ETNA2O2O
Pitch Session @ Shift2Rail
Info Day 2020

14:30 – 17:30

ETNA 2020 SERVICES FOR STAKEHOLDERs

FUNDING MAP DATABASE

- Database of complementary EU public and private funds
- https://www.transport-ncps.net/funding-map-database/

PARTNER SEARCH SYSTEM

- Organisations' profiles' database
- EEN Business offers and requests (embedded)
- TRIMIS database (linked)
- http://www.transport-ncps.net/partner-search/

EU ORGANISATIONS DATABASE

- This tool should enable you to identify what the roles of the different R&I transport-related organisations are and which are the ones that you should be engaging with.
- https://www.transport-ncps.net/toolbox/

EUROPEAN TRANSPORT DOCUMENT REPOSITORY

- Repository of roadmaps, strategies, white papers, position papers published by relevant organisations/associations/platforms from the transport sectors
- https://www.transport-ncps.net/toolbox/

FRAMEWORK PROGRAMME ANALYSIS TOOL

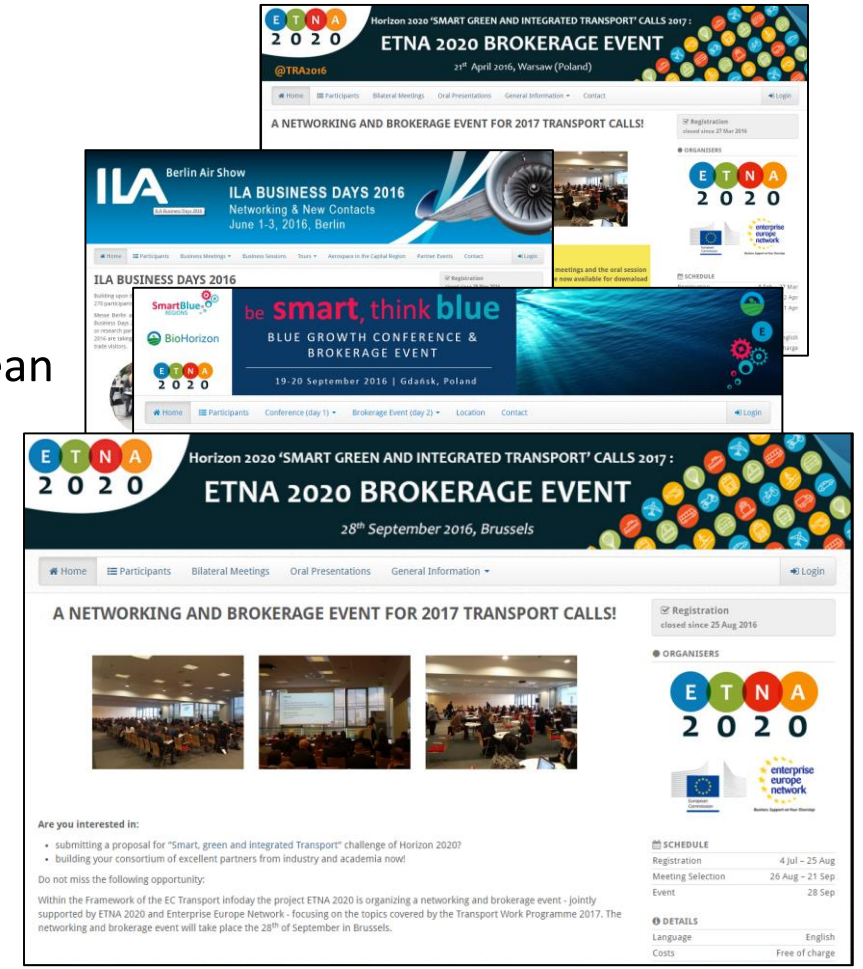
- Interactive analysis of the participation in Transport H2020 calls
- https://www.transport-ncps.net/toolbox/

ETNA 2020 EVENTs

- Brokerage events

- Training events
  - The ETNA2020 5th Forum (17.12.19) will provide an overview of the Shift2Rail JU, and will discuss suggested directions towards a European rail research and innovation program post 2020. For info, contact: Ofir.Weltsch@iserd.org.il

- Webinars:
  - “What we need to know about the Eurostars Programme” (18/12/2019). For info and registration: https://www.transport-ncps.net/webinar-what-we-need-to-know-about-the-eurostars-programme/



ETNA 2020 INFORMATION SOURCES

www.transport-ncps.net

WEBSITE, NEWSLETTER, BRANDING TOOLBOX, DISSEMINATION EVENTS, SOCIAL MEDIA

Aiming at providing information on H2020 transport-related calls & the project services

FOLLOW @ETNA2020network

etna2020@apre.it

Matchmaking session: How it works

1) 30’ round of 6/7 pitches: 5 slides in 5 min.

2) Parallel discussion groups (30 min.)

Tips

- **The aim of the pitch**: To clearly present your project idea/knowhow

- **What are you looking for?** Consortia with already a coordinator? or partners to complete your consortium?

- **During the first 30 seconds** you can **make an impact** by presenting:
  - the problem you are going to solve (based on the scope of the Call topic)
  - Your value proposition (how does your project idea solve such problem?)
  - Why you and your partners of the consortium are the right subjects to achieve the result

Part I

14:35	**Delft University of Technology**	Egidio Quaglietta
14:40	**EURECAT**	Laia Garriga Mas
14:45	**Zeleros**	Juan Vicén
14:50	**Universitat Politècnica de Catalunya**	Joaquim Rigola
14:55	**Technical University of Munich**	Bernhard Lechner
15:00	**TUC Rail**	Paul Tobback
15:05	**NETWORKING GROUPS**	

ETNA 2020 @ SHIFT2RAIL

Egidio Quaglietta

Delft University of Technology

Academic Institution, the Netherlands

Department of Transport & Planning

Digital rail traffic and automated transport operations

Contact and web url:

e.quaglietta@tudelft.nl

https://www.tudelft.nl/en/ceg/about-faculty/departments/transport-planning/staff/personal-pages/quaglietta-e/

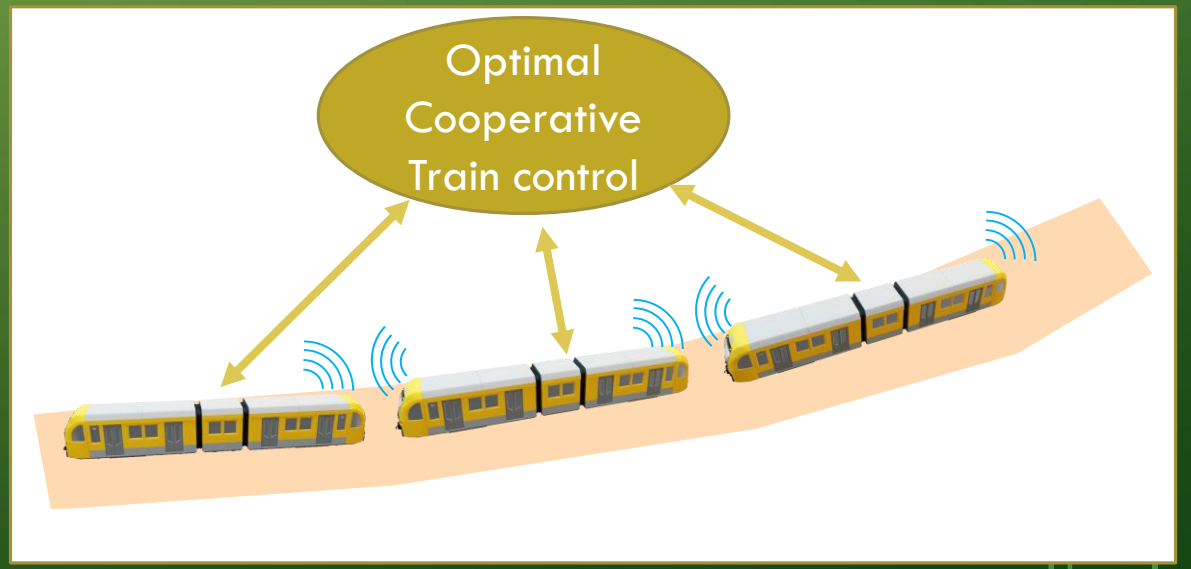
ANTRAIL

ANT-like RAIL Traffic operations to maximise network efficiency

In nature ants seem to know the secret of making super efficient, high-capacity transport networks using cooperative movements…

Research question:

Can Virtual Coupling and optimal train control unleash the same potential for railways?



ANTRAIL: Project Description

Contributing to S2R IP2:

- TD2.8 - VCTS
- TD2.9 - Traffic management evolution

Expands work in:

- S2R-OC-IP2-01-2020 of the AWP

Concept definition and verification

WP1
Principles for cooperative VC train operations

WP2
Formal Verification and functional specs

Mathematical formalisation

WP3
VC enabled rail simulation environment

WP4
Cooperative train control algorithms

Testing platform and evaluation

WP5
ANTRAIL operation platform integration

WP6
Performance analysis and assessment

ANTRAIL: Current consortium & Partner profile

Partners:

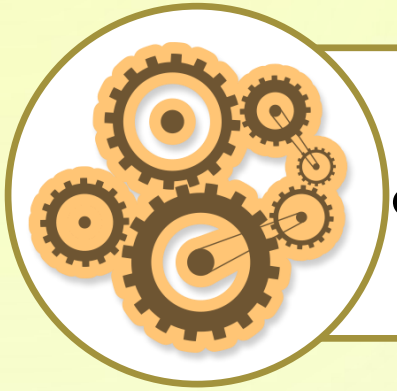
TU Delft (NL)

IFSTTAR (FR)

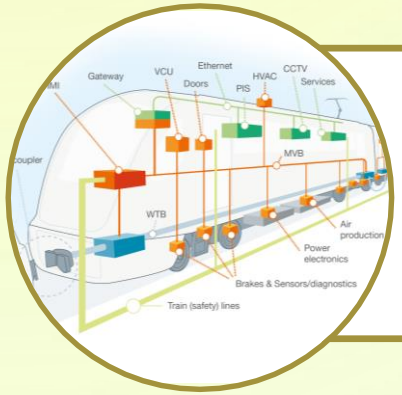
Università degli Studi di Napoli Federico II (IT)

Linnæus University Sweden (SE)

Who we are looking for:



SMEs with expertise in SW demonstrators for the railways to showcase concepts in WP5



SMEs with core business in train management control systems to support WP1 and WP3.

Thank you for your attention

Can you help us moving to the next generation of railways?

ETNA 2020

Shift2Rail 2020

EURECAT Technological Centre

Based in SPAIN
Research & Innovation private foundation

Laia Garriga – Business Developer Rail & Logistics
laia.garriga@eurecat.org
+34 636568058
www.eurecat.org

"innovating for business"

eurecat

Interested in topics:

- **S2R-OC -IP1-01-2020;** Support to Development of next generation of Traction systems
- **S2R-OC-IP1-03-2020;** Innovative technologies for Carbodies and Running Gear of the future
- **S2R-OC-IP3-02-2020:** Technology Development for Railway Systems Asset Management
- **S2R-OC-IP3-03-2020:** Advanced tools and equipment: collaborative robots & wearable mobile machines
- **S2R-OC-IP4-01-2020:** Supporting the implementation of the IP4 ecosystem

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ETNA2020 Brokerage Event @ the Shift2Rail's 2020 Infoday
10th December 2019, The Egg Brussels

ETNA 2020

58% 42%

2018

50 M€

+133 %
in billing by projects with companies

+54,6 %
of total income

+89 %
new customers

50 %
of our activity is with SMEs

1.500
Customer enterprises

160
Large I+D projects

81
patents

7
spin-offs

Industry

1. Advanced materials and new manufacturing processes
2. Functional printing and embedded devices
3. Interactive and autonomous robotics
4. Functional textiles
5. Modelling and simulation

Digital

1. Sensor systems and IoT
2. Science and data analysis
1. Artificial intelligence
2. Multimedia technologies
3. Cybersecurity

Biotechnology

1. Nutrition and health
2. Omic sciences

Sustainability

1. Water
2. Soil
3. Air
4. Energy

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ETNA 2020

TRANSBOX

Intermodality Automation

IP5

Development of automation technologies for loading and unloading processes between the different actors involved: Factories, logistics operators, train, ports ...)

The technological challenge is to increase the efficiency of intermodality by increasing the use of rail freight transport.

Technologies to develop

- Analysis of the needs of managers and operators of intermodal terminals.
- Automation solutions
  - Incorporation of automation to the process of loading / unloading of goods.
  - Load unit design
- Adaptations or new creations in rail transport equipment.
- ICT solutions
  - Traceability of the goods and assets
  - Blockchain

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Impact

TRANSBOX

Intermodality
Automation

- Optimization in the design of the new terminals, the loading and unloading processes of goods in general, in the intermodal environment (ship-rail-road ...)
- Reduction of logistics transport costs.
- Infrastructure performance improvements
- Incorporation of new technologies that allow better management of intermodal rail terminals.
- Reduction in the requirements of necessary spaces.
- Positioning of the railway sector as a leader in the development of optimization technologies in freight terminals.
- support zero emission city and territorial logistics
- humans at the centre: improving working conditions, fostering reconversion to new job opportunities

Current Consortium

TRANSBOX

Intermodality
Automation

PROMAUT ENGINEERING SOLUTIONS

Automation, supervision and process control engineering

eurecat

Technological Center

railgrup

Railgrup is a non-profit association.
Cluster of Rail and logistics Industry

FGC Ferrocarrils de la Generalitat de Catalunya

Railway operator

Profile of EU potential partners

- Container constructors
- Product designers
- Transport & logistics planners
- IoT & Big Data (Smart Platforms)
- Knowledge in logistic hubs
- Stakeholders

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S2R-OC-IPX-01-2020: Innovation in guided transport

Expanding the limits of mobility.

1000 km/h | 0 direct emissions | High Energy Efficiency

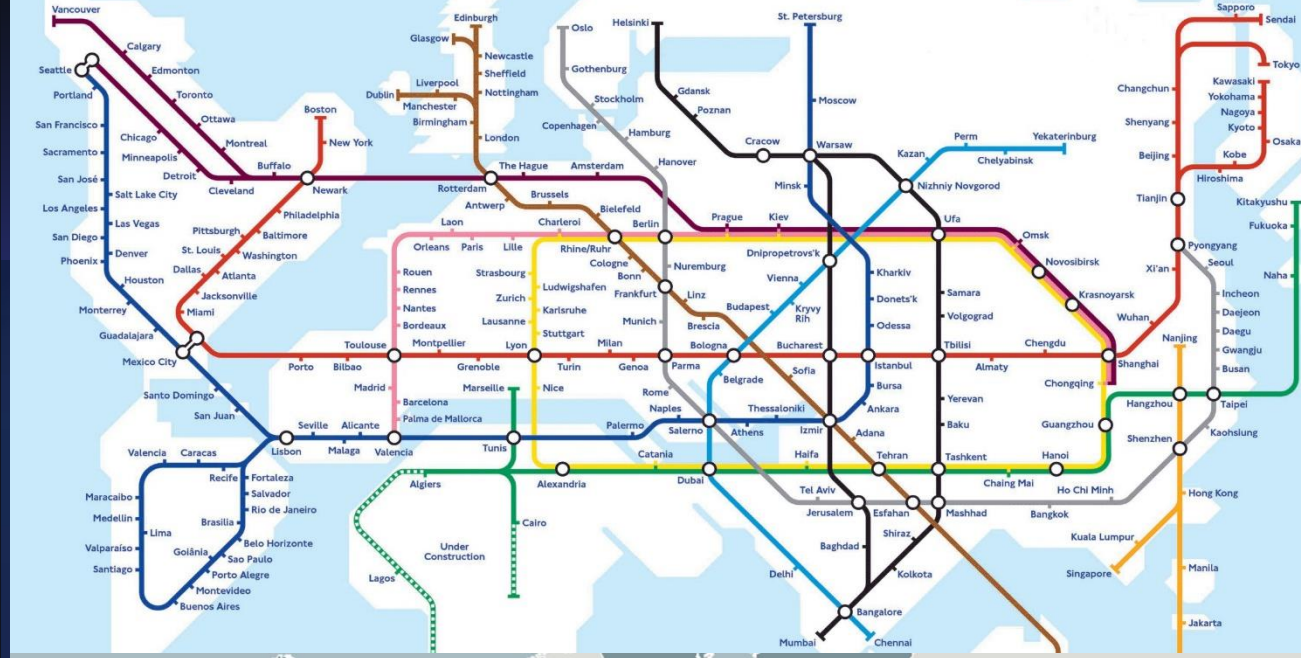
Juan Vicén – Co-Founder & CMO, jvicen@zeleros.com

VISION FOR EUROPE

A hyperloop network in Europe could reduce aviation and trucking emissions, boosting the share of high-efficiency, all-electric ground transportation.

