

JOINT FINAL EVENT 12 & 13TH NOVEMBER 2019, SANTA OLIVA, SPAIN



PaREGEn

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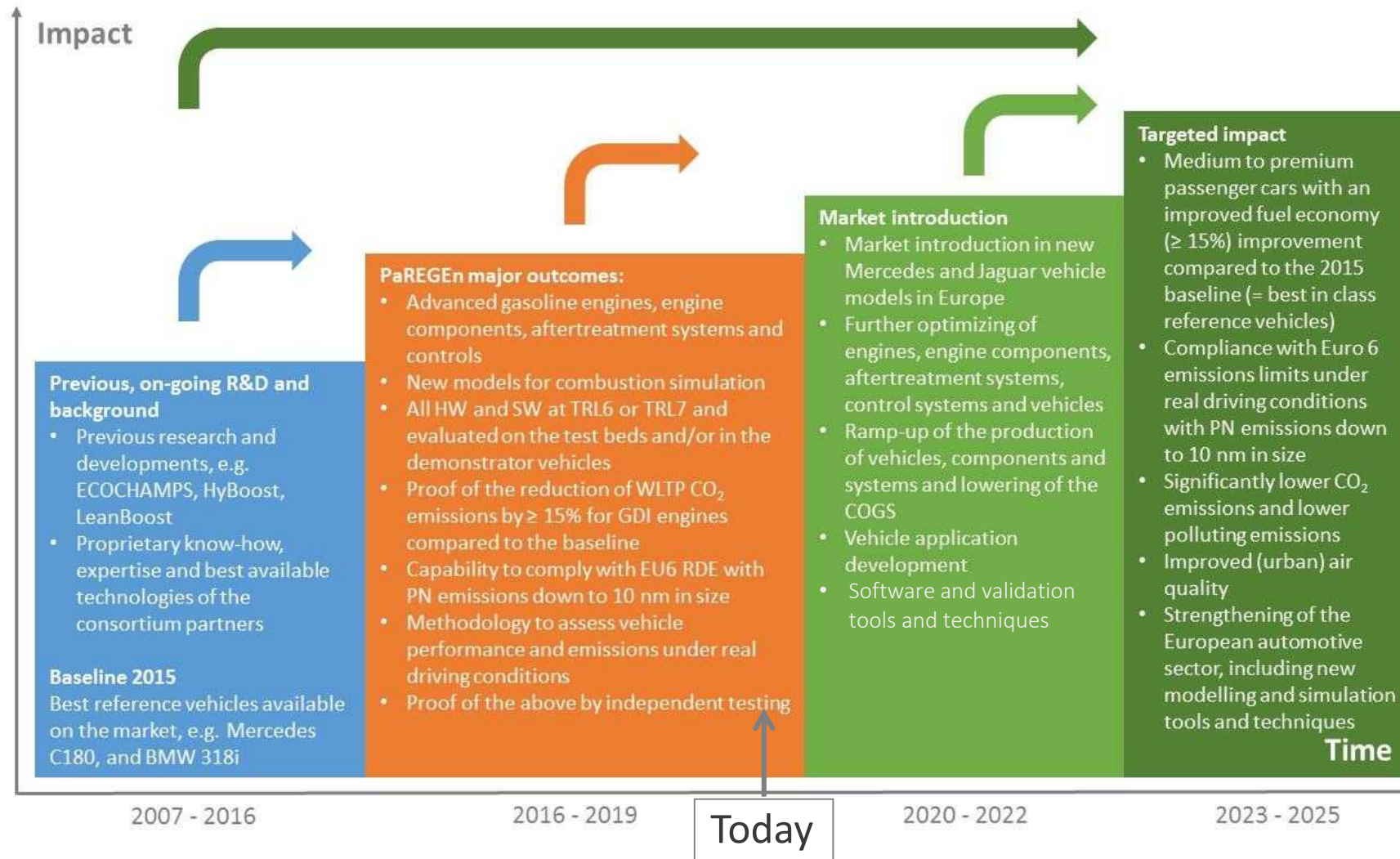


