



NDS NAVIGATION AND ADAS APPLICATIONS

KHADIM DIENG – RENAULT DEA-SMA2 / JUNE 08TH, 2021

AGENDA

RENAULT AND NDS MAP

NAV FEATURES

E-TECH AND ADAS FEATURES

NDS MAP UPDATE

NDS MAP VALIDATION



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RENAULT AND NDS MAP

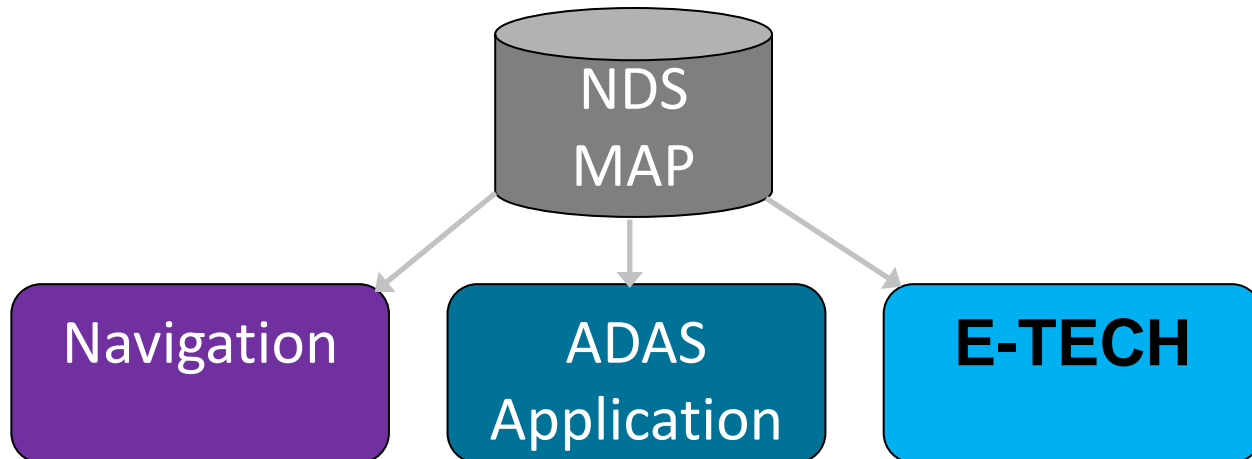
- **Member since 2017**
- **Features powered by NDS Map since 2019**
 - Navigation full features and for EV vehicles
 - ADAS features
 - E-Tech Navigation (pHEV)
- **+700K vehicles with NDS map (wide new vehicle range)**
 - New Zoe, New Captur, New Clio...
- **Common Alliance's NDS Map (Renault – Nissan – Mitsubishi)**



Flexibility on strategy:

- Possibility to have different Map suppliers depending on regions
- Switch from a supplier to another
- Same tool for Map inspection/viewer
- Optimize validation
- Reducing overall process (including validation) to release faster Map on market

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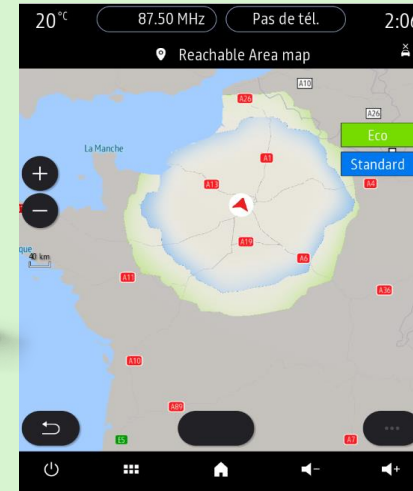


