

ANNUAL ACTIVITY REPORT
EXECUTIVE VIEW

2020

Manuscript completed in 2021

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The background of the page features a series of diagonal stripes in shades of light blue and white. Overlaid on these stripes are several thin, teal-colored lines that intersect at various angles, creating a dynamic, geometric pattern. The overall aesthetic is clean and modern.

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01 Foreword





— “ Shift2Rail has been key to ensuring that we have innovative European solutions ready for deployment across the EU network. I’m pleased to see deployment already starting for some of these, and I look forward to seeing more innovations come to life with the partners from Shift2Rail — and some newcomers — in the Europe’s Rail Partnership, helping rail play a key role in delivering decarbonisation of transport. ”



— **ADINA VĂLEAN**
European Commissioner for Transport

It is safe to say that 2020 was a challenging year for all of us: the Coronavirus pandemic was an unprecedented and major shock for European transport and mobility.

The difficult circumstances make Shift2Rail's achievements last year even more impressive – from carrying out successful pilot tests to providing innovative ad-hoc solutions, helping rail and public transport to weather the crisis, all while preparing for major initiatives in 2021: the European Year of Rail and the launch of Shift2Rail's successor programme, Europe's Rail.

2020 was also the year in which we presented the European Commission's Sustainable and Smart Mobility Strategy. By definition, rail research and innovation are amongst the key enablers of the twin green and digital transition, and will help us achieve the milestones we have set out for rail: doubling high-speed rail traffic across Europe by 2030, and rail freight traffic by 2050.

In recent years, Shift2Rail has been key to ensuring that we have innovative European solutions ready for deployment across the EU network. I'm pleased to see deployment already starting for some of these, and I look forward to seeing more innovations come to life with the partners from Shift2Rail – and some newcomers – in the Europe's Rail Partnership, helping rail play a key role in delivering decarbonisation of transport.

02 Shift2Rail in 2020



— “ Rail research and innovation has an important role to play in Europe’s recovery from the COVID-19 crisis and Shift2Rail together with its Members and partners stands ready to deliver. ”

— **CARLO BORGHINI**
Executive Director, Shift2Rail Joint Undertaking



— Despite the fact that 2020 was marked by difficulties for many people and organisations across the globe, Shift2Rail with the support of its Members and partners continued to work towards building a sustainable, interoperable, high capacity rail system, which will become the backbone of the future sustainable carbon-neutral mobility and transport system in Europe. Thanks to the dedication of the men and women supporting our activities, we have carried out concrete demonstration activities on the rail network during these uncertain times. Rail research and innovation has an important role to play in Europe's recovery from the COVID-19 crisis and Shift2Rail together with its Members and partners stands ready to deliver.

Shift2Rail's R&I activities in 2020 successfully contributed to the progress

of the innovative solutions which are due to be industrialised as from the next years, paving the way for Shift2Rail's successor programme Europe's Rail. Some key achievements include successful pilot line tests for automated train operation for both passenger and freight operations, line tests on digital automatic couplers, installation of enhanced switches and crossings, testing of multi-modal travel companion social services for passengers, resulting in a validation of technology that has been used for a public transport COVID-19 tracking app, and many more.

Shift2Rail was not only active in its R&I activities, but also in building relationships with regions and organisations. During 2020 Shift2Rail further expanded its collaboration across Europe and beyond by signing three new Memoranda of Understanding with the Basque Country, the Canadian Urban Transit Research &



Innovation Consortium (CUTRIC) and the Permanent Secretariat of the Transport Community – a major achievement and precedent for future collaboration.

2020 was also a successful year for Shift2Rail in terms of disseminating its R&I results in external and internal events and conferences. Shift2Rail participated to more than 30 online events across Europe and beyond, presenting concrete results achieved by Members together with other key stakeholders. Additionally, Shift2Rail organized its very first Innovation Days in October. The event was an opportunity to bring together the rail community after a difficult period to discuss about rail's crucial role in the mobility and transport recovery effort, Europe's Rail, the European Year of Rail in 2021, and much more.

During 2020, a major progress was also made towards the establishment of Shift2Rail's successor programme Europe's Rail. Not only that, Shift2Rail took an active role in conceptualizing the European Year of Rail – the flagship initiative of 2021.

Following the 2020 Call for Proposals, Shift2Rail has cumulatively invested almost €0.8 billion in Research &

Innovation activities (including Lighthouse Projects) accomplishing its mandate to recover the initial delays and accelerate the delivery of the Programme's innovative solutions. This will result in research and innovation activities performed by the Members and third parties estimated at €1.0 billion by the end of the Programme, with a measurable leverage effect: a tangible answer to European policy objectives expressing the needs of rail clients and freight businesses.

Despite the challenging times, we have achieved a lot and a lot more is to come. We are looking forward to further disseminating our R&I results at the World Congress on Railway Research, TRA and InnoTrans 2022. We look forward positively to the new Europe's Rail partnership which will create the opportunity to build upon the important results already achieved.

03 Call 2020 in figures



242

participants



19

projects

for a total value of €147.7 million



11

Open Call
Projects



23

EU Member
States



87 SMEs / **46** SMEs retained

€75.4 million
Shift2Rail
co-funding

40% of
women project
coordinators



04 Executive summary



— The Shift2Rail Joint Undertaking (S2R JU or S2R) was officially established on 7 July 2014, following the adoption of Council Regulation (EU) No 642/2014 of 16 June 2014 establishing the Shift2Rail Joint Undertaking (S2R Regulation).

The S2R JU is a public-private partnership under the Horizon 2020 Framework Programme¹ established to manage and coordinate mission-oriented Research and Innovation (R&I) activities for a major transformation in rail systems in Europe.

The S2R strategic objectives and targets remain valid also within the framework established by the new *Sustainable and Smart Mobility Strategy*, adopted by the European Commission on 9 December 2020¹.

2020 has been an unprecedented year, heavily marked by the COVID-19 pandemic, its successive waves and uncoordinated responses that imposed restrictions in Europe and around the world. In June 2021, at the time of writing this report, the situation is not yet addressed. During such critical periods, rail has demonstrated its role as a backbone of the European economy. In a multimodal approach, it has ensured

the transporting of goods – from food to protective and critical equipment –, supported the management of sanitary critical transfers and also continued meeting the needs of citizens, to commute for work or other essential reasons. This is made possible thanks to the rail workers and the innate strengths of rail.

Passenger numbers are dramatically low, more for cross-border traffic. The Community of European Railway and Infrastructure Companies (CER) estimates a total turnover losses at EUR 24 billion for passenger services (-42%) and at EUR 2 billion for cargo (-2%) in 2020, compared to 2019 values. Especially for rail passenger services, including urban transport, health and safety expectations will have to be managed.

¹ Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020), OJ L 347, 20.12.2013 and Council Decision (EU) No 2013/743/EU of 3 December 2013 establishing the specific programme implementing Horizon 2020 (2014-2020), OJ L 347, 20.12.2013, p. 965.

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0789>

05 Programme status

— During 2020, the S2R JU has further progressed in delivering the S2R Programme, although operational activities have been affected by the COVID-19 pandemic. The internal control system in place has ensured effective, efficient and sound financial management.

In this context, the work of S2R Members, other beneficiaries and S2R staff shall be commended because they have collectively and individually ensured the progress of the R&I activities in such complex conditions, not only with paperwork or lab developments, but with concrete demonstration activities on the rail network.

This Annual Activity Report (AAR) 2020 is saturated with the achievements of the S2R projects. Successful pilot line tests, including with requests of derogations at national level, were performed for

Automated Train Operation (ATO) over ETCS at GoA2 for both passenger (in United Kingdom) and freight operations (in Switzerland). Additional line tests were performed on digital automatic couplers (DAC) in Germany and in Sweden. Enhanced switches and crossings were installed in Austria. Multi-modal travel companion, trip tracking social services for passengers were tested in Spain, Portugal, the Netherlands and Greece, resulting in a validation of technology that has been used for a public transport COVID-19 tracking app. Many other R&I activities performed across Europe by multiple companies were successful and demonstrated the commitment of the rail sector to deliver a major digital transformation of rail, paved and steered by the S2R Programme.

