

Quantillion

COLLABORATIVE INTELLIGENCE

Doing more with less



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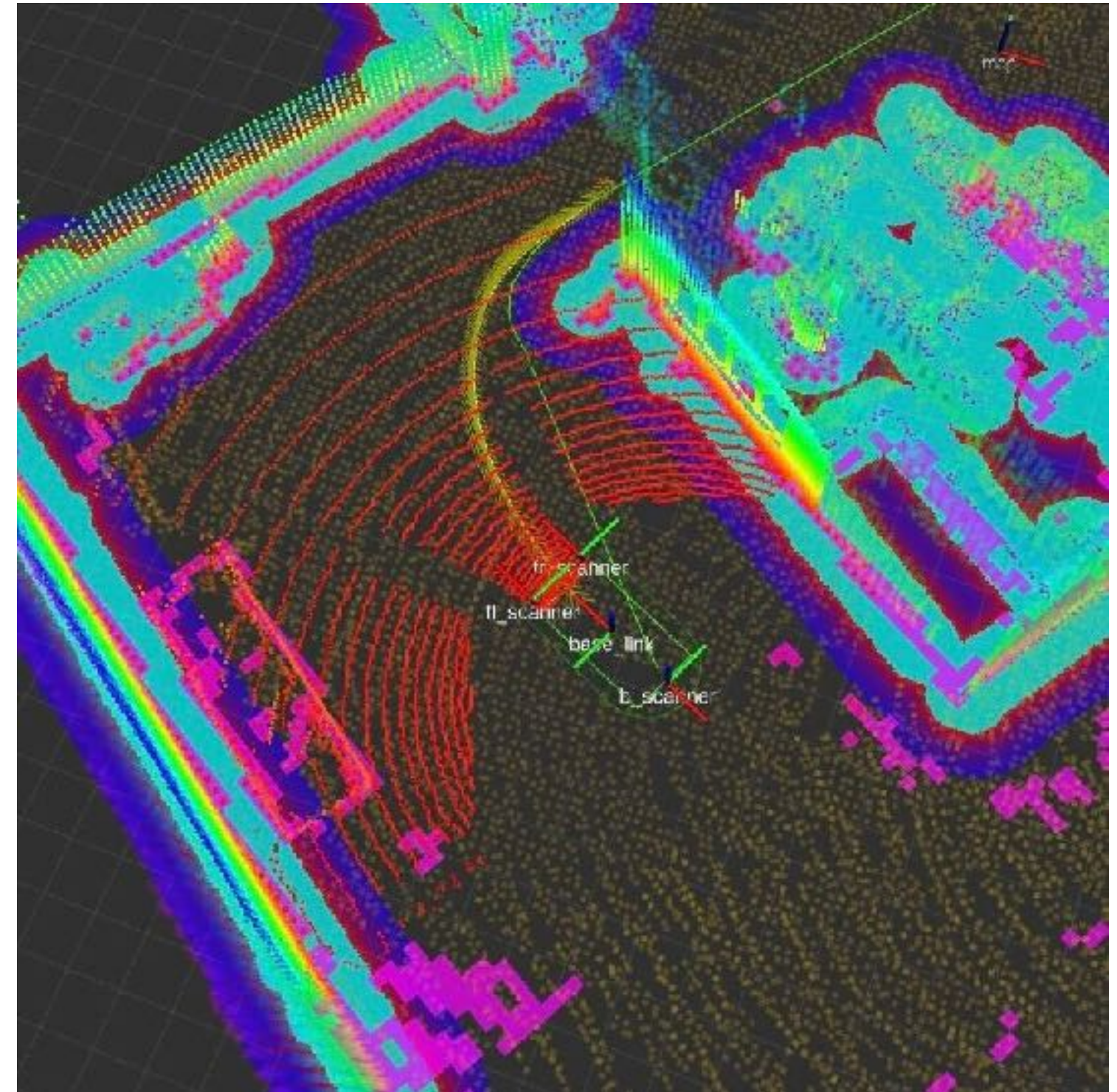
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COMPANY INTRODUCTION

At Quantillion, we're putting fast and powerful decision-making algorithms at the heart of production processes. Our products make it easy for operators and machines to make smart decisions, fast.

