ALICE – JPIC webinar on the PI Maturity Model

The Physical Internet Maturity Model for Corporations

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NRI

Envision the value,
Empower the change

After the Japanese PI Roadmap was published

Industry working groups formed

- Examples
  - Grocery
  - Apparel
  - Building materials
  - Chemicals
  - Pharmaceuticals
  - Home appliances

intra-industry
(not inter-industry)

Collaborative logistics initiatives expanded

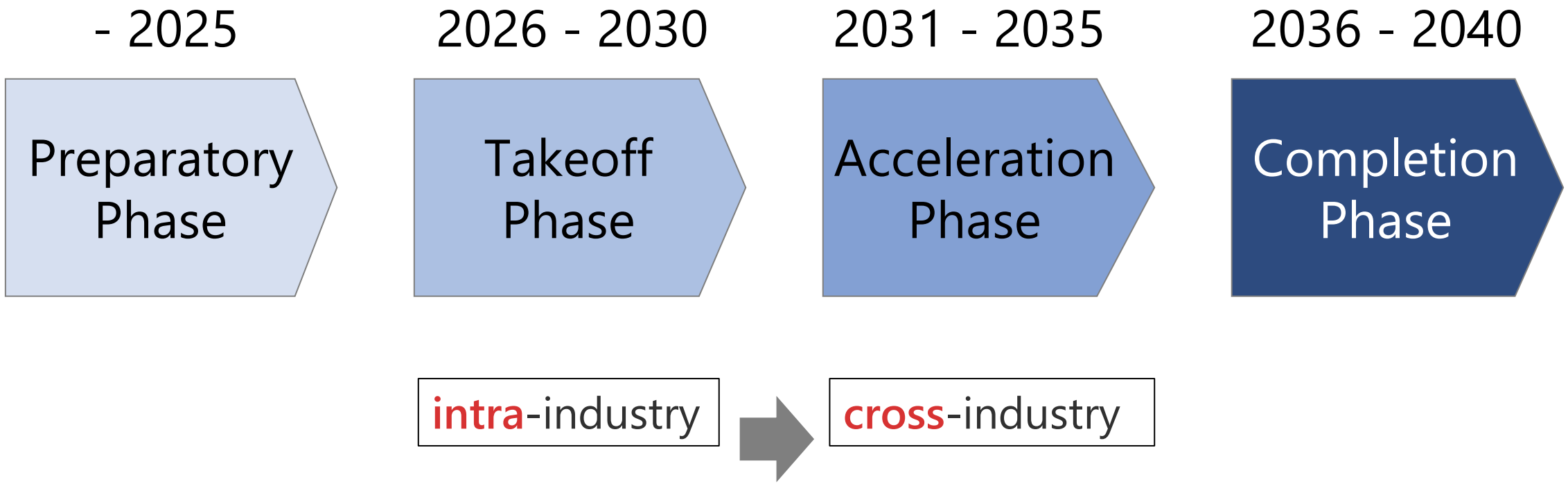
A New Challenge

- Companies started asking
  - What should we do to realize the Physical Internet?

- Need for a common yardstick
  - A shared standard to measure progress, identify weaknesses, and guide their next action.

Expansion of collaboration from “intra” to “cross”

