

We create the technology to connect the world

Smart Mobility Enabled by 5G

Juha Salmelin, Technical Leader , Nokia 29th January 2019

NOKIA

A photograph of two hands forming a heart shape at a festival, with the Nokia logo overlaid in a semi-transparent purple color. The hands are adorned with various accessories, including a ring, a watch, and several beaded bracelets. The background shows a crowd of people at a festival with colorful lights and a bright sky.

5G Will Connect Everything, Especially Moving Things

5G will be the connectivity platform for smart mobility

Three technologies emerging at the same time:

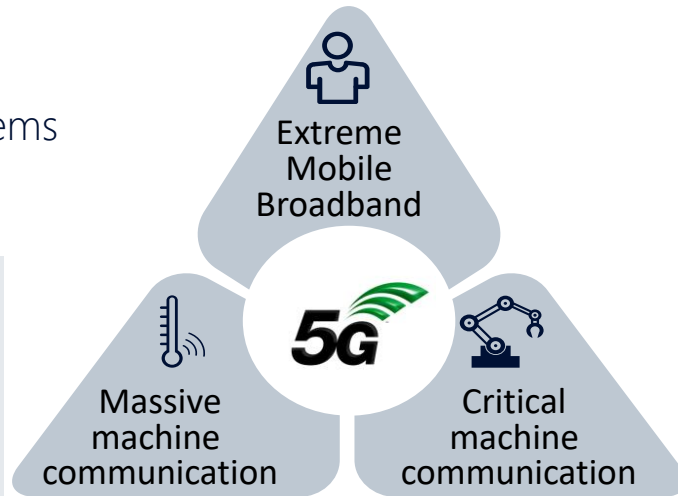
AI/ML data analytics

5G connection with low latency and high capacity

IoT massive deployment of sensors

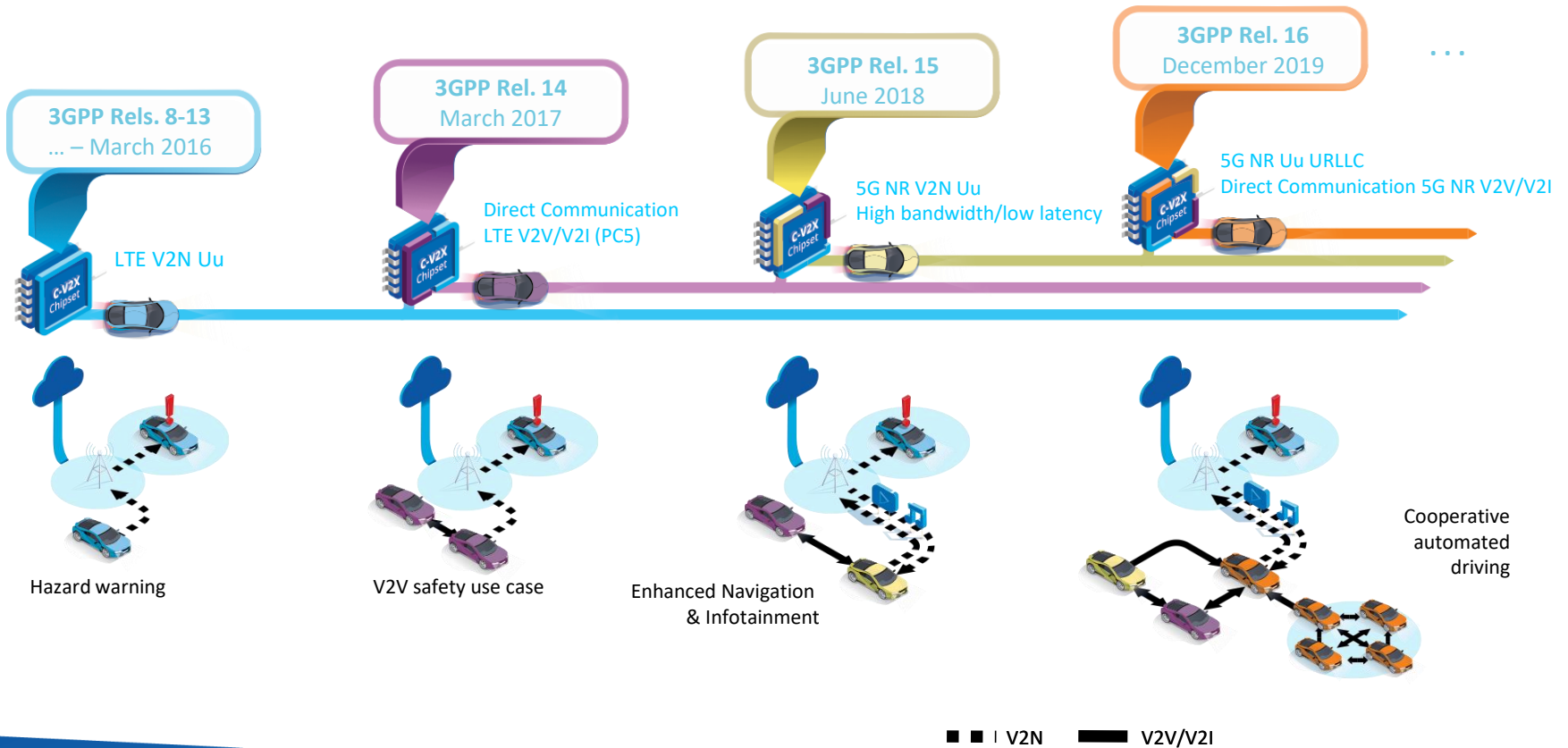
This will enable totally new digital ecosystems
also for smart mobility in cities and roads

