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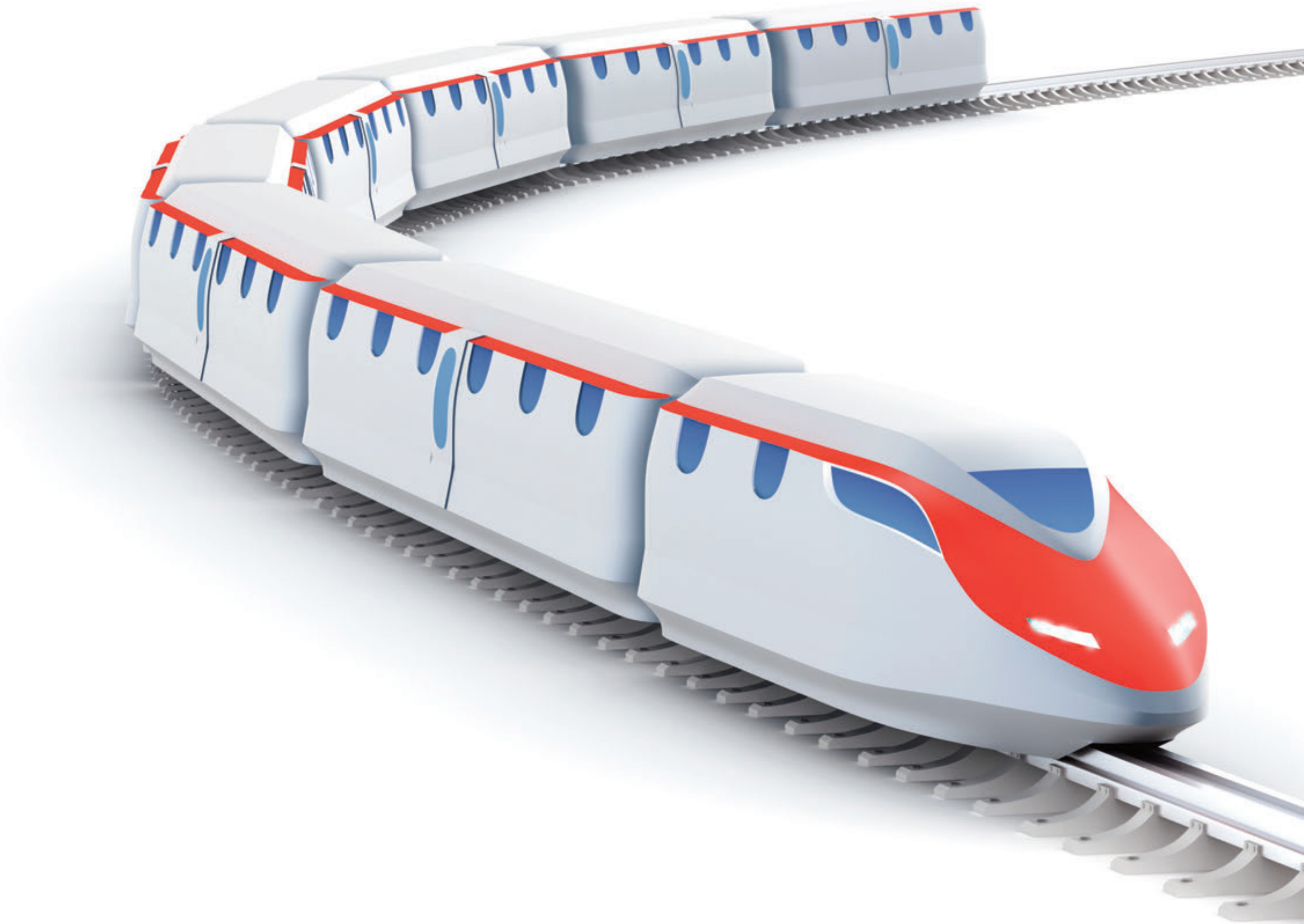
RAIL INVESTMENT

Making the money go further



ZNAPZ

RAIL INFRASTRUCTURE – SUSTAINABLE DEVELOPMENT

The rail industry is a world in motion. The rail market is probably the most competitive in the transport sector today. However, it is not always seen this way, but when you really consider rail travel it is:

• Environmentally Friendly
• Scalable
• Efficient
• Economical

We see more investments in rail than we have ever seen before in our history.

