MAKERERE UNIVERSITY
MAKERERE UNIVERSITY BUSINESS SCHOOL
FACULTY OF COMPUTING AND INFORMATICS
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ENTERPRISE INFORMATION RESOURCE MANAGEMENT

Information Resource Management Concept and Overview

- Concepts
- Definitions
- History
- Enabling technology
- Operational impact
- Strategic impact
- Factors related to strategic impact
- information architecture

Information Resource Management Concept and Overview

- Information is processed data
- Information resource is critical to Management and management Systems
- Information is the primary tool that help management, its products and services in the competitive environment
- **Data + Processing = Information**

Data	Information
The lowest abstract	The next level of data
Refers to raw input which when processed or arranged makes meaningful output	Processed outcome of data. It is derived from data
Refers to facts, analysis or statistics of any event	Information is a concept and can be used in many domains. Information can be a mental stimulus, perception, representation, knowledge, or even an instruction.

- It is a foundation for creating knowledge, skills and attitudes of employers, employees, stakeholders, competitors, products and services among others

Information Resource Management Concept and Overview: Concepts

Information is an Important Resource for any organization;

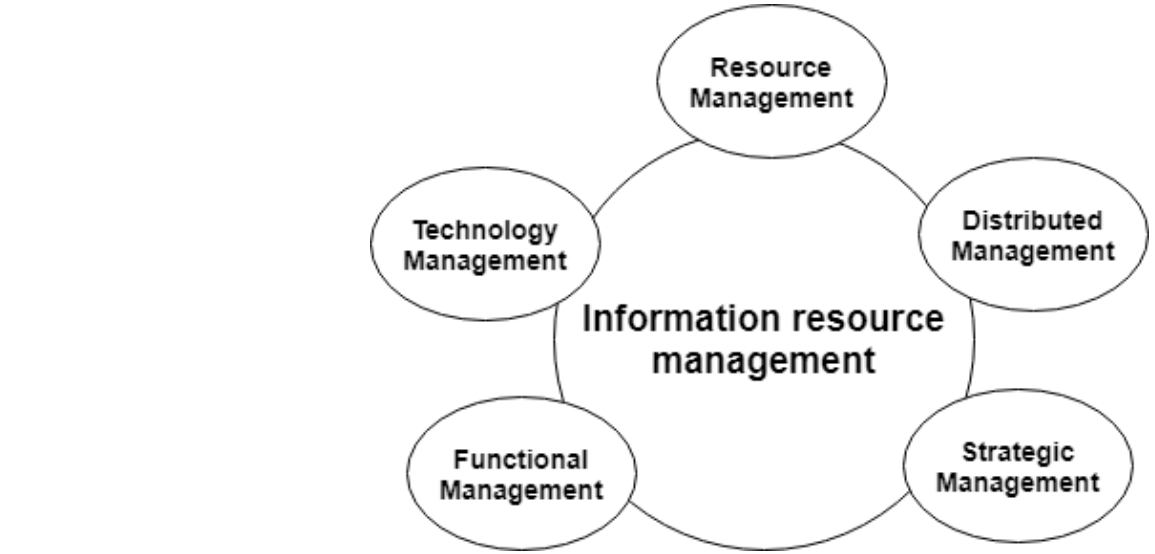
1. Supports decision making
2. Helps in planning
3. Helps in controlling activities

Information Resource Management Concept and Overview: Concepts

- **Information** has become a **valued and expensive corporate resource** .
- Enterprises must comply with the new trend of digital economy and transition from the traditional information technology and information resources management and operating modes to modern strategies.
- With the advent of information technology, more and more enterprises are focusing on information resources management.
- Modern Information resources management strategies **can improve the core competitiveness of enterprises, productivity and efficiency**
- Enterprise information management considers data, as a business asset, is managed securely through its lifecycle and is accessible to the appropriate business processes.
- Information Resource Management (IRM) is concerned with making **effective use of information technology within an organization**
- The focus of Information Resource Management (IRM) is the effective **development, management, and utilization of organizational information .**

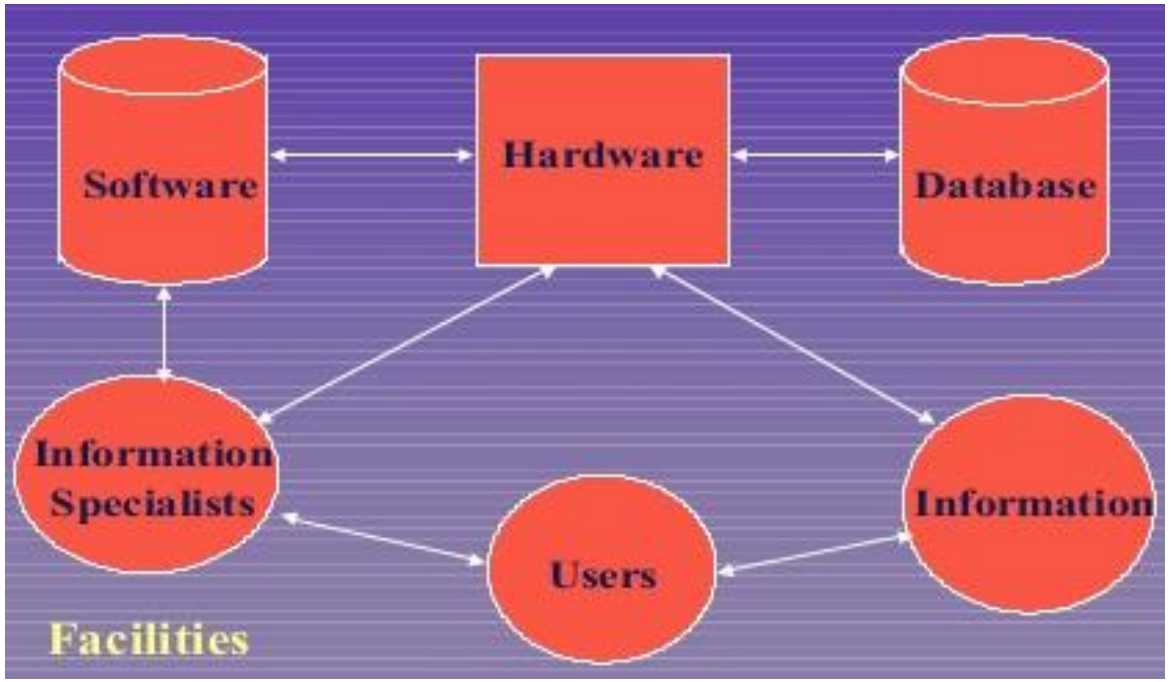
Information Resource Management Concept and Overview: Concepts

- IRM Information Resource Management (IRM) is the foundation for managing data, information, knowledge to maximize the quality, usability and value of information resources.
- It refers to the management (planning, organization, operations and control) of the resources (human and physical) concerned with the systems support (development, enhancement and maintenance) and the servicing (processing, transformation, distribution, storage and retrieval) of information for an enterprise.



Information Resource Management Concept and Overview: Concepts

- IRM encompasses policies, procedures, and actions concerning organizational information systems (Fong and Goldfine, 1989)
- It includes activities such as strategic data planning (e .g ., information, system, and technology architectures), capacity planning (e.g., long range technology planning), application selection, information system development and business system re-engineering, project management, hardware and software acquisition, and data administration (March eta., 1992).



Information Resource Management Concept and Overview: Concepts

- IRM enables Enterprises to effectively streamline **processes**, **improve decision-making**, **enhance communication**, **maintain regulatory compliance**, and **protect sensitive information**.
- It enables organizations to leverage their information resources effectively and efficiently, ultimately driving better business results.

Information Resource Management Concept and Overview: Definitions../1

1. **Enterprise information management (EIM)** is an integrative discipline for structuring, describing and governing information assets across organizational and technological boundaries to improve efficiency, promote transparency and enable business insight (Gartner)
2. **Enterprise information management (EIM)** refers to the optimization, storage, and processing of data created and used by an enterprise.
3. **Information Resource Management (IRM**) refers to the strategic planning, organization, analysis, and use of an organization's information resources, including data, technology, and personnel.
4. **Information Resource Management (IRM)** refers to information resources, including information, information technology, information systems and information management personnel and others (Zhang, 2015).

Information Resource Management Concept and Overview: Definitions../2

5. **Information Resources Management (IRM)** is the process of managing information resources to accomplish agency missions and improve agency performance, including reducing information collection burdens on the public. When standardized and controlled, these resources can be shared and reused throughout an agency, not just by a single user or application (Legal Information Institute). Information Resource Management (IRM) is a program of activities directed at making effective use of information technology within an organization
6. **Information Resources Management (IRM)** involves the efficient and effective management of data, technology, and personnel information resources to support the organization's goals and needs. IRM ensures that information is easily accessible, secure, and useful, contributing to better decision-making and increased productivity.
7. Enterprise information management (EIM) refers to the optimization, storage, and processing of data created and used by an enterprise.

Information Resource Management Concept and Overview: History../1

- The term information resource management (IRM) has had a wide range of meanings. It has been defined in three (3) perspectives;
  1. database management,
  2. records management
  3. and data processing management
- The Term Information Resources Management was first coined in 1970's in the United states of America (Zhang, 2015).
- The three sectors which could be regarded as the roots of IRM are **governmen**t, military, and **private business.**

Information Resource Management Concept and Overview: History../2

- The Term Information Resources Management was first coined in 1970's in the United states of America (Zhang, 2015).
- It has emerged as a multidisciplinary concept that combines various concepts that preceded its emergence
- The three concepts include;
  1. Records management
  2. Data management
  3. Information management.

