Determining Business Value

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Net Objectives

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OOA&D, Design Patterns, Lean, Scrum, Kanban, Test-Driven Development
Over 2/5 century of software development experience
Author of seven books, including:
  - Prefactoring: Extreme Abstraction, Extreme Separation, Extreme Readability (2006 Jolt Award)
  - Interface Oriented Design
  - Lean Agile Acceptance Test-Driven Development: Better Software Through Collaboration

No code goes in till the test goes on.
A journey of two thousand miles begins with a single step.
Outline

- Agility focuses on rapidly delivering business value
  - What is it?
  - How do we estimate it?
  - What do we do with it?

The Product (Project) Team

- The Product (Project) Team consists of:
  - The Customer Unit
    - Provides requirements
    - Provides business value estimates
  - The Developer Unit
    - Provides implementation estimates
    - Implements requirements
  - The Quality Assurance Unit
    - Validates requirements are the right ones
    - Verifies manifestation implements requirements
Business Value – What Is It? (1)

- "I can't define it, but I know it when I see it"

Business Value – What Is It? (2)

- Business Value can be:
  - Increased revenue (sales, royalties, fees) ($$)
  - Decreased expenses ($$)
    - Less resources
    - More efficient use of resources
  - Customer satisfaction ($$ ??)
    - Promoters / Satisfiers / Detractors
  - Staying in business ($$ ??)
  - Staying out of jail ($$ ??)
  - Avoiding risk ($$ ??)
  - Information (what to build, how to build it) ($$ ??)
**Requirement Prioritization**

- Every requirement has a business value
  - Or else why is it required?
- Need to prioritize requirements
  - If multiple product owners, need agreement on priorities
  - Priorities should be partially based on business value of requirements
- Example priorities
  - Must have
  - Should have
  - Could have
  - Might have
  - “In your dreams”

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**Business Value Measurement**

- Customer should estimate business value for requirement stories
  - Could use $$
    - Often difficult to do or compute
    - Question: Can it be measured?
- Business value is unit-less
  - Allows comparison between non-$-$ and $$
- As requirement is "done", business value achieved
Business Value Chart

- Shows increase in business value
- What does this tell us?

BV

Iteration

Business Value Chart

- Business value not delivered linearly
- 50% of effort usually delivers more than 50% of BV
  - 40% / 60%
  - 20% / 80%
- Need to estimate how to get BV quicker

- Often for new team / project
  - Velocity is initially slower (stories / iteration)
  - Or some overall issues are dealt with
  - Therefore BV delivery is slow
Project Example

- Sam’s Vinyl Rental Store
- Wants to replace existing manual system
- Issues
  - Current system requires too much time to check-out Album
  - Hard to get a report on what’s in inventory
  - Can’t notify customers that Album is almost late and they’ll be charged an enormous late fee.
- What’s it worth to you (Sam that is)?
  - Determine an overall $ cost savings

Business Value Example

- Example - Sam’s Lawn Mower Repair and Vinyl Rental Shop
  - Keep track of where each Album is – in store or on rental (and with whom) (100)
  - Report when Albums are overdue (40)
  - Have a catalog so the customer can see what Albums are available and what songs are on what Albums (13)
  - A charge system to bill customers monthly, rather than by each rental (20)
Business Value Points (1)

- Could set highest priority story at a value (e.g. 100) and estimate relative points
- Or could use triangulation
  - Compare stories to multiple other stories
  - Group like stories together
- Values (unit-less)
  - 0, ½, 1, 2, 3, 5, 8, 13, 20, 40, 100, etc
  - 0 is little business value

Game Play

- Place Story Cards in pile
  - Place top card on playing surface
- Next player places top card relative to first card
  - (left easier, right harder, below equal)
- In succession, each player can either:
  - Play top card from pile
  - Moving a played card
  - Pass
- Repeat above until:
  - No more cards remain in the pile, and
  - No player wishes to move a card
- Then assign points to each column
  - (1, 2, 3, 5, 8, 13, 20, 40, 60, 100)
### Business Value Workshop

- Sample
  - Mow lawn
  - Take out trash
  - Repair leaky faucet
  - Clean basement
  - Tune up auto
  - Set clock on microwave
  - Watch basketball finals
Business Value and Story Points

- Business value is one-half of equation
- Need cost estimate as well
- Time/cost estimates are frequently WAG's
  - Story points are relative measure of time/cost

Time Estimating Example

- Example - Sam’s Lawn Mower Repair and Vinyl Rental Shop
  - Keep track of where each Album is – in store or on rental (and with whom) (5)
  - Report when Albums are overdue (2)
  - Have a catalog so the customer can see what Albums are available and what songs are on what Albums (3)
  - A charge system to bill customers monthly, rather than by each rental (20)
Story Points (2)

