



Facts and figures from V2X Task 28 HEV TCP IEA

VGI Summit – DTU

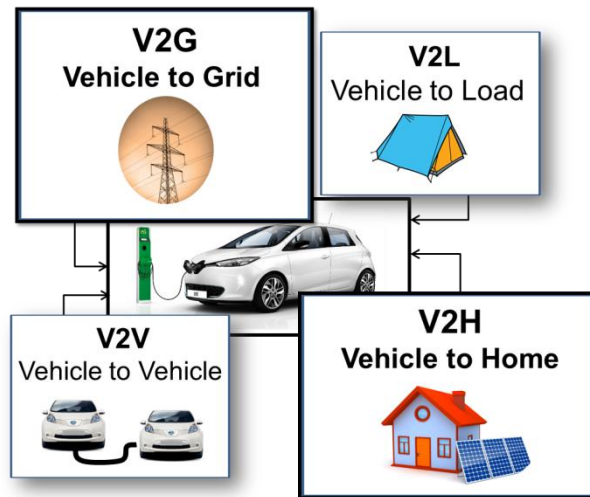
22nd November 2018

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IREC-Task 28 Operating Agents

Introduction

The IA-HEV Executive Committee (ExCo) unanimously approved the Task 28 at the Executive Committee meeting in May 2014 held in Copenhagen



V2X

VEHICLE
TO
EVERYTHING

(NIST, 2010)

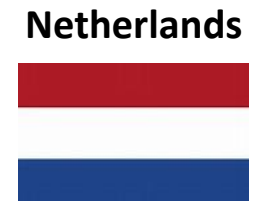
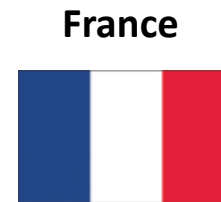
Task 28 explores the technologies and accompanying issues associated with the use of electric storage from PEVs for uses other than powering the vehicles

There remain technological and economic "knowledge gaps" in realizing the full potential of V2X technology

Task 28 addresses these gaps by means of creating an international network of experts who conduct bi-annual meetings on different strategic topics

