



# Connectivity and Automated Driving

M2F Plenary Meeting 2015  
11<sup>th</sup> March 2015 – Madrid

Innovation in Road Transport for  
Europe Competitiveness

# Connectivity and Automated Driving

- Task Force created by ERTRAC in June 2014
- Call for experts within ERTRAC members: industry, European associations, research providers, EU Member States + EC DG R&I/MOVE/CNECT
- 1<sup>st</sup> workshop 8 July 2014: gather experts; set the scene
- 2<sup>nd</sup> workshop 8 October 2014: propose roadmap structure and main chapters
- Draft 1.0 for consultation (sent 31 October 2014)
- Draft 2.0 after consultation (sent 3 December 2014)
- 3<sup>rd</sup> workshop 11 December 2014
- 4<sup>th</sup> workshop 26 January 2015
- Public presentation at ERTRAC Conference 3 March 2015



# Roadmap Document

## Table of contents

<b>2</b>	<b>Scope and Objectives</b>	<b>4</b>
<b>3</b>	<b>Common Definitions</b>	<b>5</b>
<b>4</b>	<b>State of the Art</b>	<b>16</b>
<b>5</b>	<b>EU and international situation</b>	<b>17</b>
<b>6</b>	<b>Key Challenges and Objectives</b>	<b>25</b>
6.1	Environmental Detection and Perception	26
6.2	Demonstrating Reliability, Safety and Robustness of Technology	26
6.3	Legal and Regulatory Framework	26
6.4	Users' and Societal Acceptance	27
6.5	Driver Attention and Involvement	28
6.6	Common Validation Procedures and Testing Requirements	28
6.7	Infrastructure Requirements	28
<b>7</b>	<b>Roadmap</b>	<b>30</b>
<b>8</b>	<b>Table of figures</b>	<b>39</b>
<b>9</b>	<b>Bibliography</b>	<b>40</b>
<b>10</b>	<b>Annex</b>	<b>40</b>



# European Activities (Chapter 5)

## Member State contributions:

- France
- Germany
- Spain
- Sweden
- The Netherlands
- United Kingdom



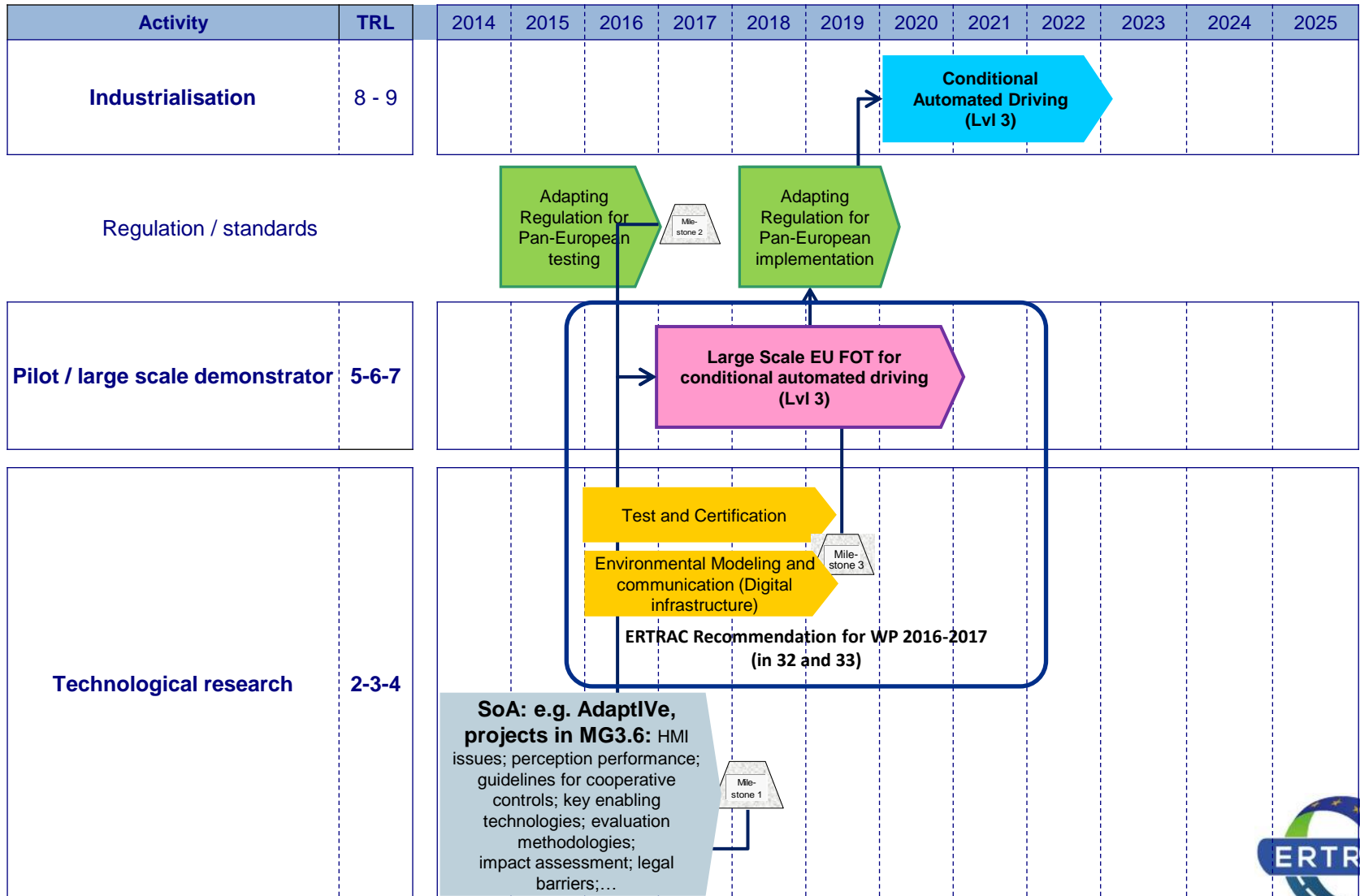
# Roadmap Development

## Objectives:

- Comprehensive, clear, rememberable;
- Keep it simple;
- TRL-based approach;
- Clear target for implementation;
- Overall number of roadmaps should be reasonable;
- Consider the state of the art.



