

# MA5840 Data Science and Strategic Decision Making for Business

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1300 535 919

Cairns  
Singapore  
Townsville

# Internal Analysis

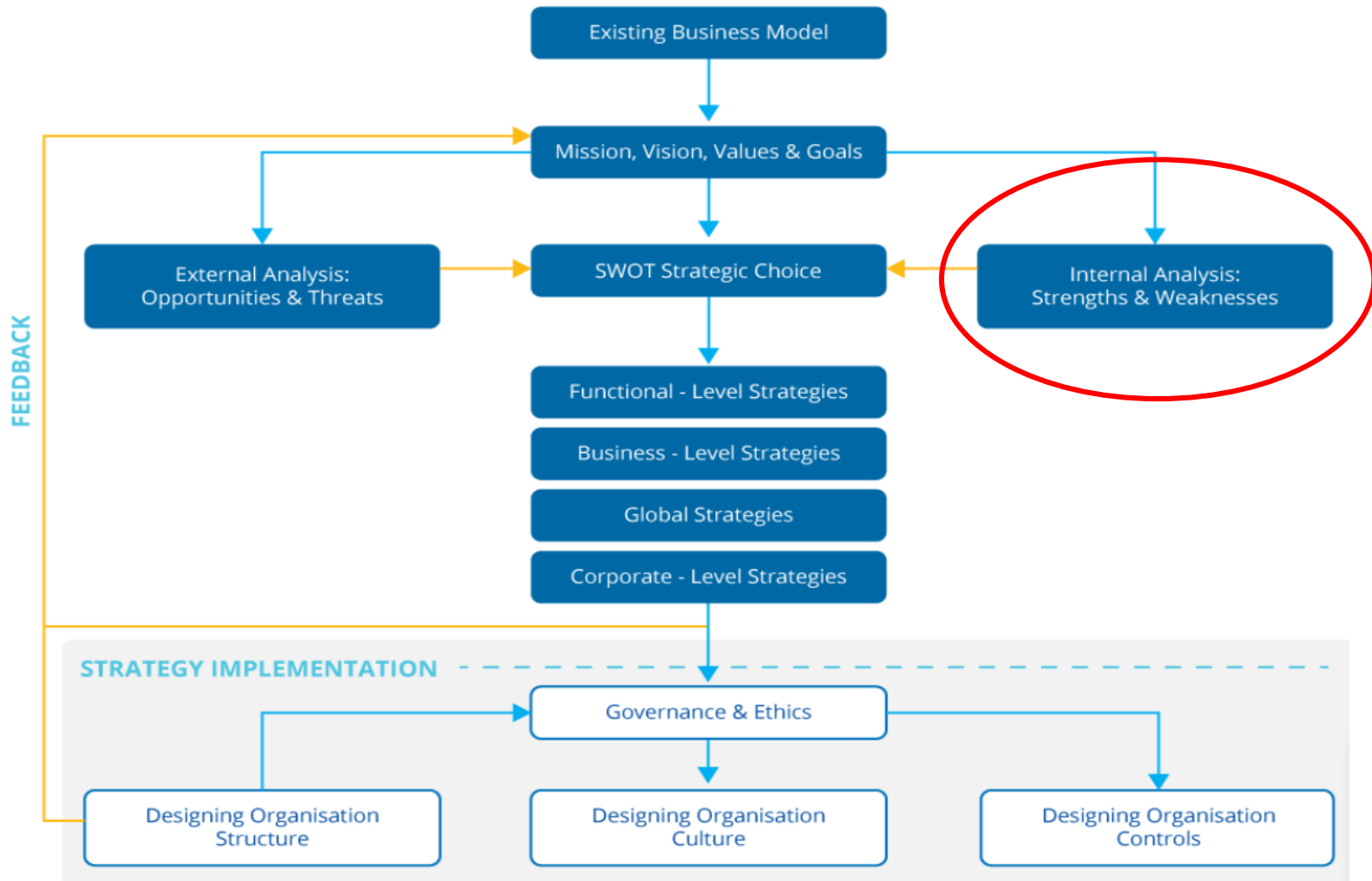
- Why do internal analysis?
- How to do internal analysis
- Where to find strategic internal data
- The value of strategic data

# Warm-up activity:

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- 2 hours
- New Marketing VP
- There are a couple of reports in place, but they were customised exclusively for the previous VP and they have too many details that may not be useful, or worse, they may just confuse the audience.
- Required strategic focus:
  - Do I have the correct resources in the right location?
  - Are the facilities still capable of producing the correct products for the markets?
  - What future sales might we expect for these regions?
- Post your dashboard in the BI discussion and provide feedback to two others

## STRATEGY FORMULATION



# WHAT IS INTERNAL ANALYSIS

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- The critical and thorough examination of a company's **internal** components and capabilities, both tangible and intangible, such as resources, assets and processes.
- An **internal analysis** helps the company decision-makers accurately identify areas for growth or revision to form practical business strategy or business plan.
- Internal analyses should give insight to business leaders to identify ways in which they can improve company functions. A few of the most important reasons to conduct an internal analysis include identifying:
  - Company strengths
  - Structural weaknesses
  - Business opportunities
  - Possible threats
  - Viability in the marketplace

# WHAT IS INTERNAL ANALYSIS

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## Internal Questions

- What do we do best?
- What are our company resources – assets, intellectual property, and people?
- What are our company capabilities (functions)?

## Methods

- Consultants
- Research
- Reflection

# WHY DO INTERNAL ANALYSIS

# WHY DO INTERNAL ANALYSIS

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- **We need to address strategic threats and opportunities to the organisation.**
- Not just about handling day-to-day operations.
- Strategic decision making looks at how resources and capabilities are deployed.
- Critical business decisions depend on the availability of proper strategic information — timely, reliable, single source of truth.
- Internal analysis allows us to understand organisational strengths and weaknesses.



# HOW TO DO INTERNAL ANALYSIS

# HOW TO DO INTERNAL ANALYSIS?

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Six simple steps to undertake internal data analysis for organisations to support strategic decisions.

