

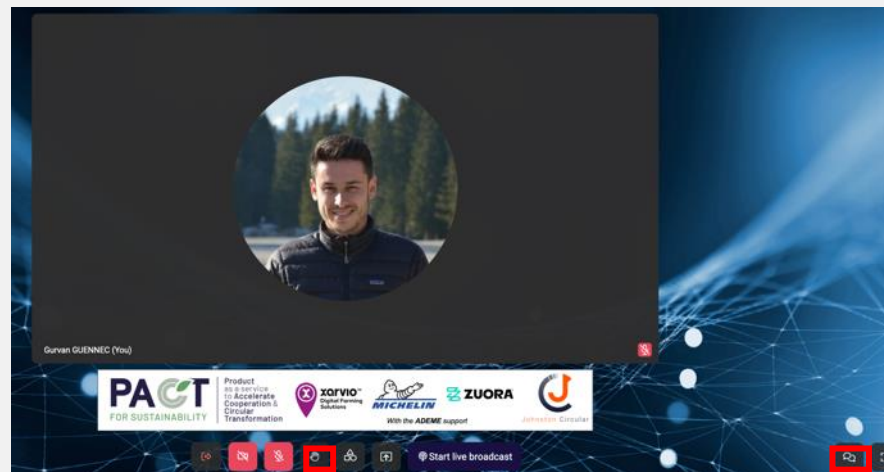


Product as a service to
Accelerate Cooperation and
Circular Transformation

MEASURING THE IMPACT OF PAAS: QUANTIFYING ENVIRONMENTAL AND SOCIAL VALUE

HOW TO INTERACT & COMMUNICATE WITH US ?

During the Webinar



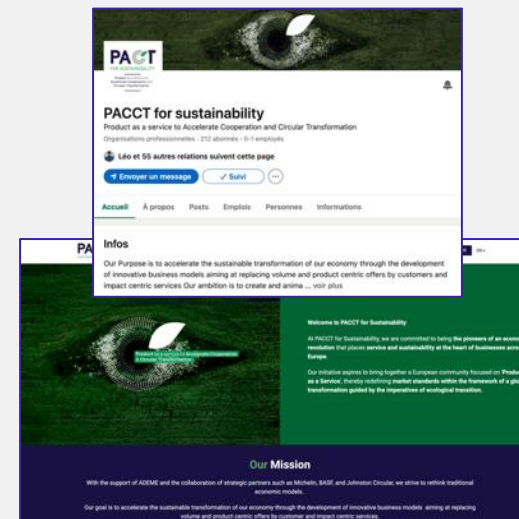
*Please ask your questions
or comments in English*

At the end of the Webinar



*Please take 2 minutes to
answer 4 questions, and
help us improve your
experience*

After the Webinar



[change@pacct-
sustainability.org](mailto:change@pacct-sustainability.org)

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*Re-Live our webinar on our
website*

Today's speakers !

E-Lin TAN

Global Head at
BlueMovement (All-in+)