■Four Phases in Japan’s PI Roadmap



PIMM's Two Core Values

The Two Core Values

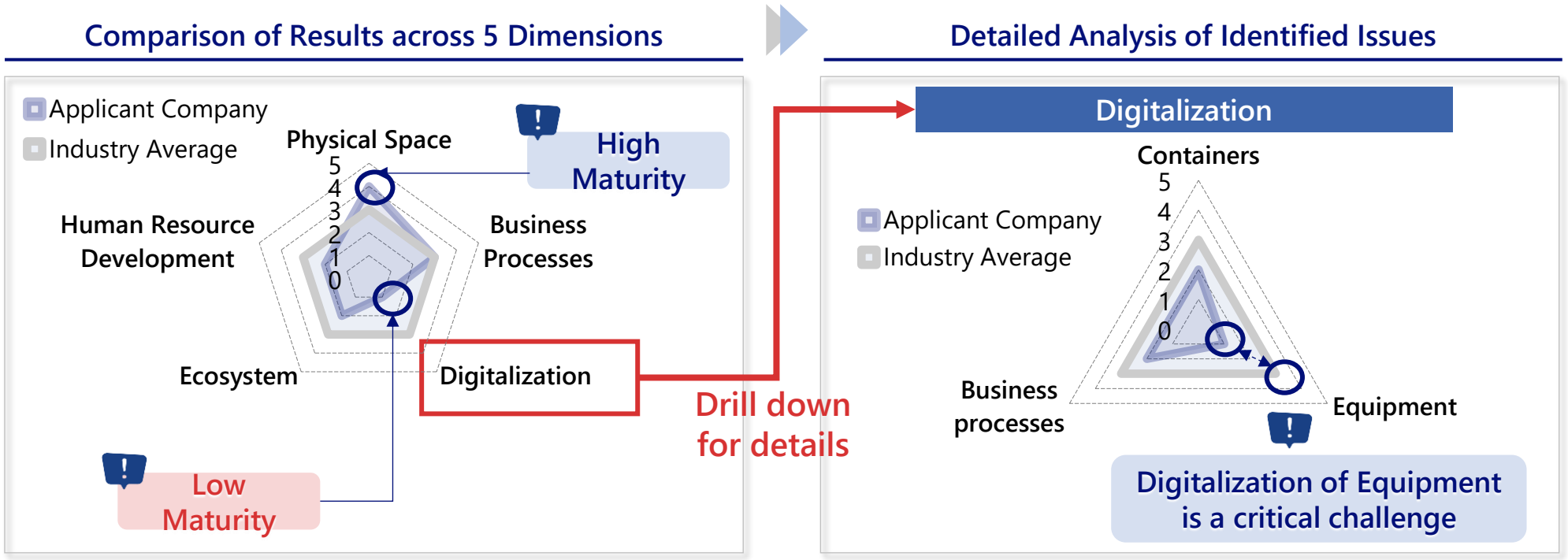
- Continuous Improvement
- Trusted Partner Discovery

Powered by Three Essential Functions

- Self-Assessment: Pinpoints your location
- Benchmarking: Shows you the landscape
- Action Plan: Shows you the path forward

Value 1 – Continuous Improvement

- Companies get a detailed radar chart comparing them to industry averages.
- They receive specific, actionable advice to reach the next level.



* Comparison with the industry average is assumed to be implemented after a certain amount of evaluation data has been accumulated.
* This represents the average of applicant companies (which tend to have high awareness), meaning the average score is expected to be relatively high.

Value 2 – Trusted Partner Discovery

Access an Exclusive Community of Certified Companies

- Eliminate Risk & Guesswork: Move beyond the uncertainty of finding reliable partners.
- A Shared Standard of Excellence: Every member is objectively evaluated against the same strict 17-item framework.

Establish a "Common Language" for Collaboration

- This shared framework allows you to skip the introductions and get straight to productive conversations.
- Benefits:
  - Quickly understand each other's strengths and capabilities.
  - Easily align on project goals and strategies.
  - Instantly connect with high-quality partners who share your commitment.

Assessment Target: What We Assess

Focus

- Not the entire company, but a specific collaborative logistics project between multiple partners.

Key Requirement

- The project must be an ongoing operation, active for at least one year.
  - Short-term "Proof of Concept" (PoC) or experimental projects are excluded.

