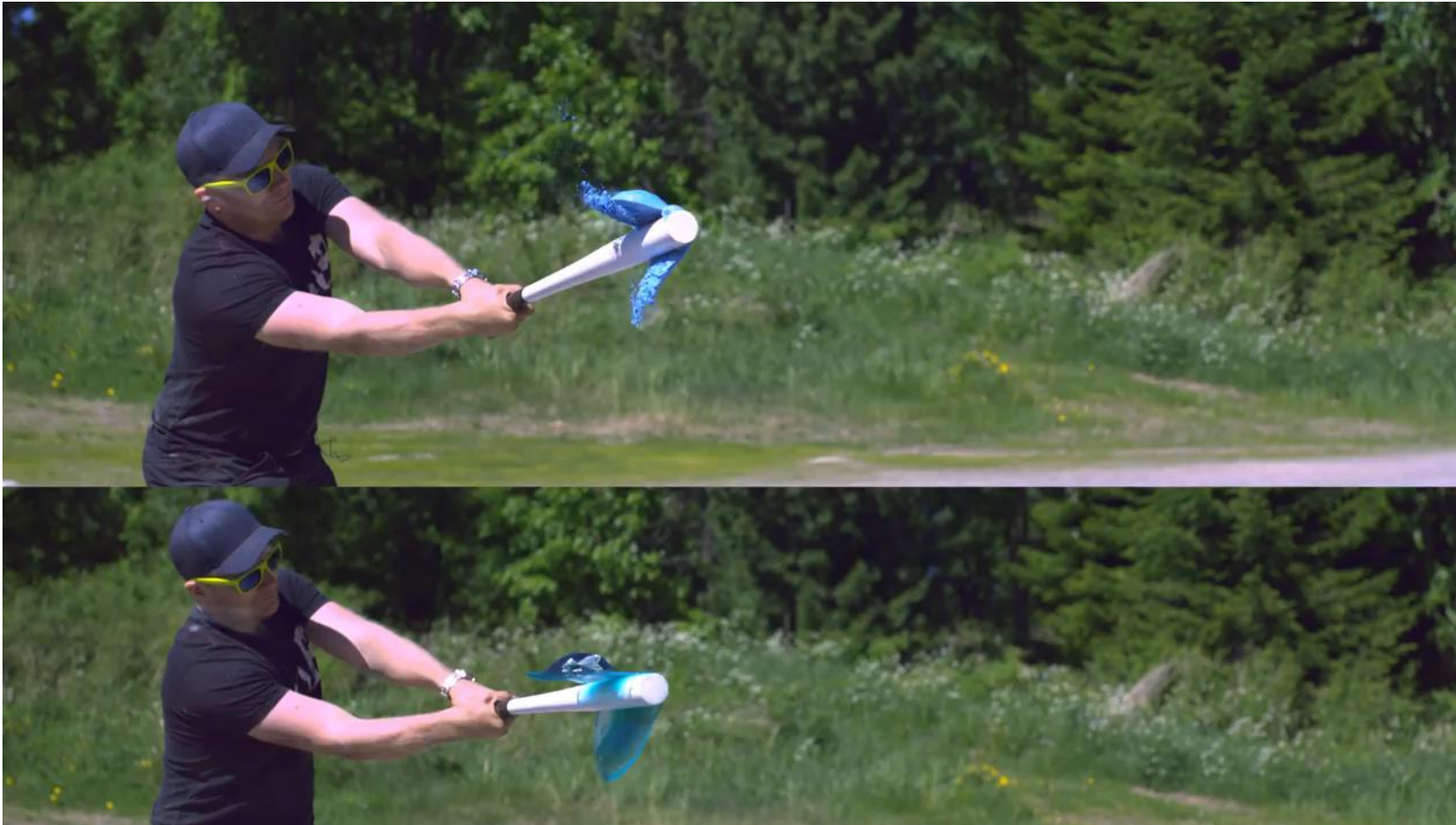




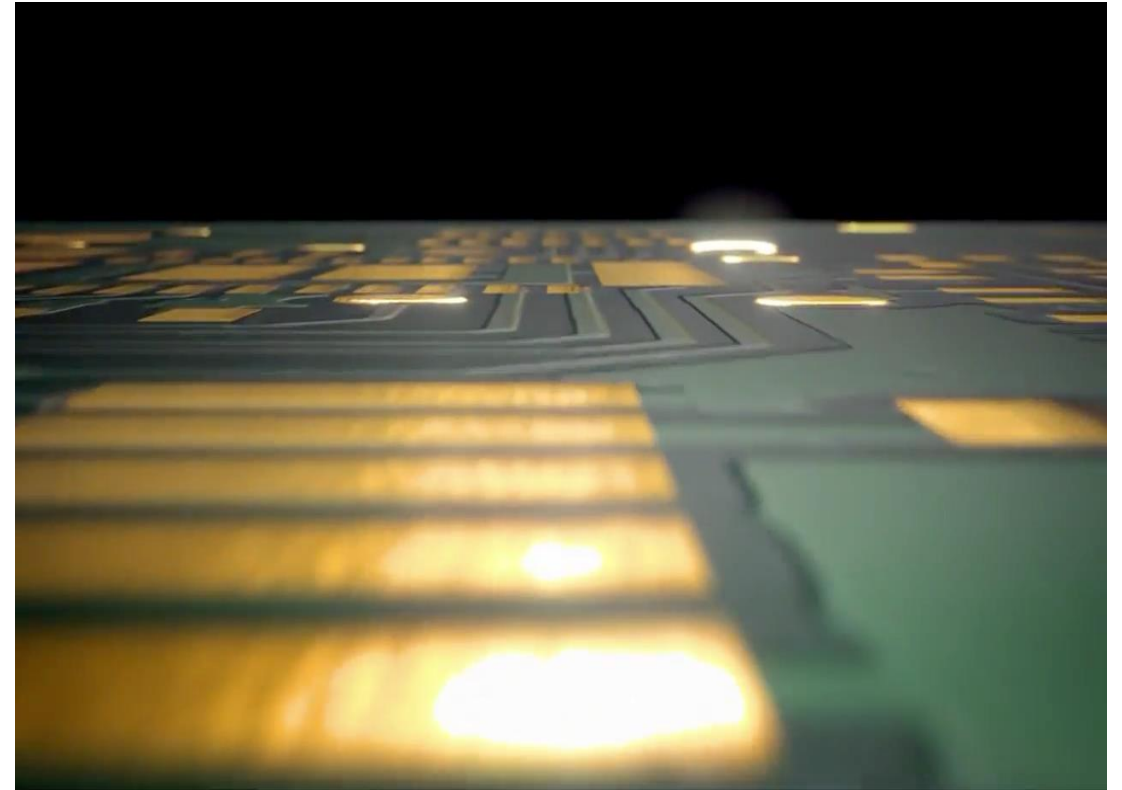
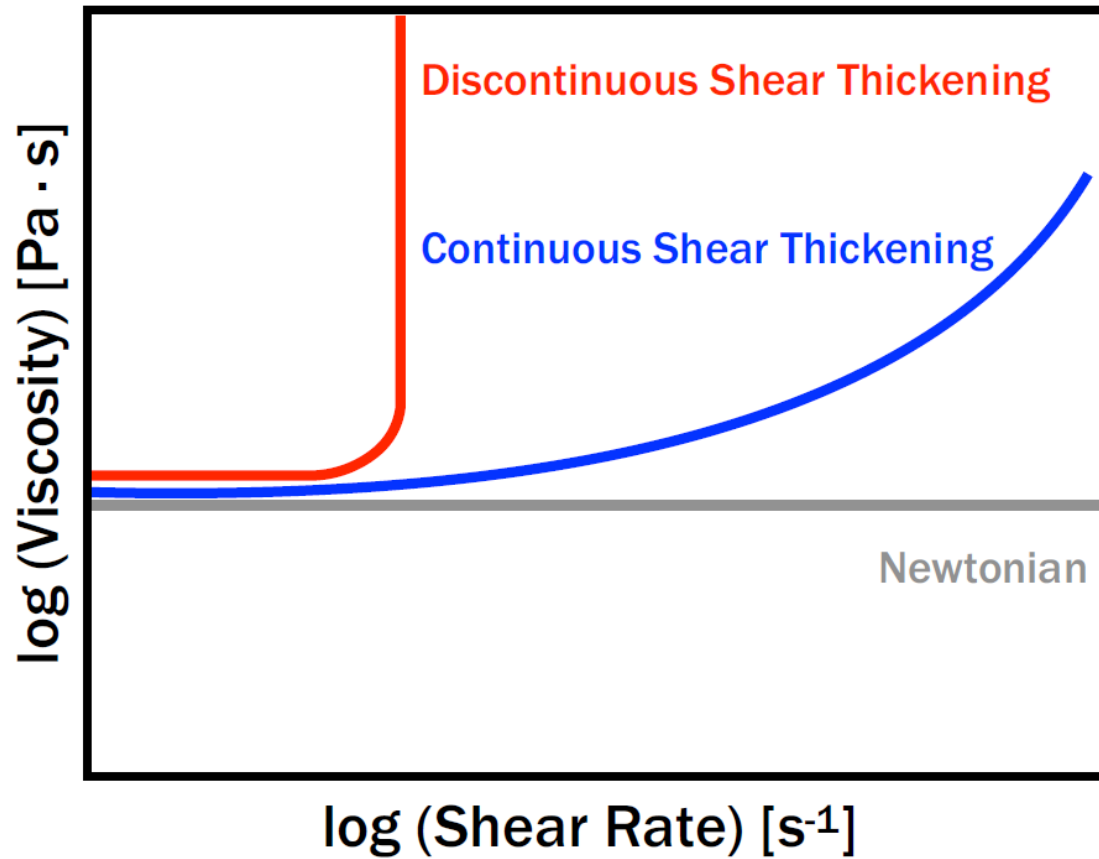
**To flow or not to flow:
that is the question**
(for the processing of concentrated pastes!)