Potential:

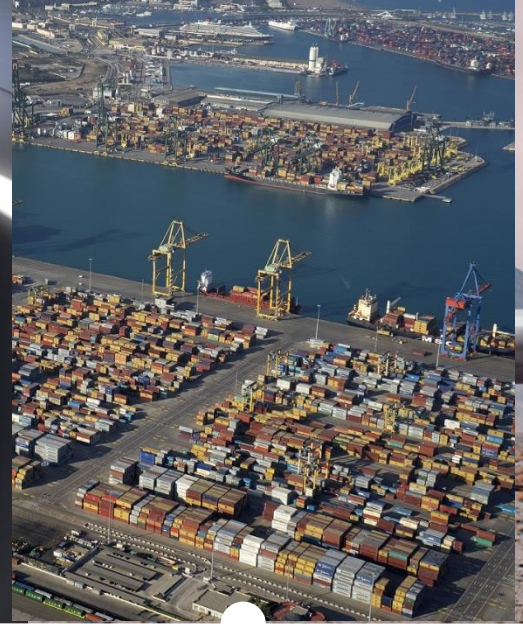
- Enhanced competitiveness in ultra-high-speed transport
- Economic development & cohesion of the EU regions
- High-value job creation and attraction/retention of talent
- Integration of the EU research infrastructures & centers in high-speed transportation
- Increased capacity of the EU transport network



2019-2020
SUBSYSTEM TESTING

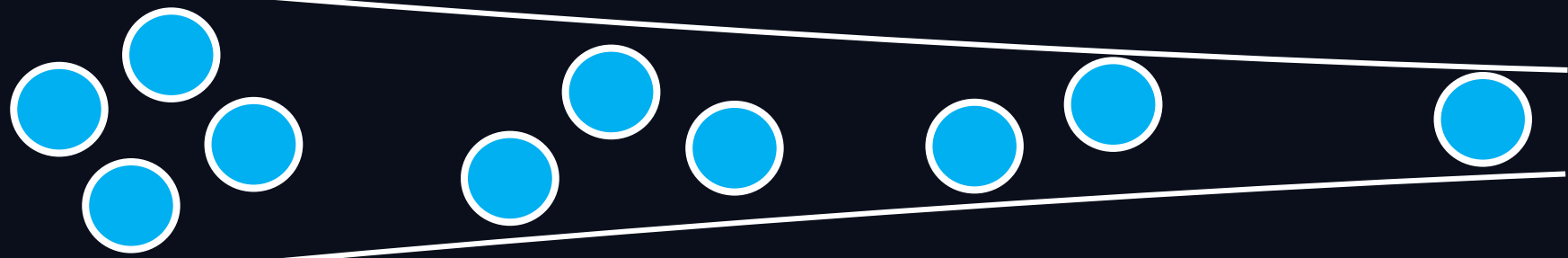
2020-2021
SYSTEM TESTING MEDIUM SCALE

2021-2023
SYSTEM TESTING REAL SCALE



2023-2024
PREPARATION FOR REAL OPERATION

2025
EUROPEAN HYPERLOOP READY FOR FOR OPERATION



CONVERGENCE TOWARDS AN INTEROPERABLE SOLUTION

SCALABILITY: THE KEY FOR GLOBAL IMPLEMENTATION

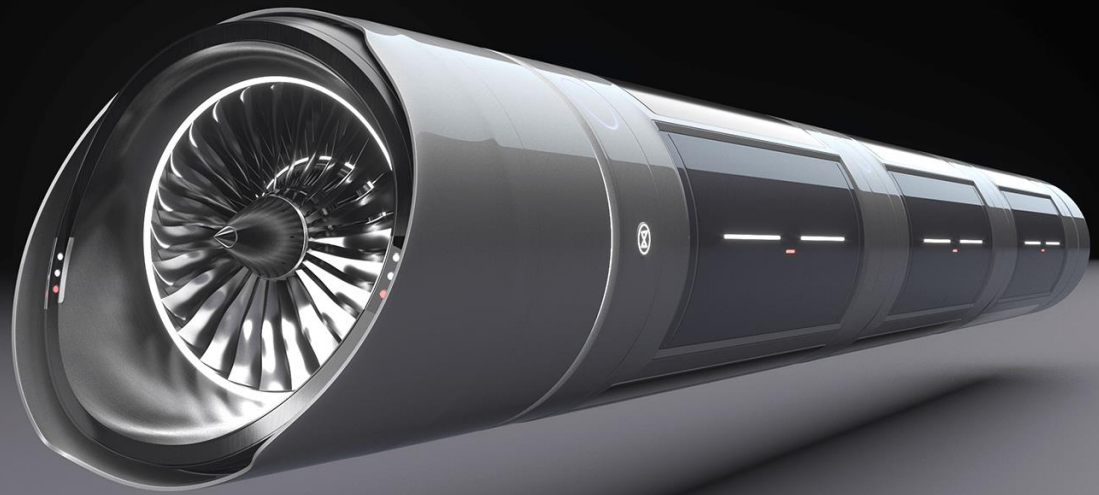
*Minimization of **infrastructure complexity with in-vehicle technologies,***
achieving a scalable solution to connect long distances at speeds up to 1200 km/h

Safe
pressure levels

Reduced infrastructure
construction costs

Reduced infrastructure
energy needs

Simplified
maintenance



GENERALITAT VALENCIANA · renfe · UNIVERSITAT POLITÈCNICA DE VALÈNCIA · eit Climate-KIC · altran · PLUG AND PLAY · ANGELS · Ciemat · ITE · GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA, INNOVACIÓN Y AGENDA DIGITAL · institute IMDEA · IK4 Research Alliance

STANDARDISATION & REGULATORY FRAMEWORK: PROGRESS.

June 2018

International agreement in Brussels for standardization of hyperloop.
Meeting with DG MOVE.

Sept 2018

First hyperloop conference with companies showcasing intent to cooperate on standardization.

Dec 2018

1st meeting of DG Move with Member States regarding hyperloop. Successful.

March 2019

DG Move, RTD, Growth + Shif2Rail + Hyperloop promoters

April 2019

Meeting of rail operators with HL companies, promoted by DB.

May 2019

Meeting with EASA and ERA.
Focus: Safety/Interoperability

June-July 2019

2nd follow-up meeting with Member States.

Oct 2019

Meeting of companies with European Commission.

ETNA 2020

Prof. Joaquim Rigola

Centre Tecnològic de Transferència de Calor
UNIVERSITAT POLITÈCNICA DE CATALUNYA

Heat and Mass Transfer Technological Center (CTTC)

Universitat Politècnica de Catalunya – Barcelona TECH (UPC)

Mechanical and Aeronatical Engineering School, Terrassa, (BCN), Spain

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quim.rigola Joaquim Rigola

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Business Support on Your Doorstep

S2R-OC-IP1-02-2020: Technical solutions for the next generation of TCMS Functional distribution framework, through an integrated modular platform, including the integration of third party's HVAC function.

S2R-OC-CCA-01-2020: Noise and Vibration Call Noise reduction

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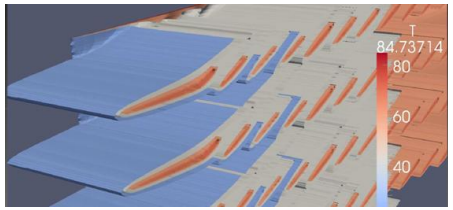
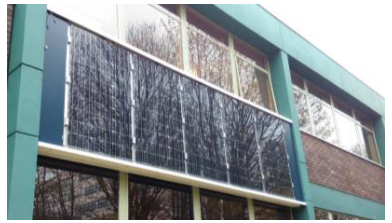
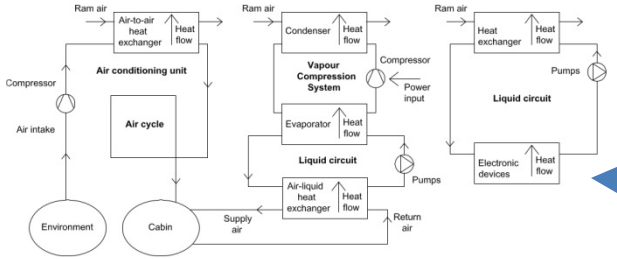
UNIVERSITAT POLITÈCNICA DE CATALUNYA

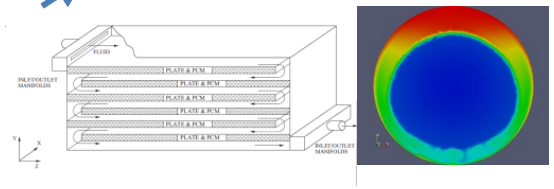




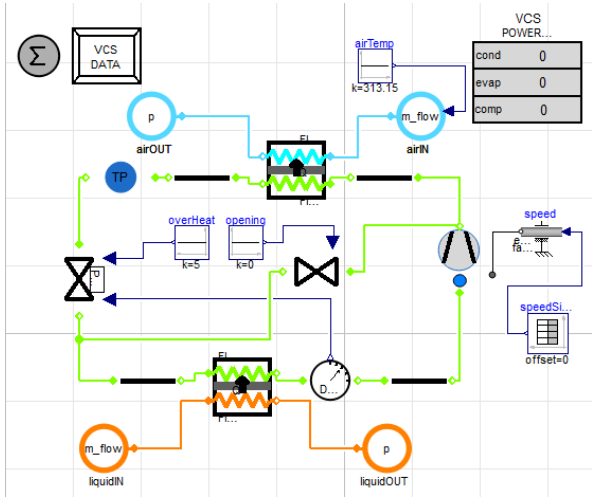


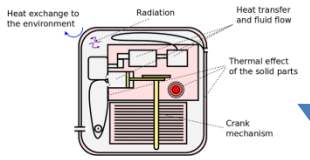
Computational Fluid Dynamics and Heat Transfer

Object oriented tools thermal systems & equipments



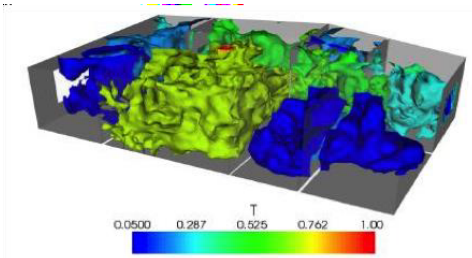
HVAC AIRPLANES





HYBRID PV PANELS

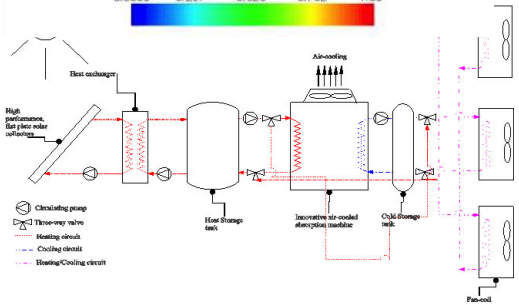
PCM HEAT STORAGE



COMPRESSORS

ACTIVE CONTROL BUILDINGS

REFRIGERATION SYSTEMS



ABSORPTION MACHINES

Smart and Adaptive Refrigerated Containers (SARC)

- **Rail connection fresh food products**
  - Sustainable
  - Fast, reliable and efficient
  - 70% of CO_2 emissions reductions

- **Examples**
  - 2018 COLDTRAIN Canadian Pacific Railway
  - 2018 TK Washington – Oregon
  - 2019 MSC COOLRAIL Valencia - Rotterdam

- **Actual alternatives**
  - CO2 cryogenic tanks
  - LNG fueled refrigerated vehicles

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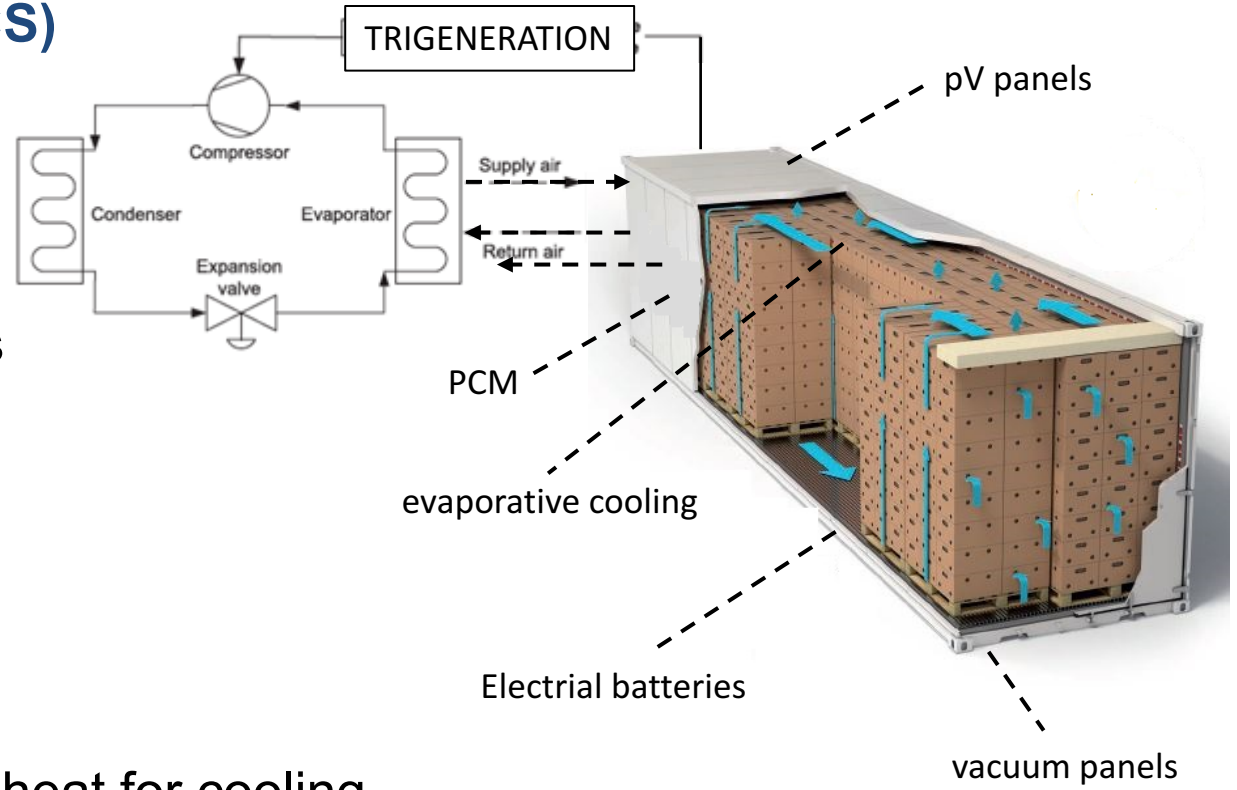
Smart and Adaptive Refrigerated Containers (SARC)

- **Vapour compression refrigerating system (VCS)**
  - New fluid refrigerants
  - Evaporative cooling
- **Insulation walls**
  - Vacuum panels and Phase Change Materials
  - Air flow control distribution
- **Renewable energy**
  - pV panels at the top of the container
- **Waste heat recover**
  - Trigeneration system to convert motor waste heat for cooling
- **Storage capabilities**
  - Electrical batteries
  - Fuel cell + gas storage



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Smart and Adaptive Refrigerated Containers (SARC)

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UNIVERSITAT POLITÈCNICA DE CATALUNYA

eurecat
Centre Tecnològic de Catalunya

railgroup

- Containers Constructors
- HVAC Manufacturers
- Vaccum panels & PCM producers
- pV panels producers
- Batteries producers
- Test chambers
- Stakeholders

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Dr.- Ing. Bernhard Lechner

Technical University of Munich, Germany

Department of Civil, Geo and Environmental Engineering
Chair and Institute of Road, Railway
and Airfield Construction

Expertise:

Track design and performance analysis (ballasted and ballastless); Real and virtual testing; Vehicle-Track-Substructure interaction, Track stiffness; Noise and vibration

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Phone: +49/89/289 27033
Web: www.bgu.tum.de/vwb

