User Stories – The Art of Writing Agile Requirements



Agenda

- Introduction
- Overview of Agile/Scrum
- From Vision to Acceptance Criteria
 - ☐ Modeling Users & Customers
 - □ Epics, Features & User Stories
 - ☐ Elaborating from Vision to Story
 - ☐ Acceptance Criteria & Testable Examples
- Q&A



Overview

Agile & Scrum



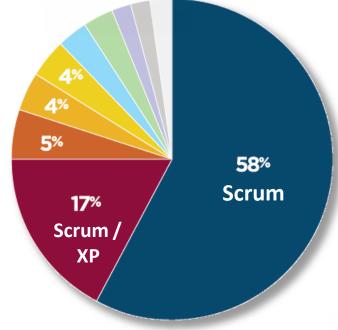
The Agile Landscape

"Agile" describes a number of related methods.

Scrum is the most popular.

- Scrum
 Jeff Sutherland & Ken Schwaber
- Extreme Programming (XP)
 Kent Beck, Ward Cunningham, Ron Jeffries
- Kanban
 David Anderson
- Scaled Agile Framework (SAFe)

 Dean Leffingwell



Source: 2010 State of Agile Development Survey, VersionOne



Dealing with Uncertainty

You don't need agile if you know what to build, who to build it for, and how to build it

Use agile when you have uncertainty...

