

The Age of Customer Centric Manufacturing

The challenges are real, how they translate matters, but they're not new

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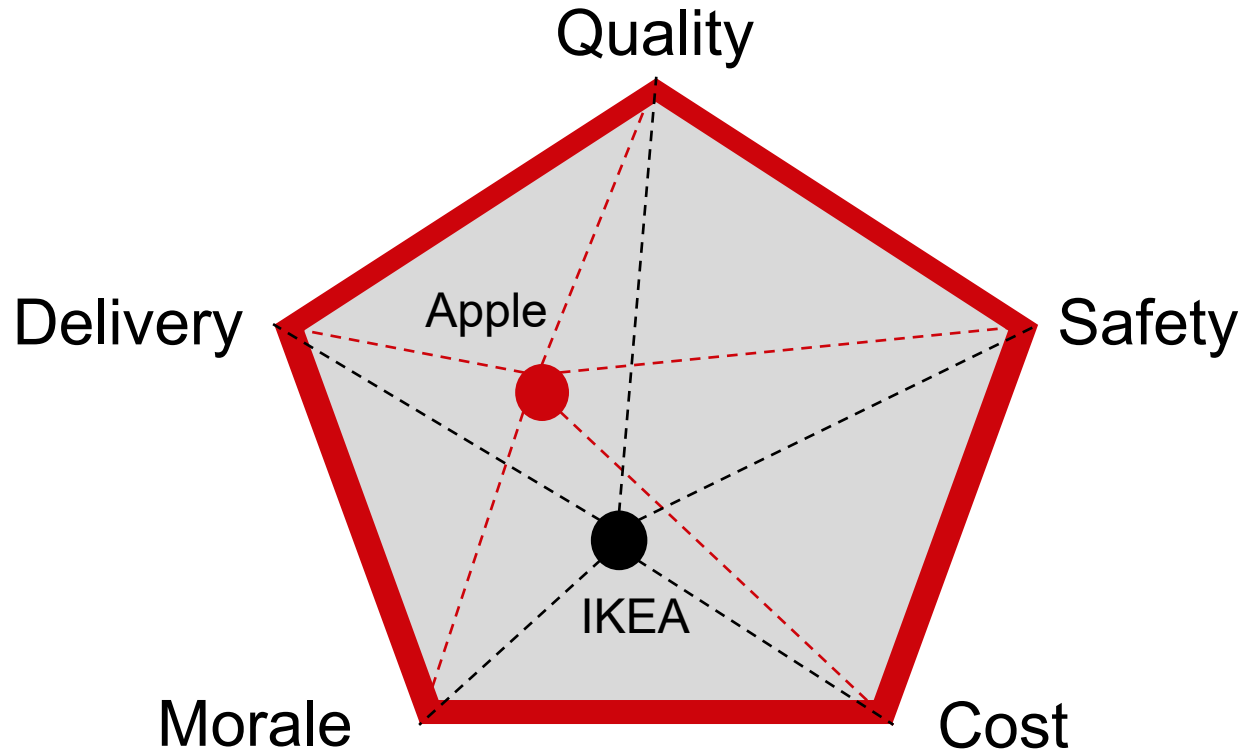
“It is not the strongest of the species that survive, nor the most intelligent, but ***the one most responsive to change***”

--- Charles Darwin

QCDSM: the 5 forces of manufacturing

- **Quality**
 - Manufacturing: quality of conformance
 - Research & Marketing: quality of design/product features
- **Cost**
 - Manufacturing & purchasing: cost of goods
 - Marketing and finance: price and program
- **Delivery**
 - Manufacturing and logistics: traditional customer service
 - Sales and marketing: revenue and profit growth
- **Safety**
 - Manufacturing: employee safety
 - Research: product safety
- **Morale**
 - Manufacturing & purchasing: employees and suppliers
 - Marketing & sales: customers and consumers

Strategy determines the priority order of the five forces



Every decision must align with the forces in proportion to their priority



**In the 1930's the world of
manufacturing changed
forever...**

“A car for every purse and purpose”

--- Alfred P Sloan

...and it's still reverberating today

***“The CEOs of nearly 200 companies just said
shareholder value is no longer their main objective”***

---- CNBC, August 19, 2019



Digital Transformation is about personalizing the business mission



The Economy of One



How do we deliver personalized products from a manufacturing ecosystem designed for scale?

