AN INTRODUCTION TO BUSINESS VALUE ENGINEERING

New York, March 26, 2009

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Attributions

- **Some people who directly or indirectly contributed: Ken Schwaber, Jeff Sutherland, Kent Beck, Peter Drucker, Takeuchi & Nonaka, Jim York, Chris Mats, Kent McDonald, Womack & Jones, Mary & Tom Poppendieck, Taiichi Ohno, some friends at "a large financial institution in Virginia", and many others.**

Joe Little, CST & MBA

- **Agile Coach & Trainer**
- **20+ years in senior level consulting to well-known firms in New York, London and Charlotte**
- **Focus on delivery of Business Value**
- **CST, CSP, CSM**
- **Was Senior Manager in Big 6 consulting**
- **Head of Kitty Hawk Consulting, Inc. since 1991**
- **Head of LeanAgileTraining.com**
- **Started trying to do [Agile] before reading The Mythical Man-Month**

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CERTIFIED Scrum Trainer

A Start

"You've got to be very careful if you don't know where you're going, because you might not get there."   Yogi Berra
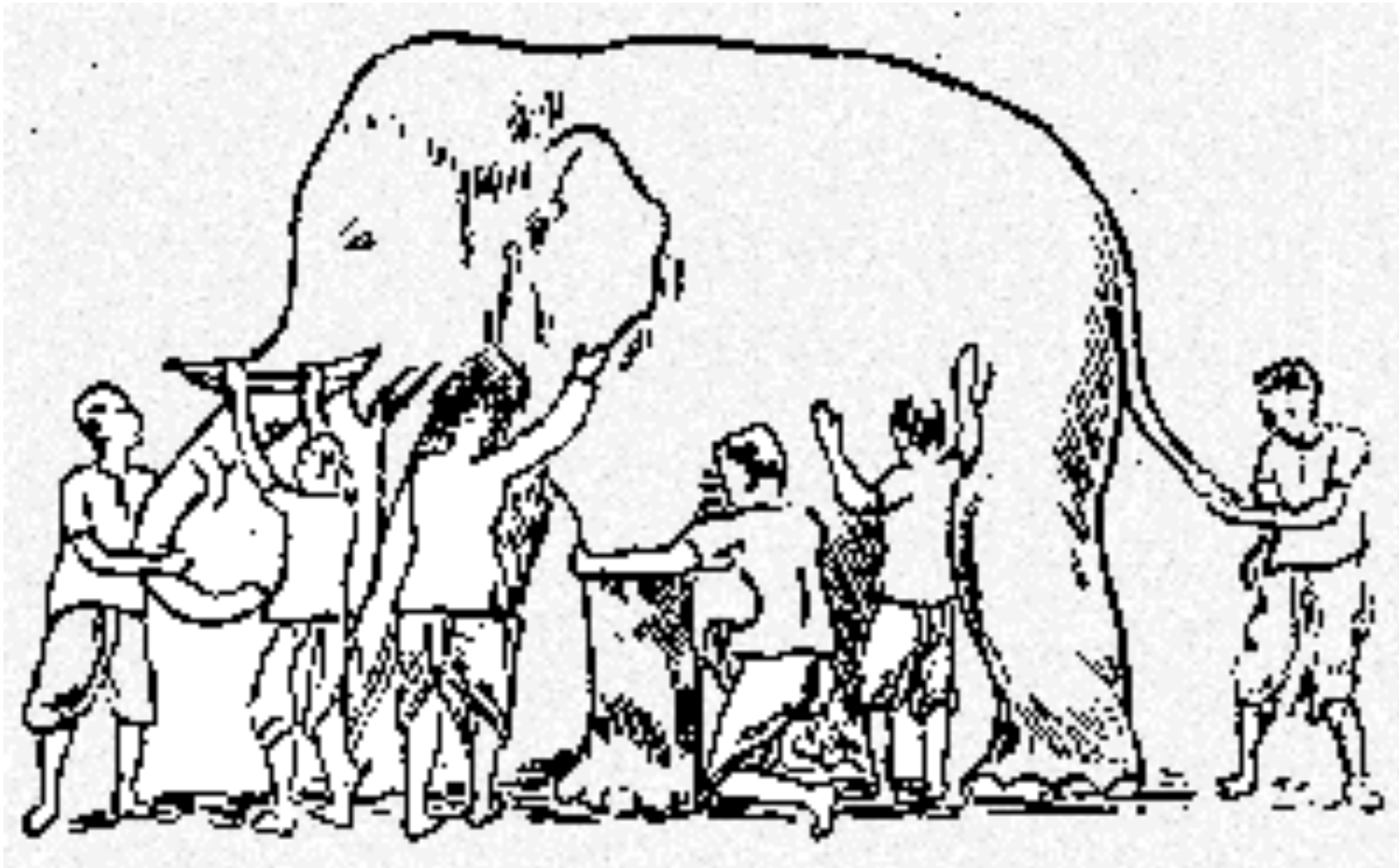
6 Blind men and an elephant

What are the numbers for your team?

- **Cost per year**

- **NPV delivered per year**

- **Derive: "The multiple"**

Let's do the math...

- Assume team costs $1,000,000 per year
- Assume normal multiple is 3x (ie, delivers $3,000,000 in BV)
- Assume the "real work" itself does NOT get any faster

Is BV Engineering Important?

- We make the stories 20% better
- We use Pareto's "85-33" rule to get more done in less time
- We identify more high value epics
- We motivate the team, so that they are more productive
- We assure that we actually hit the mark, rather than just say that we did

- What's that worth? 3X more BV?

One version....

	Year 1	Year 2	Year 3
Cost of Team	$1,000,000	$1,000,000	$1,000,000
Orig Value Delivered per Year	$3,000,000	$3,000,000	$3,000,000
NPV	$7,460,556		
ID Better Stories (+20%)	$3,600,000		
Deliver Top 33% (85% of BV)	$3,060,000		
Deliver Top 33% again	$3,060,000		
Deliver Top 33% again	$3,060,000		
TOTAL FIRST YEAR	$9,180,000	$9,180,000	$9,180,000
Better NPV	$22,829,301		
Better/Original	3.1		

And what if I said...

