JOE**JUSTICE**

MORALE MAXIMIZES VELOCITY

WIKISPEED™

AGILE BUSINESS INSTITUTE

EXECUTIVE LED AGILE AND DIGITAL TRANSFORMATION

Harvard Business Review: http://hbr.org/product/team-wikispeed-developing-hardware-the-software-way/an/ES1391-PDF-ENG

INCREASE RETURN ON CAPITAL

**Scrum for Hardware**

Paolo Sammicheli
Foreword by Joe Justice

Forbes: http://www.forbes.com/sites/stevedenning/2012/05/10/wikispeed-how-a-100-mpg-car-was-developed-in-3-months/
Forbes: http://www.forbes.com/sites/stevedenning/2012/08/01/transformational-leadership-in-agile-manufacturing-wikispeed/
Forbes: http://www.forbes.com/sites/stevedenning/2012/08/02/can-established-manufacturers-transition-to-agile/
Forbes: http://www.forbes.com/sites/stevedenning/2012/09/24/how-manufacturing-can-learn-from-software-to-become-agile
CNN Money Fortune https://fortune.com/2012/06/18/how-companies-ought-to-train-their-starters/

@JoeJustice0

1

Joe Justice
Joe@WIKISPEED.com

"MORALE MULTIPLIES VELOCITY"
"If you are not growing you are dying"
"An XL project is really 18 XS projects waiting for modular architecture"
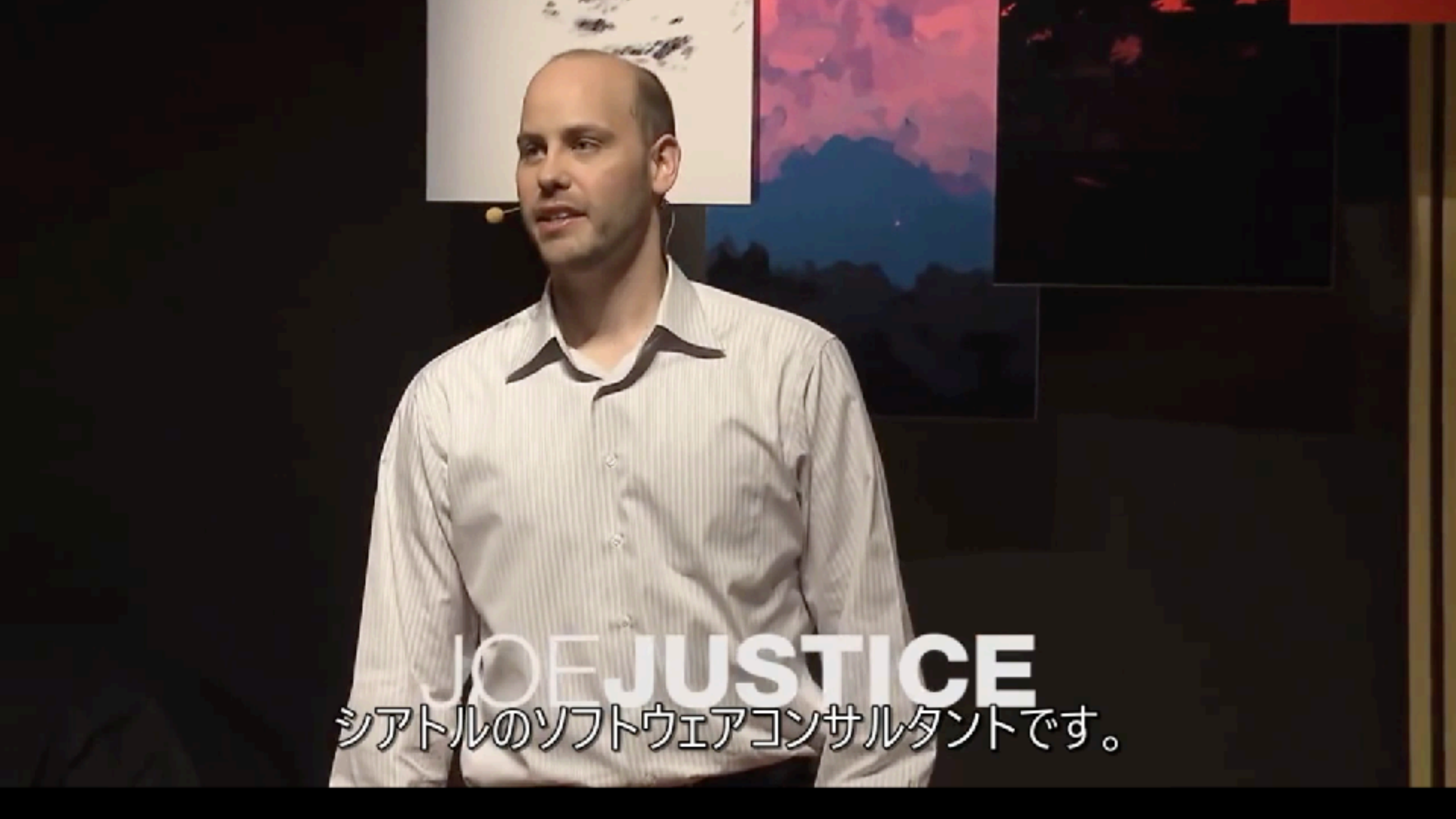
- **Author of Scrum Hardware Guide**
- **Chair of Agile Business Institute**
- **Creator of eXtreme Manufacturing Methods**
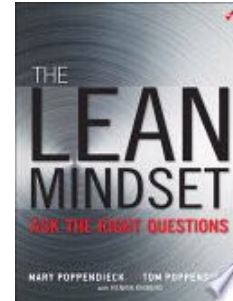
Learning in: Lockheed Martin, Google, Amazon, Microsoft, Boeing, USAF, HP, Tesla, Toyota, MIT, Siemens, Pictet Bank, and 100+ more.

JOE JUSTICE

シアトルのソフトウェアコンサルタントです。

6:14 52°

Opportunities executive teams embraced at Bosch, Toyota, Siemens, and others while leading agile transformations

@JoeJustice0

Agile Automotive

Volkmar Denner

CEO Robert Bosch GmbH

"For Bosch agility is crucial, it allows us to adjust to the increasing speed of change around us. Agility allows us to remain in a position as an innovation leader."

Akio Toyoda

CEO Toyota Motor Company

"When you look at a product, going to the actual sites, going to genba, what is important is to fuel the change point." Akio Toyoda, CEO Toyota Motor Corporation.

Herbert Dies

CEO Volkswagen Group

"The big questions is: Are we fast enough? If we continue at our current speed, it is going to be very tough."

