ICT158

Introduction to Information Systems

Topic 9

Fitting IS to the organisation

Learning objectives

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After completing this topic you should be able to:

- Explain how information systems can impact an organisation and cause change
- Describe two different change strategies – *continuous improvement* and *business process re engineering*
- Describe the four major responsibilities of an IS department within an organisation
- Evaluate the roles of different IT positions within an organisation
- Discuss the importance of stakeholders and users of an information system
- Define usability
- Discuss usability in relation to globalisation/localisation challenges.

Key Concepts

- Continuous improvement (CI)
- Business process reengineering (BPR)
- People and information systems
- Usability
- Globalisation/localisation

Readings

- Kroenke, D, Bunker, D, & Wilson, D. (2010). Experiencing MIS: Pearson Australia. Ch 11 [available through MyUnitreadings]

Topic 8 looked at how information systems are acquired, often either developed or procured.

This topic looks at *why* IS is acquired, and *who* and *how* decisions about *which* IS are made.

Overview

Organisational change – improvement through CI or BPR

The role of the IS department (based on Kroenke et al 2010 ch 11)

IS positions

Stakeholders & end users

Usability

Globalisation/localisation

9.1Organisational change

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9.1.1 Culture & change

9.1.2 Change adjustments - improvement through

- CI
- BPR

Organisational change

In topic 3 we said **organisational culture** – *the shared understandings, values, and assumptions in an organisation* - influences information systems within the organisation

Often a new IS represents a process of

organisational change

How the organisation reacts to this change is impacted by its culture

Cameron and Quinn's classification

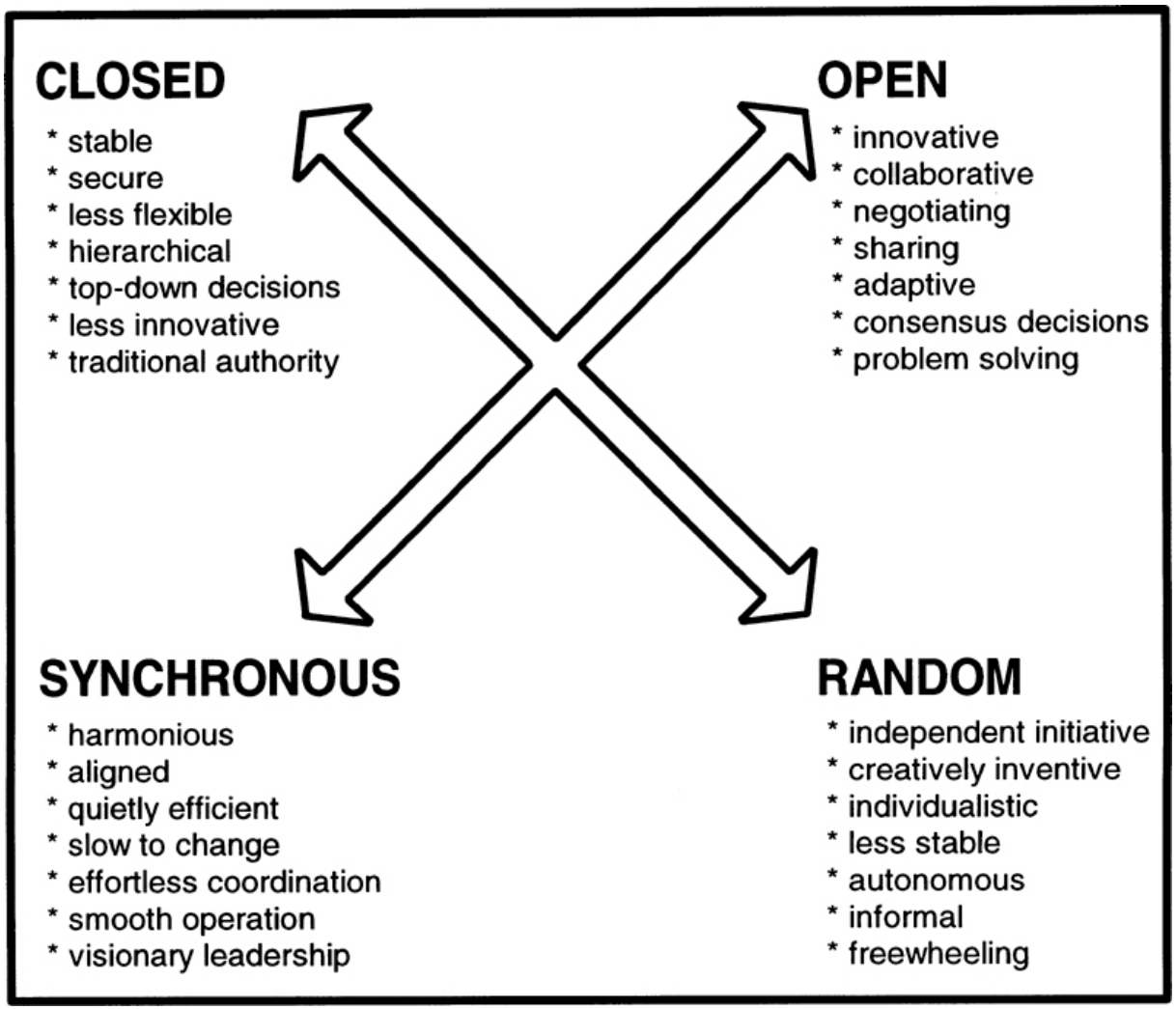
Major dimensions reflect an *inward* or an *outward* focus, and *flexibility* versus *stability*

SOURCE: ADAPTED FROM K. S. CAMERON, R. E. QUINN, J. DEGRAFF, AND A. V. THAKOR, COMPETING VALUES LEADERSHIP (NORTHAMPTON, MA: EDWARD ELGAR, 2006), P. 32.

From Topic 3

Source: http://leadstrategic.com/2013/04/29/new-wineskins/

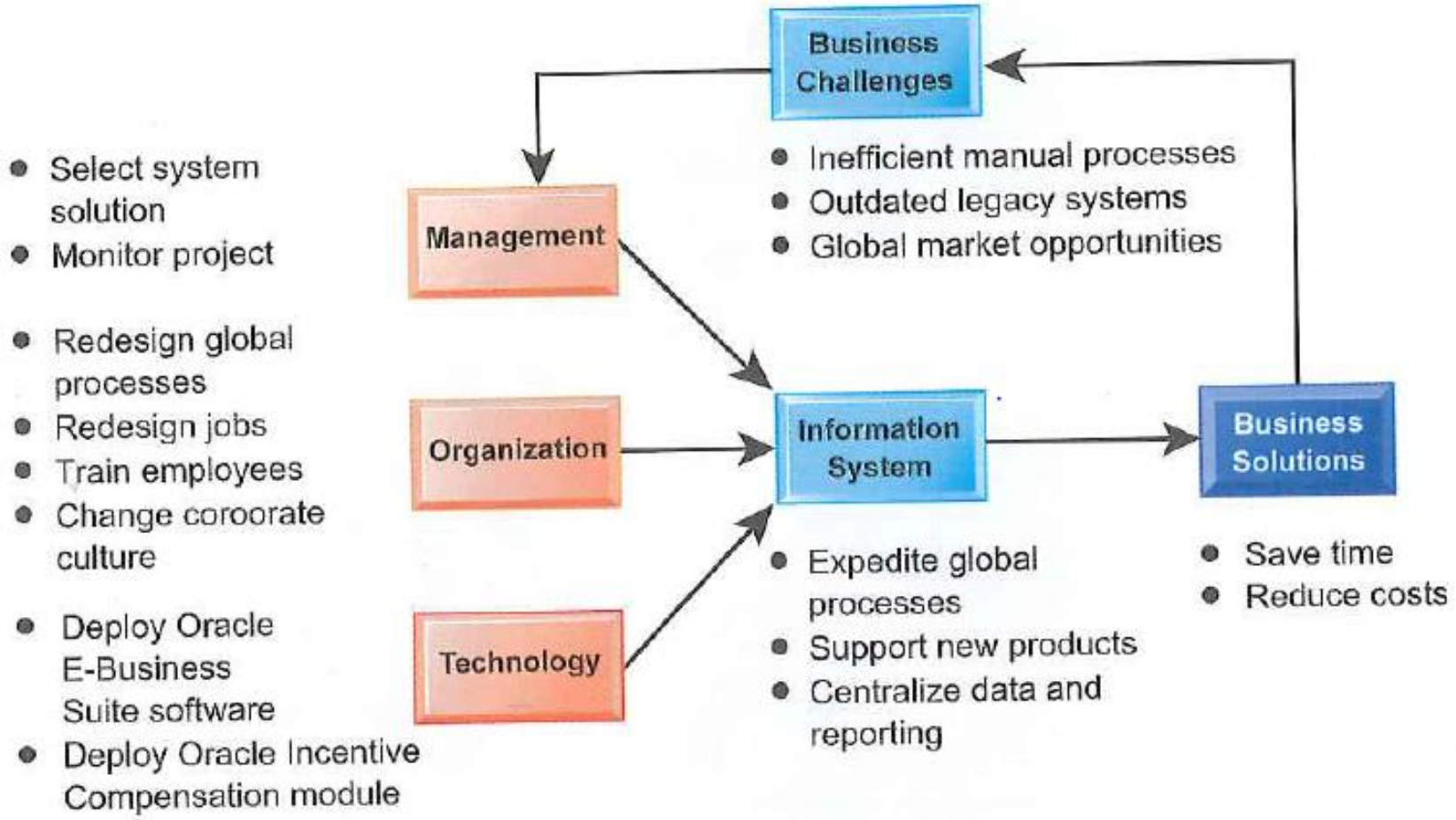
Constantine's classification



From Topic 3

Source: Constantine, (1993).