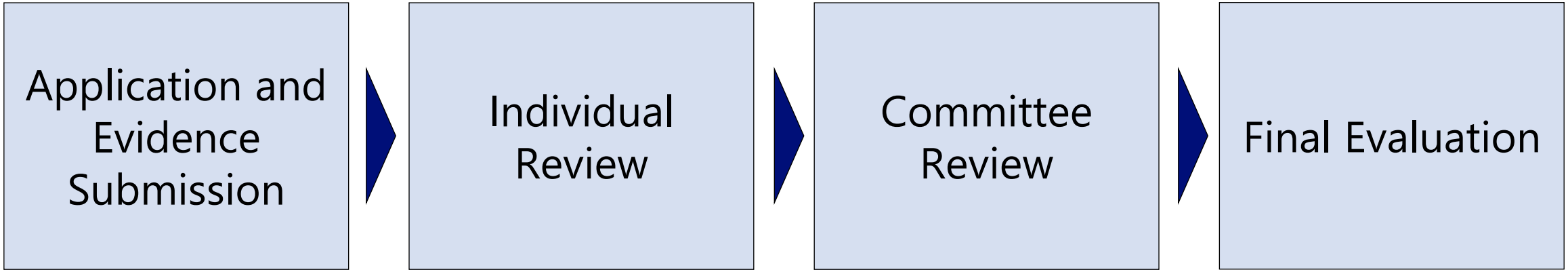
Outcome

- A jointly issued certificate for all participating partners in the project.

PIMM Certificate Mockup

The 4-Step Assessment Process: How We Assess

- A clear, rigorous process ensures a fair and comprehensive evaluation



Provide concrete inputs from your operations

In-depth analysis by individual assessors

Group discussion to ensure fairness and objectivity

Receive your comprehensive, multi-dimensional profile

01 Introduction

02 Framework Design

03 Operational Design

04 Initial Trial: Practicality Verification

05 Conclusion & Future Work

How Was PIMM Built?

Synthesizing Proven Models:

- Built by combining three established frameworks:

Table : Framework Design Approach: Analysis of Existing Models

Existing framework	Key strength	Structural blind spot
CMMI（Capability Maturity Model Integration）	◯ Structured maturity levels	× Ignores physical logistics operations
Global SCM Scorecard	◯ Evaluation of internal supply chain & logistics operations	× Fails to account for 3rd-party non-contracted entities
Integrative Framework for Collaborative Governance	◯ Multi-stakeholder problem-solving	× Lacks specific operational mechanics

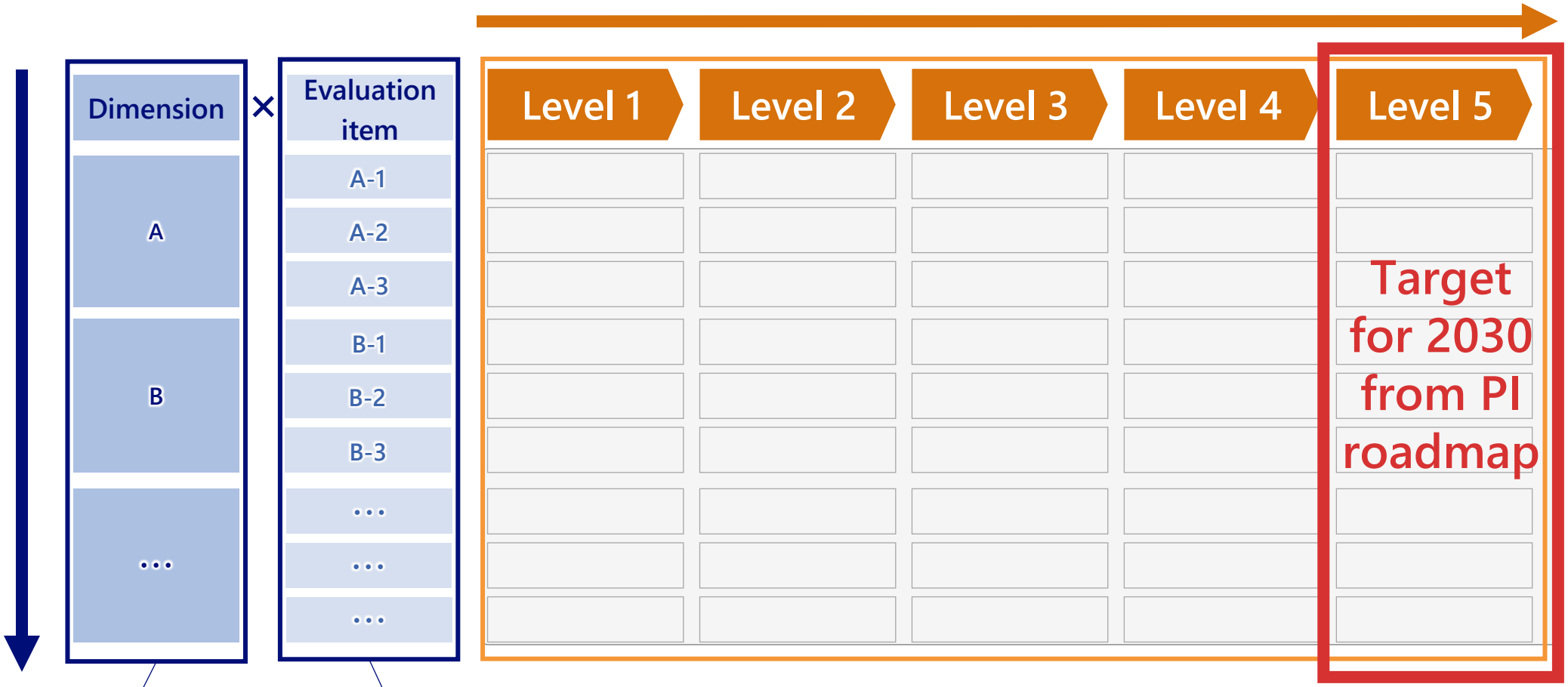
- Integrated key concepts from PI roadmaps (e.g., ALICE, Japanese Gov.)

