IFB295 – IT Project Management

Project Management

Lecture 3

Project Cost, Release Planning, Sprint Planning

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Agenda

- Project Cost
  Estimates for calendar effort, Velocity, Initial velocity, turn estimates into dollar value, internet banking example
- Release Planning
- Sprint Planning
- Assessment 1 Discussion

Estimates for Calendar Effort

- Team velocity
  - if known
- Top down guesstimate
- Bottom up mapping

Top Down Guesstimate

- Agree on a team structure
  - e.g. 4 developers, 2 testers, a business analyst, and a project manager
- Look at the application as a whole
  - considering all estimates
- How long will it take the team to build system?
- Multiply team size by duration
  - gives person months or days

Bottom Up Mapping

- Pick a typical story that is 1 story point in size

- Discuss *everything* that needs to be done to implement the story
  - essentially a group design discussion
  - consider normal working practices

- Repeat for a few stories of each size group
  - some consistency should emerge

- Generate a conversion factor
  - conversion factor = development time ÷ story points

Bottom Up Mapping

- Apply conversion factor to all stories
  - total time = story points × conversion factor
- Get total development effort for project
- Factor in other team members' contributions
  - use team structure from top down estimate
- Add overhead activities
  - e.g. deployment, deployment preparation, ...

Compare the Estimates of Effort

- Compare Top Down to Bottom Up estimates
  - are they similar?
  - if not, why not?

- If there are significant differences
  - discuss assumptions
  - understand why they are different
  - re-estimate

- Check if there are systemic biases

- Check if non-development activities were accounted for
  - e.g. testing, project management, ...

Velocity

- Team counts number of story points completed at end of each sprint
- Probably will complete about the same number in the next sprint
  - assuming no changes in the team
  - assuming similar technology
- Use velocity to convert story points to calendar effort
  - requires consistent sprint length

Initial Velocity

- Guesstimate initial velocity to be ⅓ to ½ of the available time
  - e.g. 6 team members, working on a 2 weeks (10 day) sprint = 60 potential days
  - by ⅓ results in 20 ideal days per sprint
- How many story points in an “ideal” day?
  - would be handy if 1 story point = 1 “ideal” day (i.e. team day)
- For subsequent sprints use the actual velocity from prior sprints for forward planning

Turn Estimates into Dollar Values

- Calendar effort provides effort in person months
- Can be used to estimate dollar cost
- Use average internal costs for resources

Internet Banking – Estimate Dollar Cost

- Team Structure
  - 4 developers
  - 1 UI designer
  - 1 tester
  - 1 business analyst
  - 1 project manager
  - 0.5 support from architecture
- Assume $1000 / person / day
- Daily cost: $8500

Internet Banking – Estimate Dollar Cost

- For example:
- If calendar effort estimating indicated
  - 1 story point = 1 day
- Total story point estimate
  - 154 points
- Total development time
  - 154 team days
- Estimated Development Cost
  - 154 × $8500 = $1,309,000

Internet Banking – Estimate Dollar Cost

- Consider overhead tasks
- Designing overall site look & feel
  - 3 weeks × pair of UI designers = $30,000
- Load testing
  - 2 weeks × 2 testers = $20,000
- Final system testing
  - 2 weeks × 2 testers = $20,000
- Security specialist
  - 4 weeks × 1 consultant = $20,000
- Total overhead costs: $90,000

Internet Banking – Estimate Dollar Cost

- Consider other costs
- Documentation – $15,000
  - production of material for call centre operators
- Training – $0 (nil)
  - no development team training
- Communication – $100,000
  - marketing material for customers
    - demo application & mailouts
- Travel and Accommodation – $0 (nil)
  - development team is co-located

Internet Banking – Estimate Dollar Cost

- Hardware – $400,000
  - production environment
  - disaster recovery environment
  - performance testing environment
  - staging
- Operational costs – $150,000
  - hardware support
  - 1 infrastructure team member

Internet Banking – Estimate Dollar Cost

• Development	$1,309,000
• Development Overheads	$ 90,000
• Documentation	$ 15,000
• Communication	$ 100,000
• Hardware	$ 400,000
• **Total for Develop & Deploy:**	**$1,914,000**
• Operational Cost	$ 150, 000
• **Total to end of first year:**	**$2,064,000**

Internet Banking – Estimate Dollar Cost

- Banded estimates
- Assuming 20% sensitivity
  - $2,064,000 × 1.2 = $2,476,800
  - $2,019,000 × 0.8 = $1,651,200
- Round to nearest $100K
- Minimum cost: $1.7M
- Likely cost: $2.1M
- Maximum cost: $2.5M

Review Cost-Benefit Analysis

- Revisit the cost-benefit analysis
  - if the estimated cost is less than expected everything is ok
  - otherwise
- May need to trim scope
  - keep the largest benefits
- Is the project too costly and no longer viable?
  - stop it now before starting major development work
    - a successful project planning phase

Internet Banking – Cost-Benefit Analysis

Costs $M			Benefits $M: Minimum	Likely	Maximum
			$1.6M	$2.0M	$2.5M
	Maximum	$2.5M	–$0.9M	–$0.5M	$0.0M
	Likely	$2.1M	–$0.5M	–$0.1M	$0.4M
	Minimum	$1.7M	–$0.1M	$0.3M	$0.8M

- Is this project viable?
- What should a project manager do?
- What should a project sponsor do?

