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**Fixed-Price, Fixed-Feature, Fixed-Time
Agile Development**

Agile 2010
Tuesday, August 10, 3:30-5:00

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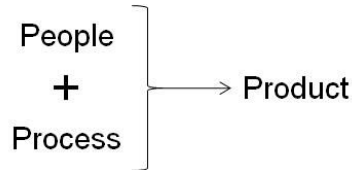
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Agenda

- Agile vs Traditional Development
 - Agility in Fixed-Price Environment
 - Developing a Project/Release Plan
 - Monitoring a Release
-
- This is an aggressive agenda. Wish us luck...

People, Product, and Process

- Very Simple Equation:



- Two simple rules I believe in:
 - People over Process (Agile Manifesto)
 - Pull, don't Push (Lean Principle)
- Results in Two Basic Flavors
 - Process → Product** (predictive, Process *pushes* Product)
 - Product ← People** (agile, Product *pulls itself from* People)

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Changing Mental “muscle memory”

- In order for Scrum to work, the people in (and around) Scrum teams *must*:
 - Accept that reality trumps expectations, so when reality and expectations don't match, it is the expectations that must change
 - Prefer self-organizing teams over either lone-wolf-ism or tightly controlled management
 - Openness, Focus, Commitment, Courage, Respect, Visibility, Sense of Humor
 - Separation of “Command and Control”
 - Realize that each of them is part of a “Team developing Product” and not simply a “Person doing Work.”

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Changing Mental “muscle memory” (continued)

- Understand that the Product Owner at each level *completely* controls his Team’s prioritization
 - Accepts guidance from above
 - Mixes in his Teams “own stuff”
 - Makes final prioritization decisions
- Understand that the Team “owns” its commitment
 - Priorities should “take care of” dependencies
 - Team only commits to what it *can* do...
 - Not what people *want* it to do.
- Produce Quality Product
 - Flatten “cost of change” curve
 - Prevent Technical Debt



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Agile vs Traditional Development

Dreams and Issues
Managing Change



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Dreams

- Traditional (fixed price) Contracting Dream
 - Visioning/Contracting Phase
 - Produces Contract, Requirements, and Plan
 - Now just go do it... we know what we're doing
- Agile Dream
 - We know we don't know what we're doing, so let's just start doing something
 - We'll inspect and adapt, and when we get somewhere good, we'll stop
- Get Real!
 - Neither of these dreams is reasonable
 - They are both "pie in the sky", and run into problems in implementation

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Issues that Arise in Waterfall:

- BDUF, complete Requirement Document
 - Causes great inertia, resistance to change
 - Creates false sense of security – "illusion of control" (Ken Schwaber)
- Monitoring "actual" progress towards Product is difficult
 - Don't see actual product until integration at end of process
 - Measuring "artificial stuff" until then... non-product artifacts
 - Easy to "game" the metrics
- How do we adapt to stuff that happens?
 - Stuff will happen, have changes that need to happen
 - Change Control Board (CCB)
- Predictive behavior all around, runs smack-dab into reality, and it hurts...

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Issues that Arise in Agility:

- How do we know where we're supposed to be going?
 - If we don't have a Requirements Document, how do we get anywhere?
 - We'll have problems if we don't have a architecture up front
- How do we get a budget?
 - If we don't know what we're building, how do we know how much it will cost?
 - I can't afford to keep paying you guys hoping that we get something done!
- Agile thinking has built-in uncertainties, and this makes people nervous
 - Many people need to have knowledge (even if it's wrong) to hold onto in order to be comfortable



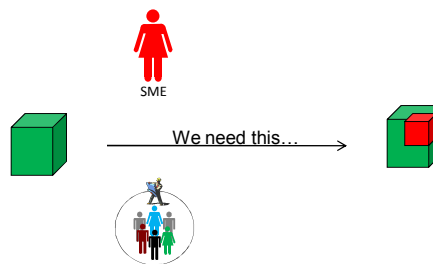
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One Issue: A Need for A Change

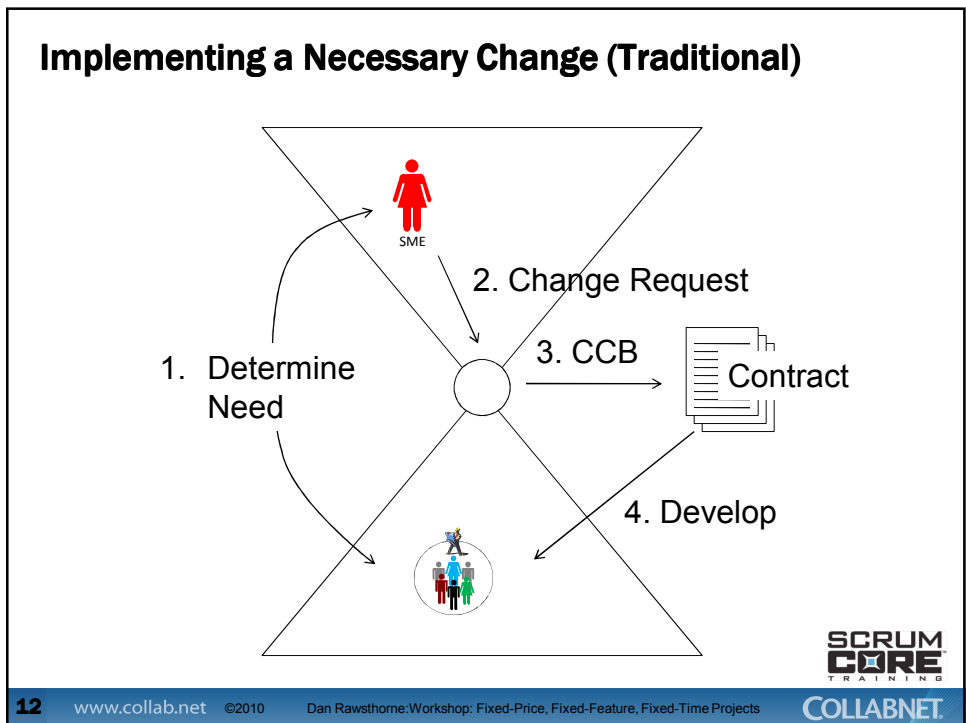
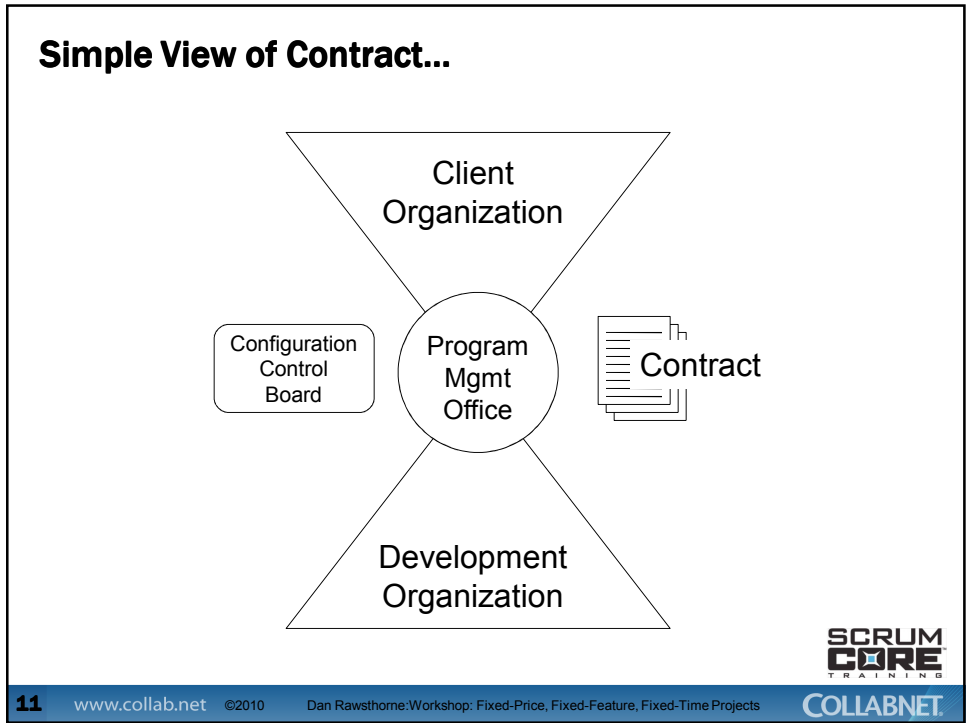
- No matter where you look, there are problems...
- Let's just look at one: A "Need for a Change"
 - The basic idea is that the Development Team, working with a Client SME, has identified a need for change
 - They want to change the Product...