Elon Musk

CEO Tesla

"Pace of innovation is all that matters in the long run"

@JoeJustice0

Geely's Volvo Cars lays off 1,300 in Sweden as coronavirus slump takes hold

Volvo needs cash in the crisis, just like everybody else

Volkswagen projects the pandemic will drag on, with sales down 15-20%

We Don't Know The Total Effect of COVID19 On Organizations, But We Know They Are Undergoing Organizational Change, Quickly, Right Now
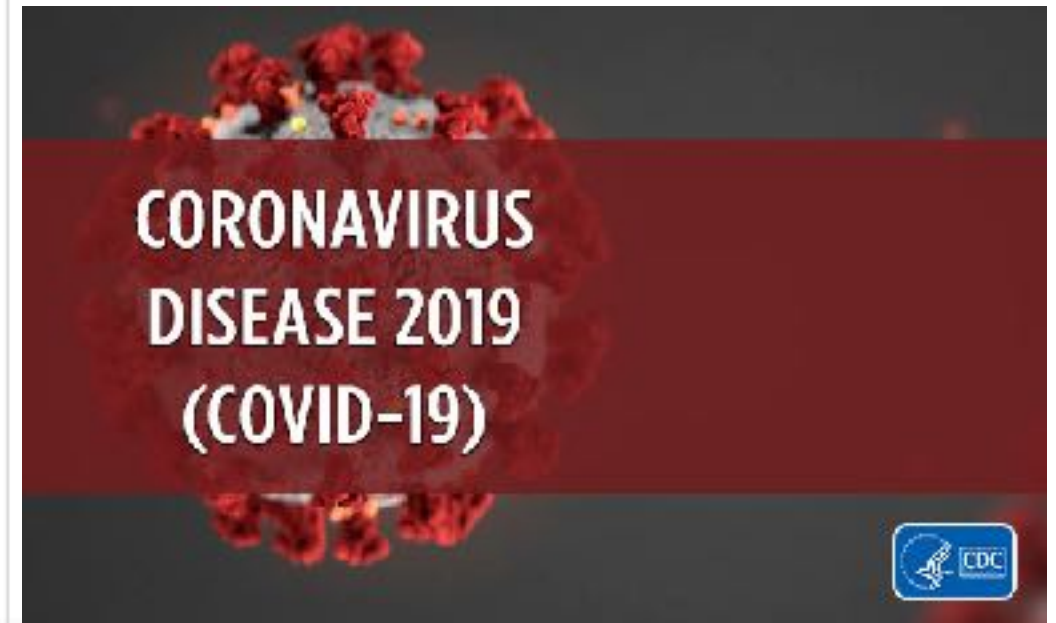
OFFICIAL

Ford, as foreshadowed, posts $2 billion 1Q loss, blames coronavirus
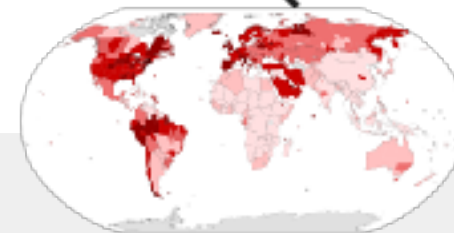
CDC director warns second wave of coronavirus is likely to be even more devastating

Director of the Centers for Disease Control and Prevention Robert Redfield said April 22

CORONAVIRUS DISEASE 2019 (COVID-19)

Source: Washington Post

@JoeJustice0

Building Design and Construction in 3 weeks

Joe Justice
President and Principal at Agile Business Institute
5d · 🌐

Looking great. Modular and re-deployable (road legal size or smaller) makes for some of the best agility in construction: fastest deploy and iteration (improvement) speeds and can be one of the lowest cost methods too depending on how the design, test, and manufacturing is organized (scrum hardware) and material and tool selection (XM).

Boldt, HGA raced the clock to develop modular health care centers for COVID-19 patients - Milwaukee Business Journal

bizjournals.com

By Sean Ryan – Reporter, Milwaukee Business Journal
Apr 12, 2020, 5:00pm EDT

The call came on March 15, three days into Wisconsin's public health emergency, and the mission was to design and start making modular hospital facilities for people suffering from COVID-19 within three weeks.

https://www.bizjournals.com/milwaukee/news/2020/04/12/boldt-hga-raced-the-clock-to-develop-modular.html

@JoeJustice0

Autoworkers step up to make medical gear despite the risks

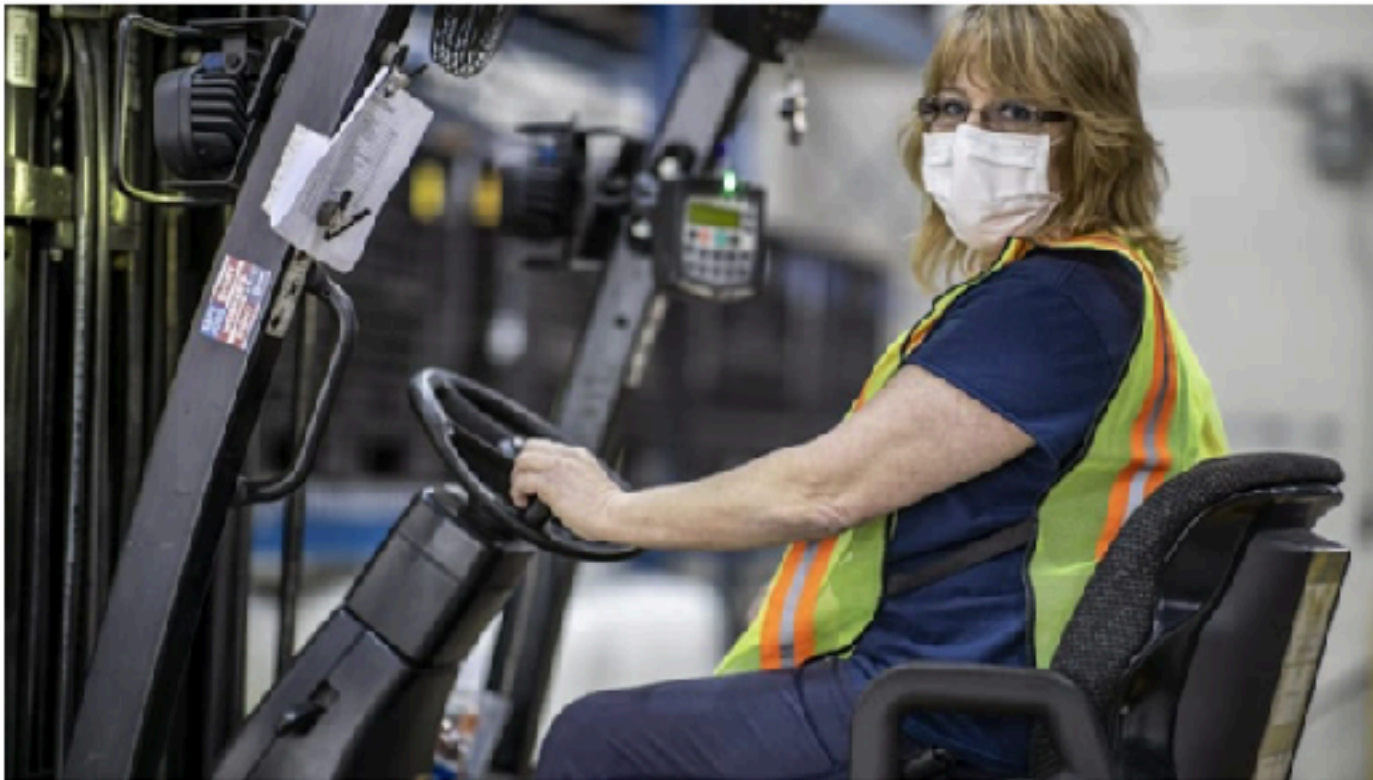## Most could have stayed home but wanted to help

ASSOCIATED PRESS
Apr 25th 2020 at 9:00AM

1 comments

Agile Mono-tasking: Manufacturing with just one project is really fast

- GM: Idea to mass assembly in 3 weeks. Goal 30k units by August.

