

GR8PM

*Traditional • Agile • Hybrid*

Training • Coaching • Consulting



The Five Time-tested Keys  
of Estimating  
that  
*Successful PMs Can't Live Without!*

Copyright, GR8PM, 2013, all rights reserved.



Five Keys to Estimating  
Introduction



What can you expect from this training?

- Proven Ideas and Clear Principles.
- Practicality over Theoretical Purity.
- Plenty of Time for Questions!

Purpose and limits of this training?

- Transfer as much knowledge as possible.
- Identify valuable sources of information.
- Accept we can't cover everything in detail in only 1 hour!

## Introduction:

John Stenbeck, PMP, CSM, CSP, PMI-ACP



- Sr. PM Consultant for client-side ERP implementations
- Experience in Accounting, IT, Aerospace, Construction, and Manufacturing
- Train technical professionals in Aerospace, Defense, High Technology, Financial Services, Bio-medical and Life-science fields
- Adjunct instructor at the University of California San Diego (UCSD)



3

## Introduction:

John Stenbeck, PMP, CSM, CSP, PMI-ACP

- Featured speaker at HP's National Conference (2002), Oracle's Annual Conference (2003), and PeopleSoft's International Conference (2004).
- One project reached the Federal Supreme Court.
- Front page feature in the San Diego Union and LA Times; Guest on Oprah and the Today Show.
- Past President and VP of Prof. Dev. for PMI-SD



4

## GR8PM Introduction:



- PMP® and PMI-ACP® Exam Prep classes
- Scrum Master Certification classes
- Corporate On-site seminars:
  - Command Course in Agile Project Management
  - Project Management Boot Camp
  - Crash Course in Leadership
  - Masters Course in Estimating and Risk Management
- Organizational Support Services:
  - Agile Enterprise Roll-out Consulting
  - Contract Project Managers

5

## GR8PM Introduction:



### Partial List of Past Clients

- Booz Allen Hamilton, Inc., McLean, VA
- Guinness Bass Import Company, Greenwich, CT
- Lucent Technologies – Bell Labs, Allentown, PA
- Nike Corp., Beaverton, OR
- Oracle Corp., Redwood Shores, CA
- Orange County Public Works, Orange, CA
- Qualcomm Inc., San Diego, CA
- U.S. Army – Space & Terrestrial Comms., Fort Monmouth, NJ
- U.S.D.A. – National Finance Center, New Orleans, LA
- Visa – Smart Cards, Foster City, CA

6

GR8PM  
Traditional • Agile • Hybrid  
Training • Coaching • Consulting



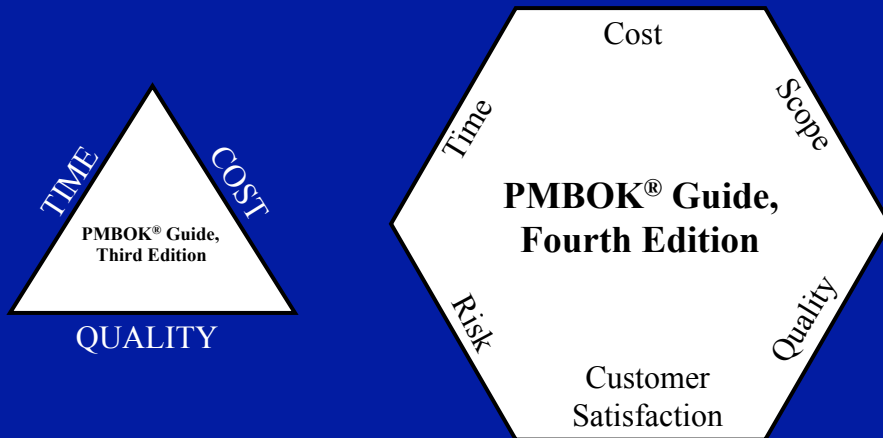
# Five Keys to Estimating:

## Key #1 – *The Law of Imprecision*



# Five Keys to Estimating

## Key #1 – The Law of Imprecision



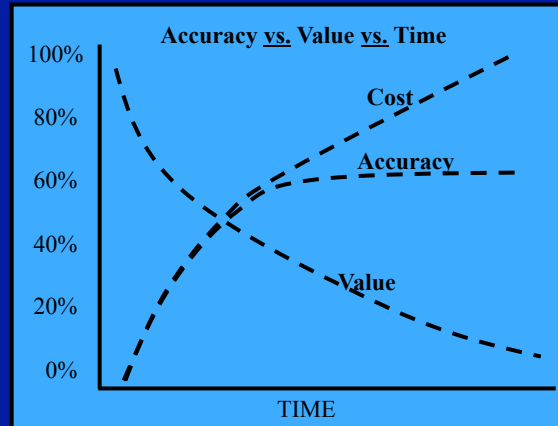
*Iron Triangle* transformed into *Hell-of-a-Hexagon*  
From Three to Fifteen Interrelationships.

## Five Keys to Estimating

### Key #1 – The Law of Imprecision



Why must estimates be imprecise?



“It is better to be roughly right than precisely wrong.”  
John Maynard Keynes

9

## Five Keys to Estimating

### Key #1 – The Law of Imprecision



- Fundamental Premise of Planning

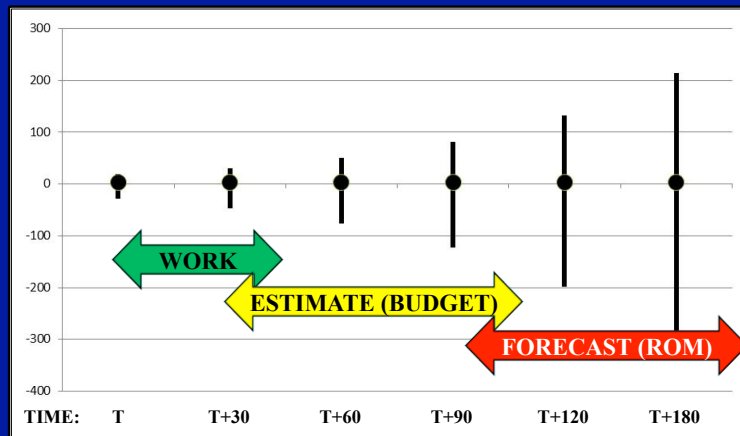
<u>Estimate Types</u>	<u>% Design Complete</u>	<u>Estimate Accuracy</u>
ROM	0 – 10 %	+100% to – 50%
Budget	15 – 25 %	+30% to – 15%
Definitive	45 – 100 %	+15% to – 5%

10

## Five Keys to Estimating Key #1 – The Law of Imprecision



- Cost-effective Planning Despite Uncertainty



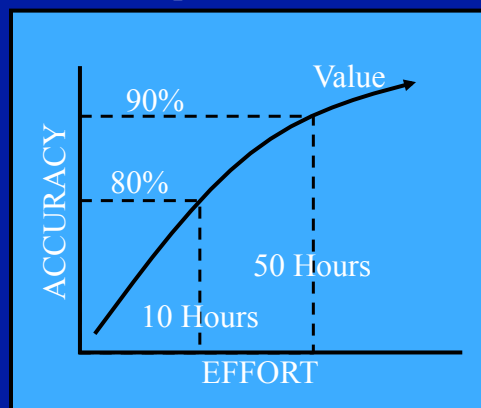
11

## Five Keys to Estimating Key #1 – The Law of Imprecision



Why do imprecise estimates?

A little effort helps a lot! But a lot more doesn't.



Planning ROI:

Is it  
5 : 1  
10 : 1  
15 : 1  
or ??

