

## Information Cited in Automotive Training Institute Summit

Orlando, FL

March 22, 2018

### Slide 2

My background including education and work history can be found on my LinkedIn page @ <https://www.linkedin.com/in/johntellis>. You can also read more about my work and publications @ [www.johntellis.com](http://www.johntellis.com).

### Slide 3

Image of Andy Grove taken from here: <https://newsroom.intel.com/biography/andrew-s-grove/>. His book "Only the Paranoid Survive: How to Exploit the Crisis Points That Challenge Every Company" can be found here: <https://www.amazon.com/Only-Paranoid-Survive-Exploit-Challenge/dp/0385483821>.

### Slide 4

Image of Yogi Berra taken from here: <http://www.businessnewsdaily.com/images/i/000/002/002/original/Yogi-Berra-Glove.jpg?1333388491>. His quote (and the history of his life) can be found here: [https://en.wikiquote.org/wiki/Yogi\\_Berra](https://en.wikiquote.org/wiki/Yogi_Berra).

### Slide 5

The image of Karl Benz and the story of the 1886 patent are taken from here: <http://nederland.mercedes-benz-clubs.com/geschiedenis-mercedes-benz/#>. The image of the vehicle Benz patented along with additional history of Mercedes Benz is found here: <https://www.daimler.com/company/tradition/company-history/1885-1886.html>.

### Slide 6

The image of the Ford assembly line on the left is taken from here: <http://www.bloomberg.com/news/articles/2013-09-25/henry-ford-s-century-old-line-finds-15-billion-in-china>. The image of the Ford assembly line from 1928 is taken from here: <https://www.thebalance.com/roaring-twenties-4060511>.

### Slide 7

This image is from a Ford advertisement printed January 24, 1925 in the *Saturday Evening Post*. You can find this image here: <https://media.ford.com/content/fordmedia/fna/us/en/features/opening-the-highways.html>.

### Slide 8

Image on the left is the High Five Interchange in Dallas, Texas and can be found here: [https://en.wikipedia.org/wiki/High\\_Five\\_Interchange](https://en.wikipedia.org/wiki/High_Five_Interchange).

Image on the upper right is the Circle Interchange (officially the Jane Byrne Interchange) in Chicago, Illinois and can be found here: [https://en.wikipedia.org/wiki/Jane\\_Byrne\\_Interchange](https://en.wikipedia.org/wiki/Jane_Byrne_Interchange).

Image on the lower right is a cloverleaf interchange in Wyoming, Michigan and can be found here: [https://en.wikipedia.org/wiki/Cloverleaf\\_interchange#/media/File:US\\_131,\\_M-6,\\_68th\\_St\\_interchange.jpg](https://en.wikipedia.org/wiki/Cloverleaf_interchange#/media/File:US_131,_M-6,_68th_St_interchange.jpg).

The total miles of roads in the USA is taken from [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national\\_transportation\\_statistics/html/table\\_01\\_04.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_01_04.html) "Public Road and Street Mileage in the United States: and is quoted as of year-end 2013.

#### Slide 9

The parking lot image is taken from [https://commons.wikimedia.org/wiki/File:Parking\\_lot\\_at\\_HAA\\_Kobe.jpg](https://commons.wikimedia.org/wiki/File:Parking_lot_at_HAA_Kobe.jpg) with photo credit to [Lair Keiows](#).

#### Slide 10

The parking lot image is taken from <https://stocktoncitylimits.files.wordpress.com/2013/12/scl-pwp-aerial-empty.jpg> with photo credit to Google 2014 earth view.

The number of an upper limit of 2 billion parking spaces comes from <http://iopscience.iop.org/article/10.1088/1748-9326/5/3/034001/meta;jsessionid=2A71801A95070A0AC074345E3650AA6D.c5.iopscience.cld.iop.org>.

The conversion of parking spaces to land usage is calculated as follows:

9'x18' is the standard parking space (<http://www.parkinglotplanet.com/helpful-hints/195-common.html>) which is 162 ft<sup>2</sup>.

1 Square Mile = 27,878,400 ft<sup>2</sup> (<http://www.asknumbers.com/square-mile-to-square-feet.aspx>).

$(2 \text{ billion parking spaces} \times 162 \text{ ft}^2) / 27,878,400 \text{ ft}^2 = 11,622 \text{ miles}^2$ .