- Estimation Poker
  - Each estimator has deck of cards
  - Decide on one story that’s average – 5 or 8 - for comparison
  - Read story
    - Each person pulls a card
    - Turn all cards over
    - Discuss differences
    - Redo until agreement

Story Point Workshop

- Instead of cards, we'll use hand signals
- Sample
  - Mow lawn
  - Take out trash
  - Repair leaky faucet
  - Clean basement
  - Tune up auto
  - Set clock on microwave
  - Watch basketball finals
### Bang for the Buck

- **Once business value and time estimated**
  - Determine “bang for the buck”

- **Bang = Business value points / Story points**
  - Represents roughly “return on investment”
  - Don’t get into differences of 1.3 versus 1.4, but rather 1 and 2 or 3

- **May want to prioritize high Bang stories**

### Bang for the Buck Example

- **Example - Sam’s Lawn Mower Repair and Vinyl Rental Shop**
  - Keep track of where each Album is – in store or on rental (and with whom)  100/5 = 20
  - Report when Albums are overdue  40/2 = 20
  - Have a catalog so the customer can see what Albums are available and what songs are on what Albums  13/3 = 4
  - A charge system to bill customers monthly, rather than by each rental  20/20 = 1
Bang for Buck Workshop

- Compute "Bang for the Buck"
- Sample
  - Mow lawn
  - Take out trash
  - Repair leaky faucet
  - Clean basement
  - Tune up auto
  - Set clock on microwave
  - Watch basketball finals

Business Value Chart (Revisited)

- Slope is roughly "Bang for the Buck"
  - (If SP per iteration constant)
**Bang for the Buck**

- When Bang for Buck decreases
  - Consider project termination
  - Look for other projects with bigger BfB

**Weighted Shortest Job First (1)**

- WSJF uses Cost of Delay (CoD) which combines
  - Business value
  - Time Criticality
    - Does value decay over time?
    - Fixed deadline?
    - Will customer wait for us?
  - Risk reduction / opportunity enablement
    - What else does this do for us?
    - Reduce risk?
    - Open up opportunities?
Weighted Shortest Job First (2)

- Estimate (on 1 to 20 or 1 to 100 scale)
  - Business value
  - Time Criticality
  - Risk reduction / opportunity enablement

- Then combine into CoD
  - At least two ways to do this:
    
    \[
    \text{CoD} = \text{BV} + \text{TC} + \text{RR\_OE} \\
    \text{CoD} = \text{BV} + \text{TC} \times \text{TCWeight} + \text{RR\_OE} \times \text{RR\_OEWeight} \\
    \text{WSJF} = \frac{\text{CoD}}{\text{SP}}
    \]

WSJF

- Example – Sam’s Vinyl Rental Shop

<table>
<thead>
<tr>
<th>Item</th>
<th>BV</th>
<th>CoD</th>
<th>RR_OE</th>
<th>Unweighted CoD</th>
<th>SP</th>
<th>WSJF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep track of where each Album is</td>
<td>100</td>
<td>100</td>
<td>20</td>
<td>220</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td>Albums are overdue</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>42</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Catalog</td>
<td>13</td>
<td>8</td>
<td>1</td>
<td>21</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Charge system</td>
<td>20</td>
<td>5</td>
<td>13</td>
<td>38</td>
<td>20</td>
<td>2</td>
</tr>
</tbody>
</table>
### CoD Exercise

<table>
<thead>
<tr>
<th>Task</th>
<th>Business Value</th>
<th>Time Criticality</th>
<th>Risk reduction / opportunity enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mow lawn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take out trash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repair leaky faucet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean basement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tune up auto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set clock on microwave</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch basketball finals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CoD Considerations

<table>
<thead>
<tr>
<th>Task</th>
<th>Time Criticality</th>
<th>Risk reduction / opportunity enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mow lawn</td>
<td>Harder to do when higher</td>
<td>Neighbors complaining Win best yard in neighborhood</td>
</tr>
<tr>
<td>Take out trash</td>
<td>Smell increases</td>
<td>Rats</td>
</tr>
<tr>
<td>Repair leaky faucet</td>
<td>Cost of additional water</td>
<td>Possible water damage Prevent mold growth Prevent losing job from loss of sleep</td>
</tr>
<tr>
<td>Clean basement</td>
<td>Loss of pizza due to cockroaches</td>
<td>Losing significant other after seeing cockroaches</td>
</tr>
<tr>
<td>Tune up auto</td>
<td>Loss of resale value</td>
<td>Possible car not starting Possible engine repairs</td>
</tr>
<tr>
<td>Set clock on microwave</td>
<td>None</td>
<td>Missed taping of shows Annoyance of blinking</td>
</tr>
<tr>
<td>Watch basketball finals</td>
<td>Won’t be real time if missed</td>
<td>Watching after knowing score</td>
</tr>
</tbody>
</table>
Assumptions