- Ford: logistics on-line delivering essential gear with 3m.

Agile Coaches can help these teams!

@JoeJustice0

3 weeks from idea to tooled mass production
(with customer feedback!)

"There is a group of a dozen or so amazing people at Toyota North America who have been working tirelessly for the past 2-3 weeks to ramp up production of medical face shields to donate as part of Toyota's #COVID19 response effort. The team includes Tom Wipert, Kirk Barber, Leah Almeling, Dallas Martin and quite a few others

The communications team talked to local hospitals to figure out what was most needed, then our TILT Lab team began rapid prototyping using #3dPrinting. With customer feedback from local hospitals they were able to iterate on the design quickly.   Next they created a 3D printed #InjectionMolding die insert to scale up quantities while more durable dies were being machined. Now they're cranking out over 10,000 per day and have shipped 112,000 to date! They're also ramping up other Toyota facilities to produce more and working on plans for making other critical supplies too." -Mike Tromans, Manager, Toyota USA

https://www.linkedin.com/feed/update/urn:li:activity:6657293219312787456/

@JoeJustice0

Tesla Inc   800.51 USD   154.19% ↑

Toyota Motor Corp   127.86 USD   -7.72% ↓

3 months	**6 months**	YTD	1 year	5 years	Max

200.00%

150.00%

100.00%

50.00%

0.00%

-50.00%

Dec 2019   Feb 2020   Apr 2020

Growing During Crisis

Ventilators: idea to V2 in 18 days
Tesla April 5, sprint demo of rev 2 functioning.
Second rev April 4.
April 3 doctors receiving ventilators
Mar 31 nyc hospitals received ventilators.
Mar 27 committed to give away ventilators.
Mar 26 started delivering bough ventilators.
Mar 25 ventilator in house design began.
Mar 23 California gov confirms ventilators delivered.
Mar 22 50,000 masks delivered to Washington state doctors, and PAPR helmets.
Mar 21 discussion with Medtronic on state of the art.
Mar 20 space x and Tesla working on ventilators.
Mar 19 called hospitals to confirm what they need
Mar 18 evaluated what Tesla and spaceX could build.

You can watch the V2 demo here: https://www.youtube.com/watch?v=zZbDg24dfN0

@JoeJustice0
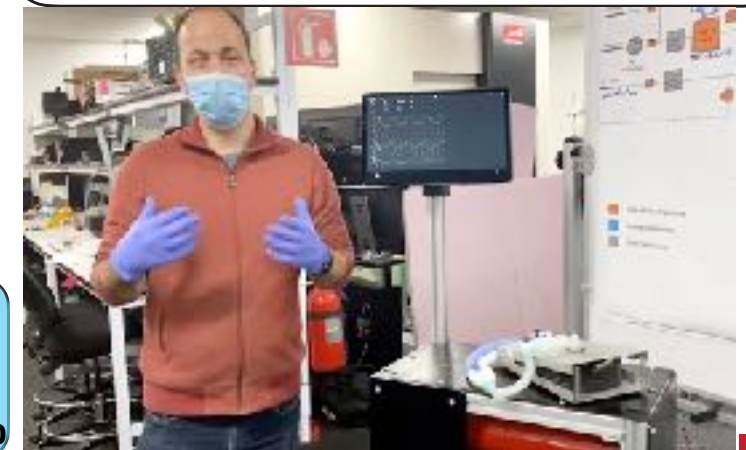
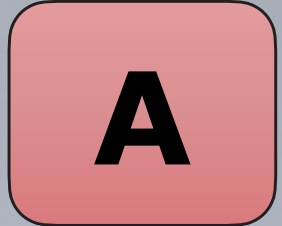# Unlikely but Wildly Successful Anyway

- These projects suffered from a worst case scenario of project management:
  - Changing requirements even late in development
  - No defined processes and tools for the response
  - Lack of clear contracts
  - No agreed plan
- And they still shipped 5200% faster than business as usual with high customer satisfaction. Why?

5200% faster based on a MMC cycle of 3 years, versus 3 weeks idea to delivery

High Customer Satisfaction derived from social media gratitude displays from hospitals and are workers around the world
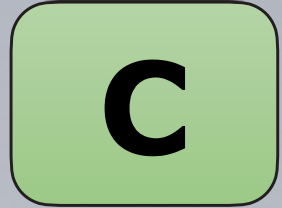
Why did it work?
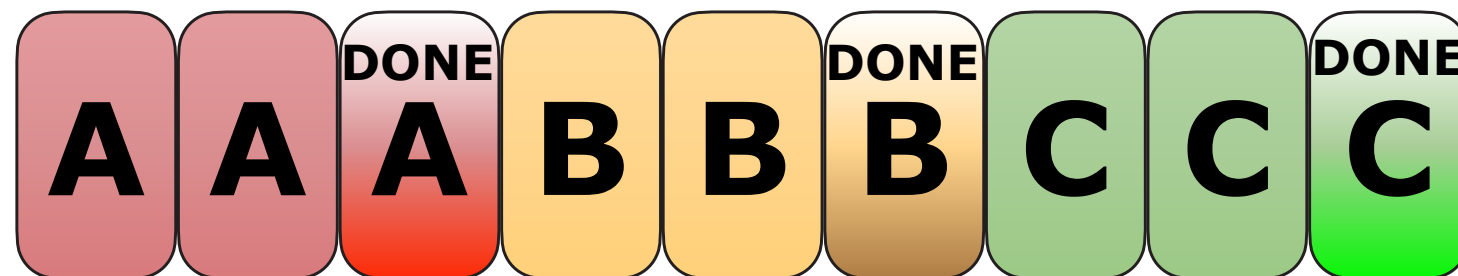# Agile Mono-tasking

Project A

Project B

Project C

source: Joe Justice original research on ~3,500 people and Weinberg's Table of Context Switching Loss

