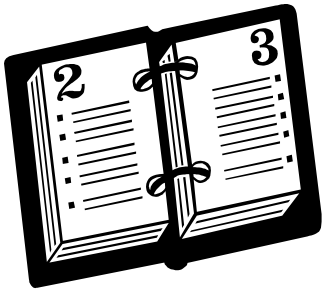
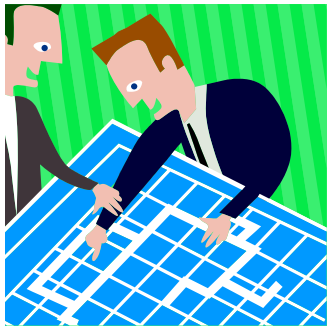
The University of Sydney

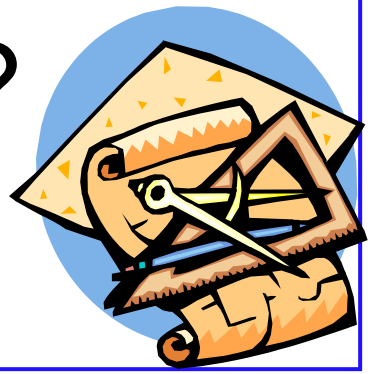
INFO5990 Professional Practice in IT

Lecture 12-13A





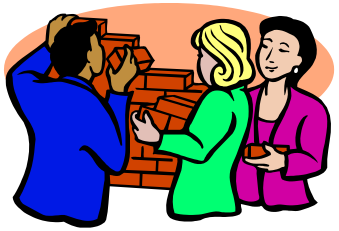
Where have we been?



Today's format

- 7pm-7.10pm Student survey (70% target response)
- 7.10pm- 8pm - course review / exam hints & tips
- 8.10pm-close – exam questions practice

Hints being dropped today !



Student Survey

Will not go to exam tips until I have at least 80% of students completing – Uni Rule !

Students who complete will go in the draw for an iPad – 3 IINFO5990 students have won in the past.

2nd Quiz

Source:learndash.com

60 questions, 60 minutes, 10 marks

Start time 22nd Nov at 11.59pm

Finish time 29th 11.59pm

Only 1 attempt – please do not try if you are not going to finish in One attempt !

Last segment

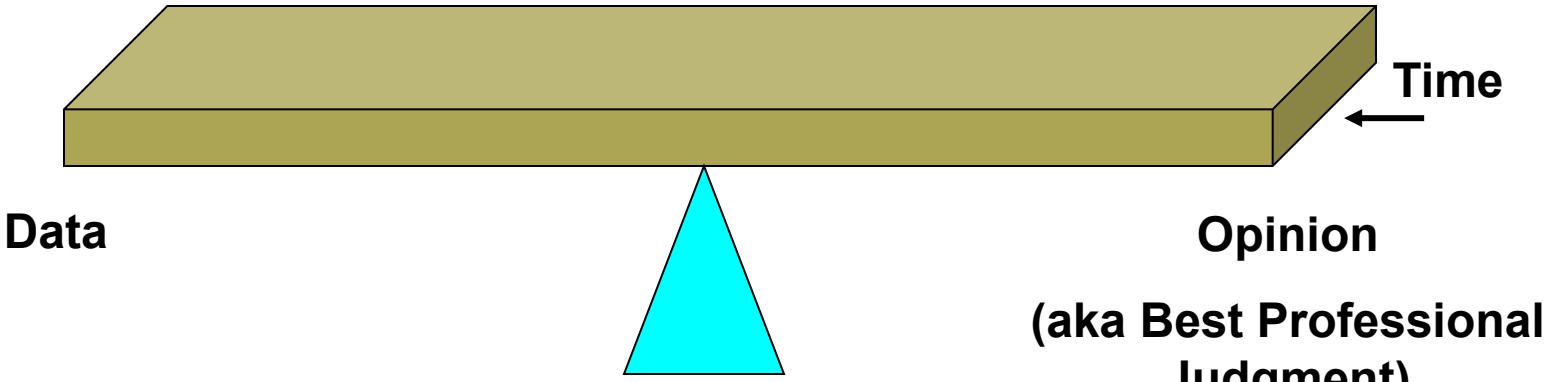
How Important is BI?

Top 10 Business and Technology Priorities for 2011:

1. Cloud computing
2. Virtualization
3. Mobile technologies
4. IT Management
5. **Business Intelligence**
6. Networking, voice and data communications
7. Enterprise applications
8. Collaboration technologies
9. Infrastructure
10. Web 2.0

Source: Gartner's 2011 CIO Agenda (aka "Reimagining IT: The 2011 CIO Agenda").

Why is Business Intelligence So Important?



In the absence of data, business decisions are often made by the HiPPO.

With Business Intelligence, we can get data to you in a timely manner.

Current & Major BI Trends

Mobile
Cloud
Social Media
Advanced data Analytics / A.I

Unstructured Text Processing

Example of BI / data science in business ?

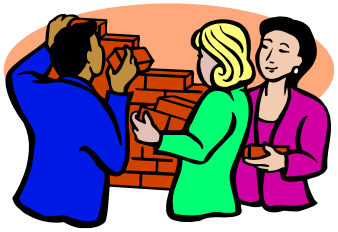
Exam Practice

Importance of coming to lectures !