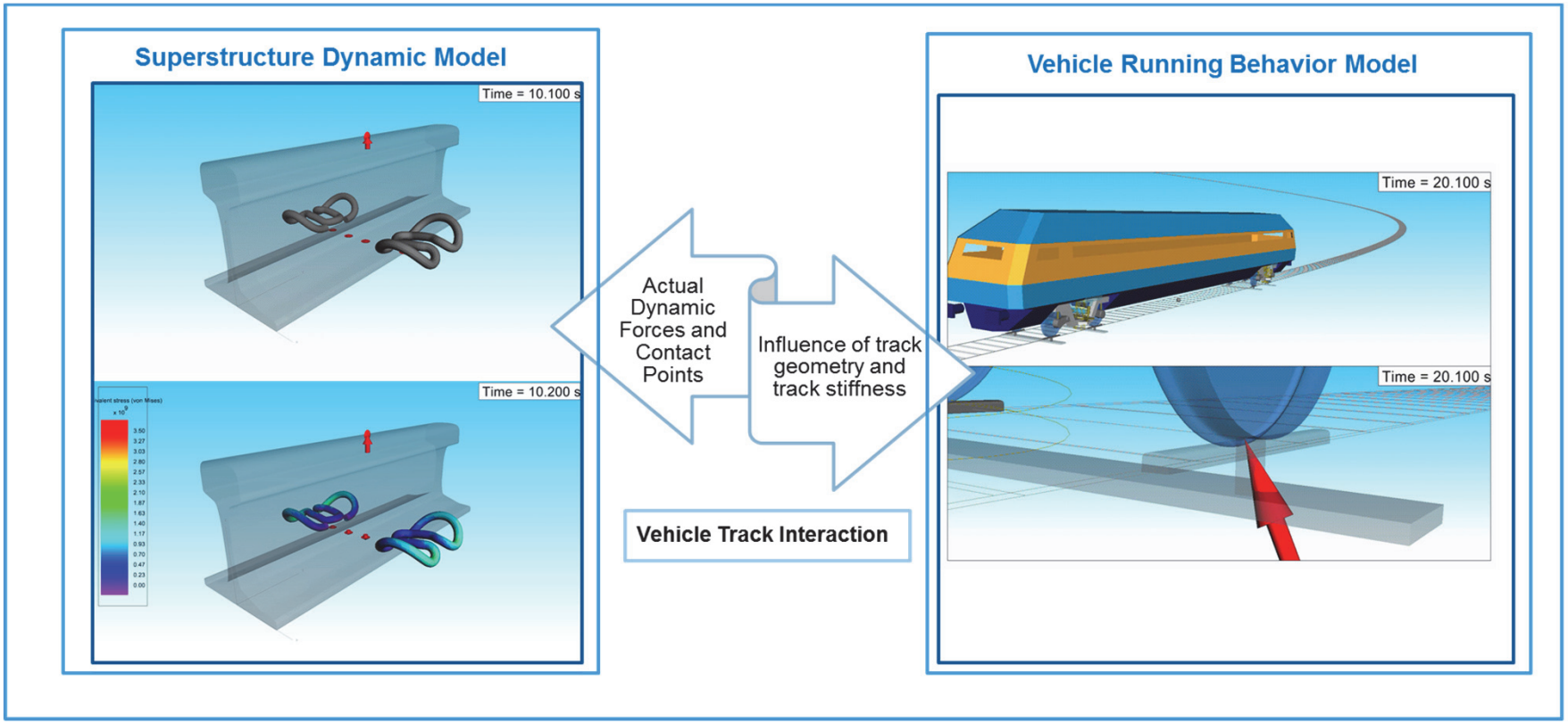
S2R-0C-IP3-01-2020: Next Generation Track Transition Zones

Track stiffness transition design using hybrid testing strategies (Virtual and lab/in-situ testing; Enhanced track structure monitoring based on train borne or/and track borne data)

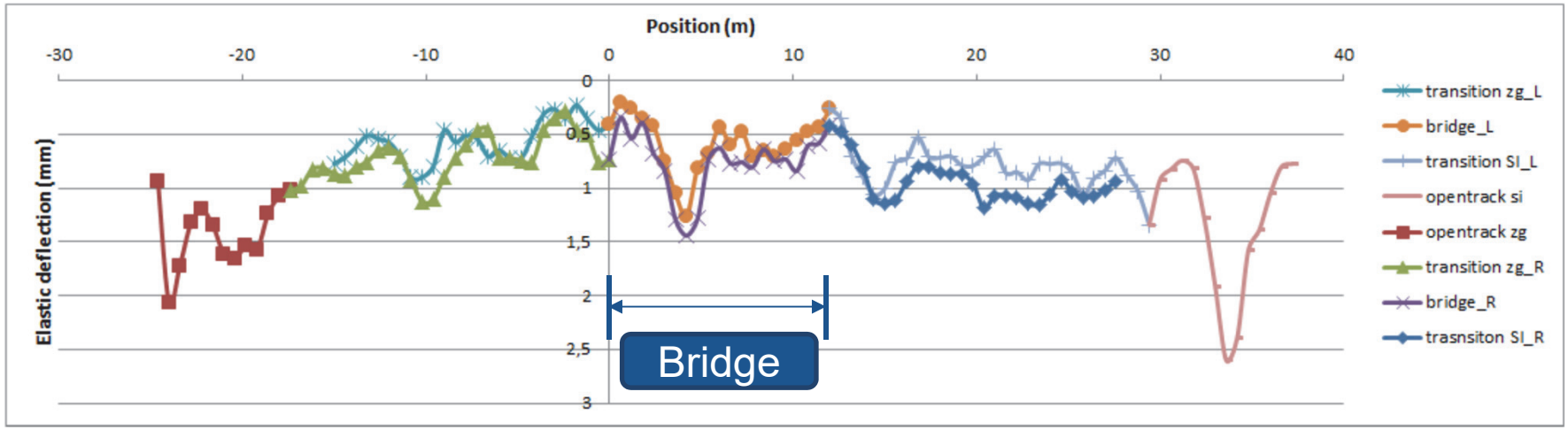
Partners:

- **Infrastructure managers (integration of track structure monitoring; train borne vs. track borne)**
- **Tracksystem, subsystem and components suppliers**

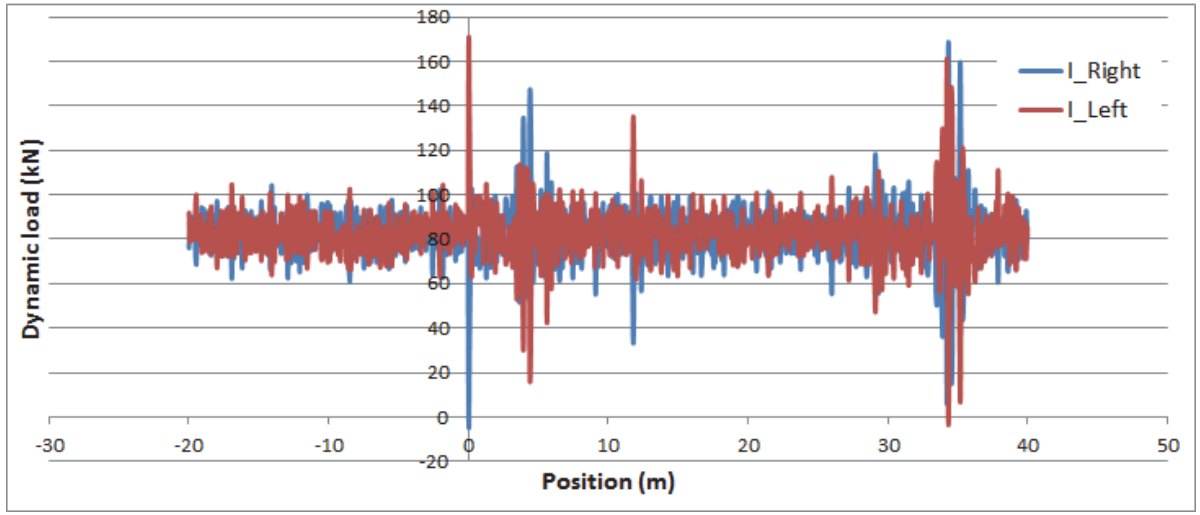
Analysis and evaluation of local track geometry and stiffness discontinuities (e.g. Transitions)



Track stiffness variation along discontinuities, Case study Bridge - Transitions



Dynamic wheel load simulation(MBS)



References

Liu, D.; Lechner, B.; Freudenstein, S.: EVALUATION OF HIGH-SPEED TRACK QUALITY USING DYNAMIC SIMULATION OF VEHICLE-TRACK INTERACTION, JTT: Vol.6, No.1, Jan 2016 ISSN: 2160-0481

Chen, K.; Lechner, B.; Freudenstein, S.: INVESTIGATING TRACK STIFFNESS QUALITY BASED ON RAIL FOOT BENDING STRAIN UTILZING STRUCTURE OPTIMIZATION METHODS. 7th Transport Research Arena TRA 2018, Vienna, Austria 16.4. – 19.4.2018, 2018

Hannema, G.; Tröbs, H-M.; Van Damme, B.; Zemp, A., Wunderli, J-M.; Lechner, B.; Zhang, J.; Sohr, S.; Hecht, M.: VALIDATION OF A FEM STRUCTURE-BORNE SOUND RADIATION MODEL FOR RAILWAY ROLLING NOISE. Noise and Vibration emerging methods - NOVEM 2018, 7 – 9 May 2018, Ibiza, Spain, 2018

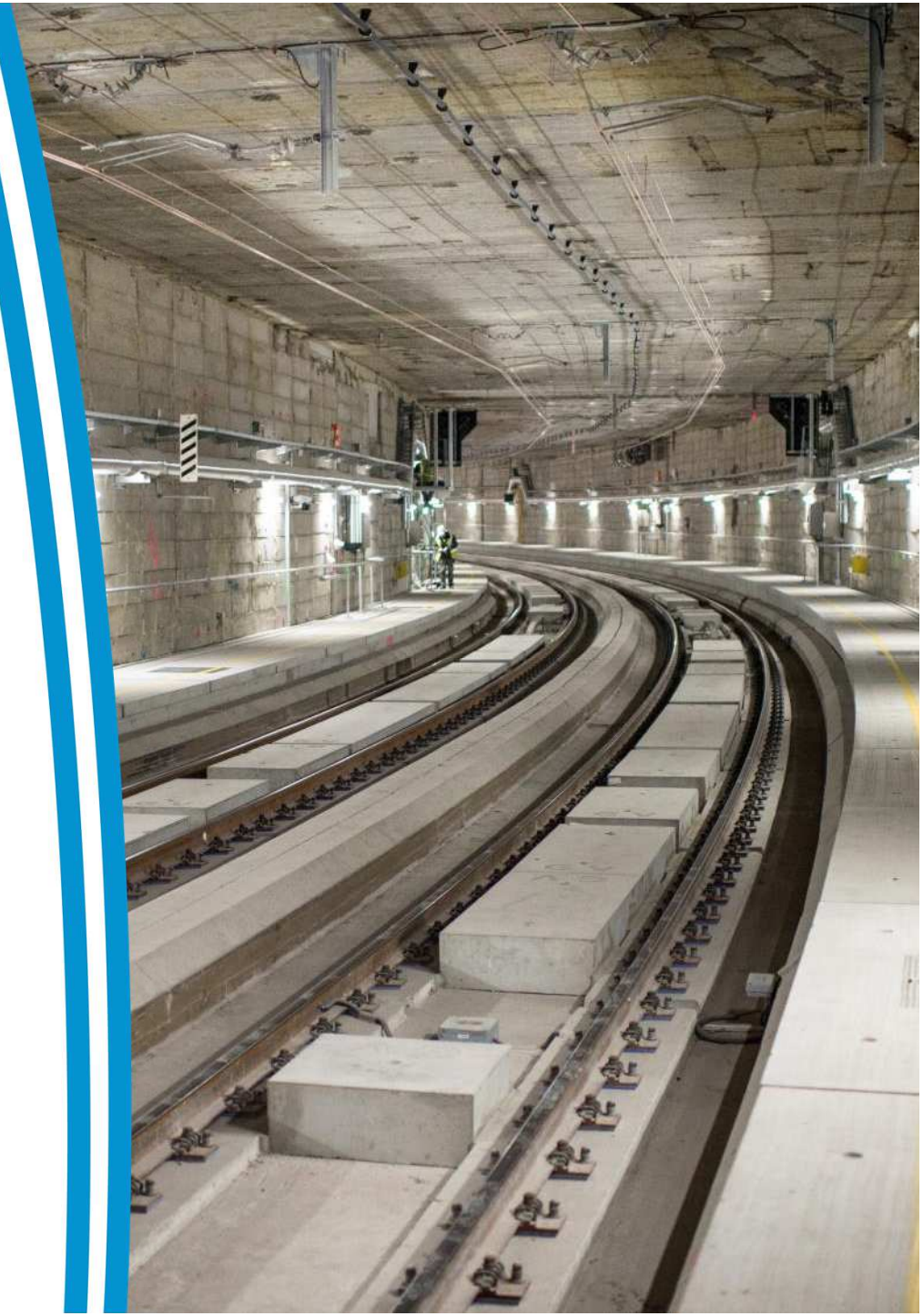
Stahl, W.: "DYNAMIC TRACK DEFLECTION MEASUREMENTS IN GOTTHARD BASIS TUNNEL". ETR Railway Technology Review, 2017, 28-32

Structural Health Monitoring

IoT sensors

Paul Tobback - Electrification

10/12/2109



Structural Health Monitoring – IoT sensors

- INFRABEL – Belgian Railways Infrastructure Manager – public company
- TUC RAIL – Railway Engineering & Project Management – private company, 100% subsidiary of INFRABEL

- Departments involved: INFRABEL Asset Management (I-AM) & ICT

  - Jurgen Sohier → Overhead Contact Lines
  - Koen De Gussemé → Power Distribution & Substations
  - Ken Yoshimi → Tracks
  - Didier Vandevelde → Bridges

- Paul Tobback
  Lead Design Engineer
  Competence Centre Electrification – OCL Expert
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  M +32 477 47 13 04
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  1060 Brussel/Bruxelles (Sint-Gillis)
  www.tucrail.be

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1070 Brussel/Bruxelles (Anderlecht)
www.infrabel.be

The project

- Test bed installation of multiple sensors on one pilot spot (Mechelen)

R&D activities

- Bridges → monitoring of integral bridges
- Track → rail-bridge interaction on bridges without sleepers
- Overhead Contact System → monitoring of mechanical and electrical behaviour
- Substations → monitoring of switches and protective devices

- End-to-end → build & operation

- By means of a railway testbed and research activities together with partners from academia, start-ups and/or engineering firms, we want to investigate which emerging Internet-of-Things technologies and Artificial Intelligence algorithms can help us to enhance our maintenance and asset management processes.
  Through these activities we want to gain new insights in structural health monitoring. We want to discover which set of physical/electrical/chemical/structural/… phenomena, which types and combinations of sensors, and which deep learning algorithms can help **us to propose a cost effective structural health monitoring strategy that can benefit our entire rail network**.

Profile & Role of the partners

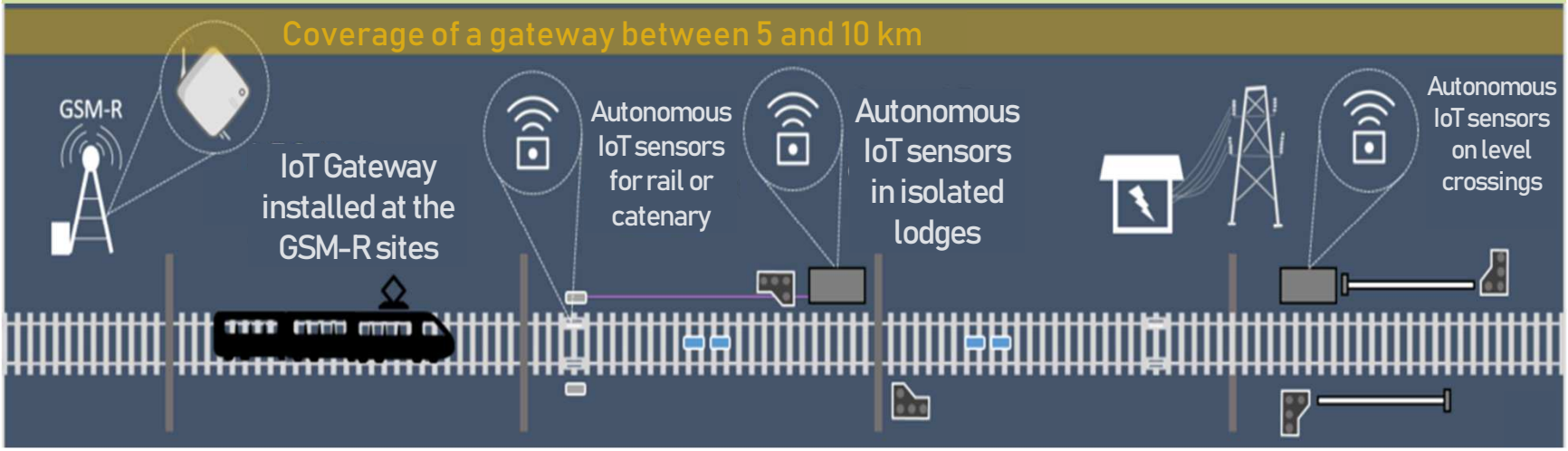
- No consortium
- Profile of the partners sought:
  - Universities
  - Start ups within the field of data analytics, artificial intelligence and asset monitoring
  - Engineering firms
- Role of the partners sought:
  - Realize a cost efficient tendering and installation
  - Guidance on defining the most appropriate sensors for the observed railway phenomena
  - Analysing measurement data
  - Define alerts levels and predict failure & future maintenance
  - Gain new insights in structural behaviour by correlating data previously not linked
  - Scale up the pilot and industrialize solutions

Structural Health Monitoring

→Integration with our enterprise systems and our workflows

→Using open standards while guaranteeing data security & confidentiality

ALL IDEAS WELCOME !