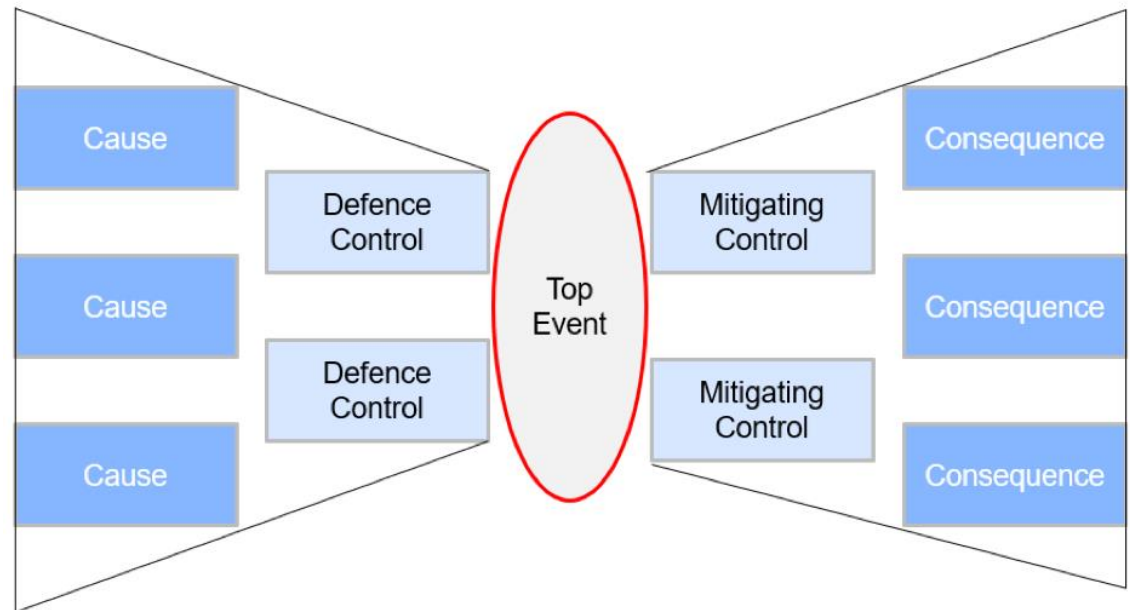
- Step 1: Identify the strategic issues/questions
- Step 2: Conduct an internal resources and capabilities analysis
- Step 3: Identify internal strengths and weaknesses
- Step 4: Analyse the data, model data or conduct research
- Step 5: Refine your analysis into an insights pack
- Step 6: Present your findings.

# WHY DO INTERNAL ANALYSIS

Internal analysis allows us to understand organisational strengths and weaknesses.

**One way to explore capabilities is to run scenario planning with the Risk Bowtie method.**

e.g. A top event for a zoo - tiger escapes from its enclosure



# HOW TO DO INTERNAL ANALYSIS?

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## Step 2: Conduct an internal resources and capabilities analysis

Understanding how internal resources and capabilities are deployed may help deliver a competitive advantage if they are optimised. Divide data into three categories:

### Resources

1. **Tangible resources:** the physical resources of the organisation, for example land, labour and capital
2. **Intangible resources:** those resources that have no physical presence but represent real benefit to the organisation, for example brand names, service levels and technology
3. **Organisational capability:** the skills of the workforce, culture and leadership of the organisation.

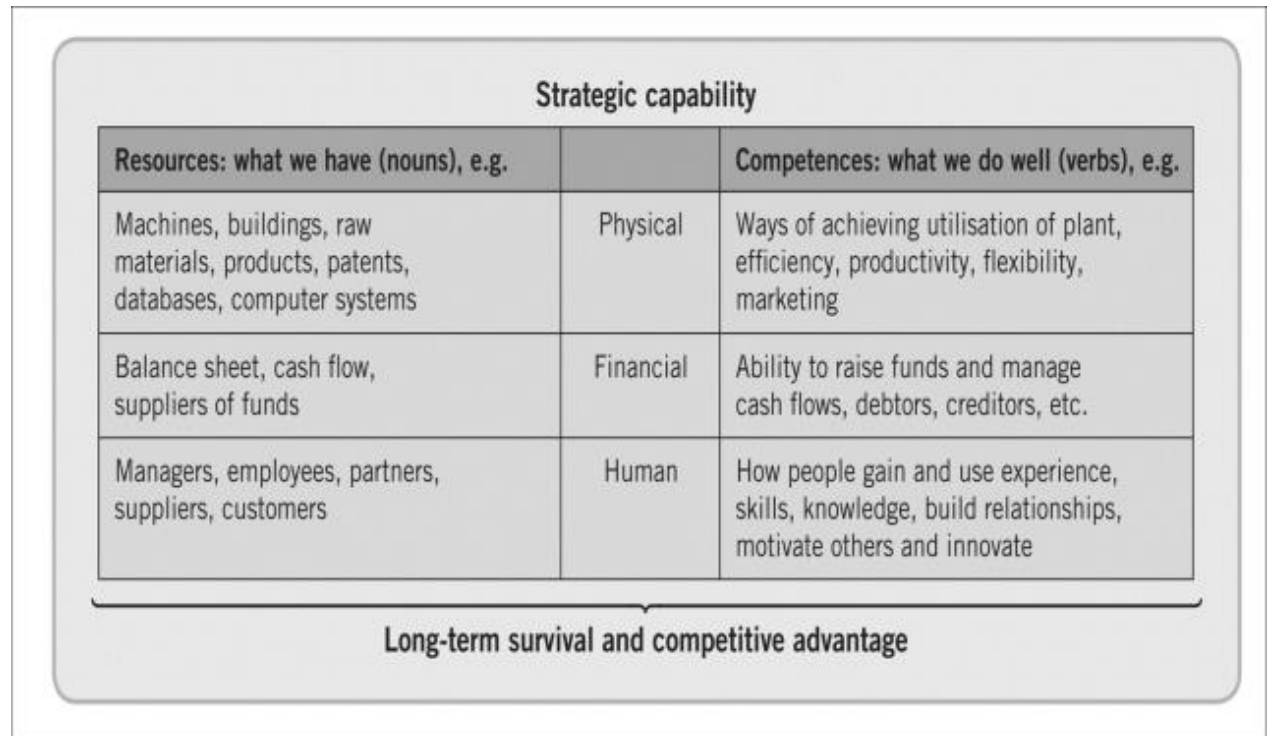
### Example Indicators

- Debt / Equity ratio
- Credit rating
- Net cash flow
- Market value of fixed assets
- Alternative uses for fixed assets
- No. of patents owned
- Royalty income
- R&D expenditure
- R&D staff
- Brand equity
- Customer retention
- Supplier loyalty
- Employee qualifications
- pay rates
- turnover
- Employee Satisfaction

# WHY DO INTERNAL ANALYSIS

## Resources and competencies:

- Strategic capability frameworks for internal analysis to support strategic decisions
- Resources: what we have
- Competencies: what we do well

