



LCI Israel's Launch – Jeff Grillo  
Intel Global Procurement Director  
(Facilities Materials & Services )



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# The US Experience of Lean Construction



**Jeff Grillo**

Director, Facilities, Materials &  
Services  
Intel

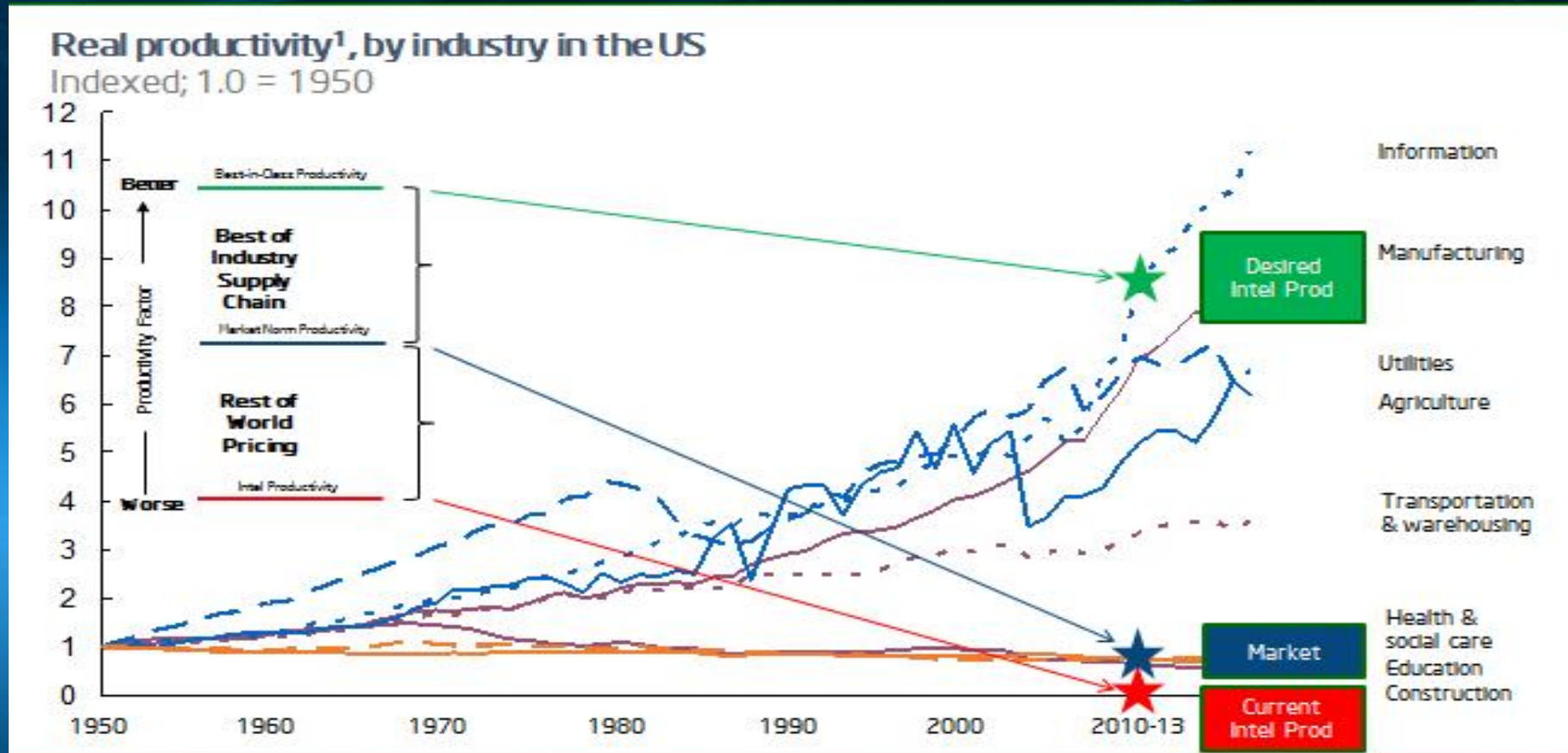
**Brett Hamilton**

Intel Arizona Site Manager  
Harder Mechanical

**Darin Johnson**

Operations  
Corbins Electrical

# The construction industry has not achieved the productivity gains of many other sectors



<sup>1</sup> GDP value-added per employee

SOURCE: Bureau of Economic Analysis (BEA), Hideyuki (2011)

- To move the productivity improvement at the required pace, Owners looked in two primary directions
  - External - What are the industry leaders doing and how can we learn/implement
  - Internal - What can we learn from other sectors

