

A Vision: Innovate or Perish!

An Outlook to a Future EuroSPI Eco-System Extension

EuroSPI Tech Day, 3.9.2026

Dr Andreas Riel, Grenoble INP & ISCN Group

Dr Richard Messnarz, ISCN GmbH

33rd EuroSPI Conference Context

Pre-taste of two forward-looking keynotes in a rapidly changing world

Keynote 4:

- Dr Richard Messnarz
 - *Innovate or Perish – Why Structured Innovation and Innovation Capability are Required in Europe*

Keynote 10:

- Dr Andreas Riel
 - *EuroSPI as an Ecosystem – You are part of the story to build the knowledge community*



*What does **Nature** teach us about **real** ecosystems?*

Ecosystems in Nature

Abiotic (Non-Living) Components:

- Physical and chemical elements such as **sunlight**, temperature, water, air soil composition, minerals, and climate.
- These set the **physical boundaries** and conditions for life.

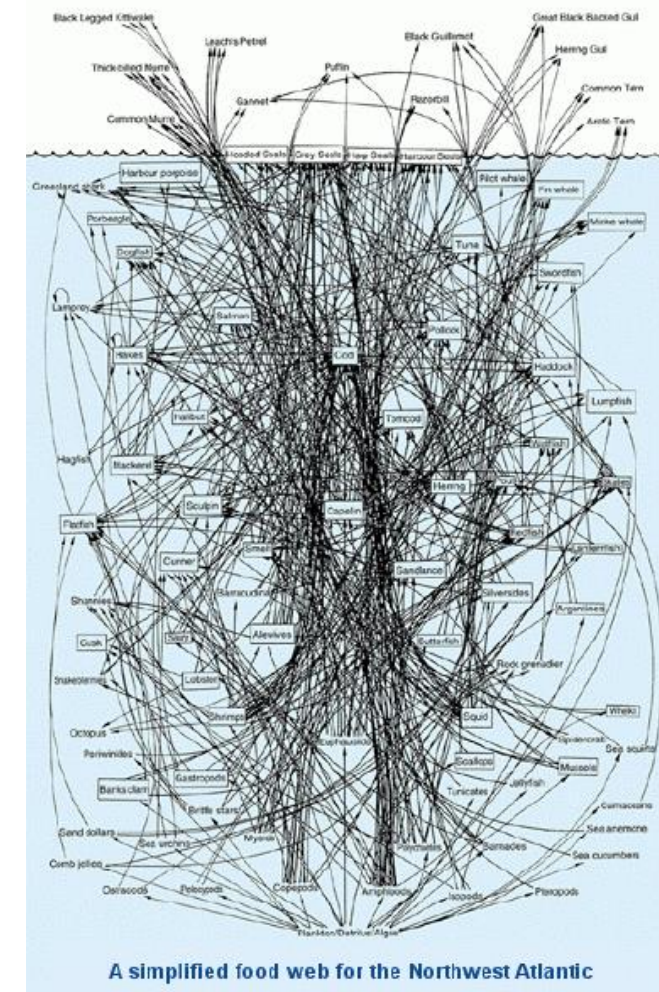


Biotic (Living) Components: All organisms in the environment, categorized by how they obtain energy:

- Producers (Autotrophs):**
Organisms like plants and algae that convert solar energy into chemical energy via photosynthesis.
- Consumers (Heterotrophs):**
Organisms that eat other living things to gain energy (herbivores, carnivores, omnivores).
- Decomposers (Saprotrophs):**
Bacteria and fungi that break down dead organic matter, returning inorganic nutrients back to the soil and water.

Structural Characteristics

- **Stratification:**
 - Ecosystems exhibit **vertical and horizontal** spatial structures.
 - For instance, a forest has distinct vertical layers (canopy, understory, forest floor), each hosting species specifically adapted to that light level and microclimate.
- **Complex Interdependence (Food Webs):**
 - Organisms do not exist in isolation;
 - they are **connected through feeding relationships** called food chains and food webs.
 - Predators control prey populations, plants provide shelter and food, and decomposers recycle waste.