What to build: End Uncertainty

How to build it: Means Uncertainty

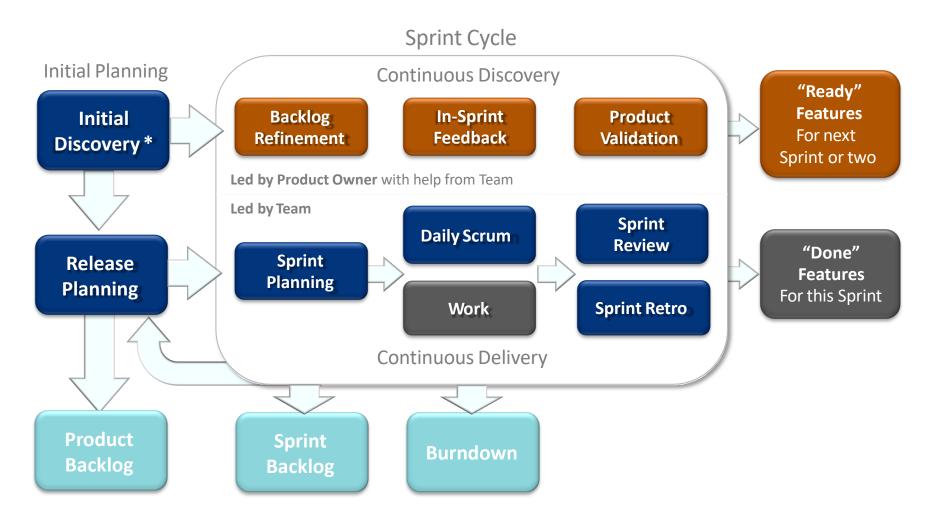
Who to build it for: User Uncertainty





Initial Plan

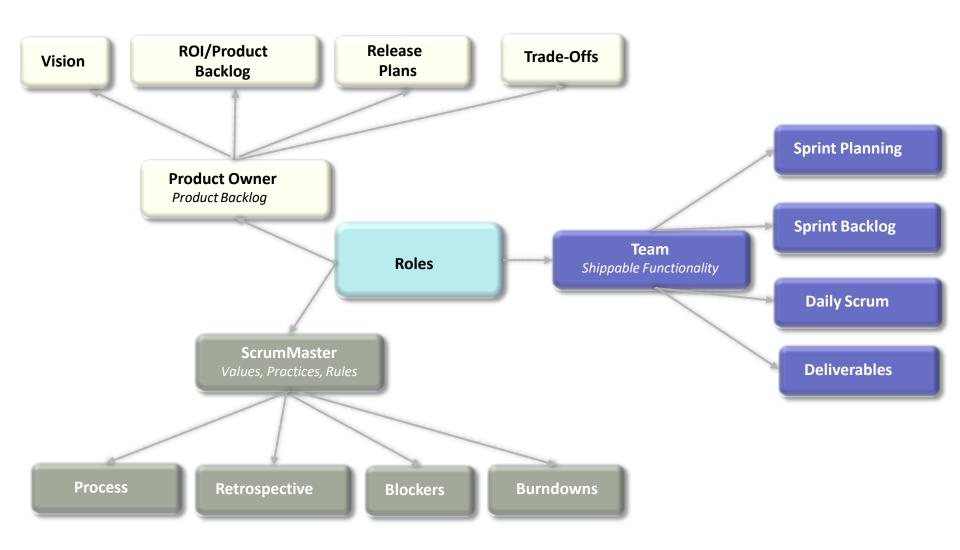
Ceremonies and Artifacts of Scrum



^{*} Discovery is not explicitly part of the Scrum Framework



Roles





Tools

Product Backlog

Prioritized list of all items (PBI) required

to launch a successful product

Sprint Backlog

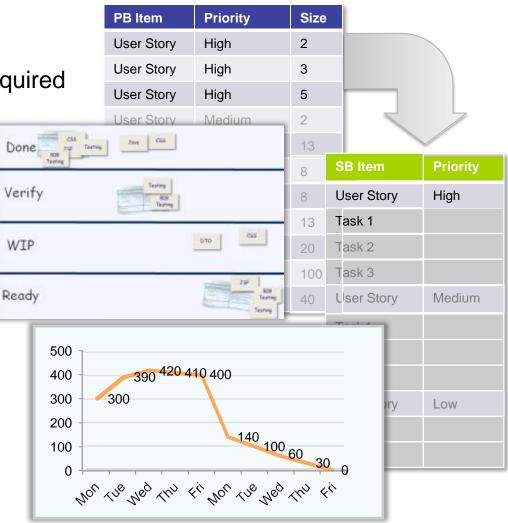
Tasks to get committed PBIs to done within Sprint

Task Board

Stories and tasks for the Sprint tracked from start to completion

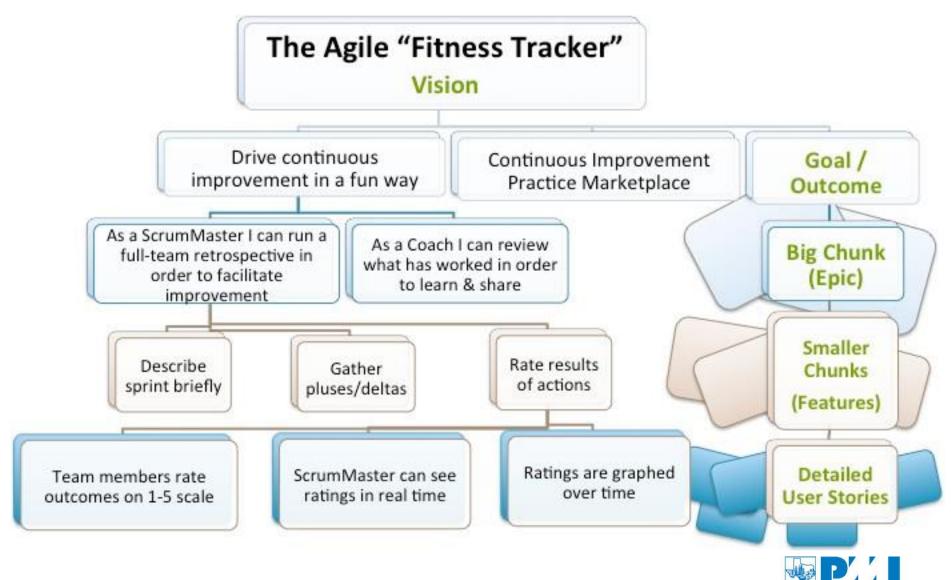
Burndown/burn-up Chart

Visual aid for tracking team progress and forecasting expected completion dates





The Big Picture



June 9-11, 2014

Vision

Aligning Goals & Constraints



Crafting a Vision Statement

For Target Customers
Who Statement of Need
The Product Name
Is a Category



That Compelling Reason to Buy & Use Unlike Competition / Alternative
Our Product Differentiator

As described by Geoffrey Moore in **Crossing the Chasm** (Thanks to Gabrielle Benefield for the reference)



Simulation

Restaurant Finder



Exercise – Prepare a Pitch

Create a Vision Poster for your simulation project with:

- 1.A product name;
- 2.A product logo;
- 3.A product slogan or jingle; and
- 4.Three (3) compelling reasons to buy your product.



Personas

Customer & User Modeling



Users vs. Customers



Users interact directly with the system

They are important to understand, because:

- •Knowledge of current usage patterns helps to design better, more usable systems.
- •Unsatisfied users will work around the system, nullifying its advantages and eventually eliminating it.



Customers (sponsors) make buying / adoption decisions They are also important, because:

- •They have their own wish lists that may have little to do with their users' needs.
- •They make the purchasing decisions, so if they aren't happy, you won't get in the door.