S2R projects progressed towards delivering higher TRL levels and prepare for Technological Demonstrators that will be presented at InnoTrans 2022.

By the end of 2020 the Programme delay, still considered substantially contained, is estimated to be at up to 6 months. However, the evolving situation combined with additional scattered restrictions may further impact the progress of the activities.

The ongoing projects have been affected in different ways by the COVID-19

pandemic. Although projects at lower TRL levels, or where collaboration was possible via digital communication, progressed largely in line with their planning, projects requiring collaborative activities at different sites in Europe suffered from delays due to different limitations.

Since the early months of the pandemic, the Programme Team has worked with the Project Coordinators to establish a detailed risk analysis and identify mitigating actions as early as possible.

By the end of 2020, the S2R Programme reached pivotal milestones in terms of implementation:

- almost all S2R resources are committed for the Programme activities,
- at least 60% of the Programme has been realized in view of reaching the TRL6/7 operational demonstrations planned for conclusion during 2023. Also the R&I activities of the Call 2020 have started, with the exception of one grant agreement signed in May 2021. It is estimated that the total value of activities performed in 2020 amount to EUR 119.4 million, of which EUR 110.3 million are delivered by the Members other than the European Union (hereinafter Other Members).

— During 2020, the S2R JU assessed its R&I activities through a third Control Gate Exercise³. This exercise took into account the deliverables and reports submitted in the context of the Annual Review of the active Projects coordinated by the Other Members. Through this process the S2R JU also ensured that the recommendations made during the previous Control Gate Assessment had been properly applied. The overall result is that the Programme benefited from such feedback, also built upon external expertise.

The quality of some deliverables was below standard and the S2R JU requested several re-submissions and suspended technical and financial reports. This process is still particularly demanding for the Members and the S2R JU, and the Executive Director requested the Programme Team to rethink the approach for 2021.

The overall Programme monitoring realized through the quarterly meetings of the Innovation Programmes (IPs) appears to be more and more a coordination/information exercise that will require corrections for the S2R Successor.

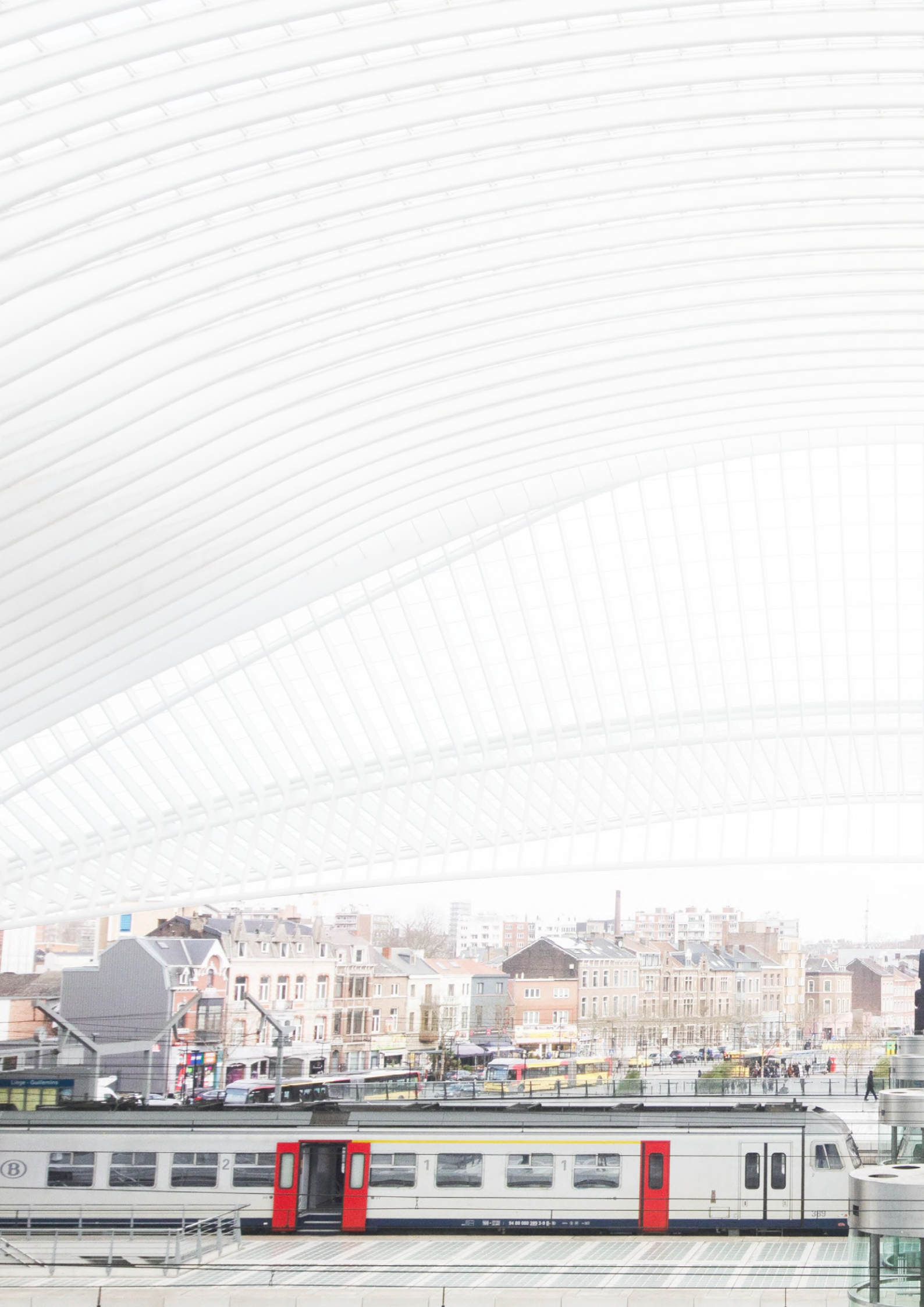
The S2R JU Programme Team also conducted project review meetings for non-S2R Members during 2019. The request of such projects to better interact with the reviewing experts and the S2R Programme Managers will have to be considered in the light of the future staffing of the S2R JU.

This Programme assessment allowed the S2R JU to confirm that overall the progress of the activities has been in line with the expectations. In addition, the launch of the system approach activities within IPX provided additional coherence and consistency between the interdependencies of the implementing Projects.

The status of the progress of the TDs is reported in Section 1.7. Only few TDs show delays compared to the initial scheduling, mostly due to availability of resources and external factors. In such cases, the S2R JU has requested the concerned Project Teams to put in place the necessary mitigating measures.

³ In accordance with the procedure set in the S2R Governance and Process handbook, transparently published on the S2R website: https://shift2rail.org/wp-content/uploads/2020/06/S2RJU-Governance-and-Process-Handbook_20200127_v2.0.pdf





- IP1** – Passenger Trains
- IP2** – Traffic Management
- IP3** – Optimised Infrastructure
- IP4** – Digital Services
- IP5** – Rail Freight
- CCA** – Cross-Cutting Activities
- IPX** – System Architecture
and Disruptive Technologies



IP1



Passenger Trains



In 2020, IP1 TDs progressed unevenly and overall reached 83% of the estimated work planned in 2020. Besides TD1.5, which shows a significant progress in terms of overall implementation of the innovative braking system and TD1.8 (started in 2018), which is now running at full speed for the HVAC demonstrators with CO2 refrigerants, most of the other TD activities concentrated in the preparation for the high-TRL demonstrations. TD1.3, TD1.6 and TD1.7 were impacted by an initial non-alignment of the complementary project Carbodin, which ultimately led to a

mitigation measure in agreement with the S2R JU to be put in place in 2021, including the externalization of a stream of work via a S2R JU procurement procedure.