Introduction

Countries



Companies

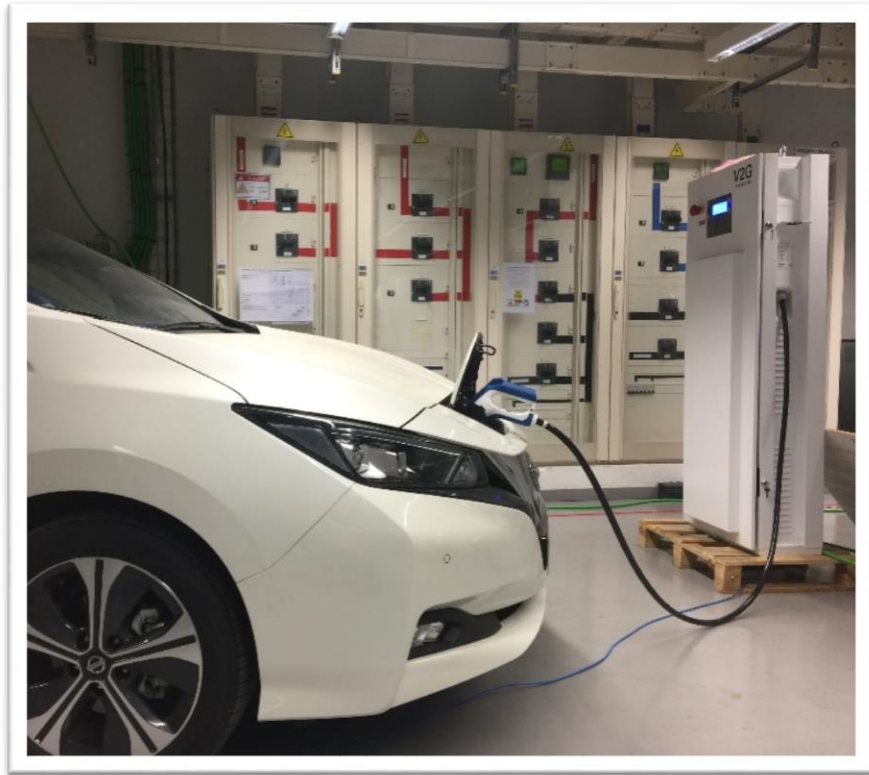


Our path



2013
First V2G task proposal

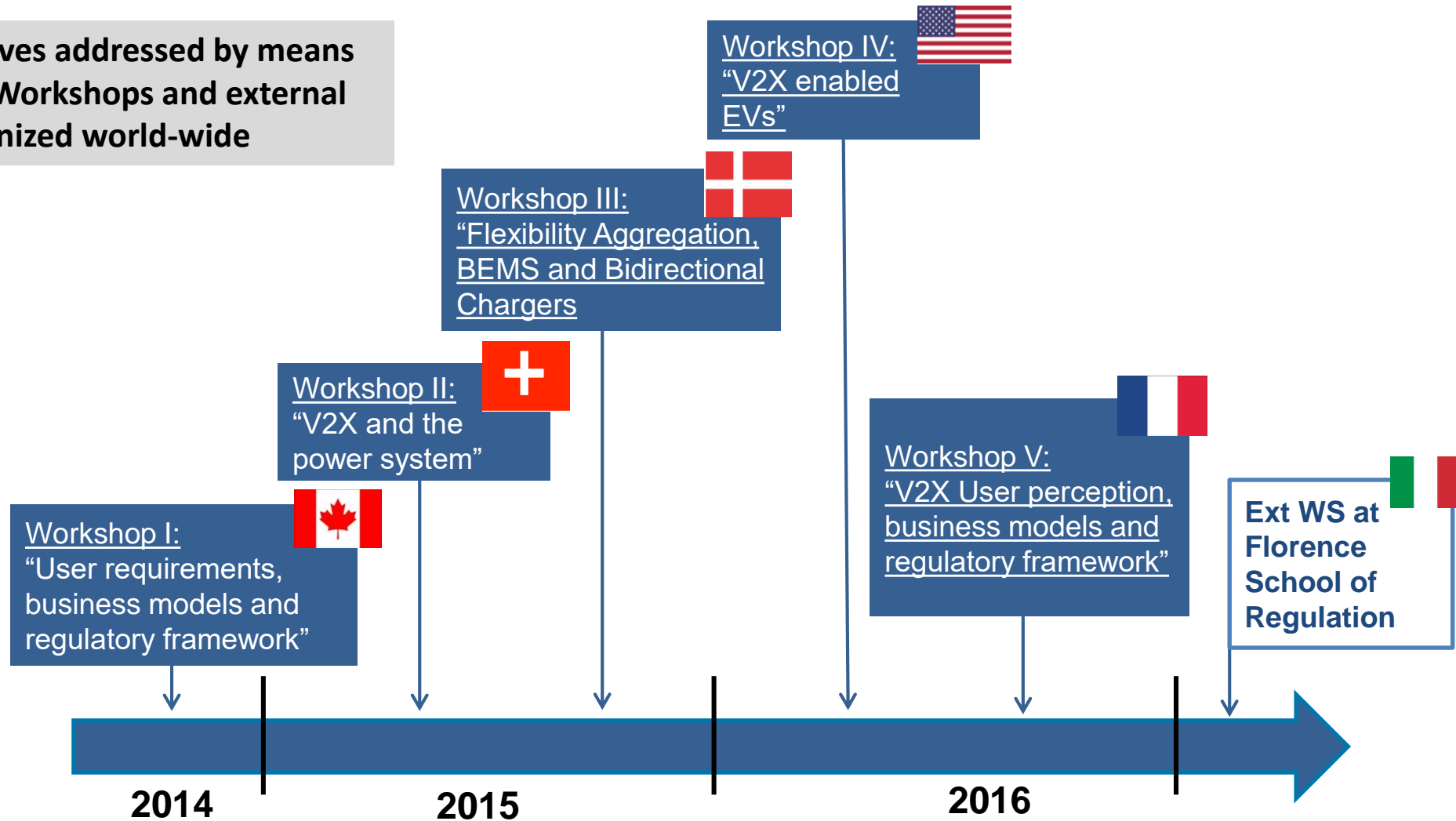
8 expert workshops:
✓ Industry
✓ Research Institutes
✓ University
✓ Public administration
✓ Associations



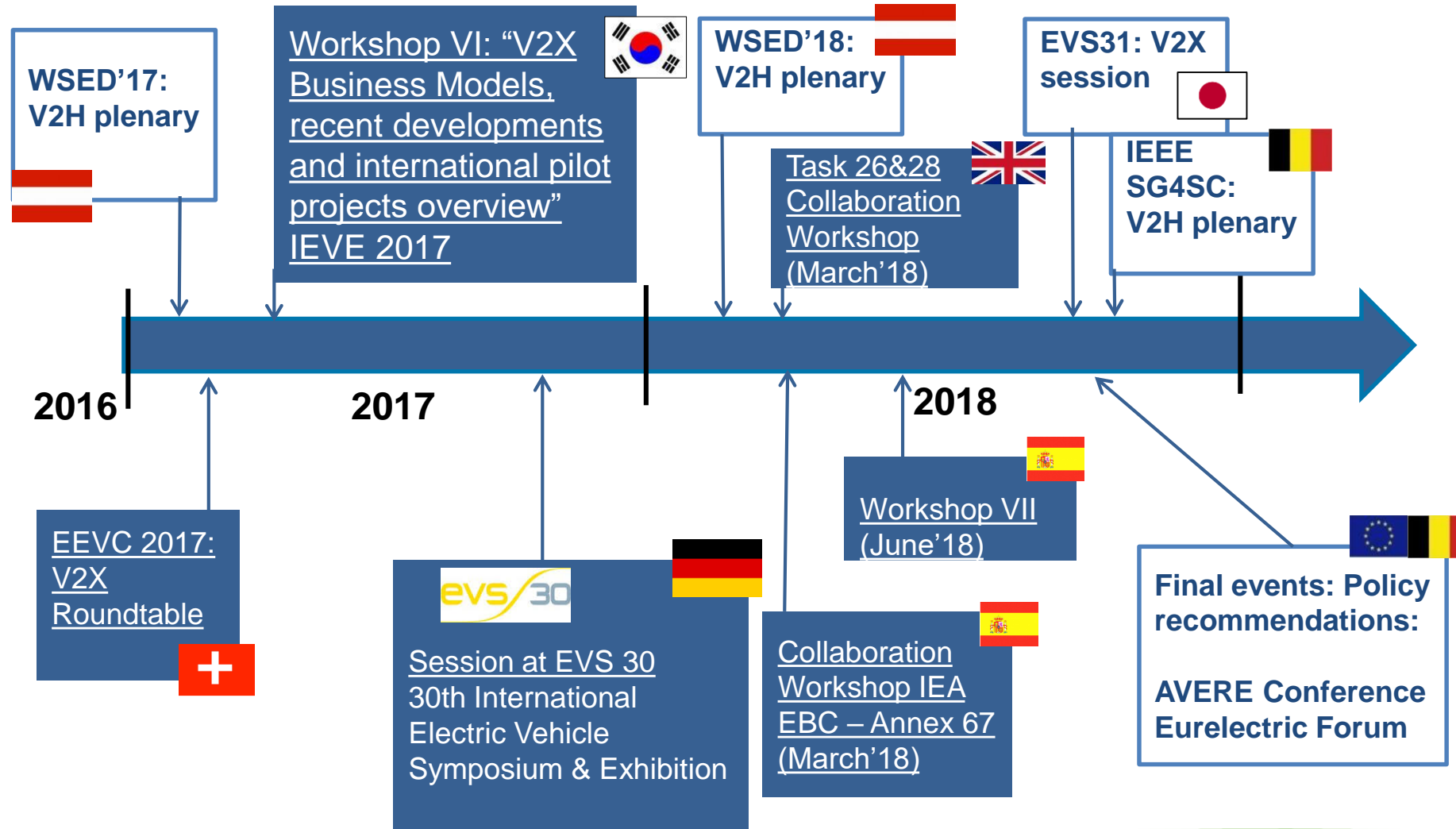
2018
End of Task 28 (to be continued...)