PEMs
4Nano

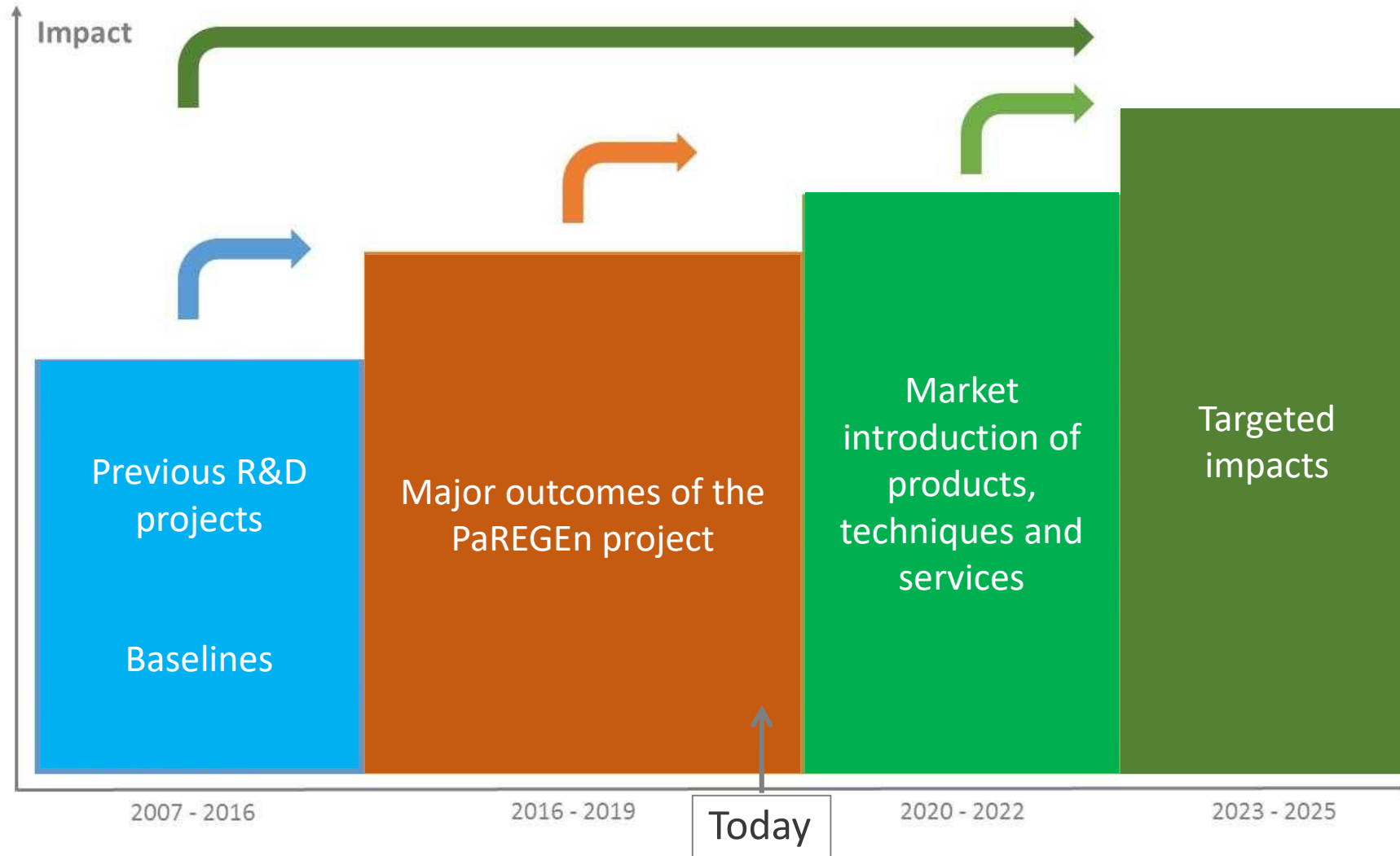
PaREGEn: Looking to the Future

Simon Edwards – Ricardo – PaREGEn Coordinator
Cor van der Zweep - Uniresearch

