. Data is brought together in unique combinations to support reporting, analytics, visualization, self-service solutions and the training and development of ML and AI models. It is here that the following enterprise analytic views are crafted: exploratory, inferential, causal, comparative, statistical, descriptive, diagnostic, hypothesis, predictive, decisional, directional, prescriptive.
- Templates for presenting insights are extremely valuable to an enterprise, both for their initial use, and for the ability to build deeper, more insightful analytics. These derived data sets and the thought models, presentation styles, templates, and other derived and contrived assets should be repatriated into the derived data repositories and the enterprise information management systems respectively as shown in Tier 2.

Info-Tech Insight

Repatriation of data and information is essential for the management of organizational knowledge. This is where information, knowledge, and insights that are stored in content form are moved back to the accumulation layer for long-term storage. This makes it crucial to have an effective enterprise content management strategy including the means to find information quickly and efficiently. This is where metadata and taxonomy come in.

Data Delivery & Consumption



Find out more

For more information on business intelligence tools and strategy, refer to Info-Tech's [Select and Implement a Reporting and Analytics Solution](#) and [Build a Reporting and Analytics Strategy](#) blueprints. For more information on AI and ML systems, refer to Info-Tech's [Drive Business Value With Off-the-Shelf AI](#) blueprint.

As a data architect, you must prioritize your focus according to business need

Determine your focus

- Now that you understand the **drivers** requiring data architecture optimization and the current data architecture situation at your organization, it's time to determine the **actions** that will be taken to address each driver.
- The next four slides provide an overview of the **priorities** that accompany the four most common business drivers that require updates to a stale data architecture.



Business driver

Based on the questionnaire, your main business driver is:

Becoming More Data-Driven

As organizations are looking to get more out of their data, there is a push for more accurate and timely data from applications. Data-driven decision making requires verifiable data from trustworthy sources. Data architects are an integral part of ensuring that the data is understood at a conceptual, logical, and physical level, which is used to guide data workers such as DBAs and individuals who perform data entry to optimize, tune, and manage not only the physical databases, but also the processes that are followed to access data by data users in the business.

Based on your business drivers, you should focus on the following Data Architecture Areas:	
Data Architecture Tier	Description
Data Ingestion & Accumulation	Data ingestion is the process of moving and replicating raw data from sources to target destination such as a data lake or data warehouse. Data accumulation is where data rests (long-term storage) and also where an enterprise's information, documents, digital assets, and any other content types are stored.
Data Augmentation	This is where data is transformed for unique business purpose that will also be moved to a place of rest or a place of specific use. Data integration, masking, scrubbing, aggregation, cleansing and matching, and other data related blending tasks occur at this layer.
Data Delivery & Consumption	This is where data moves back into action. Data is brought together in unique combinations to support reporting, analytics and self-service solutions.

Data Architecture Driver Pattern Identification Tool



Tactics across the four tiers

Description of the Optimized Logical Data Architecture

2

Tier 2 is where data goes to rest. Data goes to a central repository, which could involve data warehouse or data lake technology. An optimized warehousing environment has the following attributes:

- Data is classified
- A business data glossary exists to provide a catalog view of the data
- The repository represents a comprehensive data library – in terms of subject areas and domains
- Defined data owners and data stewards exist who will divide the library into multiple areas, keeping track of the catalogs
- Needs of the data users, including the timeliness of the data, have been determined. This will inform the performance-tuning activities that should occur on a regular basis
- Backup, retention, and archive activities are defined and performed according to business rules
- All historical data is retained to make it comprehensive
- Critical data is managed as master and reference data
- Capacity planning and failover setup is performed on the central repository

Tactics to Optimize the Logical Data Architecture Environment

2

- Establish guiding principles to govern architectural decisions (3NF, Inmon, Lindstedt, Kimball)
- Make use of performance enhancing technologies such as in-memory, columnar, and appliance
- Store historical data to meet business needs
- Create a physical architecture that classifies and manages hot, warm, and cold data
- Offload data to a Hadoop platform
- Leverage a business data glossary to create a consistent definition of data elements
- Organize your data warehouse in a star schema (minimizes joins)

Data Architecture Driver Pattern Identification Tool



Documented tactic plan

INFO-TECH

Data Architecture Optimization Template

Introduction: How to Use This Template

The goal of the Data Architecture Optimization Template is to provide data architects with a set of repeatable tactics that can be used to optimize the architecture and performance across the four tiers of the Data Architecture Driver Pattern. This template is designed to be used as a reference for data architects to create a documented tactic plan for their organization. The template is organized into four sections: Document Information, Table of Contents, Table of Tiers, and Table of Tactics. The Table of Tiers section provides a high-level overview of the four tiers of the Data Architecture Driver Pattern. The Table of Tactics section provides a detailed list of tactics for each tier, including a description of the tactic, the tier it applies to, and the business driver it addresses. The template is designed to be used as a reference for data architects to create a documented tactic plan for their organization.

Document Information

Document Title	Data Architecture Optimization Template
Version	1.0
Author	Info-Tech Research Group
Reviewer	Info-Tech Research Group
Approved By	Info-Tech Research Group
Effective Date	2023-01-01

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Info-Tech's Data Architecture Optimization Template

Use this template as a reference for data architects to create a documented tactic plan for their organization. The template is organized into four sections: Document Information, Table of Contents, Table of Tiers, and Table of Tactics. The Table of Tiers section provides a high-level overview of the four tiers of the Data Architecture Driver Pattern. The Table of Tactics section provides a detailed list of tactics for each tier, including a description of the tactic, the tier it applies to, and the business driver it addresses. The template is designed to be used as a reference for data architects to create a documented tactic plan for their organization.

Info-Tech's Data Architecture Optimization Template

Business driver #1: Adding a **new functionality** to an application can have wide impacts on data architecture

Does the business want to add a new application or supplement an existing application with a new functionality?

Whether the business wants to gain better customer intimacy, achieve operational excellence, or needs to change its compliance and reporting strategy, the need for collecting new data through a new application or a new functionality within an existing application can arise. This business driver has the following attributes:

- It's often operational oriented and application driven.
- An application is changed through a version upgrade, migration to the cloud, or customization, or due to rationalization or changes in the way that application data is generated.
- However, not all new functionalities trigger this scenario. Non-data-related changes, such as a new interface, new workflows, or any other application functionality changes not involving data, will not have data architecture impacts.



When this business driver arises, data architects should focus on optimizing architecture at the data creation and ingestion and accumulation tiers.

Tactics for this business driver should address the following pattern:



Business driver #2: Organizations today are determined to become more **data driven**

Does the business want to better leverage its data?

Organizations are determined to get more out of their data and may wish to do so for multiple reasons. Whether these include improving customer experience or operational excellence, the data architect must ensure that the organization's data ingestion and accumulation, augmentation, and delivery and consumption layers are assessed and optimized for serving the needs of the business. This business driver has the following attributes:

- This scenario is typically project driven and analytical oriented.
- The business intends to leverage data and information by processing data through business intelligence tools and self-service.
- Example: The organization wants to include new third-party data and needs to build a new data mart to provide a slice of data for analysis. Organizations beginning their AI journey may wish to use that data to train and build ML and AI models.



“Data-drivenness is about building tools, abilities, and, most crucially, a culture that acts on data.”

– Carl Anderson, *Creating a Data-Driven Organization*

When this business driver arises, data architects should focus on optimizing architecture at the data ingestion and accumulation, augmentation, and delivery and consumption tiers.

Tactics for this business driver should address the following pattern:



Business driver #3: Risk and compliance demands can put pressure on outdated architectures

Is there increasing pressure on the business to maintain compliance requirements as per regulations?

An organization wants to maintain more transparent and accurate records and ensure that appropriate rules are followed to support audit, compliance, regulatory, and legal requirements. Architectural decisions around data impact the level of compliance within the organization. How your data is stored and processed in databases at the data creation layer, in the data ingestion and accumulation layer, in the data augmentation layer, or in data delivery and consumption layer can compromise your organization's compliance. There are different types of requirements:

- Some are data-element driven. For example, personal identifiable information (PII)/personal health information (PHI) involve requirements around data elements that are associated with personal and health information.
- Some are process driven. For example, some requirements restrict data read/write to certain groups.



When this business driver arises, data architects should focus on optimizing architecture at the data creation, ingestion and accumulation, augmentation, and delivery and consumption tiers.

Tactics for this business driver should address the following pattern:



Business driver #4: Mergers and acquisitions can require a restructuring of the organization's data architecture

Does the organization intend to acquire or merge with another organization or line of business?

There are three scenarios that encompass the mergers and acquisitions business driver for data architecture:

1. The organization acquires/merges with another organization and wants to integrate the data.
2. The organization acquires/merges a subset of an organization (e.g. a line of business) and wants to integrate the data.
3. The organization acquires another organization for competitive purposes and does not need to integrate the data.

Regardless of what scenario your organization falls into, you must go through the same process of identifying the requirements for the new data:

1. Understand what data you are getting.
 - a) The business may acquire another organization for the data, for the technology, and/or for algorithms (for example). If the goal is to integrate the new data, you must understand if the data is unstructured, structured, how much data, etc.
2. Plan for the integration of the new data into your environment.
 - a) Do you have in-house expertise to integrate the data? Database structures and systems are often mismatched (e.g. acquired company has an Oracle database whereas you are an SAP shop) and this may require expertise from the acquired company or a third party.
3. Integrate the new data.
 - a) Extraction of the new data is often the easy part. Transforming and loading the data is the difficult and costly part.

When this business driver arises, data architects should focus on optimizing architecture at the data creation, ingestion and accumulation, augmentation, and delivery and consumption tiers.

Tactics for this business driver should address the following pattern:

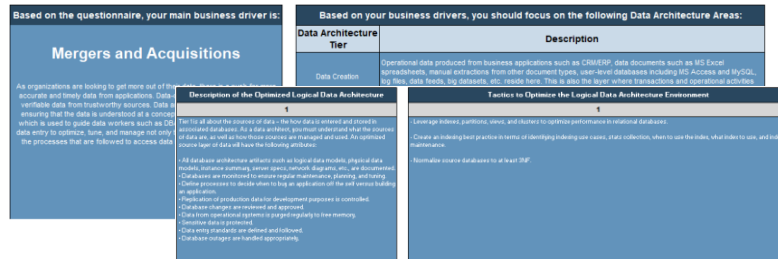


1.2.1 Determine your tier priority pattern and the tactics that you should address based on the business drivers

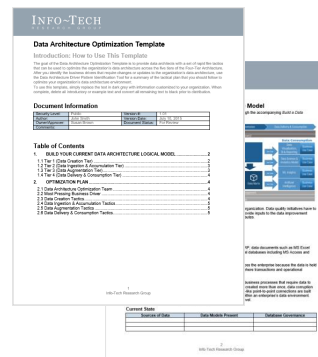
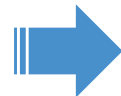
30 minutes

Instruction:

1. After you have assessed the organization's business driver on **Tab 2** (Driver Identification), move to **Tab 3** (Tactic Pattern Plan).
2. Here, you will find a summary of the business driver that applies to you, as well as the tier priority pattern that will help you to focus your efforts for data architecture.
3. Document the Tier Priority Pattern and associated tactics in **Section 2** (Optimization Plan) of the Data Architecture Optimization Plan.



