
Lonsdale Systems
Developing Software Quality Plans
a Ten Step Process
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Lonsdale Systems
Software Quality Plans
• We all agree that you need one but...
• What do you put in them?
• How do you develop one?
• This ten-step process
– 'Cook book' approach
– Risk driven
– Basic quality improvement techniques
– Easy to customise

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1. Identify Work Products

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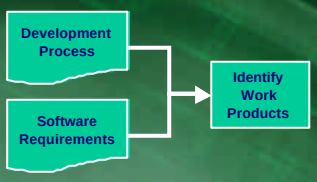
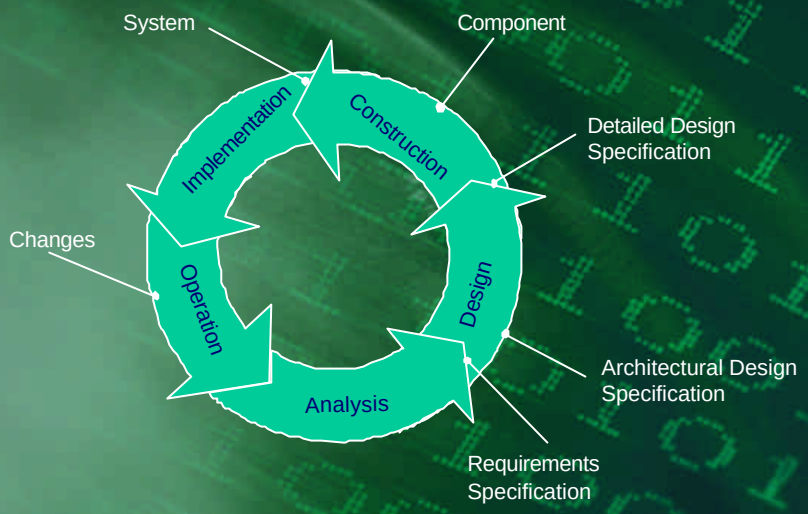
Identify Work Products



A Simple Development Process



Software Requirements

- Analysis is different because requirements are not known
  - Work products must be defined as part of the process
  - There is nothing to verify requirements against
- After analysis, work products are defined
  - As part of the process
  - By requirements

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2. Identify Work Product Creation Activities

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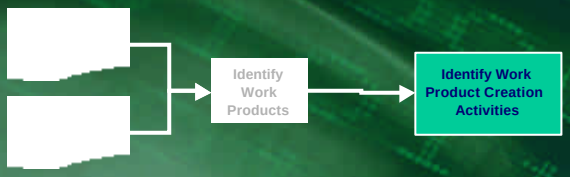
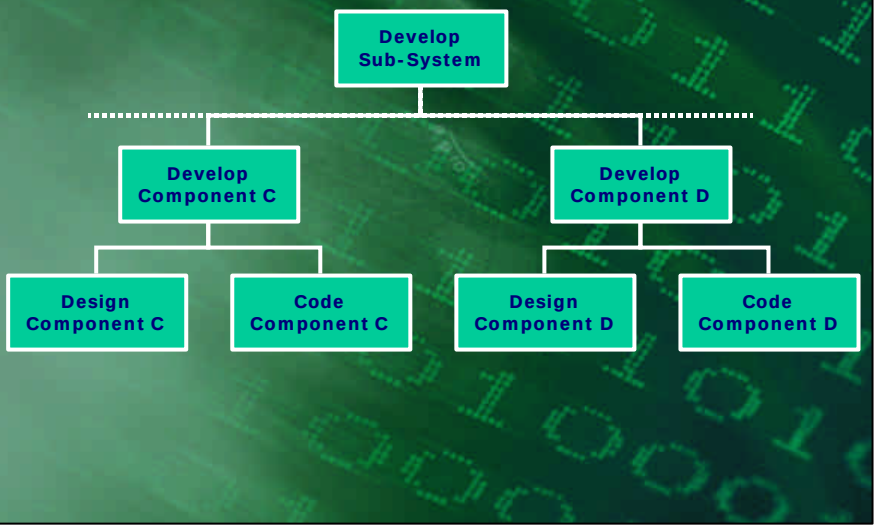
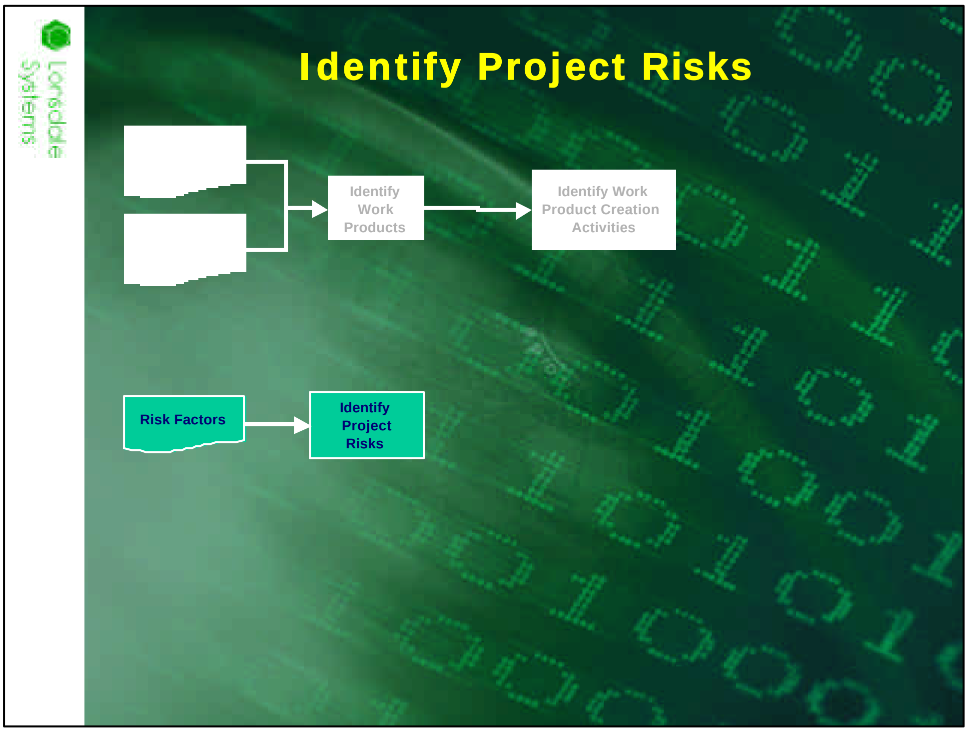
Identify Work Product Creation Activities



