



VCE INFORMATION TECHNOLOGY IMPLEMENTATION WORKSHOP, 2010

In 2011 a new VCE Information Technology (IT) study design will be operating. Its accreditation period is from 2011 to 2014. All schools have received printed copies of this study design, and an electronic version is available on the VCAA website at <http://www.vcaa.vic.edu.au/vce/studies/infotech/infotechsd2011-2014.pdf>

Aims of the study

Underpinning this study is a set of aims that are used as the overarching contextual framework for each unit. Within the learning program of every unit students should be given the opportunity to develop knowledge and skills to:

- Solve information problems using ICT
- Understand the processes that are involved in converting data into information
- Confidently and responsibly protect the security of information they handle
- Understand how the technology they are using supports the creation of information
- Evaluate the extent to which the needs of society are met through the use of ICT.

Problem-solving methodology (PSM)

This study design incorporates a new problem-solving methodology (PSM) that is applied across all units. The PSM has four key stages: analysis, design, development and evaluation, and within each stage there is range of activities. The extent of the application of the PSM varies from one unit to another. The PSM is mandated as it is part of the study design, so for the purposes of teaching and assessment the descriptions/definitions contained within the methodology are the ones to be used and followed. Details of the PSM are on pages 16 to 18 of the study design.

Glossary

The study design contains a glossary of 22 terms, which like the PSM, must be used for teaching and assessment purposes. The terms in the glossary are typically ones for which there are not always consistent definitions, hence, for the purposes of the study, definitions are provided. The glossary is located on pages 12 to 15. Note that in the majority of other studies that have a glossary, it appears in the Advice for teachers section, which has the status of being explanatory but not mandatory.

Queries

If you have any queries about the study design please contact Paula Christophersen on 9651 4378 or via email at christophersen.paula.p@edumail.vic.gov.au

UNIT 1: IT in ACTION

AoS1

02190601	INDEPENDENT	Western Metropolitan Region	926
01750501	GOVERNMENT	Hume Region	577
02198101	INDEPENDENT	Eastern Metropolitan Region	982
02192401	INDEPENDENT	Northern Metropolitan Region	949
02201001	CATHOLIC	Northern Metropolitan Region	938
01620301	GOVERNMENT	Barwon South-West Region	523
02160801	CATHOLIC	Eastern Metropolitan Region	925
01875301	GOVERNMENT	Grampians Region	535
02190601	INDEPENDENT	Western Metropolitan Region	926

SPREADSHEETS

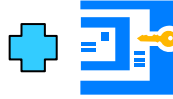


GRAPHIC OUTPUT

AoS2



NETWORKS



SECURITY

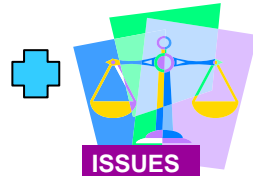


MOBILE DEVICES

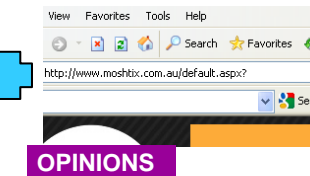
AoS3



APPLICATIONS



ISSUES



OPINIONS

Area of Study 1: From data to information

- Spreadsheets used to manipulate data to produce graphic information
- Teacher must provide data for students. Good sources include Melbourne Water, the Bureau of Meteorology, the Australian Bureau of Statistics. Provide extra data so students have to select relevant data from the data set
- Two stages of the PSM are applied – Design and Development
- Teacher provides the solution requirements – what is required of the solution and any constraints on the solution
- Students select and apply appropriate design tools to represent the appearance and functionality of the solutions
- Three Development activities are undertaken – manipulate, test, validate
- Output in graphic form