A | B | C | A | B | C | A DONE | B DONE | C DONE

0 January 1 February 2 March 3 April 4 May 5 June 6 July 7 August 8 September 9

A | A | A DONE | B | B | B DONE | C | C | C DONE

A 500% FASTER
B 250% FASTER
C 167% FASTER

@JoeJustice0

Solution

- The emerging solution seems to be working in isolated, autonomous small teams
  - Agilists have decades of skill optimizing this
- Remote shift change meetings
  - The Scrum of Scrums and MetaScrum patterns by Jim Coplien seem to be the most effective template to coach here
- Increasing production by reducing handoffs, cross-training, and developing "full stack" hardware teams capable of completing and testing entire product modules in team
  - T shaped people in cross functional teams
  - Modular hardware architecture with known stable interfaces and TDD
- These isolated, autonomous teams then prioritize their own shift activities and conduct their own impediment removal
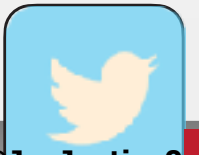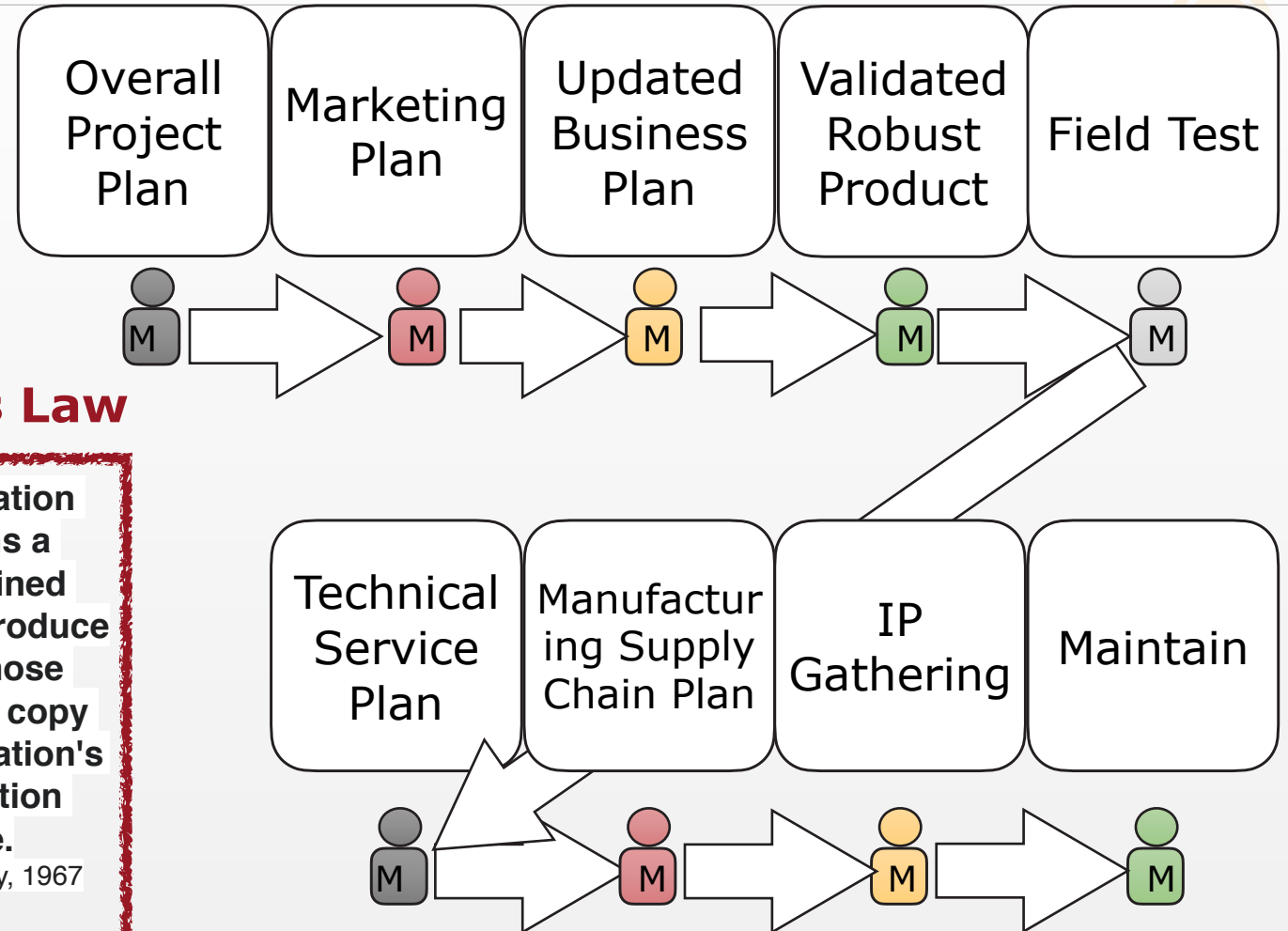 - The Product Owner and Scrum Master role help here

Paolo Sammicheli
Agile Coach, Author
Sienna, Italy

CORONAVIRUS DISEASE 2019 (COVID-19)

Phase Teams

WIKISPEED
AGILE BUSINESS INSTITUTE

Conway's Law

Any organization that designs a system (defined broadly) will produce a design whose structure is a copy of the organization's communication structure.
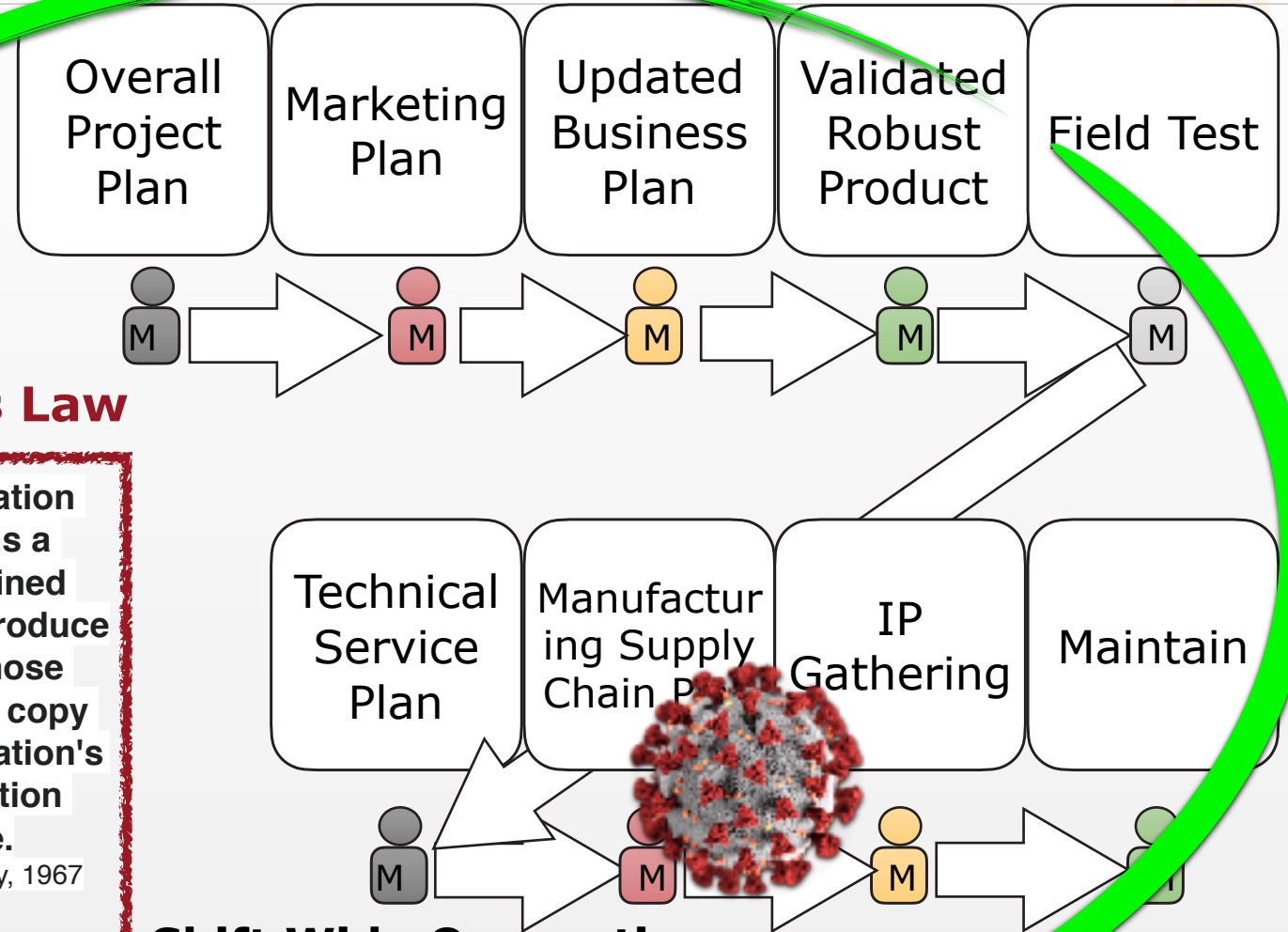— Melvin E. Conway, 1967

