SWARM ENGINEERING

Delivering AI superpowers to the Agri-Food Supply Chain

Telepathy

Understand what others are thinking

Challenge

A supply chain is a complex system of separately managed elements including sourcing, procurement, manufacturing, and logistics, interlinked with many disparate parties, each focused on their own goals. Everyone in the supply chain seeks to optimize their own process, but each objective is potentially in conflict with one or more of the other objectives, making it a multi-objective optimization problem – or a 'MOOP'. The lack of communication between departments or facilities, means that understanding and overcoming MOOPs can be difficult for organizations.

This problem is magnified when aspects of the supply chain are outside of the company's firewall, and communication and technology barriers can result in a highly inefficient end to end process, even when each function is individually optimized.

A business challenge like network optimization, where you are deciding which facilities to consolidate, where to open new distribution or manufacturing centers, or which products to make at each location, can be incredibly difficult to solve as it is a MOOP problem with multiple variables.

Typical Approach

When trying to solve MOOPs such as the network optimization problem, businesses usually enlist the help of specialist consultants or systems integrators who have the expertise to understand the complicated formulas involved and deliver the best outcomes.

This kind of assessment is costly and ongoing, typically taking months to complete and only being repeated every few years. By the time a conclusion has been drawn, the data used is often obsolete, given the pace at which the market and a company's portfolio of products and customers evolves.

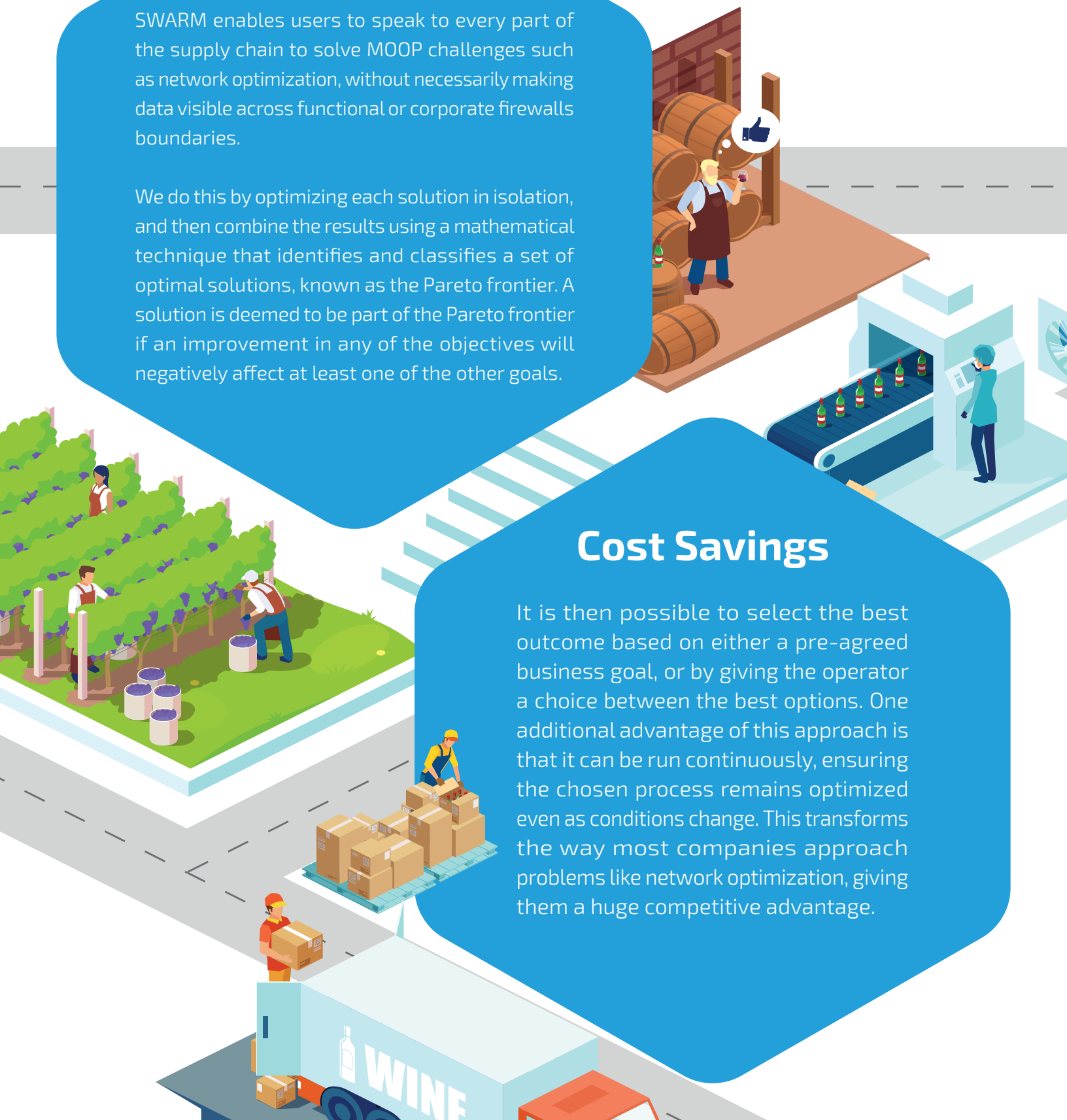
After implementation has taken place, a solution may already be a legacy, delivering sub-optimal results.
Organizations that elect to design a solution themselves often draw on various software tools and their own knowledge to find a MOOP solution. A typical approach will result in many factors being filtered out, to make the problem more manageable, as MOOPs are frequently too complex for humans to solve.