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Issues with Standard Method

- Slow
- Need to update Contract without knowing *exactly* what is needed
 - There is usually a force try to limit cost of negotiation between Dev Team and Client SME
 - Have to figure out what's not going to get done – in order to manage “new” cost
 - Negotiation between Client SME and Dev Team is at the “What do I need?” level
 - Seen as “overhead” task
 - Change Control Board is often about “Control”
- Can enter endless change loop



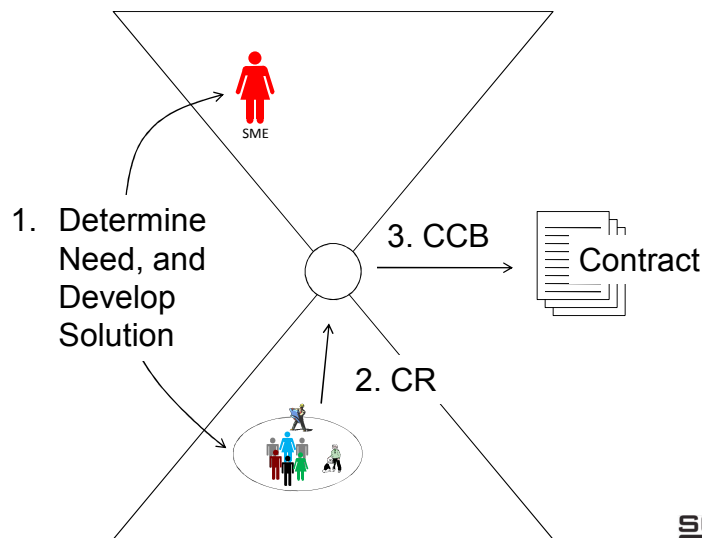
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Implementing a Necessary Change (Agile)



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Issues with Agile Method

- Quick
- Update Contract based on what has actually been done
 - Negotiation between Client SME and Dev Team is at the “What do I need?” and “How do we build it?” levels
 - Can actually see what we get, so can see if we needed it
 - Change Control Board is about “Change”
 - Requirements Document itself often developed incrementally, in parallel with product
- But Needs to be Managed
 - Can lead to “out of control” scope creep, looks pretty scary...
 - But, the idea is that if something was developed then it must have been the most important thing to do, according to SME... must trust our SMEs...



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Agility in Fixed-Price Environment

Summary of Problem
Large Scale Agility
Simplifying Assumptions
Our Scenario



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Summary of Fixed-Price Agile Problem

- In order to successfully conduct a fixed-price contract in an agile way, we must:
 1. Have a way to adapt and change quickly – Large Scale Agility
 - This is the hard part!
 - Involves all those inter-acting moving parts
 - Requires change in “muscle memory”
 2. Given a date and scope, be able to produce a baseline plan and budget that will allow us to succeed
 3. Have a way to compare actuals to baselines that provides useful truth, so that we’ll know what has to change (the expectations vs reality comparison)

- This is what I’ll talk about now...

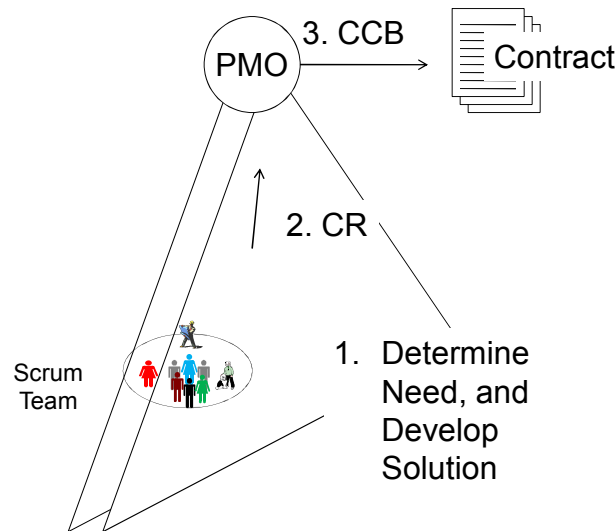


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Make a Combined Team



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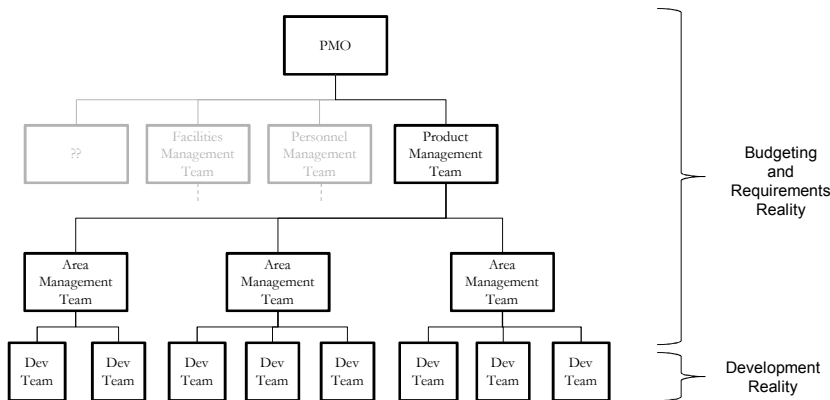


People over Process...