It is worth noting the potential savings highlighted by different TDs in IP1. A standardised approach to virtual certification showed a reduction of validation tests of about 20%, for example for traction system. Several works of IP1 contribute to the Cross-Cutting Activities (CCA) on both energy and noise reduction, for example, the running gear works which, with active suspension and new materials, estimate a reduction of the rolling noise of -2dB. Furthermore, within TD1.5 a proposal for consideration of wheel/rail adhesion management solutions within ETCS braking curve calculation has been made and discussed with European Union Agency for Railways (ERA) .



IP2



Traffic Management



Significant progress has been reported on all TDs that on average have reached 98% of the estimated work planned in 2020. All IP2 TDs started between 2016 and 2017 have been working on the preparation of demonstration activities. On the contrary, TD2.8 on Virtual Coupling only started at the end of 2018, having therefore reached an overall implementation maturity of 45% by the end of 2020. Similarly, the activities of TD2.4 have shown a slower progress in terms of overall TD advancement. This is due to the fact that an activity has been added in 2020 with R&I works on a stand-alone train

positioning on top of the previously ongoing works on virtual-balises.

Notable results are the successful pilot line tests performed for Automated Train Operation over ETCS at GoA2 for both passenger (in United Kingdom) and, together with IP5, freight operations (in Switzerland). The positive assessment of these test results allow the safe introduction of such novel technology in the Technical Specifications for Interoperability (TSI) for enhancing the capabilities of ERTMS, as they will complement the feedback on specifications issued by S2R in 2019 (further to interoperability tests performed on the Reference Test Bench) provided to ERA and the rail sector.

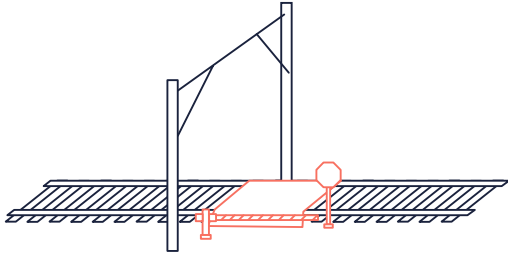
TD2.8 on Virtual Coupling, which is not planned to reach a high TRL under the S2R Programme, has shown through an analysis of



sample scenarios that the Virtually Coupled Train Sets have the potential to improve line capacity compared to mechanical coupling: +29.7% in high-speed operations (that includes coupling of trains) over 300km with 3 stops and + 41.1% on regional operations (that includes coupling of trains) over 70km with 15 stops. These results, together with a potential increased flexibility of operations, call for pursuing such innovation.

Overall, the results achieved are key milestones for the market uptake of the solutions of this IP and prepare the integration of functions and its specifications in the Control Command and Signalling TSI, in the next revision, currently targeted by 2022, and its further evolution. The work performed in IP2 will show how R&I will feed the new regulatory framework and become a test bed for the future deployment of S2R innovative solutions.

IP3



Optimised Infrastructure



As in the previous years, also IP3 showed an uneven progress across TDs. On average, IP3 has reached 84% of the estimated work planned in 2020, but TDs 3.2, 3.4 and 3.5, overall, did not progress as expected. The next generation of switches and crossings, next generation of tracks and bridges and tunnels activities are showing a delay in their overall implementation. Although many diverse activities have been initiated, the progress is estimated at less than 50%. This results from a combination of factors, availability of resources, reorganization of activities and companies but also contractual aspects with linked third parties.

The S2R JU has worked together with the related projects to implement mitigation measures, as reported in IP3 section of the consolidated AAR version, although they were not sufficient to close the gap. Early 2021, additional meetings, also in the light of the launch of the last IP3 project, will help to enhance the situation and prioritize further.

In general, IP3 R&I activities are moving towards the operational environment demonstrators. In 2020, enhanced switches and crossings tests have started both in Austria and France, contributing to a significant progress in TD3.1, compared to 2019. A slower progress needs to be reported for the asset management activities (TDs 3.6-3.8), which are over the 50% implementation, but mainly thanks to the important progress achieved in 2019. Energy management (TDs 3.9-3.10) and the future stations (TD3.11) have been progressing well.



IP_4



Digital Services

IP4 TDs on average have reached 80% of the estimated work planned in 2020. Progress has been affected by TD4.1 performance issues of the Interoperability Framework that required major interventions for the correct implementation in a pilot scenario. Works on developing a new architecture and, in the short-term, on solving existing bugs have been put into place in late 2020 for this essential TD, which enables interoperability and multimodality.

Notwithstanding the Interoperability Framework issues, in 2020 IP4 started pilots in different European locations:

Spain, Portugal, the Netherlands and Greece. The following features were tested for passengers:

- **Travel Companion:** applies behavioural analytics and AI techniques to provide a seamless door-to-door experience that suggests solutions and available options when they are necessary during a journey;
- **Trip Tracking Services:** help guide passengers from A to B;
- **Social Market Service:** enhances provider interactions with passengers during a trip, offering additional products and services like discounted transport, leisure activities and Wi-Fi access.

In addition, the following feature was tested for transport operators:



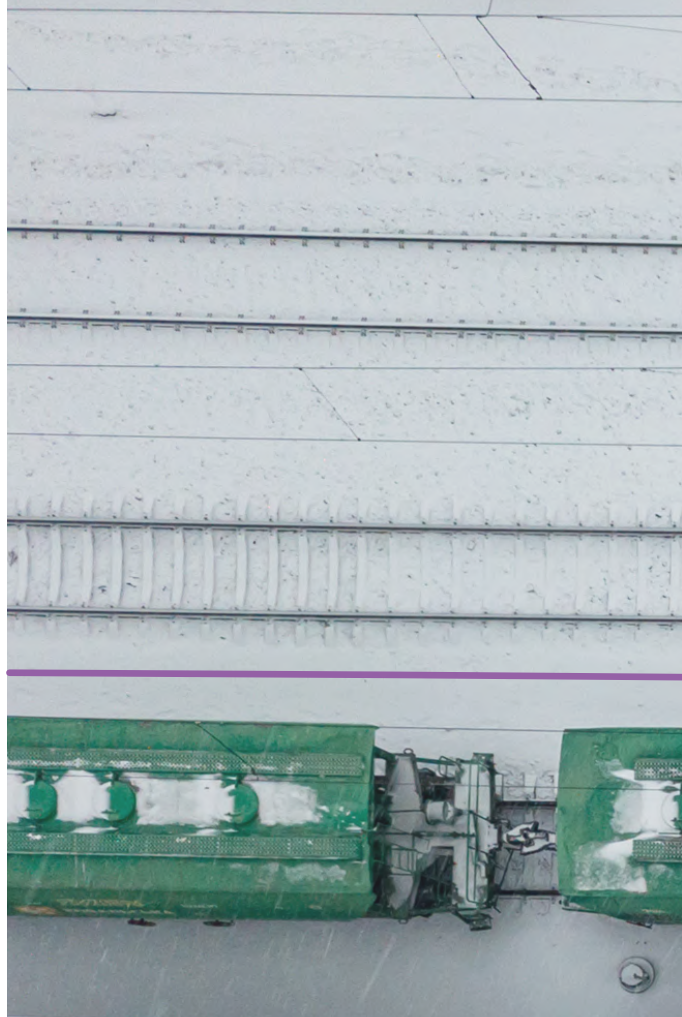
- Web-Based Interface for Operators: collects past passenger data to improve and adjust services to each traveller's individual needs and preferences, ensuring compliance with GDPR.

It is worth noting that the Open Call project My-Trac, building upon the technology developed within the S2R IP4 ecosystem was funded by the EIT Urban Mobility to develop a COVID-19 app (Co-APS), launched to help reduce the spread of the virus by managing density in public transport and public spaces.