12

GR8PM

*Traditional • Agile • Hybrid*

Training • Coaching • Consulting



## Five Keys to Estimating:

*Key #2 – Estimating is hard.*



## Five Keys to Estimating Key #2 – Estimating is Hard



Exercise:

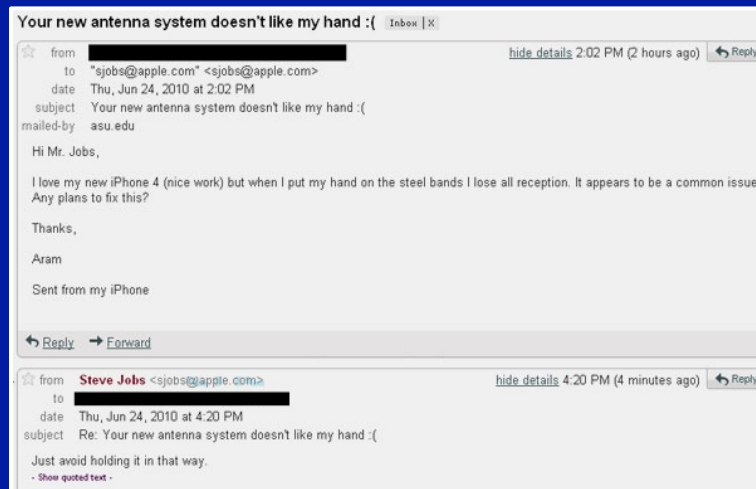
- Form a 3-person team.
- Identify the #1 risk that every project faces.

Answer:

- There is nothing more expensive than building (*and selling!*) the wrong product!!

## Five Keys to Estimating

### Key #2 – Estimating is Hard



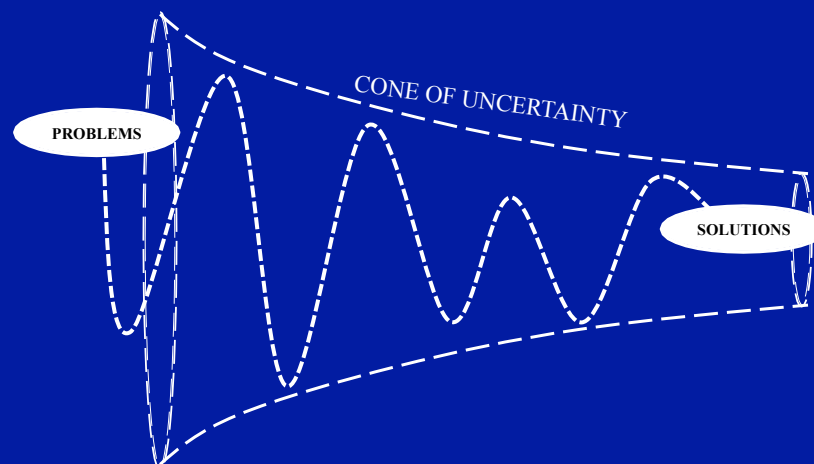
15

## Five Keys to Estimating

### Key #2 – Estimating is Hard



- What is the challenge of estimating?



16



### Five Keys to Estimating Key #2 – Estimating is Hard

GR8  
IPM  
*Traditional, Agile, Hybrid.*

- How is estimating improved?

17

### Five Keys to Estimating Key #2 – Estimating is Hard

GR8  
IPM  
*Traditional, Agile, Hybrid.*

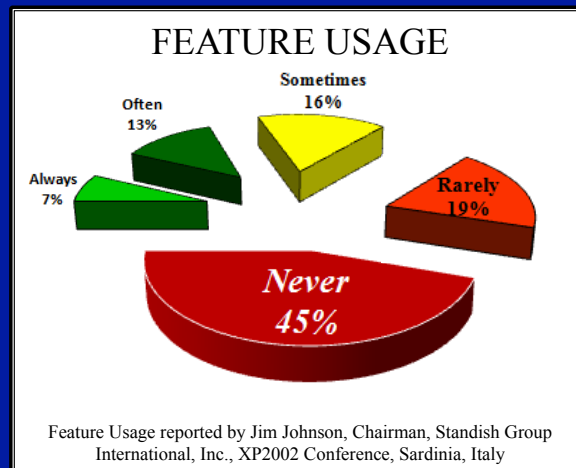
- What does Agile contribute?

18

## Five Keys to Estimating Key #2 – Estimating is Hard



- How is the Cone of Uncertainty narrowed?