- Is one of the major objectives of agility
- So, what I'm showing here is one pattern for large-scale agility
 - Simplified to just incorporate "Product Owner Team"
 - Just to show one way we can make it work
- This won't work unless the people change
 - Go back to the changing mental "muscle memory" slides...



Project Hierarchy and Agility



- The organization must balance the realities here
- The tool to use is agility



Project Hierarchy and Agility

- There are lots of thing to manage here
- And there are lots of agile teams to manage them

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The Basic Scrum Team

- Scrum team
 - Product Owner
 - Developers
 - ScrumMaster
- Backlog
 - Work to Do
 - Capabilities
- Product
 - What's being built
- Stakeholders
 - Needs, wants
 - Feedback
- Sprint
 - Complete Cycle

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The Scaling Problem

- Developers split into two scrum teams
- Each has own Product Owner
- Each has own Scrum Master
- Now have “hierarchy” of Product Owners
- From outside looks the same as it did
 - Same Backlog
 - Same Product
 - Same PO

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Basic circle of agility in scaled system

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Basic circle of agility in scaled system

Stakeholders

SME

SME

- There are a lot of inter-connected moving parts to manage – all at once!

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Chores and Feedback (it's not even *that* simple)

Chores / Feedback must be mixed into each sub-team's backlog, too...

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Issues Identified at First Glance



- Decomposing Product Backlog to Team Backlogs
- Prioritizing amongst:
 - Team Chores
 - PBIs “passed down” from above
 - PBIs found in “local” evaluation
- Integrating Teams’ Products into Product
- Working SMEs across Teams
- Evaluating Combined Product
- Evaluating each Team’s Product Locally

- Discuss these “large team” issues
 - Five minutes



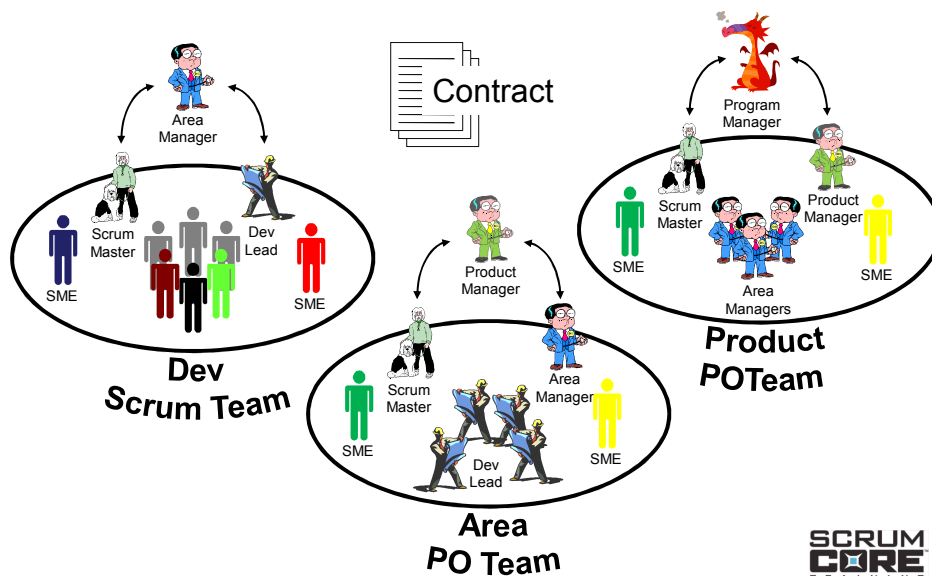
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One Solutions: Multiple “layered” Teams



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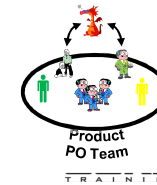
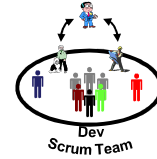
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Different Levels of Agility – Lowest to Highest

- Dev Scrum Team
 - Tactical Agility
 - “What” provided by PO (Dev Lead)
 - Detailed “what” provided by Team, SME
 - “How” is agile, done by Team
 - PO Adjust Sprint Backlogs for own Team
- Area POTeam
 - Maintain Release Goals at Area Level
 - Modify Release Goals at Dev Team Level
 - Help Adjust Sprint Backlogs across Dev Teams
- Product PO Team
 - Maintain Product Vision
 - Modify Product Roadmap
 - Adapt Release Goals at Area Level
 - Even Adapt Areas from Release to Release
 - Work with Program Manager to Renegotiate Contract




So, That’s How We Do The Agility...

Any Questions?



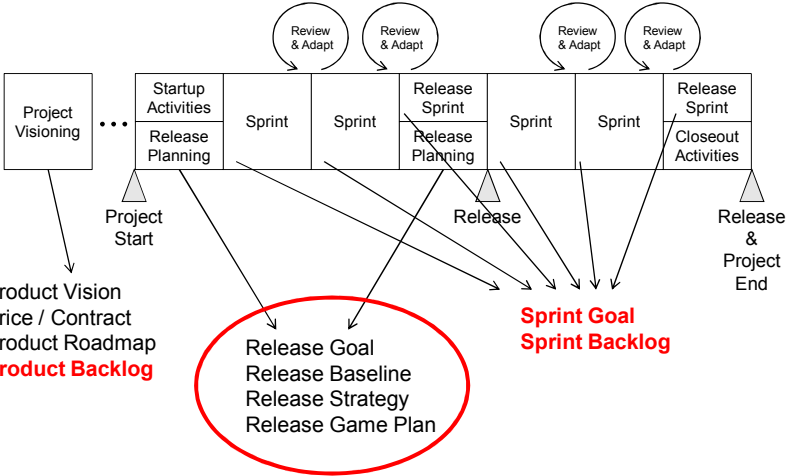
Developing a Project/Release Plan

Vision/Roadmap
Required Capacity and Cost
Release Plan



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Planning Artifacts in Agility



Product Vision
Price / Contract
Product Roadmap
Product Backlog

Release Goal
Release Baseline
Release Strategy
Release Game Plan

Sprint Goal
Sprint Backlog

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Release Plans: Three Types...

- When Can we Release?
 - Known scope, existing team
- What Can we Release?
 - Known time, existing team
- How much will it Cost?
 - Known time, known scope, new team
 - This is the tough one... fixed price
- All based on calculation

Time (# of Sprints)	Scope (Total SPs)	Capacity (SPs/Sprint)
??	XX	XX
XX	??	XX
XX	XX	??