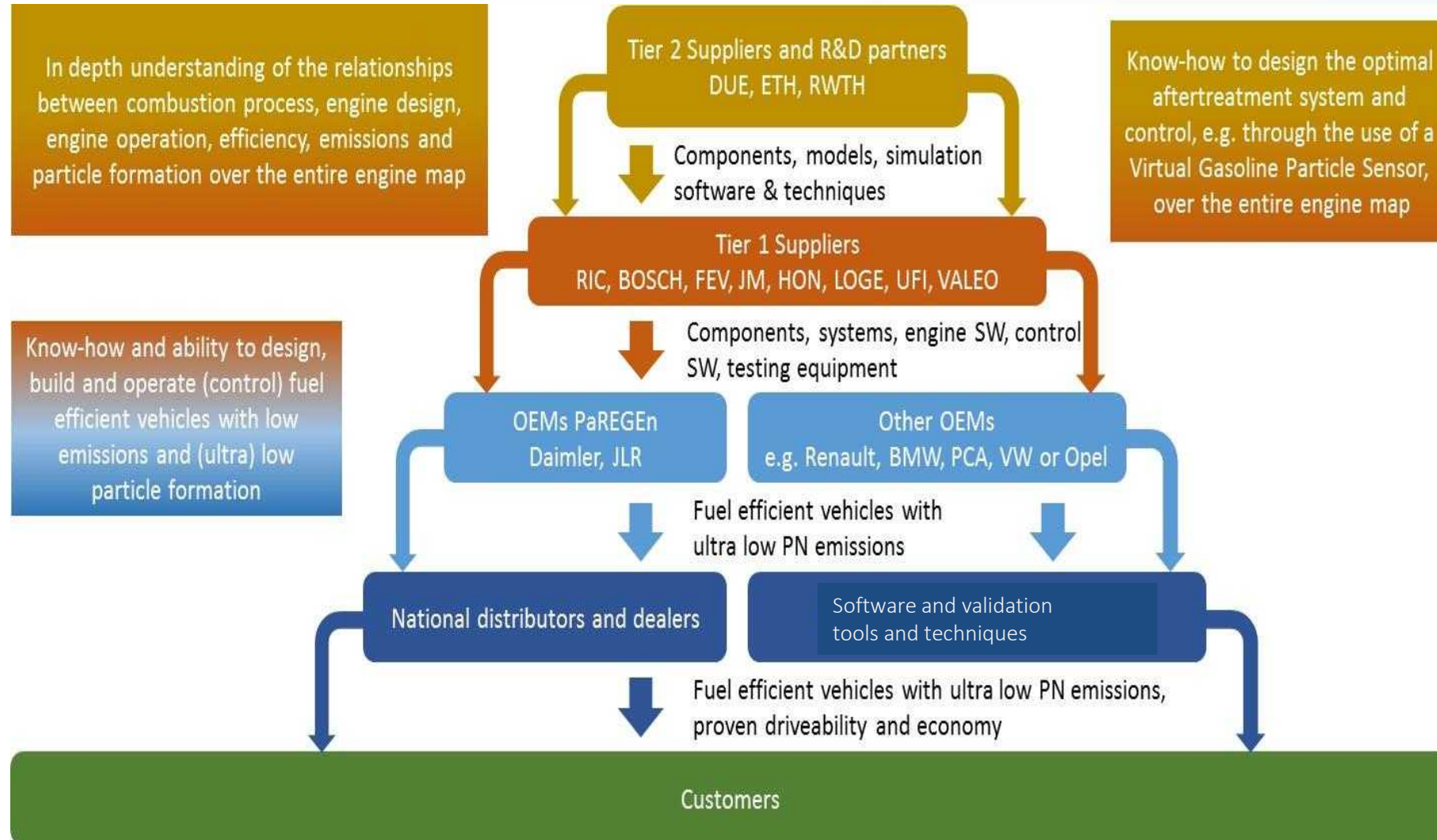
Proposed impact of the PaREGEEn project



Proposed impact of the PaREGEEn project



Routes to “market”



