AI Strategy: The Building Blocks to Realizing Your AI Ambition

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John Walsh

Chief Data Officer at Bronson Consulting Group

Seasoned Government of Canada Chief Data Officer (Ret'd)

A former Director General, John has over 30 years of experience in the Canadian federal public service including senior executive roles advising Deputy Ministers and Assistant Deputy Ministers in several departments in areas related to data and statistics, natural resource development, climate change, economic development and international relations.

John has a history of leading data and digital transformation efforts across business lines. He has led strategy, operations, business and data/digital transformations for clients in multiple Canadian federal public sector organizations. While at Natural Resources Canada he was named the very first departmental data lead responsible for driving the data transformation agenda. Later he was named the first Chief Data Officer at Environment and Climate Change Canada where he implemented the Chief Data Office organization and developed and implemented the first enterprise-wide Data Analytics Strategy. He was also enterprise Chief Data Officer of the Department of National Defence (DND) and Canadian Armed Forces where he implemented the first enterprise Data Analytics Strategy. John has developed experience across a broad range of departments, addressing challenges to technology improvement and delivery. His additional areas of focus include IT/digital strategy and innovation and how organizations can successfully leverage data for more effective decision making.

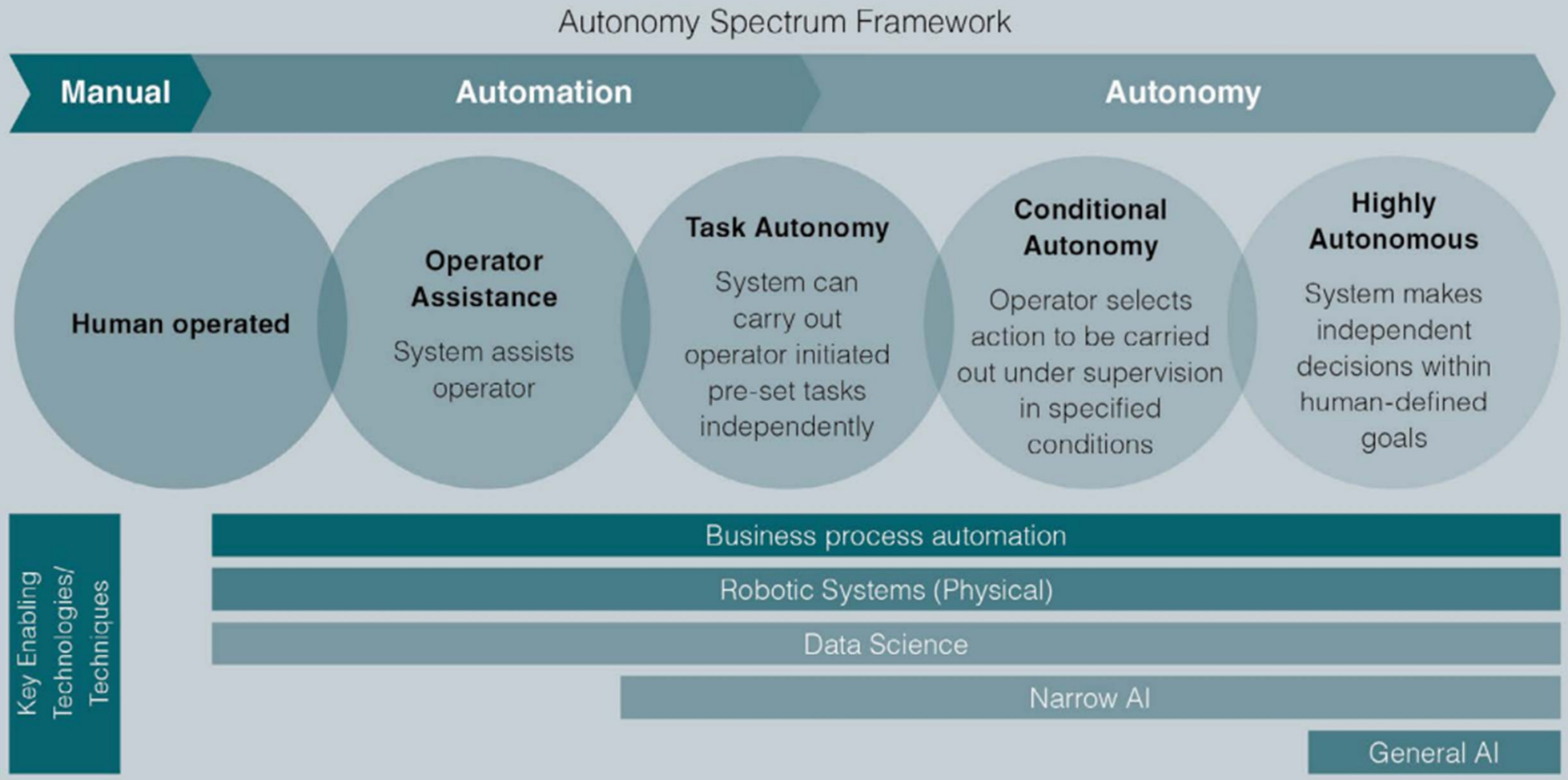
While working in the federal public service on the data file he was a recognized thought leader and change agent. He was a founding member of the Government of Canada Chief Data Officer Council, and the interdepartmental Data Leads. In addition, he was a founding member of the FYES Chief Data Officer Council, representing Canada and the Department of National Defence internationally on issues related to AI, the responsible use of AI, Open Data and Data Standards.

