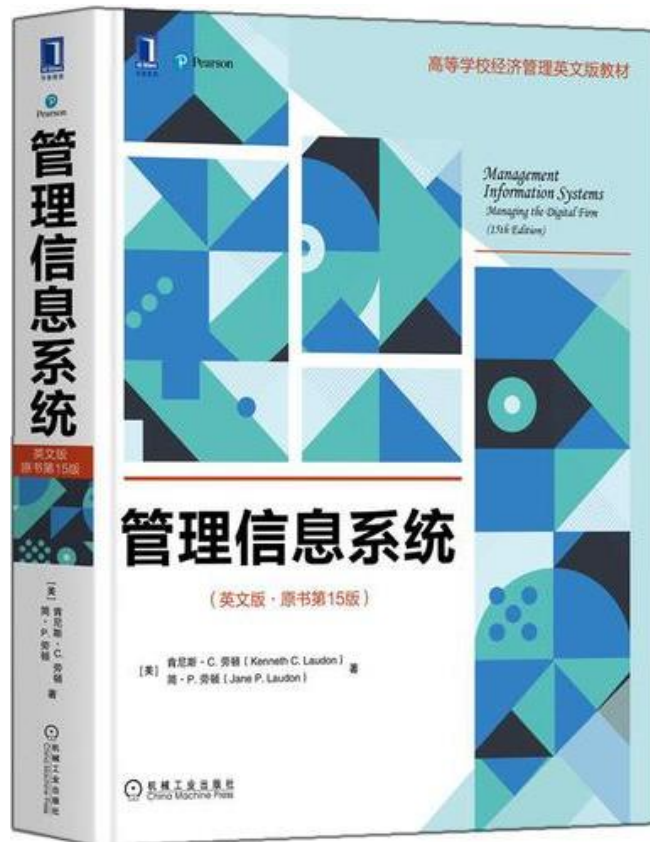


Management Information Systems: Managing the Digital Firm

Fifteenth edition



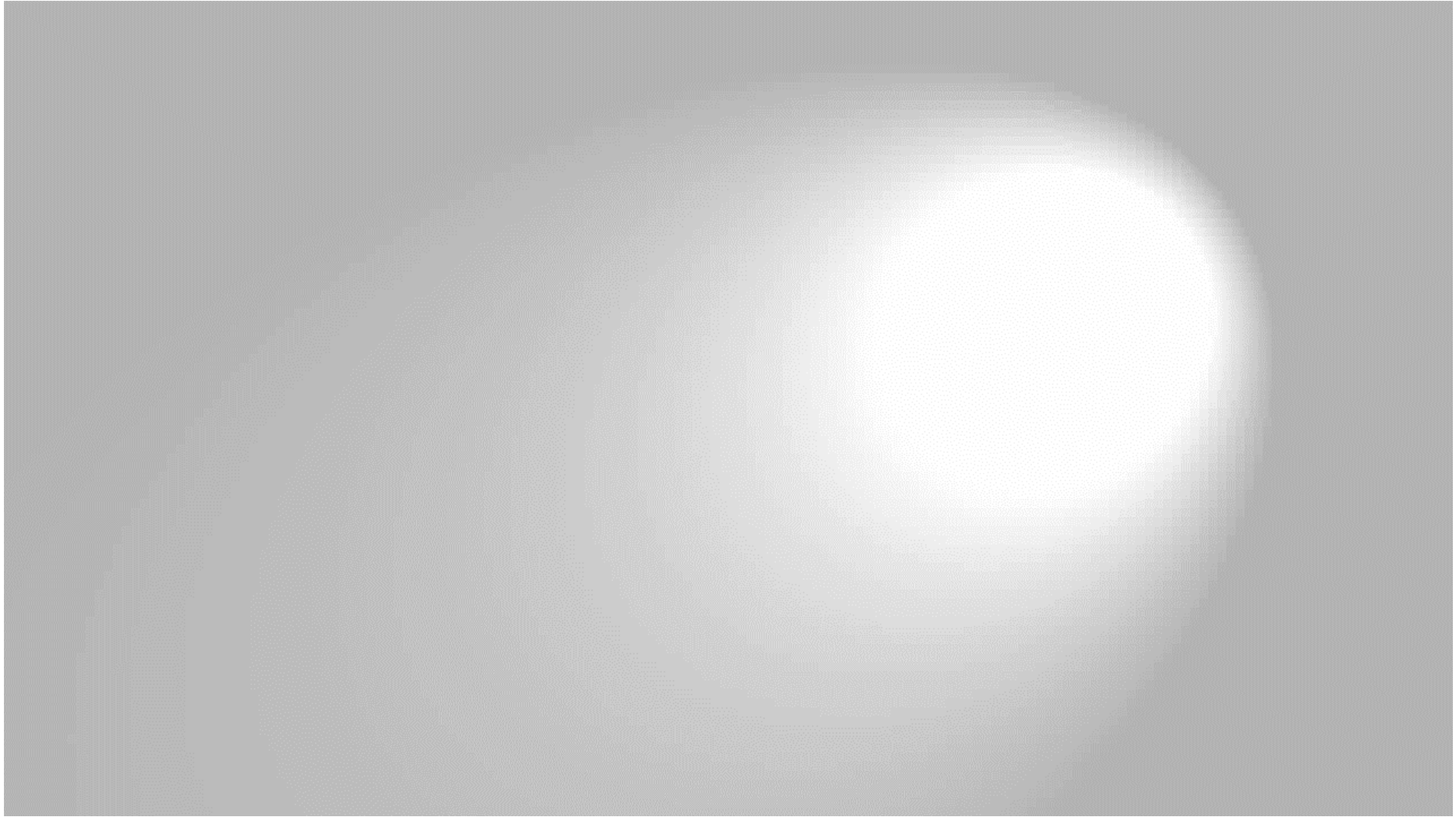
Class 1

THEME1

Information Systems in Business Today

Prof. Cui Lili 崔丽丽

TA: 龚源宏



Phenomenon or Trend? !

链圈

产业互联网

边缘计算 大众创业

饭圈

韩都衣舍

元宇宙

阿米巴模式

分布式账簿

互联网+

AYAYI

C2B

S2b2c

行为识别

灵犀

社交电商

C2M

盒马村

智能+

社区团购

互联网思维

共享经济

混合现实

大数据杀熟

数字孪生

5G

小米生态链

车厘子自由

直播经济

THEME1 : Information Systems in Business Today

C ontents



1 Background

2 DT and digitization

3 Enterprise IS

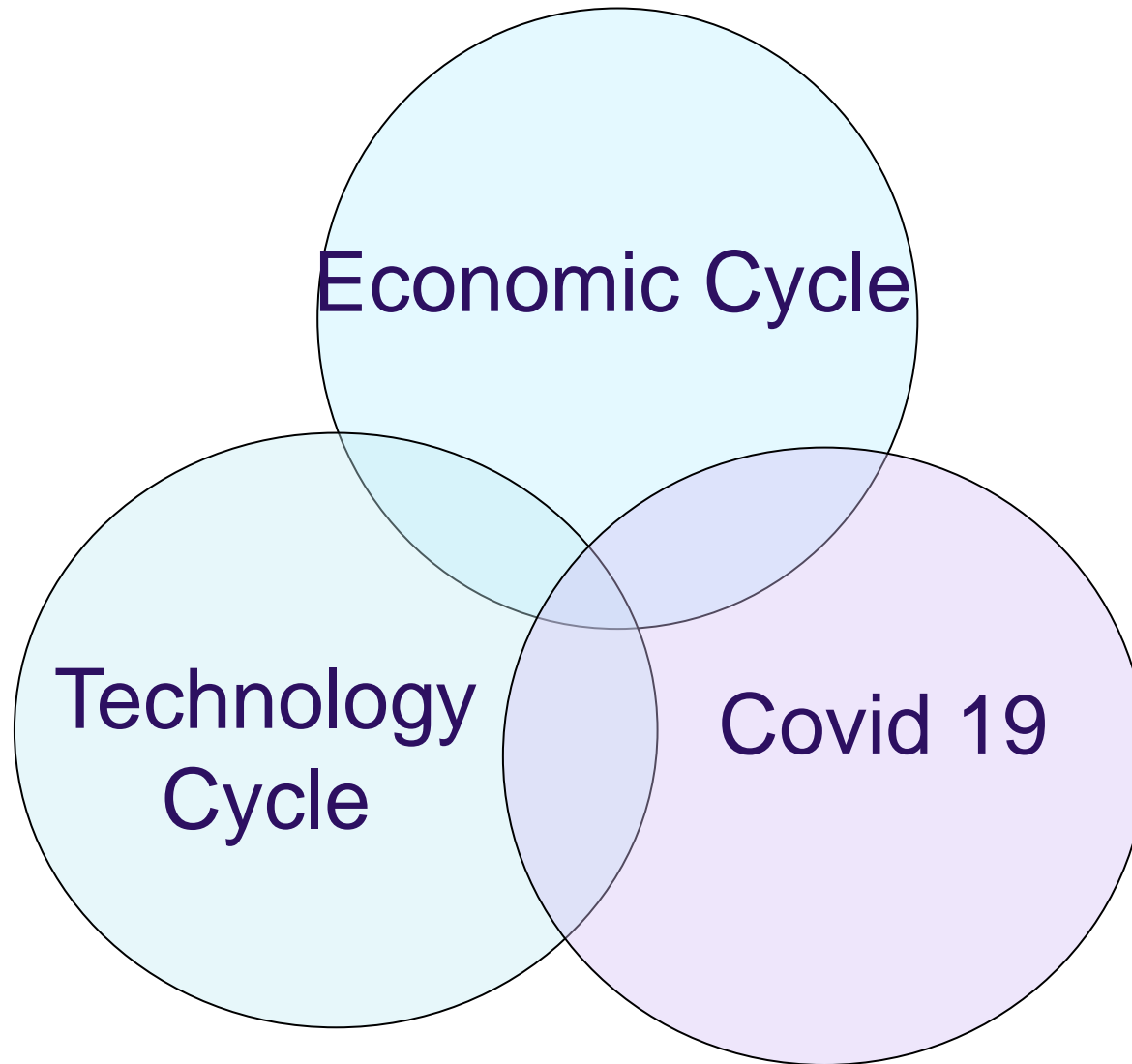
4 Digital Transformation

Today is the Digital Era



Enabling digital innovation is the core mission of enterprise information management

Anxious comes from...