Learning outcomes (1) Useful Skills

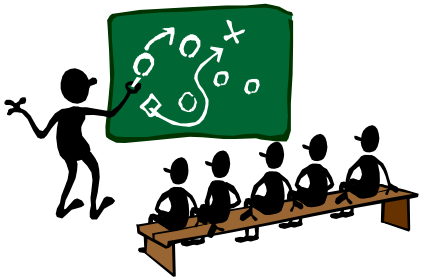
1. Written communication
2. Oral presentation
3. Testing
4. Problem solving
5. Project management
6. Working in team

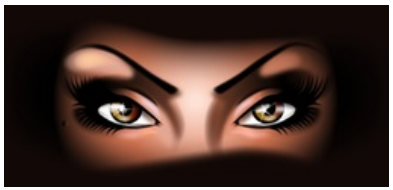
Feedback attached

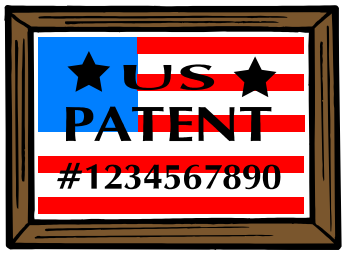


Learning outcomes (2) Professional Attitudes

1. Being an effective team player
2. Being an effective leader
3. Acting ‘ethically’ at all times
4. Dealing with privacy and security
5. Respecting intellectual property

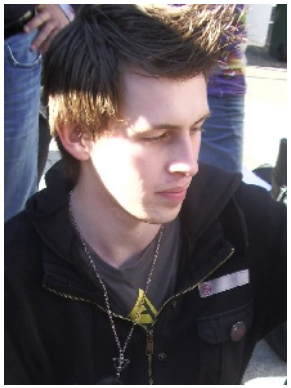






Learning outcomes (3) Valuable Experiences

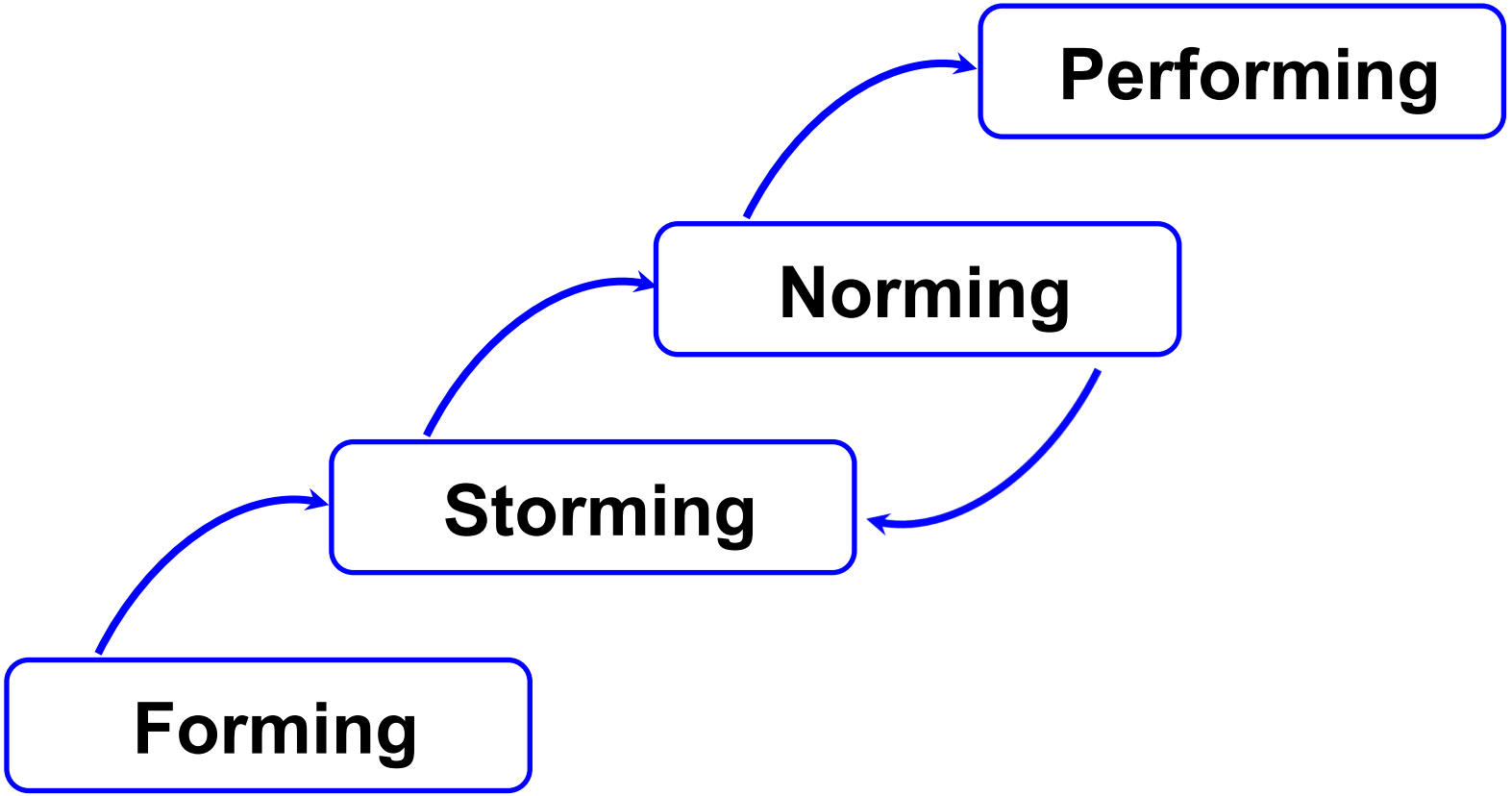
1. Formal writing
2. Giving an oral presentation
3. Working as part of a team
4. Forming a network of friends



Stages of Group Development

- Devised by Bruce W Tuckman in 1965
- The model was further refined in 1977 when a new stage was added.