| Overall Project Plan | Marketing Plan | Updated Business Plan | Validated Robust Product | Field Test |

| Technical Service Plan | Manufacturing Supply Chain Plan | IP Gathering | Maintain |

Phase Teams

Conway's Law

Any organization that designs a system (defined broadly) will produce a design whose structure is a copy of the organization's communication structure.

— Melvin E. Conway, 1967

Overall Project Plan	Marketing Plan	Updated Business Plan	Validated Robust Product	Field Test

Technical Service Plan	Manufacturing Supply Chain P...	IP Gathering	Maintain

Shift Wide Quarantine
Facility Wide Quarantine
All Work Impacted

Justice's Law

"The modules of the system define the structure of the organization."
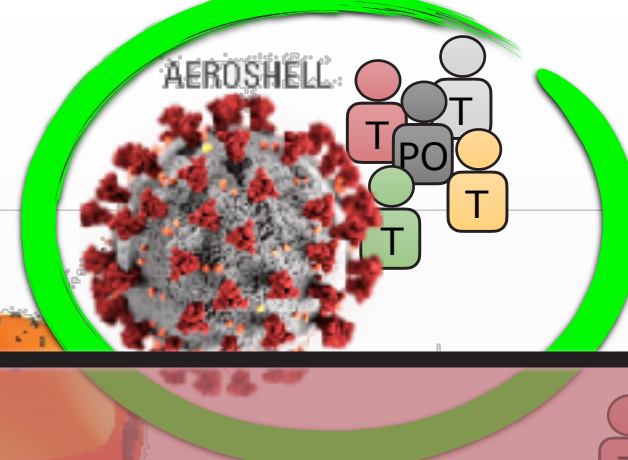
-Joe Justice 2006

Module Teams

$10M (crossed out)

$10M
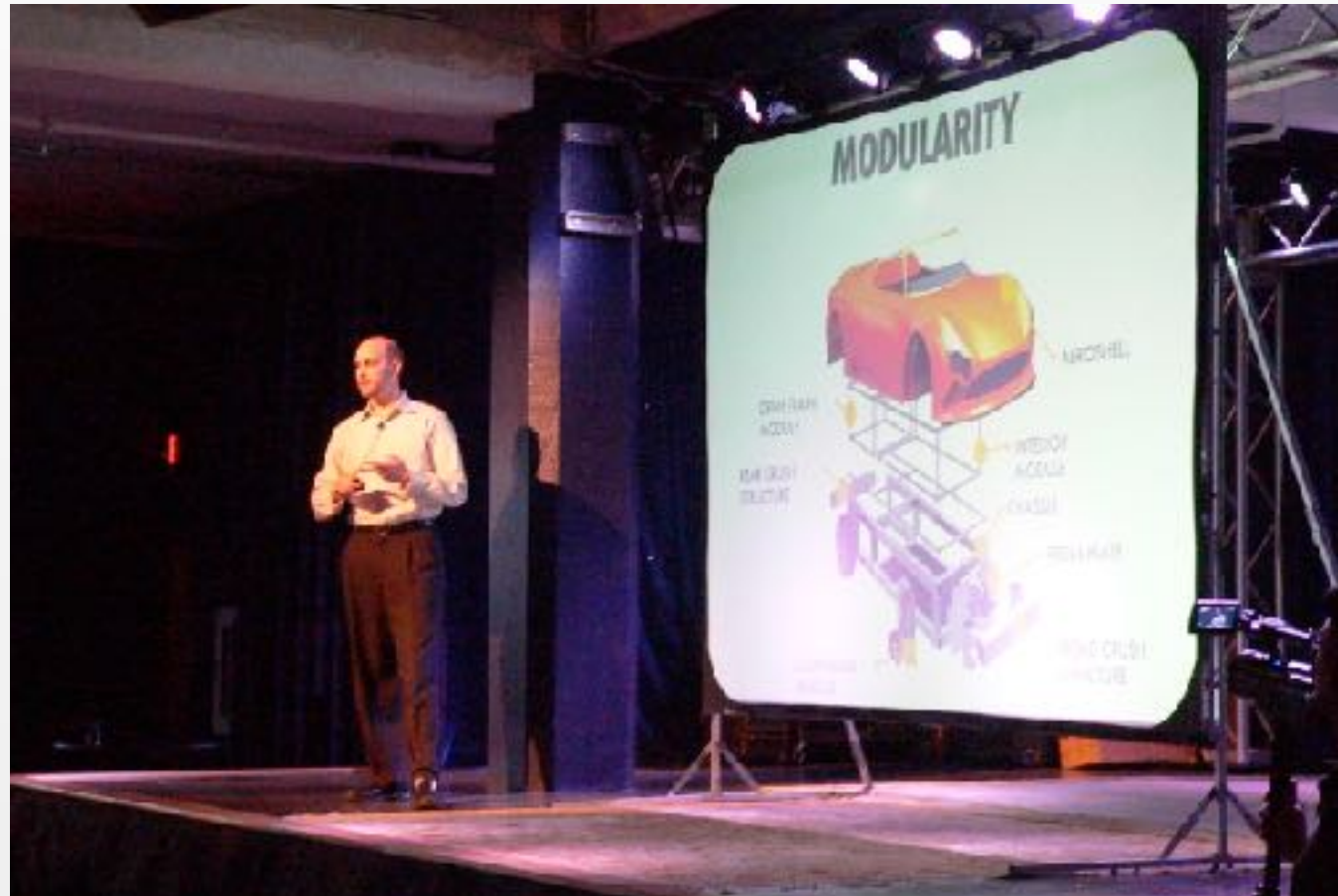
IN A CRISIS
AGILE COMPANIES SAVE JOBS
-Joe Justice

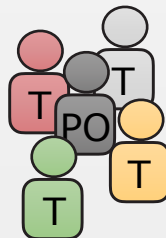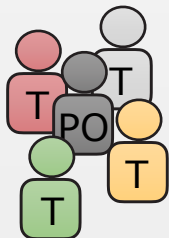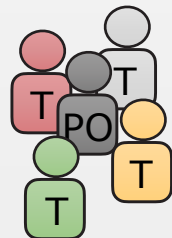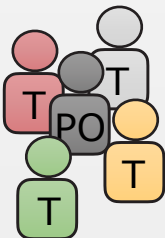**Joe Justice, WIKISPEED Model**

Company As a Service Teams

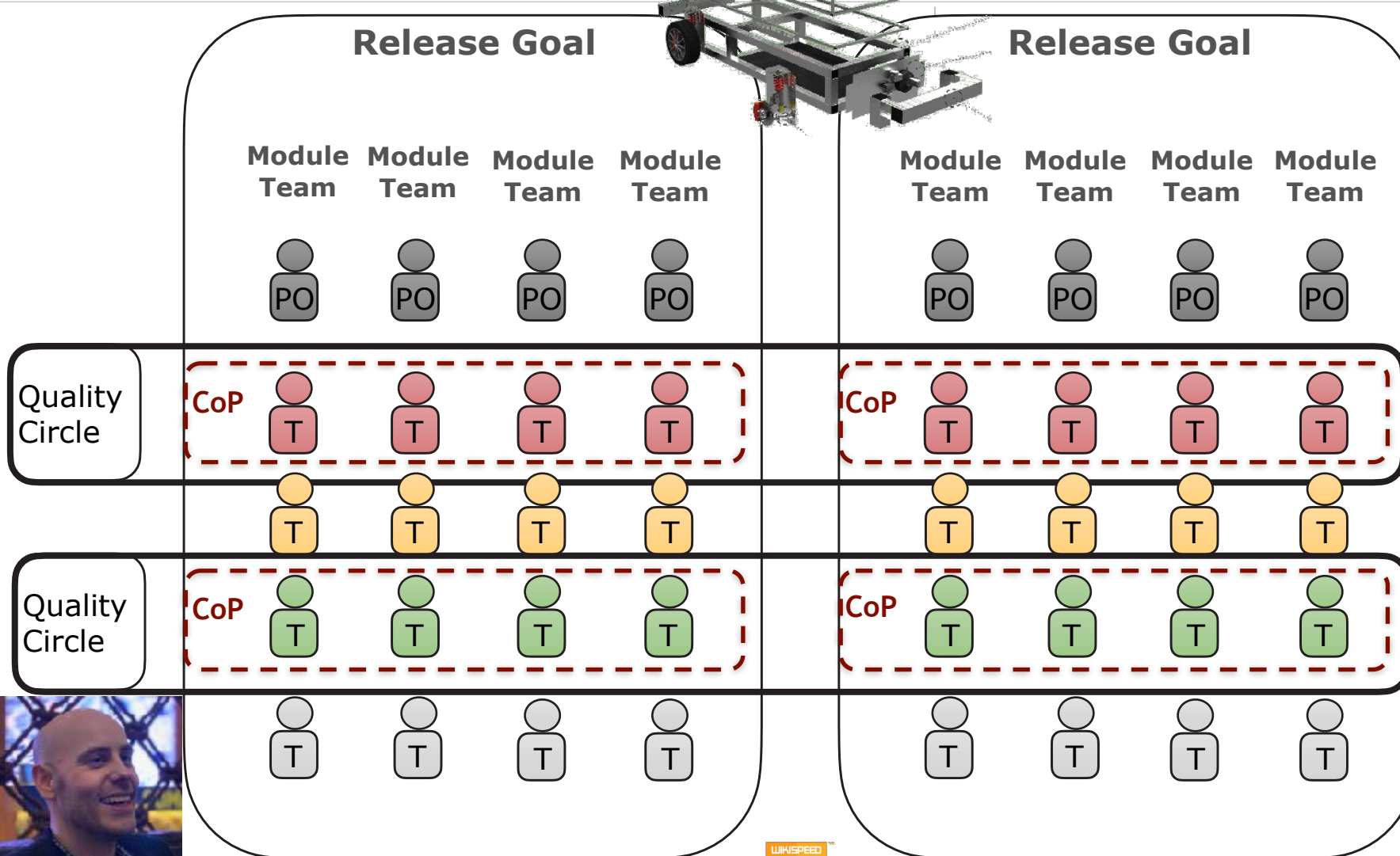| Coffee Team | Facilities Team | Gourmet Team | Funding Team |

DRIVE TRAIN MODULE

AEROSHELL

INTERIOR MODULE

REAR CRUSH STRUCTURE

PEDAL PLATE

SUSPENSION MODULE

FRONT CRUSH STRUCTURE

@JoeJustice0

Group Scrum

Release Goal   Release Goal
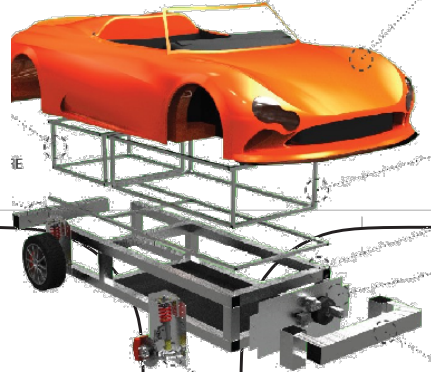
Henrik Kniberg, Spotify Model

