The Lean Mindset

Learning to Surf
Our Two Minds

System 1:
- Fast
- Reflexive
- Responsive
- Expertise
- Intuition
- Habit
- Tacit Knowledge
- Autopilot
- Makes Most Decisions
- Overrides System 2

System 2:
- Slow
- Deliberate
- Rational
- Analysis
- Evidence
- Plans
- Explicit Knowledge
- Manual Mode
- Checks up on System 1
- Basically Lazy

Daniel Kahneman – Thinking Fast and Slow
Working with Amos Tversky
“Instead of learning to surf, conventional organizations try to control the waves! This almost never works.” --- Allen Ward
The Speed Paradox

Time passes….
Build every hour
Deploy Last Good Build
End of Day Atlanta
Deploy EOD Singapore

We have to BUILD??
Building is HARD!
How often do we Build?
How about every day?
Both Speed And Quality

Design Stage
- Model
- Hypothesis
- SBE
- Wireframes

Commit Stage
- Compile
- Commit Tests
- Assembly
- Code Analysis

Acceptance Stage
- Configure Environment
- Deploy Binaries
- Smoke Test
- Run Acceptance Tests

Capacity Stage
- Configure Environment
- Deploy Binaries
- Smoke Test
- Run Capacity Tests

Production
- Configure Environment
- Deploy Binaries
- Smoke Test

UAT Stage
- Configure Environment
- Deploy Binaries
- Smoke Test
- Manual Testing

Environment & Application Configuration Scripts

Victory Stage

ARTIFACT REPOSITORY

Version Control
- Source Code & Tests

Both Speed And Quality

Reports

Metadata

Source Code & Tests

BINARIS

Smoke Test

Manual Testing

Self-Service Deployments

Testers

Configure Environment

Deploy Binaries

Smoke Test

Testers

Configure Environment

Deploy Binaries

Smoke Test

Manual Testing

Configure Environment

Deploy Binaries

Smoke Test

Push-Button Releases

Operations

Configure Environment

Deploy Binaries

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Environment & Application Configuration Scripts

Victory Stage
Can Big Companies Surf?

ERICSSON

$33 Billion
110k+ Employees
Sells ~ 40% of mobile network equipment.
It supplies software and operations, and manages infrastructure build-out projects.

Will supply much of the equipment and software, installation and operation.
1. Manage features, not projects.
2. Decouple releases from development.
   a) Product and technical leadership.
   b) Autonomy and responsibility.
4. Component specialists were consultants
5. Central planning coordinates features
   a) One feature (~3 weeks) at a time
   b) Set date and allow content to vary
   c) Team worked with customer engineer to determine detailed scope

The past was not good enough for the future.

Results:

- Twice as fast
- Higher hit rate
- Significantly higher quality
- More engaged engineers

Mats Lindén
Reliable Promises

The past was not good enough for the future.

Accept uncertainty and learn how to live with it.

1. Manage features, not projects.
2. Decouple releases from development.
   a) Product and technical leadership.
   b) Autonomy and responsibility.
4. Reorganized management jobs
5. Central planning coordinates features
   a) Sets content and allow date to vary
Both Autonomy And Predictability

Managing Complexity
1. Probe
2. Observe
3. Adjust

Achieving Predictability
1. Flow
2. Obstacle
3. Adjustment
10 Years or 10,000 Hours of Deliberate Practice

1. Coach
2. Challenge
3. Feedback
4. Progress
What is a Challenge?

Safety-Focused Goals (Prevention Focus)
- Prevent Failure
  - Is it safe?
  - Find the safest option
- Duty and Obligation
  - Setbacks => redoubled efforts
  - Praise => more relaxed efforts

Aspirational Goals (Promotion Focus)
- Create gains
  - Let’s do it!
  - Explore all the options
- Aspirational Goals
  - Praise => redoubled efforts
  - Setbacks => discouragement

Regulatory Fit Theory*
- People learn from childhood to favor a focus
- Use goals that fit the regulatory focus of the people

Goal Conflict
- Large companies struggle with aspirational goals.
- Startups struggle with safety-focused goals.

