Leadership Vision for 2020: Data and Analytics Leader

Debra Logan
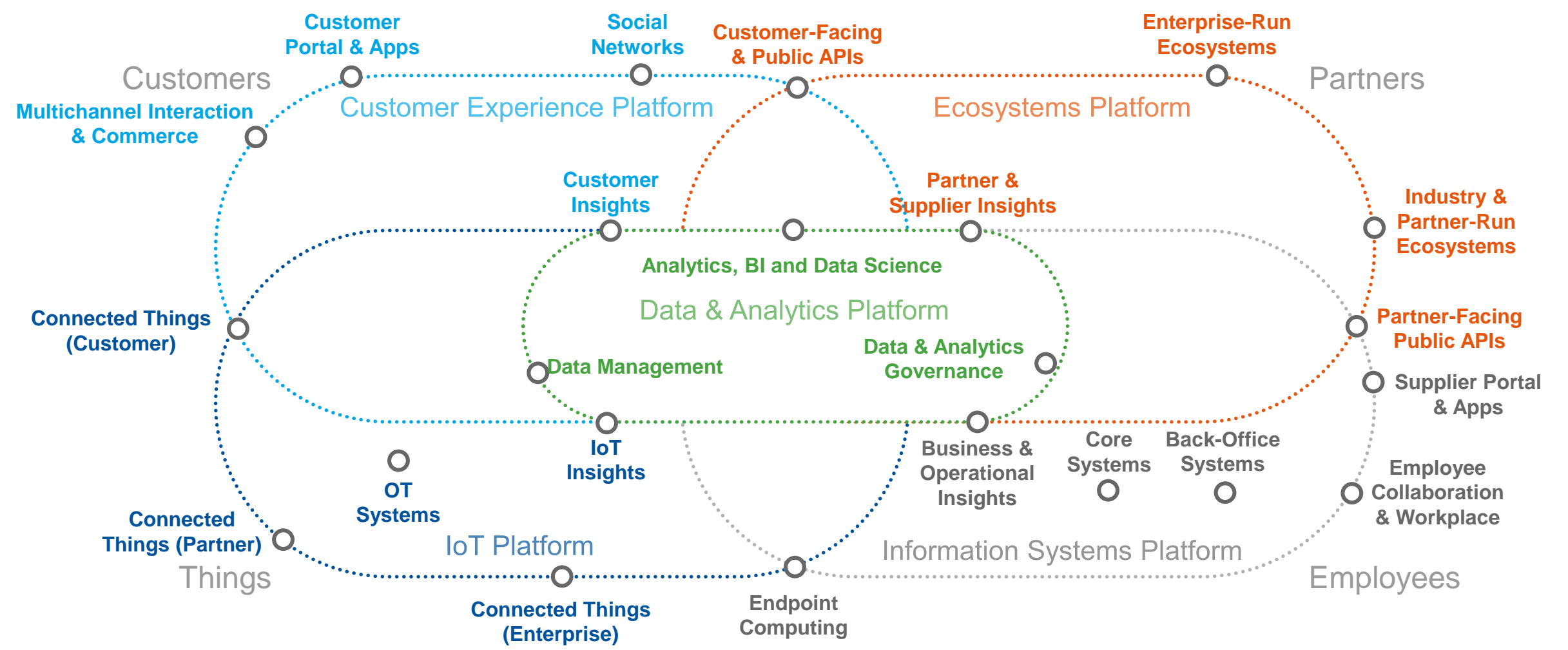
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The 'T' to 'I' Paradigm Shift

From		To
Technology-centric	**Vision**	Data-centric
Out of IT	**Strategy**	*Is the* business
Efficiency and cost	**Metrics**	Diverse business benefits (including monetization)
Truth	**Governance**	Trust
Monolithic	**Organization**	Distributed
Technology-savvy	**Roles**	Data literacy
Local, Siloed, Collect	**Technology**	Collection *and* connection

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What the Technology to Information Shift Looks Like

Customers

Partners

Customer Portal & Apps

Social Networks

Customer-Facing & Public APIs

Enterprise-Run Ecosystems

Multichannel Interaction & Commerce

Customer Experience Platform

Ecosystems Platform

Customer Insights

Partner & Supplier Insights

Industry & Partner-Run Ecosystems

Connected Things (Customer)

Analytics, BI and Data Science

Data & Analytics Platform

Partner-Facing Public APIs

Data Management

Data & Analytics Governance

Supplier Portal & Apps

IoT Insights

Business & Operational Insights

Core Systems

Back-Office Systems

Employee Collaboration & Workplace

OT Systems

Connected Things (Partner)

IoT Platform

Information Systems Platform

Employees

Things

Connected Things (Enterprise)

Endpoint Computing

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D&A Leadership for the Digital Era Requires Mastering Three Vectors of Excellence

Analytics Excellence (vertical axis, bottom to top):
- Reporting
- Business Intelligence, Dashboards
- Basic Analytics (Descriptive, Diagnostic)
- Advanced Analytics (Predictive, Prescriptive)
- Data Science, AI/Machine Learning (Cognitive, Context-Aware)
- Augmented Analytics and Optimization (Pervasive, Automation, Algorithm Marketplaces)
- ...

Data Management Excellence (horizontal axis):
Local, Functional, Enterprise, Big Data, Logical ...

Wave 1, Wave 2, Wave 3, Wave 4, Wave 5

Tipping Point: Naming of CDOs to champion transformative data and analytics capabilities

Information Ecosystems and Monetization (Data Marketplaces = Internal Data + Data Brokers + Open Data + Social Data + IoT + Personal Data, and so on…)

Leading Change for Impact

Enabling Advanced Business and Life Outcomes (Data-Driven Culture, Digital Ecosystems and Business Moments, Data Literacy)

Success Factors

- **Vision and Value: Offense and Defense**
  Innovative use cases for growth and potential monetization plays, plus efficiency and risk management plays

- **Strategy: Bimodal Approach**
  Carve off talent and infrastructure capacity to intentionally support the core, and explore

- **Organization: Hybrid COE**
  Analytics center/community of excellence with supportive hub and empowered self-service/citizen model; active communications, sharing successes

- **Governance: Integrated**
  Data *and* analytics governance model
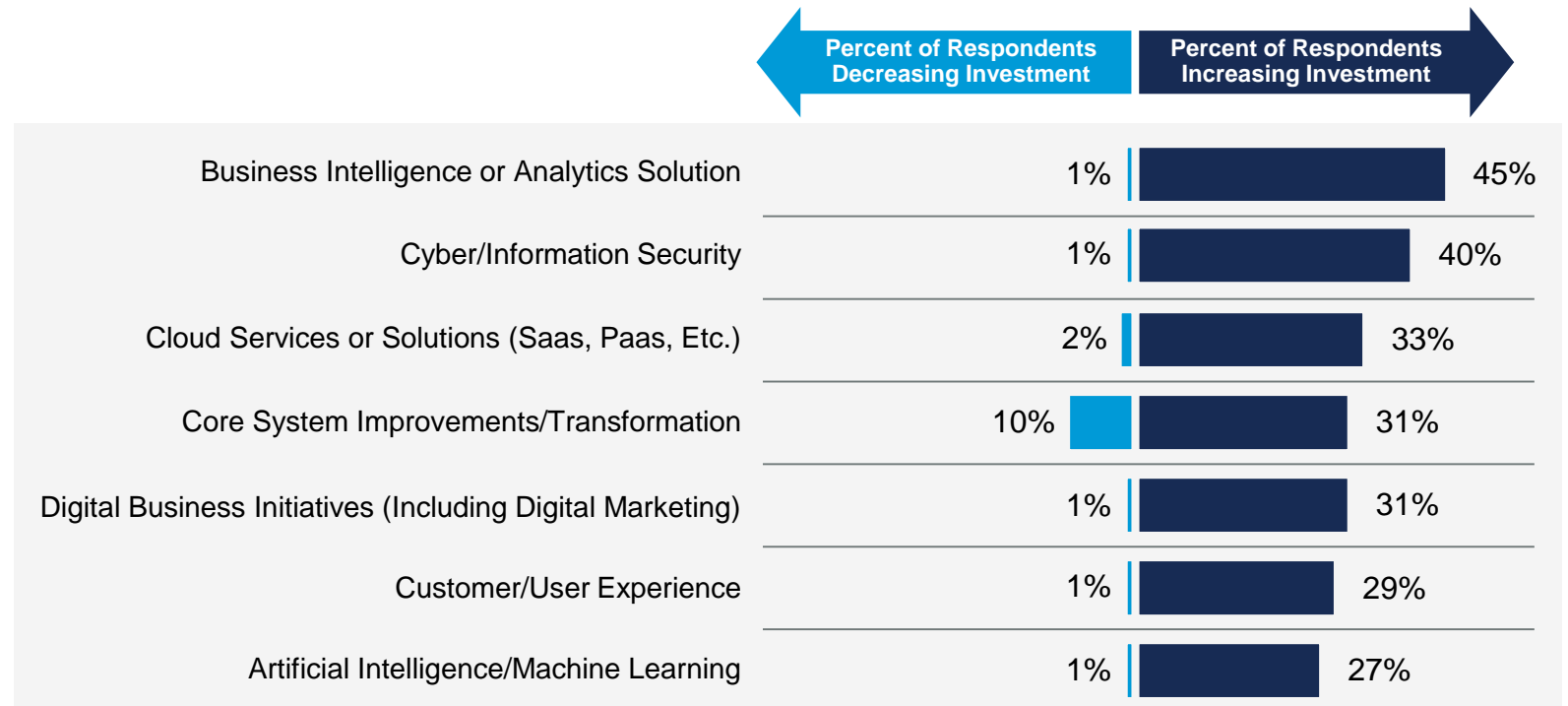
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Key Issues

1. What are the major trends and challenges affecting the Data and Analytics leader?

2. What actions and best practices should a Data and Analytics leader and team implement?

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Data and Analytics Investment Leads New Digital Transformation Again for CIO's

Plans to Increase Investment for Digital Transformation

Analytics investment continues to increase

← Percent of Respondents Decreasing Investment		Percent of Respondents Increasing Investment →
Business Intelligence or Analytics Solution	1%	45%
Cyber/Information Security	1%	40%
Cloud Services or Solutions (Saas, Paas, Etc.)	2%	33%
Core System Improvements/Transformation	10%	31%
Digital Business Initiatives (Including Digital Marketing)	1%	31%
Customer/User Experience	1%	29%
Artificial Intelligence/Machine Learning	1%	27%

Q. What are the technology areas where your organization will be spending the largest amount of new or additional funding in 2019? n = 3,086.

