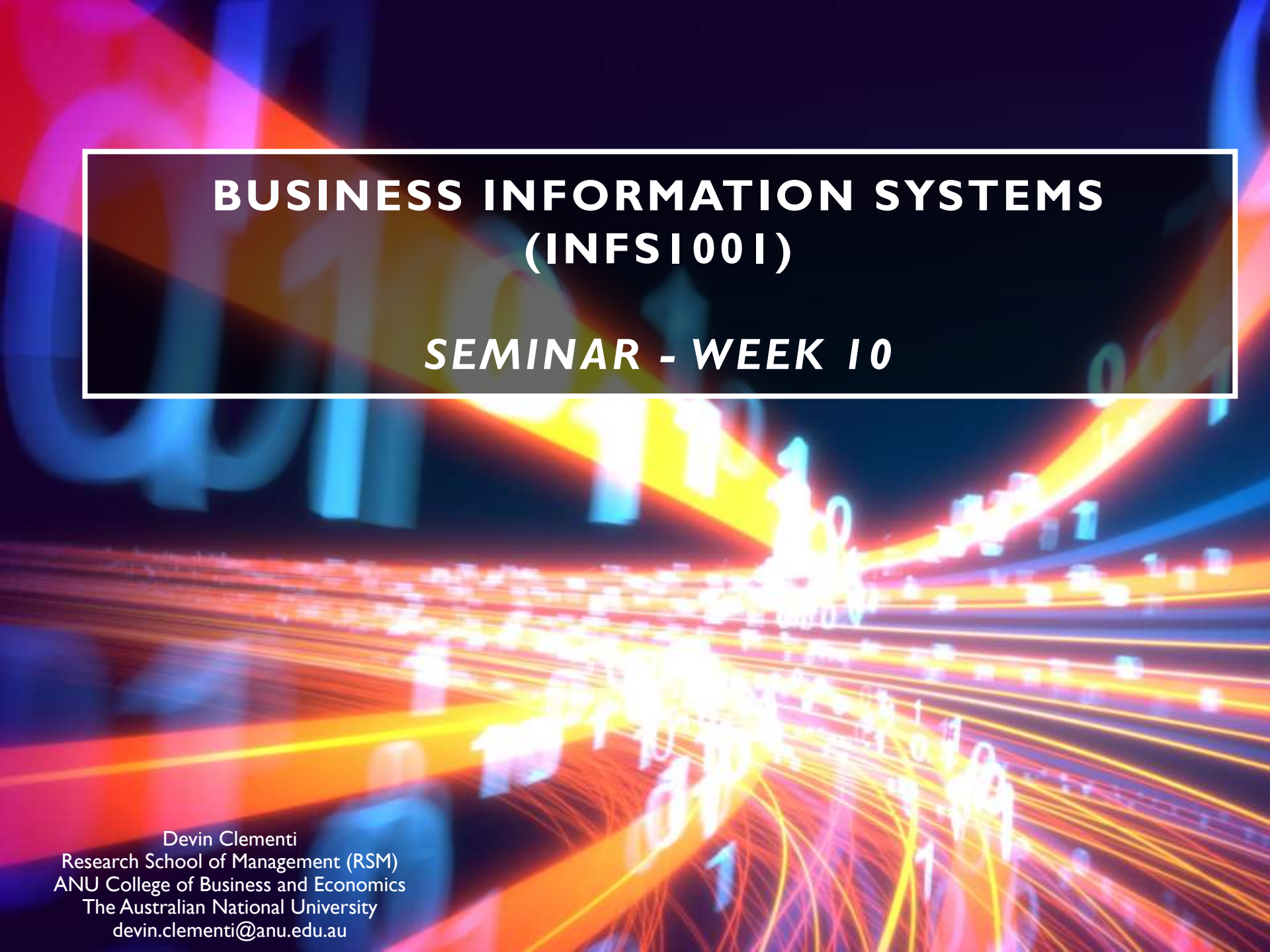

BUSINESS INFORMATION SYSTEMS (INFS1001)

SEMINAR - WEEK 10

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WEEK 10 AGENDA

- Welcome Back
- Review
- Quantum Computing
- Internet of Everything
- Week 10 wrap-up

THE BUSINESS INFORMATION SYSTEMS ECOSYSTEM

In this course we examine how business information systems impact the inner workings of a business and the connections to a broader ecosystem.