Work Breakdown Structure (WBS)



3. Identify Project Risks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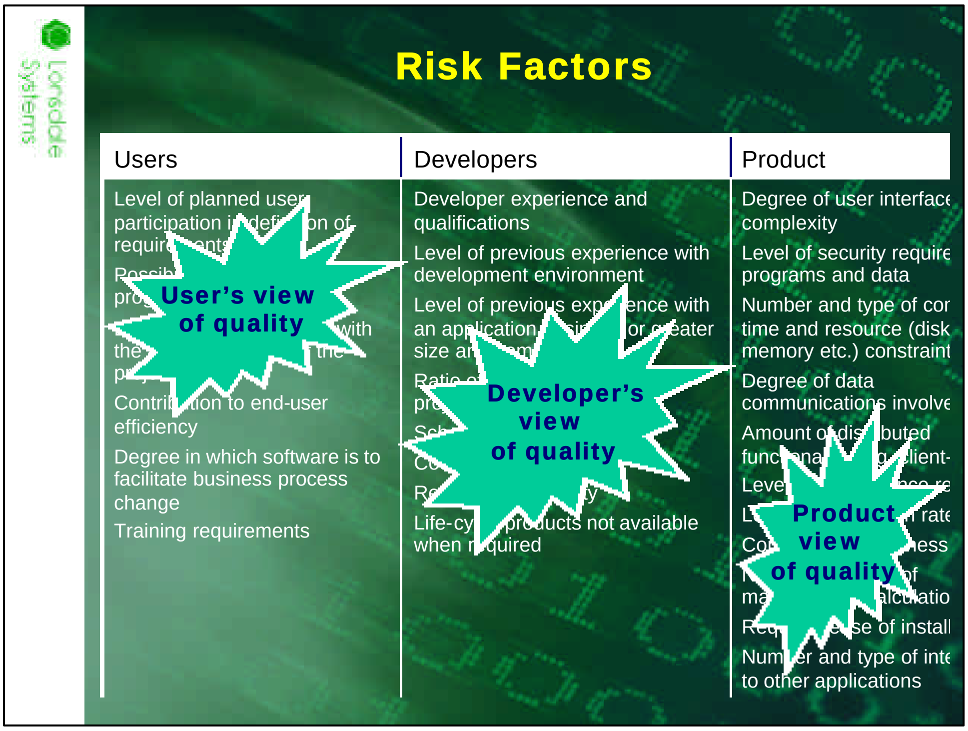
Identify Project Risks
Identify Work Products
Identify Work Product Creation Activities
Risk Factors
Identify Project Risks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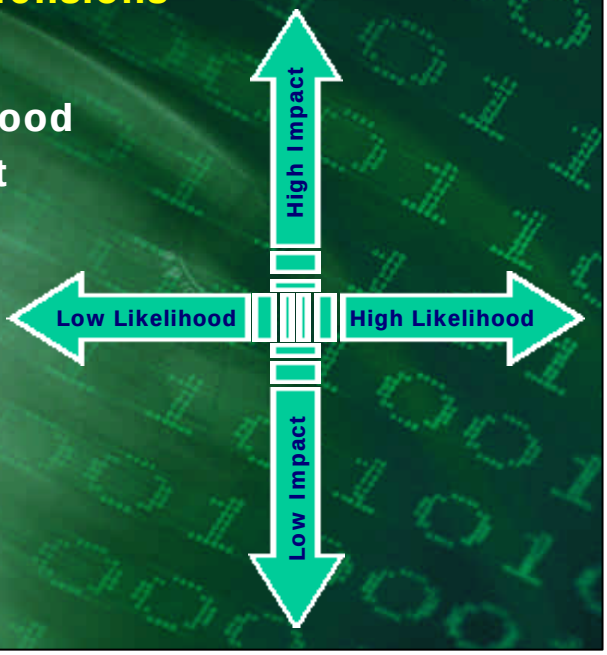
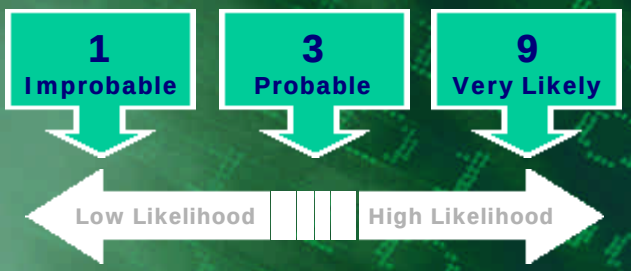
Risk Factors
Users
Level of planned user participation in definition of requirements
Contribution to end-user efficiency
Degree in which software is to facilitate business process change
Training requirements
User's view of quality
Developers
Developer experience and qualifications
Level of previous experience with development environment
Level of previous experience with an application of similar or greater size
Life-cycle products not available when required
Developer's view of quality
Product
Degree of user interface complexity
Level of security required for programs and data
Number and type of constraints on time and resource (disk, memory etc.)
Degree of data communications involved
Number and type of interfaces to other applications
Product view of quality