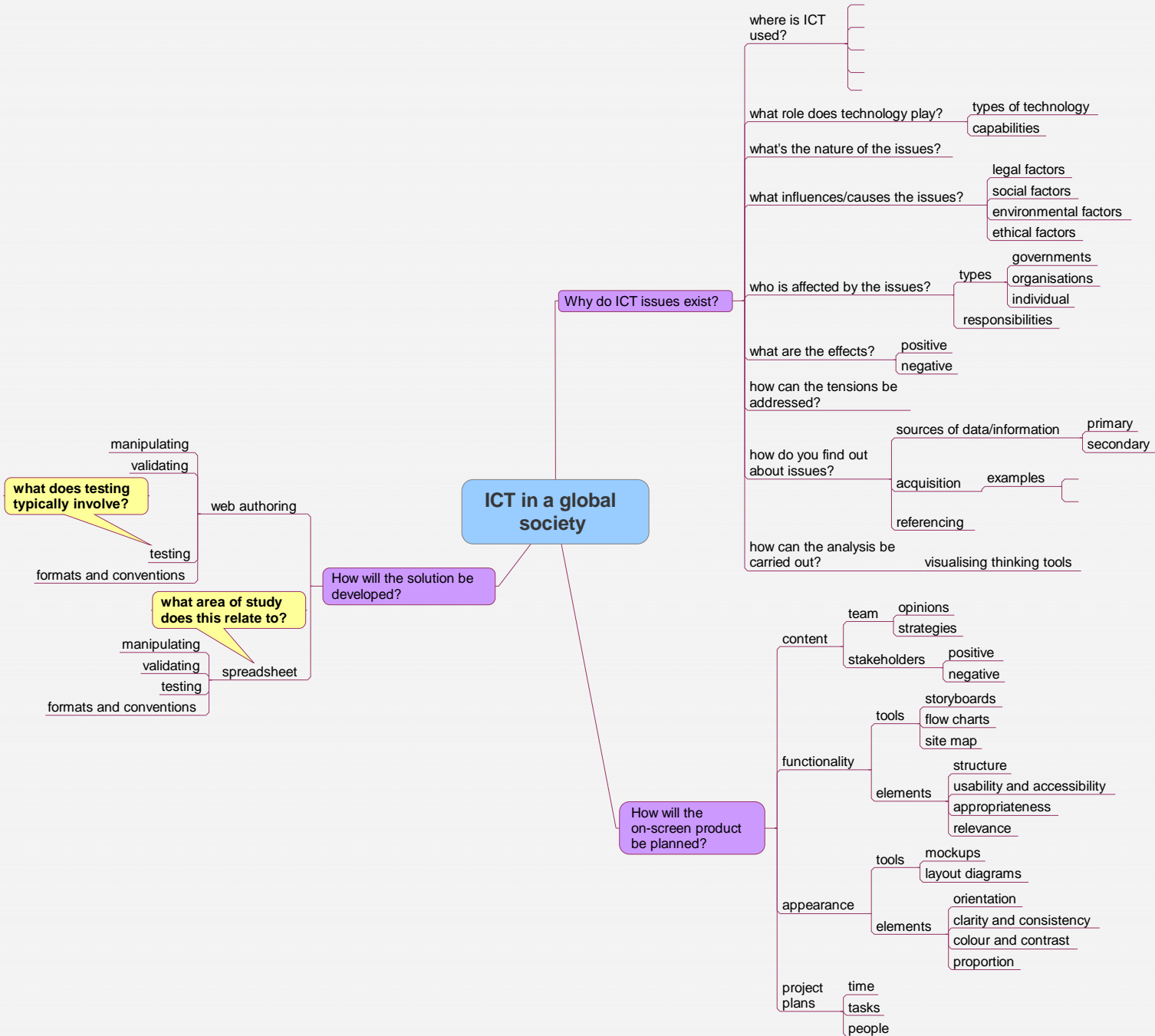
Area of Study 2: Networks

- Similar to Area of Study 2 in Unit 2 (2007–2010 study design), but students do not have to show data flows. New features include: (i) role of network professionals (ii) focus on mobile devices (iii) security threats to networks
- No software use is required, but it can be used to show the type of network
- Focus on solving a network problem rather than just learning about networks
- Problem can be provided by teacher or proposed by the student