Markets

Customers

Suppliers

Organisational Change

Decision Making

Systems Modelling

Technologies

Systems Development

Strategy Development Methods

Data Management

Cyber Security

Ethics

Government

Disruptive Tech

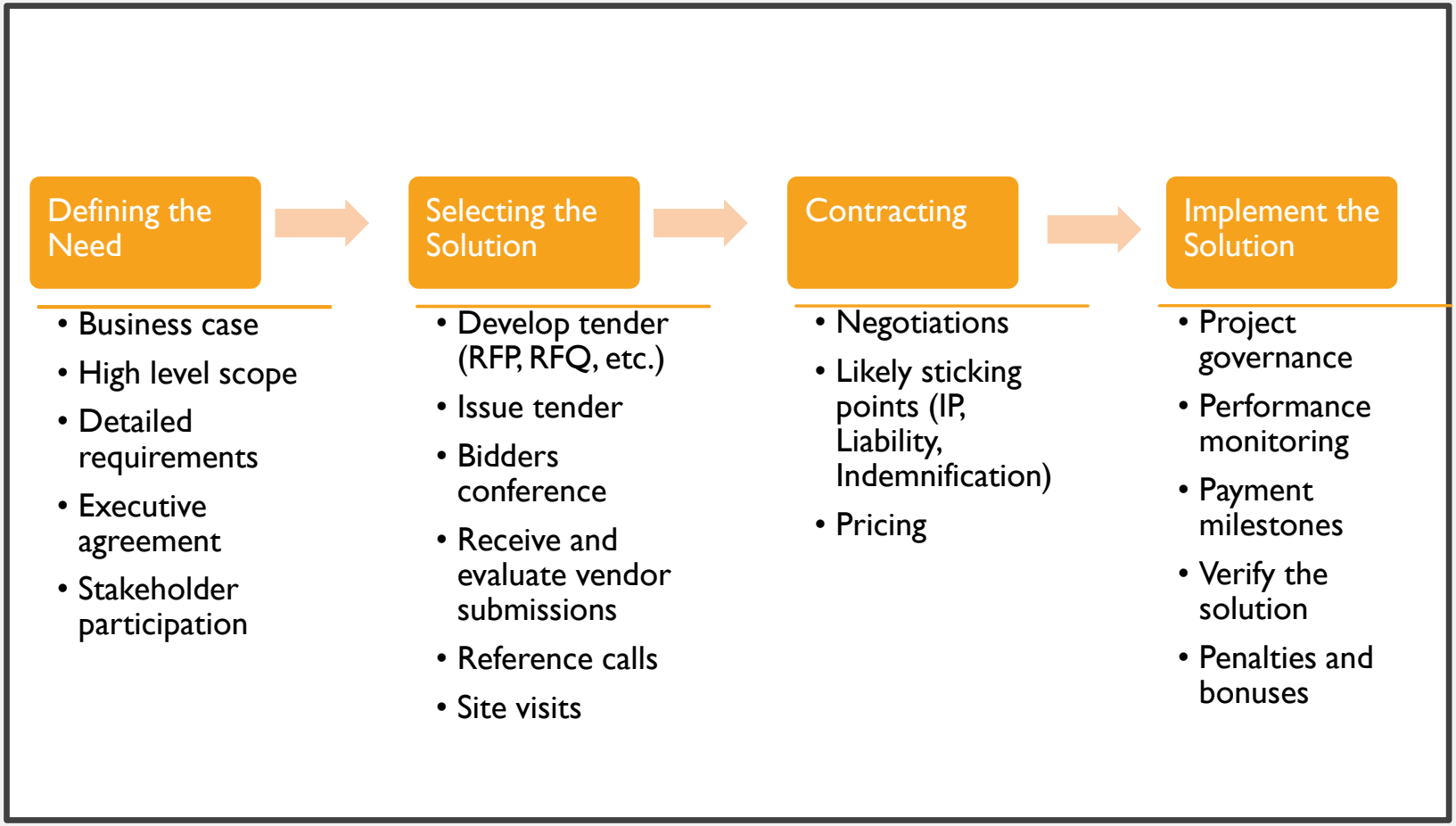
Competitors

FINDING THE RIGHT INFORMATION SYSTEM

- It's great that we've decided and are prepared to implement an ERP system or other forms of technology but how can we make sure we are buying the right solution?
- We need an effective, repeatable and defensible approach to find the right information system…

In Class discussion – what criteria are most important when deciding to buy technology? What's the latest piece of tech that you have bought?

OVERVIEW OF SELECTION, CONTRACTING AND IMPLEMENTATION PROCESS



SELECTING THE RIGHT SYSTEM

Selecting technology

- Software
- Hardware
- Network

Acquiring services

- Consultants
- Contractors
- Internal
- Cloud

Aligning with regulatory and organisational requirements

- Value for money
- Transparency
- Sufficient competition
- Ethical processes

ISSUING A TENDER REQUIRES STAKEHOLDER PARTICIPATION AND CLARITY

- The better the tender the more likely you will receive a quality and informative response.
- Ask yourself, "Could I respond to this tender?"
- Following the analysis of the tender, the list of prospective vendors is reduced often to 2 or 3 (hopefully not 1).
- Reference calls may be made during the tender analysis
- Once the list has been narrowed, client site visits may occur.

Tenders vary in form and complexity.

They provide the vendor with an overview of the project and the expectations of the buyer.

They include qualitative and quantitative measures

Qualitative measures include:

- Functional requirements
- Non-functional requirements
- Supplier background and references
- Contracting terms

Quantitative measures include:

- Purchase and ongoing costs
- Service level expectations
- Penalties and bonuses.

The inclusion of references may lead to site visits.

PROPOSAL ANALYSIS FOCUSES ON THE POTENTIAL PERFORMANCE OF THE VENDOR AND THEIR SOLUTION

The Solution

- Does it meet the functional requirements?
- Will the solution allow for high priority customisations?
- Are we confident they can deliver within our timeframe and budget?
- Are they providing experienced resources?
- Do we truly have the whole of life costs?
- Will they meet non-functional requirements?
- Is their underlying technology robust?
- Are they meeting any required regulatory and industry standards?
- What are they offering that we didn't expect?

The Vendor

- Do they have a history of positive client experiences?
- Is their organisation financially stable and viable over the lifetime of the contract?
- Can they provide us with the ongoing support that we will need?
- Is their product strategy aligned with our future needs?
- Have they done a good job in their response to our tender?
- Can they meet our contractual expectations?

These are just some of the factors that are considered in system selection. However, they need to be prioritised based on the nature of the project and the culture of the purchasing organisation.

SOMETIMES ORGANISATIONS DECIDE TO TAKE THE DIY APPROACH…

- Most organisations prefer to buy "off the shelf" solutions from vendors for the reasons we have already discussed.
- Often these solutions need customisation and hopefully only minor modifications.
- However, there may be situations where organisations have to develop their own systems.
- These "home grown" systems need a rigorous system development methodology to increase the likelihood that they will be fit for purpose.