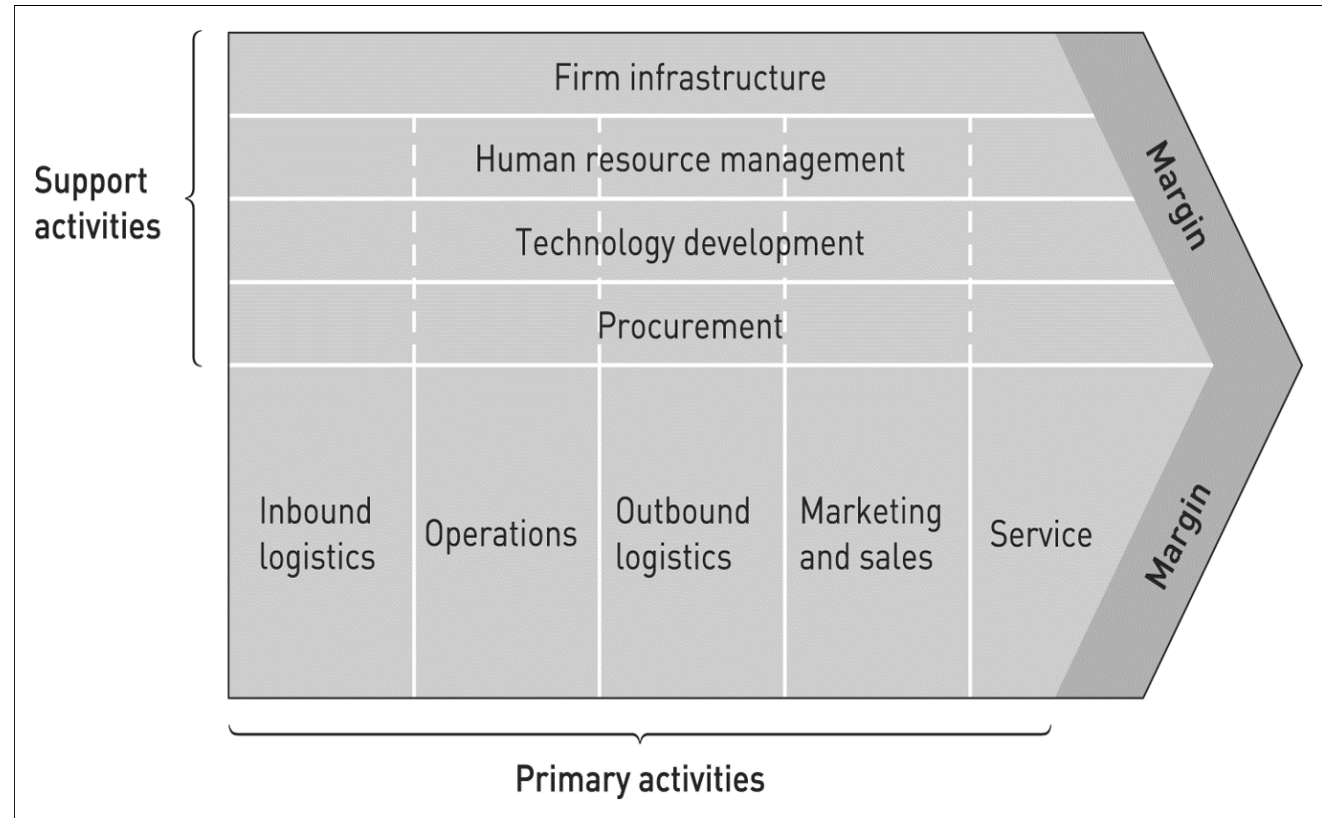


# HOW TO DO INTERNAL ANALYSIS?

## Step 3: Identify internal strengths and weaknesses

Porter's Value Chain

Porter, M. E. (2008b). The five competitive forces that shape strategy. Retrieved from [http://www.ibbusinessandmanagement.com/uploads/1/1/7/5/11758934/porters\\_five\\_forces\\_analysis\\_and\\_strategy.pdf](http://www.ibbusinessandmanagement.com/uploads/1/1/7/5/11758934/porters_five_forces_analysis_and_strategy.pdf)



# HOW TO DO INTERNAL ANALYSIS?

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## **Step 4: Analyse the data, model data or conduct research**

- Gather the required data
- Build models
- Build scenarios on those models
- Develop initial insights

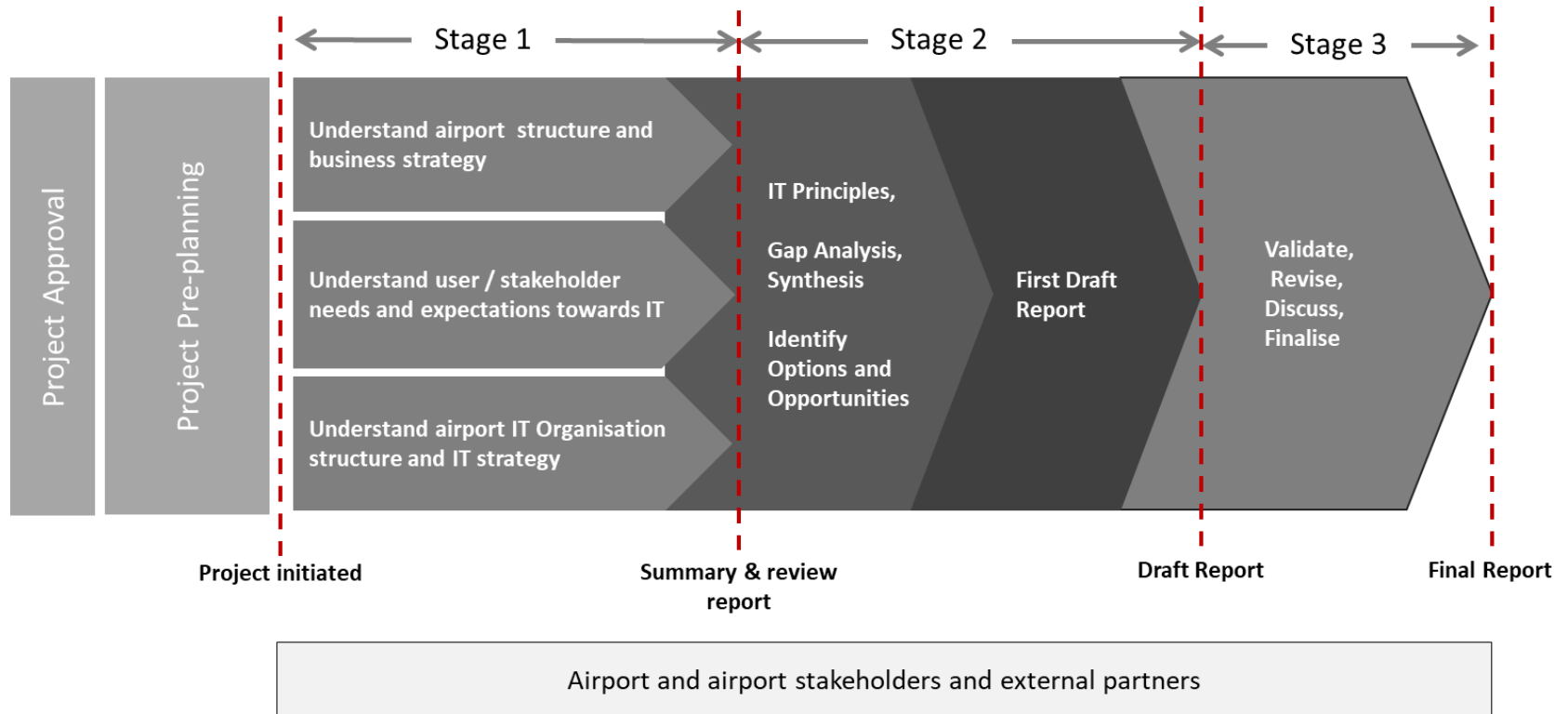
## **Step 5: Refine your analysis into an insights pack**