Global cyclical industrial

Economic
Cycle

Tech
Cycle

Covid 19

- The decline of World Economic growth
 - New competition pattern
 - Sino US relations new normal
 - Psychological threat
- Epitaxial growth model overed
 - Familiar model is changing
- Internet business model meets bottle neck
 - Flow+ capital model is fading

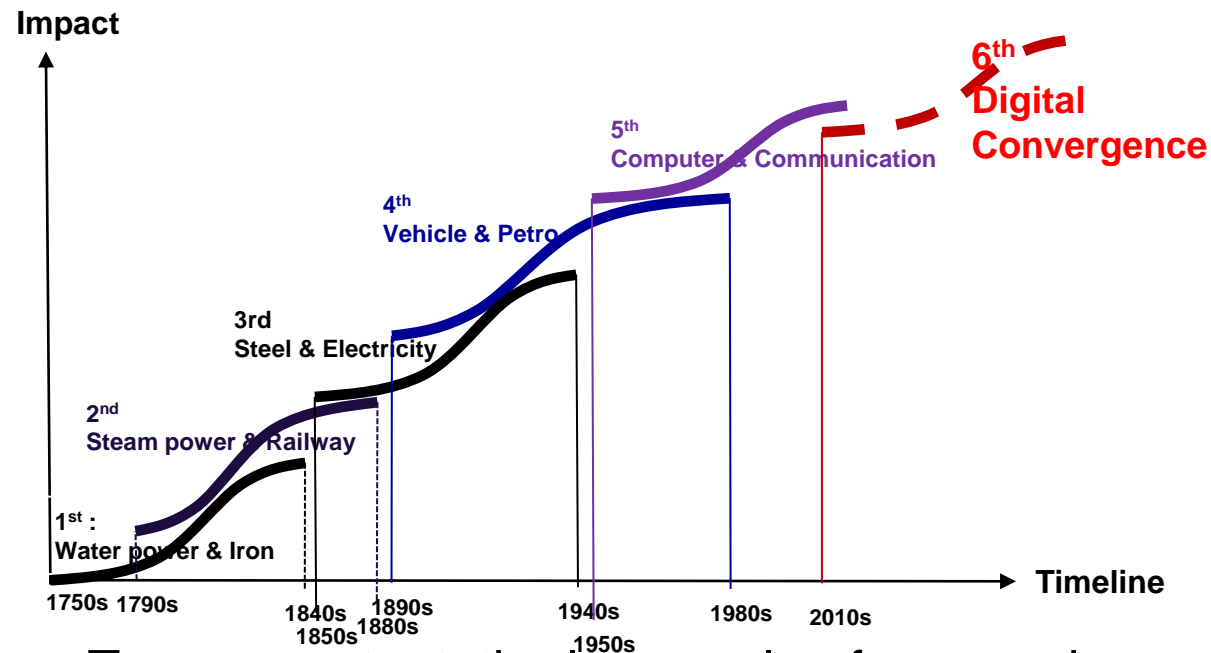
Global cyclical industrial

Economic
Cycle

Tech
Cycle

Covid 19

- New technology has become the basis for the growth of new core industries



- To some extent, the long cycle of economic growth is equivalent to the cycle of tech revolution
- The sixth round of tech and industrial revolution is changing the expansion period

Tech Cycle: 2nd machine age based on computer

Characters

- Stable exponential increase
 - The more's laws lasted 40years+
- All Digitization
 - Hardware, Infrastructure, person, Org
- Combined innovation



A Story about exponential increase



第01天：1粒米

第10天：1袋米 (1024粒米)

第20天：1箱米 (1024包米)

第30天：1倉米 (1024箱米)

第35天：國王破產...



- When finished the 32nd chessboard, the King gave 4 billion rice...
- As for the other part of the chessboard ,
Unbelievable!

World entered the other part of the chessboard



- **Stable exponential increase brings us to the other part of the chess board**
 - **More and more devices connected to human daily life, such as AI robots, wearable devices, Intelligent assistant, intelligent transportation, Smart home, drones.....**
 - **In the future, the globe will become a world of super computer**
 - **“In this world, the "cheap" solution brought by the unprecedented cheap sensors will eliminate the previously difficult problems, and the virtual world of science fiction will become a living reality”**

All digitization



Combined innovation

Digital Tech: Accelerate industrial integration

■ DT integrated with different industries

□ Cloud computing “settled”

- Infrastructure for whole society/ industry
- 90% of “Futune1000” enterprises use cloud services
- Driver: Edge computing, Intelligent internet

□ Mobile Internetblooming”

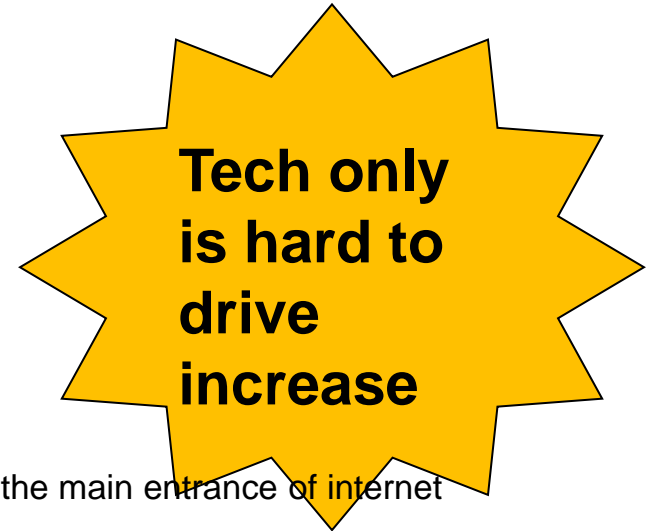
- Smartphone market nearly stopped increase, mobile become the main entrance of internet
- 70% of enterprise use intelligent mobile OA platforms
- Competing : super mobile app, enters the new mobile era

□ Big data “springs”

- Big data is real fact, and important essential product factor as well
- 90% of the “Fortune 1000” enterprises invest in big data resources and application
- Data intelligence, driven by application scenarios

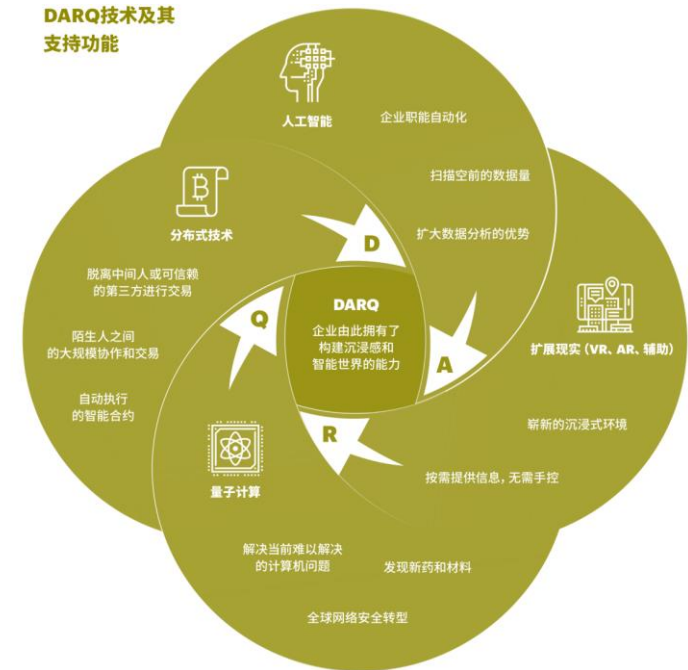
□ Social Media “upgrading”

- Social , multi medias become the Must
- 91% of the enterprises marketing through social media platforms
- Concern : social business formats hasting of maturity



Digital integration: New DT & other Science and Tech achievements

- New Tech: **DARQ / ABCDE**
 - **D/B**: Distributed Ledgers (Blockchain)
 - **A (A)**: AI
 - **C**: Cloud Computing
 - **D**: Data Analytic/Intelligence
 - **E**: Edge Computing
 - **R**: Extended Reality
 - **Q**: Quantum Computing

