Data. Your Other Renewable Resource.

Connecting the dots to find new value in data.

About Info-Tech Research Group

Unbiased and highly relevant research to help CIOs and IT leaders make strategic, timely, and well-informed decisions.

Who We Are

Info-Tech Research Group is the world's fastest growing information technology research and advisory company, proudly serving over 30,000 IT professionals.

We produce unbiased and highly relevant research to help CIOs and IT leaders make strategic, timely, and well-informed decisions.

We partner closely with IT teams to provide everything they need, from actionable tools to analyst guidance, ensuring they deliver measurable results for their organizations.

What We Do

- Research

- Counseling
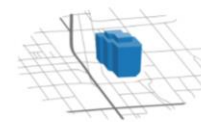
- Software Reviews

- Consulting

Our Offices

London, ON   Toronto, ON   Las Vegas, NV   Sydney, NSW   London, UK

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting
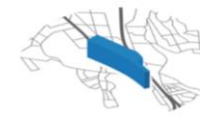
Agenda

- State of the Industry – Data and Analytics
- Why is Data Managed so Poorly
- Opportunities and Challenges in Utilities
- Establishing a Data & Analytics Program

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Data and Analytics

The state of the industry.

Data & Analytics Consulting

Digital Constellation

Almost everything can be connected by a digital device if it is not already.

| Digital Sources | Connectivity | Analytics |
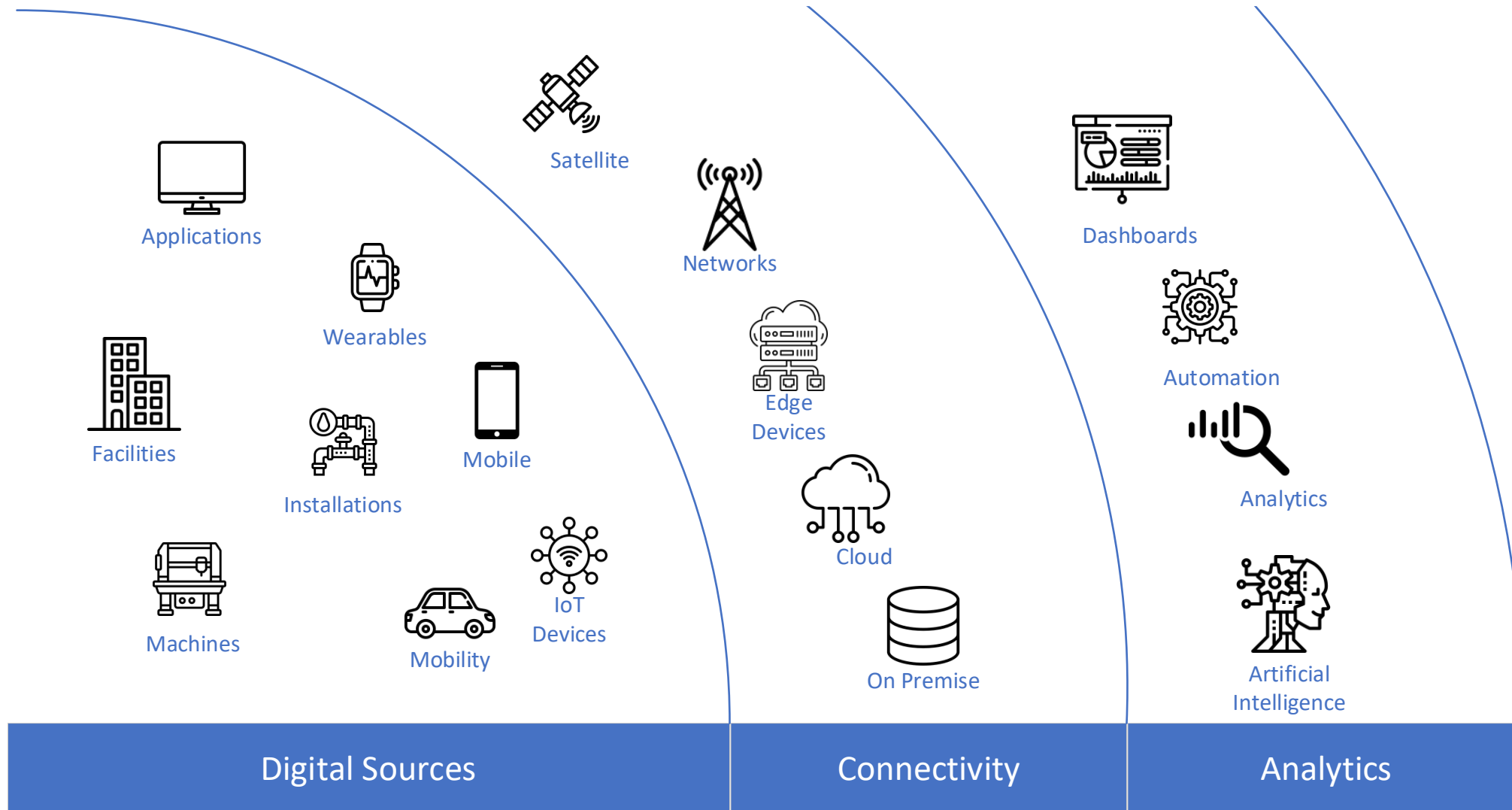
Data

The dots that connect everything is data.

