



TELE-OPERATION BRIDGING THE GAP TO AUTOMATED MOBILITY

H2020-ICT-2018-20

Next generation connectivity for enhanced, safe & efficient transport & logistics

www.5gblueprint.eu

Ir. Eric Kenis – *Vlaamse Overheid policy department*



5G-BLUEPRINT IN A NUTSHELL



<u>https://drive.google.com/file/d/17t0Yfi0Yxw_9Wx7pBRluD0O7f0sx</u> <u>bNNj/view?usp=sharing</u>

5G-BLUEPRINT IN A NUTSHELL





Washington DC
Pittsburgh PA
Columbus OH
Indianapolis IN
Kokomo IN
Saint Louis MO
Kansas City KA
Denver CO
Four Corners
Grand Canyon
Las Vegas NV
Los Angeles CA
San Diego CA

Driven in autonomous mode: 98.2 % of the trajectory*

* https://www.cs.cmu.edu/~tjochem/nhaa/









Edge & corner cases





REMOTE CONTROL ...









- Tasks on top of 'driving' (potentially) (new) roles, functions, relationships...
- Business model & CAPEX/ OPEX
- Governance
- Legal framework

FOCUS OF THIS PRESENTATION





© 5GBlueprint.eu

• Car sharing (on demand)

RELEVANCY?

- > (re) positioning of (empty) vehicles
- cleaning/ fueling /maintenance
- Distribution of Goods

Vay, Fetch, Ush, Elmo

eleo











First/ last mile - public transport

- Complementing core network
- Outside 'operating hours'
- Rural areas \succ

RELEVANCY?

- Dangerous/ unhealthy working environments ullet
- Shock absorbers (@ mobile road works)















7 WORKING SCENARIOS @ 3 PILOT SITES





MISSION: A ROADMAP FOR DEPLOYMENT





TECHNO ECONOMIC & BUSINESS ANALYSIS



Key learnings



Use Case dependent

5G deployment approach depends on the scope of TO deployment



Anticipate scaling up

Approach potential customers & network operators; Seek investment kick-starters



Economies of scale & OPEX matters

OPEX is the key cost element



Anticipate labour market shift

Realize upsides of unmanned transport for labour market; Mitigate downsides

LESSONS LEARNED _ OVERALL





Avoid a Teleoperation big bang

Gradually integrate TO in the existing (logistics) ecosystems



Involve all stakeholders

Get all parties impacted around the table



TO follows connectivity

Assess the potential of TO deployment within current networks constraints



Tag along with Automated Driving

> get TO on the agendaof ongoingregulatory initiatives on AD

(direct) Tele-operation



Automated Driving

12



THE PARTNERS





· Marton



SGBLUEPRINT

5GBlueprint.eu #5GBlueprint

#CAM

ericjm.kenis@mow.vlaanderen.be





leuven