Time x Capacity = Scope

- Let's do a quick version of the "hard" case
- Then finish the talk with one of the easy cases
 - Because I have the data for it ☺



Simplifying Assumptions for our Example

- In order to do this talk simple I will assume that this Project has only one Release for the actual calculations
- I will also assume we only have one Team
- I will also assume that we have a collegial relationship with SirJeff, and that the contracting details are very informal – a classic use of "Simplified Acquisition Procedures" ☺
- These simplifying assumptions allow me to show you what planning looks like at the conceptual level
- And we'll use these same assumptions later when showing the metrics, too



Royal Catalina Airlines (RCA)

- Royal Catalina Airlines is owned by Sir Geoffrey Smithers (SirJeff) who made a fortune writing software in the Silicon Valley before buying a plane and ferrying tourists up and down the California Coast
- He is now buying 4 more planes, hiring pilots, crews, etc, and wants a web site, RoyalCatalinaAir.com. We're going to build it for him...
- Note: When he started the business he wrote his own database to manage his schedule, passenger list, and so on. He called it CUTLASS



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What SirJeff Wants...

- We have a talk with SirJeff, and talk about what he wants. This is his vision:
 - I, SirJeff, want to get lots of new customers for my new airline, Royal Catalina Air (so that I can make a lot of money...) In order to get lots of new customers for my airline, I want a website, RoyalCatalinaAir.com, that will be as good as that of "real" airlines
- And Here's what he wants it to do six months from now:
 - The customer can "Buy an e-ticket"
 - The customer can "Check Status of Flights"
 - The customer can "Get a Hotel at his destination"
 - The customer can "Get a rental car at his destination"
 - The Pilots can "Manage Pilot Timesheets"
 - The Customer can "Manage the Good Customer Plan"
- How Much will This Cost?



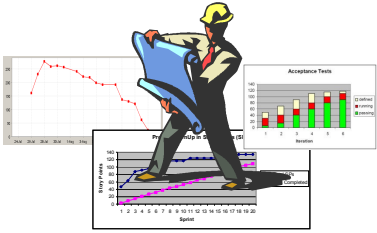
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How Do We Measure Size?



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Functional Size Measurement

- To discuss planning and contracts, we need to be able to measure “how much” product we’re looking at or producing...
- So, let’s discuss Functional Measurement...
 - A General Concept
 - Function Points (FP)
 - Use Case Points
 - Feature Points
 - COSMIC Function Points (CFP)
 - All attempt to measure “functional size” of software
 - Most of the calculations are difficult and require a design
 - But maybe we can estimate, rather than calculate...
- What can we learn to use with Story Points?
 - Remember, Stories are the units of “work” the Team prioritizes and does
 - Story Points are a relative measure of Work
- As we’ll see, we want 1 FP’s worth of product to be developed by 1 SP’s worth of work...

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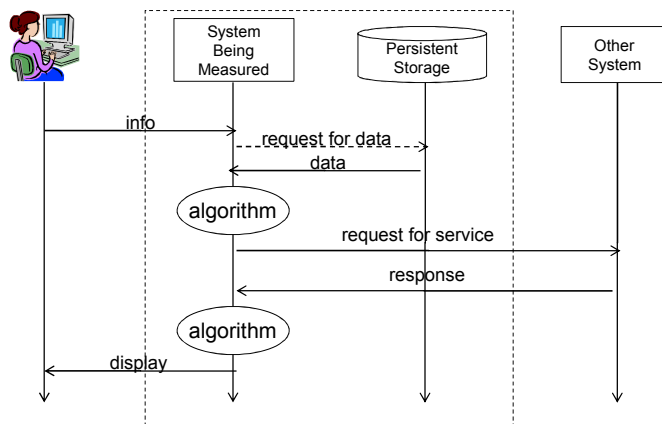
COSMIC Function Points

- The Common Software Measurement International Consortium, <http://www.cosmicon.com/>
 - International Standard, ISO/IEC 19761:2002
 - Relatively new, latest version is 2007
- Easy to Calculate
 - If we wanted to measure CFP production as we move along
 - Part of our Sprint Review “we produced 35 CFPs this Sprint”
- Easy to Estimate (very important for us)
- Only measures moving parts
 - Entry – sending information to the system
 - Exit – receiving information from the system
 - Read – reading information from persistent storage
 - Write – writing information to persistent storage
- See picture next page...



Counting COSMIC Function Points

- This is how FPs are counted using COSMIC (and adding algorithmic complexity)
- Here is a typical system



For a given scenario, all we do is count the number of times information moves, and the total is our CFP (But requests for data don't count)

I suggest adding points for especially complex algorithms, as well....



Example: Add Traveler to Itinerary

Add Traveler to Itinerary

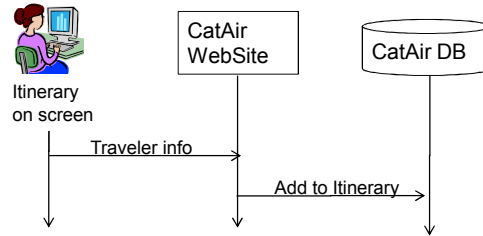
As a <traveler> I would like to <add my daughter to my itinerary> so that <we could travel together>

Preconditions:

- itinerary exists in CatAir DB
- itinerary is up on screen

Postconditions:

- itinerary with daughter added is in CatAir DB
- itinerary on screen shows complete with me and my daughter



- This is as simple as it gets
- A Small Story, with CFP = 2



Example: Get List of Flights from CUTLASS

Get List of Flights

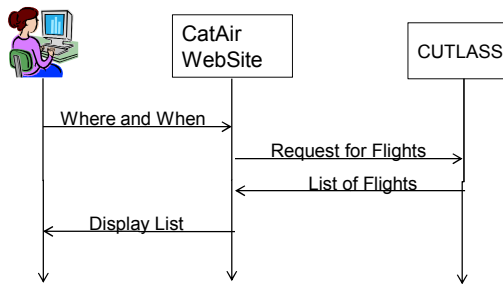
As a <traveler> I want a <list of Flights that match my itinerary> so that <I can find one that works for me>

Preconditions:

- Traveler has prepared an itinerary

Postconditions:

- CUTLASS has returned a list of flights that matches the itinerary (up to 10)
- The list is presented to the traveler



- This is typical Medium-Sized Story, CFP = 4



Example: Pick One and Pay with VISA™

Pick Flight and Pay with VISA

As a <traveler> I want to <pay with VISA for a flight that I pick from a list>

Preconditions:

- a list of flights is on the screen

Postconditions:

- the chosen flight has been paid for
- the itinerary is updated as being paid for
- the payment is confirmed to the traveler

```

sequenceDiagram
    actor Traveler
    participant CatAir as CatAir WebSite
    participant DB as CatAir DB
    participant VISA as VISA™ Widget

    Traveler->>CatAir: List of Flights on screen
    Note over Traveler: Chosen Flight
    Traveler->>CatAir: Chosen Flight
    CatAir->>Traveler: Payment Window
    Traveler->>CatAir: VISA™ Info
    CatAir->>VISA: Cost and VISA™ info
    VISA->>CatAir: Payment accepted
    CatAir->>DB: update itinerary
    DB->>CatAir: updated itinerary
    CatAir->>Traveler: confirmation
    
```