### OWNER SHARING

Universal Health Services  
Sutter Health  
Walt Disney Imagineering  
British Petroleum  
UC San Francisco

### BIC INNOVATION CONSTRUCTORS

JE Dunn - Paperless &  
Collaborative Design  
Bechtel - Vertical Integration  
Balfour - Innovation Center  
Turner So Cal - Productivity  
DPR - IPD  
Boldt - CBA

### CONSULTANT CONNECTS

Howard Ashcraft  
Will Lichtig  
Rex Miller  
Dick Bayer  
Steve McIntyre  
Klaus Lemke  
Rebecca Bettler  
ASU Professors

## External Learning Efforts

### BENCHMARKING

Bain Study  
CURT Owners (P&G, GM, AB)

### WEBINARS

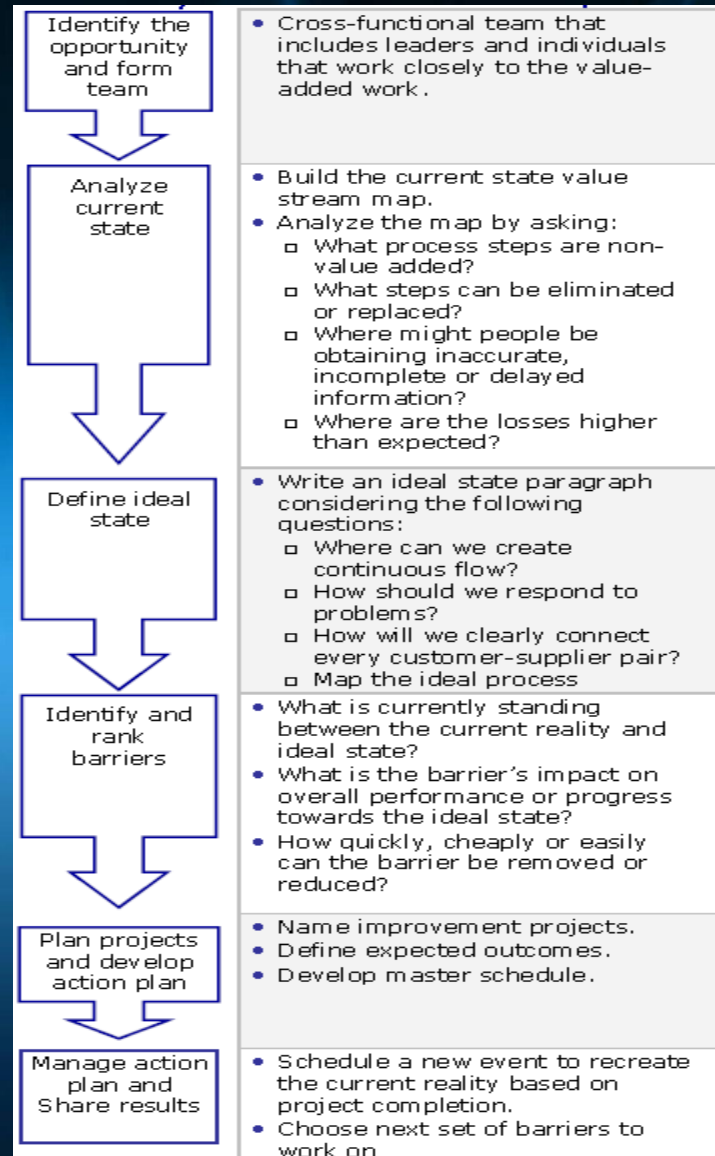
BIA - Bridging  
ConstructPro - GMP  
DBIA - Design Build

### CONSORTIA

CII - Construction Industry  
Institute  
LCI - Lean Construction  
Institute  
CURT - Construction Users  
Round Table  
DBIA - Design Build  
Institute of America

# What We Learned From Our Core Business (Intel Internal Learnings)

- **Process – Measure and Adapt**
  - Establish the measurable baseline for what is possible today
  - Map the Value Stream and measure actual performance against possible baseline
  - Identify variance (risk) and focus efforts to mitigate
  
- **People – Build Trust & Commitment, invest in development**
  - Consistent team membership
  - Trust established via delivering commitments
  - Invest in technology and development
  
- **Aligned Goals**
  - Individual goals directly enable factory output
  - Continuous Improvement targets a way of life