Whether figuring out the digital transformation agenda, leveraging data for insight, thinking about the best Business Intelligence tools, or meeting change management challenges, John can provide ongoing insight and expertise.

Some Take Aways

- AI and especially generative AI is part of a shift in how humans and machines interact. Machines are evolving from being our tools to becoming our teammates
- Gartner predicts that by 2025, GenAI will be a workforce partner for 90% of companies worldwide
- AI comes in a few flavours:
  - Everyday AI is focused on productivity, making us do what we already do faster and more efficiently (chatbots, RPL, ML etc)
  - Game-changing AI is focused on creativity: creating new types of value, products, services, business models, and even new industries
- In this new era where humans and machines interact, there are all sorts of consequences. This means diligence, risk, guidelines, access and appropriate use of AI evolve constantly.
- If you don't have an AI vision, you don't have an AI ambition.

Levels of Oversight & Control



The appropriate level of human oversight, verification and control will vary depending on the system design, mission objectives and operational context.

AI – Policy Context

In recent years, artificial intelligence (AI) has emerged as a powerful force in shaping the future of various industries, and its impact on government operations is no exception.

Moreover, governments have unique obligations with respect to AI and must strive to maintain public trust, transparency, and reduce bias in every algorithmic decision reached by AI. Some recent notable government policy releases include:

- June 2023, Bill C-27 was introduced in the HoC, which includes proposed legislation known as the Artificial Intelligence and Data Act (AIDA)
- In October, 2023 TBS released the Guide on the use of Generative AI - Canada.ca
- October 2023, White House releases Executive Order on Safe, Secure and Trusted AI
- November 2023, United States Department of Defense unveils it's newly revised AI Strategy
- CIFAR Pan Canadian AI Strategy 2017

AI Top Policy Concerns

1. National Security
   - Threats from other nations use of AI
   - Risks in how AI is deployed in military setting
2. The Workforce
   - Appropriate use of AI in work setting
   - Impact AI will have on jobs
3. Bias and Discrimination
   - Risk of embedded discrimination
4. Transparency and explainability
   - Importance of population to understand AI and it's effective use but also it's threats to both build support for the appropriate use but also build awareness
5. Data Privacy
   - Consumers may not always be aware that their personal data is being collected and/or that their personal data is being protected appropriately