Internet Banking – Cost-Benefit Analysis

Costs $M		Benefits $M: Minimum	Likely	Maximum
		$1.6M	$2.0M	$2.5M
Maximum	$1.9M	–$0.3M	$0.1M	$0.6M
Likely	$1.6M	$0.0M	$0.4M	$0.9M
Minimum	$1.3M	$0.3M	$0.7M	$1.2M

- Is this project viable?
- What should a project manager do?
- What should a project sponsor do?

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Release Planning

- Assemble stories into logical groups for releases and subsequently decomposition of the first release into sprints.

- Shared understanding by the project team of the initial release plan and features that deliver the best or highest value to the business.

Release Planning

- Collect stories into coherent groups of functionality
- Identify the smallest set of stories that delivers immediate business value
  - initial release
  - subsequent releases are small increment that delivers additional business value
- Deployment overhead will influence the size and frequency of releases

Release Planning is Not …

Release Planning

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Prioritisation

Release Planning Roles

- Product owner decides on priorities
- Scrum team decides what needs to be done to achieve it and the effort

Release Planning Examples

- Imagine stories for an Internet Banking system
- Organize them into coherent releases
- First few releases will be almost exclusively "Must Have" stories
  - a few complementary low priority stories may be added to satisfy user expectations
- "Won't Have" stories are out of scope

Internet Banking Example Release Plan

Internal Release One

- Feasibility Demonstration (30 points)
  - Must Haves from View Accounts, Transfers and Bpay
    - without implementing reliability

Internal Release Two

- Security Base (20 points)
  - most Must Haves from Security

Release Candidate One (MVP)

- Reliability (18 points)
  - ensure transactions are reliable, plus remaining Security story

Internet Banking Example Release Plan

Internal Release Three

- Increased Flexibility (20 points)
  - Should Haves: view transactions in range, schedule for future date, correct mistake, login with account number

Internal Release Four

- Remember for Me (30 points)
  - Should Haves: maintain external account list, maintain BPay list, bill from existing billers

Internal Release Five

- Scheduling (18 points)
  - Could Haves, without SMS confirmation and duplicate transaction warnings