Information Resource Management Concept and Overview: History../3

- **The records management** approach to IRM has its origins in library science, records management, administrative management, and other disciplines concerned with the effective storage, retrieval, and utilization of documents in organizations.
- This was the first area to use the term IRM to describe a coherent and global approach to managing information. (Trauth, 1989)

Information Resource Management Concept and Overview: History../4

- It can be seen as an attempt to disassociate the **data administration's** role from the data processing image.
- IRM can be viewed in the context as the term for what data administration would like to be.
- It addresses questions such as:
  - What information is most crucial to the success of the company?
  - How can the quality, timeliness, reliability, consistency and accuracy of the information be improved? and
  - how can data redundancy be reduced?

Information Resource Management Concept and Overview: History../5

- The strategic objectives for the **information management** function have shifted away from an exclusive focus on physical control of paperwork, and the supporting electronic technologies, toward treating information itself as one of a firm's key assets which can be managed like other strategic assets such as personnel, materials or capital investments.
- This shift has implied applying resource management techniques to the information resources of the firm. (Marchand and Horton, 1986, p.122)

Information Resource Management Concept and Overview: History../6

- Enterprise Information Management | EIM by Hawksroost Consulting
- https://www.youtube.com/watch?v=hRMtvKdgWmE&t=149s

Components of IRM

The principal components of this information resource management are:

1. **Organizational processes** - Information Planning and data modeling
2. **Organizational functions** - data administration and database administration
3. **Enabling technologies** - DBMS and a Data Dictionary

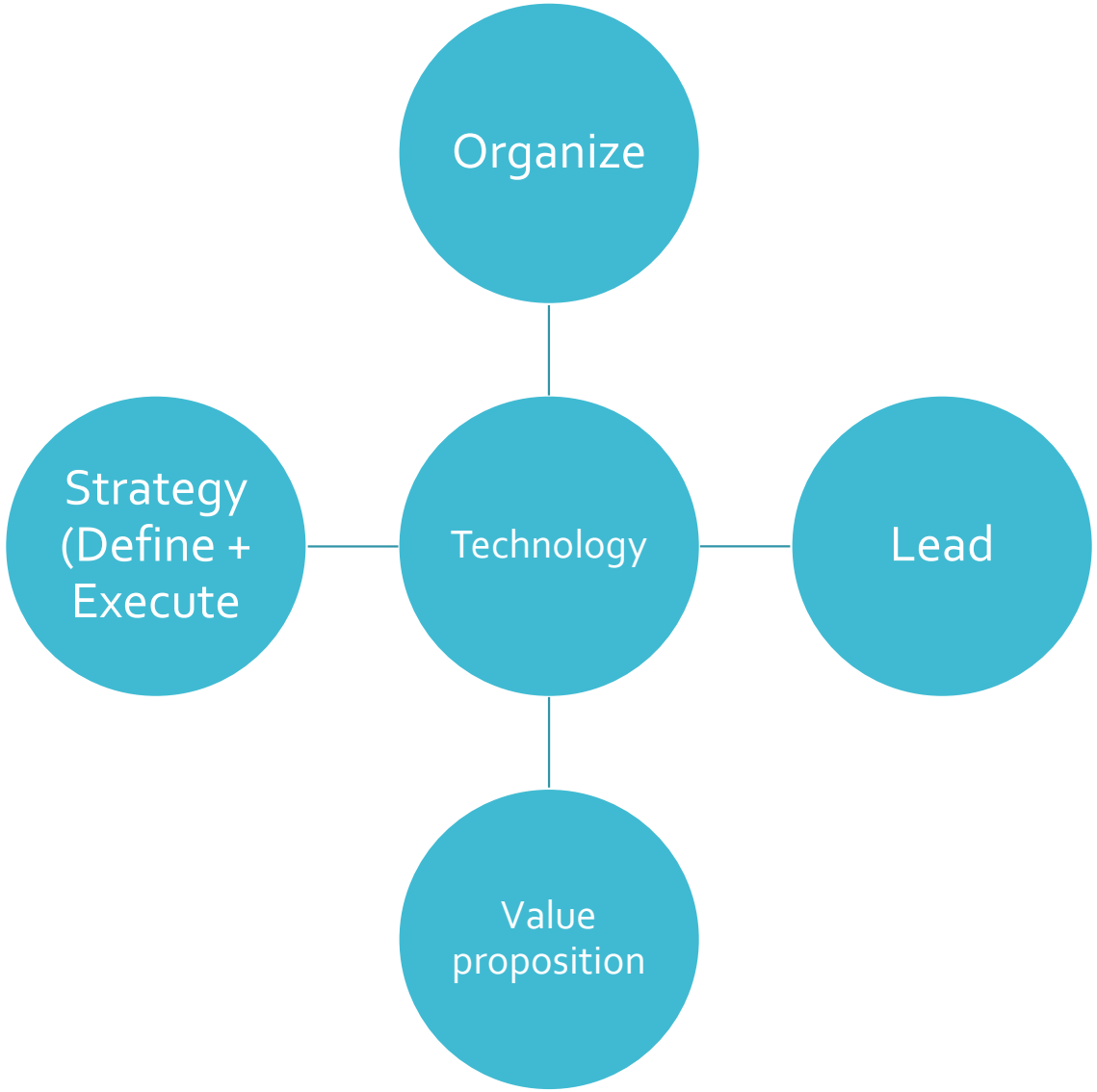
Enabling Technology

- Fourth Industrial Revolution (4IR) phenomenon ushered in many transformative technologies, which allow for the creation, generation, collection, analysis and dissemination of data and information to relevant stakeholders.
- These 4IR data and information enabling technologies include big data, analytics, cloud computing, 3D printing, drones, internet of things and others

Information Technology

Business executives vs Technology executives

Information Technology and Strategy



- Technology today has greater influence on the way organizations define and execute strategy, the way we organize and lead businesses, and the way we define a unique value proposition.

Information Technology and Strategy

- Information has become a major economic good together with any other tangible goods and services
- IT has become a strategic part of modern businesses,
- IT has redefined how organizations compete today
- IT has redefined the concept of organization, markets and Industry in which they compete.
- IT has accelerated the convergence of technology, work, and the workforce in the recent past;
- IT has promoted increased automation, digitization and remote working; Concept of virtual office/organizations
- IT is no longer a tool to support back office business transactions but rather a strategic business resource
- Technology has become a core enabler and, in some cases, the primary channel through which business is done

Market Structure and Industry Dynamics

Technologies are changing the way we work, play, interact, learn, and build businesses

Evolving business models

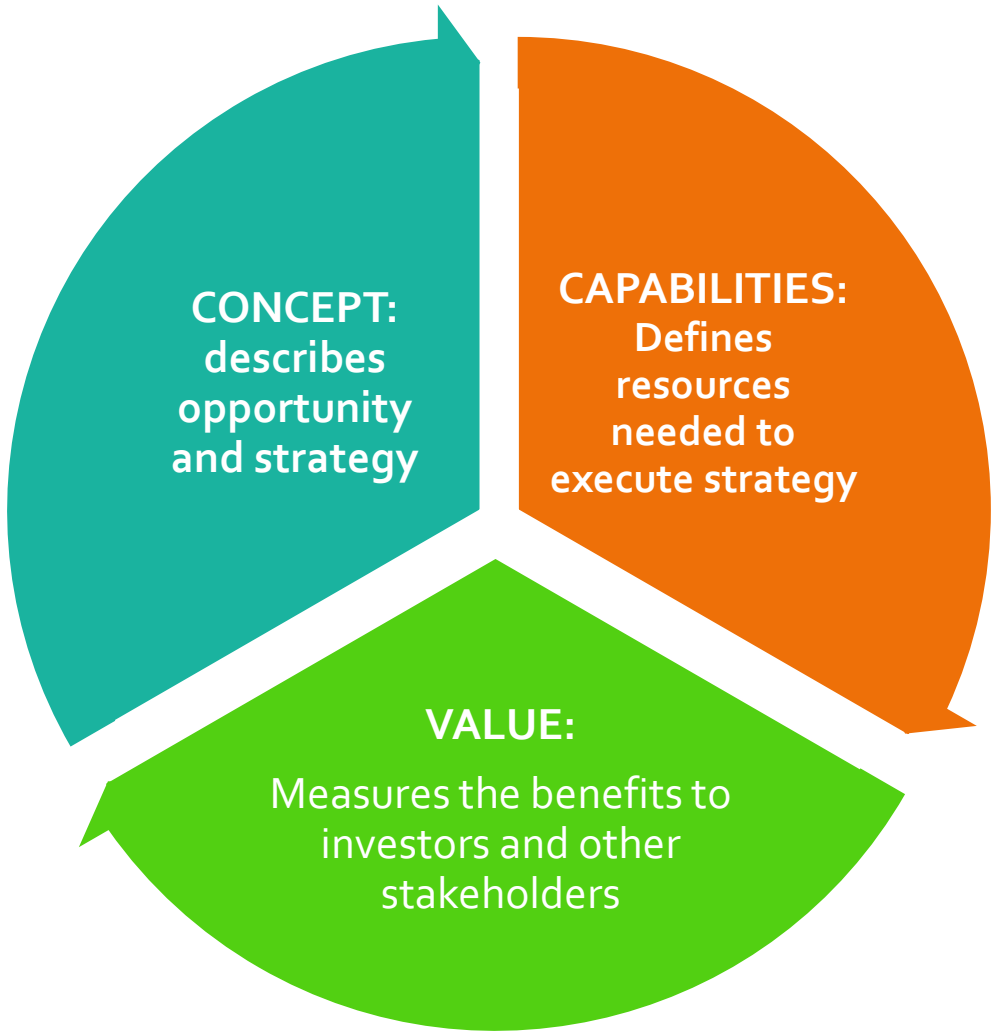
- As technology has redefined opportunities and the choices employees make to exploit those opportunities
- **What business are you in?**
  - We're a telecommunications service provider (UTL, MTN, Airtel…)
  - We're a consumer products manufacturer (Nice House of plastics, Mukwano…)
- **What business are these companies involved in?**
  - Google?
  - Jumia?
  - MTN, Airtel?
  - Facebook, WhatsApp,
  - ?????