AI Top Policy Concerns

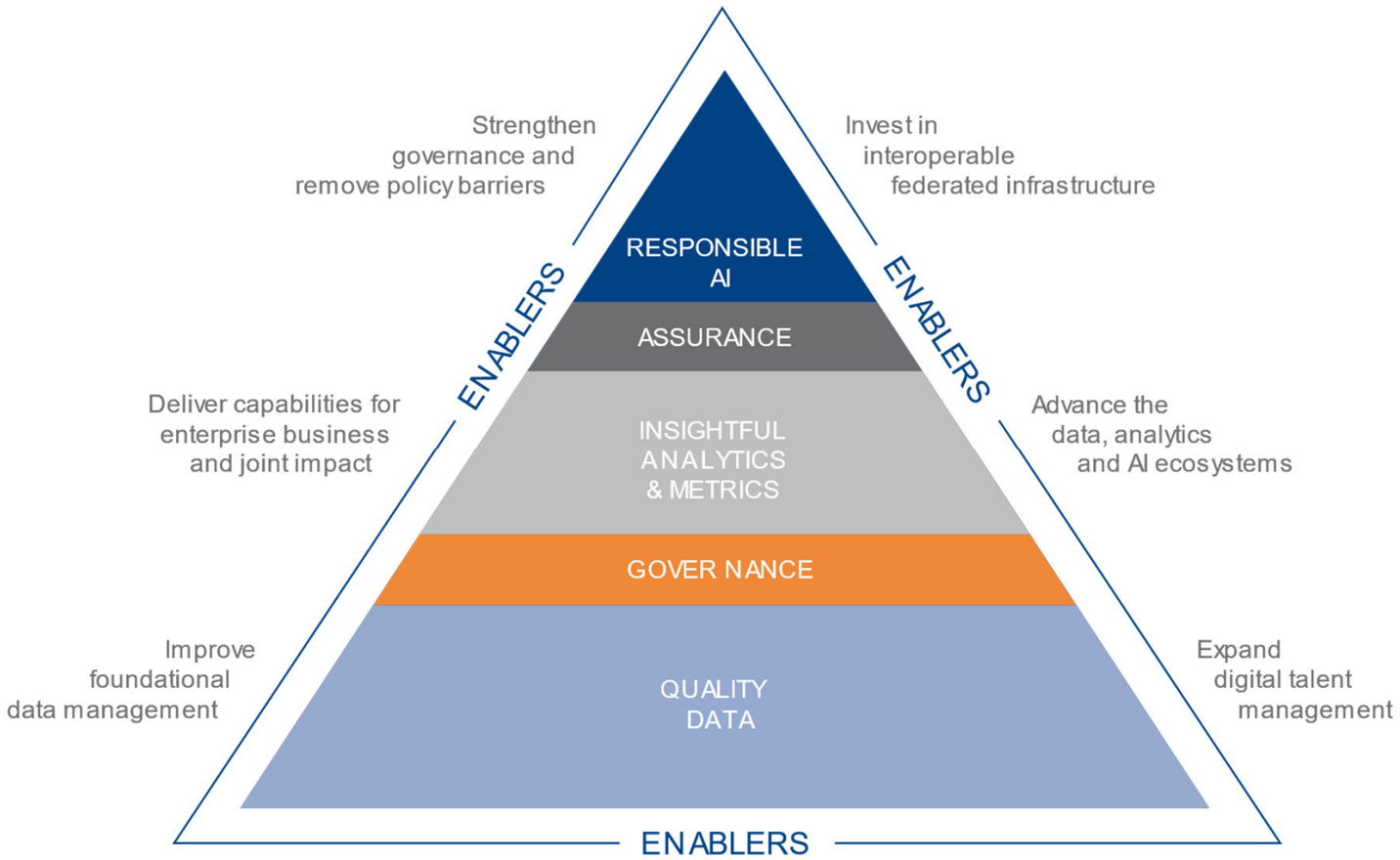
6. Deepfakes
   - Modern AI technologies have the potential to push dis-information and inaccuracies to a new level
7. Accountability
   - There is a push to bring new transparency and oversight of software, algorithms and other automated systems that are used to make critical decisions about nearly every aspect of our lives”
8. Copyright
   - Policymakers have considered whether AI-generated content is protected via patents, trademarks and copyright like other intellectual property and raised questions about who owns the AI-generated content and the data sets that are used to train AI systems