Manufacturing
at Scale



Personalization
of Product

"If I'd asked customers what they wanted, they would have told me, 'A faster horse!'" --- Henry Ford

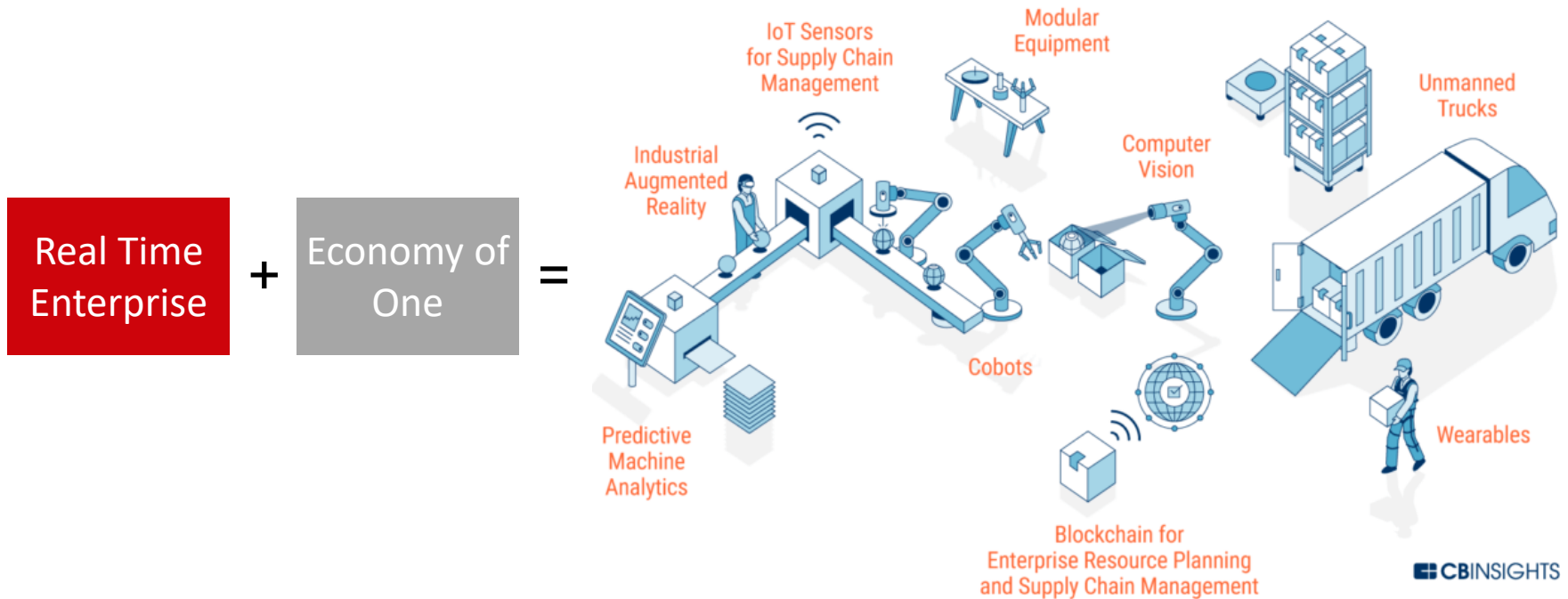


Mapping current trends to the five forces

QUALITY	<i>3D Scanning, AI Enhanced Design, Rapid Prototyping, Collaboration</i>
COST	<i>Skilled Labor Shortage, Utilization Optimization, Forecasting, Scheduling, Predictive Maintenance, Release Management, Licensing, Manufacturing as a Service, Factory in a Box</i>
DELIVERY	<i>Self-serve, A/B Testing, Franchising, Personalized Product, Low Volume Manufacturing</i>
SAFETY	<i>360° Safety, Robotics, AR/VR</i>
MORALE	<i>Supply Chain Transparency, Shift Scheduling, Training</i>

Where is manufacturing heading?

