

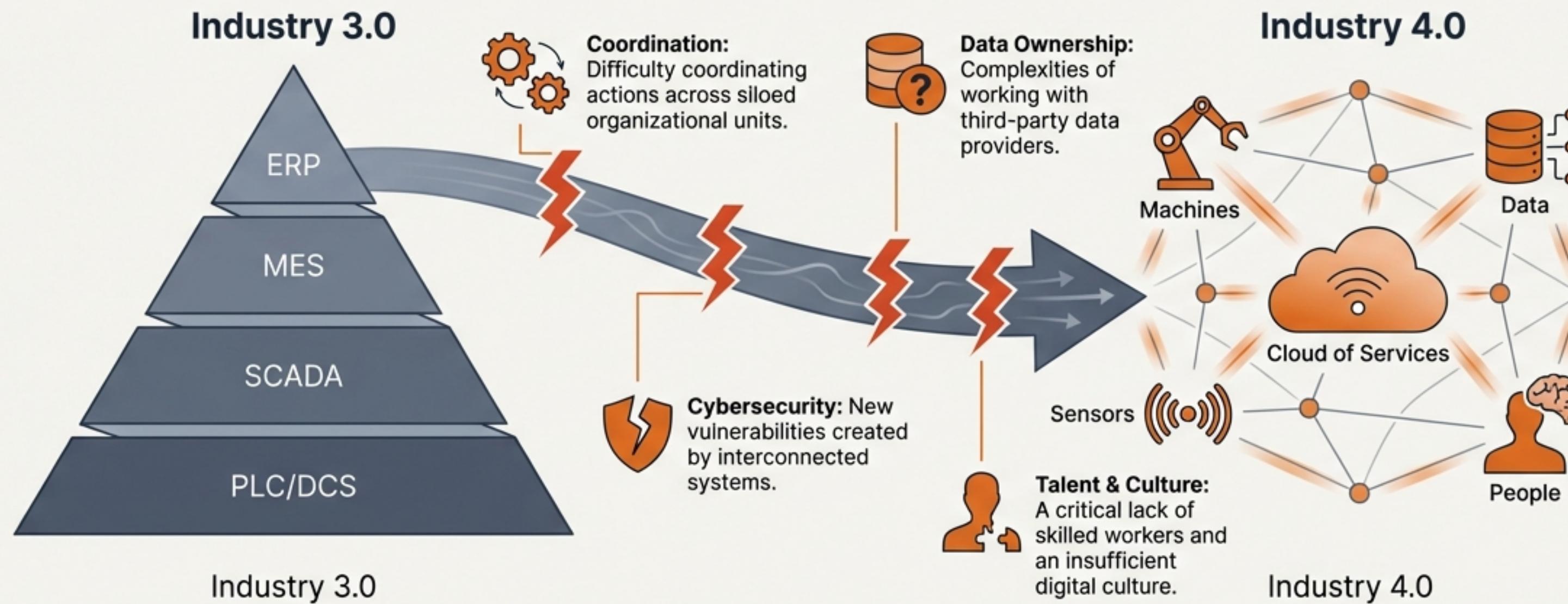


# Scaling Human Expertise for Industry 4.0

An introduction to Patented Intelligence (Pi-Mind),  
a technology for cloning expert decision models.