19

## Five Keys to Estimating Key #2 – Estimating is Hard



It is not about the “Unknown Unknowns”

*As we know, there are known knowns.*

*The things we know we know.*

*We also know, there are known unknowns.*

*That is to say, we know there are things we do not know.*

*But there are also unknown unknowns,  
the things we don't know that we don't know.*

*Donald Rumsfeld, Feb. 12, 2002, DOD news briefing*

20

## Five Keys to Estimating

### Key #2 – Estimating is Hard



#### Three Key Questions:

- What is the purpose of the estimate?
- How precise of an estimate do I really need?
- How much time do I have?

#### Best Practices:

- Obtain historical data for similar projects.
- Evaluate similarities and differences.
- Apply expert judgment.
- Document the estimate and assumptions.

21

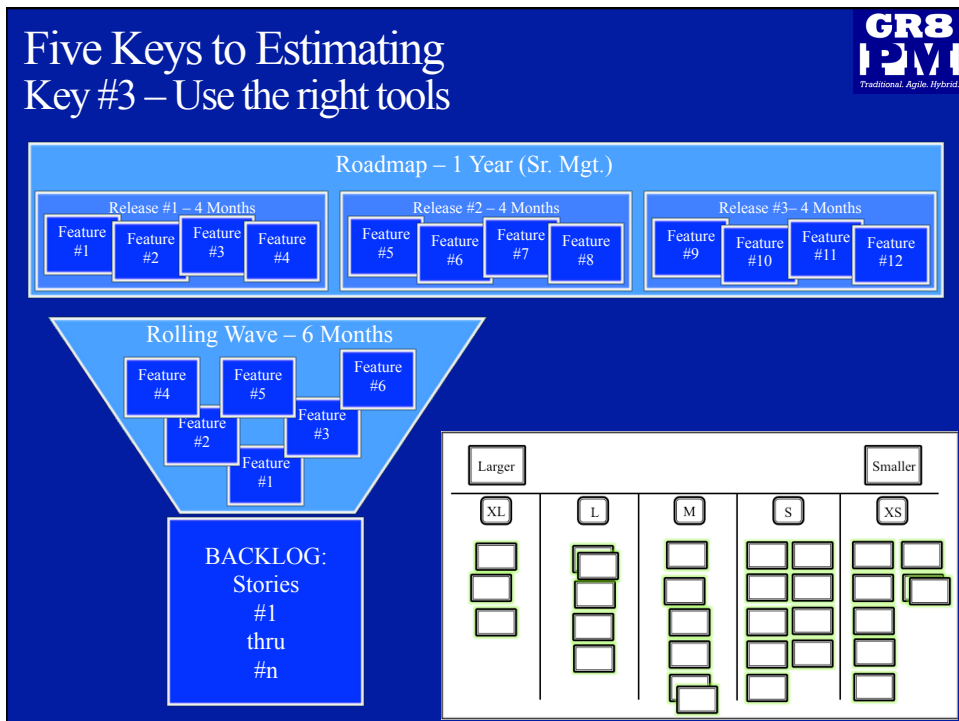
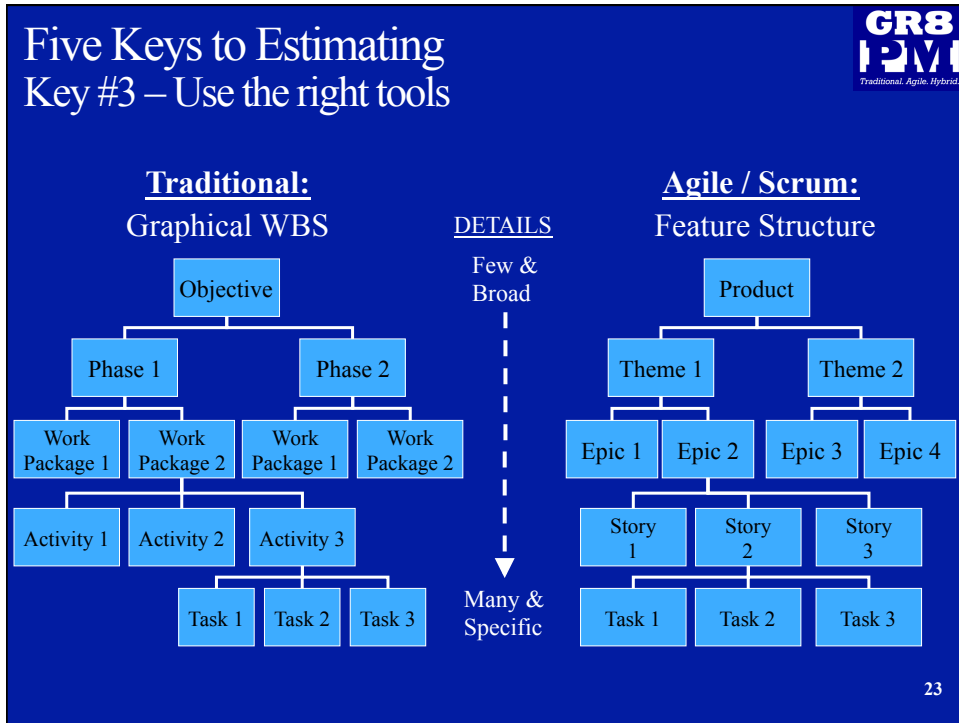
GR8PM  
 Traditional • Agile • Hybrid  
 Training • Coaching • Consulting