BOSCH



BOSCH

Chalotte GAMAURY

Environmental Policy
Officer

ADEME



**RÉPUBLIQUE
FRANÇAISE**

*Liberté
Égalité
Fraternité*



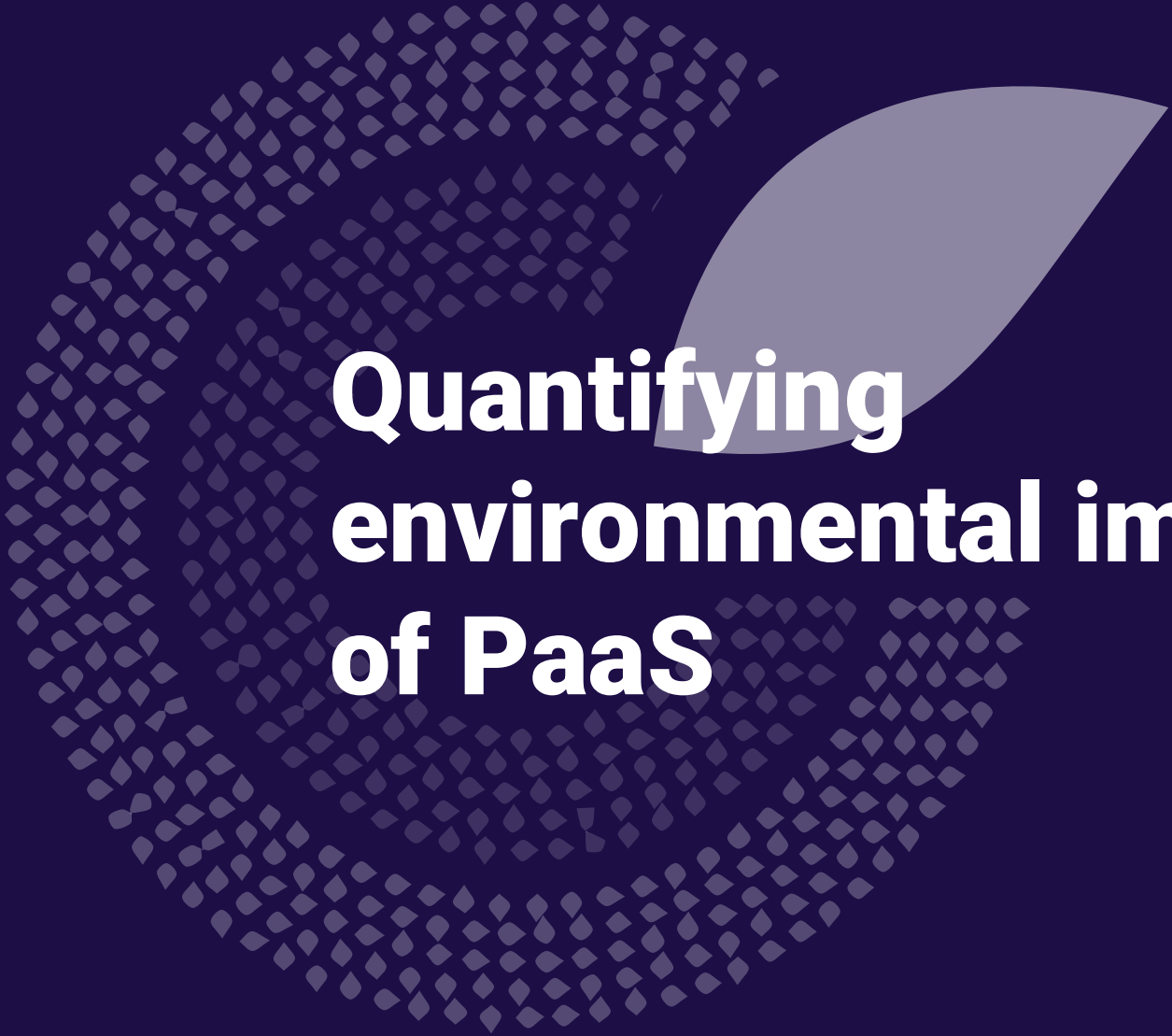
Tomohiko SAKAO

Professor (Division of
Environmental Technology
and Management)

Linkoping University



li.u LINKÖPING
UNIVERSITY

A large, stylized leaf logo in a light purple color, positioned behind the text. The leaf is oriented diagonally, with its base at the bottom left and its tip pointing towards the top right. It has a smooth, curved shape with a pointed tip.

Quantifying environmental impact of PaaS

The 6 companies show significant environmental impact reductions

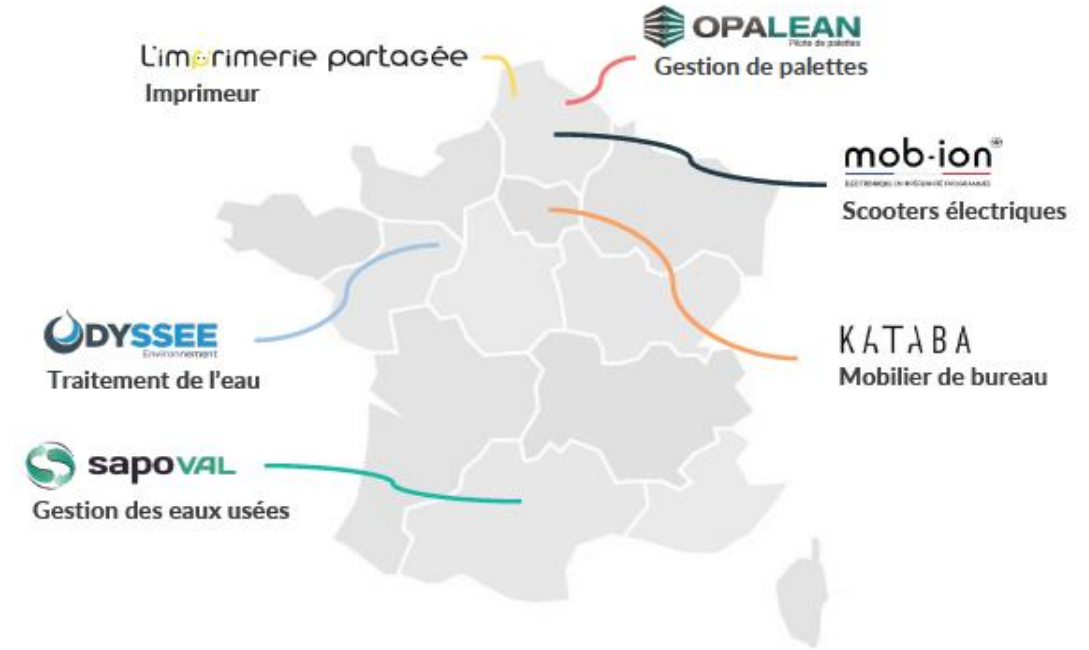
❖ **Better single score EF for all companies**

❖ **Average reductions vs linear model :**

- **Carbon footprint : -20% to -40%**
- **Resource use : -15% to 30%**
- **Waste generation : -25% to -50%**

❖ **Methodology used : ADEME « Empreinte Projet » (*project footprint*), based on life-cycle assessment (LCA) but enlarged to the project scale ; including critical review**

→ Comparison: FCE* scenario vs. linear "business-as-usual" scenario for each company



The 6 participating companies

3 main levers leading to reduced environmental impacts



OPALEAN

❖ Reducing product volumes

→ Opalean : better traceability and increased reuse of pallets thanks to Opalean's tracking and monitoring software

❖ Both reduction of materials consumption and optimization of existing materials and equipment

→ Odyssée Environnement : real-time water monitoring for a better efficiency

❖ Lowering energy consumption



Environmental impact of PaaS: A home appliance

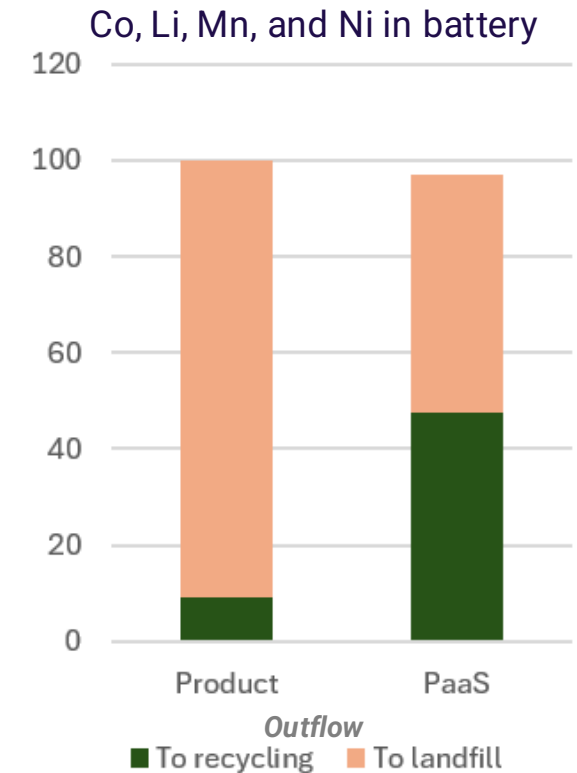
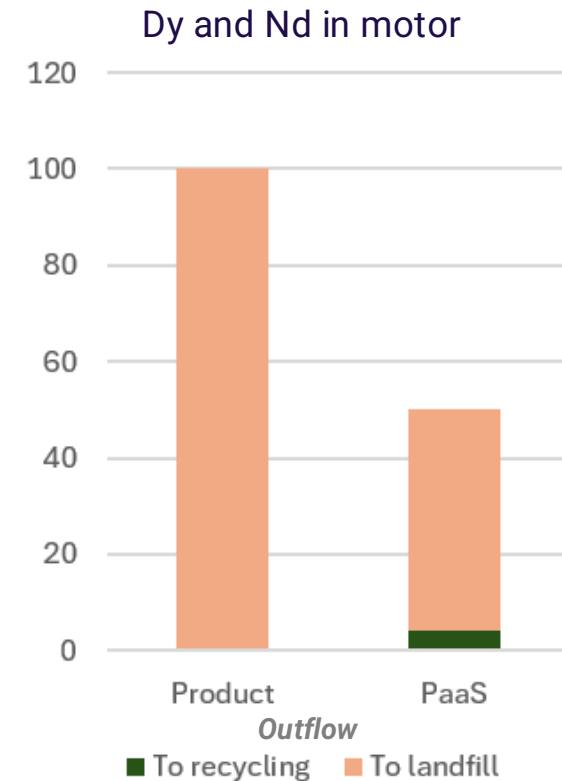