Stages of team development



Did your team display any of the following characteristics?

- High level of negativity and passivity
- Quick (and 'dirty') problem solving; lack of clarity about what problem is
- Lot of win-lose situations among members
- Strangled information flow; dominance by one or two members; power plays
- Mistaking silence for support

Anat Lechner, (2003) Stern School of Business

http://sydney.edu.au/engineering/it/~isys3207/readingsonteams/groupsb2351_lechner.pdf

Nurturing and Retaining IT Talent

Top 3 attraction and retention strategies:

- Differentiate compensation based on performance
- Provide access to coaching and mentoring
- Offer job and career flexibility

The Deloitte and CIO survey 2009:
http://www.cio.com/documents/whitepapers/mindthetalentgap.pdf

Change management

The number one obstacle to success for major change projects is:

“employee resistance and the ineffective management of the people side of change”

The ADKAR® Change Model

Five building blocks for successful change

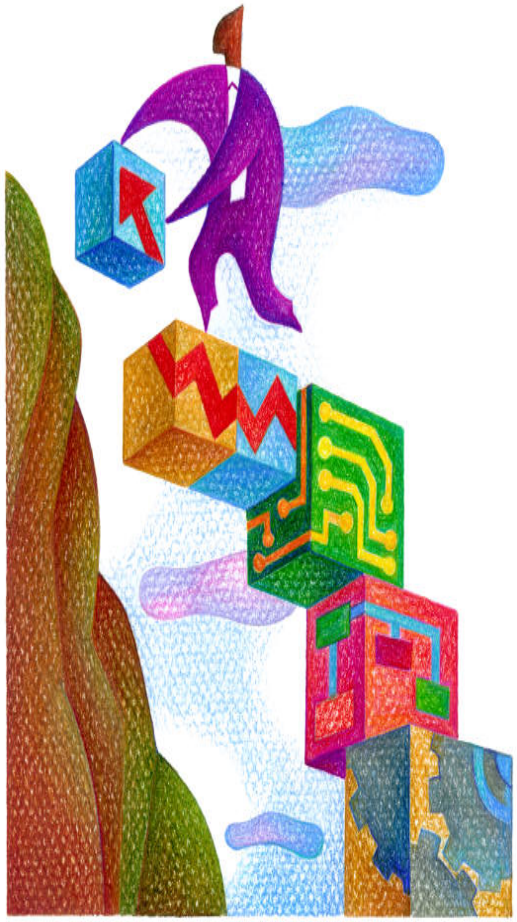
Awareness
- Of the need to change
- Of the nature of the change

Desire
- To support the change
- To participate and engage

Knowledge
- What to change
- How to implement new skills and behaviors

Ability
- To implement the change
- To demonstrate performance

Reinforcement
- To sustain the change
- To build a culture and competence around change



Information System Audit: 3 key areas of concern

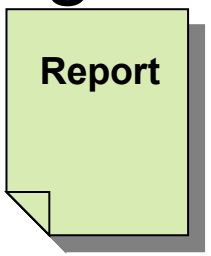
Availability	• Will systems be available for the business at all times when required? • Are systems well protected against all types of losses and disasters?
Confidentiality	• Will information in the system be disclosed only to those who need it?
Integrity	• Will the information provided in the system always be accurate, reliable and timely? • What ensures that no unauthorized modifications?

S.Anantha Sayana : http://www.isaca.org/Journal/Past-Issues/2002/Volume-1/Pages/The-IS-Audit-Process.aspx

Risk Based Approach

- A useful approach where cost prevents auditing all aspects of a system
- Order priorities on basis of risk
- Risk can affect various systems differently
  - Non availability of a system
    - Compare Restaurant booking system with Company Blog
  - Unauthorised access to a system
    - Compare Online Banking with Hair Salon booking system

Characteristics of professional writing



- Clarity
  - Clear structure. Logical arrangement
  - Simple but complete explanations
- Precision
  - No ambiguity or confusion
  - Uses words with precise meaning
- Objectivity
  - Statements supported by evidence
  - Avoids exaggeration or emotive statements
- Brevity
  - Effective and efficient
  - Avoids being ‘longwinded’, stating the obvious

$E = mc^2$

Aspects of an oral presentation

1. The Message
2. Structure
3. Timing
4. Physical factors
5. Personal factors
6. Visuals - Powerpoint

Benefits of using styles and templates

- Consistency
- Flexibility
- Productivity
- Templates define the ‘typography’ for a your document
- You can use the same template over and over again

Type of Research 1

Type	Purpose	Time frame	Degree of control	Examples
Experi-mental	Test for cause/ effect relationships	current	High	Comparing two types of treatments for anxiety.
Quasi-experi-mental	Test for cause/ effect relationships without full control	Current or past	Moderate to high	Gender differences in visual/spatial abilities

Four most common reasons for project failure

- Incomplete project **requirements** (10%)
- Unrealistic **schedules** (13%)
- Insufficient resource **planning** (18%)
- Poor **communications** (28%)