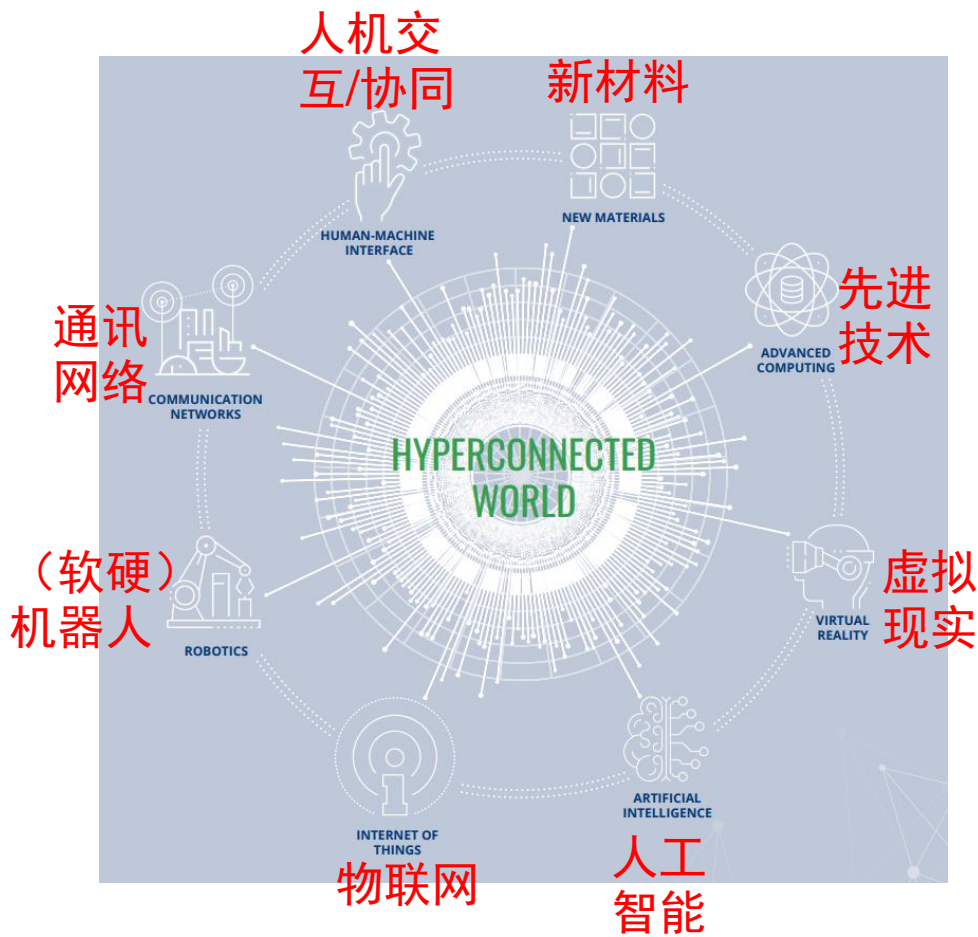


Accenture 2020 Tech Outlook

- Modern scientific and technological achievements
 - (Intelligent) Materials: Aerospace, Medical & Healthcare, National defense, data storage etc.
 - Energy: Green, Clean, Environmentally friendly and efficient energy storage solutions
 - Gene edit Tech: Agriculture, Food etc.

“Super Unicom world”

- Global Trends 2040, A More Contested World



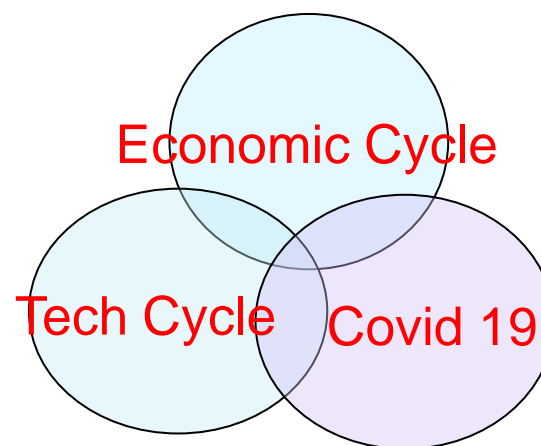
Forcing enterprises to embark on the road of digital transformation



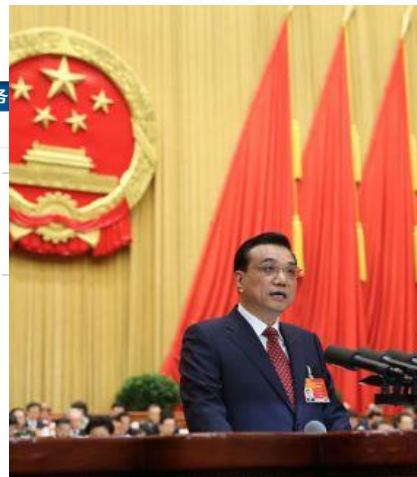
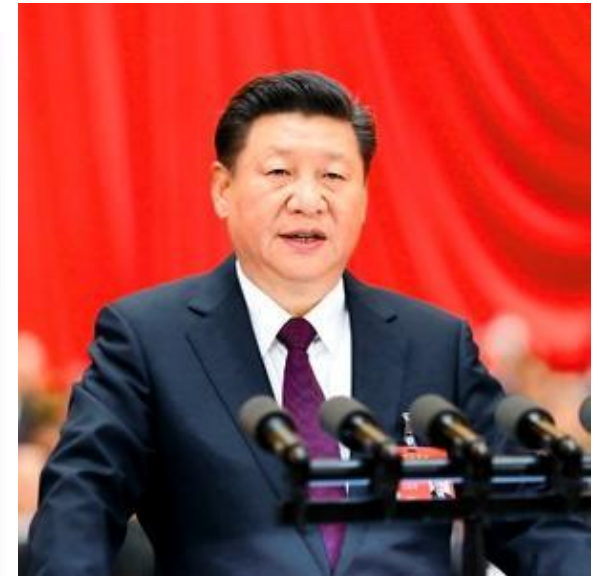
2019年2月：今天中国的**经济周期**和**技术周期**进入到了非线性的状态，不是靠原来的逻辑、原来所积累的核心能力就能够持续下去的

■ + Covid 19

- **High** Uncertainty as new normal
- Accelerate: eliminate, transformation, innovation



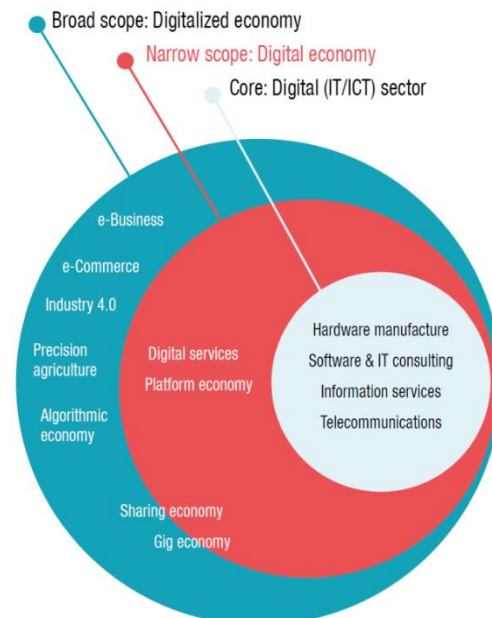
National Strategy



National Development Demand

Proposal of the CPC Central Committee on formulating the 14th five year plan for national economic and social development and the long-term objectives for 2055

- IV、 accelerate the development of a modern industrial system and promote the optimization and upgrading of the economic system
 - 15. Accelerate digital development
 - Digitized economy and digital economy
 - Data resource property rights
 - Digital skills and Information services



New infrastructure to consolidate the cornerstone of the development of digital economy



New business format encouraged by Policy



关于支持新业态新模式健康发展 激活消费市场带动扩大就业的意见 发改高技〔2020〕1157号

各省、自治区、直辖市、新疆生产建设兵团有关部门：

党中央、国务院高度重视数字经济发展，先后出台实施“互联网+”行动和大数据战略等一系列重大举措，加快数字产业化、产业数字化发展，推动经济社会数字化转型。在各方面共同努力下，数字经济助推经济发展质量变革、效率变革、动力变革，增强了我国经济创新力和竞争力。特别在抗击新冠肺炎疫情中，数字经济发挥了不可替代的积极作用，成为推动我国经济社会发展的新引擎。为落实《政府工作报告》部署，支持新业态新模式健康发展，激活消费市场带动扩大就业，打造数字经济新优势，提出如下意见。

一、总体要求



《Shanghai action plan for promoting online new economic development（2020-2022）》

市经济信息化委发布《上海市促进在线新经济发展行动方案（2020—2022年）》

发布日期：2020-05-09

访问次数：

字号：[大 中 小]

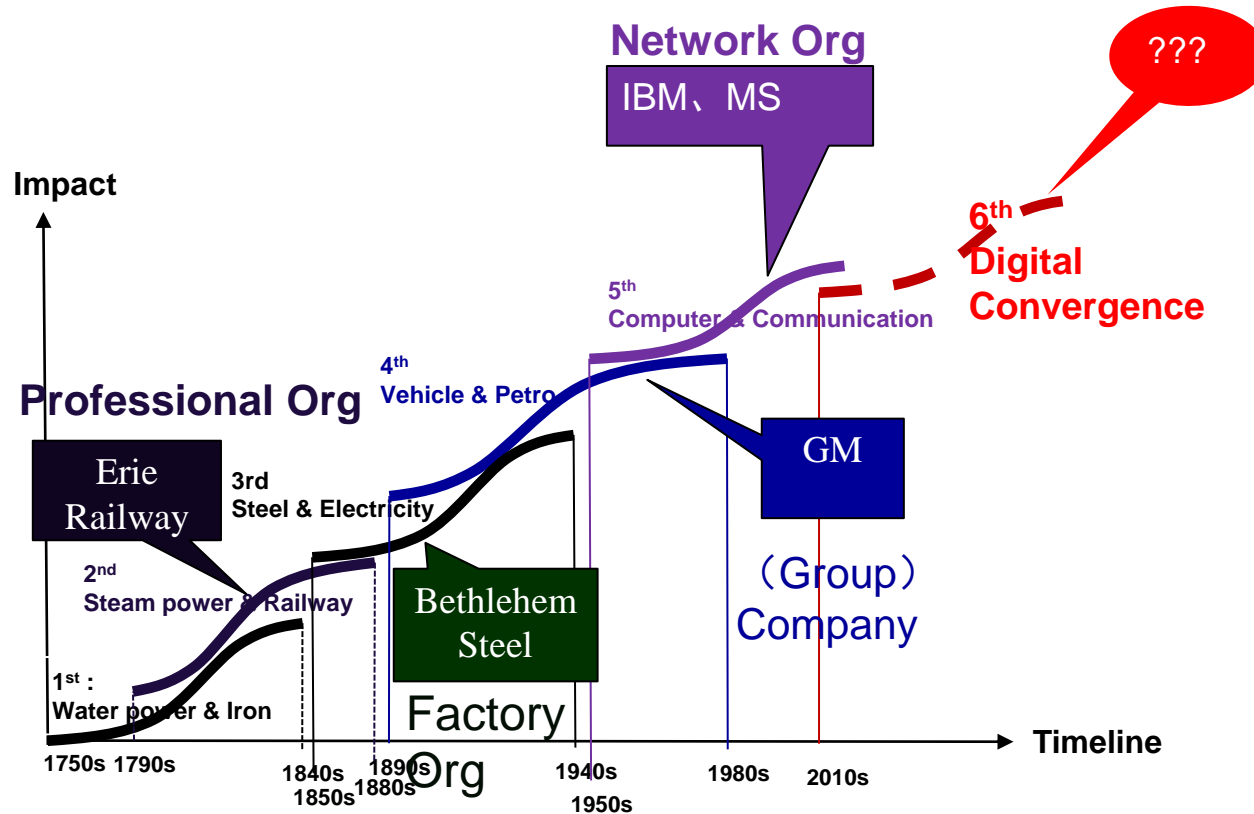
4月13日，上海市经济信息化委发布《上海市促进在线新经济发展行动方案（2020—2022年）》。明确集聚“100+”创新型企业、推出“100+”应用场景、打造“100+”品牌产品、突破“100+”关键技术等行动目标，聚焦十二大发展重点，实施6项专项行动，落实5条保障措施。