Looking Across Usage Scenarios

- Personas represent a type of user across usage contexts.
 - One member of our current or desired audience in a tangible, less ambiguous way.
 - Provide a name, a face, and a description giving us a mental model of our users allowing us to emphasize with them and predict how they will use our software.



Level of detail

- Add just enough detail to aid empathy, more details can be distracting.
- Lightweight personas will suffice for many.





User Models Summary

- **Use what works** user roles, personas, etc., without getting hung up in vocabulary.
- Prioritize your user(s) and prioritize stories for them.
- Post big charts (e.g. personas) in team room to aid empathy.
- Focus testing and evaluation on the right users, identifying test subjects similar to your models.
- Base models on reality (ethnography / field study):
 - Usability Testing
 - Observation
 - Interviews

- Data Analysis
- Feedback Forms
- Surveys, etc.



Exercise: Create Personas

Who are your most critical personas, or early adopters?

- List potential stakeholders that would represent the Customers & Users of your product.
- Prioritize these stakeholders and pick two to elaborate.
- 3. Create at least two personas by writing brief stories that outline the motivations and goals of these customers or users.





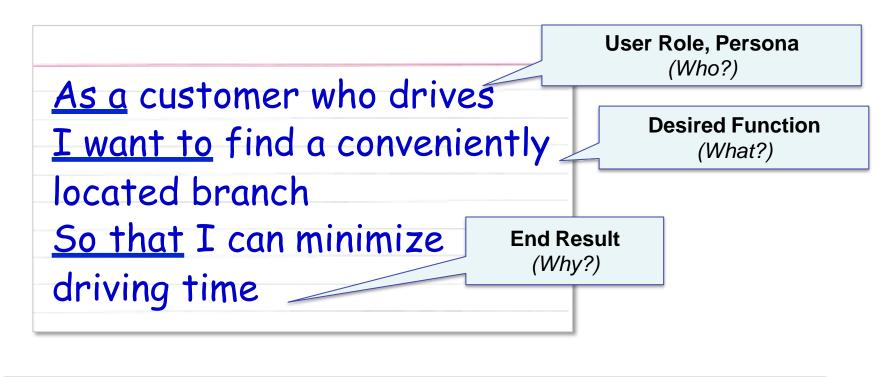
User Stories & the Backlog

Working with Agile "Requirements"



User Stories

The basic user story template is simplistic, it helps us remember a need while providing context.



What is not specified?



User Stories at a Glance

Key Characteristics

- High-level descriptions of desired functionality and goals
- "Contracts for conversation", not all-inclusive requirements
- Pulled into the Sprint Backlog from Product Backlog
- Contain Acceptance Criteria to define "Done"
- Vertical slices of the system's functionality

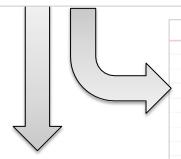
Product Backlog User

As a user I want to create an account so that I can shop online.

Estimate 13 Points

Priority 1 (High)





As a user I want to enter my billing information.

Estimate 4 points

Priority 1 (High)

As a user I want to enter my personal information.

Estimate 4 points

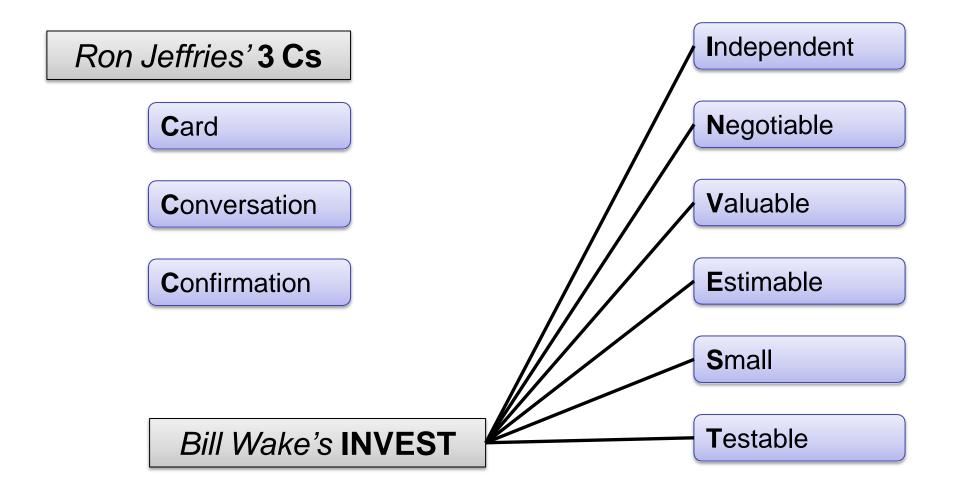
Priority 1 (High)

Sprint Backlog
User Stories

Work in Agile projects is organized by Units of Value, rather than by Architectural Layer.