Q. What are the technology areas where your organization will be reducing funding by the highest amount in 2019 compared to 2018? n = 2,819.

Multiple responses allowed, excludes don't know.

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Challenge: Answering the "Why" of Data and Analytics

Bad example:

- "We want to be the largest and most profitable company in the world."

Good example:

- "We want our customers to lead a healthier life."

Good example:

- "All employees will have the actionable insights to help them get the most out of customer, supplier and partner relationships."

- The mission statement answers the "why?" question. The vision describes the future position of the organization and of what to achieve. Often, the terms are used interchangeably.

- What is important is to have a "dot on the horizon" to come back to every time there is a discussion about direction.

- Good missions and visions are what you achieve for your stakeholders, the different kinds of users. These can be internal and external to the organization.

- If there is no common vision, no strategy will succeed. Everyone will read something different in it.

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Challenge: Securing Resources and Funding

Ask yourself:

- How can Data and Analytics change or even disrupt the existing business model?
- Which new Data and Analytics products and services can we develop?
- What are the critical business objectives and initiatives at the moment?
- Which new initiatives are launched and how can Data and Analytics support these?

- Every Data and Analytics conversation is, ultimately, a business conversation.

- Which business problems exist that analytics could help in solving.

- Data and Analytics initiatives support specific business goals and outcomes, such as operational excellence, customer intimacy, production innovation or risk mitigation.

- A Data and Analytics program can support multiple business goals at the same time, through an infrastructural approach. However, there has to be a link between the investments and the goals of the wider organization.

- Describe not what the initiative *could* achieve, but what you *will* achieve and can commit to.

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Challenge: Setting a Meaningful Scope That Enables Success

The scope can have various dimensions:
- Business impact, based on information value to be created
- Priorities (low-hanging fruits and burning platforms)
- Business domains
- Data sources (although relying solely on internal data is not necessarily recommended)
- Information gaps and problem areas

- Every strategy has a scope.

- Clearly state what is within the span of concern for the strategy, and what is not.

- Dare to be brutally honest when identifying problems and priorities.

- At the same time, keep your options open. You can't plan three or more years ahead. The scope is an indication — at one moment in time — of which areas in the business you will focus on. These can always change or be reprioritized.

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Challenge: Engaging Key Stakeholders
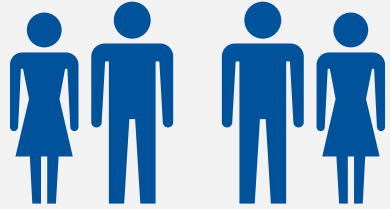
Bad example:

- "Supporting management decision-making processes."

Slightly better:

- "Distinguishing casual users, power users and data scientists."
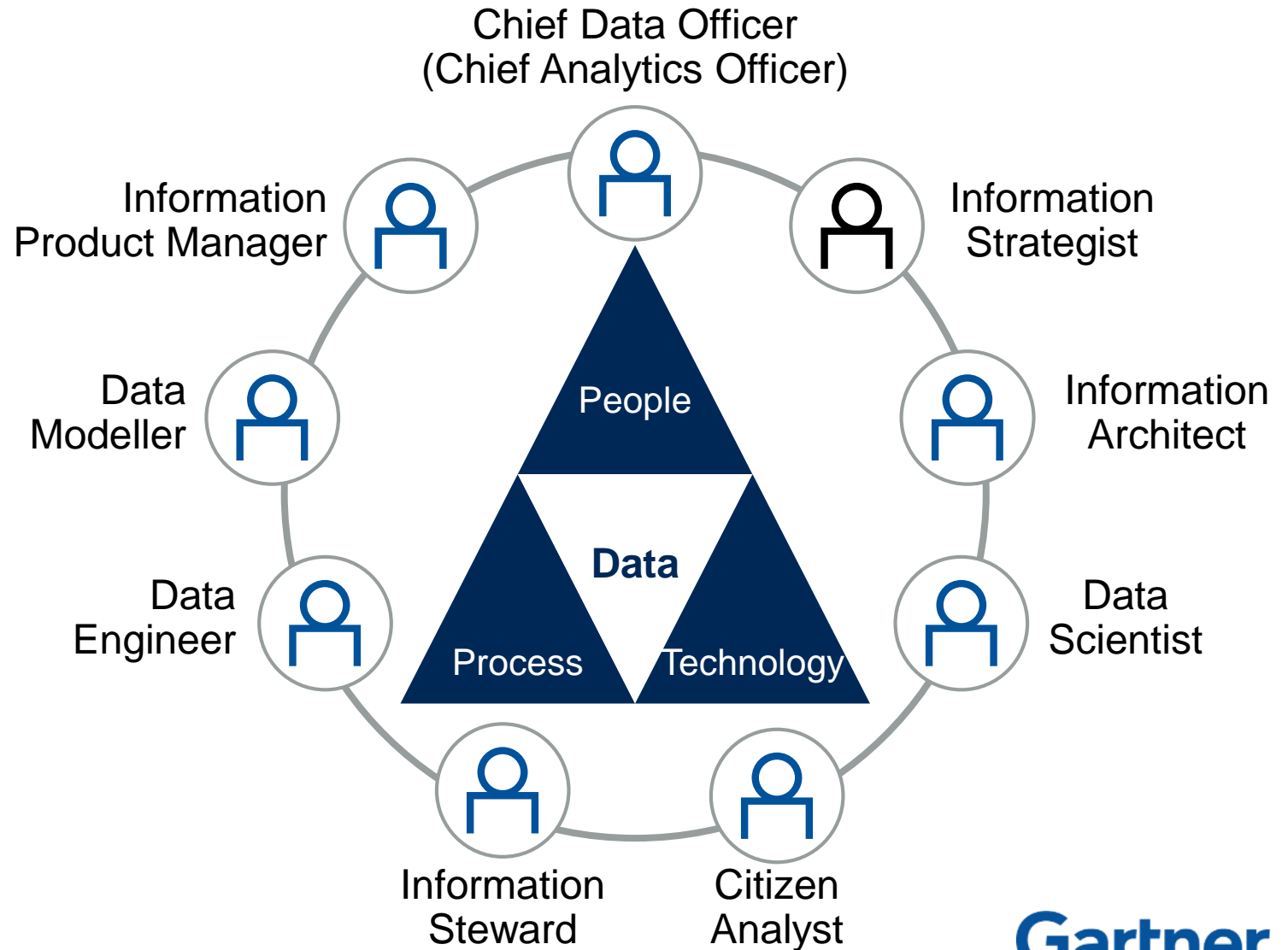
Good example:

- *External:* "Partners, customers, regulators and so on, and their information requirements and contributions."
- *Internal:* "Business departments and functions, and their information requirements and contributions."

- Data and Analytics Strategy is created and driven by business stakeholders.

- The vast majority of Data and Analytics strategies don't mention stakeholders at all, or imply a further unspecified group of "managers that require information and decision support."

- Who are you are addressing? What is the value you deliver to each stakeholder? Remember, value is not only delivered, it also needs to be perceived that way before it is considered to be of value.

- Increasingly, Data and Analytics strategies are external in nature; they are about information exchange with suppliers in the supply chain, partners in the ecosystem and customers, as part of a value proposition.

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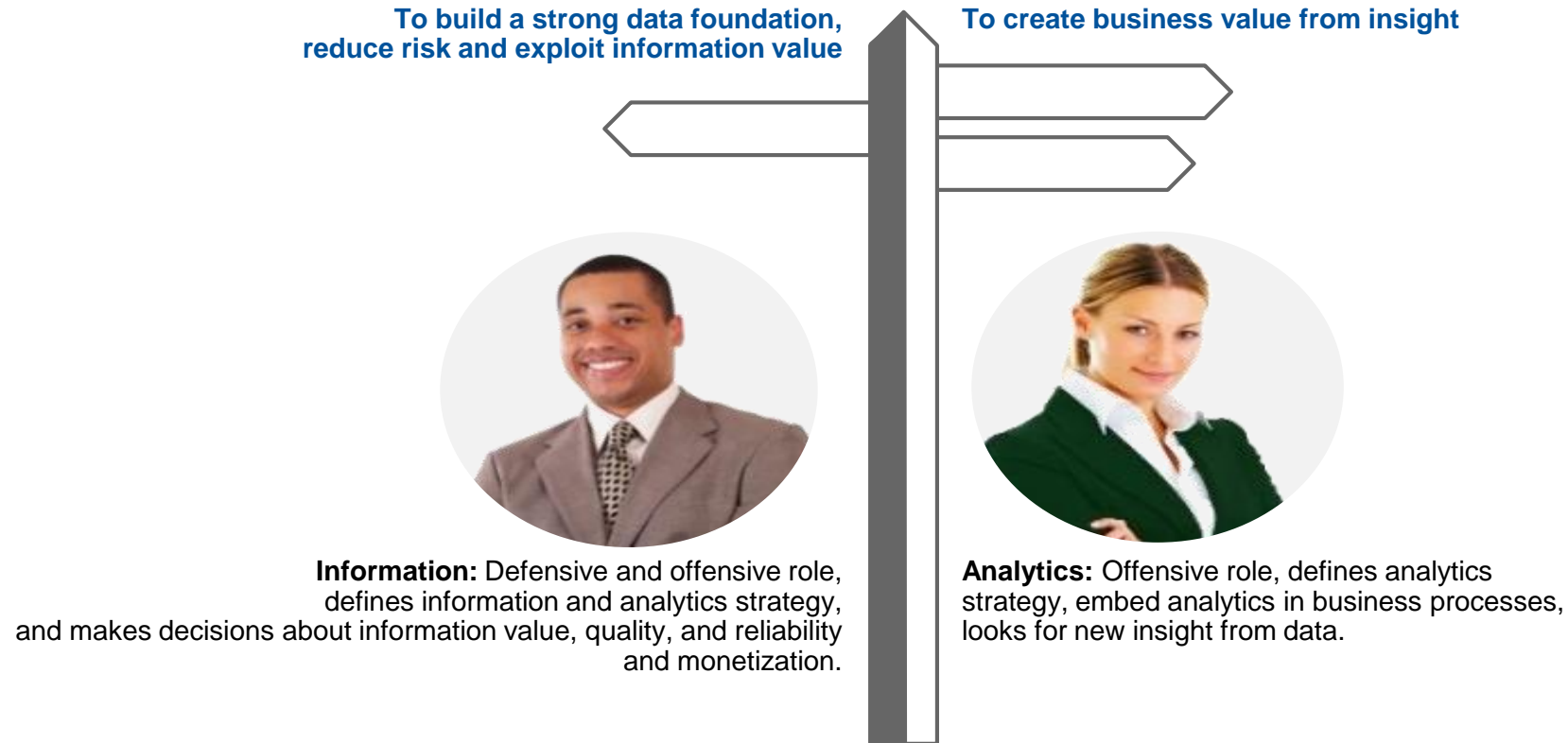# Challenge: Skills and Expertise Are Scarce, Organizational Models Are Failing

