The Future of Digital

SAP Solution Manager Education Summit
EMEA 2019

December 4th  Heidelberg
Happens!
<table>
<thead>
<tr>
<th>Fecha / Mes</th>
<th>Glucosa en sangre</th>
<th>Dosis de insulina</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Desayuno</td>
<td>Cena</td>
</tr>
<tr>
<td></td>
<td>Antes</td>
<td>Después</td>
</tr>
<tr>
<td>7/5</td>
<td>79</td>
<td>118</td>
</tr>
<tr>
<td>9/1</td>
<td>91</td>
<td>127</td>
</tr>
</tbody>
</table>

Se observa una forma de monitorear los niveles de glucosa en sangre y las dosis de insulina en diferentes momentos del día.
### Daily Patterns
*November 15, 2019 - November 28, 2019 (14 Days)*

#### Daily Average

<table>
<thead>
<tr>
<th>Time</th>
<th>12am</th>
<th>2am</th>
<th>4am</th>
<th>6am</th>
<th>8am</th>
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<th>12pm</th>
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<th>4pm</th>
<th>6pm</th>
<th>8pm</th>
<th>10pm</th>
<th>12am</th>
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<tbody>
<tr>
<td>Glucose (mg/dL)</td>
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<td>132</td>
<td>112</td>
<td>123</td>
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<td>127</td>
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<td>111</td>
<td>115</td>
<td>116</td>
<td>119</td>
<td>131</td>
<td></td>
</tr>
</tbody>
</table>

#### Target Range
- 25th to 75th Percentile
- 10th to 90th Percentile

- Median

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@TomRaftery
Manufacturing
Fiat’s newest concept is a modular electric car you can almost endlessly customize

Right down to the battery pack

By Sean O’Kane | @sokane1 | Mar 6, 2019, 3:17pm EST

Photos: Fiat
 UPS Partners With SAP to Launch Spare Parts 3D Printing Business
First titanium 3D-printed part installed into serial production aircraft
Los Angeles is blazing the trail for connected street lighting
Energy
The Stone Age didn't end for lack of stone, and the oil age will end long before the world runs out of oil.

- Sheik Ahmed Zaki Yamani
The Swanson effect
Price of crystalline silicon photovoltaic cells, $ per watt

Source: Bloomberg New Energy Finance
Plans to build the world's largest solar and storage project in the Australia desert, and use it to help power Singapore, have taken a new and exciting step forward, with "plug and play" solar start-up 5B tapped to provide the massive project's PV component.
Saudi Arabia wind farm claims world record low energy cost

Joshua S Hill   13 August 2019   0 Comments

Saudi Arabia's 400MW Dumat Al Jandal onshore wind farm has announced what it says is a world record-low onshore wind levelised cost of electricity (LCOE) of 1.99 US cents per kilowatt-hour (kWh).
IEA: Wind Will Be Europe’s Largest Energy Source by 2027

Once again, European wind growth estimates are revised upward.

JASON DEIGN  |  SEPTEMBER 27, 2018

Wind is set to become the European Union’s largest source of electricity within a decade, according to International Energy Agency Executive Director Fatih Birol.
Yet today's offshore wind market doesn't even come close to tapping the full potential - with high-quality resources available in most major markets, offshore wind has the potential to generate more than 420 000 TWh per year worldwide.

This is more than 18 times global electricity demand today.
Companies

212 RE100 companies have made a commitment to go '100% renewable'. Read about the actions they are taking and why.

Ingka Group (formerly IKEA Group) operates three business areas: IKEA Retail, Ingka Investments and Ingka Centres. Ingka Group operates 367 IKEA stores in 30 countries, as well as shopping centres and increasingly city-centre customer meeting points. The company has committed to generate as much renewable energy as the total energy it consumes in its operations by 2020; as well as to consume 100% renewable electricity by 2025. Alongside Swiss Re, Ingka Group is a founding partner of the RE100 campaign.

