# Becoming an Effective Scrum Product Owner

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# Mike Cohn - background

USER STORIES APPLIED
FOR AGILE SOFTWARE DEVELOPMENT

Agile Estimating and Planning

Mike Cohn
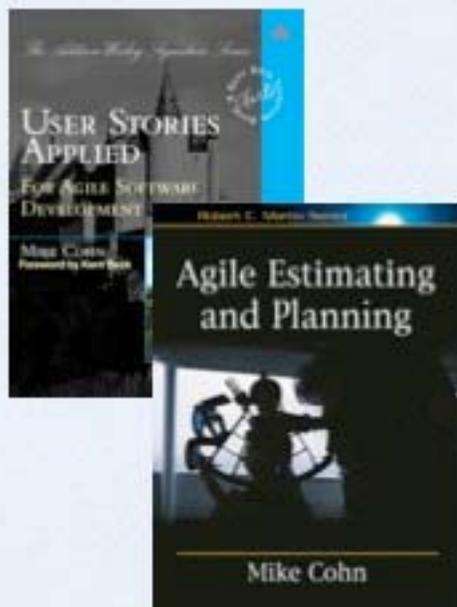
Consultant, author, and speaker

Founding member and director of Agile Alliance, Scum AII:

Founder of Mountain Goat Software
-Process and project management training and consulting

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# Today's agenda

- ☑ What is product ownership
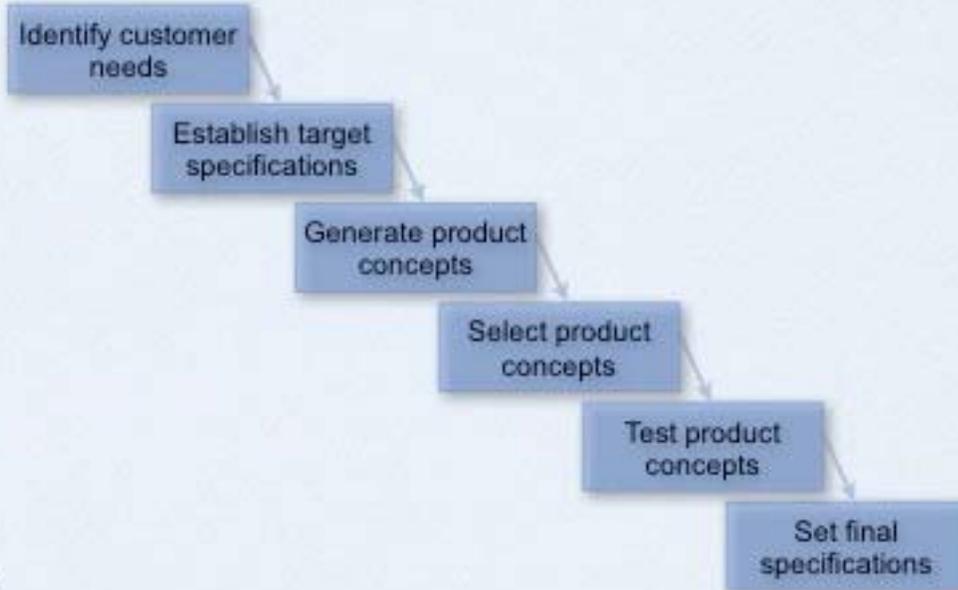- ☐ From concept to product backlog
- ☐ Project wrapup

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# Role of the product owner

- What are the primary responsibilities of the product owner?
- What are some differences between the role of the product owner and the ScrumMaster?
- What skills should the ideal product owner possess?
- What things would you expect to happen on a project without a product owner?

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Traditional view of product management

Identify customer needs → Establish target specifications → Generate product concepts → Select product concepts → Test product concepts → Set final specifications

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Agile view of product management

Identify partial concepts    Assess

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A product manger helps reduce uncertainty

Waterfall — Agile

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The planning onion

Strategy / Portfolio / Product / Release / Sprint / Daily

Agile Product Management is mostly concerned with the space from Product to Sprint.