Satellite

Applications

Wearables

Networks

Dashboards

Facilities

Mobile

Edge Devices

Automation

Installations

Analytics

Cloud

Machines

IoT Devices

Mobility

On Premise

Artificial Intelligence

| Digital Sources | Connectivity | Analytics |

Structured Data

Image

Data Types

Video

Sound

Unstructured Data

INFO~TECH RESEARCH GROUP

Data & Analytics Consulting

Support for NARUC's Mission

Improving quality and effectiveness can be enhanced by Data and Analytics

The Digital Constellation brings enormous opportunities for NARUC to fulfil its mission.

NARUC's Mission

Our mission is to serve the public interest by improving the ***quality*** and ***effectiveness*** of public utility regulation.

NARUC is aware of the importance of data.

Resolution on Ensuring that Federal and State Entities Collaborate, Share Data, and Track Progress on Closing the Digital Divide Utilizing Various Federal Programs including the Infrastructure Investment and Jobs Act and the American Rescue Plan Act of 2021.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

The Domains of the Digital Constellation

It is now possible to link the person, process, facility, machine, and component all together.

Operational Technology
- Installations
- Machines

Internet of Things (IoT)
- Facilities
- Mobility
- IoT Devices
- Mobile
- Wearables

Information Technology
- Applications
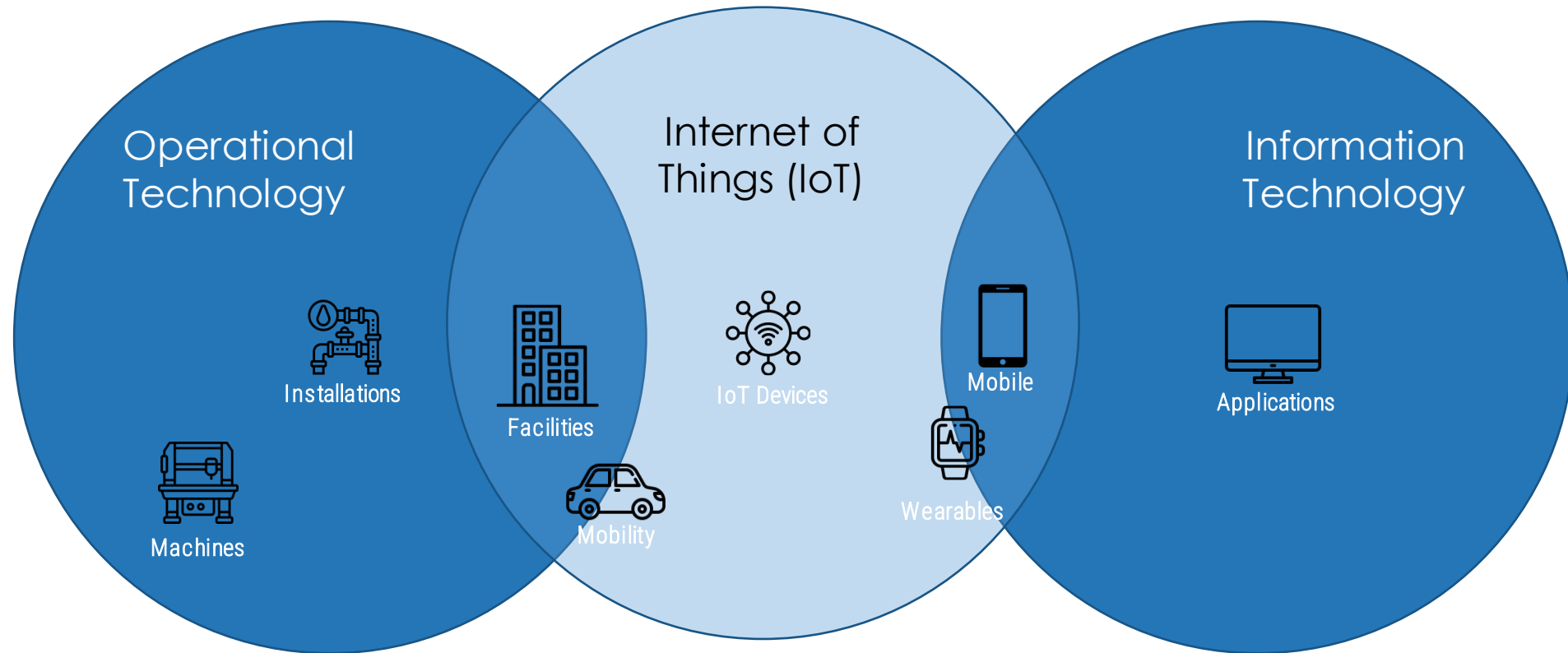
Digital Transformation is the act of connecting these domains to enable new ways to deliver products and services that improve the Customer Experience, and to facilitate continuous innovation to improve, accelerate, and scale all operational outcomes.