# Intel Lean Journey



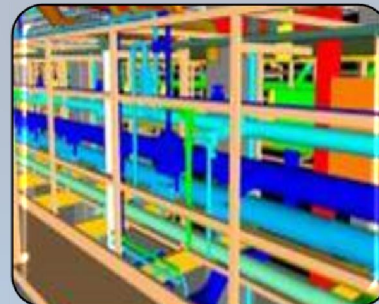
## Learning Org

- Benchmarking
- Standards
- Education
- Industry Consortia
- Project to Project Improvement



## Lean Construction

- Kaizen Events
- Last Planner System
- Target Value Design
- IPD/IFOA
- Transparency



## Technology

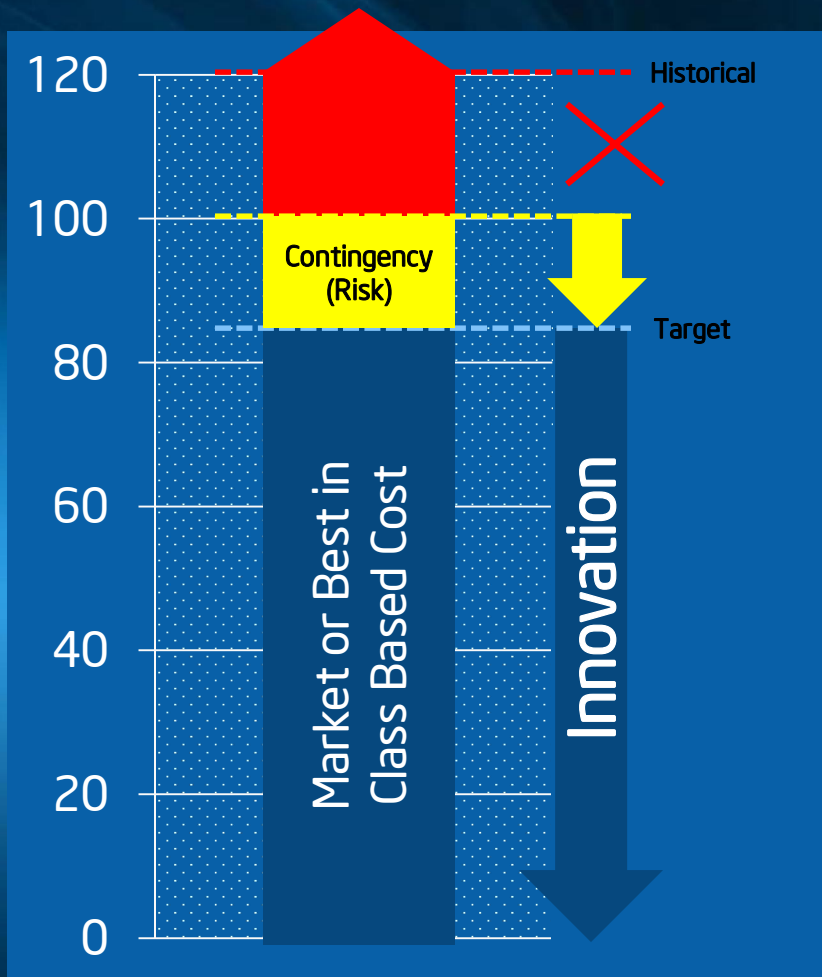
- BIM
- Various Project Management Tools



## Offsite Fabrication

- Sub-fab laterals
- Boiler
- Tool Install

# Collaborative Agreements - Innovation



## All projects now use a collaborative strategy & contract

- IFOA, Consensus Docs Collaborative, etc
- Fixed and reimbursable compensation
- Designer/Builder/Trades on board before Design or earlier (desired state)

## Each leverage the same principles

- Target Cost based upon Market/Best-in-Class
- Innovation plans/commitments to improve cost
- Jointly managed risk, everyone has 'skin in the game'
- Shared savings for improving costs beyond target & for mitigating risk

## Build Partnership & Trust

- Goal/Information transparency (Budget, Schedule,....)
- Aligned method to track, monitor and define 'great'
- Conditions of Satisfaction
- Indirect cost target included owner costs
- Entire team has ownership of key decisions



# Intel Lean/IPD Journey

Partner's View and Learnings

# Previous State

- Contractors only concerned about their own success
- Extremely adversarial relationship with owner (lack of trust)
- Management resources focused on protecting bottom line
- Contract used as a weapon on both sides
- All risk incorporated into pricing
- Individual departments only concerned with their own needs
- Owner's answer to problem was to throw money/people at problems
- Win/Lose environment