These investments need to be well protected and this is where Asset Management really comes into play.

Across Europe, over the next 10 years, 100's of billions of Euros will be invested in the rail infrastructure, to extend, change and maintain the rail network. This makes the rail industry by far the one with the highest investments in Capital Assets. Not only is this a key driver for the European Economy but the EU and governments also see the rail industry as the responsible and convenient alternative to other methods of transport.

The European Commission for Mobility and Transport has developed and launched a very enlightening and informative Scorecard; this gives lots of information about the methods of transport and how they stack up against each other, country by country.

Commission Vice-President Siim Kallas, responsible for mobility and transport, says:

"The new scoreboard is a fantastic tool that shows visually where we stand in making our transport systems more efficient, more customer-friendly, safer and cleaner. It can of course only offer a snapshot, but it gives us and Member States a point of reference and a source of inspiration for our work together."

We believe that the Scorecard can be further enhanced with relevant Asset Management information. This will demonstrate even more conclusively why we should invest in rail infrastructure and how this investment must be protected in the future, and what the development potential is for the individual European countries, therefore protecting the value of such investments becomes of paramount importance.

In the industry a maintenance figure of 1.5%-2% of the Replacement Asset Value (RAV) for on-going lifetime maintenance is seen as "Sustainable Best in Class". In the rail infrastructure market we have seen companies spending 4% or more on on-going maintenance of the aging infrastructure. These are very serious sums of money being spent, which lends itself to very serious opportunities for governments to find easy savings.

Let us look at the value of the rail Infrastructure first.

What is it?

In today's Europe, transport is growing two fold. Firstly, the European population is still, though marginally, growing, secondly, the European economy is further developing despite the setback we have had over the last 7 years. These two factors and some other developments, like the Internet shopping, have caused a growth in the transport market. Within this growth there is more room for rail transport to grow more than for other ways of transportation. Rail is reputedly known for:

• Being more economical than road and air transport
• More environmental friendly
• Having a great safety record
• With first class punctuality

It is becoming even more competitive with the arrival of more high-speed trains and the convenience factor of public transport is growing. The high-speed trains between London and the Continent best demonstrate this. Today the rail industry know that train journeys up to three hours are considered favourably above air transport for passengers. With the high speed record for a passenger train at 574 km/hr that means already a distance of over 1700 km. Amsterdam – Rome, or Amsterdam – Madrid are coming in reach rail transport and this is being considered convenient; especially with free internet and power available for the business

traveller. The specific value for the market is a lower imprint on the environment, lower cost and higher service. This supports the global trend for more transport without the negative environmental consequences.

Who is involved in the infrastructure?

Here too the rail market differentiates from many other industries. At least three organisations sometimes four or more are involved in managing the Infrastructure. First it is the government who ultimately set the parameters for expectations in availability, safety and cost. Especially when the government owns the infrastructure, they dictate the rules. The second organization is the regulator; the body that executes the rules set by the government and monitors the daily performance of the Rail Network. Then we have the asset owner, the rail infra organisation. They have to execute the work against the rules set by the government and regulators to the best or their ability and report back the performance and the developments in the rail network. Most of the time the asset owner is also the asset operator, the organisation that maintains the network. However a development is ongoing where the asset owner has outsourced the development and maintenance activities to a service organisation. The Netherlands is a good example, where external companies that are not part of the asset owner (Prorail), execute the daily maintenance and have also developed the High Speed Line in a PPP construction.