Co-Creation Process:

- Refined through feedback from external experts (industry and academia)
- Expanded beyond just technical issues to include "organization" and "human resources"

Framework Design

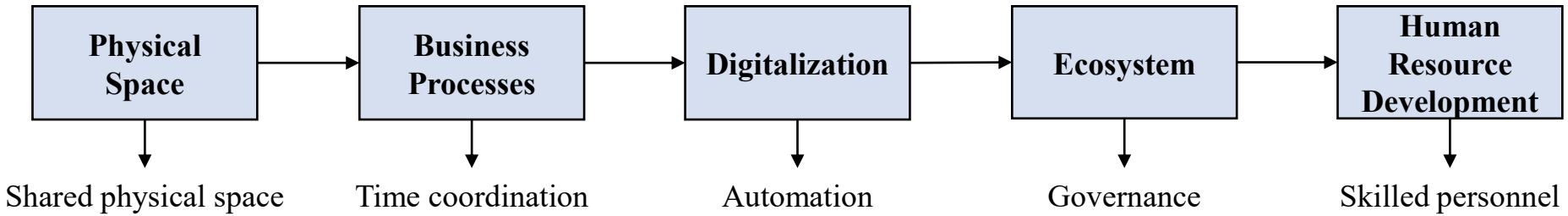
Overall Structure of PIMM



Structure of PIMM: 5 Dimensions

Sequential Logic:

- **Physical Space**: Sharing containers and equipment
- **Business Processes**: Synchronizing time and operations
- **Digitalization**: Using tech for automated synchronization
- **Ecosystem**: Creating rules and governance
- **Human Resource Development**: Training people for collaboration

