

*Net* Objectives

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# Determining Business Value

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# Ken Pugh



- Fellow Consultant
- OOA&D, Design Patterns, Lean, Scrum, Test-Driven Development
- Over 2/5 century of software development experience
- Author of six books, including:
  - Prefactoring (2006 Jolt Award)
  - Interface Oriented Design

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*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 (\$\$ ??)
  - Your suggestions?

# 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”

# Business Value Measurement



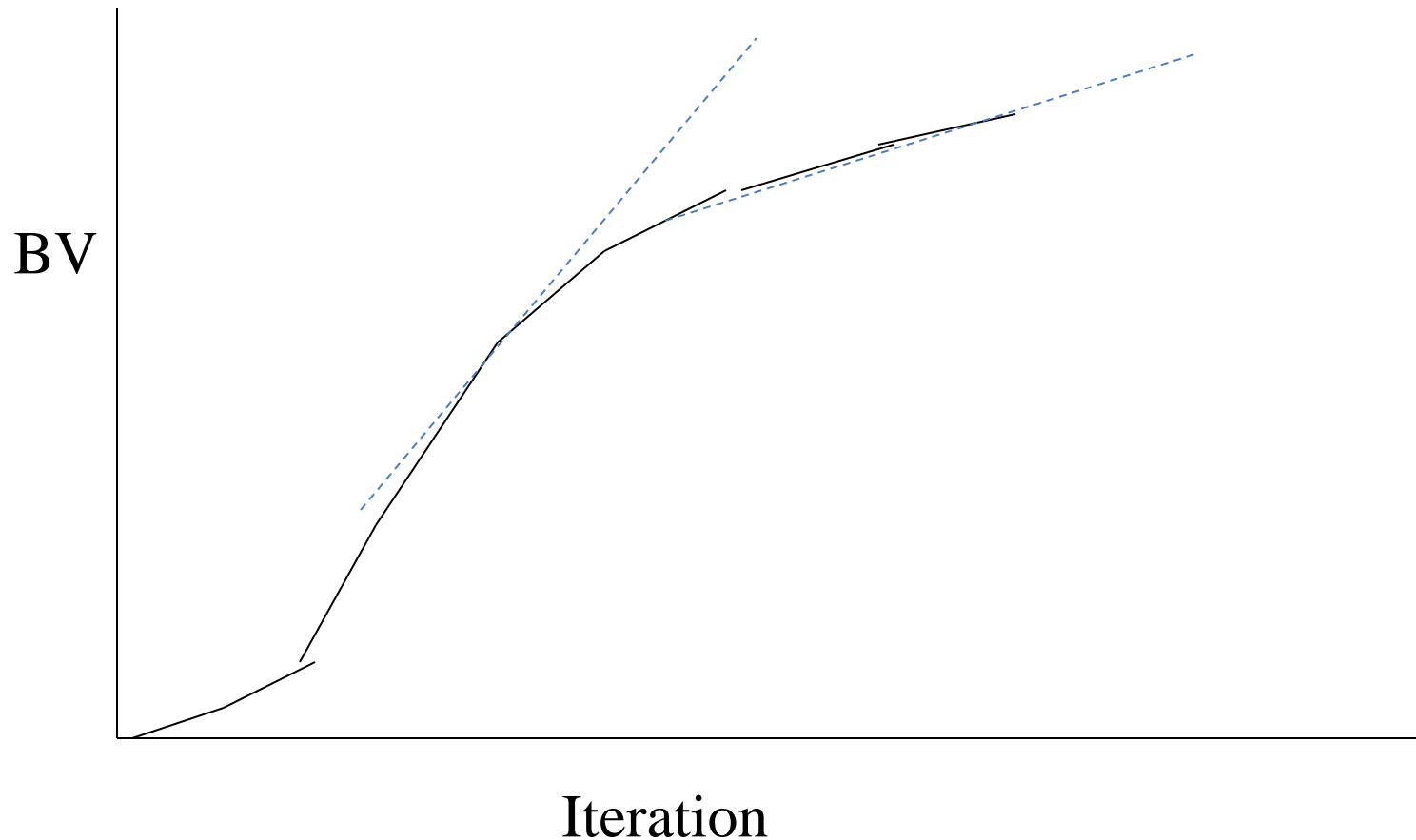
- Customer should estimate business value for requirement stories
  - Could use \$\$
    - Often difficult to do or compute
    - Question: Can it be measured?
- Business value is unit-less
  - Allows comparison between non-\$\$ and \$\$
- As requirement is "done", business value achieved