Identifying a business challenge



Source: Laudon & Laudon (2014)

Change adjustments

Continuous Improvement (CI)

Constantly seeking ways to improve business processes

Business Process Reengineering (BPR)

Radical redesign of business processes, organisational structure, and information systems of the organisation

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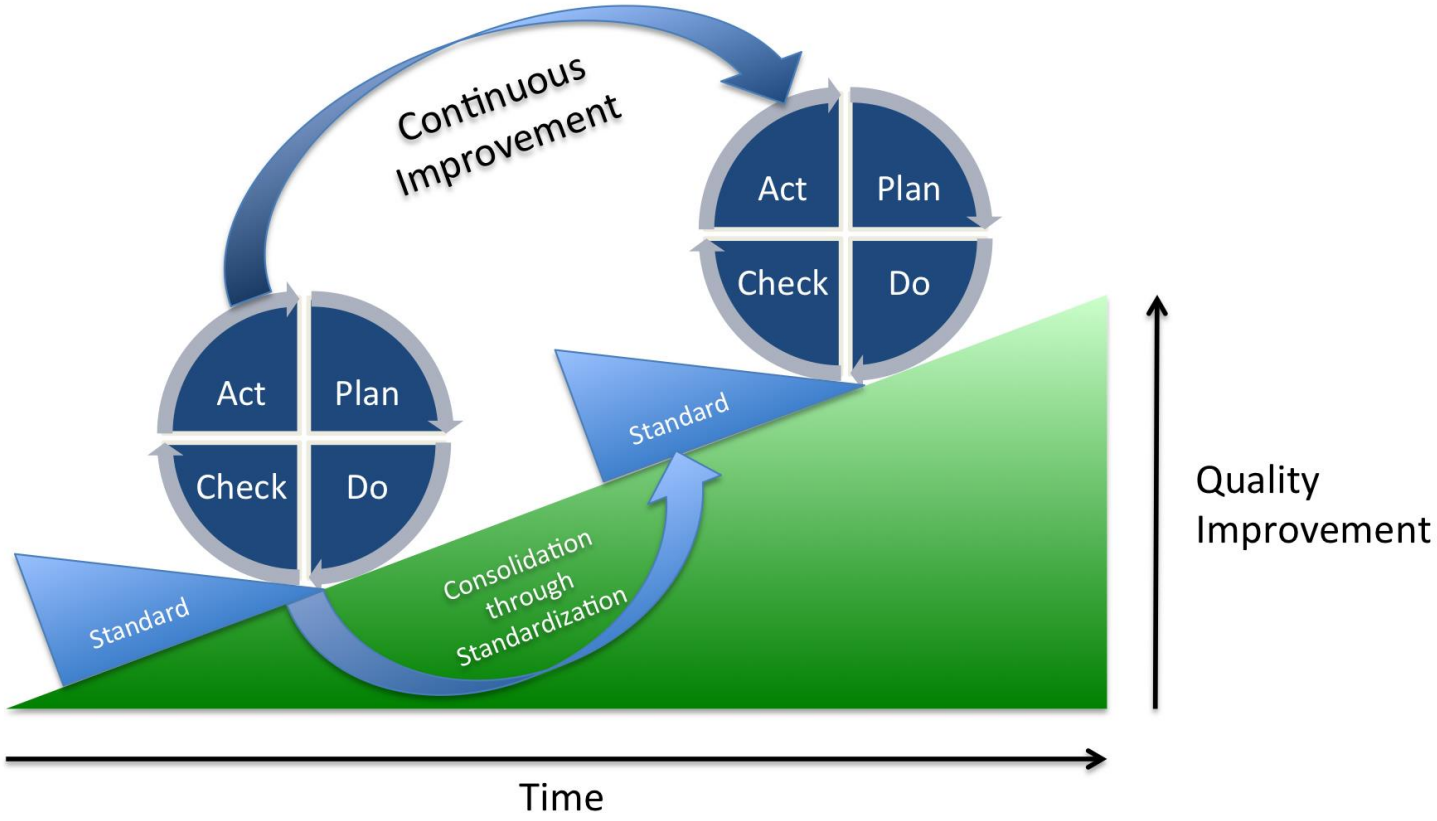
It's important to continuously improve information systems as business grows or declines

As an information system communicates improved information and provides the appropriate tools and content, it supports changing business strategies throughout the organisation

This is *iterative improvement*

Cycle of continuous improvement



Source: http://upload.wikimedia.org/wikipedia/commons/a/a8/PDCA_Process.png

BPR

Business Process Reengineering is different from other approaches to organisation development, especially Continuous Improvement

Its aim is for *fundamental* and *radical* change rather than iterative improvement

BPR

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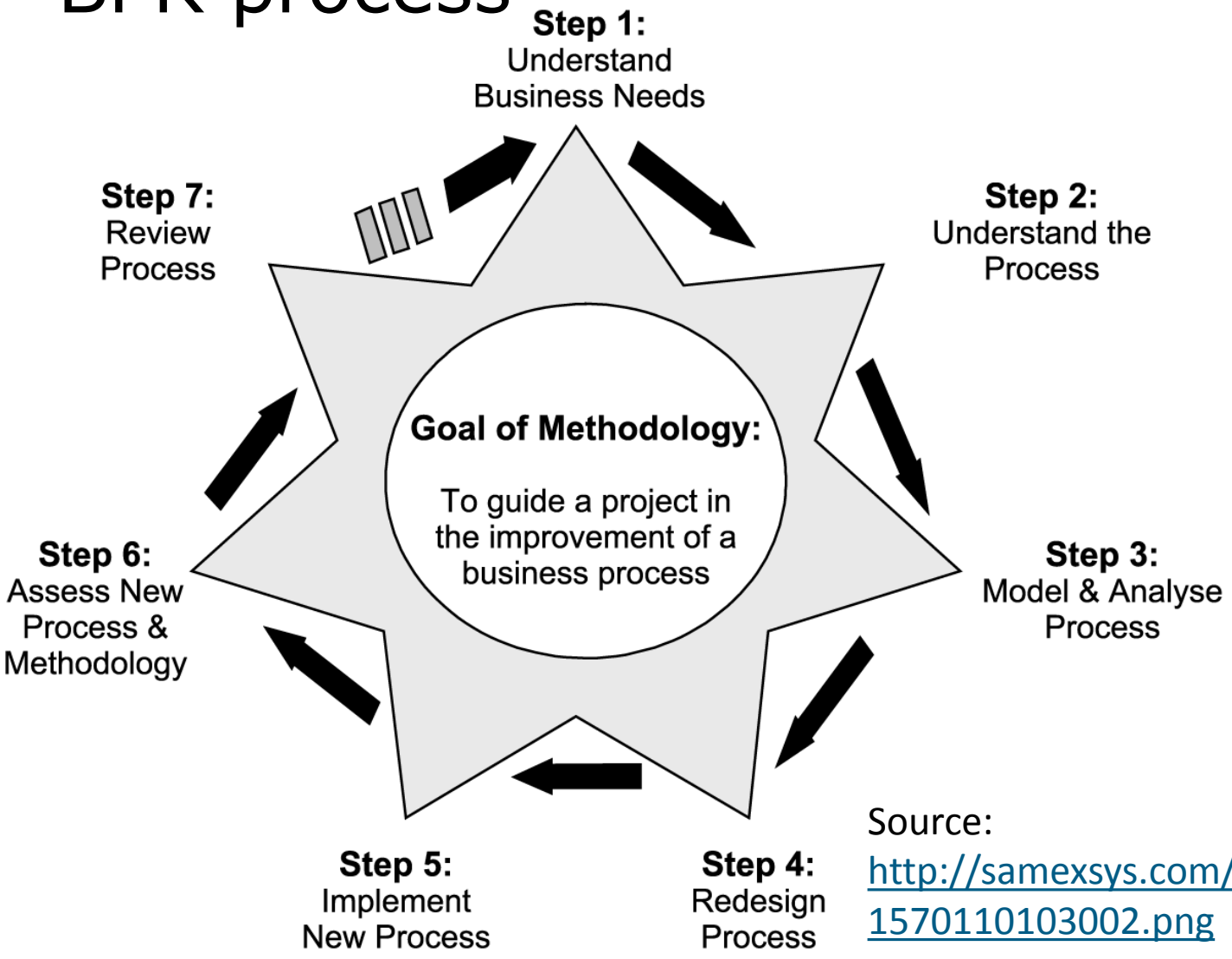
- Focuses on the analysis and design of workflows and business processes within an organisation
- Starts with high-level assessment of mission, strategic goals and customer needs
- Only after the organisation rethinks what it should be doing, does it go on to decide how best to do it

BPR process



Source: http://samexsys.com/en/images/services/1570110103002.png

Impact of BPR

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When properly implemented BPR produces *radical gains in efficiency and productivity*

It may even change the way the business is run

In some instances, it drives a paradigm shift that transforms the nature of the industry

Amazon is an example of a radical rethinking of the way a book can be bought or sold

Change adjustments

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Reengineering	Continuous Improvement
Firm strong action to remedy serious problem	Routine actions for minor improvements
Driven from the top down	Worker drive
Very broad in scope	Narrow in scope
Initiated by external factors	Initiated by workers close to the area
IS play a very large part in formulating a solution	IS provide data to guide the improvement

Recap

Continuous improvement and BPR are strategies for monitoring and improving business processes within the organisation.