These are four areas that are central to the practice of

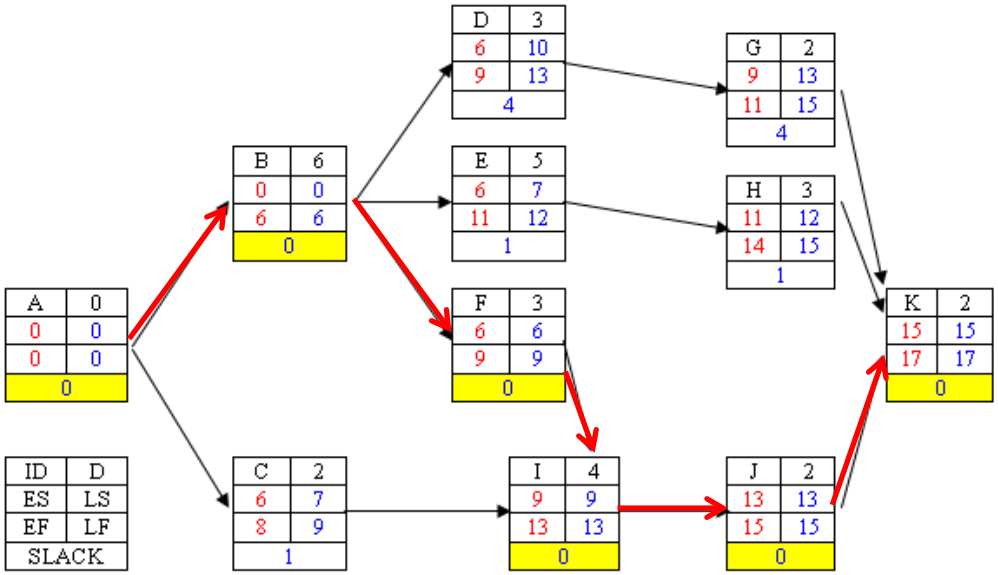
"PROJECT MANAGEMENT"

Work breakdown structure

- Lists all of the work that needs to be done
- Helps define the scope of the project
  (can also state what is NOT to going be done)
- Basic input to all aspects of the planning and scheduling process
- Lowest level of subdivided work should be
  - small enough to permit adequate control and visibility
  - without creating an unwieldy administrative burden. (Charles C. Martin)

Network diagrams

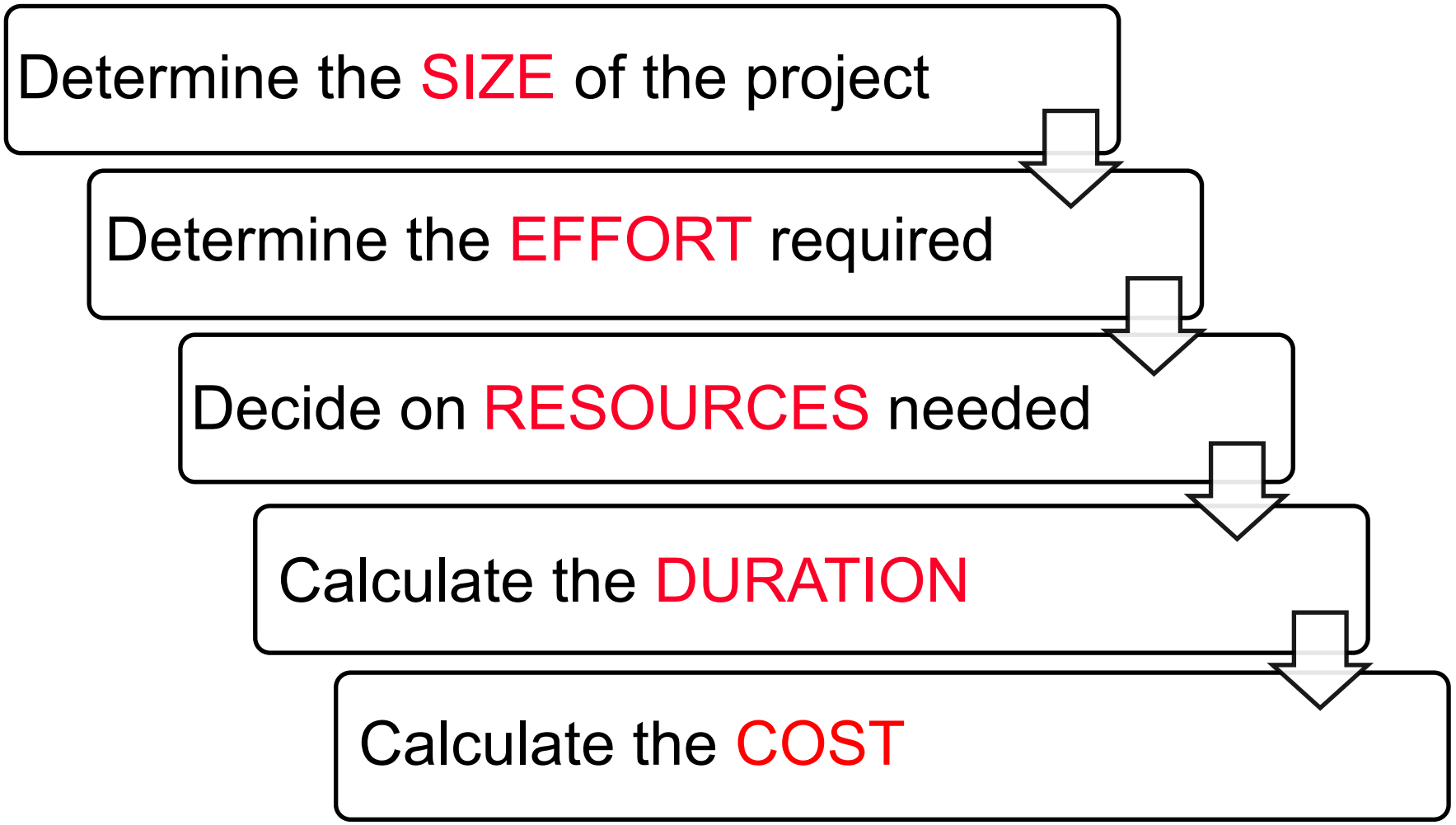
- Critical path method (CPM)
  - The longest path through the network
  - Passes through all nodes with zero slack
- Program Evaluation and Review Technique (PERT)
  - Makes use of three estimates: best, optimistic, pessimistic