Evolving Business Models

- **Why business models are important?**
- The Internet and the associated technologies of the network economy are enabling businesses to exploit **new opportunities** and build **new capabilities.**
- Traditional business models have evolved and, in some cases, **new business models** have emerged.
- Some of the current examples of new business models include portals or application service providers (ASPS).
- **What are some examples of ASPs businesses in Uganda?**
-

Evolving Business Models

Key components of a business model



Information Technology Impact

- The objective for technology use determines the approach to developing, operating, and managing technology. The key considerations for IT use include;
  1) Operational impact of IT
  2) Strategic impact of IT

Information Technology Impact

- The objective for technology acquisition and use determines the approach to developing, operating, and managing technology.
- The key considerations for IT acquisition and use include;
  1) Operational impact of IT
  2) Strategic impact of IT.

1. Operational Impact of IT

- This dimension assesses the impact of IT on core business operations
- Some businesses require zero-defect operation of IT.
- While the impact of failure-for even a few seconds of some businesses can course an enormous loss to a business,
- The impact of a day-long IT failure in other businesses like law firms would be much less immediate and less severe
- Businesses sign a service-level agreement (SLA) to highlight the importance of IT on core business operations. It is a critical component of any technology vendor contract
- SLA defines the level of service you expect from a vendor, laying out the metrics by which service is measured, as well as **remedies or penalties should agreed-on service levels not be achieved.**

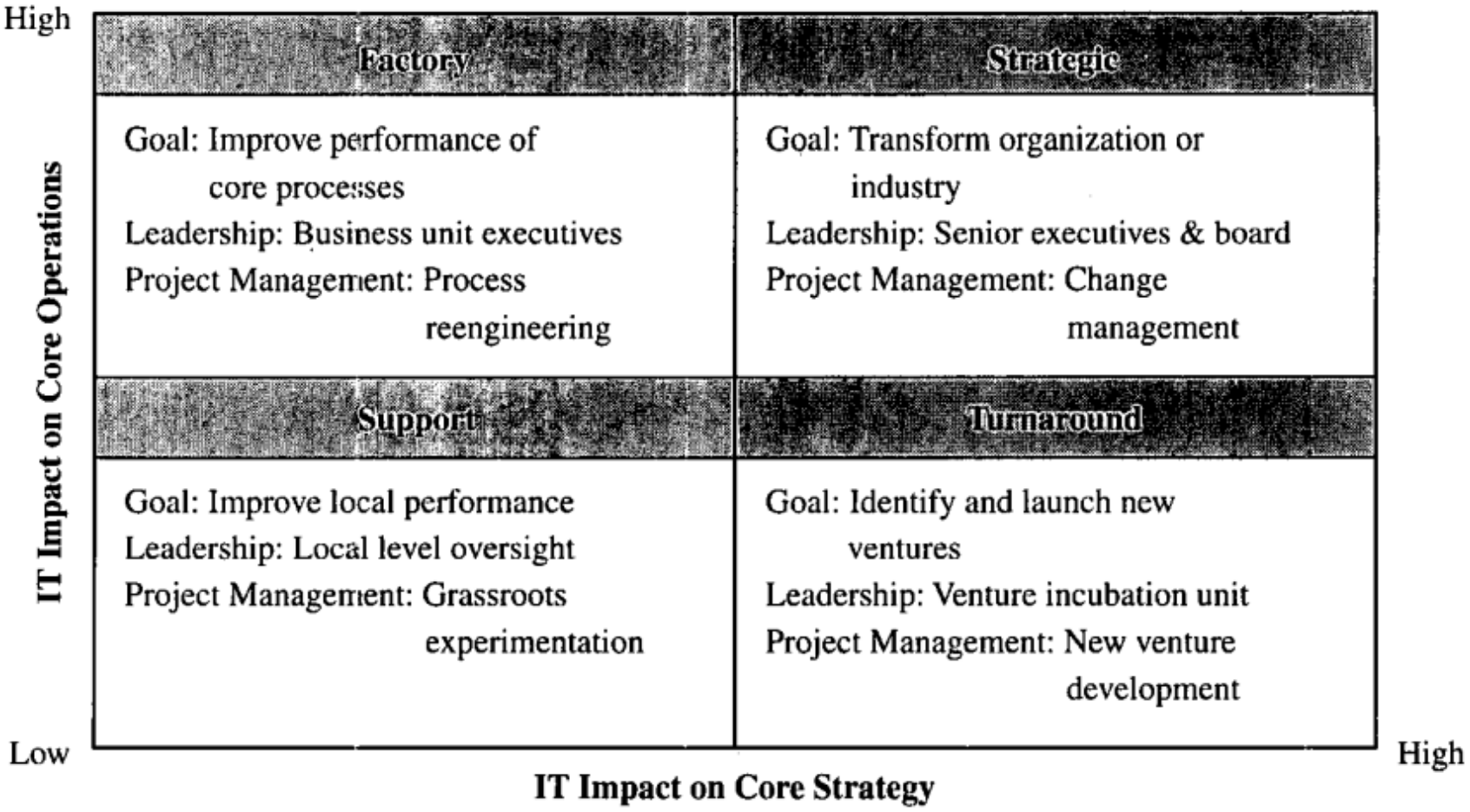
https://www.cio.com/article/274740/outsourcing-sla-definitions-and-solutions.html

2. Strategic impact of IT

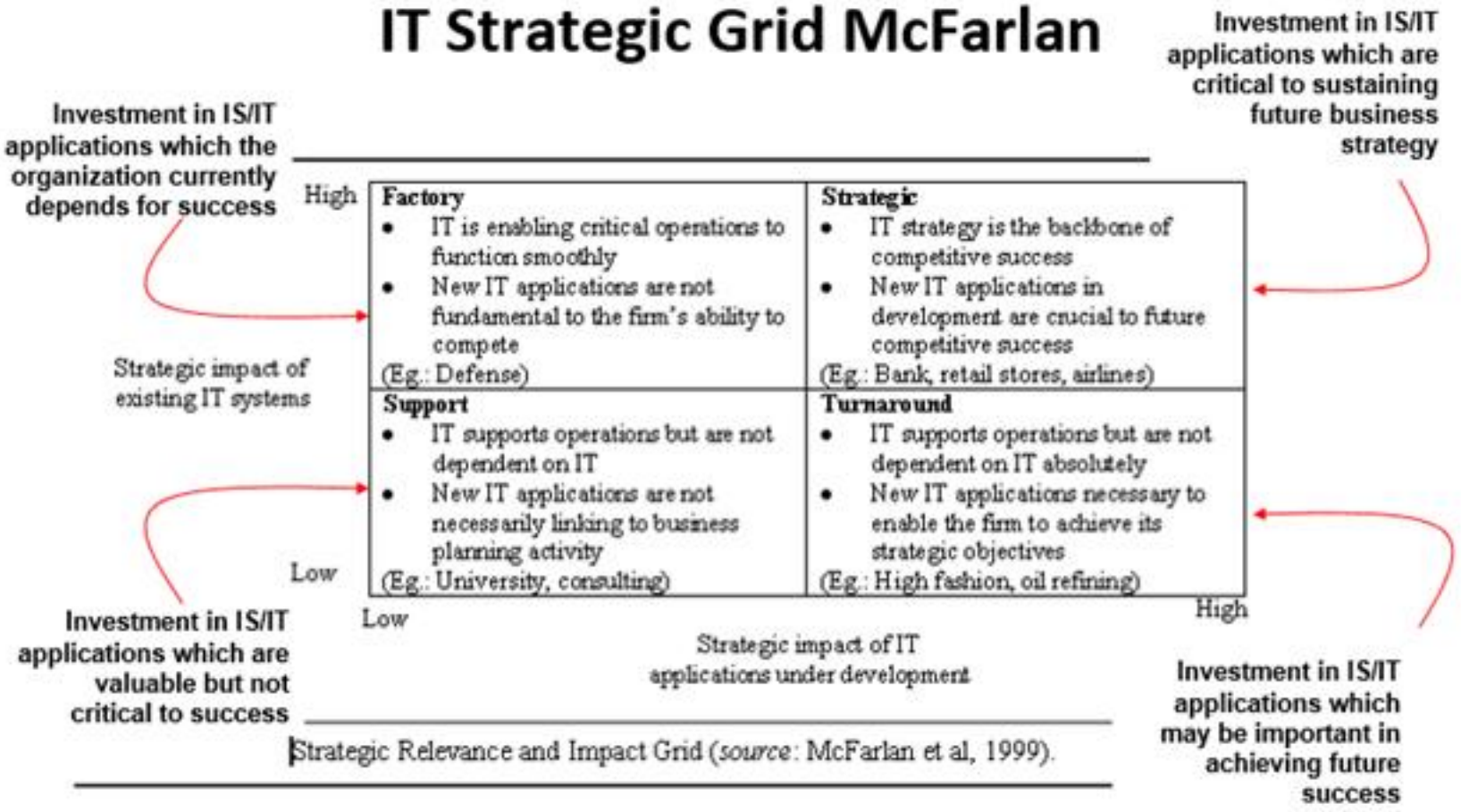
- This dimension assesses the strategic impact of IT on the core strategy of a business
- For some businesses, a steady stream of technological innovations drives strategy evolution. In other words, IT development activities are inextricably linked to the strategy of the these businesses and IT investment decisions are made in the boardroom by organizations management
- ***For other businesses, IT development priorities are targeted toward incremental, operational improvements that may improve a firm's cost profile but do little to change its position or power in the industry.***

The strategic grid

The strategic grid defines four categories of IT impact that help determine the approach used to identify opportunities, define and implement IT-enabled business initiatives, and organize and manage IT assets and professionals.