BAU: purchased by an enduser.
After 5 years, the product to a municipal waste-sorting.

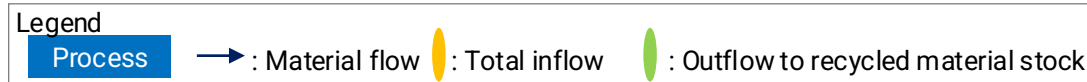
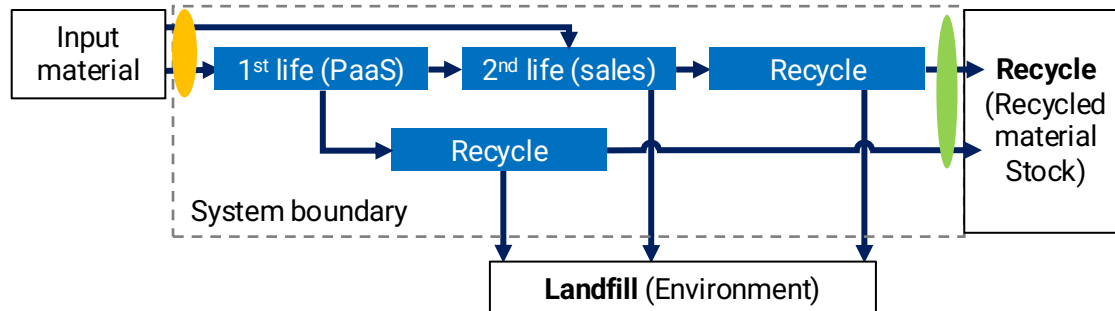
PaaS: contract of 6 years, before the same as BAU.

MFA (material flow analysis) results:

Flow (mass per time) compared



PaaS scenario



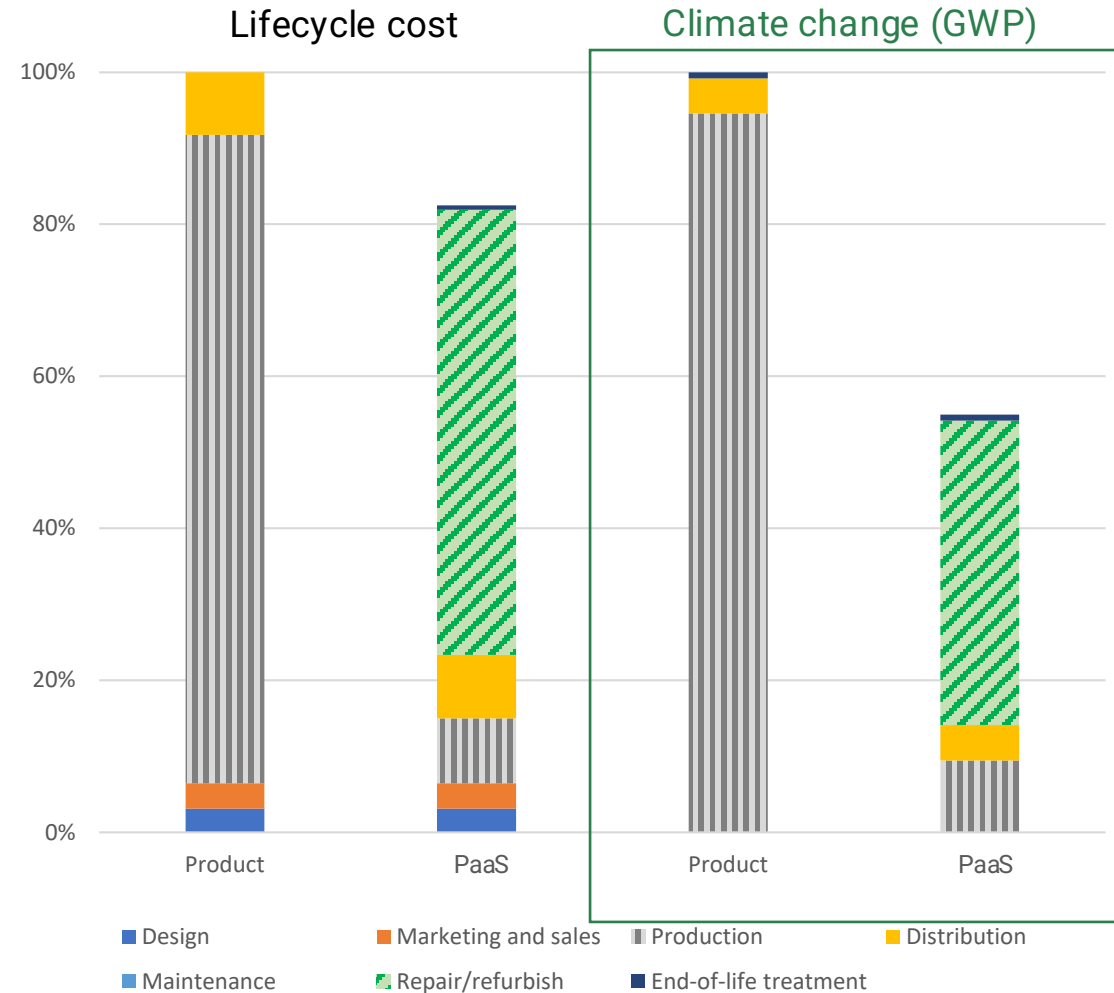
Environmental impact of PaaS: A tent for fairs