Data & Analytics Consulting

FAIR Data is Essential

Data is the foundation of Digital Transformation and improvements in general.

Findable
The first step in (re)using data is to find it.

Accessible
Once the user finds the required data, they need to know how it can be accessed, possibly including authentication and authorization.

Interoperable
The data usually need to be integrated with other data.

Reusable
The ultimate goal of FAIR is to optimize the reuse of data.
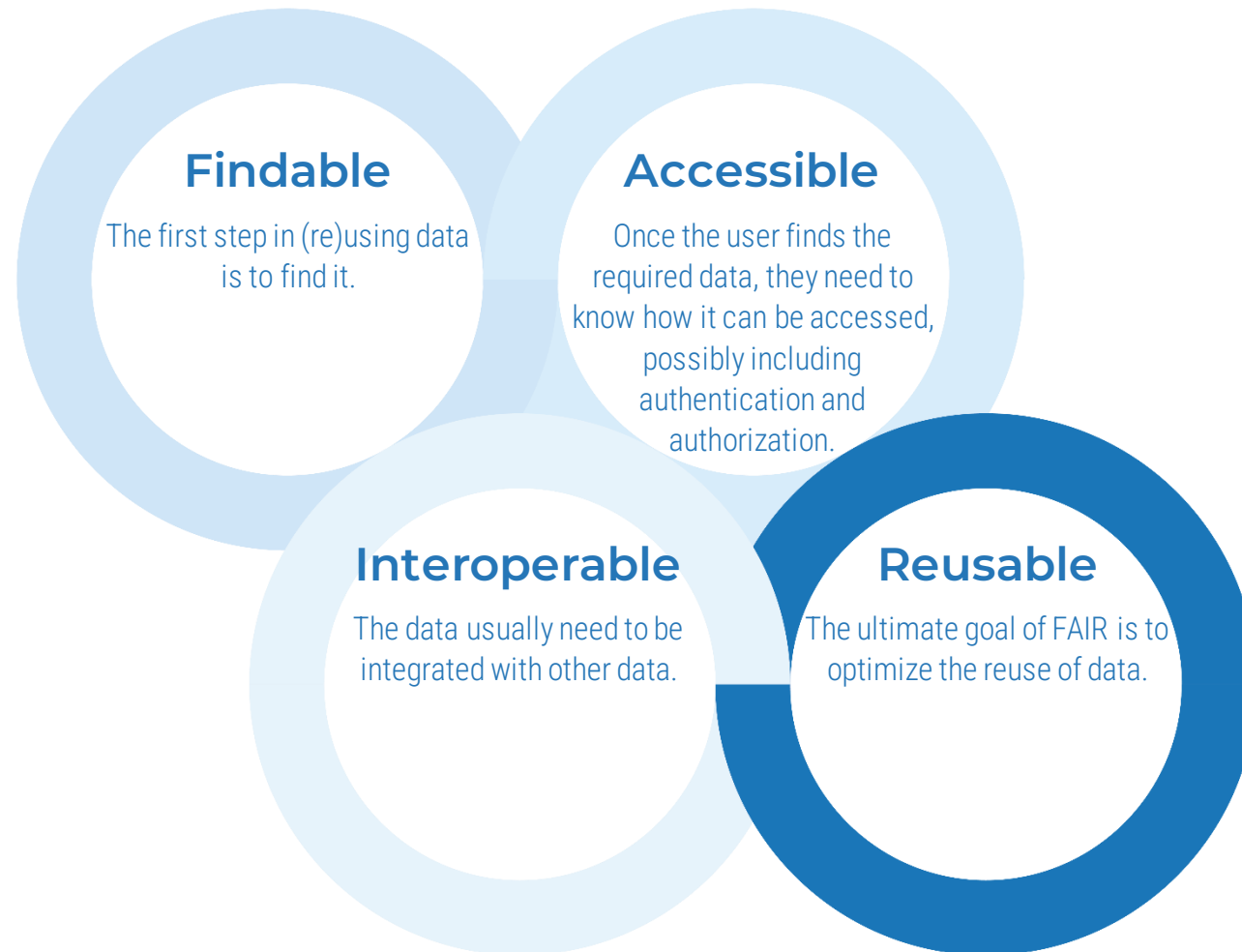
98% of companies use data to improve the Customer Experience.