Networking groups (1)
15:05 – 15:30

Part II

15:30	**Co.El.Da. Software srl**	Antonio Lucisano
15:35	**LusConsult**	Ludovic Seydoux
15:40	**STAM Srl**	Pietro De Vito
15:45	**PARAGON**	Harry Tsahalis
15:50	**DTS**	Alberto Mandler
15:55	**AV Ingenieros**	Ignasi Gómez-Belinchón
16:00	**BTS Rail Saxony**	Mareike Walter
16:05	**NETWORKING GROUPS**	

Project RTS-AGW

The Co.El.Da. Software has concentrated its business research in designing and patenting an innovative system for the management of rail freight logistics

Who we are

The Co.El.Da. Software was founded in 1987 with the aim of creating and offering specific software solutions to Corporate Authorities and Professionals, offering IT Consulting services and custom software application development.

To date, the company is a Market Leader for the supply of application software in the Port System Authority sector, with over 70% of the Bodies authorithies served.

Project site: http://www.rts-agw.com/ E-mail: info@coelda.com

WO2014002077

The INTELLIGENT railway wagon

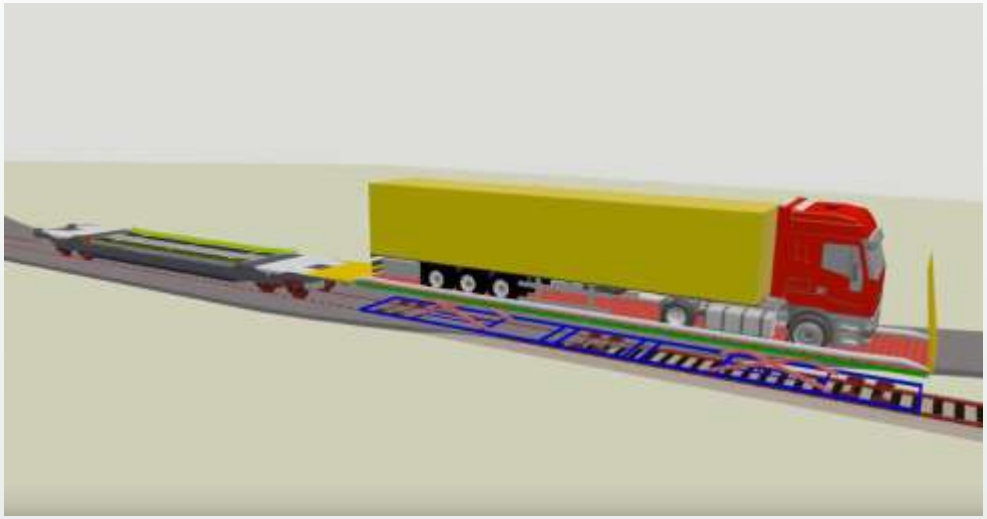
- The current wagon is transformed from a passive element, that can be moved only by a locomotive, to an autonomous element
- The wagon is managed remotely by a software platform to perform movements to:

  - position itself anywhere in the railway yard
  - approach another wagon for coupling operations
  - position itself next a crane for containers loading / unloading operations
  - position itself next to another wagon for horizontal transhipment of containers
  - position itself next to a warehouse for loading pallets, goods, etc..

Demo video simulation

PATENT filed for international patent PENDING

Intelligent ‘poche’ wagon



- Modification of a normal wagon with upgrades to make it "smart"
- Mobile loading platform
- Automatic hooking / unhooking of semitrailer towing pin

Demo video simulation

The solution designed

- Automates the traction of individual railway wagons
- Automates the coupling / uncoupling system of the individual wagons with backward compatibility with the current system
- Automates the wagon handling phases
- Automates the maneuvers for the composition and decomposition of trainsets
- Automates the loading / unloading modes
- Computerises the intermodal centers
- Interfaces control systems

Functions

- Planning the movement of individual wagons
- Organizing the maneuvers, selecting the optimal routes to move the wagons
- Interfacing with the manager of the railway yard
- Interfacing with the signs of the railway yard
- Managing of wagon orders
- Checking the correctness of the maneuvers
- Checking the process of automatic coupling
- Interfacing with the loading / unloading devices
- Creating the possibility, for different operators, to operate independently on their wagons

Realization areas

The project is able to significantly increase the efficiency of transport management in the various areas of logistics and transport.

- Ports
- Intermodal logistics areas
- Medium / large stations
- Small stations
- Industrial areas
- Industrial plants
- Each of these areas is suitable for different applications to optimize the costs of sorting goods.

Partners sought

- Railway freight wagon builders
- Rail operators with container transportation service
- Operators of intermodal logistics areas

Ludovic Seydoux

Manager @ LusConsult
Belgium

- Mobile phone : +32 473 75 40 48
- Email : LusConsult@ludovicseydoux.eu
- LinkedIn : linkedin.com/in/seydouxludovic

Create a BIM standard chapter to predict

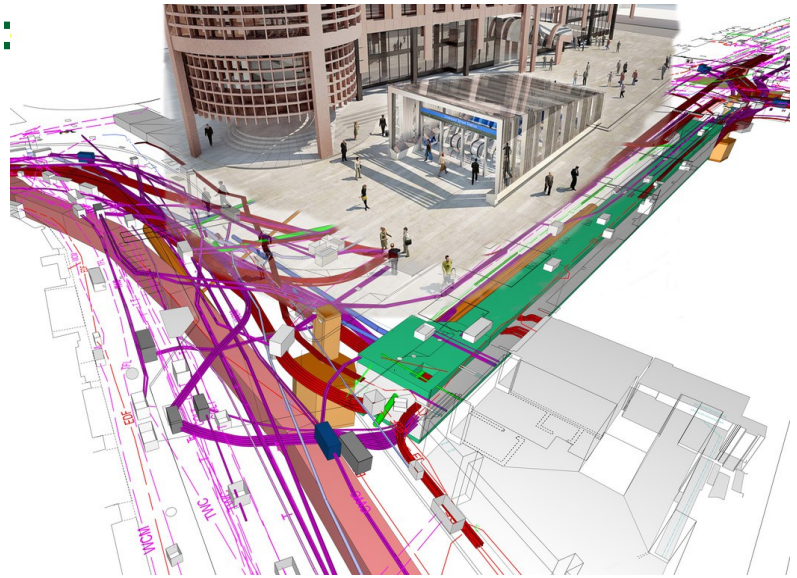
accurate transit time

Rail actors	*to provide*	*to*	*third-parties*
Train Stations Operators	ACCURATE TRAVELLERS TRANSIT TIMES		Public : - travel apps, multimodal - search engines/maps Businesses : - Booking software - Cartography / mapmakers

+KPI for Contiunous Improvement

How will BIM help

- **BIM is Building Information Modelling :** approach to the collaborative design, realization, and operations of buildings



- Based on standards and workflows.
- Today, integrated datas includes :
  Structure, power, airflow, clean&waste water,
  Information network, fire detection, thermal, …

- New chapter : **transit time management,** includes :
  - Items :
    - Paths, corridors
    - Doors & Checking gates
    - Stairs and lifts
  - Data :
    - Crossing time
    - Convenience ability : weatherability, luggages, wheelchairs...
    - Efficiency / load : theoretical, live and predicted

Suggested Partners

- For standard definition

  - Rails actors
  - BIM experts / OpenBIM standard,
    including Industry Foundation Classes (IFC)
  - Cartography / mapmaking organisations
  - IT specialists

- For implementation / deployement :

  - Regulators : create incentive or legal obligation and timing to implement
  - Train stations operators : implement and maintain
  - Train station builders : integrate in architectural projects
  - IT specialists

Deployment phases

- 1 : standard times, users able to integrate transit time data
- 2 : Updated data – Macro : peak hours, days
- 3 : Live Updates – Micro data : sensors in infrastructure and people
- 4 : predict the future, build scenarii
  - Actors to define future events impact : refurbishment work, ...

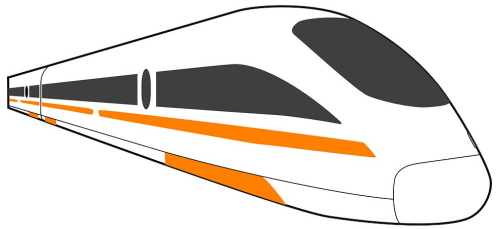
RESULT

- Improved travel confort and efficiency

Transit time :

Option 1 : June 1st, 8:05am
- 12 min., fluid

Option 2 : June 1st, 9:35am
- **28 min.**, deviation caused by power maintenance



CobotRail

ETNA 2020

STAM
MASTERING EXCELLENCE
www.stamtech.com

Umberto Battista
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FAIR Stations (OC-IP3) Coordinator
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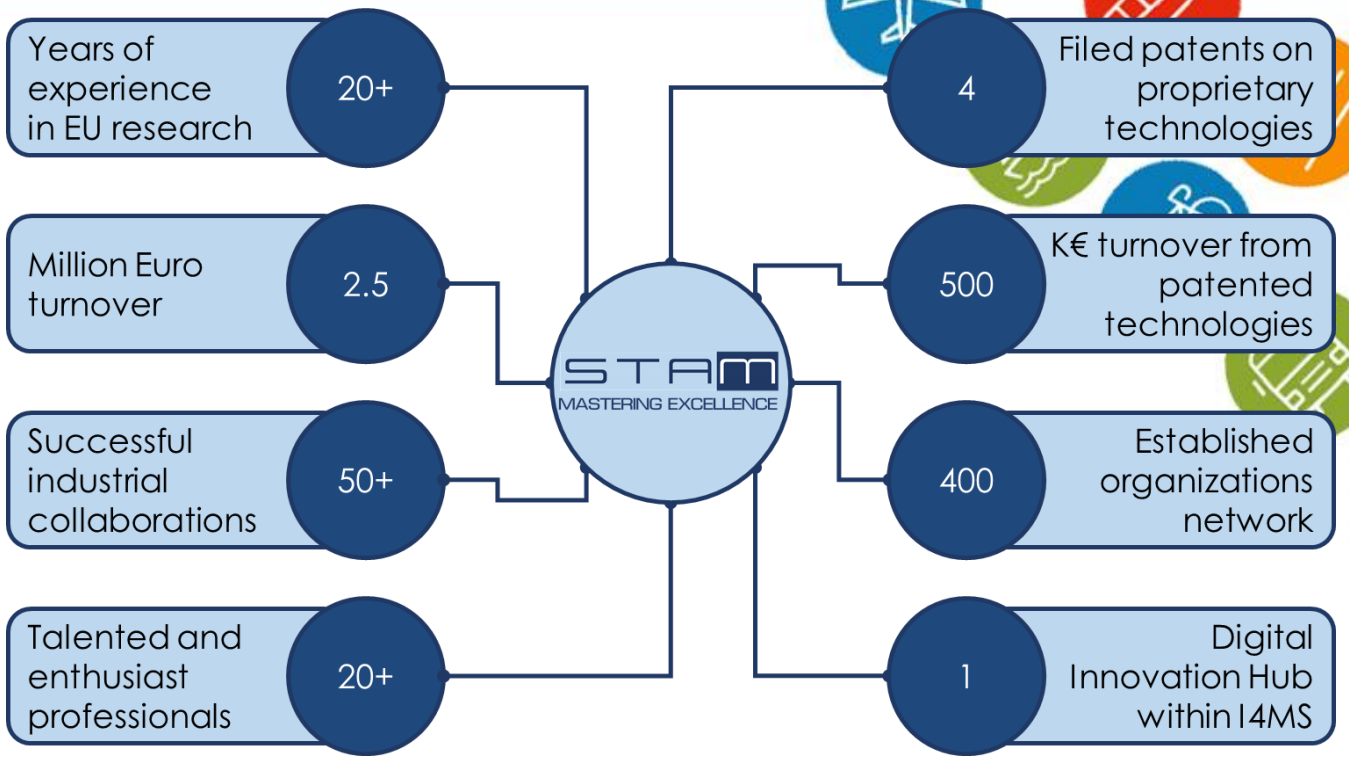
Pietro De Vito
Project Engineer
p.devito@stamtech.com



SECURITY & TRANSPORT

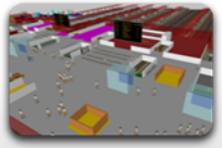
SPACE & DEFENCE

ENERGY & ENVIRONMENT

AUTOMATION & ROBOTICS

Relevant Track Record

SECURITY & TRANSPORT



FAIR Stations (H2020, **Coordinator**) "Future secure and accessible rail stations"

Crowd modelling – PTI system design

www.fairstations.eu

SECUREMETRO (FP7, Partner) "Inherently secure blast resistant and fire safe metro vehicles"

securemetro.inrets.fr

RAMPART (CIPS, Partner) "Development of a risk assessment toolbox for the prevention and reduction of terrorist attacks on metro and light-rail critical infrastructures"

www.rampart-project.eu

TRAINSAFE (FP5, Partner) "Railway interoperable manufacture and modular safety"

EUProtect (ISFP, **Coordinator**) "Development of New Solutions for the Protection of European Citizens and Infrastructures Against Terrorist Threats"

www.euprotect-project.eu

AUTOMATION & ROBOTICS

SHAREWORK (H2020, Partner) "Safe and effective HumAn-Robot coopEration toWards a better cOmpetiveness on current automation lacK manufacturing processes"

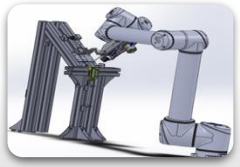
www.sharework-project.eu

SOFTMANBOT (H2020, Partner) "Advanced RoBOTic Technology for Handling SOFT Materials in MANufacturing Sectors"

www.softmanbot.eu

AGREE (POR-FESR, Partner) "Arm exoskeleton and Grip assistance for REhabilitation and indipEndent living"

NU-ELBOW (Eurostars, **Coordinator**) "Elbow actuation of orthopaedic prostheses based on the NUGEAR principle"



FLEXICOIL (FP7, Partner) "Development of a robotic cell for coils winding"

CobotRail Proposal Idea

S2R-OC-IP3-03-2020 Advanced tools and equipment: collaborative robots & wearable mobile machines

Current Consortium

- Stam (IT): cobots, ROS, system integration, mechatronics, exoskeletons
- Metro de Madrid (ES): rail operator and use-case
- University of Newcastle (UK): mechatronics, HFE
- Italian Institute of Technology (IT): robotics, Human-Robot Interaction (HRI)

Partners sought

- Plant equipment providers
- Experts in exoskeletons control
- Environment recognition
- Dynamic trajectory planning
- Additional use-cases

S2R Topics and Expertise

- **S2R-OC-IP3-02-2020 Technology Development for Railway Systems Asset Management**
  - DSS, machine learning, AI, optimization, data-driven models, risk assessment
- **S2R-OC-IP1-01-2020 Support to Development of next generation of Traction systems**
  - AI, predictive maintenance, virtual validation, Additive Manufacturing
- **S2R-OC-IP4-01-2020 Supporting the implementation of the IP4 ecosystem**
  - Urban demo site, interface, user needs & expectations
- **S2R-OC-IP2-01-2020 Modelling of the Moving Block system specification and support for Railway Minimum Operational Performance Standards**
  - Data fusion, simulations
- **S2R-OC-IP1-03-2020 Innovative technologies for Carbodies and Running Gear of the future**
  - LCC running gear components

Thank You!

STAM

MASTERING EXCELLENCE

Italian High-Tech Engineering SME

- High-skilled multidisciplinary team
- 50+ successful EU projects completed
- First in EU to have an SME-Instrument Phase-2 project awarded

Pietro De Vito
Project Engineer
p.devito@stamtech.com

Umberto Battista
Area Manager
u.battista@stamtech.com

Open and willing to collaborate on any topic where we can bring added value

Who We Are

PARAGON S.A.