在线新经济是借助人工智能、5G、互联网、大数据、区块链等智能交互技术，与现代生产制造、商务金融、文娱消费、教育健康和流通出行等深度融合，具有在线、智能、交互特征的新业态新模式。

本次《行动方案》提出聚焦12大发展重点，分别是无人工厂、工业互联网、远程办公、在线金融、在线文娱、在线展览展示、生鲜电商零售、“无接触”配送、新型移动出行、在线教育、在线研发设计、在线医疗。这些领域上海都在前期已经做了多年积累和发展，预计到2022年，上海将打造成具有国际影响力、国内领先的在线新经济发展高地。

Human Technology revolution entering the Six Wave

- Every technological revolution will bring about a new paradigm of economic organization



Digital Transformation develop rapidly

- Consumer behavior and expectation changed



Course Content

Part I Main Stream Digital Technologies

THEME 1: Enterprise digital Transformation
THEME 2: Main Stream Digital Technologies ABC
THEME 3: Main Stream Digital Technologies D
THEME 4: Main Stream Digital Technologies E



Part III Pathway for Digital Transformation

THEME 10: **Formation of Digital Platform**
THEME 11: **Improving Decision Making(Excel Model)**
THEME 12 : **Pathway for Digital Transformation**
THEME 13: **IS Structure Empowering Digital Transformation**
THEME 14: **Digital Plan and IT Organization**
THEME 15: **Summary**

Part II Digitization empower enterprise Innovation

THEME 5: Internet Platforms: Digital Business Model
THEME 6: Omni-Channel: Re-connect Costumers
THEME 7: Agile Organizational Structure
THEME 8: Reconstruction of Product and Business System
THEME 9: Digital Operation: ERP、CRM and SCM



THEME 2 : Enterprise Digital Transformation

C ontents



2 IT and DT

2.1 Information Tech

2.2 Digital Tech

2.3 Digitization

1 What is Information Technology?

- Narrowly, Technology that helps people collect, transmit, store, process and provide information, called IT;
 - Computer
 - Telecommunication
 - Remote Sensing & Telemetry Tech
 - Data collection Tech
 - Modern Printing Tech
 - Other Techs used in Modern office
- Broadly, Technology and application related to digitization, communication and information processing

2 Digital Technology (DT)

- DT: tech perspective
 - Digital technology rising in the 20th century: Turning analog information into binary numbers
 - “byte” : binary digits
 - The different combinations of 1 and 0 series determine the decoding and reorganization of information
 - Digital technology refers to the technology of computing, processing, storage, transmission and dissemination after converting various information, such as graphics, text, sound and image, into binary numbers "0" and "1" recognized by electronic computer with the help of certain equipment
- The core of digital technology is symbol based computing, that is, strings (0 and 1) provide a standard form of symbols for encoding the input, processing and output of various tasks

2 Digital Technology (DT)

- DT: application perspective
 - DT is a **complete collection** of a series of technologies such as digital network technology (mobile Internet and social network technology, IoT), cognitive technology (including MLA, NLP, predictive analysis) and infrastructure (including IT infrastructure, big data analysis, information security, cloud computing, quantum computing, etc.)
 - DT is a combination of modern information technology, computing technology, communication technology and connection technology. Its integrated application has triggered the changes of today's society, economy and organization.

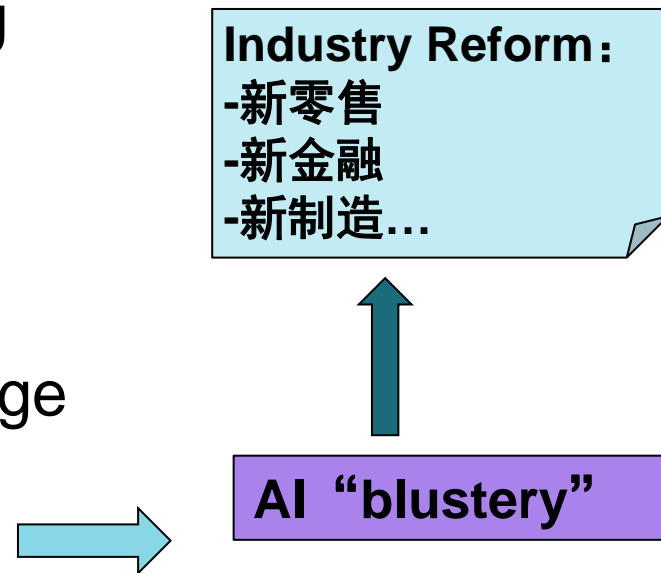
Main Stream Digital Technologies

- **SMACIT**

- Social Media、Mobile Internet、Analytics、Cloud Computing and IoT

- **ABCDE**

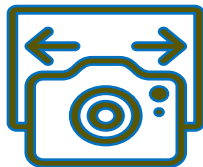
- AI、Block Chain、Cloud Computing、Data Tech、Edge Computing



Intelligent transformation is a long-distance race

3、 Digitization

- Representative Definition
 - It refers to the process of converting analog forms such as images, audio, video and text into digital forms
 - The process and action of converting analog information into digital bits
 - Digitization is to turn all kinds of information about people and things into digital signals or digital codes for processing through various programs
- The process of connecting people, systems, companies, products and services with sensing technologies and connection technologies such as sensors and the IoT



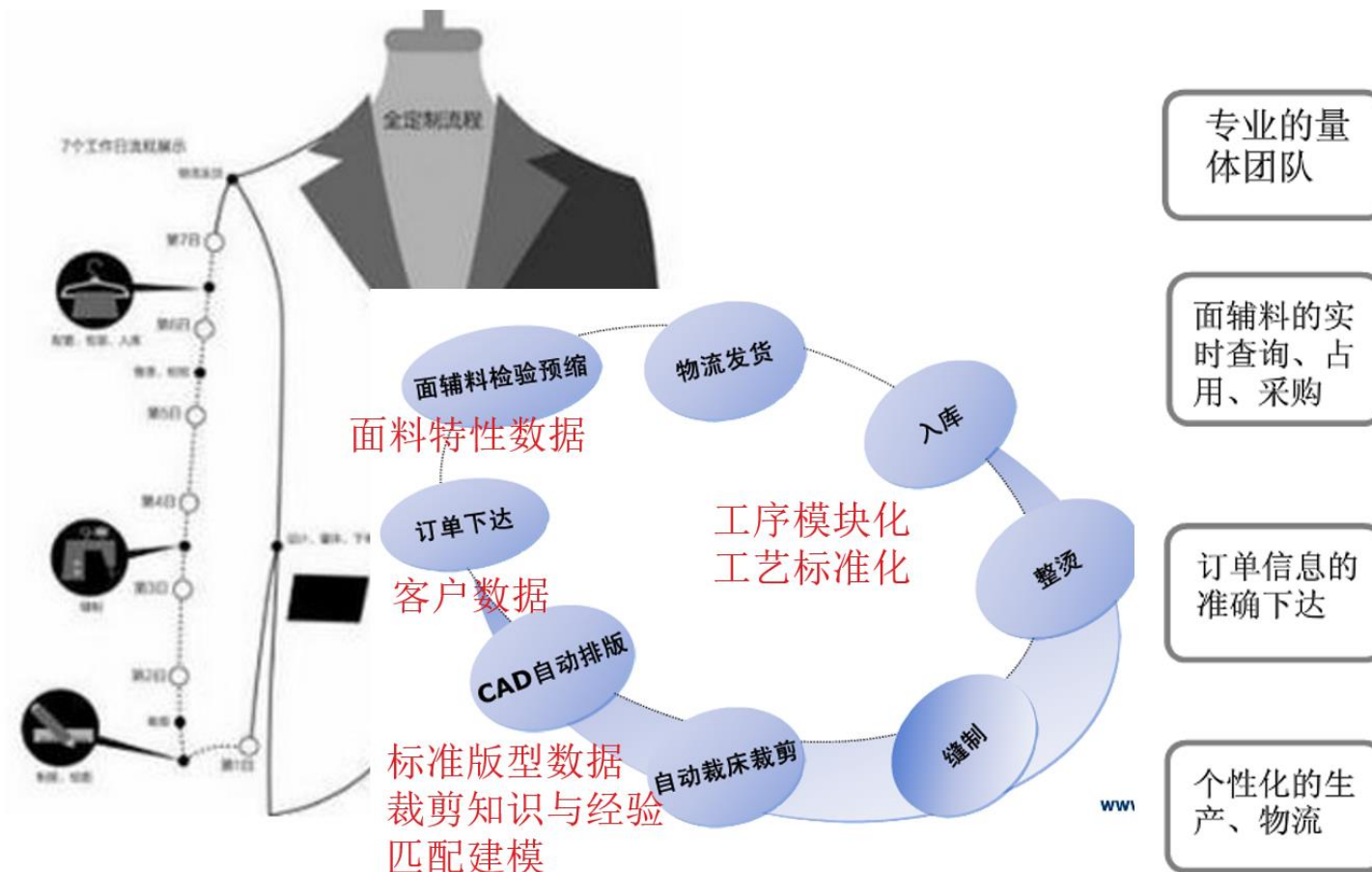
Example of Digitization: Retailing



Example of Digitization: Manufacturing



Example of Digitization: Manufacturing



Other Examples



Scan + OCR
digital invoice



Digital
Bicycle



Digital
garbage
can



Digital
water
Bottle



Digital Car



Digital
Refrigerator

Accounting Automation

Bicycle identification, positioning and tracking, and connect with users to form a customer service system

garbage can identification, positioning, load measurement, alarm, etc., and connect with the management system