Internet Banking Example Release Plan

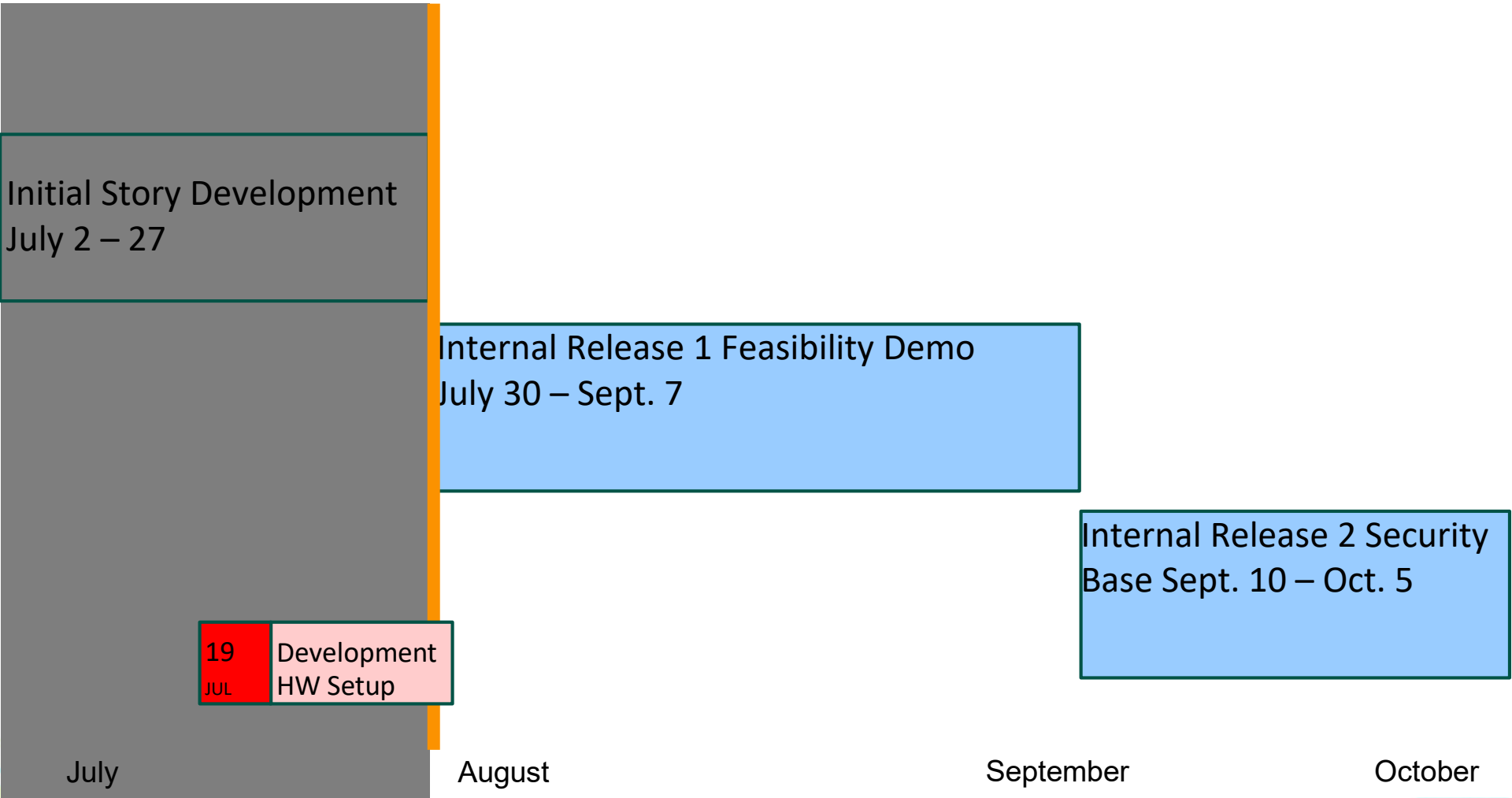
Release Candidate Two

- Extra Security and Assurance (18 points)
  - confirmation of PIN change by SMS and warnings about
    duplicate transactions

- Story point estimation: 154 points
- Cost estimation calculated a team velocity averaging one story point per day
- Team is following fixed two week sprints

- So, team velocity is 10 story points

Internet Banking Example Release Plan



Internet Banking Example Release Plan

Release Candidate 1
Reliability
Oct. 8 – Nov. 2

Internal Release 3
Increased Flexibility
Nov. 5 – 30

3 iterations, but with Christmas holidays

Internal Release 4
Remember for Me
Dec. 3 – Jan. 25

15 OCT	Full HW set up including DR
5 NOV	Trial deployment & backout
17 DEC	Release 1 Live

October November December January

Internet Banking Example Release Plan

Internal Release 5
Scheduling
Jan. 29 – Feb. 22

Release Candidate 2
Extra Security and Assurance
Feb. 25 – Mar. 22

25 MAR	Trial deployment & backout

29 APR	Release 2 Live

February March April May

Release Planning Issues

- Stakeholder key dates
  - What happens if the release plan doesn't correspond to stakeholders' important dates?
    - e.g. Olympic Games website by Sept. 2016
- Balancing business value vs. technical risks
- External dependencies
  - risks of delay?
- Resource requirements
  - fully identified?
  - availability?

Release Planning Template

- Release Plan Discussion using template from Blackboard.

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Sprint Planning

- GOAL: Identify stories to be completed in a sprint and subsequently decompose them into implementation tasks.

- Shared understanding by the project team of the work to be done during the sprint.

Sprint Planning Part 1

- Meeting with product owner at start of sprint
  - <2 hours for a 2 week sprint
- Product owner selects stories from product backlog
  - sets sprint goal
  - prioritises stories from highest to lowest
  - revisit release plan
    - do they have new priorities?
- How many story points completed in last sprint?
  - velocity for next sprint
  - product owner decides what to do about stories not completed

Sprint Planning Part 2

- Planning meeting for team at start of sprint
  - ~2 hours for a 2 week sprint
- Break stories into tasks
  - estimating size of each task
  - becomes sprint backlog

Task Break Down

- Read out story
- Brainstorm tasks required to implement story
  - keep them short
    - half a day or less is good
  - write each task on an index card
- All stories have a “Verify story is complete” task
- Review list of tasks
  - Does the list seem complete?
- Compare lists of tasks between stories
  - Was something forgotten?

During Sprint

- Highest priority story is the one under development
- Developers work on 1 task at a time
- Stories are completed throughout the sprint
  - *not* all at the end
- The “next task” is any task from the unfinished story with the highest priority
  - taking into account dependencies between tasks
- When you complete a task mark the card as completed
- If you discover a new task create a card for it
  - highlight the card
    - review these in sprint retrospective

Progress Checkpoint

- Review progress halfway through the sprint
  - are you going to finish all the stories?
- If not, quickly redo sprint plan
  - which stories will likely be dropped?
    - confirm priorities with product owner
  - review task estimates
    - was there consistency in estimation?
- Key principles: Communication & Courage
  - keep the customer informed and on-side

Sprint Planning Template

- Sprint Plan Discussion using template from Blackboard.

Week 4 Tutorial

- Your team has written a good set of user stories for the given case study meeting INVEST criteria.

- Assessment 1 activities - Release and Sprint Plan