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# What agile product ownership is not

- Agile is not a synonym for
  - lazy
  - lightweight
- Building the right product requires:
  - Some upfront thought (but balanced with the knowledge that we'll be wrong)
  - Some hard work
  - Willingness to be wrong

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# Today's agenda

- ☑ What is product ownership?
- ☐ From concept to product backlog
- ☐ Project wrapup

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# From concept to product backlog

1. Gather raw data from users

2. Formulate raw data into into user needs

3. Organize needs into themes

4. Assess importance of each theme
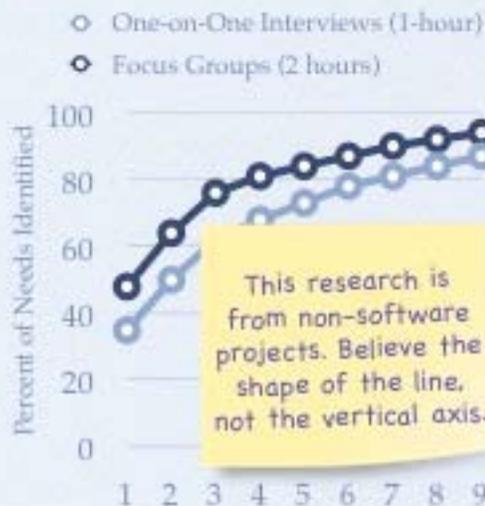
5. Prioritize themes

6. Stock the product backlog

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*Step 1*
# Gather raw data from users

- Interviews
- Focus groups
  - Typically 7-12 users
  - Participants often paid $50 - $100
  - Videotape
  - Two-way mirrors
- Observation
  - Passive or active



○ One-on-One Interviews (1-hour)
◆ Focus Groups (2 hours)

*This research is from non-software projects. Believe the shape of the line, not the vertical axis.*

Source: *"The Voice of the Customer"* by Griffin and Hauser.

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# Who and how many?

- How many?
  - Typically 10 - 50 but stop when you're not hearing much new
- In most cases favor users over customers
- Try to talk with *lead users*
  - Lead users experience needs months or years ahead of other users and benefit most from innovation
- Why?
  - Can articulate emerging needs because they've thought about them
  - May have already created solutions to these needs

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# Customer selection matrix

|  | Customer Type | | |
|---|---|---|---|
| | Lead Users | Users | Travel Agent |
| **Vacation traveler** | 0 | 5 | 2 |
| **Business traveler** | 2 | 3 | 2 |
| **Frequent flier** | 3 | 7 | |

Market Segment

# Sample questions to ask

- When and why do you use this product?

- Tell me what you usually do with this product.

- What do you like about this product? About its competitors?

- What do you dislike about this product? About its competitors?

- What factors do you consider when purchasing this product?

- What improvements would you make to this product?

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# Additional hints

- Let the user talk

  - Do not interrupt just to make sure you ask your prepared questions

- Be prepared to let the user run the product

  - And, ideally, other (perhaps competitive) products

- Listen for latent needs

  - Pursue with follow-up questions

- Watch for nonverbal clues

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# User data template

| User: | Mike Cohn | | Interviewer: | Larry King |
|---|---|---|---|---|
| Address: | PO Box 165 Lafayette, CO 80026 | | Date: | November 15, 2005 |
| Telephone: | (720) 890-6110 | | Currently | Orbitz |
| Email: | mike@mountaingoatsoftware.com | | Type of user: | Frequent flyer |
| Question/ Prompt | Customer Statement | | Interpreted Need | |
| Typical uses | I sometimes plan a trip like one I've taken before | | | |
| | A lot of sudden, short trips | | | |
| Likes about current product | I like that it remembers I prefer United Airlines | | | |
| | I like that I can search nearby airports | | | |

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# Formulate raw data into user stories

- Convert user statements into descriptions of user needs

    - Focus on **what**, not **how**

- Avoid adding extra detail through interpretation or your own assumptions

- Goes into the blank column on the user data template

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# A user story template

- Express user needs in terms of what the user wants to achieve

- Excellent template for this:

> As a <type of user>, I want <goal> so that <reason>.

