Downer

Relationships creating success

TrainDNA

IN PARTNERSHIP WITH

IBM

Downer

We are the leading provider of **Urban Services** in Australia and New Zealand.

We are critical to the **sustainment** and **operation** of a vast portfolio of **government** and **private infrastructure**.

We are **diversified** across capabilities, markets and geographies.

Our **service delivery excellence** drives **long-standing** and **trusted** relationships.

We are uniquely placed to support the **Australian** and **NZ economies** in **energy transition** and **decarbonisation**.

Our Company Footprint

490 million
passenger journeys on our operated or maintained transport network in a standard year (including Keolis Downer)

58,000 kilometres
of roads managed and maintained in Australia and New Zealand

3+ GW
of renewable energy generated by plants Downer has built or is currently delivering

HIGH PERFORMING
performing sustainability ratings, as measured by independent ESG analysts (e.g. Sustainalytics, ISS and S&P Global)

$35 billion
work in hand

43,000 people
ACROSS AU + NZ

30,000
students who attend education facilities that Downer provides asset maintenance services to

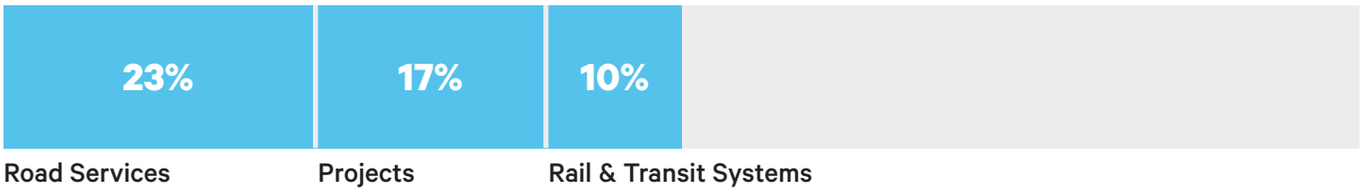
ZERO HARM

Australian Sovereign OPERATIONS

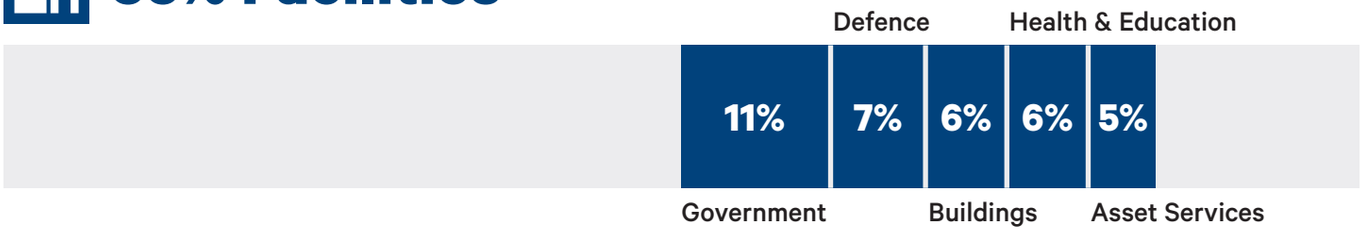
Sustainability LEADER

Downer Business Profile

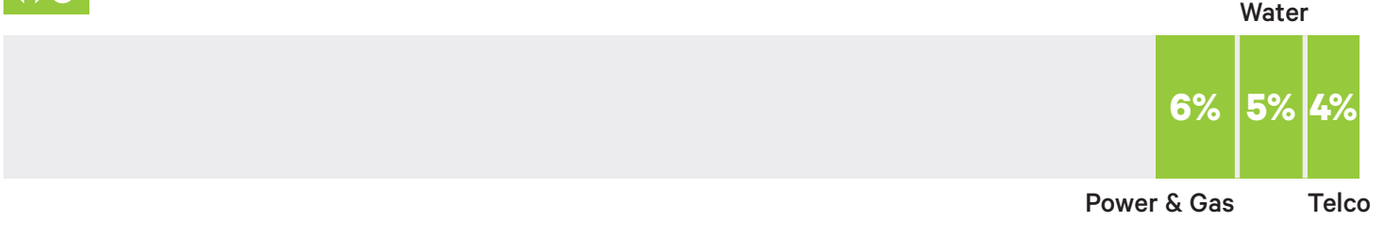
50% Transport



35% Facilities



15% Utilities



Downer RTS

Downer Rail & Transit Systems provides trusted support to critical passenger train assets across Australia. We are the largest national rollingstock maintainer with a unique breadth of capabilities. No other organisation has all these capabilities in-house:

- Rollingstock design
- Infrastructure delivery and maintenance capability
- Manufacturing and TLS capability
- Operational and maintenance capability

90% Government work-in-hand
Federal/National State and Local

1,000+ cars fleet supported

+1,500 light rail vehicles

3,600 km network length

+1,300 buses

100+ years experience

20+ sites depots & facilities operated

880+ million annual passenger journeys

13.5+ million people serviced

Market Influences / Challenges

The elements that influence the current and future Rail marketplace and transit system are becoming increasingly difficult to navigate. Passenger experience has never been more important. Through implementing TrainDNA, we are helping our customers address the following:

Patronage growth/ recovery

- Availability
- Reliability
- Amenity
- Safety
- Disruption management

Budgetary pressure driving need for reduction in LCC

- Labour productivity
- Materials management
- Maintenance optimisation
- Disruption avoidance

Digitisation & Sustainability

- Real-time alerts and passenger updates
- Real-time energy consumption information
- Robotics & AI

TrainDNA

Downer TrainDNA is

a full suite of rail and transit system, asset management services, designed to provide class leading performance and improve passenger outcomes.

TrainDNA

Capability

Over a development period of more than 10 years, Downer has taken a base industry standard asset management tool (typically used for static assets) and, in conjunction with deep industry experience, developed an industry application that:

- Is uniquely tailored to suit mobile assets and the particular requirements of the rail and transit system sectors
- Is comprised of multiple unique modules tailored to the unique industry needs of operators, maintainers and asset owners
- Provides a custom integration layer to connect all of the modules, set-borne data feeds, customer data feeds (e.g. timetables and advertising), and external data feeds.
- Provides a wide range of operational, LCC and safety benefits.

Provided a 51% improvement in fleet reliability

Enhanced efficiency in maintenance delivery allowing for a 21% growth in fleet, with minimal increase in workforce requirements

Enabled a 2 fold extension in the routine periodic maintenance interval

TrainDNA

Downer TrainDNA

Delivers a full-service approach for improved passenger experience through next generation asset management.

Current Customer Outcomes

Higher Train availability

Extra capacity in the existing maintenance Facilities

Reduced Overtime

Operational benefits

- **Automatic detection** and notification of failure events
- **Shorten diagnosis** period and address alerts quickly
- **Faults are positively identified** & priority list for investigation and CCTV review
- **Real-time monitoring** of safety critical failure mode allows trains to remain in service longer.
- Real-time monitoring data is used to **prioritise preventative maintenance** activities across the fleet
- Machine Learning, data analytics and Robot Process Automation is used to **eliminate false positive** alerts

Improved Life Cycle Cost over the life of the asset

LCC benefits

- **Reduced in-service** failures and associated penalties
- **Reduction of abatement** / KPI cost linked to reduced train availability
- Enables **optimised planning** and prioritise scheduled maintenance instead of expensive corrective maintenance
- Condition Based Maintenance allows **maintenance and overhaul interval extensions**

Improved safety assurance for safety critical systems

Safety + sustainability benefits

- Improved control and **condition monitoring of safety critical items**
- **Ensure accuracy and quality** of the technical maintenance data and the business data
- **Better** control of **safety critical system performance**

Our Modular TrainDNA Approach

Across different geographies, markets and economic conditions, the need to change and improve maintenance work practices is increasing at pace. Our modular product approach allows us to focus on differing customer needs, with the ability to expand in the future to provide a complete digital solution underpinning all maintenance activities.

1

Maintenance Management
of all asset management, maintenance activities and the related workforce planning.

Output
Efficiently and optimally manage all aspects of a rollingstock asset, including maintenance tasks, inventory and workforce.

2

Operational Intelligence
by real-time data, integrated from many sources (trains, maintenance facilities, operators).

Output
Identify and prioritise a issue on the network and decide what actions to take real-time to maximise asset reliability, availability and passenger service.

3

Asset Intelligence and Analytics
The process of analyzing data and producing in-sights and findings.