- **BAU: product sales**
- **PaaS: refurbishment using product frames 10 times**

More cases published on scientific papers: check my pages or ask tomohiko.sakao@liu.se

Life cycle analysis results



BlueMovement is the End-to-End Unit at BSH/Bosch that drives Product-as-a-Service business solutions

All-in+

Subscribe to the Future with Bosch. Today.



**Affordable
Quality**

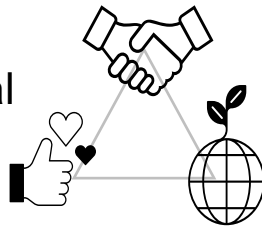


**Peace of
mind**



**Circular
by design**

- ✓ Appliance → Service & Experience
- ✓ 1-time transaction → Recurring loyal relationship
- ✓ Take.Make.Waste. → Circular & sustainable



Product is tested,
repaired/refurbished,
ready for a new life

BSH takes /
buys back

Direct-from-Manufacturer



User selects
✓ Subscription duration
✓ Additional personalized
services (e.g.
consumables)

Appliance is
delivered and
installed

User enjoys "always working"
A-Brand Quality Appliance & Services

What is Bosch All-in+?

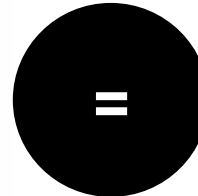
It is like car rental, only for home appliances – Simple. Transparent. Worry-free.

All-in+ for Home Appliances

One monthly price. All included.

- ✓ Use of the appliance
- ✓ Delivery
- ✓ Installation
- ✓ Repair & Replacement
- ✓ Take-back

- Own / Rent
- 12/24/36/48/60 months
- New / Refurbished



from 10€/month

Additional Services to personalize

- | | |
|--------------------------------------|---|
| ☐ Consumable | ☐ Upgrade option |
| ☐ Maintenance | ☐ Premium Care |
| | ☐ ... |

Car rental

One monthly price. All included.

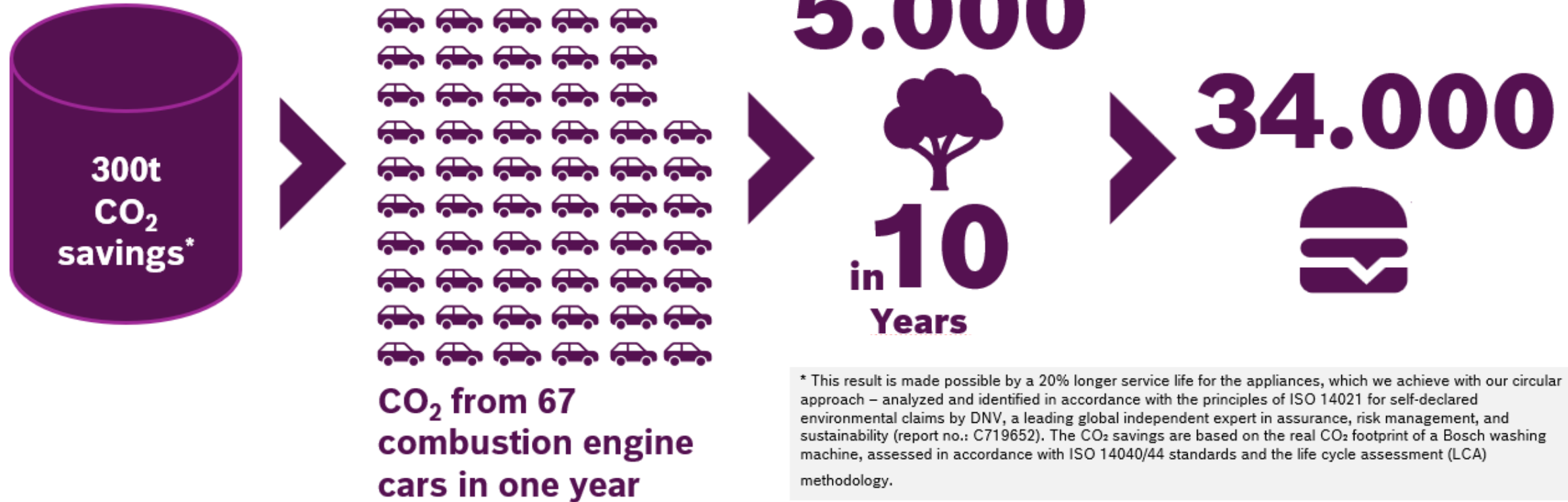
- ✓ Use of the car
- ✓ Basic insurance
- ✓ Basic warranty coverage
- ✓ Taxes