Experian Data Quality 2019

89% Of CIOs surveyed say lack of quality data is an obstacle to good decision making.

Larry Dignan, CIOs juggling digital transformation pace, bad data, cloud lock0in and business alignment, 2020

INFO~TECH
RESEARCH GROUP

9

Top 3 Data Related Goals for IT Leaders

Many organizations want to improve how they manage data.

2022

Expand access to data.

Improve Data Quality

Establish Data Governance

The term *Data* encompasses Information, Content, Structured Data and Unstructured Data

NVP - Data and AI Leadership Executive Survey 2022

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Top 3 Data Related Goals for IT Leaders

The problem is not much progress has been made.

2002

Improve Data Quality

Establish Data Governance

Expand access to data.

2022

Expand access to data.

Improve Data Quality

Establish Data Governance

NVP - Data and AI Leadership Executive Survey 2022

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Customers Feel It Everyday

Customer expectations are not bound by your industry. If Amazon or my bank can do something, why can't you?

28%
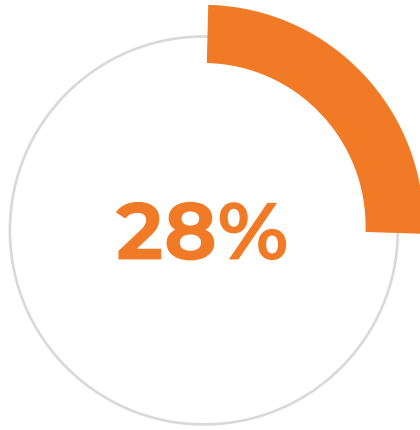
Organizations suspect 28% of their customer and prospect data is inaccurate in some way.
(Source: Experian, 2020)

51%
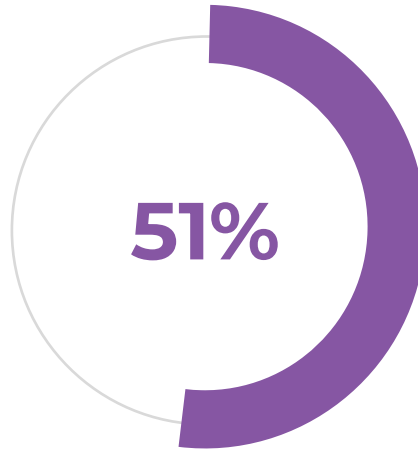
Only 51% of organizations consider the current state of their CRM or ERP data to be clean, allowing them to fully leverage it.
(Source: Experian, 2020)

35%
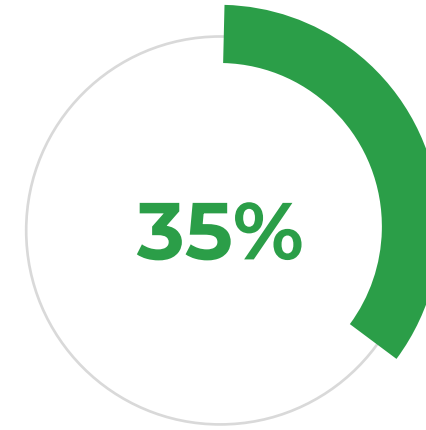
35% of organizations say they're not able to see a ROI for data management initiatives.
(Source: Experian, 2020)

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

The Bottom Line

While some organizations have achieved some successes with data and analytics, most cannot.

95%

Of organizations indicated that poor data undermines business performance.

Source: Experian Data Quality, 2019

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

If Data is so important, why is it managed so poorly?

We need to rethink our Data Initiatives.

The State of Data Initiatives

Significant resources are being invested in Data Initiatives.

2022

Despite significant investment in Data Initiatives the results have been less than inspiring.

97.0% of participating organizations are investing in Data initiatives

60.3% are **not** managing data as an enterprise business asset

81% have **not** established a data culture.

91.9% point to culture as the greatest impediment to achieving business outcomes with data.

8.1% cite technology limitations as the primary impediment.

NVP - Data and AI Leadership Executive Survey 2022

Data & Analytics Consulting

The State of Data Initiatives

There has been a big change in expectations around Data.

2017

95.0% of participating organizations are investing in Data initiatives

82% are not managing data as an enterprise business asset

69.4% Firms are striving to establish data-driven cultures

52.5% report cultural impediments prevent realization of broad business adoption of Data initiatives.