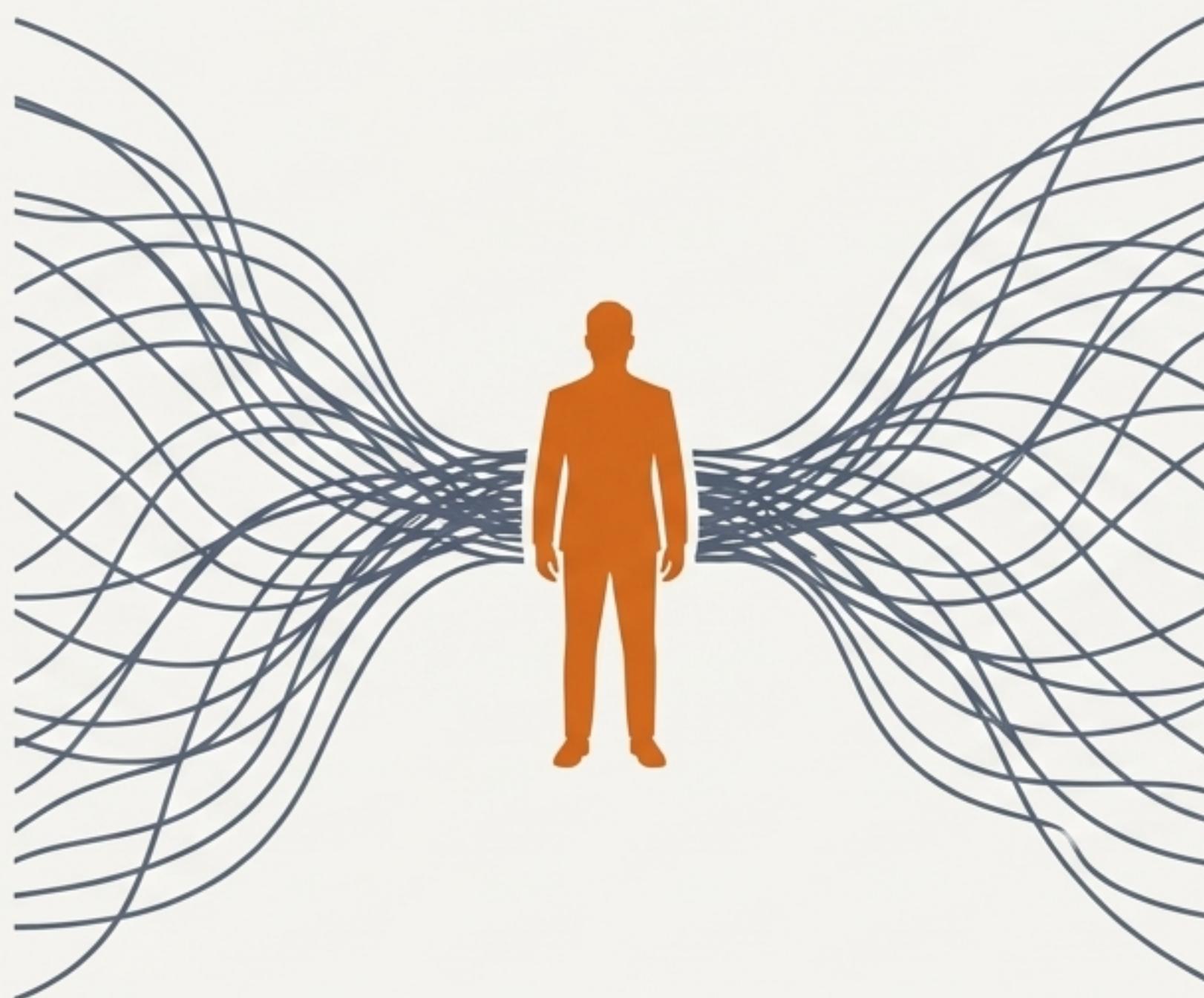
# Industry 4.0 Is Here, But Its Promise Is Stalled by New Complexities

The Fourth Industrial Revolution is fusing the physical, digital, and biological worlds, creating smart factories and cyber-physical systems. However, companies are hitting significant implementation barriers that prevent them from capturing the full value.



# The Critical Bottleneck Is Human: We Can't Scale Our Best Decision-Makers

While routine jobs are automated, the most crucial tasks—creative problem-solving, strategic planning, and emergent decision-making—still depend on a small number of highly skilled experts, or “change agents”.



## The Workforce Challenge



**Expert Scarcity:** Companies cannot hire enough experts to drive transformation at scale.



**Knowledge Loss:** Critical expertise leaves the company when employees depart.



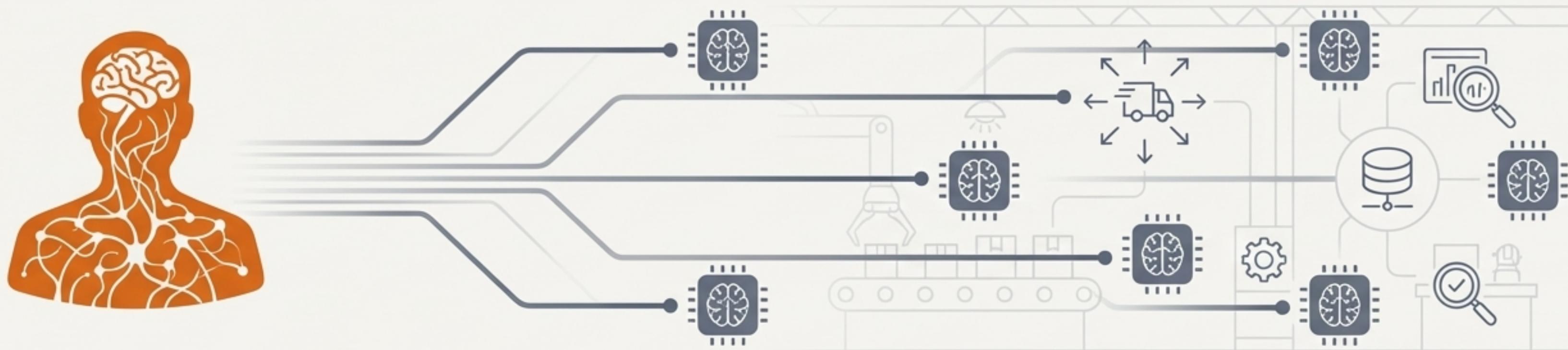
**Availability Risk:** Key decision-makers become bottlenecks, creating delays and reducing production flexibility.