- PARAGON S.A. (ISO 9001 certified) is a Research & Technology Development SME (micro-SME) active in R&D and Commercial services, established 1995 in Athens, Greece.

- RTD activities range from in-house development projects, to solutions and applications development provision, and participation to RTD consortia as an SME Research partner. PARAGON has participated to 30 research initiatives from EC FP4 through to H2020 in Aeronautics (including Clean Sky), Transport, ICT, Factories of the Future, Energy & Environment, and Security.

Contact. Mr. Harry Tsahalis

Email. htsahalis@paragon.gr

LinkedIn. https://www.linkedin.com/in/htsahalis/

Web. http://www.paragon.gr

- Commercial activities comprise of a range of services, that include scientific and measurement applications and support (experimental, industrial, occupational safety & health), specialized applications development, and commercial representation of major manufacturers of industrial & scientific instrumentation (sensors, daq/dsp, portable measurement & analysis, control, actuation, software) from the EU and USA to markets in Greece and S.E. Europe.

- PARAGON is active in dissemination & events organization, and is sponsor to the biennial international conferences IC-SCCE (www.scce.gr) and IC-EpsMsO (www.epsmso.gr).

Areas of Expertise & Applications development

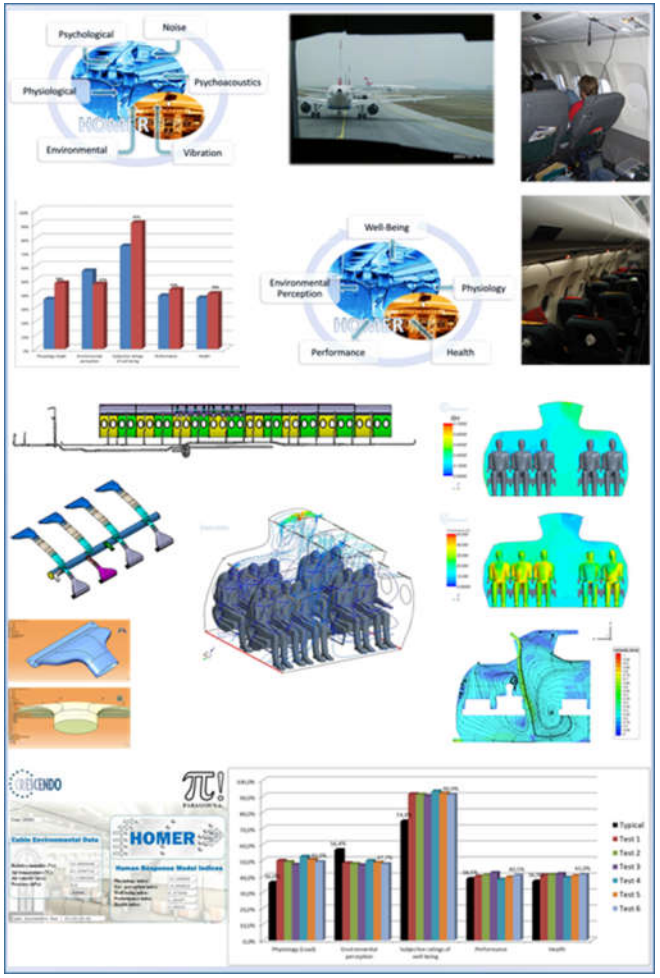
PARAGON S.A.

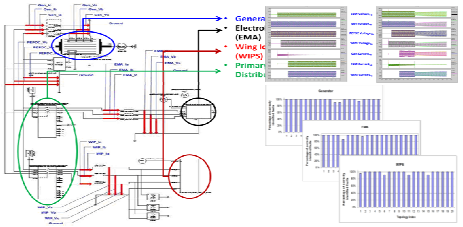
- Computational - Artificial Intelligence
- Evolutionary Computation – Multi-objective Optimization Algorithms
- Acoustics (incl. beamforming) & Vibration -related applications (measurement - monitoring - analysis - condition - diagnostics - active control - optimization)
- A.I. -based Centralized / De-centralized on-line Condition Monitoring - Diagnostics - Etc. applications (acoustic/vibration, electrical, and electro-mechanical applications)
- 3D Sound Generation Systems (including vibration) | Simulators – Training
- Multi-parameter Human Fatigue – Performance – Well-being (subjective + objective) modeling - simulation - monitoring - control applications | Aviation - Passengers / Crews
- Active Control / Monitoring Systems | Evolutionary Algorithms and/or A.I. (automated system building) -based:

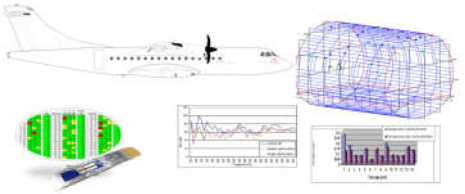
  Active Vibration Control (AVC) • Active Structural Acoustic Control (ASAC) • Active Noise Control (ANC) • Active Flow Control (AFC) | Active Aerodynamics • Structural Health Monitoring (SHM) | Active / Passive • Integrated - Simultaneously Optimized- Active Control/Monitoring networks | Combined SHM + AVC/ASAC
- Smart & Sustainable Manufacturing operations – Multi-objective Triple-Bottom-Line (Energy + Emissions + Social factors) Production Planning – Scheduling Optimization
- Product Development Process – Multi-objective Simulation Workflow Optimization (heterogeneous, distributed)
- Multi-objective Optimization for Smart & Rapid Process / Product development - configuration - optimization
- ICT for Radar -based applications – Harmonic and/or Conventional radar - (processing (raw sensor data) - monitoring - object detection - object tracking - object trajectory prediction)
- Multi-objective Optimization for Sensor - Actuator systems networks
- Sensor-Actuator networks - test-benches - testing technical know-how

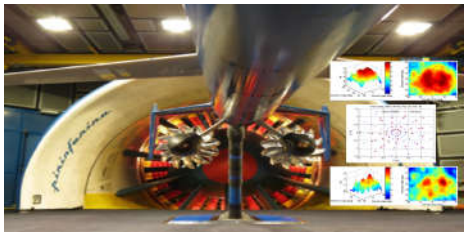
Applications (EC Projects) - Examples

PARAGON S.A.









- 3D Sound Generation System - Simulators | ASCENT (H2020, CS 2).
- Active Control / Monitoring Systems - Active SHM, AVC, ASAC, Energy Harvesting, Combined SHM + AVC/ASAC, AFC | MESEMA (FP6), MOET (FP6), AVERT (FP6).
- Centralized / De-centralized Fault detection - Diagnostics – Etc. (on-line/off-line, design phase) | ACTUATION 2015 (FP7), CRESCENDO (FP7), MOET (FP6), TATEM (FP6).
- Multi-objective Aero-acoustic Arrays – Tests Configuration and Optimization | WENEMOR (FP7, CS 1).
- Multi-parameter Human Fatigue & Well-being modeling - processing - simulation | CRESCENDO (FP7), HEACE (FP5).
  - Subjective + Objective
  - Environmental + Physiological + Psychological parameters

S2R 2020 Call – Project idea & Topics of interest

PARAGON S.A.

S2R-OC-CCA-01-2020: Noise and Vibration

- Consortium building – Intent for submission (early stage). Main partners (SMEs) currently from Hellas (EL), Italy (IT), other member states (from aerospace – simulators domain).
- Partner search open (both call topic Work-streams, particularly Work-stream 1). Open to collaboration – merge with other teams aiming for this call topic.

For the following topics we have interest for participation – contribution to consortium as an SME RTD partner

S2R-OC-IP3-02-2020: Technology Development for Railway Systems Asset Management

- work area 'Multi-objective decisions optimization tools…'

S2R-OC-IP1-01-2020: Support to Development of next generation of Traction systems

- work area 'Big Data, Artificial Intelligence (AI)...'

S2R-OC-IP1-03-2020 Innovative technologies for Carbodies and Running Gear of the future

- various areas listed in the call topic.

S2R-0C-IP3-01-2020: Next Generation Track Transition Zones

- various areas listed in the call topic such as (but not exclusive to) integrated/embedded condition monitoring solutions, design and materials to provide sustainable, whole system solutions, optimum maintenance regimes…

S2R-OC-IP3-03-2020: Advanced tools and equipment: collaborative robots & wearable mobile machines

- various areas listed in the call topic.

EC Research participations (indicative listing)

PARAGON S.A.

| AERONAUTICS |

ASCENT Active Simulator Cockpit Enhancement (CS2, Large Passenger Aircraft, Topic Manager - Airbus Defence & Space, ES) • **WENEMOR** Wind Tunnel Tests for the Evaluation of the Installation Effects of Noise Emissions of an Open Rotor Advanced Regional Aircraft (CS 1, Green Regional Aircraft, Topic Manager - Leonardo Aircraft) • **ACTUATION 2015** Modular Electro Mechanical Actuators for ACARE 2020 Aircraft and Helicopters (FP7, Goodrich Actuation Systems) • **CRESCENDO** Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation (FP7, Airbus) • **MOET** More Open Electrical Technologies (FP6, Airbus) • **TATEM** Technologies and Techniques for New Maintenance Concepts (FP6, GE Aviation Systems) • **AVERT** Aerodynamic Validation of Emission Reducing Technologies | Active Flow Control technologies (FP6, Airbus) • **MESEMA** Magneto-Elastic Energy Systems for Even More Electric Aircraft | Active Vibration Control | Active Structural Acoustic Control | Structural Health Monitoring | Energy Harvesting (FP6) • **HEACE** Health Effects in Aircraft Cabin Environment | Multi-parameter Passengers / Crew Fatigue – Performance – Well-Being modeling - processing - simulation (FP5).

| FACTORIES OF THE FUTURE |

PRECOM Predictive Cognitive Maintenance Decision Support System (H2020) • **FOFDATION** The Foundation for the Smart Factory of the Future (FP7, Airbus) • **INTEFIX** Intelligent Fixtures for the Manufacturing of Low Rigidity Components (FP7, I4MS).

| ICT / IST-NMP / SECURITY |

IPROD Integrated Management of Product Heterogeneous Data (FP7, ICT) • **SWOP** Semantic Web-based Open Engineering Platform (FP6, IST-NMP) • **SENSE** Smart Embedded Network of Sensing Entities | Airports - Civil Security Monitoring, Critical Infrastructure Protection (FP6, IST).

DTS

DirecTrainSystems

Your NexTrain. Always.

"Smart, green and integrated transport”

Better mobility, less congestion, more safety and security

DTS DirecTrainSystems is capable of

“reconciling the growing mobility needs with improved transport fluidity, through innovative solution for seamless, inclusive, affordable, safe, secure and robust transport systems that make full use of modern information and communication technologies (ICT) capabilities”.

DirecTrainSystems

Topics of interest

IP1 and IP2

Virtual Coupling, Moving Blocks and Next Generation TSMC

- S2R-CFM-IP1-02-2020
- S2R-CFM-IPX-01-2020
- S2R-OC-IP1-02-2020
- S2R-OC-IPX-01-2020

DirecTrainSystems

State of the Art:

Virtual coupling

- Capacity increase is limited by network topology
  - Stations / switches / crosses
- Today we understand there are only few scenarios where virtual coupling really increases capacity

DirecTrainSystems

DTS is the solution

- DTS technology can retrieve the loss of improvement potential inherent in current technology (virtual coupling)
- DTS technology combines multi-disciplinary capabilities
- DTS technology uses existing infrastructure
- Increases capacity, safety and security
- Connects urban, suburban and periphery

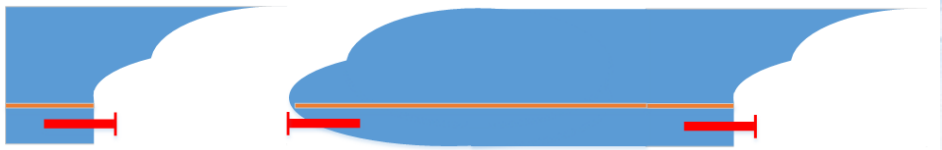
DirecTrainSystems

Join Us!

- We are looking for partners to develop DTS solution for the next generation of virtual coupling
- The team:
  - Communication
  - Car Manufacturers
  - Railway operator(s)
  - Signaling and network management
  - Capacity research

DirecTrainSystems

Thank you!



Tito@directrains.com

Name: Joan Cardona

Position: Technical Manager

Company name: AV Ingenieros

Web url: www.avingenieros.com

Nature: SME

Country: Spain

Expertise: Noise & Vibration control and modelling

Contact details:

C/ Joan XXIII, 23 (local).

08173 St. Cugat del Vallès

Telf. 93.674.31.91

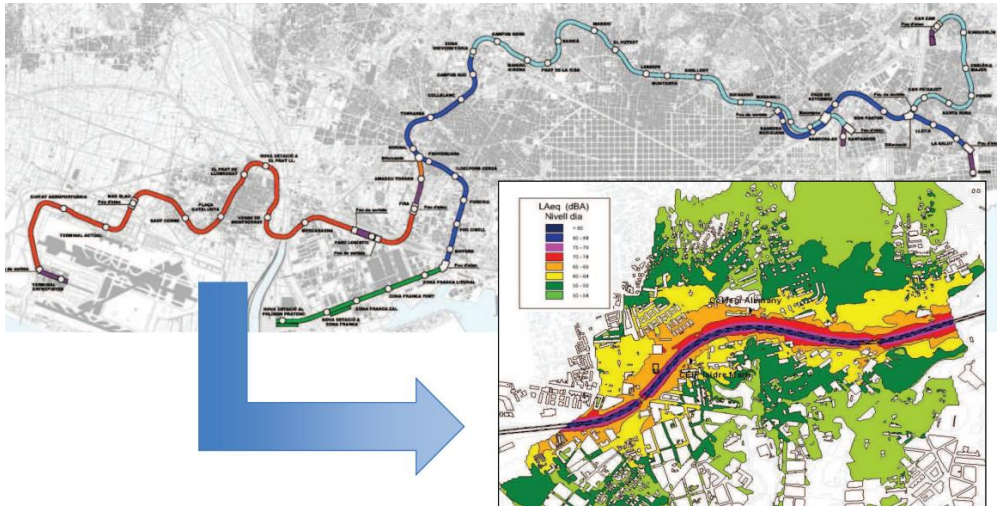
info@avingenieros.com

Ground vibrations

Project title: -

Topic: S2R-OC-CCA-01 2020: Noise and vibration Call

Project description:



Development of an accepted procedure to predict railway-induced vibration levels into buildings.

MATLAB toolbox for the prediction of railway-induced vibration and reradiated noise levels into buildings according to ISO 2631-2:2003 and other national European regulations. Software skills:

- Flexible and computationally efficient semi-analytical model considering vehicle, track, tunnel, layered ground and building.
- Track model to afford different track types: ballasted track, slab track, floating slab track and others.
- Available infrastructure cases: at-grade, circular tunnel and cut-and-cover tunnel.

Ground vibrations

Project description:

INPUTS:

- Database from experimental measurements
- Parameter values
  - Vehicle data: suspended/not suspended weight, number of wheels, speed, wheel roughness, etc..
  - Track data: rail mass, Young modulus, damping and inertia, rail roughness, etc…
  - Soil data: Mechanical properties of each layer and their thickness.
  - Building data: Geometrical and mechanical parameters of columns and floors

OUTPUTS:

- Noise & Vibration frequency spectra (1/3 octave band & narrow band)
- Maximum Transient Vibration Value (MTVV)

Ground vibrations

Current consortium:

Organisation	Skills	Role
AV Ingenieros	SME expert in vibration prediction projects	Validation manager
LEAM-UPC	Research centre with deep knowledge in vibration modelling	Vibration & re-radiated noise modelling

Profile of partner sought:

Organisation	Skills	Role
ISVR*	Research centre with deep knowledge in vibration modelling	Project Manager
-	Optimisation of simulation codes Implementation of simulation into a user-friendly interface	Software developer
-	Results' geographical visualisation	GIS expert
-	Deep knowledge in soil characterisation and vibration propagation through it	Soil modelling
-	Building dynamics	Building modelling
Strukton Rail* Deutsche Bahn*	Rail operator	Access to validation measurements

* Tentative

BTS Rail Saxony

The Largest Rail Industry Cluster in Central Germany

Presenting Cluster Coordinator: Mareike Walter

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@BTSRailSaxony

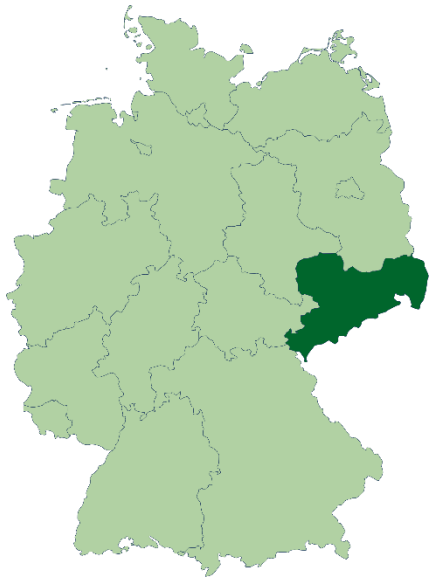
www.bts-sachsen.de

>>Trade Directory Rail Saxony 2019

The largest Rail Industry Cluster in Central Germany

Exchange and Networking Platform for rail supply SMEs promoting

- Research, Development and Innovation Projects
- Business Development (Market Access and Sales)



Providing Access to one of the Top-3-centres for railway industry in Germany – Saxony!