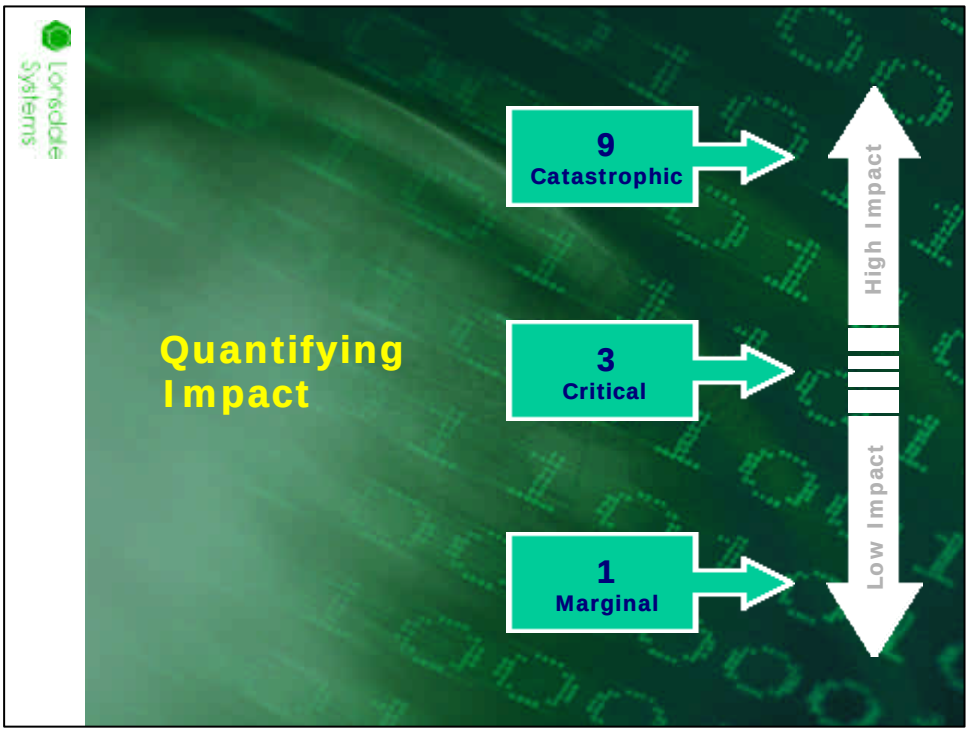
Risk Dimensions

- Likelihood
- Impact



Quantifying Likelihood

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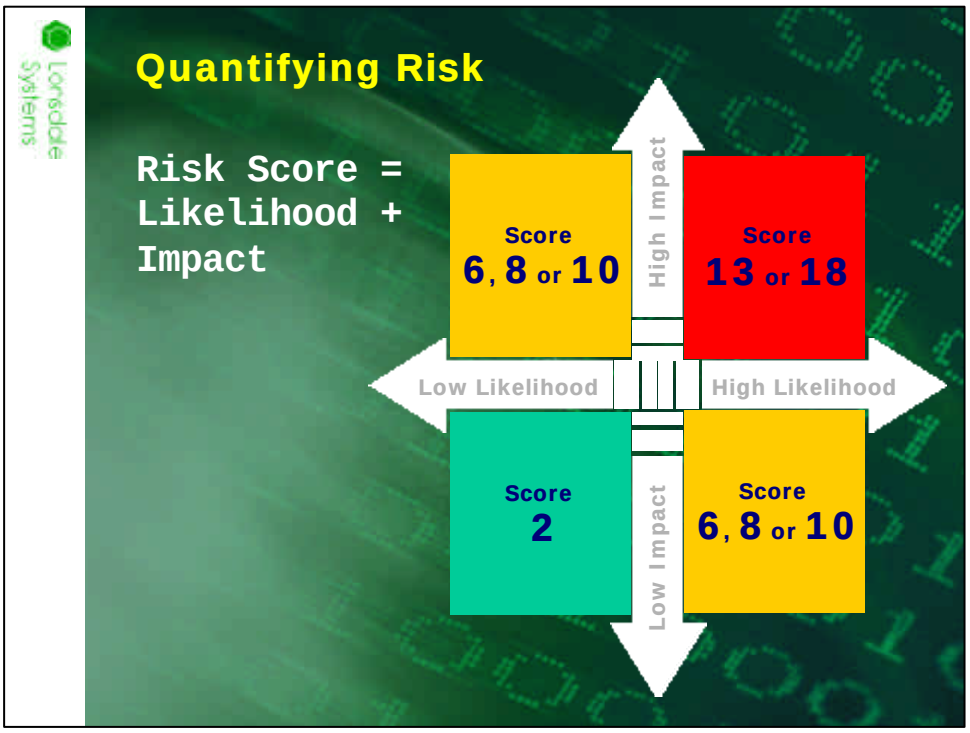
Quantifying Impact
9
Catastrophic
3
Critical
1
Marginal
High Impact
Low Impact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Quantifying Risk
Risk Score = Likelihood + Impact
Score
6, 8 or 10
Score
13 or 18
Score
2
Score
6, 8 or 10
High Impact
Low Impact
Low Likelihood
High Likelihood