## Five Keys to Estimating:

*Key #3 – Use the right tools.*





## Five Keys to Estimating Key #3 – Use the right tools

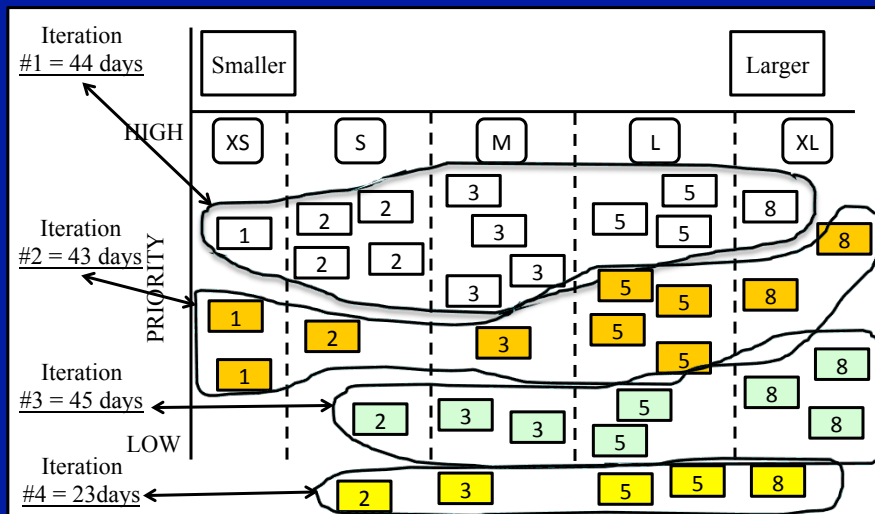


### Capacity Analysis

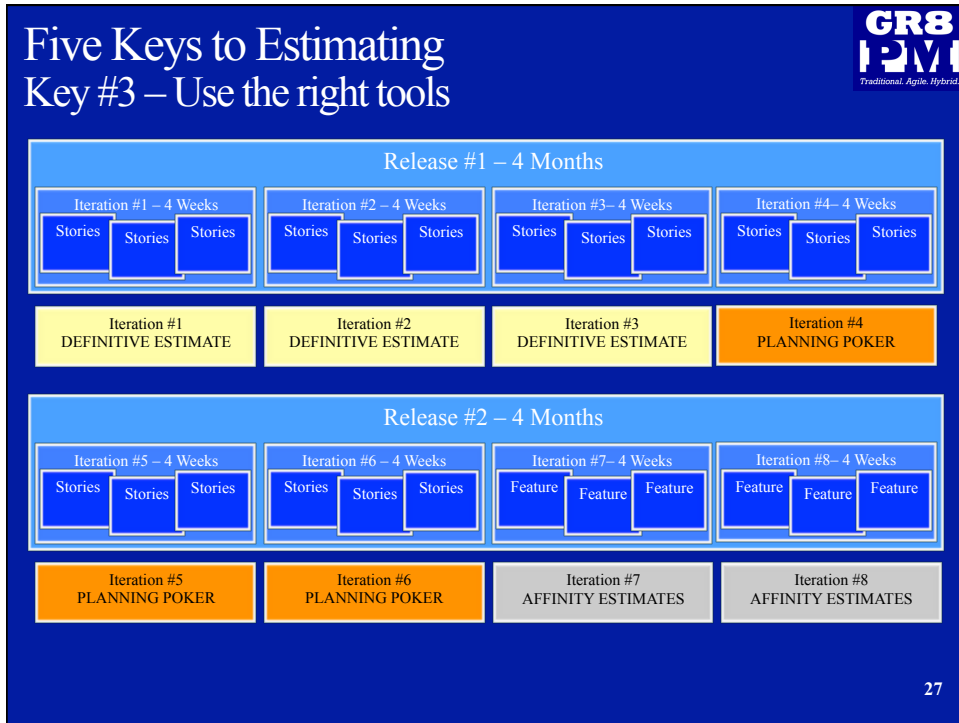
- 6 Developers x 3 wks. x 4 Iterations = 72 weeks
- 72 wks. x 60% efficiency = 43 weeks
- 43 weeks = Planning Limit
- Stories are:
  - Extra Small (XS) = 1 week to complete
  - Small (S) = 2 weeks
  - Medium (M) = 3 weeks
  - Large (L) = 5 weeks
  - Extra Large (XL) = 8 weeks

25

## Five Keys to Estimating Key #3 – Use the right tools



26



GR8PM  
*Traditional • Agile • Hybrid*  
Training • Coaching • Consulting

## Five Keys to Estimating: Key #4 – *Measure early and often.*

# Five Keys to Estimating

## Key #4 – Measure early and often



### Tracking Systems

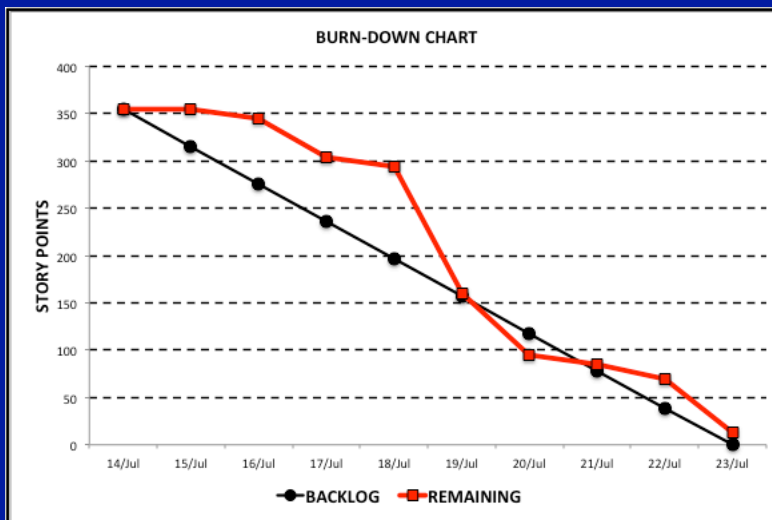
Not Started			In Progress			Completed		
Hours	Task	Owner	Hours	Task	Owner	Hours	Task	Owner
8	IT to validate Flash Reports	Donald	24	Design Framework for Analysis	Ravi	8	Prompt Page Design	Ravi
4	ETL for Accounting	Ravi	2	Publish analysis package	Ravi	16	Prompt Page Development	Ravi
2	Migrate Control Batches to Production	Srini	60	Report Page Development	Ravi	4	ETL Testing - Contractors	Yogi
2	ETL Migration to Production	Srini	4	QA Report Screens	Yogi	8	Identify recon process failure notifications	Donald
3	Database Migration to Production	Donald	8	Assist with uploading Budget file	Donald	24	Write first draft User Manual	Ed
16	Flash Report Testing	Susan	8	Test ETL Adjustments	Yogi	2	Production Migration to Sub account	George
8	Test Report Security	Yogi	8	Security for report users only	George	16	Reconcile upload file to final published numbers	Donald
8	Test Accounting ETL	Yogi	1	Write access to data schema	George	24	ETL for Adjustments	Ravi