Organizations need Data and Analytics professionals and business hybrids to succeed in digital business.

Chief Data Officer
(Chief Analytics Officer)

Information Strategist

Information Architect

Data Scientist

Citizen Analyst

Information Steward

Data Engineer

Data Modeller

Information Product Manager

People

Data

Process

Technology

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Key Issues

1. What are the major trends and challenges affecting the Data and Analytics leader?

2. What actions and best practices should a Data and Analytics leader and team implement?
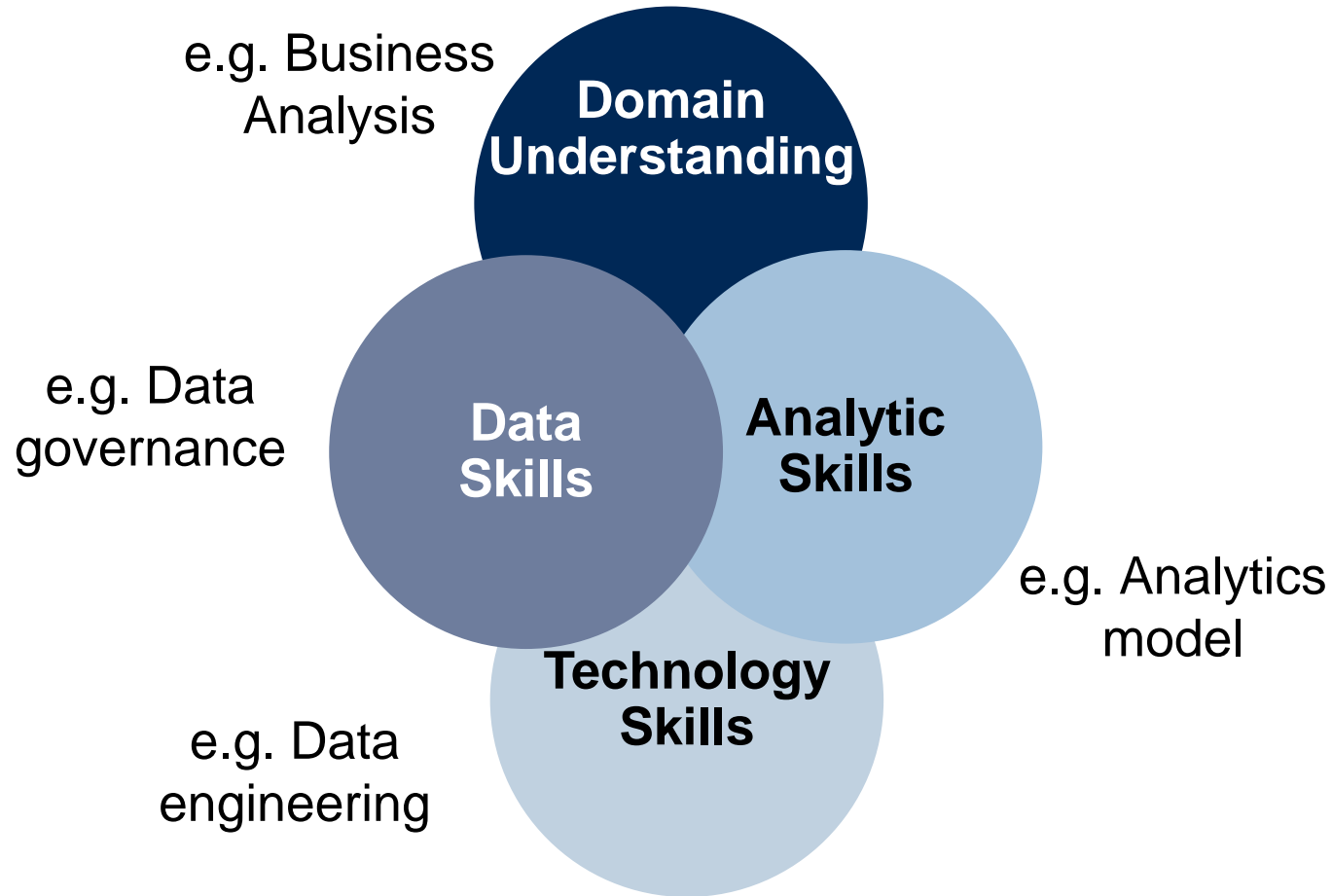
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Best Practice 1: Assign a Senior Executive Champion (CDO or Equiv.)

To build a strong data foundation, reduce risk and exploit information value

To create business value from insight

Information: Defensive and offensive role, defines information and analytics strategy, and makes decisions about information value, quality, and reliability and monetization.

Analytics: Offensive role, defines analytics strategy, embed analytics in business processes, looks for new insight from data.

83% of Survey Responders are already responsible or exploring idea of new digital or information products

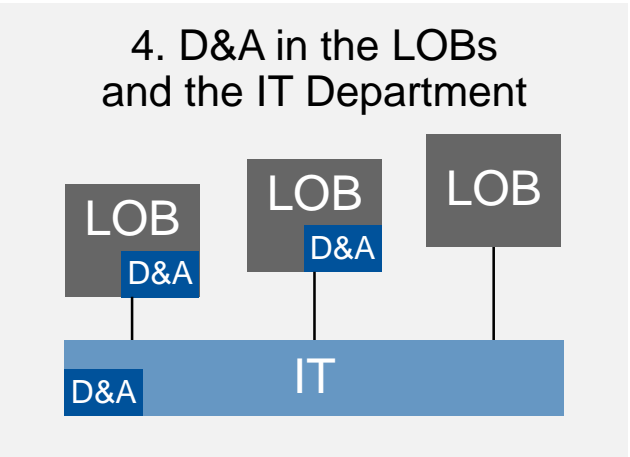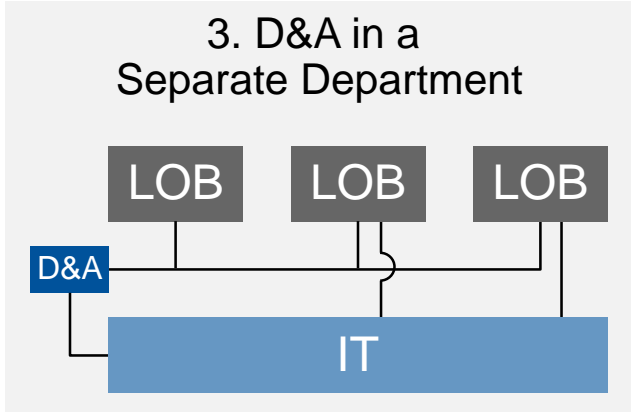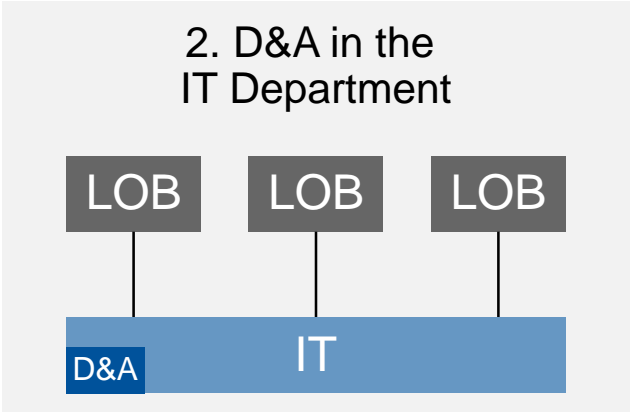— Fourth Annual Gartner CDO Survey

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Best Practice 2: Assess and Adjust Your Organization Models (CoE, Talent/Training, Roles and Skills etc.)

e.g. Business Analysis

Domain Understanding

e.g. Data governance

Data Skills

Analytic Skills

e.g. Analytics model

Technology Skills

e.g. Data engineering

Must Have Roles:

- Chief data officer
- Data-driven facilitator
- Analyst(s)
- Business process analyst
- Data engineer
- Data ethicist
- Information architect
- Lead information steward and information stewards
- Master data management (MDM) program manager