1 bn EUR revenues (20% of German rail industry revenues)

240 Saxon Rail Industry Companies with 13.000 Employees.

25 Research Institutes & Universities active in the field of rail

Specific Technological Core Areas

Power Train

Lightweight & New Materials

Train Control & Safety

Vehicle Engineering / Construction / Dynamics

Infrastructure Planning

Track & Track Technology

Predictive Maintenance

Traction Power Supply Grid

More information about BTS Rail Saxony and its members on (www.bts-sachsen.de) or in the >>Trade Directory Rail Saxony 2019!

S2R Open Calls - Looking for Partners in:

IP1 – Cost Efficient and Reliable Trains	
Call-ID	Call Topic
S2R-OC - IP1-01-2020	Support to Development of next generation of Traction systems (TD1.1)
S2R-OC-IP1-02-2020	Technical solutions for the next generation of TCMS
S2R-OC-IP1-03-2020	Innovative technologies for Carbodies and Running Gear of the future

IP2 – Advanced Traffic Management and Control Systems	
Call-ID	Call Topic
S2R-OC-IP2-01-2020	Modelling of the Moving Block system specification and support for Railway Minimum Operational Performance Standards
S2R-OC-IP2-02-2020	Study on alternative bearers and on communication protocols

IP3 – Cost Efficient and Reliable Infrastructure	
Call-ID	Call Topic
S2R-OC-IP3-02-2020	Technology Development for Railway Systems Asset Management (TD3.6)

CCA – Cross Cutting Activities	
Call-ID	WA
S2R-OC-CCA-01-2020	Noise and Vibration Call

Creating Project Consortia within ERCI - the European Railway Clusters Initiative

ERCI
EURAILCLUSTERS

"As the rail sector's largest dedicated b2b networking organisation, the **European Railway Clusters Initiative** is all about bringing customers, suppliers and supply chain opportunities together."

@EurailCluster
www.eurailclusters.com

Networking groups (2)
16:05 - 16:30

Part III

16:30	**Engineering**	Mario Barile
16:35	**EnginSoft S.p.A.**	Carla Baldasso
16:40	**Everis**	Patricia Jimenez
16:45	**Kappa optronics GmbH**	Sotirios Leventis
16:50	**ASAS**	Tutku Özen
16:55	**Cluster Berlin**	Lutz Hübner
17:00	**NETWORKING GROUPS**	

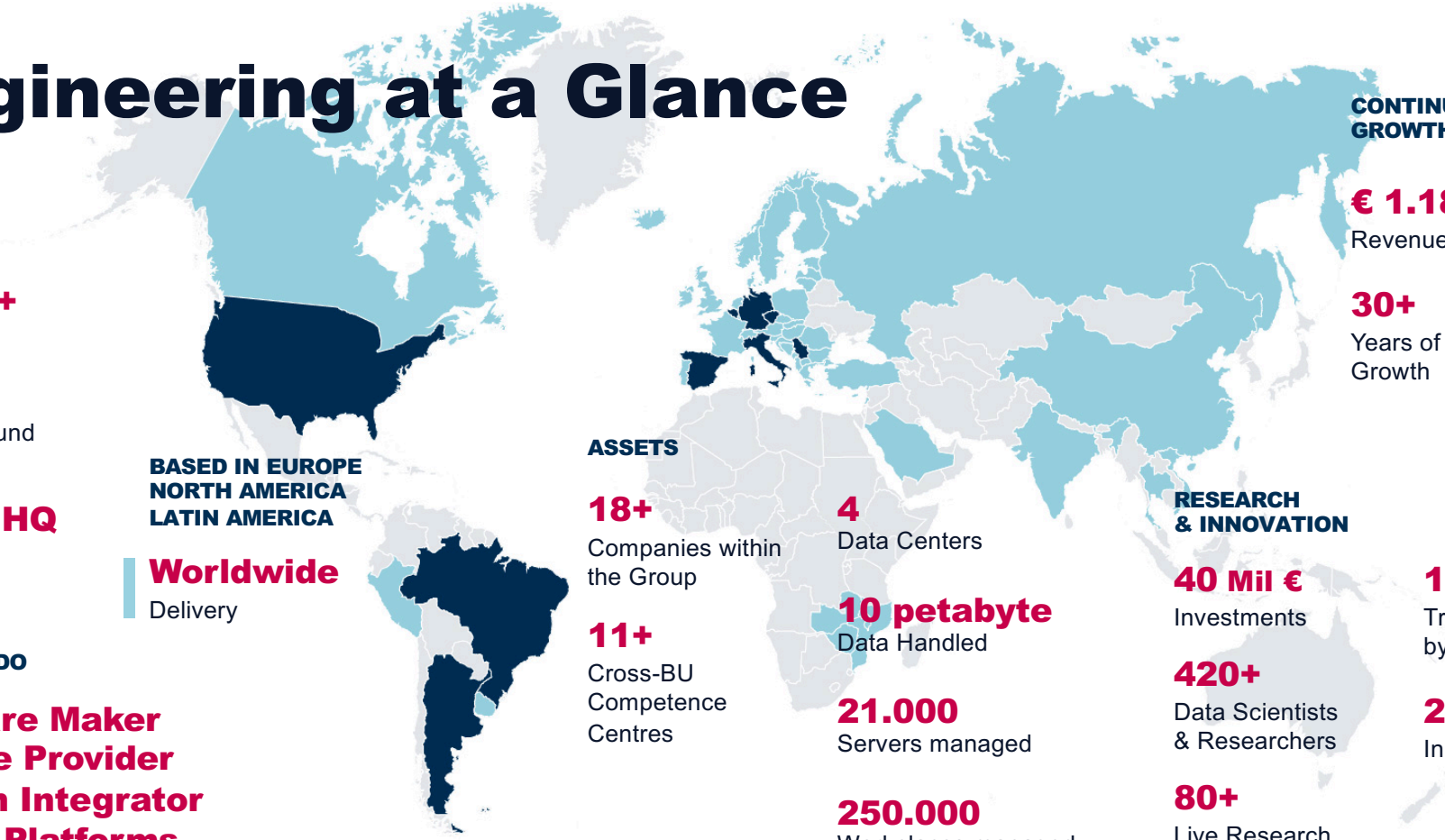
Engineering Ingegneria Informatica

Mario Barile – Business Developer for R&D Department

IS3 Research Laboratory – Industry and Security Technologies, Research and Innovation

GROUP

Engineering at a Glance



A GLOBAL COMPANY

11.000+
Associates

50+
Offices around the world

Global HQ
Rome, Italy

BASED IN EUROPE
NORTH AMERICA
LATIN AMERICA

Worldwide
Delivery

WHAT WE DO

Software Maker
Service Provider
System Integrator
Digital Platforms

ASSETS

18+
Companies within the Group

11+
Cross-BU Competence Centres

4
Data Centers

10 petabyte
Data Handled

21.000
Servers managed

250.000
Workplaces managed

Tier IV

CONTINUOUS GROWTH

€ 1.18 Bn
Revenues FY18

30+
Years of Continuous Growth

RESEARCH & INNOVATION

40 Mil €
Investments

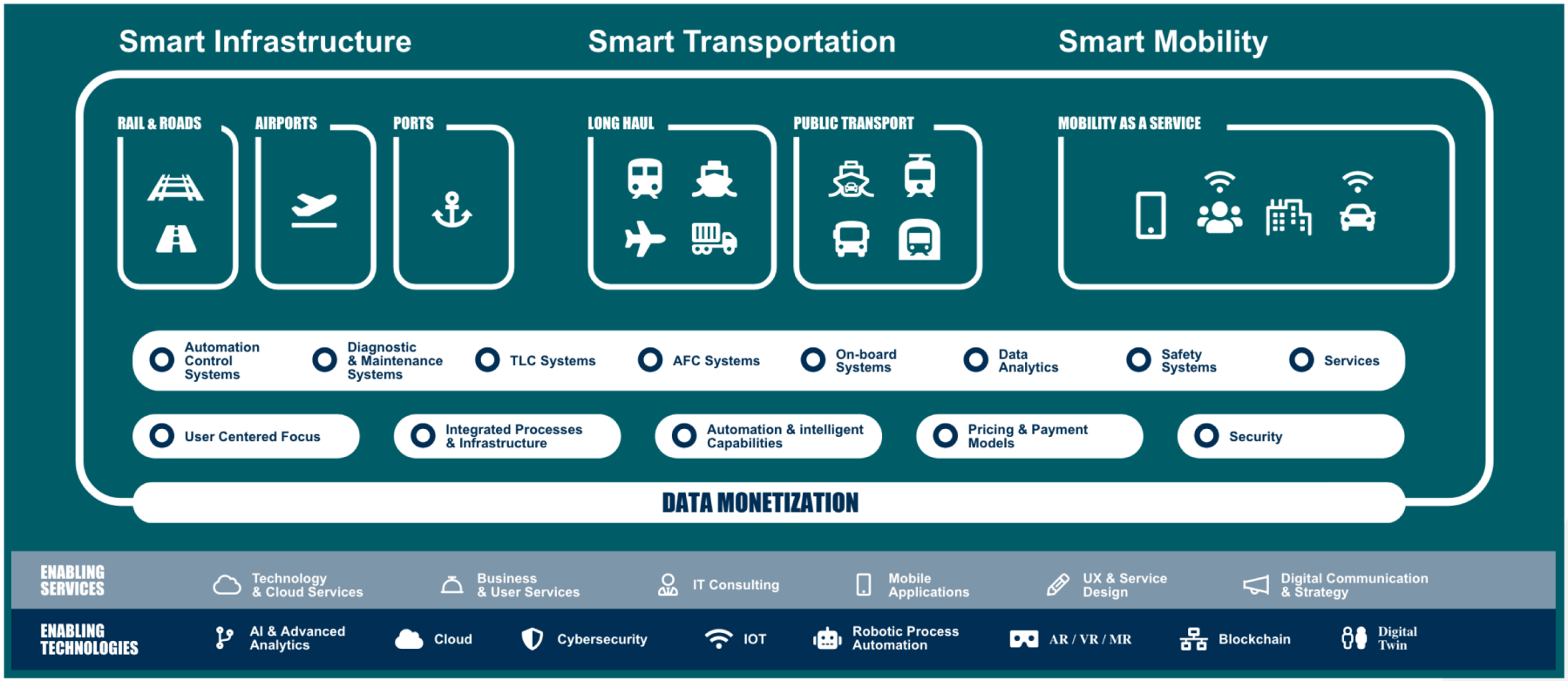
420+
Data Scientists & Researchers

80+
Live Research Projects

160k
Training hours by our Academy

200+
Innovators

ENG market positioning in Transport



For specific Use Cases (e.g. driverless subway, digital twinning, smart maintenance), please check the website

Interesting 2020 S2R Topics

Topic ID	Topic	Relevant workstream / contribution
S2R-OC -IP1-01-2020 (RIA)	Support to Development of next generation of Traction systems (TD1.1)	**WS4** – Big Data, Data Mining, Artificial Intelligence for smart and predictive maintenance
S2R-OC-IP1-02-2020 (IA)	Technical solutions for the next generation of TCMS	**WS3** – Safety and cyber security
S2R-OC-IP3-02-2020 (RIA)	Technology Development for Railway Systems Asset Management (TD3.6)	Prescriptive data analytics tools for DSS; Multi-objective decisions' optimization tools for IAMS; Sensitivity analysis methodologies; Context based dynamic HMI
S2R-OC-IP4-01-2020 (IA)	Supporting the implementation of the IP4 ecosystem	Data normalisation, fusion, processing

What Engineering can bring

- Extensive research experience in **critical infrastructure cyber-physical security** / coordinator of two Large Scale Pilots on critical infrastructure (DEFENDER, INFRASTRESS)
- Innovative **Data Fusion / Event Processing** capabilities
- **Cyber risk assessment** at asset (both tangible and intangible) level
- **IDPS** – Intrusion Detection and Prevention Systems
- **Situational Awareness** / **Visualisation** tools
- Availability of a **Cloud Data Centre** located in Italy (European based hosting)
- Possibility to setup/organise **Use Cases** and **Pilots** in Italy
- Link with relevant European initiatives such as **BDVA**, **EOS**, **ECSO**

+50 **H2020 PROJECTS** - best Italian performer, 6th in Europe, in the category 'Large Companies'

THANK YOU

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gruppo.engineering

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Mario Barile – Business Developer
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SHIFT2RAIL Info Day

ENGINSOFT S.p.A (SME)

Italy, France, Germany, the UK, Sweden, Turkey, U.S.A.

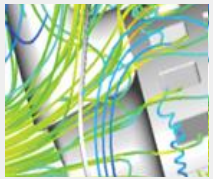
Carla Baldasso

Research & Development

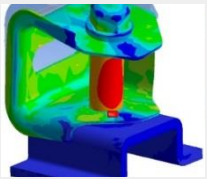
c.baldasso@enginsoft.com www.enginsoft.com

EnginSoft S.p.A. in brief

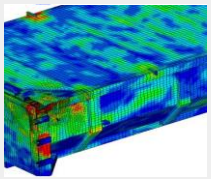
- EnginSoft is an SME leader for **simulation-based engineering and sciences (SBES), Simulation Process and Data Management**
- Funded in 1984
- 35 Years Experience using CAE software
- Turnover approx. 35 Million Euro
- Seats in Italy, France, UK, Sweden, Germany, Turkey, USA



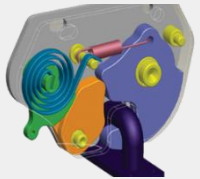
FLUID DYNAMICS



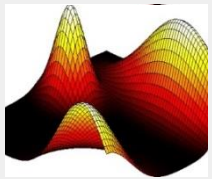
MECHANICS



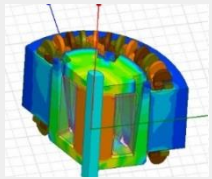
CRASH AND FAST DYNAMICS



TOLERANCE ANALYSIS

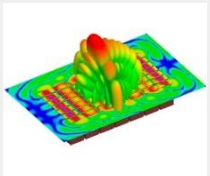


OPTIMIZATION

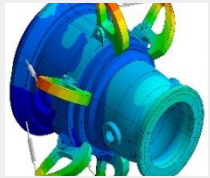


ENVIRONMENTAL AND VIBROACOUSTICS

MULTIBODY



ELECTRO-MAGNETISM



FATIGUE AND DURABILITY

PROCESS SIMULATION

HIGH-PERFORMANCE COMPUTING

ENGINSOFT

Our activities

CONSULTING

4.000

SOFTWARE

1.500+

TRAINING

130+

RESEARCH

70+

Our research facts and numbers

- From 2003 involved in 90+ co-funded research projects
- Invest 10%+ of turnover in R&D
- Laboratory certified by the Italian ministry of R&D (MIUR)
- 150+ engineers and mathematicians supporting research in many fields: **smart manufacturing, aerospace, automotive, new materials, biomedical, energy ….**
- Multidisciplinariety and Cross fertilization from one sector to another
- Member of **DITECFER**

ENGINSOFT

Our expertise for SHIFT2RAIL Calls

IP	Call	EnginSoft expertise
IP1: Cost-efficient and reliable trains	S2R-OC -IP1-01-2020 Support to Development of next generation of Traction systems	Work-stream 1: 3D additive manufacturing and new manufacturing technologies - **3D printing process simulation and new materials implementation** Work-stream 4: Big Data, Artificial Intelligence (AI) applied to Traction systems smart and predictive maintenance – **data mining**
	S2R-OC-IP1-03-2020 Innovative technologies for Carbodies and Running Gear of the future	**Materials modelling and performance behaviour simulation**
IP3:Cost-Efficient and Reliable High-Capacity Infrastructure	S2R-0C-IP3-01-2020: Next Generation Track Transition Zones	**Novel materials modelling** **Optimised design for reliability** **Manufacturing techniques**
	S2R-OC-IP3-02-2020: Technology Development for Railway Systems Asset Management	**Data analytics tools to implement a Decision Support System (DSS)** **Multi-objective decisions' optimization tools for IAMS integrating data-driven models into the DSS**
	S2R-OC-IP3-03-2020: Advanced tools and equipment: collaborative robots & wearable mobile machines	**Wearable mobile machines behavior simulation and optimization**
S2R-OC-CCA-01-2020: Noise and Vibration Call	S2R-OC-CCA-01-2020: Noise & Vibration Call	**Frequency-based noise and vibration simulation and prediction**

ENGINSOFT

Carla Baldasso
c.baldasso@enginsoft.com
www.enginsoft.com

Thank you!