What Makes a Good Story?





User Stories: Invest - Independent

- If <u>all</u> stories are independent, any one can be picked and delivered in isolation
- For large systems this is nearly impossible!
- But, minimizing, identifying and prioritizing, dependencies can result in a better backlog
- Which user story must come first?

Order
Checks
Transfer
Pay Bills
Register
Login

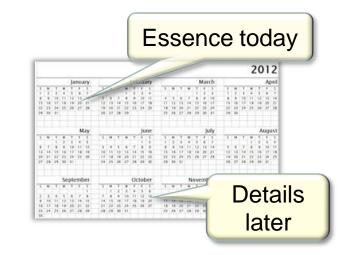
As prospect
I want to register
So that I can
execute electronic
transactions

As a user
I want to pay bills
online
So that I don't have
to write checks



User Stories: Invest - Negotiable

- Leaving room for give and take and decide the details when you have more context
 - High priorities stories should be more precisely defined
 - Low priority stories should have more play



As a driver
I want to get directions to
conveniently located stores
So that I get there quickly

Acceptance Criteria:
Show locations on map
Show locations on Google
Maps

Defer details until you are close to building, in this case update the acceptance criteria



User Stories: Invest - Valuable

The user story must have value to the user and to the business

As a user
I want to have my
previous orders stored
in the database
So they will be there
permanently

As a repeat customer
I want to access old orders
So that I can quickly
purchase the same products
again



As a customer
I want 75% off all
purchases
So I can save money

There is clearly value to the user, but is there value to the business?



User Stories: Invest – Estimable/Small

- If you can't estimate it, it is either too large, too vague, too risky, or some combination thereof
- Solutions include adding acceptance criteria, splitting the story, or better defining it

Easier to estimate. perhaps small enough to complete in a few days

As a customer I want a self service center So that I can address basic needs 24 by 7 by 365 from my computer

Too big?

As a customer I want to find an ATM So that I can make deposits or with-drawls outside of banking hours

Acceptance Criteria:

- Stop payment on check
- Find a branch
- Find an ATM
- Order new checkbook
- 5. Get statement < 2 years old

As a customer I want to stop payment on check so that I an prevent a payment made in error

As a customer I want to see my canceled checks online So that I can confirm transactions



As a customer

branch

I want to find a nearby

So that I can conduct

business in person

User Stories: Invest - Testable

- You need clarity on the story specific done criteria
- Solutions include adding acceptance criteria or better defining the story



?????

As a registered user
I want a better looking
homepage
So that I don't have to look at

something so ugly

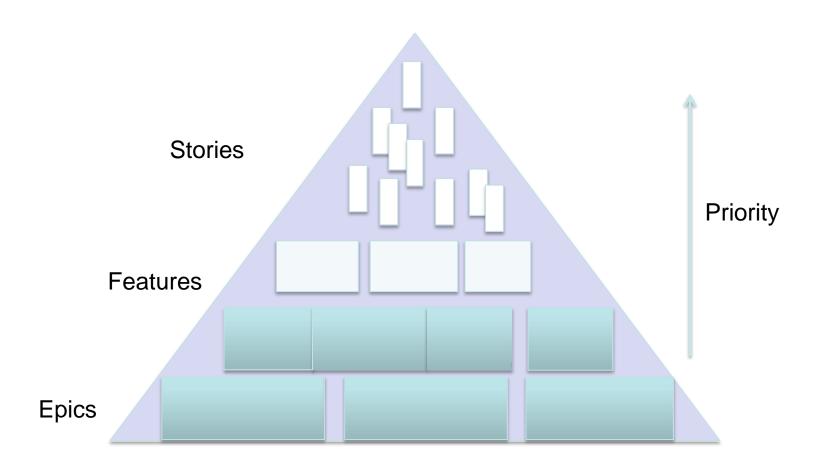
Have to manually test, but it is clear.

Acceptance Criteria:

- 1. All text is dark color on light background (no more red on black)
- 2.Only two different fonts used (instead of seven)



Epics, Features, Stories



Product backlog



Epics

Epics are high-level features or activities that span Sprints, or even Releases.

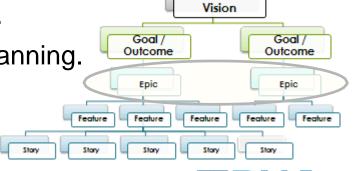
- Add a Customer Center for self service.
- Improve database response time by 50%.