FACTORY OF THE FUTURE



- More data
- Improved flexibility
- Finer control
- Smaller footprint
- Better quality
- Less impact



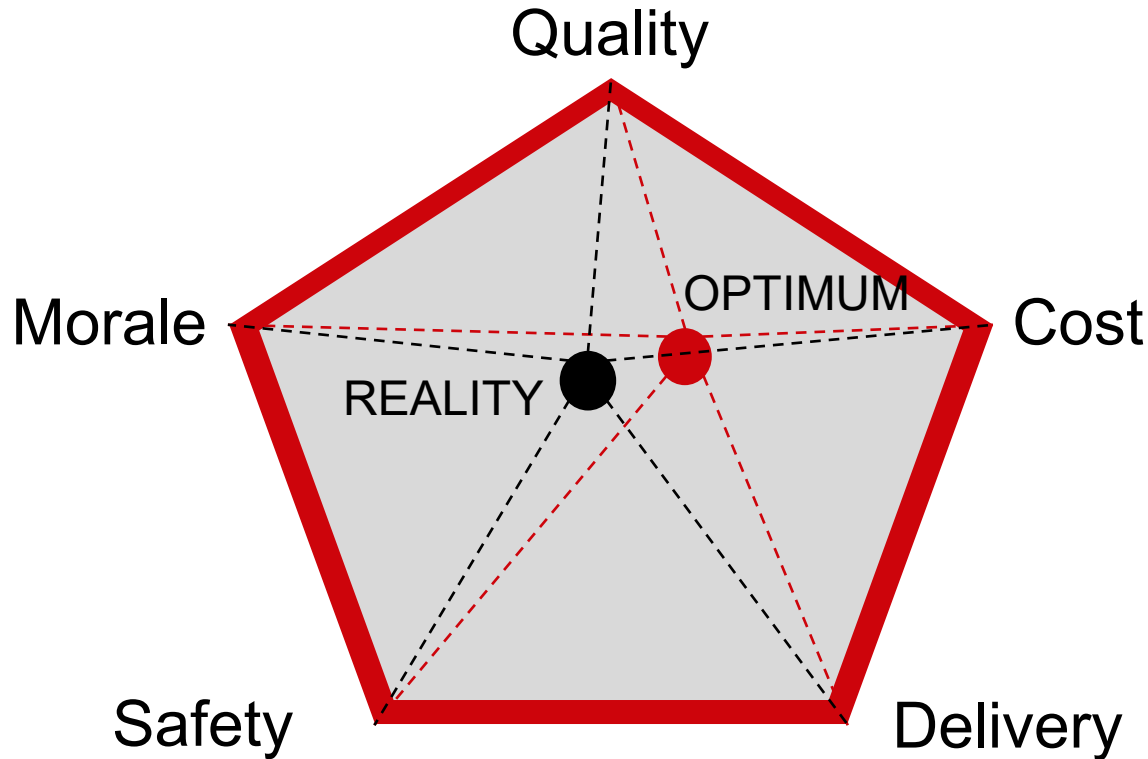
Has manufacturing changed?

1. Tesla's Gigafactory woes (Morale)
2. Kraft Heinz Merger goes astray (Quality)
3. Samsung Galaxy Note 7 recall (Safety)
4. Nike 'Betsy Ross' sneaker hubbub (Morale)
5. GM Electric & Driverless car future (Cost)
6. Apple In China, Can't Move Out (Delivery)



Oh, and one more thing: Supply Chain, the DevOps of Manufacturing

An effective Supply Chain finds the optimum balance of the five forces



Friction arises when participants focus on being optimal, instead of being part of an optimal arrangement

Thank you.