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4. Identify Risk Impact on Work Product Quality

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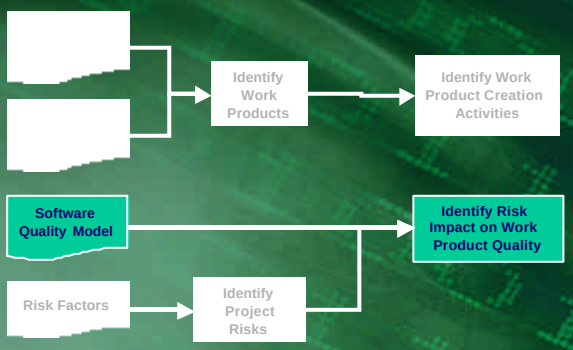
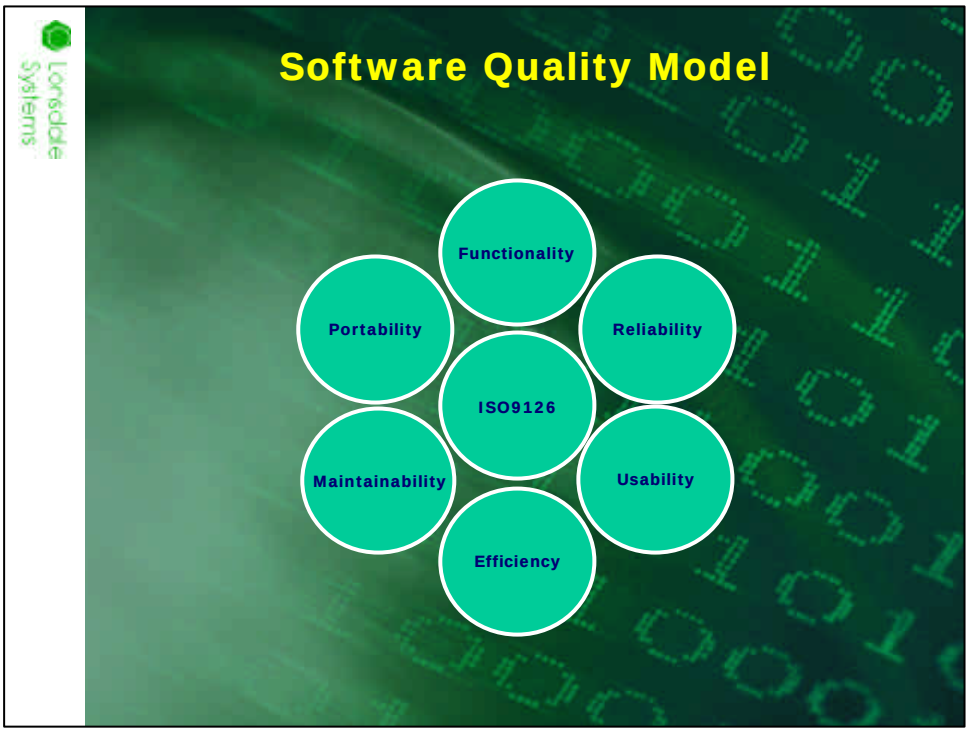
Identify Risk Impact on Work Product Quality

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Software Quality Model
Functionality
Portability
Reliability
ISO9126
Maintainability
Usability
Efficiency


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Risk Impact on Product Quality
Software Characteristics
Functionality
Reliability
Usability
Efficency
Relative Importance
Suitability
Accuracy
Interoperability
Compl
Secu
Mat
Fau
Reg
Und
Learnability
Operability
Time Behaviour
Resource Behaviour
Analysability
Relative importance of risk factor
Relative importance of characteristic
Risk Factors
Users unable to define req due to a lack of experien electronic funds trans
System will not suppor processes in an efficer
Transaction rate will not be achieved.
System cannot be recovered within an acceptable time frame.
Unathorised access to the system to illegally transfer funds.
Training will take longer than planned.
INFLUENCE
9 High
3 Medium
1 Low

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5. Develop Quality Strategy

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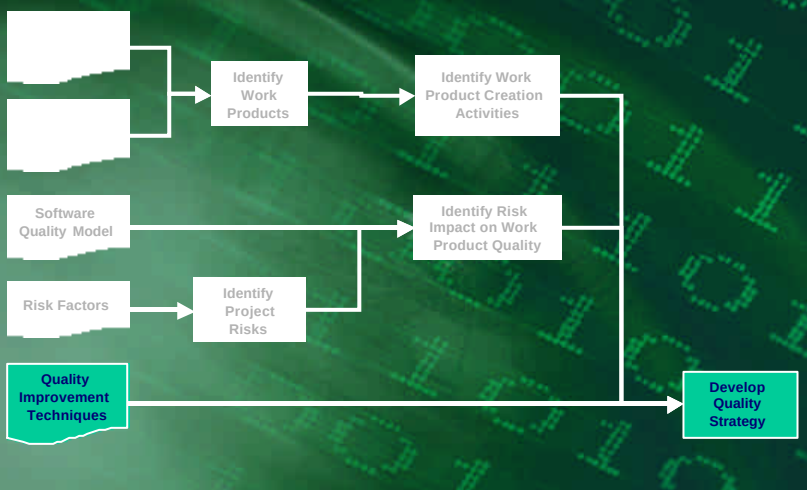
Develop Quality Strategy

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Quality Improvement Techniques
• Early requirements validation
• Inspection
• Test
• Configuration management


