

# The Future Is Now: Digital Societies and Autonomous Vehicles

- **e-Estonia: A Small Country Revolutionizes Government Services**
- **Transportation: Take the Autonomous Bus to the Beach in Norway**
- **Chatbots: How to Build Your AI-Driven Conversational Interface**





Digitalization: Estonia's journey to a digital society

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Dublin: Home of pubs, friendly people, and OUG Ireland 2018

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# Editorial

Dear Oracle User Group Community Members,

With so many new and fascinating trends evolving in the industry right now, I am way beyond excited to be the one to write the editorial for this issue of ORAWORLD Magazine!

This time, you are in for an interesting read on e-Estonia, autonomous vehicles, chatbots, and how to patch your Oracle Database. For instance, in her article on [page 7](#), Sandra Särav from the Estonian government tells us an amazing success story of how her country with just over one million citizens has managed to build e-solutions that save its inhabitants not only time, but also money.

Besides, Artificial intelligence (AI) again plays a very important role in this issue: Read for example Ann-Sofie Vikström Often's article on [page 10](#) on how autonomous buses become reality in her neighborhood in Bærum, Norway. Or find out how to make use of AI-driven conversational interfaces and how build your own chatbot in Grant Ronald's article on [page 21](#). However, while all these new and exciting things are evolving and used more widely, we still need to remember the basics of data management: databases. On [page 28](#), you can read Mike Dietrich's advice and suggestions on patching the database.



**Heli Helskyaho**  
**Ambassador, EOUC**

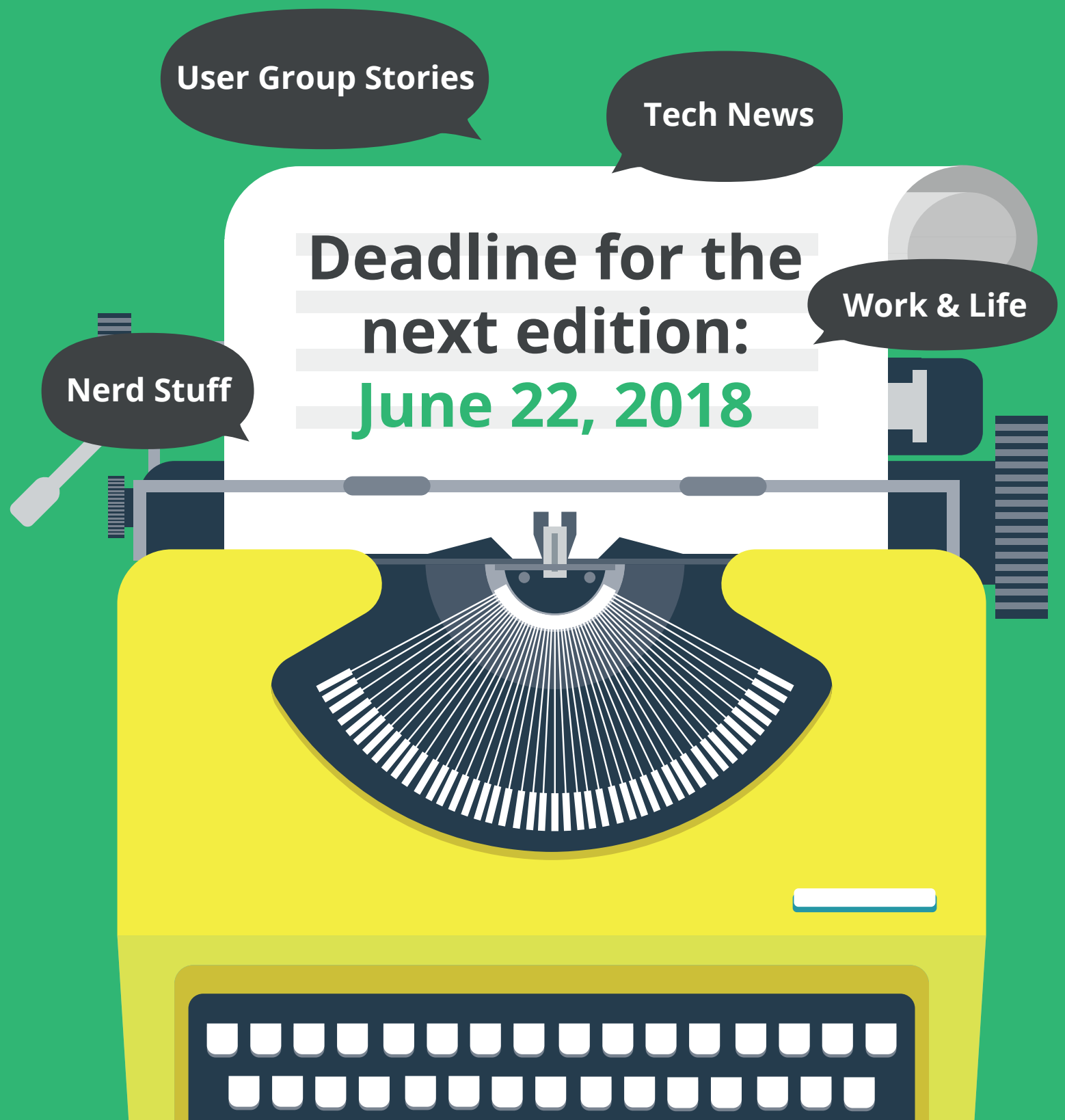
These are just some examples of the great articles in ORAWORLD issue 9. I hope you enjoy browsing through this issue! Please remember to submit your content for the upcoming issue online on our website: [www.ORAWORLD.org](http://www.ORAWORLD.org). Deadline is June 22, 2018.

Yours,  
Heli Helskyaho  
Ambassador, EOUC

# Submit Your Article!

You have an interesting topic to publish in ORAWORLD Magazine? Then submit your article and be part of it!

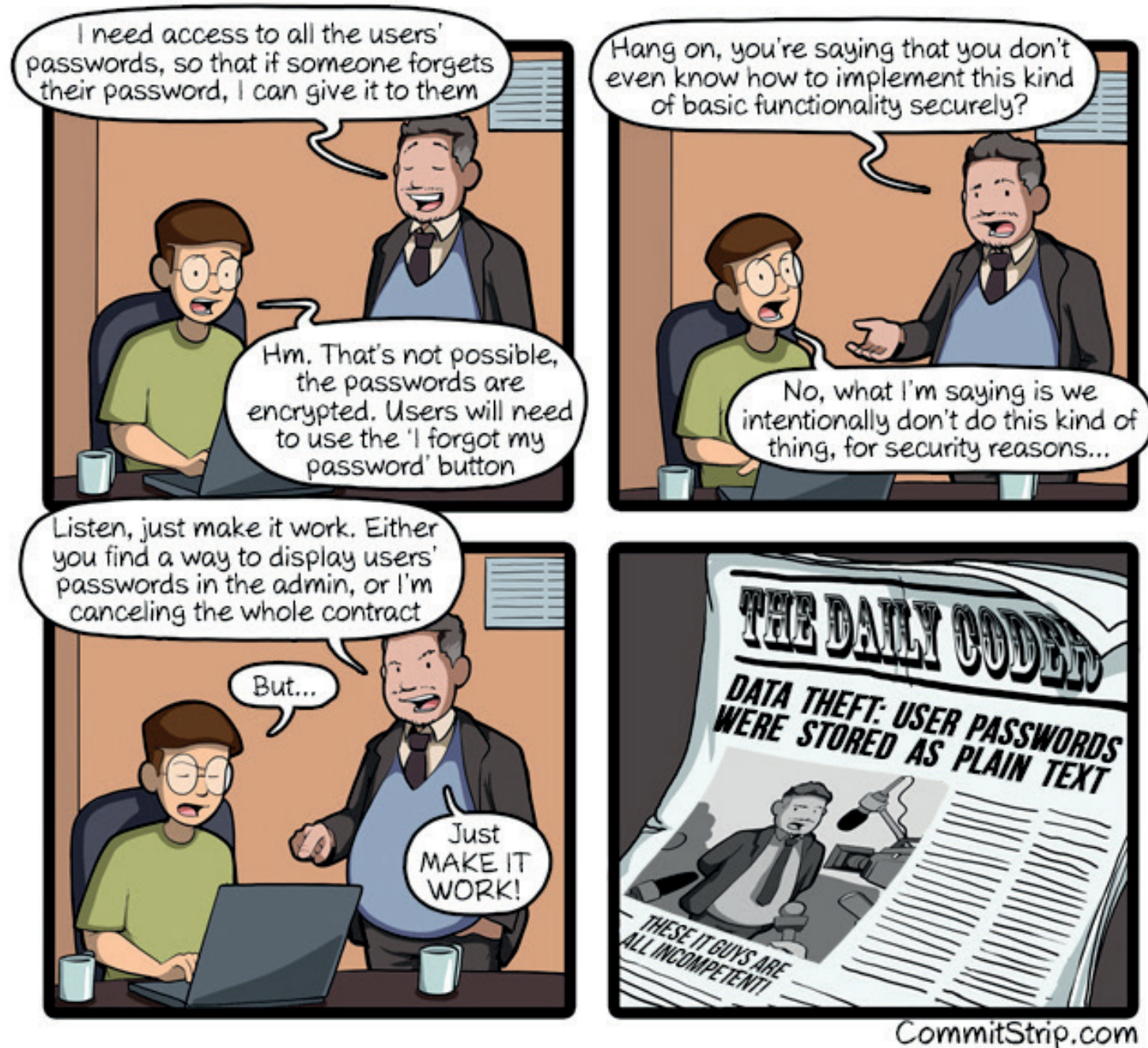
Please e-mail us your article via the online form at [www.oraworld.org](http://www.oraworld.org).





# Basic Functionality

[www.commitstrip.com](http://www.commitstrip.com)



CommitStrip is a daily strip recounting funny anecdotes of life as a coder mixed up with a dash of topical tech news. Find more comics here: [www.commitstrip.com](http://www.commitstrip.com)



# Fun Office Pranks That Won't Get You Fired

**Office work can quickly get tedious. To shake up a dull day at the office, try some of these pranks that will (probably) not get you fired. Always keep in mind that pranks should be in good fun, quick and not personal or destructive. Do not waste a lot of company time setting up the prank or getting rid of the aftermath. Never prank people you genuinely don't like and who might not like you. Always make sure your chosen colleague is a good sport and won't be irritated.**



© via reddit.com, wormholes

## The Milk Has Eyes

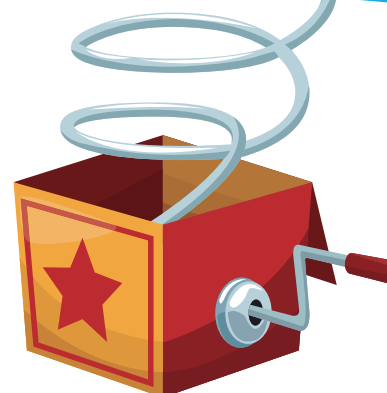
For this cute prank, buy a bunch of googly eyes and put them on every single food item in the fridge.



© Metro Goldwyn Mayer (MGM)

## Drawer Shock

Why not print out a funny picture of your choice (preferably a face) and hide it in your colleague's drawer? Tip: Pictures of iconic people like Nicolas Cage or David Hasselhoff are very suitable for this!



## Mouse Fun

A lot of pranks involve your colleague's mouse and they are pretty great. Simply put a sticker or tape a piece of paper over the laser reader of your colleague's computer mouse. Now watch them struggle to move their mouse. If you wish to be even more vicious, unplug the mouse, too. So if they think they solved the issue by fixing either one of these pranks, they will be severely disappointed.