Logistics

 The PO works with stakeholders and the Team to create epics that address desired Goals.

Epics are often defined prior to Release Planning.

Often months of effort.





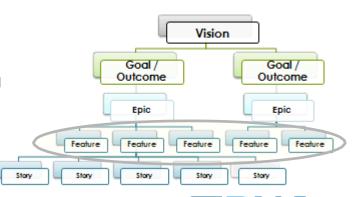
Features

Features are tangible expressions of functionality, but still too large to build.

- As a Bank Customer, find a branch so that I can deposit checks.
- As a Shopper, set up a mobile wallet so I can pay for purchases via Near Field Communications.

Logistics

- Created by the PO with input from the team
- Often defined prior to Release Planning
- Decomposed over time to smaller Stories
- Typically weeks of effort



User Stories

User Stories are ready for the Team to build.

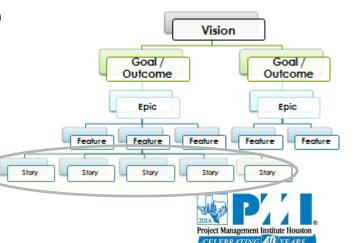
- As a Bank Customer, find a branch near an address so that I can minimize travel.
- As a Shopper, add an account to my mobile wallet so that I can fund it.

Logistics

 Refined in backlog grooming sessions by PO and representatives from Team

 Stories should be well-defined prior to Sprint Planning

Generally about 1-3 days of effort



Non- Functional Requirements (NFRs)

- System-wide nonfunctional requirements may become part of the **Definition of Done.**
- Articulated as tests
- Serve as design constraints

Search response time will not exceed 10 seconds. All stories will meet Section 508 accessibility guidelines.

 Story-specific NFRs are expressed as Acceptance Criteria.



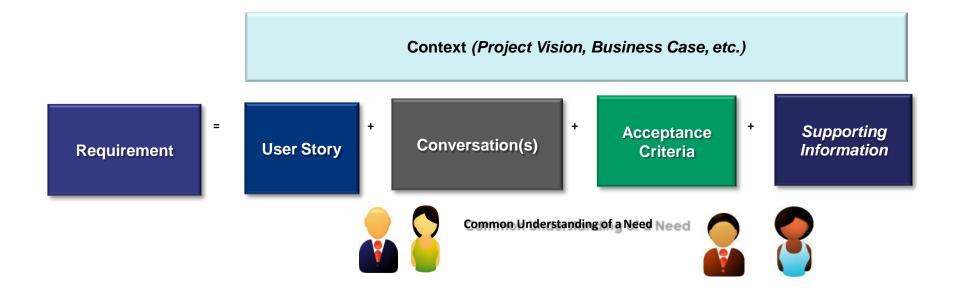
What User Stories are NOT

User Stories Requirements

(User Stories -->> Requirements)



Requirements, More than Just a Story





Which Story is Better?

A	В
As a prospect I want to enter my billing information	As a prospect I want to register So I can make purchases online
As a driver I want to find the store with the shortest drive time So I can get there quickly	As a driver I want to find directions to a store on Google Maps So I can get there quickly
As a repeat customer I want to access old orders So that I can rapidly purchase the same products again	As a user I want to have my previous orders stored in the database So they will be there permanently
As a color blind user I want dark text & light background So that I can easily read the text	As a user I want a nice looking site So my aesthetics are satisfied



Exercise – Write User Stories

Using the Epics we provided for our awesome restaurant finder app:



- Create at least five Sprint-sized
 User Stories based on these Epics.
- Use the "As a, I can, so that" format for the User Stories.



Release Planning/Roadmapping

Story Maps



Mapping Releases with Story Maps

User Goals

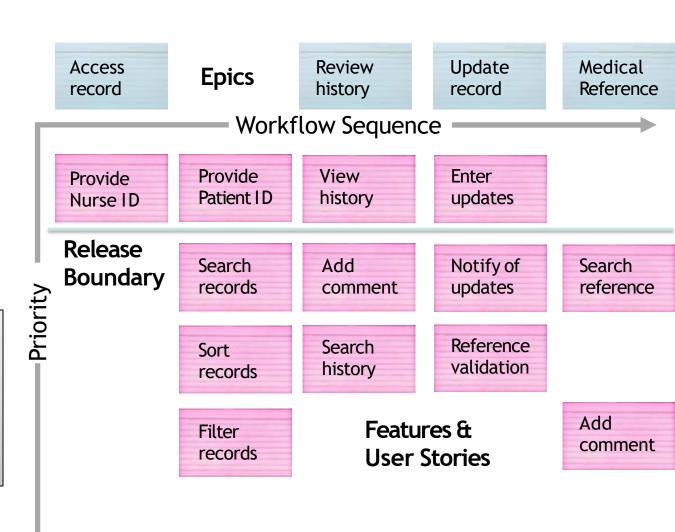
- Minimize the time needed to access patient records
- Minimize the customer inputs necessary to access patient records