Additional Services

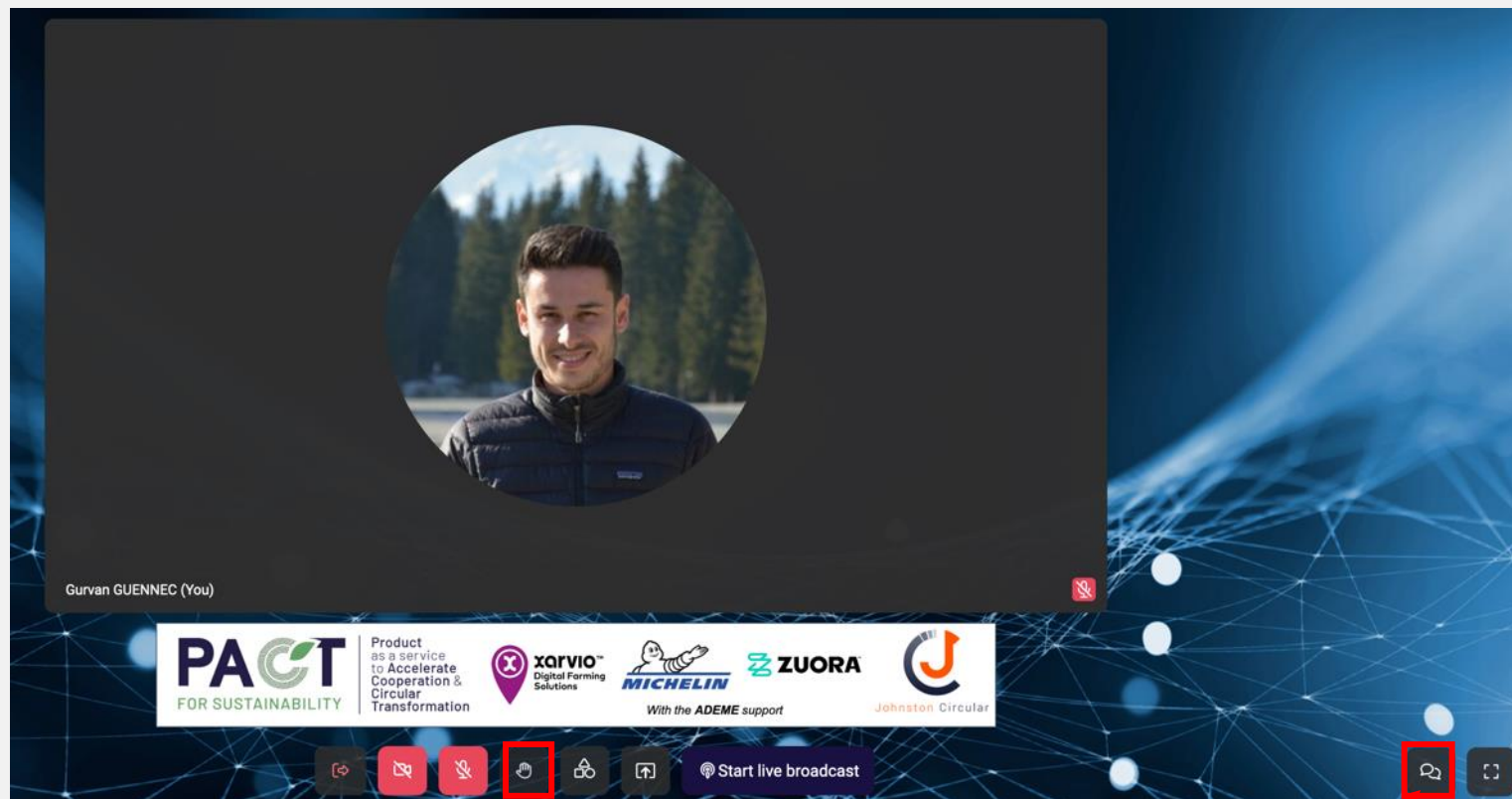
- | | |
|-------------------------------------|--|
| ☐ GPS | ☐ Additional driver |
| ☐ Child seat | ☐ Roadside assistance |
| | ☐ ... |

Example of environmental impact – and we are growing!



Q&A (5min)

Two possible ways to ask your questions



Raise your hand and you
will interact by video
directly with the speakers

Ask your questions in the
chat



Quantifying social impact of PaaS

Social LCA by UNEP/SETAC guideline:

Preliminary results of a Papillon case in Belgian compared with product sales (excerpt)

Stakeholder category	Subcategory	Inventory Indicator	Assessment	Reasoning behind
Society	Poverty alleviation	The organization carries out a poverty alleviation program	Possibly net beneficial	Helps vulnerable people in energy poverty & living comfort.
Workers	Working hours	Number of hours effectively worked by employees and Number of holidays effectively used by employees	Possibly net detrimental	Providing 24*7 service to the end users in the PaaS.
Local Community	Community engagement	Diversity of community stakeholder groups that engage with the organization	Net beneficial	Local social enterprise contributes to the business viability and bridging with local municipalities.
	Local employment	Percentage of spending on locally based suppliers	Unknown	Local dealers are not needed, but repair work generates local jobs , leading to detrimental and beneficial direction, respectively.

Financed by Scandere (Scaling up a circular economy business model by new design, leaner remanufacturing, and automated material recycling technologies) granted from the ERA-MIN3 program (grant number 101003575) via VINNOVA, Sweden's Innovation Agency (No. 2022-00070).

(Sakao, 2025, REMADE "Social Sustainability of a home appliance product-as-a-service for a circular economy")

Overwhelmingly positive social impacts

❖ 5 key dimensions, co-constructed with companies, have been evaluated :

- Performance & productivity: +28% avg. perceived improvement
- Social bonds: +33% stronger cooperation
- Professional development: +22% skill acquisition
- Personal fulfillment: +38% pride in contributing to sustainability
- Well-being: mixed results (↓ stress for 65% ; ↑ for 35% due to workload changes)

❖ A few standout findings :

- Clients : 89% reported higher trust in EFC companies
- Employees : 76% felt their work had greater meaning
- Indirect effects on value chain : cooperation spread beyond direct partners



Examples of social impact – and we are growing!