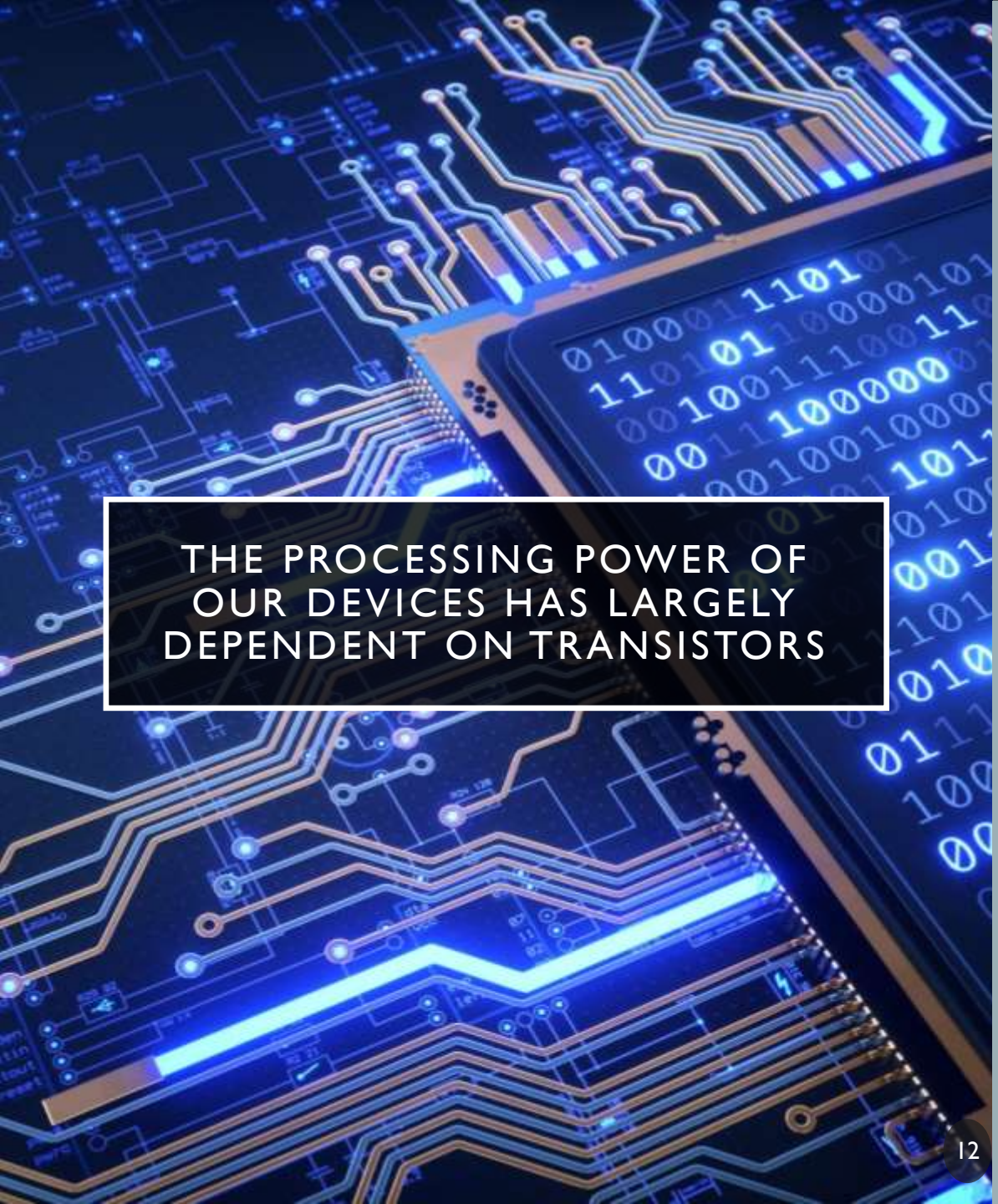
Question: What circumstances might require an organisation to have to build their own information system?

COURSE OVERVIEW
What have we studied? (1 of 2)

Strategy Development Methods	• Business Model Canvas • Digital Strategy Diamond • IT Strategy • SWOT • Social Media Strategies
Systems Modelling	• General Systems Model • Rich Picture • Enterprise Architecture: TOGAF (organization) • e-Commerce models
Systems Development	• Agile • Waterfall • Design Thinking • System Selection
Organisational Change	• Leadership Style (Transformational, Transactional, etc.) • Lewin's model and force field analysis • IT Organisation and Role of the CIO • The Value of IT • Tuckman

COURSE OVERVIEW
What have we studied? (2 of 2)

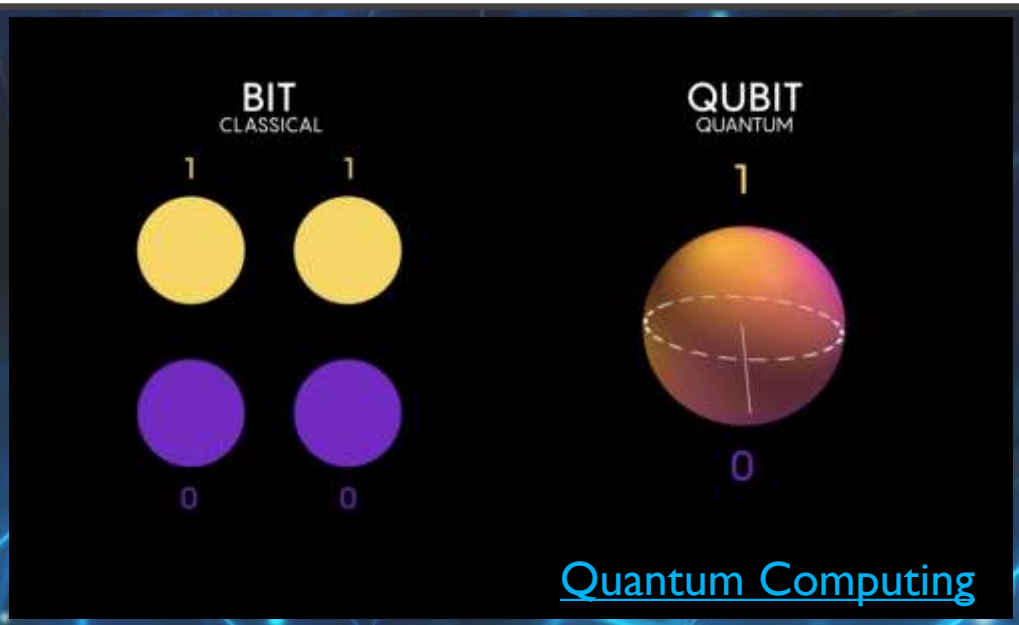
Technologies	• Enterprise Resource Planning (ERP) • Cloud • Emerging and Disruptive • Artificial Intelligence • VR and AR, Metaverse, Quantum, IoE
Decision Making	• Simon's model • Heuristics • Structured, Semi structured, Unstructured
Data Management	• Data Management Strategy • Information Architecture • MIS/Balanced Scorecard • Data Hierarchy
Cyber Security	• Threat Types • Ethical Hacking • Data Breaches • Risk Management Strategy
Ethics	• Egoism • Utilitarianism • Natural Law • Respect for Persons



THE PROCESSING POWER OF OUR DEVICES HAS LARGELY DEPENDENT ON TRANSISTORS

- Computer chips are made up of transistors that are like a binary switch which is either on or off.
- The more transistors you can fit on a chip, the more processing power you have available.
- So how many transistors?
  - 1985 : The Intel 80386 chip – 275,000
  - 1995: PowerPC (Apple Mac) – 1.6M
  - 2022: iPhone 14 has - 16 billion transistors.
  - 2019: Cerebras Wafer-Scale Engine (WSE) – 2.6 Trillion
- These chips are surrounded by other technology, so device performance is influenced by many factors.
- But it's clear that the computing industry has got very good at placing very small transistors on computer chips and therefore dramatically increasing processing power.
- However, classical computing is still limited by zeroes and ones i.e., you only have two states to work with.