IP5



Rail Freight



In 2020, the TDs reached an average implementation rate of 73%, but especially delivered some key results, such as:

- ATO freight demonstration in coordination with IP2;
- static tests in Germany for distributed traction and long trains;
- essential prototype development of the European Digital Automatic Coupler (DAC) and its tests.

The 50% milestone of overall progress has been reached, showing progress with the activities in 2020 compared to 2019. In

particular, major focus has been placed on the preparation of the upcoming demonstration activities.

The R&I work of IP5 in 2020 has also been instrumental for the creation of the Modular Automatic Coupling prototype that went beyond its initial scope of only being validated in the test bench. This prototype is now tested at TR7 (operational conditions) within the framework of the European DAC Delivery Programme, and installed in real wagons and compared with other types of DAC (based on proven couplers market solutions).

The acceleration in some of key aspects of IP5 may require additional resources to achieve market impact - resources not yet available for rail freight in the S2R Programme.





Cross-Cutting Activities

The Cross-Cutting Activities after a catch-up of delays in 2019 faced additional delays in 2020, with 79% of implementation of planned activities for 2020.

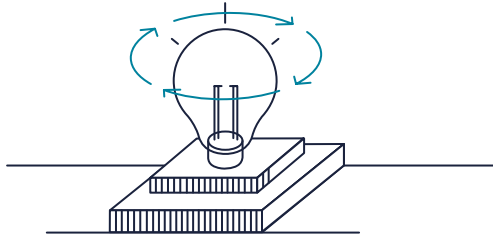
The S2R KPI works achieved a milestone with the tender 'Long-term needs & socio-economic research' completion of the S2R KPI Tool which has been launched on the S2R website during the S2R Innovation Days in October 2020.

Work Area (WA)3.2 progressed slowly in 2020, achieving both, a yearly and total implementation of 50% and being able to deliver the version 4 of the Standardisation

Rolling Development Plan (SRDP) at the beginning of 2021. Another Work Area shows a slow implementation pace - the WA6 on Human Capital suffered from internal allocation of resources. WA 5.2 on Noise and Vibration was impacted by delayed measurement campaigns due to the COVID-19 restrictions which are fundamental for achieving the objectives defined in the S2R Multi-Annual Action Plan (MAAP).

WA3.5 and WA4.1 successfully ended their activities. The former provided general recommendations for a mixed virtual/experimental certification process, which shall ultimately lead to a significant reduction of certification costs and duration. The latter more concretely resulted in the development of a macroscopic simulation tool which supports the timetable and operational planning with information on the operational impact of disturbances, delivering calculated results within minutes instead of hours compared to state-of-the-art tools.





System Architecture and Disruptive Technologies


The investment of the Members and the S2R in designing and launching the IPX activities related to the concept of operations and functional system architecture, started delivering. The first version of the Railway Functional System Architecture by the project Linx4Rail is now ready and under approval. This is a major milestone achieved by the sector working together and moving away from silos initiatives, setting the basis for the System Pillar of the S2R Successor..

TER4RAIL provided a useful Rail Innovative Research Observatory and mapping

of running EU funded projects that have potential content synergies with the S2R Programme activities. This output is now used by the Programme Team to engage with a possible collaboration and synergy with those other R&I projects, including with non-rail stakeholders.


Also, Flex-Rail provided a comprehensive inventory of innovations and trends that was made available in an interactive public webpage, inspiring possible future R&I works.

And finally, in 2020, S2R launched the HYPERNEX project which is tackling the topic of innovation in new and emerging guided transport system, looking for sharing of technological know-how with rail and ensuring a coherent European approach. In addition, it has to be noted that the S2R JU supported DG MOVE to keep regular contacts



and organise meetings (4 in 2020) with hyperloop promoters and Member States (1 meeting in 2020). S2R has contributed to ongoing technical discussions (e.g. preparation of a document on hyperloop functional definition) and has provided useful advice on the study commissioned by DG MOVE on an EU Regulatory Framework for Hyperloop, which was finalised in March 2021.

07 Programme Management and MAAP



— In terms of Programme Management, 2020 was the first year during which reviews of Lump Sum projects took place. Experience so far has shown that from an operational perspective the use of Lump Sum for Members' projects does not only result in an administrative simplification, but also effectively bundles efforts in the project review to focus on the achievements of results. The fact that the proof of concluded work packages (hence related focus on deliverables and milestone approval) provides the basis for the reimbursement of costs has allowed the S2R JU and consortia to focus their efforts in an effective way to ensure the delivery of projects.

2020 Programme Management has been influenced by the need to continue monitoring projects affected by the pandemic restrictions. According to the Commission guidelines, the S2R JU applied a fast-track procedure to requests for amendments justified by reasons related to the COVID-19 pandemic, for up to 6 months. The S2R Programme Office supported the projects in implementing mitigating measures as needed. However, delays in the submission of

deliverables, in particular in the case of demonstration activities, will have to be mitigated once the current pandemic restrictions are lifted. Nevertheless, thanks to the ambitious S2R 2019 planning to have all activities finalised by the end of 2022, the delays caused by the pandemic restrictions will still allow the JU to target a conclusion of its R&I Programme by mid-2023, well within the S2R JU mandate ending in 2024.

With a holistic approach, the role of the S2R JU is also to ensure that interactions between the various IPs are adequately considered and managed, as technological developments in one part of the system could lead to changes in performance, or even create barriers, in other parts. In addition, Cross-Cutting activities include research on long-term economic and societal trends, such as customer needs, human capital and skills, which must be taken into account by the different IPs.

In 2020, the programme management could also benefit from the active exchange with the ED Programme Board which took up its activities following the ED Decision on a renewed Programme Governance and Change Management, and endorsed by the S2R Governing Board. Several change requests have been processes, ensuring among other sectorial coherence of initiatives, notably with the integration of relevant concepts from OCORA or RCA into the

S2R R&I activities that will deliver concrete demonstrations.

At the end of 2020 the ED Programme Board also discussed the first release of the S2R Functional System Architecture, which is setting the basis for an increased sectorial competence for system of systems modelling in view of enabling and accelerating the integration of new technologies and processes in the rail system.

08 R&I activities launched in 2020 and prepared for 2021

— In July 2020, the S2R JU Governing Board selected for funding 19 proposals as a result of the 2020 Call launched in January 2020 based on the amended Annual Work Plan (AWP) 2020, covering in its entirety the topics and scope of the Call.

18 grant agreements were signed between September and December 2020; at the request of the Consortium, taking into consideration the need to reorganize the project allocations between work packages, one grant agreement signature was postponed and signed in May 2021. In total, the project proposals selected for funding will result in R&I activities funded up to EUR 75.4 million against a total value of EUR 147.7 million. The CFM part of the Call was implemented through the Lump Sum approach.

As in the case of the previous years and for the full duration of the Programme,

excluding the S2R lighthouse projects launched by the Commission in 2014, the Founding Members other than the Union and the Associated Members (jointly referred to as the “Other Members”) of the S2R JU agreed to a funding rate of maximum 44.44% (this would mean a net 41.44% for an Other Member after having considered its obligations), demonstrating a strong commitment to deliver the most ambitious Railway R&I Programme for a major transformation to rail systems, once deployed.

In total 242 participants, of which 29% were represented by SMEs in the Open Call projects, were retained for funding in the 19 R&I topics under the 2020 Call. The applications represented participants from 30 countries, of which 19 EU Member States and 3 Countries associated to the Horizon 2020 Framework Programme were retained for funding.

A slight increase of underrepresented Member States’ participants has been noticed in the 2020 Call, thanks to the efforts made by the S2R JU and the increase of TRL of the Programme with a total of 20 participants versus a previous average of 13. In order to attract a wider representation from underrepresented Member States, it will be important to integrate successful S2R R&I results with longer-term demonstration activities, to bridge the way towards future deployment.