<https://scapegotseals.org/marine-food-web-complexity/>

Functional Characteristics

- **Unidirectional Energy Flow:**
 - **Energy enters** almost every ecosystem as **sunlight**. Photosynthetic producers capture this light and transform it into organic matter.
 - **Energy** then **moves up** through trophic levels (Producers → Herbivores → Carnivores).
 - Unlike nutrients, **energy flow is strictly one-way**—at each step, roughly 90% of energy is lost as heat, meaning ecosystems require a continuous external energy source (the Sun) to persist.
- **Biogeochemical Nutrient Cycling:**
 - While energy flows through and dissipates, **matter is continuously recycled**.
 - Essential elements—such as carbon, nitrogen, phosphorus, and water—cycle between living organisms and the abiotic environment through biogeochemical cycles.
- **Primary and Secondary Productivity:**
 - Ecosystems differ in their capacity to generate biomass.
 - Primary productivity measures how fast **producers accumulate new organic material**, which sets the energy limit for all higher trophic levels in that system.

Functional Characteristics

- **Unidirectional**

- Energy transfer is one-way
- Energy flows from the sun to producers and then to consumers
- Unlike matter, energy is not recycled

- **Biogeochemical**

- While energy flows, matter is recycled
- Essential for the survival of organisms
- and the functioning of the ecosystem

- **Primary**

- Ecosystems are dependent on the primary energy source



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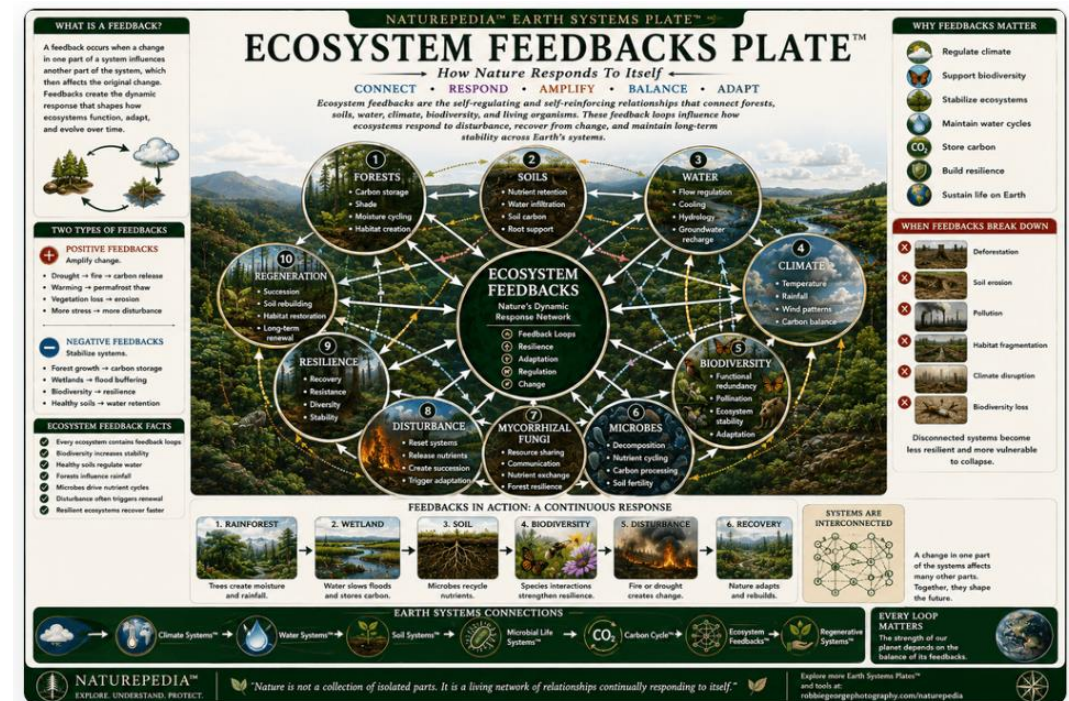
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Dynamic & Behavioral Characteristics

- **Dynamic Homeostasis (Self-Regulation):**
 - Natural ecosystems **possess feedback mechanisms** to maintain balance.
 - For example, if a prey population surges, predator populations naturally rise shortly after, preventing overgrazing.
- **Ecological Resilience and Stability:**
 - Healthy ecosystems can **absorb disturbances**—such as fires, storms, or seasonal floods—and recover over time.
- **Ecological Succession:**
 - Ecosystems **change predictably over time**.
 - Starting from bare rock or disturbed ground, plant and animal communities gradually replace one another until a stable climax community is established.