**Inconsistent Quality:** Decisions vary wildly depending on which person is available, not who is best.

# The Answer: Clone Your Best Decision-Makers

We need a compromise between fully human-driven and fully AI-driven decision-making. Pi-Mind is a novel technology that enables companies to capture, clone, and patent the decision models of their top experts.



## Capture

Digitize an expert's unique approach to decision-making.

## Clone

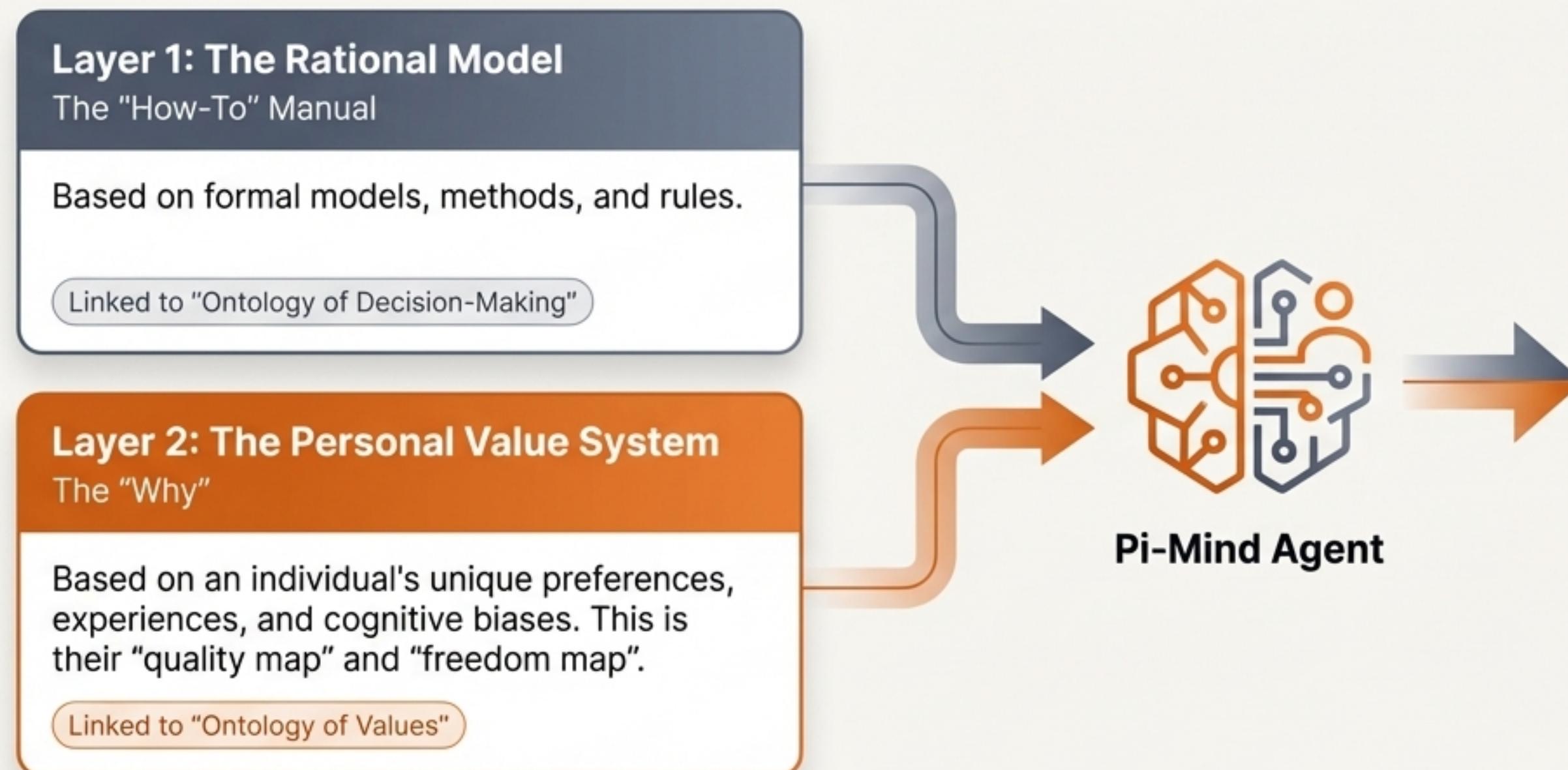
Create software agents (“digital twins”) that can replicate this decision process.

## Deploy

Make elite expertise available anywhere, anytime, simultaneously.