CI may be considered evolutionary*, while BPR can be* revolutionary.

9.2 The role of the IS department

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9.2.1 Responsibilities of the IT/IS department

- Plan for IS and IT *infrastructure*
  - *Business alignment*
- Develop and adapt IS and IT *infrastructure*
- Maintain IS and operate and manage *infrastructure*
- Protect *infrastructure* and *data*

Role of the IS department

Why do you need to know?

- To be an effective consumer of the IS department's resources
- To be a better manager by knowing the functions of the IS department
- To ensure the functions are performed

Responsibilities of the IS department

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These are the critical areas of influence:

- Plan for IS and IT *infrastructure*
- Develop and adapt IS and IT *infrastructure*
- Maintain IS and operate and manage *infrastructure*
- Protect *infrastructure* and *data*

Plan for IS and IT infrastructure

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Information systems exist to further the organisation's competitive strategy

One perspective is that there are no 'IS projects' – all projects involving IS facilitate some business goal

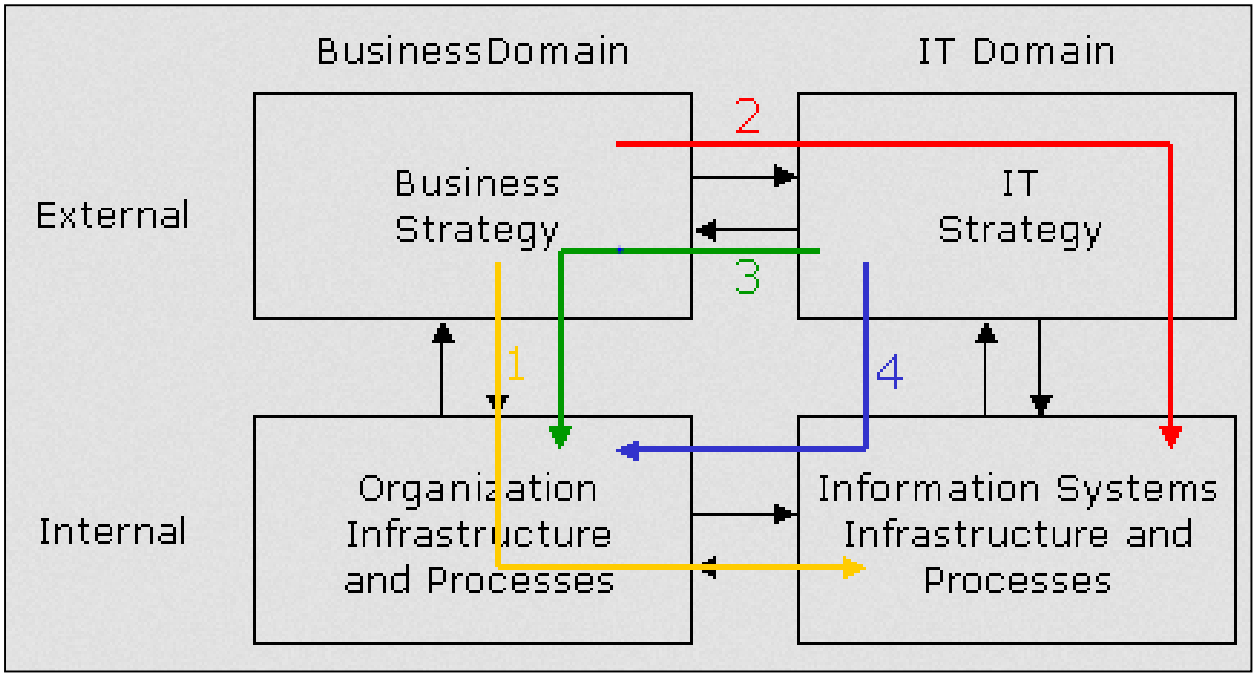
The IS department aligns all of its activities with the organisation's primary goals and objectives

As new technology emerges, the IS department assesses it and determines if it can advance the organisations goals

As the business changes, the IS department is responsible for adapting infrastructure and systems to the new goals

Business – IS alignment

Business-IS *alignment* involves optimising communication between executives who make the business decisions and IS managers who oversee the technical operations



Source: http://www.valuebasedmanagement.net/methods_venkatraman_strategic_alignment.html

Develop and adapt IS and IT infrastructure

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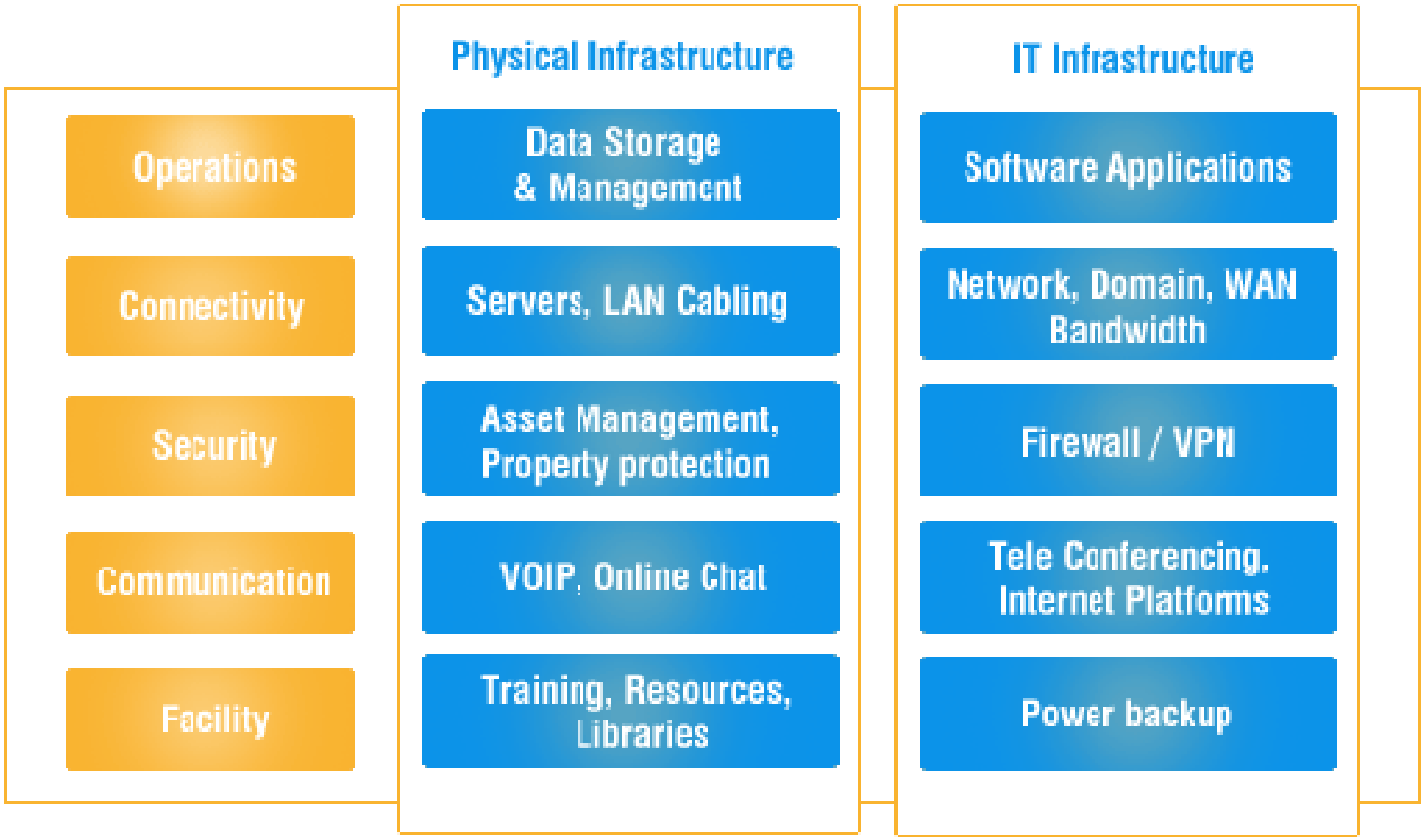
In addition to IS development, the IS department is responsible for creating and adapting *IT infrastructure* (eg networks, servers, repositories)