L	P	W	A
o	o	i	r
w	w	d	e
	e	e	a
r			



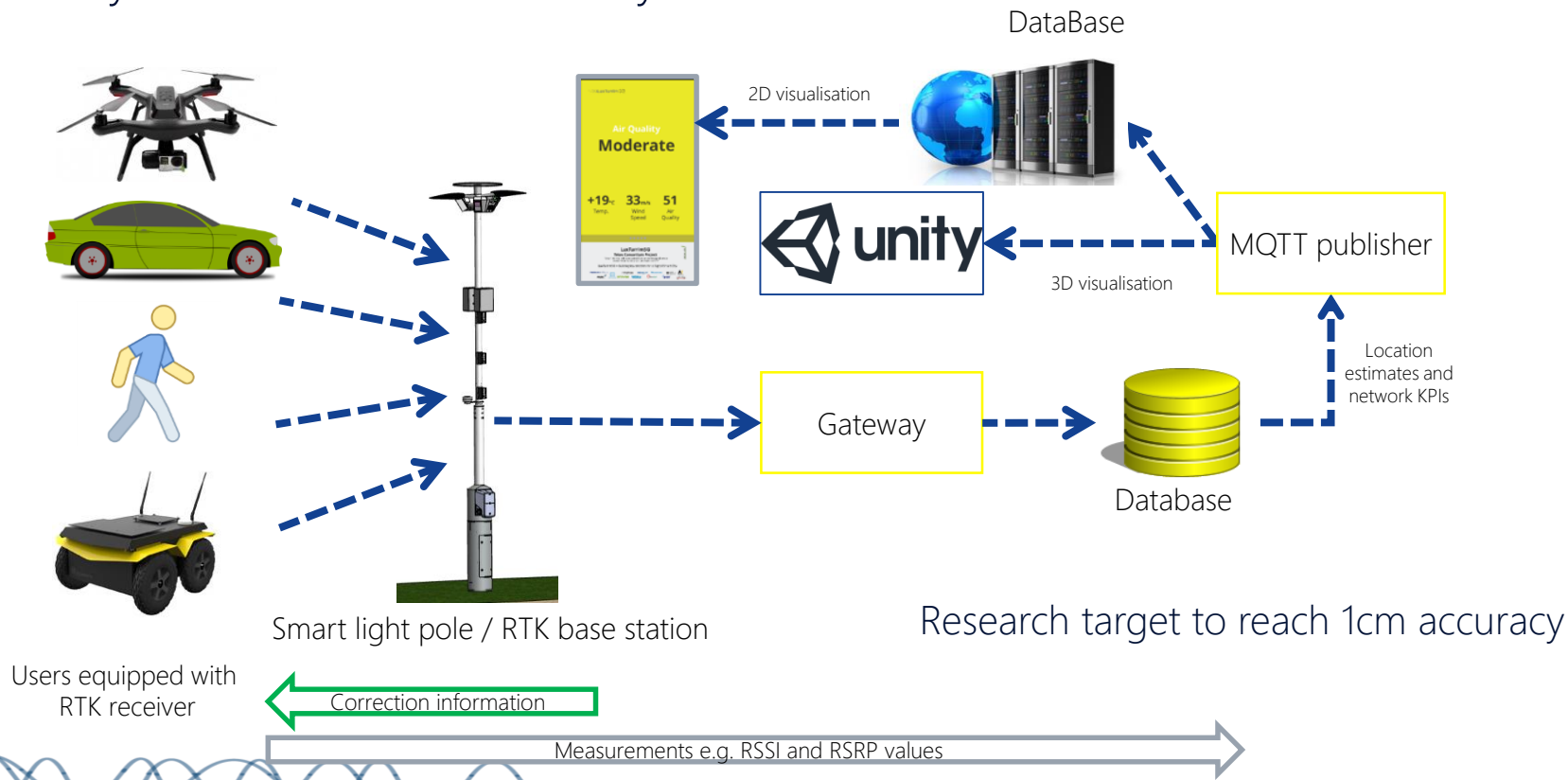
U	R	L	L	C
l	e	o	a	o
t	l	w	t	m
r	i		e	m
a	a		n	s
	b		c	
	l		y	
e				