Again, this results in sub-optimal performance, and is rarely checked to see if it is still the best approach for current operating conditions.

SWARM Solution

SWARM enables users to speak to every part of the supply chain to solve MOOP challenges such as network optimization, without necessarily making data visible across functional or corporate firewalls boundaries.

We do this by optimizing each solution in isolation, and then combine the results using a mathematical technique that identifies and classifies a set of optimal solutions, known as the Pareto frontier. A solution is deemed to be part of the Pareto frontier if an improvement in any of the objectives will negatively affect at least one of the other goals.



Cost Savings

It is then possible to select the best outcome based on either a pre-agreed business goal, or by giving the operator a choice between the best options. One additional advantage of this approach is that it can be run continuously, ensuring the chosen process remains optimized even as conditions change. This transforms the way most companies approach problems like network optimization, giving them a huge competitive advantage.

Which AI superpower do you need?

Precognition
see the future

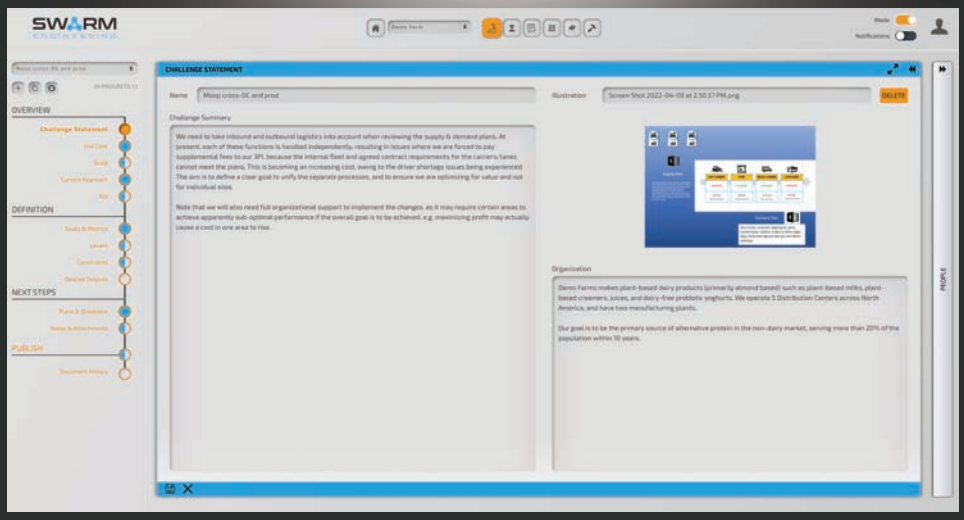
Telekinesis
move physical objects at will

Mastery
become an expert on a topic instantly

Telepathy
understand what others are thinking

Adaptability
cope with any disruption

SWARM empowers organizations to continuously solve their multi-objective optimization problems, removing siloed functions, and resulting in holistic benefits across the supply chain. This saves time and money and ensures critical processes don't suffer from degradation, drift, or become obsolete as conditions change and the business evolves.



See how SWARM can help your organization
swarm.engineering/start

SWARM is a solution engine for the agri-food supply chain that saves costs, reduces waste, and delivers environmental benefits.
SWARM is structured around a curated market of algorithms for key supply chain processes.
We provide an easy way for business users to define problems, and rapidly match them to advanced solutions without the users needing to do any software coding, or have any knowledge of advanced AI, or machine learning. SWARM is democratizing AI for the agri-food supply chain.