Prof. Dr. Lucio Isa
Department of Materials,
Laboratory for Soft Materials and Interfaces

Shear-thickening fluids: when liquids become solid



When shear thickening becomes a problem for industry

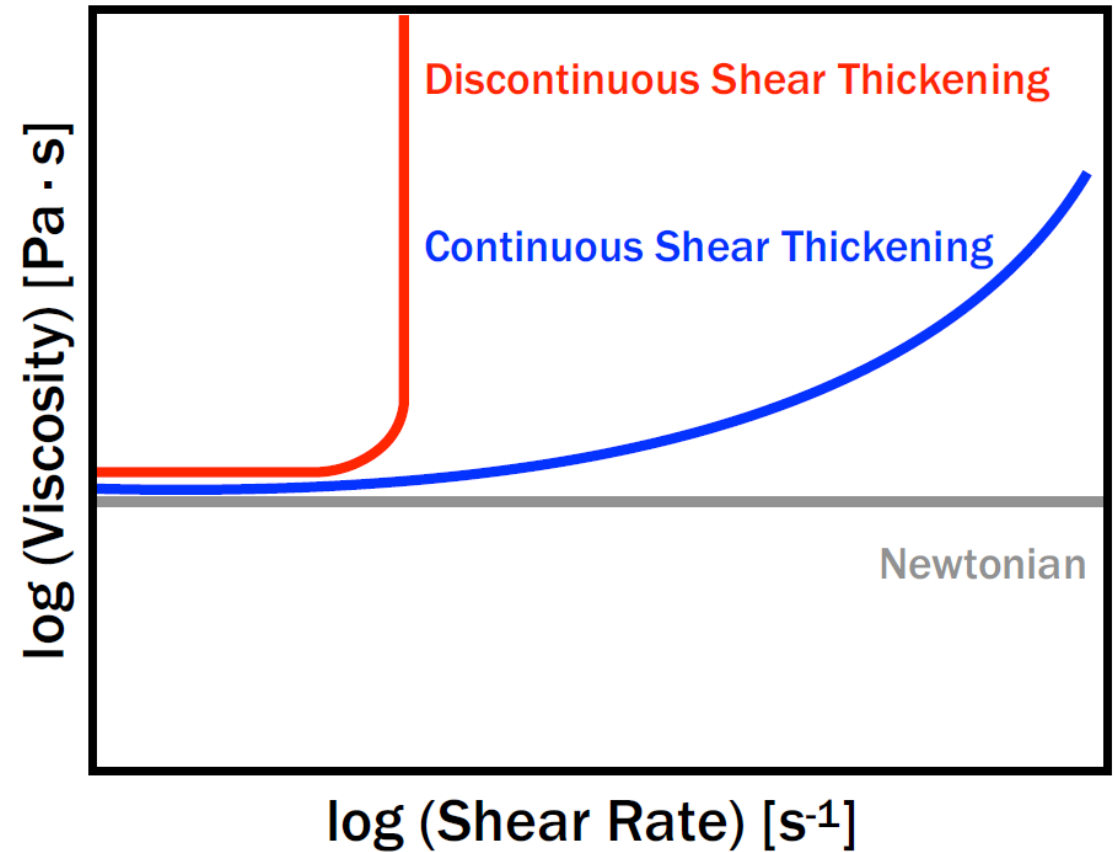


<https://www.youtube.com/watch?v=OLSxOJEs1N8>

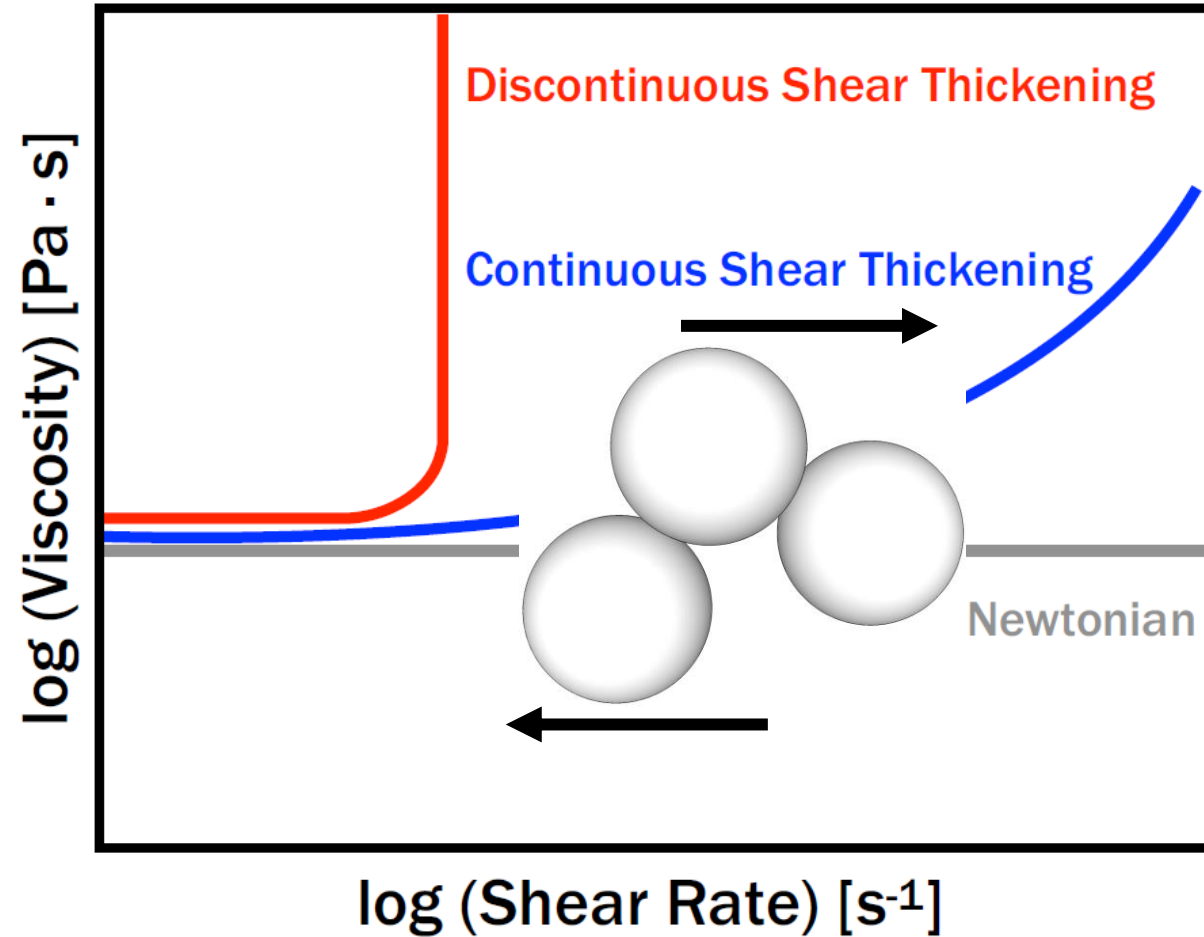
When shear thickening becomes a problem for industry