Monitoring progress

- Limits to reducing the duration
  - Available resources: e.g. programmers or engineers with the necessary skills
  - Budget: the cost increases as more resources used
  - Communication: becomes more of a problem
  - Management of the project: becomes more difficult as size of team increases

Flow chart of project estimation



What NOT to do if the project is ‘slipping’

- Ignore it
- Try to hide it
- Keep on keeping on
- Rob Peter to pay Paul
- Try to play ‘catch up’

Responses to Risk

1. Avoidance
2. Mitigation
3. Transfer
4. Sharing
5. Acceptance

Three essential software attributes

1. Correct
   - behaves according to the functional requirements
   - produces the right result for any given set of inputs
2. Reliable
   - behaves as expected on every occasion
   - over any period of time
3. Robust
   - behaves in a predictable and controllable fashion even if the input not valid.
   - a program may be correct but not robust
     - e.g. division by zero or non-numeric input.

Terms used in connection with software testing

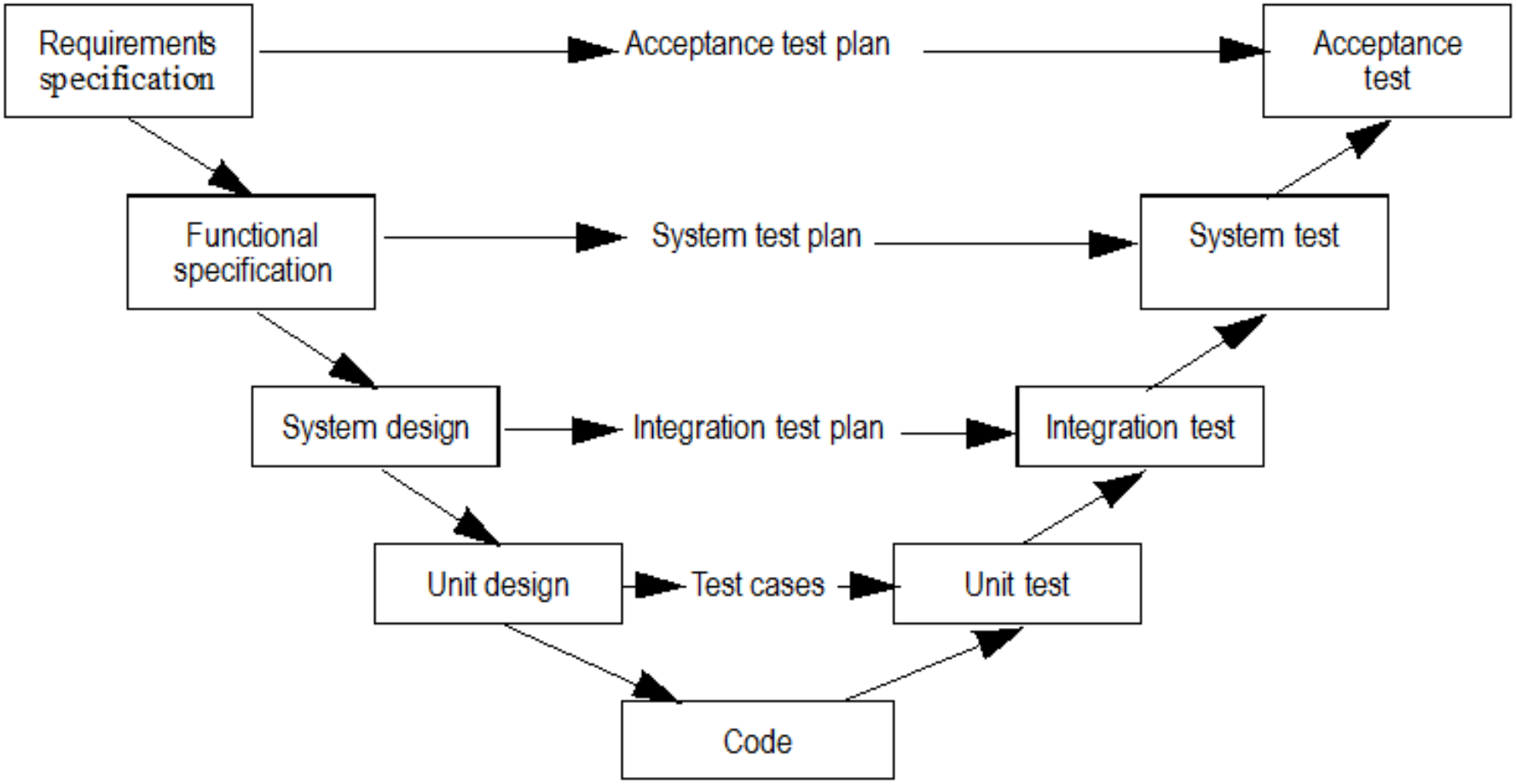
- A *defect*
  - any error or mistake, which may cause the program to not perform according to specifications.
  - may be the result of programmer error, or of incorrect or incomplete specifications
  - may not always cause the program to fail.
- A *failure*
  - occurs when the software does not behave as expected.