Expert's Workshops

Task objectives addressed by means of Expert's Workshops and external events organized world-wide

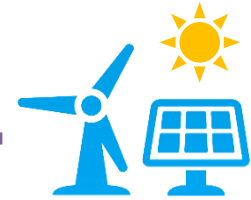
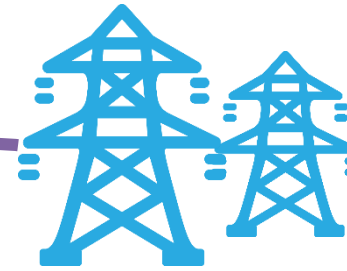


Expert's Workshops



Main benefits from V2X

Self Consumption
Reduce peak power demand
Generator when outages
Emergency power

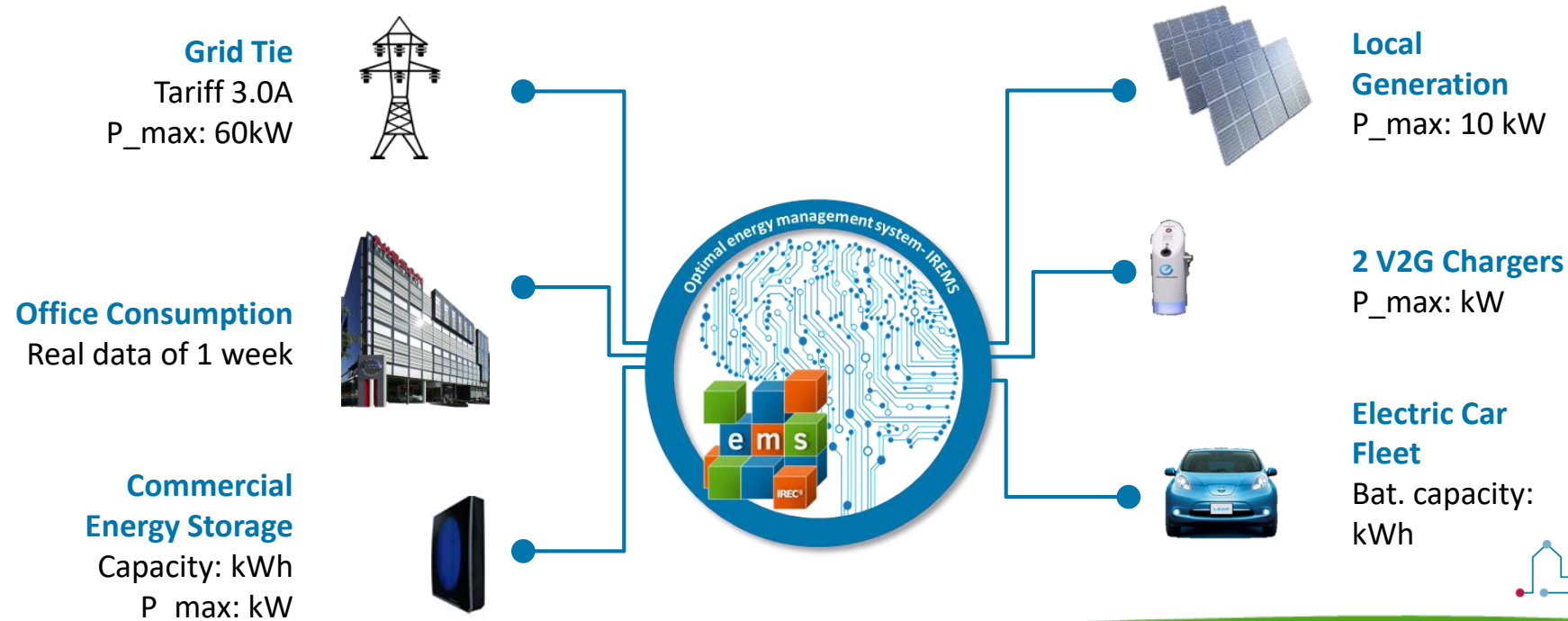


Electricity market participation
Enhance grid stability, reliability and security
Generate revenues
Better integration of renewable sources
Renewable energy storage