LEARN MORE

The Swiss Re Group is a leading wholesale provider of reinsurance, insurance and other insurance-based forms of risk transfer. Its global client base consists of insurance companies, mid-to-large-sized corporations and institutions worldwide.
Generalised power plant years to deliver including resource and project lead time
Fuel resource contract + extraction establishment; plant lead time + EPC build, nominal 300MW project
Chart @FSS_Au @ProfRayWills update 16Nov17
World new capacity (GW) fossil fuel v renewable 2008-2018

FS-UNEP Jun 2018 data; Net against retirement 2018 estimate & chart @FSS_Au @ProfRayWills 8May19

- Renewable
- Gross Fossil
- Net Fossil
Lithium-ion battery price survey results: Volume-weighted average

Battery pack price (real 2019 $/kWh)

2010: 1,183
2011: 917 (22% decrease)
2012: 721 (8% decrease)
2013: 663 (11% decrease)
2014: 588 (35% decrease)
2015: 381 (23% decrease)
2016: 293 (26% decrease)
2017: 219 (18% decrease)
2018: 180 (13% decrease)
2019: 156

Source: BloombergNEF
The graph illustrates the cost and gravimetric energy density of Li-ion and Ni-MH batteries over the years from 1990 to 2010. The cost of Li-ion batteries has significantly decreased, while the gravimetric energy density has increased. In contrast, Ni-MH batteries show an increase in cost and a decrease in gravimetric energy density. Points for Ni-Cd batteries are also shown for reference.
Tesla’s giant battery saved $40 million during its first year, report says

Fred Lambert - Dec. 6th 2018 7:04 am ET  
@FredericLambert
The head of NextEra Energy, the biggest and most successful utility in the United States says the energy industry is in the grip of massive change, with the cost of renewables and battery storage – without subsidies – beating gas, as well as existing coal and nuclear on costs.
Renewables Shock

Electricity prices in Germany have turned negative when supply from renewables is abundant.

Source: Bloomberg New Energy Finance

Note: Renewables include biomass, hydro and waste energy and others.
Global cumulative storage deployments

Source: BloombergNEF
Tesla is installing Powerwalls and solar power on 50,000 homes to create biggest virtual power plant in the world

Fred Lambert - Feb. 4th 2018 12:04 am ET  @FredericLambert

Tesla has been making big moves on the energy storage market in Australia, but they are now all being dwarfed by this new project that will see them install solar arrays and Powerwalls on 50,000 homes to create the biggest virtual power plant in the world.
Tesla says it is expecting to hit its goal of producing 500,000 cars annually — including the Model S, Model X and Model 3 — two years earlier than expected, meeting that expectation by 2018.
Nissan Energy Solar provides complete flexibility. Whether you’re looking for solar energy with solar battery storage solution, want to add storage to your existing solar panels, or feel that a solar only system would best suit your needs, we can help find the right solution for you.

**XSTORAGE & SOLAR PANELS**

The all in one solution to power your life.

**SOLAR PANELS**

Power your home with sunlight.

**XSTORAGE**

Increase efficiency by adding solar battery storage to your existing solar panels.

STARTING FROM £7,635

STARTING FROM £3,881

STARTING FROM £6,446
Your benefits

Rethinking green energy.

100% green energy
You receive electricity from 100% renewable energy for your home and electric vehicle - simple, affordable and sustainable.

Expansion of renewable energy
We support the expansion of renewable energy and the built-up of new eco-power plants - this is our contribution to the German Energiewende.

Safety & reliability
Shell Says It Can Be World's Top Power Producer and Profit

by Kevin Crowley, bloomberg.com  March 11, 2019 03:09 PM

Shell's Plan to Become Top Power Producer

- Oil major aims to be No. 1 electricity company by early 2030s
- Shell seeks 8-12% returns in historically low-margin business
ALL YOU CAN EAT
V2G to provide utilities $2 billion by 2025
Utilities Are Lining Up Behind The Electric Vehicle Movement

HOOKED ON BATTERIES: UTILITIES LOOK TO TAKE BILLIONS FROM OIL INDUSTRY WITH ELECTRIC VEHICLES
Transportation
CASE
Connected
From vehicle data to connected car services. Continental provides the end to end solution.