Ecosystem Feedbacks Plate™ — a Naturepedia™ systems map of how living Earth responds to change.



*How does the **EuroSPI ecosystem** implement these principles?*

The EuroSPI Ecosystem: Structural Characteristics

Abiotic Components (Infrastructure & Environment):

- *Natural Equivalent*: Sunlight, climate, soil composition.
- **Digital Platforms**
 - Capability Adviser assessment platform
 - SmartSPI Innovation platform
 - EuroSPI Academy training platform
 - EuroSPI Exam and Certification platform
 - EuroSPI Conference Series platform
 - Springer book series
 - Conference journals (Wiley, MDPI Technologies)
 - ISCN/EuroSPI Cybertester Automotive Lab
- **International standards** (Automotive SPICE, ISO 33000, ISO 26262, ISO 21434, ISO 56000, etc.)
- **EU alliances**, projects, and frameworks (e.g., ASA, DRIVES, TRIREME, ALBATTIS, etc.)



The EuroSPI Ecosystem: Structural Characteristics

Producers / Autotrophs (Knowledge & IP Generators):

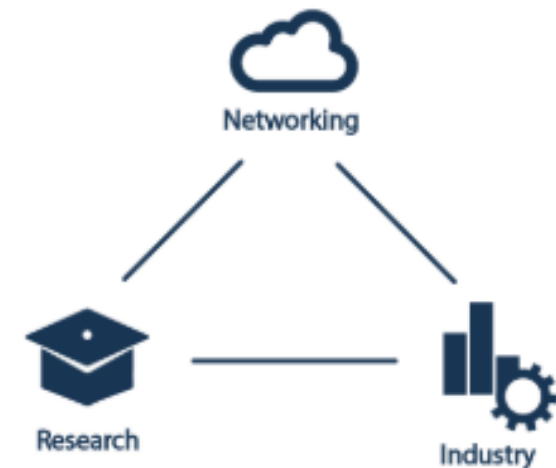
- *Natural Equivalent*: Plants converting solar energy into biological energy.
- **EuroSPI University network**
 - TU Graz, Riga Technical University, TU Ostrava, Grenoble INP, etc.
 - Top-down knowledge generation from research challenges
- **EuroSPI Industry Network & SoQrates**
 - Bottom-up knowledge generation from real-world industrial challenges
- **EU-Projects, EU-Blueprints, EU-Initiatives**
 - Bottom-up/top-down knowledge generation



The EuroSPI Ecosystem: Structural Characteristics

Consumers / Heterotrophs (Commercializers & Implementers):

- *Natural Equivalent:* Herbivores and carnivores that consume primary energy.
- **EuroSPI/ISCN customer & partner network** (e.g., major OEM's, Tier-1's, Tier-2's)
 - Absorb process improvement-related standards, and implement them in their development and production processes.
- **Trainees in Industry**
 - Bring the new knowledge into the organisations
- **Students in Universities**
 - Empowerment, and increasing their attractiveness for the job market.
- **Readership of EuroSPI publications**
 - Top download figures, top impact factors
 - Vulgarization of knowledge



The EuroSPI Ecosystem: Structural Characteristics

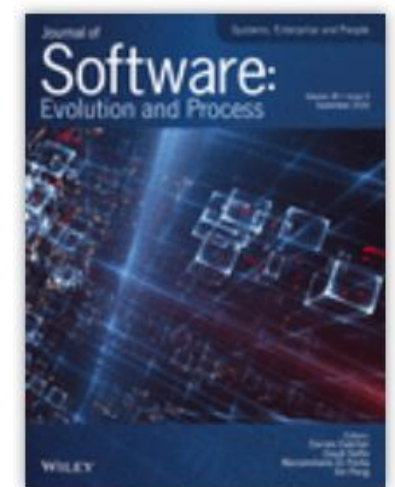
Decomposers / Saprotrophs (Restructuring & Knowledge Recycling):