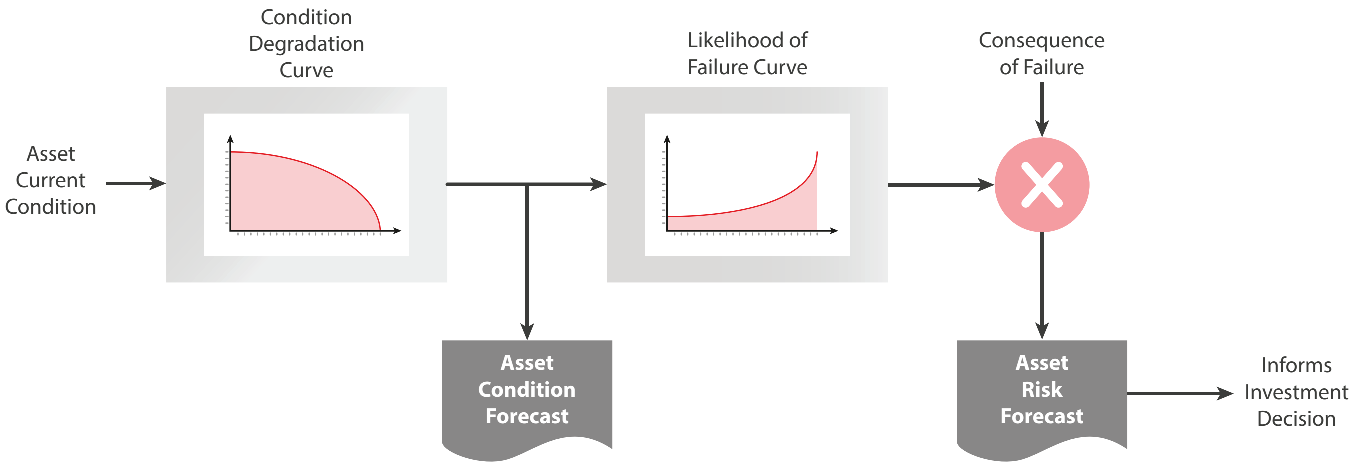
All parties involved across Europe indicate that having one clear view of the activities and performances is difficult to get.

Maintaining the infrastructure

The current and new infrastructure needs to be maintained. Keeping the costs low but realistic is a key driver for the acceptance and growth of the rail industry. New techniques enable the best possible maintenance regimes. This all starts with a clear cost overview of the necessary budgets to maintain the assets. This lifetime budget feeds into the asset investment plan allowing money to be spent when it generates the highest value against the company defined values and business drivers.

In our view it all starts with the realisation that the right maintenance activities need to be performed at the right time and in the most efficient manner. The cost for these activities can be scheduled; the performance of the asset and the risk of failure could be mitigated against the set corporate standards. However when the maintenance tasks are not done at the right time, this doesn’t free up the budget, it only relieves the pressure on the cash flow, but the obligation to perform this maintenance stays, while the risk register increases with

Asset behaviour over time



the prolongation of executing this required maintenance.

In many countries the rail companies have built up an asset debt, because of lack of funds to execute the required maintenance to protect the function of the assets.

Asset Debt: "the accumulation of prudent, past due, asset interventions (maintenance, upgrade etc.) not undertaken"