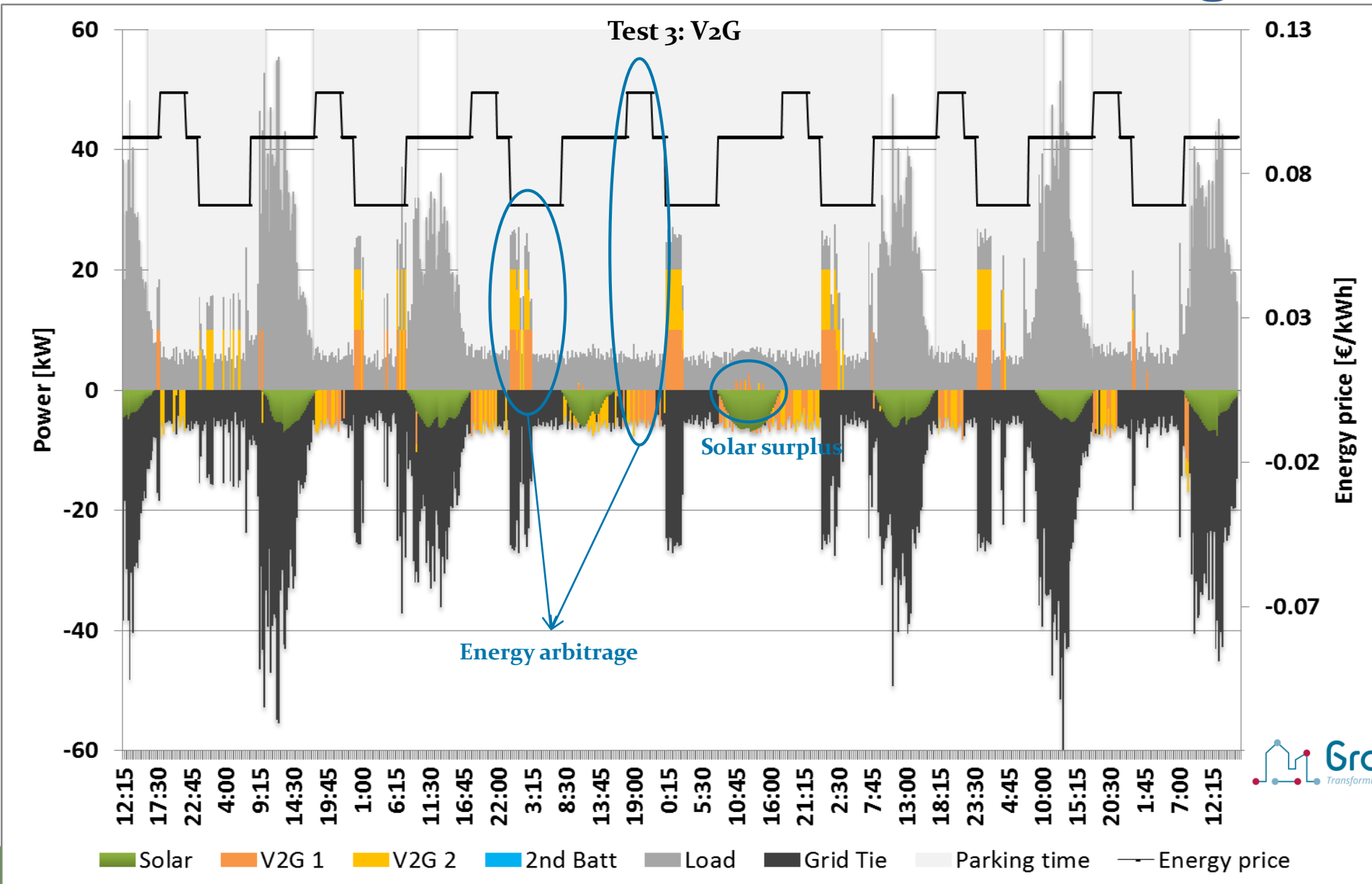
iREMs for V2B at Nissan offices in Barcelona

The aim of this activity is to evaluate:

- the functionality Local Charging Management based on V2B and how this impact on consumption profile
- the installation of a Storage System based on 2nd Life Batteries and renewable generation unit.