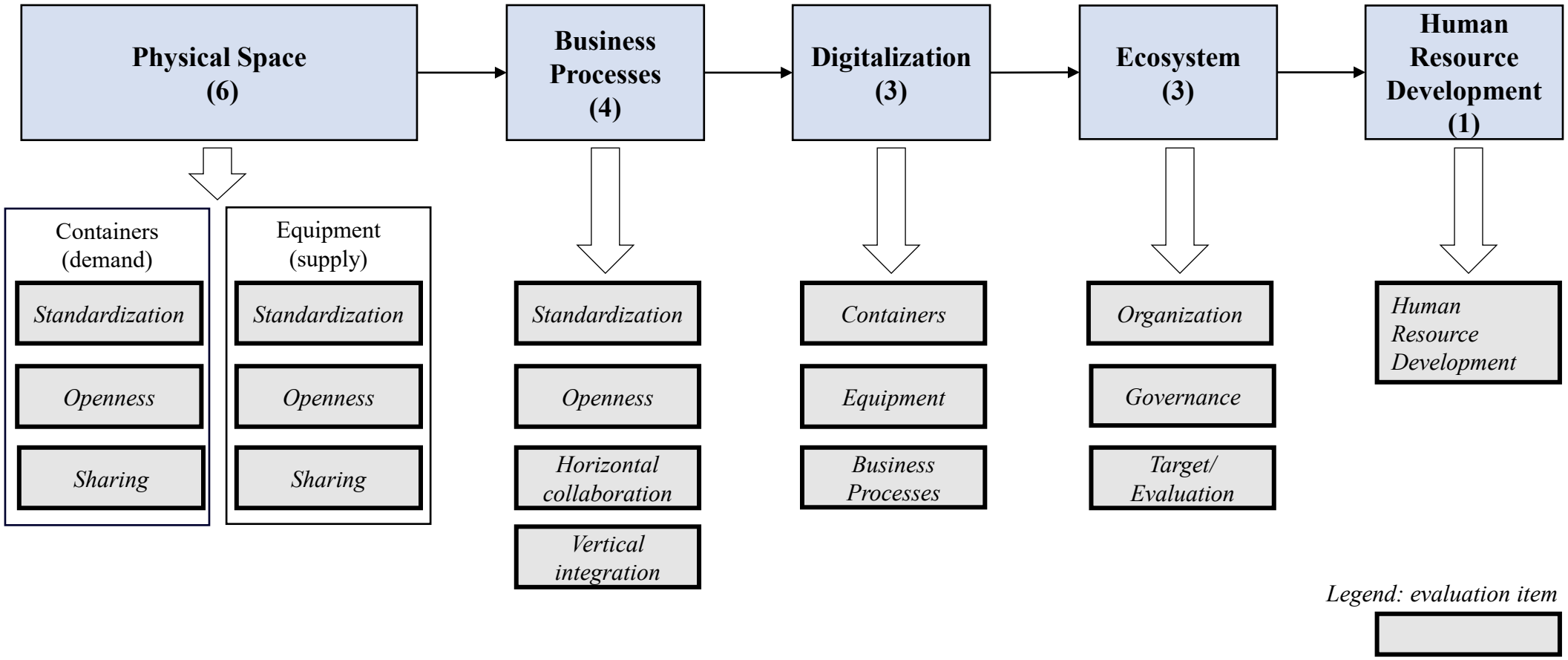


Evaluation Items:

- These 5 dimensions are divided into 17 specific, actionable items.

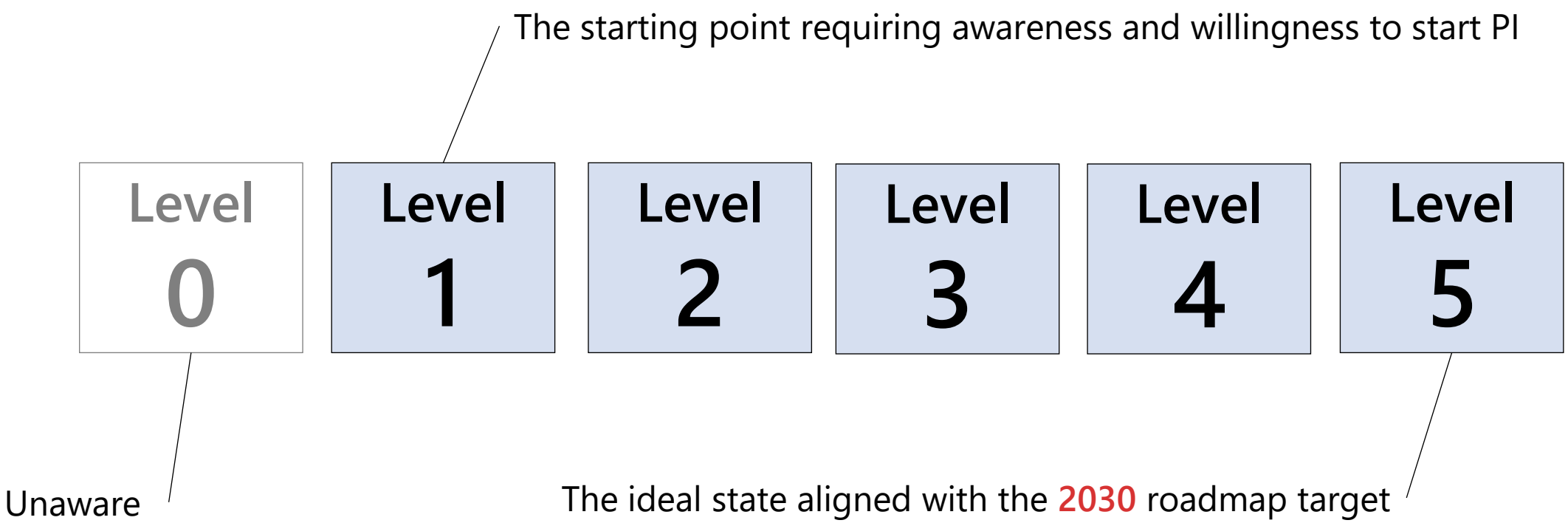
Framework Design

Structure of PIMM: 17 Evaluation Items



Framework Design

Structure of PIMM: Level Definitions



Clear Milestones for Maturity (Levels 1 to 5)

Specific Criteria:

- PIMM uses specific, milestone-based criteria, not just vague labels.
- Examples:
  - Digitalization for Containers
  - Standardization for Containers

Clear Milestones for Maturity (Levels 1 to 5)

■ Example (Standardization for Containers):

Table : Level definition examples for the "Standardization" evaluation item under "Containers" within the "Physical Space" dimension

	Level 1	Level 2	Level 3	Level 4	Level 5
Qualitative State	Unestablished	Unified across internal warehouses/businesses	Unified with specific external companies	Standard specifications (single type)	Standard specifications (multiple types)
Description	No unified rules for container sizes and specifications	Adopting unified standards across multiple internal warehouses and business units	Unifying container standards with specific trading partners	Using containers compliant with common industry standards. Standardization is limited to a single type (e.g., folding containers only, or pallets only)	Using containers compliant with common industry standards. The efficiency of combining multiple types of containers, such as folding containers and pallets, is taken into consideration.

No rules ***within*** **your company** ***with a specific partner*** ***Adoption of an industry standard*** ***Adoption of multiple industry standards***

Clear Milestones for Maturity (Levels 1 to 5)

■ Example (Digitalization for Containers):

Table : Level definition examples for the "Containers" evaluation item within the "Digitalization" dimension