Many Questions - one Solution

What do Connected Car Services mean to you?
Berlin’s Emil launches pay-per-mile car insurance
Tesla Insurance

Get a quote with Tesla Insurance for competitive rates in as little as one minute.
Now available in California.

GET QUOTE
Electric
Amsterdam to ban petrol and diesel cars and motorbikes by 2030

Diesel cars older than 15 years will be barred next year as first part of anti-pollution drive

Cars and motorbikes running on petrol or diesel will be banned from driving in Amsterdam from 2030.
Sweden to ban sales of fossil-fuel powered cars by 2030

Sweden is saying goodbye to cars with internal combustion engines. Prime Minister Stefan Löfven has now declared that no new cars with diesel or petrol engines will be sold after 2030.

Clearly, Scandinavia is stepping up when it comes to transport transition off fossil fuels. Norway, which is so far the only country ever to have an EV-registration quota of around 50 per cent, has aimed even higher, with no new cars with combustion engines to be on the market in 2025. Denmark has drawn up corresponding plans for the year 2030, as Sweden has now done.
China Gives Automakers More Time in World's Biggest EV Plan

Bloomberg News
September 28, 2017, 8:31 AM GMT+2  Updated on September 28, 2017, 5:38 PM GMT+2

- Automakers need to obtain 10% of credits from NEVs in 2019
- Companies with annual sales over 30,000 units need to comply

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**ELECTRIC VEHICLES**
Projected percentage of light-duty vehicle fleet made up of EVs

Source: Bloomberg New Energy Finance

China Slows Switch to Electric Cars
MEPs vote for 40% cut in car emissions by 2030

Tory MEPs voted against the goal despite a UK government instruction welcoming it

△ Germany is one country opposed to an increase on the 30% cut proposed by the European commission.
Photograph: Hannibal Hanschke/Reuters
Drastic action required by carmakers to close the emissions gap

Grammes of CO₂ per km

- **BMW**
  - 2015: 130
  - 2018: 101
  - 2021 target*: 90

- **Daimler**
  - 2015: 130
  - 2018: 103

- **FCA**
  - 2015: 130
  - 2018: 91

- **PSA**
  - 2015: 130
  - 2018: 91

- **Renault**
  - 2015: 130
  - 2018: 93

- **VW**
  - 2015: 130
  - 2018: 100
PSA Group (Peugeot-Citroën-DS-Opel) creates new EV division ahead of launching its first electric cars

GM races to build a formula for profitable electric cars

DETROIT (Reuters) - General Motors Co Chief Executive Mary Barra has made a bold promise to investors that the Detroit automaker will make money selling electric cars by 2021.

Ford plans $11 billion investment, 40 electrified vehicles by 2022

DETROIT (Reuters) - Ford Motor Co (F.N) will significantly increase its planned investments in electric vehicles to $11 billion by 2022 and have 40 hybrid and fully electric vehicles in its model lineup, Chairman Bill Ford said on Sunday at the Detroit auto show.

Volkswagen accelerates push into electric cars with $40 billion spending plan

WOLFSBURG/HAMBURG (Reuters) - Volkswagen (VOWGp.DE) approved a $40 billion (340 bln euro) spending plan on Friday that accelerates its efforts to become a global leader in electric cars.
Porsche CEO expects German automaker to only sell electric vehicles starting in 2030

Fred Lambert - Apr. 9th 2018 9:43 am ET  @FredericLambert
Porsche officially launches all-electric Taycan in Berlin, begins new era

SEPTEMBER 5, 2019 - 3 MINUTE READ - BRIDIE SCHMIDT
Electric car models to triple in Europe by 2021