What/How can EVs contribute to buildings



What/How can EVs contribute to buildings

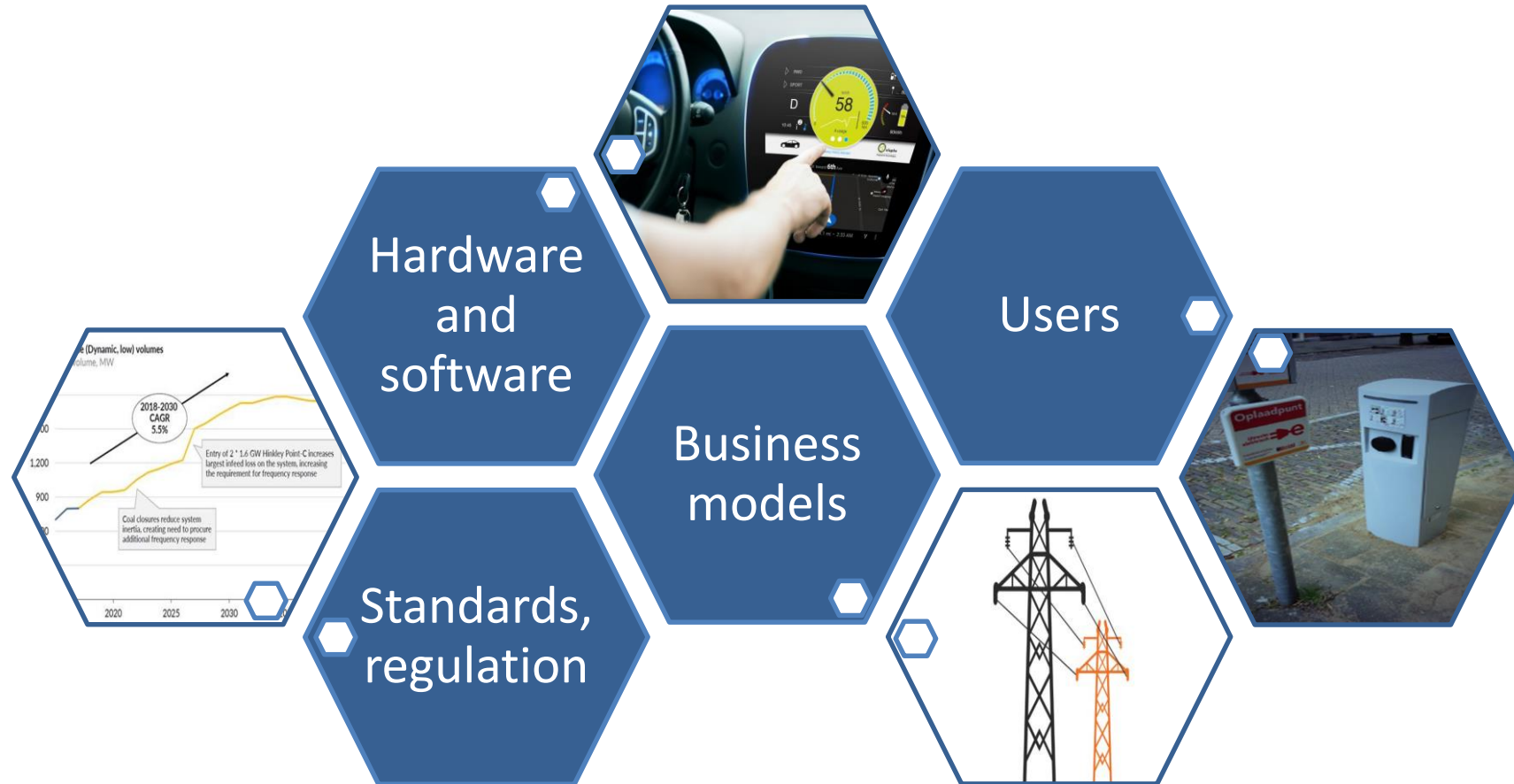
	Test 1	Test 2	Test 3	Test 4
Solar surplus [kW]	1,9	0,0	0,0	0,0
Max. power from grid [kW]	55,31	55,31	55,31	40
Energy cost [€]	169,54	164,3	159,99	154
Average cost per kWh [€/kWh]	0,09	0,088	0,084	0,082
Load supplied by V2G	0	0	10,63%	9,38%

✓ With the smart charge, surplus solar production is used.

✓ The possibility of discharging EV's batteries and thank to optimization cost of IREMS, the energy arbitrage strategy obtains a better cost-efficiency management.

✓ The integration of second life batteries into the system, emphasizes the benefits of optimal management of V2G chargers

Lessons learnt



Lessons learnt

Hardware
and
software

Technology challenges

- Advanced power electronic requirements
- Few electric vehicle with V2G capabilities
- Grid requirements for V2G services
- Protocols and communications requirements
- Data management



Lessons learnt

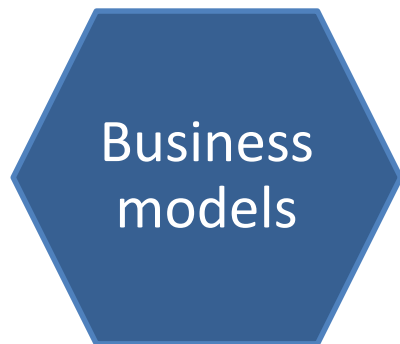
Standards and regulation

Regulatory challenges

- Interconnection standards
- Different international electricity market regulations
- Metering regulation
- Lack of definition as DER
- Limited coordination between stakeholders