AI Strategy Framework

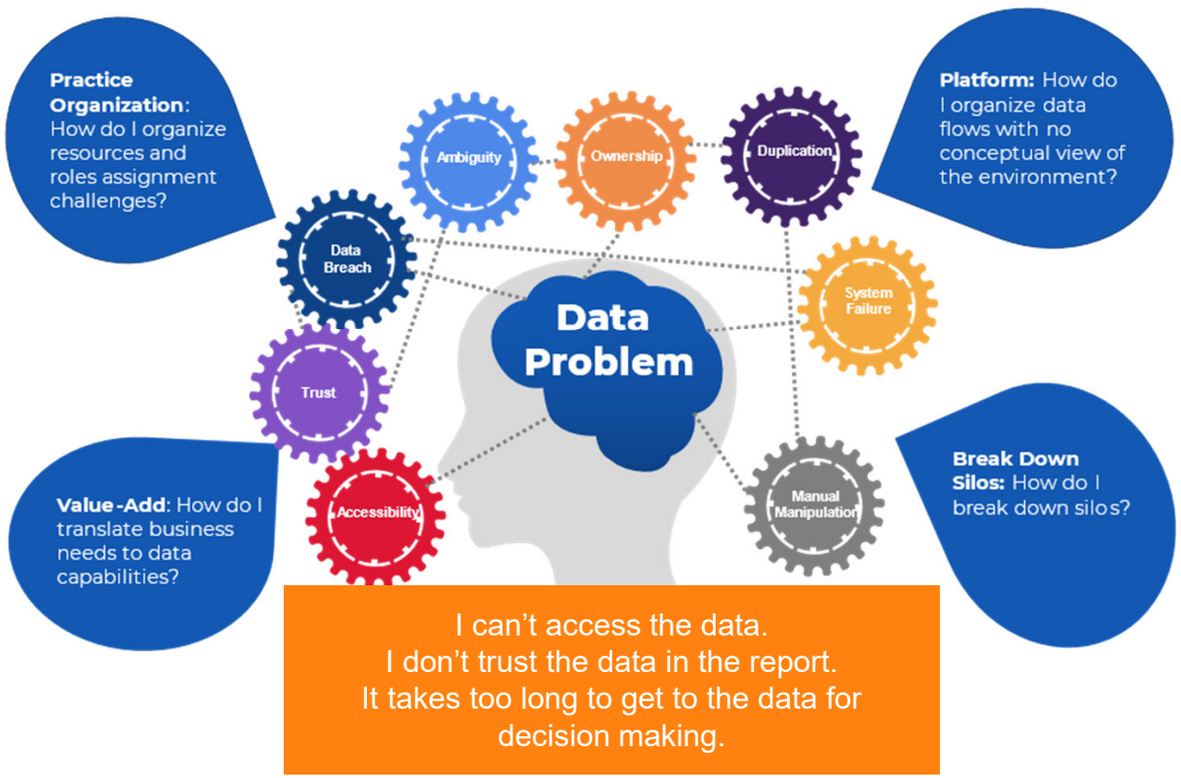
"Without an AI Vision, you have no AI ambition…"

Data management	• Data quality • Data Interoperability • Data Mesh
Digital and Data Capability	• Zero trust / cyber security • Cloud / agile • Analytics platform / stack • Automation
Policy and governance	• Data governance and stewardship • Remove / address policy barriers • Record management • Responsible AI
Culture and Skills	• Recruit, retain attract data talent • Upskilling • Data centric decision-making • Experimentation and third party partnerships

AI Building Blocks

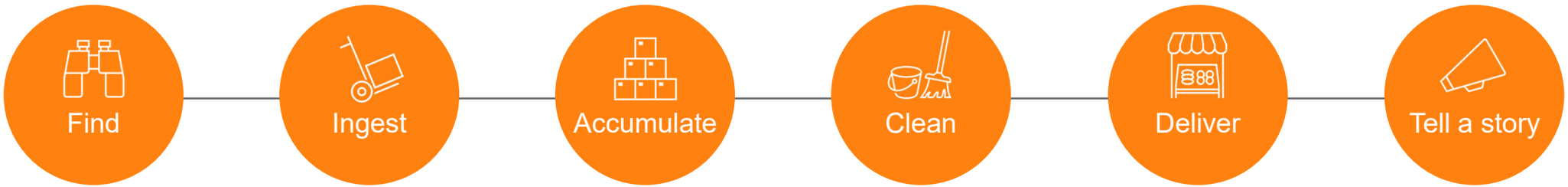


Situation – Perpetual Data Problem



- Lack of **data-centric leadership** results in downstream issues: integration, quality, accessibility
- The organization's **data is too complex** to manage without a cohesive plan.
- The complex nature of the data and a lack of understanding leads to **de-scoping delivery of data services** that does not meet business needs or add value.
- **Poorly designed practice and siloed platforms** result in an initiative that is lengthy, costly, fizzles out, does not deliver business value, and ends up being considered a failure.