# Business Value Chart



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



# 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 Lawn Mower Repair and CD Rental Store
- Wants to replace existing manual system
- Issues
  - Current system requires too much time to check-out CD
  - Hard to get a report on what's in inventory
  - Can't notify customers that CD 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 CD Rental Shop
  - Keep track of where each CD is – in store or on rental (and with whom) (100)
  - Report when CDs are overdue (40)
  - Have a catalog so the customer can see what CDs are available and what songs are on what CDs (13)
  - A charge system to bill customers monthly, rather than by each rental (20)
  - Be able to offer discounts to frequent renters (5)
  - When multiple stores, the system should show which stores have a particular CD (3)

# 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



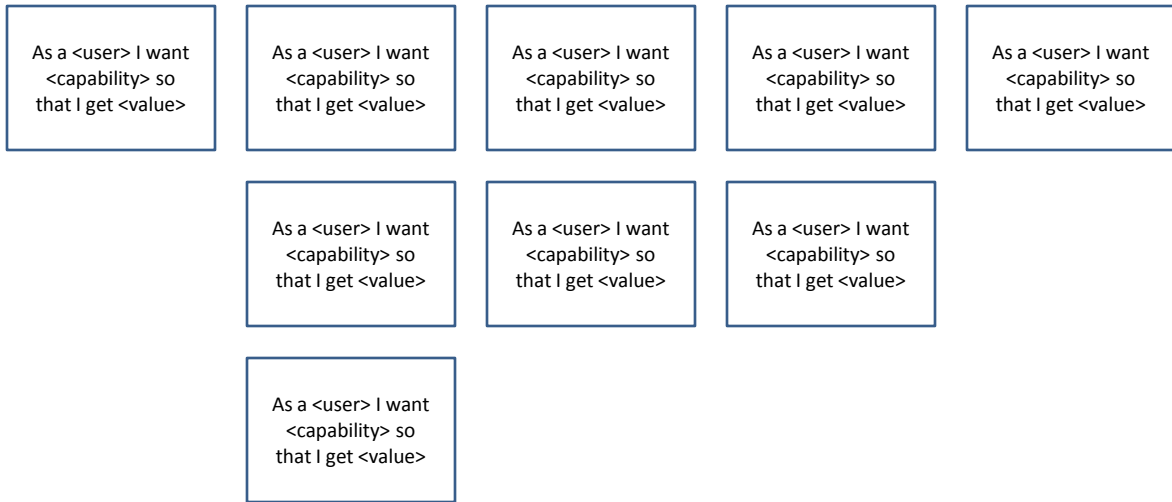
- Place Story Cards in pile
  - Place top card on playing surface
- Next player places top card relative to first card
  - (left easier, right harder, below equal)
- In succession, each player can either:
  - Play top card from pile
  - Moving a played card
  - Pass
- Repeat above until:
  - No more 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)

# Starting Point

# Ending Point



As a <user> I want  
<capability> so  
that I get <value>



# Business Value Workshop



- Sample
  - Mow lawn
  - Take out trash
  - Repair leaky faucet
  - Clean basement
  - Tune up auto
  - Set clock on VCR
  - 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 CD Rental Shop
  - Keep track of where each CD is – in store or on rental (and with whom) (5 – comparison)
  - Report when CDs are overdue (2 - comparison)
  - Have a catalog so the customer can see what CDs are available and what songs are on what CDs (3)
  - A charge system to bill customers monthly, rather than by each rental (20)
  - Be able to offer discounts to frequent renters (13)
  - When multiple stores, the system should show which stores have a particular CD (5)

# Story Points (2)



- Estimation Poker
  - Each estimator has deck of cards
  - Decide on one story that's average – 5. 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 VCR
  - Watch basketball finals