Lessons learnt



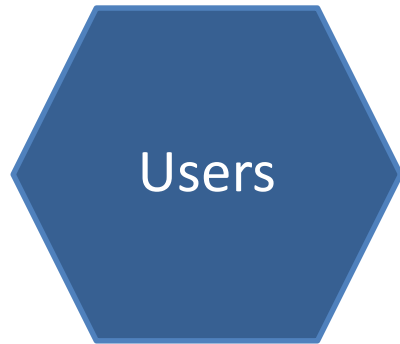
Chicken and egg

High cost of V2G chargers
Few cars with V2G capabilities
Unclear roles in the business model
Competition with smart charge take up



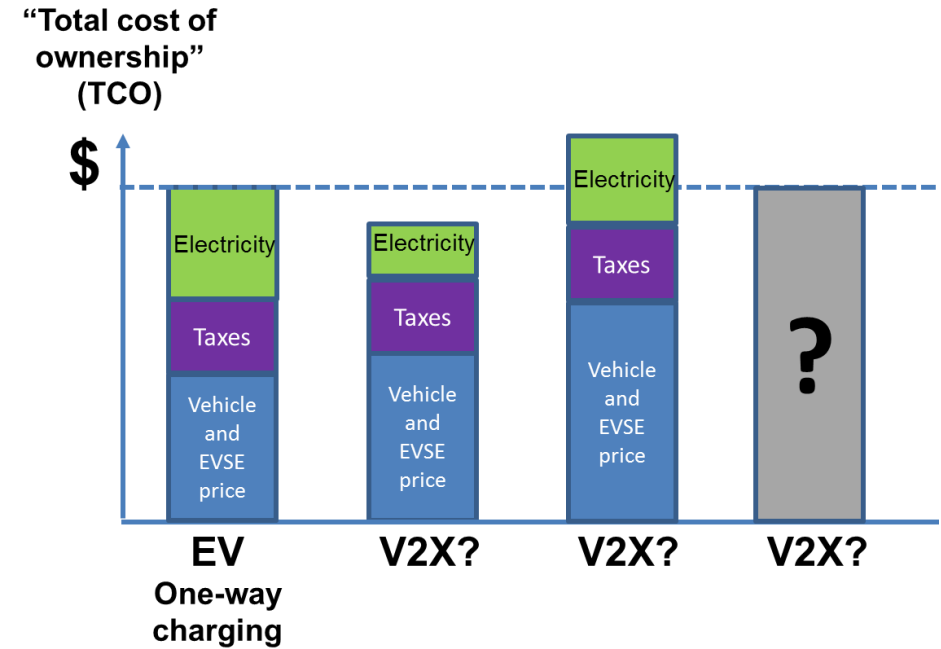
Not enough clients for mass production
Regulation not enabling market access
Lack of coordination between stakeholders

Lessons learnt



User engagement

- The awareness of the V2X capabilities is scarce
- TCO should be clearly decreased
- Guarantees (EV, battery, full charge, ...)
- Stakeholders identification and clarity on costs and revenues