- Validate findings
- Test assumptions
- Address gaps in data/understanding

## **Step 6: Present your findings.**

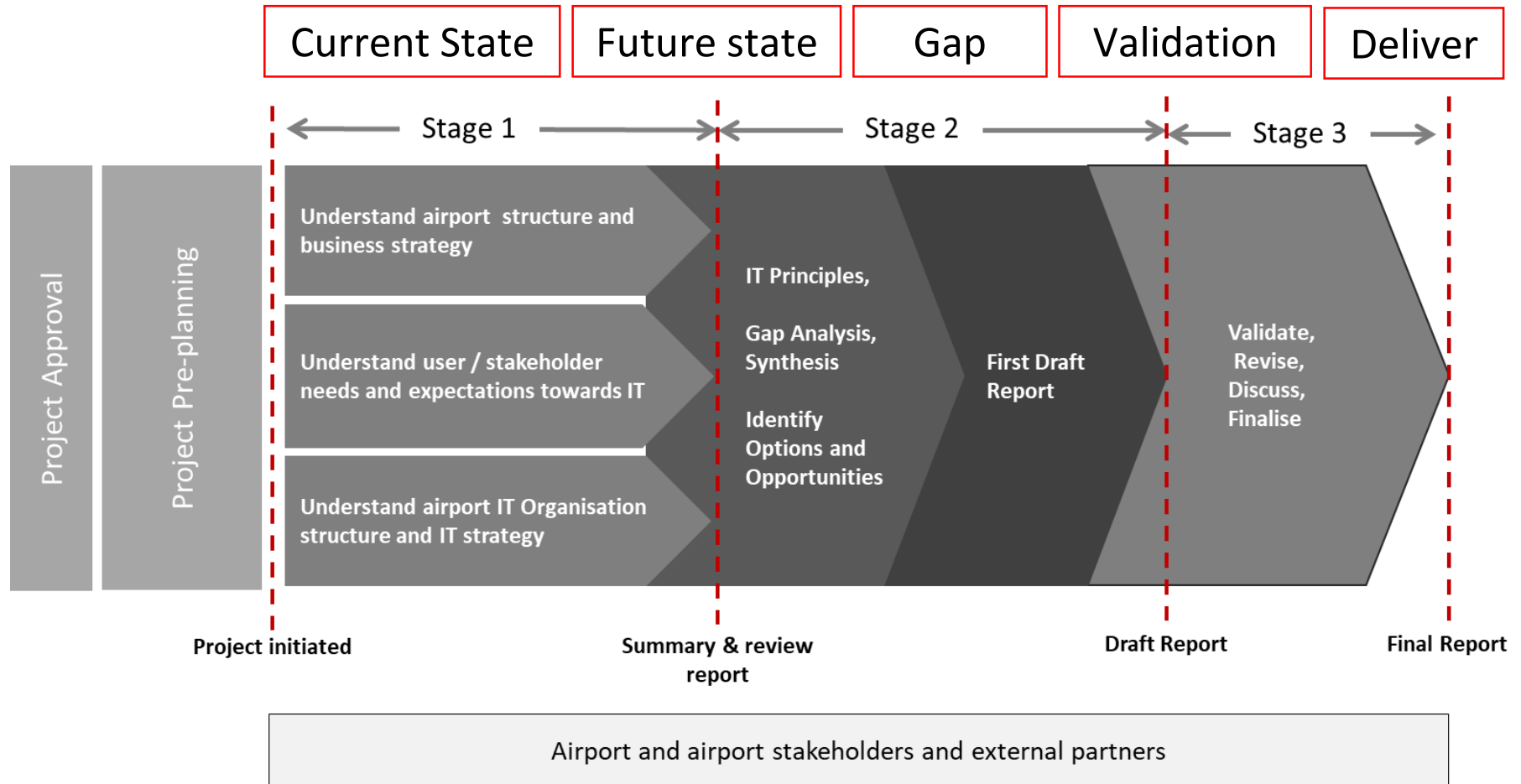
- Go through the chain of decision making
- Target for each audience
- Executive briefs are short