RENAULT'S NAVIGATION FEATURES – POWERED BY NDS MAP

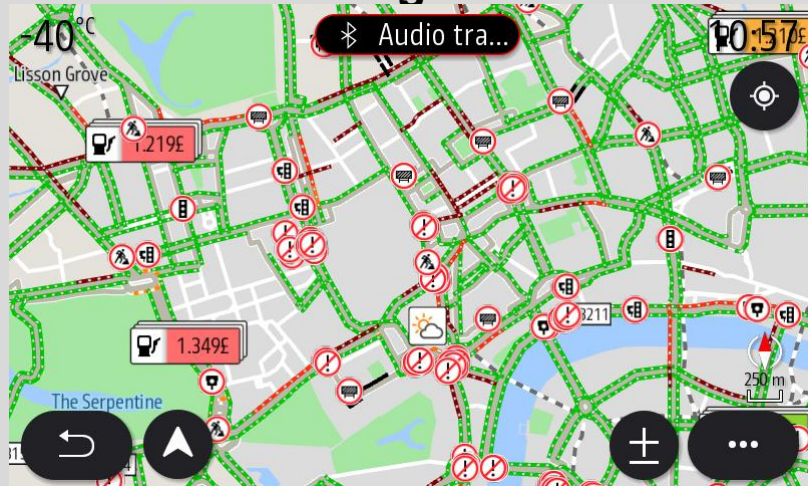
■ Full Feature's Navigation



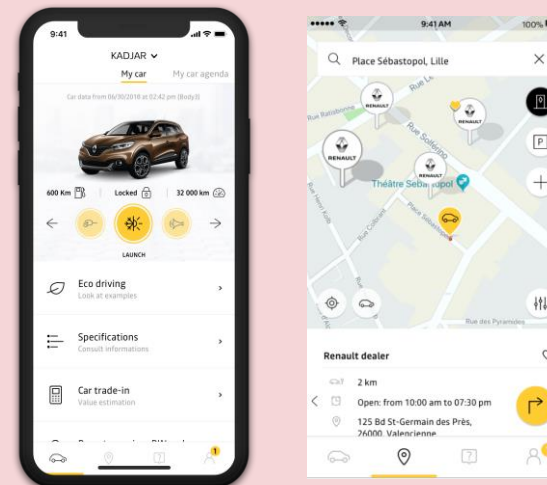
■ Dedicated EV Features



■ Connected Navigation



■ End To End Features



Navigation with Full features

- 3D Landmarks/building, Advanced city Models, Junction view..
- Voice Recognition
- Online search
- Premium POIs, ePOI...
- EV Navigation:
 - ✓ reachable area
 - ✓ Manual Route planner

.. And Connected as well

- Traffic Flow Prediction and events, Weather, Dynamic charging station's information, Fuel Price...
- End 2 End Features
 - ✓ Last Mile navigation using MyRenault's Mobile App) Application)
 - ✓ Send Destination to the car (from MyRenault)
 - ✓ Locate Your Car

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ADAS AND NAVIGATION FEATURES POWERED BY NDS MAP

■ E-TECH (E-NAV): Efficient Nav based Hybrid Energy Management

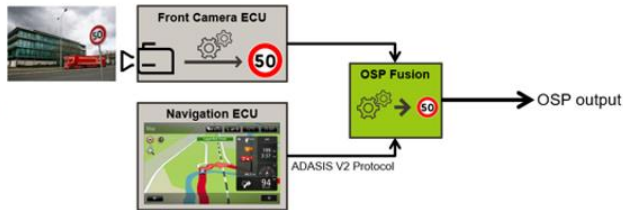


E-Nav takes into account: Speed Limit, Traffic Speed, Road Slope and Road Type (Urban, Extra-Urban and Highway)

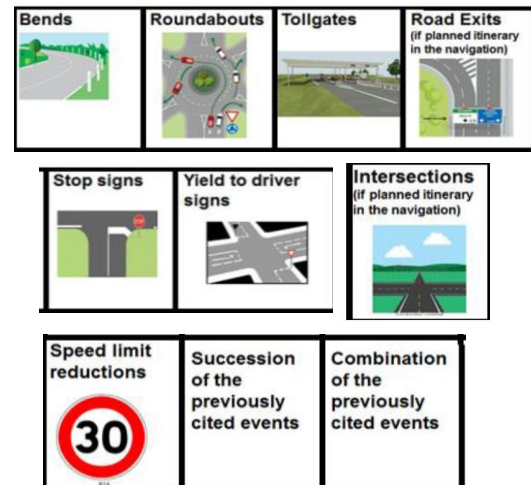
E-Nav system uses upcoming route data to optimize SOC management

■ ADAS features

Over Speed Prevention (& ISA)



Contextual Advice for Speed Prevention



More features...



E-NAV features:

- E-Nav controls the HV battery SOC target during the whole trip

ADAS application (on Market and more to come..)

- OverSpeed Prevention Mode
 - ✓ The maximum speed allowed
- Contextual Advice speed prevention
 - ✓ Advice the driver about the possibility to gain some fuel with release the acceleration pedal
- Additional features
 - ✓ ADAS/E-TECH
 - ✓ Starting end of 2021