The number of electric car models available to consumers in Europe is expected to triple by 2021, says a European environmental lobby group.
Renault Zoe 22kWh
90 mi ≈ 145 km
Real World

Renault Zoe 40kWh
130 mi ≈ 210 km
Real World

Renault Zoe 52kWh
245 mi ≈ 402 km
WLTP
Tesla Model S/X Mileage vs Remaining Battery Capacity (Same chart as above but at full scale for better perspective)
Tesla researcher’s 1 million-mile battery cell breakthrough secures the Semi’s longevity

By Simon Alvarez

Tesla lead battery researcher Jeff Dahn and members of the Department of Physics and Atmospheric Science in Dalhousie University recently released a new paper that points to the development of battery cells capable of lasting over 1 million miles on the road, or 20 years if utilized in grid energy storage.
Daimler abandons internal combustion engine development to focus on EVs

By Simon Alvarez

Posted on September 19, 2019

In a rather surprising announcement, German automaker Daimler has revealed that it will be stopping its internal combustion engine development initiatives as part of its efforts to embrace electric vehicles.
Daimler is buying over $20 billion in battery cells to support electric vehicle plans
Volkswagen will buy 50 billion euros ($56.57 billion) worth of battery cells for electric cars and has identified South Korea’s SKI, LG Chem and Samsung SDI as strategic battery cell suppliers as well as China’s Contemporary Amperex Technology Co Ltd (CATL).

The German automaker is retooling 16 factories to build electric vehicles and plans to start producing 33 different electric cars under the Skoda, Audi, VW and Seat brands by mid 2023.
<table>
<thead>
<tr>
<th>Car</th>
<th>Range (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMW iX3</td>
<td>400</td>
</tr>
<tr>
<td>Audi e-tron</td>
<td>400</td>
</tr>
<tr>
<td>Hyundai Kona</td>
<td>413</td>
</tr>
<tr>
<td>Mercedes EQC</td>
<td>400</td>
</tr>
<tr>
<td>Kia e-Niro</td>
<td>420</td>
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<tr>
<td>Jaguar iPace</td>
<td>425</td>
</tr>
<tr>
<td>Porsche Taycan</td>
<td>400</td>
</tr>
</tbody>
</table>
Tesla Roadster

The quickest car in the world, with record-setting acceleration, range and performance.

1.9s
0-60 mph

250 mph
Top Speed

620 mi
Mile Range

Reserve now
Small + Midsize Luxury Cars – 2018 US Sales

- Tesla Model 3: 139,730
- Mercedes C/CLA/CLS/E-Class: 129,390
- BMW 2 + 3 + 4 + 5 Series: 129,102
- Audi A3 + A4 + A5 + A6: 89,404
- Lexus ES + GS + IS + RC: 81,371
- Infiniti Q50 + Q60 + Q70: 48,259
- Acura RLX + TLX: 32,399
- Volvo 60 + 90: 21,456

Chart: CleanTechnica • Source: Automakers, CleanTechnica • Created with Datawrapper
UK has more EV charging stations than petrol stations

Number of electric vehicle charging sites has risen above 9000, while 8400 conventional fuel stations remain open.

There are now more electric vehicle (EV) charging stations in the UK than conventional fuel stations, according to data published by Nissan.
British All-Electric Car Market Surges By 158% In July 2019
BP is Acquiring Chargemaster - Big Oil Ready To Go Electric

BP Invests In PowerShare, China's EV Charging Platform

BP Invests In StoreDot - Firm Promises Charging As Quick As Fueling

FreeWire Raises $15 Million In Financing For Mobile Fast Charging
Shell Buys Slice of the Electric Vehicle Market With Purchase of NewMotion

Oil and gas majors continue exploring new markets in electrification.

Shell Acquires Greenlots to Lead North American EV Charging Push

The Los Angeles startup found a well-capitalized backer for its charging network software platform.