# Bang for the Buck

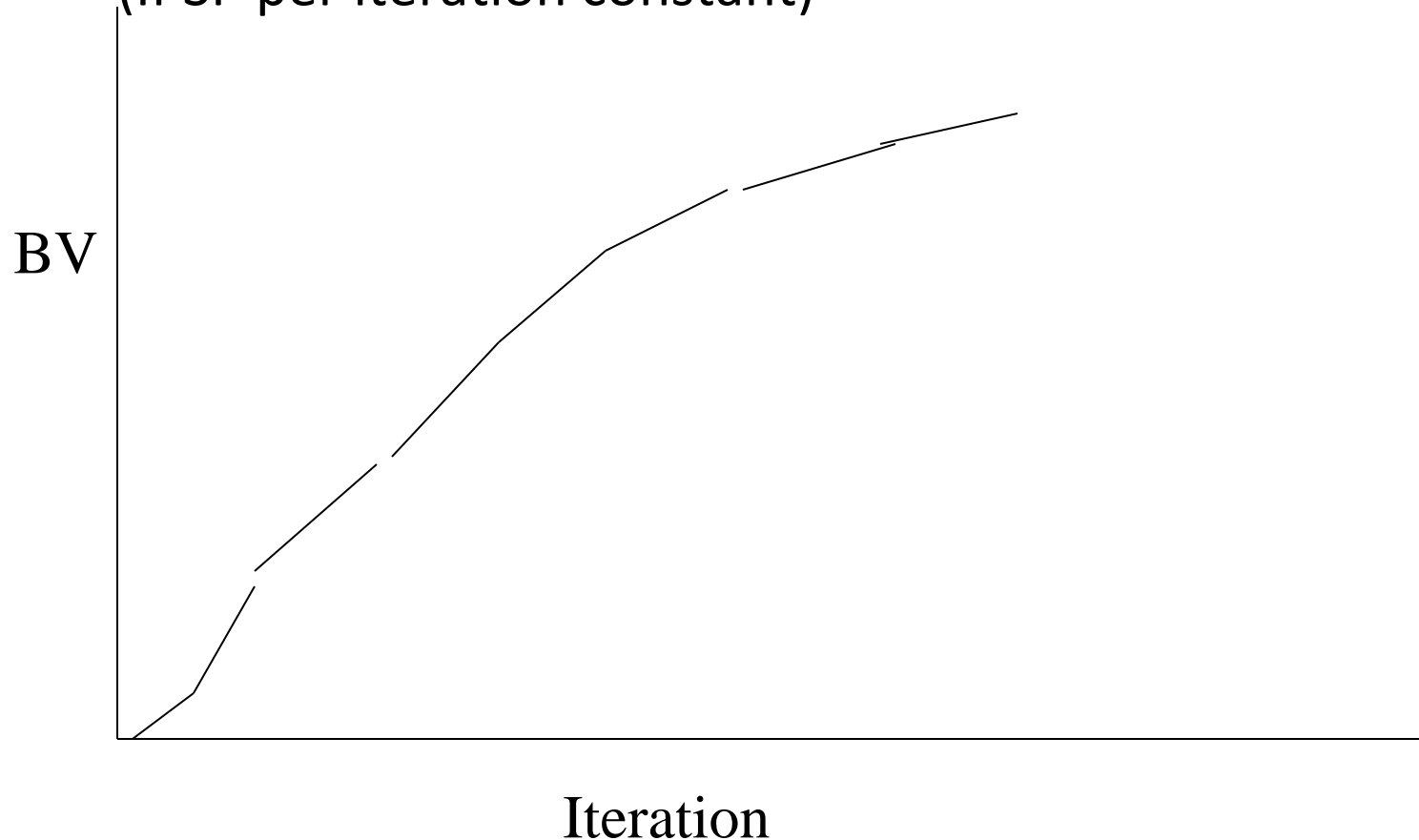


- Once business value and time estimated, can determine “bang for the buck”
- $\text{Bang} = \text{Business value points} / \text{Story points}$ 
  - Represents roughly “return on investment”
  - Don’t get into differences of 1.3 versus 1.4, but rather 1 and 2 or 3
- May want to prioritize high Bang stories

# Business Value Chart (Revisited)



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



# Bang for the Buck Example



- Example - Sam's Lawn Mower Repair and CD Rental Shop
  - Keep track of where each CD is – in store or on rental (and with whom)  $100/5 = 20$
  - Report when CDs are overdue  $40/2 = 20$
  - Have a catalog so the customer can see what CDs are available and what songs are on what CDs  $13/3 = 4$
  - A charge system to bill customers monthly, rather than by each rental  $20/20 = 1$
  - Be able to offer discounts to frequent renters  $5/13 = .5$
  - When multiple stores, the system should show which stores have a particular CD  $3/5 = 1$