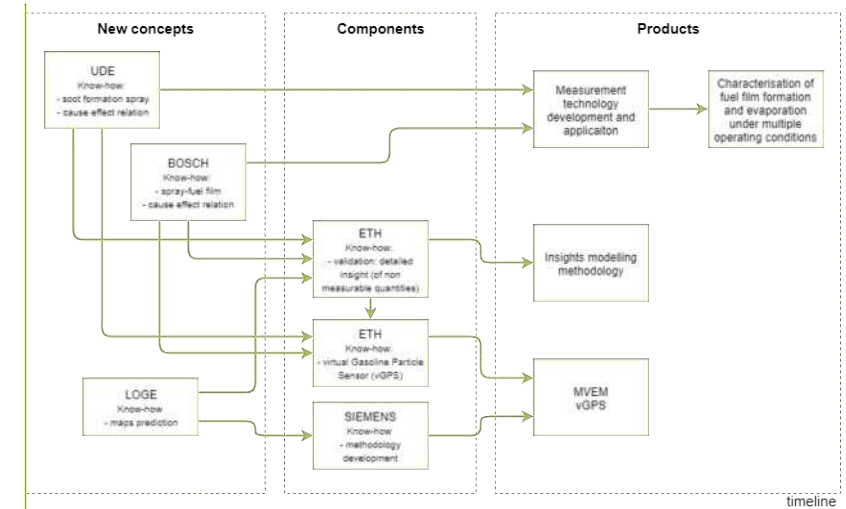
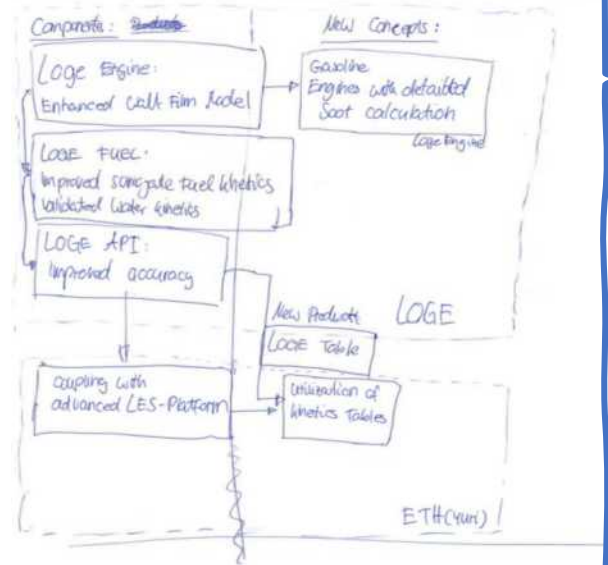
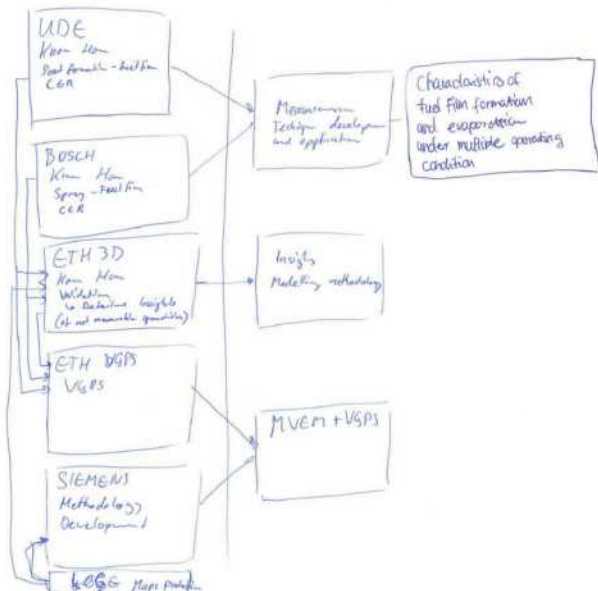
Exploitable knowledge, products etc.