Flexible Factories. Faster Decisions.



WE'RE BUILDING the Autonomous Factory of Tomorrow

We build tech that enables the heavy industry to innovate and grow, faster.

We optimise your processes, coordinate operators and machines, and make sure you're all in sync.

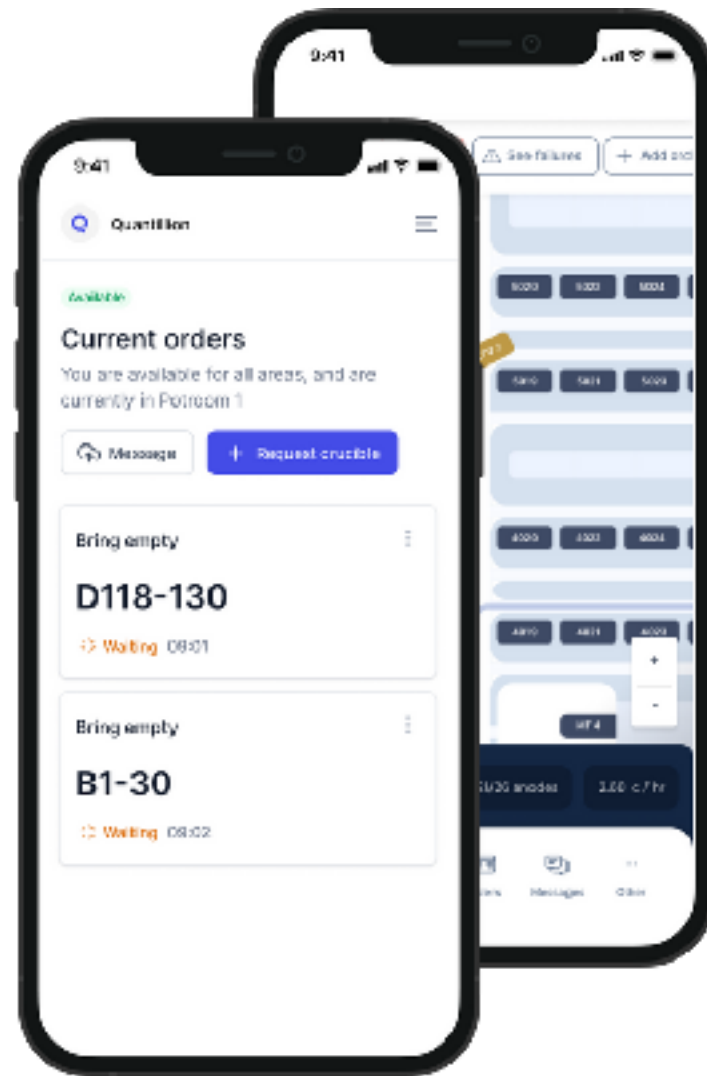
The screenshot displays a comprehensive factory management dashboard. On the left, a sidebar lists navigation options: TMS (Truck Management System), OMS (Order Management System), and CASTH. (Casting System). The main area is divided into three panels:

- Current fleet:** Lists three autonomous vehicles (APTV1, APTV2, LTV1) with their current status (e.g., 72% battery, 0% battery) and scheduled tasks. APTV1 is currently idle at location b2913, with a task for MTS 2 at Buffer 3. APTV2 is idle at b4212, with a task for Pot 3031 and Pot 3037. LTV1 is loaded at b8191, with a task for Buffer 3 and Pot 3891.
- LTV1 Controls and Orders:** A detailed view of the LTV1 vehicle's current task sequence. It shows a 'now' task for MTS 2 load at Buffer 2, followed by Buffer 2 unload. Subsequent tasks include Buffer 1 load (5 min), Pot 4091 unload (6 min), Pot 4052 load (5 min), and MTS 4 unload (6 min). Each task is accompanied by a shield icon indicating a priority or status.
- Terrain view:** A 3D perspective view of a charging station area. It shows two charging bays labeled BAT 1 and BAT 2. A vehicle is currently charging at BAT 2. The view includes a 'Terrain view' dropdown and zoom controls (+/-).