WHAT IS QUANTUM COMPUTING?

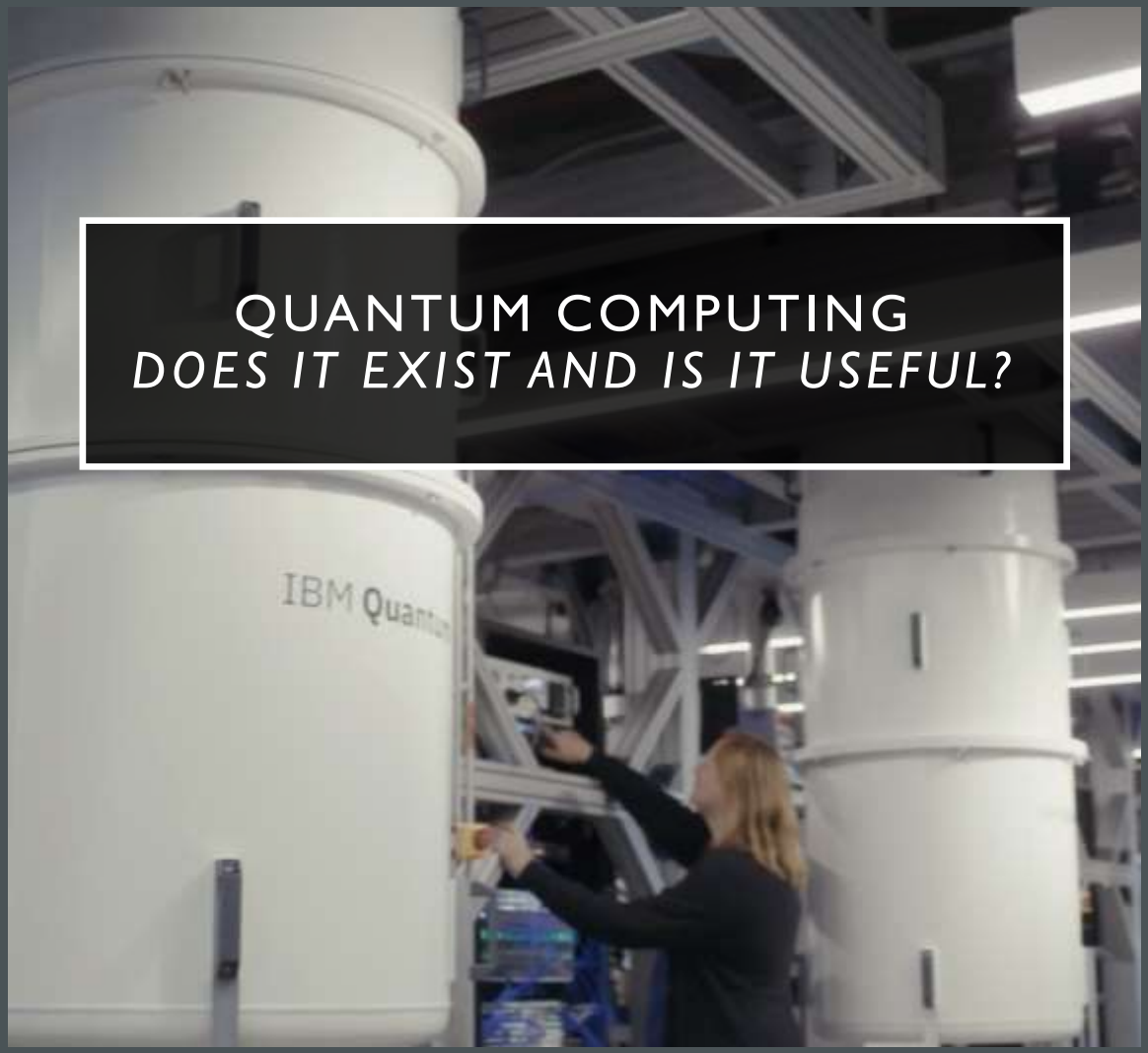


Quantum computing relies on the principles of quantum mechanics and the ways in which subatomic particles behave.

Quantum computing uses qubits which are more useful in performing calculations and storing information because they can be used to represent much more than the classical computing which relies on binary information i.e. zeroes and ones.

A quantum computer with a 10-qubit capability is equivalent to a classical computer with 16000 bits.

A quantum computer with a 500-qubit capability is equivalent to a classical computer with more bits than all of the atoms in the known universe.



