Industry 5.0: From Vision to Application

INDUSTRY 5.0 SUMMER SESSIONS 2026

Sara Canella - NSBproject

WHY THIS MATTERS

Technology & People in European Care

4.8M

healthcare worker shortage by 2030

1 in 5

Europeans will be over 65 by 2050

80%

of European care is informal

Digital technologies — assistive robots, AI avatars, tele-rehabilitation — are proposed as responses to these pressures. But do they get adopted? And what can other industries learn?

THE RESEARCH

4 Ethnographic Cases

3 countries · 4 hospitals & research centres · real-world pilots

Semi-structured interviews · Participant observation · Co-design · Online ethnography

SI CS1

Slovenia

Maribor Hospital

Robot Pepper

Reception, wayfinding & reminders

IT CS2

Italy

IRCCS San Camillo, Venice

Neurorehabilitation Tech

Serious games, tele-rehabilitation

IT CS3

Italy

IRCCS Santa Lucia, Rome

Robot RoBee / MedBee

Rehabilitation & motivation support

JP CS4

Japan

Smart Ageing Centre, Sendai

AI Avatar + Robot Daruma

Dementia support & companionship

What Drives — and Blocks — Technology Acceptance

DRIVERS OF ACCEPTANCE

- Anthropomorphisation (name, gender) reduces psychological distance
- Experiential learning & peer support between colleagues
- Reduces administrative and physical workload
- Intuitive design and system reliability
- Cultural familiarity with robotics (e.g. Japan)

BARRIERS TO ACCEPTANCE

- Fear of professional replacement (especially senior staff)
- Poor alignment with existing clinical workflows
- Technical failures that increase workload
- Low digital literacy, especially among older users
- Ethical concerns around surveillance and privacy

RESEARCH INSIGHT

The Human-Machine Boundary

"Robots were tolerated — and often appreciated — precisely because they remained recognisably non-human: tools, not companions."

Sara Canella, Ethnographic Research 2024/2025

Non-delegable identity

Clinical reasoning, ethical responsibility and situated judgment remain exclusively human.

AI as support, never substitute

Decision tools were accepted only as aids. Final validation always stays with humans.

Generational & cultural gaps

Younger professionals normalise AI faster. In Japan, emotional acceptance is more diffuse.

Key Principles That Cross Sectors

What healthcare pilots teach us about Industry 5.0 adoption — wherever you operate.

Co-design from day one

Workers and end-users involved in design — not just testing — show significantly higher acceptance and long-term ownership.

Integration, not addition

Technologies that fit existing workflows succeed. Those adding a parallel process fail. Workflow redesign must precede deployment.

Role clarity for the tech

Acceptance rises when users know exactly what the technology decides and what stays human. Ambiguity breeds resistance.

Peer learning over top-down

Experiential training with colleagues outperforms formal courses. The messenger matters as much as the message.

Great Pilots That Go Nowhere

The real challenge is not proving a technology works. It is scaling it.

The Pilot Trap

Projects end when funding ends. Without a scale-up plan from day one, pilots remain isolated islands of excellence.

Funding Gap for Scale-Up

Innovation funding covers R&D and pilots. The 'valley of death' between proof-of-concept and full deployment is rarely bridged.

Workflow Redesign Required

Technology adoption is not plug-and-play. Organisations must redesign processes around the tool — or it gets abandoned.

Continuous Skills Training

One-off training is never enough. Users need ongoing support, especially as technology evolves and staff changes.

NSB — Next-gen Solution Blueprint + ARL

Two complementary lenses: technical readiness (SRL) and adoption readiness (ARL) — together they surface what really blocks scale.

SRL — SOLUTION READINESS LEVEL

TRL — Technology Readiness

How mature is the core technology in real operating conditions?

MRL — Manufacturing Readiness

Is the organisation ready to produce and deploy at scale?

IRL — Integration Readiness

Can the technology integrate with existing systems and workflows?

CRL — Commercial Readiness

Is there a sustainable business model and route to market?

ORL — Organisation Readiness

Does the team hold the skills, roles and capacity to execute?

LRL — Legal (Compliance)

Is the technology compliant and regulation-ready for deployment?

SRL aggregates all 6 dimensions — low scores on critical dimensions (especially CRL) drive weighted penalties, surfacing real bottlenecks.

ARL — ADOPTION READINESS LEVEL

ARL — Adoption Readiness

Non-technical adoption risks across 4 categories:

- **Value Proposition**
  Cost, performance, ease of use
- **Market Acceptance**
  Demand, market size, value chain
- **Resource Maturity**
  Capital, workforce, infrastructure
- **License to Operate**
  Regulation, policy, permitting, community

Formalised by U.S. DOE OTT. Referenced in peer-reviewed adoption studies.

Complements SRL with adoption perspective

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