NVP – Big Data and AI Leadership Executive Survey 2017

2022

97.0% of participating organizations are investing in Data initiatives

60.3% are **not** managing data as an enterprise business asset

81% have **not** established a data culture.

91.9% point to culture as the greatest impediment to achieving business outcomes with data.

8.1% cite technology limitations as the primary impediment.

NVP - Data and AI Leadership Executive Survey 2022

Data & Analytics Consulting

Did COVID spark a culture war about Data?

52.5% report cultural impediments prevent realization of broad business adoption of Data initiatives.

91.9% point to culture as the greatest impediment to achieving business outcomes with data.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

We need to think about Data differently

52.5% report cultural impediments prevent realization of broad business adoption of Data initiatives.

91.9% point to culture as the greatest impediment to achieving business outcomes with data.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

What is Data?

**Many Views of Data
as an Asset**

- Technical
- Business
- Strategic
- The "New Oil"

Data As An Economic Asset

An asset is an entity from which economic benefits may be derived by their owners by holding them, or using them, over a period of time.

OECD

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

But There Is a Twist

Data has no value. It's how you use it to derive customer, product and operational insights. If you think about data as an asset, it never depletes, it never wears out. And the same dataset can be used across an unlimited number of use cases at a marginal cost equal to zero. Value is determined not by how much someone is willing to pay you for it, but the value you can derive by using it."

– Bill Schmarzo

To Infinity and Beyond

Data is not a finite resource.

Unlike other assets such as money or minerals, it is not consumed when used.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Unintended Consequences

Management is the effective and efficient use of scarce resources to produce a desired output.

Data is not scarce. It never was

IT organizations have unintentionally created **faux scarcity** by managing data as a scarce resource.

What was actually scarce was the means to access and use data.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

You Do Not Govern Data

- **You govern access to the data.**

- The volume of data is exploding. You cannot *govern* all of it.
- You must govern regulated data.
- Use Value as a driver to focus resources.
- Do not default to locking down everything.
- *What Data is valuable?*

An Origin Story

- Accessing and manipulating data required specialized skills. Data storage was difficult. And it was all very expensive.

- Controls were put in place to manage the costs.

- The control mindset is still there.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

All Data is Valuable

Data Relativity

- **But some Data is more valuable than others.**

- The value of data is relative to the user of the data or - *Data Relativity*.

- There is not an enterprise-wide consensus on value.

- Do not think in terms of systems. Use Business Functions as your base unit.

- For example, Data used by multiple functions is more valuable.

- Where you stand depends on where you sit.

- Miles Law on bureaucracy succinctly describes how your personal perspective impacts the relative importance of anything.

- The same is true of data.

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Real stupidity beats Artificial Intelligence every time.

~Terry Pratchett

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Challenges and Opportunities in Utilities

Data Deluge

- Utilities already generate a lot of data.
  - Adding IoT devices requires effective Data Management strategies and infrastructure to manage the volume effectively.
- The Ingestion and Streaming of this data in real time is essential for the application of models and real time optimizations.

Example

- With the deployment of IoT devices on stand alone machines, the company was suddenly faced with half a million rows of data per second being generated.

- The deployment of IoT sensors overwhelmed the existing infrastructure with the volume and speed of data.

- Implemented automated data ingestion and integration.

- Using clustering and streaming, the streams of data were fed to the appropriate models, creating near real time alerts.

- Alerts were incorporated into company wide dashboards that predicted breakdowns before they occurred.

Data & Analytics Consulting

Power to the Edge

- It is a truism that preventing a machine from stopping or operating incorrectly brings significant benefit.

- To be effective you need:
  - Sufficient data
  - Alerts where the preventative action must be taken

- Edge processing for data and analytics brings the alerts to where they are needed.

Example

- Preventative Maintenance/Unplanned Downtime models are not exceedingly complex. They do need to steadily consume data quickly to be effective.

- Sending maintenance teams to very remote locations is expensive.

- A challenge was the IoT data at the remote sites did not have continuous network contact and needed to operate independently.
  - Edge devices with the Machine Learning models could make decisions locally.
  - Alerts could be sent when network connections were made.

- Teams could be dispatched without the lag of waiting for data to be ingested, processed and have Machine Learning applied.

27

Automated Compliance

- Compliance uses intelligence to streamline the compliance management processes of an organization.

- It allows compliance teams to save time and reduce compliance risks by automating repetitive and administrative tasks.

Example

- The creation of compliance reports and supporting data was a manual process.
  - The process was prone to error, inconsistent, and consumed a lot of time and resources.