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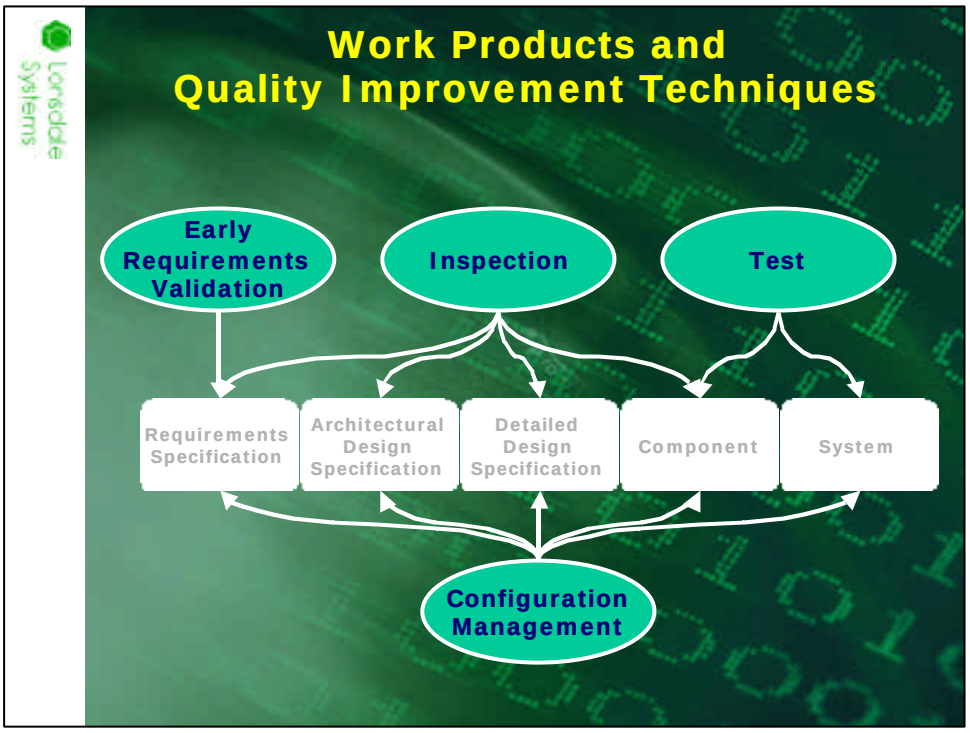
Early Requirements Validation
• Product and process redundancy
• Joint Applications Development (JAD)
• Quality Function Deployment (QFD)
• Prototyping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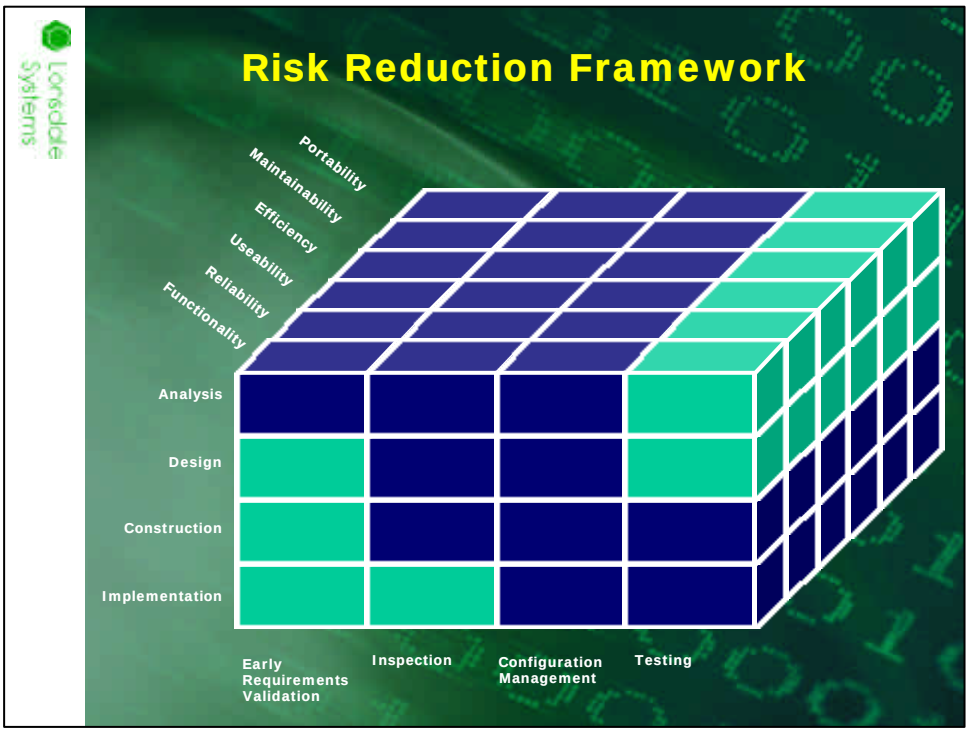
Work Products and Quality Improvement Techniques
Early Requirements Validation
Inspection
Test
Requirements Specification
Architectural Design Specification
Detailed Design Specification
Component
System
Configuration Management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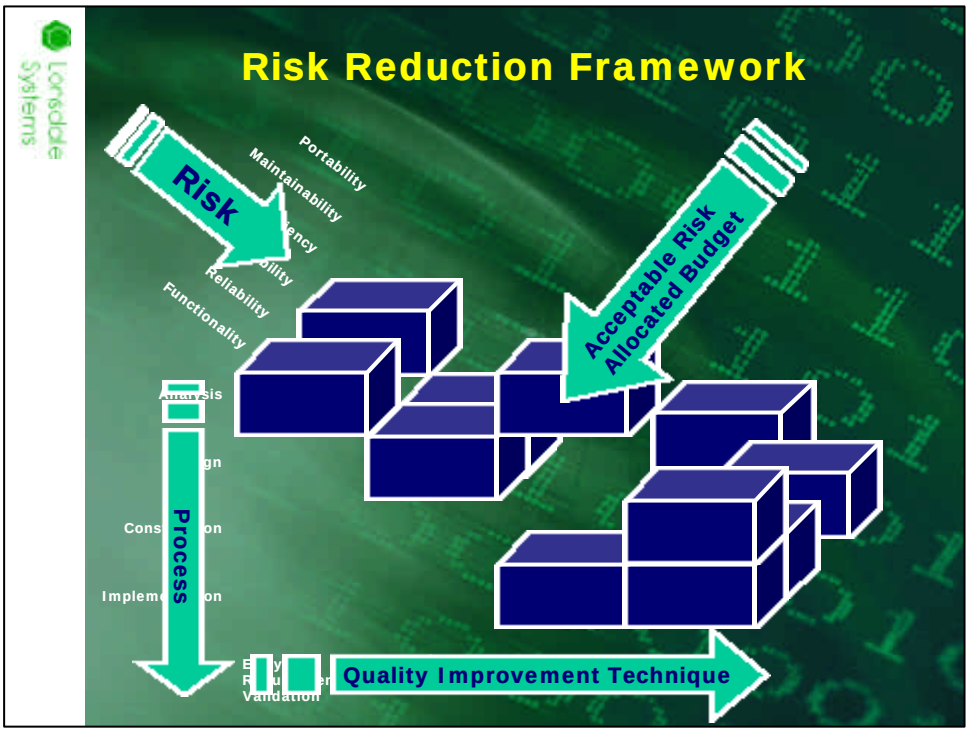
Risk Reduction Framework
Portability
Maintainability
Efficiency
Useability
Reliability
Functionality
Analysis
Design
Construction
Implementation
Early Requirements Validation
Inspection
Configuration Management
Testing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Risk Reduction Framework
Risk
Portability
Maintainability
Reliability
Functionality
Acceptable Risk
Allocated Budget
Process
Quality Improvement Technique