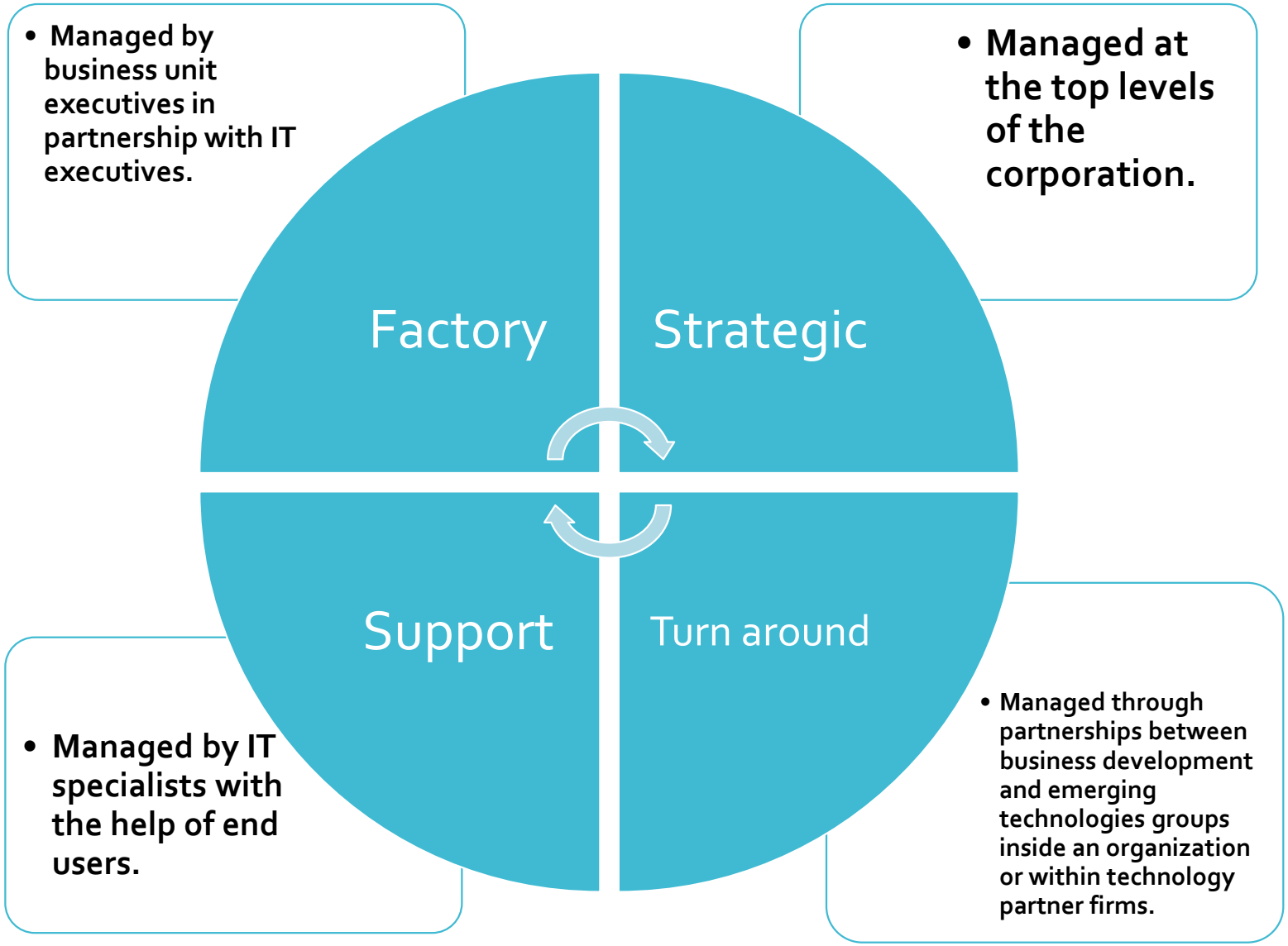


The strategic grid



Strategic Relevance and Impact Grid (*source*: McFarlan et al, 1999).

Factors related to strategic impact



Factors related to strategic Impact

- **Analyzing the Impact of IT on Strategic Decision Making**
- Evaluating the IT applications and their impact within the strategic grid enables organizations to choose the appropriate approach to organizing and managing IT-enabled business activities.
- Five key questions can be used to guide strategic decision making when one is evaluating the impact of networked IT on core operations and core strategy.

1. Can IT be used to reengineer core value activities and change the basis of competition?
2. Can IT change the nature of relationships and the balance of power and buyers and suppliers?
3. Can IT build or reduce barriers to entry?
4. Can IT increase or decrease switching costs?
5. Can IT add value to existing products and services or create new ones'?

For detained discussion refer to page 32 of the reference guide: Corporate information strategy and management

Information Architecture

Definition of Information Architecture (IA)

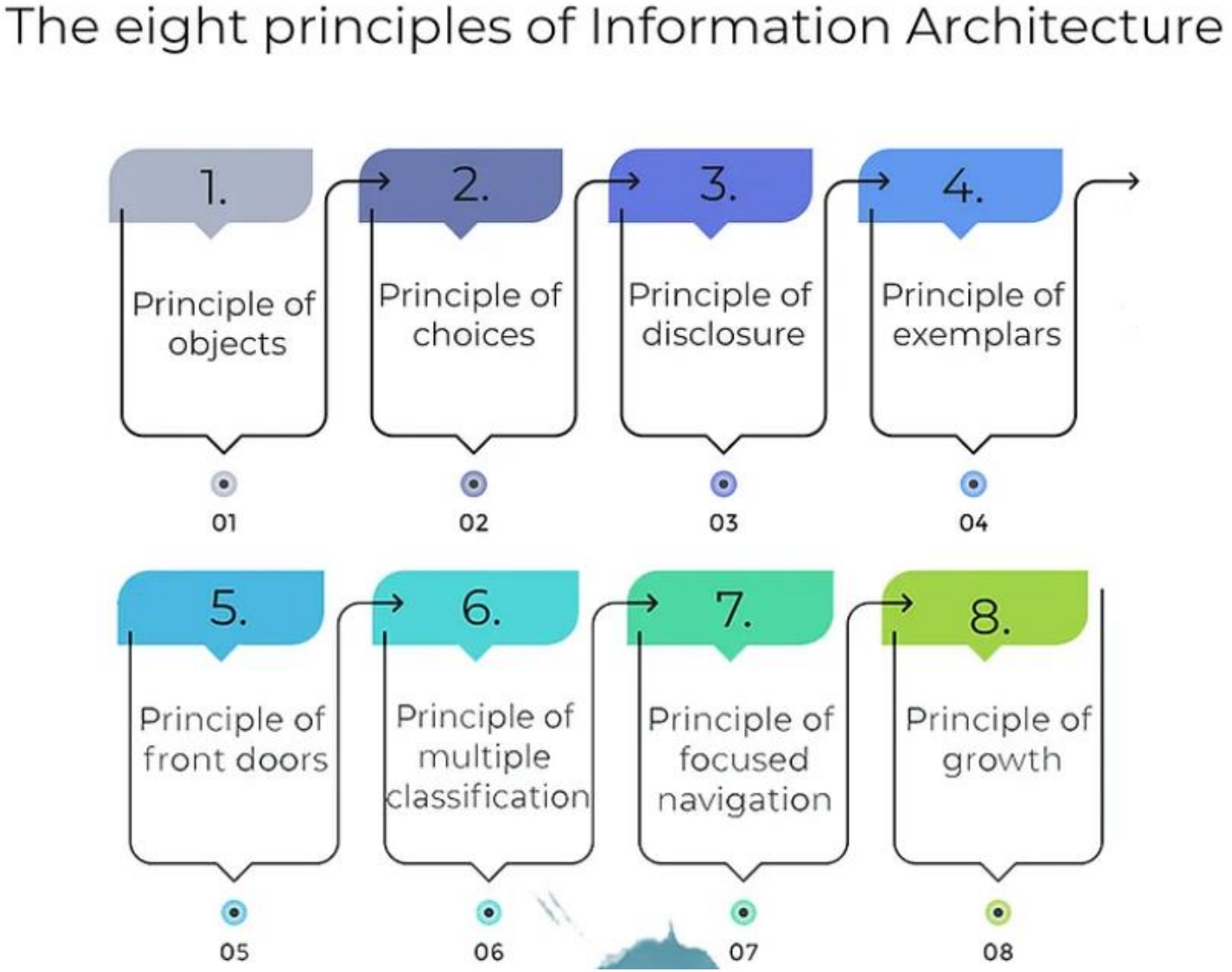
1. IA is an emerging community of practice that is focused on bringing principles of design, architecture & information science to the digital landscape (wikipedia.org);
2. Information Architecture (IA) is the practice of designing structures.
3. Information Architecture IA is the structural design of shared information environments;
4. It refers to the art and science of organizing and labelling websites, intranets, online communities and software to support usability and findability;
5. Information architecture refers to process of;
    a. Organizing content or objects
    b. Describing them clearly
    c. Providing ways for people to get to them.