Data Architecture Driver Pattern Identification Tool



Data Architecture Optimization Template

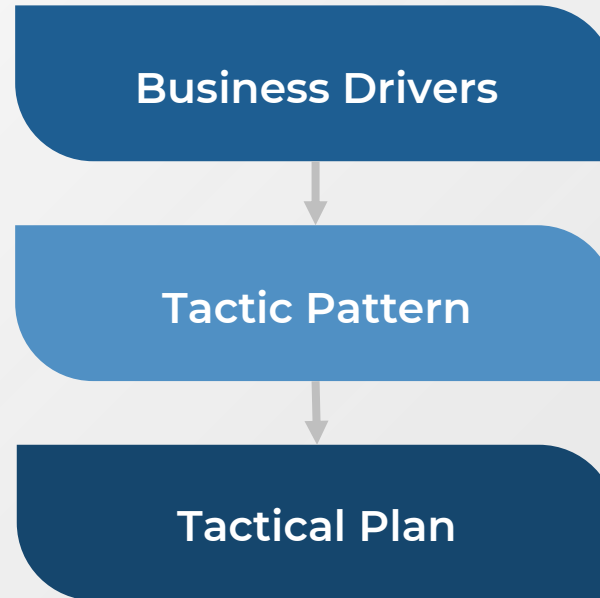
Input	Output
<ul style="list-style-type: none">• Business driver assessment	<ul style="list-style-type: none">• Tactic pattern and tactic plan
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Driver Pattern Identification Tool</i>• <i>Data Architecture Optimization Template</i>	<ul style="list-style-type: none">• Data architect• Enterprise architect

Info-Tech Insight

This phase helped you create a tactical plan to optimize your data architecture according to business priorities

Phase 1 is all about focus.

Data architects and those responsible for updating an organization's data architecture have a wide-open playing field with which to take their efforts. Being able to narrow your focus and generate an actionable plan will help you provide more value to the organization quickly and get the most out of your data.

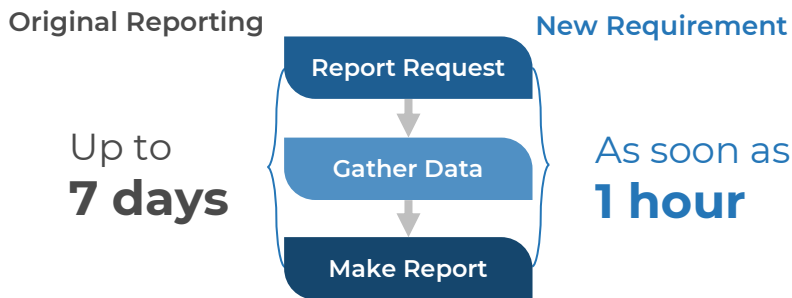


Now that you have your prioritized tactical plan, move to Phase 2. This phase will help you map these priorities to the essential capabilities and measure where you stack up in these capabilities. This is an essential step in creating your **data architecture roadmap** and plan to modernize the organization's data architecture in the coming years.

Case Study Part 1

To identify what the monetary authority needed from its data architecture

Prior to receiving new external requirements, the monetary authority body had been operating with an inefficient system. Outdated **legacy systems**, reports in **paper form**, **incomplete** reports, and **stale data** from other agencies resulted in slow data access. The new requirements demanded speeding up this process.

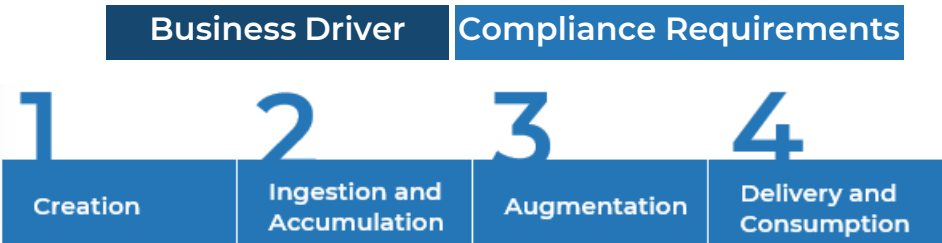


Although the organization understood it needed changes, it first needed to establish the business objectives and which areas of their architecture they would need to focus on.

The business driver in this case was **compliance requirements**, which directed attention to the data creation, ingestion and accumulation, augmentation, and delivery and consumption tiers.

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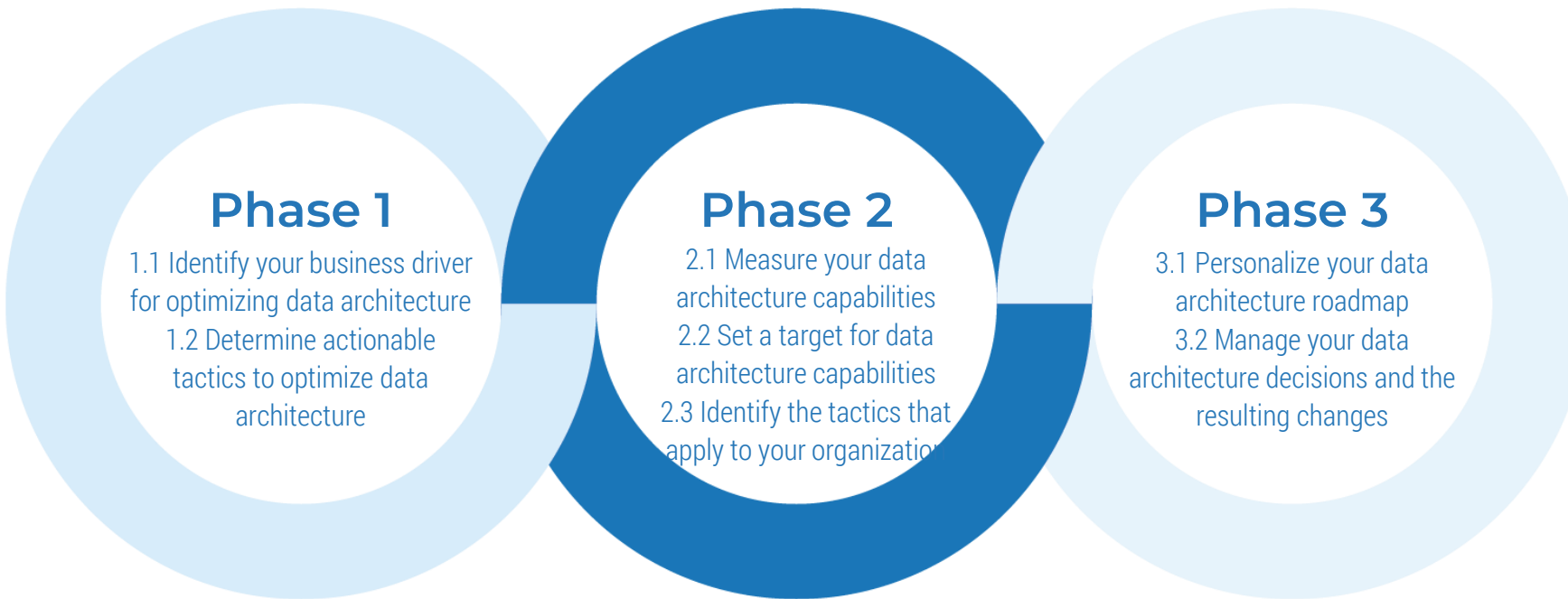
Looking at the how the different tiers relate to certain business operations, the organization uncovered the best practice tactics to achieving an optimized data architecture.

- | | | | |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tier 1 tactics: | Tier 2 tactics: | Tier 3 tactics: | Tier 4 tactics: |
| <ul style="list-style-type: none">• Identify data sources• Ensure data quality | <ul style="list-style-type: none">• Properly catalogue data• Properly index data | <ul style="list-style-type: none">• Align aggregation rules and logics with business requirements | <ul style="list-style-type: none">• Provide the means of data accessibility• Allow for data reduction/space for report building |

Once the business driver had been established, the organization was able to identify the specific areas it would eventually need to evaluate and remedy as needed.

Phase 2

Personalize Your Tactics to Optimize Your Data Architecture



Build a Data Architecture Roadmap

This phase will walk you through the following activities:

- Measure your current state across the tiers of the capability model that will help address your business driver.
- Measure your target state for the capabilities that will address your business driver.
- Review the tactical roadmap that was created with guidance from the capability gap analysis.

This phase involves the following participants:

Data Architect



Step 2.1

Measure your data architecture capabilities

Activities

2.1.1 Use the *Data Architecture Tactical Roadmap Tool* to create a tailored plan of action.

2.1.2 Determine your current state across the related architecture tiers.

Personalize Your Tactics to Optimize Your Data Architecture

Step 2.1

Step 2.2

Step 2.3

This step involves the following participants:

Data Architect



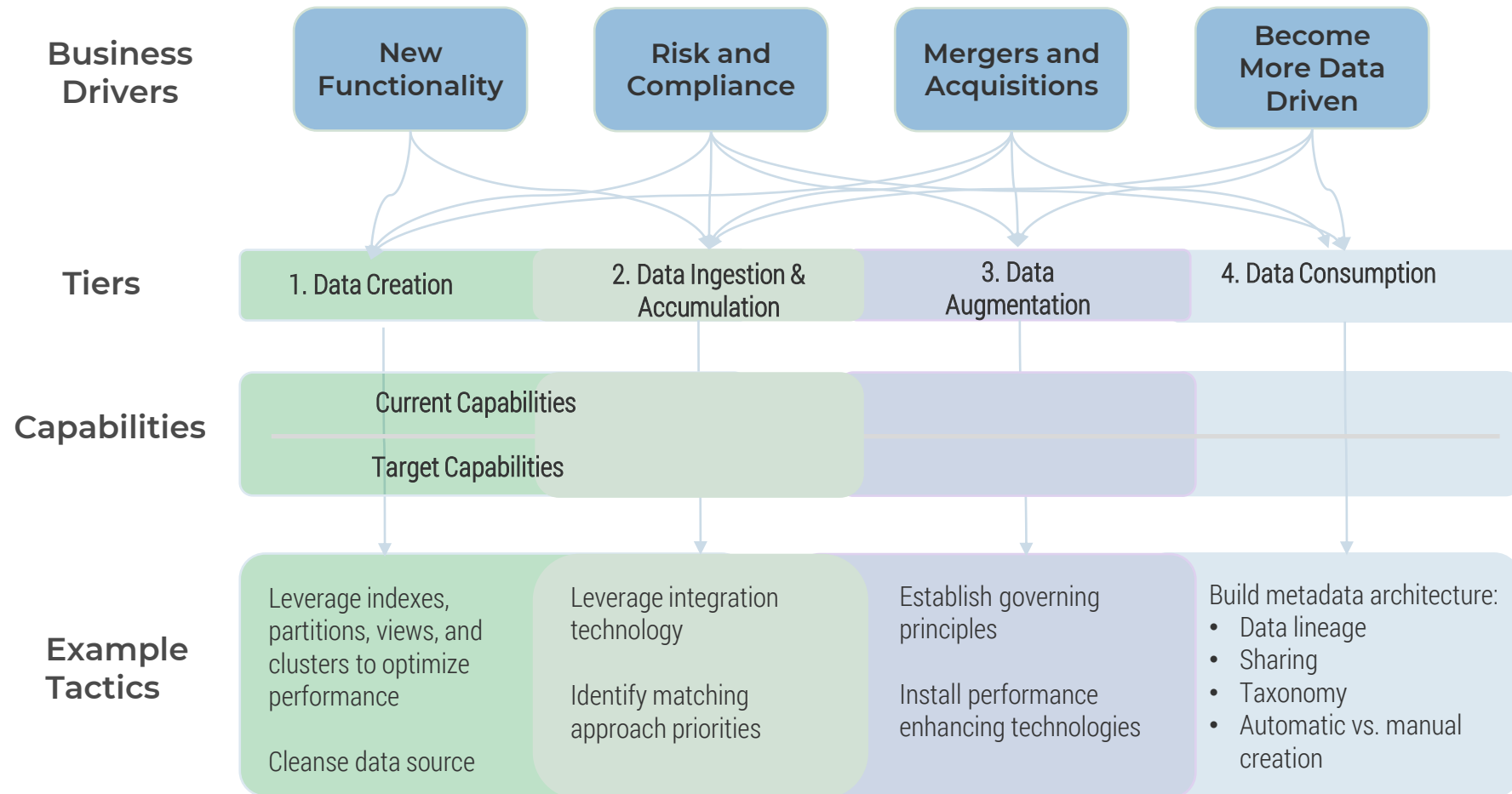
Outcomes of this step

A framework for generating a tactical plan for data architecture optimization.