Output
Faster investigations, increased conditional maintenance, increased predictive maintenance and optimised maintenance plans.

4

Robotics and automation
to remove manual tasks that are prone to human error, difficult to perform and time consuming to complete.

Output
High risk and labour intensive inspection tasks automated with increased quality and accuracy.

5

Sustainability
Optimising real-time power consumption, work practices and track sustainability benefits.

Output
Increased decarbonisation effectiveness and emissions reporting compliance.

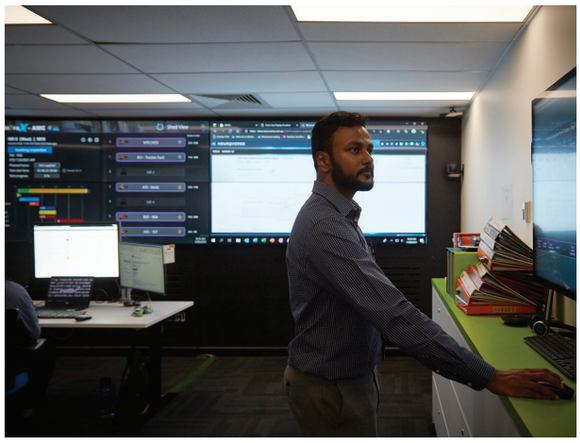
Case Study

Sydney Trains, Australia

- Downer designed, built and maintained a brand new, world-class fleet for Sydney Trains
- Through implementation of TrainDNA's methodology, our maintenance team expanded from servicing 78 Waratah Sets (624 cars), to include 35 Millennium sets (140 cars) and 41 SGT sets (328 cars) – which culminated in the ongoing asset management of 1092 cars, we are currently maintaining today and for the next 30 years.
- We have delivered a real-time holistic view of train systems and sub-systems that has enabled predictive maintenance of the fleet using our Business Intelligence module. The proven data collection platform has allowed accurate forecasting of part failures and agile response to potential faults

As a result, we have achieved:

- 51% improvement in fleet reliability
- A 2 fold extension in the routine periodic maintenance interval &
- Affected passenger experience to achieve a 30% increase in patronage over 5-years, from 300 million to over 400 million passenger trips per annum



98% increase depot utilisation, which now efficiently maintains 154 sets compared to initial fleet of 78

To talk to one of our TrainDNA specialists and find out more about our modular approach, please contact: TrainDNA@downergroup.com