# Bang for the Buck



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



# 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 VCR
  - Watch basketball finals

# Smaller Picture



- Example had “feature level”
- Features → stories for scheduling
- BV and SP allocatable among stories
  - Total story SP not necessarily == feature level SP
  - Estimates better for smaller items (stories) than large items (features)
  - Can use planning poker, card movement, or just agreement
- Example feature:
  - Keep track of where each CD is – in store or on rental (and with whom) BV 100 SP 5

# Smaller Picture



- Stories with “Allocated BV / SP”
  - As the Counter Clerk, I want to check-out a CD for a customer
    - BV = 40, SP = 3
  - As the Counter Clerk, I want to check-in a CD
    - BV = 40, SP = 2
  - As the Counter Clerk, I want to note that a CD is damaged on check-in
    - BV = 5, SP = 2
  - As the Counter Clerk, I want to note that the customer reported the CD as lost or stolen
    - BV = 5, SP = 2

# “Right-Sized” Stories



- If user story effort 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 a CD for a customer
  - BV = 40, SP = 3
- Smaller Stories:
  - As the Counter Clerk, I want to check-out a CD for a standard rental for a customer
    - BV = 20, SP = 2
  - As the Counter Clerk , I want to check-out a CD for an extended rental for a customer
    - BV = 13, SP = 1

# “Right-Sized” Stories



- If story not breakable into stories with BV
  - Break story into developer stories
  - Developer stories have no BV
    - Should have developer-supplied acceptance tests
- Example Story
  - As the Counter Clerk, I want to check-out a CD for a customer
  - BV = 40, SP = 3
- Smaller Stories:
  - As the Developer, I need to create a database to support check-out CD for a customer
    - SP = 2
  - As the Developer , I want to create a user-friendly UI to support check-out CD for a customer
    - SP = 2

# 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 BB

# Portfolio Project Example



## CheckInOut

BV =

SP =

BB =

## Website Redo

BV =

SP =

BB =

## HR Automation

BV =

SP =

BB =

## New Store Layout

BV =

WP =

BB =

# Portfolio Feature Example



<b>CheckInOut</b>	<b>Website Redo</b>	<b>HR Automation</b>	<b>New Store Layout</b>
Keep track of CDs BV 100; SP 5; BB 5	Menus BV 100; SP 3; BB 33	Paychecks BV 5; SP 2; BB 3	Checkout area BV 20; WP 5; BB 4
Overdue report BV 40; SP 2; BB 20	Sign up BV 20; SP 13; BB 2	Vacation plans BV 1; SP 3; BB .5	New CD shelves BV 13; WP 20; BB .5
Catalog BV 13; SP 3; BB 4			
Charge system BV 20; SP 20; BB 1			
Discounts BV 5; SP 13; BB .5			
Other Stores BV 3 SP 5; BB 1			

What might be the sequence?



# BV to \$\$



- If need \$\$
  - Take total estimated \$\$ for a project
  - $BV \$ = (Total\ BV) / (Total\ \$\$)$
  - Using past history, determine estimated SP \$ (Total \$\$ / Total SP for a project)
- ROI is  $BV \$ / SP \$$

# 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

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**Supplementary**

# Exercise – Estimation (1)



- You are traveling from here to (destinations to be supplied)
- How long will it take you to get there?

## Exercise – Estimation (2)



- What assumptions did you make?
- What is probability of making your estimate?
  - How about 50% less time?
  - How about 50% more time?

# Estimating Exercise Sequel



- You are traveling from here to the same destination as before
- What is your lowest time (5% probability of success), probable (50% probability), and highest time (95% probability)?