The IS department also creates *systems infrastructure* (eg email systems, wikis and any other technology the organisation needs)

The IS department will specify the *standards* it will support (in hardware, software and configurations)

Develop and adapt IS and IT infrastructure



Source: http://www.strategicservices.com/in/images/graph-infrastructure.gif

Maintain IS and operate and manage infrastructure

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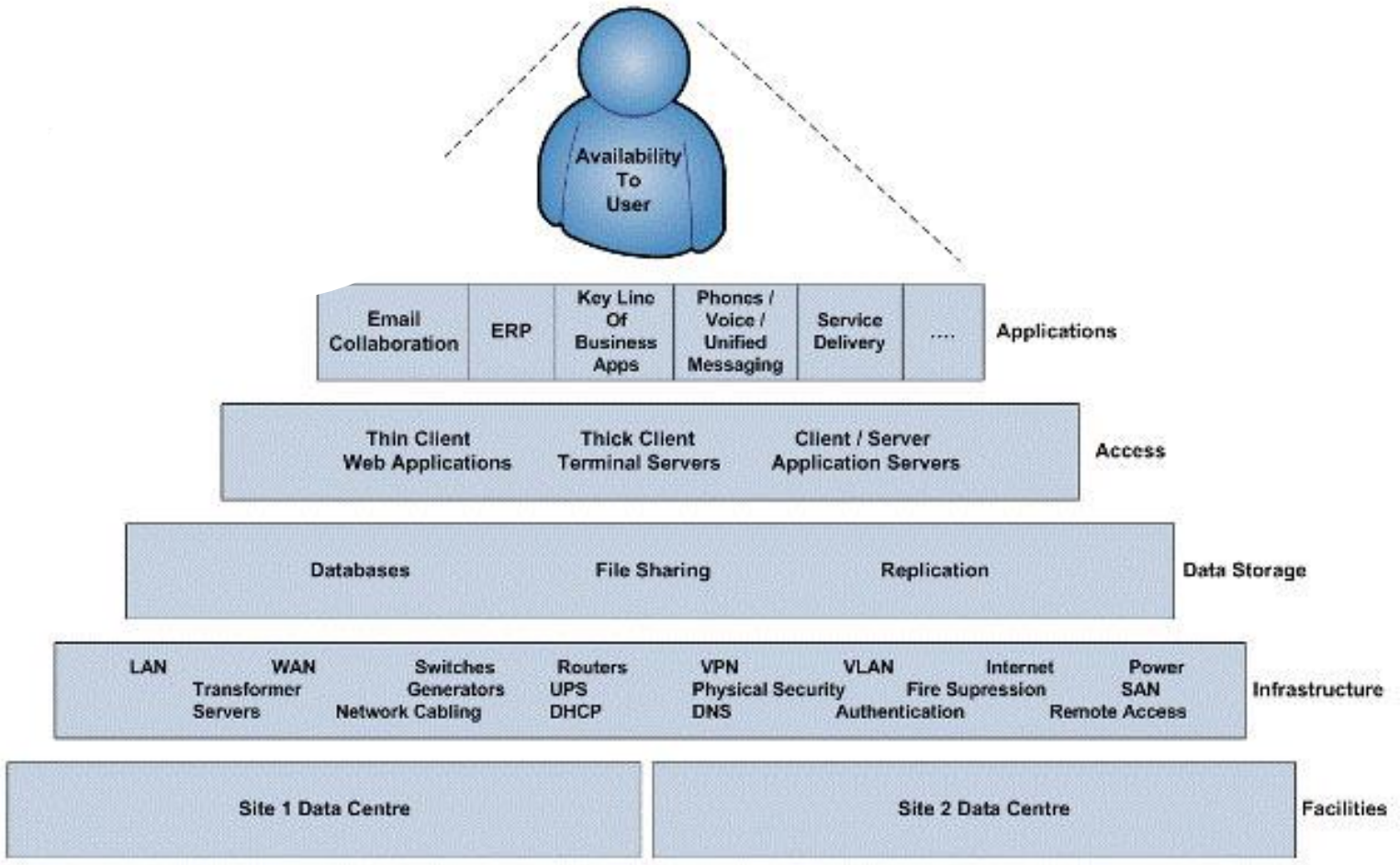
Infrastructure must be *monitored* and *managed*

Due to the high cost and serious disruption of system outages, IS personnel are particularly sensitive to possible threats to that infrastructure

Infrastructure dependency



Source: http://radinka.co.id/v1/images/stories/infra01.jpg

Protect infrastructure and data

Threats arise from three sources:

- Human error
- Malicious human activity
- Natural events & disasters

The IS department helps the organisation manage risk by

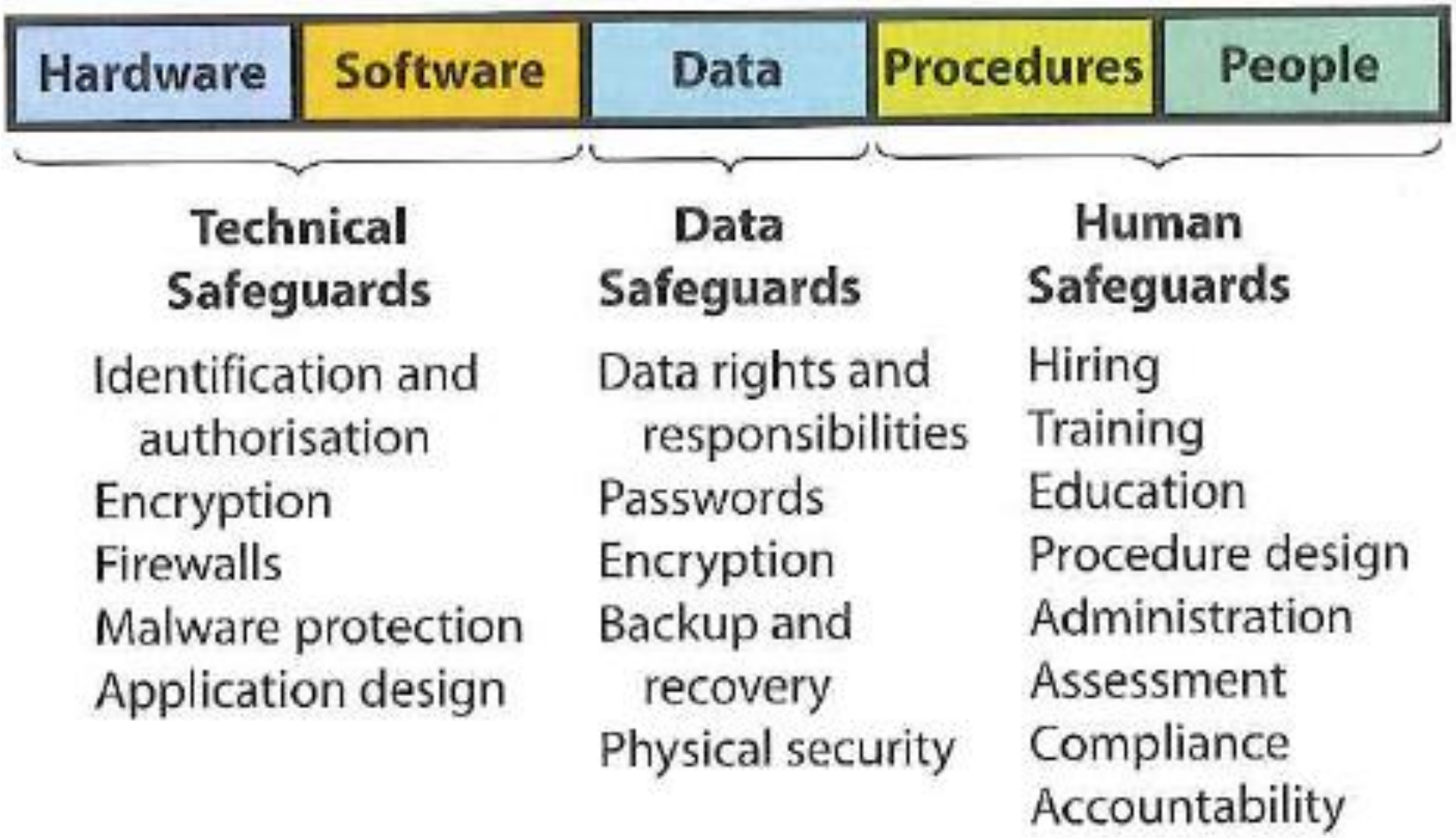
- identifying threats
- estimating cost (not just financial)
- specifying appropriate safeguards

Security threats

		Source		
		Human Error	**Malicious Activity**	**Natural Disasters**
Problem	**Unauthorised data disclosure**	Procedural mistakes	Pretexting Phishing Spoofing Sniffing Computer crime	Disclosure during recovery
	Incorrect data modification	Procedural mistakes Incorrect procedures Ineffective accounting controls System errors	Hacking Computer crime	Incorrect data recovery
	Faulty service	Procedural mistakes Development and installation errors	Computer crime Usurpation	Service improperly restored
	Denial of service	Accidents	DOS attacks	Service interruption
	Loss of infrastructure	Accidents	Theft Terrorist activity	Property loss