- **No more lying**
- **More satisfaction working with a team**
- **More fun!**
- **More satisfied customers**

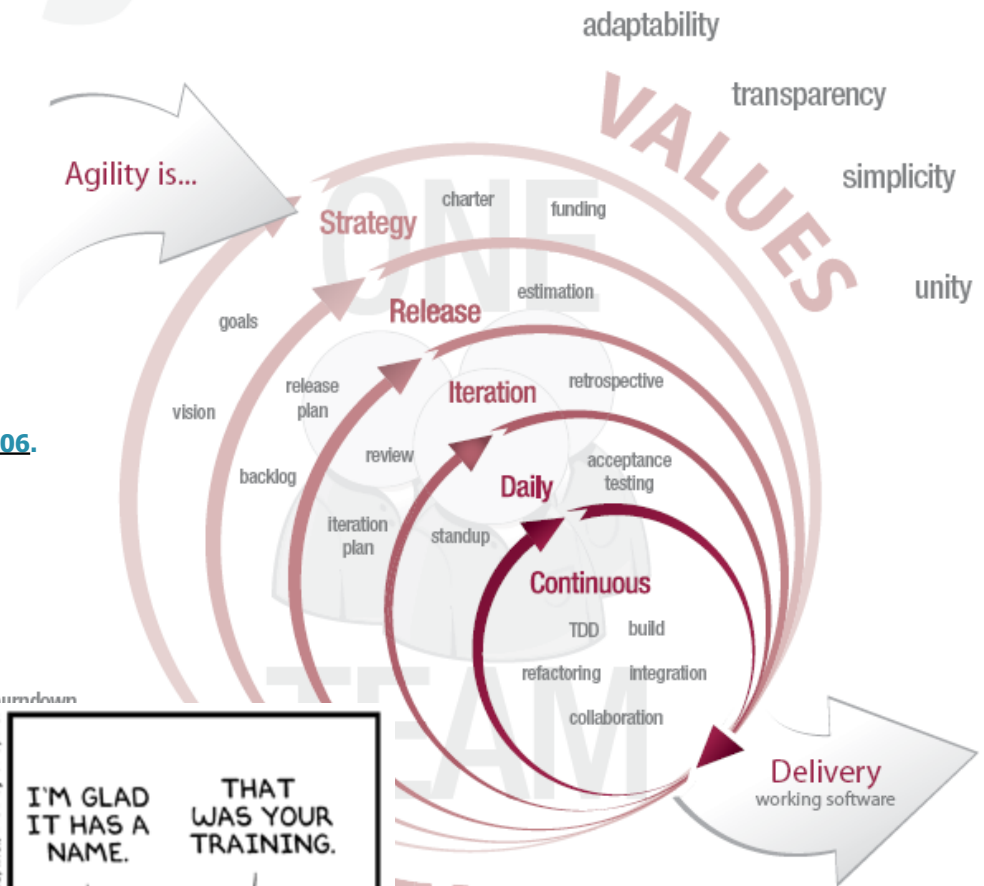# Now let's change subjects...