The V-Model

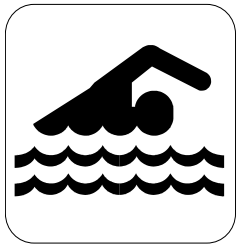
Verify against the specification.

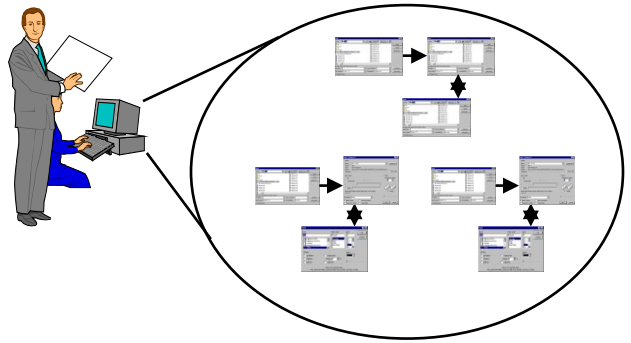
The V-Model implies a policy of continuous testing

Validate against client requirements



Implementation Testing





Performance Test

- To test system performance under maximum expected load.
- Simulates key processes under maximum load.

Soak Test and Stress Test

- To ensure that system is stable over extended period.
- Load increased until system fails. Checks effects of over-load

Acceptance Test

- Compares system functionality against agreed-on user requirements
- Carried out by client using scenarios, supervised by developer

A Bitter experience

‘Nectar’ card launch fiasco

System testing for TESCO

- Total budget for testing, £1 million
- Testing to be carried out off line (so as not to interfere with live system)
  - Capacity model: to simulate user load two years into future
  - Usage model: typical mix of tasks
  - Test database: full-sized database, since size affects performance

The TJX case: 17 Jan, 2007

- TJX retailers
  - 2100 stores in US, 300 in Canada
  - $16 billion annual revenue
- "The worst retail data breach ever?"
  - 46 million customers affected
- Details
  - What happened?
  - How did it happen?
  - What was the result?
  - What lessons?

Five categories of security threats

1. Unintentional acts
   - Human error, carelessness, ignorance
2. Natural disasters
   - Power outage, fire, flood, earthquake
3. Technical failures
   - Hardware failure, software failure
4. Management failures
   - Ineffective procedures and controls
5. Deliberate acts
   - Vandalism and malicious damage
   - Malware: viruses, worms and spyware
   - Phishing

Ethical theories

- Consequentialism
  - The evaluation of an action depends on the non-moral consequences that the action brings about.
- Utilitarianism
  - The moral standard should be the promotion of the best long-term interests of everyone concerned, i.e. positive consequences for everyone
- Deontology
  (from Greek δέον, deon, “obligation, duty”)
  - ‘Goodness’ or ‘rightness’ is determined by examining the acts themselves, rather than consequences, or even the intentions of the person doing the act.

The burden of being a “professional”

- Responsibility: A moral concept
  - You accept the consequences and obligations of your decisions and actions, as a member of the human race
- Accountability: An organisational concept
  - You need to be able to justify your decisions on rational grounds and be prepared to be held responsible for such decisions
- Liability: A legal concept
  - Existing laws give any individuals affected, including those downstream, the right to recover costs resulting from your actions

Australian Computer Society Code of Ethics

(7 Oct, 2009)

To uphold and advance the honour, dignity and effectiveness of the profession of information technology and in keeping with high standards of competence and ethical conduct, a member must:

(a) be honest, forthright and impartial

(b) loyally serve the community, and

(c) strive to increase the competence and prestige of the profession

(d) use special knowledge and skill for the advancement of human welfare.

http://www.acs.org.au/attachments/Code_of_Ethics.pdf

What is Intellectual Property (IP) ?

- Represents the property of your mind or intellect.
- It can be worth money and may be sold on to other parties to utilise
- It may give you the ‘edge’ which will make your company successful
- It may be stolen and/or used without permission