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Best Practice 3: Create the Right Organization

1. D&A in the Business Unit

2. D&A in the IT Department

3. D&A in a Separate Department

4. D&A in the LOBs and the IT Department

5. D&A Experts Scattered Throughout the Enterprise
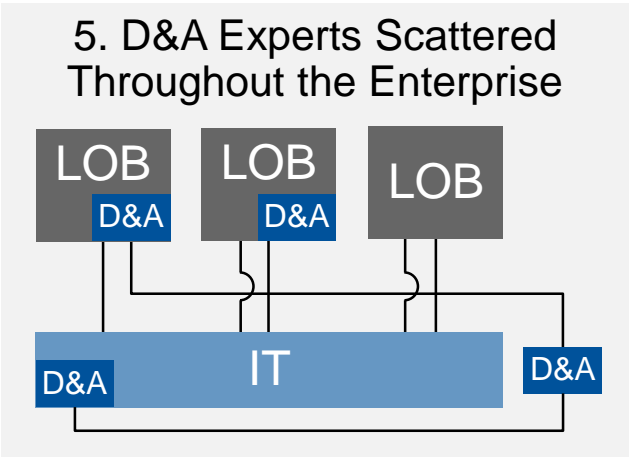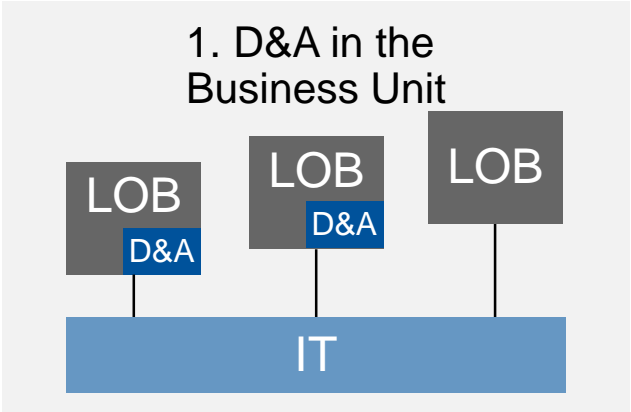
Connecting Culture, Governance and Organizational Diversity

LOB = Line of business

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Best Practice 4: Assess Maturity Across the Seven Major Disciplines, and Inventory the Viability of Current Programs

Data & Analytics IT Score

Create the Data & Analytics Vision and Strategy	Manage the Data & Analytics Function	Align Data & Analytics to Business Outcomes	Develop Data & Analytics Organizational Talent	Create & Maintain Analytics Content	Integrate & Manage Data	Govern Data & Analytics Assets
Forge the Vision	Prioritize Project Proposals	Establish an Enterprise KPI & Metrics Framework	Plan Organizational Strategy to Develop Skills	Create & Maintain Business Semantic Models	Describe Data Assets	Determine Which Assets Need Governance
Design the Strategic Plan	Manage Projects	Quantify the Value	Recruit Talent	Create & Maintain Enterprisewide Reports	Organize Data Assets	Set Governance Policies
Create the Functional Design	Monitor Portfolio Health	Innovate the Business Model	Develop Data Literacy	Create & Maintain Visual Dashboards	Integrate Data Assets	Enforce & Operationalize Governance Policies
Implement the Strategy				Create Advanced Analytics Models	Share Data Assets	Communicate Governance Policies

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Best Practice 5: Build Data Literacy in Your Organization

While conversant in the "people, process and technology" capabilities of business change, most executives and professionals do not speak "data" fluently as the new critical capability of digital society.
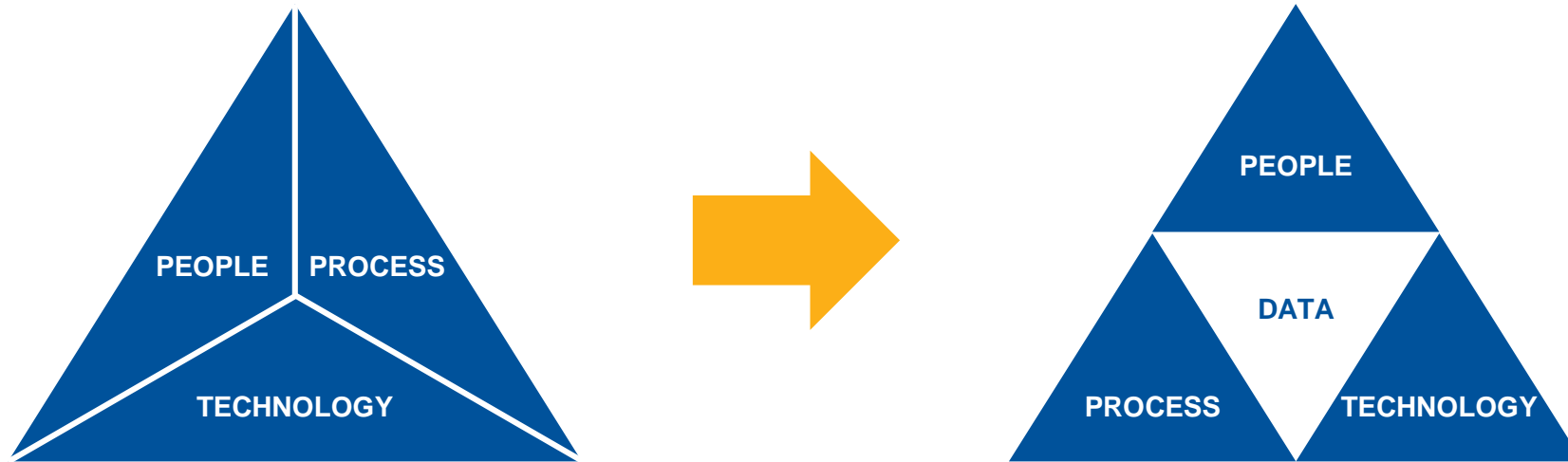
Gartner formally defines data literacy as:
The ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied, and the ability to describe the use-case application and resulting value.

Informally … do you "speak data?"

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To Summarize: Five Best Practices

- Identify your Leader – CDO

- Assess Organizational Capabilities

- Adopt the Right Organizational Model

- Get a Baseline Across Data and Analytics Disciplines

- Become a data driven, data literate organization
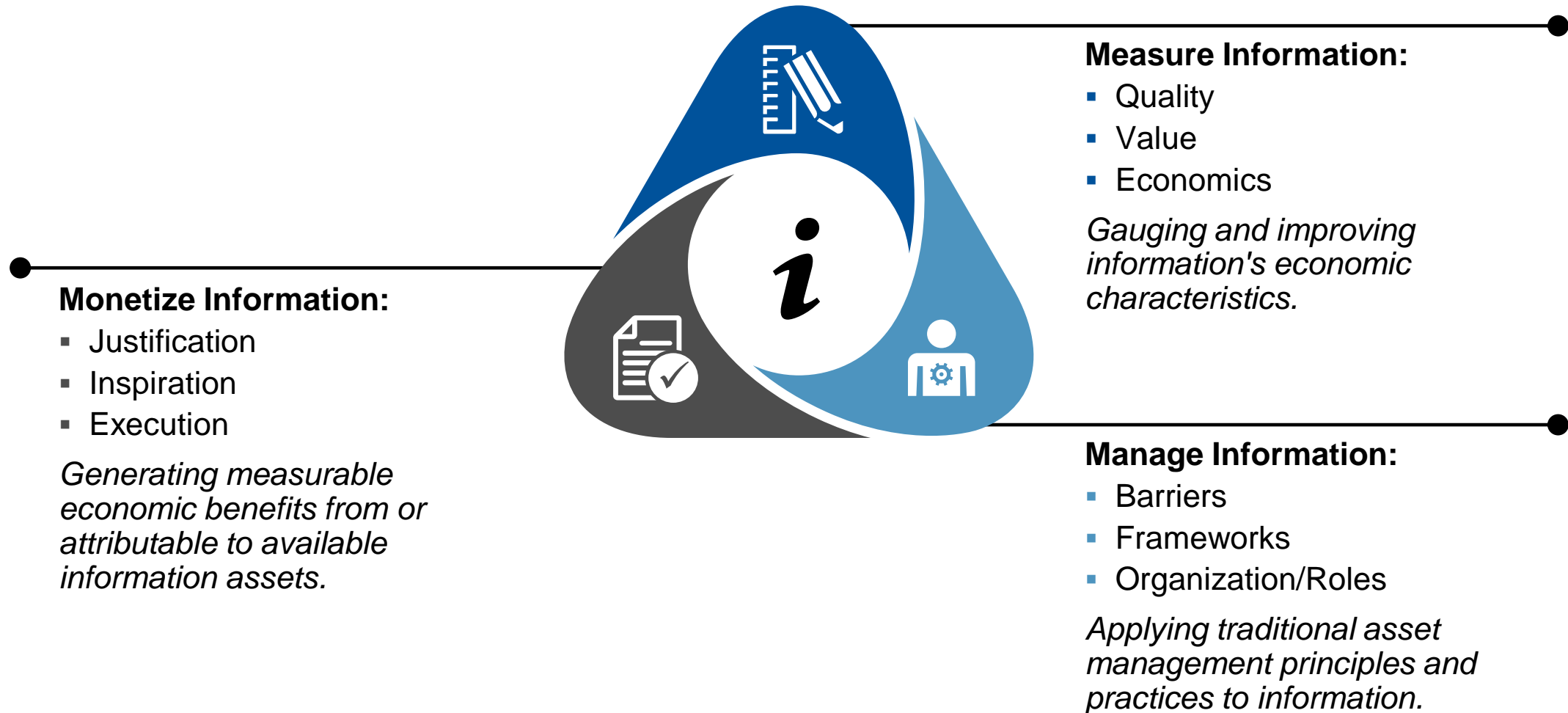
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Key Issues

1. What are the major trends and challenges affecting the Data and Analytics leader?

2. What is leadership in the digital age for a data and analytics leader?

3. What actions and best practices should a Data and Analytics leader and team implement?

4. How do leading organizations deliver the highest value using Data and Analytics?

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Align/Exploit Data and Analytics to/with your Enterprise Goals

From		To
Technology-centric	**Vision**	Data-centric
Out of IT	**Strategy**	*Is the* business
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Local, Siloed, Collect	**Technology**	Collection *and* Connection

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Vision: Refining Focus and Capturing Opportunities Through Data and Analytics

Measure Information:

- Quality
- Value
- Economics

Gauging and improving information's economic characteristics.

