

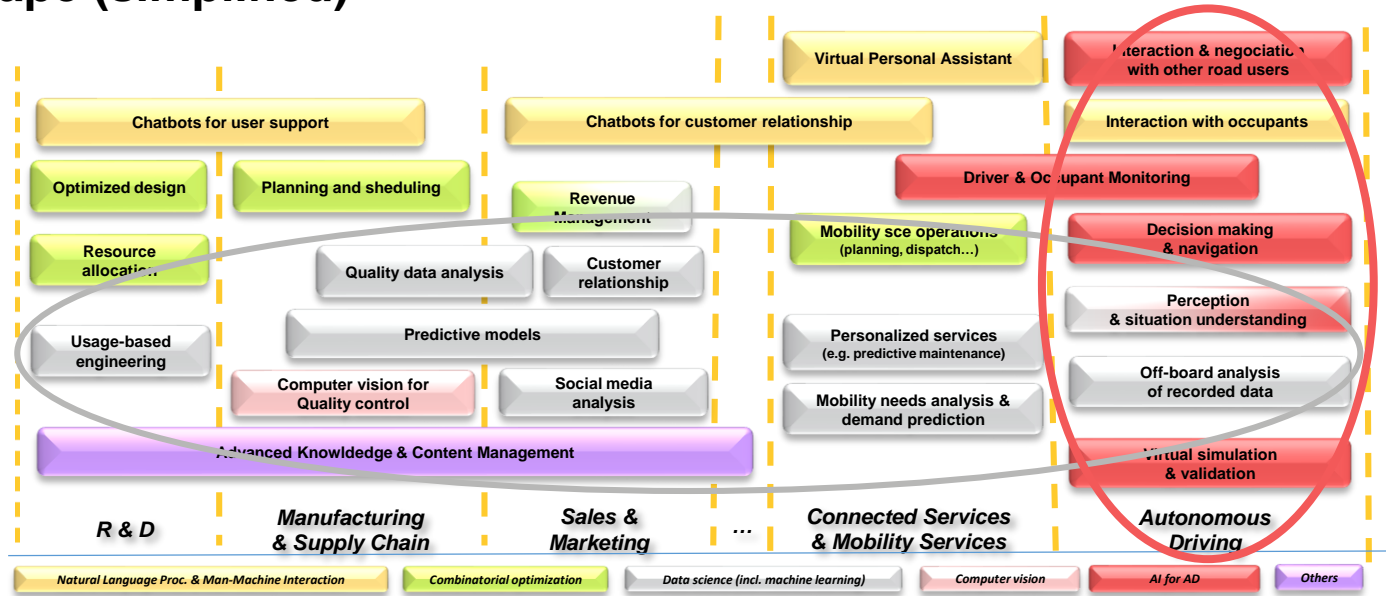
# Deploying AI and Machine Learning at scale: lessons learnt from Renault experience

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& Data Management Summit  
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## RENAULT AI landscape (simplified)



- AI is everywhere
- AI is not just 'deep learning'
- With 2 main drivers: Autonomous Vehicles & Digital Transformation

# The Digital Transformation: making value from the data avalanche

## Various data sources

- **Our internal processes**
  - Design, Manufacturing IoT, After-Sales...
- **Our customers**
  - CRM, Renault web sites, social media...
- **Our connected cars**
  - vehicle data, driving environment, usage...
- **The infrastructure**
  - V2X, smart cities...

## For multiple purposes

- **Efficiency & agility of internal processes**
  - Design, Quality, Marketing...
- **New personalized services**
  - In the car (e.g. predictive maintenance)
  - Mobility services
- **Getting value from (car) data**
  - E.g. H2020 Automat Car Data Market Place

# AGENDA

- **Focus on 'Big Data' and Digital Transformation**
- **Some achievements & lessons learnt - from various points of view:**
  1. Organization
  2. Competencies
  3. Innovation
  4. Launching successful projects

# DATA LAKE & DATA GOVERNANCE

## Building the foundations for a 'data' strategy

### ■ Renault Digital

- Launched in 2017
- A specific IS/IT unit to boost the Digital Transformation
- +250 p. - including 50 data engineers / data scientists

### ■ Missions of Renault Digital

- Data Lake
- Data governance (Chief Data Officer)
- Cross-functional processes to collect and share data
- Competence center on Data Science