Knowledge of the various trends in the data architecture field that can be incorporated into your plan.

Phase 2 will determine the tactics that you should implement to optimize your data architecture

Each business driver requires focus on specific tiers and their corresponding capabilities, which in turn correspond to tactics necessary to achieve your goal.



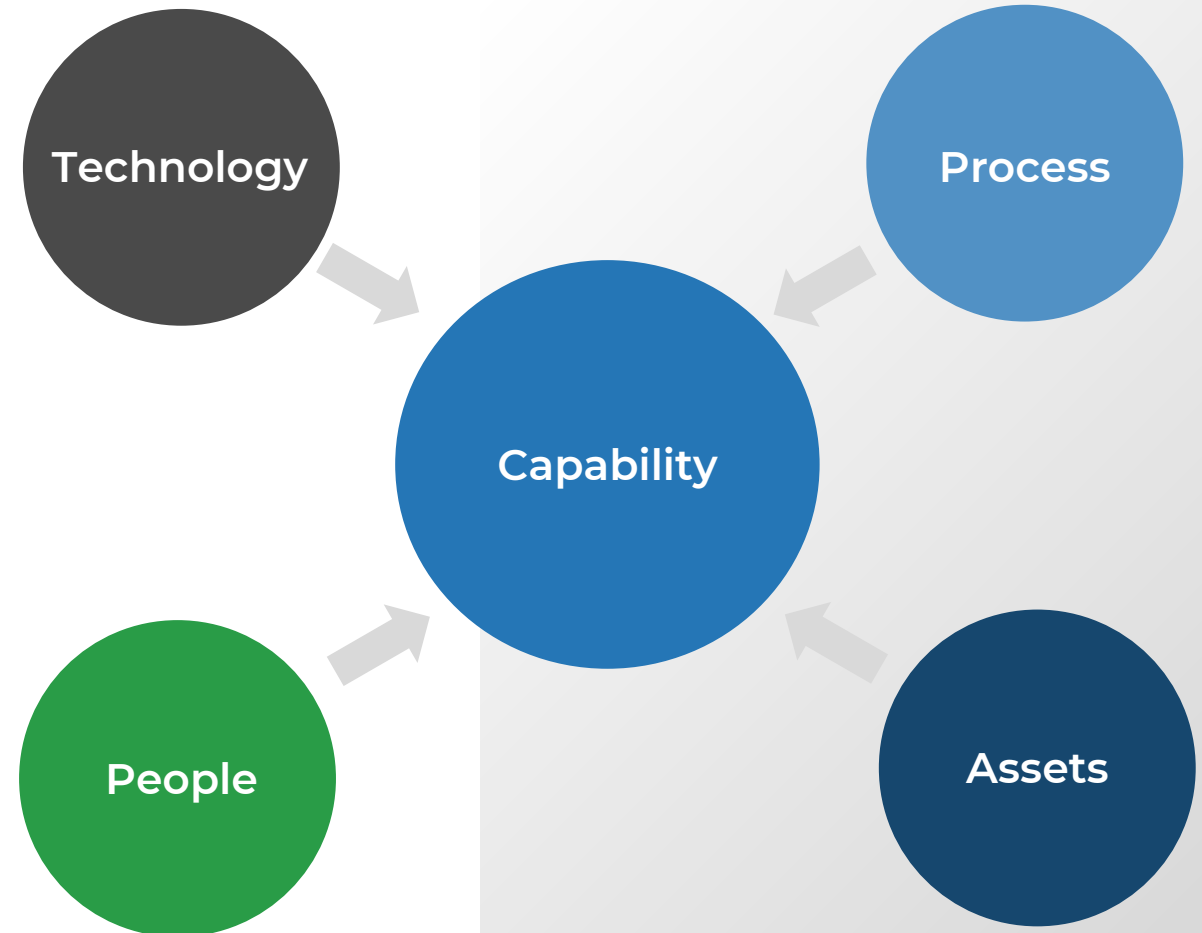
To personalize your tactical strategy, you must measure your base data architecture capabilities

What is capability?

Capabilities represent a mixture of people, technology, and processes. The focus of capability design is on the outcome and the effective use of resources to produce a **differentiating capability** or an **essential supporting capability**.

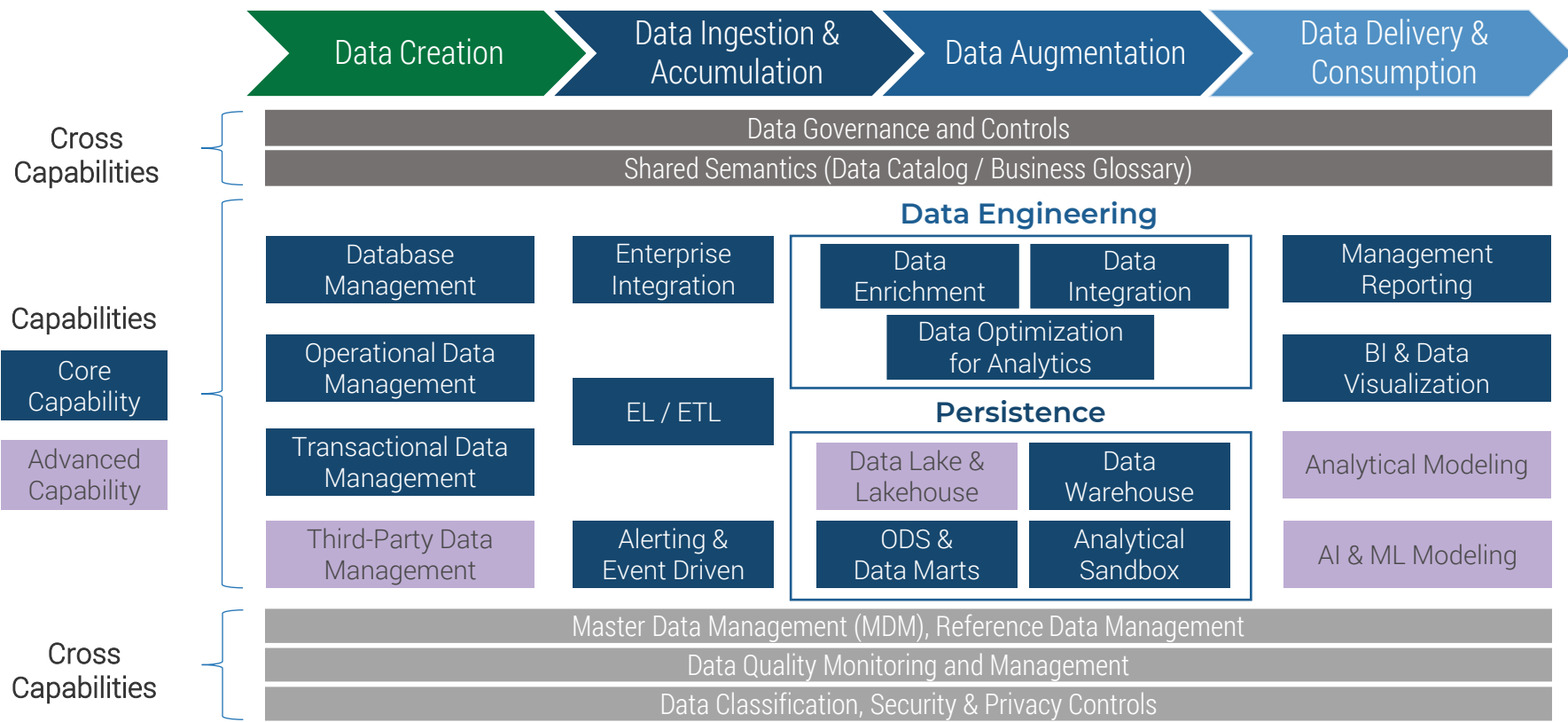
To personalize your tactics, you must understand what the essential capabilities are across the four tiers of an organization's data architecture. Then, assess which capabilities you presently have and where you must go to build your optimization plan.

Info-Tech's **data architecture capability model** can be laid over the four-tier data architecture to understand the essential and advanced capabilities that an organization should have, and to build your tactical strategy for optimizing the organization's data architecture across the tiers.



Use Info-Tech's data architecture capability model as a resource to assess and plan your personalized tactics

Info-Tech's **data architecture capability model** can be overlaid on the four-tier data architecture to understand the essential and advanced capabilities that an organization should have, and to build your tactical strategy for optimizing the organization's data architecture across the tiers. Refer to the illustration of a capability example below.



2.1.1 Use the *Data Architecture Tactical Roadmap Tool* to create a tailored plan of action


Instruction:

Use the *Data Architecture Tactical Roadmap Tool* as your central tool to develop a tactical plan of action to optimize the organization's data architecture. This tool contains the following sections:

1. Introduction
2. Business Driver Input
3. Capability Assessment
4. Capability Gap Analysis
5. Tactic and Initiative Plan
6. Metrics
7. Initiative Roadmap

Benefits of using this tool:

- Comprehensive documentation of data architecture capabilities present in leading organizations
- Generates an accurate architecture roadmap for your organization that is developed in alignment with the broader enterprise architecture and related architectural domains



Data Architecture Tactical Roadmap Tool

This *Data Architecture Tactical Roadmap Tool* will help you analyze your organization's data architecture capabilities and the gaps between the organization's current and future states. After determining the gaps in data architecture capabilities, the tool will recommend a list of tactics and associated activities based on these gaps, which you can then visualize in Gantt chart format.

This tool's assessment uses the CMMI framework and includes the following scoring legend:

- 1 = Initial/Ad Hoc
- 2 = Developing
- 3 = Defined
- 4 = Managed and Measurable
- 5 = Optimized

Tab 2. Business Driver Input: Select the business driver that is pushing the need to optimize and modernize the organization's data architecture. If you have not identified your business driver, go back to the *Build a Business-Aligned Data Architecture Optimization Strategy* blueprint to walk through the *Data Architecture Driver Pattern Identification Tool* and identify your driver. If you want to assess your organization's data architecture across the entire architectural landscape, choose "Comprehensive Data Architecture Assessment."

Target State and Gap Analysis


- Tab 3. Capability Assessment
- Tab 4. Capability Gap Analysis

Initiative Planning and Roadmap Creation

- Tab 5. Tactic and Initiative Planning
- Tab 6. Metrics
- Tab 7. Initiative Roadmap

Use the current-state assessment results as a starting point for building a custom list of target capabilities. Additional capabilities of this tool will help you assess the gap between your current state and target state, and provide a visual view of the gap size and actions required while assisting in the creation of a roadmap.

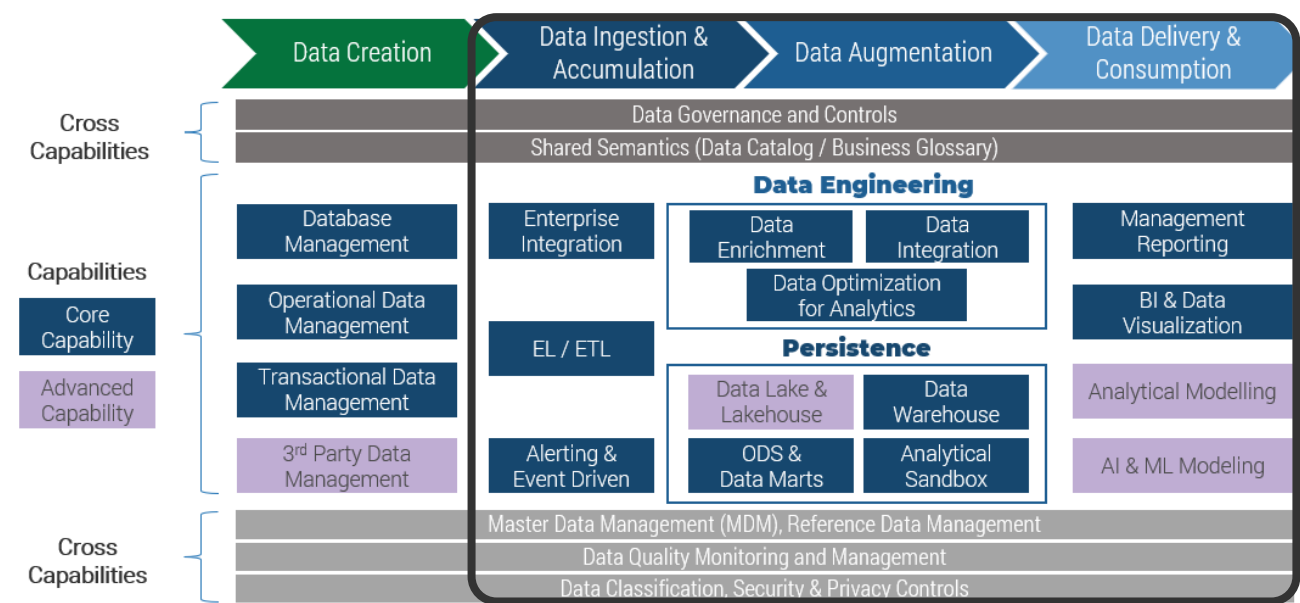
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[Download the *Data Architecture Tactical Roadmap Tool*](#)

To create a plan for your data architecture priorities, first you must understand where you presently are

Now that you understand the business problem you intend to solve, it is time to take action in solving the problem.

- The organization likely has some of the capabilities necessary to solve the problem, but also a need to improve other capabilities. To narrow down the capabilities that you should focus on, first select the business driver that was identified in Phase 1 in Tab 2 (Business Driver Input) of the *Data Architecture Tactical Roadmap Tool*. This will customize the roadmap tool to deselect the capabilities that are likely to be less relevant to your organization.
- Example: If you identified your business driver as “becoming more data-driven,” you will want to focus on measuring and building out the capabilities within Tiers 2, 3, and 4 of the capability model.



Note: If you want to assess your organization for all the capabilities across the data architecture capability model, select “Comprehensive Data Architecture Assessment” in Tab 2 (Business Driver Input) of the *Data Architecture Tactical Roadmap Tool*.

Data Architecture Business Driver Selection

Steps:

1. Indicate the business driver you have identified for your data architecture from the drop-down menu.
2. If you would like to assess the organization's data architecture across the full architectural landscape, choose "Comprehensive Data Architecture Assessment."

Business Driver	Comprehensive Data Architecture Assessment
-----------------	--------------------------------------------

2.1.2 Determine your current state across the related architecture tiers

1 hour

Objective:

- Use the *Data Architecture Tactical Roadmap Tool* to evaluate the baseline and target capabilities of your practice in terms of how data architecture is approached and executed.

Instruction:

1. Invite the appropriate stakeholders to participate in this exercise.
2. On **Tab 3** (Capability Assessment), assess the current and target states of each capability on a scale of 1 to 5. To assess data architecture maturity, Info-Tech uses the Capability Maturity Model Integration (CMMI) program for rating capabilities: 1 = Initial/Ad hoc, 2 = Developing, 3 = Defined, 4 = Managed and Measurable, 5 = Optimized. Note: *Ad hoc* implies a capability is completed, but randomly, informally, and without a standardized method.

These results will set the baseline against which you will monitor performance progress and keep track of improvements over time.

Input	Output
<ul style="list-style-type: none">• Current data architecture capabilities	<ul style="list-style-type: none">• An idea of which capabilities you presently have.
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Tactical Roadmap Tool</i>	<ul style="list-style-type: none">• Data architect• Enterprise architect• Business representatives

Info-Tech Insight

Focus on early alignment. Assessing capabilities within specific job functions can result in disagreement or debate, especially between business and IT people. Objectively facilitate any debate and only finalize capability assessments when there is full alignment. Remind everyone that data architecture should ultimately serve business needs wherever possible.

Step 2.2

Set a target for data architecture capabilities

Activities

2.2.1 Determine your target state in each of the relevant capabilities.

2.2.2 Identify where gaps in your data architecture capabilities lie.

Personalize Your Tactics to Optimize Your Data Architecture



This step involves the following participants:

Data Architect



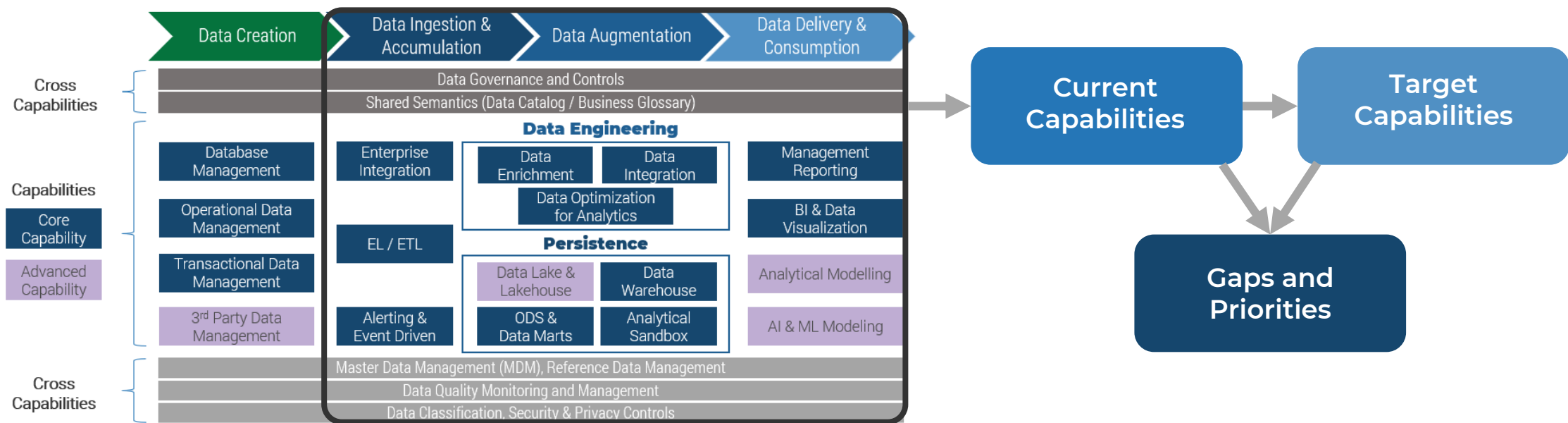
Outcomes of this step

A holistic understanding of where the organization's data architecture currently is, where it needs to go, and where the biggest gaps lie.

To create a plan for your data architecture priorities, you must also understand your organization’s target state

Keep the goal in mind by documenting target state objectives. This will help to measure the highest priority gaps in the organization’s data architecture capabilities.

Example driver = “Becoming more data driven”:



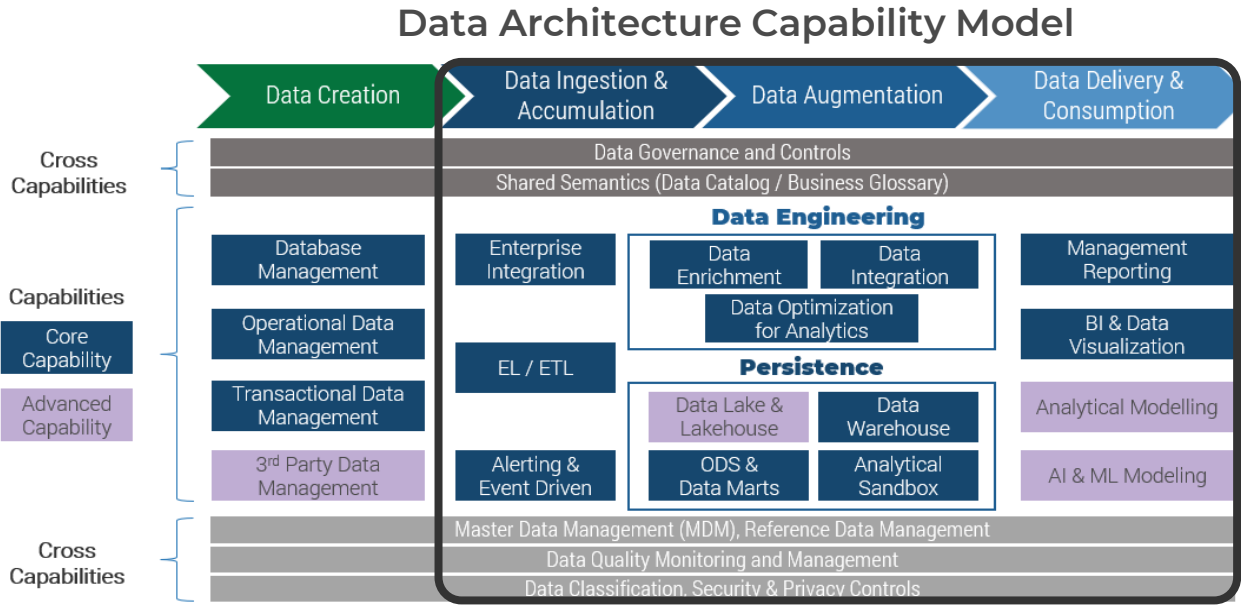
2.2.1 Determine your future state across the relevant tiers of the data architecture capability model

2 hours

The future of data architecture is now.