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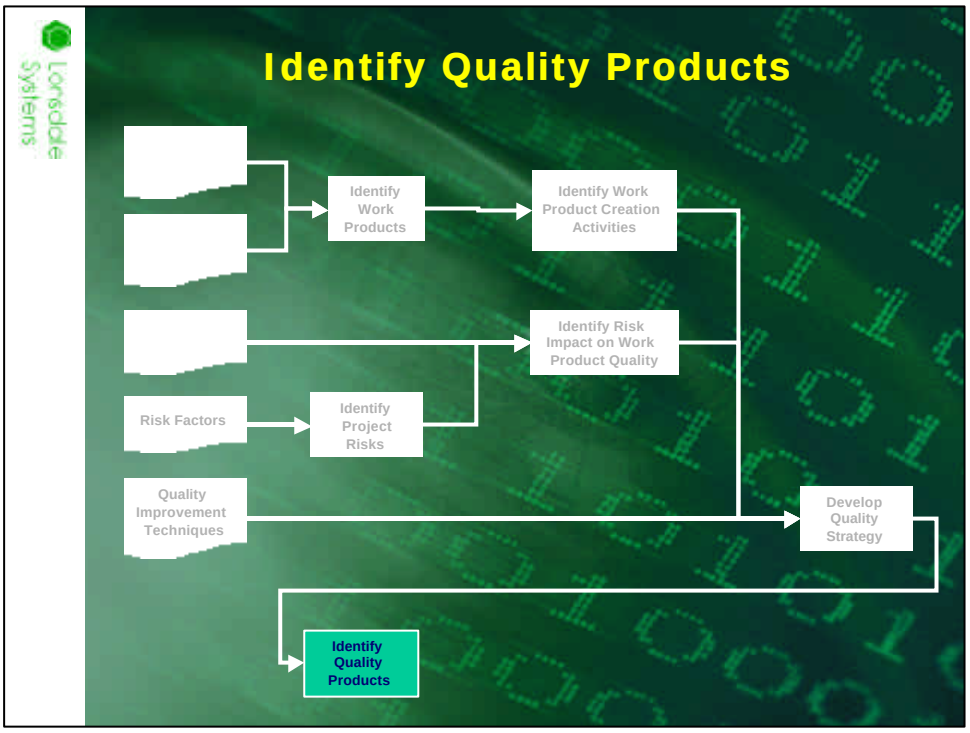
6. Identify Quality Products


Identify Quality Products
Identify Work Products
Identify Work Product Creation Activities
Identify Risk Impact on Work Product Quality
Risk Factors
Identify Project Risks
Quality Improvement Techniques
Develop Quality Strategy
Identify Quality Products


Quality Products
Plans
Specifications
Records
Redundant analysis products
Inspection process
Review plans
Audit plans
Test plans
Plan
Specify
Record
Outcomes of JAD sessions
Outcomes of QFD sessions
Outcomes of prototypes
Outcomes of inspections
Outcomes of reviews

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7. Identify Quality Product Creation Activities