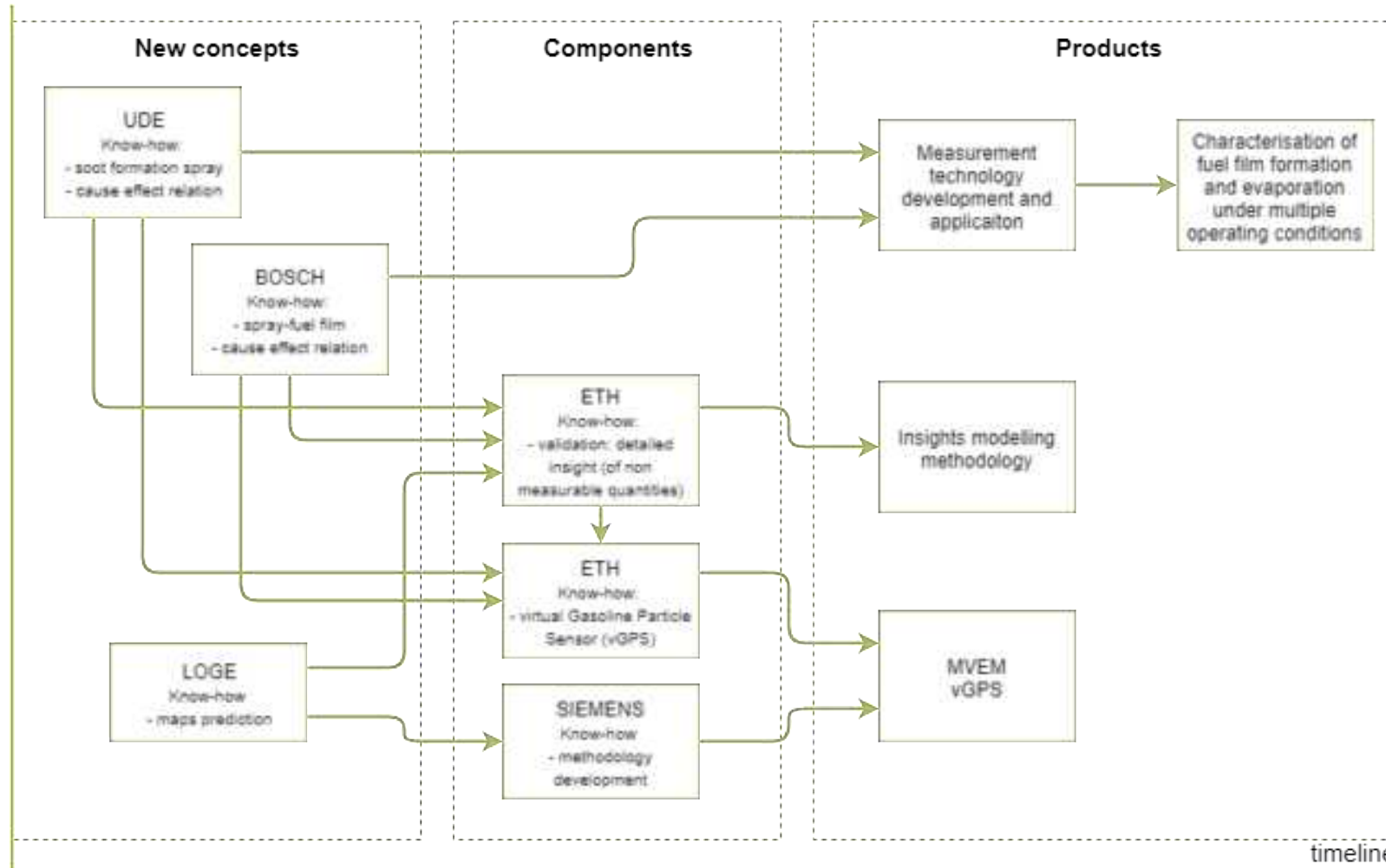
Exploitable knowledge	Exploitable product(s) or measure(s)	Sector(s) of application	Timetable for commercial use	Patents or other IPR protection	Main partners involved
WP1					
WP2					
WP3					
WP4					
WP5					
Engine testing specifications	[Redacted]	Automotive	2020	Proprietary know-how and/or patent application	AVADA, etc
Testing procedures	[Redacted]				
Testing results	[Redacted]			Proprietary know-how and/or trade secret	
Investment assessment	[Redacted]				
[Redacted]	[Redacted]				AVADA, etc
Engine testing and calibration report from task 3.3.1 and 3.3.2	[Redacted]	Gasoline engine development		Proprietary know-how and/or trade secret	AVADA
Engine testing and simulation report from task 3.3.1	[Redacted]			Proprietary know-how and/or trade secret	AVADA