Ample Raises $31M: A Better Place Clone, or a New Way to Charge Electric Cars?

Ample is getting support from Shell for "autonomous robotics" charging. Is the company following in the footsteps of Better Place?
"A developed country is not a place where the poor have cars. It's where the rich use public transportation."
E-Buses to Surge Even Faster Than EVs as Conventional Vehicles Fade
The London electric bus fleet is the largest in Europe

The Mayor of London, Sadiq Khan, has announced that two of London’s bus routes are becoming exclusively electric, as the capital’s electric bus fleet becomes the largest in Europe.
United States power and energy company Dominion Energy has announced plans to develop the country's largest electric school bus deployment, which will see 1,050 electric school busses deployed in its Virginia service territory by 2025, with an aim to replace all diesel school buses by 2030.
Harley Davidson announces plans for multiple electric motorcycles and even an electric bicycle

Micah Toll - Jul. 30th 2018 9:34 am ET  
@MicahToll
elonmusk First production cargo trip of the Tesla Semi heavy duty truck, carrying battery packs from the Gigafactory in the Nevada mountains to the car factory in California.
Technology

Volkswagen’s Truck Unit to Pour $2.2 Billion Into Electric Vehicles, Software

By Christoph Rauwald
October 2, 2019, 9:00 AM GMT+2

- CO2 reduction biggest challenge to industry, truck head says
- VW unit outlines plans three months after partial listing
Daimler adds 2 electric truck models in race with Tesla, VW

June 6, 2018 @ 4:56 pm

Eric M. Johnson and Ilona Wissenbach
Reuters

Roger Nielsen, president and CEO of Daimler Trucks North America, unveils the all-electric eCascadia big rig truck at Portland International Raceway, in Portland, Ore., on Wednesday. Photo credit: REUTERS
A look at DAF’s new all-electric truck with a 170 kWh battery pack
Peterbilt becomes latest truck maker to work on all-electric class 8 truck to compete with Tesla Semi

Fred Lambert - May 2nd 2018 11:35 am ET  @FredericLambert
Volvo Trucks Unveils Electric Truck, Readies Commercialization

September 13, 2019 by Jerry Hirsch, @Jerryhirsch

Volvo Trucks North America unveiled the VNR Electric zero-emissions truck at the factory where it will be built Thursday, providing details about its architecture and the plan for marketing the vehicle.
Amazon orders 100,000 electric vans from Rivian, the US startup in which the online retailer had already invested heavily in February. The announcement of the van purchase is part of Amazon’s now published climate protection plan.
Renault Trucks unveils new generation of all-electric trucks

Fred Lambert - Jun. 27th 2018 9:36 am ET  @FredericLambert

Renault Trucks unveiled today a whole lineup of its next-generation all-electric trucks which should hit
US Average Fuel Use by Major Vehicle Categories
Data 2013 www.afdc.energy.gov/data/
Chart @ProfRayWills

- Class 8 Truck: 12,441 GGEs per year
- Transit Bus: 10,492 GGEs per year
- Refuse Truck: 9,877 GGEs per year
- Para. Shuttle: 3,139 GGEs per year
- Taxi: 2,813 GGEs per year
- Delivery Truck: 1,918 GGEs per year
- School Bus: 1,714 GGEs per year
- Police: 1,423 GGEs per year
- Light Truck: 694 GGEs per year
- Light-Duty Vehicle: 528 GGEs per year
- Car: 483 GGEs per year
- Motorcycle: 58 GGEs per year
Caterpillar unveils an all-electric 26-ton excavator with a giant 300 kWh battery pack

Fred Lambert - Jan. 29th 2019 6:00 am ET  @FredericLambert
JCB Goes Electric with First Fully Electric Excavator

By Staff Writer - August 22, 2019
An electric tank? Army sees multiple advantages in dumping fossil fuels

SEPTEMBER 10, 2019  •  3 MINUTE READ  •  BRIDIE SCHMIDT
Known electrically propelled aircraft developments*