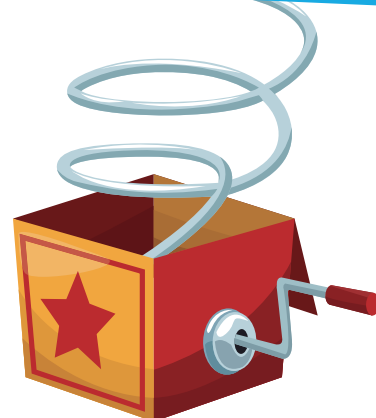
Or: Change the mouse movement speed to the lowest setting. To do this, press the Windows Key, type Control Panel and hit Enter. Then, click "Hardware and Sound", under the "Devices and Printers" section, click "Mouse". In the "Properties" window, click the "Pointer Options" tab and set the slider to the slowest speed.

## Colorful Surprise

Put M&Ms and Skittles and, if available in your country, Reese's Pieces into the same bowl and leave it out for your colleagues. If someone grabs a handful, they will most likely be very confused as soon as they start chewing due to the very different textures. Fairly easy to get away with this prank, since you will still reward your colleagues at the same time.



© GettinMyHealthyOn.com



## Desktop Mayhem

To people who do not know this trick, it can be quite confusing to suddenly see their desktop turned upside down. All you need to do is go to "Display Settings" and change the "Orientation" to "flipped" in the drop-down list.



© via CollegeHumor.com

## Cat Attack

Your colleague likes cats? Awesome. Your colleague hates cats? Even better. Turn their workplace into a photo book of an animal of your choice. Tip: To maximize the effect, make sure to include keyboard and telephone buttons as well!



© MJ Franklin, Twitter: @heyitsfranklin2

## Balloons? Balloons!

If you have enough time (and lung power), why not fill your colleague's office with balloons? Tip: Do not choose the colleague with the biggest office.



## Desktop Freeze

Take a screenshot of your coworker's desktop and set it as the new wallpaper. Carefully move the shortcuts, folders and files into a hidden folder or hide the icons. Needless to say, helpless clicking will ensue.





# e-Estonia — The Little Country That Could

Sandra Särav

*Estonia is often described as the digital leader in Europe. The country with just over one million citizens has managed to build e-solutions that save its inhabitants not only time, but also money. It was the first country to adopt online voting, and is still the only country in the world to offer e-residency. Read on for an inside view on Estonia's digital journey by Sandra Särav, who works as Global Affairs Director at the Estonian Government CIO Office.*

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I bet lots of you have heard of the term e-Estonia. That's what has put Estonia on the map. You may have even heard of terms like x-Road, KSI Blockchain, or that Estonia is the country where Skype comes from. But what does it really mean, from a policy perspective, to build a digital society? In my mind, it comes back to three key points.

**You cannot digitalize for the sake of digitalization.** You have to have an ulterior motive. Like putting the citizen in the centre. In 2018, countries are expected to digitalize and embrace the digital transformation, because data is the new oil and apparently, it's cost-effective to digitalize things. But it doesn't have to be blunt like that. We think that, right, it's good if the citizen declares taxes, but what if we actually made them enjoy the process? What would the citizen want? Well, what about not to spend days or weeks on declaring the taxes. What if they could do it within a couple of minutes? Or what if you, as a company, didn't have to declare taxes at all. What if you gave consent to the tax and customs board to collect the data in real-time and you wouldn't have to burden yourself with the process to begin with. And maybe we could use it in other ways – like pursuing real-time economy. And this is what we do at the moment. We build seamless services and try to enforce a proactive government that knows the needs of the citizens even before the citizen has to ask for something. Whereas this also means using the data given to us to predict what the economy will do next. It's like going to a restaurant and have the waitress read your mind and bring you the perfect food and wine combination. Plus, it turns out to be cheaper than McDonalds.

**Secondly, digitalization must be stable, but innovation cannot stand still.** In Estonia, we know that you always have to look forward and cannot rest on your laurels. Today, 99 percent of Estonian public services are online. We introduced

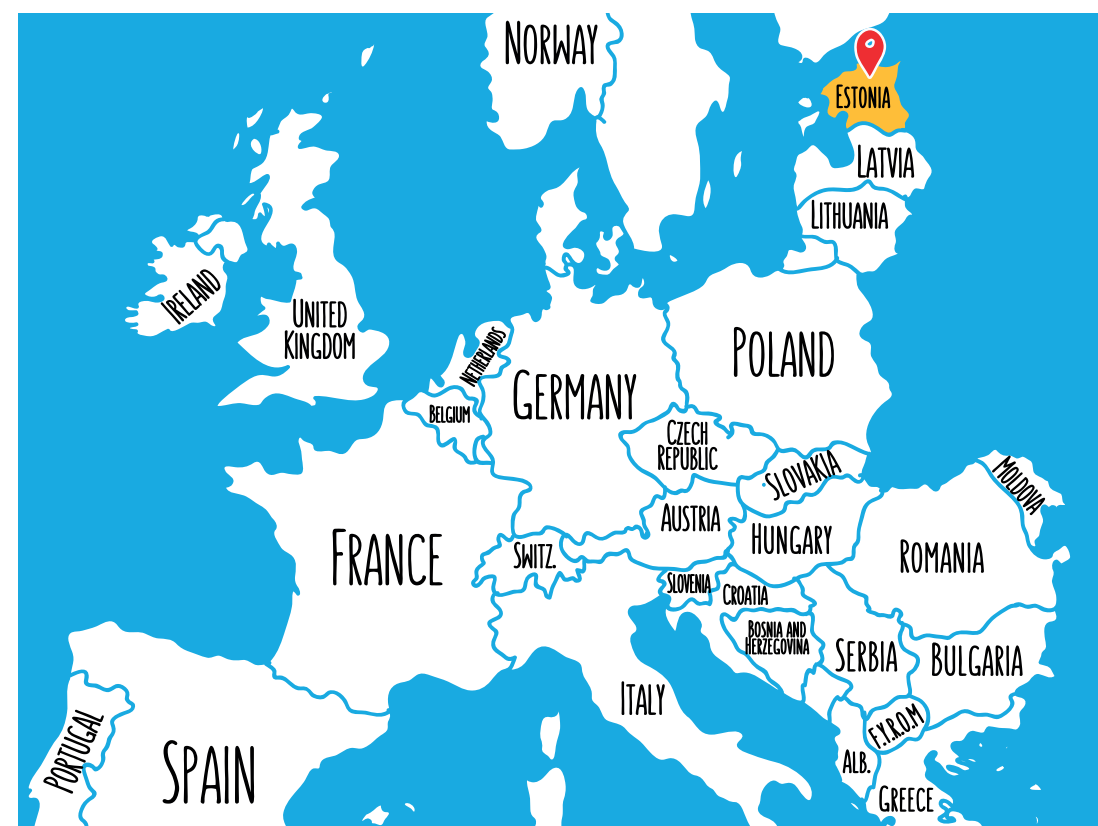


**Sandra Särav**  
Global Affairs Director  
at Estonian Government CIO Office

our mandatory national ID cards back in 2002, through which all these services are accessible. By 2015, almost all services were online and every third person used internet voting. But we didn't stop there. Under my first point, I mentioned that a government should be proactive. It's not only this, though. There's always something happening in the digital sphere that you need to catch up with. For instance, the keyword for 2018 is AI. And you have two options, really: a) overregulate it and kill it without enjoying its benefits; or b) see how it could help you and your citizens. Estonia grabs the bull by the horns. We see that we need to avail ourselves to the possibilities of AI. Now, one of the things we focus on is personalized medicine: with the help of AI, we could take healthcare to a whole new level. Last year, the buzzword was self-driving cars. We wanted to be there, too – we tested self-driving buses on the streets of Tallinn – successfully. And now we have a plan to launch a project of self-driving vehicles in Estonia. A few years before that, we opened our digital services to the entire world with the e-Residency programme. Today we have more than 30,000 e-residents using e-services of Estonia from more than 150 countries. And way before that, we were the first country to test Internet voting. So there's always something to look forward to, and if the big tech companies can innovate, it means that we as a country can, too.

My third point coincides a bit with my first but I need to emphasize it – **digitalization is not only about the technology and technological capabilities but about the mindset**. In today's global world, you can recruit technical talent from anywhere. We welcome other countries to implement our solutions like the so-called backbone of e-Estonia, our data exchange layer x-Road that saves us more than 800 working days annually. Our companies would be happy to set you up, but there has to be willingness. It's not only about introducing an ID card. Rather, think of it this

way: I've always driven a Volvo, but what if I tried a Tesla? What if I moved to Mars? Of course, this all requires a lot of trust. When we talk about digitalization, the citizens need to trust their government – but the government also needs to trust the citizens. There are different ways of ensuring that. For instance, in Estonia, the citizen or the company still owns their data. They just grant access to the data for the service provider. And most of the crucial data is secured with blockchain – so there's nothing to worry about really. We can check which medical professionals have accessed our medical records, and challenge this (in court) if necessary. And that's why 97 percent of patients have countrywide-accessible digital records: We also use almost-online digital prescriptions. This is how our brains work – if things are easier, faster, and more effective when done online – then this is what we do.



Ann-Sofie Vikstrom-Often

# Autonomous Vehicles – The Future of Transportation or Utopia?

*Can you see a future where driving your own car is so last year? Where you could get an unmanned bus or be picked up by your car wherever you are? Despite some serious accidents with self-driving cars during the last years, the evolution of self-driving cars continues. The most profiled companies like Tesla Motors, Google, Uber and Nissan seem to be pioneers in research, but other car manufacturers, researchers and technology companies are also developing in this field. Ann-Sofie Vikstrom-Often on autonomous vehicles.*





I have a Tesla S myself with the first beta version of autopilot, which is self-driving on the highway. It is very convenient, and “she” even adjusts speed to the actual allowed speed. There are already some shuttle buses in operation at several locations all over Europe, and at Fornebu, in Bærum community, Norway, there is a plan to start a trial with a self-driving shuttle bus. But let’s start at the beginning...

**What Is an Autonomous Vehicle?**

In short, an autonomous vehicle it is a vehicle that uses cameras, radar, GPS and ultrasonic sensor or lidars<sup>1</sup> together with the software to create a map of the situation. Hardcoded rules, for example obstacle avoidance or object visualization, help in following traffic rules in accordance with the software that takes control of steering, breaking, navigation etc.

**Autonomy Levels**

The scale used today for the level of self-driving goes from zero to five. Nowadays, most self-driving vehicles are in between two and three, but in a few years we will see more of level four vehicles.

Safety is one top benefit since it is assumed that an autonomous vehicle will be safer in following the speed signs, avoiding accidents and reading the traffic situations quicker than a human being. But the vehicle must also be secured so that hackers and terrorists cannot take control. And can we really trust the safety without having the possibility to take over the driving?

.....  
<sup>1</sup> Sensors that bounce laser light to determine the size and the distance to objects



*The maire Lisbeth Hammer Krogh of Bærum Community*

**Autonomy Levels**

|   |  |
|---|--|
| 0 | All major systems are controlled by humans   |
| 1 | Certain systems, such as cruise control or automatic breaking may be controlled by the vehicle (one at the time)                       |
| 2 | Simultaneously working functions (at least two) like automated steering, breaking, and acceleration                                    |
| 3 | The vehicle can manage all safety-critical functions under certain conditions, but the driver will be alerted to take over the driving |
| 4 | The vehicle is fully-autonomous in some driving scenarios but not all  |
| 5 | The vehicle is completely self-driving in every situation  |

Source: <https://www.ucsusa.org/clean-vehicles/how-self-driving-cars-work#.Wtwn8S-mOu5>



The green line shows the route. The bus will drive on a public road.

## Autonomous Vehicles and the Law

In order to give authorization for self-driving vehicles, changes of the law will be needed. Several countries have already applied some changes to law.

In addition, there are a lot of considerations when allowing fully-autonomous vehicles, for example:

- Who will be responsible in case of an accident according to the law?
- How can authorities manually stop a vehicle?
- Storage of sensor data for self-learning, but also controls
- Securing of personal data
- Routines for video storage (anonymization, deletion)
- Reporting to authority and insurance companies after an accident
- Securing the internet connections to the vehicle for unauthorized use

## Take the Bus to the Beach

In my community, Bærum, there will be a trial of a shuttle bus going outside my door from Fornebu Senter to the beach at Storøya.