- *Natural Equivalent:* Fungi and bacteria breaking down waste to replenish nutrients.
- **ISCN Assessments & Coaching**
 - Extract lessons from failed software/hardware processes or obsolete standards.
- **EuroSPI Academy Training Platform**
 - Re-integrate best practices back into updated training curricula
- **EuroSPI Conference Series & Proceedings**
 - Harvest & publish success & failure stories for re-integrating the related knowledge in the community & the great public for continuous improvement
- **EuroSPI/ASA Innovation Task Force**
 - Question/decompose existing, traditional innovation practices to pave the way for new approaches

The EuroSPI Ecosystem: Structural Characteristics

Stratification (Maturity & Role Layers):

- *Natural Equivalent*: Canopy, understory, and forest floor.
- Canopy (Global Outreach):
 - EuroSPI International Conference & Proceedings in Springer, Wiley, MDPI
- Mid-Canopy (Operational Working Groups):
 - SoQrates regional task forces (Austria, Czech Republic, Germany, Switzerland, etc.).
 - ASA Innovation Task Force
- Ground Layer (Skill Building & Certification):
 - EuroSPI Academy
 - ISCN Training and Coaching

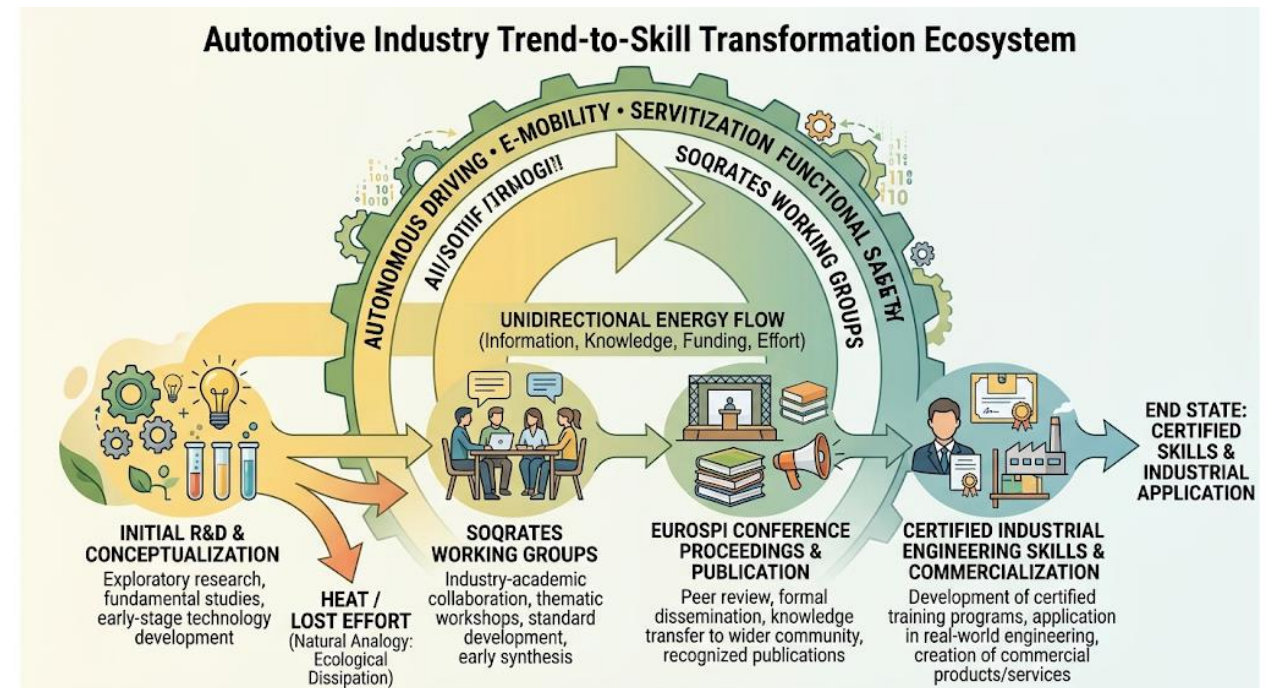


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The EuroSPI Ecosystem: Functional Characteristics

Unidirectional Energy Flow:

- *Natural Equivalent:* Solar radiation captured by plants and transferred up the food chain, dissipating as heat.
- **Funding and legislative mandates**
 - Automotive Industry trends like Autonomous Driving, E-Mobility, Servitization, Functional Safety, AI/SOTIF, etc.
 - This “energy” flows from initial R&D through SoQrates working groups into EuroSPI conference proceedings, eventually being commercialized into certified industrial engineering skills
 - EU projects & initiatives

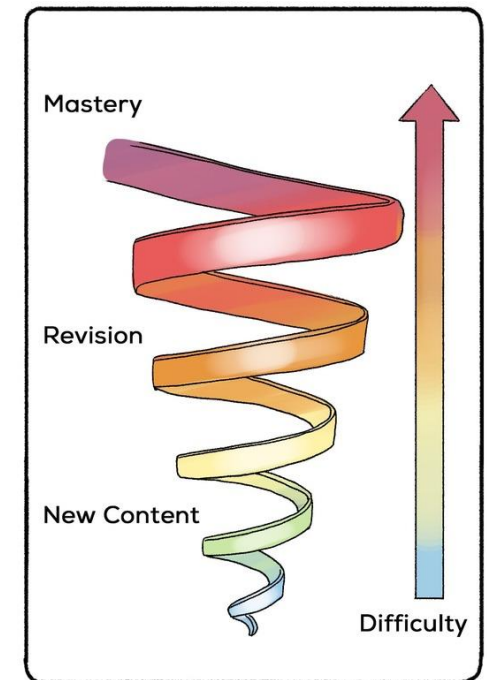


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The EuroSPI Ecosystem: Functional Characteristics

Biogeochemical Nutrient Cycling:

- **Natural Equivalent:** Continuous cycling of carbon and nitrogen between living matter and soil.
- **The Best-Practice Feedback Loop.**
 - Experiences gained on the factory floor by companies like Bosch or ZF are shared within confidential SoQrates meetings.
 - These insights are converted into “*Knowledge Releases*”, distilled into EuroSPI papers, transformed into ISO standard contributions, and
 - recycled back into MOOCs and training programs for future engineers.
- **The Learning Organization Spiral-Concept**
 - Continuous learning in iterations provides the energy supply for sustainable innovation performance.



<https://www.qmul.ac.uk/queenmaryacademy/educators/resources/degree-apprenticeships/curriculum-design/spiral-curriculum/>

The EuroSPI Ecosystem: Functional Characteristics

Symbiosis & Interdependence:

- *Natural Equivalent:* Mutualism and commensalism among species.
- **Mutualism:**
 - Competitors (e.g., Bosch and ZF) pre-competitively share non-proprietary safety/cybersecurity architectures in SoQrates workshops.
 - They save millions in baseline R&D while collectively elevating industry standards.
- **Symbiosis (Moderator & Orchestrator Roles):**
 - ISCN acts as the orchestrator/moderator connecting industrial needs (SoQrates) with academic dissemination (EuroSPI) and educational scaling (EuroSPI Academy).

The EuroSPI Ecosystem: Dynamic & Behavioral Characteristics

Dynamic Homeostasis (Self-Regulation):

- *Natural Equivalent*: Predator-prey feedback loops maintaining population balances.
- **Working Groups and Task Forces:**
 - When new disruptive risks emerge (e.g., cybersecurity breaches, AI/machine learning safety concerns in autonomous driving), the ecosystem self-regulates by forming specialized task forces (e.g., SoQrates Working Groups, ASA Innovation Agent Task Force) to define best practices and metrics.
- **EU Project Proposals:**
 - Project Consortia are created around future (skill) challenge topics to create training content & certification to build and stabilize a critical mass of certified experts around an impactful innovation topic

The EuroSPI Ecosystem: Dynamic & Behavioral Characteristics

Ecological Resilience & Diversity:

- *Natural Equivalent:* Polyculture forests surviving blights far better than monocultures.
- **Diverse Core Technologies & Diverse Partnerships**
 - By spanning across multiple domains (software, hardware, systems engineering, functional safety, medical devices, automotive), the ecosystem resists sector-specific shocks and technology hypes.
- **Diverse Partnerships**
 - By mixing SMEs, multinational corporations, universities, training & certification bodies, the ecosystem resists sector-specific economic shocks.
- **Continuous Partnership Renewal:**
 - Local EuroSPI hosts invite their network members
 - Invited Keynotes
 - SoQrates is open to new members