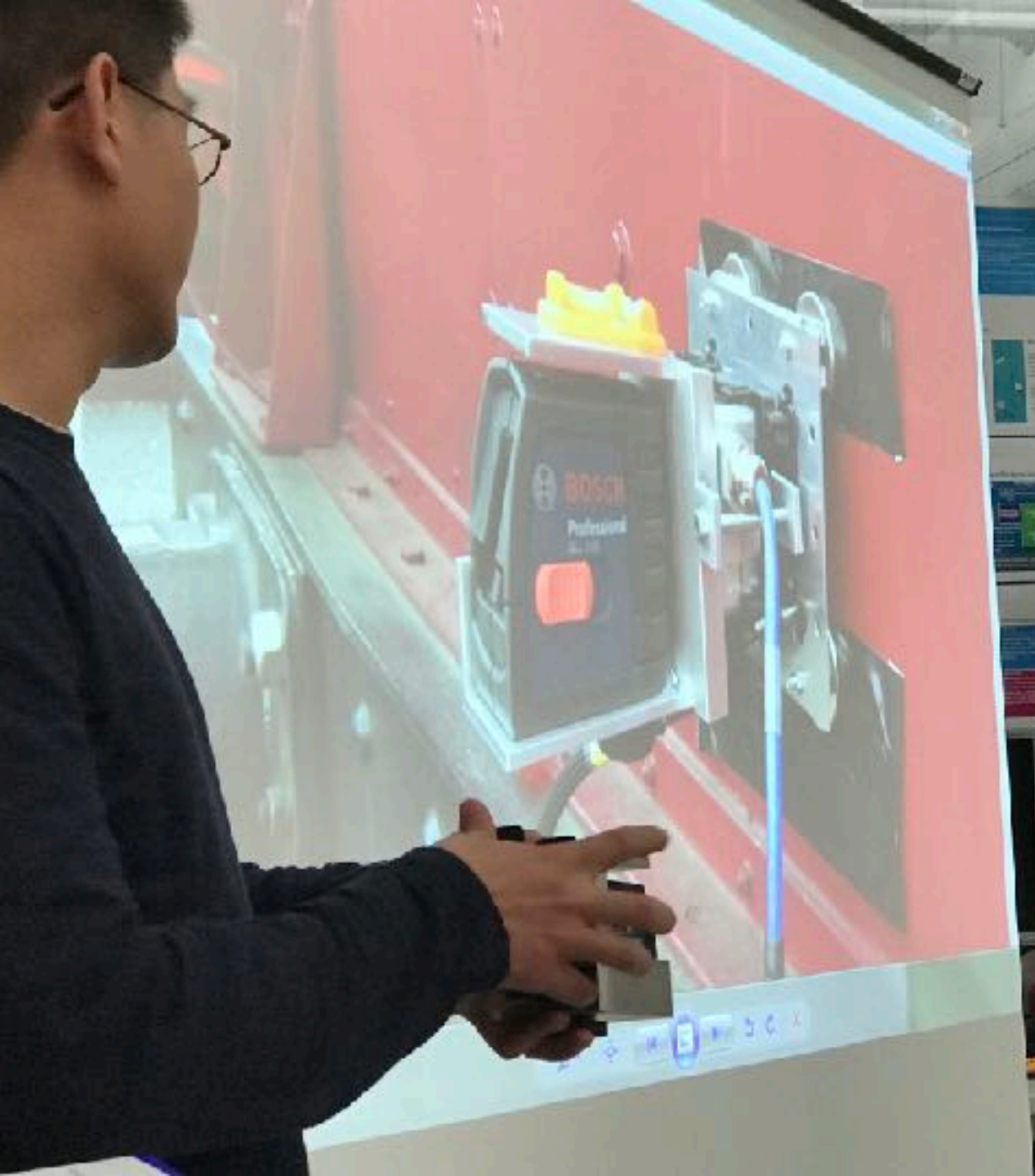**Paul Takken, Tribes & Guilds at ING Bank**
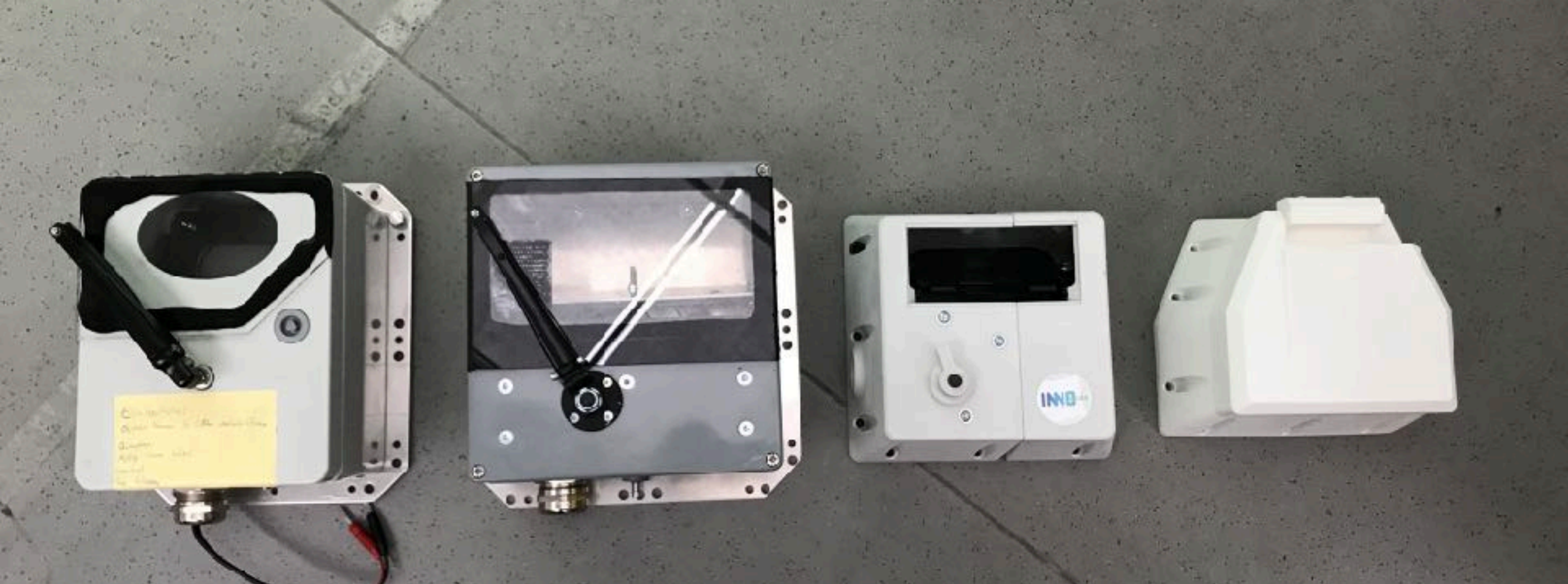
Joe Justice, WIKISPEED Model

@JoeJustice0

"For Bosch agility is crucial, it allows us to adjust to the increasing speed of the world around us. Agility allows us to remain in a position as an innovation leader."
– Volkmar Denner, CEO of Bosch

@JoeJustice0

21

1. Executive session
2. Executive group consulting
3. Product Sprint 1:

@JoeJustice0

5 sprints

@JoeJustice0

Siemens

- Shorten product development cycles: Lab Equipment
  - Hardware CSM all design staff
  - Hardware CSM and CSPO all procurement and contract staff
  - Leadership workshop all product executives

WIKISPEED

AGILE BUSINESS INSTITUTE

@JoeJustice0

Toyota

- Culture Change for faster innovation
- Maintain manufacturing skill, employee care, social and environmental responsibility while obtaining silicon valley speed
- All staff CSM training, most staff Hardware CSM training.
- Executive workshop
- Hired Google employee as CEO
- Next Toyota CEO embedded in group, hardware CSM training.