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# Some samples (travel site)

| | |
|---|---|
| I sometimes plan a trip like one I've taken before | As a user, I want to rebook a past trip |
| I often stay longer than I planned | As a user, I want to change my return date |
| I like that it remembers I prefer United Airlines | As a frequent flyer, I want the system to remember my preferences |
| I like that I can search nearby airports | As a user, I want the system to (always?) search nearby airports so that I find the best fares (or flight options). |

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# Condos4Less.com

- We plan to contract with condo owners and help them rent their condos
  - We will work with individual owners as well as multi-unit owners
- We plan to make money by
  - Charging a listing fee
  - Taking a percent of each rental
  - Advertising
  - Providing an optional management service

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# Raw data to stories

--Complete the user data templates on the following pages by filling in the "Interpreted Need" columns.
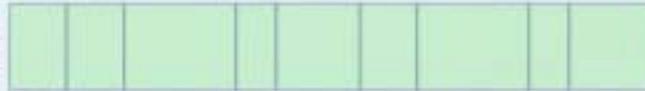
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# Organize needs into themes

- At this point you'll likely have 50-300 user stories

  - This is usually too many to work with directly

- Some definitions

| An epic is a large user story | |
| --- | --- |
| A theme is a collection of related user stories | |
| An epic is a theme that hasn't been split yet | |

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# Steps for organizing into themes

1. Write each story on its own note card or post-it

2. Eliminate redundant stories

3. Group similar stories

4. Label each group with a theme name

5. If you have a lot of themes or have small themes, consider making themes of themes

6. Review the results

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# Affinity grouping

- Distribute cards equally to all participants

  - No particular pattern to how you do this

- Someone reads a card and places in on wall / table

  - Others look for similar cards and add them to it

- Next person reads a card, places it, and others place similar cards with it

- Continue repeating until out of cards

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# An example

As a frequent flier, I want to book a flight.

..., I want to book a flight using miles.

..., I want to book a flight and pay for it.

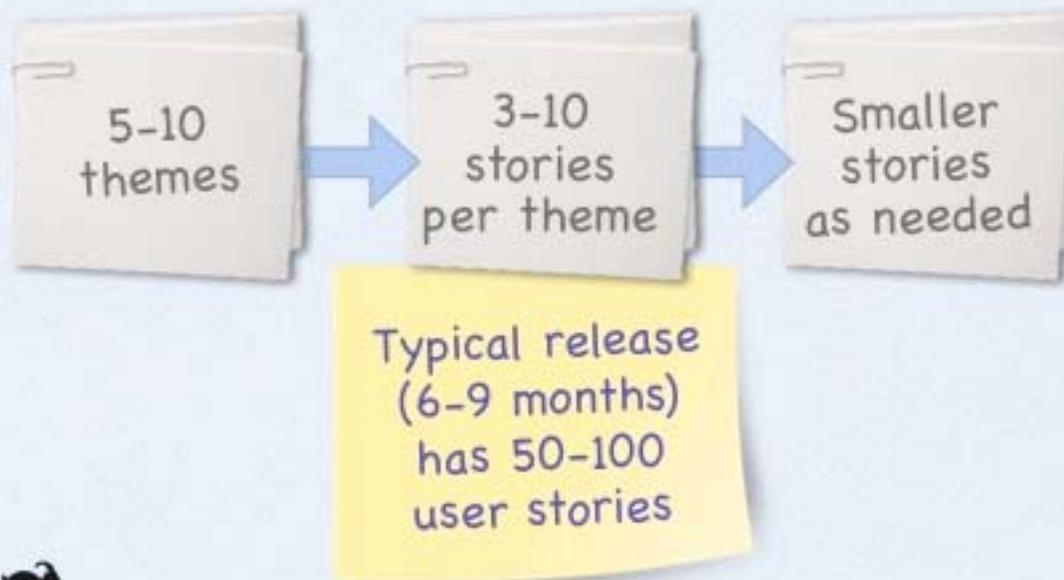..., I want to re-book a flight I take often.

..., I want to request an upgrade to first class.

..., I want to see if my upgrade cleared.

Be sure you are organizing stories around user needs; not around how you'll build the software or how the company is organized.