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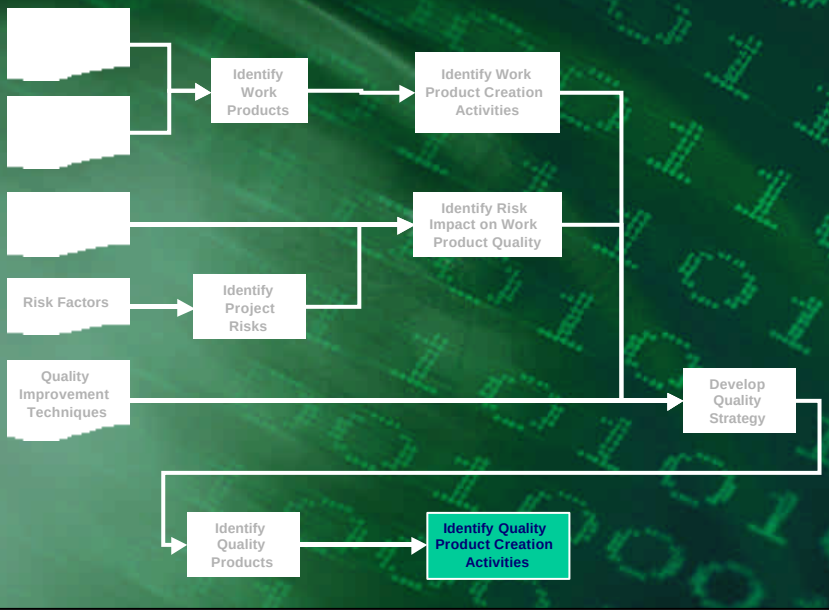
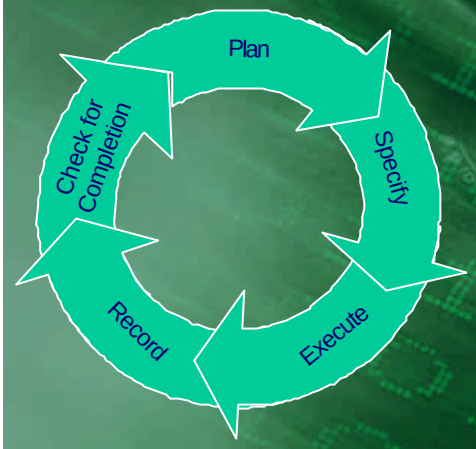
Identify Quality Product Creation Activities

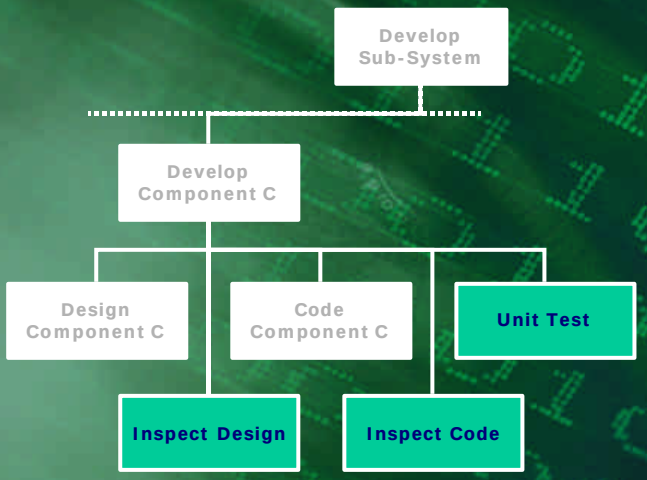


Generic Quality Activities



- Plan
  - This is it!
- Completion criteria
  - Coverage
  - Statistical models
- Iterative
  - Stop when completion criteria are satisfied

Quality Activities Added to the WBS



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8. Identify Configuration Management Activities

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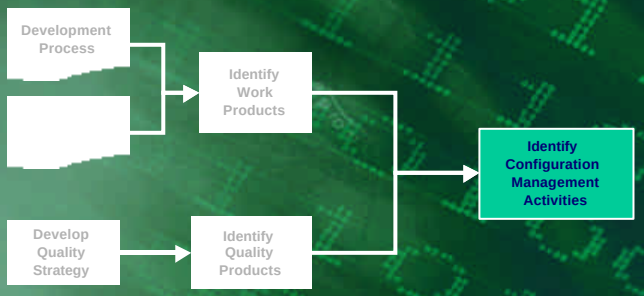
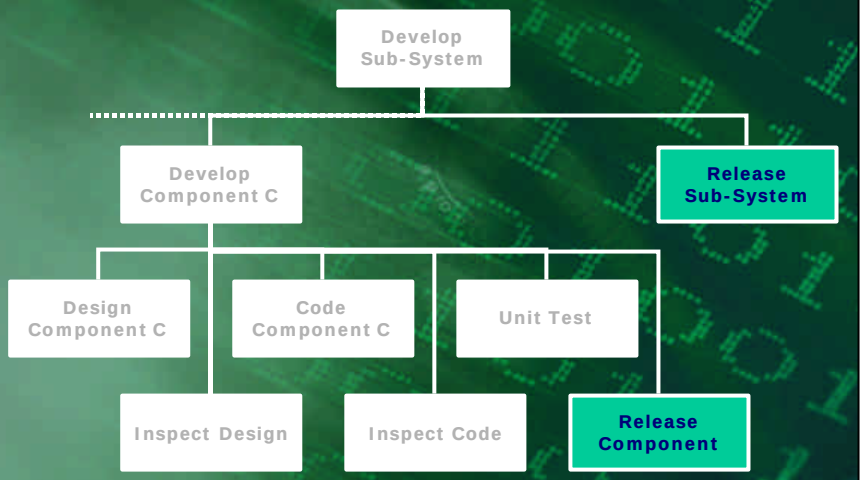
Identify Configuration Management Activities