*Only including developments with first flights after 2010; excluding unmanned electrical vehicles and recreational developments

Source Roland Berger / Electric Aircraft Database
Norway aviation firm orders 60 all-electric airplanes, drops operation costs 80%
Boeing-Backed Startup Lands JetSuite for Electric Plane's Debut

By Mary Schlangenstein and Julie Johnsson
May 21, 2018, 1:00 PM GMT+2  Updated on May 21, 2018, 5:48 PM GMT+2

- Charter airline to get first aircraft with 2022 delivery goal
- Zunum is trying to pioneer new era with less emissions, noise

Zunum Aero aircraft Source: Zunum
Airbus considers making the next version of its top-selling jet an electric hybrid

By BENJAMIN KATZ | BLOOMBERG | JUN 14, 2019 | 3:00 AM

An A320neo passenger plane leaves its hangar at the Airbus plant in St.-Martin-du-Touch, near Toulouse, France. (Eric Cabanis / AFP / Getty Images)
Electric flight

Bringing zero-emission technology to aviation
All-electric ferry cuts emission by 95% and costs by 80%, brings in 53 additional orders

Fred Lambert - Feb. 3rd 2018 1:57 pm ET @FredericLambert

The operators of the first all-electric ferry in Norway are starting to get some good data on the vehicle and it's nothing short of impressive.

They claim that the all-electric ferry cuts emission by 95% and costs by 80% compared to fuel-powered counterparts and the results are attracting customers.
Siemens has opened an “advanced robotized and digitized” battery module factory in Trondheim, where 55 battery modules will be assembled per shift for marine and offshore markets. The factory comprises a line with eight robot stations and a capacity of up to 300 MWh per year.

The batteries running off the assembly line consist of nine modules, each of which in turn consists of 28 cells. According to the company, assembly is completely automated from unpacking the incoming production parts to testing the finished battery module. “We expect this market to grow significantly in the future. That is why we have invested in the development of safe and reliable battery solutions,” says Bjørn Einar Brath, Head of Offshore Solutions at Siemens.

Until now, Norwegian companies have led the way in the electrification of shipping. But, as Brath added: “We also see interest in such solutions outside Norway. The new battery factory will therefore also serve an international market.” In Trondheim, Siemens has already established themselves as a competence centre for electrical and hybrid solutions in recent years. With serial production on site, the company is now taking their next major step.

So far, the market has been largely driven by electric ferries, Siemens outlines, but fishing boats, workboats for aquaculture and offshore factories also offer great potential for the future. The factory recently received its first order for the assembly of batteries for use on a Northern Drilling oil rig. According to Siemens, the plant named West Mira will be the first of its kind to be operated with a modern battery solution.
Ship intelligence

Transforming future marine operations

We are pushing the boundaries of ship technology by harnessing the power of data in order to deliver through life asset optimisation.
Autonomy
Volvo creates a dedicated business for autonomous industrial and commercial transport

Darrell Etherington @etherington / 1:23 pm CEST • October 18, 2019

Volvo Group has established a new dedicated business group focused on autonomous transportation, with a mandate that covers industry segments like mining, ports and moving goods between logistics hubs of all
Tesla unveils ‘Robotaxi’ plan for self-driving ride-sharing network next year

Fred Lambert - Apr. 22nd 2019 5:46 pm ET  @FredericLambert
GM unveils autonomous Bolt EV without steering wheel or pedal, aims to bring it to market next year

Fred Lambert - Jan. 12th 2018 8:14 am ET @FredericLambert

Today, GM unveiled the first image of its upcoming autonomous fourth-generation Bolt EV-based vehicle – the “first without a steering wheel or pedal.”