Additionally, the S2R JU for the first time used a ‘prize’ as an instrument to

accelerate innovation into the market and respond to a specific Union needs.

During the Shift2Rail Innovation Days on 22-23 October, the Unique Train Prize was launched. The Prize is aimed at the development of an implementable single solution that will allow the tracking of all commercial freight trains, from all railway undertakings, covering the whole European network.

The applicants have one year to develop the solution and the winner will be awarded 400.000, while the runner-up will receive 100.000 EUR.

09 The European DAC Delivery Programme under the leadership of S2R JU

— In July 2020, the Governing Board of the S2R JU endorsed the European DAC (Digital Automatic Coupler) Delivery Programme proposed by the Executive Director, voicing the request of the railway sector. Building upon the outcomes achieved in Shift2Rail's freight related R&I activities (Innovation Programme 5), this Programme brings together the rail sector beyond the membership to bridge the research work with innovation, including migration planning, towards the deployment of a European DAC solution, built on open and transparent standard specifications. This activity constitutes a major step ahead of the digital rail freight, enabling new operations and services that will contribute meeting the expectations of the Sustainable and Smart Mobility Strategy.

Today the European DAC Delivery Programme is a reality and it integrates, with an independently managed delivery programme, projects like DAC4EU, funded by the German Federal Ministry

of Transport and Digital Infrastructure, as well as relevant results from S2R projects under its Innovation Programme 5.

Following the task provided by the S2R Governing Board to the S2R Head of Research and Innovation, an effective programme management system has been set-up to ensure the proper and timely delivery of the expected results. The EDDP has been structured in seven different Work Packages and two decision-making bodies (Supervisory Board and Programme Board), with the Programme Manager playing a pivotal role. Mr Mark Topal, CTO of OEGB, was identified and appointed the European DAC Delivery Programme Manager supported by the Co-Manager Jens Engelmann, owner of railable.

The programme's objectives cover technological assessments of the available solutions, testing and demonstrations, definition of migration plans, assessing the interfaces with other programmes, business cases, and communication and dissemination, aiming to facilitate the deployment of the DAC in Europe. Concretely, it will include:

- the selection of an open, functional, operationally tested, safe and sustainable European DAC model ready for industrialisation and deployment;

- the delivery of a final open design of the selected model, based on use-case considerations in 2021, and its interoperability and safety requirements which could be incorporated into the TSI, Green Deal and Digitalization Package in 2022;
- the identification of migration and business plans compatible across Europe (subject to the results of the ongoing business case analysis), as well as the necessary resources to match them.

The European DAC Delivery Programme is an open programme which looks forward to active participation from stakeholders, who are invited to submit their interest through the dedicated application form on the EDDP webpage, established under S2R website in autumn 2020, where additional and up to date information about the programme is available.

With regard to the budget appropriations set aside for this activity in 2020, the necessary procurement procedures were launched and contracts are expected to be signed by Q1 2021 in accordance with the S2R JU Financial Rules.

10 Activities aligned to feed the successor of the S2R JU

— The current activities of the S2R JU are progressing towards their demonstrations in 2022 and 2023, paving the way to the R&I activities to be undertaken by the S2R Successor. This will ensure a proper phase out and phase in between the two Programmes. The S2R technological demonstrators are the building blocks of a more systemic railway transformation which is strategically driven by the European Commission's European Green Deal, the Digitalisation Agenda and more recently the Sustainable and Smart Mobility Strategy.

During spring 2020, the S2R JU further supported the development of a High Level Paper on the S2R Successor, the candidate European Institutional Partnership 'Europe's Rail Joint Undertaking'. As part of its preparations to set new R&I European Partnerships under the next research and innovation framework programme, Horizon Europe, the European Commission had asked the rail sector (EIM, CER with the

technical support of UIC, UNIFE, UITP, ERRAC, etc.) in autumn 2019 to develop the key features of a future European partnership. Following the submission of the first version of the High Level Paper in December 2019, the S2R JU, in its role of sectorial stakeholders' integration, continued the coordination of the various inputs in the first half of 2020. The final version of the Draft Partnership Proposal was sent to the Commission by the sector in early July 2020 and was published on the DG Research & Innovation website for the presentation of candidates for European Partnerships in Climate, Energy and Mobility⁴.

This preparation work has also been an opportunity for the S2R JU to reassess the maturity level expected to be reached by the different streams of work, the potential in terms of market take up of R&I outputs, and indicate the areas of improvements to foresee for the next generation of R&I projects, the so called 'transforming projects'.

The preparations for the future European Partnership for the rail sector were also part of several events during 2020.

During August 2020, the European Commission launched its invitation

for entities to manifest the interest to become Candidate Founding Members of the Europe's Rail Joint Undertaking. This process was formally concluded in the very end of 2020 with the Commission's notification to entities of their status as Candidate Founding Members of the new Partnership. First exchanges took place in early 2021 to prepare for the new Partnership and develop the priorities of the Successor Programme.

⁴ https://ec.europa.eu/info/horizon-europe/european-partnerships-horizon-europe/candidates-climate-energy-and-mobility_en

11 Other activities

— In order to provide administrative support to the Programme execution, the S2R JU has progressed in the recruitment of staff filling budgetary open positions. At the end of the year, 24 positions were filled, including 2 SNEs and one short term exceptional recruitment to cover a long leave absence. The S2R JU is subject to high turnover mostly due to the fact that other Union JUs and Agencies are in the position to offer Temporary Agent posts (TA) instead of Contractual Agent posts (CA). In fact, contrary to almost all other Union Institutions, Agencies and JUs, the S2R JU has a Staff Establishment Plan with 25% TAs positions and 75% CAs positions; in almost all other cases, these percentages are reversed.

With regard to communication and dissemination activities, the S2R JU continued its efforts to promote the activities of the programme during 2020, while adapting to the challenges imposed by the COVID-19 pandemic. 2020 communication and dissemination activities were marked by the first digital edition of the S2R Innovation Days, that to a certain extent compensated the lack of larger physical events (like InnoTrans

2020) which gathered on 22-23 October more than 600 participants interested in discovering the R&I discoveries of the S2R projects.

During 2020, the S2R JU also continued its efforts to increase cooperation in Member States as well as with international parties. On 22 January 2020, the S2R JU signed a Memorandum of Understanding (MoU) with the Basque Region. This was followed by the signature of two additional Memoranda in October: during the Shift2Rail Innovation Days, a Memorandum of Understanding was signed with the Canadian Urban Transit Research & Innovation Consortium (CUTRIC), a non-profit innovation consortium whose vision is to make Canada a global leader in low-carbon smart mobility, by focusing on technology development, integration and standardisation vis-à-vis low-carbon propulsion systems, smart vehicle systems, data-driven analytics in mobility, and cybersecurity in transportation. Moreover, the signature of a Memorandum of Understanding with the Permanent Secretariat of the Transport Community took place on Monday 26 October, during the Transport Community Ministerial Meeting. The Transport Community is an International Organization established by the Treaty establishing the Transport Community that was signed on 9 October 2017 and comprises the European Union and the South East European Parties

being the Republic of Albania, Bosnia and Herzegovina, the Republic of North Macedonia, Kosovo, Montenegro and the Republic of Serbia.

In addition to the efforts on stakeholder involvement, the JU further continued improving its internal organisation as to provide continuous support to its Members and beneficiaries. By implementing and adopting a new internal control framework, performing defined control activities, as well as assessing and managing risks, the S2R JU has continued to ensure the sound financial management of EU funds.

With regard to the Discharge in respect of the implementation of the Budget of the S2R JU for the financial year 2019 and the European Parliament resolution, the present report provides in its different sections the answers requested by the Budgetary Authority. All actions stemming from audit recommendations have been implemented without delay, thus reinforcing the internal management and control system of the S2R JU.