Source: Kroenke et al 2010

Security safeguards

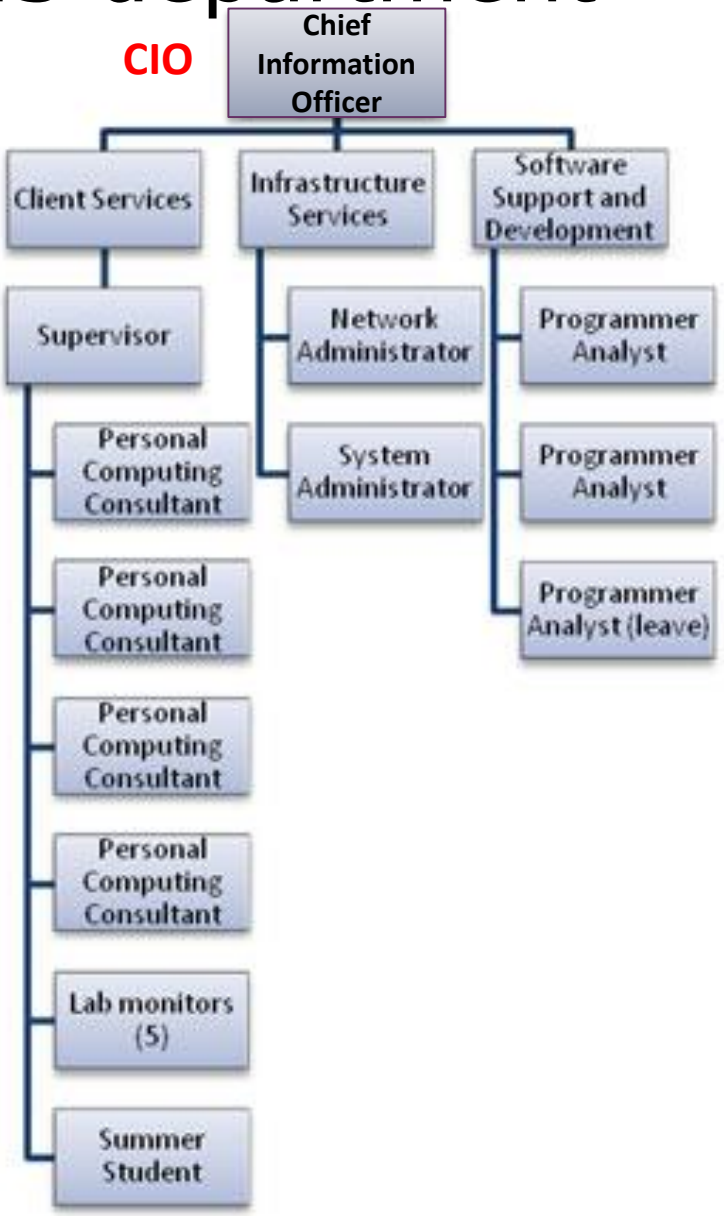


Source: Kroenke et al 2010

Organising the IS department

The department may have specified personnel to manage specific responsibilities:

- Software support & development
- Infrastructure
- Client services



Source: http://www.mi.mun.ca/media/mi/informationcommunicationstechnologies/images/ict-structure.jpg

Recap

The IS department plays several principal roles in an organisation:

- *Plan for IS and IT infrastructure*
- *Develop and adapt IS and IT infrastructure*
- *Maintain IS and operate and manage infrastructure*
- *Protect infrastructure and data*

9.3 IS professionals

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9.3.1 Skills

9.3.2 Roles

Skills required of an IS professional

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From Topic 1

- Strong
  - analytical
  - critical thinking

  skills as they apply to the creation, management and use of the information associated with organisational processes
- Technical skills in the areas of the analysis, design and implementation of information technology solutions that enhance organisational performance

  across a wide variety of domains

Information Systems job profiles

From Topic 1 E.G.

Business Analyst

Primary Skill	Business analysis (BUAN)
2nd Skill	Business process improvement (BPRE)
3rd Skill	Requirements definition and management (REQM)
4th Skill	Information analysis (INAN)
5th Skill	Data analysis (DTAN)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 E.G.

Systems Analyst

Primary Skill	Systems design (DESN)
2nd Skill	Information analysis (INAN)
3rd Skill	Business analysis (BUAN)
4th Skill	Technical specialism (TECH)
5th Skill	Data analysis (DTAN)
6th Skill	Business process improvement (BPRE)
	Consultancy (CNSL)
	IT governance (GOVN)
	Release and deployment (RELM)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 E.G.

Database Administrator

Primary Skill	Database administration (DBAD)
2nd Skill	Database/repository design (DBDS)
3rd Skill	Programming/software development (PROG)
4th Skill	Data management (DATM)
	Systems design (DESN)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 

Project Manager

Primary Skill	Project management (PRMG)
2nd Skill	Programme management (PGMG)
3rd Skill	Systems development management (DLMG)
4th Skill	IT management (ITMG)
5th Skill	Consultancy (CNSL)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 E.G.

Business Development Manager

Primary Skill	Stakeholder relationship management (RLMT)
2nd Skill	Consultancy (CNSL)
3rd Skill	Business process improvement (BPRE)
4th Skill	Information management (IRMG)
5th Skill	IT governance (GOVN)
	Enterprise and business architecture development (STPL)
	Portfolio management (POMG)
	Service level management (SLMO)
	Software development process improvement (SPIM)
	Supplier relationship management (SURE)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 E.G.

Chief Information Officer

Primary Skill	IT governance (GOVN)
2nd Skill	IT management (ITMG)
3rd Skill	Stakeholder relationship management (RLMT)
4th Skill	Enterprise and business architecture development (STPL)
	Portfolio management (POMG)
6th Skill	Supplier relationship management (SURE)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Information Systems job profiles

From Topic 1 

ICT Consultant

Primary Skill	Consultancy (CNSL)
2nd Skill	Business process improvement (BPRE)
3rd Skill	Business analysis (BUAN)
4th Skill	IT governance (GOVN)
5th Skill	Solution architecture (ARCH)

Source: ACS. (2013). Common ICT Job Profiles & Indicators of Skills Mobility *ICT Skills White Paper*. Sydney: Australian Computer Society.

Recap

IT professionals have a number of roles within the IS department in an organisation.

Which role they take depends on the skills they exhibit and rely on.

9.4 IS for people

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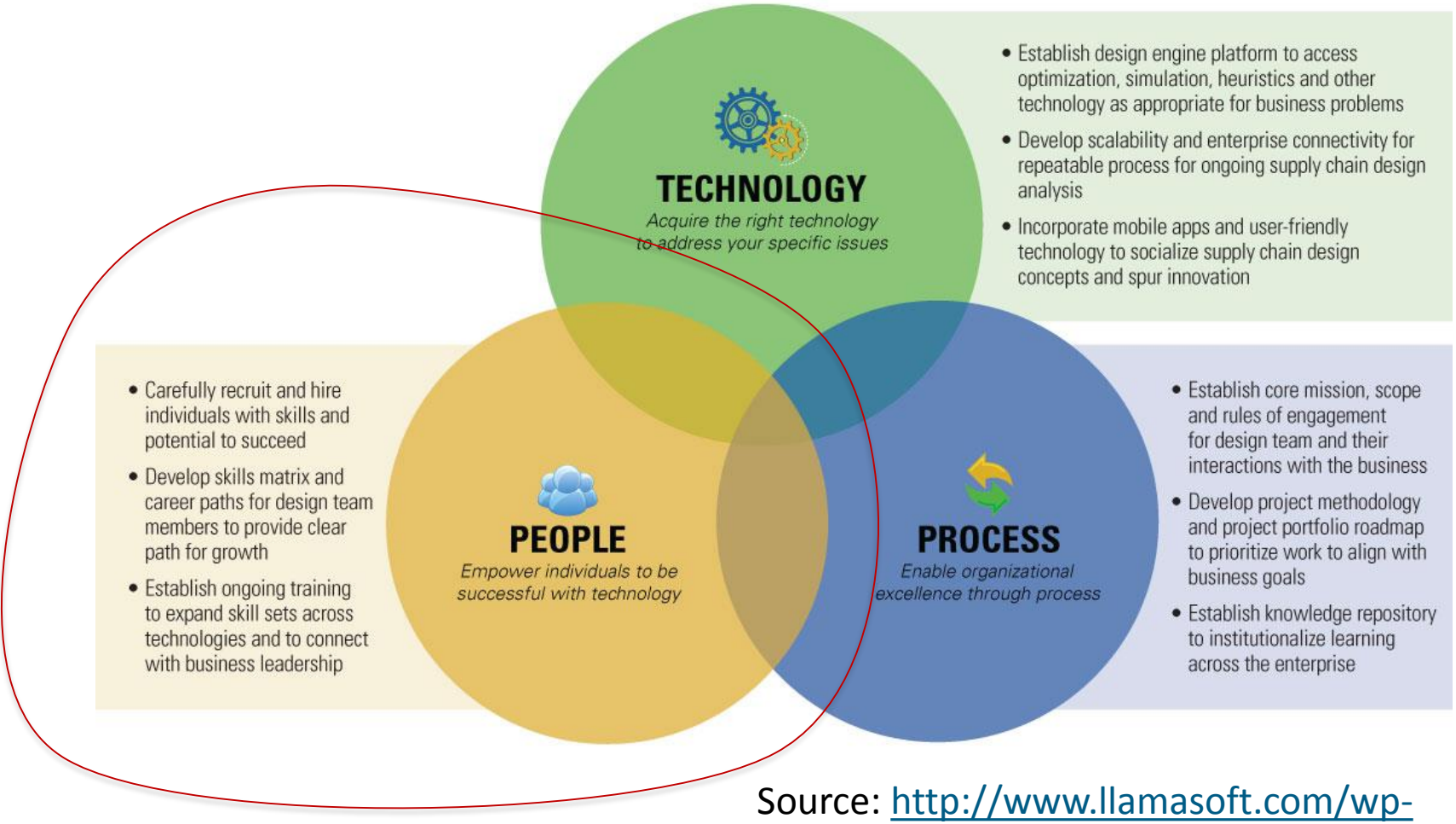
9.4.1 Stakeholders