Detailed exploitation possibilities

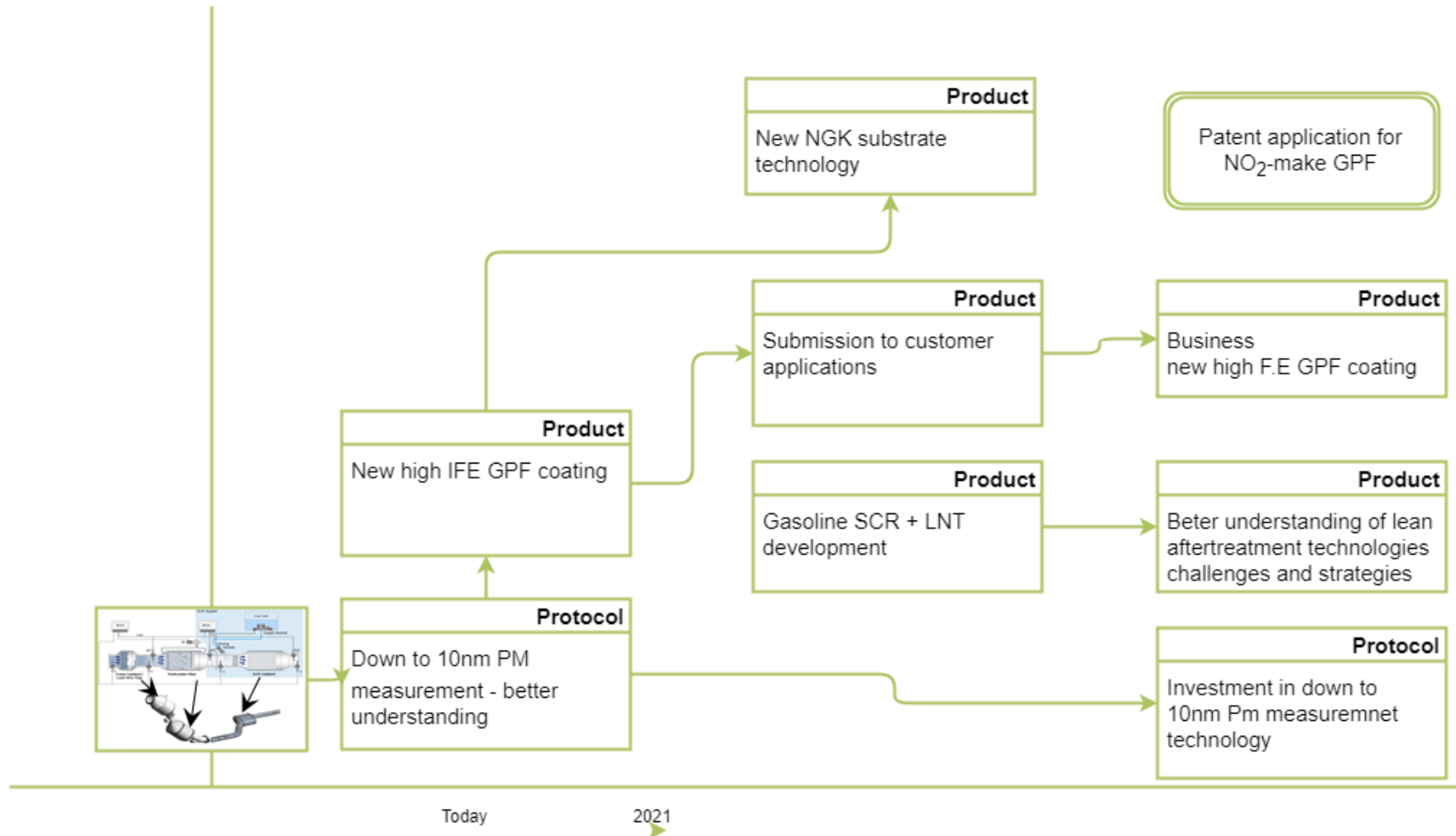
Expertise / Knowledge	Key activities / Research	Current / Future Applications	Timeline for commercial use	Partners / Other IP partners, markets
<p>WTI</p> <p>In-depth understanding of CEF for nanoparticle formation and identification of 4-cylinder and formation over the entire engine map</p> <p>Cycle resolved optical diagnostics methodology for fuel films, soot and nitrogen oxides and soot 3D CFD simulation methodology for in-cylinder combustion involving chemical reactions for gasoline and H₂</p> <p>2-4% contribution enhanced by advanced ignition system</p> <p>Particle/3D simulation methodology and models using virtual sensors adapted to vehicle architectures</p>	<p>Time flow for designing efficient and clean gasoline engines, engine components and control algorithms</p> <p>Engine and combustion simulation models</p> <p>Soot simulation model</p> <p>Test results quantifying benefits</p> <p>Virtual gasoline particle sensor</p>	<p>Gasoline engine components and architecture of system development</p>	<p>2020</p> <p>2020</p> <p>2021</p> <p>2020</p>	<p>Proprietary know-how BOSCH, UDE, ETH, Siemens</p> <p>Patent applications UDE, BOSCH</p> <p>Proprietary know-how UDE, ETH</p> <p>Proprietary know-how BOSCH</p> <p>Trade secret ETH, BOSCH, UDE, Siemens</p>