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# Typical results

5-10 themes → 3-10 stories per theme → Smaller stories as needed

Typical release (6-9 months) has 50-100 user stories

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## Step 4
## Assess importance of each theme

- Two general approaches
  1. Team opinion
  2. Survey users
- Some specific approaches
  - Kano analysis
  - Relative weighting
  - Theme screening
  - Theme scoring
  - Financial analysis
  - Analytic Hierarchy Process

We'll look at Kano, Relative weighting, and financial analysis today

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# Kano analysis

**Three types of features**

| | |
|---|---|
| Mandatory / Baseline | → | Must be present in order for users to be satisfied |
| Linear | → | The more of it, the better |
| Exciters / Delighters | → | Features a user doesn't know she wants, until she sees it |

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# Surveying users

- To assess whether a feature is baseline, linear, or exciting we can:
  - Sometimes guess
  - Or survey a small set of users (20-30)
- We ask two questions
  - A functional question
    - How do you feel if a feature is present?
  - And a dysfunctional question
    - How do you feel if that feature is absent?

# Functional and dysfunctional forms

| Functional form of question | → | If your hotel room includes a free bottle of water, how do you feel? | I like it that way. | X |
|---|---|---|---|---|
| | | | I expect it to be that way. | |
| | | | I am neutral. | |
| | | | I can live with it that way. | |
| | | | I dislike it that way. | |

| Dysfunctional form of question | → | If your hotel room does not include a free bottle of water, how do you feel? | I like it that way. | |
|---|---|---|---|---|
| | | | I expect it to be that way. | X |
| | | | I am neutral. | |
| | | | I can live with it that way. | |
| | | | I dislike it that way. | |

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# Categorizing an answer pair

| | | Dysfunctional Question | | | | |
|---|---|---|---|---|---|---|
| | | Like | E_ _t | Neutral | Live with | Dislike |
| **Functional Question** | Like | Q | E | E | E | L |
| | Expect | R | I | I | I | M |
| | Neutral | R | I | I | I | M |
| | Live with | R | I | I | I | M |
| | Dislike | R | R | R | R | Q |

M   Mandatory
L   Linear
E   Exciter
Q   Questionable
R   Reverse
I   Indifferent

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# Aggregating results

| Theme | Exciter | Linear | Mandatory | Indifferent | Reverse | Questionable |
|-------|---------|--------|-----------|-------------|---------|--------------|
| Apply formatting themes | 3 | 11 | (31) | 1 | 3 | 2 |
| Automate report execution | 4 | (22) | (20) | 4 | 1 | 0 |
| Export reports to PowerPoint | (21) | 9 | 14 | 5 | 1 | 1 |

# What to include

- All of the baseline features
  - By definition, these must be present
- Some amount of linear features
- But leaving room for at least a few exciters

# Kano analysis of Condos4Less

Based on the list of stories you wrote earlier, identify 2-3 of each type:
--Exciters
--Linear
--Baseline
You can make up new stories if you'd like.

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# Relative weighting

- Assess the impact of having a story/theme from 1-9
- Assess impact of NOT having it from 1-9
- Calculate the value of each story or theme relative to the entire product backlog
  - This gives you the relative value of that story or theme
- Estimate the cost of each story theme
- Calculate the cost of each story or theme relative to the entire product backlog
  - This gives the relative cost of that story or theme
- Priority is given by (Relative Value + Relative Cost)

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# Relative weighting: an example

| Themes | | Relative Benefit | Relative Penalty | Total Value | Value Percent | Estimate | Cost Percent | Priority |
|---|---|---|---|---|---|---|---|---|
| | More investment choices | 8 | 6 | 14 | 40 | 64 | 44 | 91 |
| | Portfolio rebalancing | 9 | 2 | 11 | 31 | 40 | 27 | 115 |
| | Comply with new law | 1 | 9 | 10 | 29 | 42 | 29 | 100 |
| | Total | | | 35 | 100 | 146 | 100 | |

Total Value = Relative Benefit + Relative Penalty
Value Percent = Total Value / $\sum$ (Total Value)
Cost Percent = Estimate / $\sum$ (Estimate)