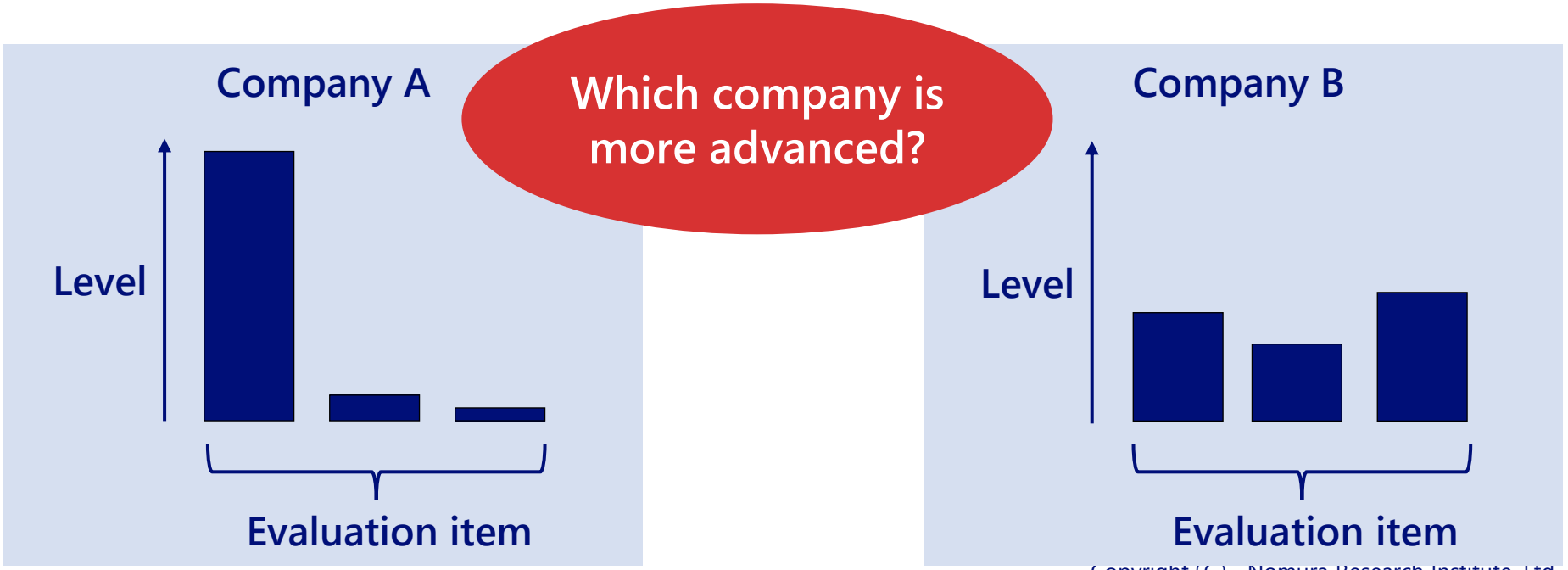
	Level 1	Level 2	Level 3	Level 4	Level 5
Qualitative State	Manual	Digitization	System Integration	Visualization, Analysis & Improvement	AI-driven Decision Support
Description	Containers are managed manually or unmanaged	ID assignment per shipping unit(e.g., pallets, roll cages). Standardized identifiers like GS1 SSCC are desirable.	Container management system linked with ERP/WMS, enabling the tracking of the exact quantity, location, and specifications of containers	Dashboard visualization and analysis of utilization rates, turnover rates, and retention status, enabling human identification of areas for improvement	AI analyzes real-time and historical data to automatically detect and alert inefficiencies or problems in the supply chain process

Manual ***Count*** ***Track*** ***Human analysis*** ***AI analysis***

The Challenge: How to Score Fairly?

Why a simple sum doesn't work

- Companies have diverse strategies: some specialize deeply in one area, while others work broadly across many.
- A simple scoring system might unfairly penalize specialists with advanced initiatives.
- Our goal is to evaluate the maturity of what you did, not to penalize you for what you didn't.



Framework Design: Calculation of the Overall Level

Our Solution: The Flexible Scoreboard

A flexible evaluation that fits your actual initiatives

- We introduced a unique concept called the "Flexible Scoreboard."
- This method focuses on the maturity level of the items a company actually worked on.
- It allows us to fairly compare and evaluate companies with different strengths and strategies.

Company A

Company B

Scoring Process

A process to ensure objectivity and transparency

- The overall level is calculated objectively through the following four steps.

Step 1	Raw Score Calculation	Calculate scores for each assessment item
Step 2	Score Adjustment	Exclude non-applicable items to create a valid
Step 3	Weighted Average	Calculate the weighted average to measure the maturity of the implemented items
Step 4	Level Determination	Determine the final 5-tier level based on the overall score

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How the Assessment Works (1): What & Who

Scope of Evaluation ("What"):

- Strictly limited to practical initiatives that are in continuous operation.
- Excludes transient Proof of Concept (PoC) projects, as they dilute the value of certification.