# Estimating

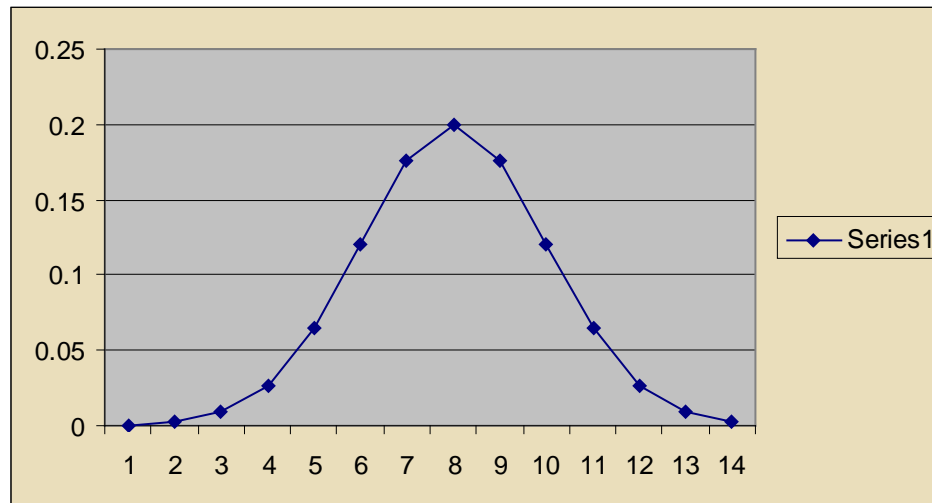


- Estimations – can use a range (low, high) or a three-way (low, probable, high)
  - Low, probable, high often in 1-2-4 or 1-3-9 ratio
- Actuals are not a uniform distribution
  - There is an absolute minimum
  - “Most likely” is not the average

# Estimating – Gaussian



Most Likely  
Average

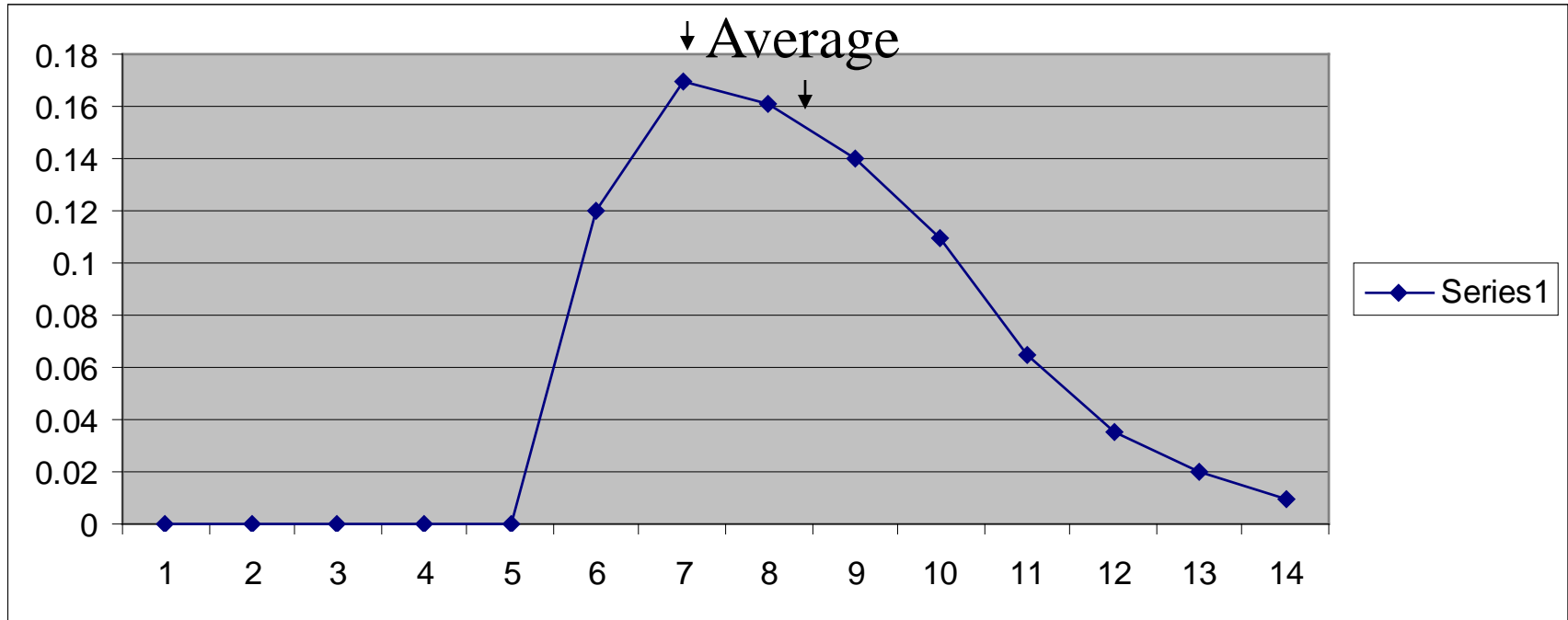




# Estimating – Typical Distribution



## Most Likely



# Time Estimating – Story Points



- Story point
  - Bigness of task
    - How hard
    - How much
  - Relative values are important
  - Points are unit-less
- Story points acknowledge inexactness of estimations

# Story Point Chart



- Shows story effort expended