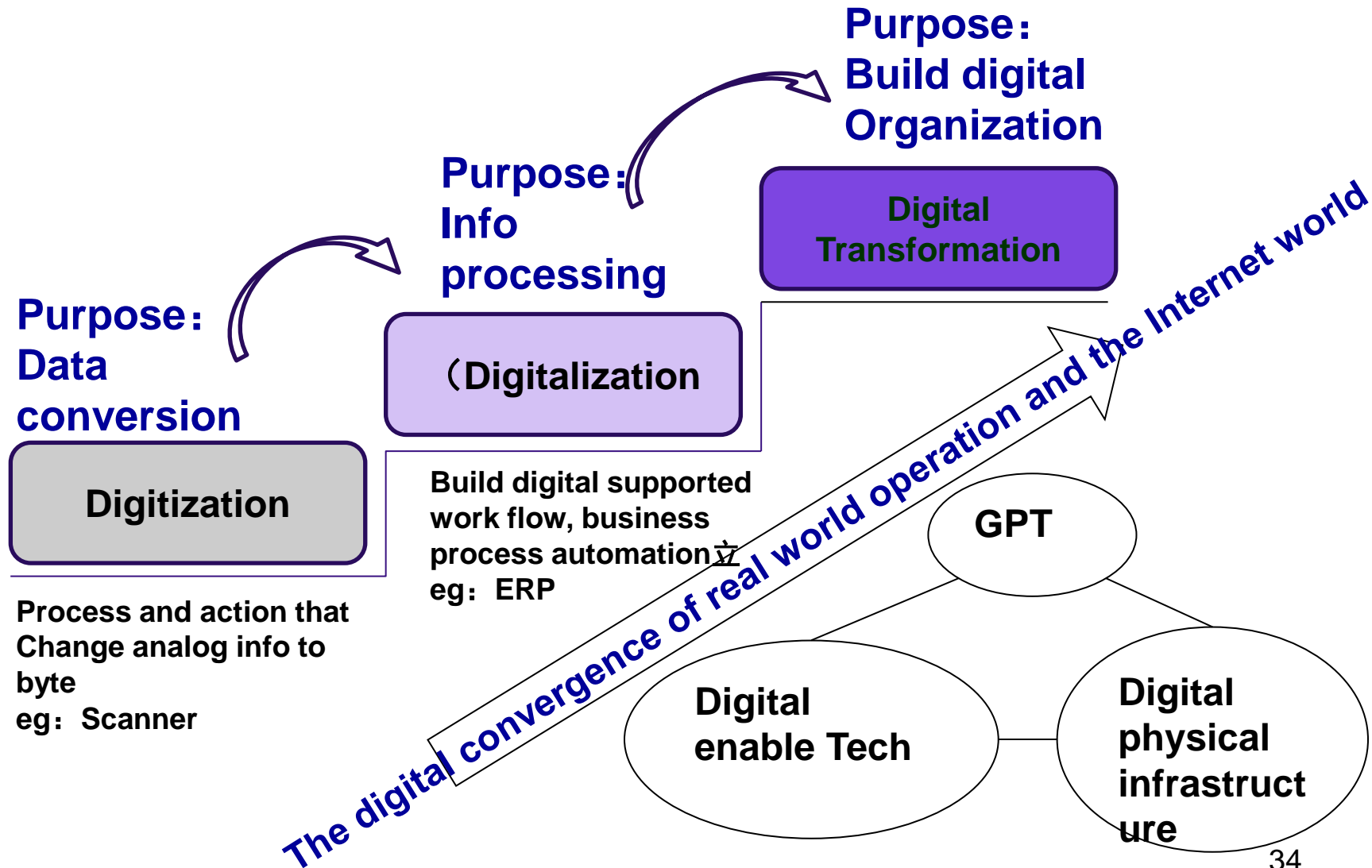
Anyone who finds that there is no water can notify the water delivery company and connect it with the office system

no longer an "isolated product", connect users and service providers to form a new business system based on physical devices

Digitization's definition

- Digitization/digitalization is the action, process and development stage of digital technology application
 - From **application** perspective, Digitization refers to the **action and process** of turning various information of people, things, organizations and events into digital signals or codes, and processing them through various calculation programs;
 - From **Impact** perspective, Digitization is driving the development of Internet, AI and social and organizational changes. Human society and economic development have gradually entered the **advanced stage** of digitization and industrial intelligence
- Digital infrastructure has become a new infrastructure for economic development
 - General purpose Tech such as ICT
 - Digital enable Tech such as IoT, Cloud Computing, Big data
 - Digital transformation of traditional physical infrastructure, such as physical facilities with sensors installed

From Digitization to Digital Transformation



THEME 2 : Enterprise Digital Transformation

C ontents



3 Enterprise IS

3.1 Tech Perspective

3.2 Management Perspective

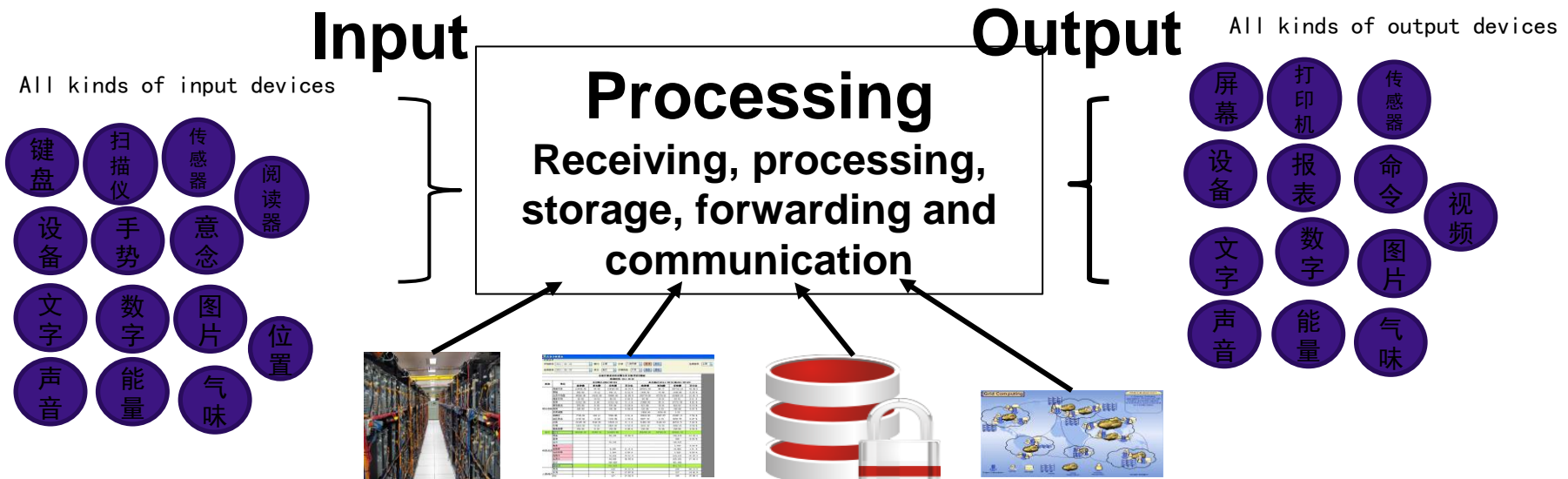
3.3 Development Stage

Dimensions of Information Systems

- Technology
- Management
- Organizations

1、 What Is an Information System? (1 of 3)

- Information system from Technology Perspective
 - Set of interrelated components
 - Collect, process, store, and distribute information
 - Support decision making, coordination, and control



1、 What Is an Information System? (2 of 3)

- Three activities of information systems produce information organizations need
 - Input: Captures raw data from organization or external environment
 - Processing: Converts raw data into meaningful form
 - Output: Transfers processed information to people or activities that use it

1、 What Is an Information System? (3 of 3)

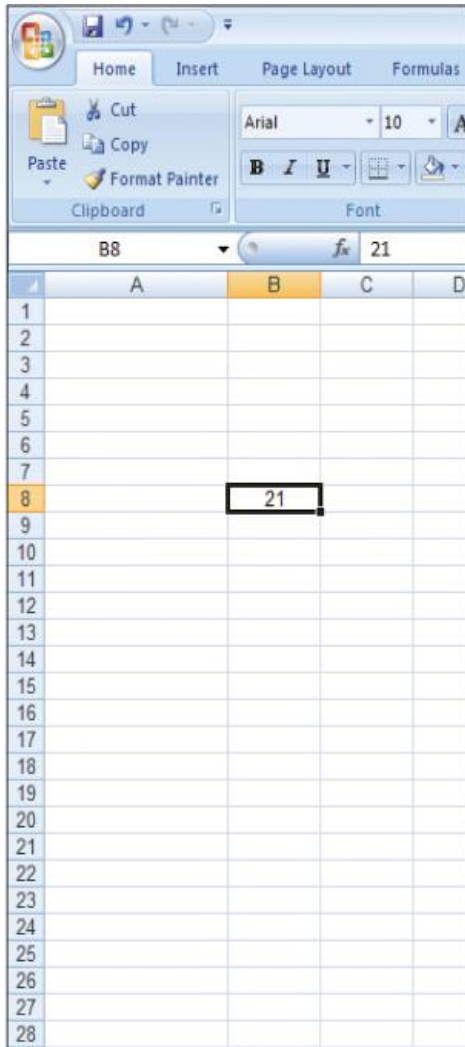
- Feedback
 - Output is returned to appropriate members of organization to help evaluate or correct input stage
- Computer/computer program vs. information system
 - Computers and software are technical foundation and tools, similar to the material and tools used to build a house

Data-information

54

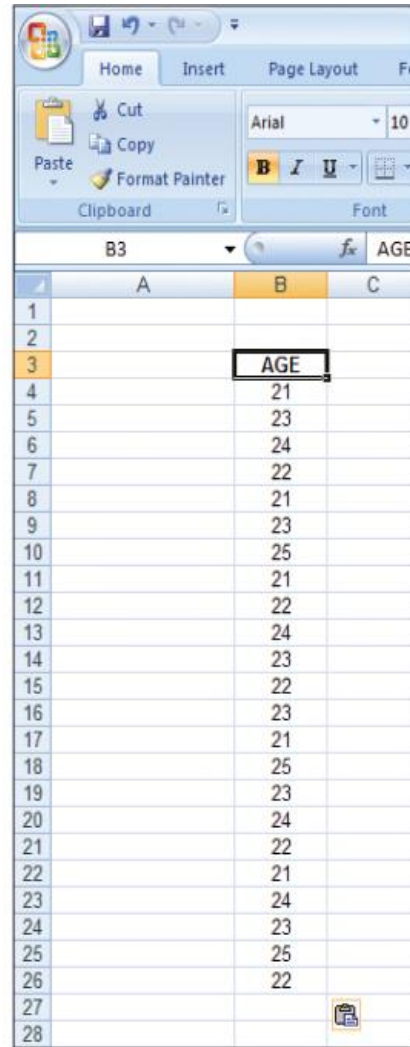


Data-information-knowledge



An Excel spreadsheet with the 'Home' tab selected. The active cell is B8, which contains the number '21'. The formula bar shows '=21'. The spreadsheet is mostly empty, with columns A through D and rows 1 through 28 visible.