- This is a large one, CFP = 8

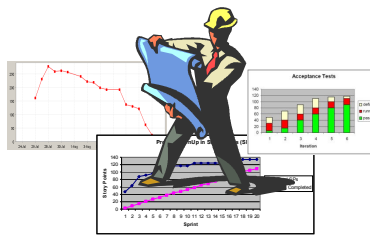
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Summary of Story Size (Relative) Estimation

- In agile project we don't calculate size, we estimate it. Here's a sample estimation script for stories:
 - Pick a "typical" M-Sized Story – possibly "Get List of Flights from CUTLASS" with CFP = 4
 - For Functional Stories, compare the story to the "basic M-Sized" Story
 - Use Estimation game with question: "How big is this one, in terms of moving parts, compared to our 'typical M-Sized one', given that the codebase is the same, the same people work on it, and so on"
 - Double (?) the points if it is "architecturally significant"
 - For non-Functional stories with well-defined definitions of "done" compare the story to the "basic M-Sized" Story
 - Use Estimation game with question: "How hard is this one, in terms of effort, compared to our 'typical M-Sized one', given that ..."
 - For Stories with ill-defined definitions of "done", timebox them
 - "Do 8 hours of Exploratory testing on page ABC"
 - "Do a Small Story's worth of work cleaning up the code in module XYZ"
- This works because of the "wisdom of the crowds" and the fact that everything evens out over time...

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Determining Required Capacity



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Sizing Use Cases

- A Use Case is a collection of scenarios
 - Each scenario has
 - A single black-box test
 - A logical sequence diagram
 - Hence, a Cosmic Function Point size
- Therefore, if we
 - Estimate how many scenarios a Use Case will need to be releasable
 - Have a FP size for a typical scenario (maybe 5 FPs?)
 - Then we can get a FP budget for the Use Case
 - **NOTE: we DO NOT decompose the use case into scenarios for this!**
- This is what has been done on the following page

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Baselines for Capabilities

- By working with Stakeholders and Developers, the team arrives at the following baseline sizes (in Function Point (FP)*) for the stuff SirJeff wants:

Capability	FPs
Buy an e-Ticket	150
Check Status of Flights	50
Get Hotel at Destination	100
Get Rental Car at Destination	100
Pilot Timesheets (risky)	250
Good Customer Plan (risky)	250
<i>Total</i>	<i>900</i>

* Function Points quantify the functional user requirements (FUR), independent of technical or quality requirements. FUR relate to (but are not limited to) data transfer, transformation, storage, and retrieval .



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Now, Determine How Much This Will Cost

- Method 1: FP Estimation
 - Need 900 FPs, use standard 20Hrs/FP, get
 - 18,000 Hrs = 18 people for six months
 - Could modify with COCOMO, right?
- Method 2: SP Velocity Method
 - So, we know that we want to produce 900 FPs
 - We want to release in 6 months = 13 2-week sprints
 - So we need to produce 900 FPs in 12 sprints (no additional FPs in last sprint – reserved for Release Sprint)
 - Which is a velocity of $900/12 = 75$ FP/sprint
- Continued on Next Page



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And derive the Team Size (cost)

- Our experience is that a single development team (5-7 people) has a baseline velocity of 50 SPs/sprint, ~50% of which will be FP-producing (a release of 6 sprints)
 - 1/6 of SPs provide no BV (release sprint)
 - 70% of SPs are BV-Producing in other sprints
 - 1/3 of BV SPs are Arch-sig, so half of these 1/3 are FPs (1/6th of SPs aren't FPs)
 - Total of $(5/6)(.7)(5/6) = 48\%$
- We need 75 FPs/sprint, so we need 3 development teams
- With 3 development teams, we'll need an integration / management team, so we have a total of 3 dev teams and one management team, for a total of $3 \times 5 + 3 = 18$ people minimum, $3 \times 7 + 3 = 24$ people maximum



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Anyway...

- We go back to SirJeff and tell him that we need a 20-person project team on day one, and we don't have that available
 - We'd be glad to come up with a ramp-up plan for him
 - Or, we could figure out what we can actually give him with the people we have available, which is one team that is moving off of another project
- SirJeff says: "ok, tell me what this one team can give me in the next three months"
- So, we do another release plan, of type "What can I get?"




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Determining Story Point Capacity (Baseline)




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What's Going On Now

- Have a team
 - Transitioning from SouvSite development
 - Half the team for the first 2 sprints
 - Whole team from then on
- SirJeff wants initial release in 3 months (7 sprints)
 - Needs to be useful to consumers
 - What he can tell his marketing and sales folks will be there?
 - This is a classic “Release Planning”-type question
- Remember, SirJeff’s priorities are:
 1. Buy an e-Ticket
 2. Check Status of Flights
 3. Pilot Timesheets
 4. The rest...

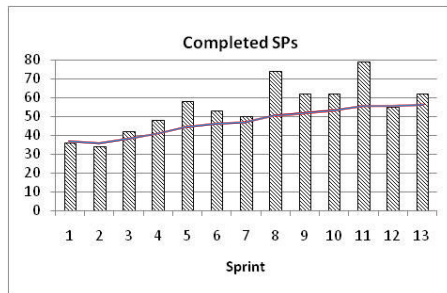


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Historical Information for Team

- 8 Members of Team
- Currently on SouvSite project
 - Velocity as below
- “Plannable” hours per 2-week sprint as at right

Plannable Hours/Person	Hrs
Total Hours	80
Minus Planning Day	72
Minus Grooming Mtg	68
Minus Lost Time	60



- Lost Time is vacation, sick, management time, etc
- Meetings aren't plannable, as they are fixed time already spoken for

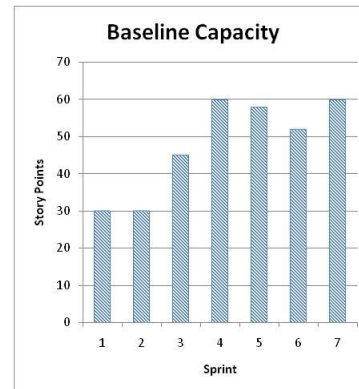


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Baseline Total Capacity Calculations

- We have half the team for the first two sprints
- We have a Transition sprint, as we bring the rest of team over
- And then we have four “full” sprints
 - Joe's on a Honeymoon sprints 5-6
- This is a total of 335 SPs as our baseline SP budget
- And we “spend” 2820 hours to do it
 - 60 hours/person/sprint



Sprint	1	2	3	4	5	6	7	Total
Hours	240	240	480	480	468	432	480	2820
SPs	30	30	45	60	58	52	60	335



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Adjusting the Count

- What we want, though, is how many SPs we can dedicate to SirJeff's stuff... these will be our FP-producing SPs
- So, we make adjustments to the count

Step	What's Going On	Avail SPs
1	Calculate Total Capacity (what we just did)	335 SPs
2	Need a Release Sprint, so lose last Sprint's worth	275 SPs
3	Lose SPs to Maintain SouvSite after Sprint 2 (10%, or 21 SPs)	254 SPs
4	Lose SPs for Chores (30%, or 76 SPs)	178 SPs