Monetize Information:

- Justification
- Inspiration
- Execution

Generating measurable economic benefits from or attributable to available information assets.

Manage Information:

- Barriers
- Frameworks
- Organization/Roles

Applying traditional asset management principles and practices to information.

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# Vision: Depending on Your Role and Value Discipline—Different Value Propositions Unfold

Role of Data and Analytics

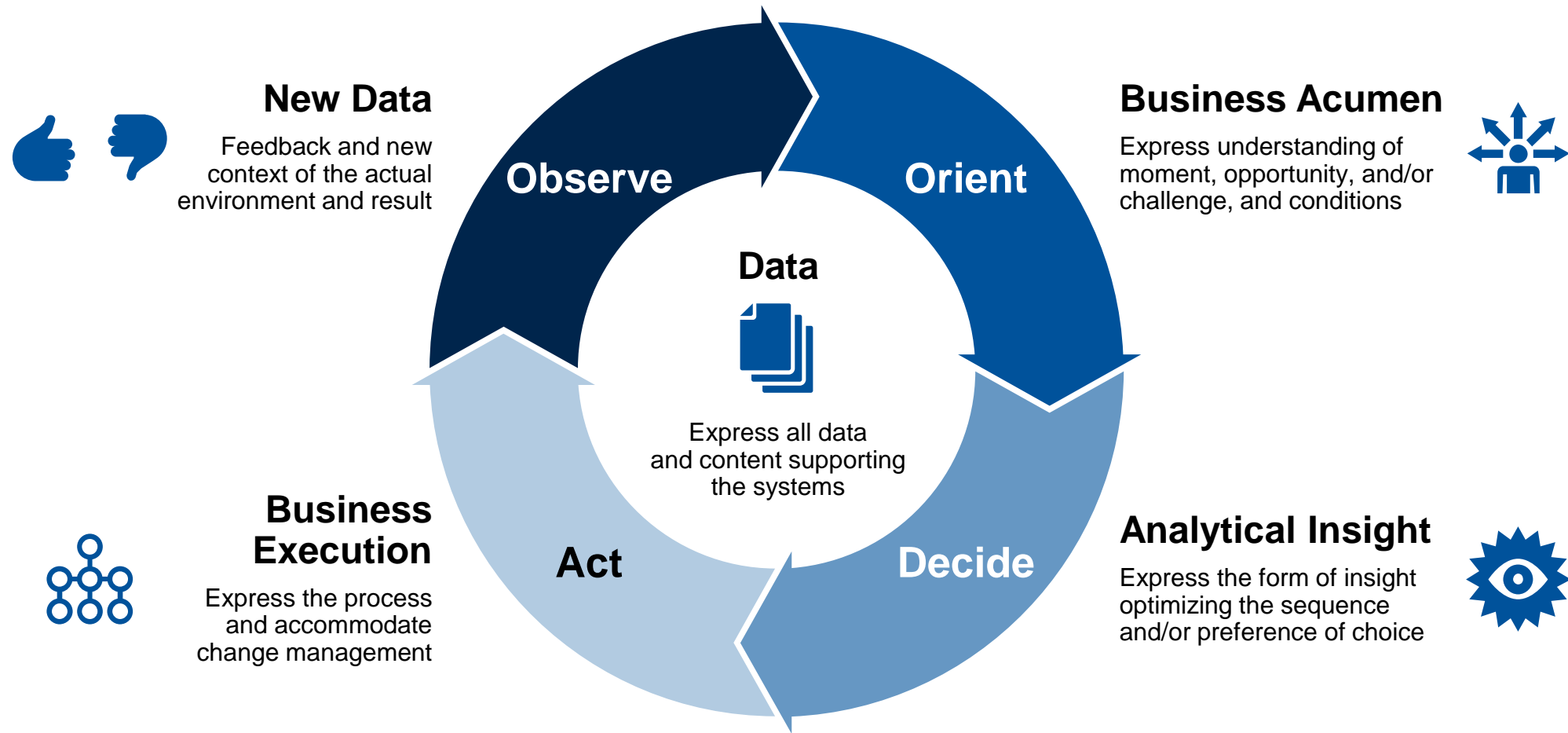| Value Discipline	Driver	Enabler	Utility
Operational Excellence	Integration Value Chain	Data and Analytics Hub	Always On
Customer Intimacy	Personal Analytics	360-Degree	Data and Analytics as a Service
New Business	Information Products	Feedback	Self-Service
Risk Management	Handle Risks Others Can't	Risk Mitigation	Compliance

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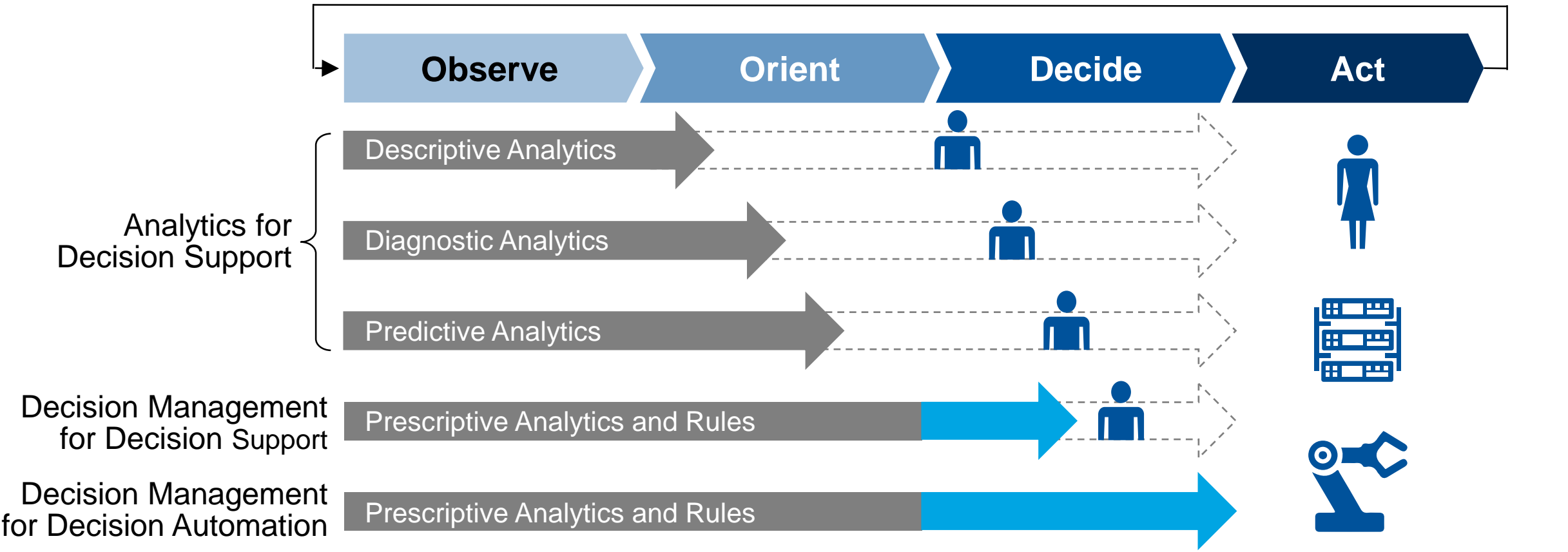# Execute Strategy with an **Operating Model** that Scales
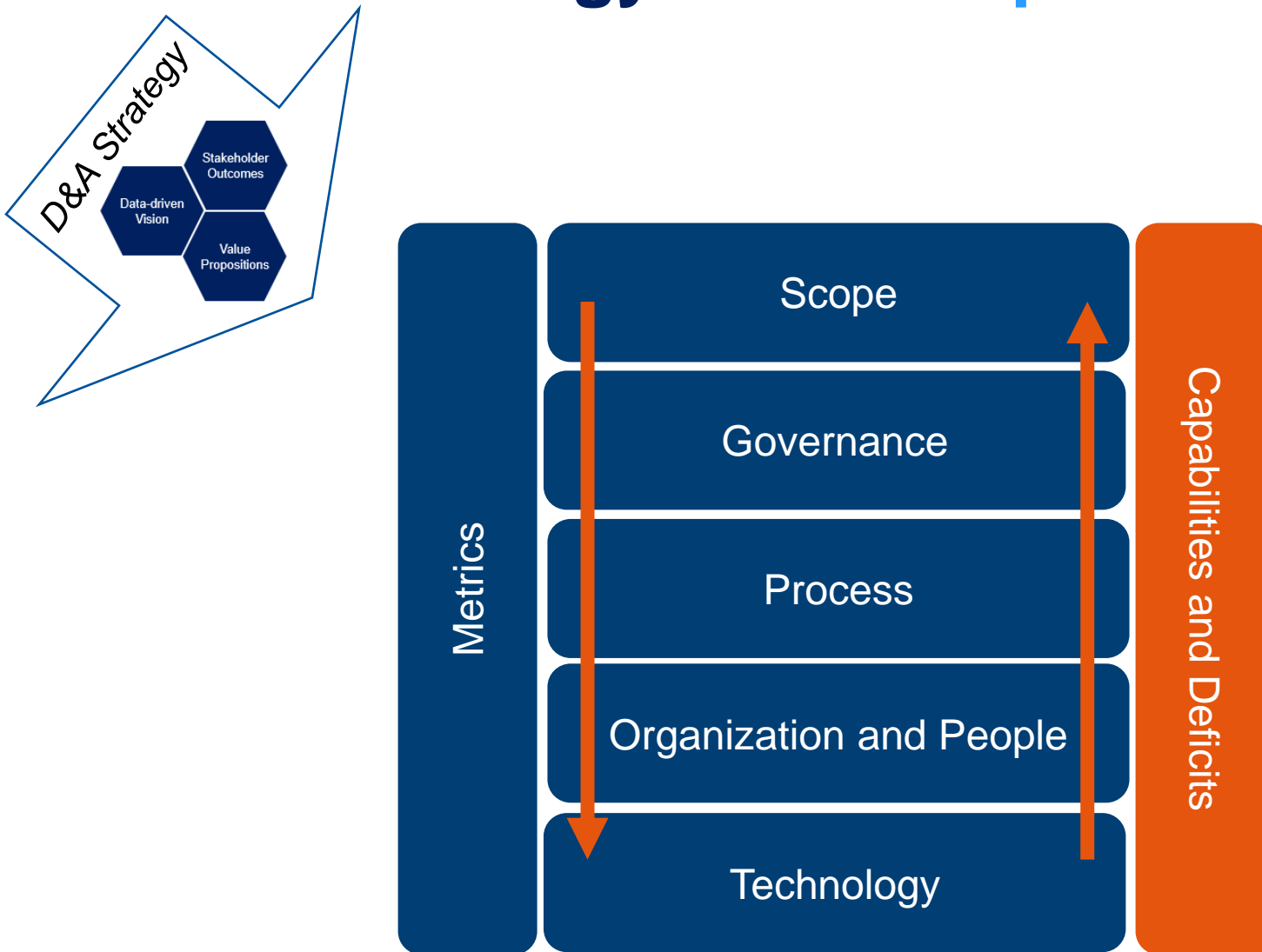
- The Data and Analytics Strategy provides the framework for the Operating Model (here depicted in detail)