#### Slide 11

The picture of Chicago is taken from here: <http://d3qi0qp55mx5f5.cloudfront.net/www/i/homepage/spotlight/urban-chicago-spotlight.jpg>.

The size of Chicago in square miles is taken from here: <https://en.wikipedia.org/wiki/Chicago>.

#### Slide 15

The sharing economy life-cycle is from PWC UK and can be found here <https://www.pinterest.com/pin/100627372902670506/> with supporting research found here

<https://www.pwc.co.uk/issues/megatrends/collisions/sharingeconomy/outlook-for-the-sharing-economy-in-the-uk-2016.html>.

#### Slide 16

US adult sharing economy graphic can be found here

[http://www.emstatic.com/images/chart\\_gifs/228001-229000/228473.gif](http://www.emstatic.com/images/chart_gifs/228001-229000/228473.gif).

#### Slide 17

The Evolution of Shared Mobility can be found here <https://steps.ucdavis.edu/new-research-ride-hailing-impacts-travel-behavior/>.

#### Slide 18

The Mobility in China slide is from Roland Berger and can be found here

<https://www.rolandberger.com/en/Blog/Mobility-in-China.html>.

#### Slide 20

The story and image of Mary Ward is taken from here:

[https://en.wikipedia.org/wiki/Mary\\_Ward\\_\(scientist\)](https://en.wikipedia.org/wiki/Mary_Ward_(scientist)).

The story and image of Henry Bliss is taken from here:

[https://en.wikipedia.org/wiki/Henry\\_H.\\_Bliss](https://en.wikipedia.org/wiki/Henry_H._Bliss).

#### Slide 21

The graphic for the World Health Organization road traffic mortality 2013 is taken from here:

[http://gamapserver.who.int/mapLibrary/Files/Maps/Global\\_RoadTraffic\\_Mortality\\_2013.png](http://gamapserver.who.int/mapLibrary/Files/Maps/Global_RoadTraffic_Mortality_2013.png). The World Health Organization maintain an extensive library of data collected on such things as seat belt laws, drunk driving laws and other safety related issues. All of this can be found here: <http://gamapserver.who.int/mapLibrary/app/searchResults.aspx>.

Worldwide number of 1,250,000 is from here:

[http://www.who.int/gho/publications/world\\_health\\_statistics/2016/whs2016\\_AnnexA\\_RoadTraffic.pdf?ua=1&ua=1](http://www.who.int/gho/publications/world_health_statistics/2016/whs2016_AnnexA_RoadTraffic.pdf?ua=1&ua=1).

2017 US number of 40,100 can be found here

[https://www.nsc.org/Portals/0/Documents/NewsDocuments/2018/December\\_2017.pdf](https://www.nsc.org/Portals/0/Documents/NewsDocuments/2018/December_2017.pdf).

#### Slide 22

The image of the two (2) 747 planes crashing is taken from here:

<http://www.kpbs.org/news/2011/feb/14/nova-deadliest-plane-crash/>.

The number of 2016 deaths due to US vehicle accidents can be found here

[https://www.nsc.org/Portals/0/Documents/NewsDocuments/2018/December\\_2017.pdf](https://www.nsc.org/Portals/0/Documents/NewsDocuments/2018/December_2017.pdf).

### Slide 23

Gabe Klein quote citation is still being sought. This quote was heard during a smart city meeting in the summer of 2016.

### Slide 24

The vehicle sensor diagram can be found here: <http://automotive-engineering-illustration.com/Vehicle-sensors.html>. Note – I have added a few additional sensors including microphone, clock, wiper, barometer, and rain anemometer. These sensors are commercially available today.

### Slide 25

The Building Blocks of Autonomy infographic from Vision Systems Intelligence can be found here <http://www.prweb.com/releases/vsi/segmentsautonomousvehicle/prweb13472308.htm>.

### Slide 26

The autonomous timeline is taken from here: <https://phys.org/news/2015-11-driverless-cars-car-ownership.html>.