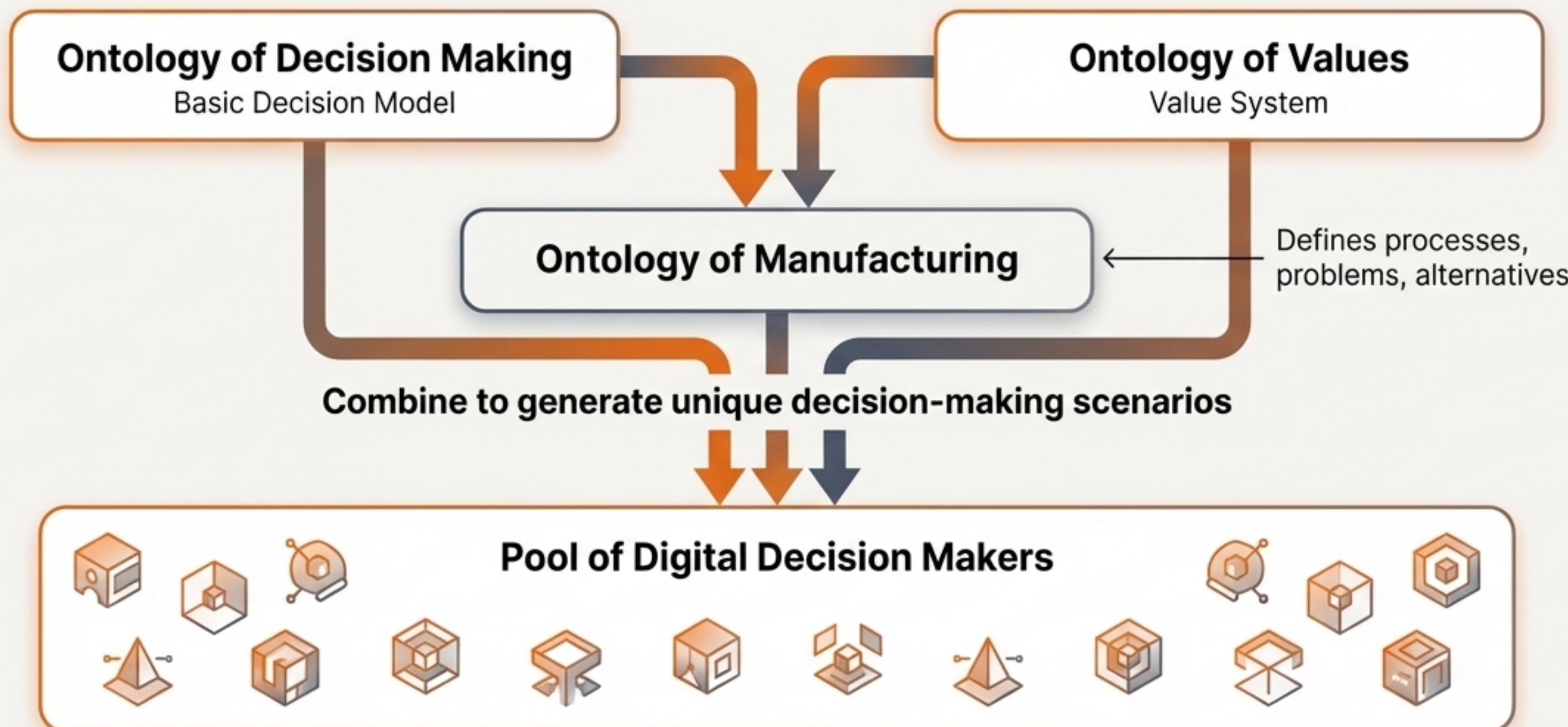
# Patented Intelligence Captures Both Rational Logic and Personal Values

A human decision is a unique blend of rational analysis and intuitive, value-based judgment. Pi-Mind's novelty lies in its two-layer model that captures this symbiosis.



