



Comprehensive internationalization  
through digitalization, innovation  
and global-regional coproduction

**Damir Isovlic**, *Dean of School / Head of International Council*

School of Innovation, Design and Engineering

Mälardalen University



# Partners and history of collaboration



- **2015**  
UHR Contact Seminar in Colombia. We met both UdeA and UTP
- **2016 – 2017**  
Linnaeus-Palme initiation grants with both
- **2018 – 2020**  
Linnaeus-Palme partnership with UTP
- **2020 – 2022**  
this STINT project with both partners
- **2022** – applying for ICM with both partners





# High-level objectives of the project

- **Strategic partnerships** – building strong and broad collaboration with some selected international partners. Applying MDU coproduction model in a broader international context.
- **Virtual collaboration** – distributed student projects combined with short-term physical mobility, virtual mobility, lifelong learning with international partners,...
- **Integrated internationalization** – integrating internationalization into education and research, supporting staff and students at home, developing organization and structure,...



# Kick-off in Sweden in January 2020

We started with getting to know each other...



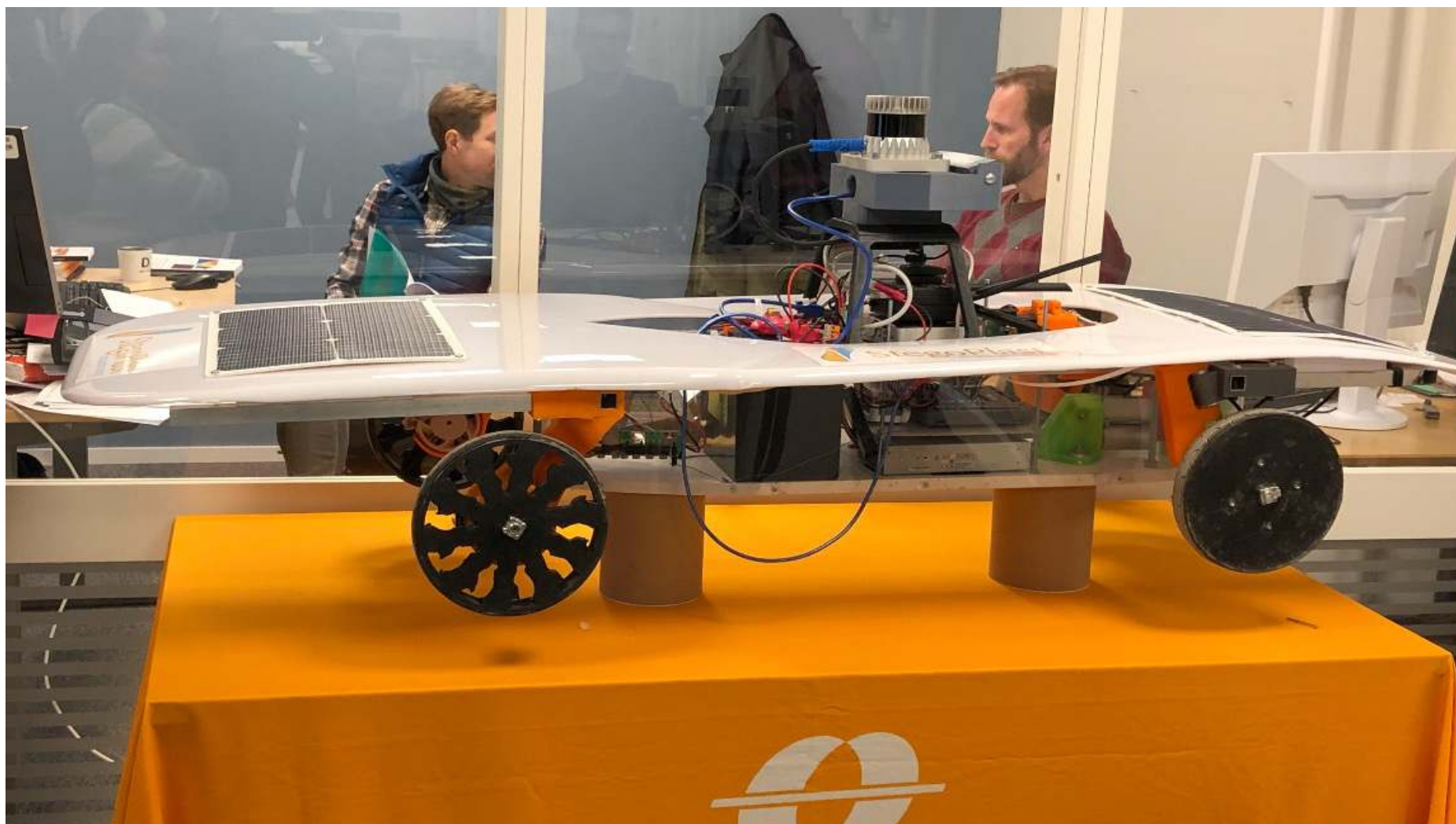
...and loaded with a lot of positive energy...





# Kick-off in Sweden

Then we visited two **industrial coproduction labs** at MDU to get inspired...