- Benefits of estimating CoD (or just BV)
  - Make explicit the implicit assumptions about value

Smaller Picture

- Example had “big level stories”
- Big level stories turned into smaller stories for scheduling
- BV allocable among stories
  - Can use planning poker, card movement, or just agreement
- Example big level story:
  - Keep track of where each Album is – in store or on rental (and with whom) BV 100
Stories with “Allocated BV”
- As the Counter Clerk, I want to check-out an Album for a customer
  - BV = 40
- As the Counter Clerk, I want to check-in an Album
  - BV = 40
- As the Counter Clerk, I want to note that an Album is damaged on check-in
  - BV = 5
- As the Counter Clerk, I want to note that the customer reported the Album as lost or stolen
  - BV = 5

“Right-Sized” Stories

- If user story effort (Story Points) exceeds an iteration (or other limit)
  - Break story into smaller stories
  - Every story should have BV (minimum of 1)

Example Story
- As the Counter Clerk, I want to check-out an Album for a customer
  - BV = 40

Smaller Stories:
- As the Counter Clerk, I want to check-out an Album for a standard rental for a customer
  - BV = 20
- As the Counter Clerk, I want to check-out an Album for an extended rental for a customer
  - BV = 20
“Right-Sized” Stories

- If story not breakable into stories with BV
  - Break story into developer stories
  - Developer stories have no BV (they support BV)
    - Should have developer-supplied acceptance tests
- Example Story
  - As the Counter Clerk, I want to check-out an Album for a customer
    - BV = 40, SP = 8
- Smaller Stories:
  - As the Developer, I need to create a database to support check-out Album for a customer
    - SP = 2
  - As the Developer, I want to create a user-friendly UI to support check-out Album for a customer
    - SP = 2
  - Etc.
- Achieve BV when all developer stories done

BV to $$

- If need $$
  - Take total estimated $$ for a project
    - BV $ = (Total $) / (Total BV)
  - Using past history, determine estimated SP $
    - (Total $$ / Total SP for project)
- ROI is BV $ / SP $
- Example:
  - Sam’s benefit was $100K, total BV was 173, $/BV is $580
  - Based on past history, 1 SP equivalent is $10000, total cost of 30 SP is $300,000.
    - Total ROI = $100k/$300K = 33%
  - Earned value is $580 per BV completed
Summary

- We’ve looked at business value
  - What is it?
    - Measure of worth to the business
  - How do we measure it?
    - Customer unit estimate sit
  - What do we do with it?
    - Determine bang for buck
    - Determine requirement priorities
    - Show business value growth
    - Prioritize portfolios
Start Becoming Business Valuators

Thank you

Please fill out Evaluations

Supplemental
A Last Exercise

- If there’s time
  - Let’s try it for real

Bigger Picture
### Bigger Picture

- **Can use "Bang for the Buck" on larger scale**
  - Determine "Business Value" for project on large scale
  - Determine "Story Points" for project on large scale
  - Rank projects (or individual features) on "Bang for the Buck"

- **Issues**
  - People who have bigger picture view / appreciation
  - Need to rank non-homogeneous projects
  - Need to adjust effort estimates by different teams
    - Use past history, if available

- **Measures**
  - May use WP (work points) for non-software work
  - Need to determine a WP to SP ratio to adjust BfB

### Portfolio Project Example

<table>
<thead>
<tr>
<th>Project</th>
<th>BV</th>
<th>SP</th>
<th>BB</th>
</tr>
</thead>
<tbody>
<tr>
<td>CheckInOut</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Website Redo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR Automation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Store Layout</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- BV = Business Value
- SP = Story Points
- BB = Bang for the Buck
### Portfolio Feature Example

<table>
<thead>
<tr>
<th>CheckInOut</th>
<th>Website Redo</th>
<th>HR Automation</th>
<th>New Store Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep track of Albums</td>
<td>Menus</td>
<td>Paychecks</td>
<td>Checkout area</td>
</tr>
<tr>
<td>BV 100; SP 5; BB 5</td>
<td>BV 100; SP 3; BB 33</td>
<td>BV 5; SP 2; BB 3</td>
<td>BV 20; WP 5; BB 4</td>
</tr>
<tr>
<td>Overdue report</td>
<td>Sign up</td>
<td>Vacation plans</td>
<td>New Album shelves</td>
</tr>
<tr>
<td>BV 40; SP 2; BB 20</td>
<td>BV 20; SP 13; BB 2</td>
<td>BV 1; SP 3; BB .5</td>
<td>BV 13; WP 20; BB .5</td>
</tr>
<tr>
<td>Catalog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BV 13; SP 3; BB 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BV 20; SP 20; BB 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What might be the sequence?