Persona

Night Nurse **Robin**

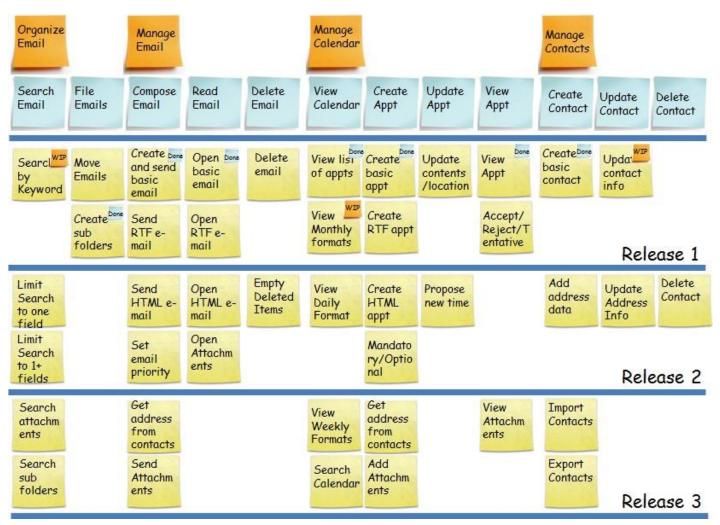
Robin leaves for work at 6pm, after sleeping during the day. She works a

7pm-7am shift in Labor & Delivery, caring for prospective mothers and their babies. Complex computer apps make Robin grumpy.





Another Example



Thanks to Winnipeg Agilist for this image



Prioritization Parameters

Value is influenced by many things:

- Time sensitivity Build features that decay in value over time earlier.
- Uncertainty & Risk Use "spikes" to test market or technical viability for critical, risky features.
- Size All else being equal, do the shortest first.
- External Dependency Third party or support group dependencies can be immutable constraints.



Exercise – Story Mapping

Plan your **first few Releases** with a **Story Map.**

- Place Epics or High Level Activities at top, in order of their natural workflow as appropriate.
- Place User Stories underneath the Epics that they support, from top to bottom by value.
- Group the stories for your first Release (MVP)
 and subsequent Releases, describing the
 targeted benefits of each at a Roadmap level.



Product Backlog Management

Refining, Accepting & Testing



Product Backlog Essentials

Adding User Stories

- Anyone can suggest backlog items
- Product Owner prioritizes them

Estimating & Elaborating

- High-priority items are estimated and described most precisely, since they will be worked on first
- Low-priority items are generally estimated and described coarsely

Prioritizing

Ordering is driven mainly by business value and risk reduction.

High priority items are better defined

#	Backlog Item	Estimate		
1	Create login screen	1		
20	Allow user to browse recently viewed items	8		
60	Add personalization	30 (or so)		

Low priority items are often "epics"



Progressive Elaboration

3-4 Sprints ahead or more

~1-2 Sprints ahead

Current Sprint

Ideation

Market Trends
Prototypes
Focus Groups
User Experience
Basic Workflows
Vision
Business Outcomes
Release Timing and Goals
Product Architecture
Epics and Features

Maturation

User Story Decomposition
User Story Maturation
Acceptance Criteria
Test Cases
Dependencies
Story Mapping
Prioritization
Epic Estimation
Backlog Development

Execution

Sprint Planning
Sprint Estimation
Daily Standups
SoRware Development
Testing
Burndowns
Documentation
Product Demos
Retrospectives

Marketing/Sales, Product Management, Product Owners, Architects Product Owners, Architects, Dev Leads, QA Leads, UX/Analysts Leads, UX/Analysts, Dev Team Members



Maturation of a User Story

User Stories

Created during upfront and ongoing Discovery

As a user
I want to create an account
So that I can shop online

Priority – 1 (High)

Estimate - 5 Points

Testable Examples (ATDD)

Sprint Pre-Planning (Backlog Grooming)