### Slide 27

The autonomous phasing infographic is taken from here: [https://cdn.vox-cdn.com/uploads/chorus\\_asset/file/9440435/RPA\\_The\\_Road\\_to\\_AVs\\_in\\_the\\_Region\\_1.png](https://cdn.vox-cdn.com/uploads/chorus_asset/file/9440435/RPA_The_Road_to_AVs_in_the_Region_1.png).

### Slide 28

The timeline of autonomous product commercialization is take from here <https://www.mynrma.com.au/-/media/advocacy/timeline-to-autonomous-vehicles.jpg?la=en>.

### Slide 29

The picture of the Otto truck delivering Budweiser beer and the corresponding story can be found here: <https://www.bloomberg.com/news/articles/2016-10-25/uber-self-driving-truck-packed-with-budweiser-makes-first-delivery-in-colorado>.

### Slide 31

The image of the Uber autonomous vehicle can be found here <https://www.recode.net/2018/3/20/17144394/uber-self-driving-autonomous-accident-crash-arizona-tempe>.

### Slide 33

The fuel economy slide is taken from Dr. Larry Burns' "Signal in the Noise" presentation he delivered on June 1, 2016 at the IESF conference presented by Mentor Graphics. This presentation can be found here: [https://videos.mentor-cdn.com/videos/2500/iesf-2016-detroit-keynote-lawrence-burns.mp4?\\_=1](https://videos.mentor-cdn.com/videos/2500/iesf-2016-detroit-keynote-lawrence-burns.mp4?_=1). The discussion begins at time 7:38 and goes until 8:56.

### Slides 34-35

Pictures of the parts of an internal combustion engine vehicle as well as the Tesla Model S powertrain come from <https://valueinnovations.com/tony-seba-predicts-the-internal-combustion-engine-will-be-obsolete-by-2030-why-what-are-the-implications/>.

### Slide 36

The “Electric Cars Win on Price” image come from here: <https://ilsr.org/wp-content/uploads/2017/06/Electric-Cars-Will-Win-on-Price-1.png>. More information on the electric vehicle and adoption challenges and opportunities can be found here <https://electrek.co/2016/05/19/the-math-and-evidence-all-around-you-that-shows-shared-autonomous-vehicles-powered-by-solar-power-and-batteries-are-inevitable/> and here <http://www.samefacts.com/2017/08/everything-else/the-end-of-fossil-fuelled-cars/> and here <https://www.imf.org/en/Publications/WP/Issues/2017/05/22/Riding-the-Energy-Transition-Oil-Beyond-2040-44932> and here <https://insideevs.com/electric-car-transition-parallel-model-t/>.

### Slide 37

The Bloomberg electric vehicle lineup image is taken from this article: <https://www.vox.com/energy-and-environment/2016/9/23/13018294/electric-cars-price-range-one-chart>.

### Slide 38

The projected Annual Global Electric Vehicle Sales chart can be found here <http://www.businessinsider.com/china-holds-the-keys-to-the-electric-car-revolution-2017-12>.

### Slide 39

The Overtaking Lane image is taken from here [http://reneweconomy.com.au/wp-content/uploads/2017/12/1Ar6\\_-PbeJzbNKQ0EnwB\\_JA-2.jpeg](http://reneweconomy.com.au/wp-content/uploads/2017/12/1Ar6_-PbeJzbNKQ0EnwB_JA-2.jpeg).

### Slide 40

Germany headline is taken from this article: <http://www.roadandtrack.com/new-cars/future-cars/news/a31097/german-government-votes-to-ban-internal-combustion-engines-by-2030/>.

Stanford headline is taken from this article:

<http://www.livemint.com/Industry/FiK1sb9LHRYu07C78pEaTI/End-of-fossil-fuelrun-vehicles-in-sight-says-Stanford-stud.html>

The China information can be found in a number of locations including:

<https://www.theguardian.com/world/2017/sep/11/china-to-ban-production-of-petrol-and-diesel-cars-in-the-near-future>, <https://www.bloomberg.com/news/articles/2017-09-10/china-s-fossil-fuel-deadline-shifts-focus-to-electric-car-race-j7fktx9z>, and <https://www.theverge.com/2017/9/10/16284866/china-ban-fossil-fuel-cars>.

