MBSE Workshop ’17
Mark Sampson: Chair MBSE Initiative
Troy Peterson: Asst-Director SE Transformation

Accelerate Transformation…Faster

www.incose.org/IW2017
Vision: Integrated MBSE…

Minimum Turn Radius: 24 ft.
Dry Pavement Braking Distance at 60 MPH: 110 ft, 90 ft.
MBSE 2007 to present...
How models have effected his life
Anyone see a Bulbasaur in the room?
Did you see that coming?

• Nintendo value increases $3.65 billion with the launch of Pokemon Go. Nintendo value bigger than Sony
• Revenue tops $342 million (as of Aug.2016) $2.3 million/day in-app purchases
• Estimated revenue at $1.1 billion/year (advertising, Gyms/Pokestops, …)
• Expanding to books, …
He expects things to happen now…

Amazon

- 5 billion items sold in 2014 (per FastCompany 40% 3rd party) 16 million items sold on CyberMonday
- 608 million packages/year, 1.6 million/day 1k/min.* Rumors of them buying cargo planes/trucks to make your Amazon experience even ‘now-er’
- <60 sec of human labor to ship package, longer to open package than to package/ship it to you
- Looking forward to first drone delivered package

How?
‘Chaotic Storage’—find an empty slot and use it
- Flexibility—free space is filled immediately
- Simplicity—no learning curve
- Optimization—optimized random route is more efficient than any organization scheme (SE application here?)

64 million releases/yr
‘Chaos Monkeys’

*Sanford C. Bernstein & Co Report
Industry Transformation/Disruption…

5th Avenue – NYC in 1900

5th Avenue – NYC in 1913

“I do not believe the introduction of motor-cars will ever affect the riding of horses” – Scott-Montague, 1903
Accelerating…

Year 2000 – ASCI RED Supercomputer

The most powerful computer on Earth…

- 1 Teraflops computer
- Surface: 150m² (1,600 sq ft)
- Power consumption: 850 KW
- **Cost: $46 million**

Year 2016 – GPU NVIDIA Drive PX2

Built for Self-Driving Cars…

- 8 Teraflops
- Surface: few cm²
- Power consumption: 80 W
- **Cost: $15,000… and fast going down**

Has deep learning SW, surround computer vision, over-the-air updates, etc…
Internal Combustion Engine (Gas) Vehicle

- Clutch, pistons, gears, driveshaft, transmission, injection,…

2000+ moving parts…

Electrical Vehicle

- 18 moving parts…
  - 100X cheaper to maintain
  - Tesla > Infinite Mile Warranty
  - All new cars by 2025 will be EVs
After a Twitter complaint, Elon Musk announced a rapid fix. Some owners of electric cars have made it a habit to use charging stations at every opportunity, and charging stations are everywhere. Tesla is always full with electric cars, and other electric cars are getting sick of waiting.

One took the problem straight to Tesla CEO Elon Musk last week when he tweeted: "San Mateo supercharger is always full with idiots who leave their Tesla for hours. With minutes, Musk replied: "You're right, this is becoming an issue. It costs us to charge, not parking. We'll act." Six days later he was debating the merits of his solution, others are applauding his fast response to the situation. Richard Zhang did when he wrote on LinkedIn: "Tesla is the future of the auto industry." To remedy the problem, the company is "Introducing a fuel-efficient idle fee increase Supercharger availability," per a Tesla blog post.

"For every additional minute of idle fee." If the car stays, the fee will increase.

An app alerts Tesla owners when a Supercharger is available, but otherwise, they have to call customer service, which is why it was Musk’s prime motivator.

THE NATIONAL HIGHWAY Traffic Safety Administration recently published two recall announcements for Tesla Motors and one from GM. Both are related to fires that could cause fires. Tesla’s fix can be conducted over the air, but it requires software updates and doesn’t require bringing cars to the dealer. For that reason, we are often contacted about Tesla repairs.

Ludicrous Speed is now a $10,000 hardware and software upgrade, though buyers of the P85D will get it at half price.

Here’s how Tesla hits ‘Ludicrous Speed’ 2.8-second 0-60 sprint time is now a $10,000 upgrade away.

JULY 21, 2015

We told you last week about Tesla’s upgrade from ‘Insane Mode’ to Ludicrous Speed, now available on the Tesla Model S, allowing the pure-electric sedan to make the sprint from 0 to 60 mph in just 2.8 seconds. That’s down from a relaxed, gentle 3.2-second launch time.

TEAM OF HACKERS TAKE REMOTE CONTROL OF TESLA MODEL S FROM 12 MILES AWAY

Chinese researchers were able to interfere with the car’s brake, door locks and other electronic features, demonstrating an attack that could cause havoc.
Our environment demands transformation

“Digital is the main reason just over half of the companies on the Fortune 500 have disappeared since the year 2000.”

Pierre Nanterme
CEO Accenture
Where’s he going to work?

Some demographic trends*…

- He’s inclined to entrepreneurial startups (favorite title for millennials is ‘owner’)
- He’s already experienced how youtube can generate revenue
- Into animation, has networks of other animators, including some famous ones
- Will stay 2 years in first job
- Gen Y will make up 75% of workforce by 2025 (boomers retiring 1 every 8 sec.)

Perfect storm converging on systems engineering…

- Complexity getting worse (old methods won’t scale)
- Technology disruptions coming faster (Amazon vs Sears, Macy’s)
- Contribute to design (Crowd sourcing: Local Motors, Tesla power hogs)
- Want it now (3D printing, Amazon)
- Expecting more options (Tesla: Ludicrous, Plaid Speed)
This requires change…
High-tech experience
2017 INCOSE annual international workshop
Los Angeles, CA, USA
January 28 - 31, 2017

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10 Year Anniversary

Materials posted at: