About Us

Vision

Transform the maintenance management process, enabling Australian companies to lead the way maintenance is conducted, increasing both productivity and profitability through the automation of the work management stages.

Purpose

To deliver the next generation of data science solutions focused on the problems that industry needs, which is to ensure the efficient and effective maintenance execution.

Our academic-and-industry partnership will deliver the next generation of data science products coupled with training to ensure efficient and effective maintenance execution.

How

Enabling Maintenance Work Management by providing **decision support solutions** for activity that need a 'human-in –loop' for maintenance and automating activities that don't.

Who

The centre is a partnership between Curtin University, The University of Western Australia, CSIRO and industry partners Alcoa, BHP and Roy Hill, as well as CORE Innovation Hub and the Minerals Research Institute of Western Australia.

What

To enable this transformation, the Centre will focus on the three key roles in a new digitally-driven maintenance management system. These are:

1 The maintainers responsible for executing work on the assets and making crucial observations about as-found condition of the assets,

2 The engineers responsible for the models and analysis necessary for fault detection, asset health assessment and remaining useful life predictions, and quantifying uncertainty, and

THE CENTRE HAS THREE RESEARCH THEMES AND FOUR TRANSLATION THEMES.

Each research themes has a series of three blocks of work:

1 The development of fit-for-purpose data sets, these will be provided by our Partner organisations. The aim here is that all data captured by the maintainers is machine readable, the data is cleaned and stored, and captured data in a way that is repeatable and requires minimal data wrangling by users.

2 Building Suitable models. The data sets will be used to build suitable models, taking us to our second block of work. Models are themselves developed, validated, stored and updated in a trackable way. The use of these models by decision makers is also tracked and performance changes measured and assessed.

3 Computational efficiency. The Centre has employed software engineers to ensure research outcomes are more easily translated into existing operations and/or provisioned via a consistent platform

We understand that models by themselves don't deliver value; we also need to change organisational psychology/culture/training/software architecture/business process. What we believe makes this Centre special is that this is built-in alongside our translation themes.

	COMPANY PROVIDED DATA SETS	MODELS	COMPUTATIONAL EFFICIENCY	
RESEARCH THEME 1 — **SUPPORT THE MAINTAINER**	Work orders, inspection and condition analysis reports, operational and safety data	Knowledge representation / Natural Language Processing & Generation / Image processing / AI tools	Efficient rule generation for reasoning / Ontology framework / Adaption and checking	**TRANSLATION THEMES** — 4.1 SOLUTIONS TO INCREASE MODEL USE BY DECISION MAKERS / 4.2 GENERIC SOFTWARE ARCHITECTURE / 4.3 TRAINING FOR INDUSTRY / 4.4 PRODUCTS & SERVICES
RESEARCH THEME 2 — **SUPPORT THE ENGINEER - MANAGING UNCERTAINTY**	Sensor and operational data, physical models	Expert elicitation / Statistical distributions and parameter estimation / Bayesian models	Efficient code for Bayesian models / GPUs for processing	
RESEARCH THEME 3 — **SUPPORT THE MANAGER - MAKING DECISIONS**	Costs, operational data, planning schedules, schematics	Semi-autonomous agent-based models / Optimisation at different organisational levels (asset, site, across sites)	Efficient code for the models / Parallel computing	

3

The maintenance managers responsible for ensuring that decisions at the system level balance cost, risk and performance.