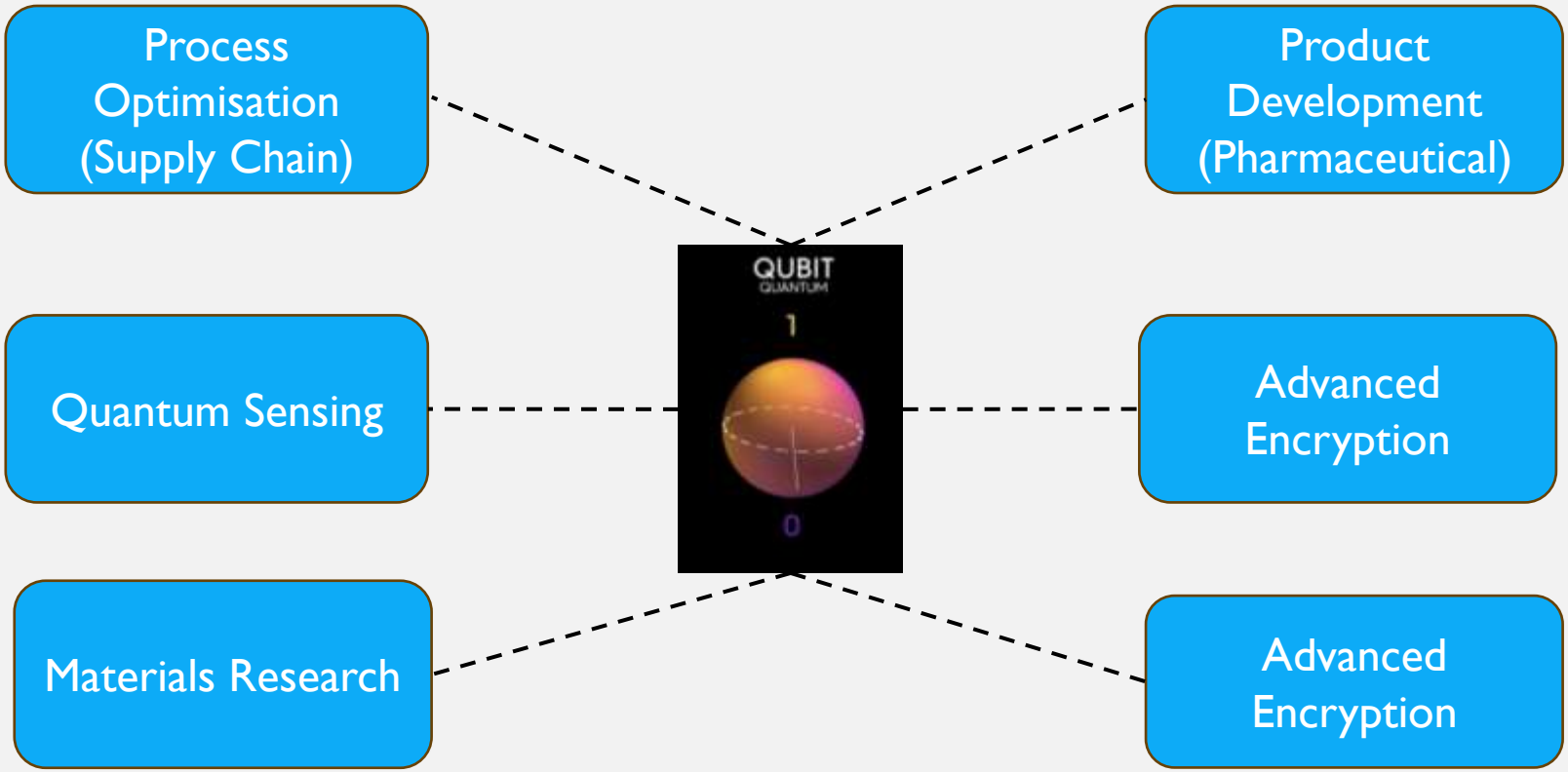
QUANTUM COMPUTING
DOES IT EXIST AND IS IT USEFUL?

IBM Quantum Computing

- Quantum computing is currently working mostly in "laboratory settings" under tightly controlled conditions.
- However, this is similar to the computers of the 1960s, 1970s and 1980s.
- Ultimately, this kind of computing technology, with even more processing capacity, made its way into the mainstream.
- Your mobile phone is an example of this phenomena.
- So, are there real-world applications for Quantum Computing?
- Research areas such as physics and other sciences seem to represent a large part of the interest in Quantum Computing.
- However, companies like IBM, Google and Amazon all tout quantum computing capabilities so it seems likely that there are business applications in the near future.

WHERE'S THE BUSINESS VALUE IN QUANTUM COMPUTING

*Some research suggests that the market for Quantum Computing will reach $65B by 2030**



* Research and Markets, "*Worldwide quantum computing market (2019 to 2030)—Drivers, restraints and opportunities*," press release, Globe Newswire, April 6, 2020

THE INTERNET OF EVERYTHING (IoE)

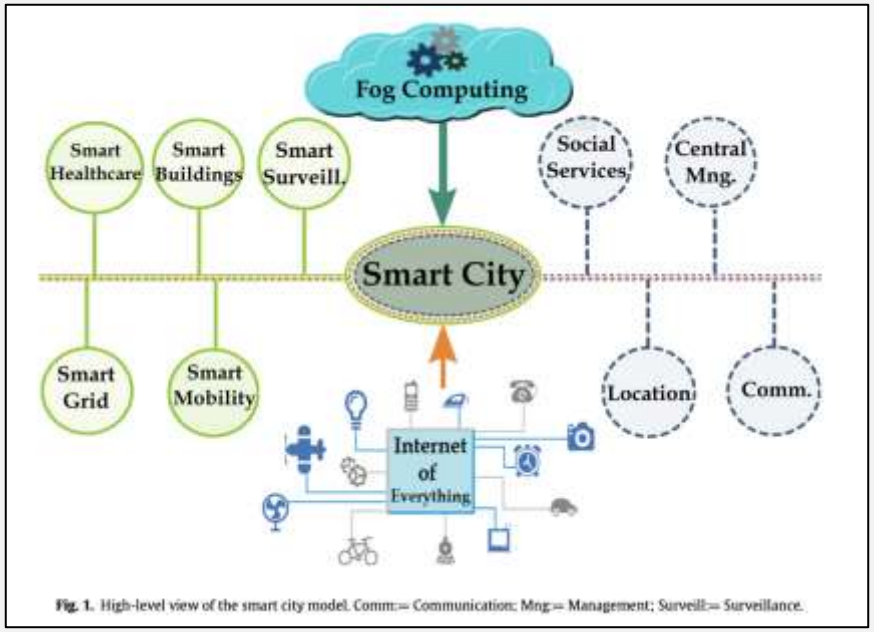


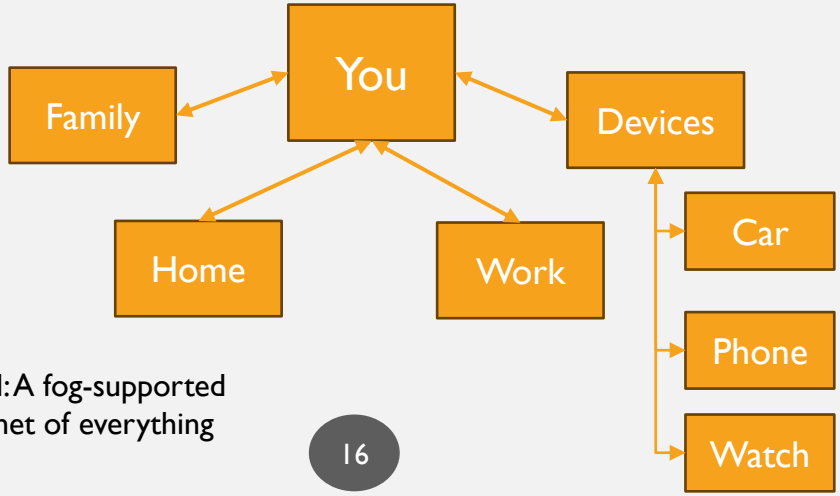
Fig. 1. High-level view of the smart city model. Comm:= Communication; Mng:= Management; Surveill:= Surveillance.

Most of the devices that we use every day are connected to the Internet and form the basis of the Internet of Things (IoT)

But what if everything was connected and devices were able to communicate with each other via the Internet or even more directly.