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Case Study

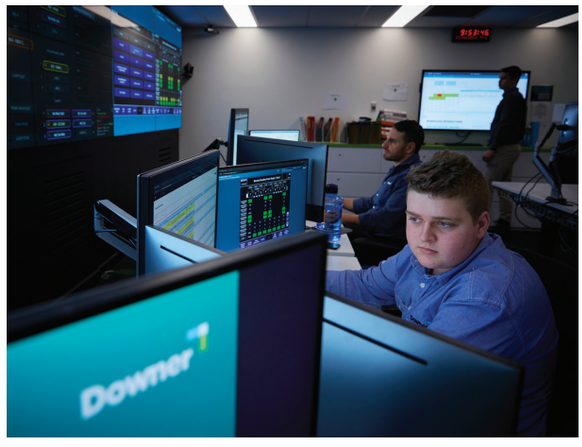
IBM Australia

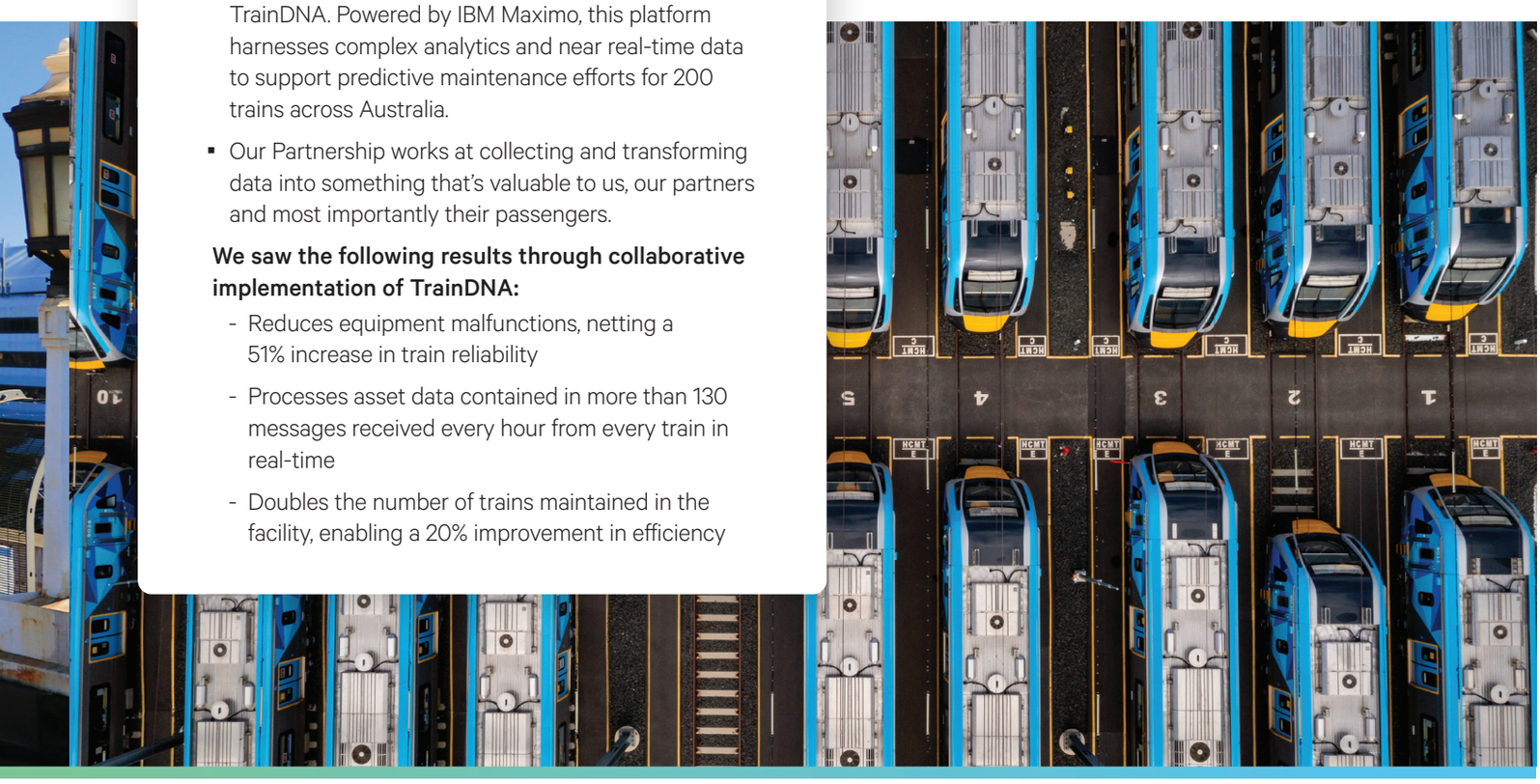
Downer and IBM Consulting keep passengers moving safely, reliably and comfortably with updated, sustainable asset management.

- Working with IBM Consulting, Downer Group enhanced its design efforts to continually update and improve its TrainDNA rollingstock asset management platform to deliver sustainable, higher quality service to passengers. Powered by IBM Maximo solution pulls in train data in real time, helping to identify and resolve issues before they occur.
- Together with IBM, Downer is searching for opportunities to cut the energy of train fleets and support a more sustainable transport future. It's acknowledged that Train networks are some of the largest users of electricity in their respective localities. In better understanding which parts of the Rail system are requiring the most energy, at different points throughout the day, we can support operators optimise use and achieve a much better overall outcome.
- Downer coordinates with IBM Consulting™ for the ongoing development and enhancement of TrainDNA. Powered by IBM Maximo, this platform harnesses complex analytics and near real-time data to support predictive maintenance efforts for 200 trains across Australia.
- Our Partnership works at collecting and transforming data into something that's valuable to us, our partners and most importantly their passengers.

We saw the following results through collaborative implementation of TrainDNA:

- Reduces equipment malfunctions, netting a 51% increase in train reliability
- Processes asset data contained in more than 130 messages received every hour from every train in real-time
- Doubles the number of trains maintained in the facility, enabling a 20% improvement in efficiency





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RTS Digital

Powered by TrainDNA

IBM