New-to-Bosch consumers



4

Multi-Property Houses
(6–8 single apartments each)



18

Single Apartments



350

Appliances
in different structures,
including built-in appliances
→ High replacement potential



468

households rent a device
via Papillon



706

Appliances for rent

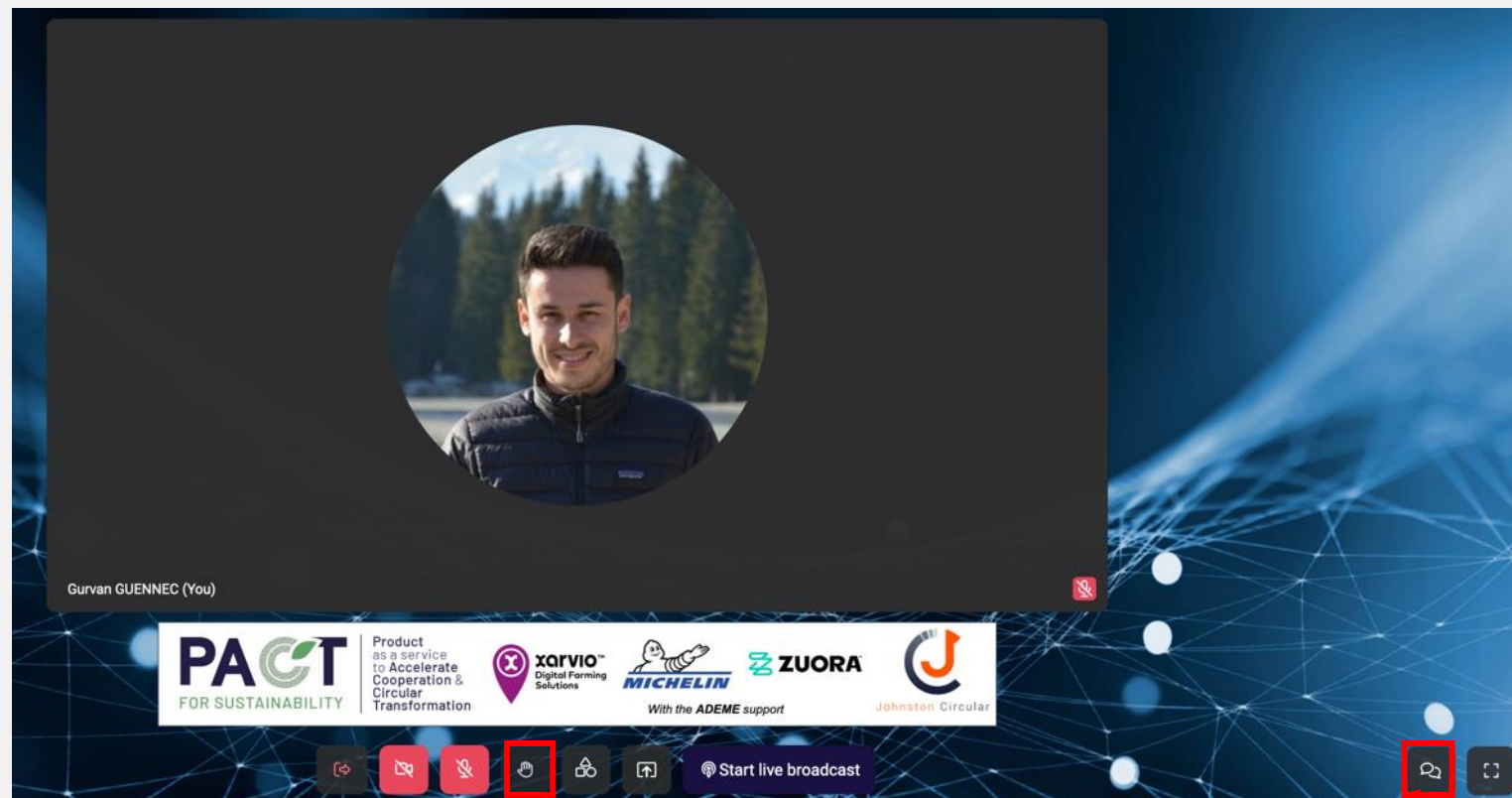


“

I am fed up with the low-cost appliances that keeps breaking down. I have so much stress and repair costs. I must focus on my tenants' well-being.

Q&A (5min)

Two possible ways to ask your questions



Raise your hand and you
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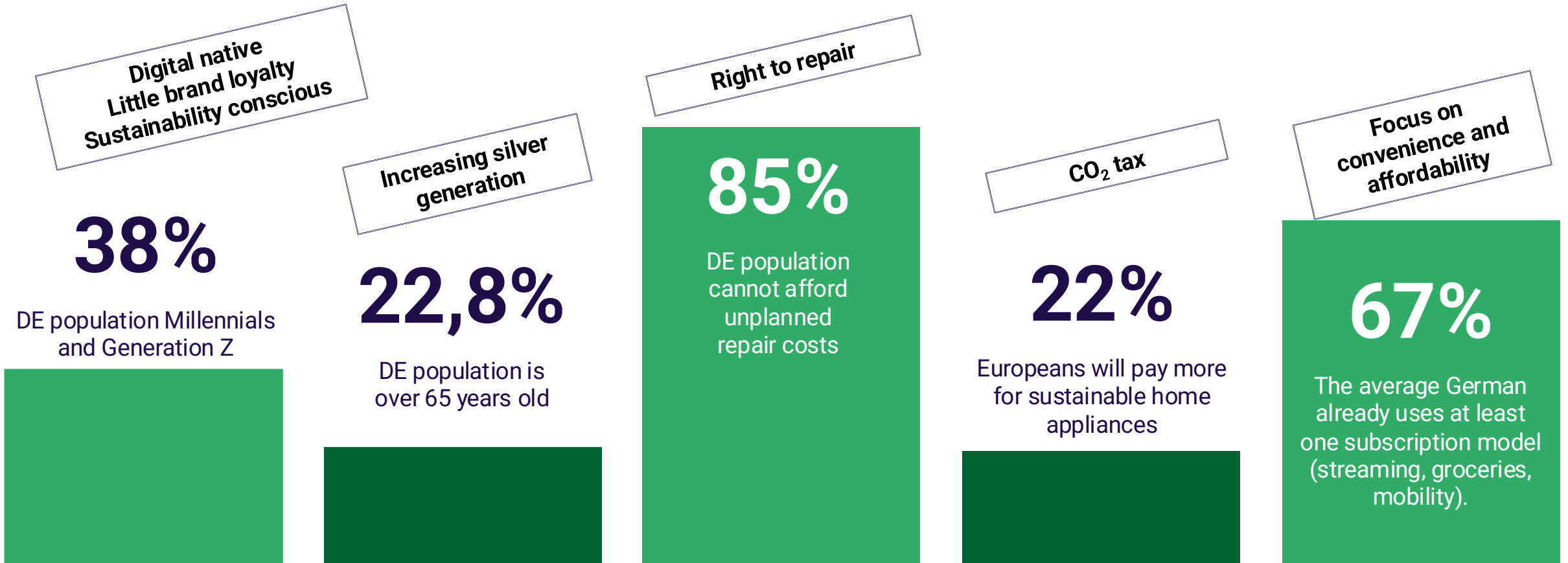
Ask your questions in the
chat



Challenges to overcome

Challenges = Opportunities

The German consumer demands value-for-money but still aspires for more. Simple, affordable and reliable solutions win! Europe and the world are no different.