This can be viewed as an expansion of the IoT but also raises even more concerns regarding security, performance and ethics.

There's significant overlap between IoT and IoE but maybe the key difference is recognising that we are connecting people and not just things.



Naranjo, P. G., Pooranian, Z., Shojafar, M., Conti, M., & Buyya, R. (2019). FOCAN: A fog-supported Smart City Network Architecture for management of applications in the internet of everything environments. *Journal of Parallel and Distributed Computing*, *132*, 274–283.

Business Strategy

- Developing and implementing a business strategy is key to deriving value from technology.
- Without customers, revenue, profit and value – you don't have a business!!
- Understanding the intent of the business strategy helps us identify areas where technology contributes the most.
- There are many tools and frameworks that help senior management develop and communicate their business strategy.

There's significant overlap of Business and IT Strategies

Already two decades ago:

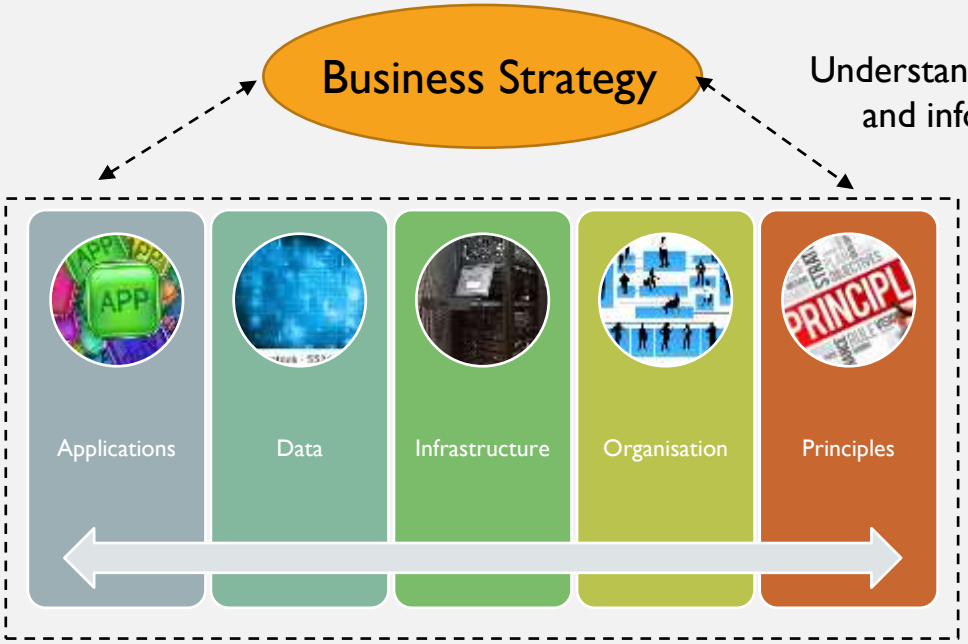
"It's gotten to the point where it's almost impossible to distinguish between the business strategy and the IT strategy of any successful enterprise.

Approximately half of the investments that customers make in IT are now driven by line-of-business managers, not chief information officers."

[Louis Gerstner, IBM chairman of the board, IBM Annual Report, 2001]

BUILDING THE INFORMATION SYSTEMS STRATEGY

Information Systems Strategy



Document current state, analyse and describe/plan for the future

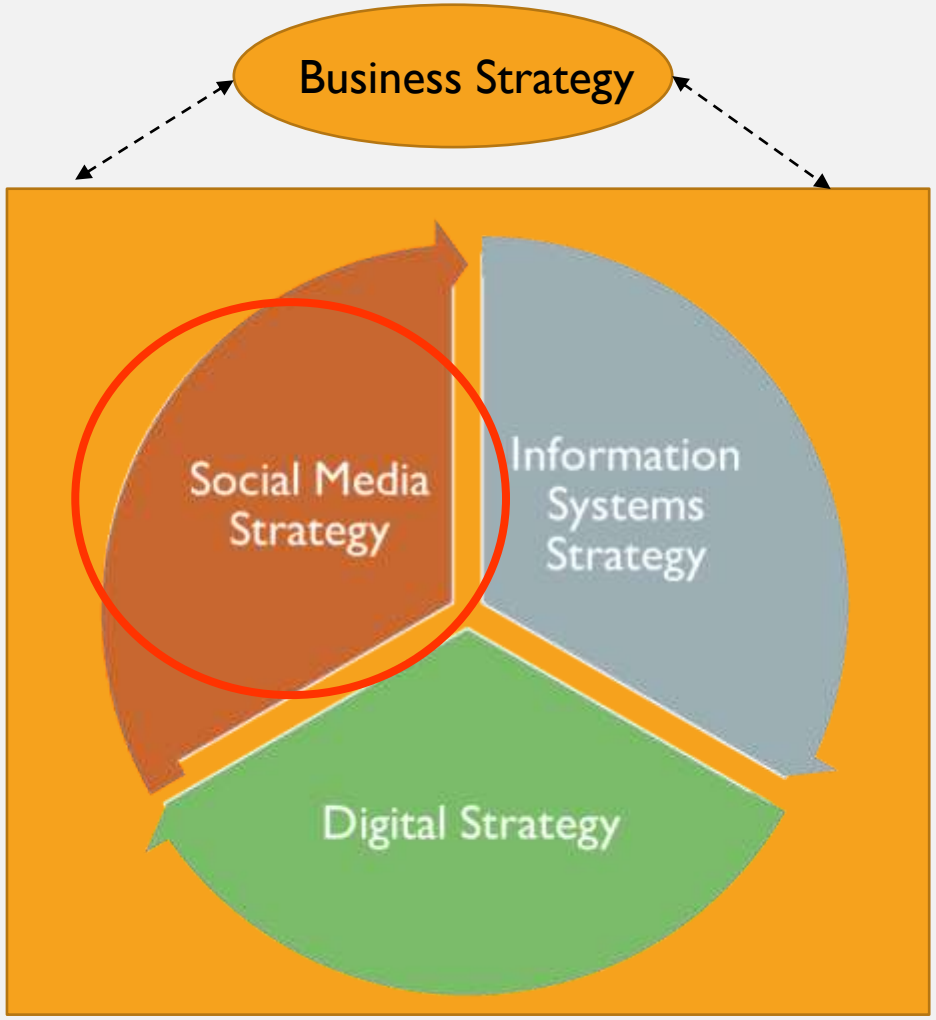
Question – what challenges or decisions do you think might occur in these domains?