- Using Natural Language Processing (NLP) it was possible to automatically extract much of the information that was needed from documents that were produced as part of normal operations.

- The extracted information was reviewed and used as a primary source for meeting compliance submissions.

- It was an 80% reduction in effort.

Data & Analytics Consulting

Where to Begin

- It is not that you lack potential Use Cases – you likely have too many.

- **Value Engineering** is an exercise to identify Use Cases. The Use Cases are classified based on their potential value and difficulty to implement.

- The key to success is sequencing the Use Cases in a Roadmap.

Example

- A Global Heavy Machine Manufacturer knew there was value in Data and Analytics but could not justify the ROI for investing.

- What they originally envisioned as the highest priority Use Case turned out to be number 4 on the Roadmap.

- The highest value Use Case was to reduce the failure of laser cutters using predictive modeling.

- Even a reduction in failures of the laser cutters by only 20% would generate enough ROI to support the next 2 Use Cases.

Data & Analytics Consulting

Utilities value stream

Defining Capabilities: Activities that define how you do business. These capabilities support specific value streams.

Shared Capabilities: Activities that are typically customer-facing. These capabilities can support multiple value streams simultaneously.

Enabling Capabilities: Activities that support the creation of strategic plans and facilitate business decision-making and business functioning (e.g. IT, Finance, HR).

Power Generation

Defining

Engineering Services	Demand Management
Construction Services	Energy Sales & Trading
Plant Operation	Facilities Management
Fuel Management	Plant Production Management
Conservation Strategy	Sustainable Investment Planning

Transmission & Distribution

Grid Management	Monitoring & Inspection
Construction & Maintenance	Preventive Maintenance
Transportation Management	Load Balancing
Utilities Asset Planning	Energy Storage
Transmission System Development	Security & Emergency Services

Retail & Customer Support

Quality Assurance	Customer Care
Technical Troubleshooting	Billing & Invoice Support
Technical Repair	Outage Management
Deployment Management	Complaint Management
Business Development	Omnichannel Management

Shared

Customer Management	Account Management	Contract Management	Risk Management	Regulatory & Compliance
Enterprise Resource Mgmt.	Project Management	Strategic Partner Management	Big Data & Analytics	Safety & Health
Asset Management	Product Management	Mobile Workforce Management	Fleet Management	Supply Chain Management

Enabling

Corporate Governance	Strategic Planning	Operations Management	Accounting & Reporting	Labor Relations	Human Resources
Corporate Communication	Legal	Corporate Finance	IT Management	Government Affairs	Regulatory Affairs

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting

Opportunities with Analytics

Data Analytics Advantage Creators

- ◼ High Impact
- ◼ Medium Impact
- ◻ Low/No Impact

Generation

Defining

Engineering Services	Demand Management
Construction Services	Sales & Trading
Plant Operation	Facilities Management
Fuel Management	Plant Prod. Mgmt.
Conservation Strategy	Sustainable Investment Planning

Transmission & Distribution

Grid Management	Monitoring & Inspection
Construction & Maintenance	Preventive Maintenance
Transportation Management	Load Balancing
Utilities Asset Planning	Storage
Transmission System Development	Security & Emergency Services

Retail & Customer Support

Quality Assurance	Customer Care
Technical Troubleshooting	Billing & Invoice Support
Technical Repair	Outage Management
Deployment Management	Complaint Management
Business Development	Omnichannel Management

Shared

Customer Management	Account Management	Contract Management	Risk Management	Regulatory & Compliance
Enterprise Resource Mgmt.	Project Management	Strat. Partner Mgmt	Big Data & Analytics	Safety & Health
Asset Management	Product Management	Mobile Workforce Mgmt	Fleet Management	Supply Chain Management

Enabling

Corporate Governance	Strategic Planning	Operations Management	Accounting & Reporting	Labor Relations	Human Resources
Corporate Communication	Legal	Corporate Finance	IT Management	Government Affairs	Regulatory Affairs

Data & Analytics Consulting

Establishing a Data & Analytics Program

The foundational elements needed to create a Data Driven Culture.

A Data and Analytics Program

The key component is a comprehensive Data Strategy.