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# An example with weights

| | Weight→ | 2 | 1 |
|---|---|---|---|

| Themes | | Relative Benefit | Relative Penalty | Total Value | Value Percent | Estimate | Cost Percent | Priority |
|---|---|---|---|---|---|---|---|---|
| | More investment choices | 8 | 6 | 22 | 41 | 64 | 44 | 93 |
| | Portfolio rebalancing | 9 | 2 | 20 | 38 | 40 | 27 | 141 |
| | Comply with new law | 1 | 9 | 11 | 21 | 42 | 29 | 72 |
| | Total | | | 53 | 100 | 146 | 100 | |

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# Financial analysis

- Net Present Value (NPV)
  - Sum of discounted future cash flows
  - Expresses return as an amount of money
- Return on Investment (ROI) / Internal Rate of Return
  - The interest rate at which NPV = ¤0
    - That is, at which you'd be indifferent to the investment
  - Expresses return as a percentage
- Discounted payback period
  - Amount of time before discounted returns equal the investment
  - Expresses return as an amount of time

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# An example: Theme comparison matrix

| Theme | Story Points | Cost | 3-Year Return | NPV | IRR | Payback |
|---|---|---|---|---|---|---|
| Theme A | 25 | $150 | $1,065 | $449 | 133% | 2 |
| Theme B | 32 | $192 | $2,109 | $940 | 172% | 4 |
| Theme C | 90 | $540 | $2,537 | $683 | 80% | 2 |
| Theme D | 48 | $288 | $1,360 | $443 | 76% | 4 |
| Theme E | 55 | $330 | $900 | $191 | 48% | 2 |
| Theme F | 79 | $474 | $1,365 | $331 | 56% | 4 |
| Theme G | 90 | $540 | $5,964 | $2,519 | 139% | 5 |
| Theme H | 50 | $300 | $2,415 | $1,023 | 146% | 2 |
| Theme I | 15 | $90 | $1,800 | $747 | 221% | 1 |
| Theme J | 30 | $180 | $840 | $182 | 65% | 2 |
| Theme K | 75 | $450 | $516 | ($104) | 5% | 4 |
| Theme L | 40 | $240 | $171 | ($110) | -12% | 5 |
| Theme M | 60 | $480 | $1,025 | $142 | 38% | 3 |
| Theme N | 18 | $108 | $185 | $7 | 24% | 2 |
| Theme O | 35 | $210 | $423 | $60 | 33% | 3 |
| Theme P | 24 | $144 | $188 | ($19) | 12% | 5 |
| Theme Q | 15 | $90 | $102 | ($20) | 5% | 5 |
| Theme R | 6 | $36 | $155 | $53 | 90% | 1 |
| Theme S | 65 | $390 | $410 | ($105) | 2% | 4 |
| Theme T | 12 | $72 | $1,505 | $748 | 365% | 1 |

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# Prioritize themes

- Factors in prioritizing
  - Value
  - Cost
  - Risk
  - Uncertainty
    - End uncertainty
    - Means uncertainty

Product manager is (usually) the best at assessing value and the importance of reducing end uncertainty, but...

...rely on the development team to provide insights into:
--changes in relative cost
--risk
--means uncertainty

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# Stock the product backlog

- Fill in gaps in the product backlog
- Make sure highest-priority themes are in ready-to-develop stories

High priority

A theme that will soon be split into smaller stories

A theme that has already been split into stories

Low priority
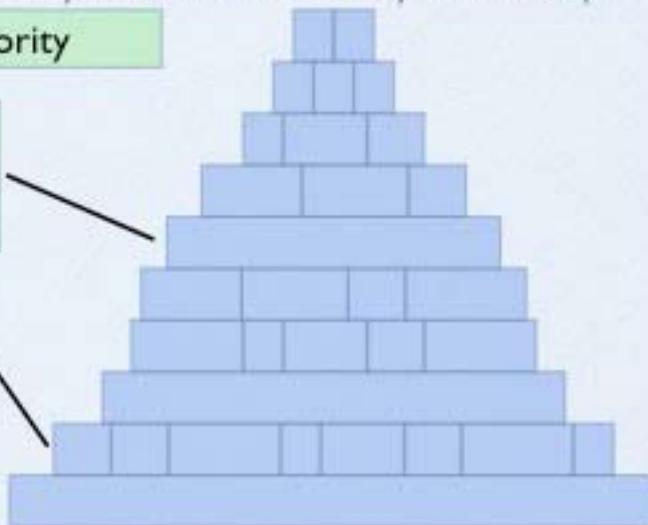
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# Today's agenda