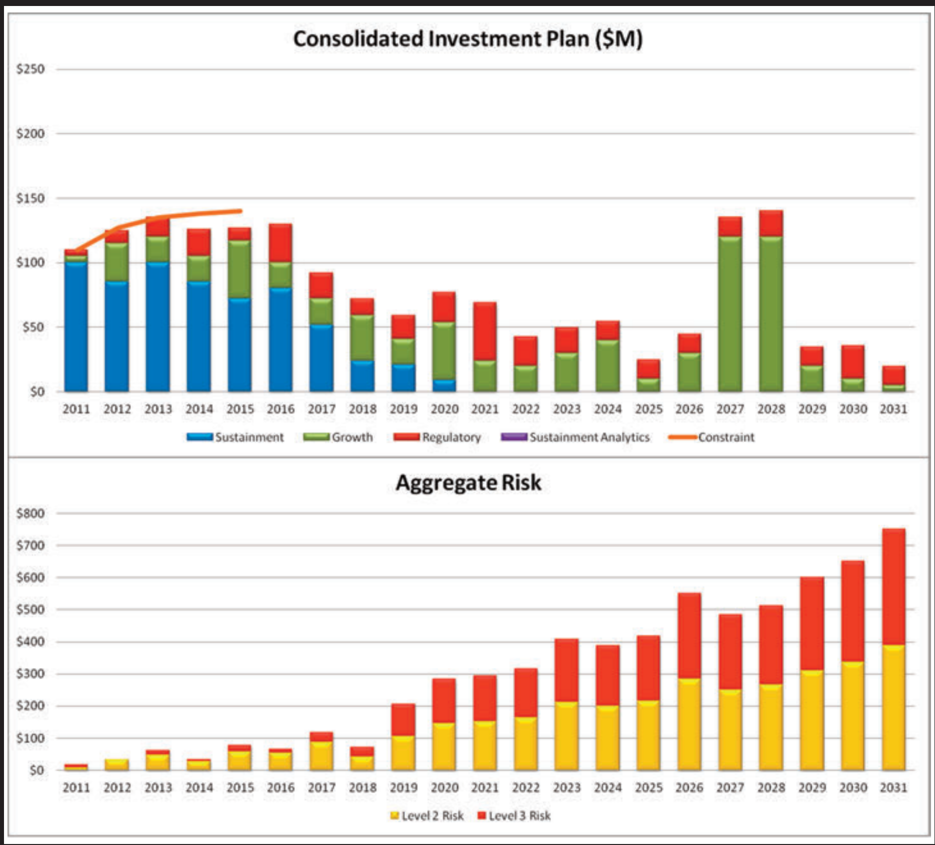
This will result in either a higher failure rate in the near future or a significant additional investment to bring the assets back to the required state. It already occurs that more damaged tracks are causing more damage to the train wheels; more damage equals a higher risk of failures. It won't be long before the Rolling Stock companies will demand compensation for this infrastructural problem. It is not only causing additional cost for the trains, it also causes delays, a lower service and unhappy customers.

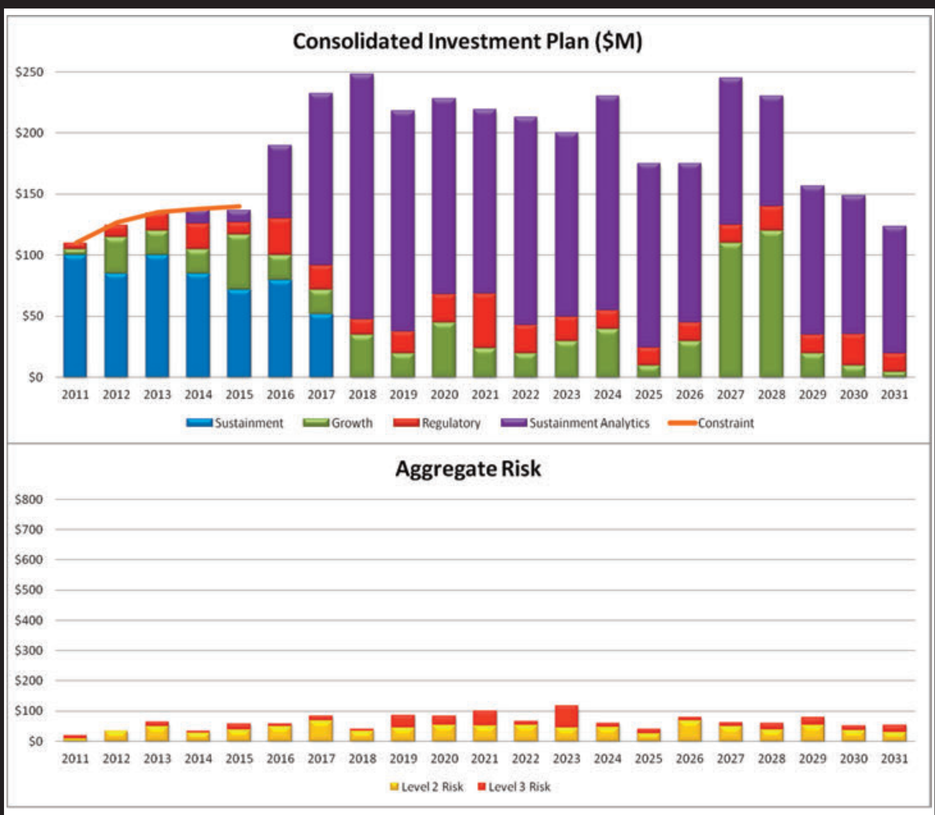
How can this be resolved?