Information Architecture

Why good Information Architecture is important for an organization or business

1. Information architecture helps organizations to organize content or things, describing them clearly and providing ways for people to get to them.
2. A lot of information architecture work relates to What you need to create a good information architecture, websites and intranets, but is just as relevant for music and movies, a computer file system, your paper files at home or even groceries on supermarket shelves.
3. Good information architecture helps people to find information they need.
4. It can also help them learn and make better decisions. You need to understand three things to create a good information architecture: People, content and context.

Information Architecture



Source: https://uxplanet.org/the-eight-principles-of-information-architecture-eed4doc4a5f2

Information Architecture

Principles of Information Architecture

The following principles help guide the design of Information structure

1. **The principle of objects** — Treat content as a living, breathing thing, with a lifecycle, behaviors and attributes.
2. **The principle of choices** — Create pages that offer meaningful choices to users, keeping the range of choices available focused on a particular task.
3. **The principle of disclosure** — Show only enough information to help people understand what kinds of information they'll find as they dig deeper.
4. **The principle of exemplars** — Describe the contents of categories by showing examples of the contents.
5. **The principle of front doors** — Assume at least half of the website's visitors will come through some page other than the home page.
6. **The principle of multiple classification** — Offer users several different classification schemes to browse the site's content.
7. **The principle of focused navigation** — Don't mix apples and oranges in your navigation scheme.
8. **The principle of growth** — Assume the content you have today is a small fraction of the content you will have tomorrow.

Source: https://asistdl.onlinelibrary.wiley.com/doi/full/10.1002/bult.2010.1720360609

Information Architecture

The main components of IA

Information architecture (IA) focuses on organizing, structuring, and labeling content in an effective and sustainable way. The goal is to help users find information and complete tasks. Users need a diverse understanding of industry standards for creating, storing, accessing and presenting information.

1. **Organization Schemes and Structures**: How you categorize and structure information
2. **Labeling Systems**: How you represent information
3. **Navigation Systems**: How users browse or move through information
4. **Search Systems**: How users look for information

Source: Lou Rosenfeld and Peter Morville; Information Architecture for the World Wide Web

https://www.usability.gov/what-and-why/information-architecture.html

Information Architecture

- **The purpose of Information Architecture**
- The purpose of IA is to help users understand where they are, what they've found, what's around, and what to expect. In other wards, IA informs the content strategy through identifying word choice as well as informing user interface design and interaction design through playing a role in the wireframing and prototyping processes.

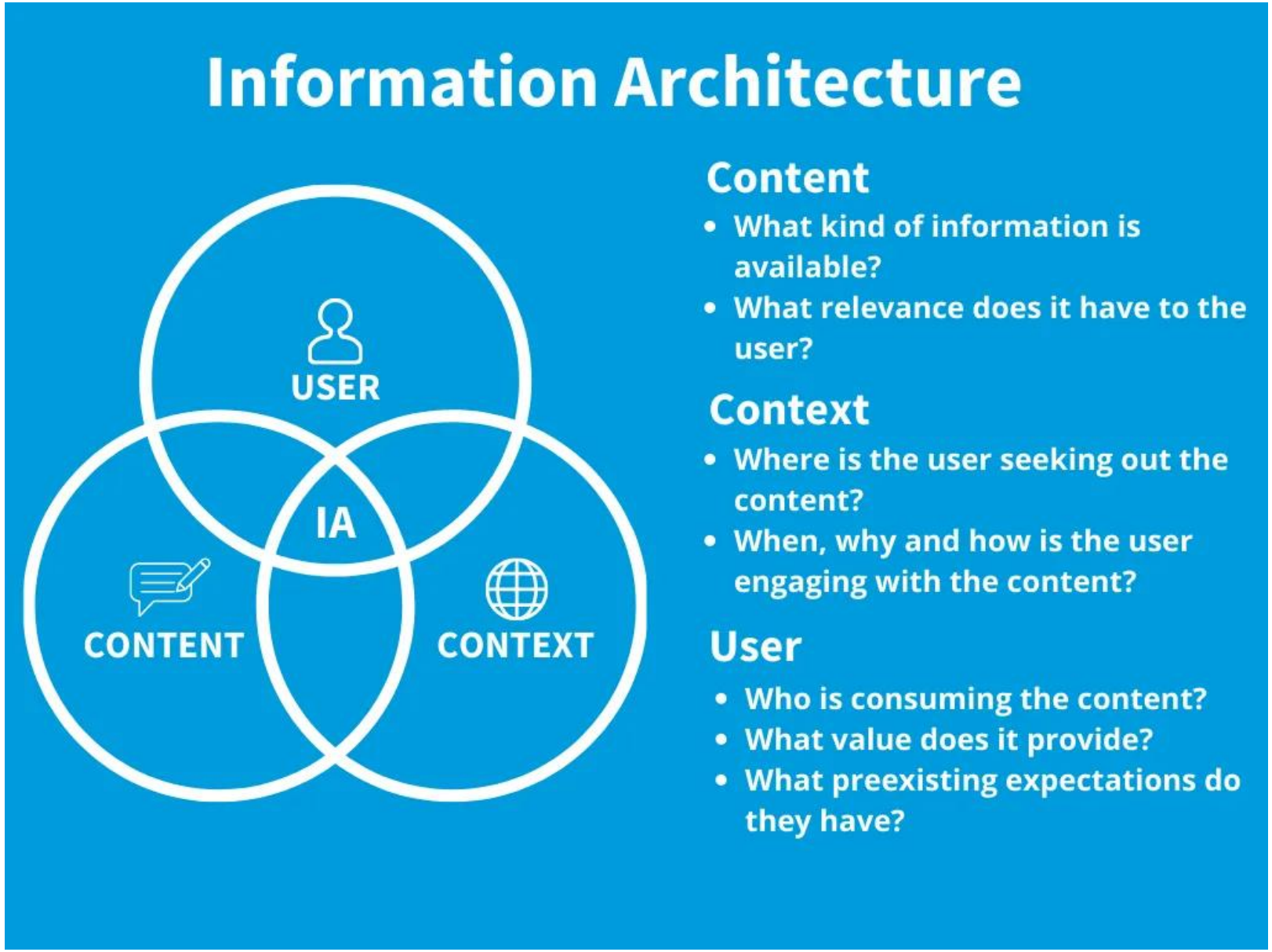
Information Architecture

Information ecology

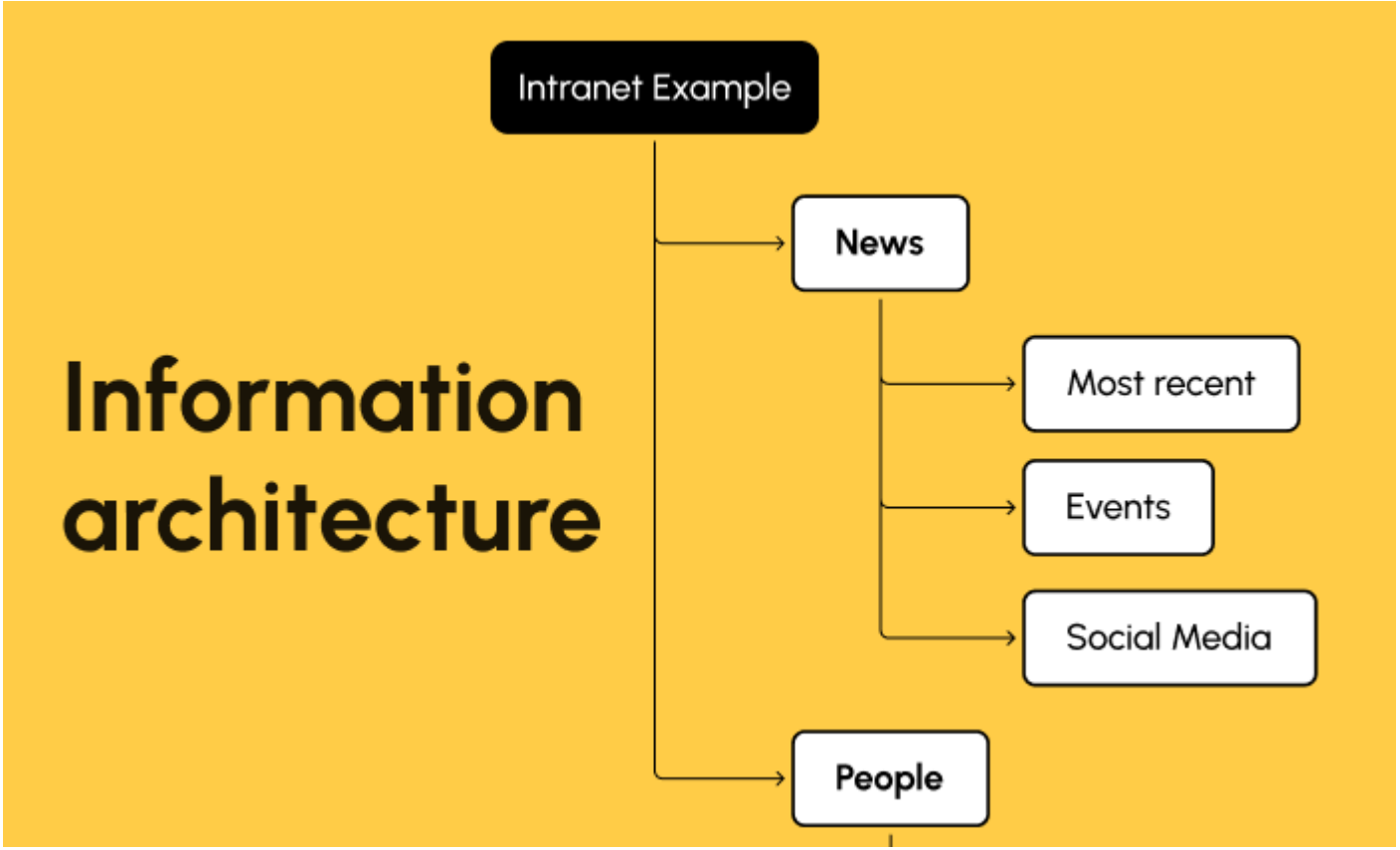
In order to create these systems of information, there is need for proper understanding of the interdependent nature of users, content, and context also known as "information ecology". It consists of context, Content and Users;