# HOW TO DO INTERNAL ANALYSIS?

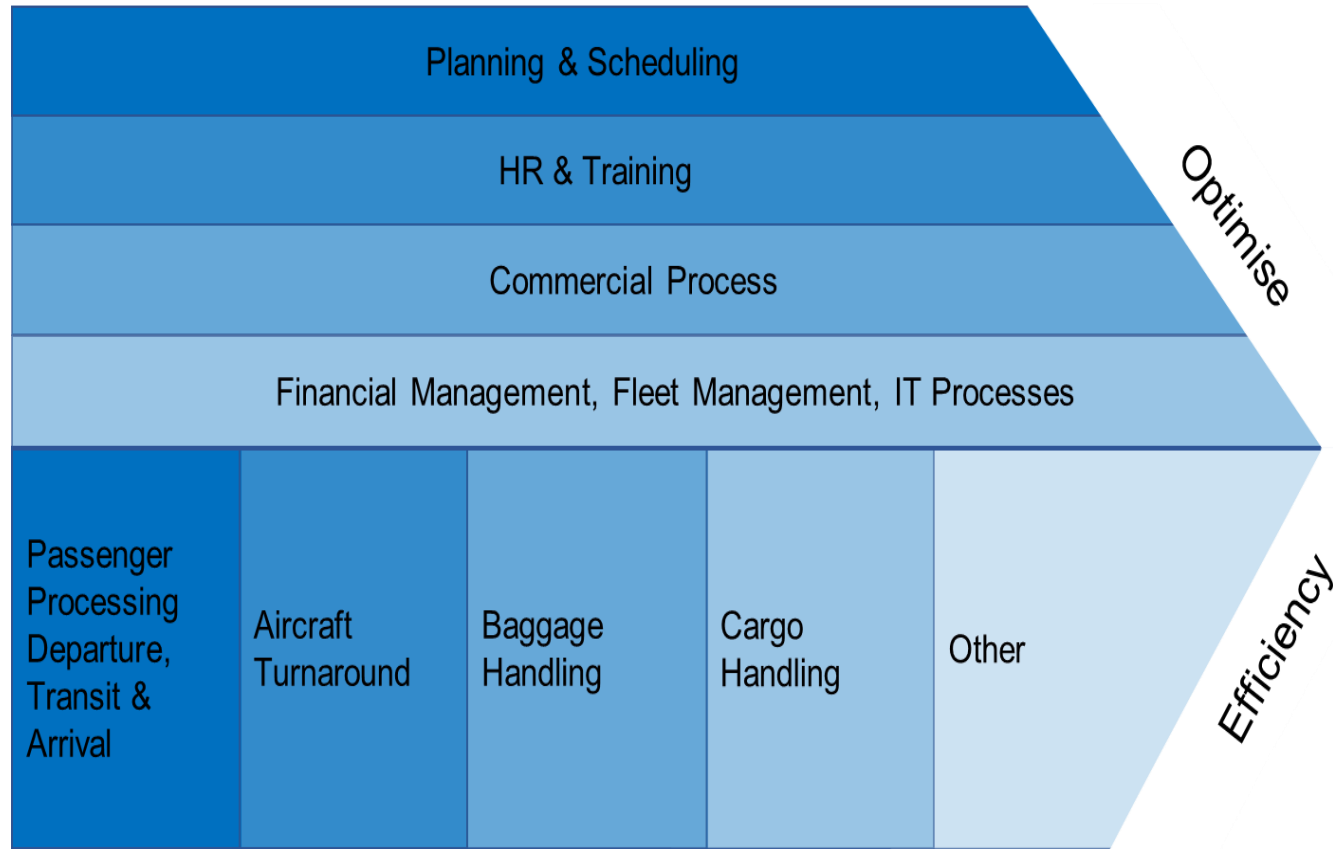




# HOW TO DO INTERNAL ANALYSIS?



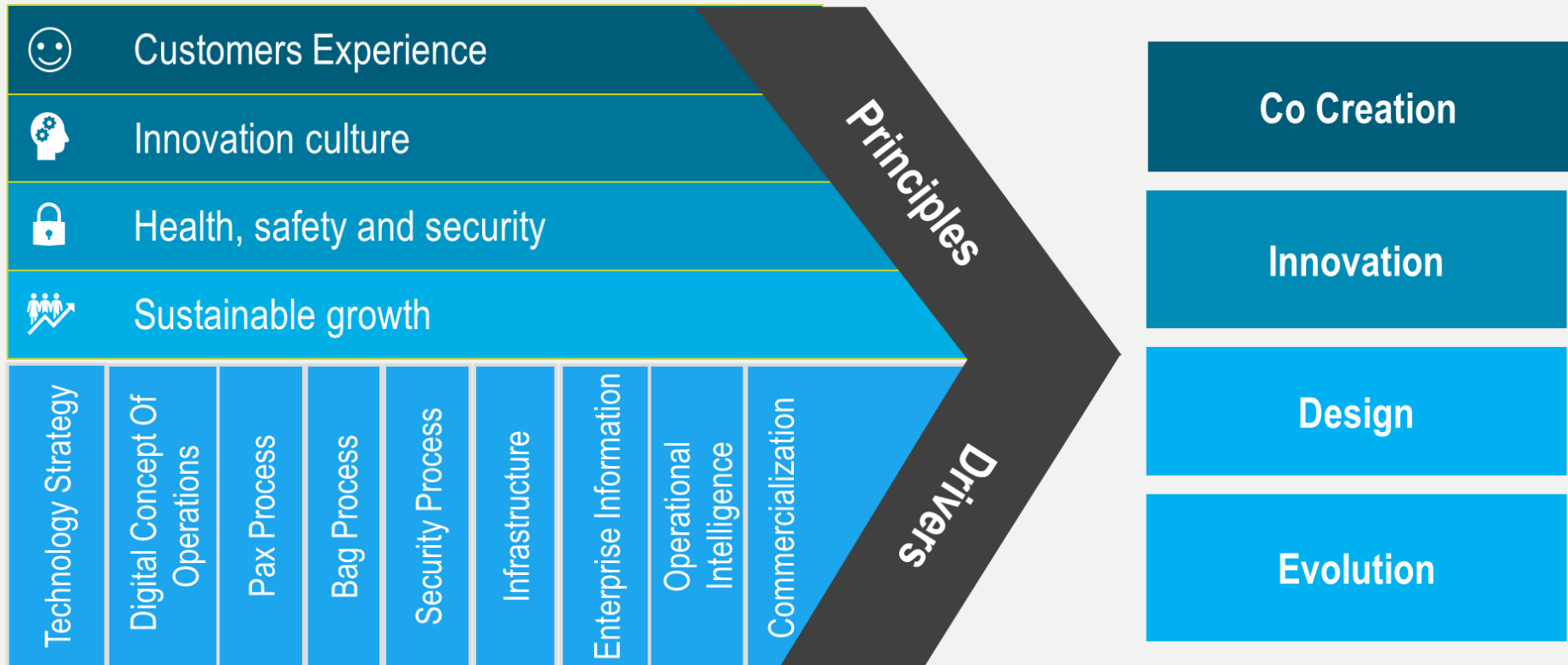
# HOW TO DO INTERNAL ANALYSIS?



Adapted by SITA Consulting from "Digital Transformation in Airport Ground Handling Operations", Kovynyov & Milut May 2018,

Ref: SITA Business Consulting 2020

# HOW TO DO INTERNAL ANALYSIS?



# **WHERE TO FIND STRATEGIC INTERNAL DATA**

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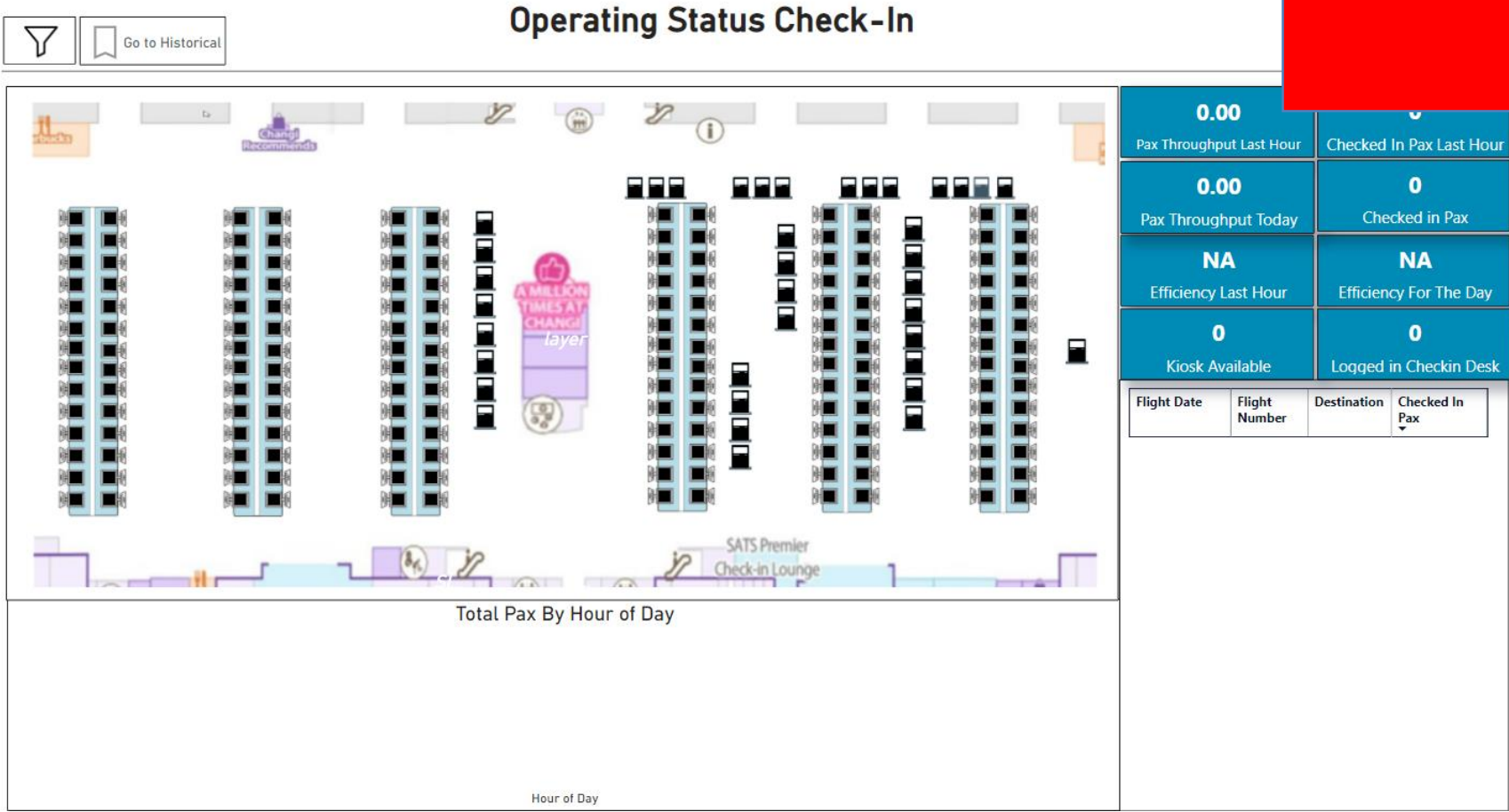
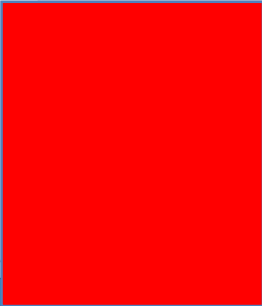
## Where is all the data?