A lot of knowledge has been gained about assets and rail assets in particular. Condition monitoring techniques have improved dramatically over the years to give realistic meaningful information about the behaviour of our rail assets today and in the near future. This allows us to have the best maintenance regime possible for most of the assets. We need to start realising that an asset is creating value when used; all cost should be related to the asset, WHEN USED. When we agree with this principle we can now generate an accurate budget that should give an acceptable overview of the required activities such as overtime, and it must be defendable to all parties involved.

The need to spend money on asset investments requires a model that is based on numerous parameters and factors; too many to detail here. The model, when applied will correctly take all these parameters and factors including maintenance into account. However we must never short change our maintenance regimes, as not spending the money, i.e. not executing the required maintenance tasks will cause an increase in the Risk Register, as shown in the graphs opposite.

The top graph indicates that maintenance is budgeted until 2020, already significantly reducing after 2016. This is causing a gradual but increasing risk of failure factor. When the risks are clearly identified and the strategy for risk management is defined we can calculate the required additional investment to keep the assets within the tolerances. This is presented in the 2nd graph This graph demonstrates the need for substantial investments to keep the assets functioning and to keep the assets risks within the tolerances the government, regulator or the asset owner have defined as being acceptable. These investments should be well defined and become an unquestionable element for the rail asset management. When the investment is challenged or even worse, reduced, the asset owner is no longer able to maintain his/her obligations to manage the infrastructure. While the service levels and speed may initially go up, the consequences of failure increase, hence the obligation to execute the right level of maintenance at the right time is of paramount importance.





On the other hand the involved parties may require to be informed that the right asset/maintenance management is executed and the Investments have been done creating the highest asset residual value. This requires a good reporting mechanism and the ability of the system to optimise the investments against the available funds, resources and values they create. This is what asset investment planning brings. On top of this it keeps track of the value that is created by the investments over the investment lifecycle. Organisations will struggle using software such as Excel for investment planning whereas, with more bespoke tools the outcome will be more professional and would create a framework for definition, discussion and defense of the required investments over the lifetime of the assets. Copperleaf's C55 product is a good example of such a tool.

The standardised way of working, with regular reporting on Investments made, project progress and value created will ease the cooperation between the asset owners, regulators and government and be a valuable input in the European Transport Scorecard.

Marcel van Velthoven
Managing Director ZNAPZ
ZNAPZ is a software company that builds, maintains and optimizes Asset Management Software.

Rail infrastructure – a lasting legacy

Stephen Hammond, Minister for Rail at the Department for Transport details how investment in rail is growing and its positive impact on the nation's economy...

Rail travel in Britain is soaring. Over the past 20 years, passenger demand has doubled, and on intercity routes it has grown even faster. Although the network today is roughly the same size, we are running 4,000 extra services a day. But historic underinvestment over decades has left the ageing infrastructure in urgent need of modernisation – both to keep the country moving and to generate economic growth. This government has embarked on the biggest programme of improvements to the railway for generations to address this infrastructure deficit.