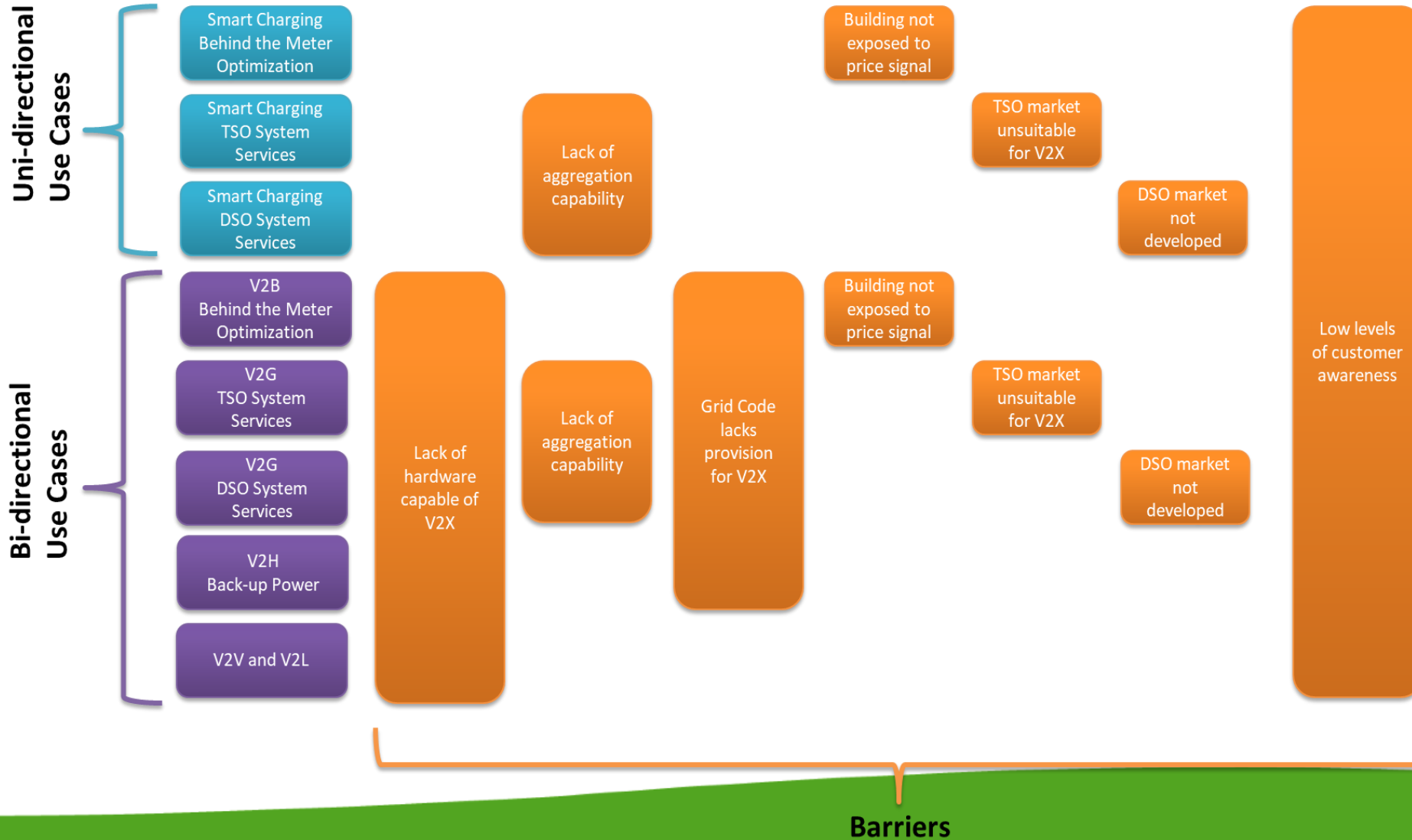


V2X Roadmap

- Review of V2X technology, current statuses and barriers
- Goals and actions required to support and accelerate the development of V2X technologies
- Can be used by policy-makers and industrial partners in the promotion of V2X technology
- Output from IA-HEV Task 28 – “Home Grids and V2X Technologies”

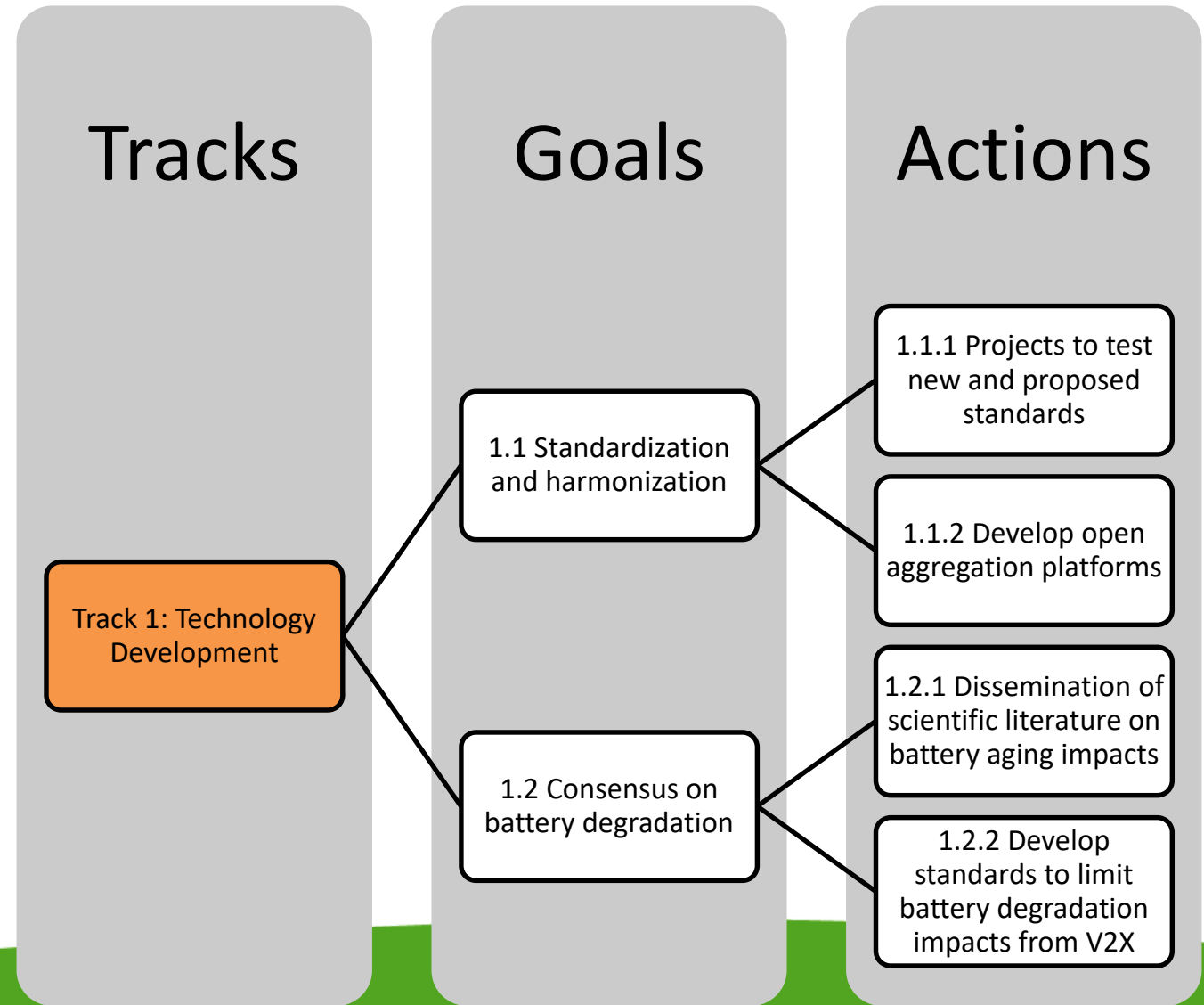


Barriers analysis



V2X roadmap structure

- Three Tracks developed:
 1. Technology Development
 2. Markets and Regulation
 3. Social Acceptance
- Goals - What can be done in the next 5 years to advance V2X technology.
- Actions - Which practical steps should be taken to achieve these goals, when do we take them and who needs to be involved.