- **...seemingly, for a moment**

ScrumButt

Kudos to Eric Gunnerson for coining the term ScrumBut in 2006.
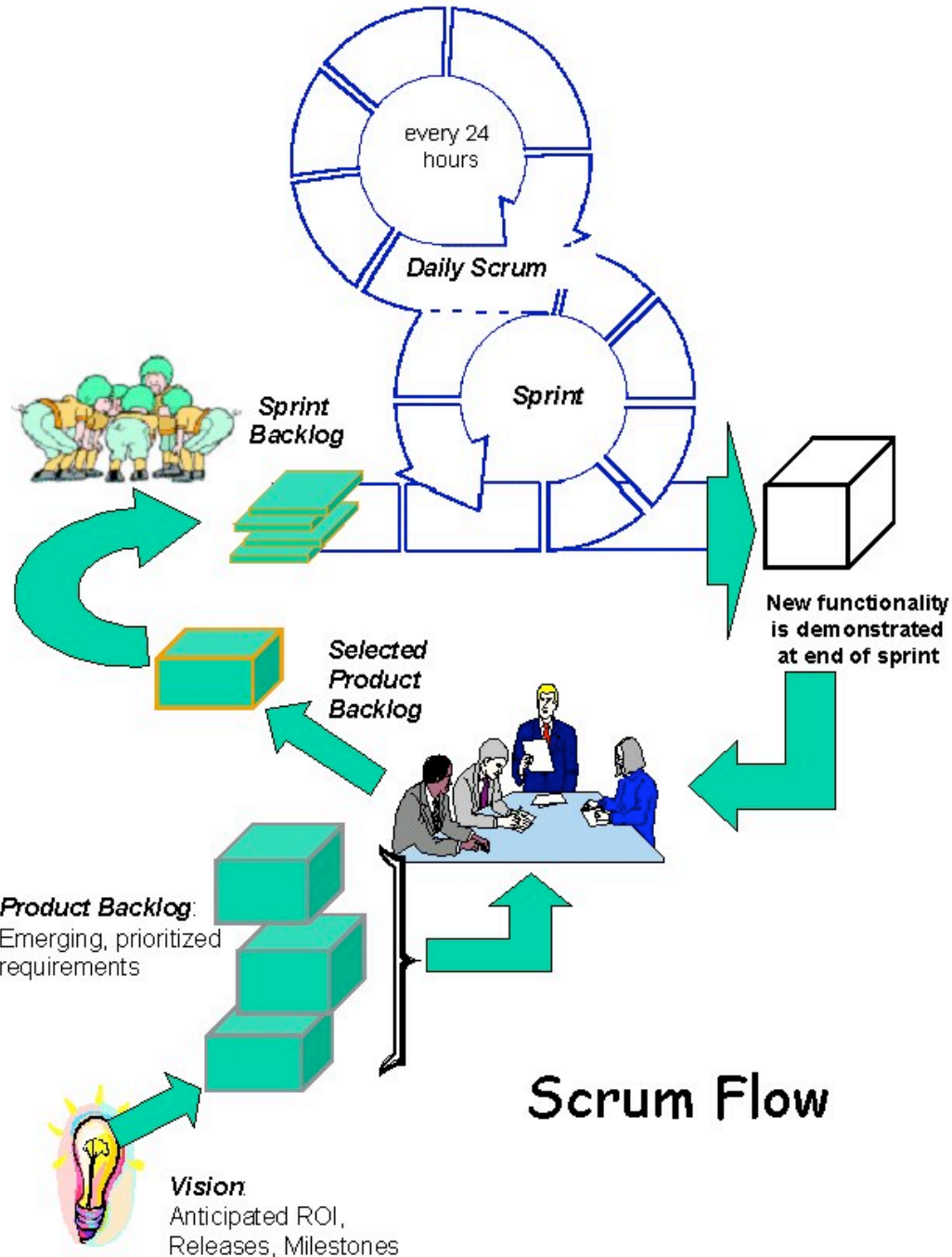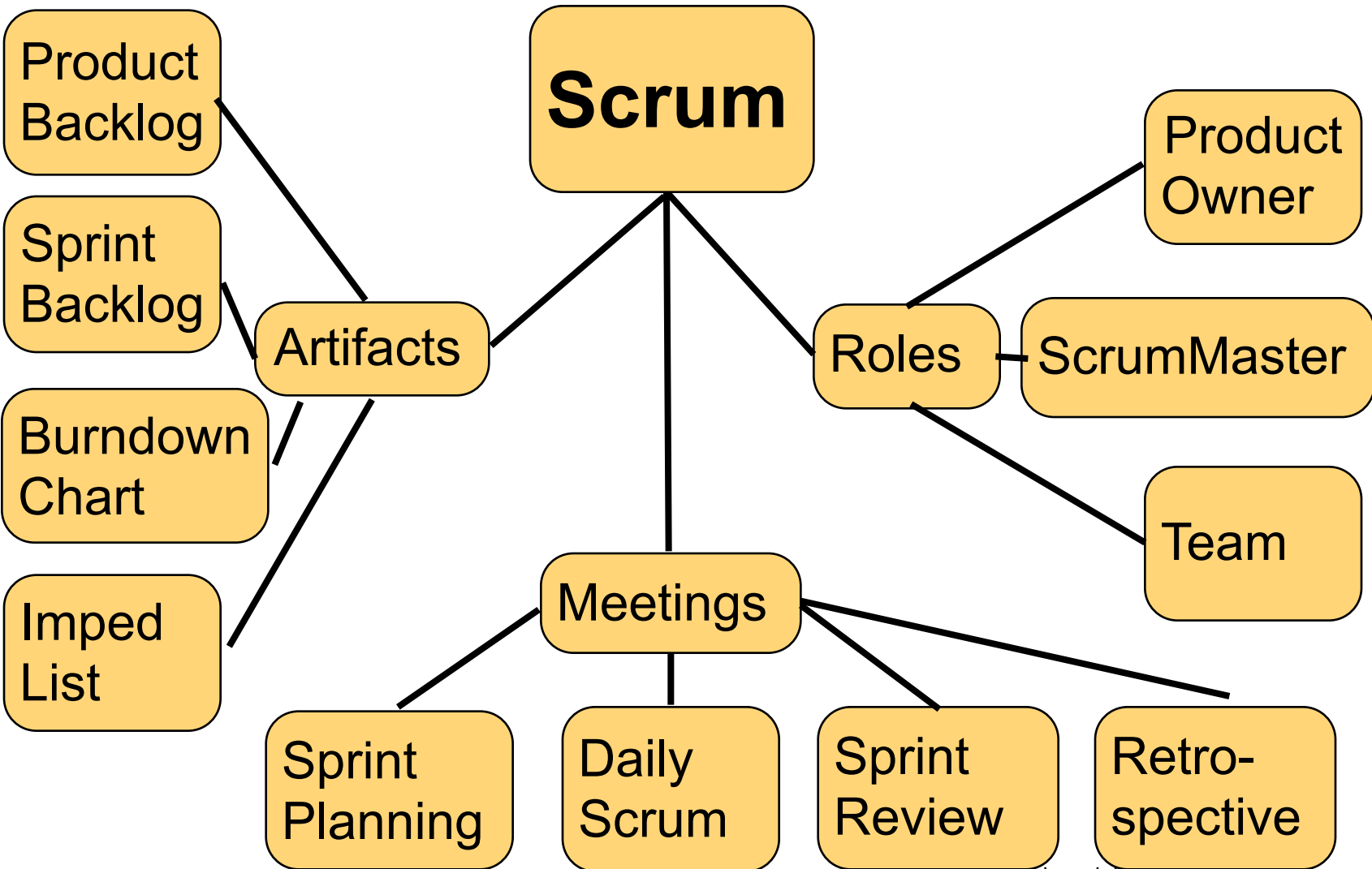
One way to measure ScrumButt

- **Excellent Scrum - annual revenue up 400%**
  - PatientKeeper
  - Others companies I work with in Scandinavia
- **Good Scrum - revenue up 300%**
  - Companies in Scandinavia I can't talk about
- **Pretty Good Scrum - revenue up 150% - 200%**
  - Systematic Software Engineering - 200%
  - Google - 160%
- **ScrumButt - revenue up 0-35%**
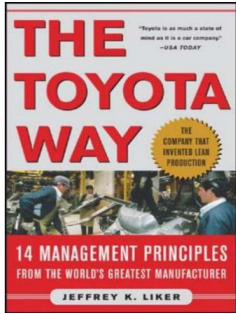 - Yahoo, most companies

every 24 hours

Daily Scrum

Sprint

1. **What did you do yesterday?**
2. **What will you do today?**
3. **What got in your way?**

Sprint Backlog

Selected Product Backlog

New functionality is demonstrated at end of sprint

Product Backlog: Emerging, prioritized requirements

Vision: Anticipated ROI, Releases, Milestones

Scrum Flow

Scrum is a Simple Framework

Scrum

Product Backlog

Sprint Backlog

Burndown Chart

Imped List

Artifacts

Roles

Product Owner

ScrumMaster

Team

Meetings

Sprint Planning

Daily Scrum

Sprint Review

Retro-spective

Toyota Way: Learn by Doing
Fujio Cho, Board Chairman

- **We place the highest value on actual implementation and taking action.** *Agile Principle #1*

- **There are many things one doesn't understand, and therefore we ask them why don't you just go ahead and take action; try to do something?** *Agile Principle #3, #11*

- **You realize how little you know and you face your own failures and redo it again and at the second trial you realize another mistake ... so you can redo it once again.** *Agile Principle #11, #12*

- **So by constant improvement ... one can rise to the higher level of practice and knowledge.** *Agile Principle #3*

"Anyone who has never made a mistake has never tried anything new." Albert Einstein

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The Nokia Test

1. Are you iterative?

- Sprints are 4 weeks or less
- Features are tested and working by the end of the Sprint
- Sprints start with an Agile Specification

2. Are you doing Scrum?

- You know who the Product Owner is
- There is a Product Backlog prioritized by Business Value
- The Product Backlog has estimates created by the Team
- The Team generates burndown charts and knows their velocity
- There are no project managers (or anyone else) disrupting the Team

Question 1 - Iterations

- **No iterations - 0**
- **Interations > 6 weeks - 1**
- **Variable length < 6 weeks - 2**
- **Fixed iteration length 6 weeks - 3**
- **Fixed iteration length 5 weeks - 4**
- **Fixed iteration 4 weeks or less - 10**

Question 2 - Testing

- No dedicated QA - 0
- Unit tested - 1
- Feature tested - 5
- Features tested as soon as completed - 7
- Software passes acceptance testing - 8
- Software is deployed - 10

Question 3 - Agile Specification

- **No requirements - 0**
- **Big requirements documents - 1**
- **Poor user stories - 4**
- **Good requirements - 5**
- **Good user stories - 7**
- **Just enough, just in time specifications - 8**
- **Good user stories tied to specifications as needed - 10**

Question 4 - Product Owner

- No Product Owner - 0
- Product Owner who doesn't understand Scrum - 1
- Product Owner who disrupts team - 2
- Product Owner not involved with team - 2
- Product owner with clear product backlog estimated by team before Sprint Planning meeting (READY) - 5
- Product owner with release roadmap with dates based on team velocity - 8
- Product owner who motivates team - 10

Question 5 - Product Backlog

- **No Product Backlog - 0**
- **Multiple Product Backlogs - 1**
- **Single Product Backlog - 3**
- **Product Backlog clearly specified and prioritized by ROI before Sprint Planning (READY) - 5**
- **Product Owner has release plan based on Product Backlog - 7**
- **Product Owner can measure ROI based on real revenue, cost per story point, or other metrics - 10**

Question 6 - Estimates

- **Product Backlog not estimated - 0**
- **Estimates not produced by team - 1**
- **Estimates not produced by planning poker - 5**
- **Estimates produced by planning poker by team - 8**
- **Estimate error < 10% - 10**

Question 7 - Burndown Chart

- No burndown chart - 0
- Burndown chart not updated by team - 1
- Burndown chart in hours/days not accounting for work in progress (partial tasks burn down) - 2
- Burndown chart only burns down when task in done (TrackDone pattern) - 4
- Burndown only burns down when story is done - 5
- Add 3 points if team knows velocity
- Add two point if Product Owner release plan based on known velocity

Question 8 - Team Disruption

- **Manager or Project Leader disrupts team - 0**
- **Product Owner disrupts team - 1**
- **Managers, Project Leaders or Team leaders assigning tasks - 3**
- **Have Project Leader and Scrum roles - 5**
- **No one disrupting team, only Scrum roles - 10**
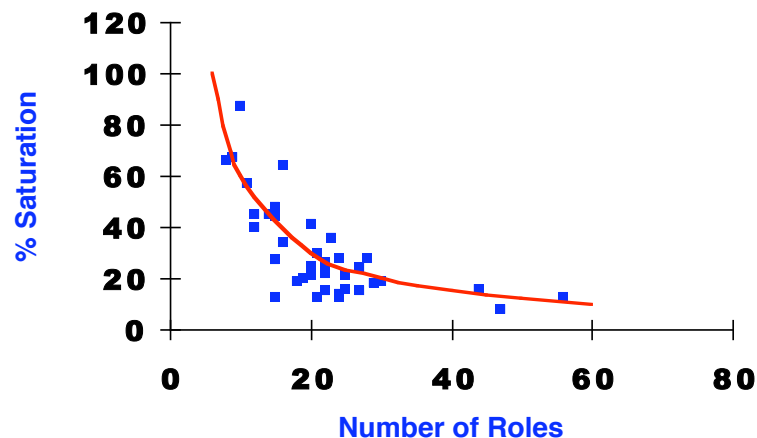
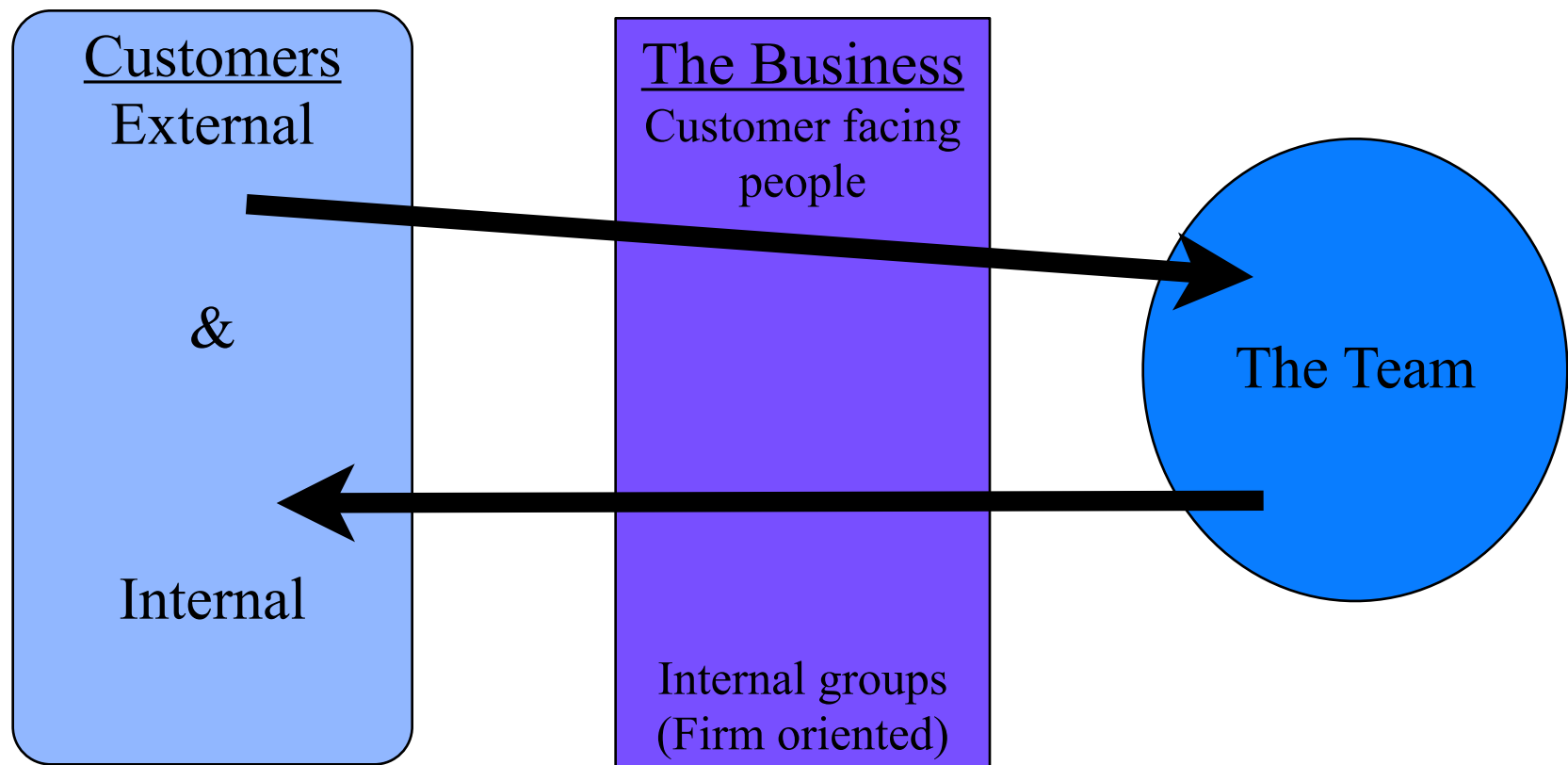Organizational Patterns of Agile Software Development by Coplien and Harrison (2004)