- So, we have 178 SPs to dedicate to SirJeff's stuff in this release...
- Let's figure out how to use them



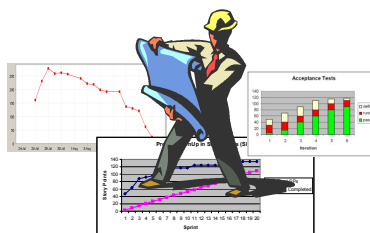
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SP Budgets for Epics/Features



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This is where it gets interesting

- Rely on the “wisdom of the crowds” again
 - Talk to team
 - Talk to Stakeholders
 - Innovation Games (Luke Hohmann)
- Do S/M/L estimation game at the Use Case level
 - Maybe budget 75/150/250 or 100/150/200 to the different sizes
- Maybe do some initial analysis and extrapolate using S-shaped curve
- Goal is to get a budget, and use agility to deliver within this budget
 - The low-level strategic agility the PO “owns”
 - Don’t want to cut yourselves short here – want to have a chance to succeed



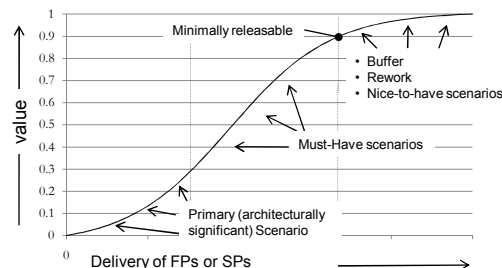
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S-Shaped Curve for Delivery of Use Cases...



- If we know SPs for “backbone”, can just multiply by 3
- If we know “all the stuff we want”, then just multiply by 3 (because we know the must-haves)
- Otherwise, make a guess based on size of Use Case (how many moving parts)



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What the Team Thinks (more detail)

- “Buy an e-Ticket”
 - Backbone is 6 Large stories = 48 SPs, so need 144 SPs
 - Looks like an initial version of this is a M-Sized Use Case, so need 150 SPs
 - So, we want 150 SPs
- “Check Status of Flights”
 - Don’t really know how hard this is
 - If data is already in CUTLASS, is a really small Use Case
 - Willing to dedicate 50 SPs, but
 - 10 SPs dedicated to figuring out CUTLASS interface (need this anyway, for Buy an e-Ticket)
 - 40 SPs for Check Status, but no guarantee of making it
- “Pilot Timesheets”
 - Have no idea, but want to do 20 SPs worth of investigation to see how hard it is for next release...



Negotiating the Budgets (our baseline)

- Note that the Team thinks it needs 220 SPs, but the Capacity calculations show we only have 178 SPs to play with – Oops... Now what?
- Negotiation, arriving at the following table... and we also got Business Values from SirJeff for the ones he cares about...

Capability/Item	BV	Baseline
Buy an e-Ticket	80%	108SP
Investigate CUTLASS interface/capabilities		10SP
Investigate the basics of Pilot Timesheets	10%	20SP
Check Status of Flights	10%	40SP
SouvSite Maintenance (before Release Sprint)		21SP
Chores (before Release Sprint)		76SP
Release Sprint (includes SouvSite Maint and Chores)		60SP
Total	100%	335SP

risky
} 178



Discuss This Negotiation



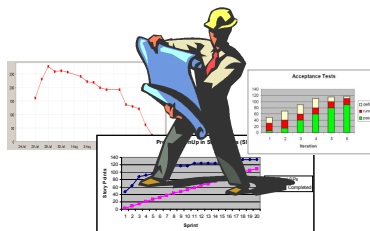
- There are a lot of TradeOffs happening here

- What do you think is “in play”
 - Chores
 - SouvSite Maintenance
 - Capabilities
 - Buffer
 - Baseline of SPs to “play with”
 - Etc...

- What do you think?
 - Five minutes



Release Goal, Strategy, Game Plan



Finally, we have the info we need

- So, Release 1 Goal
 - Initial Release of CatAir website. Must be able to sell a ticket on the web
- Strategy:
 1. Learn How to use CUTLASS
 2. Get a minimal “Buy e-Ticket” as fast as possible
 - We know SP budget is risky
 - But this Epic is the most important
 - But don’t gold-plate – pay attention to “minimal”...
 3. Then, if Sprint 6 hasn’t begun yet, start “Status of Flights”
 4. Focus Sprint 6 on determining how hard “Pilot Timesheets” are
 5. If it’s possible to get a releasable version of “Status of Flights” *after* investigating “Pilot Timesheets”, do so
 6. If not, get more functionality for “Buy e-Ticket” (make it prettier, for instance)
- Both the Goal and Strategy are negotiated, and agreed to, between SirJeff and the Scrum Team

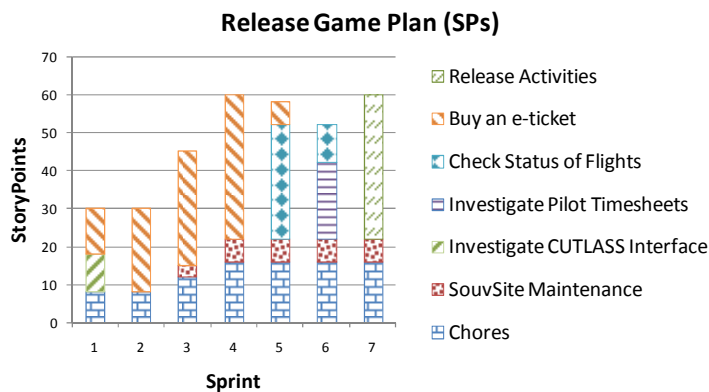


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And we Come Up With a Game Plan



- Note that we decomposed the Release Sprint into pieces, too, in order to manage “Release Activities”



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That's How We Do the Planning...

Any Questions?



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Monitoring the Release

Release BurnUp
Earned Value Metrics
Earned Business Value
Tracking SirJeff's Release