# METIER DATA LABS

« *Data Scientists are kind of autists...*

*There is no way to make them collaborate with problems owners »*

- **Métier Data Labs in (almost) every function**

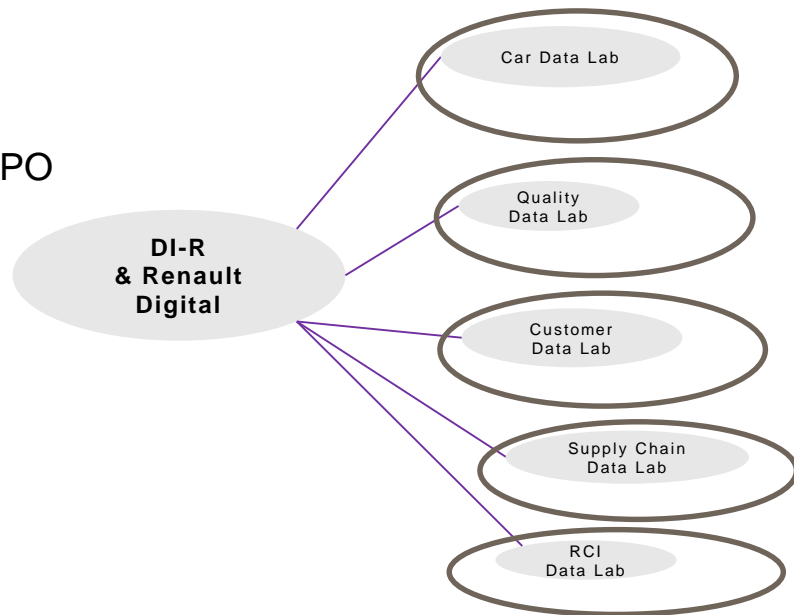
- Their role is to make the link between data scientists & PO

- **Activities include:**

- Ideation, problem framing...
- helping define the most appropriate techniques (and sometimes acting as project leaders)

- **Double competencies**

- AI / Data Science – at a general level
- Business (processes, vocabulary, stakes...)



# AI4X PROGRAMS

**Scaling-up: shifting from local and opportunistic initiatives to a more systematic search for value**

- **AI4X Programs in each function**  
e.g. 'AI for Engineering', 'AI for Manufacturing'...
- **The Corp. Digital Transformation program acts as an umbrella**
- **Activities include**
  - Broad analysis of business pain points
  - Benchmarking with similar companies
  - Defining priorities
- **Dedicated AI4X Program Management teams**

# BUILDING AN AI CULTURE

**Raising awareness on what AI can bring, limits, myths...is key for future success**

- **Different populations & needs**

- Managers
- Business Process Owners
- Project Leaders
- ...

- **Specific training programs for each; internal events...**

- **E.g. training program for managers**

- The basics (15' of e-learning)
- Introduction to AI (4 hours course - based on Renault applications); 400 p. in 2019
- Data Strategy for managers (2 days – multi-enterprise); starting Dec. 2019



# DATA SCIENTISTS

## Data Scientists are scarce, but...

- **We can concentrate them in a single team to maximize their contribution**
  - Renault Digital as a competence center
- **Hiring (some of) them is possible**
  - Young specialists (PhD) or very specialized profiles
  - But to a limited extend only
- **We can built on our eco-system !!**
  - Research Institutes (CNRS, INRIA, CEA...), including joint labs
  - Technological Research Institutes (e.g. SystemX) & AI Institutes (ANITI, DataIA...)
  - IT / AI suppliers

# AI PROJECT LEADERS

### Managing AI project is a real issue !

- **Shall understand both business and techno, to challenge them both**
- **Probably the most critical competency !**
  - No time to wait for data scientists to become senior project leaders
- **And they cannot be recruited !**
  - They need to know AI and project management, but Business as well
- **Our strategy is to built on business project leaders**
  - With background in maths, computer science, stats... to train them to AI
  - Shared initiative with PSA, Valeo...

## OPEN INNOVATION

### Making the best of open innovation, world-wide

#### ■ Innovation Lab network

- (Alliance) teams in Silicon Valley, Israël, Korea, China...
- To scout start-ups & manage local research projects (Berkeley, Stanford...)

#### ■ Alliance Corporate Ventures (launched in 2018)

- To define *Innovation Territories* (top priority innovation areas)
- To invest in startups (e.g. WeRide.AI in China for L4 Autonomous Driving)

But collaboration between agile startups and large industrial companies remains a complicated story...

# INNOVATION ROADMAP

**Issues and potential breakthroughs have to be identified to prioritize research and innovation projects**

- **Innovation roadmap**
  - based on priorities, Make or Buy strategy, TRL (Technology Readiness Level)
- **E.g. safety and robustness of AI is a major issue for autonomous driving**
  - Renault has contributed to the launch of **ANITI**, the Toulouse Institute launched in 2019 which focuses on “Certifiable AI towards autonomous critical systems”
- **E.g. combining data-based with model-based (hybrid AI)**
  - Renault contributes to the IA2 Program @ SystemX

# POC (« PROOF OF CONCEPT »)

**POC shall not be just demos - but shall help decide or not a project**

- **POC are too often demos of AI algorithms, on very limited sub-problems which makes hard for (project) managers to decide**  
(specially when they are not familiar with e.g. combinatorial / scaling-up issues)
- **Applying AI & Data Sciences techniques shall not prevent:**
  - to define and frame the project
  - identify risks to be assessed in preliminary phases
- **But using machine learning techniques raises specific issues**
  - Representativeness of data, removing biais, ensuring robustness of the model...

# THE SUCESS LOOP

## Success calls for success

- AI has a long history of failing on far too ambitious goals...
- Sucessfull projects will bootstrap activities
- Start smaller, and deliver !
- Even limited sucess on simple projects will help promoting AI, raise awarness, and will encourage to launch more ambitious projects – or collecting more data



**THANK YOU**