*Work of Troy Higgins
Moore’s Law

Cramming more components onto integrated circuits

By Gordon E. Moore
Director, Research and Development Laboratories, Fairchild Semiconductor division of Fairchild Camera and Instrument Corp. Electronics, Volume 38, Number 8, April 19, 1965

If transistors were people

2,300 Average music hall capacity
134,000 Large stadium capacity
32 Million Population of Tokyo
1.3 Billion Population of China

1970 Intel 4004
1980 Intel 286
1990 Pentium III
2000 Core i7 Extreme Edition

Now imagine that those 1.3 billion people could fit onstage in the original music hall. That’s the scale of Moore’s Law.
The Challenge

At Intel, every department is involved in Moore’s Law. Even PDE. (Product Development Engineering) Especially PDE!

From First Silicon to PRQ. (Product Readiness Qualification)

Timeline

1. 2007-2008: Early Agile
2. 2009-2010: Advanced Agile
3. 2011-2012: Beyond Agile

Post-silicon Validation Challenges, by Keshava, Hakim, & Prudvi (Intel), presented at DAC ’10, Anaheim, 2010
**Triple Productivity in Eighteen Months**

**20011 – 2012: Beyond Agile**

Moore’s Law required:
3X More Validation Cycles

Same Funding and Time
18 months to figure it out.

3X Working Group:
Translate 3X to Specific Targets

**Lean Product Development**

Solution sets converge through a series of Integrating Events (IE’s).

www.targetedconvergence.com

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Integrating Event Goals: A = Assignment, F = Funding, C = Convergence, D = Done

Integrating Events Drive Learning
**Goal:** Every two weeks, over a 48 hour weekend, software will be validated by placing 55,000 units in test sockets.

**Feasibility:** Robot specs show it is capable of doing this.

**Coach:** Have you tested it?

**Team:** No…but –

Team decided to test 1500 parts.

Robot broke down after 80….

*It took a year of improvements for the robot to work reliably at the needed volume and speed.*
When do People Perform Best?

Remember times when:
✓ You are deeply engaged
✓ Distractions disappear
✓ Time evaporates
This is called FLOW.

People are Energized by
A Challenge to Reach
Their Full Potential

Mihaly Csikszentmihalyi
(me-high chick-sent-me-high-ee)
**Energized Workers**

- Challenge
- Feedback
- Progress
- Persistence
- Autonomy
- Satisfaction in a Job Well Done
The Perfection Paradox

Five 9's

Resiliency

<table>
<thead>
<tr>
<th>Availability</th>
<th>Downtime per Year</th>
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<tbody>
<tr>
<td>99.999</td>
<td>5.26 Minutes</td>
</tr>
<tr>
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<td>52.56 Minutes</td>
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<td>8.76 Hours</td>
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<td>17.52 Hours</td>
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<td>99.7</td>
<td>26.28 Hours</td>
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<td>3.29 Days</td>
</tr>
<tr>
<td>99.0</td>
<td>3.65 Days</td>
</tr>
</tbody>
</table>

Streetlights and Shadows by Gary Klein,
Questioning Expertise: Cognitive Biases

**Confirmation Bias**
Tendency to seek out or interpret information in a way that will confirm preexisting viewpoints.

**Anchoring**
Tendency to “anchor” or rely heavily on the first trait or piece of information that was observed.

**Loss Aversion**
Tendency to strongly prefer avoiding losses to acquiring gains.
**Overcoming Cognitive Biases**

**Options**
- Teenage Decision-making
  - Weather-or-Not
  - Either-Or
- Widen the Frame
  - Both – And
  - None of the Above
- Develop Multiple Options
  - Learn as Much as Possible
  - Decide as Late as Possible
- Look for Patterns
  - Find the Bright Spots
  - Look for Analogies

**Opinions**
- The Wisdom of Crowds
  - Multi-discipline Team
  - Aggregate Private Judgments
- Widen the Perspective
  - Invite Disagreement
  - Look at the Adoption Chain
- Zoom in – Zoom out
  - Get Close
  - Attain Distance
- Look at Base Rates
  - What are the odds?
  - What makes you different?

*Decisive* by Chip and Dan Heath
Lean Mindset: Balancing Our Two Minds

- Perfection vs. Challenge: The Perfection Paradox
- Focus vs. Exploration: The Optimization Paradox
- Analytical vs. Intuitive: The Design Paradox
- Thoughtful vs. Fast: The Speed Paradox
- Self Interest vs. Community Interest: The Rational Paradox
- Mastery: Adaptability
- Urgency: Cooperation
- Insight:
Thank You!

*The Lean Mindset*

*Book Available Fall, 2013*