ENGINSOFT
www.enginsoft.com

Interest in participating in Shift2Rail

Patricia Jiménez

Supported Smart Innovation (SuSI)

Everis, Private Company, Spain

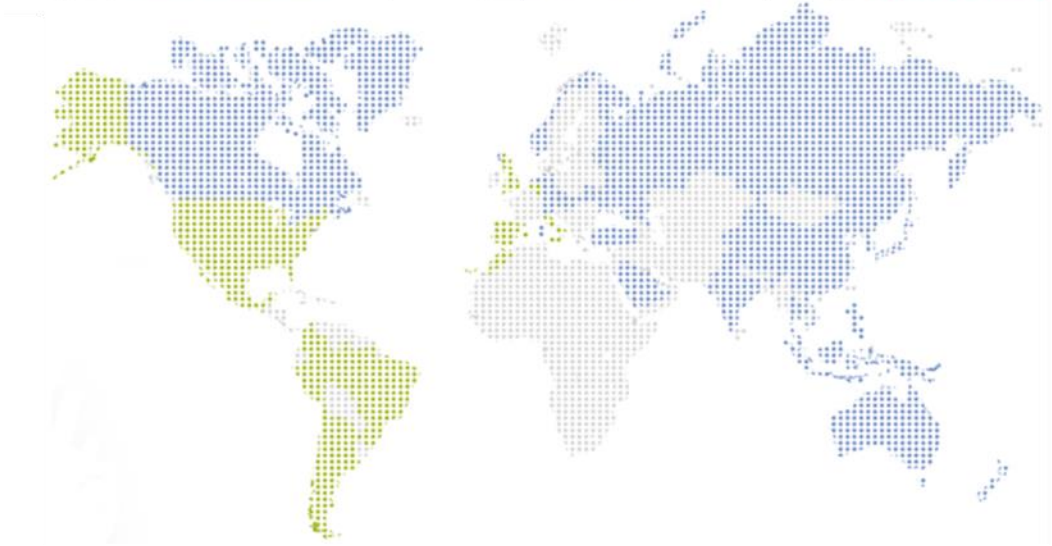
everis in a nutshell!

Our aim: Digital Transformation in more than 15 sectors, logistics and transport among them

Over **24,500** professionals

We operate in **18** countries

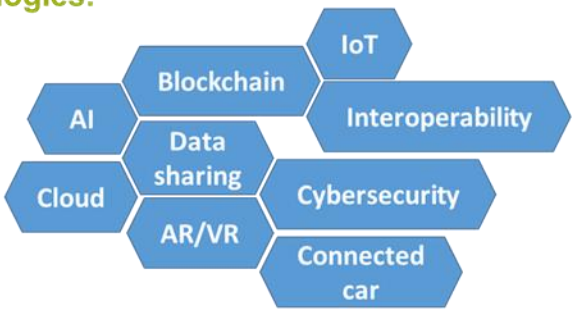
Turnover of **1.43** Billion Euro



Part of NTT DATA Global IT Innovator

- +123.000 professionals
- $19 billion in annual revenue
- Action in over 50 countries

Key technologies:



everis | logistics & transport

everis
an NTT DATA Company

Resources optimization

Asset management

Railway safety

Intelligent mobility

Collective transport

Traffic engineering

everis topics of interest

Annual Work Plan 2020 - Calls for non-JU members

4.2.2 S2R-OC-IP1-02-2020: Technical solutions for the next generation of TCMS

4.2.5 S2R-OC-IP2-02-2020 – Study on alternative bearers and on communication protocols

4.2.7 S2R-OC-IP3-02-2020: Technology Development for Railway Systems Asset Management (TD3.6)

4.2.8 S2R-OC-IP3-03-2020: Advanced tools and equipment: collaborative robots & wearable mobile machines (TD3.8)

4.2.9 S2R-OC-IP4-01-2020: Supporting the implementation of the IP4 ecosystem

4.2.11 S2R-OC-IPX-01-2020: Innovation in guided transport

everis role

Technological Partner

- Development of new assets
- Evolution of already existing assets
- Technological learning

Pilots Facilitator

- Involvement of clients
- On each sector participating

Results exploitation

- Commercialization of new products and services derived from projects
- Protection of IPR of results

If interested in our capacities, contact us at

patricia.jimenez@everis.com

susi_funding@everis.com

Who we are …

Kappa optronics GmbH
Kleines Feld 6
37130 Gleichen | Germany
www.kappa-optronics.com
info@kappa-optronics.com

Vision

With our vision systems we stand for security and trust. When driving or flying, Kappa is always the first choice any time people rely on safe decisions.

Mission

We translate the highest requirements for safety-critical vision systems into customer-specific solutions. Our solutions protect lives while flying or driving. Our partners value our employee's excellence and commitment.

Values

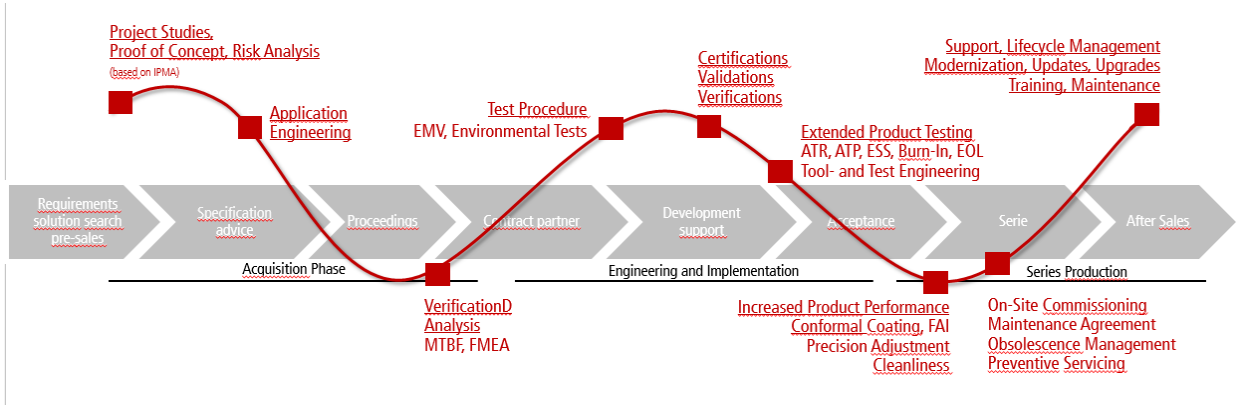
Consistent customer orientation • Partnership • Excellence • Creative Freedom • Family-Oriented Corporate Culture

- Founded 1978 | CEO: Christian Stickl
- Headquarters **Germany**
- Certified ISO 9001 (Industry) & EN/AS 9100 (Aviation)
- 145 Employees – 35% in R&D | 74 % Export | 26% Germany
- Membership: Aerospace Valley, EMVA, FED, IPMA/GPM, Measurement Valley, Spectronet

Sotirios Leventis
Business Development Manager
Fon +49 5508 974 124
Mob +49 170 128 4104
s.leventis@kappa-optronics.com
www.kappa-optronics.com

How we do it …

- More than 40 years experience in camera development
- System competence in safety regulated markets (air to air refueling, electronical rear mirror)
- Qualified and robust design for harshest environment
- Well establisehd structures in R&D for safety critical systems
- 45 Engineers at facilities in Gleichen, Germany



Camera Solutions

Complete System

Shunting Yard Video Assist

Background

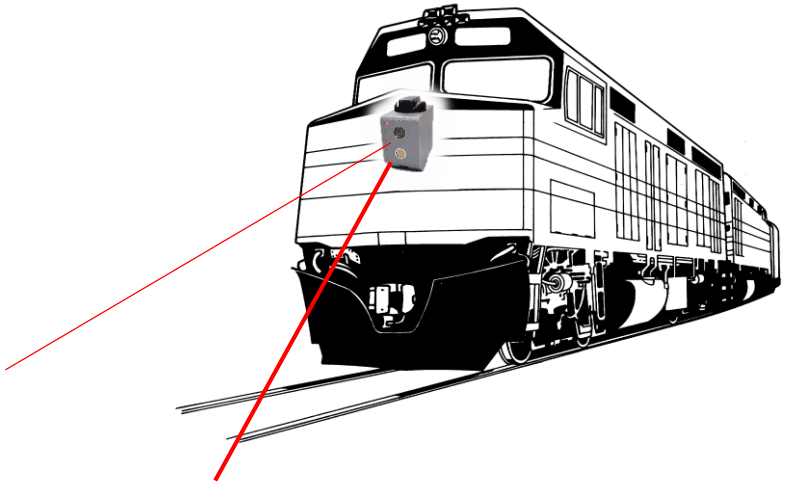
- More railway freight expected the next years
- Rail freight has taken on a key role in light of climate protection
- Qualified employees are more and more difficult to find

Solution

- Wireless 24/7 **Safe-on-Time Video** (SOTV) in harsh environments
- Obstacle detection and distance estimation **Driver Assistance**
- SIL 2 certification approved by authorities

Challenge

- SOTV and Driver Assistance not standardized yet
- One solution suitable for EU and not limited to one country
- EC type approval from North to South Europe



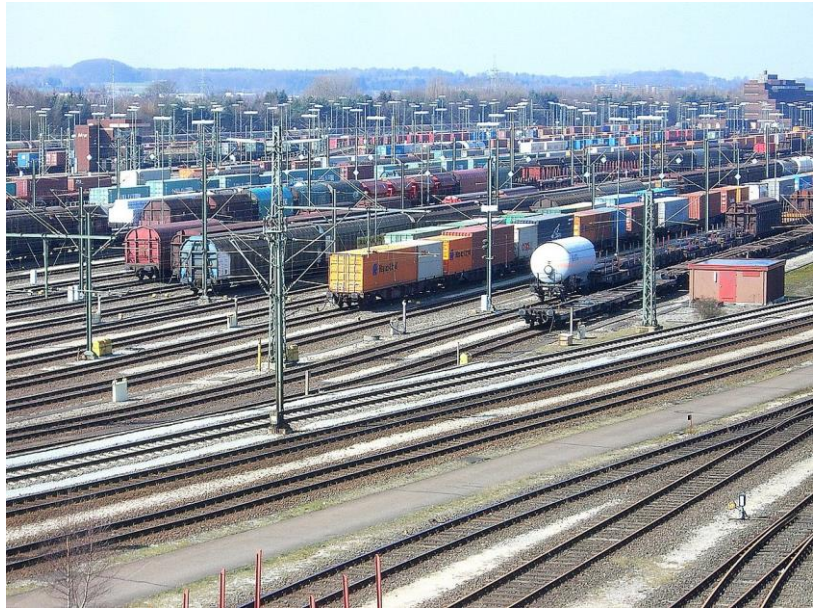
Ready for realization if…

- **Partners** helping us to develop the **vision algorithms** for obstacle detection (universities, research institutes, …)
- **Consortium** Shift2Rail JU Members and Associate Members interested in a **universal solution**
- **Other Railway Cargo Companies** and **Supplier of Equipment** with focus on **highly automated shunting** (signals to train, brakes, processing)
- **Support** from **EC authorities** to standardize the requirements throughout Europe to harmonize the system with one certification for all members of the EU
- **Dividing** the development costs and be supported by Shift2Rail

2020 Call for proposals topics…

- **S2R-CFM-IP5-01-2020:** Use-centric rail freight innovation for Single European Railway Area
  - Work stream 5: Automated train operation (TD 5.1) (ATO)

- **S2R-CFM-IPX-01-2020: Advanced Functions towards Autonomous TrainsSupport** from **EC authorities**
  - Work-stream 1: Concerning train external environment perception the following activities should be tackled in a coordinated way with TD2.2, TD2.9 and TD5.6



ASAŞ Alüminyum Sanayi Ticaret A.Ş. / TURKEY

Private Company

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Tel: +90 264 645 00 12 - 3244
Web: http://www.asastr.com/

Second Contact:
Görkem Özçelik
R&D Manager
E-mail: gorkem.ozcelik@asastr.com

Aluminium Extrusion Products

- 7 Extrusion Lines (75.000 tonnes /year
- 62 MN Biggest Press in Turkey

Aluminium Flat Rolled Products

- Continous casting lines
- Rolling up to 6 micron thickness
- Low carbon foot print with regenerative thermal oxidizer

Aluminium Composite Panels

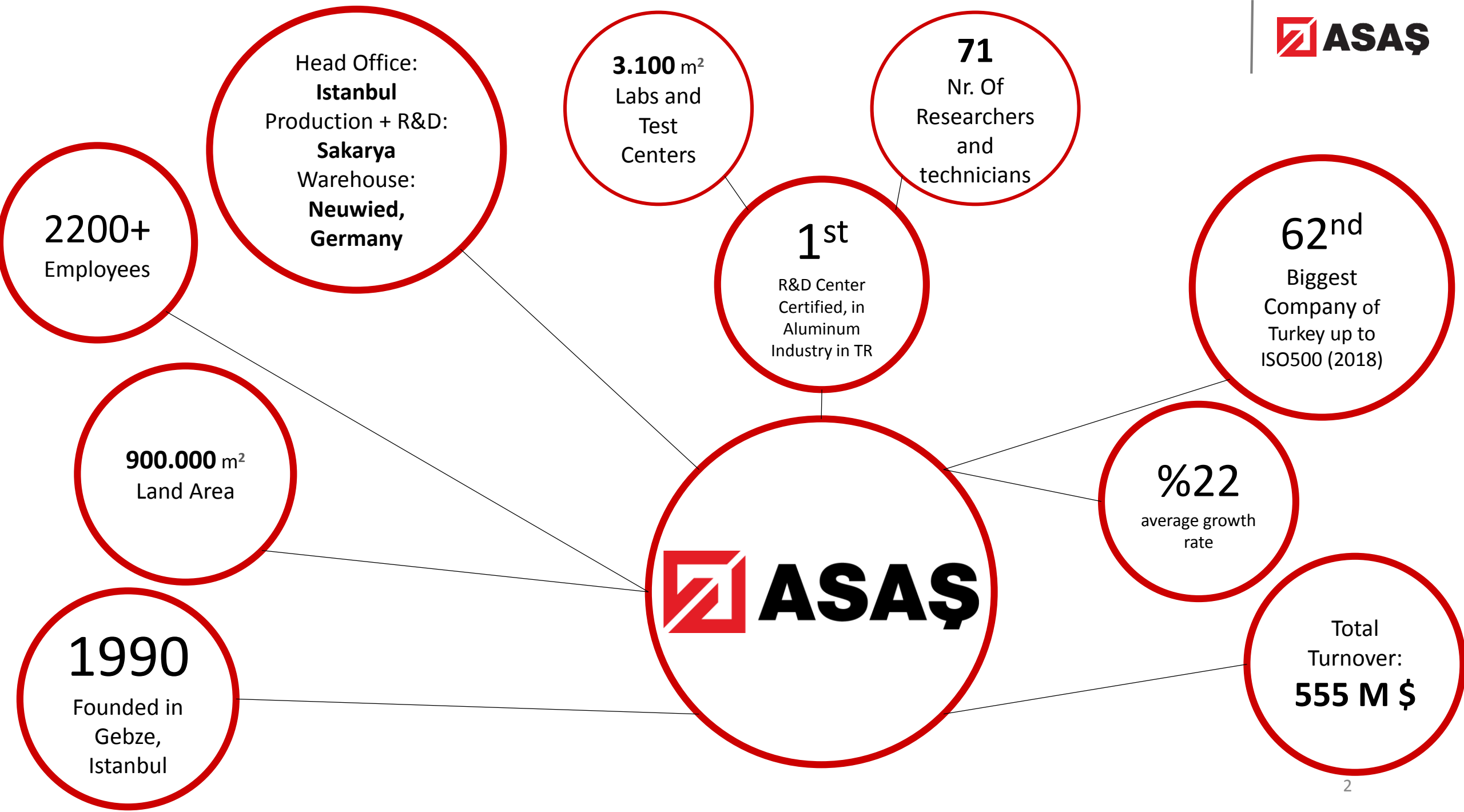
- 4 Composite panel production lines
- Fire classification: A2, FR, B1, B2