# Trust

- Us-we are all in this together and cannot accomplish this without each other
- Tell us what is affordable and we will help make it happen
- Transparency – Everything on the table from all involved
- Transfer ownership of cost, safety, schedule, and quality to those accountable for it
- True collaboration by all
- Access to correct people on Owner's side who helped drive change
- Shared savings
- Win/Win for all

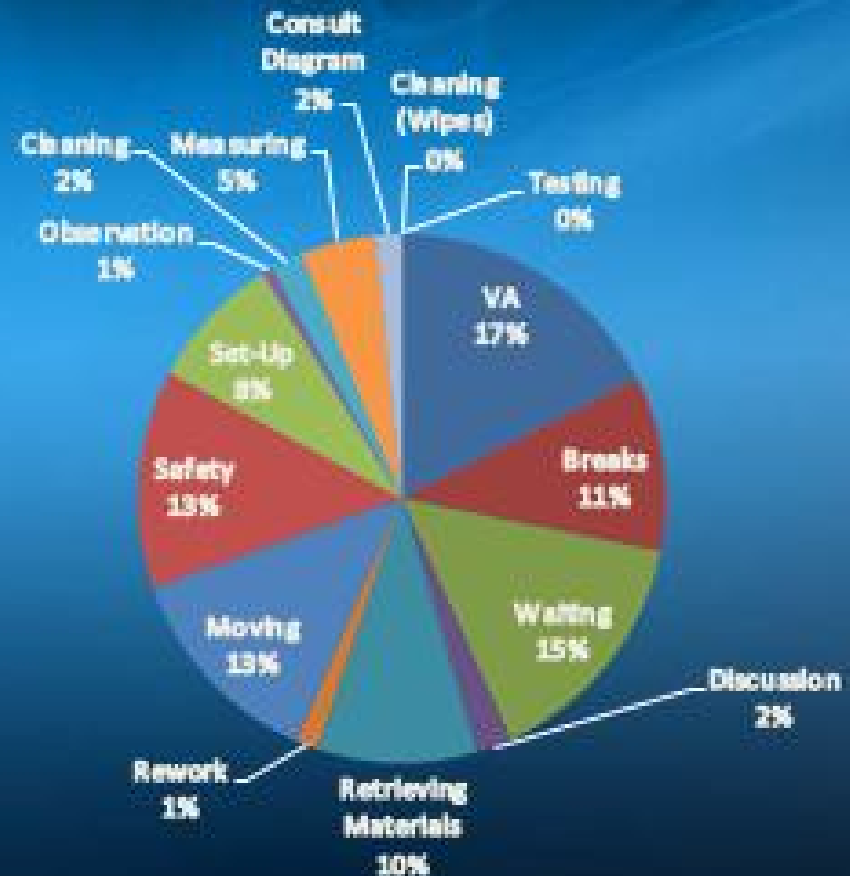
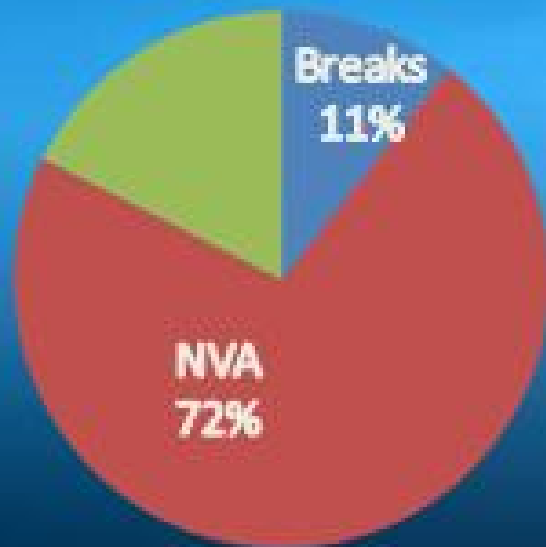
# Partner's Perspective

- IFOA Agreement Drastically Reduced Contractor Risk
  - Transformed Project Culture From Severely Adversarial To Collaborative Teamwork
  - Focused Project Resources on Innovation and Cost Savings
    - Contractors Collaborated to Share Project Resources
      - Indoor Laydown Space
      - Community Cut Stations
      - Co-location of 3D Modelers
      - Equipment
    - Successful Cost Cutting Methods and Best Practices Shared With Contractor Partners

# Observations

Pre-IPD

Waste Identified



# Summary

- Must find means and methods for better integration – find and eliminate the waste.
- Committing to reduce spending by 30% on all new projects in 2013 and beyond.
- Looking for best known practices.
- Looking for business partners who can bring integration value through the entire supply chain.
- Focusing internally on becoming “Client of Choice.”

# Summary

# Q&A