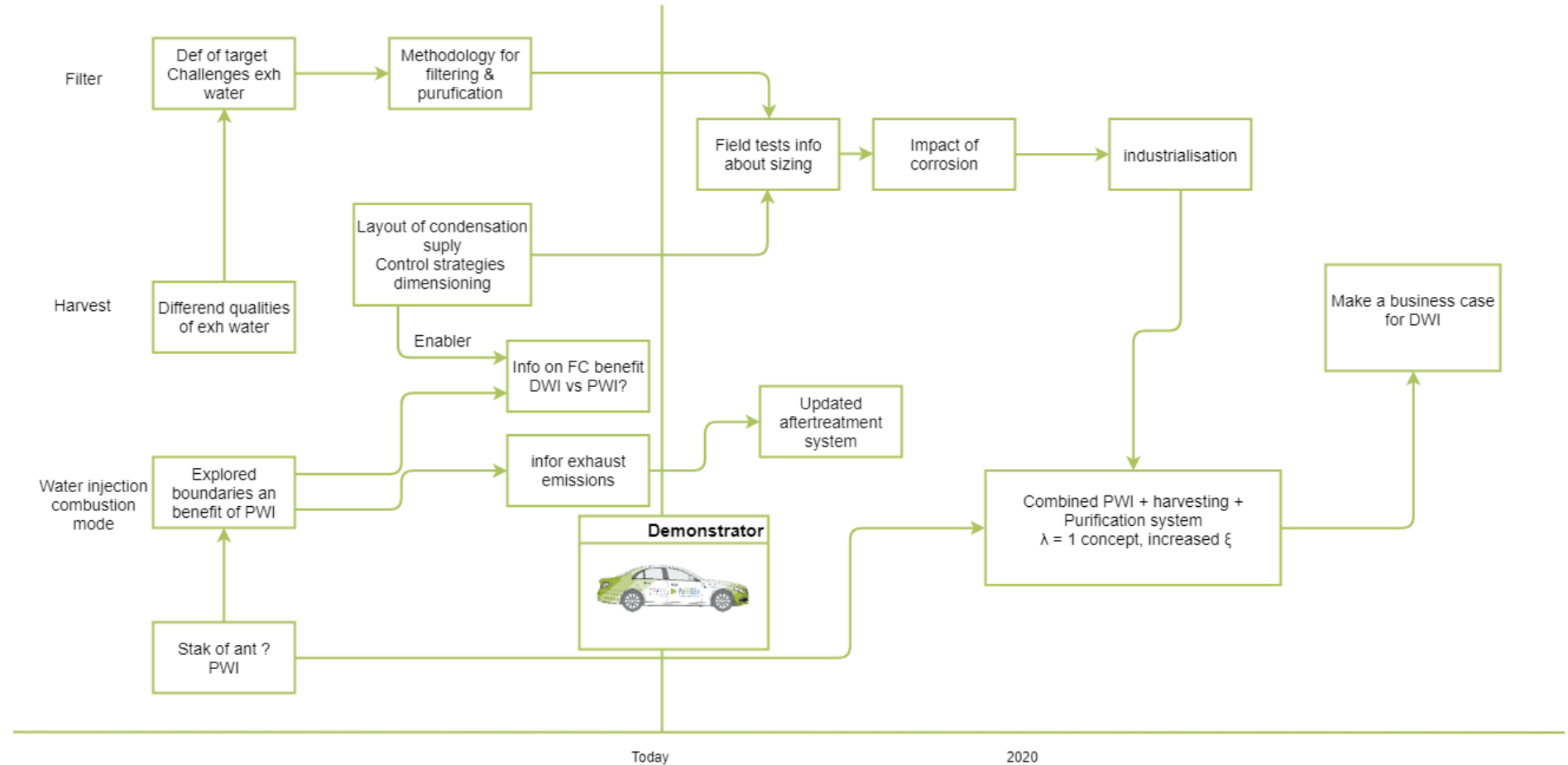
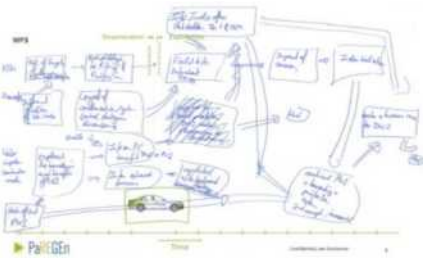
Particle formation: research to products