- ☑ What is product ownership
- ☑ From concept to product backlog
- ☐ *Calling for a release*

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# Calling for a release

- Just because we said "June 15th" back in January, doesn't mean we should release on June 15th

- Maybe earlier with fewer features or later with more would be better

- It is responsibility of the product owner to decide

- Three tools to consider when deciding
  - Release burndown charts
  - Cost of delay

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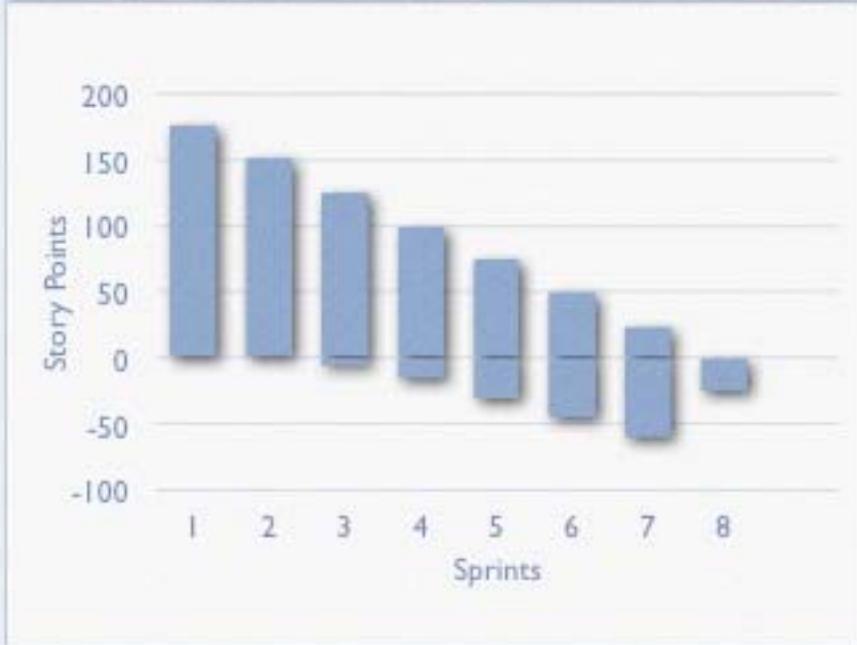


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# Predicting the end date

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# Including the rate of change

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# Interpreting burndown charts

- Burndown charts raise questions; they do not answer them

- Any problem looks like it was caused by the developers

- Burndown charts show *net* progress

- Consider using a burndown bar chart if you can avoid arguments about whether something is above or below the line

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# The cost of delay

- A hallmark of a good Scrum team is that the system is potentially releasable after every sprint

- If that's true, when should you release?

- This is a classic optimization problem
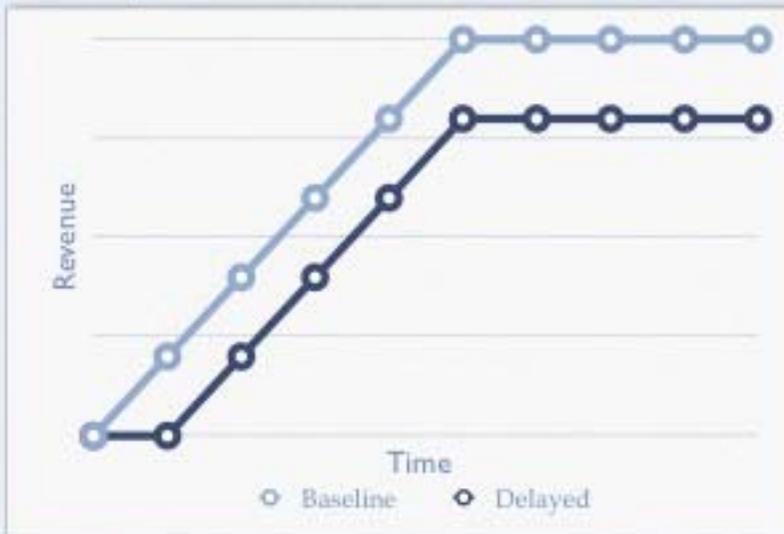
  - Apply traditional cost/benefit analysis