Name	Phone	Email	Valid
John Smith	215-555-1212	jsmith@ls.com	TRUE
Smith	215-555-1212	jsmith@ls.com	FALSE
John	215-555-1212	jsmith@ls.com	FALSE
	215-555-1212	jsmith@ls.com	FALSE
John Smith		jsmith@ls.com	FALSE
Smith		jsmith@ls.com	FALSE

Acceptance Criteria

Sprint Pre-Planning (Backlog Grooming)

- Phone # in US format, contains no alpha characters, minimum 10 digits
- First name, Last name and email address required
- Email specified in standard format

Sprint Tasks

Sprint Planning

- Design UI Mock Up
- Write online help text
- Develop CSS/HTML
- Develop validation criteria
- Create database tables
- Code test fixtures
- Code & Test



Sample Story Maturation Look-A-Head

The tactical act of getting a story ready is often performed as a two sprint look-a-head by an amigos team

Sprint n

Select User Story 999 for Sprint n +2

Re-estimate it, sharpen story & acceptance criteria

The PO and 3+ Amigos looka-head and select story 999 for inclusion for Sprint n + 2. They do deanup on the story. Sprint n + 1

Create testable example and other supporting material for 999 Get sign off from external parties

The 3+ Amigos further support the story and the PO gets appropriate sign offs.

Sprint n + 2

Develop User Story 999

Story 999 makesit's way into a sprint and it is built.



Approaches to Splitting Stories

- 1.To Demonstrate Progress: UX with no validation or save
- 2.CRUD: Create, report, update & delete (e.g. split of manage)
- 3.Basic to Advanced: Sort by one field (name), sort by any one field (name, date, etc.), sort by a combination of fields
- 4.Use Case scenarios: Happy path, alternates, exceptions
- 5. Workflow steps: Find book, see details, purchase
- 6.Importance: Credit card, split across cards, automatic billing
- 6.UI complexity: Manual coordinates, interactive web map
- 7.Spike and Build: Research credit card processing, implement



Split some Stories

1	As a I want to manage my widgets	
2	As a report viewer I want to filter my report by any combination of columns	
3	As a possible room renter I want to find and book a room	
4	As a customer I want to pay electronically	

Split some Stories

5	As a low budget vacation traveler I want to find flights using a range of dates	
6	As a credit card purchaser I want to pay by Amex, MasterCard, Visa or Discover	
7	As a frequent user I want to personalize my experience	

Getting to Ready

3+ Amigos (BA, QA, Dev) can serve as a readiness team to look ahead and ensures we are:

- 1. Ready to prioritize
- 2. Ready to estimate / right size
- Ready to build





When is a Story "Ready"?

Definition of "Ready"

- Choose the few items that your team finds most useful in Sprint Planning.
- Confident and quick Sprint Planning and smooth Sprints that produce polished results are your goals.
 - **M**✓Interaction Diagrams
 - Prototypes
 - **Wireframes**
 - **M**✓Sample Data
 - Testable Examples
 - M/Acceptance Criteria
 - **■**State Diagrams

- **™**Small Enough
- Agreement from other teams
- Approvals (Compliance, Security, Brand Mgmt, etc.)
- Dependency List
- **■**Stakeholder signoff



When is a Story "Done"?

Definition of "Done"

- A shared definition and compact between Teams and Stakeholders
- Denotes what stories require to be accepted
- Ideally represents "potentially releasable" or even released state

MACCEPtance Criteria are met

☑ Cleared by QA

MACCEPTED by Tactical PO

Accepted by Strategic PO

Live for A/B Testing

Tinal Deployment

Training Script

Pair reviewed

Peer Reviewed

MIntegrated

Lightweight usability tested

Automated testing in place

™User documentation created

™Ops documentation created



"Done Done" at Release Level

What are the minimum criteria for each Release?

- Testing/quality targets
- Performance targets
- Operational (e.g. sales/ marketing) deployment goals
- Required documentation & artifacts
- Regulatory compliance targets

Example Release Criteria

- System response on all level 1 functions within 5 seconds
- No Severity 1-3 bugs in Firefox 2+, Chrome, IE 7+ or Safari 3+
- No Severity 1 or 2 bugs found during final month
- Full compliance with accessibility guidelines in Section 508



Acceptance Criteria &

Testing



Acceptance Criteria Example

As a user
I can cancel a registration
So that I don't have
to pay

- Premium member can cancel the same day without a fee
- Non-premium member is charged 50% of first day for a same-day cancellation
- Email confirmation is sent to members primary and secondary email addresses
- Hotel is notified of any cancellation



Modern Agile Acceptance Model

Conditions of Satisfaction – Broad Terms

Acceptance Criteria – Further Refined

Examples – Actual scenarios or data

Executable Examples – Ready to automate



Acceptance – Conditions of Satisfaction

Testing a Registration Function

- What constraints should we impose?
- Business stakeholders and PO agree that passwords should not be easy to crack.