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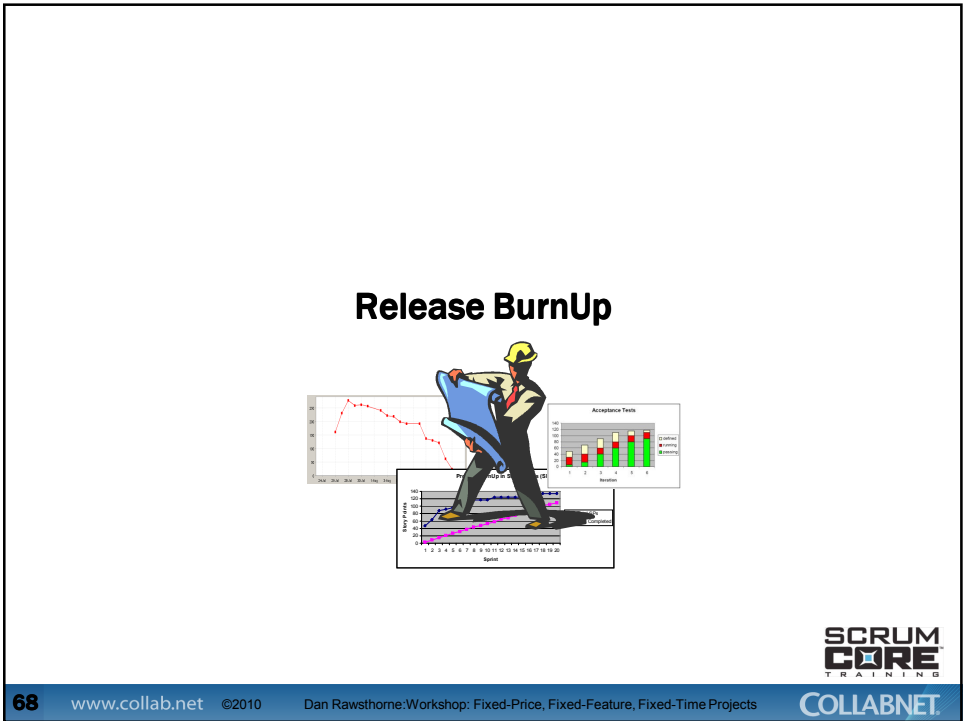
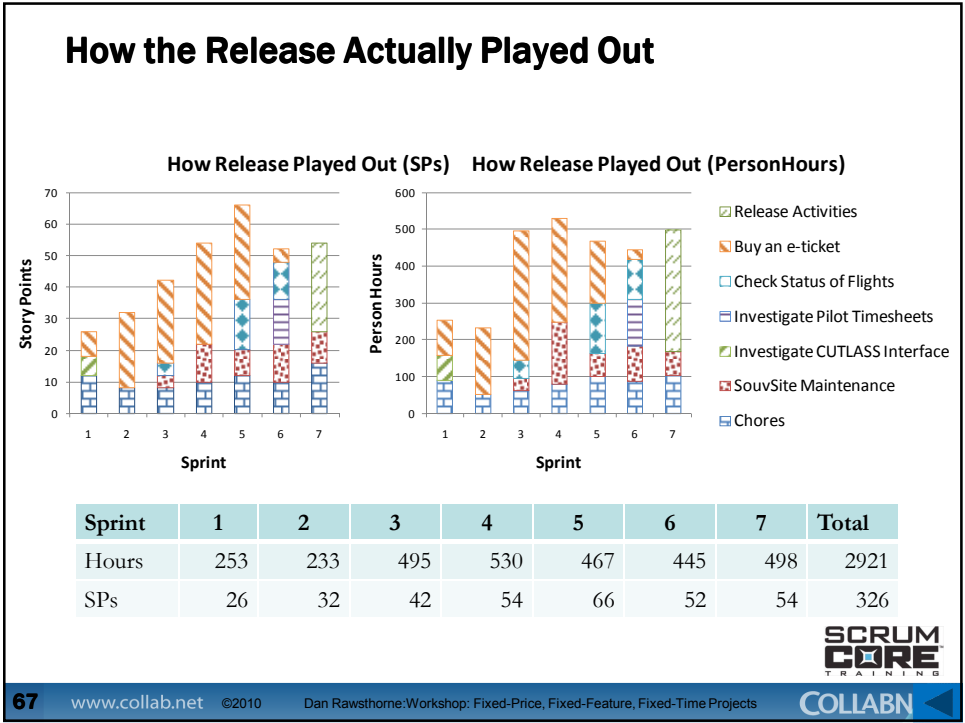
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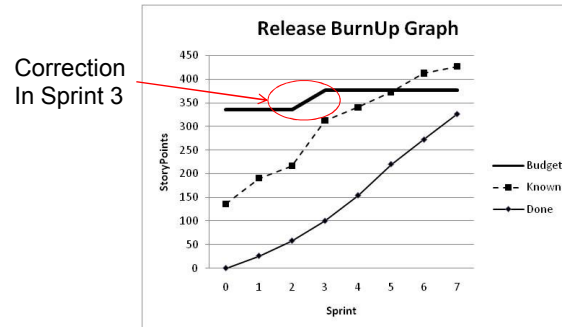
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Release Burnup

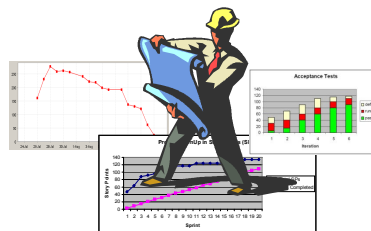


Correction
In Sprint 3

- We are delivering capabilities and Stories
- But what we are managing is (largely) StoryPoints
- The BurnUp graph shows our production of StoryPoints
 - It shows our SP velocity graphically
 - It shows how many SPs we have "to go"
 - It shows our inventory of SPs that are "ready to go"
- And it's easy to calculate



Earned Value Metrics (SPI and CPI)



Agile Earned Value Management (AgileEVM)

- First of all, it's not about value as in "goodness" or "business value" – it's value as in "actually done" – and the emphasis is on "earned"
- EVM is about measuring project performance, comparing baselines to actuals in scope, schedule, and resource
- The genius of AgileEVM is the realization that stories are an appropriate thing to measure and count for EVM purposes *
 - In fact, stories are better than the activities we normally measure in software... done is better defined
 - The unit of value that we are measuring is the "earned StoryPoint"; that is, we are measuring stories that are "done"

* <http://www.solutionsiq.com/PDF/Sulaiman-AgileEVM.pdf>



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The Metrics that Really Matter (CPI and SPI)

- CPI answers the question "are we paying what we expected for each SP?"
 - The ratio $CPI = (\text{baseline } \$/SP) / (\text{actual } \$/SP)$
 - In our case, \$ is person-hours, and (baseline \$/SP) is calculated cumulatively, sprint by sprint
- SPI answers the question "are we getting the SPs at the rate we expected?"
 - The ratio $SPI = (\text{actual } SP/Sprint) / (\text{baseline } SP/Sprint)$
 - In our case, our baseline velocity is also calculated cumulatively, sprint by sprint
- We like CPI and SPI to be ≥ 1 in standard EVM
- You'll have to trust me on the derivations* ☺

*http://danube.com/system/files/Monitoring+Scrum+Projects+with+AgileEVM+and+Earned+Business+Value+_EBV_+Metrics.pdf



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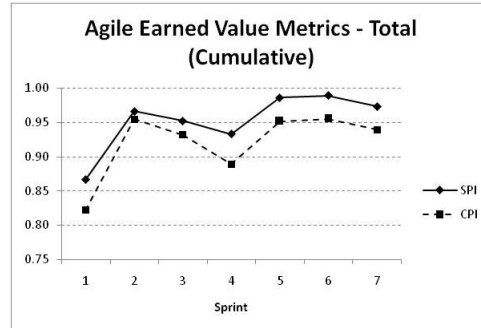
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CPI and SPI for SirJeff