Additional information on China and their plans for Electric Vehicles and alternative energy can be found in the following references:

<https://qz.com/1247527/for-every-1-the-us-put-into-renewable-energy-last-year-china-put-in-3/>

<https://www.popularmechanics.com/science/environment/a19410028/chinas-anti-pollution-initiative-produces-stellar-results/>

<https://www.cnn.com/2018/03/09/asia/djibouti-port-china-us-intl/index.html>

<http://www.businessinsider.com/china-weaponizing-capital-us-navy-chief-awake-at-night-2018-3>

The UK information can be found in a number of locations including:

<https://www.theguardian.com/politics/2017/jul/25/britain-to-ban-sale-of-all-diesel-and-petrol-cars-and-vans-from-2040>, <http://www.bbc.com/news/uk-40723581>, and <https://www.nytimes.com/2017/07/26/world/europe/uk-diesel-petrol-emissions.html>.

France's decision to go fossil fuel-free can be found here: <https://thinkprogress.org/france-sticks-it-the-us-on-fossil-fuels-5ec69aa96570/>.

Additional information on alternative energy and “clean” energy can be found here:

<http://reneweconomy.com.au/2017-showed-global-clean-energy-revolution-unstoppable-no-matter-trump-87561/>

<https://www.theverge.com/2018/1/15/16892386/ford-electric-car-11-billion-2022-detroit-auto-show-2018>

<http://www.independent.co.uk/environment/renewable-energy-cheaper-fossil-fuels-2020-uk-green-climate-change-global-warming-report-irea-a8160051.html>

#### Slide 41

The California title is taken from this article: <https://www.bloomberg.com/news/articles/2017-09-26/california-mulls-following-china-with-combustion-engine-car-ban>.

#### Slides 43-46

Analysis of Tesla software updates is taken from here:

<https://teslamotorsclub.com/tmc/threads/model-s-software-firmware-changelog.10820/>.

Quote of the Tesla Release 8.0 is from the Tesla release notes but directly pulled from this article here: <https://electrek.co/2016/09/22/tesla-v8-0-software-update-is-being-pushed-right-now-all-the-details-and-full-release-notes/>.

#### Slide 47

The image of the Tesla Model 3 is taken from here: <https://wallpaperfully.com/wp-content/uploads/2017/09/16-Tesla-model-3.jpg>. The quote is taken from here:

<http://www.thedrive.com/news/14610/tesla-model-3-leaves-drivers-with-no-way-to-play-their-own-music>.

#### Slide 48

Screen shot of turning on the Tesla P100D Ludicrous Plus+ mode taken from here:  
<http://www.dragtimes.com/blog/tesla-p100d-ludicrous-plus>.

#### Slide 49

Movie of the Tesla Model X is something I built using original source movies from  
<http://www.dragtimes.com/blog/tesla-model-x-holiday-show>.

#### Slide 50

Chart showing Tesla, GM and Ford market caps is taken from here:  
<https://www.bloomberg.com/toaster/v1/charts/bc7a9afb1b9e4abea31c91c4d95000da.html>.

#### Slide 52

The statement is a synthesis of comments being heard at smart city and commuter transportation conferences around the world. One such example of a conference where this topic was discussed can be found here: <http://actweb.org/2016-conference-portland/>.

#### Slide 53

BCG report is here: <https://www.bcg.com/publications/2017/reimagined-car-shared-autonomous-electric.aspx>.

Tony Seba report is here: <https://www.rethinkx.com/transportation/>.

The Strategy Analytics report sponsored by Intel is here:  
<https://www.intel.com/content/www/us/en/automotive/passenger-economy-report-autonomous-driving-document.html>.

The “convergence” word is taken from here:  
[https://static1.squarespace.com/static/53dbed75e4b0c5353844cd58/t/56b914b98a65e27e69cb034/1454970043453/Convergence\\_Logo+no+background.png?format=1500w](https://static1.squarespace.com/static/53dbed75e4b0c5353844cd58/t/56b914b98a65e27e69cb034/1454970043453/Convergence_Logo+no+background.png?format=1500w).

#### Slide 54

The Uber taxi image is taken from the Uber Air promotional video found here <https://www.youtube.com/watch?v=6PmXL0oiggg>.