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What's a passsing grade?

- **Probably with any number, you are doing better than you were before**
- **"Change your oil": Raise your score (it will help)**

What the Product Owner does

BV Engineering

Customers
External

&

Internal

The Business
Customer facing
people

Internal groups
(Firm oriented)

The Team

Some problems

- We set up the telephone game

- Customers are not consistent

- The needs of the customers and of the firm are sometimes in contradiction (or at least somewhat antagonistic)

- It is difficult to accurately measure success

Some more problems

- **La donne e mobile**
  - The customer is always changing his mind & who the customers are is always changing
- **Stuff is happening out there**
  - Everything in the environment, both for the customers and for us, is changing
- **Wow, this technology stuff is always changing**
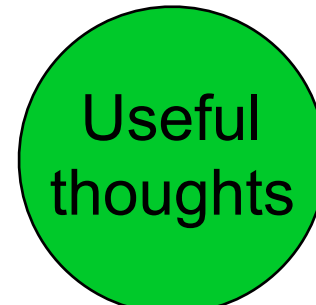 - A brilliant product today is yesterday's news tomorrow
- **"I know it when I see it"**
  - The customers can't tell you what they want
- **"What we've got here is a failure to communicate"**
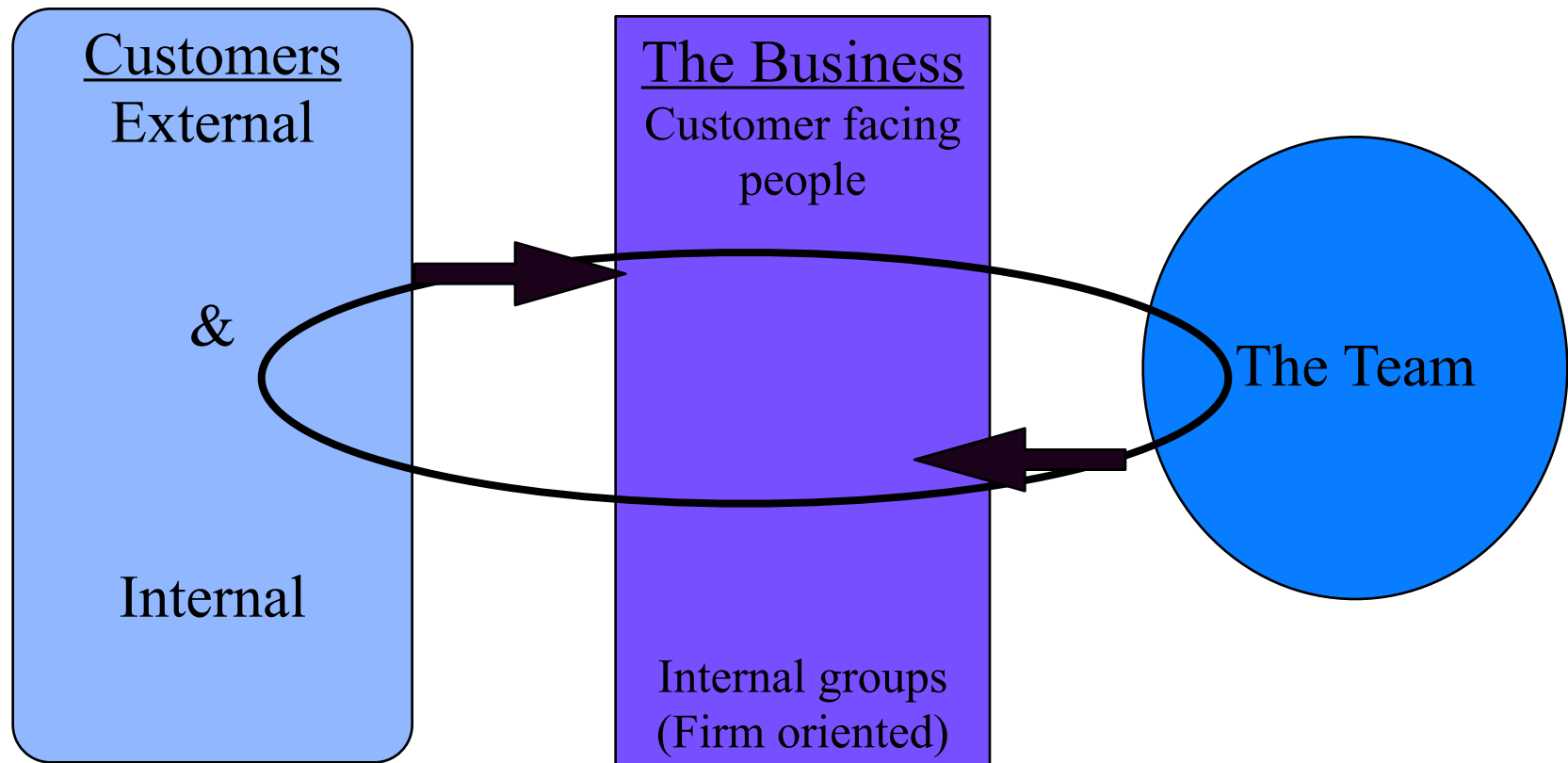 - It is impossible to accurately convey what you want