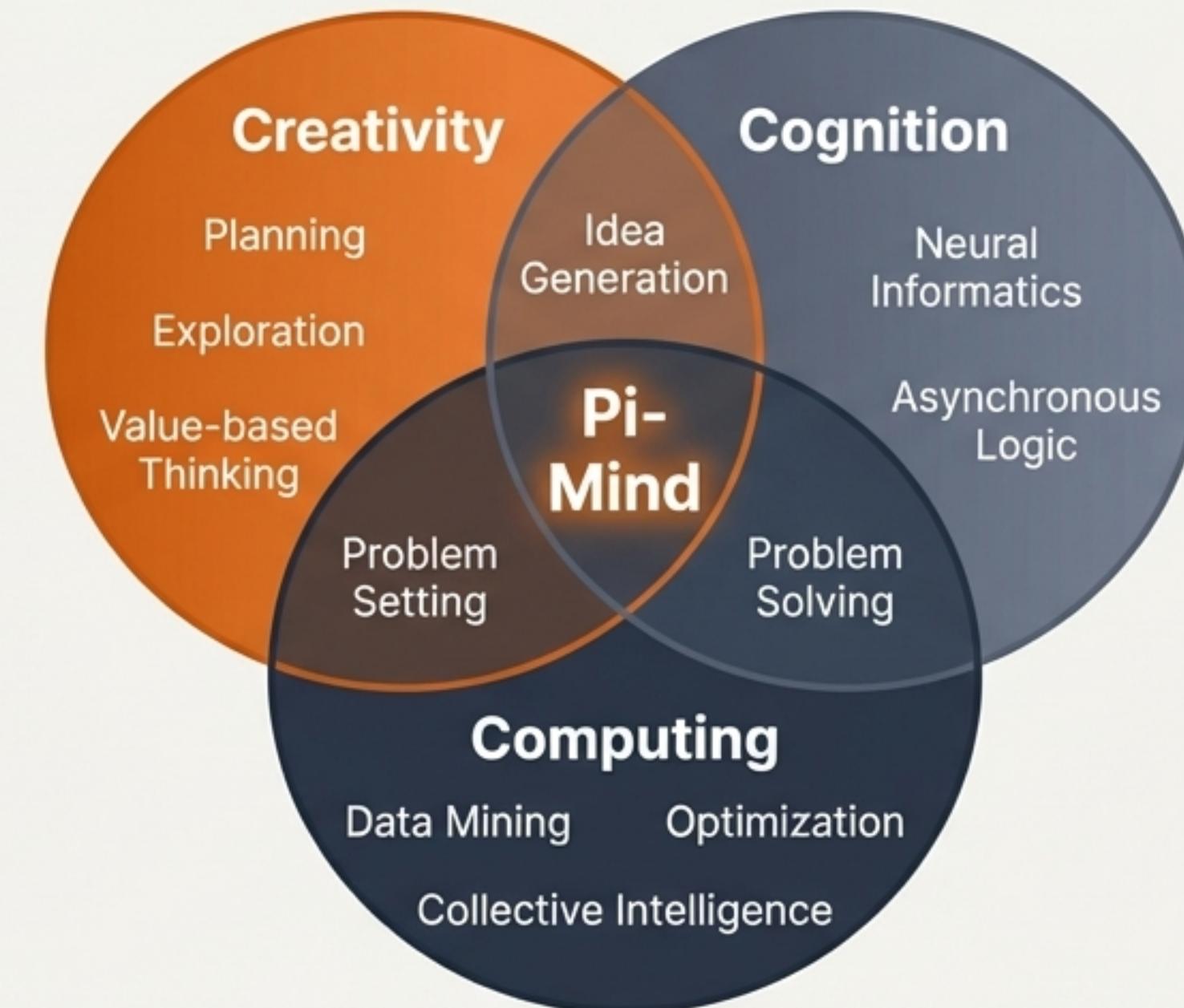
# An Ontology-Based Framework Makes Expertise Structured and Reusable

Pi-Mind uses a semantic modeling approach to formalize and integrate the two layers of a decision model with specific industrial contexts. This creates a structured, interoperable pool of expertise.



# Beyond Replication: Generating Creative Solutions in Novel Situations

In dynamic manufacturing environments, not all situations can be pre-defined. Pi-Mind agents are designed as cognitive systems that can generate new alternatives and parameters when faced with the unexpected.



This is enabled by a hierarchical, self-reconfigurable deep learning architecture, allowing the system to learn not just the solution, but how to frame the problem itself.

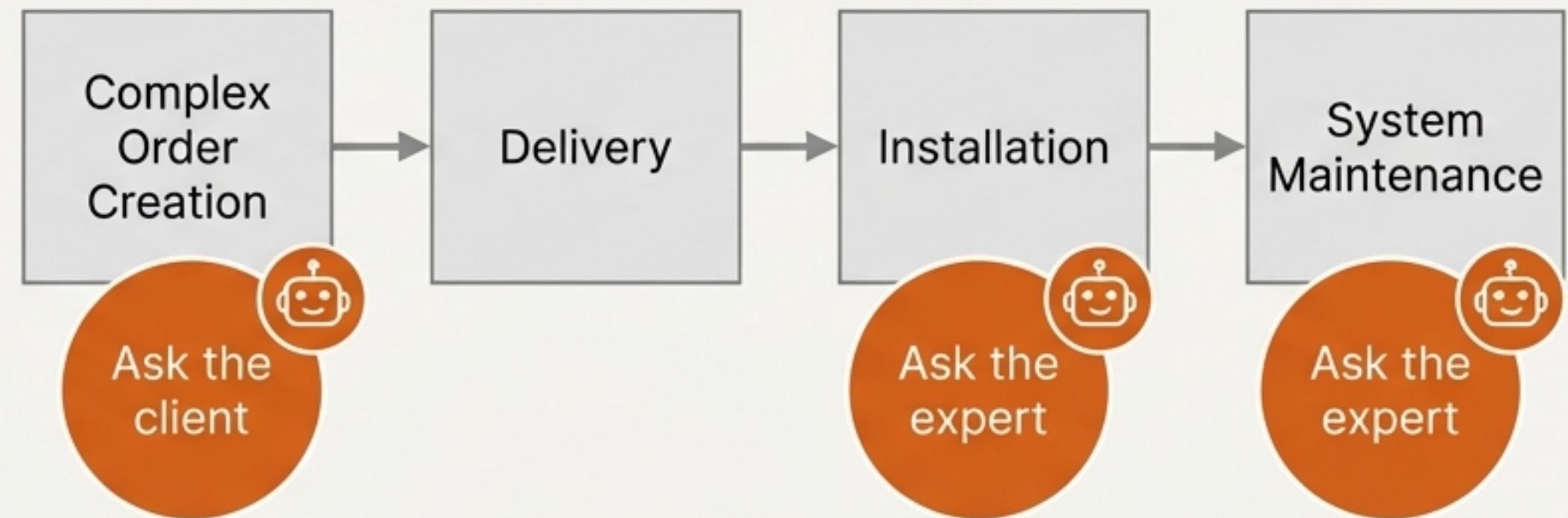
# The Proof: Testing Pi-Mind in a Complex Industrial Supply Chain

## Case Study

Focus VD, a distributor and assembler of advanced compressor equipment.