<https://www.concrete2you.com>

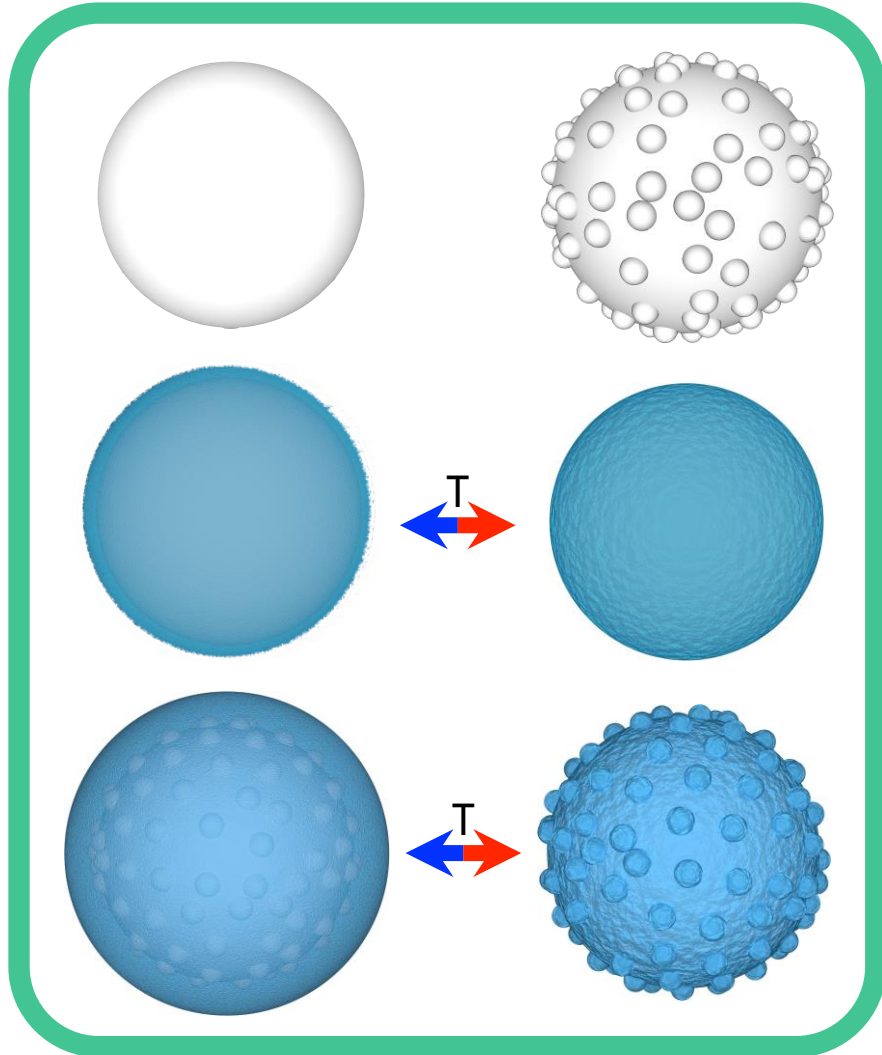


When shear thickening becomes a problem for industry

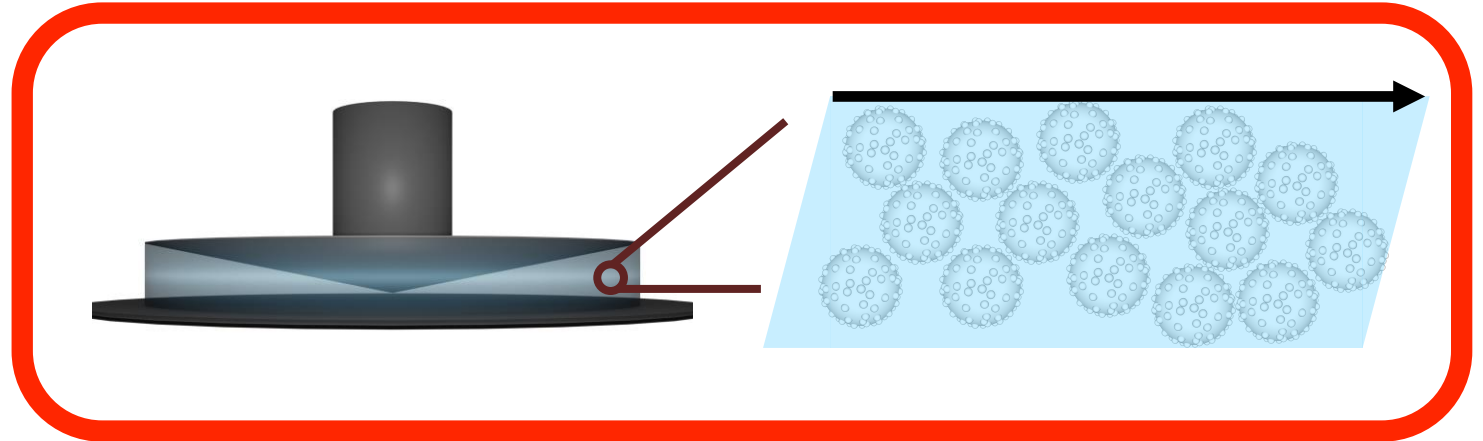


Our research: from nanoscale contacts to macroscopic flows

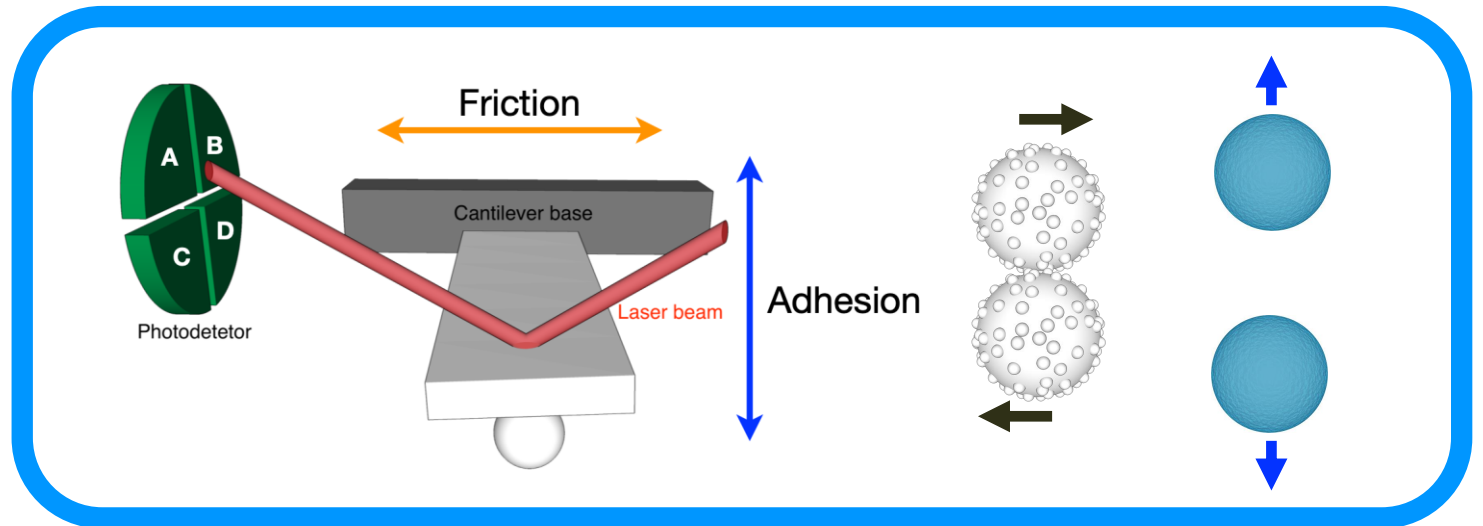
Colloidal Model Systems



Macroscopic Rheology



Nanotribological Contacts

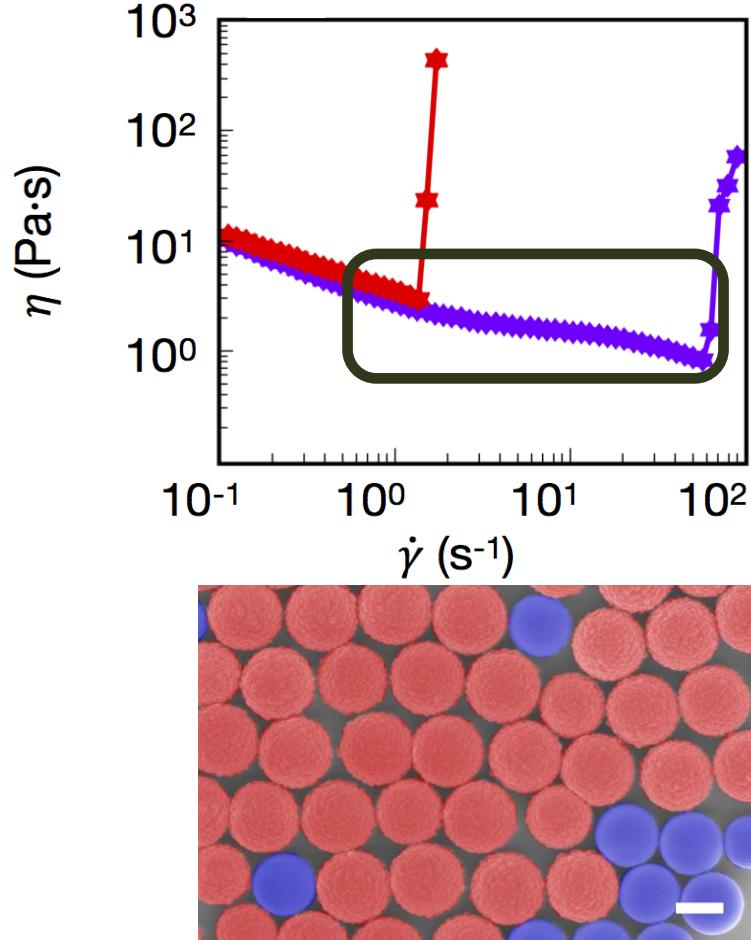


Particle engineering-based solutions

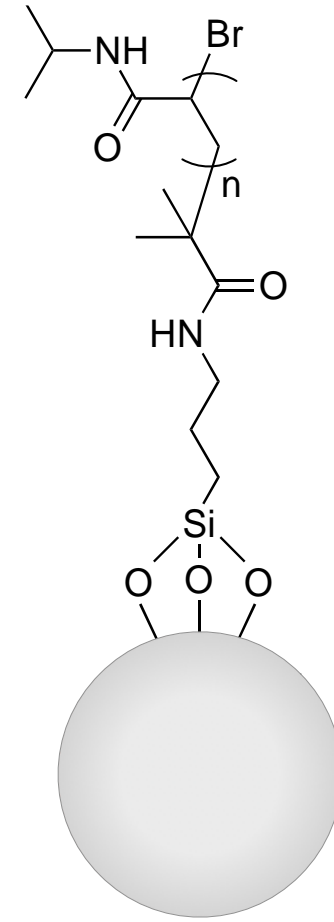
New characterization methods



Particle-based additives



Functional coatings for friction reduction





Thank you for your attention!