It's a trip of one kilometer. Two buses will operate the route each way eight hours per day every day of the week during the summer season and will be manned by a host. The fleet management software of the buses will secure that they actually go in each direction every fifth to sixth minute. You could compare this kind of bus to an elevator automatically stopping at each bus stop instead of at every floor.

## The Route

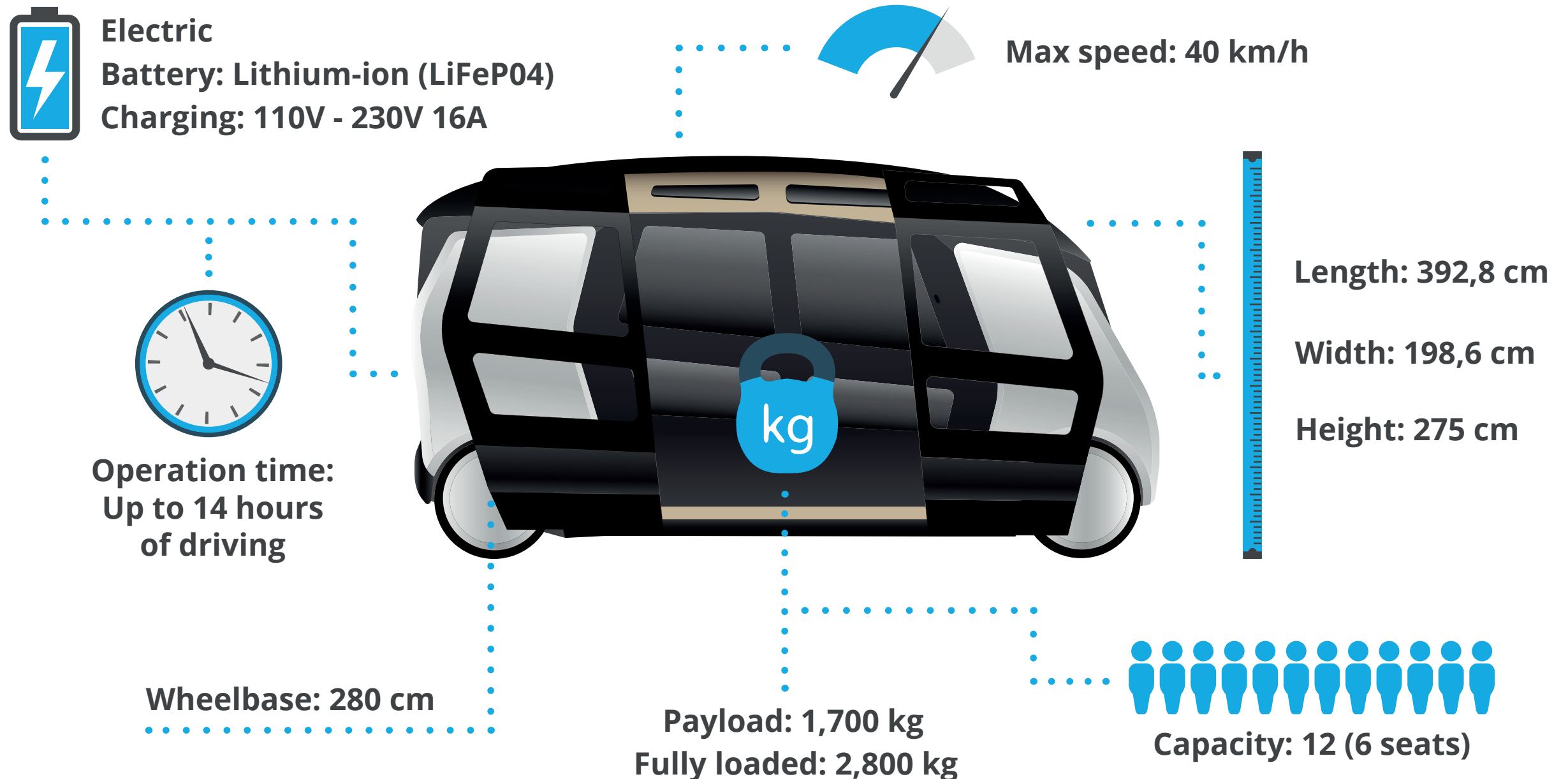
Frode Kjos from Acando in Norway, together with Bærum Community and OBOS (cooperative building association), has planned for the trial of the shuttle-bus. You can see the complete route on the picture above.



Security is a top priority. This is also the reason for the speed limit approved by the authority. The human host on board is there for teaching people how to use the bus as well as for security reasons. Every night the host also needs to drive the bus to the charging station. Since there is no steering wheel, the bus is driven by a joy stick.

## The Bus

The company EasyMile, with headquarter in Toulouse in France, is delivering the shuttle bus and there is also a model for an on-demand driving bus. The bus is on level four for autonomous driving capabilities. Here are some details of the bus:

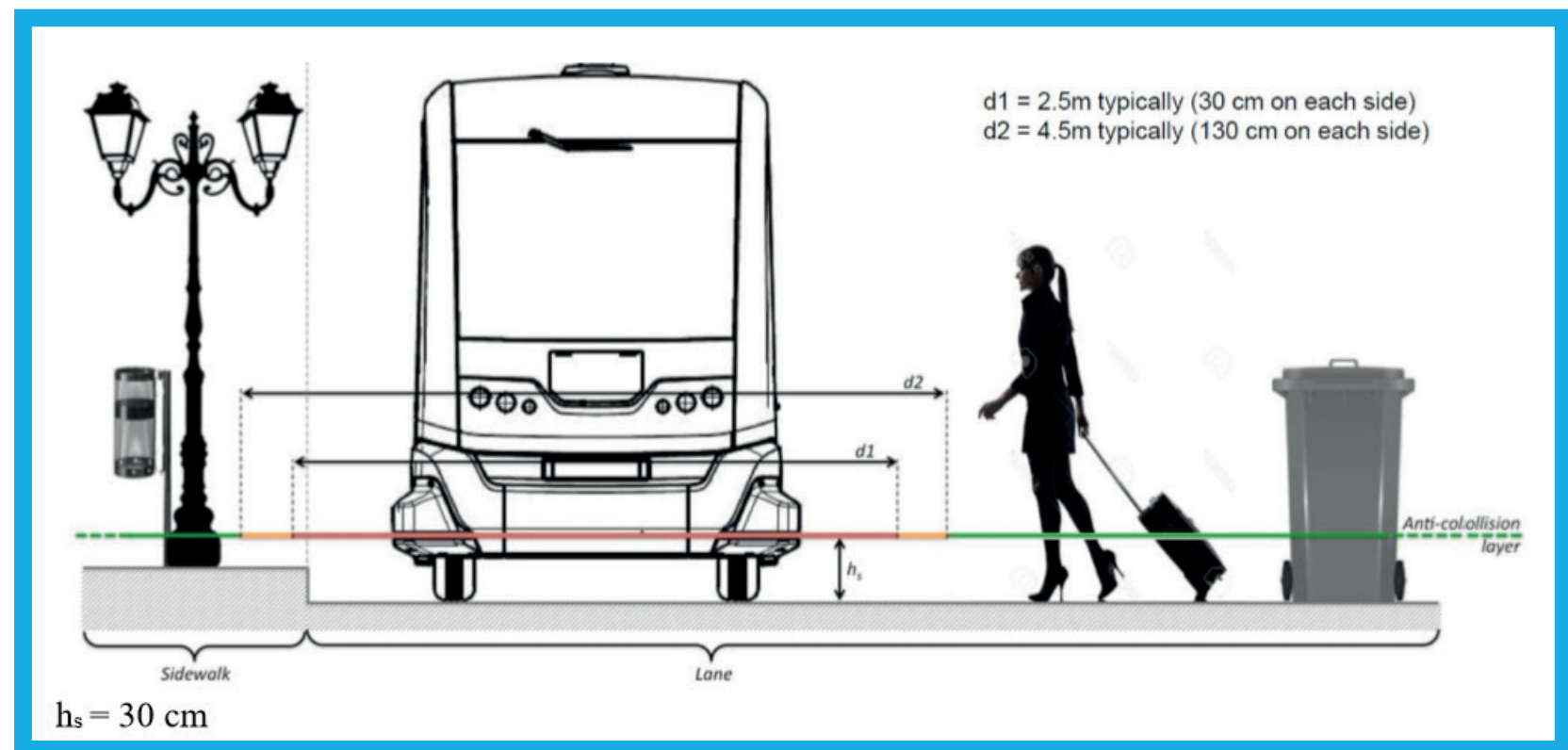
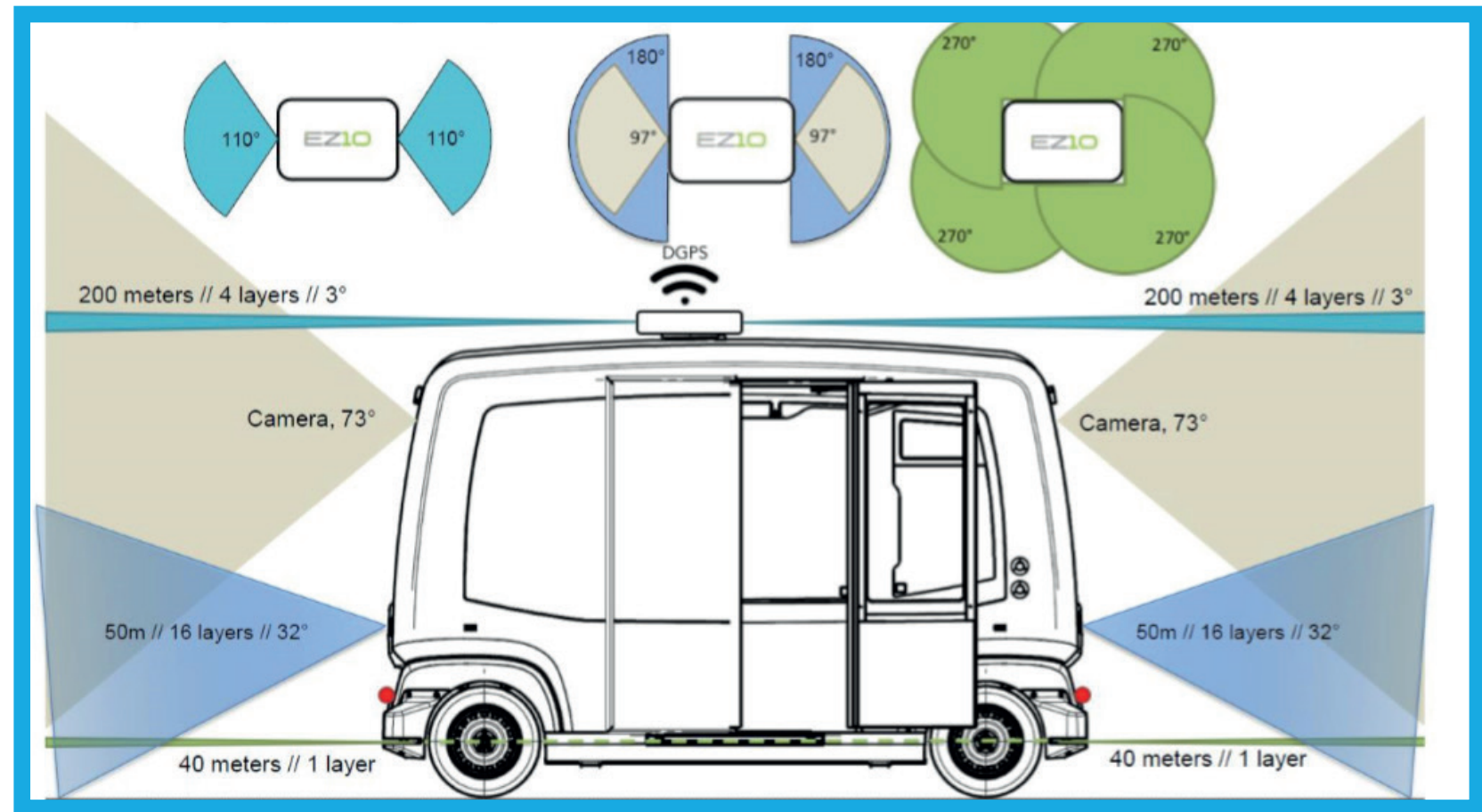




The picture on the right shows four infrared cameras (beige), two radars and GPS (turquoise), and lidars for up to 50 meter distance (blue) and for the nearest ranges up to 40 meter (green).