Business Strategy

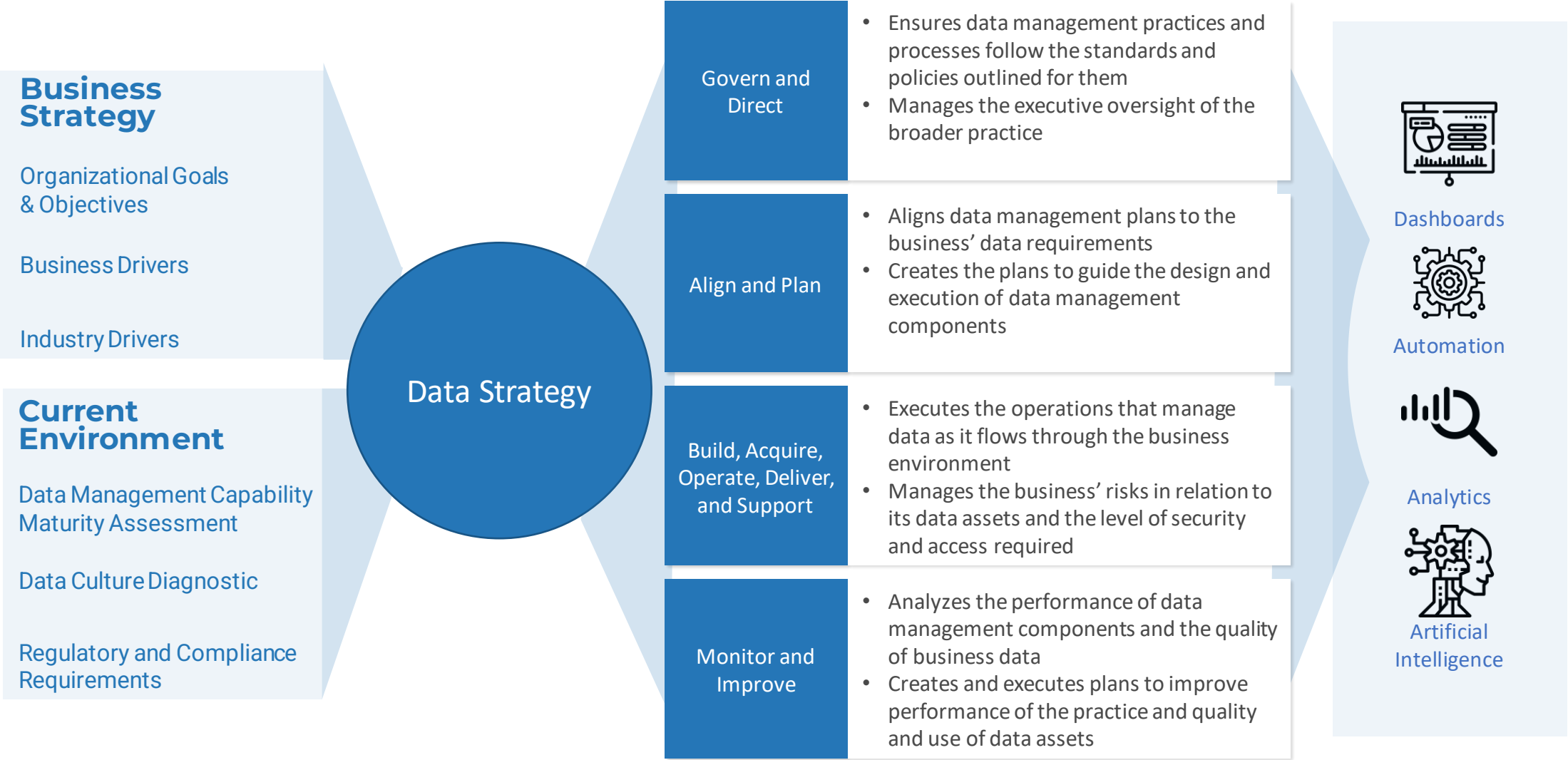Organizational Goals & Objectives

Business Drivers

Industry Drivers

Current Environment

Data Management Capability Maturity Assessment

Data Culture Diagnostic

Regulatory and Compliance Requirements

Data Strategy

Govern and Direct
- Ensures data management practices and processes follow the standards and policies outlined for them
- Manages the executive oversight of the broader practice

Align and Plan
- Aligns data management plans to the business' data requirements
- Creates the plans to guide the design and execution of data management components

Build, Acquire, Operate, Deliver, and Support
- Executes the operations that manage data as it flows through the business environment
- Manages the business' risks in relation to its data assets and the level of security and access required

Monitor and Improve
- Analyzes the performance of data management components and the quality of business data
- Creates and executes plans to improve performance of the practice and quality and use of data assets

Dashboards

Automation

Analytics

Artificial Intelligence

Data & Analytics Consulting

Hallmarks of a data-driven culture

There is a **trusted, source** of data the whole company can draw from.

There's a **business glossary and data catalog** and users know what the data fields mean.