C-V2X: Evolution to 5G maintains backward compatibility



Accurate positioning 5G+RTK

One key feature in smart mobility



Research target to reach 1cm accuracy

City of Espoo, new Kera District, new Innovation Ecosystem

Digital Connectivity- and Dataplatform: 5G light pole network

One key use case:
will be autonomous bus
with
remote driving through 5G



Business Finland:

- LuxTurrin5G consortium
- Neutral Host Pilot consortium

Nokia HQ Campus



Sensible4 Gacha, last mile all weather bus
Three month pilot is planned for next summer



Kera railway station

Kera District, smart city innovation:
digitalization, sustainability

Smartest city and community of the year 2018 (ICF)

Selected by UN as an example of future digital
smart city (OiER, UNGII)

ICF International Community Forum

OiER, Organization for International Economic Relations

UNGSII, Global Sustainability Index Institute

Route 51

5G ready light poles

To make the road more safe:

- Smart led lighting
- Alerts of big animals
- Enables future C-V2X through 5G
- Gives broadband mobile connections for cars
- Enables traffic info/control by drones



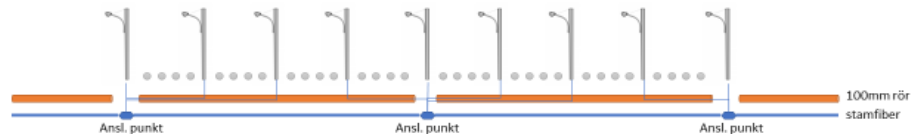
C-V2X 5,9GHz: Every 4th pole
 5G 26GHz: Every 7th pole (higher capacity later: every 3th pole)

Planned by:

Karjaan Puhelin

Community of Ingå/Inkoo

Other local stakeholders



Fiber to every pole?



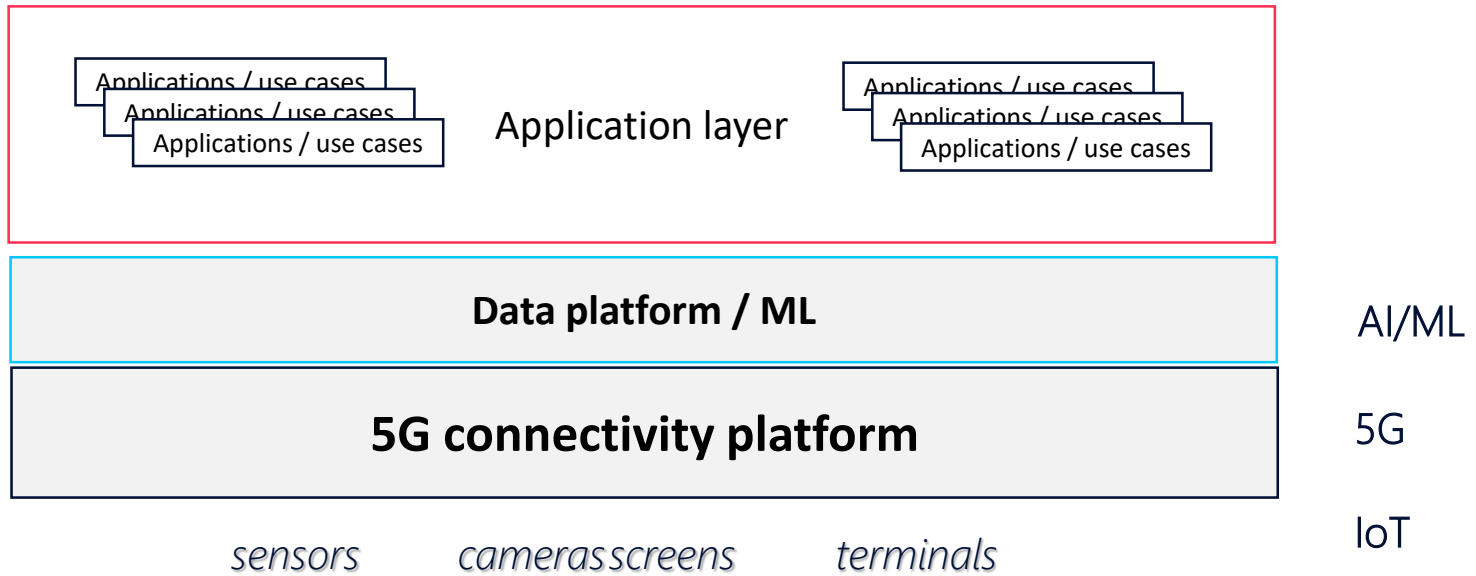
31km pilot road

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Summary: 5G will be a digital platform for everything

Everything will be connected

people factories vehicles smart cities ...



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Thanks

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A photograph of two hands forming a heart shape at a festival. The hands are adorned with various accessories: a ring on the left hand, a watch on the right, and multiple beaded and metal bracelets on both wrists. The background is a blurred crowd of people at a festival with colorful lights. The word "NOKIA" is overlaid in large, semi-transparent letters across the center of the image.