#### Slide 56

The New York Times article can be found here <https://www.nytimes.com/2016/07/02/your-money/new-cars-are-too-expensive-for-the-typical-family-study-finds.html>.

#### Slides 57-61

The cost of repair, calibration and increasing technology slides are courtesy of Society of Collision Repair Specialists ([www.scrs.com](http://www.scrs.com)).

#### Slide 62

The image of the plane can be found here <http://www.pngall.com/plane-png>.

#### Slide 63

PWC quote: <https://www.bloomberg.com/news/articles/2014-02-24/woes-of-megacity-driving-signals-dawn-of-peak-car-era>

KMPG quote: <https://www.kpmg-institutes.com/content/dam/kpmg/advisory-institute/pdf/2015/clockspeed-dilemma.pdf> (page 25)

IBM quote: <http://www-935.ibm.com/services/us/qbs/thoughtleadership/auto2025/> (page 4)

#### Slide 64

The picture of Bob Lutz comes from here:

<https://bloximages.newyork1.vip.townnews.com/fredericknewspost.com/content/tncms/assets/v3/editorial/1/49/149fed73-176e-5f2a-99d7-492263873175/58dde7f29bbb6.image.jpg>.

The Bob Lutz Automotive News op-ed can be found here:

[http://www.autonews.com/article/20171105/INDUSTRY\\_REDESIGNED/171109944/bob-lutz%3A-kiss-the-good-times-goodbye](http://www.autonews.com/article/20171105/INDUSTRY_REDESIGNED/171109944/bob-lutz%3A-kiss-the-good-times-goodbye).

Quartz headline: <https://qz.com/1122534/former-gm-chairman-bob-lutz-says-the-end-of-the-car-industry-is-near/>.

MotorTrend headline: <http://www.motortrend.com/news/bob-lutz-people-will-no-longer-drive-cars-20-years/>.

Business Insider headline: <http://www.businessinsider.com/bob-lutz-says-cars-are-over-2017-11>.

#### Slides 65-66

Pictures taken from here: <http://www.businessinsider.com/5th-ave-1900-vs-1913-2011-3>.



#### Slide 67

The 'Expert' Disruption Forecasts slide is taken from here:

<https://electrek.files.wordpress.com/2016/05/att.png?w=765&h=469>.

#### Slide 68

The Roy Amara quote and history of his life can be found here:

[https://en.wikipedia.org/wiki/Roy\\_Amara](https://en.wikipedia.org/wiki/Roy_Amara).

#### Slide 69

The image showing the acceleration of the adoption of technology is originally from Blackrock and is taken from here: <https://www.vox.com/2016/3/4/11161758/electric-cars-oil-crisis>.

#### Slide 72

The Navy Seals pool picture and associated article on the drowning training is taken from here <http://www.businessinsider.com/navy-seal-explains-how-to-survive-a-drowning-attempt-2015-12>.

#### Slide 75

The Paul Graham quote is taken from his "Most startups die by suicide rather than homicide" comment talked about in this article here: <https://medium.com/startup-grind/how-to-avoid-startup-suicide-toxic-founder-relationships-a8a0d746a82b>.

#### Slide 78

History of the quote can be found here: <http://quoteinvestigator.com/2012/09/27/invent-the-future/>. The specific language is attributed to Alan Kay.

#### Slide 79

Marc Andreessen quote is taken from his WSJ opinion piece found here:

<http://www.wsj.com/articles/SB10001424053111903480904576512250915629460>.

The David Kirkpatrick quote can be found here:

<http://www.forbes.com/sites/teconomy/2011/11/30/now-every-company-is-a-software-company/#64b07b7a1100>.

#### Slide 80

Ayn Rand quote – <http://quoteinvestigator.com/2015/04/30/reality/>.

Chinese proverb quote - [https://en.wikipedia.org/wiki/May\\_you\\_live\\_in\\_interesting\\_times](https://en.wikipedia.org/wiki/May_you_live_in_interesting_times).

#### Slide 81

The Zero Dollar Car book that is referenced in this slide can be found here:

<https://www.amazon.com/Zero-Dollar-Car-Revolution-Change/dp/1988025257>.