



A SPOTLIGHT ON LEAN LEADERS

# Lean at Amazon

## *Reconciling Lean and Hi-Tech*

April 15, 2021

Marc Onetto, retired

SVP Operations and Customer Service

Amazon.com

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**Lean Enterprise Institute**  
**lean.org**

A non-profit education and research institute based in  
Boston, MA, with 32 global affiliates

**Our Mission:**

**Making Things Better By Advancing Lean Thinking and Practice**

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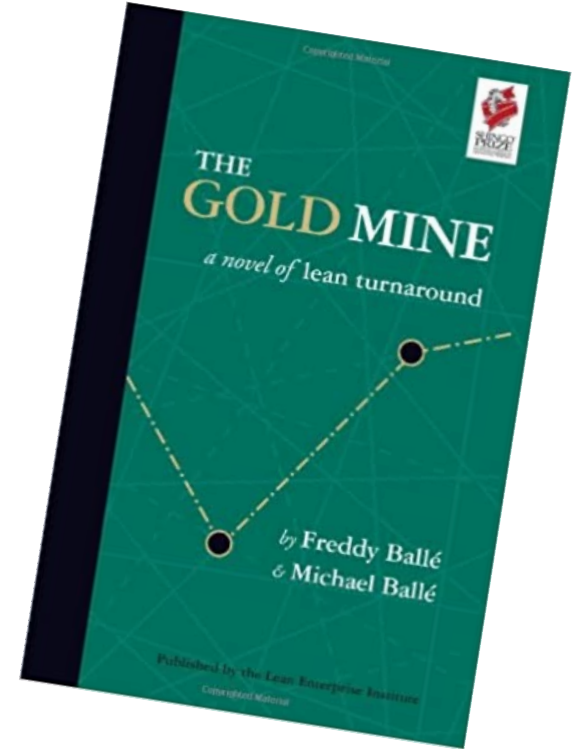
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# About Marc Onetto



Lean Consultant  
Leadership from the Mind and the Heart, LLC

- One of the original Six Sigma leaders at General Electric
- Trained by the two toughest Lean Sensei in the world: Jim Womack and Nakao-san.
- As SVP Operations at Amazon, directly reported to Jeff Bezos
- During his tenure at Amazon, the company grew from \$7B in 2006 to \$75B in 2013.



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# Amazon Basic Stats

- Pioneer of e-retail
- Founded in 1995 by Jeff Bezos as a place to buy books
- Shipped orders to customers in 50 states and 45 countries in the first 30 days of business...from Jeff's garage
- Today \$500M in sales with websites in 15 plus countries
- 150 Million prime members - 2 Million merchants
- “The shop for everything” - 40% of sales outside of US
- E-commerce success drivers: best prices, largest selection, reliable fast delivery
- Millions of consumer customers and many other types of customers: Sellers, Developers, Authors
- Now a leader in Cloud Computing with AWS -- \$50B sales



# Why Did I Join Amazon?

- My first interview with Jeff
- Customer centricity vision
- Lean to bring the vision to the shop floor
- Customer centricity is more than a slogan:
  - Company strategy
  - Walking the talk from the top
  - Daily execution
  - A true company culture
  - Well defined: Best Price, Best selection, Best delivery



# Customer-Centric Business: Prime

- At launch: Two days free delivery in USA: \$79/year
- Air shipment \$15/package, Truck shipment \$1.5/package
- 90% of orders west of Denver required air shipment
- Measure customer reaction. Same customer before and after prime, similar customer with and without prime.
- Accelerated growth, allow opening western USA FCs
- Major Reduction of air shipment
- Good for customers became good for Amazon



# Lean: Bring Customer-Centricity to the Shop Floor

- Fulfillment Centers (FCs) are large factories
- Every package is a finished product. Everyone is different
- Six workstations: Receive, Stow, Pick, Rebin (multi only), Pack and Ship, Two workflows: Receive to Stow, Pick to ship.
- Workflow 1 drives in-stock = Selection
- Workflow 2 drives Delivery promise
- Random Stow for optimizing space
- FC system technology to drive workflow and Lean to eliminate defects and variability



# Introducing Lean Kaizen to Amazon

- Introducing Womack and Shingijutsu to Amazon
- “Insultants” not Consultants
- Extending Amazon existing C2 process
- Driven by Customer Centric metrics: In stock, Delivery Estimate Accuracy, Switcheroos
- Bezos Kaizen: FBA reception workstation
- IT engineers to spend 15% of their time in Gemba Kaizen
- Enrich FC associate work life with kaizen. Respect our people.
- Moving Hi-pot managers to KPO (Kaizen Promotion Office)
- The Amazon “production” system: Amazon Customer Excellence System (ACES)

# Kaizen: Standard Work in Stow Workflow

- Workflow: Receiving station prepare stow carts, associate take cart and stow items in shelves directed by system
- Standard time built in system: 35 minutes
- But actual time very variable between 20 minutes and 50 minutes
- Kaizen work identified root cause: size of items
- Change process to 3 different carts with different item sizes and identical stow time.
- Kaizen result: 20 minutes with 1 minute standard deviation
- Allow identification of abnormalities: scanner charge status

# Lean: Automation & Associate-centric Robotics

- First pass at traditional automation: automatic “rebinning” with flip in chute technology.
  - Failed: it worked for books not for shoes.
- Kaizen made workflow cycle time predictable.
- But main “necessary muda” was long walking distance for associates.
- Needed to invent automation between associate value-added tasks.
- The Kiva robotic solution: bring the shelf to the associate for stow and pick.
- Made associate work safer and less physically challenging

# The Next Steps of Deployment

- Lean in Customer Service Centers
- Kaizen: eliminate wasted time in dialogue with customers
- From 29 enter key clicks to 8 clicks
- Required to rethink customer service system from customers perspective
- Customer Centric tenets: treat customer as friend or family, the computer takes care of the crooks
- *The New York Times* customer Christmas miracle.

# The Andon Cord at Amazon

- Empower Customer Service Associate to stop the line
- System detect repetitive defect and warn associate
- Associate stops the line: Move item from “in-stock” (buyable) to in “Quality lab” (unbuyable)
- Process in place to restart the line: weekly review with SVPs of >2 weeks Andon
- Our first Andon: SKU switch- Hard Drive versus Headphone.
- Eliminated hundreds of thousands bad customer experiences per year
- Bezos loved it

# The Ultimate Example of Lean Hi-Tech

## Customer Order Consolidation

- Two different orders taken same day would arrive in two different packages.
- Muda x 2: Frustration for customers, extra cost for Amazon
- Design new system which allows to consolidate two or more different orders into one shipment and respect faster delivery promise
- Need to coordinate many data in different systems: order promise, inventory availability, FC pick to ship workflow, logistics truck scheduling, long haul and last mile delivery logistics
- Used combination of Lean, advanced API and Machine Learning to succeed



# ACES: Amazon Customer Excellence System

## Lessons Learned and Continuous Challenges

- Synergy between Lean and Hi-tech to eliminate muda
- Major lean concepts such as Andon cord can be extended to different business
- E-commerce Lean Operations and Lean Technology drives Lean Consumption (see Womack article)
- New challenges for Amazon:
  - Lean last mile
  - Lean AWS
  - Lean Alexa
  - ...and the most difficult: engage 1 Million FC associates as COVID restricts management from walking the Gemba.



## Learn more about

- Lean thinking & practice at [Lean.org](https://lean.org)
- LEI's Virtual Lean Learning Experience at [Lean.org/VLX](https://lean.org/VLX)