In an Excel cell, you can store



An Excel spreadsheet with the 'Home' tab selected. The active cell is B3, which contains the text 'AGE'. The formula bar shows '=AGE'. The spreadsheet shows a column of age data in column B, rows 3 through 28. The data values are: 21, 23, 24, 22, 21, 23, 25, 21, 22, 24, 23, 22, 23, 21, 25, 23, 24, 22, 24, 23, 25, 22. To the right of the spreadsheet, a bar chart is displayed with five bars of different colors (orange, blue, green, red, purple) representing the ages 21, 22, 23, 24, and 25. The y-axis of the chart ranges from 0 to 6. Arrows point from the text labels to the corresponding bars: 'Average age: 22.8' points to the green bar (23), 'Youngest age: 21' points to the orange bar (21), 'Oldest age: 25' points to the red bar (25), and '6' points to the top of the green bar.

Data become information when they take

Average age: 22.8

Youngest age: 21

Oldest age: 25

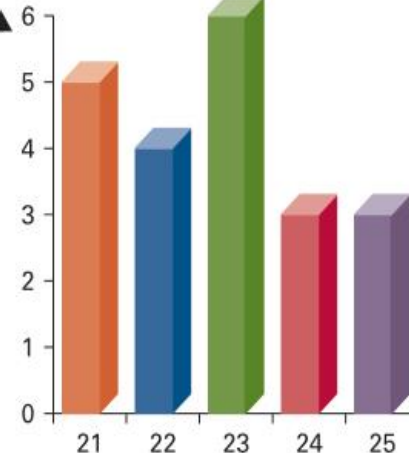
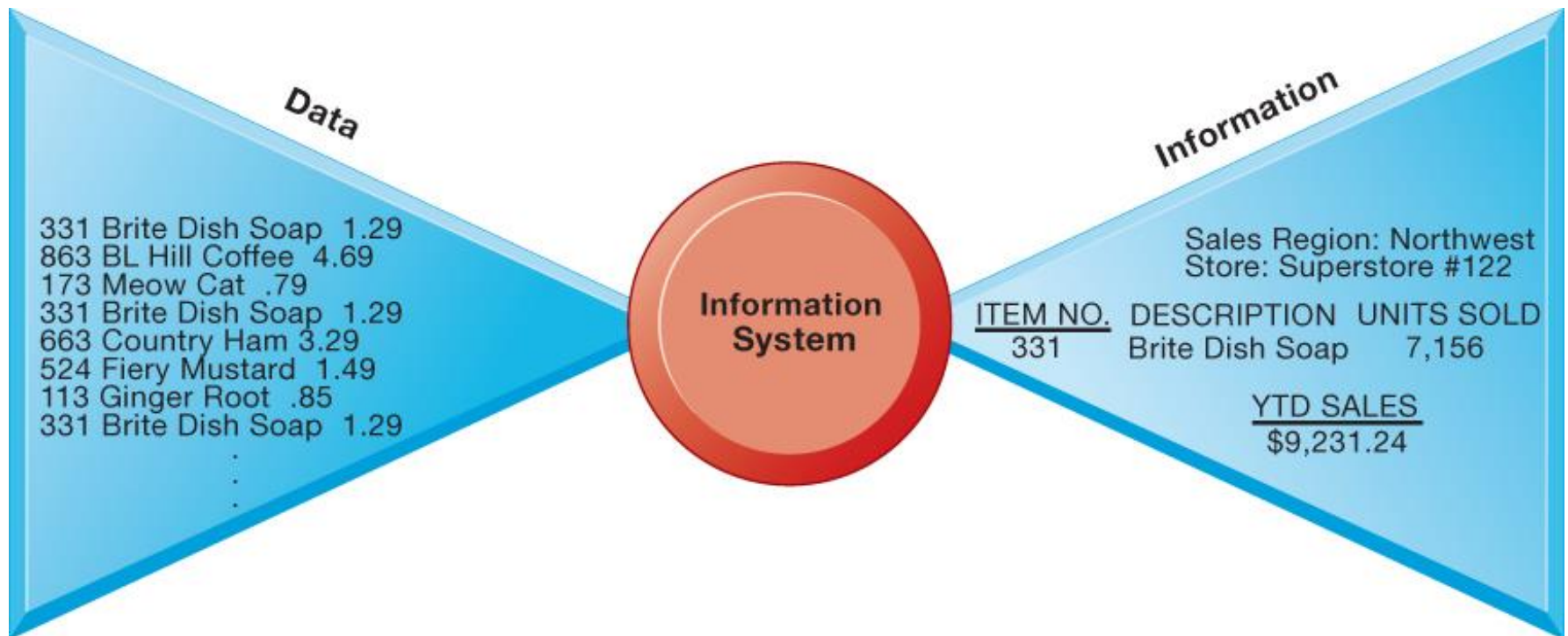


Figure 1.3: Data and Information



2、 IS: Management Perspective

Information Systems Are More Than Computers

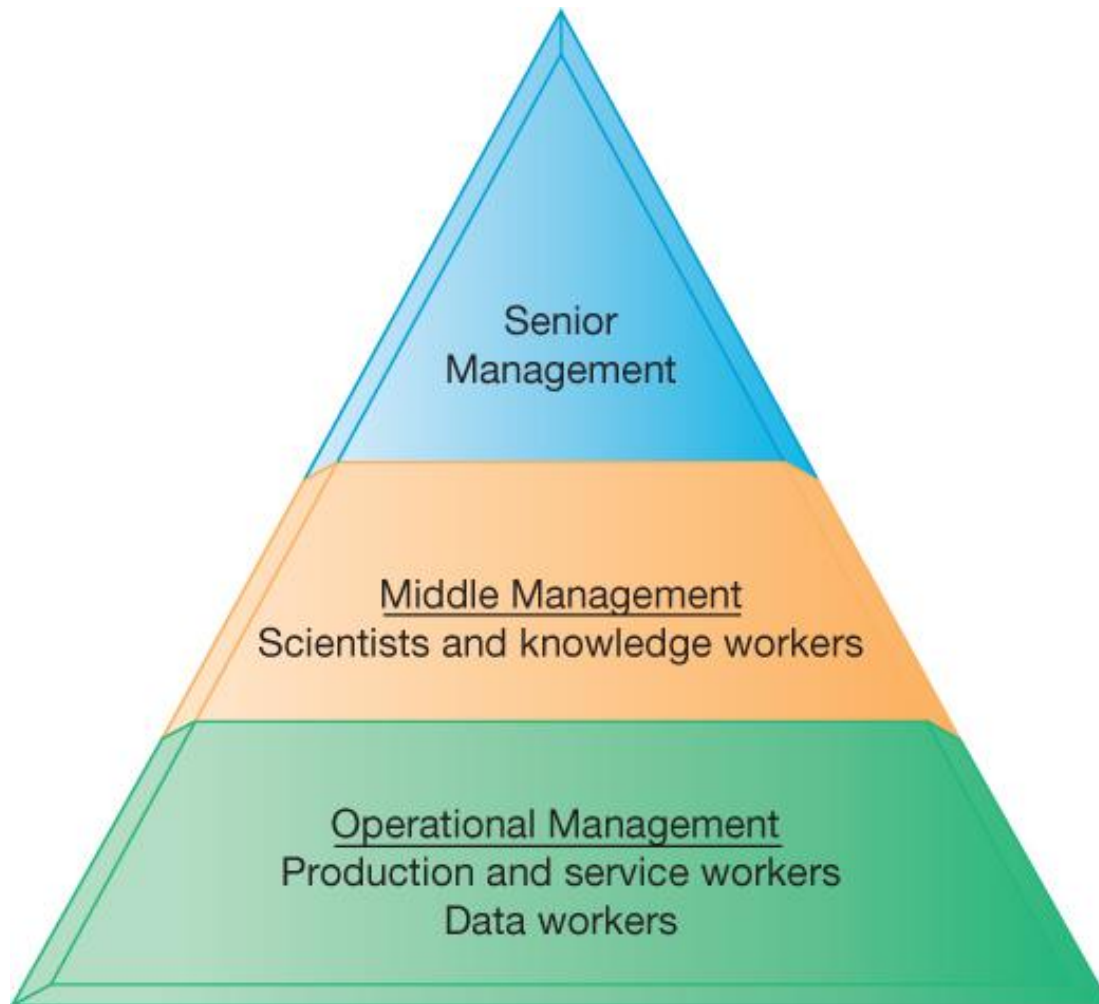


- IS is a solution for it based management and people (Org.) when enterprises face challenges.