9.4.2 Users

- HCI
- Usability

Information systems for *people*



Source: http://www.llamasoft.com/wp-content/gallery/supply-chain-design-center-of-excellence/centerofexcellence.jpg

Stakeholders are people

The earlier in the process stakeholders can be involved, the better

- **If you want to involve stakeholders in the process -** *they should be part of every phase of the work, so that they can both contribute and take ownership*. Their knowledge of the organisation and understanding of its needs can prove invaluable in helping you to avoid mistakes in your approach and in the people you choose to involve
- **Stakeholders should be included in any assessment and pre-planning activities as well as planning and implementation** in any IS project proposed. That way, they'll understand the process and project much more clearly, and can add to them
- **If you want your process to be regarded as transparent,** stakeholder involvement from the beginning is absolutely necessary
- **If your effort involves changes that will affect people in different ways -** it's important that they be involved early so that any concerns or barriers show up early and can be addressed

Source: adapted from http://ctb.ku.edu/en/table-of-contents/participation/encouraging-involvement/identify-stakeholders/main

Stakeholder analysis

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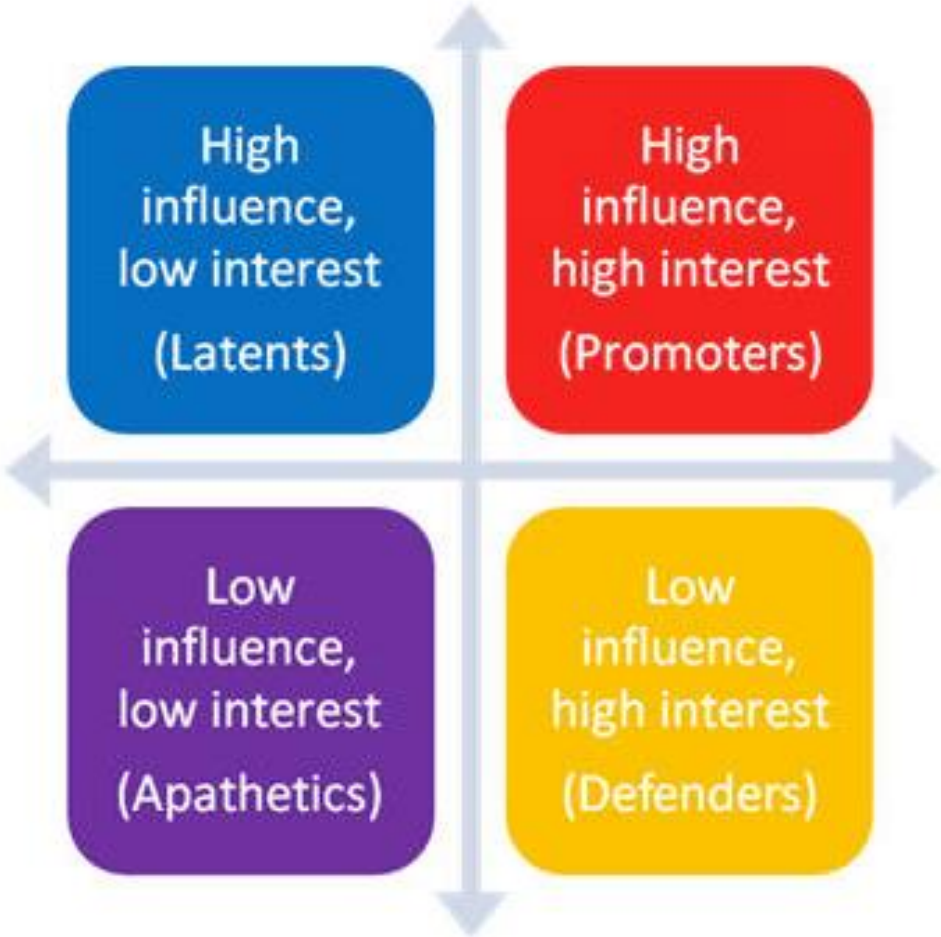
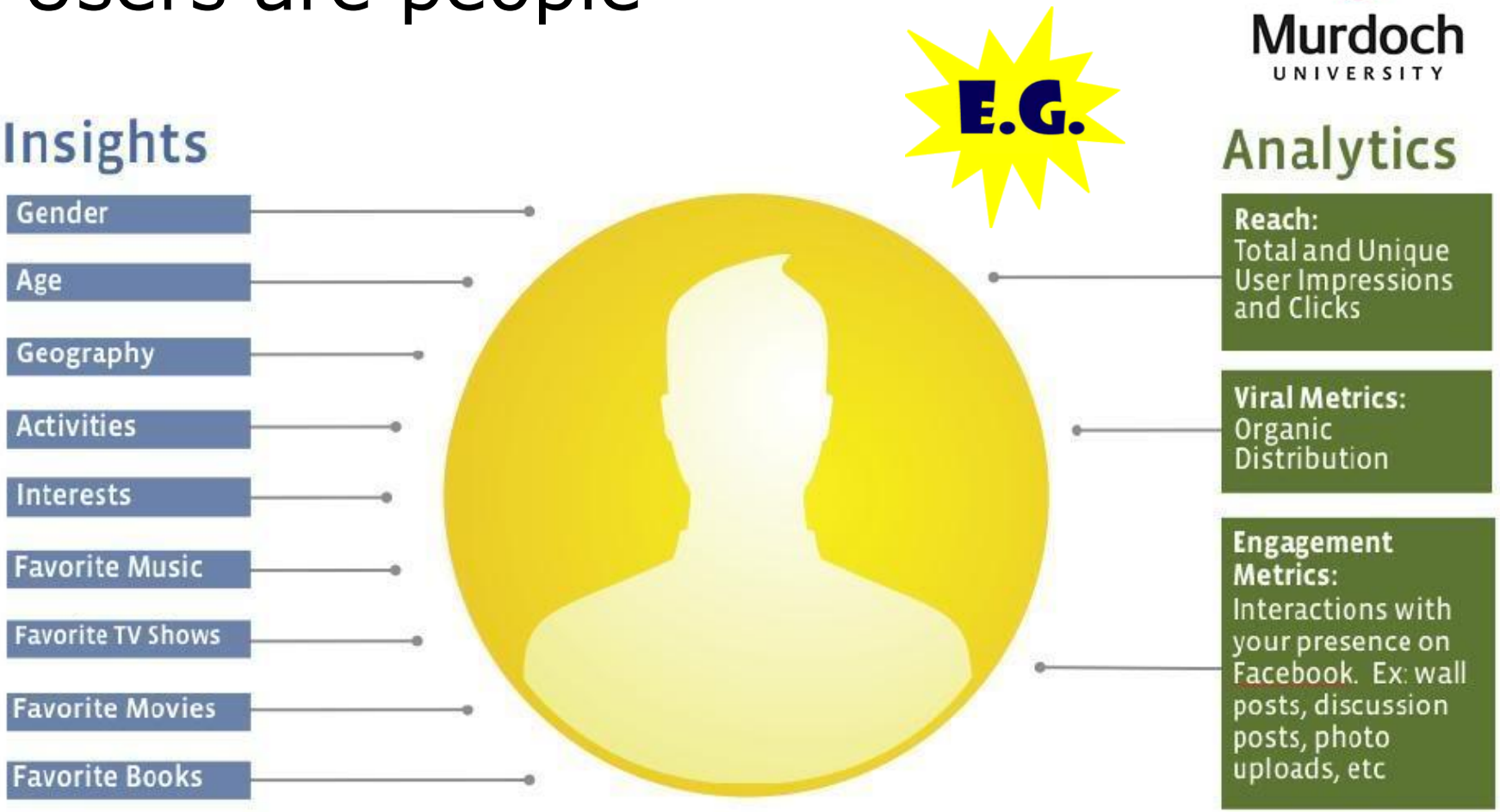
A way of determining

- who can have the most influence on an effort
- who is likely to be most affected by the effort
- how you should work with stakeholders with different levels of interest and influence.