### The Challenge

Decision-making is distributed across a complex value chain, from order creation to system installation and maintenance. Experts are constantly distracted by requests, creating delays for both internal teams and external clients.



### The Solution

Deployed Pi-Mind agents for 3 key experts and 1 anchor client to handle decision requests in a live environment for one month.

# The Result: 91% Alignment with Human Experts and a 60% Reduction in Delays

Over one month, 237 queries were processed by both the human experts and their Pi-Mind agents. The results demonstrate a powerful alignment and a dramatic increase in operational efficiency.

# 91%

## Decision Alignment

The choices made by Pi-Mind agents matched their human owners' decisions in 216 out of 237 cases.

# 60%

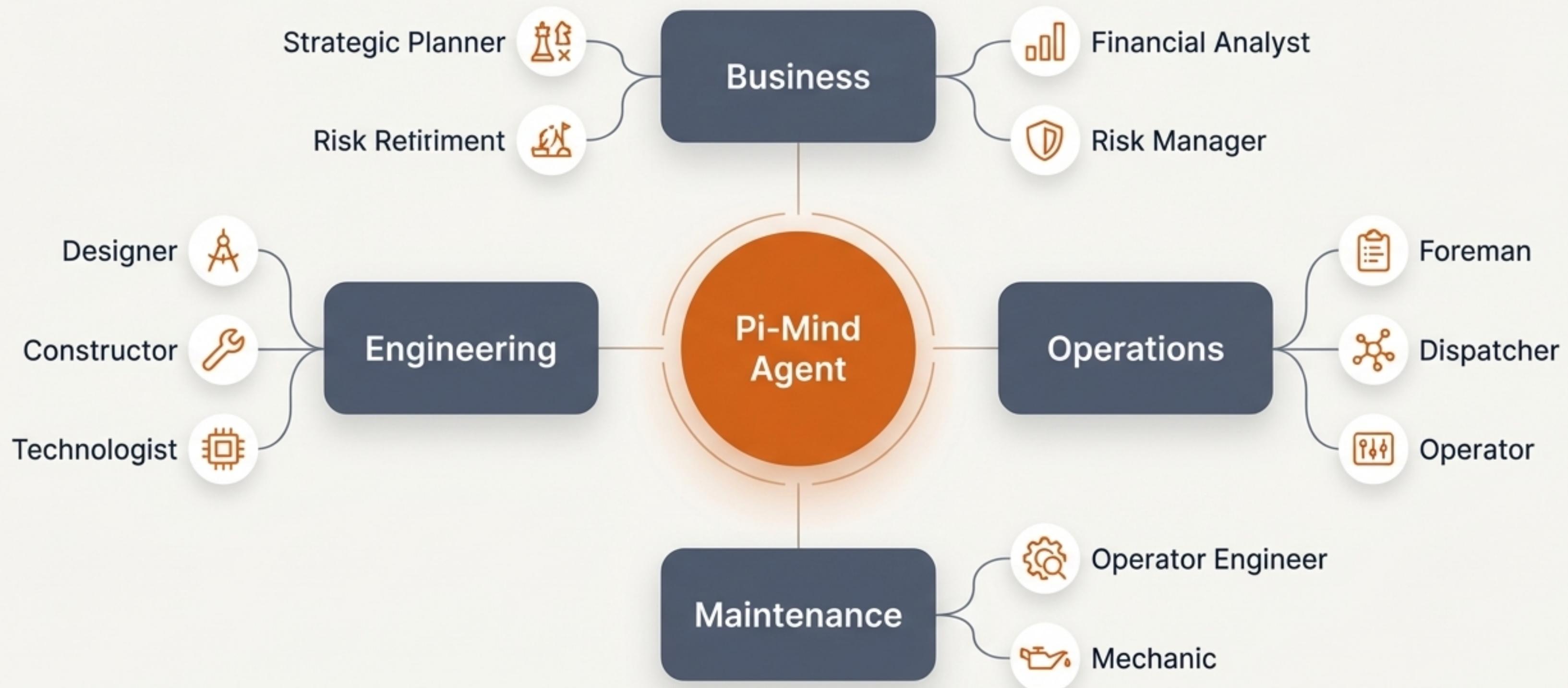
## Reduction in Pending Requests

The average number of delayed decisions (waiting for an expert) dropped by 60% over the year.