At the bottom of the interface, there are several rows of numbered buttons (e.g., 6020, 6022, 6024, 6026, 6028, 6030, 6032, 6034) representing different machine or location identifiers.



OUR PRODUCTS



Manage Orders

Maximise factory output by leveraging AI-powered order planning and execution.

Manage Traffic

Ensure safety and smooth traffic flow by managing obstacles, zones and rules.

Manage Vehicles

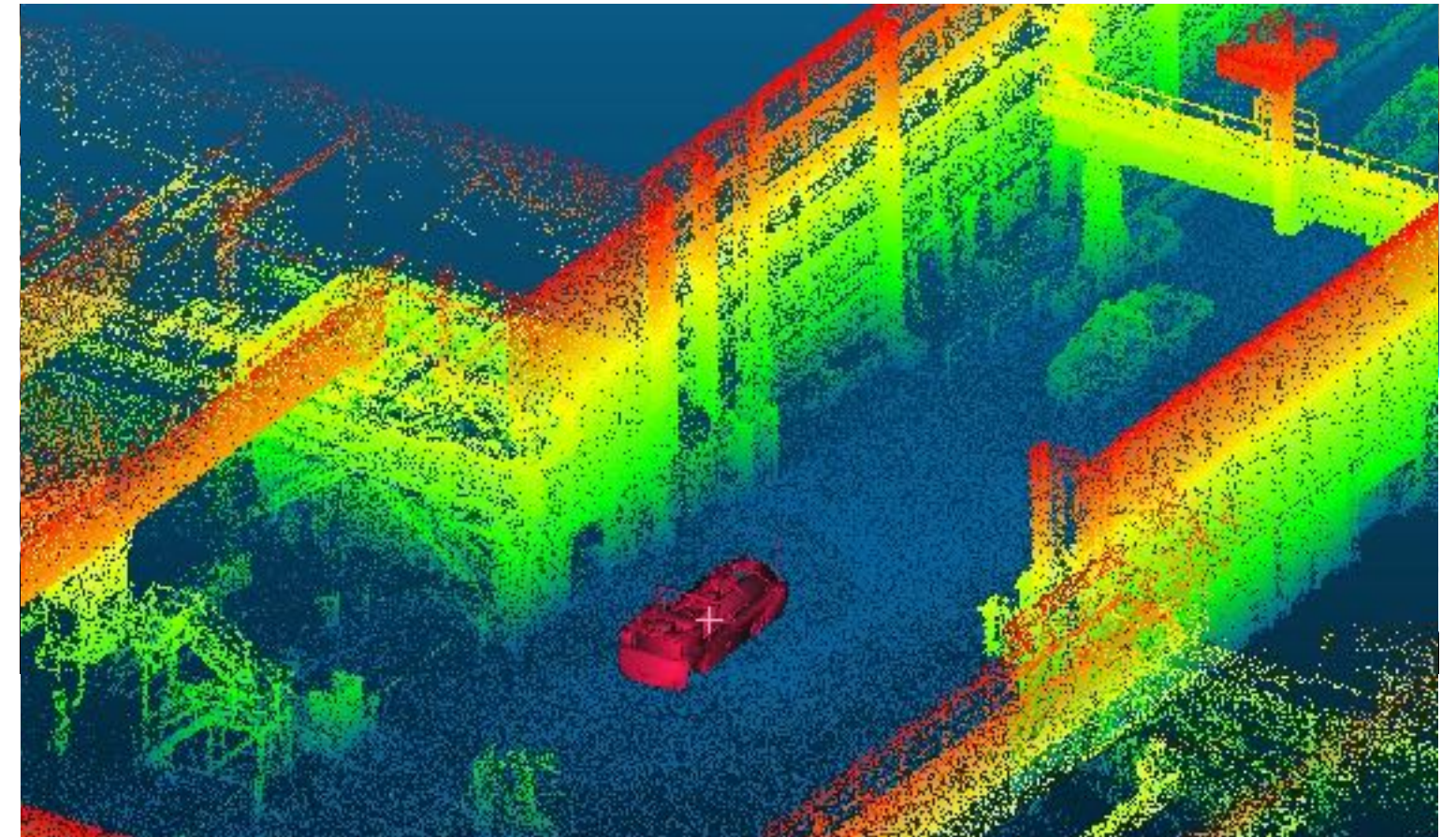
Control vehicles, routes and drivers through a unified and intuitive platform.