Source: http://ctb.ku.edu/en/table-of-contents/participation/encouraging-involvement/identify-stakeholders/main

Users are people



Source: http://i529.photobucket.com/albums/dd340/betscarpenter/FacebookUserInformationAnalysis-1.jpg

HCI

Aims to improve the interactions between users and computers by making computers more usable and receptive to users' needs

A long term goal of HCI is to design systems that minimise the *barrier* between the human's idea of what they want to accomplish and the computer's support of the user's task

HCI

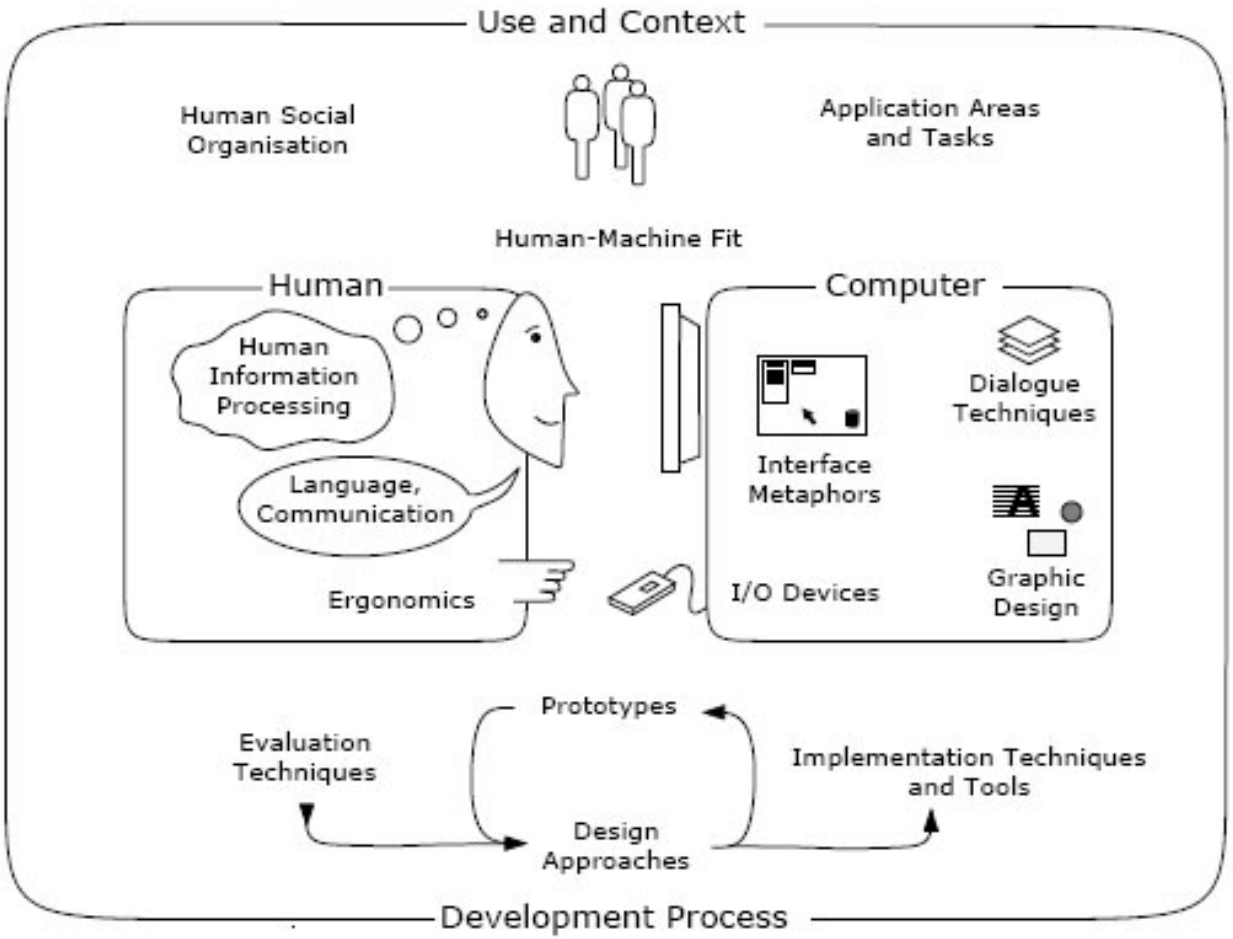


Figure 1.1: The nature of Human-Computer Interaction. Adapted from Figure 1 of the ACM SIGCHI Curricula for Human-Computer Interaction [Hewett et al., 2002]

Source: http://hcik4.files.wordpress.com/2008/11/pic02.jpg

Usability

A *quality attribute* that assesses how easy user interfaces are to use:

- **Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design
- **Efficiency**: Once users have learned the design, how quickly can they perform tasks
- **Memorability**: When users return to the design after a period of not using it, how easily can they re-establish proficiency
- **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors
- **Satisfaction**: How pleasant is it to use the design

Usability does matter

Source: http://blog.openviewpartners.com/files/usability.jpg

Usability heuristics

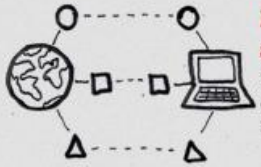
Include:

- Match ‘real world’ & system
- Provide meaningful feedback
- Prevent errors, but also help users recover from them
- Support user control (eg undo)
- Be consistent
- Provide meaningful help & documentation
- Allow for novice & experts use
- Be minimalistic in design
- Allow users to recognise what they are trying to do, not recall/remember it

Ten Usability Heuristics by Jakob Nielsen

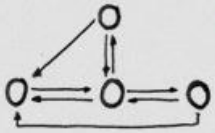
Visibility of system status

Give the users appropriate feedback about what is going on.



Match between system and the real world

Use real-world words, concepts and conventions familiar to the users in a natural and logical order.

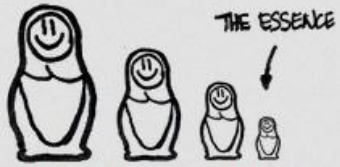


User control and freedom

Support undo, redo and exit points to help users leave an unwanted state caused by mistakes.

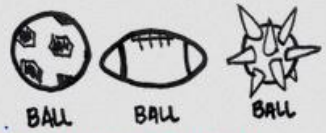
Error prevention

Prevent problems from occurring: eliminate error-prone conditions or check for them before users commit to the action.



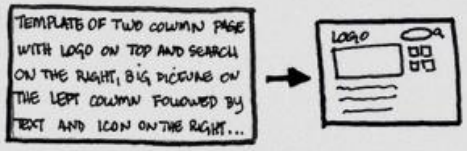
Aesthetic and minimalist design

Don't show irrelevant or rarely needed information since every extra elements diminishes the relavance of the others.



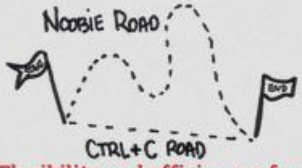
Consistency and standards

Follow platform conventions through consistent words, situations and actions.



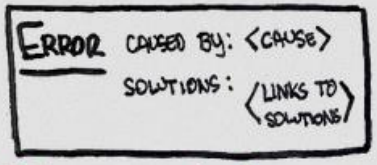
Recognition rather than recall

Make objects, actions, and options visible at the appropriate time to minimize users' memory load and facilitate decisions.



Flexibility and efficiency of use

Make the system efficient for different experience levels through shortcuts, advanced tools and frequent actions.



Help users recognize, diagnose, and recover from errors

Express error messages in plain language (no codes) to indicate the problem and suggest solutions.