- Determine the state of data architecture capabilities that the organization must reach to address the drivers of the business.
- For example: If you identified your business driver as “becoming more data driven”, you will want to focus on the capabilities within Tiers 2, 3, and 4 of the capability model.

Input	Output
<ul style="list-style-type: none">• Current state of data architecture capabilities	<ul style="list-style-type: none">• Target state of data architecture capabilities
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Tactical Roadmap Tool</i>	<ul style="list-style-type: none">• Data architect



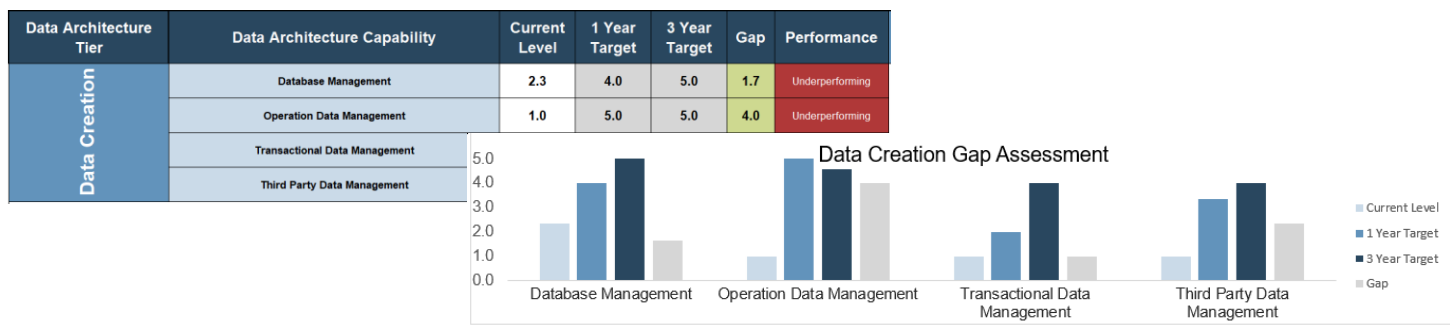
2.2.2 Identify where gaps in your data architecture capabilities lie

1 hour

Visualization of gap assessment of data quality practice capabilities

To enable deeper analysis on the results of your capability assessment, **Tab 4** (Capability Gap Analysis) in the *Data Architecture Tactical Roadmap Tool* creates visualizations of the gaps identified in each of your practice capabilities and related data management practices. **These diagrams serve as analysis summaries.**

Gap assessment of data creation capabilities



To enhance your data architecture project:

1. Enhance your gap analyses by forming a **relative comparison of total gaps** in key practice capability areas, which will help in **determining priorities**.
2. Use this information to **improve discussion** in the gap analyses and prioritization sessions.
3. Improve the clarity and flow of your **strategy template, final presentations, and summary documents** by copying and pasting the gap assessment diagrams.

Input	Output
<ul style="list-style-type: none">Current state of data architecture capabilities	<ul style="list-style-type: none">Target state of data architecture capabilities
Materials	Participants
<ul style="list-style-type: none"><i>Data Architecture Tactical Roadmap Tool</i>	<ul style="list-style-type: none">Data architect

Step 2.3

Identify the tactics that apply to your organization

Activities

2.3.1 Create metrics before you plan to optimize your data architecture.

Personalize Your Tactics to Optimize Your Data Architecture

Step 2.1

Step 2.2

Step 2.3

This step involves the following participants:

Data Architect



Outcomes of this step

A framework for generating a tactical plan for data architecture optimization.

Knowledge of the various trends in the data architecture field that can be incorporated into your plan.

Capitalize on trends in data architecture before you determine the tactics that apply to you

Before you begin to plan for optimization of the organization's data environment, get a sense of the **sustainability** and **scalability** of the direction of the organization's data architecture evolution.

Practically any trend in data architecture is driven by an attempt to solve one or more common challenges of today's tumultuous data landscape. Traditionally dealing with large volumes of data was known as *big data*, but as technology and computing power advancements have driven exponential growth in data, this term has become outdated. Managing exponentially growing data is the new normal. Data is rapidly being produced in outrageous amounts, and in a growing number of types and structures. Consider the internal and external catalysts that might fuel your organization's need to modernize its data architecture:

Data storage

The cloud

The cloud offers economical solutions to many aspects of data architecture.

Have you experienced issues with lack of storage space or with scalability?

Do you need remote access to data and tools?

Advanced analytics

Real-time architecture

Advanced analytics (ML, natural language processing) often require data in real time. Consider Lambda and Kappa architectures.

Has your data flow prevented you from automation, advanced analytics, or embracing the world of IoT?

Unstructured data

Graph databases

Self-service data access allows more than just technical users to participate in analytics. NoSQL can uncover buried relationships in your data.

Has your organization struggled to make sense of different types of unstructured data?

Integration

Is ETL enough?

What SQL is to NoSQL, ETL is to NoETL. Integration techniques are being created to address the high variety and high velocity of data.

Have your data scientists wasted too much time and resources in the ETL stage?

Read the *Data Architecture Trends Presentation* to explore some important technological advancements powering today's data architectures

- The *Info-Tech Data Architecture Trends Presentation* provides a glance at some of the more significant innovations in technology that are driving today's advanced data architectures.
- This presentation also explains how these trends relate to either the data challenges you may be facing, or the specific business drivers you are hoping to bring to your organization.



Download the *Data Architecture Trends Presentation*

Explore some of the more modern offerings in data architecture

The speed at which new technology is changing makes it difficult for IT and data professionals to keep pace with best practices. Some modern data architecture offerings include:



Data Lakehouse

Lakehouse combines the advantages of data lake and data warehouse and provides low-cost storage that is accessible by a variety of systems, as well as powerful management and optimization capabilities.



Data Fabric

“The core of the data fabric architecture is a Data Management platform that enables the full breadth of integrated Data Management capabilities including discovery, governance, integration, semantics, and distribution.”

– Tejasvi Addagada (Dataversity, 2022)



Data Mesh

“Data mesh is a decentralized sociotechnical approach to share, access, and manage analytical data in complex and large-scale environments – within or across organizations. The Four Data Mesh Principles include:

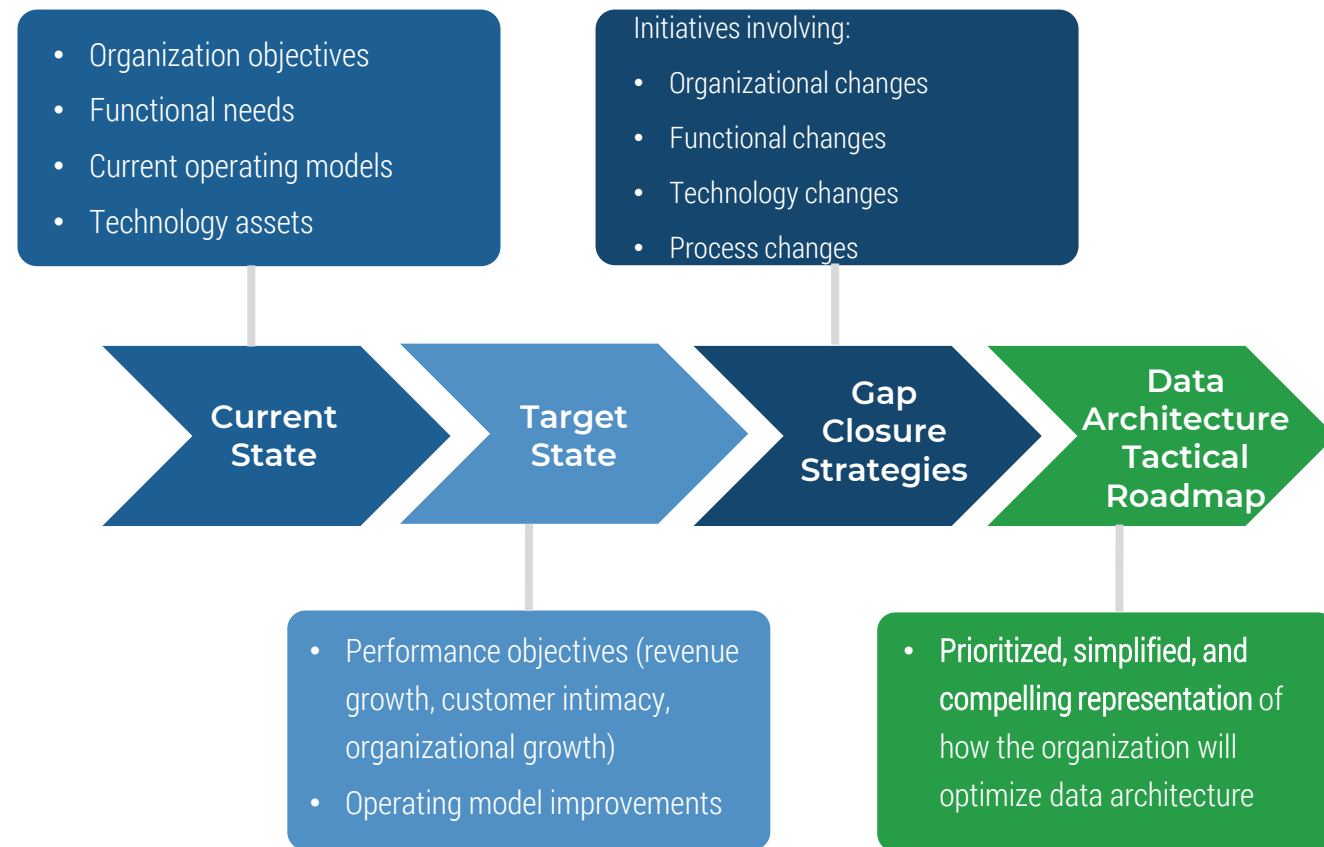
- (1) Domain-oriented decentralized data ownership and architecture,
- (2) Data as a product,
- (3) Self-serve data infrastructure as a platform, and
- (4) Federated computational governance. “

-- Zhamak Dehghani (Data Mesh, 2022)

Gaps between your current and future capabilities will help you to determine the tactics that apply to you

Now that you know where the organization currently stands, follow these steps to begin prioritizing the initiatives:

1. What are you trying to accomplish? Determine **target states** that are framed in quantifiable objectives that can be clearly communicated. **The more specific the objectives are the better.**
2. Evaluate the **delta** or difference between where the organization currently stands and where it needs to go. This will be expressed in terms of **gap closure strategies** and will help clarify the initiatives that will populate the road map.
3. Determine the relative business value of each initiative, as well as the relative complexities of successfully implementing them. These scores should be created with stakeholder input, and then plotted in an effort/transition quadrant map to determine where the quickest and most valuable wins can be found.