The other big problem

Thinking in the sky

Useful thoughts

In theory there is no difference between theory & practice. In practice, there is. (Yogi Berra)

To know and not to do is not to know. (A martial arts master)

Is it better this way?

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Some axioms

1. A "technical success" is no success at all
2. The most important thing is satisfying the customer; making money is only a constraint
3. You win by learning faster than the next firm
4. You win with small "scientific" experiments; frequent and fast
5. The numbers never get precise, but that does not mean 'use no numbers'
6. Numbers can be useful, but that does not mean 'human judgment is no longer needed'
7. There is no one best approach to BV engineering

Two opposite approaches

- **Proctor & Gamble: A 'traditional' but highly disciplined approach. "What does the customer want?" "How do we advertise our product?"**

- **Google: A new (or old?) approach. Let's try something, and see if they like it. If so, then we'll build on it.**

Proctor & Gamble

- Full marketing program
- Focus groups, customer interviews, observation, customer segmentation (& lots of other tools)
- Financial (& other numeric) forecasts
- Multiple experiments, high rigor
- Advertising

Google

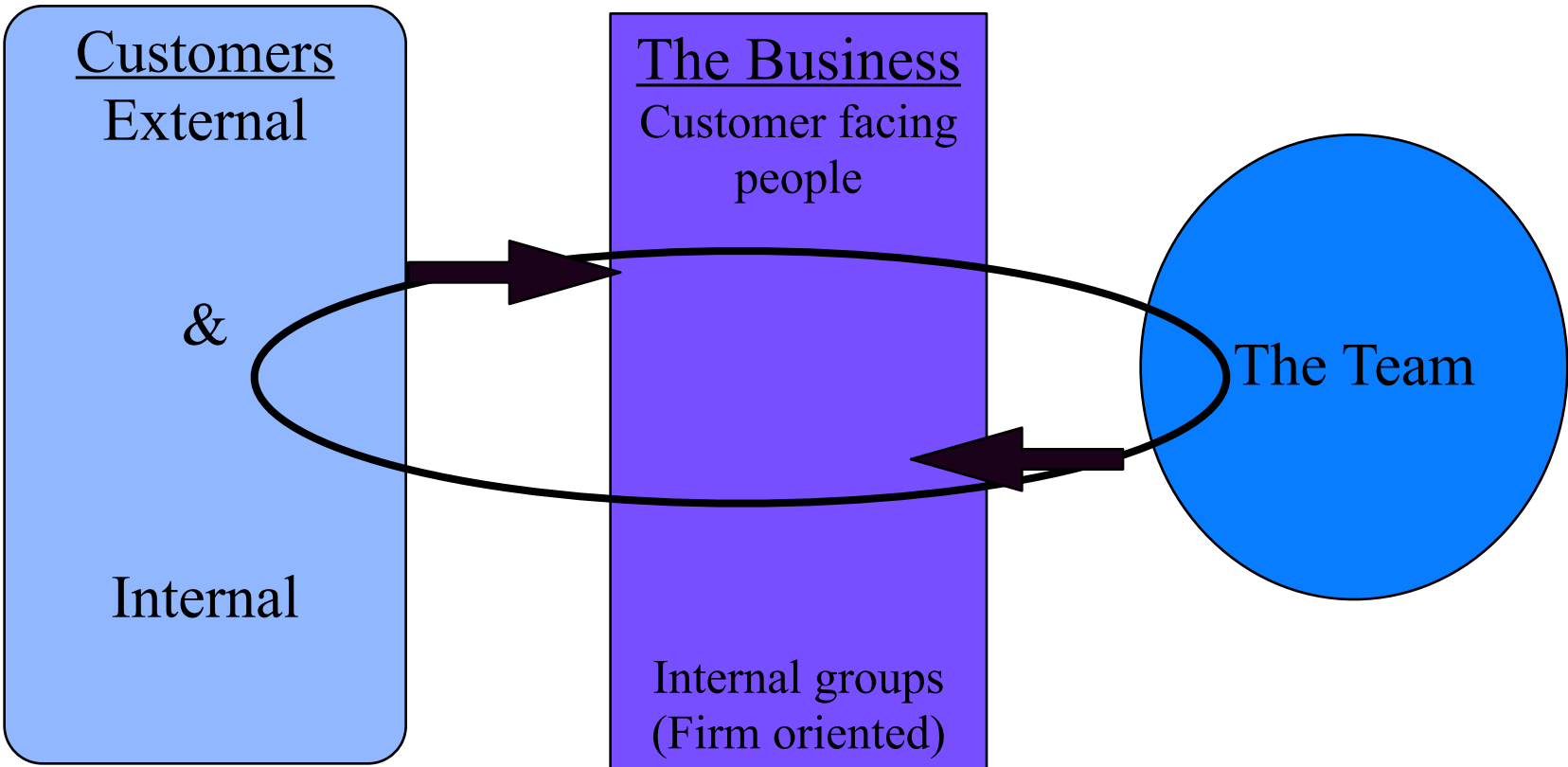- Let employees create what they want
- Get a prototype out there "in the real world"
- See who bites
- Develop product incrementally based on customer input
- Monetize later (after we have a real product that a bunch of people really want)
- Get more "at bats"

Hallmarks of real BV Engineering!!