Make Navigation Smarter

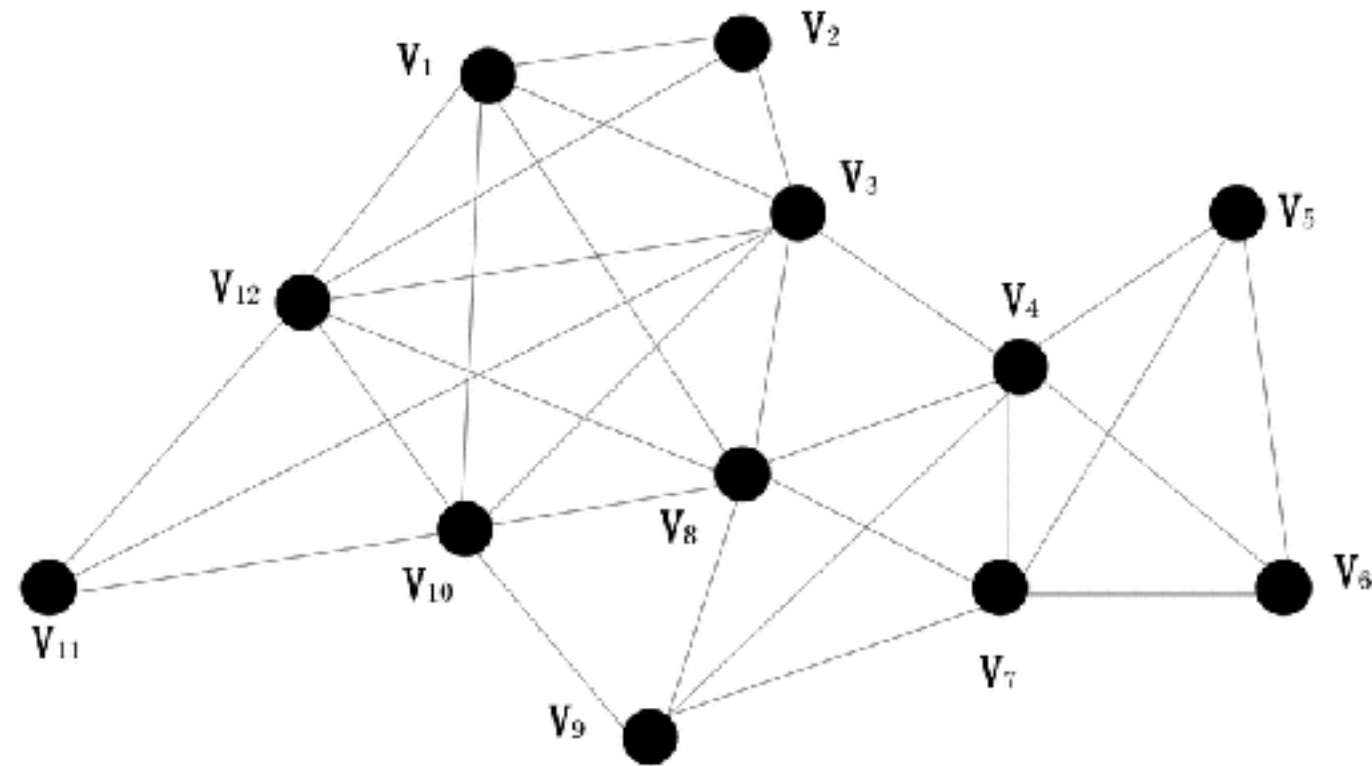
Give your machines the intelligence to make decisions and the flexibility to create new driving paths.

AUTONOMOUS NAVIGATION

- Simultaneous Localisation and Mapping (SLAM) based navigation
 - 3D Lidar
 - Mapping
 - Localisation
 - Obstacle avoidance
 - Object detection
- ✓ Flexibly operate in any environment (incl. outdoors)
- ✓ No on-site infrastructure changes
- ✓ Approximate targets suffice
- ✓ Higher level safety layer
- ✓ Higher level intelligence → Less management
- ✓ Works in magnetic field!