- Almost always mixed up with operational data
- Attached to many systems and processes throughout the organisation in a mechanistic way.
- Hard to compare across boundaries, across space and time
- Duplicated, missing or contradictory

## Where to look for data?

- Hidden on staff computers
- Left on USB thumb drives in desk draws
- Created in Excel
- Printed out on PPT presentations or manual report
- Etc

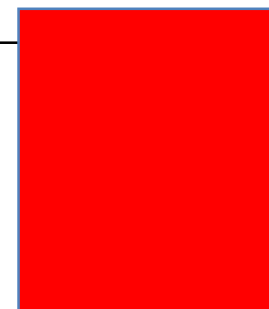
# WHERE TO FIND STRATEGIC INTERNAL DATA



# WHERE TO FIND STRATEGIC INTERNAL DATA



## Historical Check-In System Counter Usage



**SITA**

Date	Counter	Carrier	Flight	Actual Usage Start	Actual Usage End	Actual Minutes	First Event Within Session	Last Event Within Session	Active Minutes	Inactive Minutes	Total Boarding Pass Print	Total Boarding Pass Per Hour	Max Pax Per Hour	Counter Efficiency
16 July 2020	SIN1CKB757	AI	0128	16:23	17:30	67	16:23	16:23	0	67	2	2	25	8.00 %
16 July 2020	SIN1CKB757	AI	0139	16:23	17:30	67	16:23	16:23	0	67	2	2	25	8.00 %
16 July 2020	SIN1CKB757	AI	0925	16:23	17:30	67	16:23	16:23	0	67	1	1	25	4.00 %
16 July 2020	SIN1CKB757	AI	8941	16:23	17:30	67	16:23	16:23	0	67	1	1	25	4.00 %
16 July 2020	SIN1CKB757	AI	9196	16:23	17:30	67	16:24	16:56	26	41	10	10	25	40.00 %
16 July 2020	SIN1CKB757	AI	9198	16:23	17:30	67	16:59	17:28	19	48	9	9	25	36.00 %
16 July 2020	SIN1CKB757	VAA	1428	17:32	18:06	33	17:37	18:02	19	14	9	9	25	36.00 %
17 July 2020	SIN3CKB553	BA	446	12:23	12:56	33	12:28	12:38	8	25	5	5	25	20.00 %
17 July 2020	SIN3CKB553	BA	447	12:23	12:56	33	12:39	12:55	13	20	6	6	25	24.00 %
17 July 2020	SIN3CKB553	XS	977	13:01	13:43	42	13:02	13:39	27	15	13	13	25	52.00 %
17 July 2020	SIN2CKB572	SQ	8941	13:48	14:45	57	13:51	14:42	36	21	14	14	25	56.00 %
17 July 2020	SIN2CKB572	UL	434	14:50	15:39	50	14:53	15:35	36	14	17	17	25	68.00 %
18 July 2020	SIN3CKB553	SQ	787	16:19	17:08	50	16:20	17:05	34	16	16	16	25	64.00 %
18 July 2020	SIN1CKB757	AI	488	17:13	18:05	52	17:17	18:02	37	15	16	16	25	64.00 %

Ref: SITA Business Consulting 2020

# WHERE TO FIND STRATEGIC INTERNAL DATA

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Where is all the data?

- **Integration of multiple datasets from multiple systems is why we have business intelligence and decision support systems**
- Zachman Framework for Enterprise Architecture

To find strategic internal data in the first place requires an understanding of operational support systems in an organisation and their associated data.



# WHERE TO FIND STRATEGIC INTERNAL DATA

## Zachman Framework:

- Ontology for Enterprise Architecture

### Why?

1. Align resources and investments with business strategy
2. Integrate resources to more effectively achieve business goals
3. Help manage change

	What? DATA	How? FUNCTION	Where? NETWORK	Who? PEOPLE	When? TIME	Why? MOTIVATION
<b>SCOPE</b> {contextual} <b>Planner</b>	List of things important to the business	List of processes the business performs	Locations in which the business operates	List of organisations important to the business	List of events/cycles significant to the business	List of business goals / strategies
<b>BUSINESS MODEL</b> {conceptual} <b>Owner</b>	<i>e.g.,</i> Semantic model	<i>e.g.,</i> Business process model	<i>e.g.,</i> Business logistics system	<i>e.g.,</i> Work flow model	<i>e.g.,</i> Master schedule	<i>e.g.,</i> Business plan
<b>SYSTEM MODEL</b> {logical} <b>Designer</b>	<i>e.g.,</i> Logical data model	<i>e.g.,</i> Application architecture	<i>e.g.,</i> Distributed system architecture	<i>e.g.,</i> Human interface architecture	<i>e.g.,</i> Processing structure	<i>e.g.,</i> Business rule model
<b>TECHNOLOGY MODEL</b> {physical} <b>Builder</b>	<i>e.g.,</i> Physical data model	<i>e.g.,</i> System design	<i>e.g.,</i> Technology architecture	<i>e.g.,</i> Presentation architecture	<i>e.g.,</i> Control structure	<i>e.g.,</i> Rule design
<b>DETAILED REPRESENTATIONS</b> {out-of-context} <b>Subcontractor</b>	<i>e.g.,</i> Data definition	<i>e.g.,</i> Program	<i>e.g.,</i> Network architecture	<i>e.g.,</i> Security architecture	<i>e.g.,</i> Timing definition	<i>e.g.,</i> Rule specification