Data journey to AI Ambition



Foundations support the whole journey

The Path to Quality Data: Data Governance

	Find	Ingest	Accumulate	Clean	Deliver	Tell a story
COMPETENCIES	• Data discovery • Data creation	• Data ingestion • Data integration	• Data accumulation • Data management	• Data cleaning • Data augmentation	• Use cases • Model	• Data consumption • Data visualization • AI
GOVERNANCE	• What data do we need based on user requirements • Intake process from third party sources	• Who can access data • Data catalog	• Set data categories • Assess data value • Retention periods	• What is master data • What metadata to collect & values • Monitor and resolve data quality issues	• Catalog of models • Ethical use of data and statistical analysis • Use case log	• Reporting services • Provide user training, definitions, lineage • Monitor performance
STANDARDS		• Security controls • Architecture principles (e.g., point to point vs. warehouse)	• Retention policy and schedule • Data management	• Data quality / cleansing policy • Data classification		• Data sharing agreements • Open data • Accessibility

Data Governance model

Data Governance is a service that supports the entire organization.

Data Governance provides oversight, guidance and management of how data is captured, stored, managed and used.
Leveraging data assets needs **data literacy.**

Being a Data Steward and Owner **needs data literacy.**

What Governance does

Data Ownership Makes it clear who is accountable for what	**Data Access** Ensures the right people are accessing the right data
Data Quality Ensures data is reliable and used consistently across the organization	**Data Security** Ensures data and user privacy are protected

How it does it

People	**Policies**	**Processes**
Identifies data stewards and stakeholders	Sets rules of behavior	Embeds rules in workflows, systems

What they own: Domains

Finance Owner:	**Human resources** Owner:
Procurement Owner:	**Product** Owner:
Employee Owner:	**Sales** Owner:

Data architecture

Data Architecture translates strategy into execution. Maps the technologies and capabilities required to meet governance guidelines and user requirements. Current state and future state maps = sets standards for technology choices.

	Find	Ingest	Accumulate	Clean	Deliver	Tell a story
COMPETENCIES	• Data discovery • Data creation	• Data ingestion • Data integration	• Data accumulation • Data management	• Data cleaning • Data augmentation	• Use cases • Model	• Data consumption • Data visualization • Data story telling
ARCHITECTURE	Apps, databases	ETL, ODS, Point to point	Data warehouse, Data lakehouse	Data quality, Metadata	Data marts	Dashboards, Analytics