Dimensions of Information Systems: Organizations (1 of 2)

- Hierarchy of authority, responsibility
 - Senior management
 - Middle management
 - Operational management
 - Knowledge workers
 - Data workers
 - Production or service workers

Figure 1.6: Levels in a Firm



Dimensions of Information Systems: Organizations (2 of 2)

- Separation of business functions
 - Sales and marketing
 - Human resources
 - Finance and accounting
 - Manufacturing and production
- Unique business processes
- Unique business culture
- Organizational politics

It Isn't Just Technology: A Business Perspective on Information Systems (1 of 3)

- Information system is instrument for creating value
- Investments in information technology will result in superior returns
 - Productivity increases
 - Revenue increases
 - Superior long-term strategic positioning

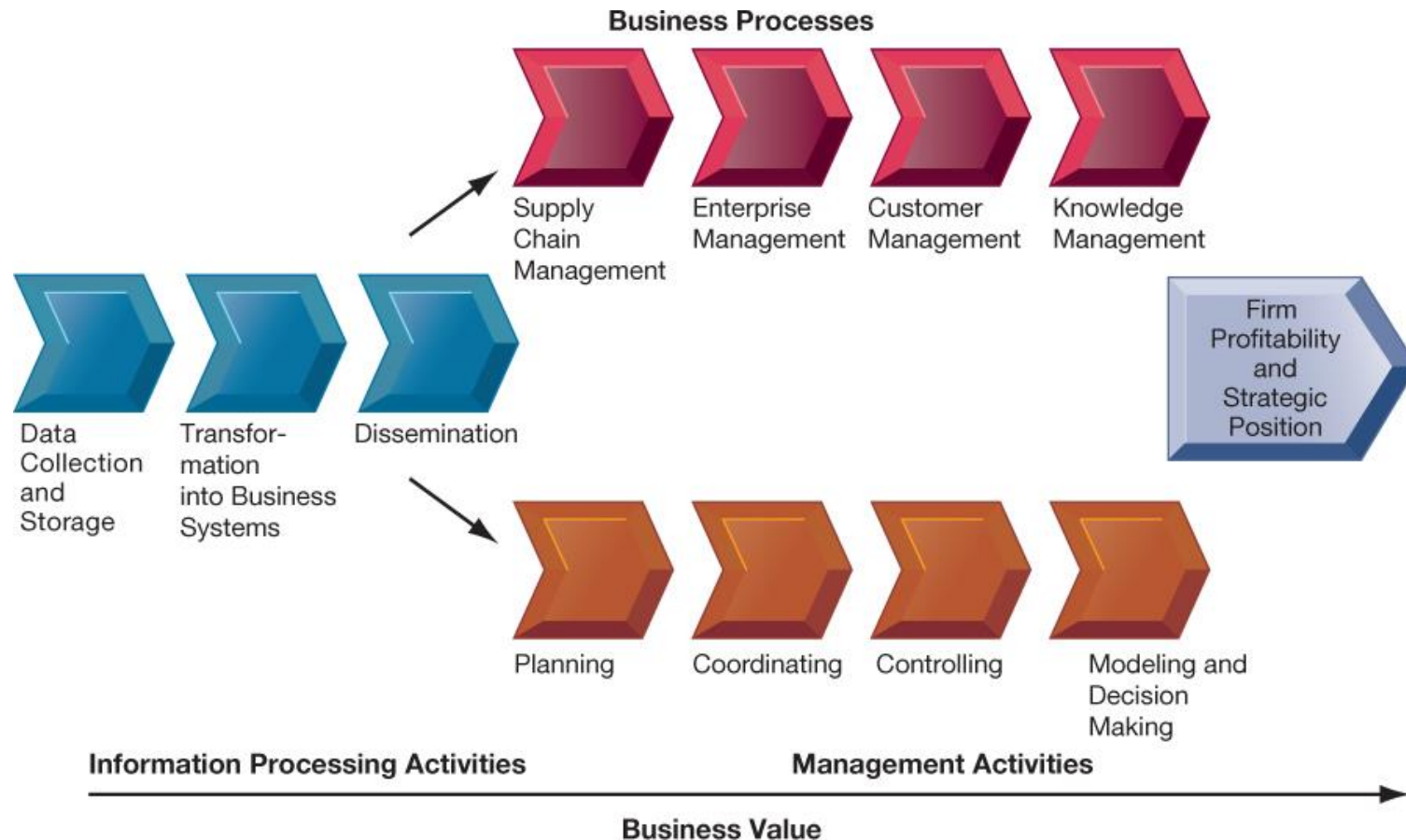
It Isn't Just Technology: A Business Perspective on Information Systems (2 of 3)

- Business information value chain
 - Raw data acquired and transformed through stages that add value to that information
 - Value of information system determined in part by extent to which it leads to better decisions, greater efficiency, and higher profits
- Business perspective
 - Calls attention to organizational and managerial nature of information systems

It Isn't Just Technology: A Business Perspective on Information Systems (3 of 3)

- Investing in information technology does not guarantee good returns
- There is considerable variation in the returns firms receive from systems investments
- Factors
 - Adopting the right business model
 - Investing in complementary assets (organizational and management capital)

Figure 1.7: The Business Information Value Chain



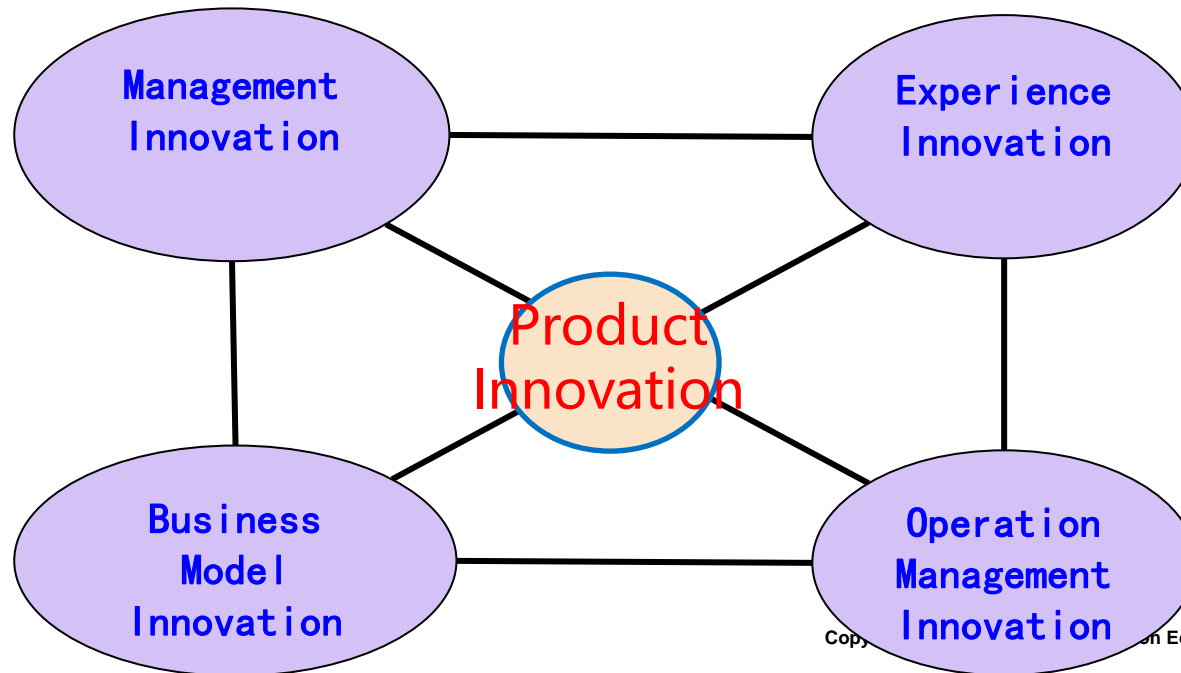
3、 Development Stage of Enterprise Informatization

- I: Computerization
 - Based on PC、 DB development
 - Focused on salary, accounting, warehouse management, material management
- II: Informatization
 - Operation optimization
 - Large and complex application software packages to support business process reengineering and optimization
 - eg. financial management、 ERP、 CRM
 - BPR
 - Key business areas across functional departments within the enterprise organization

3、 Development Stage of Enterprise Informatization

• III: Digitization

- Integrate IT, computing tech, communication tech and connectivity tech to create and innovate products / businesses, business models, customer experience, operation and management models



