Project management

Managing risk

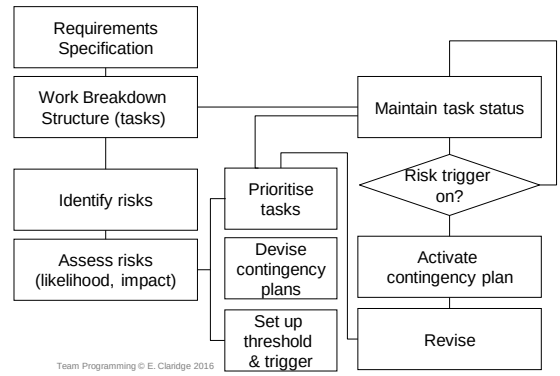
Organising the Team for success

- People management and teamwork
- Procedures and processes
  - Specifying requirements
  - Specifying tasks
  - Scheduling
  - Risk analysis
- The use of support tools

Risk management

- Project risks relate to
  - Schedule
  - Resources
- Product risks relate to
  - Quality
  - Performance

Risk management



Risk mitigation

"If you do not actively attack the risks, they will actively attack you"

Tom Glib

- Identification
- Analysis
  - Task prioritisation
  - Contingency planning
- Monitoring
  - Regular assessment essential

Risk identification: the components of risk

Hazard, chance of bad consequences or loss

The probability, or likelihood, of an event occurring

The negative consequences or impact of the event

Risk identification: the components of risk

- **Likelihood**
  An estimate of how probable is that the piece of a system would fail
  "On the scale 1 to 10, how shaky do you think this piece is?"
- **Impact**
  What would happen if this piece malfunctioned
  "How bad would it be, on a scale of 1 to 10, if this piece did not work correctly?"

Risk identification: HOW?

- Brainstorming sessions
- Based on all available sources of information
  - Requirements specification
  - Functional specification
  - Defect reports
  - User experience
  - Developer / Tester experience
  - . . .
- First collect ideas – no debating

Risk identification: HOW?

- Examples of things that can go wrong
  - "Real world" effects
  - Computer problems
  - Incorrect input
  - Failure to meet user expectations
  - . . .

Risk identification: HOW?

Base analysis on Software Requirements Specification (SRS) and / or tasks defined in the Work Breakdown Structure (WBS)

- Risk factors – how complex is a requirement / task? How mature is technology? Does the team has capability?
- Priority / release date – when is a requirement needed?
- Work planning – what work is needed to meet this requirement / what tasks need to be completed?
- Benefits – what "business" benefits does this requirement contribute to?
- Satisfaction / dissatisfaction factor – how happy / unhappy will the customer be if this requirement is met / not met

Risk analysis: task prioritisation

- Identify components
- Estimate the likelihood
- Estimate the impact
- Assign numerical values (risk number)
  $RN = (\alpha * I)^2 + (L)^2$
  $\alpha = 1.5$
- Prioritise the actions (development, testing, etc.) based on the risk number

Risk analysis: contingency planning

Murphy's Law:
"Anything that can go wrong will go wrong"

Crystallisation of a key principle of *defensive design*, in which one should always assume worst-case scenarios.

- Schedule risk examples
  - Late coming requirements / ideas
  - Late delivery of software
  - Computer environment problems
  - …
- Use "What if …" analysis to develop contingencies

Risk analysis: contingency planning

- For the high impact components a full contingency plan is necessary
- Examples of contingencies
  - Reduce the scope of the project
  - Delay implementation
  - Add resources
  - Reduce quality process
  - . . .

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Need to balance the risks

Slide 6

Examples of risk analysis documents

(from student team projects)

- Example 1
- Example 2
- Example 3

Risk monitoring

- Maintain status for each task / activity
- Set up risk threshold for each task / activity
- Set up a trigger mechanism when a threshold is exceeded
- Proceed according to the contingency plan
- Revise risk thresholds if necessary

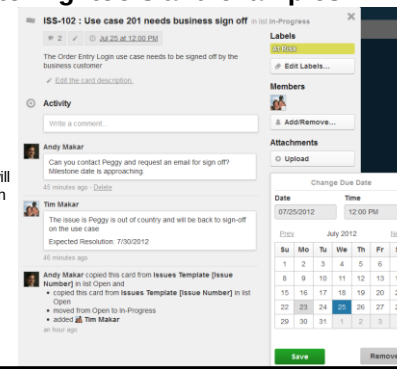
Risk monitoring: tools and examples

- Schedule risk monitoring
  - Gantt charts
  - Milestones
- Resource risk monitoring
  - Task assignments to team members
  - Availability of software resources
- Quality and performance risk monitoring
  - Results of functional testing
  - Results of user testing
  - Results of performance testing

Risk monitoring: tools and examples

Risk monitoring in Trello

The individual card status will adopt a traffic light approach
Green - Open
Yellow - At Risk
Red - Attention Required
Blue - Closed



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