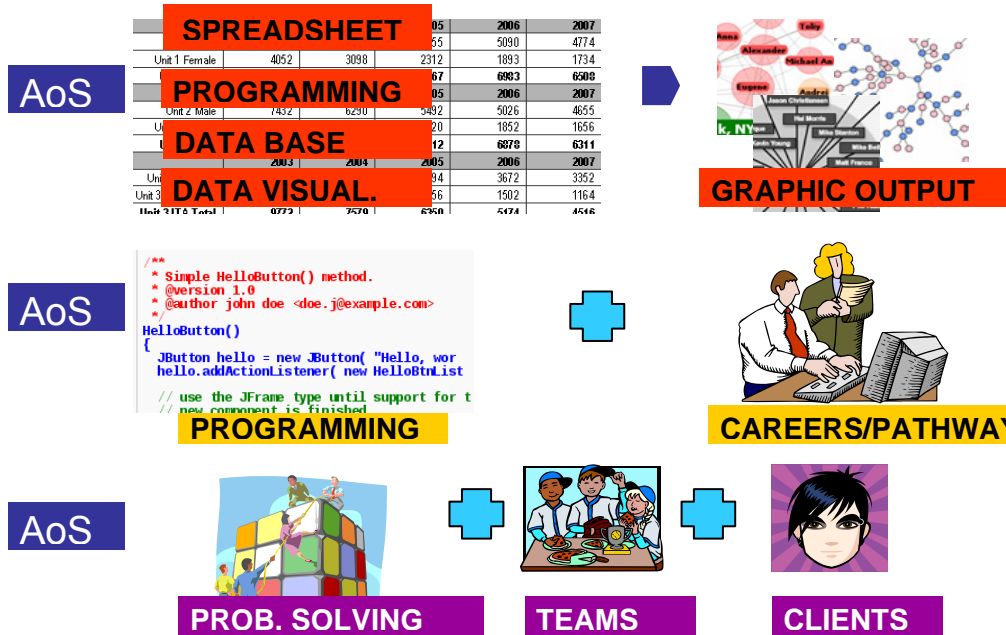
Area of Study 3: ICT in a global society

- Similar to Area of Study 3 in 2007–2010 study design – team task that requires the use of several software tools: spreadsheets, web authoring, visualising thinking and project planning tool
- Teams select to investigate an issue within one of the following contexts: computer gaming, social networking, robotics, e-commerce and cloud computing
- Students must acquire primary data and use spreadsheet software to produce at least one graphic in their website
- Only Design and Development stages of the PSM are applied
- Must be studied after or concurrently with Area of Study 1 because of spreadsheet requirement

UNIT 1: IT IN ACTION, AREA OF STUDY 3



UNIT 2: IT PATHWAYS



Area of Study 1: Data analysis and visualisation

- Data visualisation is the use of software tools to represent data in the form of charts, maps, animations or any graphic means that makes it easier to identify patterns and relationships within vast data sets
- Range of software tools can be used: programming language (e.g. Python), spreadsheets, database, data visualisation (e.g. motion charts in Google Docs, InfiView, Tableau)
- Teachers provide design brief and students apply **all** stages of the PSM. Advice about preparing design briefs is on pages 52 and 53 of the study design
- Data visualisation resources will be provided by the VCAA

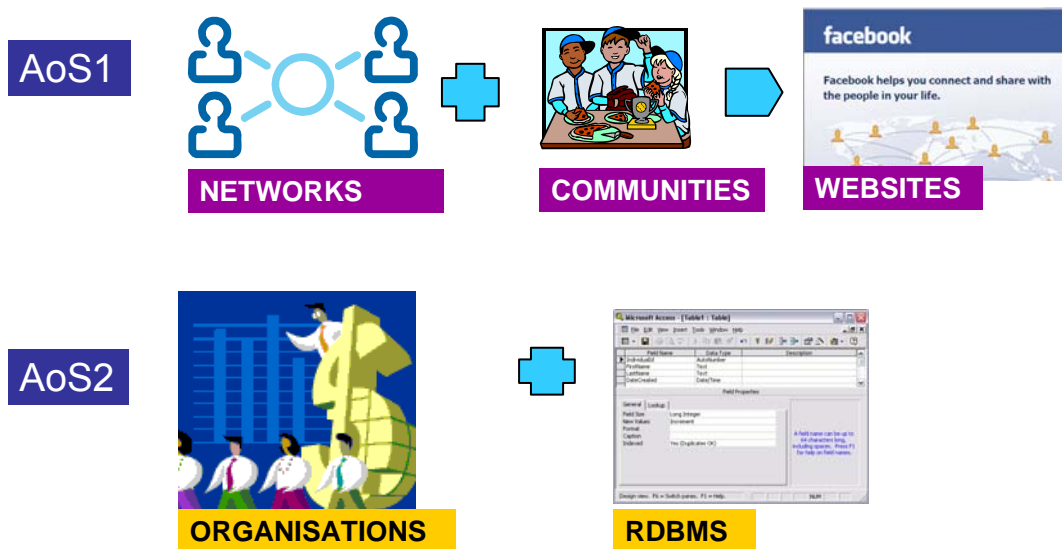
Area of Study 2: Programming and pathways