Patents

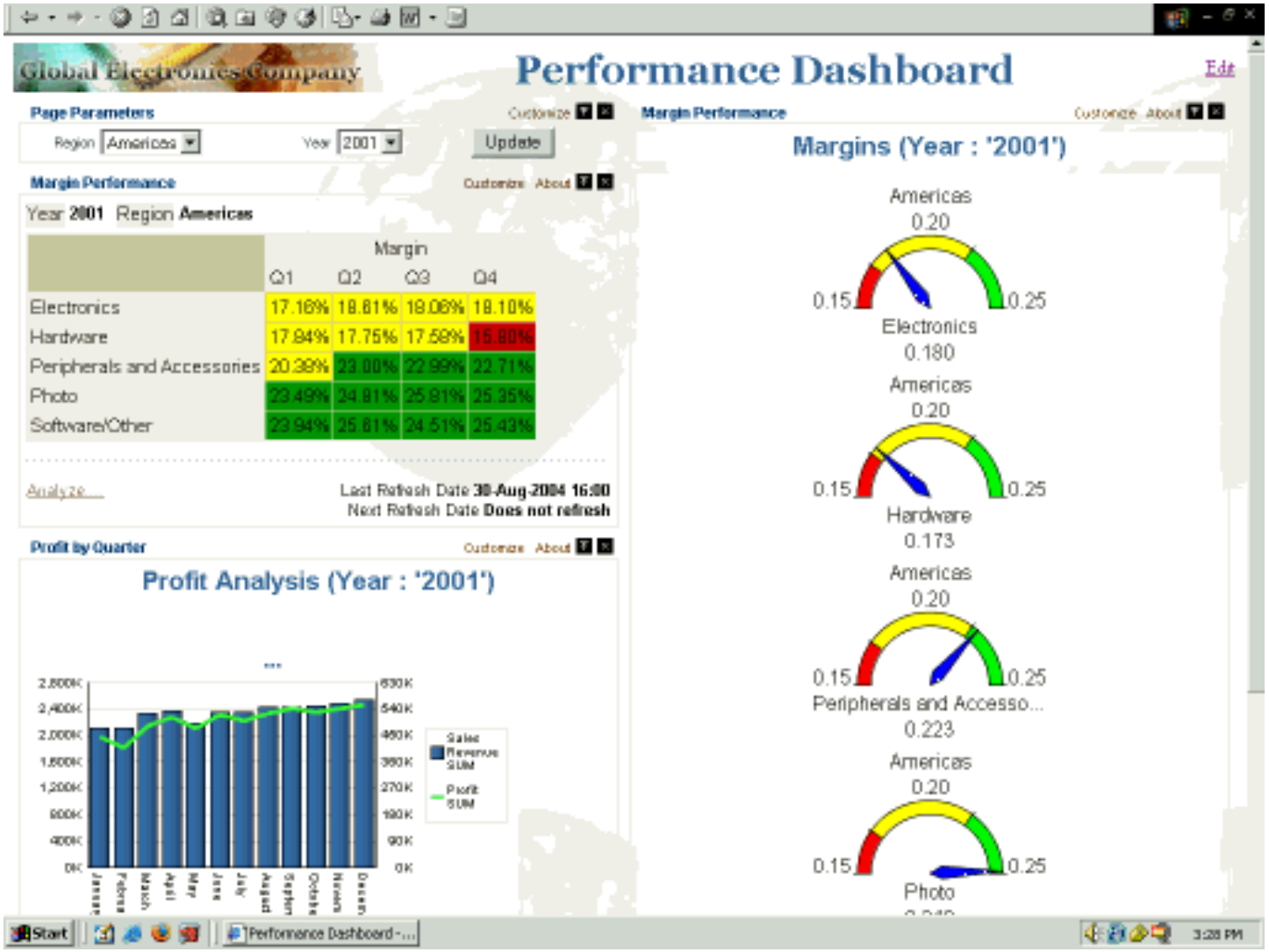
- Can only apply to technology , i.e. something that is a product, a composition or a process.
  - Must be novel, i.e. different from anything that has gone before.
  - Must be useful, i.e. have the potential for commercial return
  - Must be inventive, i.e. the result of some ingenuity on your part, not just a solution to a problem that would have been obvious to anyone.

10 Copyright myths

Art Majlessi, 2004,
http://www.legalmetro.com/library/copyright-law-explained.html

1. "If it doesn't have a copyright notice, it's not copyrighted."
   - False. According to the Berne copyright convention, anything created privately after April 1, 1989 is copyright.
   - It does not need the © symbol or anything else.
2. "If I don't charge for it, it's not a violation."
   - False, but it may matter if the court decides to award monetary damages.
3. "If it's posted to the internet it's in the public domain."
   - False. Copyright law still applies and the copyright still belongs to the author.
4. etc.