COLLABORATIVE INTELLIGENCE

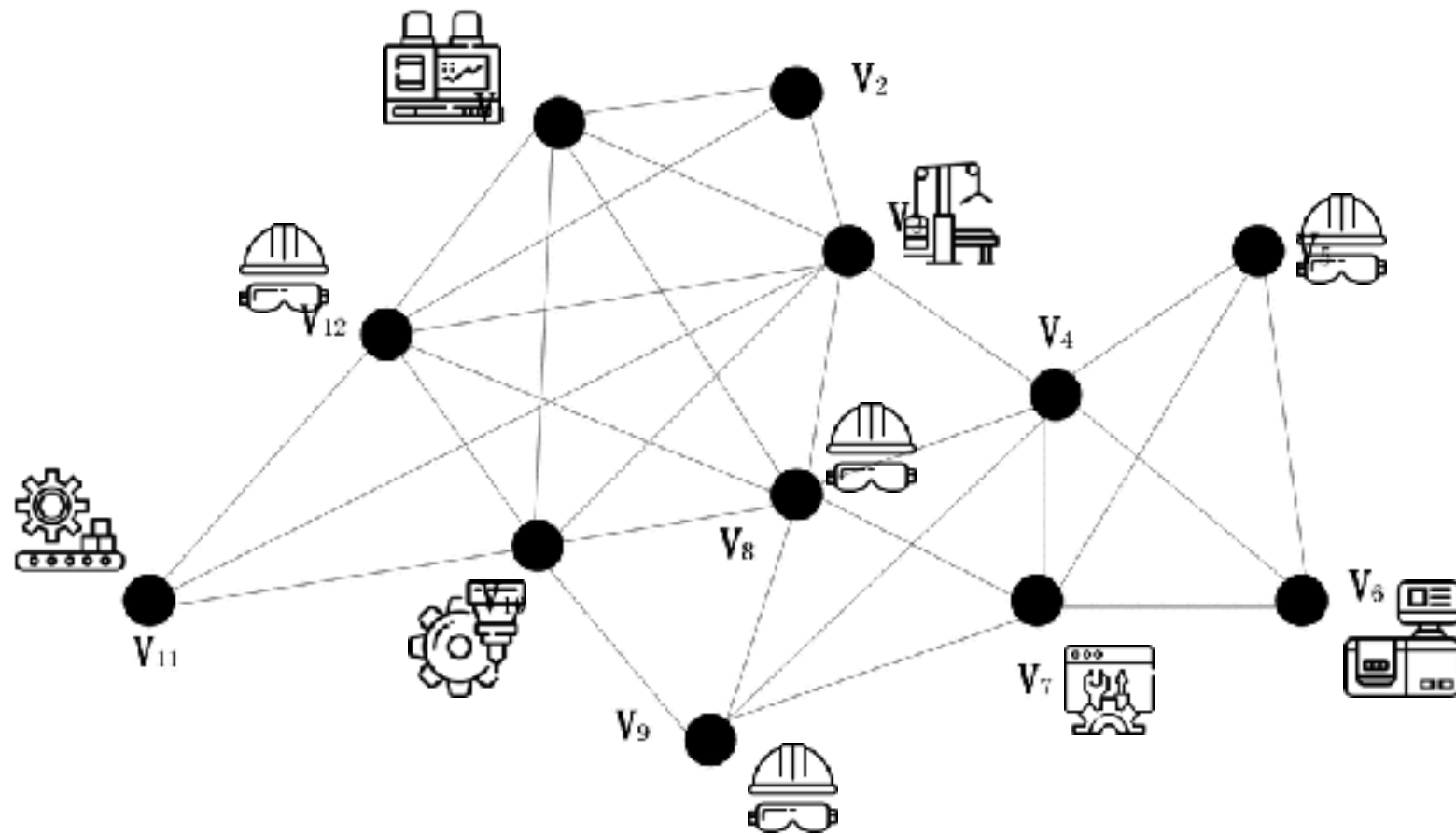


We have always been fascinated with collaborative intelligence. How can we make humans, machines and equipment work together in the most optimal way, at any time?