- Very similar to Area of Study 1 in 2007–2010 study design
- Schools can choose programming or scripting language
- Design and Development stages are applied
- Problems are small – focus on discrete tasks rather than solving large/complex problem
- Multimedia Victoria and VITTA are good sources for ICT careers information
- Electronic record kept of learning progress – blog, diary

Area of Study 3: Tools, techniques and procedures

- Very similar Area of Study 3 in 2007–2010 study design
- Team work with a real client, who must be available during the designing and evaluating stages. Teams can be virtual
- Any software tool can be used – does not have to come from this unit
- Non-dedicated project management tool used to prepare and monitor plan
- All stages of the PSM are studied

IT APPLICATIONS: UNIT 3



Area of Study 1: Online communities

- Similar to Area of Study 2 in 2007–2010 study design, but with a different context (online communities)
- Analysis, Design and Development stages of the PSM are applied
- Teacher provides a design brief and some data, from which students select. Design brief advice is provided on pages 52 and 53 of the study design
- The types of appropriate websites to support the communication needs of online communities will be published annually in *The Bulletin* as will the software functions suitable for web authoring. Typical types of websites include blogs, wikis, forums, social networking
- Website to be a prototype (40 marks) – it does not have to be fully operational but it must clearly show the content and the navigation intent.
- Theoretical component (10 marks) focuses on justifying the type of website created and explaining the technical requirements to host the website