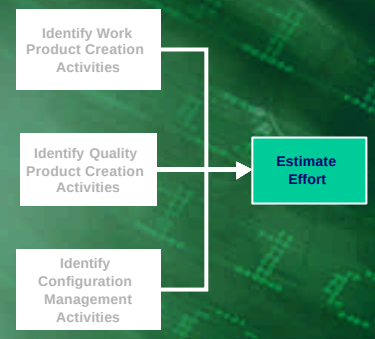


Configuration Management Activities Added to the WBS



9. Estimate Effort

Estimate Effort



Estimating Approaches

- Work Products
  - Product metrics
  - Function Point Analysis
- Quality Activities
  - Coverage
  - Statistical models
- Configuration Management Activities
  - Count of work products
  - Statistical models

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10. Develop Project Schedule

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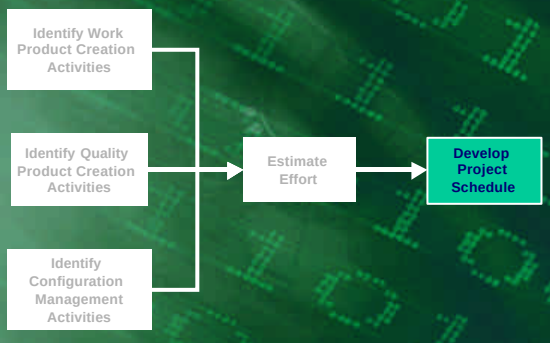
Develop Project Schedule

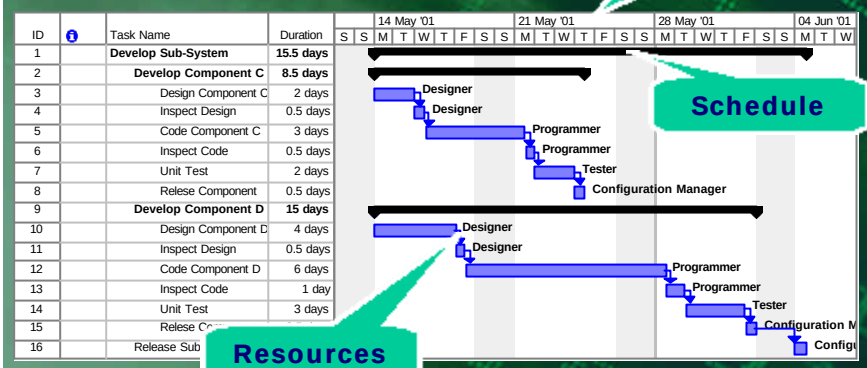


Project Schedule

Calendars

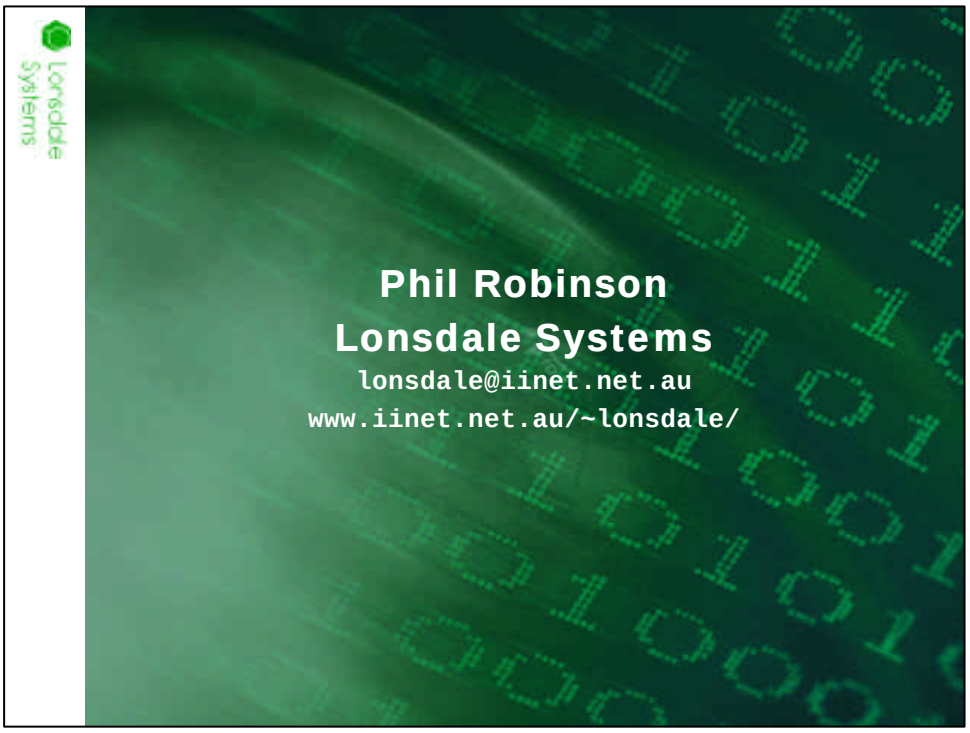
Schedule

Resources



ID	Task Name	Duration
1	**Develop Sub-System**	**15.5 days**
2	**Develop Component C**	**8.5 days**
3	Design Component C	2 days
4	Inspect Design	0.5 days
5	Code Component C	3 days
6	Inspect Code	0.5 days
7	Unit Test	2 days
8	Relese Component	0.5 days
9	**Develop Component D**	**15 days**
10	Design Component D	4 days
11	Inspect Design	0.5 days
12	Code Component D	6 days
13	Inspect Code	1 day
14	Unit Test	3 days
15	Relese C...	
16	Release Sub	

Questions?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