- This graph shows our SPI and CPI as we move through the sprints
- The values are calculated cumulatively, not one sprint at a time



Sprint	1	2	3	4	5	6	7	Total
Hrs (B)	240	240	480	480	468	432	480	2820
SPs (B)	30	30	45	60	58	52	60	335
Hrs (A)	253	233	495	530	467	445	498	2921
SPs (A)	26	32	42	54	66	52	54	326



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AgileEVM is Very Powerful


- The metrics give good early information allowing appropriate adjustments in scope and resources
- However, trying to modify behavior to “get good metrics” is very risky
 - Everything is constrained except quality, so it is the only variable to play with
 - Playing with quality invariably forces Technical Debt
 - Not reporting “real” actuals in time spent (to improve CPI) leads to working at an unsustainable pace, which also forces Technical Debt
- “Playing” with these metrics makes Technical Debt a real possibility



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Earned Business Value (EBV)



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However...

- In an agile project, we are not paid to produce StoryPoints, we are paid to produce Business Value
- Business Value is subjective, and based on our Stakeholder's needs for this Release
- Here are the features with BV in this release

Goal/Feature/Capability	BV	Baseline
Buy an e-ticket	80%	108 SPs
Investigate the basics of Pilot Timesheets	10%	20 SPs
Check Status of Flights	10%	40 SPs

- As we deliver Stories within a feature, the Earned Business Value ($EBV(feature)$) increases, and is a percentage of the Feature's Business Value ($BV(feature)$)



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Value in Software

- It is a truism in software that if you don't have:
 - A test to prove something works, and
 - A regression test to prove it continues to work, then
 - You don't really have the feature
- So, the basis of proving you have value is running tests. You need a regression test suite to prove you still have the value.
- There are many ways of using this fact, but on the next pages we'll discuss Earned Business Value (EBV).

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EBV Doesn't Measure anything "Real"

- But, It tells us where a capability's EBV "should be" if
 - The overall budget for the capability was right
 - The PO is making good decisions about what is important
- In other words, an EBV graph is only good to *start* a conversation
 - "According to this graph, this capability should be 65% 'done' ... is that what it feels like?"
- So, the *conversation* about the EBV graph gives us very good information about progress of the project

- Metrics/Values like these are called "indicators"

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Here's our Philosophy

- For each capability, our Release Plan has a Baseline SP budget
- Our goal is to use agility to provide business value the best way we can
 - 80/20 rule is valid in hindsight
 - 80/50 rule is reasonable to expect as we move forward
 - Actually two different curves
 - We'll see them next
- We expect the last third (EBV > 90%) of our Baseline budget for each capability to be our buffer
 - Using agility, we manage each buffer
 - And tradeoff SPs between capabilities
 - When in a pinch, must be calm and focus on agility and "doneness"
- This is kindof like the Buffer Management from TOC...



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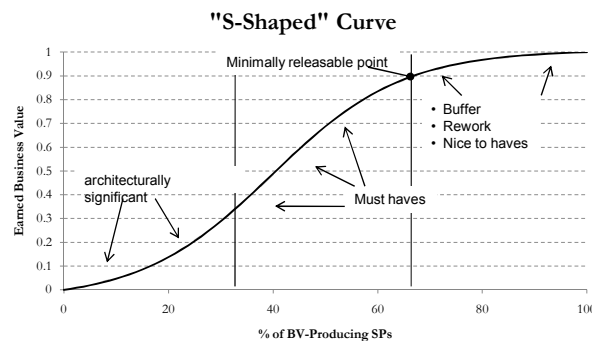
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For New Features



- That have an architectural element to them
- In our Case, we use this curve for
 - Buy an e-ticket
 - Check Status of Flights



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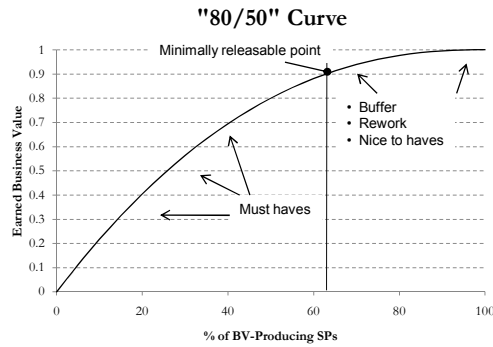
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For New/Existing Features



- Without an architectural element to add this Release
- In our Case, we use this curve for
 - Investigate the Basics of Pilot Timesheets



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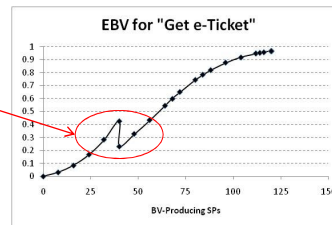
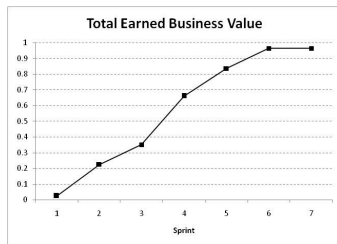
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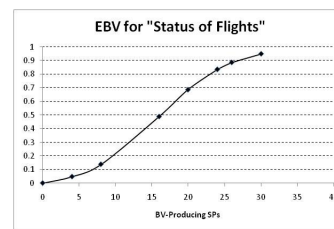
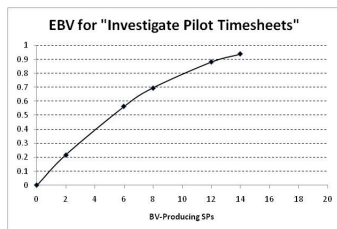
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Earned Business Value Graphs



Correction In Sprint 3



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And That's How You Monitor the Release...

Any Questions?



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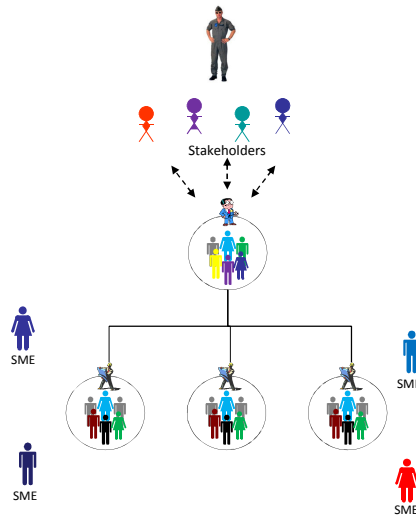
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Dan's Dream



Client/Acquirer
Needs/Wants
Stakeholders
SMEs to Help

Management Teams skilled in Functional Domain
Architecture
Business Analysts
Program Management...

Development Teams skilled in Technical Domain
Common, well-understood "def'n of done"
Known Velocity in FPs/Month
Basically, they are XP Teams...
Paid by the FP...

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Any Questions?



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Thank You Very Much!



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