## How the Bus Avoids Collisions

When an object or a person is 130 cm from the lidars, the bus starts to slow down. If an object or a person is 30 cm from the lidar, the bus makes a sudden stop. That is of course when the speed is at a level that makes it possible to stop, and also the reason for the regulation of the speed on this route.





# Fun Facts on the History of Data Storage and Backup

*Marina Fischer, Andreas Schmidt*

*Do you ever look back and wonder how you could survive with only floppy disks? Nowadays, the amount of information that can be stored increases at a high rate while storage devices are getting smaller and smaller, or – with the world wide web – are no longer visible to the user. Read on for a journey through time back to the beginnings of storage history and see how far we have come.*



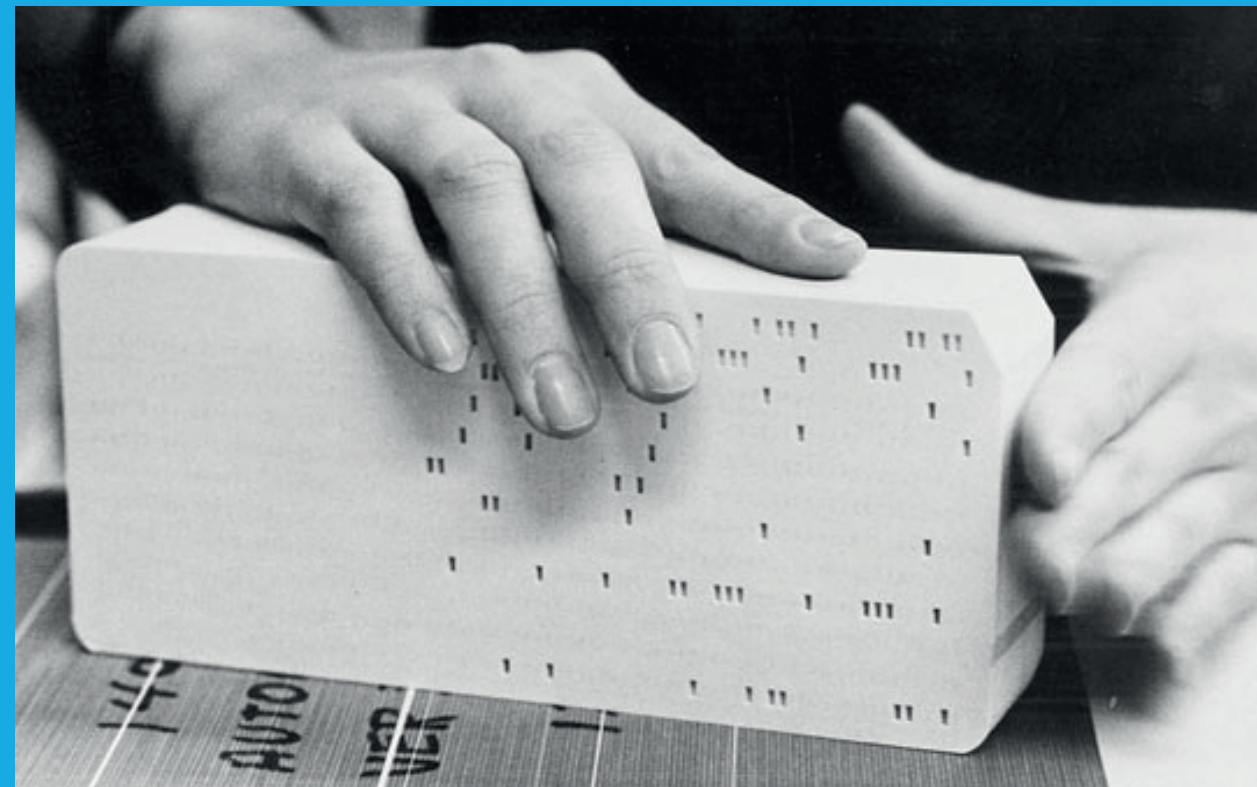
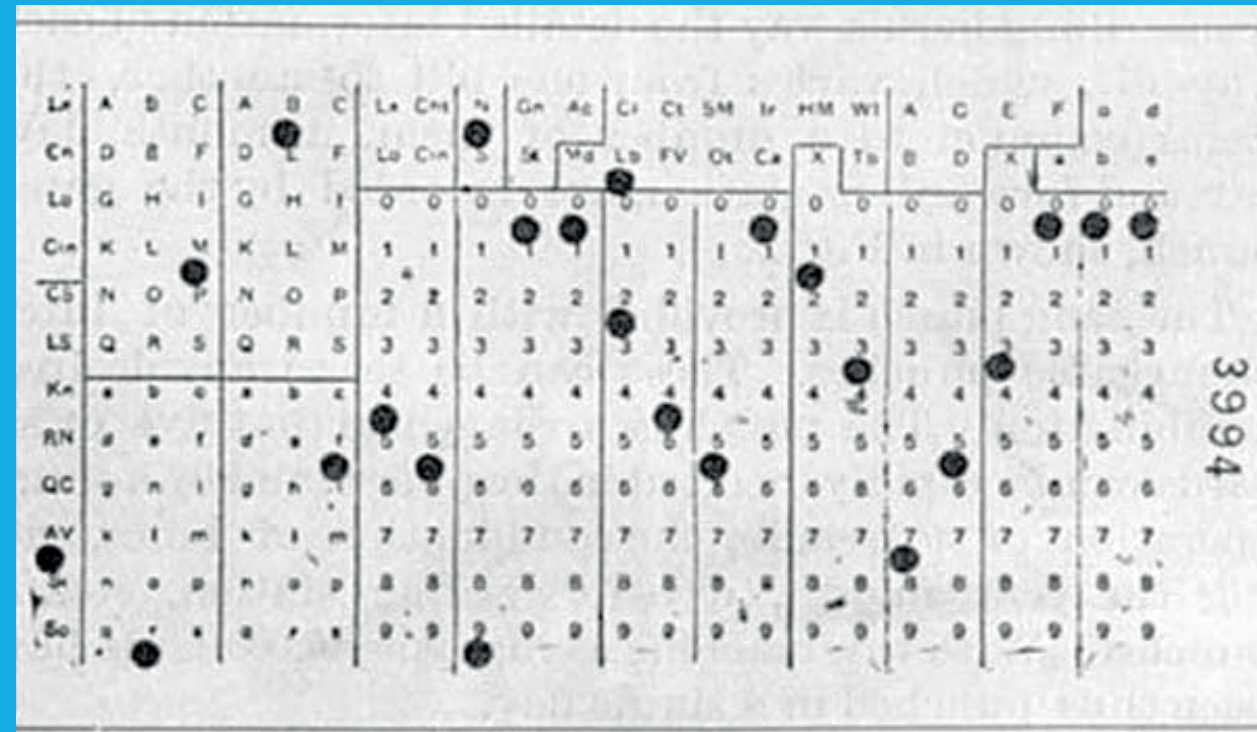


## Punch Cards

One of the earliest methods of data storage used with early computers were punch cards. These consisted of paper and had holes that were punched by machine or by hand. The holes in predefined positions, together with the absence of holes, represented digital information to be read by computers or machines. On the usual punch card, holes can be punched in 80 columns and 12 lines. Fun fact: The usual maximum line length of almost 80 characters in e-mails goes back to this punch card format.

It was Herman Hollerith who invented a punch card-based technique that was for the first time able to record and carry data to be read by a machine. At the time, the technology was developed for the 1890 US census. After that, the variety of punch card processing machines grew rapidly. By 1937, IBM produced 10 million punch cards every day.

Over the decades, punch cards had been replaced by other storage devices. However, they are still the subject of fun speculations: If one assumes that Google had a storage capacity of 15 exabytes, or 15,000,000,000,000,000 bytes, the region of New England would be covered to a depth of about 4.5 kilometers in punch cards in order to store the same amount of data.<sup>1</sup>



<sup>1</sup> Source: <https://what-if.xkcd.com/63/>





## Magnetic Tape

With the introduction of magnetic tapes as a storage medium in the 1960s, it was suddenly possible to store significantly larger amounts of data. One roll of magnetic tape could store as much information as 10,000 punch cards, which is why it became extremely popular for storing data until the mid-1980s. What is more, magnetic tape was also re-writeable – a fact that revolutionized the way that data was backed up. And, with magnetic tape, storage media was also used for the first time for private purposes – many of you still know magnetic tape as a tape or compact cassette for music.

## Hard Drive

IBM had been developing the world's first hard disk drive (HDD) since 1953 and introduced it to the market in 1956: The IBM 350 storage drive was part of the IBM 305 RAMAC computer and had the dimensions of a living room cabinet: 68 inches high, 60 inches wide and 29 inches deep (173x152x74 cm). The box contained 50 iron-oxide coated aluminum plates with a diameter of 24 inches (61 cm). The storage capacity of the entire component: about 3.75 MB. It had an impressive weight of just under one ton.

Operating the hard disk was only possible with ear protection because of its noise. According to IBM, the company built approximately 3,000 disk storage devices of the type „350“.

A smartphone with 16 GB SSD memory – that is about 4,000 times of the first hard drive's storage capacity – would have block-like dimensions with the hard disk technology of 1956: 66 feet high, 131 feet wide and 33 feet deep (20x40x10 meters). You couldn't call that mobile anymore, but you have to admit that it has enough space for a giant flat screen for watching a football game in a fan park!<sup>2</sup>

<sup>2</sup> Source: <https://www.youtube.com/watch?v=7f96PBO3yfQ>







## Floppy Disk

Many of you remember the plastic discs that have accompanied us for years, and that we have grown fond of for introducing us to the fun of PC gaming with games like Lemmings, Monkey Island and Xenon 2. The first floppy disk was introduced in 1969 by IBM and was a read-only 8-inch disk that could store 80 kB of data (that's about 1,000 punch cards). By 1973, the storage size had increased to 256 kB of data, being rewritable as well. In addition, with floppy disks being flat and no longer storing data on a roll, it was no longer necessary to store data sequentially. Now any data could be accessed and recovered instantly.

Later on, the floppy disk grew smaller, to a 3.5 inch disk, while at the same time allowing for more storage space, about 250 MB in the late 1990s. By being cheaper and more flexible than hard disks, floppy disks became very popular.



## CD/DVD

With the introduction of Compact Discs (CDs), the relatively low capacity of the floppy disk became a thing of the past. First invented by Philips and Sony together in 1979 as a digital audio disc, over the years it became a common way for home users and small businesses to do their backup once it became more affordable. CDs can contain up to 900 MB of data, which equals 500,000 pages of text in A4 format. In 2001, the CD was followed by the DVD and then Blu-ray, which can hold up to 50 GB of data.