Info-Tech Insight

Optimizing data architecture requires a tactical approach, not a passive one. The demanding task of optimization requires the ability to heavily prioritize. After you have identified **why**, determine **how** using our **prebuilt roadmap** to address the four common drivers.

Each layer of an organization’s data architecture has associated challenges with optimization

Recognize these “gotchas” that can prevent the creation of an effective data architecture environment.

Before you fully commit to creating your tactical data architecture plan, documenting the challenges associated with each aspect of the organization’s data architecture can help identify where you must focus when optimizing each tier. The following table presents the common challenges across the four tiers:

Data Creation	Data Ingestion and Accumulation	Data Augmentation	Data Delivery and Consumption
Inconsistent data models	Infrastructure needed to support volume of data	Performance issues	Data currency, flexibility
Data quality measures: data accuracy, timeliness, accessibility, relevance	Performance Volume Greedy consumers can cripple performance Insufficient infrastructure	Duplicated data	No business context for using the data in the correct manner
Free-form field and data values beyond data domain	Elasticity	Tokenization and other required data transformations	Inefficiencies in building the data mart
Reporting out of source systems			Model interoperability
Manual errors, application usability			Report proliferation/chaos (“kitchen sink dashboards”)

2.3.1 Create metrics before you plan to optimize your data architecture

Metrics will help you to track your optimization efforts and ensure that they are providing value to the organization.

There are two types of metrics that are useful for data architects to track and measure: **program metrics** and **project metrics**. Program metrics represent the activities that the data architecture program, which is the sum of multiple projects, should help to improve. Project metrics are the more granular metrics that track each project.

Program Metrics	Project Metrics
<ul style="list-style-type: none">• Total cost of ownership of IT<ul style="list-style-type: none">○ Costs associated with applications, databases, data maintenance○ Should decrease with better data architecture (rationalized apps, operationalized databases)• Cost savings:<ul style="list-style-type: none">○ Retiring legacy system & associated databases○ Consolidated licensing○ Introducing shared services• Data systems under maintenance (maintenance burden)• End-user data requests fulfilled• Improvement in delivery time of reports and insights	<ul style="list-style-type: none">• Percent of projects in alignment with enterprise architecture• Percent of projects compliant with the enterprise architecture governance process (architectural due diligence rate)• Reducing time to market for launching new products<ul style="list-style-type: none">○ Reducing human error rates○ Speeding up order delivery○ Reducing IT costs○ Reducing severity and frequency of security incidents

1 hour

Input	Output
<ul style="list-style-type: none">• Tactics that will be used to optimize data architecture	<ul style="list-style-type: none">• Metrics that can be used to measure optimization success
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Tactical Roadmap Tool</i>	<ul style="list-style-type: none">• Data architect

➔

Use Tab 6 (Metrics) of the *Data Architecture Tactical Roadmap Tool* to document and track metrics associated with your optimization tactics.

Case Study Part 2

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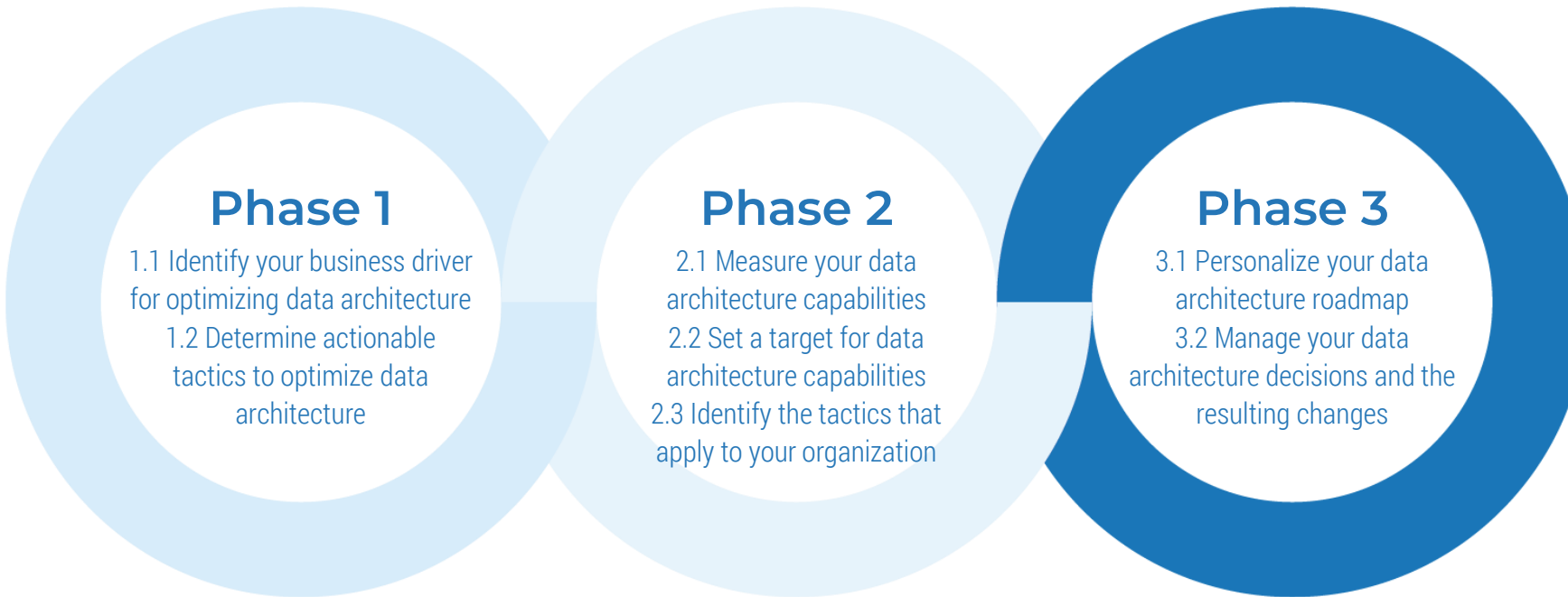
With the optimal tactics identified, the monetary authority uncovered areas needing improvement

After establishing the appropriate tactics based on its business driver, the monetary authority was able to identify its shortcomings and adopt resolutions to remedy the issues. Establishing these solutions provided the organization with necessary information to build their roadmap and move toward implementing an optimized data architecture.

	Best Practice Tactics	Current State	Solution
Tier 1 – Data Creation	Identify data sources	Data coming from several locations	Create data model for old and new systems
	Ensure data quality	Internal data scanned from paper and incomplete External sources providing conflicting data	Data cleansing and update governance and business rules for migration to new system
Tier 2, 3 – Data Ingestion & Accumulation, Data Augmentation	Data catalogue	Data aggregated incompletely	Build proper business data glossary for searchability
	Indexing	Suboptimal data warehouse performance	Architect data warehouse for appropriate use (star schema)
Tier 4 – Data Consumption	Data accessibility	Relevant data buried in warehouse	Build data marts for access
	Data reduction	Accurate report building could not be performed in current storage	Build interim solution sandbox, spin up SQL database

Phase 3

Create Your Tactical Data Architecture Roadmap



Build a Data Architecture Roadmap

This phase will walk you through the following activities:

- Create your detailed data architecture initiative roadmap.
- Create your *Data Architecture Decision Template* to document the changes that are going to be made to optimize your data architecture environment.
- Review how change management fits into the data architecture improvement program.

This phase involves the following participants:

Data Architect



Enterprise Architect



Database Administrator



Step 3.1

Personalize your data architecture roadmap

Activities

3.1.1 Determine the details of your data architecture optimization activities.

3.1.2 Communicate your data architecture optimization plan to the business for approval.

Create Your Tactical Data Architecture Roadmap

Step 3.1

Step 3.2

This step involves the following participants:

Data Architect



Enterprise Architect



Database Administrator



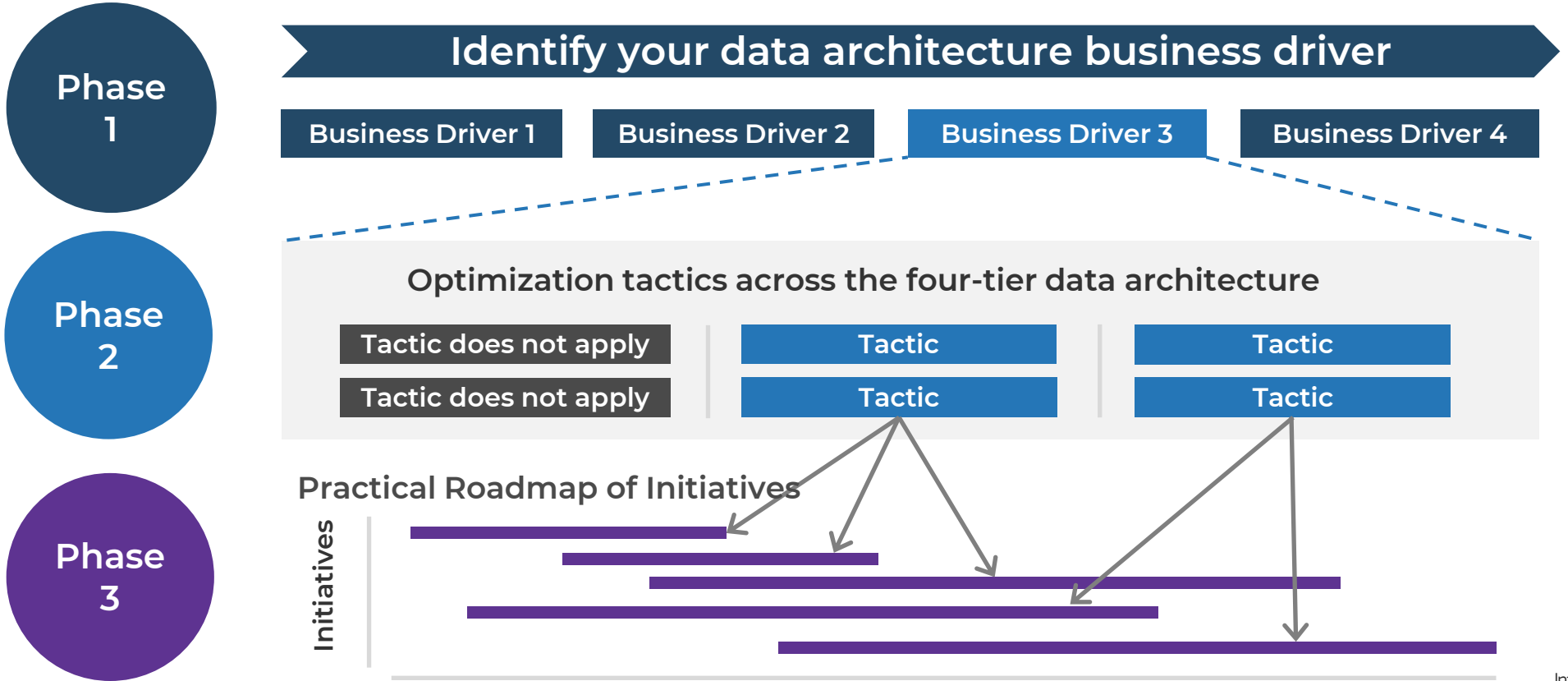
Outcomes of this step

A roadmap of specific initiatives that map to the tactical plan for optimizing your organization's data architecture.