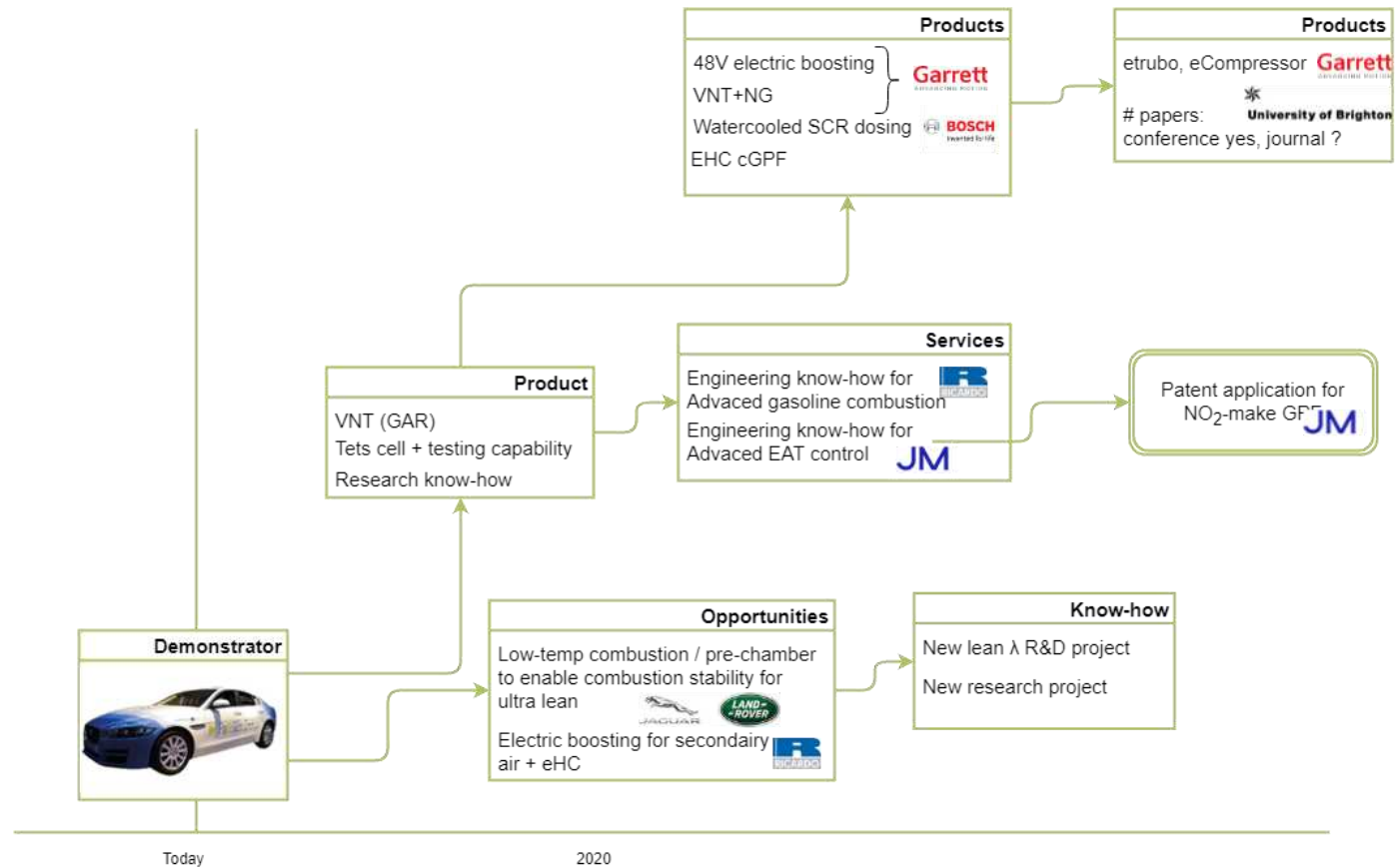
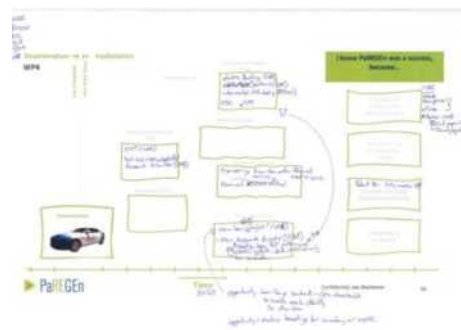
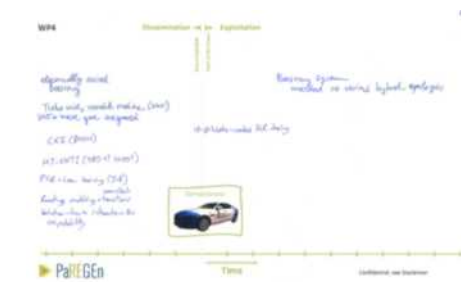
Aftertreatment: products and patents



Vehicle demo'r: products & patents



Vehicle demo'r: products & patents



- ▶▶ The step to market introductions are becoming clearer:
 - ▶▶ a roadmap to implementation of the technologies has been devised
 - ▶▶ it is supported by more detailed plans relating to how the supply industry, for both the hardware & the simulation tools, will feed into this implementation

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