The automaker also says that it filed a petition asking the DOT permission to deploy the vehicle as
Waymo starts commercial ride-share service

After months of testing and millions of miles developing self-driving vehicle technology, Waymo has officially launched the country's first commercial autonomous ride-share service.
Average miles driven in California before a human needs to take control

<table>
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<tr>
<td>2017</td>
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</tbody>
</table>

More miles between disengagements indicates better performance

- Bosch*
- Delphi/Aptiv*
- Drive.ai
- GM Cruise
- Google/Waymo*
- Mercedes-Benz*
- Nissan*
- Volkswagen
- Zoox

Sources: State of California DMV; data compiled by Bloomberg.

Notes: All automatic and/or manual disengagements. Data for tests on public streets for companies with a cumulative mileage of over 3,000. * denotes companies with tests in all three reporting periods.
“Anything that has wheels and moves along the surface of the earth is something that we, in the future, could imagine being driven by Waymo”

Waymo CEO John Krafcik
April 2019
America’s largest supermarket chain is launching a fully driverless delivery service

*Kroger is teaming up with Nuro, a startup founded by two veterans of Google’s self-driving team*
33 Industries Other Than Auto That Driverless Cars Could Turn Upside Down

September 20, 2018

Fast food, real estate, military operations, even home improvement — many large industries will have to shift their strategies in the wake of driverless cars.
Uber Elevate: Future Of Air Taxis = 3 Hours of Flight, 150 MPH, 4 Passengers

February 15th, 2019 by Nicolas Zart
Uber Partners With NASA in Vision for Managing Flying Cars

By Natalie Wong and Edward Ludlow

November 8, 2017, 11:45 AM GMT+1

→ Test vehicles will launch in Dallas, Los Angeles by 2020
→ Collaboration will boost UberAir’s speed to market, Uber says

Uber’s Jeff Holden discusses the UberAir flying taxi project.
Geely takes stake in German flying taxi start-up Volocopter

Chinese carmaker’s investment in €50m funding follows purchase of Daimler shares

Geely aims to work with Volocopter to launch air taxis in Chinese cities © Getty

Sylvia Pfeifer and Peter Campbell in London YESTERDAY

Geely will take a minority stake in German flying taxi start-up Volocopter, the latest investment from the Chinese carmaker in Europe’s largest economy after it controversially bought into Mercedes-Benz owner Daimler last year.
Air taxi aimed at revolutionising urban travel unveiled

German group Lilium aims to launch city transport service as early as 2025

The air taxi, developed by Lilium, could cut the time taken to get from New York’s JFK airport to the centre of Manhattan to six minutes
Bell's Nexus, revealed at CES in Las Vegas, represents what Bell says is an all-in commitment to a future of aeromobility. ✈️ BELL
NEW YORK (Reuters) - Boeing Co (BA.N) said on Thursday it would buy Aurora Flight Sciences Corp to advance its ability to develop autonomous, electric-powered and long-flight-duration aircraft for its commercial and military businesses.
CityAirbus is an all-electric, four-seat, multicopter vehicle demonstrator that focuses on advancing remotely piloted electric vertical take-off and landing (eVTOL) flight. The CityAirbus full-scale demonstrator conducted its first take-off in May 2019.

A low environmental footprint in mind
SpaceX’s president says we’ll be able to take a rocket to Shanghai – or Mars – ‘within a decade’

Halfway across the globe in about half an hour, Gwynne Shotwell said at TED.
Quantum Computing
Google Claims a Quantum Breakthrough That Could Change Computing

Google's quantum computer. The company said in a paper published on Wednesday that the machine needed only a few minutes to perform a task that would take a supercomputer at least 10,000 years.

By Cade Metz

Oct. 23, 2019
Applications
Intelligent traffic control with quantum computers

Traffic control is one of the many areas where quantum computers could be used. An innovative project by Volkswagen: Avoiding traffic jams and shortening waiting times using quantum algorithms.
Result: un-optimised vs optimised traffic
Quantum Computing: Spot-Checking Millions of Lines of Code
CAIXABANK DEVELOPS THE FIRST R&D PROJECTS AIMED AT APPLYING QUANTUM COMPUTING TO FINANCIAL ACTIVITY IN SPAIN

The bank has set up a team of experts with IT technicians, mathematicians and risk analysts.