A plan for communicating high-level business objectives to data workers to address the issues of the business.

Now that you have tactical priorities, identify the actionable steps leading to an optimized data architecture

Phases 1 and 2 helped you to identify tactics that address some of the most common business drivers. Phase 3 will bring you through the process of practically planning how those tactics will unfold in **your organization's environment** and creating a **roadmap** to plan how you will **generate business value** through optimization of your data architecture environment.



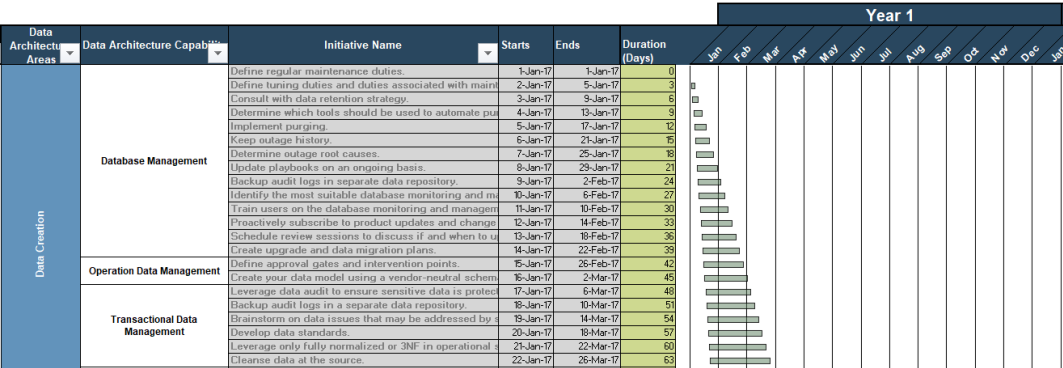
Use the *Data Architecture Tactical Roadmap Tool* to personalize your roadmap

Generating Your Roadmap

- On **Tab 5** (Tactic and Initiative Planning), you will find a list of tactics that correspond to every capability that applies to your chosen driver and where there is a gap. In addition, each tactic has a sequence of *Suggested Initiatives* which represent the **best-practice steps** that you should take to optimize your data architecture **according to your priorities and gaps**.
- Customize this list of initiatives according to your needs.
- The Gantt chart is generated in **Tab 7** (Initiative Roadmap) and can be used to organize your plan and ensure that all the essential aspects of optimizing data architecture are addressed.
- The roadmap can be used as an *executive brief* roadmap and as a communication tool for the business.

Data Architecture Areas	Data Architecture Capability	Tactic	Suggested Initiative	Include Initiative	Start Date (DD-Month-YY)	End Date (DD-Month-YY)
Data Creation	Database Management	Build a team of DBAs to ensure regular maintenance, tuning, and planning of databases.	Define regular maintenance duties.	Yes	1-Jan-17	1-Jan-17
			Define tuning duties and duties associated with maintaining the high availability of data.	Yes	2-Jan-17	5-Jan-17
		Purge data from production systems.	Consult with data retention strategy.	Yes	3-Jan-17	9-Jan-17
			Determine which tools should be used to automate purging.	Yes	4-Jan-17	13-Jan-17
			Implement purging.	Yes	5-Jan-17	17-Jan-17
		Develop playbooks to deal with outage situations.	Keep outage history.	Yes	6-Jan-17	21-Jan-17
			Determine outage root causes.	Yes	7-Jan-17	25-Jan-17
			Update playbooks on an ongoing basis.	Yes	8-Jan-17	29-Jan-17
			Backup audit logs in separate data repository.	Yes	9-Jan-17	2-Feb-17
		Leverage database monitoring and management tools.	Identify the most suitable database monitoring and management tools.	Yes	10-Jan-17	6-Feb-17
	Operation Data Management	Regularly update and upgrade database and OS versions.	Train users on the database monitoring and management tools.	Yes	11-Jan-17	10-Feb-17
			Proactively subscribe to product updates and change communications.	Yes	12-Jan-17	14-Feb-17
			Schedule review sessions to discuss if and when to upgrade.	Yes	13-Jan-17	18-Feb-17
			Create upgrade and data migration plans.	Yes	14-Jan-17	22-Feb-17
	Transactional Data Management	Leverage the ARB to review and approve database changes.	Define approval gates and intervention points.	Yes	15-Jan-17	26-Feb-17
		Create and follow an operational data model.	Create your data model using a vendor-neutral schema language such as XML.	Yes	16-Jan-17	2-Mar-17
		Leverage the ARB to review and approve database changes.	Leverage data audit to ensure sensitive data is protected.	Yes	17-Jan-17	6-Mar-17
			Backup audit logs in a separate data repository.	Yes	18-Jan-17	10-Mar-17
		Create and follow a transactional data model using a vendor-neutral schema such as XML.	Brainstorm on data issues that may be addressed by standards.	Yes	19-Jan-17	14-Mar-17
			Develop data standards.	Yes	20-Jan-17	18-Mar-17
			Leverage only fully normalized or 3NF in operational system modeling.	Yes	21-Jan-17	22-Mar-17
			Cleanse data at the source.	Yes	22-Jan-17	26-Mar-17

Tab 5: Tactic and Initiative Planning



Tab 7: Initiative Roadmap

↓ Download the *Data Architecture Tactical Roadmap Tool*

3.1.1 Determine the details of your data architecture optimization activities

Instructions:

- With the list of suggested activities in place on **Tab 5** (Tactic and Initiative Planning), select whether they will be included in the roadmap. By default, all the initiatives are set to **Yes**.
- Plan the sequence, starting time, and length of each initiative, as well as the assigned responsibility of the initiative in **Tab 5** (Tactic and Initiative Planning) of the *Data Architecture Tactic Roadmap Tool*.
- The tool will generate a Gantt chart based on the start and length of your initiatives.
- The Gantt chart is generated in **Tab 7** (Initiative Roadmap).

Info-Tech Insight

The activities that populate the roadmap can be considered best practice activities. If you want an actionable, comprehensive, and prescriptive plan for optimizing your data architecture, fill in the timing of the activities and print the roadmap. This can serve as a rapid communication tool for your data architecture plan to the business and other architects.

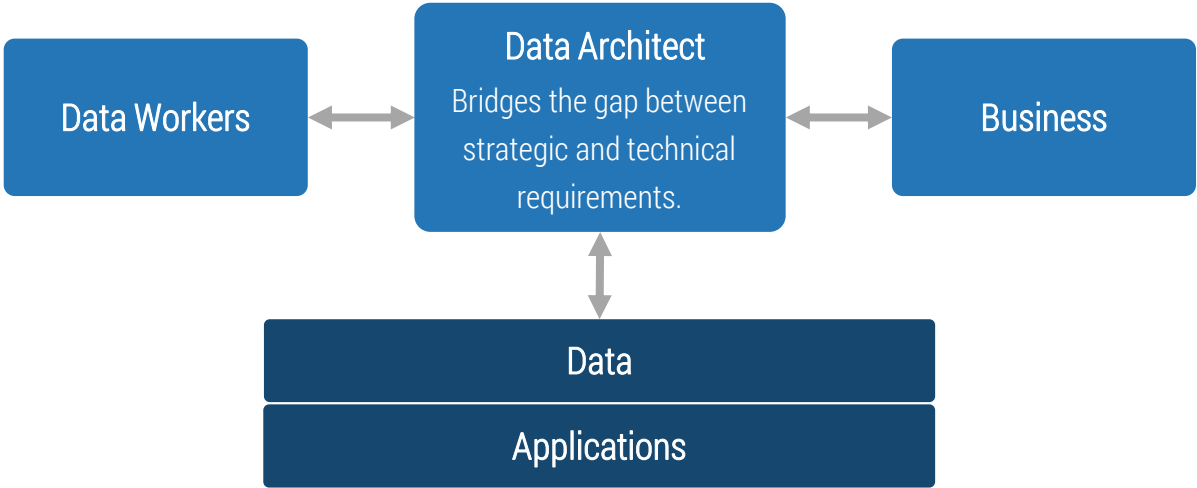
1 hour

Input	Output
<ul style="list-style-type: none">• Timing of initiatives for optimizing data architecture	<ul style="list-style-type: none">• Optimization roadmap
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Tactical Roadmap Tool</i>	<ul style="list-style-type: none">• Data architect• Enterprise architect

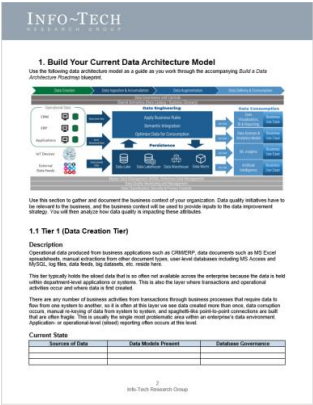
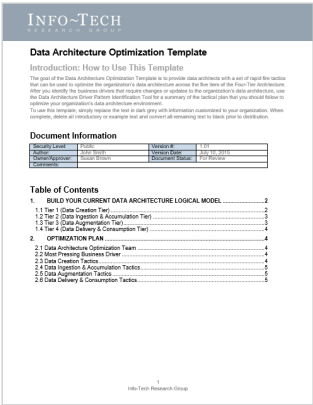
Optimizing data architecture relies on communication between the business and data workers

Data architects bridge the gap between strategic and technical requirements of data.

As you plan the data and its interactions with applications, it is imperative that you **communicate** the plan and its implications to the business and the data workers.



Data architecture optimization plan



Use your tactical data architecture optimization plan built in Phase 1 to communicate your plan for data architecture optimization to both the business and the data workers. Socialize this document as a representation of your organization's current data architecture as well as where it is headed in the future.

3.1.2 Communicate your data architecture optimization plan to the business for approval

2 hours

Instruction:

- Begin by presenting your plan and roadmap to the business units who participated in business interviews in activity 1.1.3 of Phase 1.
- If you receive feedback suggesting you should revise the plan, consult Info-Tech Research Group for advice on how to improve the plan.
- If you gain approval for the plan, communicate it to database administrators and other data workers.



Input	Output
<ul style="list-style-type: none">• <i>Data Architecture Tactical Roadmap</i>	<ul style="list-style-type: none">• Communication plan
Materials	Participants
<ul style="list-style-type: none">• <i>Data Architecture Optimization Template</i>	<ul style="list-style-type: none">• Data architect• Business representatives• IT representatives

Case Study Part 3

INDUSTRY
Financial

SOURCE
Info-Tech Consulting

With a roadmap in place, the monetary authority followed a tactical and practical plan to repair outdated data architecture.