Task Name	Duration	Start	Finish
Information Systems Project Portfolio	**210 days**	**Wed 10/07/**	**Tue 29**
Complete AI Study	**45 days**	**Wed 10/07/**	**Tue 10**
Identify AI products/ vendors	20 days	Wed 10/07/	Tue 6/
Complete viability assessment	25 days	Wed 7/08/24	Tue 10
Develop implementation plan	25 days		
ERP Implementation	**210 days**	**Wed 10/07/**	**Tue 29**
Complete selection	80 days	Wed 10/07/	Tue 29
Implementation	120 days	Mon 14/10/2	Fri 28/
Remediation	90 days	Wed 25/12/	Tue 29
Business Intelligence	**203 days**	**Wed 10/07/**	**Fri 18/**
Develop Warehouse	80 days		
Develop Dashboards	100 days	Wed 10/07/	Tue 26
Implementation	100 days	Mon 2/12/24	Fri 18/

Describe the future state implementation approach and detailed plan

SOCIAL MEDIA STRATEGY

- Organisations view and develop technology strategies from many different perspectives depending on the need.
- To drive value from technology there is often an overarching Information Systems strategy with linkages to "sub-strategies".
- Note that organisations develop strategies in many ways.
- In this course, we'll view Information Systems as an overarching strategy leading into Social Media and Digital Transformation.
- In practice, there's significant overlap however, its useful to examine each individually so we understand the relevant components of each.
- This way, when combined, we make sure we haven't missed anything.



SOCIAL MEDIA STRATEGIES – WHO DO YOU WANT TO BE?

An organisations social media strategy can't be static and changes based on business needs, market conditions and many other factors.

We can identify four social media strategies that provide an organisation with both a starting point and direction.

Class Discussion -

- Match the Social Media Strategy to the most appropriate Case

The Creative Experimenter – uses **small scale tests** to gather information and fine tune aspects of their business.

The Predictive Practitioner – focuses on a **specific area** of their business, and, maybe stakeholders, with the intent of minimising risk and enabling **close monitoring** of results.

The Social Media Champion – large scale social media initiatives launched to hopefully achieve **positive and predicted** results

The Social Media Transformer – uses large scale interaction, to enable contribution and collaboration from across the company and **allows the unexpected** to improve aspects of their business

Clorox – created a website that poses questions to customers and suppliers with the intent of gathering feedback and suggestions.

Ford – lends 100 cars to social media influencers and others and requires them to post regular content on themed, planned missions

Cisco – launches a workforce experience that operates like a Facebook wall. Real time news feed, communities, video, collaboration tools, etc.

EMC – launched a platform to see whether their employees could help reduce reliance on contractors. Conducted behind their firewall and made it clear that they'd run for 2 months and then try something else.

Wilson, H. J. (2011). What's Your Social Media Strategy? *Harvard Business Review*.

