

# Post-project analysis

Frustrated by a lack of quantified business cases for asset management, **Josine Schmitz** and **Diederik van Leeuwen** reverse-engineered their own from a successful project for Regiotram Utrecht.



**W**hat are the benefits of implementing asset management? We often focus on the technical benefits, such as improving assets' availability or reducing risk, but there are other triggers, such as compliance.

In the case of Regiotram Utrecht, a 23-kilometre light rail system in the Dutch province of Utrecht, the trigger was a belief that asset management implementation and PAS55 certification would boost the organisation's professionalism on short notice. As with many such implementations, no one evaluated or quantified the expected costs, benefits or ultimate value of asset management for the organisation.

However, it is getting harder and harder to convince management teams to approve such implementation projects on this basis. At the go/no go decision point, the management team may well hesitate and demand a business case.

Unfortunately, not many sound, properly grounded business cases for asset management are available. The most frequently referenced are:

- ISO55000 – What, Why and How by John Woodhouse (IAM, 2014), in which companies like MTR Hong Kong, Scottish Power and NUON reported cost savings and availability improvements of around 10-20 per cent
- The business case for PAS55 by Jan Schipper and Liesbeth Dik (Assets, February 2013), which listed 13 benefits of asset management for a fictitious

company, including a five per cent reduction in insurance premiums and a 10 per cent cost reduction from a better understanding and management of risk.

What these publications don't reveal is the implementation cost, and therefore whether implementing asset management was a wise investment decision.

Hoping to change this, we have reverse-engineered a business case for implementing asset management at Regiotram Utrecht.

Regiotram Utrecht owns and manages the Sneltram-Utrecht-Nieuwegein-IJsselstein (SUNIJ) light rail line, an important public transport connection carrying about 40,000 passengers every day.

The SUNIJ line itself – 23 kilometres of double rail track – used to be owned by the Dutch Ministry of Infrastructure and Environment and maintained by a contractor, while the line's 26 trams, 23 stations and depot were owned and maintained by the concession holder, Connexion.

When the concession ended in 2008, the Utrecht Regional Authority (BRU – Bestuur Regio Utrecht), the legal authority for public transport in the region, took over as asset owner and manager of the whole SUNIJ line. This was in line with the Dutch government's policy of handing over local rail infrastructure to local government, and would help BRU manage a complex and ambitious set of planned developments, including:

- refurbishing the existing fleet (2011-14)
- overhauling the infrastructure (2012-14)
- extending the tramway to the local

university complex (2013-18)

- introducing new rolling stock (2015-18)
- constructing a new workshop (2015-18).

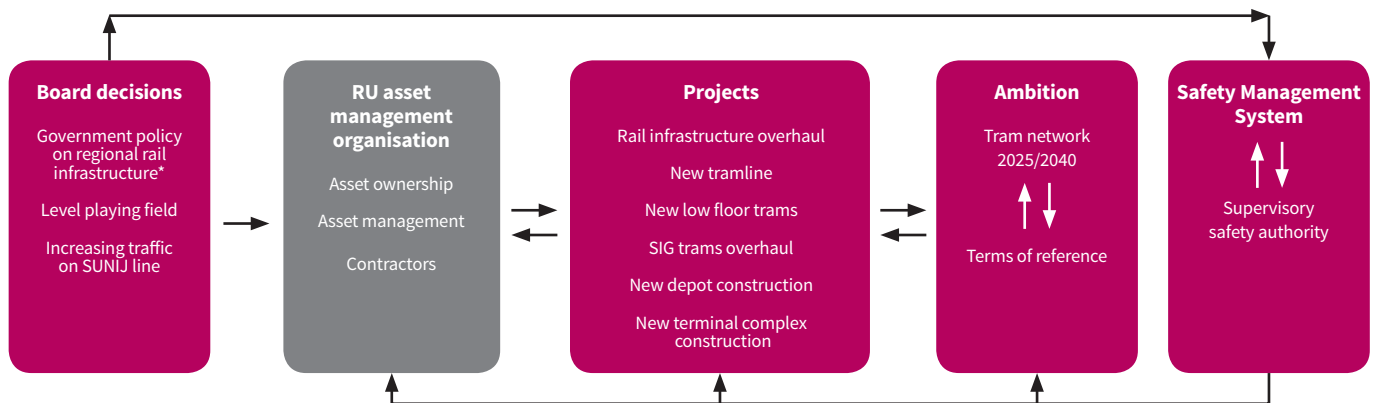
Having inherited poorly maintained rail infrastructure, stations in poor condition and old rolling stock in need of modernisation, BRU asked IES Asset Management to set up a new asset management organisation.