1. The process is visible and articulated & improved
2. Failures in BV communication are identified and corrected frequently, quickly
3. There is a theory, and a concerted attempt to prove out the theory
4. There is appropriate dynamism and change
5. Business & Technology are partners
6. Success is forecast and also measured after the fact
7. Human judgment is involved (it's not just the numbers)
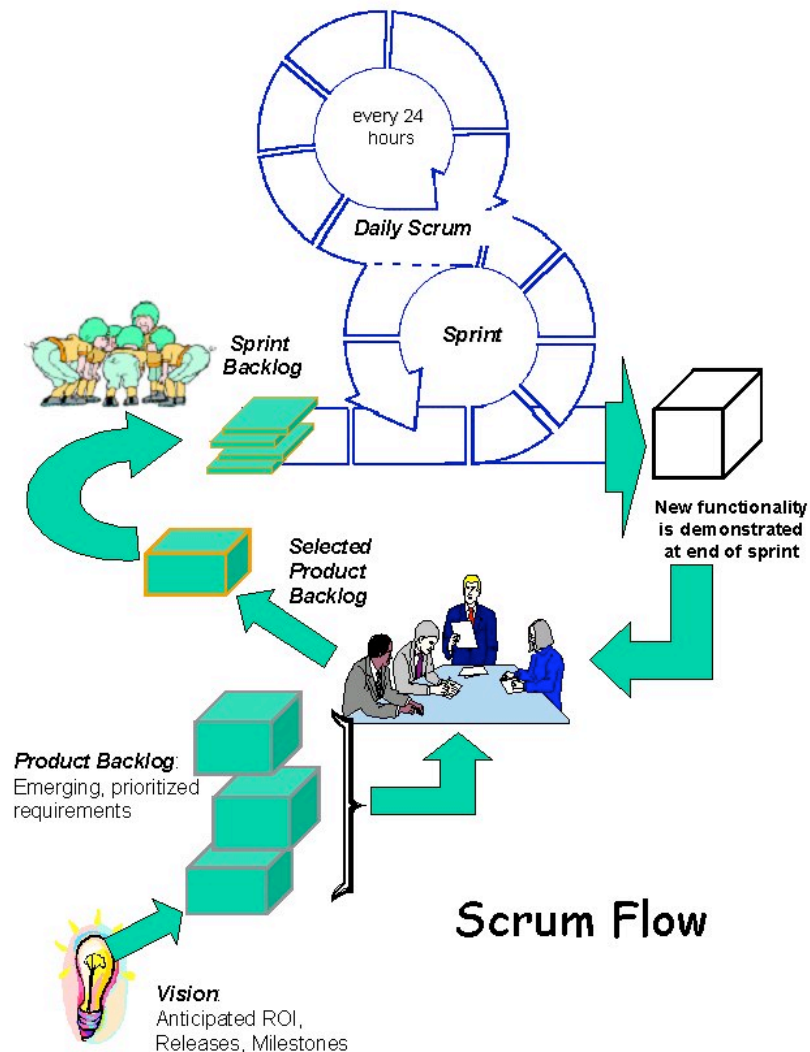
The BV process is visible and articulated

- Do you understand your's, end-to-end?

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The process is always being improved

- Is your process always being improved?
- Does everyone know that?
- What is the approach to improvement?

- Small example: Which stakeholders are involved? Do we have the right ones? Are we making the most use of them? Are we overweighted in compliance, legal, regulatory input? How good is our process of engaging them, and getting the most with the least effort? Are we creating knowledge just-in-time?

Where do you check for communication failures?

And are there other points or methods?

every 24 hours

Daily Scrum

Sprint

Sprint Backlog

New functionality is demonstrated at end of sprint

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Scrum Flow

Vision: Anticipated ROI, Releases, Milestones

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A theory, that is being proved out

- Is the theory stated as such, or is it assumed to be right?
- How it is being proved out?
- What happens when (not if) it is (somewhat) wrong?

Dynamism and change

- **The appropriate amount of dynamism and change will vary by situation.**
- **In general, my experience is that we are adapting too slowly.**

Business & Technology are partners

- **In fact, there is minimal distinction. Anyone can help a partner learn. Can question. Can propose**
  - Remember: There is no technical success
- **The Technologists often know more about the customers than you'd think**
- **Should we talk about the failure modes here?**
- **Everyone on the Team understands what real success would be**

Success is measured

- **1 to 3 key "end" metrics. Identified. Forecast.**
- **Then the real results are obtained.**
  - Perhaps not perfectly, but reasonably
- **And learned from. (Was the product wrong? Was the theory wrong?)**
- **And communicated back to the Team**

Human judgment

- Yes, stuff often happens that makes one question whether the "scientific" experiment was fair

- Yes, one can still have a hunch that the product will succeed later (if not now)