The Appraisers ("Who"):

- Utilizes a decentralized assessment system
- Initially, appraisers are academic experts. Personnel from highly mature certified companies will be added later to ensure operational sustainability.

How the Assessment Works (2): When

Two-Stage Evaluation ("How"):

- To prevent bias, we use a two-stage approach: document reviews + online interviews.
  - Stage 1: Individual reviews by appraisers
  - Stage 2: Committee discussions on borderline cases

Year-Round Cycle ("When"):

- Applications are accepted all year round.
- Formal review meetings are held quarterly to manage workload.

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Initial Trial: Practicality Verification

The Initial Trial:

- Conducted in early 2026 with 5 companies (shipper, logistics providers, platform)

Lessons Learned:

- Paper-based reviews missed on-site innovations
- Confirmed that online interviews are absolutely necessary

Highly Positive Feedback:

- 80% of participants expect PIMM to facilitate future partner matching
- 100% intend to cooperate in future operations

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Conclusion & Future Work

Conclusion:

- PIMM successfully translates the abstract PI concept into a concrete, 17-item tool.
- It resolves the "implementation trilemma" through a practical operational design (4W1H, two-stage evaluation).

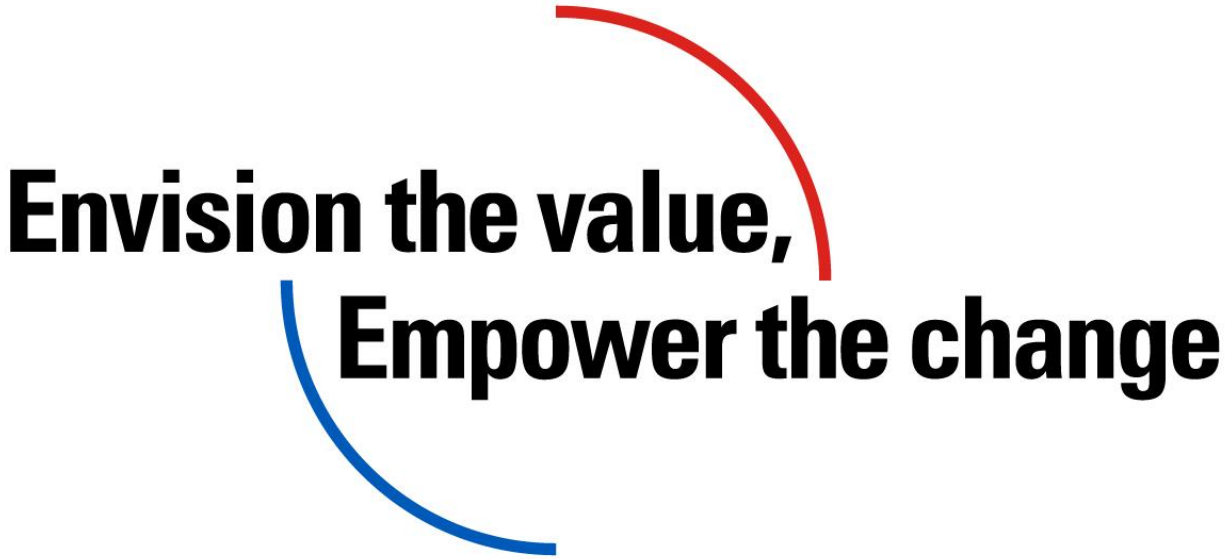
Future Work:

- Broad dissemination targeting the 2030 "Takeoff Phase"
- Future updates to align with the 2035 "Acceleration Phase"
- Expand the framework to become a recognized standard

Feedback & Discussion

Three key questions:

- Practicality in Europe:
  - Are the 17 evaluation dimensions practical for your daily logistics operations?
- Value as a "Common Language"
  - Do you see value in PIMM for ensuring compatibility and finding trusted partners?
- Integration with Existing Approaches
  - How could PIMM align or integrate with the maturity models you are currently using?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