## Today: Flash Drives, Data Centers, Cloud

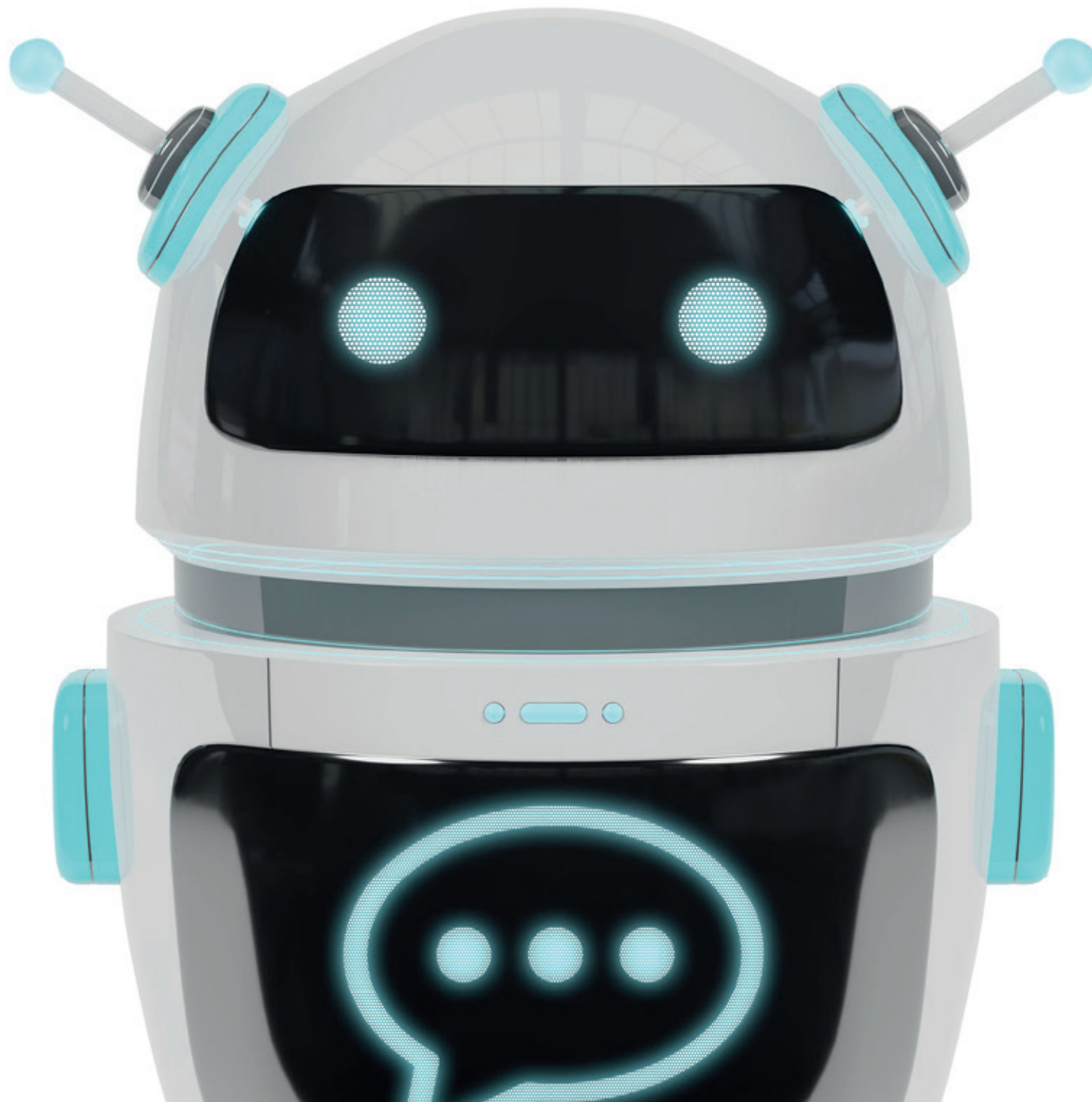
At the turn of the 21<sup>st</sup> century, USB sticks and external hard drives came to the market. Nowadays, you won't find USB sticks that don't hold multiple gigabytes, while for early models, it was normal to hold only a few megabytes of data. Almost everyone seems to have at least one USB stick in their drawer which, today, seems pretty useless due to its low capacity. The same development goes for external hard drives, while at the same time the costs per gigabyte became lower over the years.

With data centers and the cloud, data storage has been taken to a whole new level. It will be interesting to see what the future holds. What seems to be sure is this: With the ever-increasing data every day, the sky is the limit.



# Speaking of the Future: Grant Ronald

## AI Driven Conversational Interfaces



*Artificial Intelligence, Machine Learning and chatbots have become quite the darlings of the Oracle event circuit. Every presentation seems to find at least one use case to demo AI-driven conversational interfaces through messaging channels. And why not, what could be cooler than mobile, cloud and AI addressing real world business problems in a way that is already a comfortable interface for users today. Here is a quick rundown by Grant Ronald from Oracle on how to build chatbots.*





# The Building Blocks

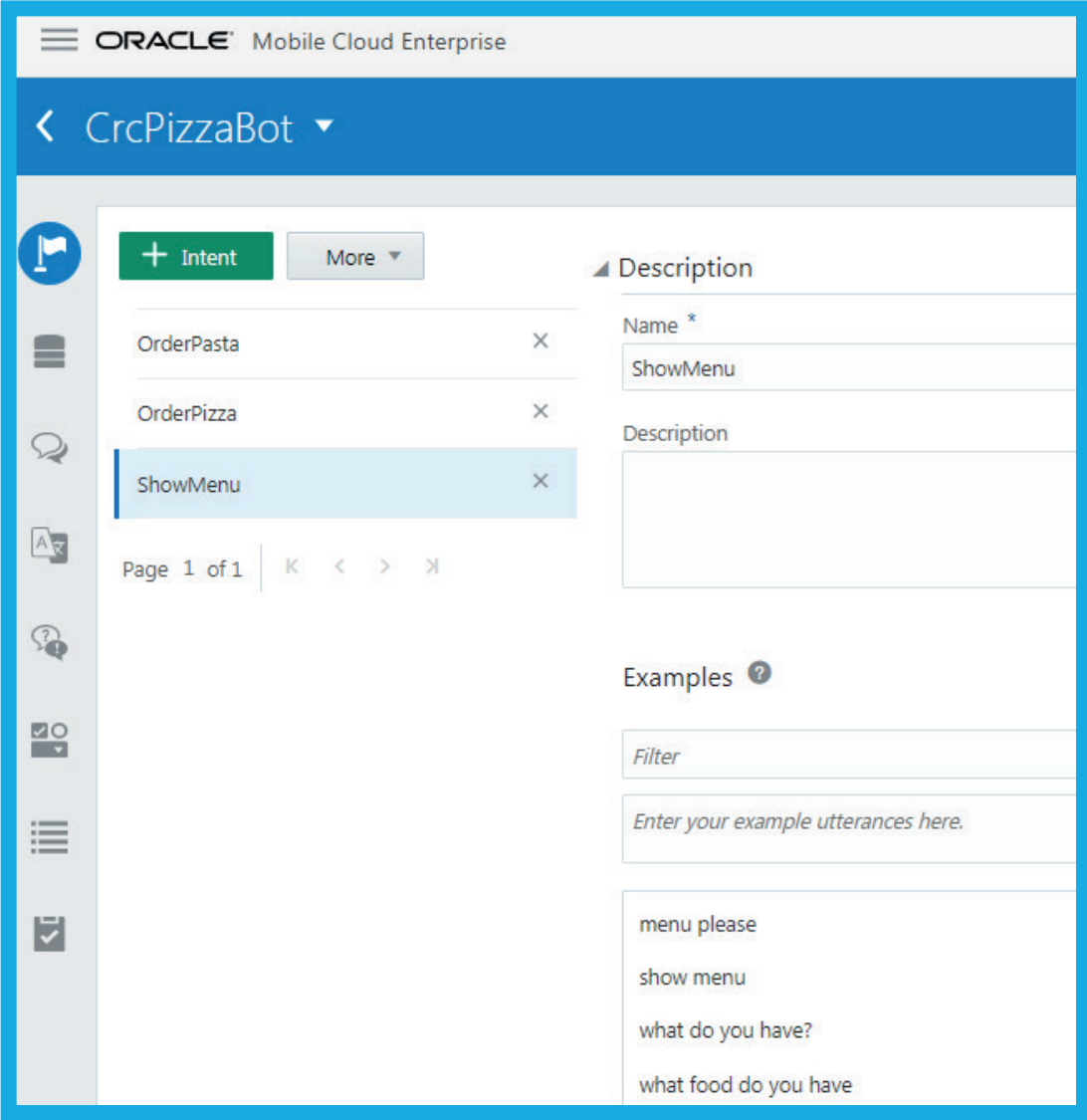
All chatbot development platforms are essentially designed with the same building blocks. With Oracle Intelligent Bots, for example, we've packaged up these building blocks as a feature of Oracle Mobile Cloud Enterprise (OMCe) – making chatbots a first-class citizen in a multi-channel digital experience.

The building blocks are:

|                                |  |
|--------------------------------|--|
| Intents                        | The use case that the bot understands as something it can actually do  |
| Training Utterances            | Like a work apprentice, a bot doesn't really know anything until you train it  |
| Entities                       | Variable elements or critical pieces of information in a conversation which need to be identified  |
| Natural Language Understanding | There must be a hundred different ways to order pizza – the smarter the bot is at understanding language, the more successful your bot will be |
| Dialog Flow                    | Like a river, conversations flow. This is where you define the bot conversation  |
| Backend Integration            | Your banking or pizza bot can be as chatty as you like, in the end, it has to do something real in some backend system somewhere               |

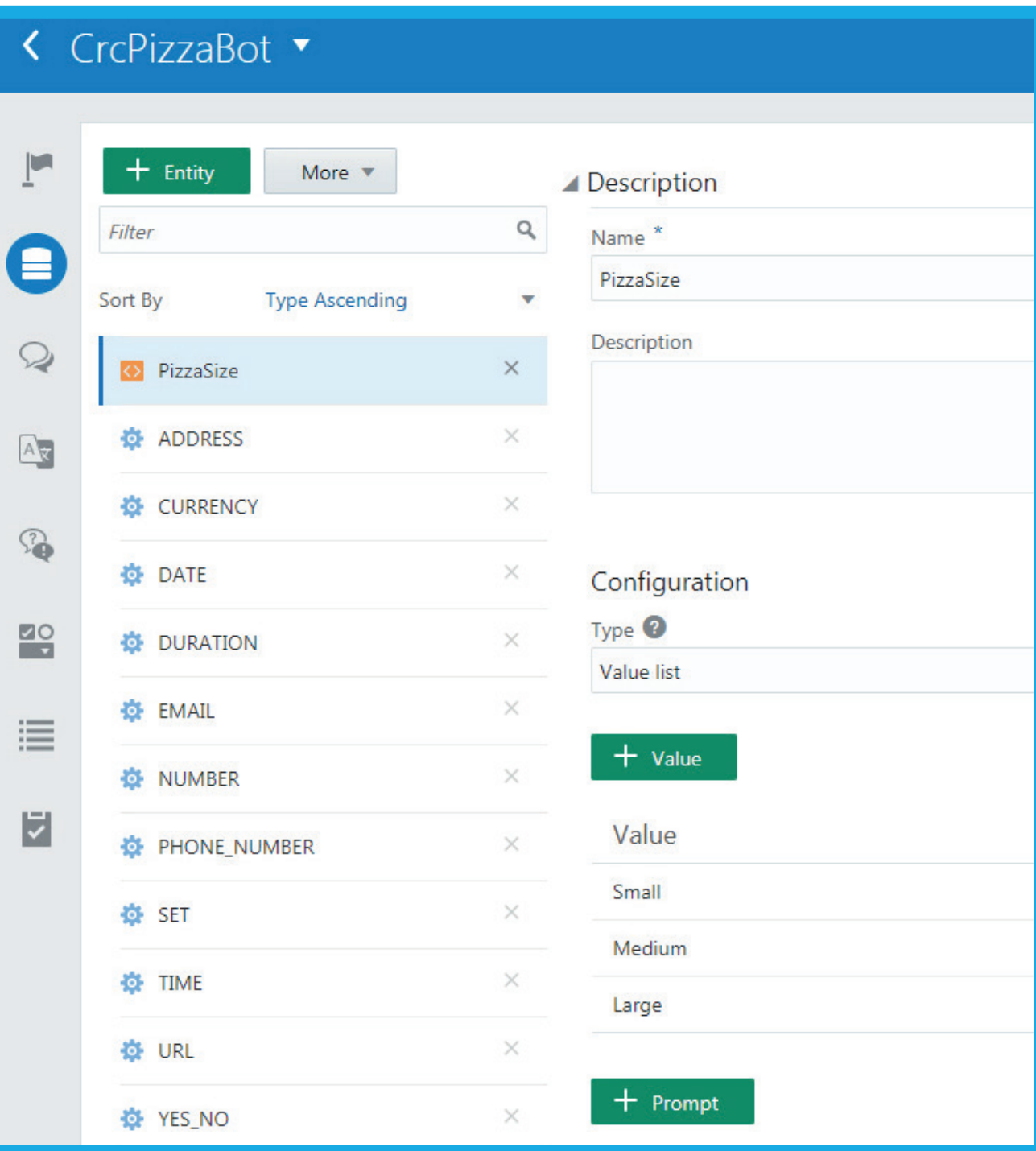
# Intents and Training

Just like a real person doing a job, you need to tell the bot what use cases it is supposed to deal with, and by inference, everything else it should politely decline or pass to someone who can help. We call each of these use cases an intent. Furthermore you have to supply training data to demonstrate how to differentiate the various use cases. These are called training utterances.