- So, metrics do not absolve managers from tough human judgment about the actuals and other information they get back
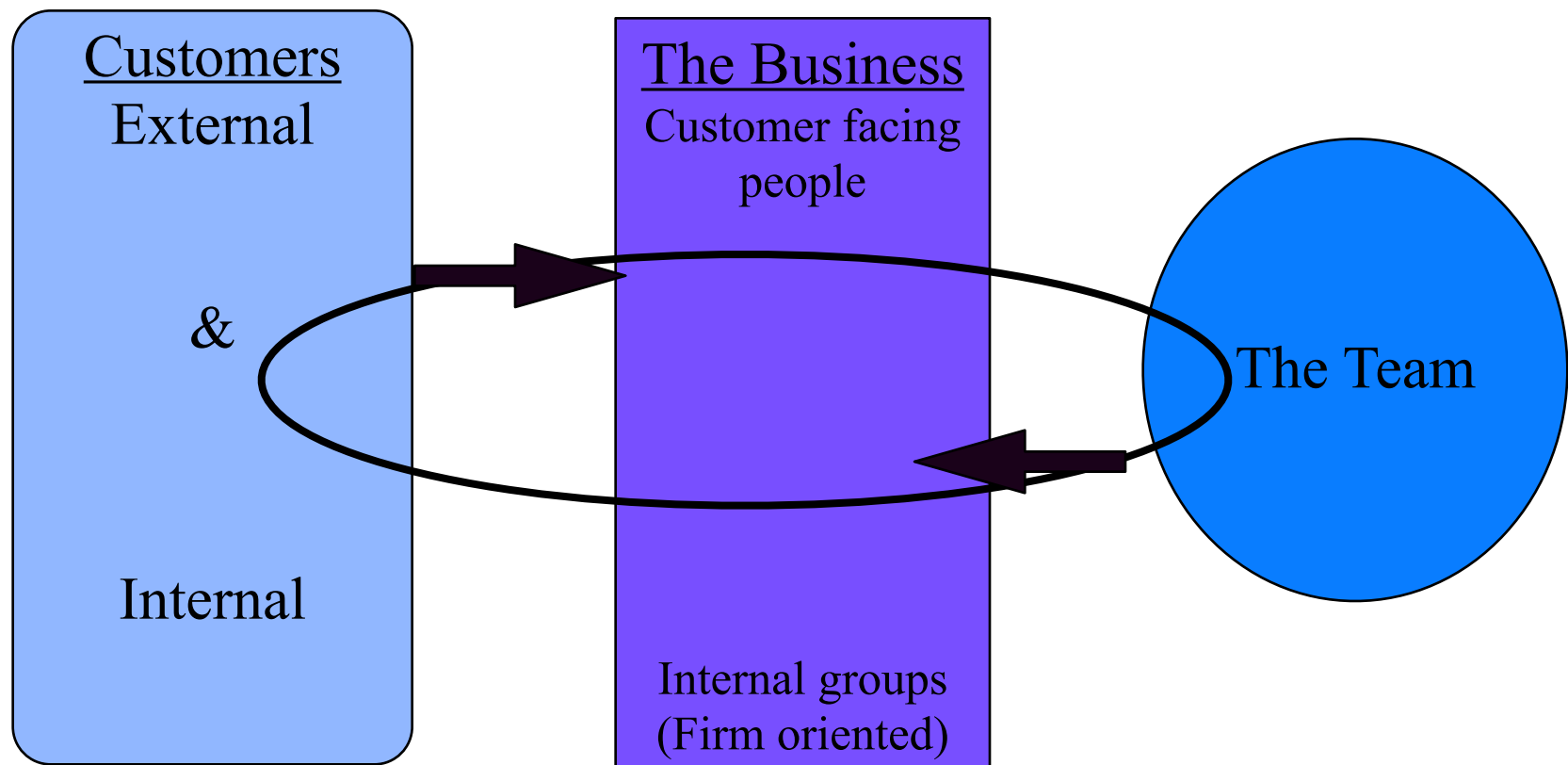
The unbearable lightness of metrics

- **We use metrics (about the past) to take forward-looking action**
- **Metrics help us see how bad we were at predicting the future**
- **Metrics help us learn (perhaps first, by helping us see how much we don't know)**

Multiple Steps are important

- **Some firms focus too much on one or two steps (eg, initial focus group, user story creation, the PO review of completed stories, the product launch)**

- **It is not one play; it is the culmination of plays that wins the game**

- **Examples: Understand the customer better <u>and</u> spend more time to assure that the Team understands the customer's problem better and better**

It is not one play...

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Elements of BV Engineering 1

1. PO Team
2. Product Backlog
3. PB prioritized by BV
4. Priority Poker
5. Story Points (proxy for cost, for cost-benefit analysis)
6. Minimum Marketable Feature Set
7. Reprioritize before each Sprint
8. Increase velocity (remove impediments)

Elements of BV Engineering 2

1. Making the stories smaller
2. Value Stream mapping
3. Kano Analysis
4. Voice of the Customer
5. Having the team live with the customers
6. Pareto chart (eg, of causes of customer problems)
7. Process charts or high level use cases
8. Other Lean, Six Sigma, or TQM tools

Elements of BV Engineering 3

1. **Understanding the importance of minimizing technical debt**
2. **Agile portfolio management**
3. **What quality means to the customer and why it is 'free'**
4. **Just-in-time knowledge creation**
5. **Modifying the BV model frequently (& the values in the model)**
6. **Removing impediments**
7. **Comparing our BV Engineering to theirs**
   - We're different; what does it mean?

Elements of BV Engineering 4

1. **Identifying better sources for good user stories (eg, observation, "living with", experts, user interaction, "prototypes", etc)**
2. **Identifying good user stories**
3. **Fleshing out good user stories with an Agile specification**
4. **Improving the monetization of User Stories (or themes)**
5. **Improving the conversations around the user stories**
6. **Getting better feedback faster**

Some metrics I like

1. NPV (net present value)
2. ROI (return on investment)
3. Faster end-to-end cycle time
4. Increased sales
5. Increased market share
6. More eyeballs (on a webpage)
7. Improved eyeball demographics
8. Reduced costs

More metrics I like

1. Reduced risk (although I prefer if this is made more concrete by being monetized...see underwriting)

2. Net promoter score

3. Any specific metric showing higher customer satisfaction

4. Others??

Lies, damn lies & statistics

- It is not having numbers...
- It is making good use of numbers (that are reasonably accurate)

The End

For now....

Retrospective

- **What do you remember?**

- **What will you act on tomorrow?**

- **What thing(s) will you do to improve your BV Engineering?**