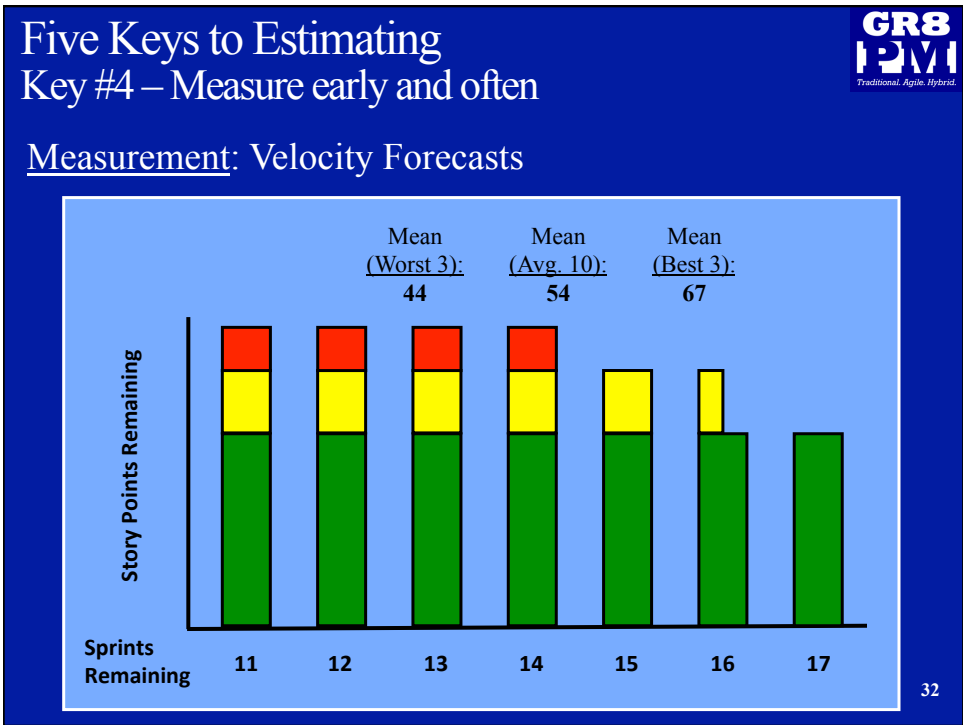
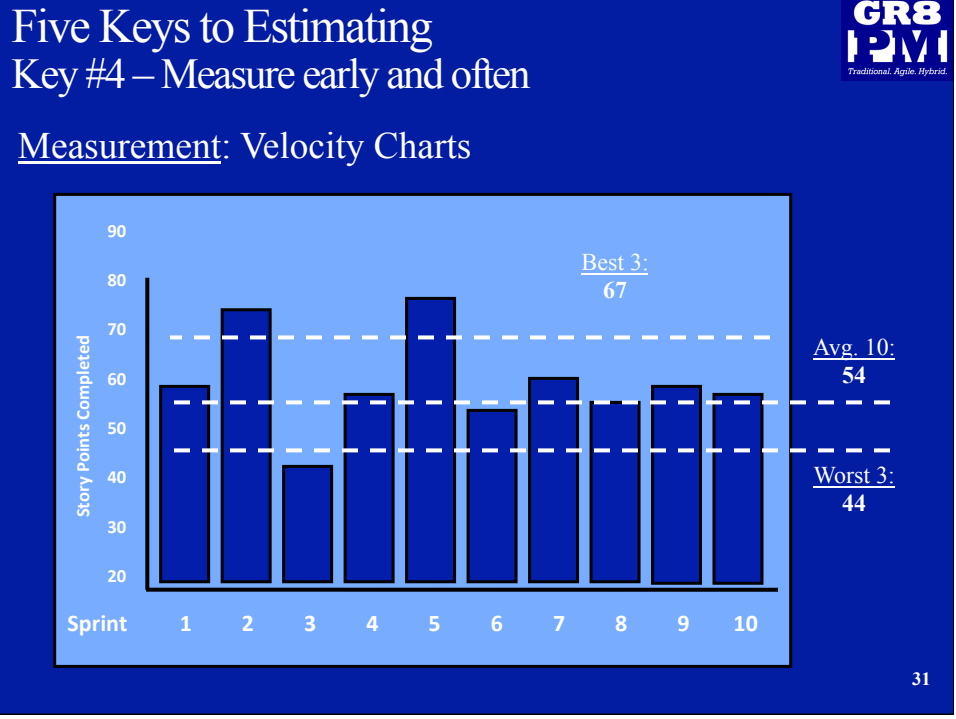
# Five Keys to Estimating