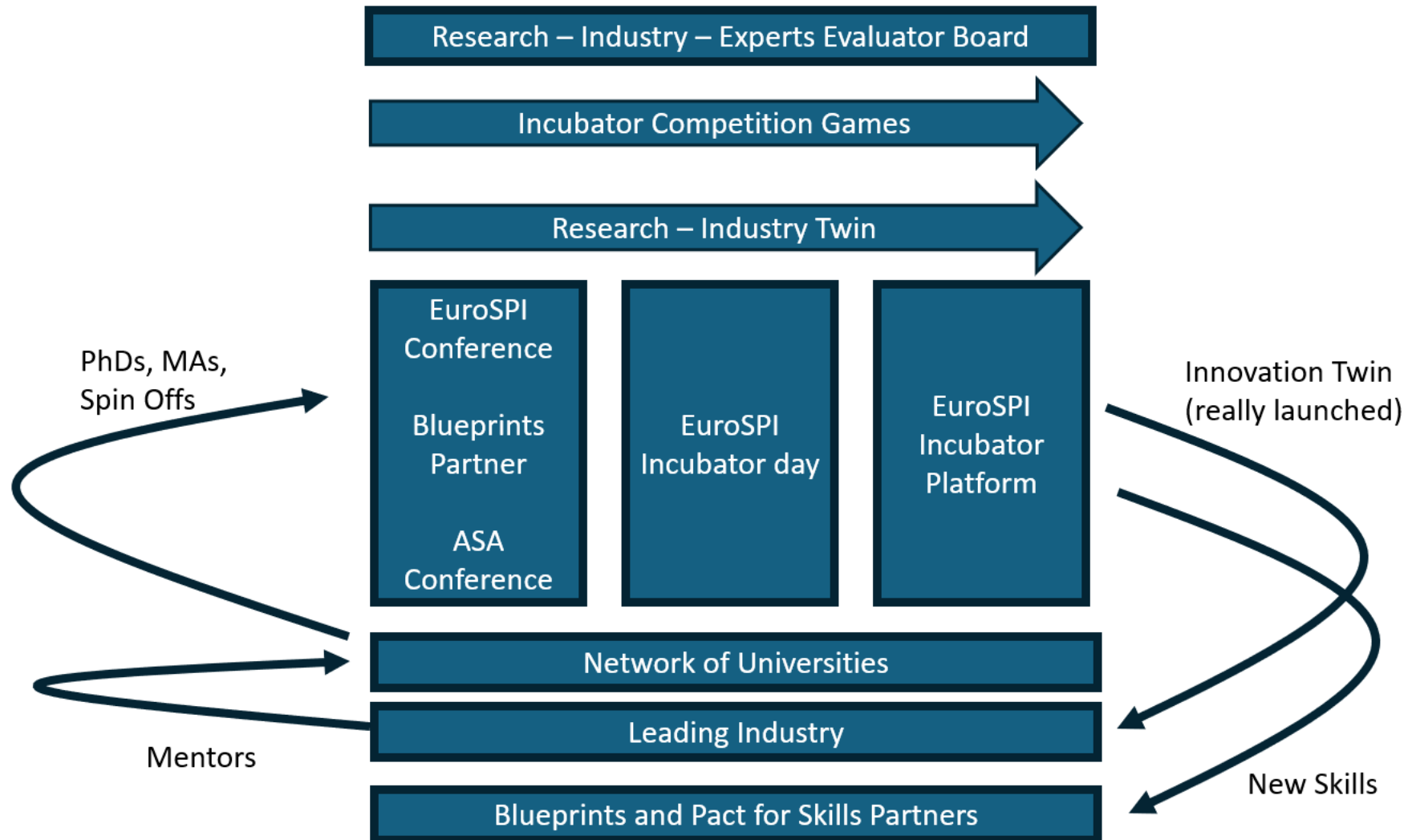
The EuroSPI Ecosystem: Dynamic & Behavioral Characteristics

Ecological Succession:

- *Natural Equivalent*: Pioneer species converting bare rock into soil, paving the way for a mature climax forest.
- **Evolution from**
 - Basic Software Process Improvement (CMMI/SPICE in the 1990s) to
 - Innovation and Core Competence Management (2000s) to
 - Automotive SPICE (2000s) to
 - Functional Safety ISO 26262 (2010s) to
 - Cybersecurity ISO 21434 (2015s) to
 - AI to
 - Sustainable Innovation Management (2020s) to
 - *more to come...*
- Each generation **builds upon** the mature "soil" (methods, tools, trust) prepared by the previous era

*How do we want to **extend** the **EuroSPI** ecosystem
in the near future –
to even better respond to
the **Innovate or Perish** paradigm
that characterizes today's world?*

The EuroSPI Ecosystem: Future Extension by Incubators

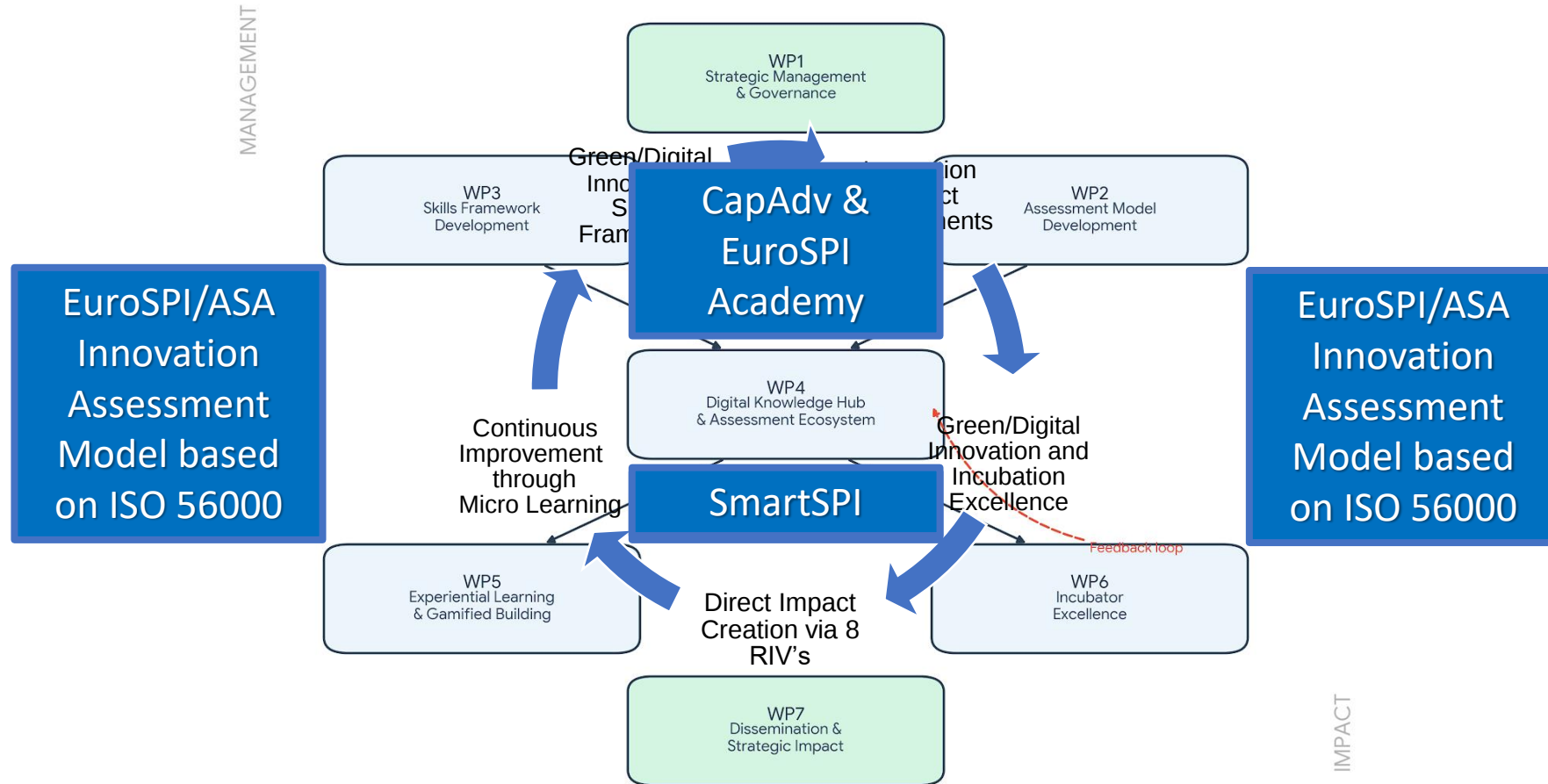


The EuroSPI Ecosystem: Incubator Partnerships

HEI Partner	Associated Incubator / Catalyst Hub	Regional Specialization & Ecosystem Value
Grenoble INP (FR)	SATT Linksium / Grenoble Innovation	A premier European deep-tech incubator. Specializes in micro-nanotechnologies and energy transition, leveraging the GIANT (Grenoble Innovation for Advanced New Technologies) ecosystem.
TU Graz (AT)	Science Park Graz (SPG)	High-tech incubator focusing on Space-tech (ESA BIC) and mobility. Acts as a bridge to the "Styrian Autocluster" and Graz's heavy-tech industrial base.
VSB-TU Ostrava (CZ)	BIC Ostrava / CPIT TL	Center for Prototyping and Innovative Technologies. Specializes in Industry 4.0 and AI, leveraging the IT4Innovations Supercomputing Center for SME scaling.
TU Sofia (BG)	TU Sofia Research Park	The engineering flagship of Bulgaria. Focuses on mechatronics, robotics, and telecommunications, serving as a gateway to the Balkan tech ecosystem.
Hochschule München (DE)	Strascheg Center for Entrepreneurship (SCE)	One of Germany's leading university centers for Sustainable Entrepreneurship. Deeply integrated into Munich's world-class automotive and ICT clusters.
Univ. of the Basque Country (ES)	ZITEK	A specialized hub for technology-based spin-offs. Pivotal in the Basque Industry 4.0 landscape, focusing on manufacturing, energy, and circular economy.
Riga Technical University (LV)	RTU Science and Innovation Centre	Via KVALB: Hosts the RTU Design Factory. Focuses on prototyping, maritime tech, and green urban solutions within the Baltic innovation corridor.