What's happening now

R&D

- >50 projects running around the world
- 21 new projects launched at UK

Industry

- Aggregators and other V2G services companies commercially active
- Different EV manufacturers working on its V2G capabilities
- New hardware manufacturers announced

New task proposal

VEHICLE GRID INTEGRATION
(one step further the technology)

Task 43 Vehicle-grid-integration

Background:

Task 28 on “Vehicle to everything” results.

Lessons learnt on why V2G is not fully developed drive us to a more global problem, one step further the technology itself.

Vehicle grid integration analysis performed by NREL for the IEA (Dec 2017)

Topic: “Vehicle Grid Integration” task will cover aspects such as:

Distribution Grid Impacts of massive EV penetration

Integration of Renewable Generation: PV and EV

Peak Demand reduction by means of EVs

Vehicle-to-Grid

Regulation issues

Consumer Economics

EVSE Controls and Networks

EVSE Cyber Security Issues

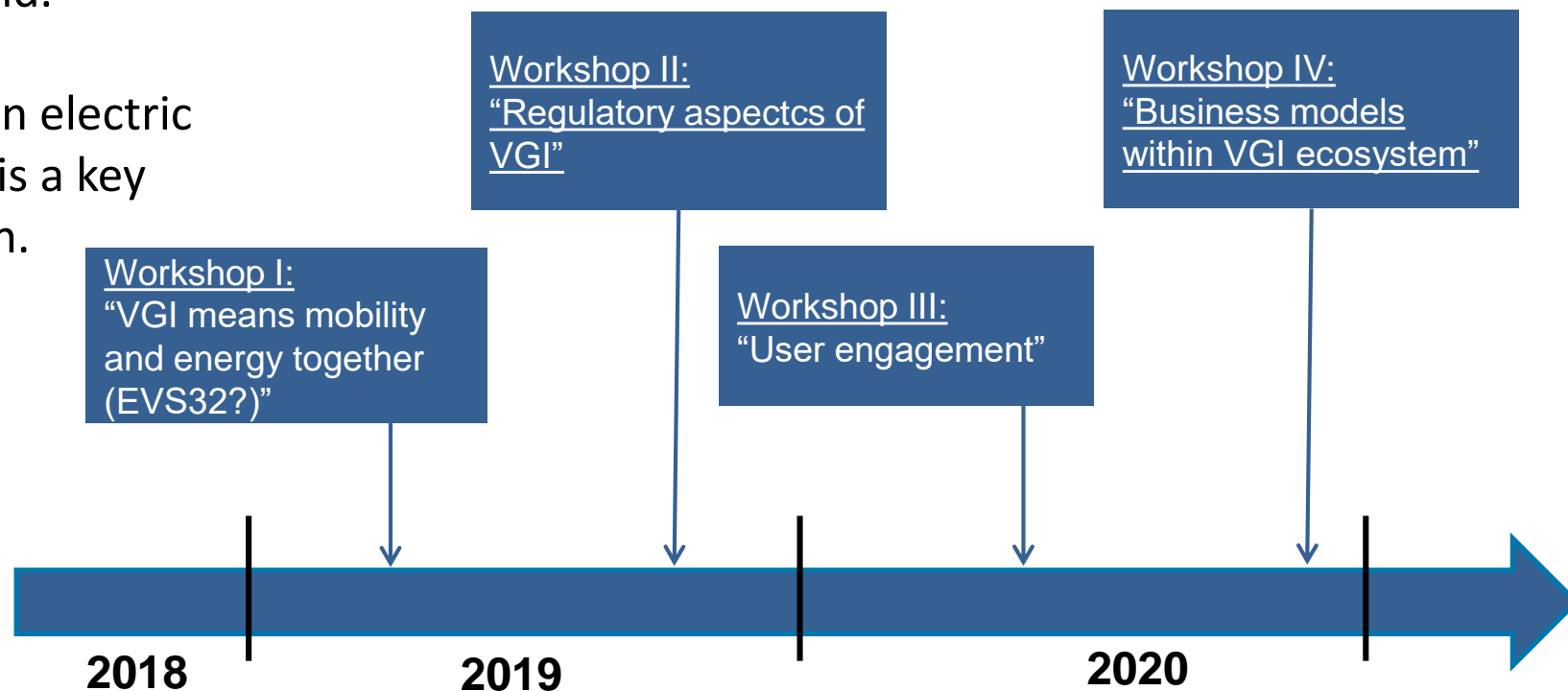


Task 43 Vehicle-grid-integration

Objective of the task

To explore, identify and give answers to the gaps preventing the electric vehicles to be fully integrated in the electrical grid.

To improve the joint work between electric sector and mobility sector, which is a key point for the real energy transition.



Thank you very much for your attention

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<http://www.ieahev.org/tasks/home-grids-and-v2x-technologies-task-28/>