1. **Context**: business goals, funding, politics, culture, technology, resources, constraints
2. **Content**: content objectives, document and data types, volume, existing structure, governance and ownership
3. **Users**: audience, tasks, needs, information-seeking behavior, experience

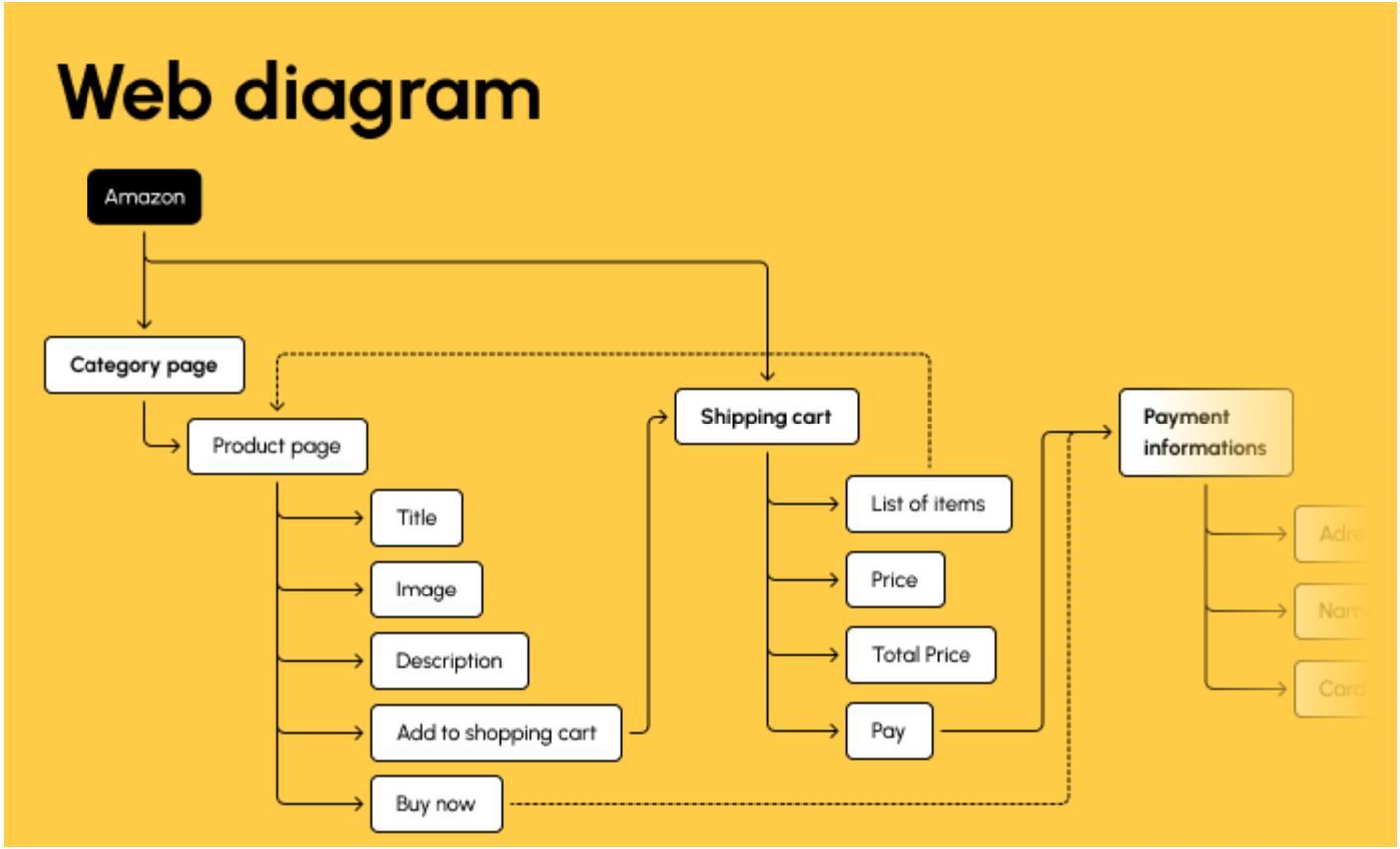
Information Architecture



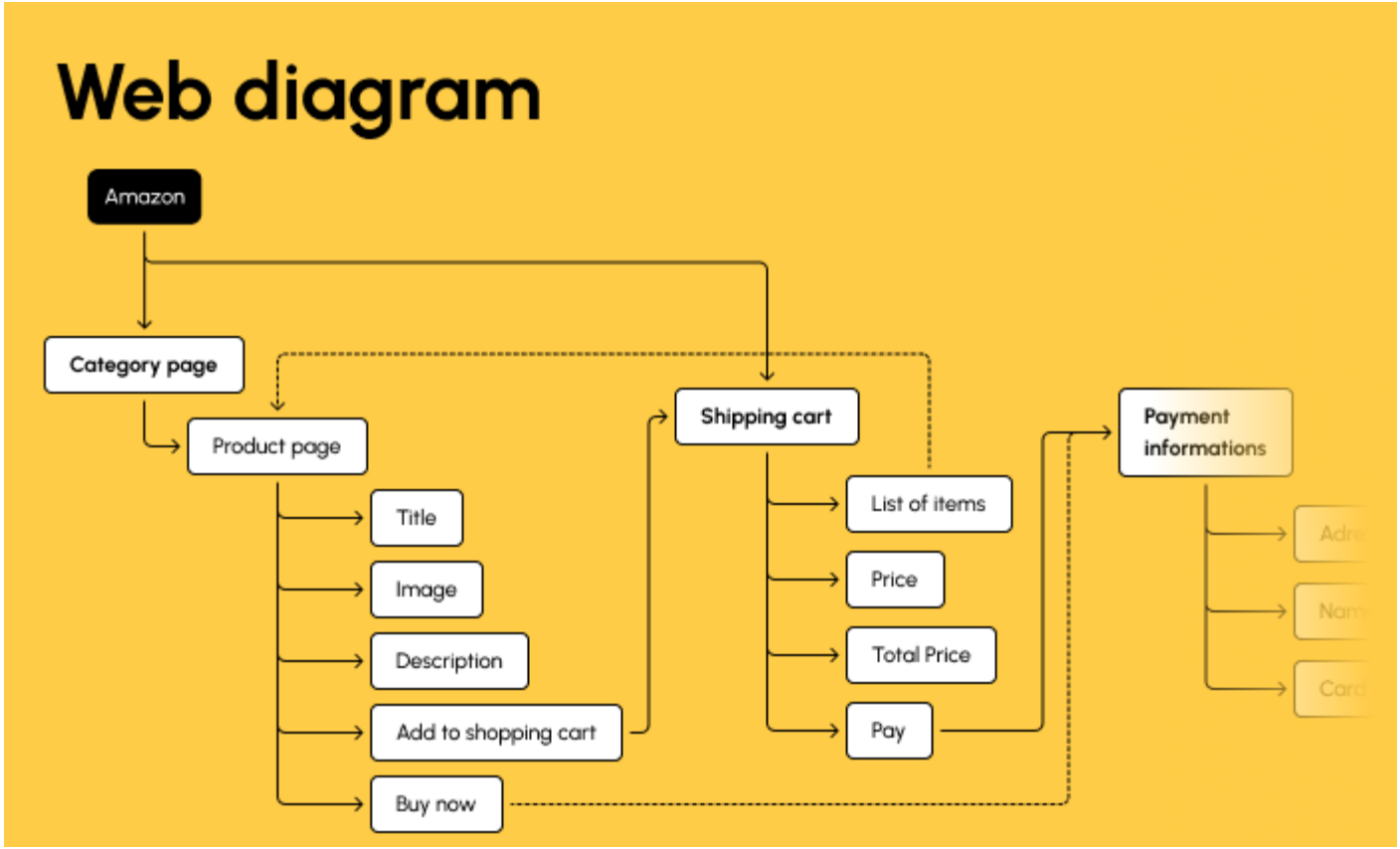
Information Architecture



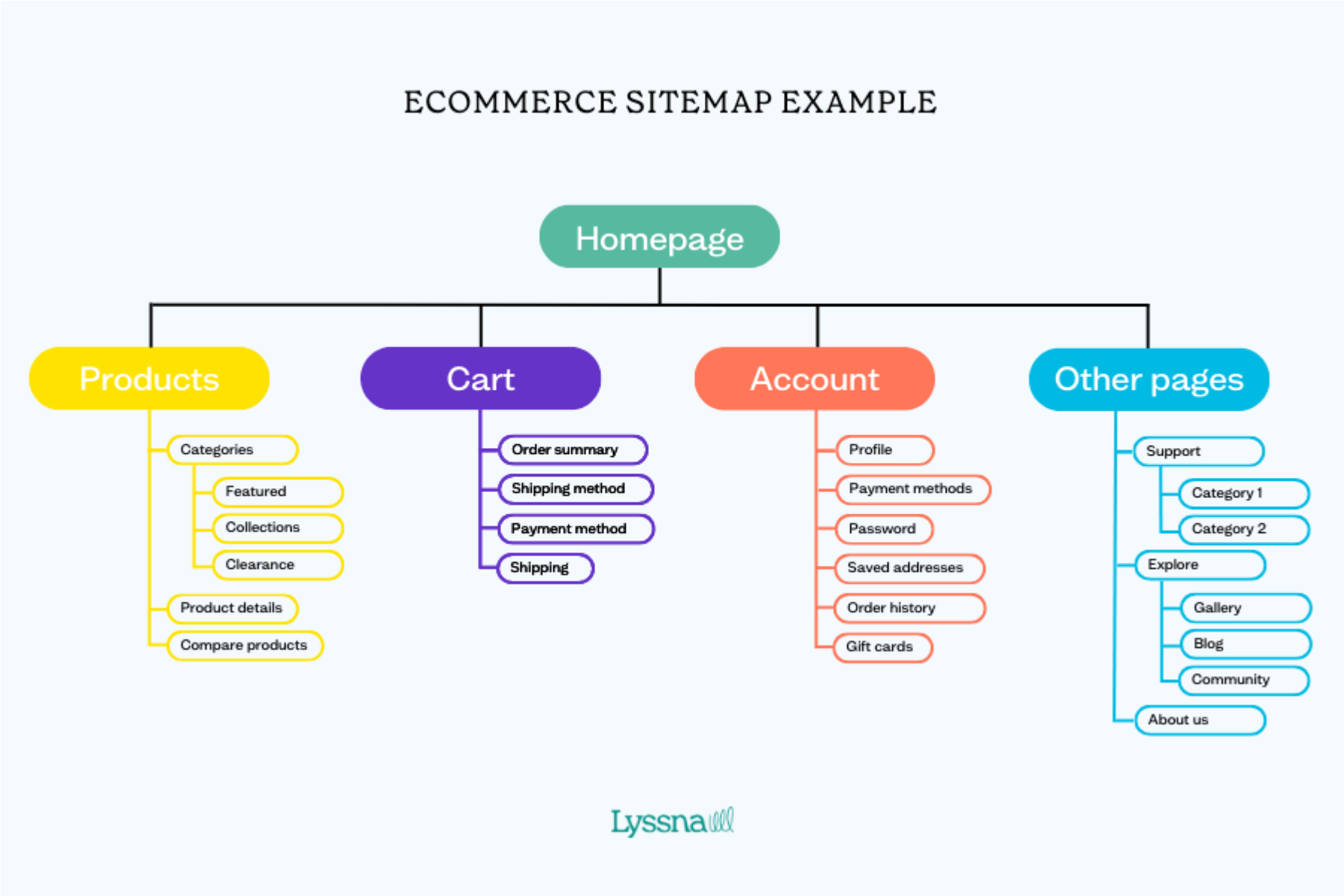
Information Architecture



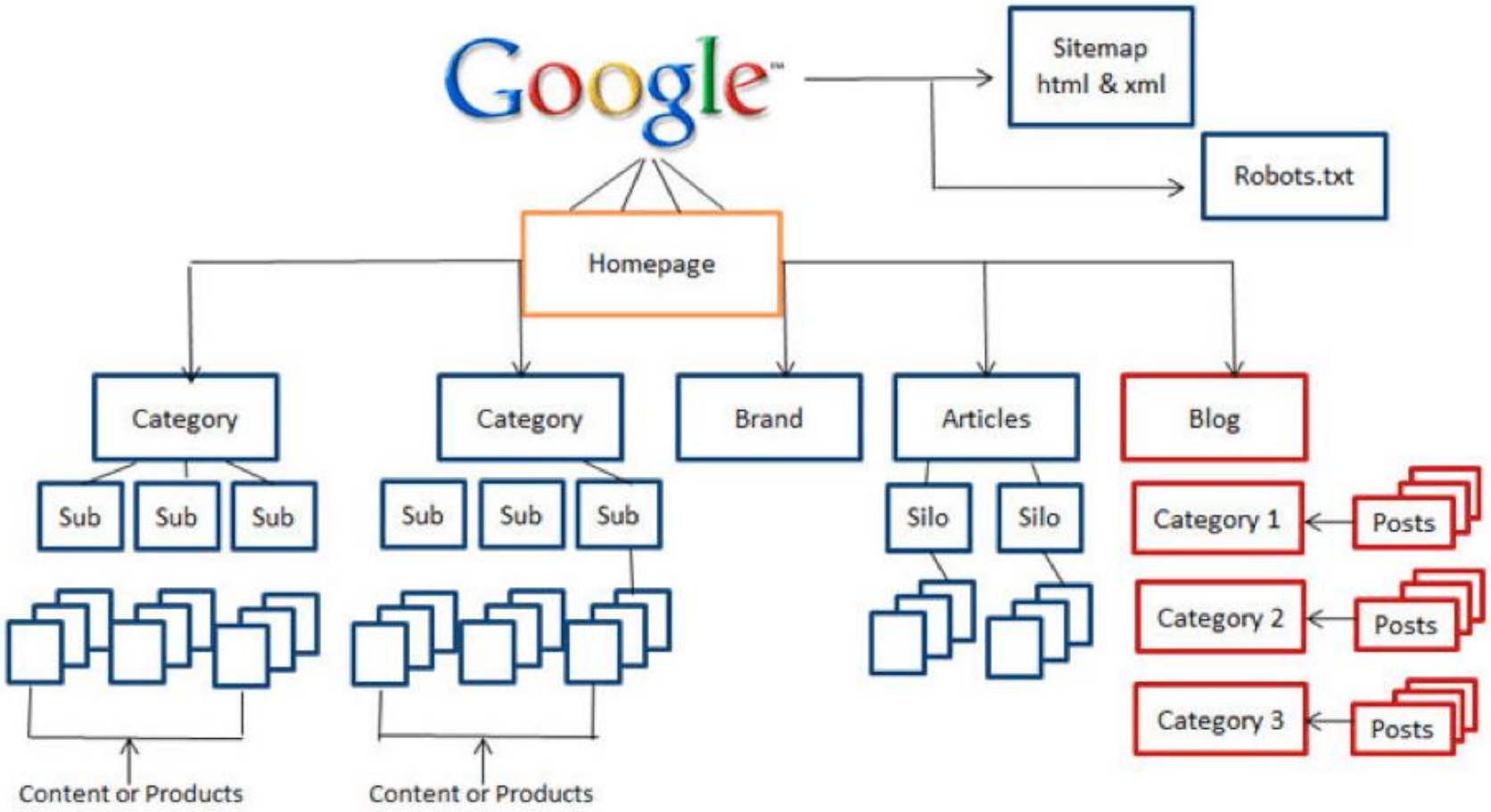
Information Architecture



Information Architecture



Information Architecture



Information System/IT environment

- **What is a commodity**
- A commodity is a substance or product that can be traded, bought, or sold (https://dictionary.cambridge.org)
- It is an article of trade or commerce, especially a product as distinguished from a service. something of use, advantage, or value (www.dictionary.com)
- According to Carr (2003) information technology is a commodity like water or electricity

- **Is Information Technology a commodity?**
- Some studies argue that IT is more than a commodity because organizations can use it to build competitive advantage which is not the case with other commodities where organizations cannot build a competitive advantage based on ownership of such commodities.
- Some organizations strategically use IT to build competitive advantage from their IT investments while others do not.

Information System/IT environment

- **What Is the Commoditization of Technology?**
- Commoditization occurs when the latest innovations lose their luster and become a part of expected daily life.
- The result of this process is dropping prices and a rise in competition among those who provide the service or goods.
- Since the dawn of the digital age, technology has continued to move forward, but older innovations, such as laptops, and services, such as coding, are now cheaper and more readily available because they have turned into a commodity.
- When technology becomes commoditized, using it no longer gives manufacturers an edge but brings them on par with the base level of expected operations.
- Understanding this idea will allow your business to seek out which technologies it cannot pass up to meet expectations and what it must do to set itself apart as an innovator in the field.