# Conditional Automated Driving



# Automated Urban Road Transport

Activity	TRL	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Industrialisation	8 - 9										Automated Urban Road Transport (Lvl 4/5)		

Regulation / standards

Pilot / large scale demonstrator	5-6-7												
----------------------------------	-------	--	--	--	--	--	--	--	--	--	--	--	--

Technological research	2-3-4												
------------------------	-------	--	--	--	--	--	--	--	--	--	--	--	--

CityMobil2,  
MG3.6, ECSEL,  
Design Guidelines;  
legal framework  
proposal;  
Showcases;  
Sensors

ERTRAC Recommendation for WP 2016-2017 (in 32 and 34)

Technical solutions  
for perception and  
connectivity enabling  
safety and acceptance  
or automated urban  
road transport

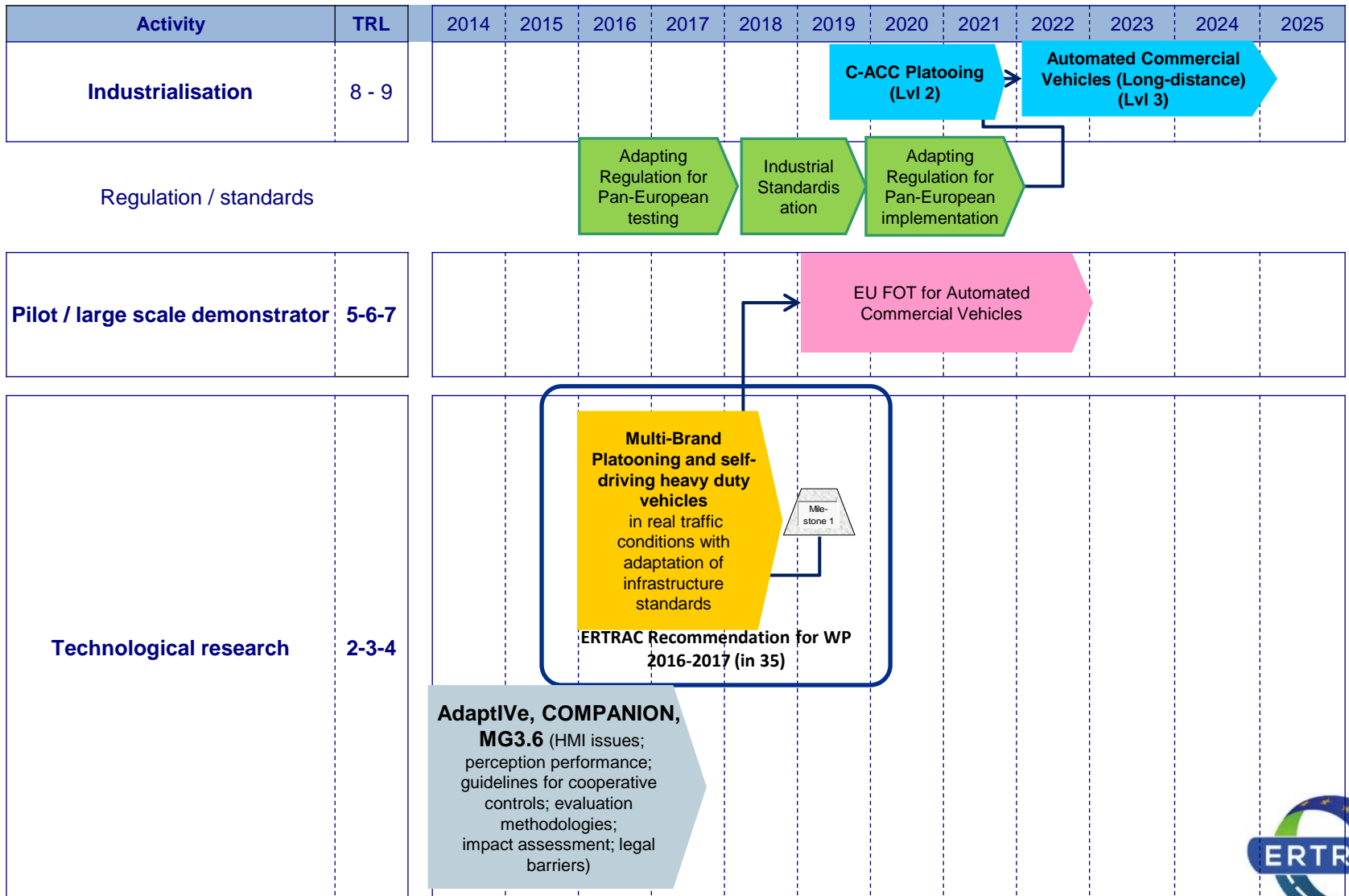
Large scale demonstration of  
urban road transport  
automation integrated with  
existing public transport

Adapting  
Regulation  
for Lvl 4/5

Automated Urban Road  
Transport (Lvl 4/5)



# Automated Commercial Vehicles





# Recommendations



Framework & Solutions for Safe Automated Road Transport



Enabling functionalities from Partial Automation to Conditional Automation



Large scale demonstration of urban road transport automation integrated with existing public transport



Platooning and self-driving heavy duty vehicles in real traffic conditions with adaptation of infrastructure standards