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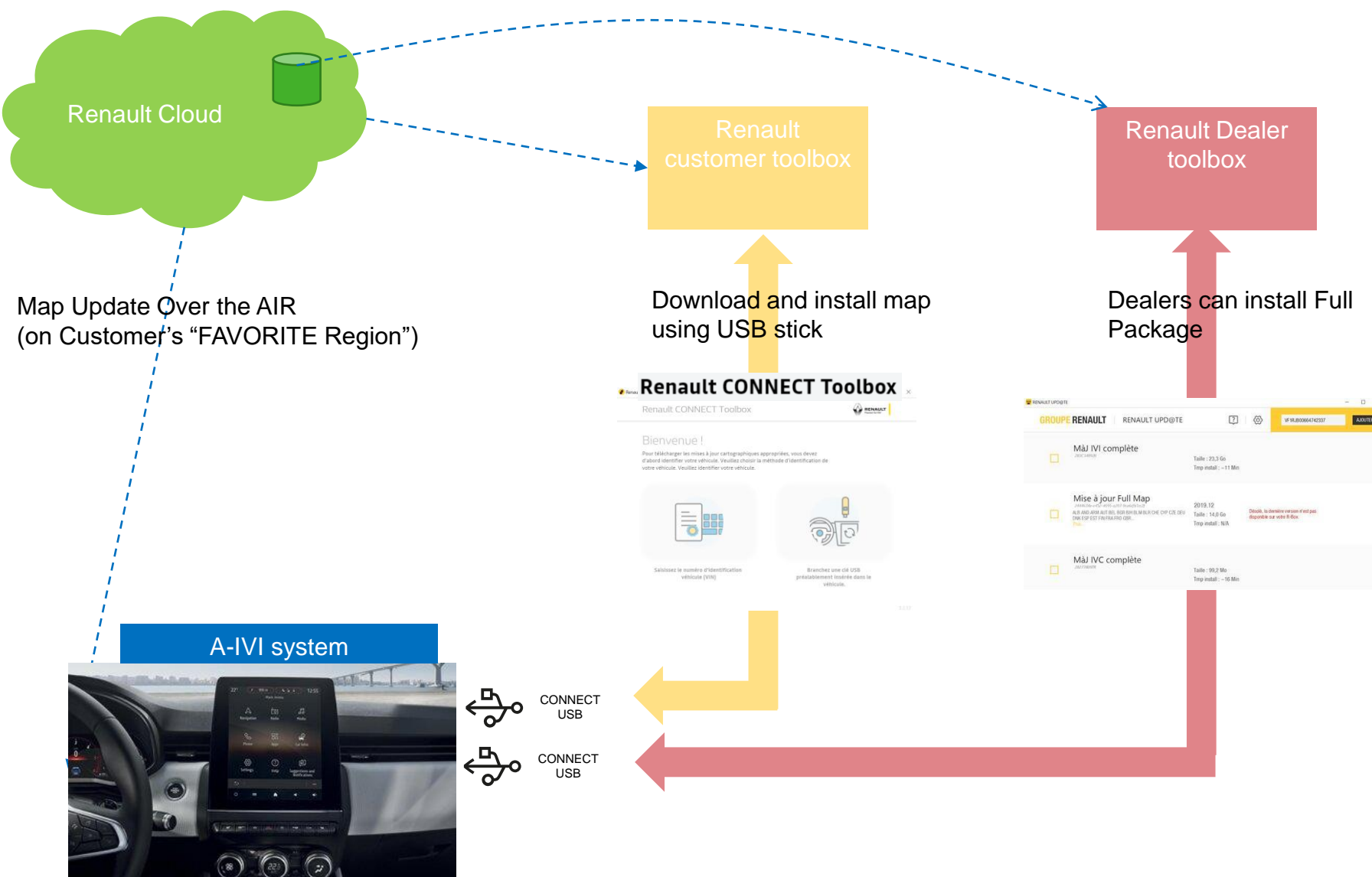
E-TECH AND ADAS FEATURES

NDS MAP UPDATE

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NDS MAP UPDATE THROUGH USB AND OVER THE AIR



Map Update strategy:

- Partial updates over the Air
- Using Customer Toolbox
- Update over the Air (favorite region) → Customer just needs to define your “Favorite region”
- Full Map Update
- Using Customer toolbox
- Using dealer Toolbox
- 2 map updates’ release per year (For each Map region)

Several Map regions (taking into account geopolitical rules)

- EUROPE, RUSSIA, TURKEY, ISRAEL, MAR, MEA....
- Some countries as « Fingerprint »

NDS Map Update Based on Tiles streaming by End of 2021

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NDS MAP AND VALIDATION

Map quality checks

System Tests

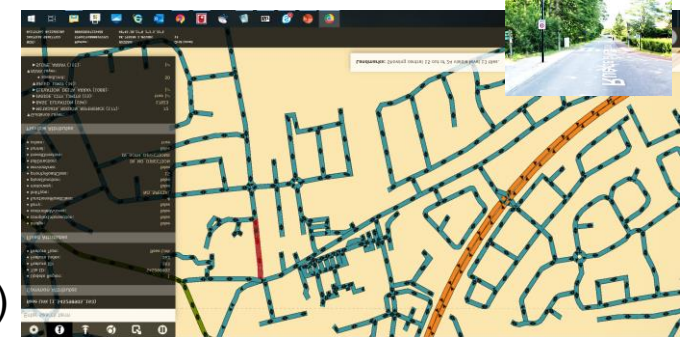
Efficient
and
optimized

Customer complaints

- **Map quality check with NDS database inspector**

- Queries to monitor specific information of interest (mainly for ADAS application)
- Optimized Map quality check for Application (e.g: ISA) with Different Map suppliers
 - Same tool/queries for NDS map from different provider

- **More efficiency on customer complaints pre-analysis**





THANK YOU