Source: https://gesrepair.com/commoditization-of-technology/

Information System/IT environment

- **Examples of Commoditized IT Products**
- When goods and services only differ in their prices from various providers, they have become commoditized.
- Some of the examples include;
- **Laptops**
- **Internet**
- **Etc..**

Source: https://gesrepair.com/commoditization-of-technology/

Information System/IT environment

- **Organizations' competitiveness transformation**
- All firms strive to gain an edge over their competitors.
- A strategic information system is an information system that enhances a company's competitive advantage.
- The information revolution cuts across all sectors of the economy.
- Strategic information systems has transformed company operations and processes.
- Organizations use strategic information systems to change operational objectives, service products and clients, and enhance environmental relationships to gain a competitive advantage.
- A company has a competitive advantage when it can successfully earn more profits by attracting more customers.

Source: https://gesrepair.com/commoditization-of-technology/

Information System/IT environment

- **Organizations' competitiveness transformation**
- All firms strive to gain an edge over their competitors.
- A company has a competitive advantage when it can successfully earn more profits by attracting more customers.
- A competitive advantage enables a company to offer its shareholders more value compared to rival firms.
- **A strategic information system is** specifically designed to align with and implement a company's competitive strategy.
- A competitive advantage is achieved by **adding value** to products and services or **reducing costs more effectively than industry** rivals.
- It changes the structure of an industry and gives business managers the ability to control, monitor, and adjust all business operations to gain a competitive edge.
- Examples of competitive advantage include proprietary technology or **access to raw materials not available to competitors**.

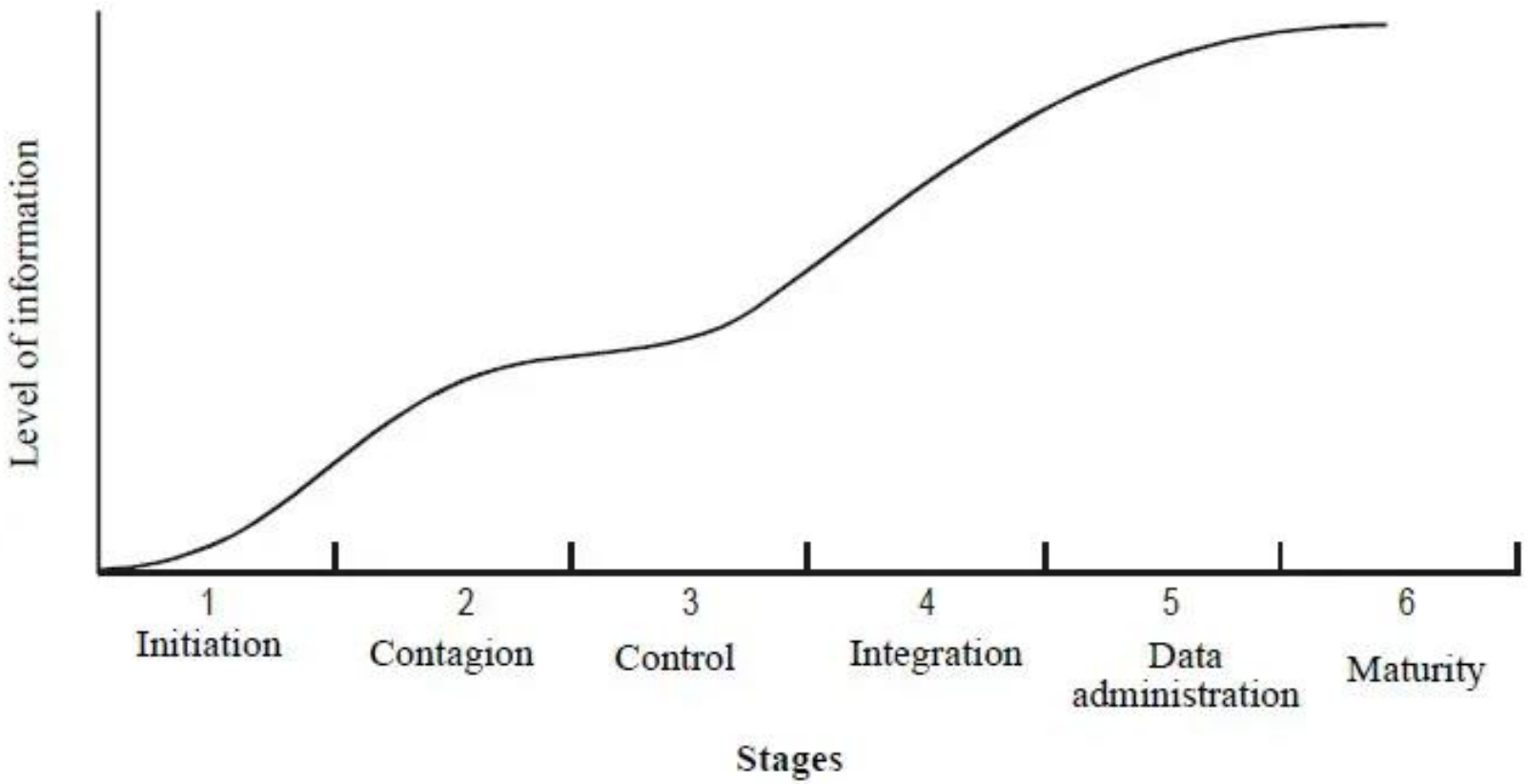
Source: https://gesrepair.com/commoditization-of-technology/

IT planning

- Information system planning is focused on determining the information needs and also ensuring that information system planning aligns with the overall business planning.
- Several models have been developed to guide IT and IS planning. One of the widely used model over the years is Nolan stage model advanced by R.Nolan.
- The Nolan model basically describes in which stage organization's information system exists. This will provide a base for planning to proceed to next stage of the growth.
- The Nolan stage model explains the evolution of information systems within an organization by considering the various stages of growth.
- The Model assumes that expenditure on information technology increases as the information system passes through various stages.
- The Six stages of Nolan's stage model include; **Stage 1:** Initiation, **Stage 2:** Contagion, **Stage 3:** Control, **Stage 4:** Integration, **Sage 5:** Data Administration, and **Stage 6:** Maturity

Source: https://www.geektonight.com/nolan-stage-model/

IT planning



Nolan Stage Model

IT planning

- **Stage 1 Initiation**
- This stage depicts that computer system is used for transaction-processing which is basically the bottom line of the organization hierarchy.
- At transaction processing level typically, a high volume of data processing is done in terms of accounting the business transactions, billing and payroll, etc.
- Very little planning of information system is required.
- The users are mostly unaware of the technology.
- New applications are development with the help of traditional languages like Cobol, Fortran, etc. System analysis and design has very few methodologies.

IT planning

- **Stage 2 Contagion**
- This stage of Nolan's growth model is also **known as expansion stage.**
- It is relates to unplanned and uncontrolled IT growth.
- Users have developed their interest to know the possibilities of Information Technology but still, they do not know much about its advantages and disadvantages
- The growth of large number of IT applications with a minimum check on whether they are required or not, are the key features of this stage.
- Technical problems with the development of programs appears.
- There is very little control of the development of information system as well as expenditure associated with IT.

IT planning

- **Stage 3 Control**
- This stage of Nolan's stage model is focused on the need to **manage the information system and to reorganize the data processing department**. This is a result of the unplanned growth, of a large number of IT applications as well as projects in stage 2.
- The data processing manager becomes more accountable or responsible to justify the expenditure on information system development.
- The growth of projects is controlled by imposing changes on user department for information system development project and the use of computer services.
- Users are witnesses of progress in the development of information systems. Unmet demands and frustration are a common occurrences in user departments.
- Organizations are unable to apply cost-effectiveness criteria.

IT planning

- **Stage 4 Integration**
- At this stage data processing has a new direction. Information systems are more information-oriented, i.e., they lay importance on information product.
- Because of this concept and to facilitate it, **there is an introduction of interactive terminals in the user department, the development of database and the introduction of data communication technology has taken place.**
- The controlled user departments are now in a position to satisfy the unmet demand for information support.
- There is a tremendous growing demand for IT applications.
- As a consequence of this, there is a hike in expenditure also.
- A new problem has emerged, i.e., redundancy of data.

IT planning

- **Sage 5 Data Administration**
- This stage overcomes and also to controls the problem of data redundancy.
- At this moment it is realized that data is an important resource of the organization that should be duly planned and managed.
- This stage is characterized by the development of an integrated database serving the whole organization's information need.
- It also develops an IT application to successfully access these databases.
- Users become more accountable for the integrity and appropriate use of the data and information resources.

IT planning

- **Stage 6 Maturity**
- This stage depicts a mature organization, which has taken information system as an integral part of the organization functioning.
- It shows that the application portfolio is complete and representative of an organization's activity. It shows that application portfolio matches with the overall objectives of the organization.
- It also shows that the planning of the information system was coordinated and comprehensive
- It shows that top management realized that information is an important resource.
- Manager of information system is on the same footing as other managers of the organization.
- Planning of the development of information system in the organization is built into the organization's overall development.

Business System Planning

- **Business systems planning** (**BSP**) is a method of analyzing, defining and designing the information architecture of organizations.
- The concept was first introduced by IBM for internal use only in 1981.