What is the cost of not releasing now?

What is the benefit of not releasing now?

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Typical cost of delay scenario

- The cost of delay can vary dramatically based on your competitive situation

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Which is which?

--High switching costs
--Monopoly
--A developing market

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# The cost of delay

- To understand the impact of delaying a release, consider the cost of delaying it one month

- Calculate baseline financials

- Calculate financials if there's a six-month delay

- Calculate per-month loss of total income

- You need a financial model for your product

  - Many ways to do this

# Baseline financials

| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 |
|---|---|---|---|---|---|---|
| Revenue | | | | | | |
| Software licenses | 500 | 1,000 | 1,500 | 2,000 | 2,000 | 2,000 |
| Maintenance services | 100 | 200 | 300 | 400 | 400 | 400 |
| Product revenue | 600 | 1,200 | 1,800 | 2,400 | 2,400 | 2,400 |
| Consulting services | 200 | 400 | 600 | 800 | 800 | 800 |
| Total revenue | 800 | 1,600 | 2,400 | 3,200 | 3,200 | 3,200 |
| Cost of Revenue | | | | | | |
| Cost of consulting svcs. | 100 | 200 | 300 | 400 | 400 | 400 |
| Gross Profit | 700 | 1,400 | 2,100 | 2,800 | 2,800 | 2,800 |
| Operating expenses | | | | | | |
| Product development | 500 | 500 | 500 | 500 | 500 | 500 |
| Sales & marketing | 250 | 250 | 250 | 250 | 250 | 250 |
| General & administrative | 25 | 25 | 25 | 25 | 25 | 25 |
| Total operating expenses | 775 | 775 | 775 | 775 | 775 | 775 |
| Operating income (loss) | (75) | 625 | 1,325 | 2,025 | 2,025 | 2,025 |

Cumulative Income = 7,950

# A six-month delay

| | QI | Q2 | Q3 | Q4 | Q5 | Q6 |
|---|---|---|---|---|---|---|
| Revenue | | | | | | |
| Software licenses | 0 | 0 | 500 | 1,000 | 1,500 | 1,500 |
| Maintenance services | 0 | 0 | 100 | 200 | 300 | 300 |
| Product revenue | 0 | 0 | 600 | 1,200 | 1,800 | 1,800 |
| Consulting services | 0 | 0 | 200 | 400 | 600 | 700 |
| Total revenue | 0 | 0 | 800 | 1,600 | 2,400 | 2,400 |
| Cost of Revenue | | | | | | |
| Cost of consulting svcs. | 0 | 0 | 100 | 200 | 300 | 300 |
| Gross Profit | 0 | 0 | 700 | 1,400 | 2,100 | 2,100 |
| Operating expenses | | | | | | |
| Product development | 500 | 500 | 500 | 500 | 500 | 500 |
| Sales & marketing | 0 | 0 | 250 | 250 | 250 | 250 |
| General & administrative | 25 | 25 | 25 | 25 | 25 | 25 |
| Total operating expenses | 525 | 525 | 775 | 775 | 775 | 775 |
| Operating income (loss) | (525) | (525) | (775) | 625 | 1,325 | 1,325 |

Cumulative Income = 1,450

# Calculating the cost of delay

- Baseline cumulative income = 7,950

- Delayed cumulative income = 1,450

- Per month cost of delay =

    (7950 - 1450) / 6 =

    6500 / 6 =

    1,083

- Make tradeoff decisions based on losing 1,083 per month of delay

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