Suggestions from the States Representatives Group (SRG) and the Scientific Committee (SC) to improve the present report have been taken into account.

Thanks to the commitment of both Members and Programme Office, 2020 has seen the S2R JU further continuing its important progress towards delivering the Programme.

12 European Green Deal, the United Nations Sustainable Development Goals and the Sustainable and Smart Mobility Strategy



The European Green Deal was presented in December 2019, setting out a clear vision of how to achieve climate neutrality in Europe by 2050⁵. Transport accounts for a quarter of the EU's greenhouse gas emissions, and still growing. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050. As a matter of priority, a substantial part of the 75% of inland freight carried today by road should shift onto rail and inland waterways.

—— “To transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.” (European Green Deal, p. 2).

Priority areas include accelerating the shift to sustainable and smart mobility: “Automated and connected multimodal mobility will play an increasing role, together with smart traffic management systems enabled by digitalisation. The EU transport system and infrastructure will be made fit to support new sustainable mobility services that can reduce congestion and pollution, especially in urban areas” (European Green Deal, p. 10).”

The European Green Deal is also an integral part of this Commission's strategy to implement the United Nation's 2030 Agenda and the 17 Sustainable Development Goals (SDGs).⁶ The S2R JU has been reporting on its contribution to the SDGs since 2018 in its Annual Activity Reports. S2R's Multi-Annual Action Program sets out key goals to strengthen the role of rail in the transport system, given rail's inherent advantages in terms of environmental performance, land use, energy consumption and safety.

⁵ [European Commission \(2019\). The European Green Deal. COM\(2019\) 640 final, Brussels](#)

⁶ [United Nations General Assembly \(2015\). Transforming Our World: The 2030 Agenda for Sustainable Development. Draft resolution referred to the United Nations summit for the adoption of the post-2015 development agenda by the General Assembly at its sixty-ninth session. UN Doc. A/70/L.1. New York](#)

S2R's unique R&I work concretely contributes to the following goals, and related sub targets:



Goal 9 Building resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation



Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable



Goal 12 Ensure sustainable consumption and production patterns

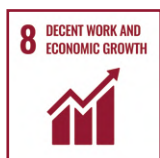


Goal 13 Take urgent action to combat climate change and its impacts

The SDGs are not 17 individual goals, but are strongly interconnected, whereas progress in one goal can unlock progress in another. Shift2Rail's R&I programme also indirectly contributes to the following SDGs, and related sub targets:



Goal 5 Achieving gender equality and empower all women and girls



Goal 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all



Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and stop biodiversity loss

A few Horizon 2020 Key Performance Indicators common to all JUs are aligned with the broader objectives of the SDGs, for example, growth and job creation in participating SMEs or percentage of women participants/coordinators in H2020 projects. The same holds for the Key Performance Indicators specific for the S2R JU, for example reducing the life-cycle cost of the railway transport system and reducing the negative externalities linked to railway transport. The S2R JU is continuously improving its KPI model data.

Besides its contribution with its R&I programme, the S2R JU continues to further improve its business operations, and highlighted in the AWP 2020 its plans to reduce the Carbon Footprint of its activities on the basis of a specific action plan. Due to the COVID-19 pandemic, the development of the Carbon Footprint Action Plan has been postponed, but it remains a priority in particular when the participation to events under and related to the programme will start returning to pre-COVID levels.

Moreover, the new Sustainable and Smart Mobility Strategy of the Commission, launched in December 2020, includes more concrete milestones for the railway sector to enhance a smart and sustainable future. Its underlying Action Plan of 82 initiatives lays the foundation for how the EU transport system can achieve its green and digital transformation and

become more resilient to future crises. In particular, it provides the visionary ambitions that the next rail R&I Programme will have to contribute to insofar as possible and notably:

- By 2030 the high-speed rail traffic will increase of 50%; the scheduled collective travel of under 500 km should be carbon neutral within the EU and automated mobility will be deployed at large scale;
- By 2050 rail freight traffic will double; high-speed rail traffic will triple and the multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high speed connectivity will be operational for the comprehensive network.

Additionally, rail transport will also need to be further electrified; wherever this is not viable, the use of hydrogen should be increased. And the roll out of the European Rail Traffic Management System (ERTMS) will be pursued including further efforts to develop train automation, for instance through joint undertakings (JUs).

Furthermore, the draft proposal for the Europe's Rail Joint Undertaking published in July 2020 presents also the sector commitment towards an ambitious research and innovation programme for the decade, meeting the expectations of the Union policies and the Sustainable Development Goals. These two documents pave the way for the S2R Successor to more concretely monitor how it's R&I programme is contributing to broader objectives of the Union to meet its sustainable development targets.

Finally, the European Parliament decision on discharge in respect of the implementation of the budget of the Shift2Rail Joint Undertaking for the financial year 2019 called upon the Commission to address via a legal framework the issue of Intellectual Property Rights in all contracts which may produce an intended outcome or result of the performance, in order to safeguard the rights of individual creators but also provide details on how the rights will be used in the future. In this respect, the S2R JU highlights the focus it provides to transparency of results and access to results, inter alia through the inclusion of the specific IPR provisions in the standard Grant Agreements, as well as through the public access to results —

not only via the EC CORDA system, but also directly via the S2R JU website (by TDs/WAs — https://projects.shift2rail.org/s2r_matrixtd.aspx), thereby contributing to the simplification of transparency of results implementing the S2R Multi-Annual Action Plan (MAAP) with individual [S2R JU grant agreements](#).



13 Projects 2020



IP1: PASSENGER TRAINS

PROJECT TITLE		PERIOD	PROJECT VALUE
CONNECTA-3	CONtributing to Shift2Rail's NExt generation of high Capable and safe TCMS PhAse 3	01/12/2020 - 31/07/2023	€ 8 973 662,69
GEARBODIES	Gearbodies Innovative Technologies for Inspecting Carbodies and for Development of Running	01/12/2020 - 31/12/2022	€ 2 419 968,75
PINTA-3	IP1 Traction TD1 - Phase 3 and HVAC TD8	01/12/2020 - 31/05/2023	€ 19 242 343,01
RECET4RAIL	RECET4rail Reliable Energy and Cost Efficient Traction system for Railway	01/12/2020 - 31/05/2023	€ 2 300 036,25
SAFE4RAIL-3	Safe4Rail-3 Advanced safety architecture and components for next generation TCMS in Railways	01/12/2020 - 31/07/2023	€ 6 132 399,18

IP2: TRAFFIC MANAGEMENT

PROJECT TITLE		PERIOD	PROJECT VALUE
AB4RAIL	Alternative Bearers for Rail	01/01/2021 - 31/12/2022	€ 349 926,25
PERFORMINGRAIL	PERformance-based Formal modelling and Optimal tRaffic Management for movING-block RAILway signalling	01/12/2020 - 30/06/2023	€ 1 335 358,75
X2RAIL-5	Completion of activities for Adaptable Communication, Moving Block, Fail safe Train Localisation (including satellite), Zero on site Testing, Formal Methods and Cyber Security	01/12/2020 - 31/05/2023	€ 33 890 375,44