For the bot you define intents and training utterances





Entities help give relevance to each intent

Using a pizza chatbot example, we define that our chatbot can deal with ordering pizza, pasta, or displaying a menu. For displaying the menu, we give some examples of typical phrases that would be used for requesting a menu.

And this is where super cool AI comes in. Given that we can't guarantee how the user will actually request to browse the menu, we build up a model which is used to calculate a probability that any received user phrase can be classified as a particular intent.

Now, with most AI based on Machine Learning, it thrives on data. The more good quality training utterances you give it, the better. But of course, the way to getting more real-world training utterances is from real user input. What this means is that you're likely to have to start off by synthesizing a small set of utterances to get you up and running. One of the cool things Oracle Intelligent Bots offer is multiple training models: in particular one model which is better suited to small synthesized training utterances, and one which gives a higher accuracy as you provide more and more data.

So you might find that your initial development and testing uses one model but as you harvest more data you can switch to the model which gives you the full power of NLP (natural language processing) allowing the bot to better understand subtleties, slang, synonyms and other challenges of natural language.

## Finding the Details

However, in understanding a user input and mapping it to an intent you are only half way there. In most cases an intent will have elements that are variable yet need to be specifically

understood. We call these entities. *"I want to order a large pepperoni pizza for 10 pm today"* is obviously an order for a pizza, however, "pepperoni", "large", "today" and "10 pm" are variable elements of the input for which we have to pay special attention since they are unique (and important!) to each user's request.

Entity extraction is the ability to define variable elements, such as date, time or numbers as well as domain-specific variables such as "pizza size" and "pizza topping", which the chatbot can parse out of the sentence and assign into variables, typically ready to be passed to some backend system that needs to know the exact details of the pizza order.

## Conversation Flow

A conversation flows: from the initial greeting through to ensuring the chatbot captures all the relevant information to perform a specific task. In Oracle Intelligent Bots this flow is defined using a simple markup language that implements the various states, or steps in a conversation. Each step in the conversation is implemented with a "component" that performs a simple and discrete task. For example, a text component offers up a welcome greeting followed by an intent component which captures the user's input, then branches to the appropriate point in the conversation based on how that input is resolved to a specific intent (or whether it is unresolved). Each step guides the conversation until, typically, a special component, called a system component, calls a backend web service to actually perform the desired action against the backend system.

```
context:
  variables:
    size: "PizzaSize"
    type: "PizzaType"
    crust: "PizzaCrust"
    iResult: "nlpresult"
    sameAsLast: "YesNo"
  states:
    intent:
      component: "System.Intent"
      properties:
        variable: "iResult"
        confidenceThreshold: 0.4
      transitions:
        actions:
          OrderPizza: "checklastorder"
          CancelPizza: "cancelorder"
          unresolvedIntent: "unresolved"
    checklastorder:
      component: "System.ConditionExists"
      properties:
        variable: "user.lastsize"
      transitions:
        actions:
          exists: "lastorderprompt"
          notexists: "resolvesize"
    lastorderprompt:
      component: "System.List"
      properties:
        options: "Yes,No"
        prompt: "Same pizza as last time?"
        variable: "sameAsLast"
      transitions: {}
```

The dialog flows from resolving the intent, checking if they'd ordered a pizza before and if so, displaying a list with Yes and No options



## Is that It?

Well, yes and no. Those are the primary building blocks for developing a chatbot and a real-world chatbot will just be a collection of intents and entities using AI to resolve input and drive the conversation through the defined dialog flow. However, the success of a chatbot, and indeed a chatbot platform, is also based on other tools and features that support those core features. For example, the ability to deploy the chatbot through not only social channels such as Facebook, but also embed a chatbot inside your company's website, or maybe within a corporate mobile app. Or the ability for the chatbot to seamlessly handover to a call center agent should it require the intervention of a human. Multi-language bots, rich media capture, structured data capture, location based information and handling Q&A/FAQ styles of interactions are also other features which help a bot meet the needs of its users.

## Find Out More

So that is the taster, if you want to find out more about Oracle Intelligent Bots you can check out our dedicated channel on [YouTube.com/OracleMobilePlatform](#), our home page on [Oracle.com/mobile](#) or follow us [@OracleMobile](#).



## Grant Ronald

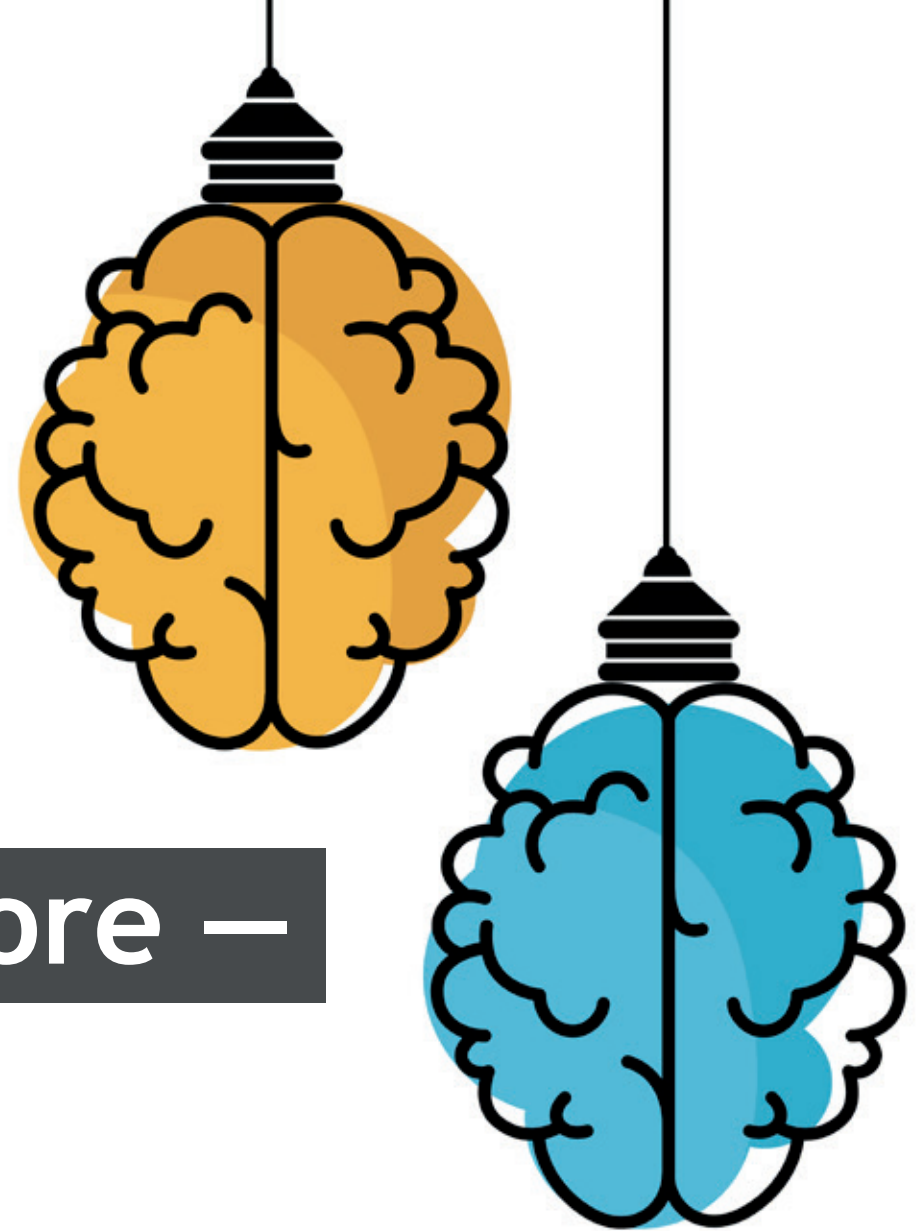
Director of Product Management Mobile  
and Intelligent Bots at Oracle



Number of  
the Quarter:

X2

*Andreas Schmidt*  
**Tomorrow We Know More —  
Twice As Much!**



In 1982, the American architect and designer Richard Buckminster Fuller described the “knowledge-doubling curve”. He found out that until the year 1900, human knowledge had roughly doubled within a century. In the middle of the 20th century, Fuller observed, it took only 25 years for knowledge to double. According to today’s experts, it is estimated that human knowledge doubled between 1980 and 1990, and then again between 1990 and 1995.

So what does the future look like? According to a statement from IBM, there are signs of a rapid acceleration in the doubling of knowledge: Within 12 hours, the existing amount of data will double<sup>1</sup>. What reasons are causing this exponentially accelerating accumulation of knowledge? For IBM, the development of the Internet of Things (IoT) is the driver.

What an exciting thought to consider when knowledge will be doubled in the blink of an eye ...

<sup>1</sup>Source: [http://www-935.ibm.com/services/no/cio/leverage/levinfo\\_wp\\_gts\\_thetoxic.pdf](http://www-935.ibm.com/services/no/cio/leverage/levinfo_wp_gts_thetoxic.pdf)





# On the Origin of the Apple Logo

*Andreas Schmidt*



Fairy tales are particularly beautiful, starting with a crisis and ending with an encouraging turnaround. Narratives of a great comeback or an encouraging turn of life are far too rare – this is one of them:

Once upon a time, a young student had been frustrated by his studies and quit college. He used his free time for something he was far more interested in than the academic matter: Calligraphy. He studied the design and effect of typefaces and incidentally found out that no current computer could offer the typefaces he loved. For the young man, this became a motivation to design a computer that supported his calligraphic interests.

The failed student had developed programming skills and years after leaving university, he and his friends designed his own computer and a program so that he could process and put his favorite typefaces on paper. This man was Steve Jobs. At the time of founding Apple, Jobs' diet consisted mainly of fruit, especially apples. The apple variety „McIntosh“ gave its name and logo to the Mac computers and the company that Jobs had built with his buddies. A success story, isn't it?

## Fun Facts

The bitten apple plays linguistically with the word “bite”. Besides the obvious meaning, “bite” also sounds like “byte”, the unit of measurement of digital technology. The design of the logo comes from Rob Janov from the time of the introduction of the Apple II computer in 1977.