Area of Study 2: Organisations and data management

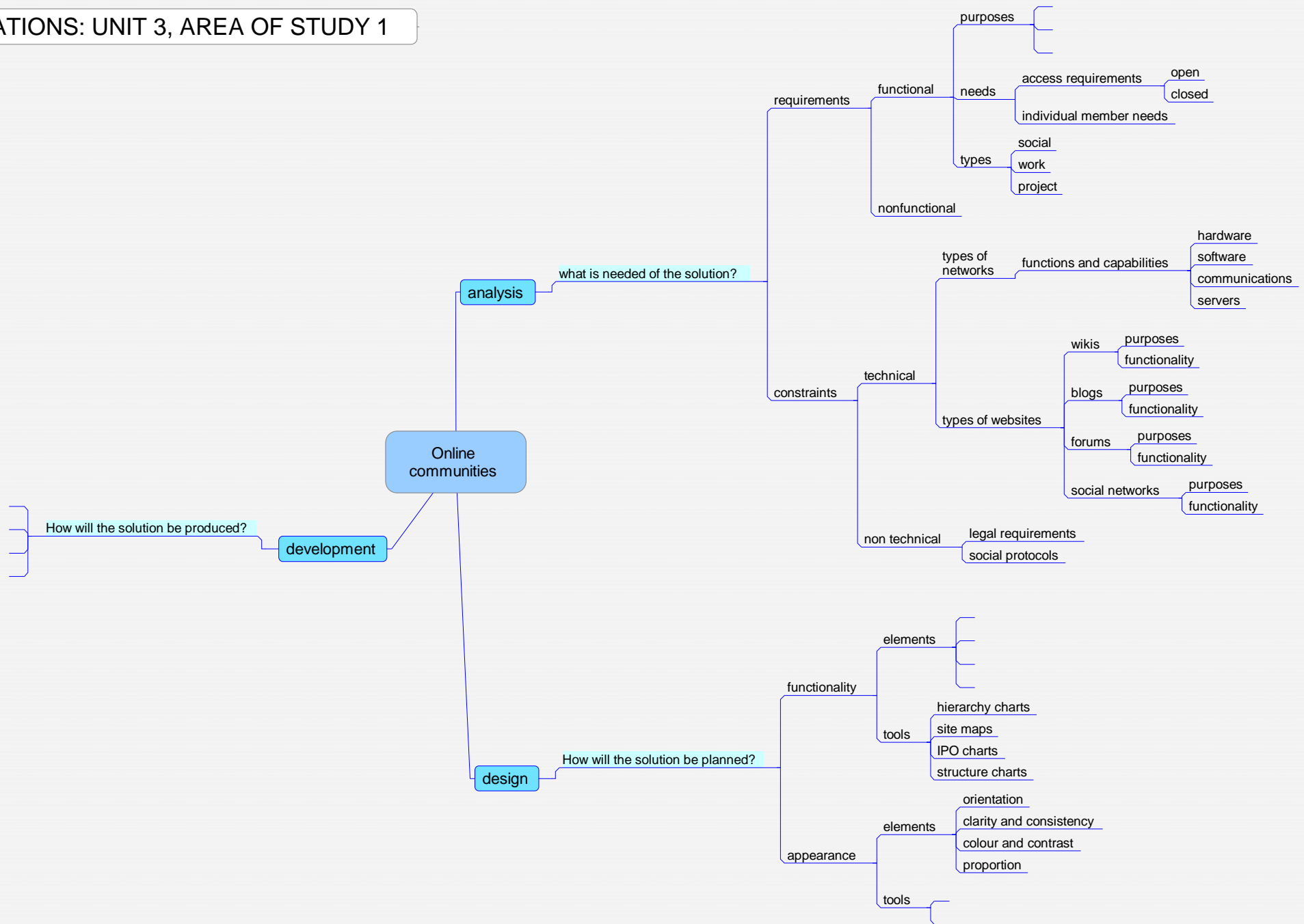
- The Web is the context for the outcome – why and how do organisations capture data via the Web and why do people and organisations supply data (report worth 10 marks)
- Design and Development stages of PSM
- Teacher provides a design brief and limited data
- RDBMS functions will be published in *The Bulletin*
- Solution focuses on building tables and conducting queries (40 marks)
- **Errata** for two key knowledge to be published in *The Bulletin*: data types and data formats

Both areas of study are worth 50 marks each

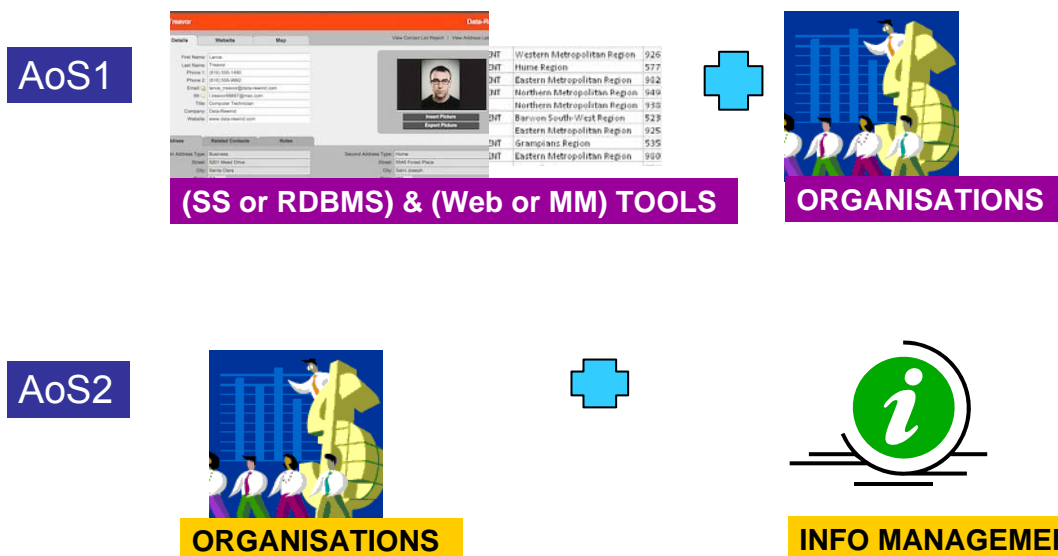
Two software tools are used: RDBMS and web authoring