SOCIAL MEDIA STRATEGY

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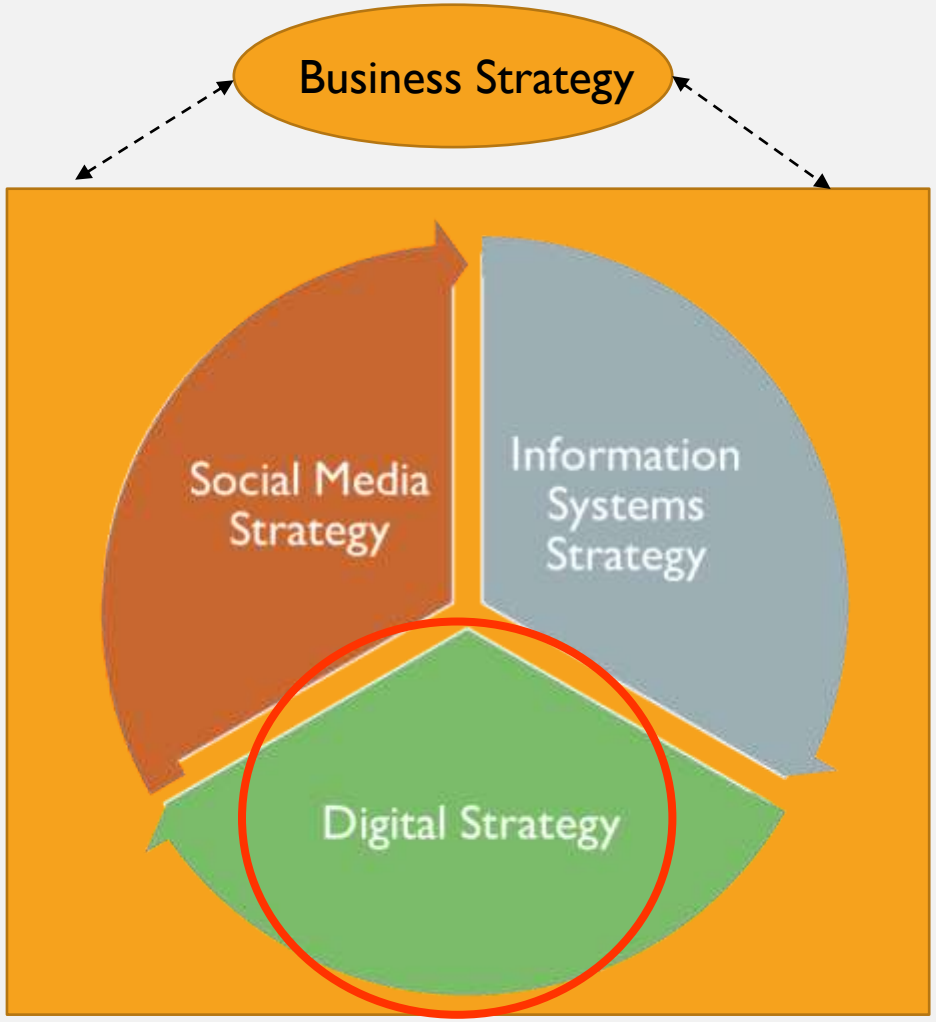
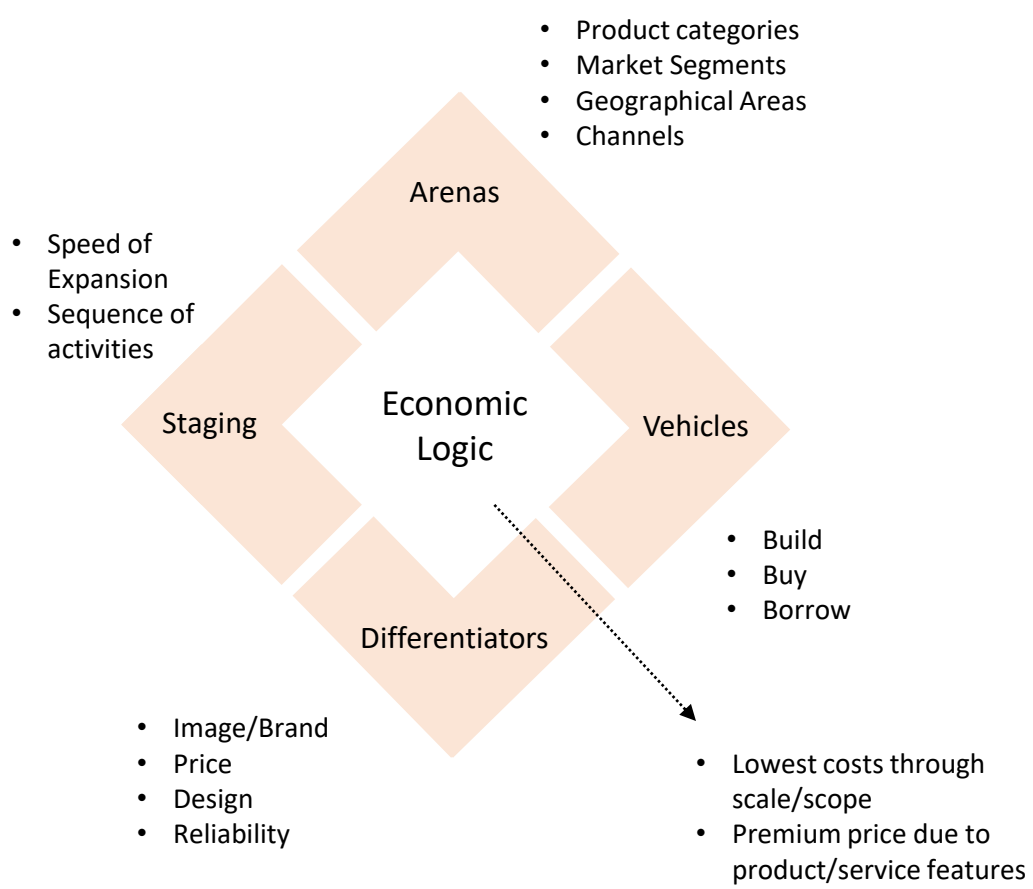
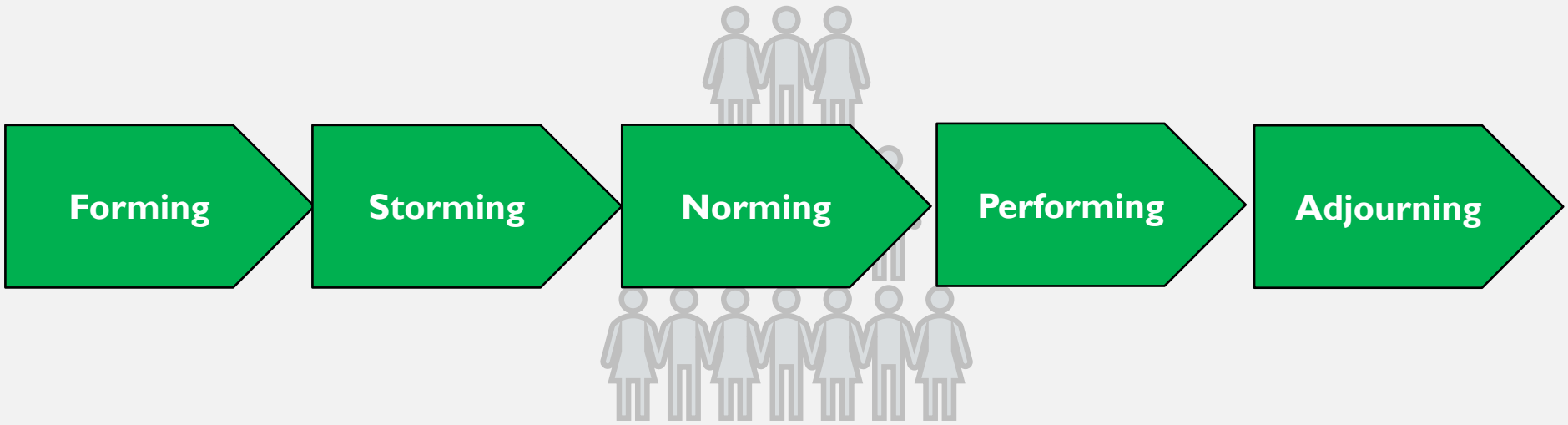


Developing the Digital Transformation Strategy, *The Strategy Diamond*



Arenas	Where will we be active
Vehicles	How will we get there
Differentiators	How will we win in the marketplace
Staging	What will be our speed and sequence of moves
Economic Logic	How will we obtain our returns

Source: Donald C. Hambrick and James W. Fredrickson: Are you sure you have a strategy? Academy of Management Executive, 19(4), 2005.



BRINGING A TEAM TOGETHER

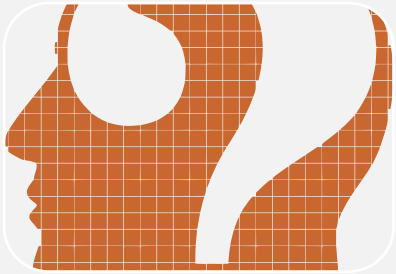
- Teams go through predictable stages of development
- Managers need to recognise where the team is in the formation process and quickly guide the team through the phases.
- This is a process that's performed more than once.

Tuckman, B.W. (1965). Developmental sequence in small groups. Psychological Bulletin, 63(6), 384-399.

STYLES OF LEADERSHIP

Transformational

Transactional



L'aissez faire

- In 1985, Bernard Bass wrote a book outlining three leadership styles.
- As an organisational leader, it's important to understand your "natural" leadership style but also recognise that the style must fit the environment.
- Different environments require one or maybe a range of leadership styles.
- Far too often we forget to self-evaluate our performance and approach to leadership.

WEEK 10 – WRAP UP

- In Week 10, we covered the following:
  - ✓ Quantum Computing
  - ✓ Internet of Everything
  - ✓ Review
- See you next week !!