# Oracle Database Patching – Tips and Tricks

Mike Dietrich

*Database patching is an exciting but also controversial subject. There are many things that may seem mysterious to someone who does not install fixes on a daily basis – starting with strange acronyms that may change magically through to tools that must be updated frequently. On top of that, there is the actual challenge: Which patch is the best for me? This article by Mike Dietrich from Oracle brings the subject database patching to light and gives some tips and tricks that are useful in everyday life.*





It is not simple to keep track of the various patches and abbreviations. The overview in [Table 1](#) provides some assistance but makes no claims of being complete. The question which patch is recommended for which release can be answered easily ([see Table 2](#)).

| Acronym | Definition             | Content  | Release       |
|---------|------------------------|--|---------------|
| CPU     | Critical Patch Update  | Security fixes   | ≤ Oracle 11.2 |
| SPU     | Security Patch Update  | Equivalent to CPU  | ≤ Oracle 11.2 |
| PSU     | Patch Set Update       | Security fixes, regression fixes   | ≤ Oracle 12.1 |
| BP      | Bundle patches         | Security fixes, regression fixes, behavior-changing optimizer fixes                  | ≤ Oracle 12.1 |
| PBP     | Proactive Bundle Patch | Equivalent to BP   | ≤ Oracle 12.1 |
| RU      | Update                 | Security fixes, regression fixes, behavior-changing optimizer fixes (off by default) | ≥ Oracle 12.2 |
| RUR     | Revision               | RU and new security fixes, regression fixes  | ≥ Oracle 12.2 |
| One-Off | One-off fix            | In addition to CPU, PSU, BP, RU or RUR   | All           |
| Merge   | Multiple one-off fixes | In addition to CPU, PSU, BP, RU or RUR   | All           |

Table 1

| Acronym | Release       | Where to install?  |
|---------|---------------|--|
| CPU/SPU | ≤ Oracle 11.2 | Only in Oracle 11.2 and only when exclusively security fixes must be installed             |
| PSU     | ≤ Oracle 12.1 | Only in Oracle 11.2 for Non-Engineered Systems   |
| BP/PBP  | ≤ Oracle 12.1 | In case of Oracle 11.2 only for Engineered Systems and special cases                       |
| RU      | ≥ Oracle 12.2 | Important: Starting from Oracle 12.1 for all database editions                             |
| RUR     | ≥ Oracle 12.2 | For all database editions starting from Oracle 12.2.0.1                                    |
| One-Off | All releases  | Only in case of a necessary stabilization when "updates" cannot be installed               |
| Merge   | All releases  | Only if absolutely necessary and when the fix is not included in a CPU, PSU, BP, RU or RUR |

Table 2

Opinions differ on the question “How often should I patch?”. It is necessary to find a balance between “effort” and “benefit”. Patching is usually not a task that can be done quickly before going home. Patches should be tested. A good option is applying patches first on an already existing standby database environment because most patches are “standby-first applicable”. This means these patches can be installed on the standby environment first to make sure that the patch can be applied correctly. Particularly in case of a large number of databases, the question is how often patching is even possible.



In my experience, most companies attempt to have two patch cycles per year. This is acceptable in many cases. However, I also recommend checking the risk matrix quarterly at the usual patch dates (always the Tuesday in January, April, July, and October, closest to the middle of the month – usually a date around the 17th). A high Common Vulnerability Scoring System value (CVSS) indicates a high risk and the security gap could be exploited easily and do a lot of damage. Prompt patching is definitely recommended in such a case. There are many vivid examples of what happens when this matter is ignored or when patches are only rarely or never installed. Please do not think: “My databases are not on the Internet.” That is not an argument because the enemy sits inside the network in many cases or obtains access to important servers by another route.

Where Do I Get the Correct Patch?

Only customers with active support contract have access to patches and can download them via “support.oracle.com”. The easiest method to find patch bundles (i.e. CPUs, PSUs, BPs, RUs, and RURs) for all platforms is with My Oracle Support Note 2118136.2 (Assistant: Download Reference for Oracle Database/ GI RU, BP, PSU). One-off fixes are available via “Patch” tab on My Oracle Support. Please use the assistant so that you always load the correct and latest patch (see Figure 1).

Selection(s)

What would you like to download?

☐ Oracle Database Base Releases

☐ Oracle Database Patchsets

☐ Oracle Database Release Updates (RU) and Release Update Revisions (RUR)

☐ Oracle Database PSU, SPU(CPU) Bundle Patches

☐ OJVM PSU/Bundle Patches

☐ Latest Available Microsoft Windows Patches

Selection(s)

What would you like to download?

> Oracle Database Release Updates (RU) and Release Update Revisions (RUR) [Change]

Please select the version:

☐ 12.2.0.1

Related Information

12.2.0.1

| Description               | Database RU              | GI RU                    | Windows Bundle Patch     |
|---------------------------|--------------------------|--------------------------|--------------------------|
| OCT2017 (12.2.0.1.171017) | <a href="#">26710464</a> | <a href="#">26737266</a> | <a href="#">26758841</a> |

Figure 1: MOS-Note 2118136.2, Patch Bundle Download Assistant





## Patching OPatch before Patching

In the README of the applicable patch bundle, the minimum version of OPatch is displayed to install this patch. In \$ORACLE\_HOME, there is usually already a subdirectory named "OPatch". However, the version of the tool for installing patches in this directory must be updated from time to time. OPatch is always made available with patch no. 6880880. Usually, version 12.2.0.1 can also be used to install patches and patch bundles for lower releases (*see Figure 2*).

Now and then, there is the question of why the suitable OPatch version cannot be downloaded automatically together with the requested patch. The answer from Sustaining Engineering, the group at Oracle that maintains the subject

"patching", is as follows: "Since patches must be literally always available, there would be a large number of old OPatch versions on the support portal. This would lead to old versions of OPatch in use that would not include current bug fixes or extensions. That is why we favor the model of separate downloads."

## What Are the Changes Starting from Oracle Database 12.2?

The "patching" topic sees an important change with the introduction of Oracle Database 12.2. The previous model of Patch Set Updates (PSUs) and Bundle Patches (BPs) is replaced by updates (RUs) and revisions (RURs). This new model has many benefits. On the one hand, you can switch between

**Patch 6880880**

Simple Search Advanced Search Quick Links Saved Searches

Description **OPatch patch of version 12.2.0.1.11 for Oracle software releases 12.1.0.x (installer) and 12.2.0.x (OCT 2017)**

Product **Oracle Global Lifecycle Management OPatch**

Select a Release

Platform or Language

Last Updated **06-NOV-2017**

Size **90M (95262208 bytes)**

Entitlement Class **Software**

Classification **General**

Download View Readme View Digest

Figure 2: Patch Number 6880880, Loading of current OPatch Version

updates and revisions, which was more difficult with PSUs and BPs. On the other hand, the new model should lead to fewer one-off fixes. [Figure 3](#) shows the difference in the following diagrams. Until Oracle Database 12.1.0.2, the PSU/BP model applies.

Usually, a PSU includes only security fixes and so-called “regression fixes”, i.e. patches that fix problems affecting many Oracle users but that do not change the behavior. Bundle patches usually also include behavior-changing optimizer fixes and possibly functional fixes, i.e. patches that extend or improve functionality. It is very important to note that behavior-changing optimizer fixes are turned off since mid 2017. They can be turned on specifically – since Oracle 12.1 either via package “DBMS\_OPTIM\_BUNDLE” or specific “\_fix\_control” settings documented in the README. [Figure 4](#) shows the model effective with Oracle Database 12.2.0.1.

Updates are also released quarterly. A new Update gets released in the following quarter, but also an additional Revision. The difference between Updates and Revisions is that Updates, in principal, have structurally the same content as Bundle Patches, but Revisions, in addition to the previous Update, only include new security fixes and potential regression fixes. There will be only a maximum of only two Revisions per Update.

Revisions are only meant for cases in which it is absolutely necessary to get a patch bundle that has the smallest possible number of fixes which