- The operating model is contextualized for each initiative.

- Scope defines the boundaries of the program, project or product and its method of implementation
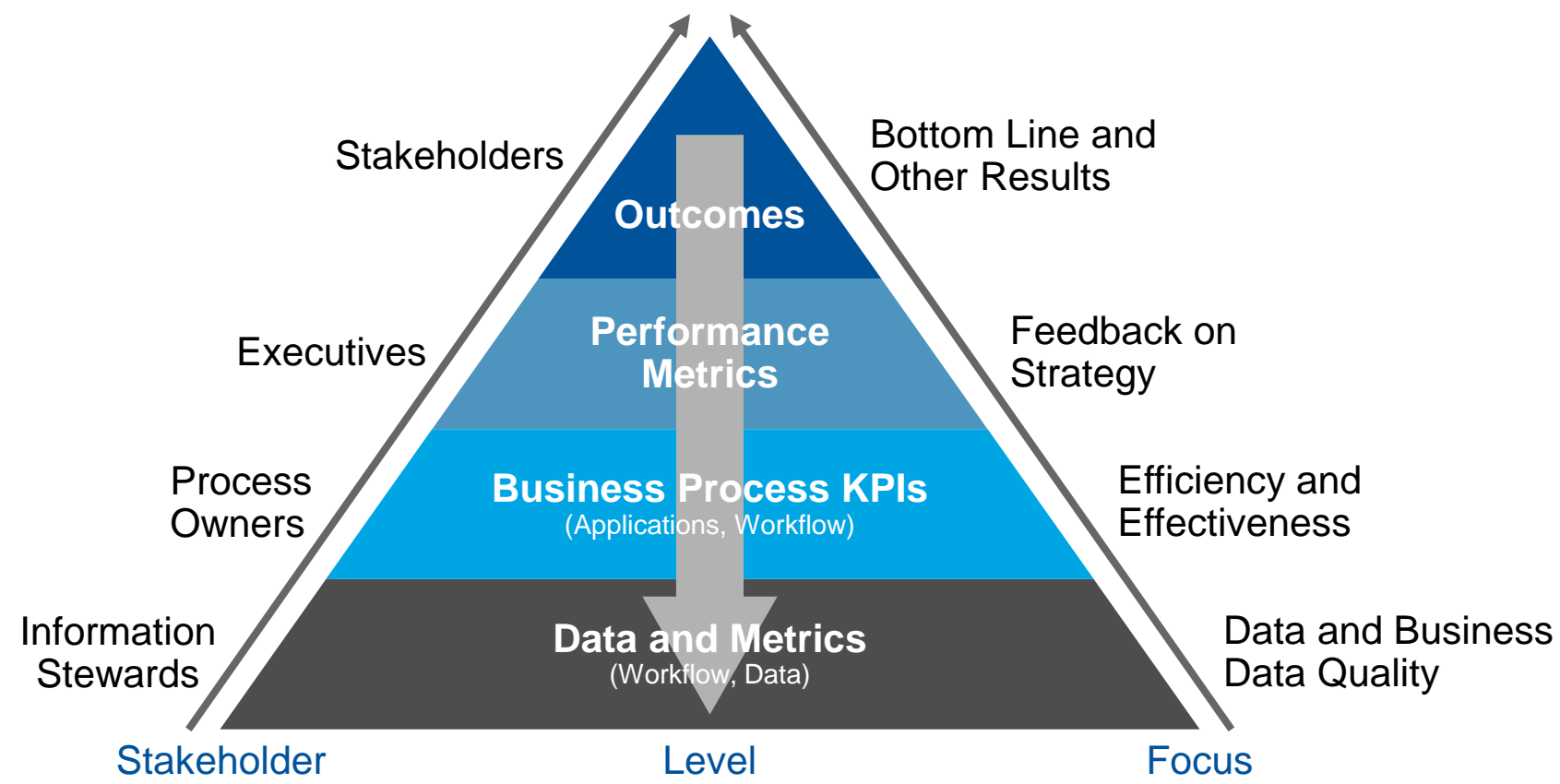
- Metrics defines the goals and outcomes

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Don't Talk Data or IT; Understand how Decisions are Taken

New Data
Feedback and new context of the actual environment and result

Business Acumen
Express understanding of moment, opportunity, and/or challenge, and conditions

Business Execution
Express the process and accommodate change management

Analytical Insight
Express the form of insight optimizing the sequence and/or preference of choice

Data
Express all data and content supporting the systems

Observe | Orient | Decide | Act

OODA Loop – Decision Cycle
The Dynamic OODA Loop

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Role of Analytics in Decision Making

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From Organizational Outcome to The Data that Matters Most

Stakeholders — **Outcomes** — Bottom Line and Other Results

Executives — **Performance Metrics** — Feedback on Strategy

Process Owners — **Business Process KPIs** (Applications, Workflow) — Efficiency and Effectiveness

Information Stewards — **Data and Metrics** (Workflow, Data) — Data and Business Data Quality

Stakeholder Level Focus

Make the connection to the business

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Artificial Intelligence Continues to Reshape Decision Making

Perception Systems

Probabilistic Reasoning

- Machine learning
- Predictive modeling
- Deep learning
- Bayesian nets
- Decision trees
- …

Computational Logic

- Logic programming
- Rule-based systems
- Heuristic techniques
- Case-based reasoning
- Fuzzy logic
- …

Optimization Techniques

- Constraint-based reasoning
- Linear programming
- Genetic algorithms
- Planning techniques
- …

Natural-Language Processing

Knowledge Representation, Learning and Search

Agent-Based Computing/Orchestration

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Modern Data and Analytics Governance is Adaptive

Complexity · Maturity

- **Autonomous** — AI Algorithms, Real-time OT, Information Markets Blockchain, IoT, Real-Time Auditing
- **Agility** — Data Science Labs, Machine Learning for Data Quality, Self-Service Models, Information Product Management
- **Outcomes** — Predictive Analytics, Multichannel Customer Experience, Customer-360, Supply Chain Analytics
- **Control** — Regulatory & Compliance, Master Data Management, Application Data Management

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Create Agile Organizational Models for Data and Analytics

1. Data and Analytics in the Business Unit

2. Data and Analytics in the IT Department

3. Data and Analytics in a Separate Department

4. Data and Analytics in the LOBs and the IT Department

5. Data and Analytics Experts Scattered Throughout the Enterprise

Where should the work of D&A take place in your Organization?