PSM stages are: Analysis, Design, Development

IT APPLICATIONS: UNIT 3, AREA OF STUDY 1



IT APPLICATIONS: UNIT 4



Area of Study 1: Organisations and information needs

- Students study either spreadsheets or RDBMS to produce solution
- Students use web authoring or multimedia software to produce user documentation
- Solution and user documentation worth 50 marks
- Focus is on decision making and types of information to support different decisions made in organisations
- Solutions must solve a recurring problem in an organisation – can process new sets of data at a later date
- The bulk of the key knowledge are not affected by the software tool selected for study
- Functions for each software tool published annually
- All stages of the PSM are applied: Analysis, Design, Development, Evaluation
- Teacher provides design brief including some data
- Evaluation task worth 10 marks
- Only two tasks (no visualising thinking task)
- For the examination students will not be disadvantaged because of the software tool they have studied. For example, students might answer a common question, which is illustrated through the software tool they have studied. Alternatively there may be opportunities to answer a question based on a specific software tool. In this instance every effort is made to ensure the same degree of difficulty.

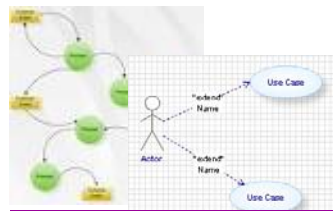
Area of Study 2: Information management

- Very similar to Area of Study 2 in 2007–2010 study design but a different title
- Key knowledge rewritten to improve clarity
- The assessment task (worth 40 marks) does not have to focus on one organisation only. This provides greater flexibility in task design. It also allows for the inclusion of discrete stimulus material such as statistics on security violations, newspaper articles etc

Sample examination questions will be available by Term 1, 2011.

SOFTWARE DEVELOPMENT: UNIT 3

AoS1

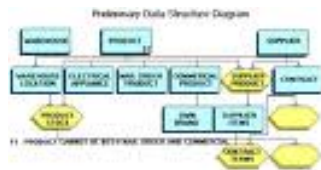


ANALYSING PRACTICES



NETWORKS

AoS2



DESIGNING



```
/**
 * Simple HelloButton() method.
 * @version 1.0
 * @author john doe <doe.j@example.com>
 */
HelloButton()
{
    JButton hello = new JButton( "Hello, wor
    hello.addActionListener( new HelloBtnList

// use the JFrame type until support for t
// new comment is finished
```

PROGRAMMING

Area of Study 1: Analysing information problems

- Focus on the Analysis stage of the PSM
- Focus is on analysing the current practices of an organisation in order to identify what is required to solve an information problem, what constraints must be considered in the creation of a solution, and scoping the solution
- Teacher provides students with a design brief (advice about preparing design briefs is found on pages 52 –53 of the study design: Advice for teachers section)
- Students explore the networked environment within which the solution will be used, and consider any security matters
- Analysis tools include context diagrams, Data flow diagrams, and use cases created using Unified Modelling Language (UML). Use cases describe the functionality of a system in a horizontal way
- The analysis is 'presented' in the form of a Software Requirements Specification (SRS) ('formal' documentation of analysis) [40 marks]
- Brief overview of the major tasks involved in managing software projects – no requirement to develop a project plan

Area of Study 2: Design and development

- Focus on the Design and Development stages of the PSM
- Approved programming languages list will appear in *The Bulletin*
- Teacher provides an SRS in order for students to undertake the Design stage
- Focus on prototype solution, using limited functions – solution sufficient to test the logic of the processes
- Problem to be a small one
- Design tools listed in key knowledge – no emphasis on interface design
- Development activities include manipulation (coding) as well as internal documentation. Testing is included but not validation
- Outcome worth 60 marks

SOFTWARE DEVELOPMENT: UNIT 3, AREA OF STUDY 1