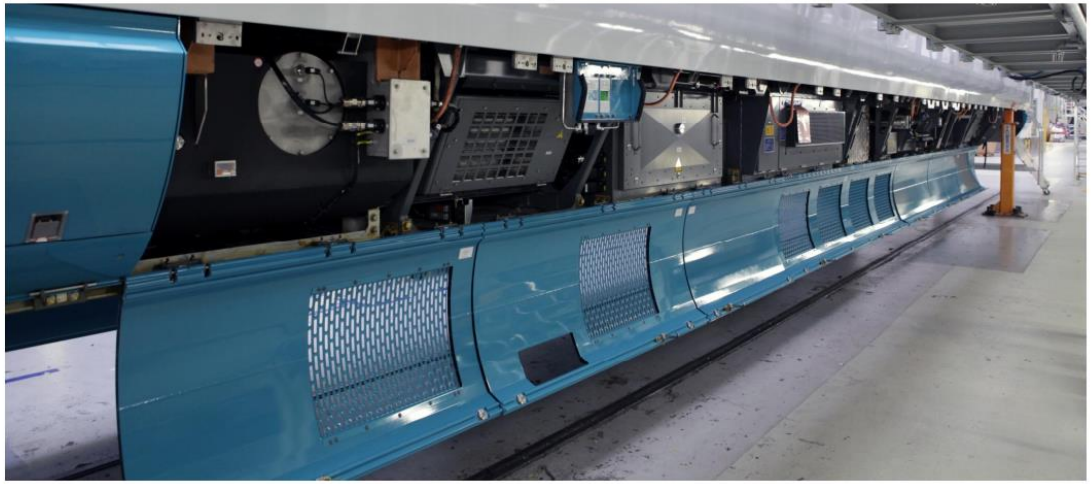
PVC Windows and Doors Systems

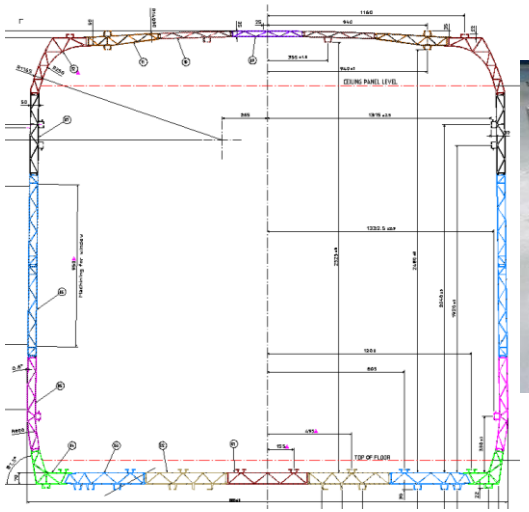
- 26 PVC Extrusion lines (35.000 t/y)
- 15 different window, door and sliding systems

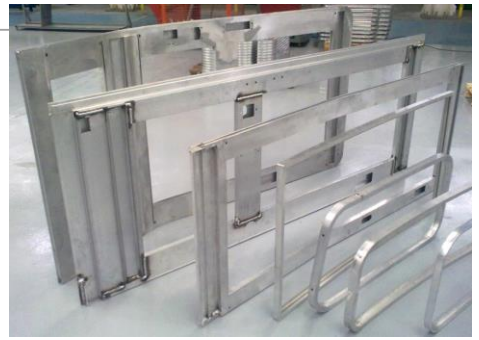
Roller Shutter and Steel Shutter Systems

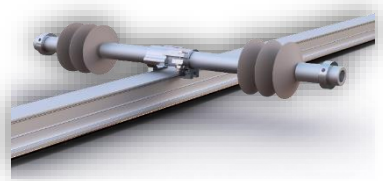
- PU filled aluminum roll form technology
- PVC Monoblock Roller Shutter Systems


Head Office:
Istanbul
Production + R&D:
Sakarya
Warehouse:
Neuwied,
Germany
3.100 m²
Labs and
Test
Centers
71
Nr. Of
Researchers
and
technicians
2200+
Employees
1st
R&D Center
Certified, in
Aluminum
Industry in TR
62nd
Biggest
Company of
Turkey up to
ISO500 (2018)
900.000 m²
Land Area
%22
average growth
rate
ASAŞ
1990
Founded in
Gebze,
Istanbul
Total
Turnover:
555 M $





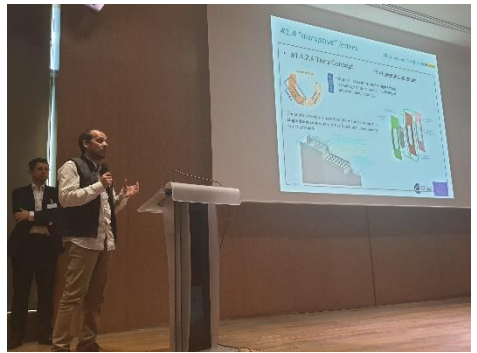


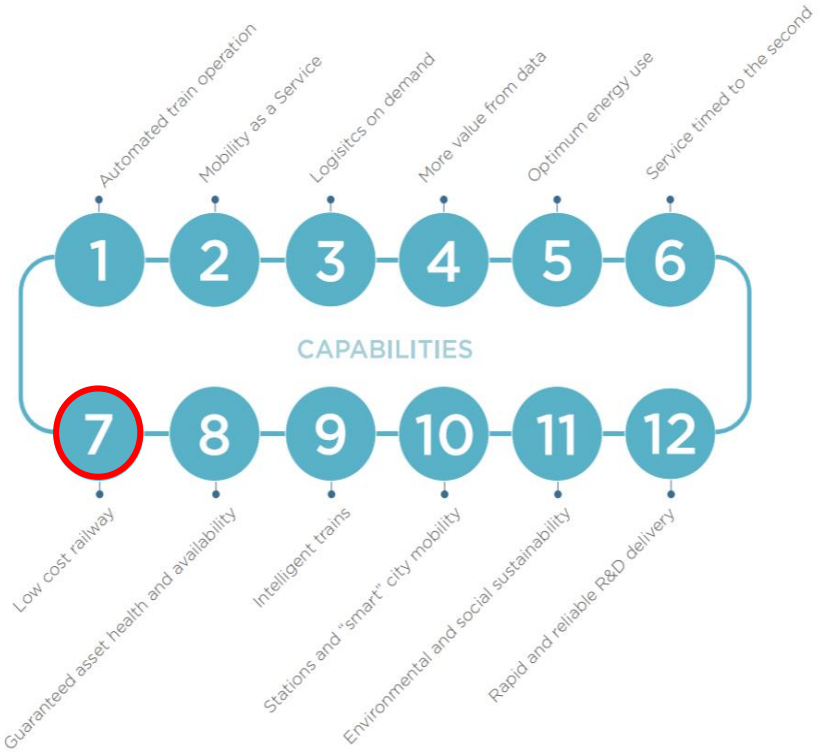


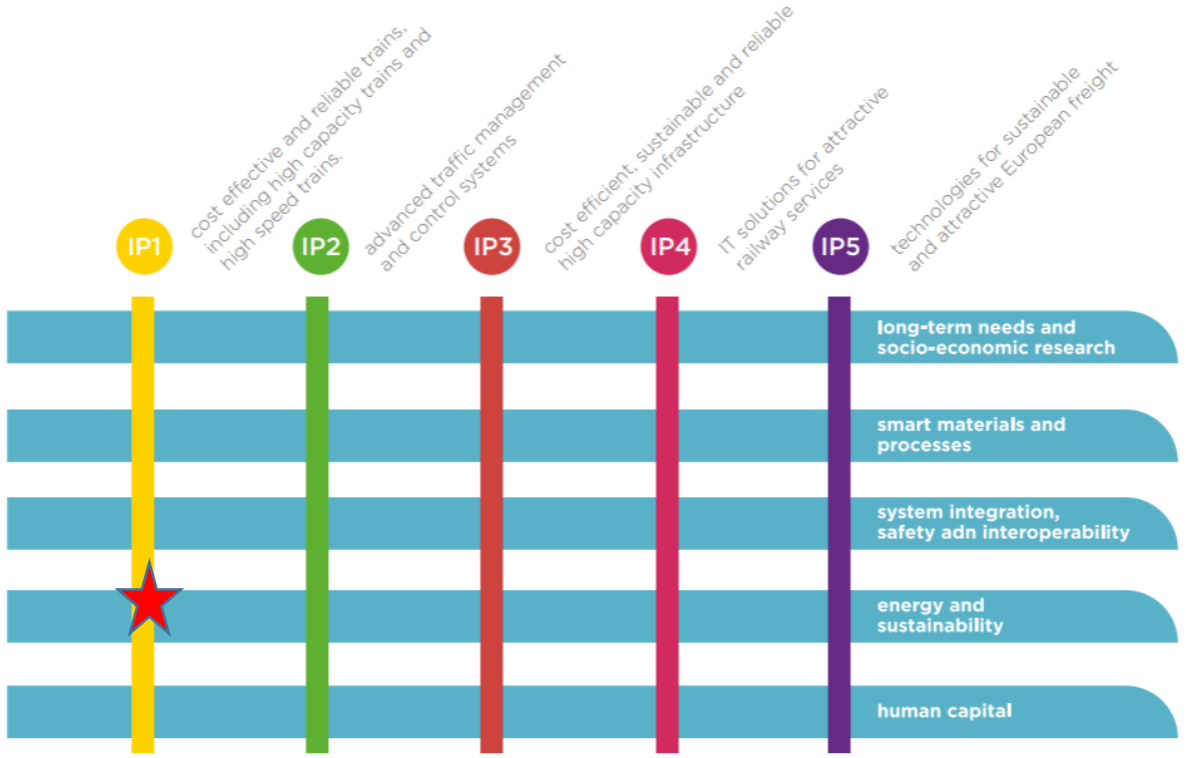
Expertise

1. Car body design & Production
2. Car body manufacturing (machining, bending, welding, assembly etc.)
3. Alloy development for railway industry
4. Large extrusion die design and manufacturing in house
5. Complex large and thin wall extrusion section production capability
6. All type of fixtures & apparatus design and manufacturing
7. Weight reduction by design new extrusion section
8. Co design & Co Engineering
9. Training on extruded product
10. Process development
11. Prototyping

	Call	Date	Duration	Total Budget (€)	Approved Budget of ASAS	Coordinator	Role of ASAS
Mat4Rail	S2R-OC-IP1-01-2017	09.2017	24 Months	3.495.216,25	70.937,5	CIDETEC	Partner
VULKANO	SPIRE-04-2016	07.2016	42 Months	6.940.813,75	252.500	CIRCE	Partner
RETROFEED	CE-SPIRE-05-2019	11.2019	42 Months	15.468.861,25	704.583,75	CIRCE	WP Leader



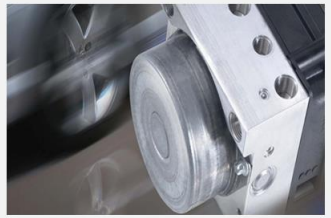
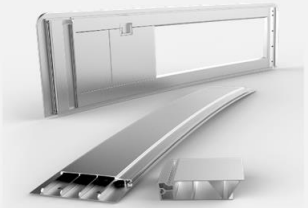




7C - The use of lightweight materials for rolling stock reduces maintenance costs and energy consumption

S2R-OC-IP1-02-2020
S2R-OC-IP1-03-2020
S2R-OC-IP3-01-2020

THANK YOU

PASSENGER CAR	TRUCK/TRAILER	RAILWAY	ARCHITECTURAL	MARINE	ENERGY	INDUSTRIAL
						
						
						

ASAŞ

CLUSTER
TRANSPORT, MOBILITY AND LOGISTICS
BERLIN BRANDENBURG

LAND BRANDENBURG

be Berlin

Rail Systems Technology in Berlin-Brandenburg
Support for Contribution to Shift2Rail

Lutz Hübner
Project Manager Transport | Mobility | Logistics
Rail Systems Technology

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www,businesslocationcenter.de

ERCI
EURAILCLUSTERS

The Cluster Transport, Mobility and Logistics Berlin-Brandenburg is Partner of the **European Railway Clusters Initiative (ERCI)**

EUROPÄISCHE UNION
Europäischer Fonds für regionale Entwicklung

THE GERMAN CAPITAL REGION
excellence in mobility

Cluster Transport, Mobility and Logistics Berlin-Brandenburg
Contribution to finished/ongoing Shift2Rail Projects

Shift2Rail Members

- ConTraffic GmbH
- Deutsche Bahn AG
- IZT Institut für Zukunftsstudien und Technologiebewertung gGmbH
- Verband der Bahnindustrie in Deutschland (VDB)
- Bombardier Transportation GmbH

Contribution to Shift2Rail Open Calls

- Contecht GmbH
- EURNEX e. V.
- Forster SMT GmbH
- Havelländische Eisenbahn AG
- IAV Ingenieurgesellschaft für Auto und Verkehr GmbH
- Schrey & Veit GmbH
- Technische Universität Berlin
- VBB Verkehrsverbund Berlin-Brandenburg GmbH
- Witt Industrieelektronik GmbH

Cluster Transport, Mobility and Logistics Excellence to the Call Topics

	S2R-OC-IP1-01-2020	S2R-OC-IP1-02-2020	S2R-OC-IP1-03-2019	S2R-OC-IP2-01-2020	S2R-OC-IP2-02-2020	S2R-OC-IP3-01-2020	S2R-OC-IP3-02-2020	S2R-OC-IP3-03-2020	S2R-OC-IP4-01-2020
ASCI Systemhaus GmbH							●	●	●
Bundesanstalt für Materialforschung und Prüfung (BAM)			●					●	
Hochschule für Technik und Wirtschaft Berlin (HTW)		●		●				●	
INTERAUTOMATION Deutschland GmbH									●
Mitsubishi Electric Europe B.V.	●	●		●	●				
Knick Elektronische Messgeräte GmbH & Co. KG	●								
Schrey & Veit GmbH			●			●			
SIUT GmbH									●

Cluster Transport, Mobility and Logistics Contributions, Ideas

S2R-OC-IP1-01-2020 (RIA) - Support to Development of next generation of Traction systems (TD1.1)

- Software system for vehicle run optimization and track occupancy planning in stations

S2R-OC-IP1-02-2020 (IA) - Technical solutions for the next generation of TCMS

- Software system for ITCS
- WS3: Develop methodology for SIL4 function development for FDF, including transfer of experience from aerospace SW development and certification
- WS3: Perform independent safety studies for DbD, FDF and Wireless TCMS.

S2R-OC-IP1-03-2020 (RIA) - Innovative technologies for Carbodies and Running Gear of the future

- Online monitoring of wheelset axles using guided ultrasonic waves
- Improved noise and vibration control by innovative approaches on vibration absorption at the wheel
- Easing the application of noise reduction measures due to standardized specification / assessing approaches

S2R-OC-IP2-01-2020 (RIA) - Modelling of the Moving Block system specification and support for Railway Minimum Operational Performance Standards

- WS1: Perform modelling and model-based analysis of Moving Block system, applying MBSE/SysML methodology including methodology enhancements supporting safety aspects
- WS2: Perform safety analyses on candidate approaches and architectures for fail-safe train localization

S2R-OC-IP2-02-2020 (RIA) - Study on alternative bearers and on communication protocols

- Software system for ITCS and passenger information

Cluster Transport, Mobility and Logistics Contributions, Ideas

S2R-OC-IP3-01-2020 (RIA) - Next Generation Track Transition Zones

- Assessing noise related design parameters for improved track systems: integrated spare part improvement in combination with adaptive measures
- Assessing the reliability of the infrastructure

S2R-OC-IP3-03-2020 (RIA) - On track machines shift to collaborative robots (TD3.8)

- Machine learning and data fusion for clever and smart evaluation of non-destructive rail testing data (ET, UT, VT) to optimize rail maintenance
- WS1: Contribute extensive experience on ROS (Robot Operating System), autonomy, and collaboration. Participate in developing system architecture, safety analysis and SW development for demonstrator.

S2R-OC-IP4-01-2020 (IA) - Supporting the implementation of the IP4 ecosystem

- **Idea**: Making train stations smarter
- **Contribution**: Providing/displaying information and guidance signals to passengers in train stations using products based on ultra-high-performance concrete and optical fibers.
- Equipment of train stations with robust concrete display systems applicable to walls and floors.
- Examples for information to be displayed: (1) Status and function of escalators and elevators (floor), (2) the most favorable waiting zone for passengers based on the current train load (floor), (3) stop and door position of the train (floor), (4) situational information, e.g. directions to rail replacement transport (wall & floor)

Networking groups (3)
17:00 – 17:30