LOB = Line of business; D&A = Data and Analytics

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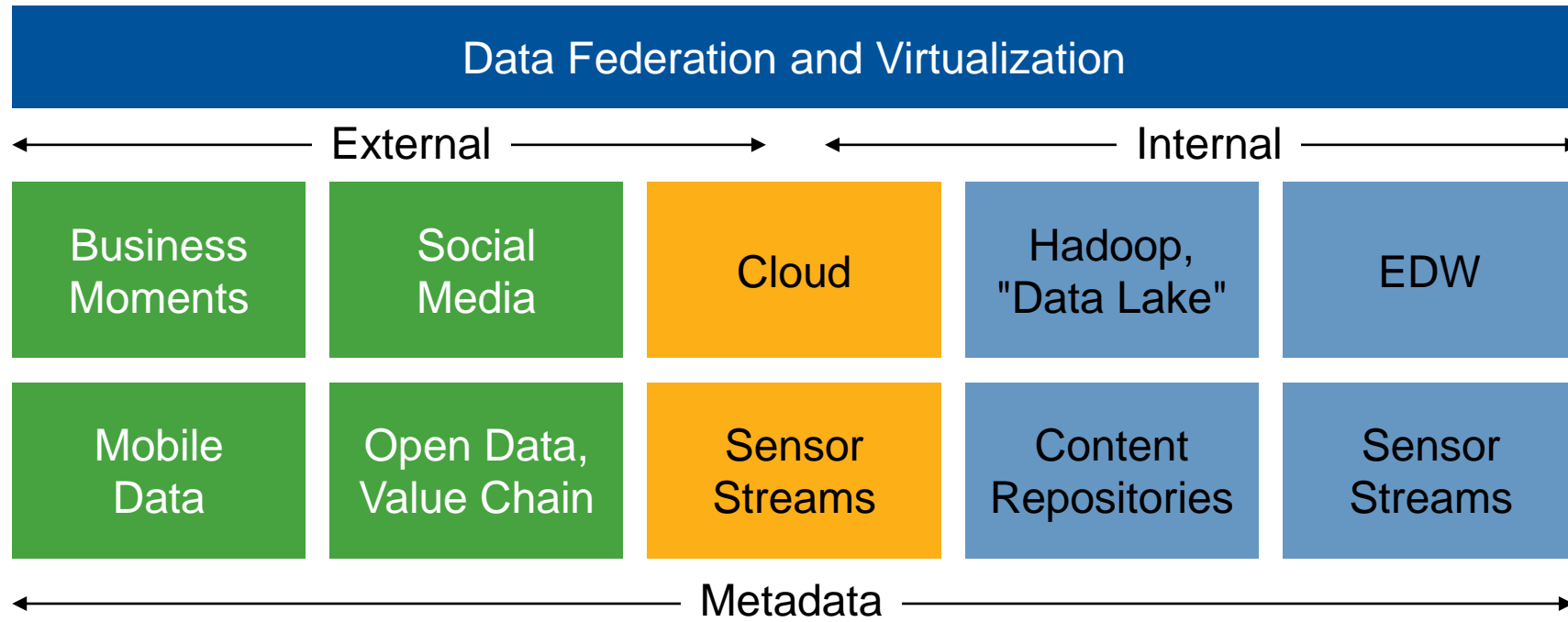# Connect your Data and Analytics Governance, MDM, Data Sharing and Integration into a single data hub strategy

Outcome to Data

Prioritize Data for Governance

Conceptual, Logical, Physical

Evaluate

Implement

Informs and Establishes Data and Analytics Governance

Informs and Establishes Sharing Requirements

Informs Technology Requirements

See Use a Data Hub Strategy to Meet Your Data and Analytics Governance and Sharing Requirements

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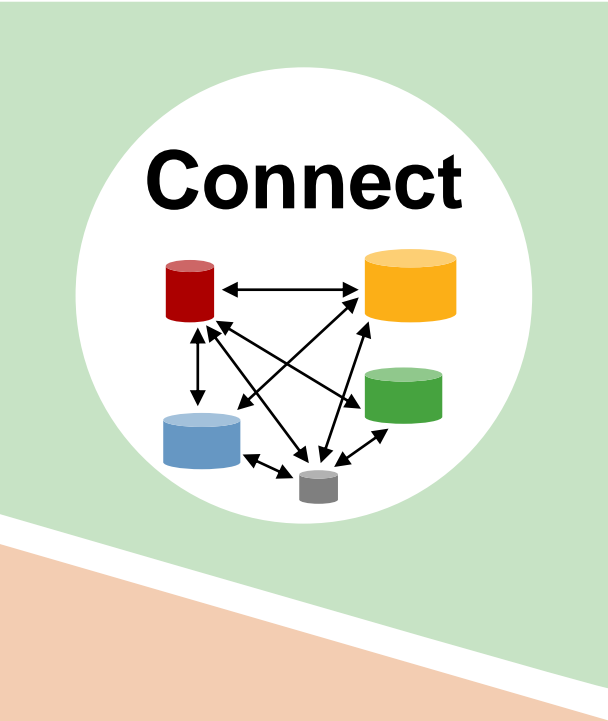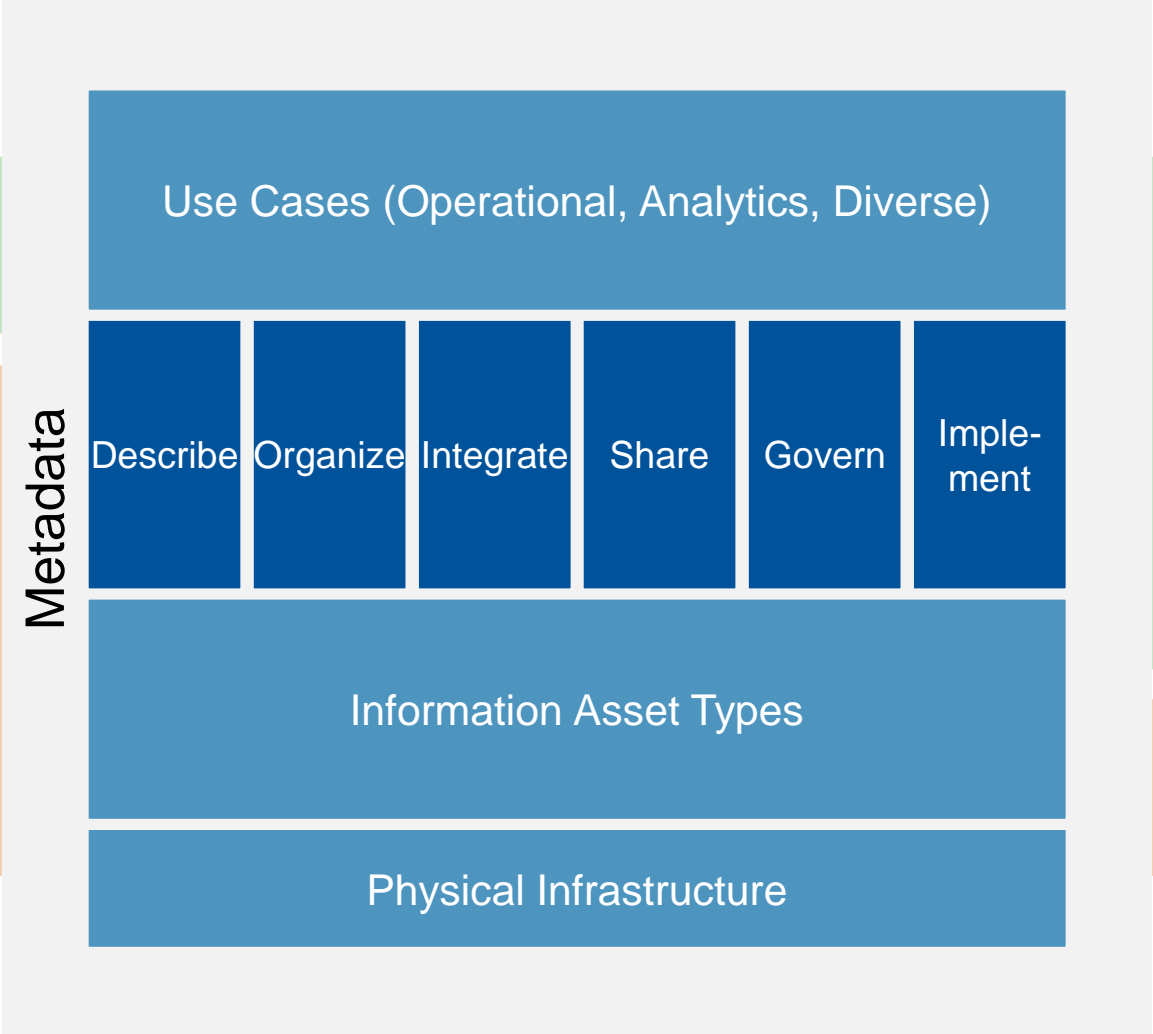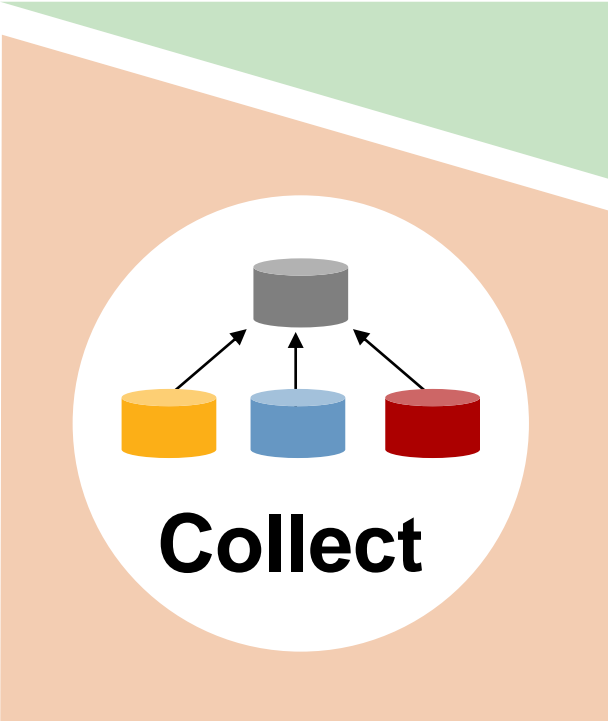# Data and Analytics Capabilities Must Support the Known and the Unknown Decisions Across the Organization