# WHERE TO FIND STRATEGIC INTERNAL DATA

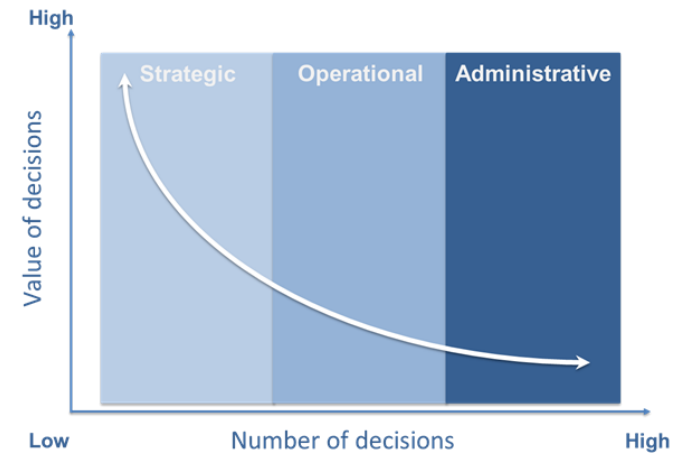
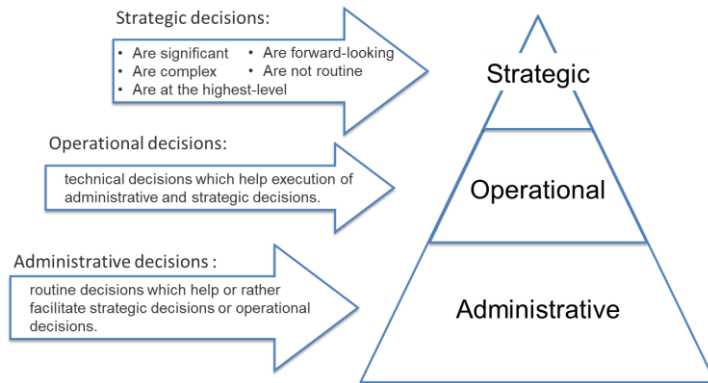
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## **Maturity of Decision Support Systems**

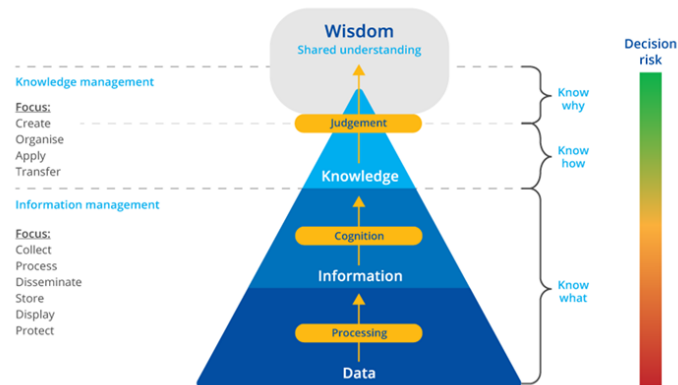
- Ad hoc reporting. Manually piece together the data and conduct one-off analysis.
- Special Extract Programs. Some manual effort required (e.g. data cleansing) to produce a report on data extract.
- Parameter-driven reporting. Report generated automatically based on parameters fed to BI/IT teams.
- Decision support systems or BI platforms. Fully interactive dashboards to drill down and drill through.
- Executive information systems or strategic information portals. Ability to surface strategic insight and KPIs through comprehensive data picture.

# THE VALUE OF STRATEGIC DATA

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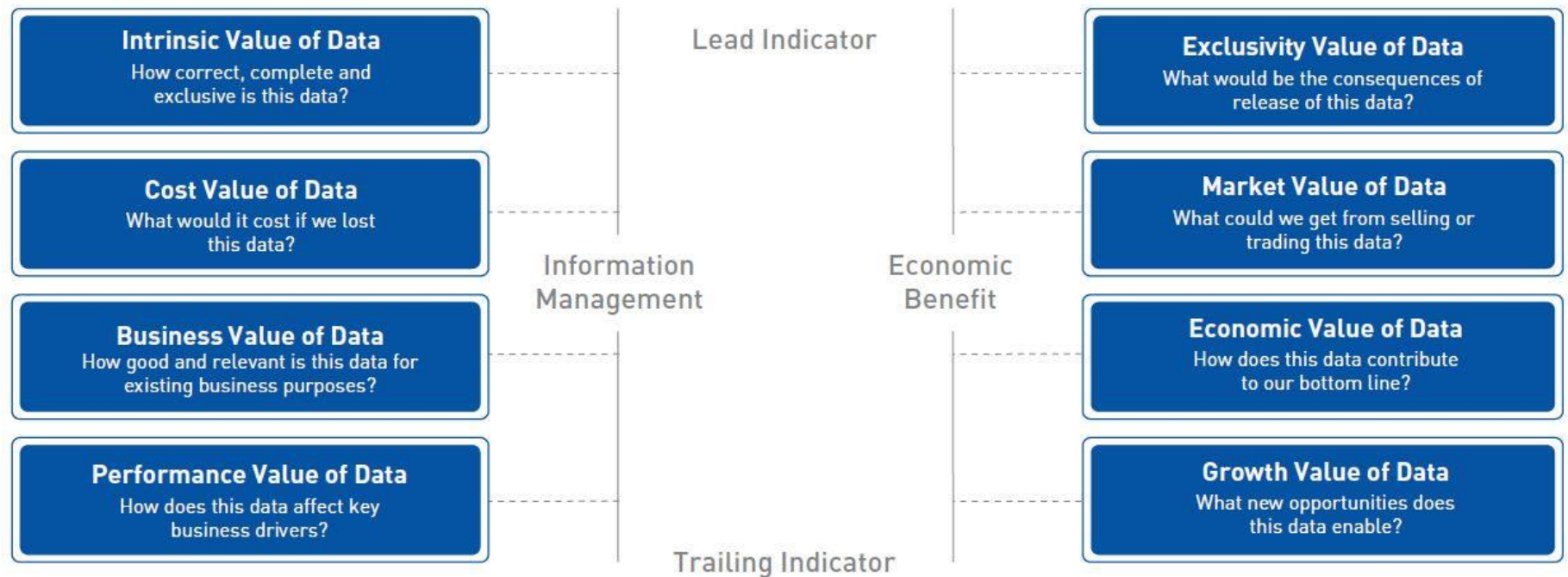
# THE VALUE OF STRATEGIC DATA

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Data has five inherent properties that distinguish it from other traded goods. These properties are:

1. **Inconsumable:** Goods are consumed by use. Data does not disappear. Data remains in one form or another however much it is used.
2. **Untransferable:** When a good is passed from person A to person B, person A no longer has it. If data is passed from person A to person B, person A still has the original information.
3. **Indivisible:** Goods used as materials, like electricity and water, can be divided and used but data can only be used when it constitutes a complete set. If only parts of the data are used, the intended meaning is lost. When this happens, the original data may become new information or misinformation where the meaning has been changed.
4. **Accumulative:** The only way to accumulate goods is not to use them. Data however, cannot be consumed unless it is deleted and, when the information is in the digital environment, even deleting information in one area does not mean it has been deleted in another area.
5. **Durable:** Data may be re-used again and again.