Both methodological and field challenges identified

- ❖ Define the right **metrics to measure impact**
- ❖ It **takes time for a company to question and actually transform its economic model (7-10 years)** : necessity to have mature enough companies to participate in the study
- ❖ Participating companies must dedicate a significant **amount of time to collect data**, answer the consultants questions and interviews -> can be challenging especially for small companies
- ❖ **No existing label or even strict definition for Functional and Cooperative Economy**, which can take different forms depending on the projects / fields -> case-by-case analysis



Challenges in assessing PaaS offerings

- **To develop a number of solid cases: Resource demanding, because it's necessary to conduct an LCA or an MFA each time and impossible to replace it with circularity indicators (Sakao et al. 2024, CIRP Annals).**
- **To collect performance data on PaaS case studies: due to confidentiality of business information.**
- **Academia and businesses: collaboration is essential**

For academia to enhance the scientific body of knowledge

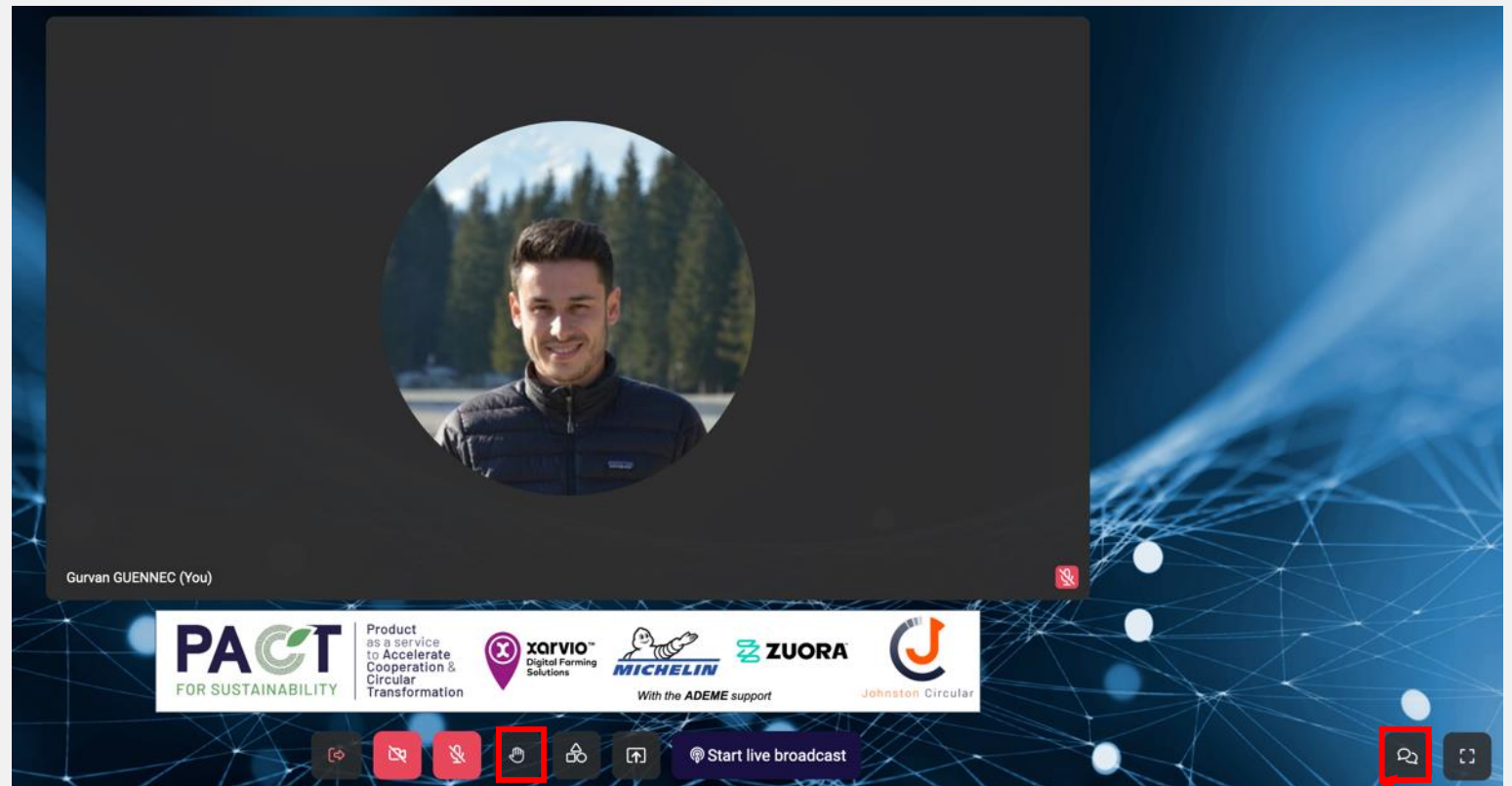
For businesses to gain and communicate a science-based evidence

For a civil society to make informed decisions



Q&A (5min)