Users have **access to data and analytics tools.** Employees can leverage data immediately to resolve a situation, perform an activity, or make a decision – including frontline workers.
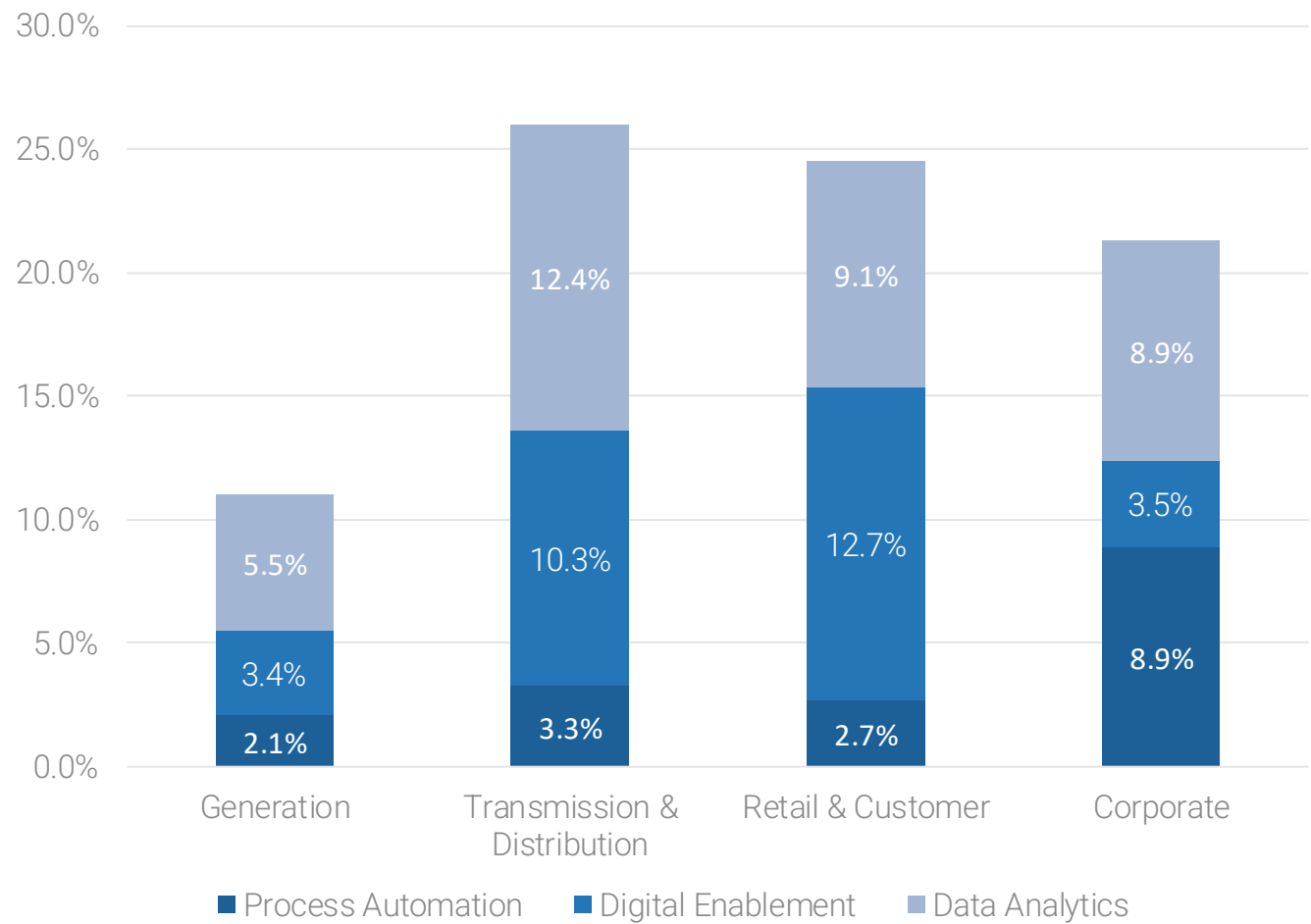
Data literacy, the ability to collect, manage, evaluate, and apply data in a critical manner, is high.

Data is used for **decision making**. The company encourages decisions based on objective data and the intelligent application of it.

Investing in Data and Analytics

Value Stream Impact

Chart — Value Stream Impact (potential savings as % of total spend):

	Process Automation	Digital Enablement	Data Analytics
Generation	2.1%	3.4%	5.5%
Transmission & Distribution	3.3%	10.3%	12.4%
Retail & Customer	2.7%	12.7%	9.1%
Corporate	8.9%	3.5%	8.9%

■ Process Automation   ■ Digital Enablement   ■ Data Analytics

This chart depicts the potential savings as a percentage of total spend for the functional business areas.
It is quite evident that investing in data analytics can drive considerable operational cost savings across all components of the Utilities value stream.

Source: McKinsey's Digital Utility

Questions

INFO~TECH
RESEARCH GROUP

Data & Analytics Consulting