IP3: OPTIMISED INFRASTRUCTURE

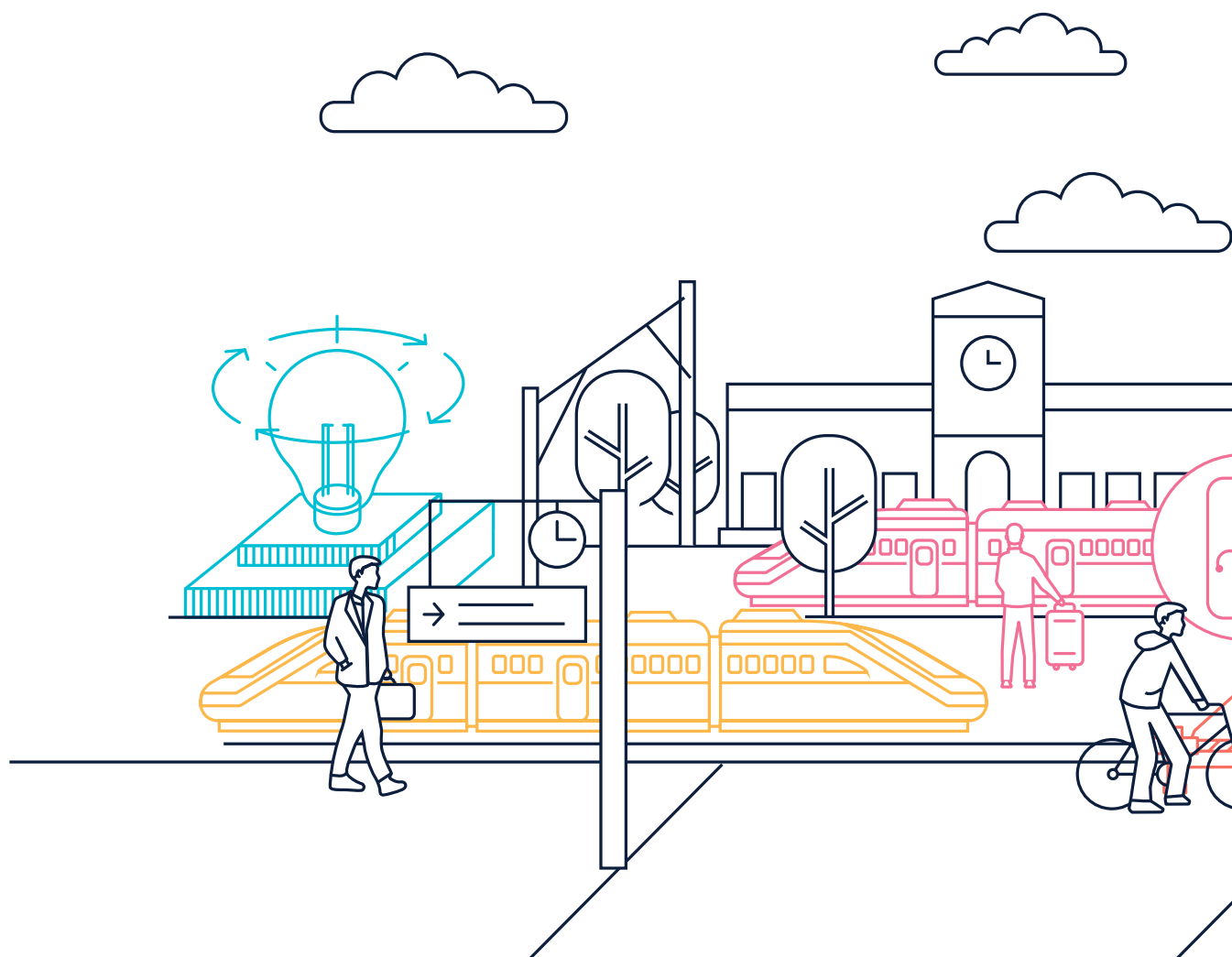
PROJECT TITLE		PERIOD	PROJECT VALUE
DAYDREAMS	Development of prescriptive AnalytIcs baseD on aRtificial intElligence for iAMS	01/12/2020 - 31/05/2023	€ 1 709 875,00
IN2TRACK3	IN2TRACK3	01/01/2021 - 31/12/2023	€ 26 689 979,00
IN2ZONE	The Next Generation of Railway Transition Zones	01/12/2020 - 31/12/2023	€ 1 349 973,75
STREAM	Smart Tools for Railway work safEty and performAnce iMprovement	01/12/2020 - 31/12/2023	€ 2 700 000,00

IP4: DIGITAL SERVICES

PROJECT TITLE		PERIOD	PROJECT VALUE
EXTENSIVE	Extending the attractiveness of transport for end user and extending IP4 to SaaS solutions	01/12/2020 - 30/06/2023	€ 11 308 534,27
IP4MAAS	Shift2Rail IP4 to support the deployment of Mobility as a Service	01/12/2020 - 31/05/2023	€ 2 507 081,25

IP5: RAIL FREIGHT

PROJECT TITLE		PERIOD	PROJECT VALUE
FR8RAIL IV	Use-centric rail freight innovation for Single European Railway Area	01/07/2020 - 31/03/2023	€ 17 705 027,89



CCA: CROSS-CUTTING ACTIVITIES

PROJECT TITLE		PERIOD	PROJECT VALUE
SILVARSTAR	SILVARSTAR SoIL Vibration and AuRalisation Software Tools for Application in Railways	01/11/2020 - 31/10/2022	€ 949 999,50

IPX: RAIL SYSTEM ARCHITECTURE

PROJECT TITLE		PERIOD	PROJECT VALUE
HYPERNEX	Hypernex: Ignition of the European Hyperloop Ecosystem	01/12/2020 - 30/11/2021	€ 250 000,00
LINX4RAIL-2	System Architecture and Conceptual Data Model For Railway, Common Data Dictionary And Global System Modelling Specifications	01/12/2020 - 31/05/2023	€ 3 227 375,61
TAURO	Technologies for the AUtonomous Rail Operation	01/12/2020 - 31/05/2023	€ 4 559 803,03



14 Shift2Rail overview



NAME

Shift2Rail Joint Undertaking (hereinafter S2R JU or S2R)

OBJECTIVES

The Shift2Rail Joint Undertaking is a public-private partnership in the rail sector, providing a platform for cooperation that drives innovation in the years to come. The S2R JU pursues research and innovation

(R&I) activities in support of the achievement of the Single European Railway Area and should improve the attractiveness and competitiveness of the European rail system.

The S2R JU contributes to:

- 01 a 50 % reduction of the life-cycle cost of the railway transport system (i.e. costs of building, operating, maintaining and renewing infrastructure and rolling stock),
- 02 a 100 % increase in the capacity of the railway transport system,
- 03 a 50 % increase in the reliability and punctuality of rail services (measured as a 50 % decrease in unreliability and late arrivals).

The S2R JU shall propose innovative solutions to be explored, tested and demonstrated in operational environment and/or “zero on site” to achieve market uptake.

Beyond that, with the deployment of its innovative solutions the S2R JU will foster connections between people, regions, cities, and businesses, supporting the socioeconomic objectives of the Union.

FOUNDING LEGAL ACT

Council Regulation (EU) No 642/2014 of 16 June 2014 establishing the Shift2Rail Joint Undertaking¹ (S2R Regulation)

EXECUTIVE DIRECTOR (ED)

Mr Carlo M. Borghini, as from 16 May 2016

GOVERNING BOARD (S2R GB) As at end of Jan 2021

European Commission (EC) members:

01 Henrik HOLOLEI, DG MOVE

EC alternate:

01 Elisabeth WERNER, MOVE DDG 2

02 Rosalinde VAN DER VLIES, RTD D

Industry members:

01 ALSTOM – Nicolas CASTRES-SAINT-MARTIN

02 AZD Praha – Vladimir KAMPIK

03 BOMBARDIER TRANSPORTATION – Massimo SIRACUSA

04 CAF – Imanol ITURRIOZ

05 DEUTSCHE BAHN – Hans Peter LANG

06 EUROCC – Thomas PETRASCHKE

07 HICON – Lars DEITERDING

08 HITACHI RAIL STS – Antonella TROMBETTA

09 INDRA – Javier Rivilla LIZANO

¹ OJ L 177, 17.6.2014, p. 9

GOVERNING BOARD (S2R GB)