- ✓ Maintained decision quality with expert-level support.
- ✓ Significant time savings for employees and clients.
- ✓ Reduced work tension from constant, small inquiries.

# Unlocking Value Across the Enterprise by Augmenting Every Key Role

Pi-Mind technology is not limited to a single function. It can be deployed to enhance decision-making across all core industrial roles, creating a cohesive, intelligent ecosystem.



# From the Factory Floor to the Open Road: Real-World Applications

Pi-Mind agents can be deployed as specialized virtual experts to solve pressing challenges in modern industry.



## Collaborative Mass Customization

A customer's Pi-Mind agent acts as their virtual representative, guiding product configuration through all stages of production and delivery, ensuring the final product matches their precise tastes without constant interaction.



## Virtual Lean Manager

A company deploys a collection of Pi-Mind agents from certified Lean Six Sigma experts to provide 24/7 quality control, minimize waste, and ensure production flexibility without needing the physical experts on-site.



## The Personalized Autonomous Driver

A car's self-driving system is customized with the owner's Pi-Mind agent, learning their unique driving style, risk tolerance, and preferences to create a safer, more comfortable, and trustworthy autonomous experience.

# The Business Impact: Transforming Intangible Expertise into a Tangible Asset

Pi-Mind creates direct economic value by fundamentally changing how intellectual capital is managed, leveraged, and monetized within an enterprise.



## Identification & Capitalization

Transfers the intangible knowledge of employees into a measurable, controllable company asset. Pi-Mind agents can remain even after an employee leaves.

## Monetization

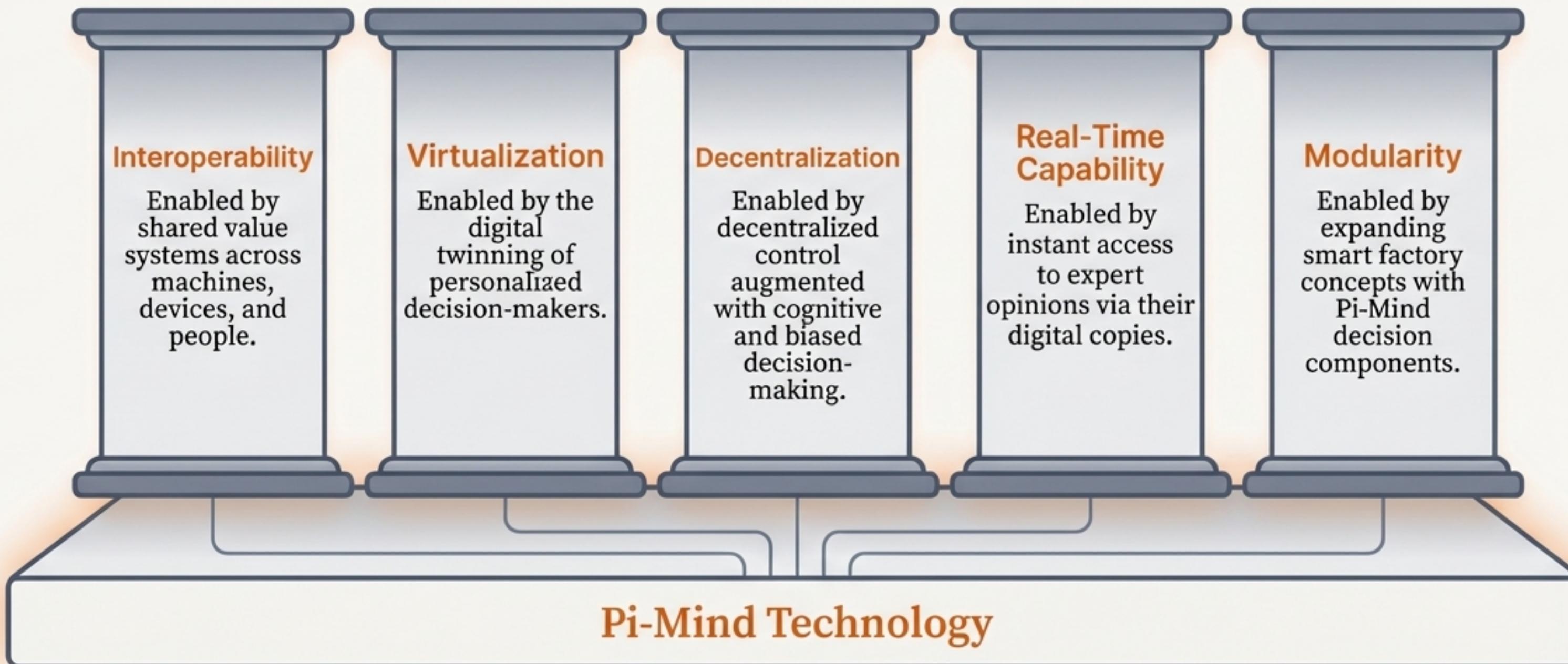
Patented decision models create new revenue streams. Licenses for Pi-Mind agents can be sold or leased, and expert councils can be formed from digital agents.