Storage

Describe, label

Clean, certify

Inventory

Purchasing

Sales

Important data concepts at a glance

Find

- Apps
- Spreadsheets
- Databases
- IoT devices
- External data feeds

Ingest

- ETL
- ODS
- Point to point
- ESB
- Manual

Accumulate

- Data warehouse
- Data lake
- Data lakehouse
- ECM, Records
- DAM

Clean

- Data cleansing
- Metadata
- Data Catalog
- Data Quality
- Data Certificate

Deliver

- Data marts
- Models
- Use cases
- Personas

Tell a story

- Dashboards
- Analytics
- Reports
- Presentation
- AI and Statistics

Foundations support the whole journey

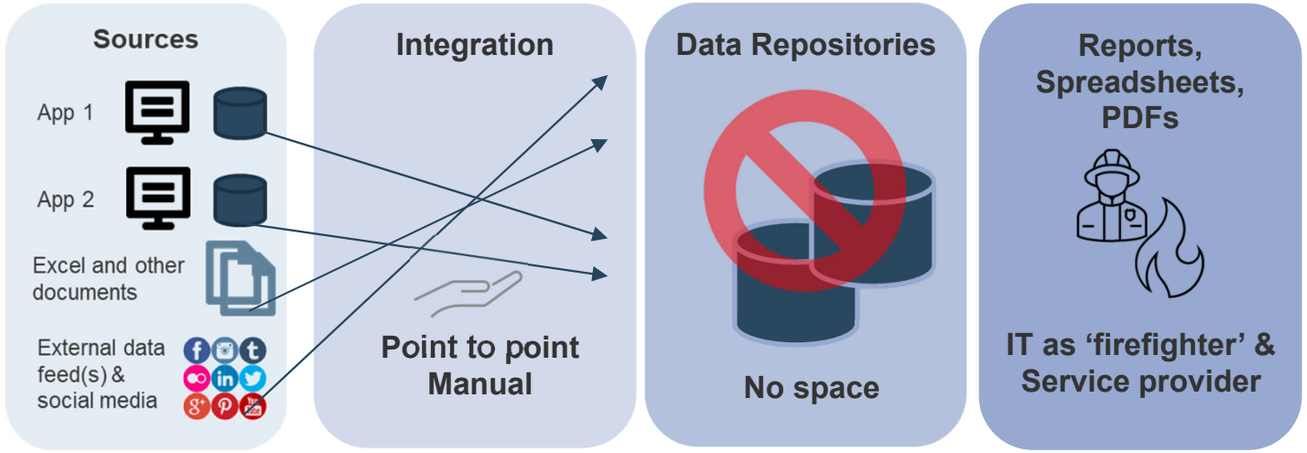
- Governance Policies
- Architecture
- Standards

How to Accelerate Responsible AI

- Alignment with Government of Canada policy and guideline (“FASTER” Principle) and best practices
- Business problem with accessible, clean, reliable data
- Experimentation, POCs, external partnerships/experts
- Mitigate risk (cyber security, privacy)
- Governance, oversight, transparency
- Establish common frameworks / business processes / approvals
- Recruit talent

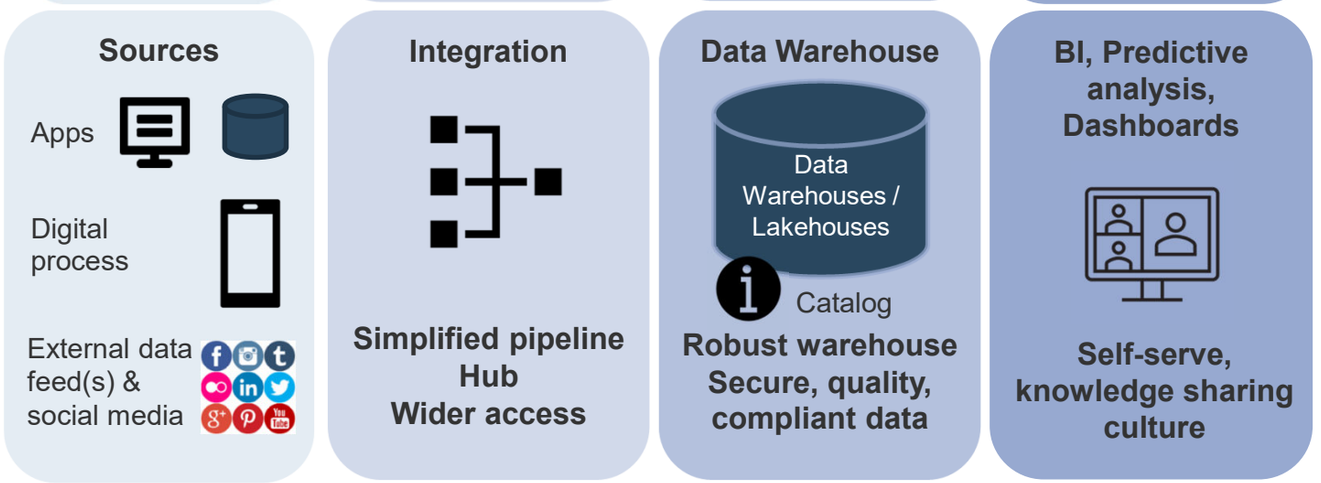
Annex: Architect for leveraging data

Before



- No storage space
- Manual processes
- Diverse practices across areas
- Poor quality
- Time-intensive reporting
- Confusion about where data is and what it means
- Inefficient integrations / flows
- Reporting on request