Industry members (at 20/01/2020):	<u>10</u>	KNORR BREMSE – Hans-Christian HILSE
	<u>11</u>	NETWORK RAIL – Robert AMPOMAH
	<u>12</u>	SIEMENS – Roland EDEL
	<u>13</u>	SMARTDEMAIN – Henk SAMSON
	<u>14</u>	SMARTRACON – Michael Meyer zu HÖRSTE
	<u>15</u>	SNCF – Carole DESNOST
	<u>16</u>	THALES (Industrial Spokesperson) – Yves PERREAL
	<u>17</u>	TRAFIKVERKET – Bo OLSSON
	<u>18</u>	VVAC+ – Filip KITANOSKI
Industry alternates (at 20/01/2020):	<u>01</u>	ALSTOM – Sophie PERROCHEAU
	<u>02</u>	AZD Praha – Michal PAVEL
	<u>03</u>	BOMBARDIER TRANSPORTATION – Richard FRENCH
	<u>04</u>	CAF – Jorge DE CASTRO
	<u>05</u>	DEUTSCHE BAHN – Ralf MARXEN
	<u>06</u>	EUROC (to be appointed)
	<u>07</u>	HACON – Rolf GOOßMANN
	<u>08</u>	HITACHI RAIL STS – Claudio MONTI
	<u>09</u>	INDRA – Javier Rivilla LIZANO
	<u>10</u>	KNORR – BREMSE – Jasmina BRACKOVIC
	<u>11</u>	NETWORK RAIL – Felicity OSBORN
	<u>12</u>	SIEMENS – Jürgen SCHLAHT
	<u>13</u>	SMARTDEMAIN – Javier Bonilla DÍAZ
	<u>14</u>	SMARTRACON – Jaizki MENDIZABAL
	<u>15</u>	SNCF – Christophe CHERON
	<u>16</u>	THALES – Alberto PARRONDO
	<u>17</u>	TRAFIKVERKET – Christer LOFVING
	<u>18</u>	VVAC+ – Erik STOCKER
Other participants (at 20/01/2020):	<u>01</u>	Carlo M BORGHINI – Executive Director of the S2R JU
Observers (at 20/01/2020):	<u>01</u>	Josef DOPPELBAUER (ERA)
	<u>02</u>	Anna GIGANTINO (ERA)
	<u>03</u>	Ny Tiana TOURNIER (ERA)
	<u>04</u>	Angela DI FEBBRARO (SC Chair)
	<u>05</u>	Sarah BITTNER-KRAUTSACK (SRG Chair)
	<u>06</u>	Miroslav HALTUF (SRG Vice Chair)

OTHER BODIES

Scientific Committee (SC)
States Representatives Group (SRG)
Innovation Programmes' Steering Committees (IP SteCos)

STAFF

24 at 31 December 2020 including 2 Seconded National Experts (SNEs) and including one exceptional recruitment (cf. 2.6)

2020 BUDGET

The initially adopted budget was not amended in 2020. By year end, the Executive Director had proceeded with several transfers in terms of commitment and payment appropriations within Title 1 and Title 2, in accordance with S2R JU FR art.6.5. In addition, the Executive Director had also transferred 4m€ in payment appropriations (in agreement with the Governing Board as per minutes of the meeting of 19 November) and 330k€ in commitment appropriations from Title 3 to Title 4 in order to be made available immediately to the S2R JU AWP 2021.

As a result, the Final Adopted Budget amounted to EUR 89.7 million in commitment appropriations, of which EUR 80.5 million for operational expenditure, EUR 3.6 million for administrative expenditure and EUR 5.6 million of unused appropriations not required in the financial year but needed to meet early 2021 commitments. In payment appropriations, the Final Adopted Budget was EUR 80.3 million, of which EUR 72.2 million for operational expenditure, EUR 3.6 million for administrative expenditure and EUR 4.5 million of unused appropriations not required in the financial year.

BUDGET IMPLEMENTATION

Based on the above, the Budget implementation in terms of commitment appropriations is at 100% and, in terms of payment appropriations at 81% (both excluding the unused appropriations not required in the financial year).

The payment appropriations' implementation is stable in comparison to previous years (78.6% in 2017, 82.3% in 2018 and 89% in 2019). A decrease compared to 2019 is mainly due to the non-payment of one Call 2020 pre-financing due to the grant signature delayed to May 2021 at the request of the Consortium (and the pre-financing of EUR 6.3 million executed beginning of June).

The implementation of Administrative budget was EUR 3.6 million in commitment appropriations and EUR 3.4 million in payment appropriations, respectively representing 100% and 96% of budget execution.

Applying sound financial management, the JU makes use of multi-annual framework contracts in particular in Title 2. The Administrative budget corresponds to approximately 4% of the JU Budget. The Operational Budget was implemented at EUR 80.5 million in commitment appropriations (100%) and EUR 57.7 million (80%) in payment appropriations.

GRANTS

In July 2020, the S2R JU awarded 19 grants as a result of the 2020 Call launched on 7 January 2020 based on the Annual Work Plan (AWP) 2020. All topics have been covered. All but one, as already mentioned, grant agreements were signed between September 2020 and December 2020, allowing the timely start of the projects. The remaining grant agreement was signed in May 2021 as a result of the Consortium request to reorganize the proposal between the different work packages.

In total, the awarded grants will fund Research and Innovation activities up to EUR 75.3 million against a total value of EUR 147.7 million.

In this respect, it should be noted that the Founding Members other than the Union and the Associated Members (jointly referred to as the “Other Members”) agreed to limit their requests for funding to 44.44% of the total project cost.

STRATEGIC RESEARCH AGENDA

In accordance with the S2R Regulation, the strategic research and innovation agenda of the S2R JU is described in the Multi-Annual Action Plan (MAAP) adopted in its latest version in November 2019, with GB Decision N° 9/2019;

The original MAAP of 2015 is maintained as a reference document.

CALL IMPLEMENTATION

The Call 2020 was implemented already at the beginning of the year. The award of the Call 2020 took place during the Governing Board meeting of 17 July 2020.

With an exceptional commitment and effort, the Other Members and OC together with the JU were able to reach the signature of 18 grants related to the Call 2020 by year end and one grant signature is expected to be finalised in Q1 2020.

The Call 2020 was implemented already at the beginning of the year. The award of the Call 2020 took place

during the Governing Board meeting of 17 July 2020. With an exceptional commitment and effort, the Other Members and OC together with the JU were able to reach the signature of 18 grants related to the Call 2020 by year end and one grant signature is expected to be finalised in Q1 2020.

The AWP2021 was amended in April 2021 to include an additional new Call for Proposal under the current MFF 2014-2020.

PARTICIPATION, INCLUDING SMES

Under the 2020 Call, 87 Small and Medium enterprises (SMEs) participated to the 2020 Call (21.4%); 46 SMEs were retained for funding (52.9%).

SMEs represent 29.1% of the entities selected in the Open Calls projects.





Founding Members



ALSTOM

BOMBARDIER



Hitachi Rail STS



SIEMENS

THALES



Associated Members

amadeus



indra

KNORR-BREMSE



Virtual Vehicle Austria Consortium (VVAC+)



FCP



Plasser & Theurer



European Rail Operating community Consortium (EUROC)



Immer in Bewegung



VÄYLA



POLSKIE KOLEJIE PAŃSTWOWE

Silesia Region



Swi'Tracken Consortium



TATA STEEL



Universidade do Porto



Universidade do Minho

vossloh



Smart DeMain (SDM) Consortium



Competitive Freight Wagon Consortium (CFW)



Tradition since 1839



IIC Research Alliance

DIE BAHNINDUSTRIE.

VERBAND DER BAHNINDUSTRIEN IN DEUTSCHLAND E.V.

AERFITEC



Smart Rail Control (SmartRaCon) Consortium



IIC Research Alliance



In accordance with Article 20 of the Statutes of the S2R JU annexed to Council Regulation (EU) No 642/2014 and with Article 20 of the Financial Rules of the S2R JU. The annual activity report will be made publicly available after its approval by the Governing Board.



WWW.SHIFT2RAIL.ORG

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