Help and documentation

Make necessary help and documentation easy to find and search, focused

Source: http://25.media.tumblr.com/tumblr_mcoafptAPQ1rzteako1_1280.png

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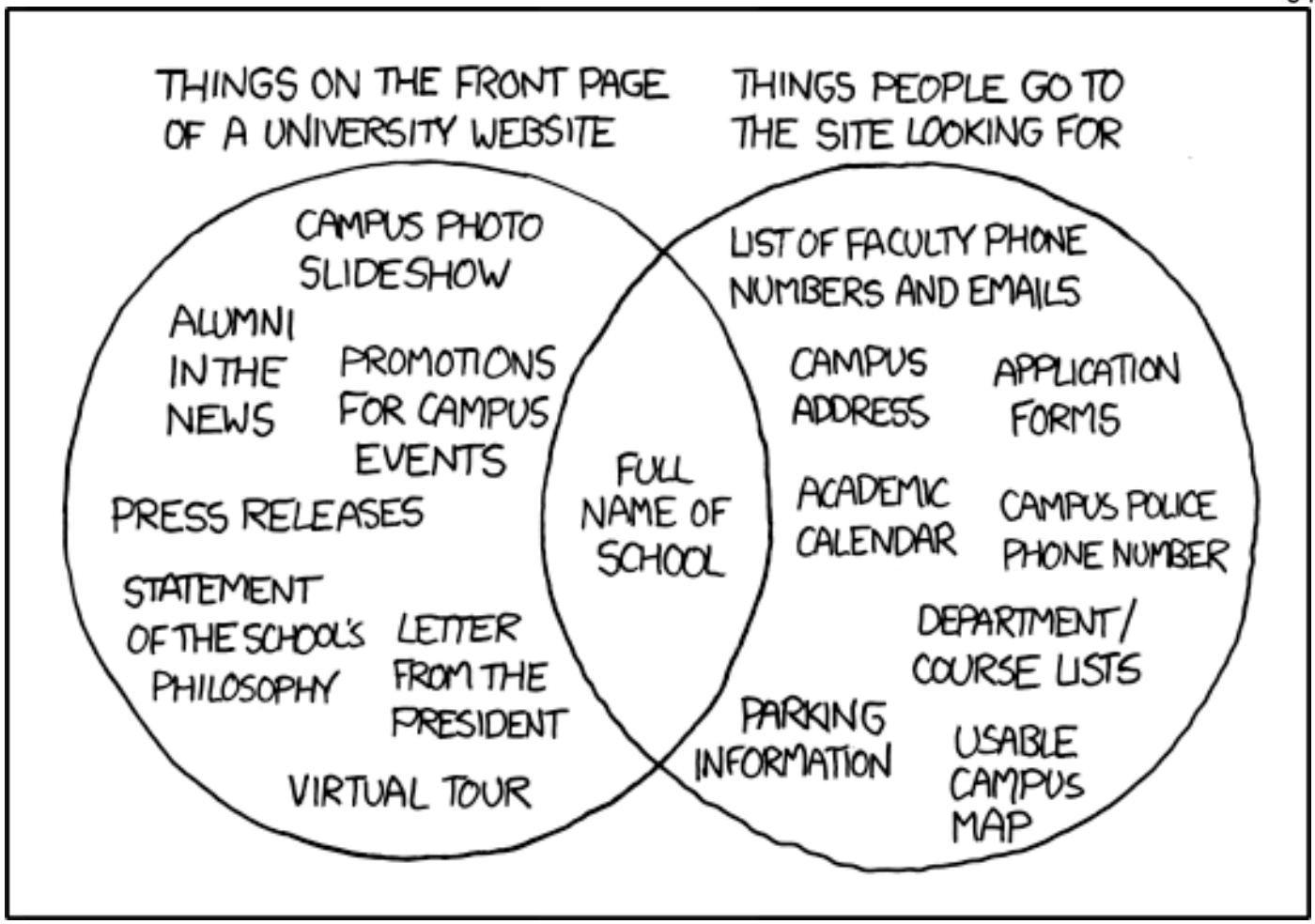
Usability of a website



Source: http://xkcd.com/773/

Recap

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Information systems are designed for stakeholders and other users.

Usability is an attribute of information systems which have been designed with the users in mind.

9.5 Globalisation/localisation

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9.5.1 Why localise?

9.5.2 Issues to consider

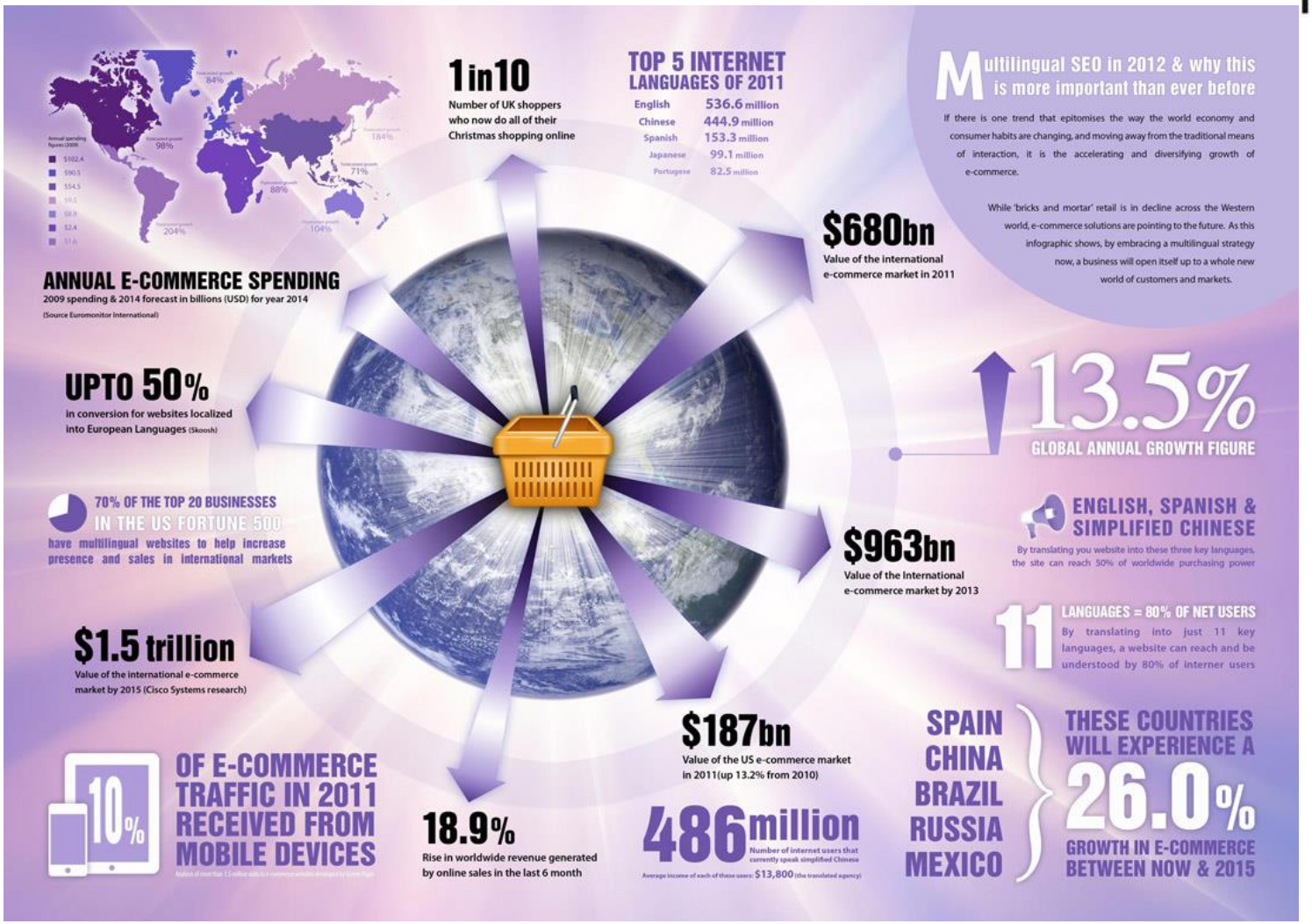
The global challenge

GENERAL CULTURAL FACTORS	SPECIFIC BUSINESS FACTORS
Global communication and transportation technologies	Global markets
Development of global culture	Global production and operations
Emergence of global social norms	Global coordination
Political stability	Global workforce
Global knowledge base	Global economies of scale

The growth of powerful communications technologies and the emergence of world cultures lay the groundwork for *global markets*—global consumers interested in consuming similar products that are culturally approved. Although the possibilities of globalisation for business success are significant, fundamental forces are operating to inhibit a global economy and to disrupt international business.

Source: http://media.pearsoncmg.com/intl/global/ema_ge_laudon_mis_13ge/Chapter%2015.pdf

Why localise?



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Source: http://beyondwordz.com/translation-images/content/why-localise_big.jpg


REUTERS 路透
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人民币面临空前升值预期。
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最新头条
中国财经
中海油惠州炼厂扩建後将加工高硫中质原油--报载
银监会要求审慎监管银行创新 防范创新成为规避监管工具
二套房贷首付不低于50% 利率不低于基准利率1.1倍--国务院
中国3月全国财政收入同比增36.8%
海升果汁拟提升北美及俄罗斯市场份额最高至五成
沪深300股指期约首日挂牌基准价为

Source: http://mashable.com/2011/12/22/website-localization/

Localising IS

Murdoch UNIVERSITY

Issues to be considered:

- Translate :
  - the user interface, including menus and commands
  - all documentation and help
  - diagrams & examples
  - error messages
  - text in message boxes
- Redesign (?) labels in forms, reports etc
- Adjust for different character sets (eg $ or €)
- Adjust for languages (eg that read/write right to left)
- Consider appropriateness of colours etc

Recap

Global information systems pose challenges because cultural, political, and language diversity magnifies differences in organisational culture and business processes and encourages proliferation of disparate local information systems that are difficult to integrate.

Summary

Information systems may be both the cause and effect of organisational change.

The IS department supports organisational objectives by providing the IT skills necessary to:

- adapt to *changing* needs
- ensure systems acquired are *usable* and
- respond to *challenges* such as those offered by globalisation.

Resources used in this topic

Constantine, L L. (1993). Work organization: paradigms for project management and organization. *Communications of the ACM, 36*, 35-40.

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Laudon, K C, & Laudon, J P. (2014). *Management Information Systems: managing the digital firm* (13th, global ed.): Pearson.