## Key #4 – Measure early and often



### Typical Burndown Report







**GR8  
P2M**  
Traditional, Agile, Hybrid.

## Five Keys to Estimating Key #4 – Measure early and often

EVM & Burn-up  
Chart

Days	Stories Completed (Blue)	Earned Value (Green)	Actual Cost (Red)
1	0.2	0.2	0.2
2	0.4	0.4	0.4
3	0.6	0.6	0.6
4	0.8	0.8	0.8
5	1.0	1.0	1.0
6	1.2	1.2	1.2
7	1.4	1.4	1.4
8	1.6	1.6	1.6
9	1.8	1.8	1.8
10	2.0	2.0	2.0
11	2.2	2.2	2.3
12	2.4	2.4	2.5
13	2.6	2.6	2.8
14	2.8	2.8	3.1
15	3.0	3.0	3.4

33

**GR8PM**  
*Traditional • Agile • Hybrid*  
Training • Coaching • Consulting

**GR8  
P2M**  
Traditional, Agile, Hybrid.

## Five Keys to Estimating: Key #5 – *Progress = f (Difficulty / Work Velocity)*

Five Keys to Estimating  
Key #5 – Progress =  $f$  (Difficulty / Work Velocity)

**GR8 P2M**  
Traditional, Agile, Hybrid.

Logic Network Diagrams

What is the Logic Network when you get a flat tire?

```

    graph LR
      S((S)) --> STOP[STOP]
      STOP --> REMOVE[REMOVE]
      REMOVE --> REPLACE[REPLACE]
      REPLACE --> GO[GO]
      GO --> F((F))
  
```

35

Five Keys to Estimating  
Key #5 – Progress =  $f$  (Difficulty / Work Velocity)

**GR8 P2M**  
Traditional, Agile, Hybrid.

Increase sophistication of Critical Path Method (CPM).

EARLY START DATE	DURATION	EARLY FINISH DATE
ACTIVITY NAME or ID	ACTIVITY OWNER PLANNED COST	COST TO CRASH MINIMUM TIME
LATE START	FLOAT	LATE FINISH

36

## Five Keys to Estimating

### Key #5 – Progress = $f$ (Difficulty / Work Velocity)



Applying the PERT kernel.

$\frac{(O + 4ML + P)}{6}$		
EARLY START DATE	DURATION	EARLY FINISH DATE
ACTIVITY NAME or ID		
LATE START	FLOAT	LATE FINISH

37

## Five Keys to Estimating

### Key #5 – Progress = $f$ (Difficulty / Work Velocity)



The PERT Kernel  
To estimate the duration of  
highly-complex or unknown tasks  
use the formula:

$$LOE_e = (O_e + 4ML_e + P_e) \div 6$$

Where:

$LOE_e$  = Level-of-Effort Estimate.

$O_e$  = Optimistic Estimate.

$ML_e$  = Most Likely Estimate.

$P_e$  = Pessimistic Estimate.

The key is in explaining expectations to the estimator!!

38

## Five Keys to Estimating Summary



### The Five Keys

- 1 – The Law of Imprecision
- 2 – Estimating is hard
- 3 – Use the right tools
- 4 – Measure early and often
- 5 – Progress =  $f$  (Difficulty / Work Velocity)

39

GR8PM  
*Traditional • Agile • Hybrid*  
Training • Coaching • Consulting



## Five Keys to Estimating



Please feel free to contact me or get LinkedIn.  
[jstenbeck@gr8pm.com](mailto:jstenbeck@gr8pm.com)