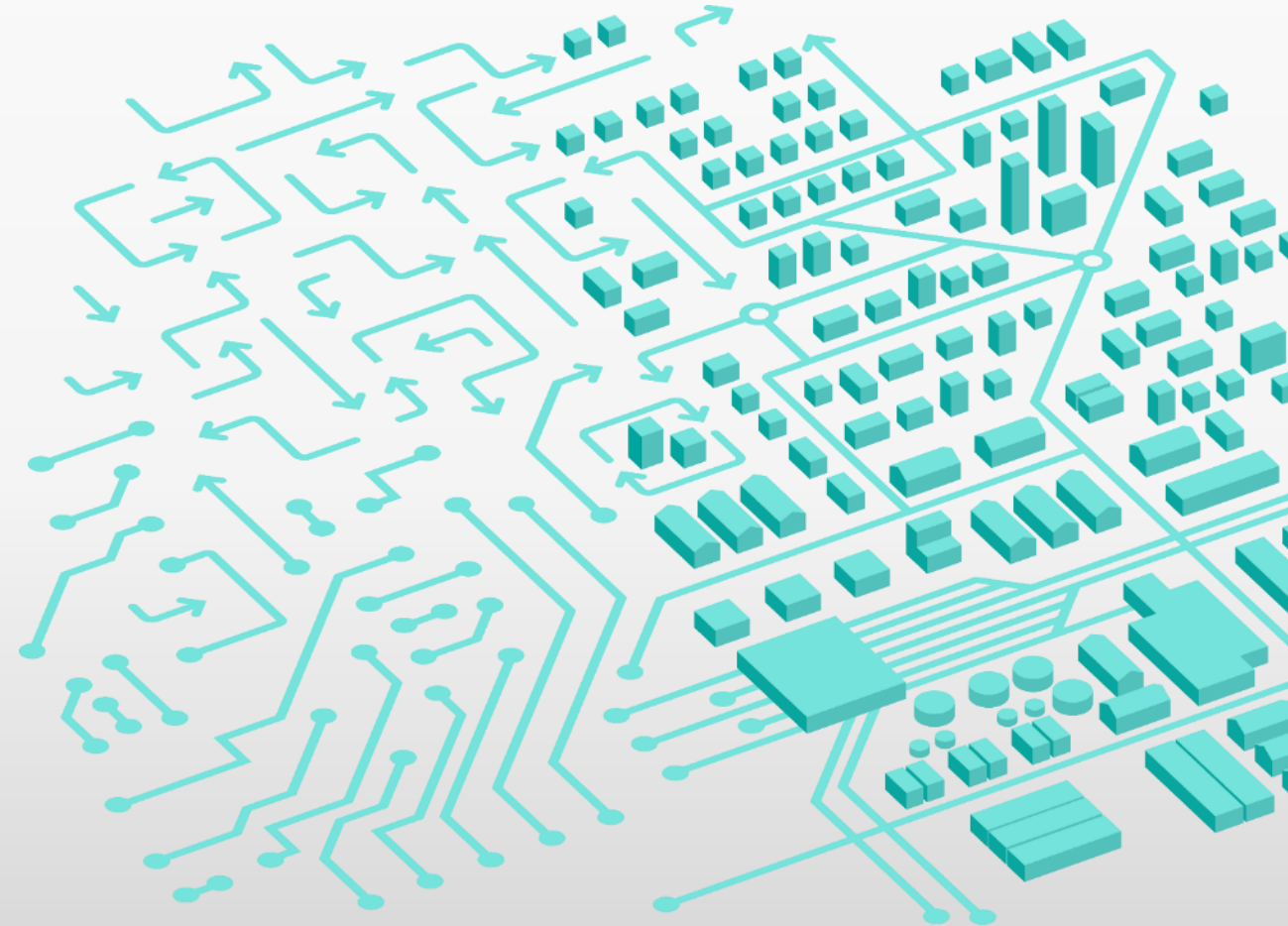
Professor Lucio Isa
Lucio.isa@mat.ethz.ch

ETH Zurich
Laboratory for Soft Materials and Interfaces
HCI H 525
Vladimir-Prelog-Weg 1-5/10
8093 Zurich, Switzerland

Automation

The answer to all buzzwords.

Dr. Claudia Fischer

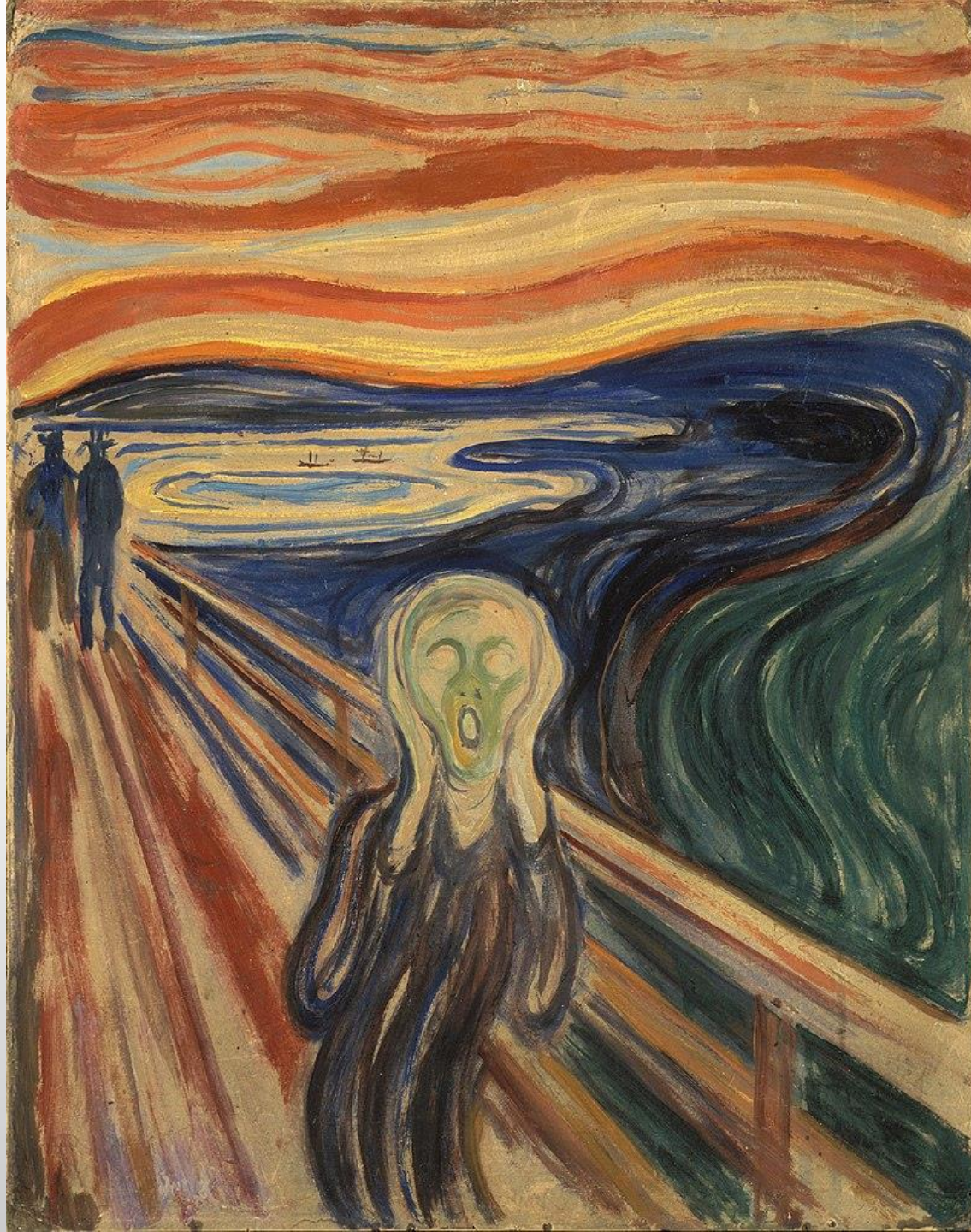


Quick questions:

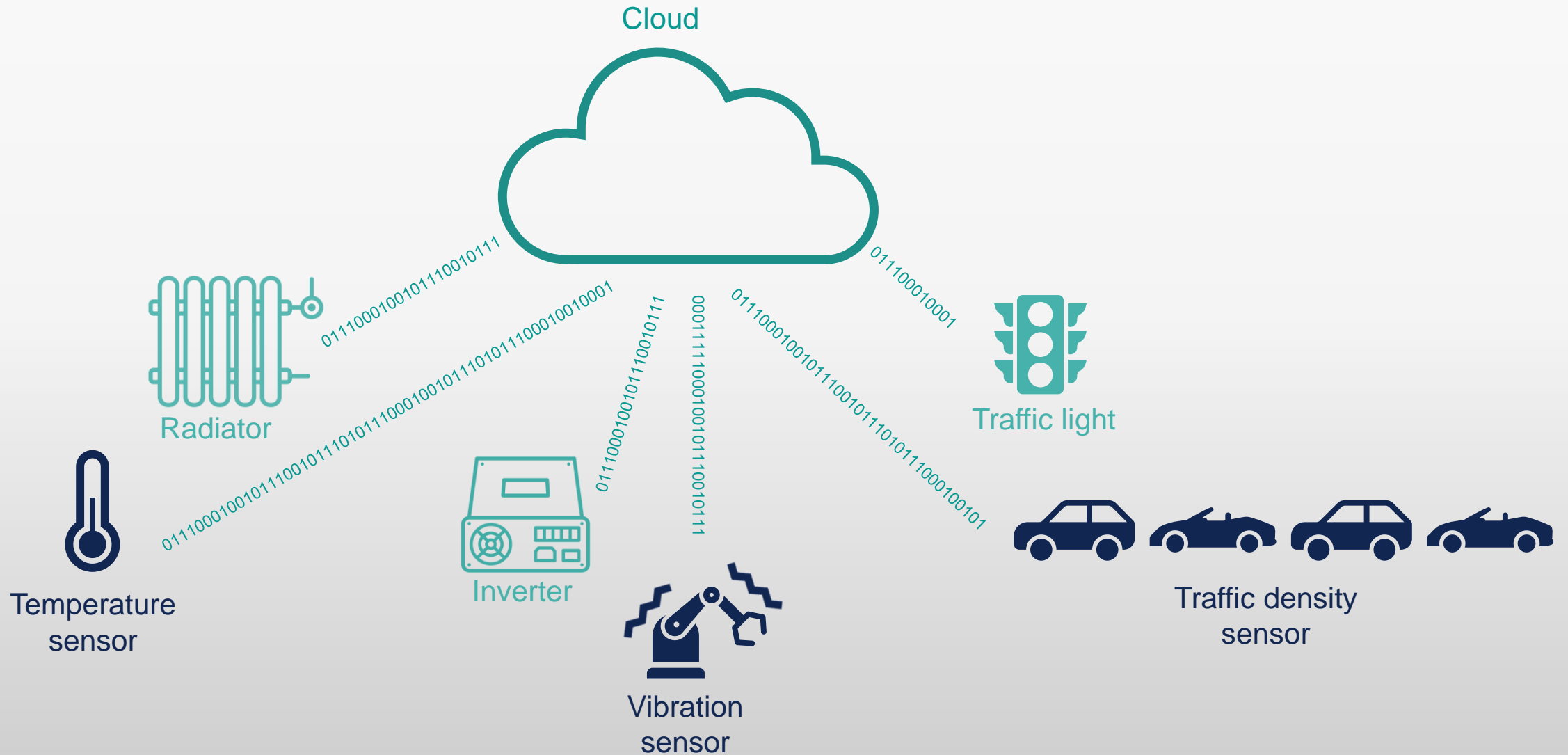
How far are you
with Industry 4.0?

What is your IoT
strategy?

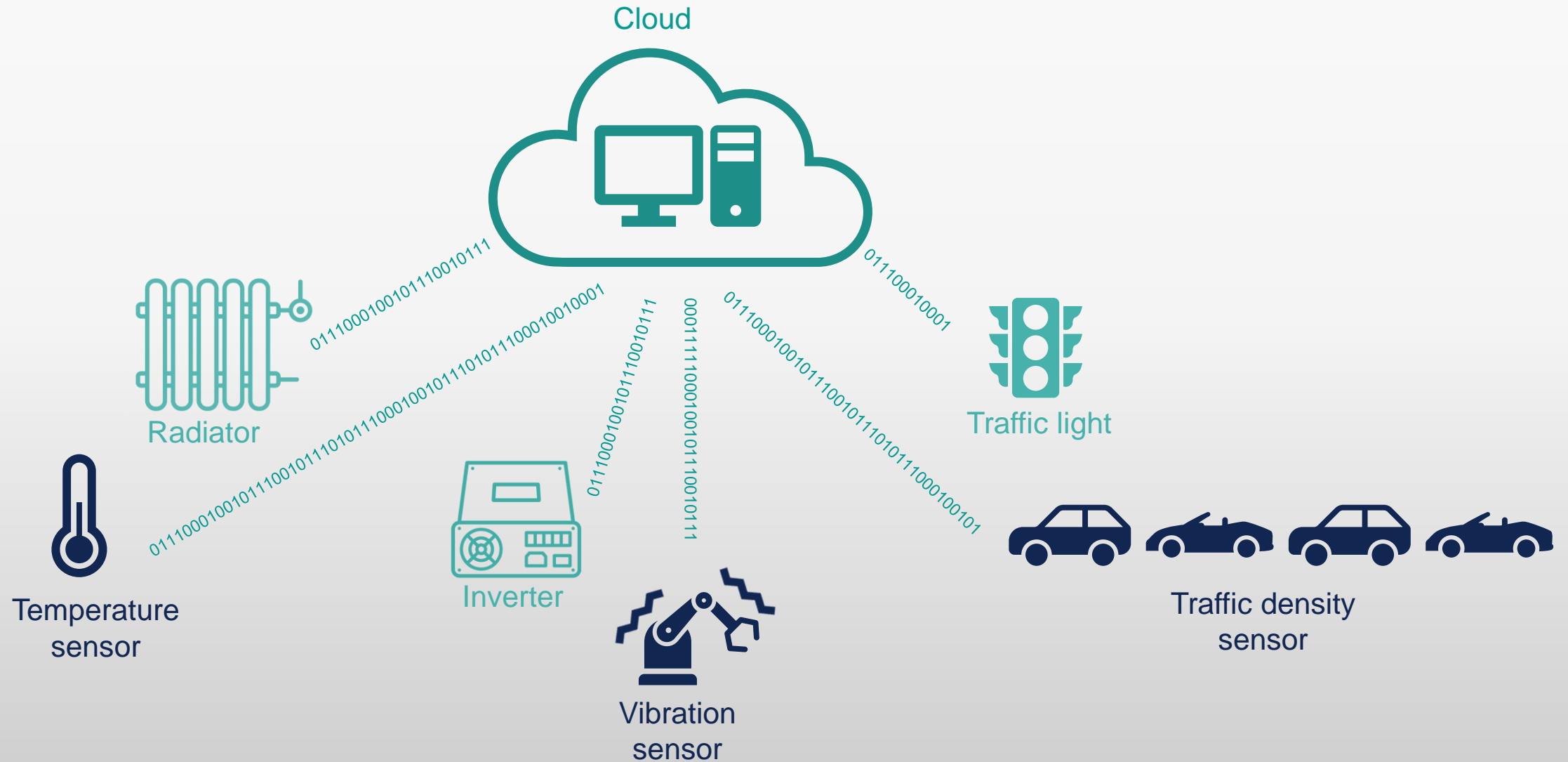
Shouldn't you be
doing something
with AI?