@JoeJustice0
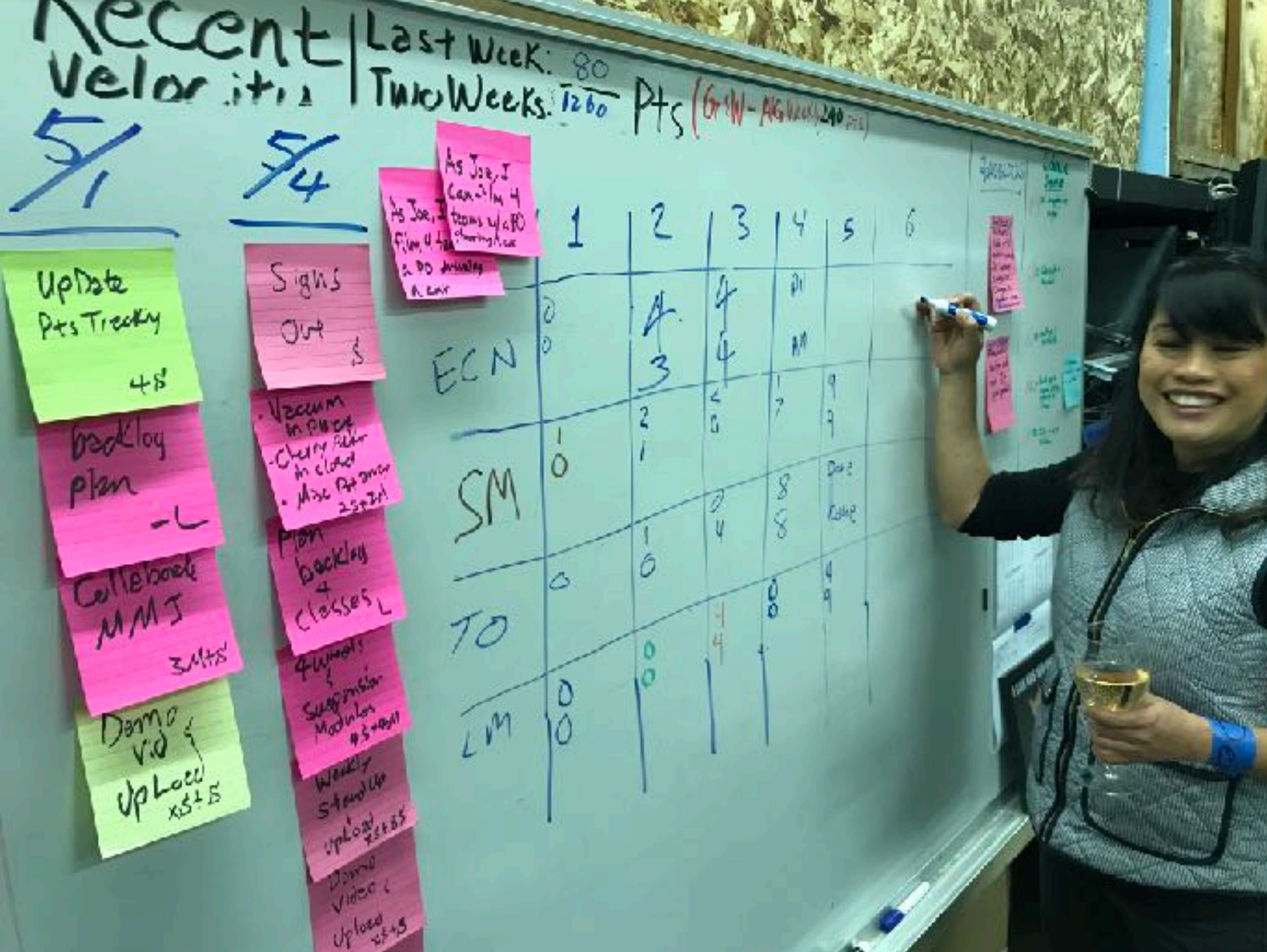
Volkswagen Group

Retrospective with C suite and Board

Create new agile company inside Volkswagen

    Full time executive agile coaches

    "Hire" existing staff into new agile organization

@JoeJustice0

Basically One Big Party That Never Ends

Design, Build, Test: 27 minutes

- If it is a Standard Operating Procedure, automate it.
- Groups of Humans for all the stuff that isn't a SOP.

@JoeJustice0

Jets

How the F35, F22, and SAAB Gripen Build Faster, Cheaper, Lighter with Scrum

@JoeJustice0

Technology to shorten or in-source the supply chain

Joe Justice
President and Principal at Agile Business Institute
1d

This knocks YEARS out of many supply chain feedback loops, increasing the speed of innovation, exciting the engineering staff, and reducing defect resolution time.

Markforged
22,996 followers
4d

When applied to applications such as drill templates, #3Dprinting can be used as a method to fabricate durable #aerospace tooling while providing significant cost and time savings. https://bit.ly/3bgFG6P ...see more

3D Printing Aerospace Tooling

3D Printing Aerospace Tooling | Drill Templates

Drill templates are a common tool used across many industries in manufacturing and are heavily relied on in aerospace tooling. When a drilling operation has to be performed by hand, custom tooling needs to be developed to simplify the process and make it repeatable. A drill template tool makes a cumbersome drilling operation as simple as locating the tool and then drill the hole.

See how 3D printing can be used as a method to fabricate durable aerospace tooling, and when applied to applications such as drill templates can lead to significant cost and time savings. This video provides an overview of the drill template tooling category and then dives into a hands-on example demonstrating design to fabrication to implementation. Throughout the process, the Markforged metal and composite 3D printers are utilized end-to-end to rapidly deploy tooling built to withstand rugged operator use on the shop floor.

Our Website: https://www.markforged.com
Twitter: https://www.twitter.com/markforged
Instagram: https://www.instagram.com/markforged
Facebook: https://www.facebook.com/markforged
LinkedIn: https://www.linkedin.com/company/mark...

Category

Science & Technology

https://www.youtube.com/watch?v=gb66SHmYSPA&feature=youtu.be

@JoeJustice0

JOEJUSTICE

MORALE MAXIMIZES

VELOCITY

WIKISPEED ™

AGILE BUSINESS INSTITUTE

AGILE COVID RESPONSE
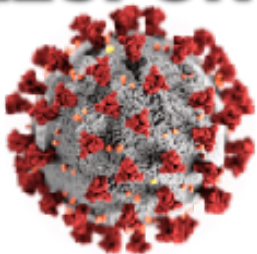
Harvard Business Review

NEXT:

If you own a business:
- identify a member of your board of directors to be a process coach for the business
- Then add process coaches to your teams

If you are the member of a team:
- ask your process coach where you can gain efficiencies in your team

And you are a process coach, or a Scrum Master:
- identify the value stream map of your business, and sharpen your skills at every opportunity

Joe@Justice.fit

@JoeJustice0

@JoeJustice0

.OIKOSOFY
SERIES

A complete masterclass of the best and most thorough Certified Scrum Master class I could teach

Sign-up below to get an email from Joe and be part of the Beta Readers program for the book!

The CERTIFIED SCRUMMASTER

JOE JUSTICE

https://bit.ly/2XKYaqS

@JoeJustice0