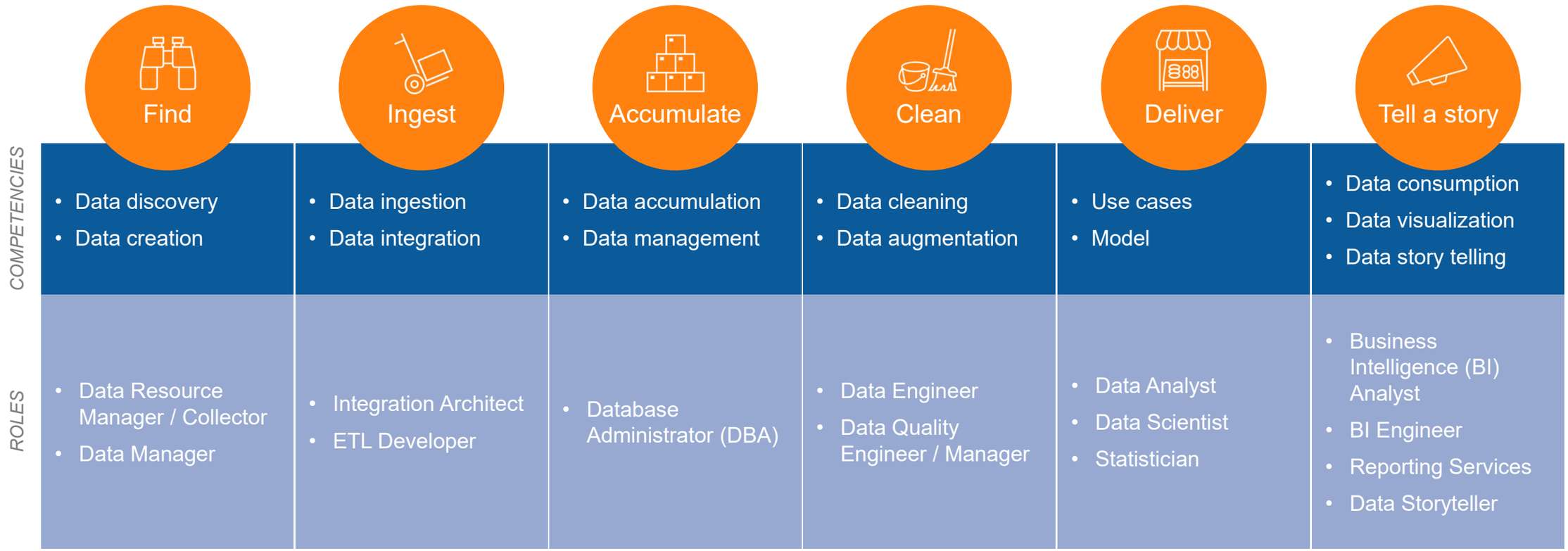
Data driven



- Quality and trust
- Access and documentation
- Reduced complexity and cost
- Robust scalable infrastructure
- Standard practices
- Organization-wide sharing
- Fluid adaptable architecture
- Automated workflows
- Self-serve reporting
- Data-fluent culture

Reports based on requirements

Annex: Data operating model



Annex: Reporting and Analytics pipeline

Source | Ingest | Accumulate | Clean | Present | What consumers ordered

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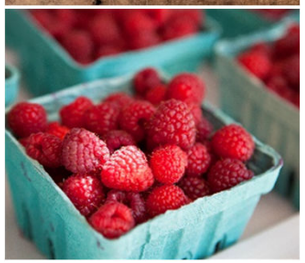


Shop for raw ingredients

Based on requests

Transport

Move / Stage ingredients for storage

Safe storage

Organized in the fridge so it can be found, but not processed yet

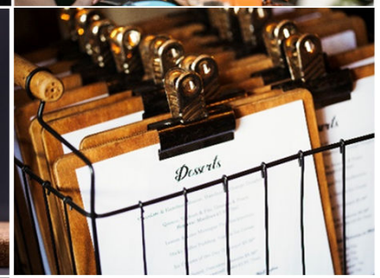
Prepare food

Cleaning, processing, quality standards

Recipe describes and instructs (Metadata, Data Catalog)