## Productivity & Optimization

Higher productivity through faster, more accurate, and more consistent decision-making at critical points in the value chain.

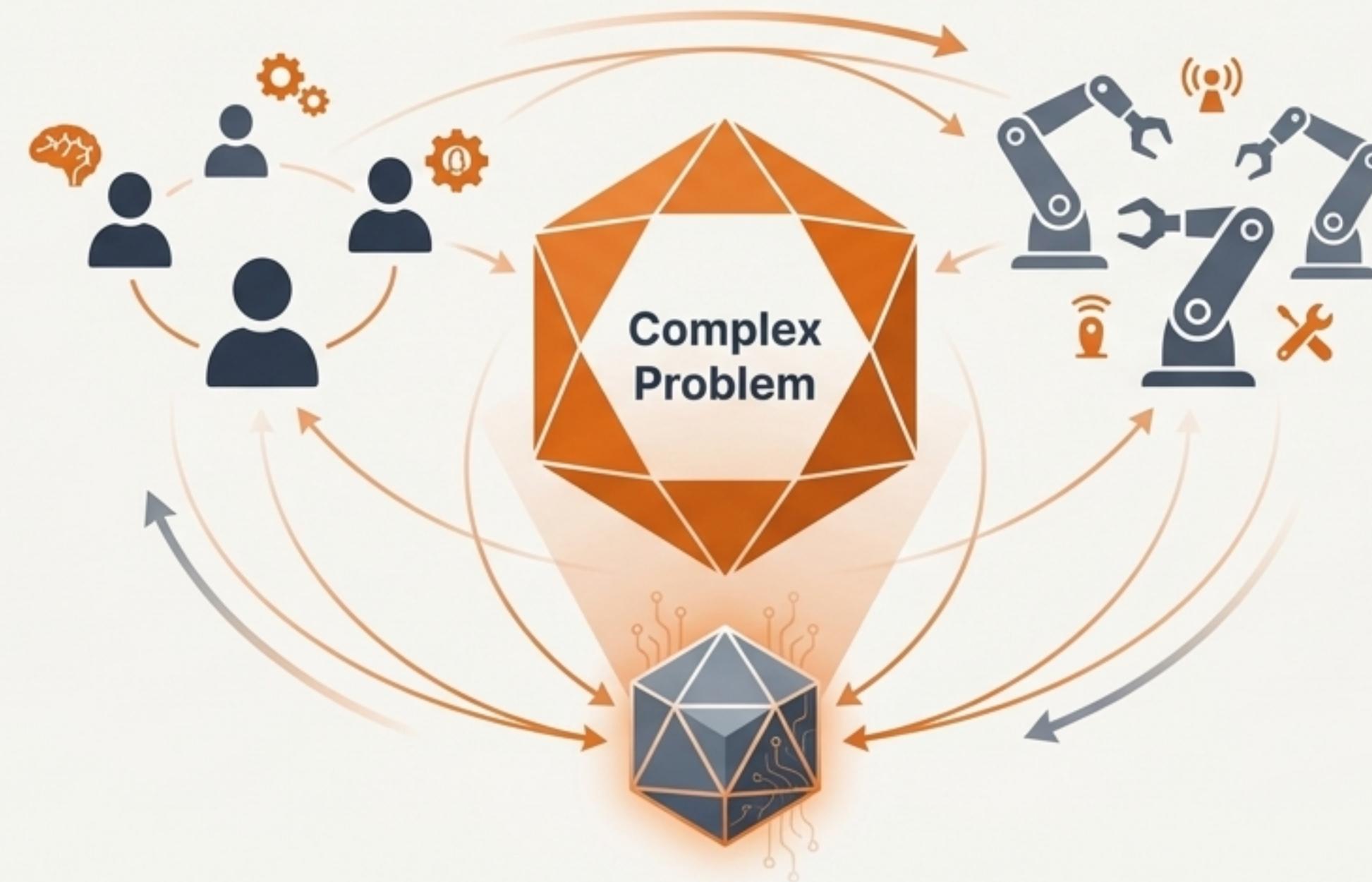
# Pi-Mind Is the Enabling Technology for a True Industry 4.0

The core design principles of Industry 4.0 require a new level of intelligence and integration. Pi-Mind technology directly addresses and enables each of these principles.



# The Future is an Ecosystem of Collective Intelligence

Pi-Mind enables a new collaborative paradigm where humans, physical robots, and intelligent software agents work as a single, cohesive team. This collective intelligence allows for benchmarking, continuous learning, and the ability to find reasonable compromises and novel solutions to complex problems, enhancing the intellectual capacity of the entire enterprise.



# The Path Forward: The Five 'I's of Patented Intelligence

The development of Pi-Mind technology will advance along five key vectors, creating a comprehensive platform for the future of industrial decision-making.