Starting with collaborative intelligence inside a primary aluminium smelter, we implemented our system in 2020 controlling multiple robots, operators & processes in one common production environment.

Our Autonomous Transport System transports all liquid aluminum & anodes in the potroom and casthouse.

MOST OPTIMAL WAY



Our first experience with collaborative intelligence was making multiple operators and machines work together in the most optimal way.

Rising the question what a most optimal way is. There is not one goal to be achieved. Multiple goals need to be able co-exist and each find their optimum.

In general: Doing more with less!

Trade-off: time / tasks

WE CANNOT RELY ON ONE OPTIMUM TO MEET ALL OUR PROCESS GOALS

Net zero

A transformation that affect all countries and industrial sectors - *like aluminium or steel* - to reach Paris Climate Agreement in 2050.

Decarbonisation

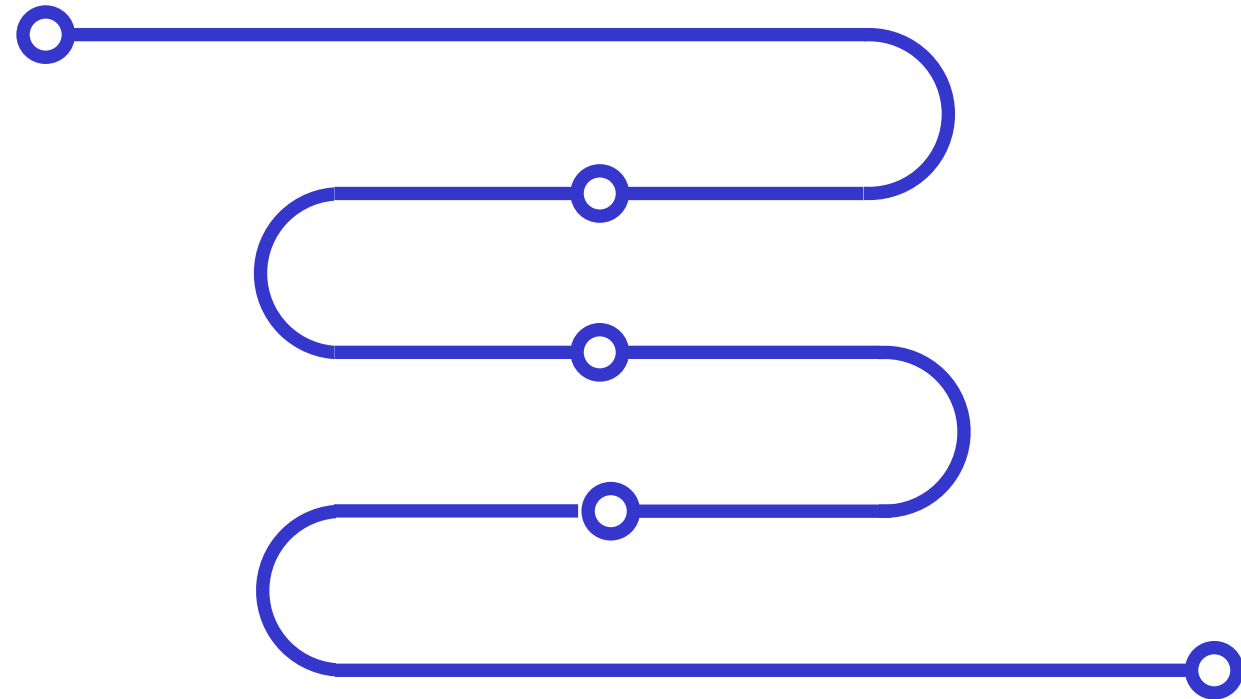
A carbon intensive industry can play a major example to other sectors. A showcase where both industrial processes and power supply need to adept to truly decarbonise.

Circularity

Recapturing materials and well sorted scrap can improve the circularity of aluminium.



INDUSTRY CHALLENGES



Switching our energy source(s)

Transforming from fossil fuel use to a constantly changing renewable energy mix will need fast and powerful decision making tools to find optimum energy mix at any time.

Switching the way we produce

We see industries adapting new technology - like Hydrogen DRI Steel making, or Inert Anode Technology in Aluminum production where existing processes and new processes need to co-exist.