University of Maribor (SI)	Venture Factory (Tovarna podjetov)	Slovenia's leading university incubator. Core of the PODIM ecosystem, specializing in SME digitalization and regional cross-border innovation.

The EuroSPI Ecosystem: Proposal Structure

TwinnubAltion Work Package Interdependency (PERT Chart)



The EuroSPI Ecosystem: Key Takeaways

- **Nature** teaches us *what real ecosystems* are and *how* they should work.
- **EuroSPI** has been set up as an **Innovation Ecosystem** from the ground up.
- It exhibits **many similarities** with natural Ecosystems.
- Therefore, it has been able **to adapt over time** to the changing context and has shown **resilience**.
- To face future innovation challenges, it is currently extending towards **fostering start-up creation via incubation structures** that help **industry-close university projects (MSc/PhD theses)** to have market impact as early as possible.
- The focus is on innovations that are aligned with the **Green-Digital Transition**.
- This initiative is **open to both university and industry partners**.
- To join it, **please get in touch with us!**

Thanks

Thank you for cooperating with ISCN.



1. ISCN is INTACS certified training provider for Automotive SPICE assessor courses
2. ISCN is certified by VDA to hold provisional and competent ASPICE assessor courses
3. ISCN moderates the German task force SOQRATES (<https://soqrates.eurospi.net>) since 2003 where >20 Tier 1 collaborate on ASPICE, Safety and Security.
4. ISCN organises the EuroSPI conference since 1994 where e.g. VW is organising a workshop community, and VW, Rheinmetall AG, EB, MAGNA, AVL held key notes. <http://www.eurospi.net>
5. EuroSPI certificates are issued by EuroSPI Certificates & Services GmbH (www.eurospi.net) in cooperation with DRIVES and the Automotive Skills Alliance (ASA). The ASA was founded by the EU Blueprint Project Drives and ALBATTIS with support from the European Automobile Manufacturers' Association (ACEA). <https://www.eurospi.net>. ISCN is founding member.

Thanks

Thank you for cooperating with EuroSPI Certificates GmbH.



1. Academy – Courses and Training Platform
2. Certification – Exam system and certificates
3. EuroSPI Conference Series
4. Assessment Tool – ISO 330xx based