Present order

Package and 'model' it for use



Menu order

Personas
User requirements
Reporting services catalog (menu)
Consumption

Annex: Information management framework

A way to organize guidelines and artifacts of governance

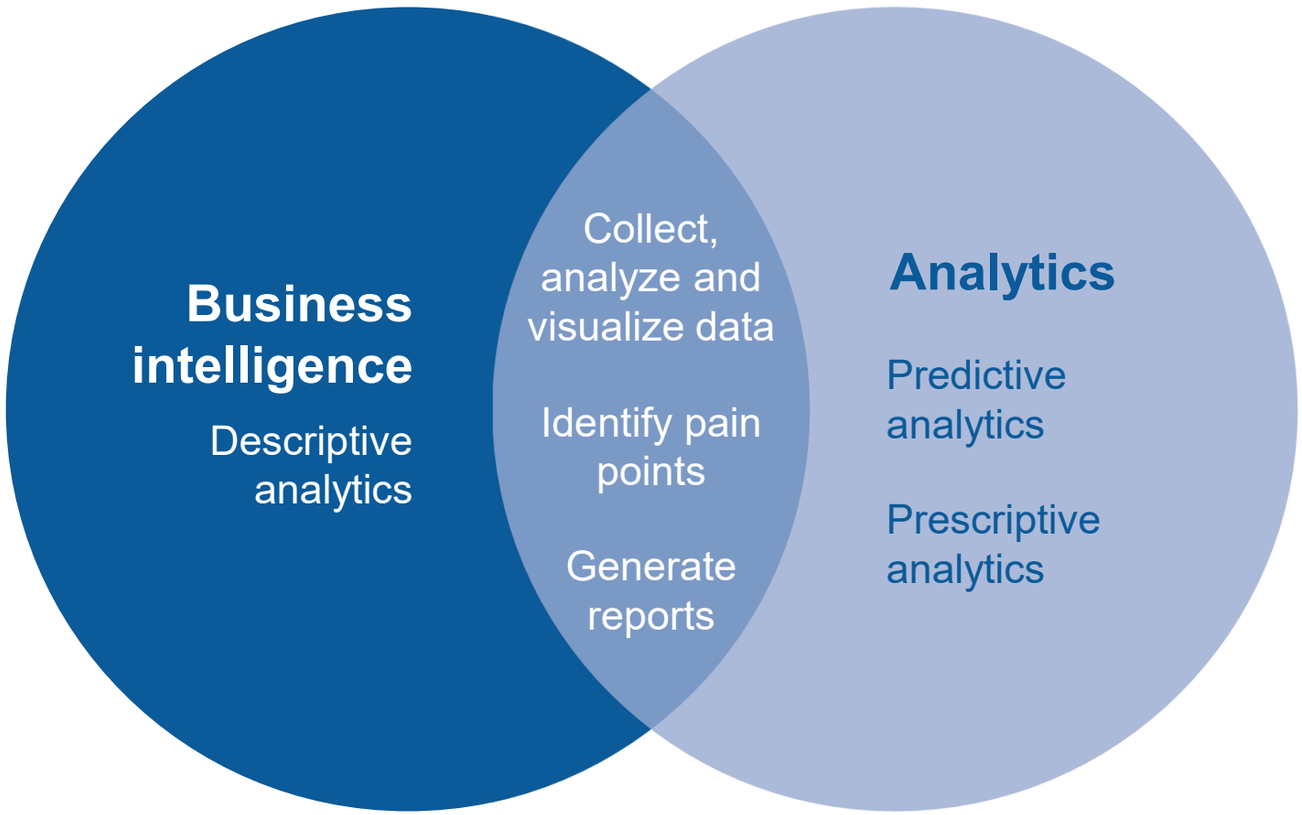
Data Governance Vision					
Principle 1 Accessibility	**Principle 2** Information is findable and accessible	**Principle 3** Information is interoperable and authoritative	**Principle 4** Information is secure	**Principle 5** Information is open	**Principle 6** Information supports agency decision making

Data Governance Policy (over-arching policy)			
Records Retention Policy	Data Classification Policy	Data Privacy Policy	Email Policy

Information Management Standards and Procedures

Annex: Capabilities: Business Intelligence and Analytics

‘Who were my top 10 customers last year?’



Use statistics to say, ’Based on historical trends, these are the people who will likely be our top 10 customers next year.’