Monitoring performance dashboard



ETL tools

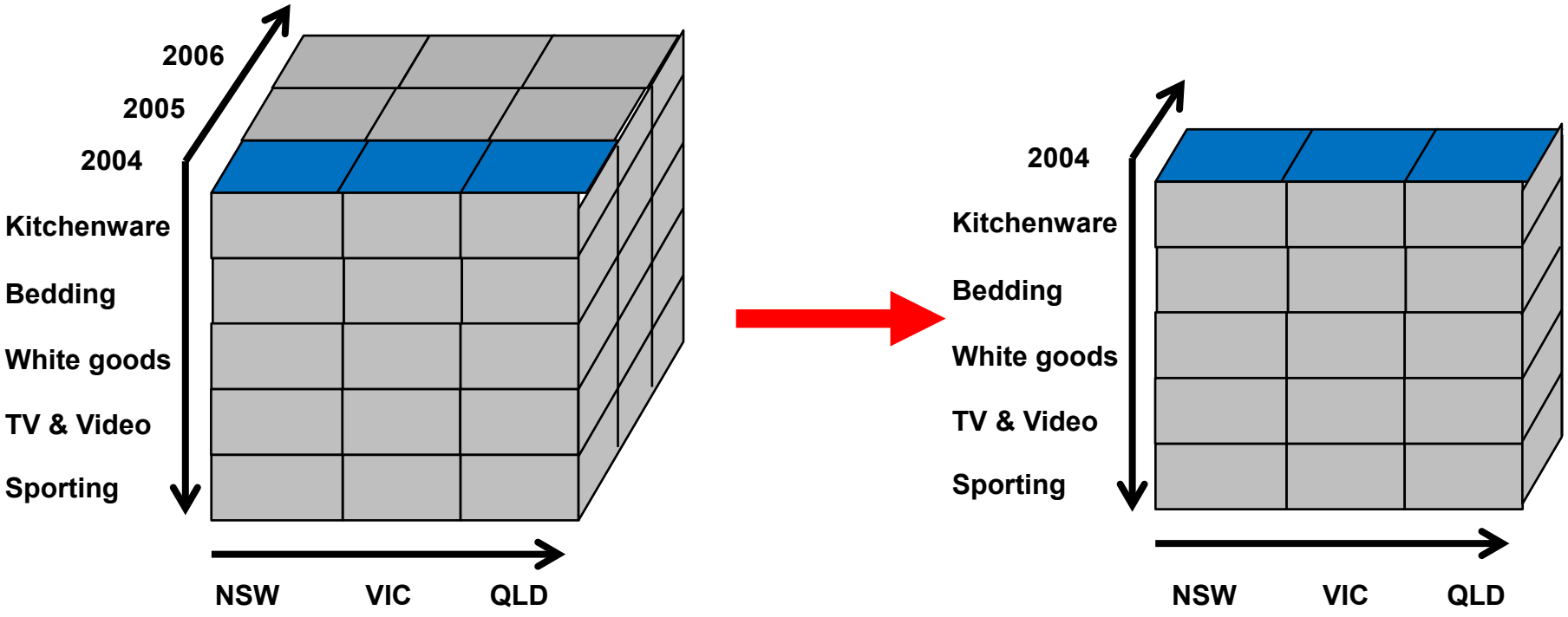
Extract-Transform-Load

- Extract data from multiple diverse data sources including those outside the organisation
- Transform data to fit operational needs, including ‘cleansing’ (quality)
- Load data into target database, data mart or data warehouse
- ETL ‘World Record’:
  5.4 TB data loaded in Under 1 Hour (Syncsort)

Dimensions, hierarchies & measures

- Dimensions:
  - aspect of business: state, store, product, time-period, actual and budget expenses
- Hierarchies:
  - each level can be a ‘child’ of the previous parent level, e.g. Year, Quarter, Month, Day, time of day
- Measures:
  - Each cell of cube holds a number, some fact about the business, e.g. sales, profits, expenses, budget, forecast
- Grain:
  - A question of how finely grained to store data

OLAP operations: Slicing



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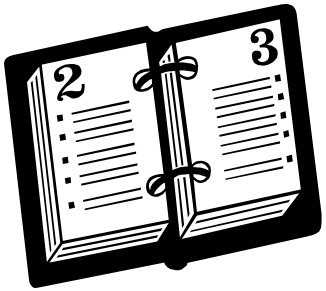
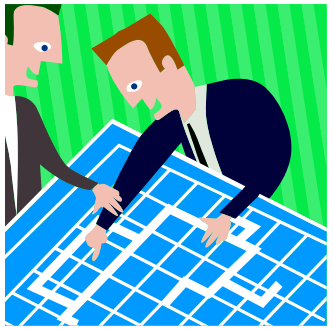
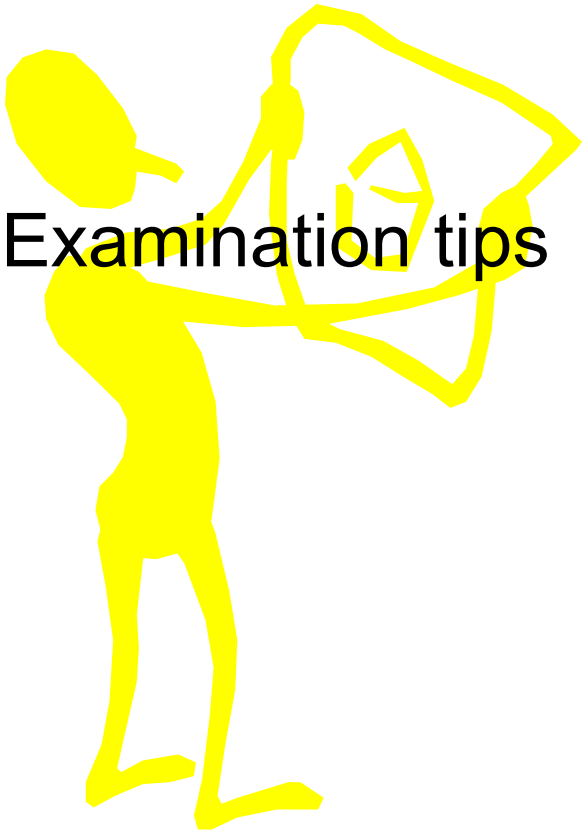
Lecture 12-13B







Examination tips

Examination

INFO5990 Professional Practice in IT

Time:

Date: Check exams timetable

Time: Check Exam timetable

(3 Hours + 10 min)

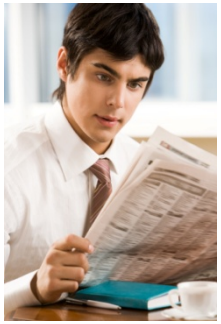
Location:

Check timetable for your particular name

What to expect

Instructions to Candidates

1. This is a CLOSED BOOK examination.
2. Via TurnitIn – means you cannot copy-paste from your notes
3. Simple calculators are allowed. Electronic devices, apart from simple calculators, are not permitted.
4. The paper comprises **10 questions** each with multiple parts & will include reference to the weekly readings
5. ANSWER ALL QUESTIONS in the exam, in the spaces provided.
6. Questions are worth equal marks. The mark to be awarded for each part is indicated. Marks total **10 questions * 5 marks each**.
7. Make sure you write the answers you attempt in the **"Answers area"**
8. **No bullet points for complete answer – there has to be an analysis**
9. Need 20/50 to pass this exam
10. Min 40/100 but have to pass exam and assessment



Examination strategy

- Be aware of TIMING
  - 50 marks to be earned in 180 minutes
  - Each question is worth 5 marks
- Read each question carefully
- Decide which topic the question is related to
- Show that you have assimilated the material delivered in THIS course
- Think, not just memorise – your understanding of the issue
- Explain the answer not just bullet points

Thank you for participating in this course

Hope you complete the end of course survey

Constructive comments will be looked into

Good luck in your Careers !

I might see you in the future!

I might hire you !