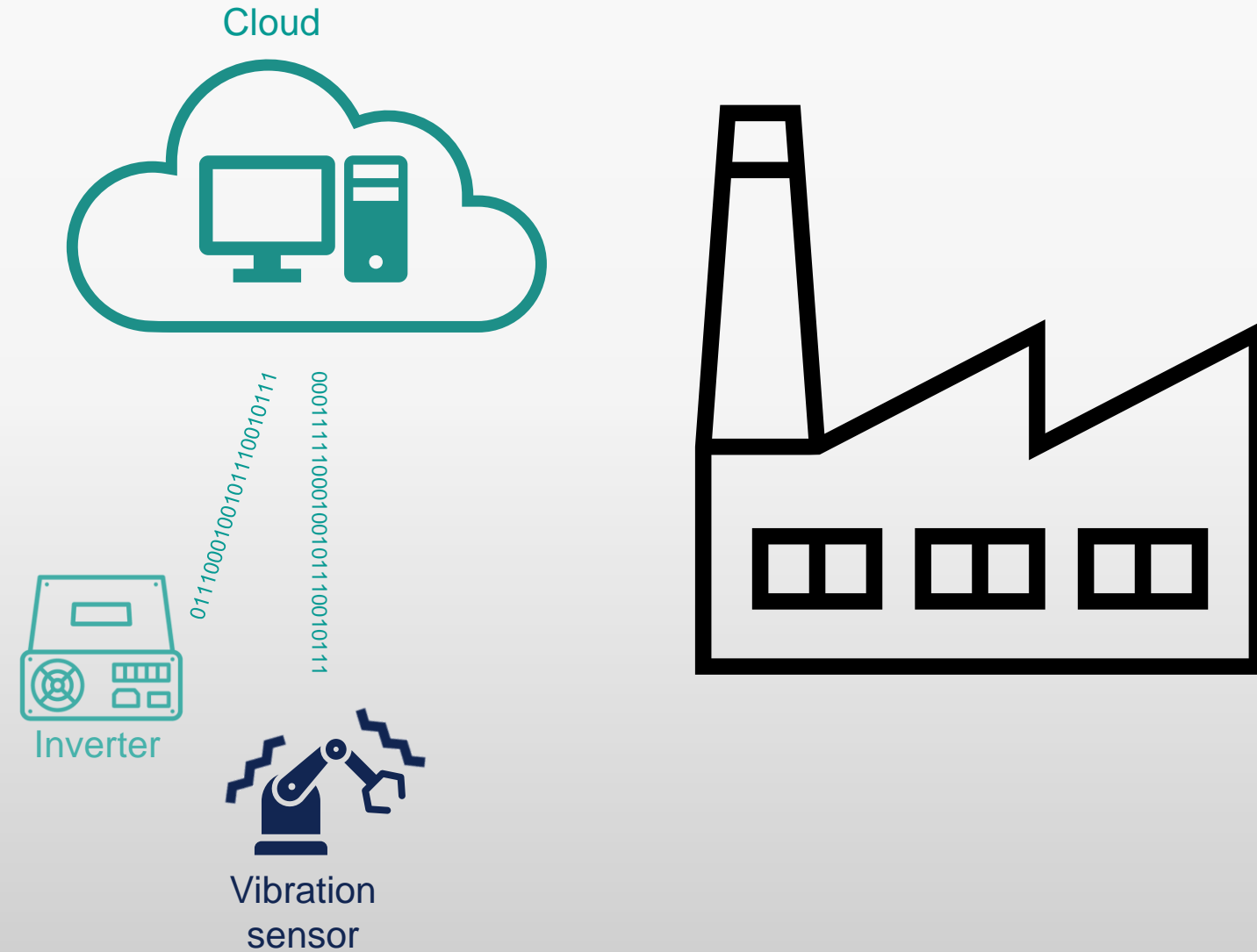
Internet of Things (IoT)



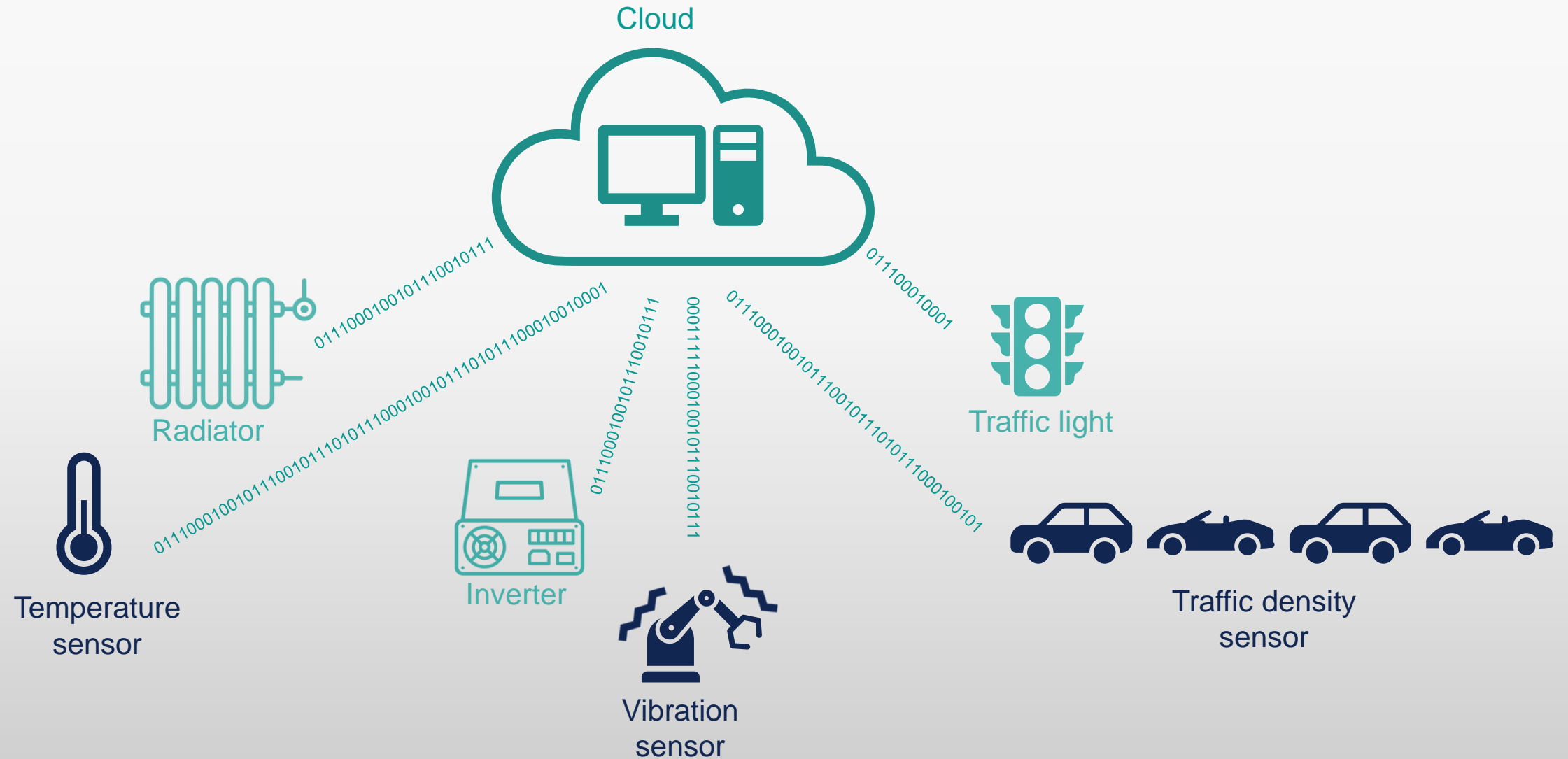
Artificial Intelligence (AI)



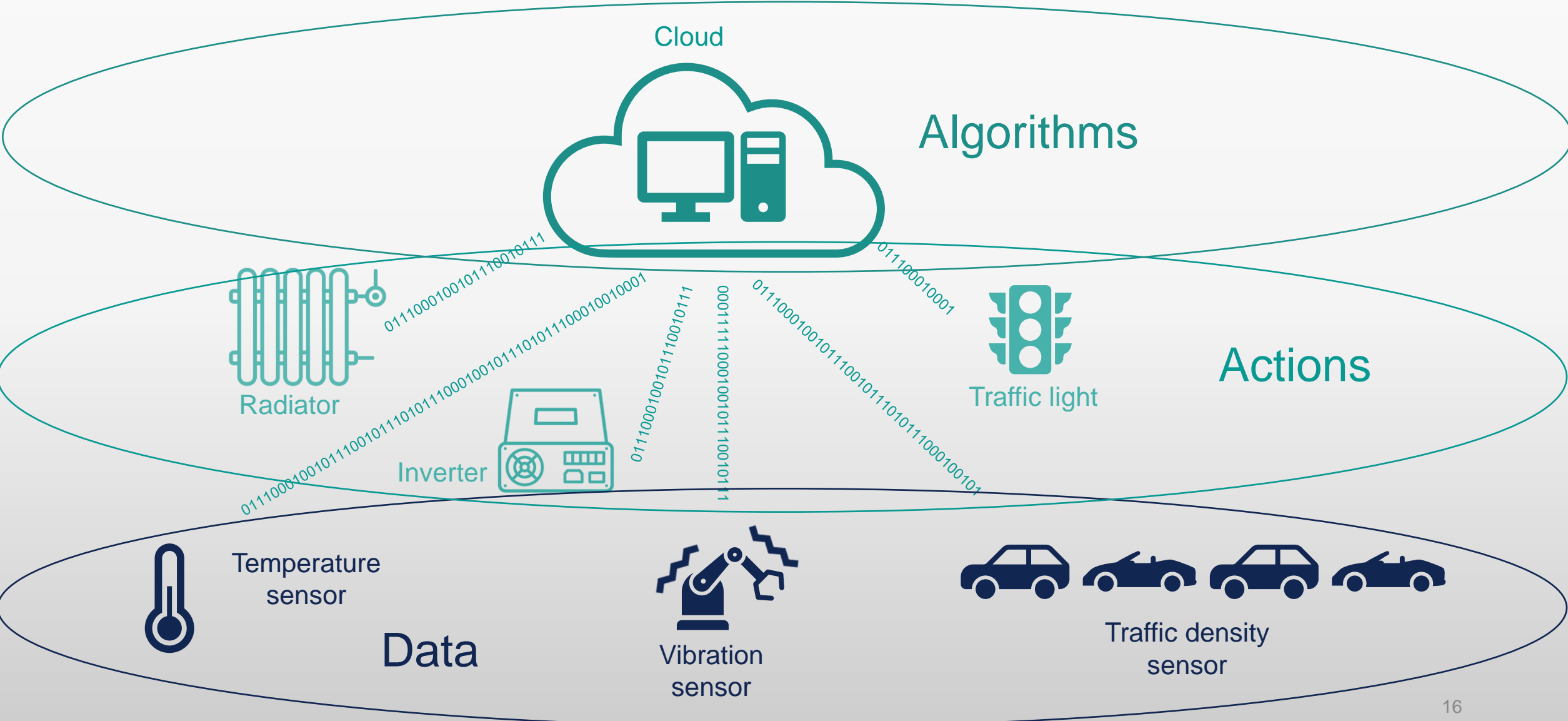
Industry 4.0



Digitalisation



Automation!