Switching the way we operate

In this big transformations to sustainable manufacturing, many changes will be incorporated which needs a high form of flexibility and responsiveness while keeping up robust decision making.

FINDING THE RIGHT SOLUTION AND BEING ABLE TO RESPOND ACCURATELY IS KEY

Demand response & line of sight

Responding to demand requires not only a good understanding of the demand but also a clear *line of sight*, where factories can directly switch operational tactics.

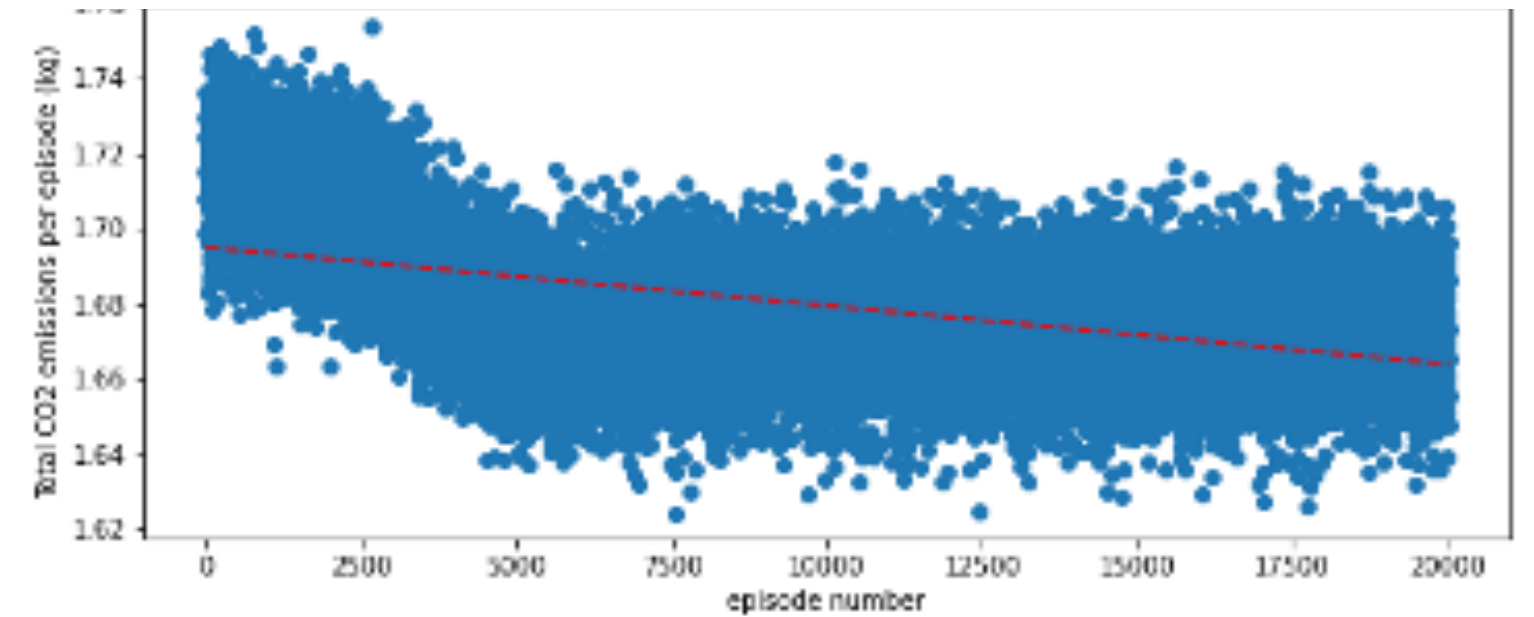
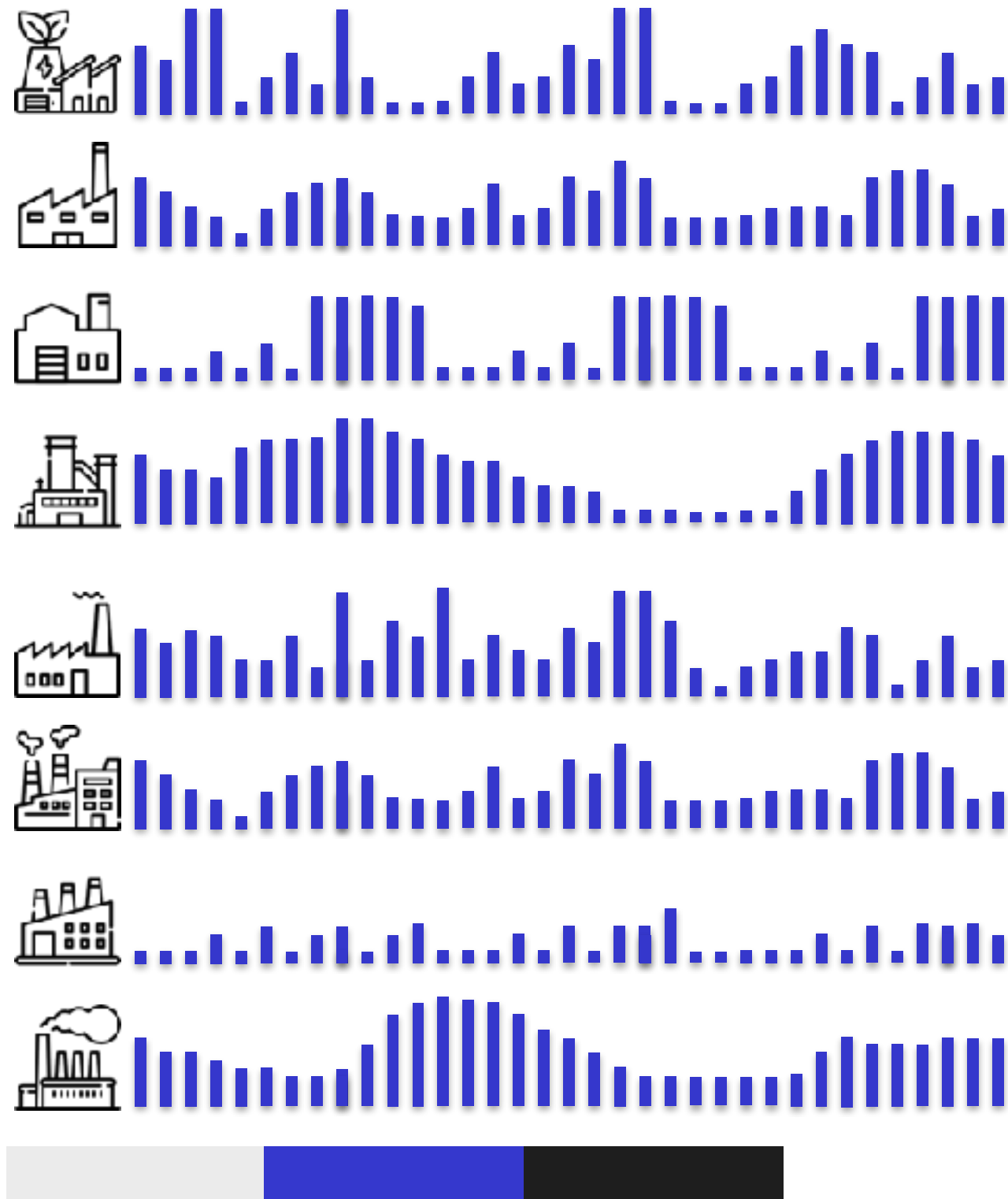
Distributed decision making

Working on cluster level, multiple companies can benefit from distributed decision making. This form of collaborative intelligence allows companies to share energy use and produce accordingly.

Constant adaptation

In big transformations, many changes will be incorporated which needs a high form of flexibility and responsiveness.

SHOWCASE: CLUSTER OPTIMISATION



RESULTS

- AI model was about 20x faster than linear model, making it fit for operational use
- Collaborative decision making outperformed individual decision making
- Intelligent distribution of tasks was able to increase efficiency with 27% without any infrastructural changes
- Multiple processes in the same environment were able to benefit from optimisation more than one individual optimised process could have realised.
- This showcase shows potential for future autonomous decision making on factory level networks lowering total capital expenditure significantly.



**THANK YOU FOR
YOUR TIME!**

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