The investments are as diverse as they are ambitious. We are electrifying 850 miles of track, and spending £5.7bn on the Intercity Express Programme. We are building Crossrail and upgrading Thameslink, and we're completing the Northern Hub connecting major cities in the north. And by 2017, we will be building HS2 to give us the capacity we need for long-term growth. All these investments will give Britain a world class railway – one that will create jobs and deliver a lasting skills legacy, providing the capacity and connectivity we need to secure the UK's long-term economic growth, as well as allowing for a higher quality travel experience for passengers.

Crossrail is the largest infrastructure scheme in Europe. This £14.5bn scheme will create a 100km east-west rail route across London and beyond, from Reading in the west to Shenfield and Abbey Wood in the east, with 13 miles of new tunnels currently being built under central London.

More than 10,000 people are currently working on the new line, including more than 800 previously unemployed workers and nearly 300 new apprentices. Crossrail's industry-leading Tunnelling and Underground Construction Academy (TUCA) has trained more than 5,000 people. The skills legacy of the programme will boost our construction and engineering industries for decades to come.

Crossrail will also deliver a lasting economic legacy. When the project is complete in 2018, it will bring an additional 1.5 million people within 45 minutes of

London's business centres, helping to create an extra 30,000 jobs in Central London by 2026. But the benefits will be felt far beyond the capital. Bombardier in Derby – Britain's oldest surviving train manufacturer – will build the rolling stock in a deal with a capital value of around £1bn, but at least a quarter of the contract value will be channelled through small and medium sized suppliers – over 60% from outside London and the South East.

The £6.5bn Thameslink upgrade is another major initiative that will deliver big benefits. As well as improvements to stations, track and signalling, the rolling stock will be new, significantly increasing capacity and connectivity on the north-south rail route through London.

Thirty two previously unemployed residents of Southwark in London have found work on Thameslink, with many going on to gain construction qualifications that will help them find lasting employment. A further 38 people have secured apprenticeships across a range of roles, with many more planned over the next four years. Overall, the programme will generate more than 6,000 jobs while, outside London, the contract to build and maintain the new trains will create up to 2,000 jobs.

Other important projects include a massive electrification programme, the completion of the Northern Hub, which will allow an extra 700 trains to run each day, and the East-West Rail project, which will connect the South to the East Midlands and generate up to 12,000 new jobs across the region.

In a further boost to manufacturing in this country, the Intercity Express Programme will provide a new fleet of state-of-the-art trains and infrastructure improvements on the Great Western Main Line, and on the East Coast Main Line between London and Edinburgh. As well as improving connections between major cities, businesses from Gateshead to Cornwall have won contracts to make everything from safety switches to brake systems. The trains themselves will be assembled in a purpose-built factory in Newton Aycliffe, Co Durham, creating more than 700 local jobs.

Our expanding rail sector has also helped to attract international investment to the UK, creating new jobs and generating further growth. Earlier this year, Hitachi – the company building the new Intercity Express trains – announced it would be moving its global rail headquarters from Tokyo to London and expanding its workforce to 4,000 from the current 2,500 – a real vote of confidence in the industry.

On a more local level, improvements to individual stations are also having a major impact on local economies. In the West Midlands, the redevelopment of Birmingham New Street Station will have generated more than 1,000 jobs during construction, while a new John Lewis store being built as part of the project will produce many hundreds more.

Elsewhere, more than 1,300 stations across the country have benefited from a range of accessibility improvements. They include step-free access at more than 160 stations, with a further 42 on the way. These improvements not only create jobs during construction, but also open up opportunities for more passengers to access local work and leisure.

Rail is an engine for growth. Between 2014 and 2019, infrastructure operator Network Rail is planning to spend £38bn to run and expand the railway, and to give us the capacity we need to prosper. This massive commitment will help us overcome the infrastructure problems we inherited, and which have held Britain back for too long.

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www.gov.uk/government/organisations/department-for-transport

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