Please fill in to register.			
Email Address			
Password			
	Register		



Acceptance – Acceptance Criteria

Acceptance Criteria, the Details

The PO works with testers and developers from the team, business stakeholders, users or SMEs to come up with this definition of "not easy to crack":

- Must be at least 8 characters and no more than 12
- Must contain only alphanumerics and the period
- Must contain at least one digit
- Must contain at least one alpha character



Acceptance – Examples Written

- Examples, Making it Real
- Actual examples are the ultimate way to communicate requirements

Password	Expec ted	Expected Message	Comment
abc123	Invalid	You password must be at least 8 characters long, and no more than 12 characters long.	
abcdefghi	Invalid	Your password must contain at least one character and one number.	
1aaaaaaaaa	Valid		Why valid?
ajx972dab	Valid		

- Team Members with testing and development expertise take the lead on creating examples, with the Product Owner verifying
- · Based on these examples, Acceptance Criteria can be refined
- These criteria act as good starting test cases too



Acceptance – Testable Examples

- Executable Example, Making it Repeatable
- Examples that can be executed are the final step

Given the "Unregistered User" user has navigated to the "register" page

When entering "newuser" in the "Username" field

And entering "abc123" in the "Password" field

And entering "abc123" in the "Confirm Password" field

And pressing the "Register" button

Then the text "Thank you for Registering" should appear on page And the URL should end with "use/accountPage"



Acceptance Test Driven Development (ATDD)?

A practice in which the whole team **collaboratively** discusses acceptance criteria, with examples, and then distills them into a set of concrete acceptance tests **before** development begins.

- Elisabeth Hendrickson



ATDD - Key Characteristics

1. Elicit details from the business stakeholder(s) about their expectations

2. Distill acceptance criteria into automatable tests expressed in a natural language

3. Wire the tests to SUT with "glue" code (as part of implementation)



Automated Acceptance Tests



(Cucumber, SpecFlow, FitNesse)

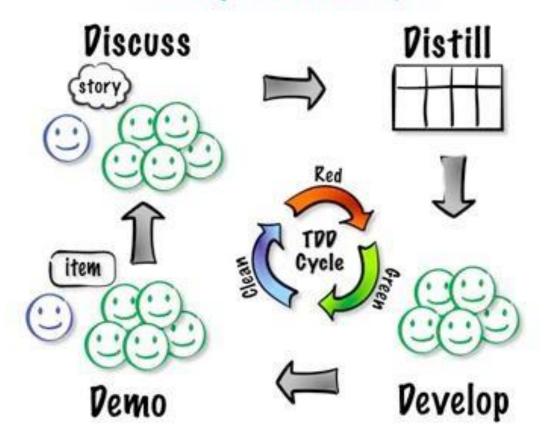
Specification expressed in common language

"Glue" code that ties specification to SUT



ATDD Cycle

Acceptance Test Driven Development (ATDD) Cycle



ATDD cycle model developed by James Shore with changes suggested by Grigori Melnick, Brian Marick, and Elisabeth Hendrickson.

Exercise – Write acceptance tests

Create testable specifications

Using the User Stories you defined

- Write acceptance criteria for each story
- Create at least two scenarios to act as examples and tests, using this format:

Scenario: Recent Account Activity

Given I am a registered user "Jsmith"

And I am logged in with password "xyx123"

And I have had account activity in the last 45 days

When I click the "Recent Activity" button

Then I should see the "Account Activity" Page

And I should see a list of my activity over the last 45 days

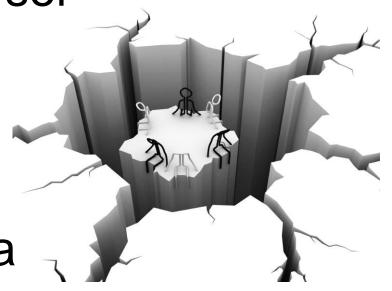


Concluding Thoughts

Common pitfalls with writing user stories

Forgetting about the User

- Too much Detail
- Lack of Conversation
- No Acceptance Criteria





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- Take a few moments to complete the Session Survey. We appreciate and value your feedback.
- Hand in your completed survey to <u>Registration</u>, you will receive a free raffle ticket for one of the drawings to be held in the Vendor Expo (see Conference Program Guide for details).