NCCR Automation – Research organisation



25+ Principal Investigators

70+ PhDs & Postdocs

Automatic Control



Director
Prof. John Lygeros

Smart Grid



Co-Director
Prof. Gabriela Hug

Robotics

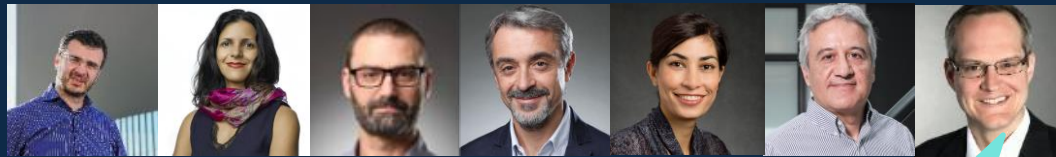
inspire

Autonomous Vehicles

ETH zürich



EPFL

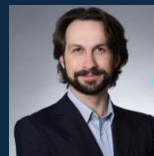


Fairness in Automation

Artificial Intelligence

Industrial Automation

Empa
Materials Science and Technology



Energy Management

Operation Management

zhaw
School of Engineering



OST
Ostschweizer Fachhochschule



University of Basel



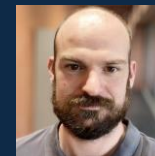
Social Science of Automation

n|w
University of Applied Sciences and Arts
Northwestern Switzerland



Advanced Manufacturing

SUPSI

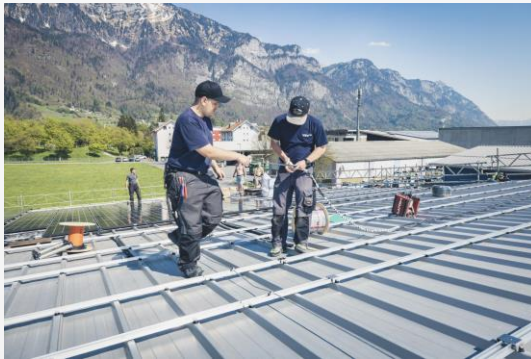


University of Zurich
UZH



Collaborations with industry

Municipalities



WEW Walenstadt:
Energy grids of the future



Sisslerfeld (AG)
Sustainable industrial parks

Industry/Academia workshops



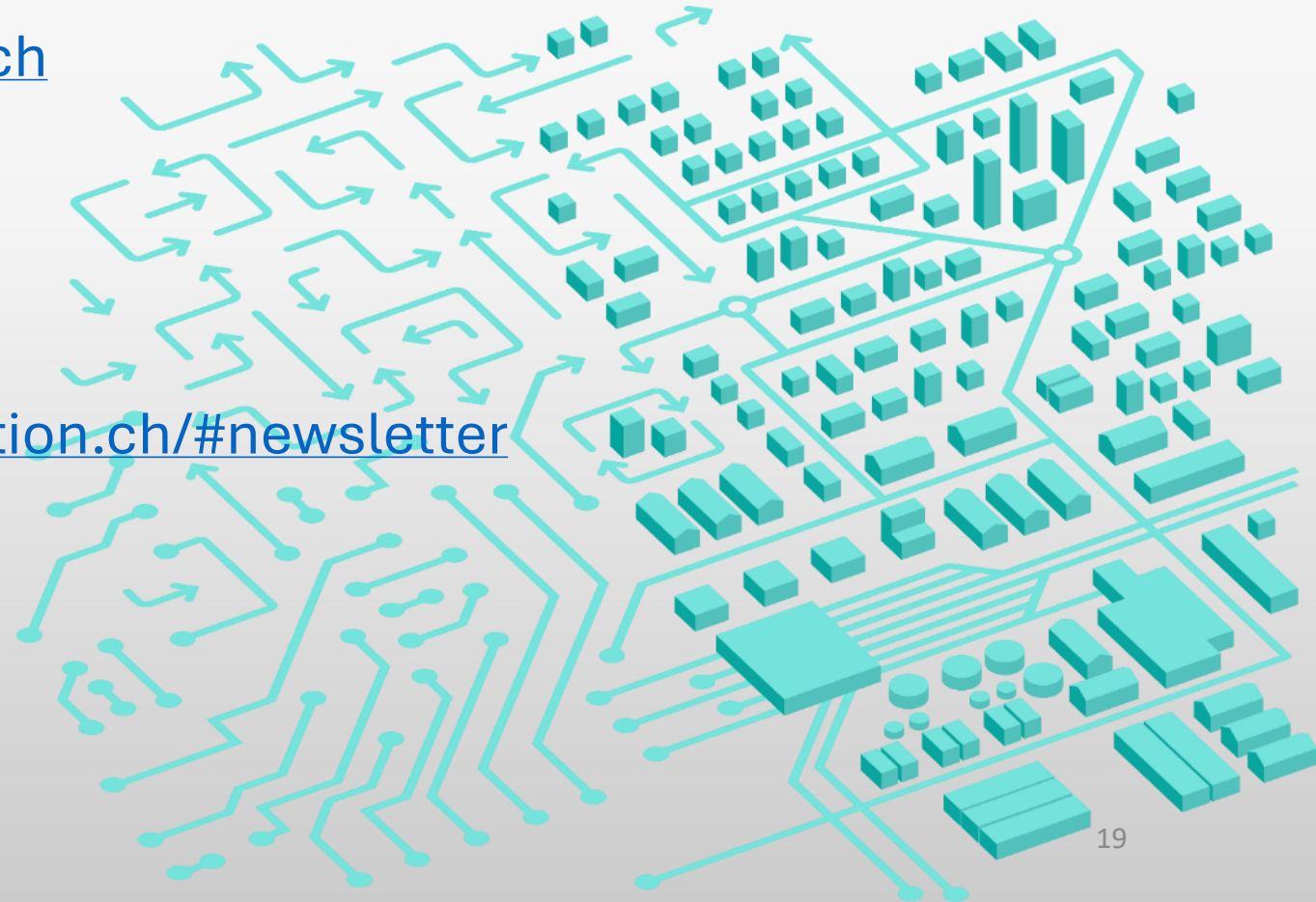
- 1-day, 5 companies, 15 engineers, 15 NCCR Automation researchers
- Companies present control challenges
- Researchers present new control methods
- Discussion and brainstorming
- Collaboration opportunities

Companies



How to get in touch

- Come talk to us at the NCCR Automation booth (AI & Robotics area)
- Website: www.nccr-automation.ch
- LinkedIn: NCCR Automation
- X: @NCCR_Automation
- Newsletter: <https://nccr-automation.ch/#newsletter>



How far are you
with Industry 4.0?

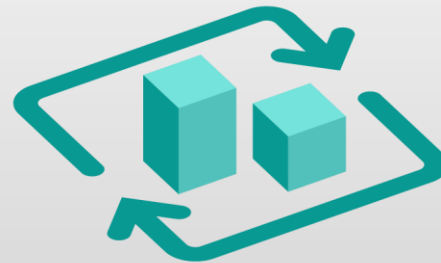
What is your IoT
strategy?

Shouldn't you be
doing something
with AI?

The answer:

Automation!

Get in touch!



National Centre of
Competence in Research
Automation



Microorganism-based cellulose materials for a sustainable future

ETH zürich
INDUSTRY DAY

21th November 2024

Treeless AG,
CH-8152, Opfikon (Zurich)
contact@treelesspack.com
www.treelesspack.com

<p>Spin-off</p> <hr/> <p>ETH zürich</p>	 <p>W.A. DE VIGIER STIFTUNG Winner SINCE 1987 2024</p>	<p>Initial Coaching supported by</p>  <p>Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra Swiss Confederation Innosuisse – Swiss Innovation Agency</p>	<p><small>Partner des Instituts für Angewandte Wissenschaften</small></p> 	 <p>OST Ostschweizer Fachhochschule</p>	 <p>B F H Berner Fachhochschule</p>	<p>Project supported by BAFU</p>  <p>Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra Bundesamt für Umwelt BAFU</p>
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Too Much Plastic & Low Recycling Rates



**Plastic pollution will triple by 2060
– if no ACTION is taken**

**430 million tonnes of plastic
produced annually**



2/3 used for short periods only

70% of EU plastic waste is NOT recycled

**Regulatory changes demand business
transformation**

Mission & Vision



Mission:

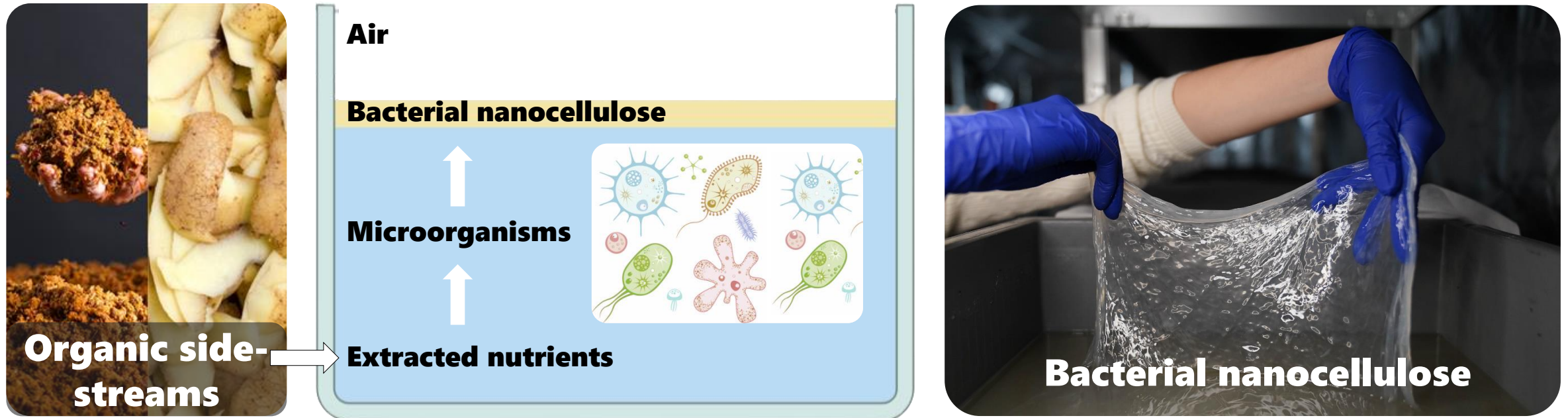
Replace harmful and polluting materials by enabling **bio-based, fossil-free** alternatives using **microorganisms**

Vision:

Create materials for a better life

Revolutionizing Materials with Microorganisms

Patent pending



Circular

80% less CO₂

Cost efficient

Scalable

Product & Applications

Biodegradable

Mechanically strong

Non-toxic

Treeless



Funding secured:

Project supported by BAFU



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Umwelt BAFU



First sales
Demo projects
LOIs for procurement

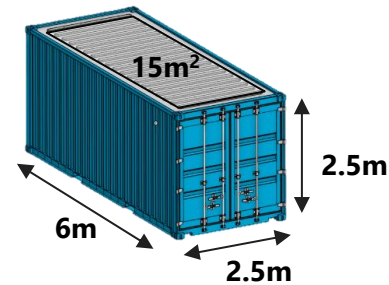


Scaling with Modular Production



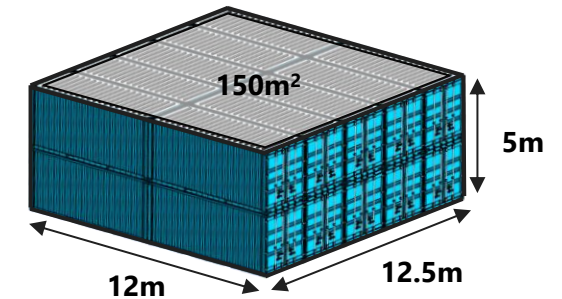
Our current pilot ^[1] production platform in Zurich

Modular & Decentralized Scaling



1X module

Yield: up to 4 ton gel product ^[2] / month



20X modules



^[1] Manually operated

^[2] 3% nanocellulose gel suspension

Key Achievements



Pilot manual production platform – Q3/22

Organic waste suppliers (tested & 2 LOIs) – Q1/23



Patent pending (growth process and paper application) – Q2/24

BAFU Grant and Innovation Boosters – CHF 270 k – Q2/24

Raised CHF 450 k, converted from GmbH to AG

Pilot projects (ongoing & LOIs)



First generated sales



Top 12



Top 10



1st prize



1st prize



Swiss Re Foundation



W.A. DE VIGIER STIFTUNG
SINCE 1987

Winner

Team



Adam Korczak
MSc Mechanical Eng.
Specialized in
Biomaterials

ETH zürich



Patrycja Kucharczyk
PhD Biotechnology
Specialized in
Microorganism Research

u^b UNIVERSITÄT
BERN



Paolo Ortolani
Executive MBA
Former Entrepreneur
Business Development

Universität
Zürich

Board of advisors:

Marcel Klaus, Former CFO Swiss Intl. Air Lines
Andreas Löwenstein, Former CEO Kopter
Oliver Kirchner, Attorney and Strategist
Philipp Bosshard, CTO & Co-Founder, YASAI
Barbara La Cara, Impact Innovation, ETH
Richard Järvinen, Chairman, Aarre

Innosuisse coaches:

Christian Brand, lead coach
Cara Tobin, impact coach
Jean-Pierre Vuilleumier, pitching and financials



Wood and Polymer
Chemistry, BFH



Ecosystem of specialized
collaborators



Materials Technology and
Plastics Processing, OST



Materials Science and Technology
Cellulose and Wood
Materials, EMPA

Zürcher Hochschule
für Angewandte Wissenschaften

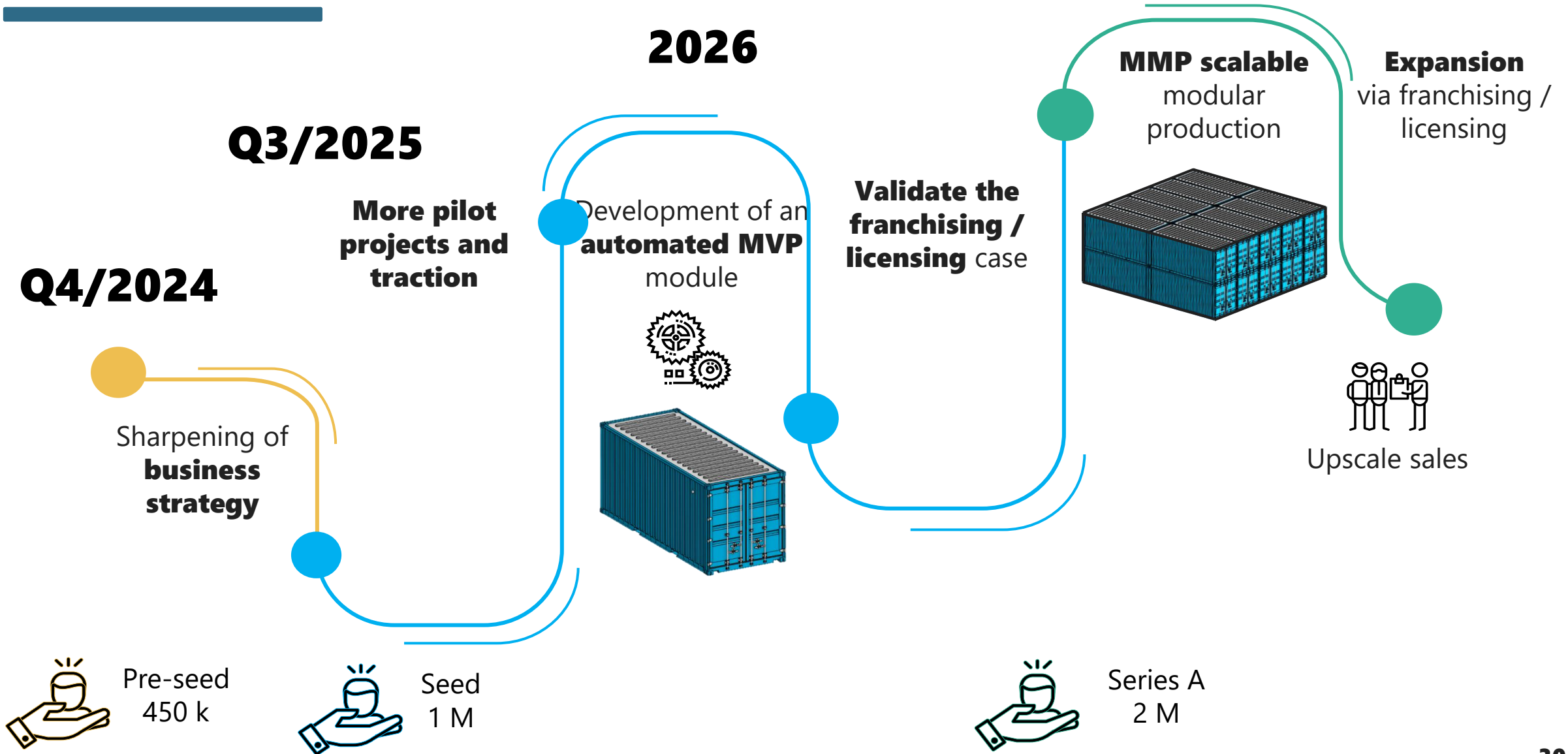


Polymer Coatings
Laboratory, ZHAW

Key hires planned:

Automation Engineer
Material Engineer

Roadmap



Let's grow together!



Partner with Us:

Join us in developing real-world applications

Run pilot projects together

Join Now as an Early Investor:

Seed round Q3/2025



Thank you for your attention!

Patrycja Kucharczyk
patrycja@treelesspack.com

Treeless AG,
CH-8152, Opfikon (Zurich)
contact@treelesspack.com
www.treelesspack.com