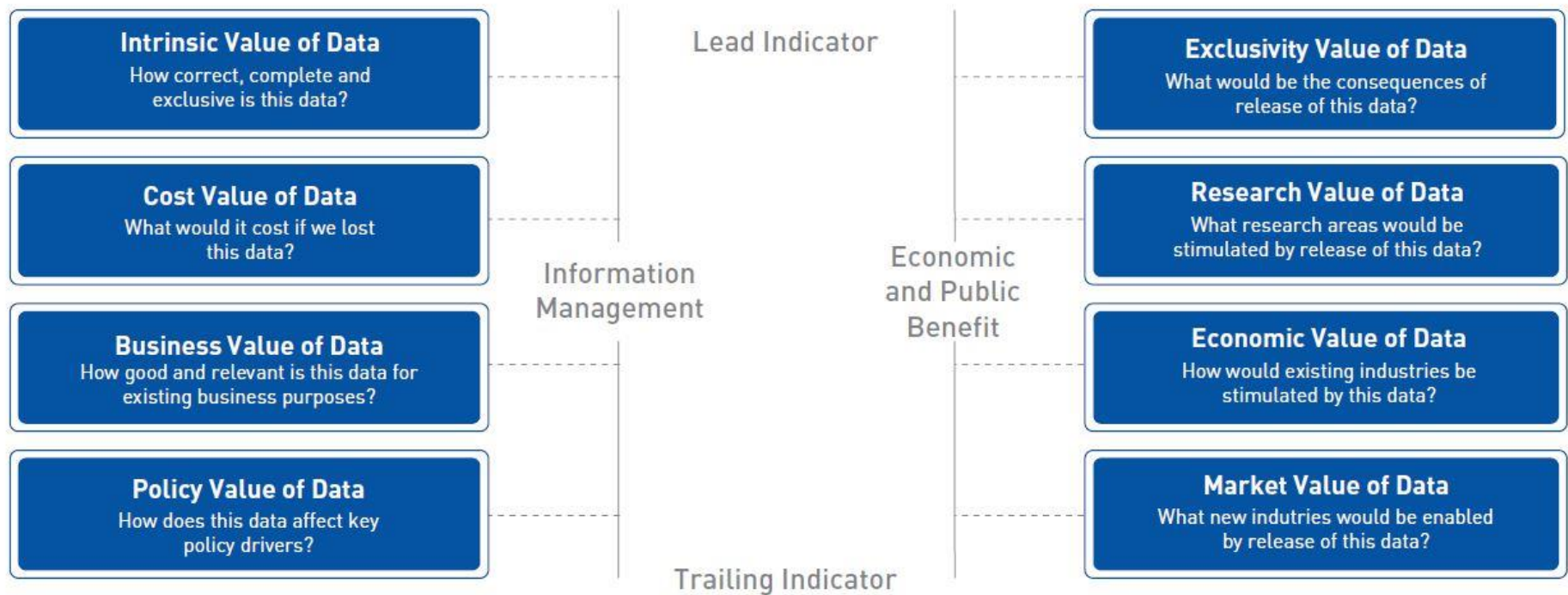
# THE VALUE OF STRATEGIC DATA



## Commercial Value of Data

Source: Data Sharing Frameworks: Technical White Paper. Australian Computer Society, 2017.

# THE VALUE OF STRATEGIC DATA



## Commercial Value of Data in Government

Source: Data Sharing Frameworks: Technical White Paper. Australian Computer Society, 2017.

# THE VALUE OF STRATEGIC DATA

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## Data as a fourth factor of production

A fundamental shift in mindset is required when we consider the pervasive role, use and value of data in the digital economy, and in a digitally enabled society. Often discussions on the digital economy are framed as if digital products and services are simply the digital manifestation of physical goods, or of traditional services, which are exchanged bilaterally and effectively monopolised or extinguished on consumption. There is a fundamental conceptual reframing required to understand the multiple uses and reuses of data which underpins the digital economy. Data can be the product itself, can be used to create the digital service, to understand the interaction with the digital service, to understand a wider set of relationships or even to predict a future state or need. The same data can then be used for further unrelated purposes creating additional value by third parties.



# THE VALUE OF STRATEGIC DATA

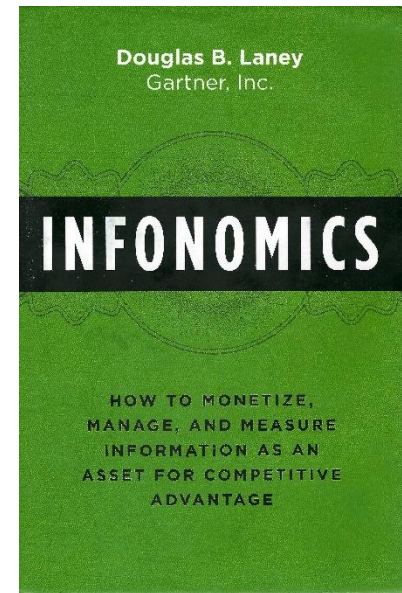
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When Data / Information is viewed as an asset, in comparison to other assets it has a variety of other unique value characteristics, and makes it ripe for monetisation;

1. **Exponential**
2. **Reusability**
3. **Liquid, based on the context.**
4. **Replicable**
5. **Divisible**
6. **Easily Transferable**

It is also

- **Not Taxed when bartered.**
- **It also not classed as an asset so to the organisation has no value.**



**Thank you.**

# THE VALUE OF STRATEGIC DATA

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## GE Case Study

- Set aside **60 minutes**
- Begin by reading the GE case study, *Digitization of an Industrial Giant: GE Takes on Industrial Analytics*
- Watch videos on GE Mind and Machines
- **Reflect and review:**
  1. Why is GE pursuing industrial analytics?
  2. Is GE better positioned than its software rivals (such as SAP)?
  3. What key actions have GE taken thus far?
  4. What are the prospects for GE Digital?
  5. What key actions does GE Digital need to take to grow its analytics business?

# Announcements, assignments, etc.

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- Assignment 1 due XXXXXX 11:59 pm. (
- Get started on the literature review (Assignment 4)
- Reflection exercises are critical for synthesizing and remembering knowledge. Watch the videos, participate in the discussions