September 3rd 2019 | 270 readers

• The Bank has adapted a quantum algorithm to assess the capital at risk for financial assets such as mortgage and treasury bill portfolios.
Improve the quality of healthcare and medical research

Microsoft is combining quantum computing, machine learning, and mixed reality to turn challenges of the past into solutions of the future.

Watch the video

Read the blog post
Secure our data in a quantum future

Microsoft is building post-quantum cryptography solutions to ensure our data remains safe once quantum computers become mainstream in years to come.

Check out this podcast ➤
Manage resources from various energy sources

Microsoft is developing new quantum-based solutions to address energy optimization and other challenges where classical computers have serious limitations.

Read more ➤
Tackle chemistry challenges with increased accuracy

Microsoft is using quantum computing to provide a better understanding of catalytic reactions, reducing the cost of industrial processes.

Watch the video ▷
Artificial Intelligence
AlexNet to AlphaGo Zero: A 300,000x Increase in Compute
MIT AI tool can predict breast cancer up to 5 years early, works equally well for white and black patients
This Software Works Just as Accurately as Your Lawyer--Only 200 Times Faster

Artificial intelligence startup LawGeex put its software up against a group of lawyers. The results were pretty eye-opening.

By Kevin J. Ryan  Staff writer, Inc  @wheresKR
Labour switching

Total employment, percentage

Caring professions | Muscle power workers

1871

1.1

23.7

2011

12.2

8.3

'Muscle power' includes cleaners, domestic servants, labourers and miners. 'Caring professions' include health and teaching professionals and care home workers. Source: England and Wales Census records

@TomRaftery
Chart 1. Agricultural labourers

Source: England and Wales Census records, authors’ calculations

Chart 2. Washers, Launderers

Source: England and Wales Census records, authors’ calculations
Chart 4. Accountants

Thousands


- Number of accountants (LHS)
- % of workforce (RHS)

Source: England and Wales Census records, authors’ calculations
Data for 1921 and 1931 have been interpolated due to discontinuities in definitions and data
Chart 5. Barstaff

Thousands


- Number of Barmen/Barstaff (LHS)
- % of workforce (RHS)

Source: England and Wales Census records, authors’ calculations
Chart 6. Hairdressers

Thousands

% of workforce


- Number of Hairdressers (LHS)
- % of workforce (RHS)

Source: England and Wales Census records, authors’ calculations
=> Labour shift
Last thoughts
The World as 100 People over the last two centuries

**Extreme Poverty**
- 6 not living in extreme poverty
- 94 living in extreme poverty
- 90 not living in extreme poverty

**Literacy**
- 12 are able to read
- 88 are not able to read
- 15 are not able to read
- 65 are able to read

**Basic Education**
- 17 have basic education or more
- 83 have not attained any education
- 14 have not attained any education
- 86 have basic education or more

**Democracy**
- 1 living in a democracy
- 99 not living in a democracy
- 44 not living in a democracy
- 56 living in a democracy

**Vaccination** against diphtheria, pertussis (whooping cough), and tetanus
- 14 not vaccinated
- 86 vaccinated
- 0 vaccinated

**Child Mortality**
- 43 die before they are 5 years old
- 57 survive the first 5 years of life
- 96 survive the first 5 years of life
- 4 die before they are 5 years old

Data sources:
- Literacy: UNESCO Global database is available for 1990 to 2015 – the 1873 vaccination was licensed in 1899.
- Education: OECD for the period 1800 to 1990. UNESCO for 2004 and later.
- Democracy: Polity IV index (own calculation of global population share)
- Child mortality: up to 1960 own calculations based on Gapminder; World Bank thereafter

All these visualizations are from OurWorldInData.org an online publication that presents the empirical evidence on how the world is changing.
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Thanks 😊