In this complex environment (Figure 1), while keeping the tramway fully operational, the partners built a fully equipped asset management organisation within three years. Thereafter, the semi-independent tramway company Regiotram Utrecht (RU) was founded. To speed up RU's maturation and professionalisation, BRU contracted IES once again to implement an asset management system, with the aim of achieving PAS55 certification by December 2014. With three weeks left before the deadline, Grontmij (now Sweco) certified RU's asset management system according to PAS55.

The expected costs and benefits of implementing asset management at RU were not evaluated before the project launched. To recover them, we analysed the project files from 2008, when BRU took ownership, to 2014, when RU achieved PAS55 certification. It was certainly not easy, despite our efforts to structure the data and documents in a professional (and PAS55-compliant) way.

Based on the benefits of asset management mentioned in ISO55000, *Asset management – an anatomy*, and a

Figure 1: BRU's complex operating environment (Steenbergen/Van Leeuwen, 2011)



\*Initiated by Dutch Ministry of Infrastructure & Environment

2015 literature study by two postgraduate students at Utrecht University of Applied Sciences, we expected the benefits to fall into four categories:

- performance
- risk management/safety
- costs
- image/stakeholders.

### Performance

Asset availability increased by about five per cent over six years. This made it possible to run an additional tram during peak hours.

Working in a professional way with a certified asset management system also made it relatively easy for RU to attract and employ talented young asset management professionals.

### Risk management/safety

The overall safety performance of the SUNIJ line was already good compared to similar systems, partly because the trams run on a segregated railway. Despite this, RU discovered some critical safety issues which were then improved step by step in consultation with the supervisory safety authority.

In 2009, when RU was a young organisation, the supervisory safety authority had some concerns about its capabilities. Since then, the PAS55 certification has shown the authority that RU professionalised its operations quickly and is in control.

To make sure the various contractors' maintenance activities were effective and covered all potential risks, RU worked with the rail infrastructure and rolling stock maintenance contractors to develop and implement risk-based maintenance concepts. These help show the supervisory safety authority what RU's risks and mitigating actions are, strengthening the relationship between the two organisations.

Since RU began building its asset management organisation, there have been no serious accidents or other kinds of asset management- or asset technology-related disruption.

### Costs

The cost of the asset management implementation, including the PAS55 certification, totalled about €1.6 million between 2009 and 2014. We consider this to be relatively high, because the asset management

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system had to be built entirely from scratch and internal resources were limited.

The project manager, interim manager and the external consultants hired to prepare and carry out the implementation account for the bulk of this cost. The project took about one man-year's worth of internal RU man-hours, with the majority of the activity taking place in the past three years.

Before 2009, BRU could only manage contractors at a distance thanks to complex contractual relationships. By hiring and employing people with extensive knowledge and experience of asset management, RU can now ask contractors the right questions, choose the right contract types and put maintenance contracts on the markets in smarter ways (with Best Value Procurement, for example).

RU saved eight per cent on its overall operational maintenance costs in the first year after taking over from the former concession holder. Over the next five years it reduced these costs by another 10 per cent – a structural yearly cost saving of nearly 20 per cent in total.

Top contributors to this saving were:

- the rolling stock maintenance contract (saving of 10 per cent/about €300,000 a year)
- an innovative rail infrastructure maintenance contract (saving of 40 per cent/at least €600,000 a year)
- the station cleaning contracts (saving of 30 per cent/about €200,000 a year).

### Image/stakeholders

RU's customer satisfaction rating increased from 7.2 in 2009 to 7.4 in 2014. The focus on keeping the trams and stations clean improved people's first impression of the line. RU also showed it takes the customer experience seriously by improving the

maintenance condition of the assets compared to when it took over – no easy task with a phased renewal of the rail infrastructure and a lifetime extension for the rolling stock both causing a nuisance for passengers.

RU can now report its performance in a more transparent and timely way, improving its relationship with policy decision-makers.

### Payback period

From our analysis, we can conclude that the payback time of Regiotram Utrecht's asset management implementation and certification project is less than two years. This fits with the standard two to three-year payback requirements for bigger projects.

In mid-December 2014, Regiotram Utrecht received its PAS55 certificate, making it the first public transport asset manager in The Netherlands to have proof of good asset management practice.

Looking back on the decision-making process, we can conclude that our gut feeling was right: implementing asset management is beneficial for the organisation and we have now proved it by reverse-engineering the costs and benefits.

Next time, however, we plan to calculate them up front.

### Authors' biographies

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