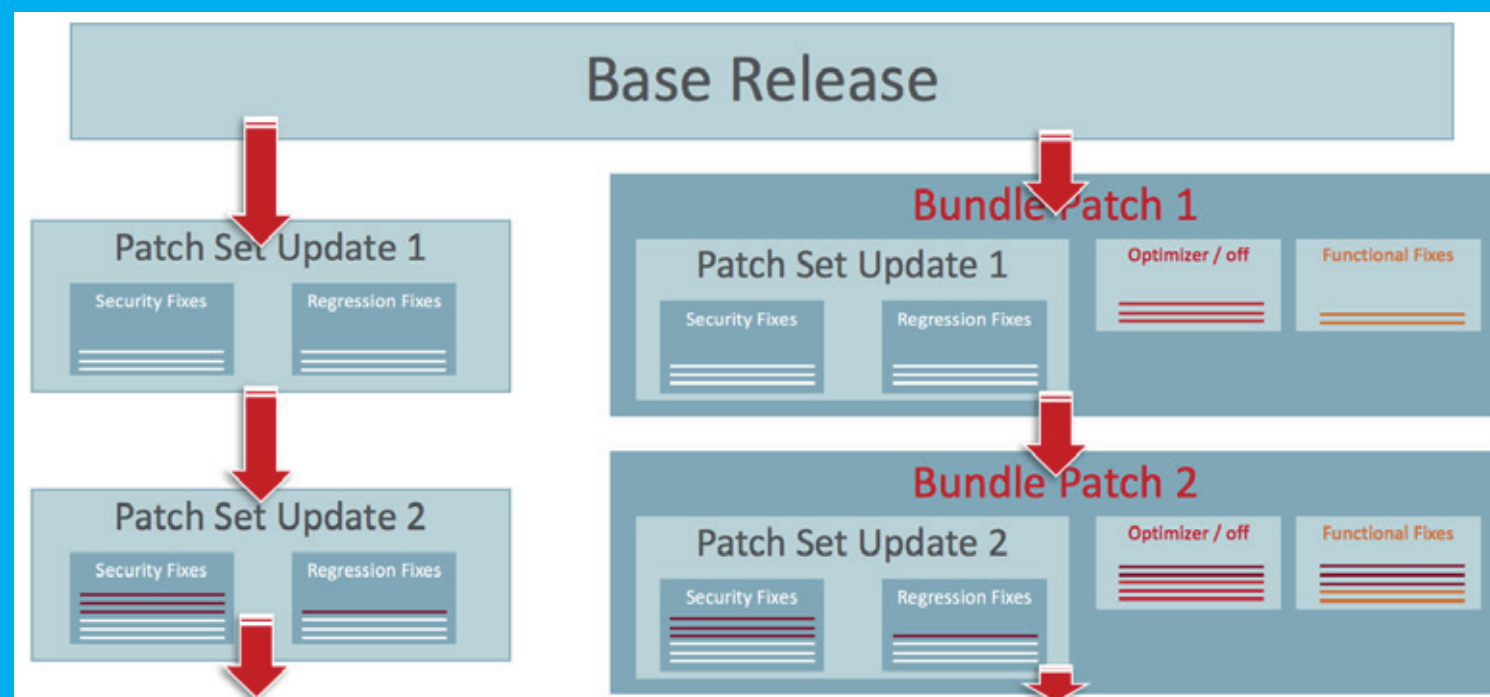


Figure 3: Patch Set Updates and Bundle Patches

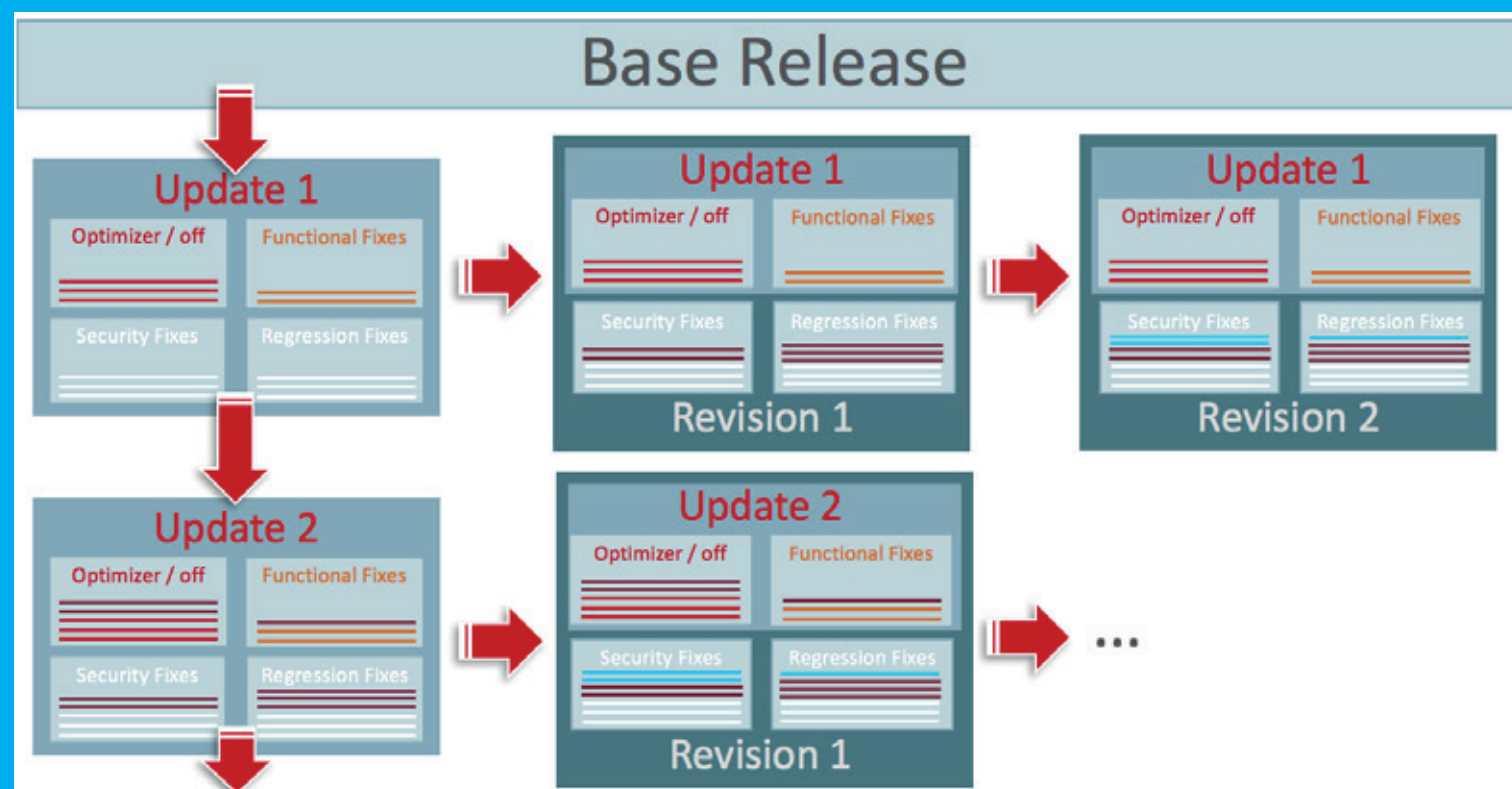


Figure 4: Updates (RU) and Revisions (RUR)



is not already included in an Update. After a certain time, the step towards Updates i.e. a subsequent Revision will occur anyhow but this version will also include a subsequent Update. Therefore, the clear and precise recommendation: Install the Updates. Revisions should only be used in special cases when an important fix is made available but the Update that also includes the fix is not yet available. One-off patches can be released in addition to both Updates and Revisions. However, the objective is to release fewer one-off fixes with the new model. There will be no changes on Microsoft Windows as Oracle platform.

## The Best for Last

Patching is not a great subject; it is more of a necessary duty. Due to complexity, particularly of the Oracle database software, patching is often also no light fare. Even so, you have to deal with the subject and try to install the latest update (or bundle patch) at least twice a year.

On top of that, you should be open for late updates in the approval process. Many problems in practice result from, for example, determining a January patch bundle as basis in the test cycle but the April or July Update has already been available for the actual go-live in August. You thereby knowingly reject several hundred bug fixes. This frequently leads to problems that must be solved with patching after go-live. These pitfalls can be avoided by installing the quarterly Release Updates in the approval process as soon as possible.

Very important: An Update is not an upgrade. We speak of an upgrade, when we switch from Oracle 11.2.0.4 to 12.2.0.2 or from Oracle 18 to Oracle 19. However, when we install the July bundle patch for Oracle 12.1.0.2, the October Update for Oracle 12.2.0.1 or, starting next year, the October Update for Oracle 18, increasing the release number from 18.3.0 to



**Mike Dietrich**

Master Product Manager,  
Oracle Corporation

18.4.0, then this is only an update. Updates and Revisions will be installed with opatch. Database upgrades still will be done with either catctl.pl or DBUA. Upgrade test routines are not necessary for this purpose.

**Note:** At <https://mikedietrichde.com/slides/#DOAG2017>, you can find presentation slides of the author regarding the new release and patching model.



# The IT Department

*Lisa Damerow*

Whenever employees encounter issues with their computers, they quickly phone the IT department for help. But what if someone or something else is sent to help them? In this funny clip, watch a series of hilarious misunderstandings when employee Tim calls for IT and does not quite get the help he asked for.



Heli Helskyaho

# ilOUG Tech Days 2018

*Heli Helskyaho speaks at many user group events every year. As an ambassador for EOUC, she especially enjoys those in her own area, EMEA. In January, she had the pleasure to visit the user group in Israel, ilOUG. Read on for her report on the conference.*







This was my third visit at an iIOUG event and it gets better every time, as I get to know more and more of the attendees. The event was organized in the beautiful city of Tel Aviv, which has an amazing beach. Even though the weather was not very warm, it was wonderful to walk on the beach to the Old Jaffa.

The day before the event, the iIOUG team took us speakers for a sightseeing tour in Jerusalem. Our guide was Ika Schweitzer who is definitely one of the best guides I have ever met. And Jerusalem is a beautiful place with a lot of history. Definitely worth visiting!



Besides, the food in Israel is wonderful! It takes a couple of meals to understand that the 100 plates they bring to the table are really starters... and the main course is yet to come. It is delicious!

The conference was for two days, January 22-23. The content of the conference was really world-class, including Maria Colgan's keynote and 57 other sessions that were selected out of 168 submissions. There were speakers from ten different countries! Those speakers included nine ACE Directors, ten ACEs, and two ACE Associates. Thanks to Oracle's support the

organizer was also able to invite 50 students from various technological institutions to attend the event.

Based on the feedback I heard and the feedback the organizers got, this event was a great success: 88 percent of the attendees found the event very good or excellent and are very likely or extremely likely going to attend iIOUG Tech Days again in the future! I enjoyed it a lot and I want to take the opportunity to thank iIOUG for inviting me and the Oracle ACE Program for funding my trip. All the best to iIOUG for your valuable contribution to the Oracle community.







# OUG IRELAND 2018

Heli Helskyaho

*In March on the 22nd and 23rd, Heli Helskyaho had the chance to attend the OUG Ireland conference for the first time. The conference was held in The Gresham Hotel in Dublin, which she found to be a nice city with plenty of pubs and friendly people. Read on for her report on OUG Ireland 2018.*



The content of the conference was interesting and rich. Presentations were in four tracks including content for everybody. Dominic Giles himself gave an excellent keynote about autonomous data management and Mike Dietrich explained how the new versioning works on Oracle, just to mention a couple of talks.

Thanks to support from Oracle Academy, the organizers were able to invite 20 students from various technological institutions to attend the event. Brendan Tierney, UKOUG board sponsor for OUG Ireland, taught them how Oracle works, and then they were allowed to attend the conference for free.

I gave two talks at the event, the second one together with the amazing Chris Saxon. I think the audience enjoyed it really much when we fixed the worst database in Ireland.

After the first day of the conference, there was a networking party with some beer and chocolate tasting – quite a success, as you can see on the picture. During that evening, Kiran Tailor (on the left of the second picture) was awarded an Oracle ACE Director. Congratulations, Kiran!

The event was really good and I enjoyed talking with people. Luckily this time, I was smart enough to stay one extra day since I have never been to Dublin before. In the evening of the second day, we gathered together to play some cards (Cards against Humanity) and had so much fun you could not believe. Thank you Christian Berg for organizing, again!





The next day I attended an amazing walking tour... and later that evening, a guided pub tour. I do not drink beer but who could visit Dublin without trying any?

A pub tour in Dublin would be nothing without gin tasting. This time we tried Martha's Revenge, an Irish milk gin. Not bad at all!

I enjoyed the event a lot and I want to take the opportunity to thank OUG Ireland for inviting me and the Oracle ACE Program for funding my trip. All the best to OUG Ireland for your valuable contribution to the Oracle community.





# Ambassador's Corner

Heli Helskyaho

Dear user group leaders,

I hope you and your user groups are doing well!

## EOUC Leaders' Meeting in Zagreb

Our next face-to-face meeting will be in Zagreb, Croatia, in June. I am sure you noticed the interesting program for the days before the event that HrOUG team has been organizing for us!

## Oracle OpenWorld 2018

At the very moment I am writing this letter, we are in the middle of voting our representatives to speak at the Oracle OpenWorld 2018. Exciting times! As usual we will have some slots in the agenda that will be filled with the content we choose. I hope all user groups will use their votes and select the best sessions. Fingers crossed for all our excellent candidates!

## EOUC Mailing List

We have agreed that each user group will have a generic contact e-mail address to give us an access point to every user group even when the members of the user group's board will be changed. We still have several user groups that have not delivered this e-mail address. If your user group has not yet

### Your Ambassadors:



**Ami Aharonovich**  
**iOUG (Israel)**  
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**Heli Helskyaho**  
**OUGF (Finland)**  
heli@miracleoy.fi

created the e-mail address, please do so ASAP and email it to your Ambassadors. They will maintain the e-mail list for EOUC. If you did not get the email about Oracle OpenWorld voting, your user group has not yet sent the e-mail address to us :-)

I hope to see many of you in Zagreb!  
Best regards,  
Heli

# Call for Papers

SOUG Day

Until August 13, 2018  
Baden-Dättwil, Switzerland  
events@soug.ch







# Events

## Tech Experience 2018

June 7-8, 2018  
Amersfoort, the Netherlands  
secretariaat@nloug.nl

## BGOUG Spring Conference

June 8-10, 2018  
Borovets, Bulgaria  
bgoug.online

## AOUG User Conference – 30 years AOUG

June 11-12, 2018  
Vienna, Austria  
www.aoug.at

## Kscope18 Conference

June 10-14, 2018  
Orlando, Florida  
kscope18.odtug.com

## POUG 2018

September 7-8, 2018  
Gdansk, Poland  
info@poug.org

## SOUG Day

September 18, 2018  
Baden-Dättwil, Switzerland  
events@soug.ch

# Events

## HrOUG 2018

October 16-19, 2018  
Rovinj, Croatia  
[2018.hroug.hr](http://2018.hroug.hr)

## Oracle OpenWorld 2018

October 22-25, 2018  
San Francisco, USA  
[www.oracle.com/openworld](http://www.oracle.com/openworld)

## DOAG 2018 Conference + Exhibition

November 20-23, 2018  
Nuremberg, Germany  
[2018.doag.org/en/home](http://2018.doag.org/en/home)

## UKOUG Technology Conference & Exhibition 2018

December 3-5, 2018  
Liverpool, UK  
[info@ukoug.org](mailto:info@ukoug.org)

## UKOUG Applications Conference & Exhibition 2018

December 3-5, 2018  
Liverpool, UK  
[info@ukoug.org](mailto:info@ukoug.org)

## UKOUG JD Edwards Conference & Exhibition 2018

December 4-5, 2018  
Liverpool, UK  
[info@ukoug.org](mailto:info@ukoug.org)





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