THEME 2 : Enterprise Digital Transformation

C ontents



4 DigitalTransformation

4.1 Concept

4.2 Correlation

1、 Digital transformation

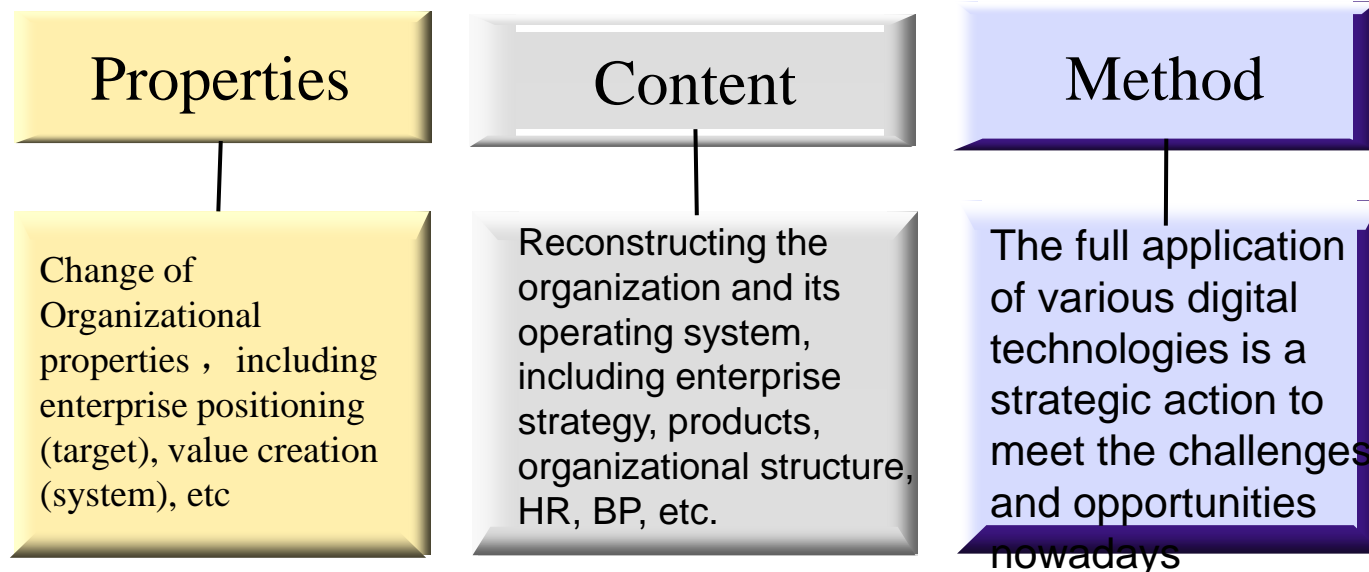
Definitions from industries

- Development Research Center of the State Council & Dell
 - 企业的数字化转型是指利用新一代信息技术，构建数据的采集、传输、存储、处理和反馈的闭环，打通不同层级与不同行业间的数据壁垒，提高行业整体的运行效率，构建全新的数字经济体系
- Alibaba
 - 企业数字化转型是以数据技术手段进行运营优化（例如数字化供应链、销售预测、生产工艺优化），实现企业从流程驱动到数据驱动，从而实现增长
- IDC
 - 利用数字化技术（例如云计算、大数据、移动、社交、人工智能、物联网、区块链）和能力来驱动组织商业模式创新和商业生态系统重构的途径和方法。目的是实现企业业务的转型、创新和增长
- Huawei
 - 数字化转型是通过新一代数字技术的深入运用，构建一个全感知、全联接、全场景、全智能的数字世界，进而优化再造物理世界的业务，对传统管理模式、业务模式、商业模式进行创新和重塑，实现业务成功。
- Kingdee
 - 企业数字化转型就是企业借助数字化解决方案，将物联网、云计算、大数据、移动化、智能化技术应用于企业，通过规划及实施商业模式转型、管理运营转型，为客户、企业和员工带来全新的数字化价值提升，不断提升企业数字经济环境下的新型核心竞争能力。包含五种基本类型：数字化营销转型、数字化运营转型、数字化产品转型、数字化服务转型

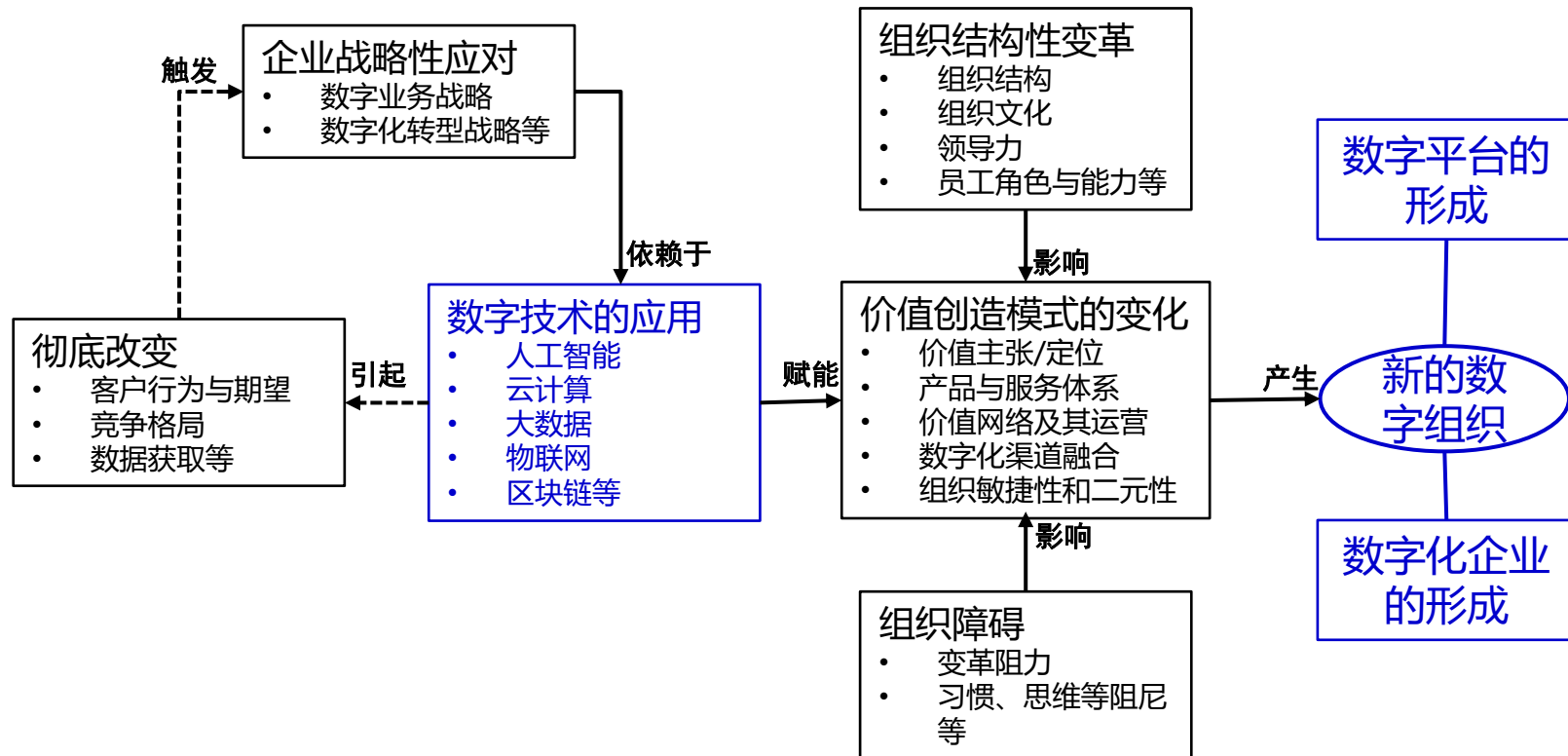
1、 Digital transformation

Definitions

- The process of "the significant change of enterprise organizational characteristics triggered by the combined application of modern IT, computing tech, communication tech and connection tech, and the reconstruction of organization and operation system"

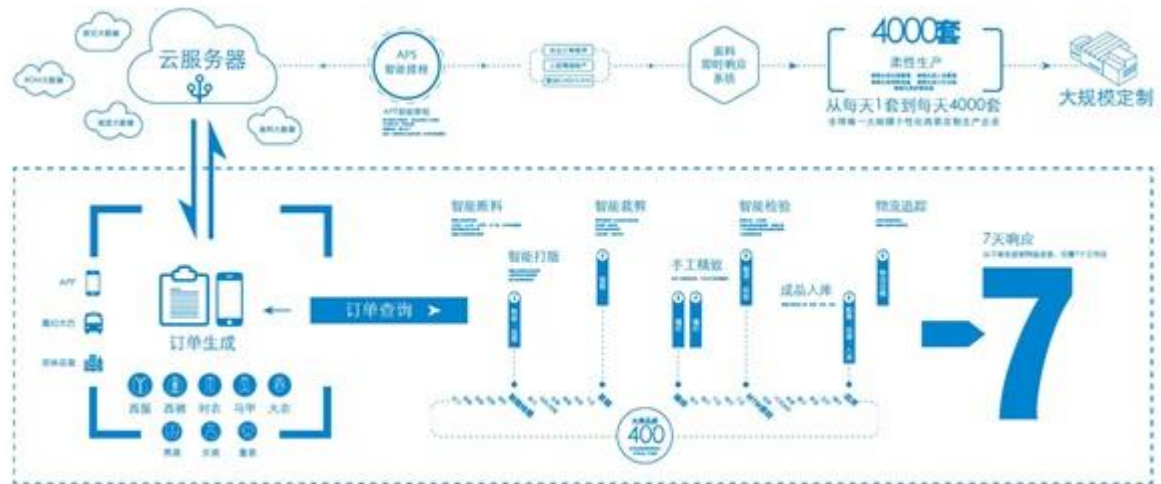


Logical model of digital transformation



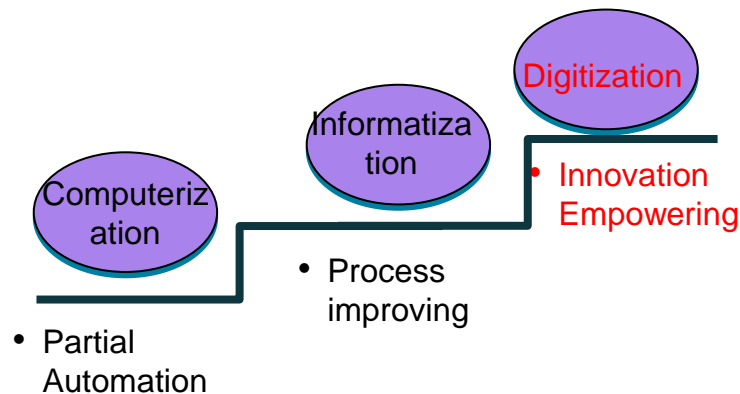
From RedCollar to kute intelligence

- Transformation of manufacturing service, become a hybrid enterprise (software company, established kute intelligence)
- Changed the business model of the existing industry manufacturing enterprises
- Changed the industry structure, competition pattern and the essence of competition



注：PPT来自中科云谷CEO王晓东先生

2、 Enterprise digital transformation is the continuation and expansion of enterprise informatization



- Different purpose
 - D: Reconstruction digital Org
 - I: Improving process and increase efficiency
- Different focus
 - D: find opportunities from market/customer perspective, and apply DT to strategy
 - I: Optimize the internal operation efficiency
- Different Solution
 - D: DT and digital convergence
 - I: IT and Software package (ERP etc.)
- Different innovation degree/extent
 - D: properties, organization and operation totally changed
 - I: internal management and operation change

Enterprise...+Internet+Digitization



Q

&

A