Two possible ways to ask your questions



Raise your hand and you
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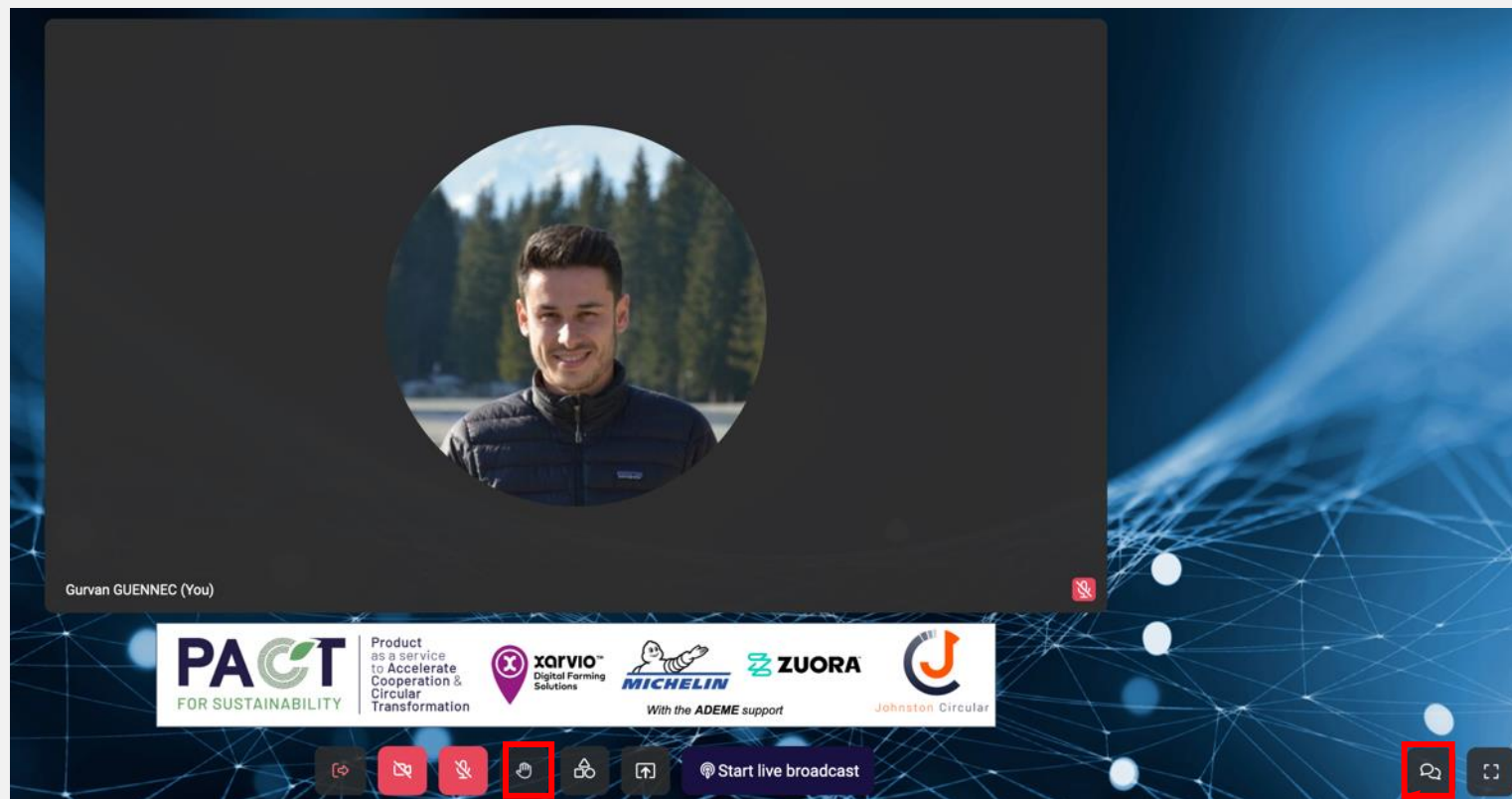
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Q&A and conclusion

Q&A

Two possible ways to ask your questions

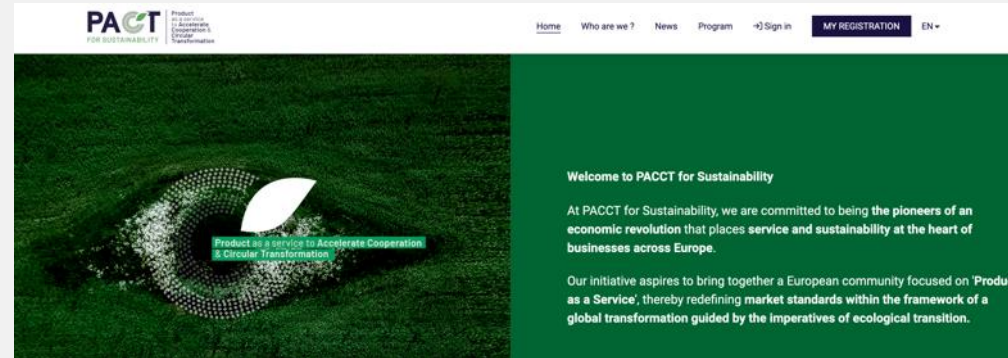


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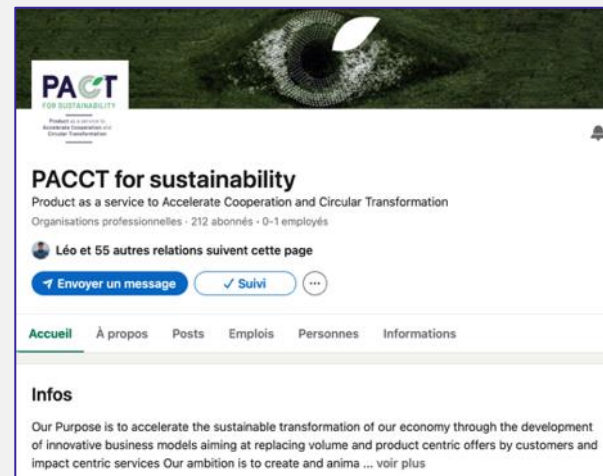
How to reach us ?



Our website

Replay & presentation in the "Program" section

Our LinkedIn page



Our emails

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gurkan.guennec@pacct-sustainability.org

francois.johnston@pacct-sustainability.org

Your feedbacks

It will only take 2 minutes !



Thank you !



Appendix

We serve both consumers and B2B customers

Our promise: Affordable Quality. Peace-of-mind. Circular by Design. Directly from Bosch.

Target Consumers and Customers