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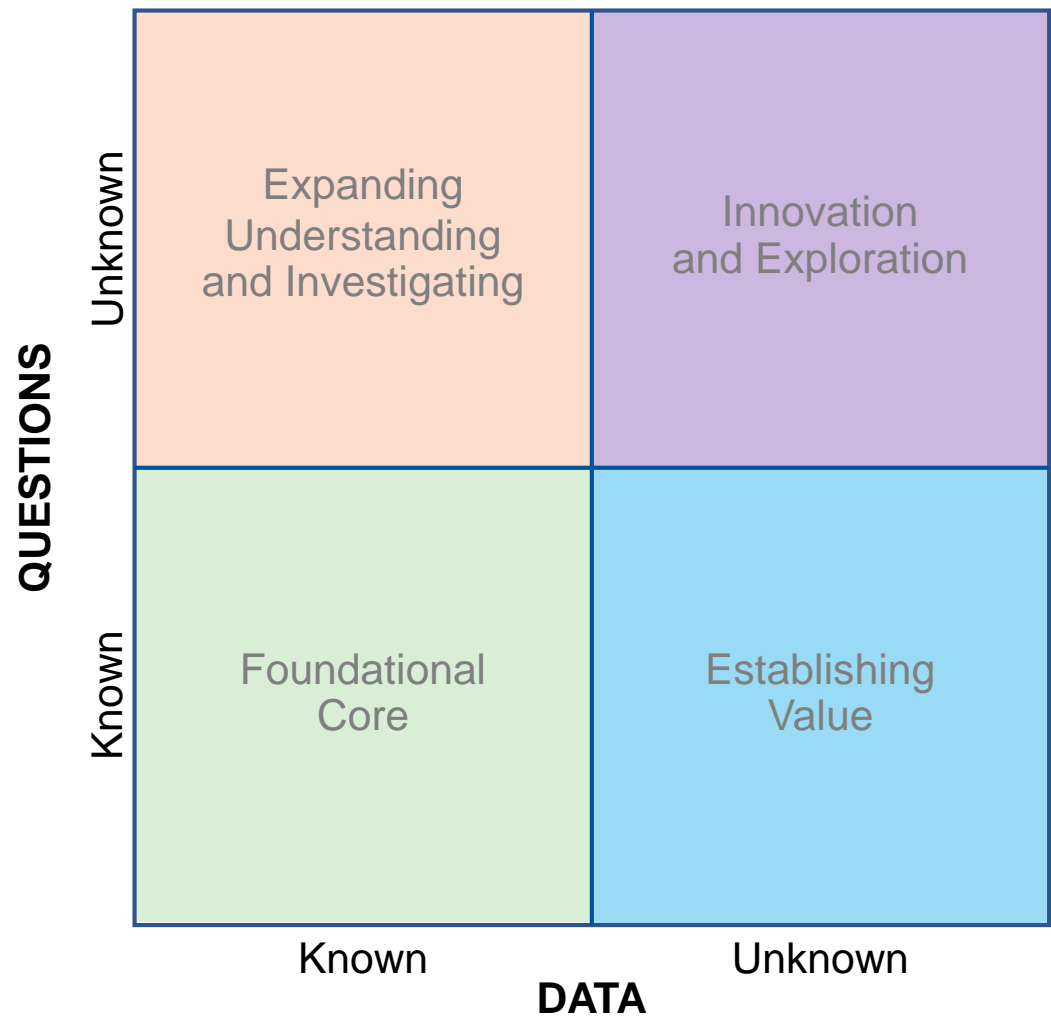
Logical Data Warehouse: The Only Option When Data Collection Becomes Impossible

Data Federation and Virtualization				
← External →		← Internal →		
Business Moments	Social Media	Cloud	Hadoop, "Data Lake"	EDW
Mobile Data	Open Data, Value Chain	Sensor Streams	Content Repositories	Sensor Streams
← Metadata →				

- Distributed architecture composed of multiple repositories
- Any and all information types — supported by optimized storage and processing
- Inside and outside (cloud, external) the enterprise
- Pulled together as and where needed by federated and virtual capabilities
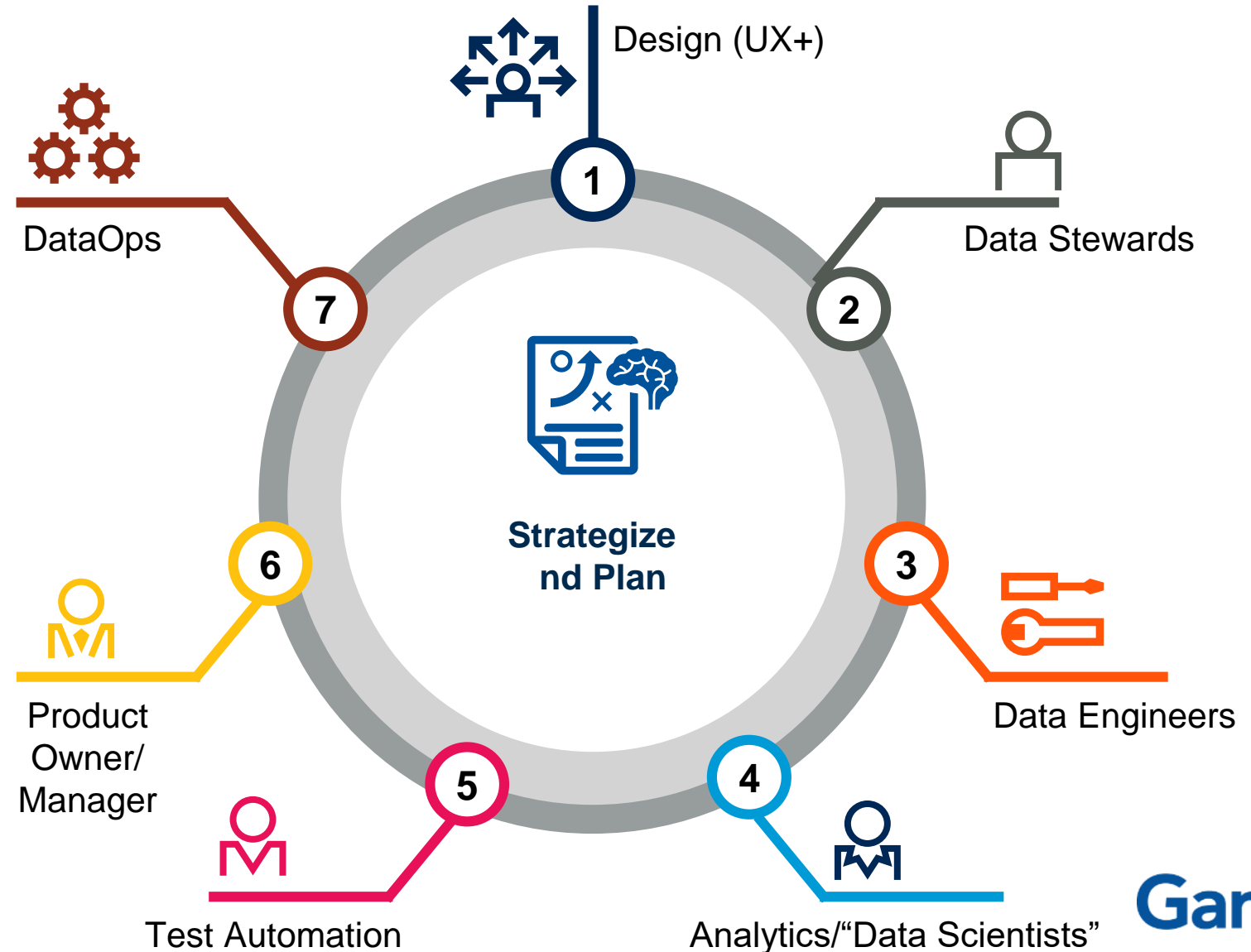
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Create a Flexible Infrastructure at the Core for Analytical and Operational Uses

Collect

Use Cases (Operational, Analytics, Diverse)

Metadata

| Describe | Organize | Integrate | Share | Govern | Imple-ment |

Information Asset Types

Physical Infrastructure

Connect

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Implement Initiatives exploiting DataOps: From Projects to Product Delivery

CIOs Say the Shift to Products Is Well Underway for their Teams

Strategize nd Plan

1 — Design (UX+)

2 — Data Stewards

3 — Data Engineers

4 — Analytics/"Data Scientists"

5 — Test Automation

6 — Product Owner/Manager

7 — DataOps

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How do leading organizations deliver the highest value using Data and Analytics?

- Start with Vision and Strategy

- Prioritize Organizational Outcomes

- Stop talking about IT; Understand how Decisions Are Made

- Exploit AI and ML to Automate and Innovate

- Adopt Adaptive Data and Analytics Governance

- Embed and Orchestrate the Work of Data and Analytics Across the Organization

- Align Data and Analytics Technology to how Decision Making Needs to be Serviced

- Leverage DataOps to implement your initiatives

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Next Action Steps

- Personalize this material by identifying five to seven major technology trends that will have the highest impact on your enterprise overall and, particularly, your digital business strategy (see Hype Cycle for Enterprise Information Management, 2019).

- Create or update your data and analytics strategy (see "How to Craft a Modern, Actionable Data and Analytics Strategy that Delivers Business Outcomes")

- Decide what roles and skills you will need, and start hiring, training and reorganizing to meet future demand (see "Why You Need to Rethink Your Data and Analytics Roles Now")

- Begin building a set of metrics that demonstrate how data and analytics are connected to business performance (see "Data and Analytics Strategies Need More-Concrete Metrics of Success").

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Gartner Recommended Reading [1/2]

▶ **"The Chief Data Officer's First 100 Days"** G00369773
Debra Logan, Andrew White, Joe Bugajski

▶ **"Survey Analysis: Gartner's Fourth Annual CDO Survey — Key Capabilities That Enable Business Success"**
Debra Logan, Alan D. Duncan, Valerie Logan, Lydia Clougherty Jones

▶ **How to Craft a Modern, Actionable Data and Analytics Strategy that Delivers Business Outcomes**
Mike Rollings, Frank Buytendijk

▶ **"Toolkit: Curriculum for Data Literacy Training Programs"**
Alan Duncan, Douglas Laney

▶ **"Driving Business Transformation by Changing the Culture"**
Bard Papegaaij, Leigh McMullen, Patrick Meehan

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Gartner Recommended Reading [2/2]

▶ **"Three Essential First Steps for Leading Transformational Change"**
Elise Olding, Carol Rozwell

▶ **"Toolkit: Best of ... Data and Analytics Strategies"**
Frank Buytendijk, Mike Rollings, Doug Laney, Nick Heudecker

▶ **"ITScore for Data and Analytics"**

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