Challenge	Solution	Results
<p>A monetary authority was placed under new requirements where it needed to produce six different report types on its clients to a regulatory body within a window potentially as short as one hour.</p> <p>With its current capabilities, it could complete such a task in roughly seven days.</p> <p>The organization’s data architecture was comprised of legacy systems that had poor searchability. Moreover, the data it worked with was scanned from paper, regularly incomplete, and often inconsistent.</p>	<p>The solution first required the organization to establish the business driver behind the need to optimize its architecture. In this case, it would be compliance requirements.</p> <p>With Info-Tech’s methodology, the organization focused on three tiers: data sources, warehousing, and analytics.</p> <p>Several solutions were developed to address the appropriate lacking capabilities. First was the creation of a data model for old and new systems. Then the implementation of governance principles and business rules for migration of any data. Next, proper indexing techniques and a business data glossary were established. Finally, data marts and sandboxes were designed for data accessibility and to enable a space for proper report building.</p>	<p>With the solutions established, the monetary authority was given information it needed to build a comprehensive roadmap and is currently undergoing the implementation of the plan to ensure it will experience its desired outcome – an optimized data architecture built with the capacity to handle external compliance requirements.</p>

Step 3.2

Manage your data architecture decisions and the resulting changes

Objectives

- With a plan in place, document the major architectural decisions that have been and will be made to optimize data architecture.
- Create a plan for change and release management, an essential function of the data architect role

Create Your Tactical Data Architecture Roadmap

Step 3.1

Step 3.2

This step involves the following participants:

Data Architect



Enterprise Architect

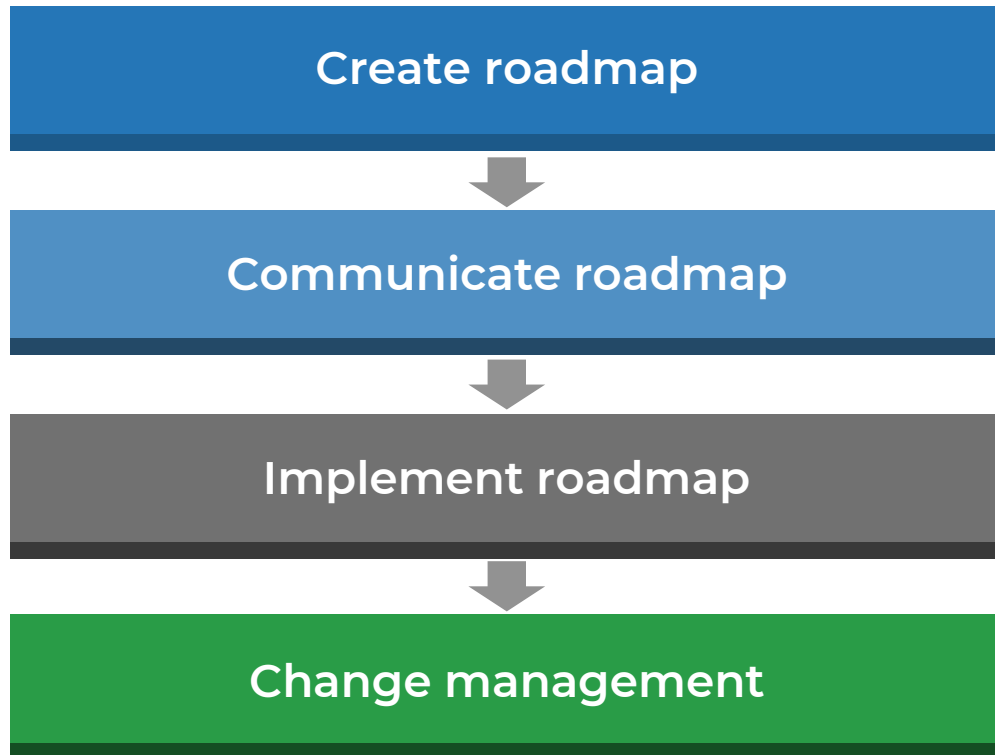


Outcomes of this step

Resources for documenting and managing the inevitable change associated with updates to the organization's data architecture environment.

To implement data architecture changes, you must plan to accommodate the issues that come with change

Once you have a plan in place, one the most challenging aspects of improving an organization is yet to come – overcoming change!



“When managing change, the job of the data architect is to avoid unnecessary change and to encapsulate necessary change. You must provide motivation for simplifying change, making it manageable for the whole organization.”

– Andrew Johnston, Independent Consultant

Use the *Data Architecture Decision Template* when architectural changes are made

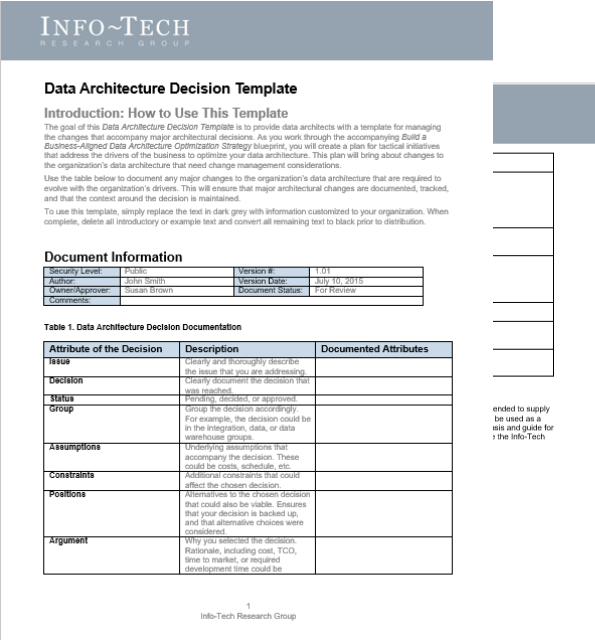
Document the architectural decisions made to provide context around changes made to the organization's data environment.

Objective:

- The goal of this *Data Architecture Decision Template* is to provide data architects with a template for managing the changes that accompany major architectural decisions. As you work through the *Build a Data Architecture Roadmap* blueprint, you will create a plan for tactical initiatives that address the drivers of the business to optimize your data architecture. This plan will bring about changes to the organization's data architecture that need change management considerations.
- Document any major changes to the organization's data architecture that are required to evolve with the organization's drivers. This will ensure that major architectural changes are documented and tracked, and that the context around the decision is maintained.



Download the *Data Architecture Decision Template*



ended to supply
be used as a
ris and guide for
the Info-Tech

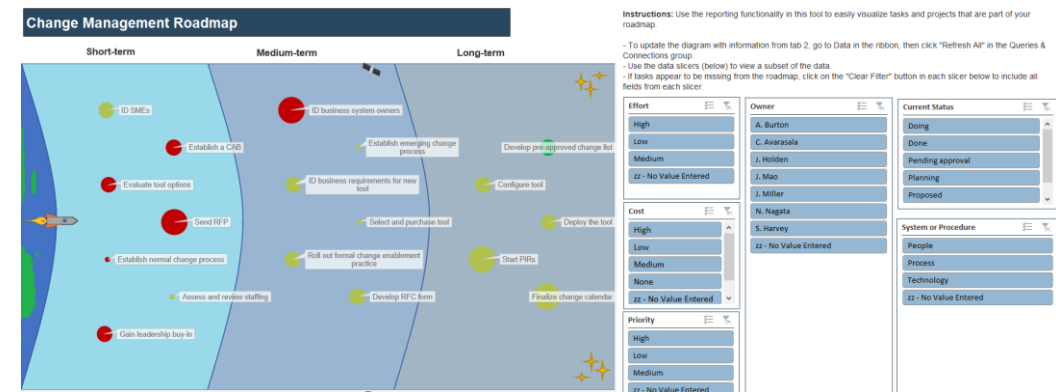
Leverage Info-Tech's resources to smooth change management

As changes to the architectural environment occur, data architects must stay ahead of the curve and plan the change management considerations that come with major architectural decisions.

Refer to Info-Tech's resources on change management to smooth changes:



Optimize IT Change Management blueprint

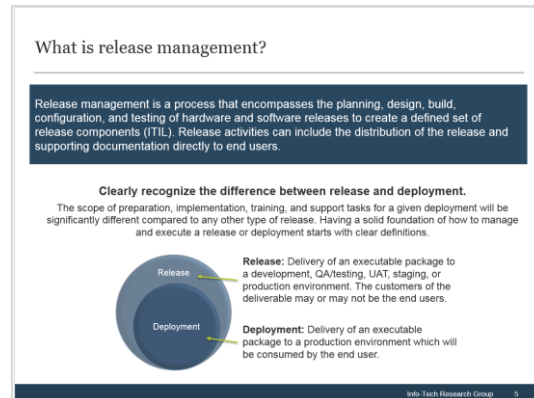
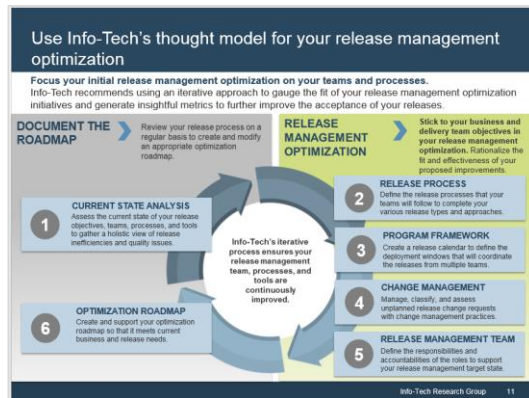


Change Management Roadmap Tool

Leverage Info-Tech's resources to smooth change management

As changes to the architectural environment occur, data architects must stay ahead of the curve and plan the release management considerations around new hardware and software releases or updates.

- Release management is a process that encompasses the planning, design, build, configuration, and testing of hardware and software releases to create a defined set of release components (ITIL). Release activities can include the distribution of the release and supporting documentation directly to end users. Refer to Info-Tech's resources on release management to smooth changes:



[Optimize Applications Release Management](#) blueprint



[Release Management Process Standard Template](#)

Summary of Accomplishment

Problem solved

Knowledge gained

- An understanding of what data architecture is, how data architects can provide value to the organization, and how data architecture fits into the larger enterprise architecture picture.
- The capabilities required for optimization of the organization's data architecture across the four tiers of the logical data architecture model.

Processes optimized

- Prioritization and planning of data architect responsibilities across the four tiers of the data architecture model.
- Road mapping of tactics that address the most common business drivers of the organization.
- Architectural change management

If you would like additional support, have our analysts guide you through an Info-Tech workshop or Guided Implementation.

Contact your account representative for more information.

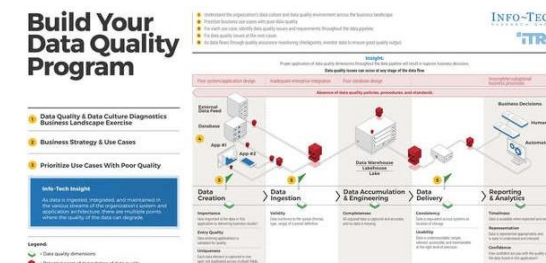
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Related Info-Tech Research



Establish Data Governance

- Data architecture depends on effective data governance. Establish data trust and accountability with strong governance.



Build Your Data Quality Program

- Data needs to be good, but truly spectacular data may go unnoticed. Provide the right level of data quality, with the appropriate effort, for the correct usage. This blueprint will help you determine what “the right level of data quality” means and create a plan to achieve that goal for the business.



Develop a Master Data Management Practice and Platform

- Make sure your most important data is accurate and accessible across your business units to ensure optimal decision support and to monetize your data assets.

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The background of the image features a series of thin, light blue lines that flow and undulate across the frame, creating a sense of movement and depth. These lines are more densely packed in some areas, creating a subtle gradient of blue tones.

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