# Kick-off in Sweden

Finally, we we put out brains together to propose **three distributed student projects**





# Kick-off in Sweden

<p>6 students</p> <p><u>Project 1</u></p> <p>Solar boat (autonomous smart)</p> <ul style="list-style-type: none"><li>- mechanical eng.</li><li>- robotics (es, el, es)</li><li>- Innovation and Design</li></ul> <p><u>Professors</u></p> <p>MDH: Mikael Ekström</p> <p>UdA: Ricardo</p> <p>UTP: Carlos</p>	<p>6</p> <p><u>Project 2</u></p> <p>(For aging population)</p> <p>Health Technology</p> <ul style="list-style-type: none"><li>- SW, User Bosp.</li><li>- Health Robotics (Eleine)</li><li>- innovation</li></ul> <p>(some technical solution that help retired people, e.g. an app...)</p> <p><u>Prof</u></p> <p>MDH: Anne S. Elaine Mikela C</p> <p>UdA: Danny</p> <p>UTP: ELIZ</p>	<p>6</p> <p><u>Project 3</u></p> <p>(Contribution to Smart Cities)</p> <ul style="list-style-type: none"><li>- energy Eva</li><li>- CS/IoT/BD/AI</li><li>- health</li><li>- innovation</li></ul> <p><u>Prof</u></p> <p>MDH: Radu/Gabrielle Eva/Fredrik</p> <p>UdA: Natalia/Juan</p> <p>UTP: Ernesto</p>	<p>6 (opt)</p> <p><u>Projects</u></p> <p>Education</p> <ul style="list-style-type: none"><li>- educate the educators</li><li>- new pedagogical methods, tools</li><li>- students can help with implementation</li><li>- distance courses</li></ul> <p><u>Professors</u></p> <p>MDH: Milica/Courty Eva</p> <p>UdA: Dorris</p> <p>UTP: Gisela</p>	<p><u>Dates</u></p> <p>Year 2021</p> <p>Physical meetings</p> <p>staff (incl. MDH, UdA, UTP) (key people responsible for the student project)</p> <p>WS UTP: 18-22 Jan 2021</p> <p>students + 2 teach. UTP/UdA → MDH: 23/8 - 3/9</p> <p>WS 2 (4 people): 23-24/8</p> <p>students + 2 teacher: MDH → UdA/UTP: Nov 29 - Dec 10</p> <p>29/11 - 3/12 both possible</p> <p>check cheapest tickets</p>	<p>1st Meeting at MDH</p> <ul style="list-style-type: none"><li>- Idea Lab WS with all groups</li><li>- funding for project resources, costs, (co)funding) but also some STINT funds</li></ul> <p>Connect to other research projects</p> <p>Companies, students do some fundraising</p> <p><u>Contents</u></p> <p>Days 1-4</p> <ul style="list-style-type: none"><li>- virtual teams</li><li>- subprojects 1-4</li><li>- integration of int'l</li><li>- company visits</li><li>- Life-long learning</li><li>- IdeaLab (separate budget)</li></ul> <p>Days 5</p> <ul style="list-style-type: none"><li>- incubators</li><li>- City of Knowledge</li></ul>
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# Then everybody went home and remote collaboration started...

## AutoSail



  
Sebastián Ricardo

  
Jonathan Nelson

UdeA Team

Two professors

- Ricardo Velásquez
- Sebastián Isaza

Two Master Students

- Jonathan Gomez (3<sup>rd</sup> semester)
- Nelson Giraldo (2<sup>nd</sup> semester)

Some undergraduate students

- When current pandemic is over

## Health Technology

→ MDH: Elaine Åstrand PhD, and Petra Heideken Wågert PhD.

→ UTP: Ernesto García PhD, and Elia Cano PhD.

→ UdeA: Augusto Enrique Salazar PhD, and Hernán Felipe García PhD.

**MDH - HVV**

- Physiotherapy with a behavioural medicine approach
- Health and welfare technology
- Physical activity
- Sedentary behavior

**MDH - IDT**

- Neurotechnology
- Robotics
- Signal processing
- Artificial Intelligence

**UdeA**

- Computer Vision
- Signal processing
- Artificial Intelligence

**UdeA**

- Representation learning
- Machine Learning
- Deep probabilistic models

**UTP**

- Networks Communications
- Wireless Sensor Networks
- Quality of Service and Transport protocols

**UTP**

- Petri Nets
- Formal Methods
- Artificial Neuronal Networks
- Bioinformatics

## Smart Rooms

  
Radu Dobrin Fredrik Wallin

  
Sasi Punnekkat

  
Juan Marcos Castillo

  
Natalia Gaviria Juan Felipe Botero

## Steering Group

Video meetings every **two weeks** (Fridays 15.00 Swedish time)



# Shortly after, first **results** emerged...



A small **demonstrator boat** was built and successfully tested at Mälaren lake...





# The word got spread...

2021-04-12 News

## Autonomous sailing boats to replace our present cargo vessels?

#globalamålen



In the student project AutoSail, students and researchers at MDH are working on developing an autonomous sailing boat.

In the student project AutoSail, students and researchers at MDH are working side by side on developing an autonomous sailing boat.

- If we can eventually replace the cargo vessels on the Atlantic with autonomous, self-propelling sailing boats powered by sustainable energy, we can gain enormous



Mälardalen University

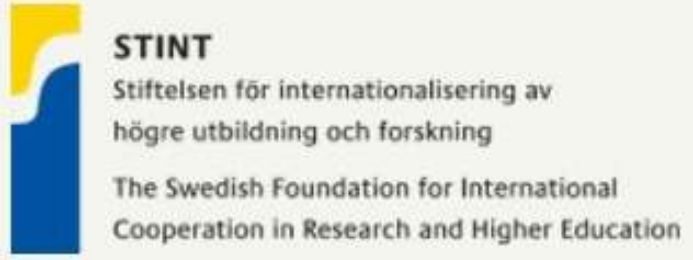
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This week, Panama's ambassador in Sweden, Andrés Gregorio Núñez Sánchez, visited our C2 lab - a lab where several of our engineering students carry out projects together with our researchers, other





# In November 2020, we organized a **virtual seminar**...




STINT  
Stiftelsen för internationalisering av  
högre utbildning och forskning  
The Swedish Foundation for International  
Cooperation in Research and Higher Education

## Student Project Presentation

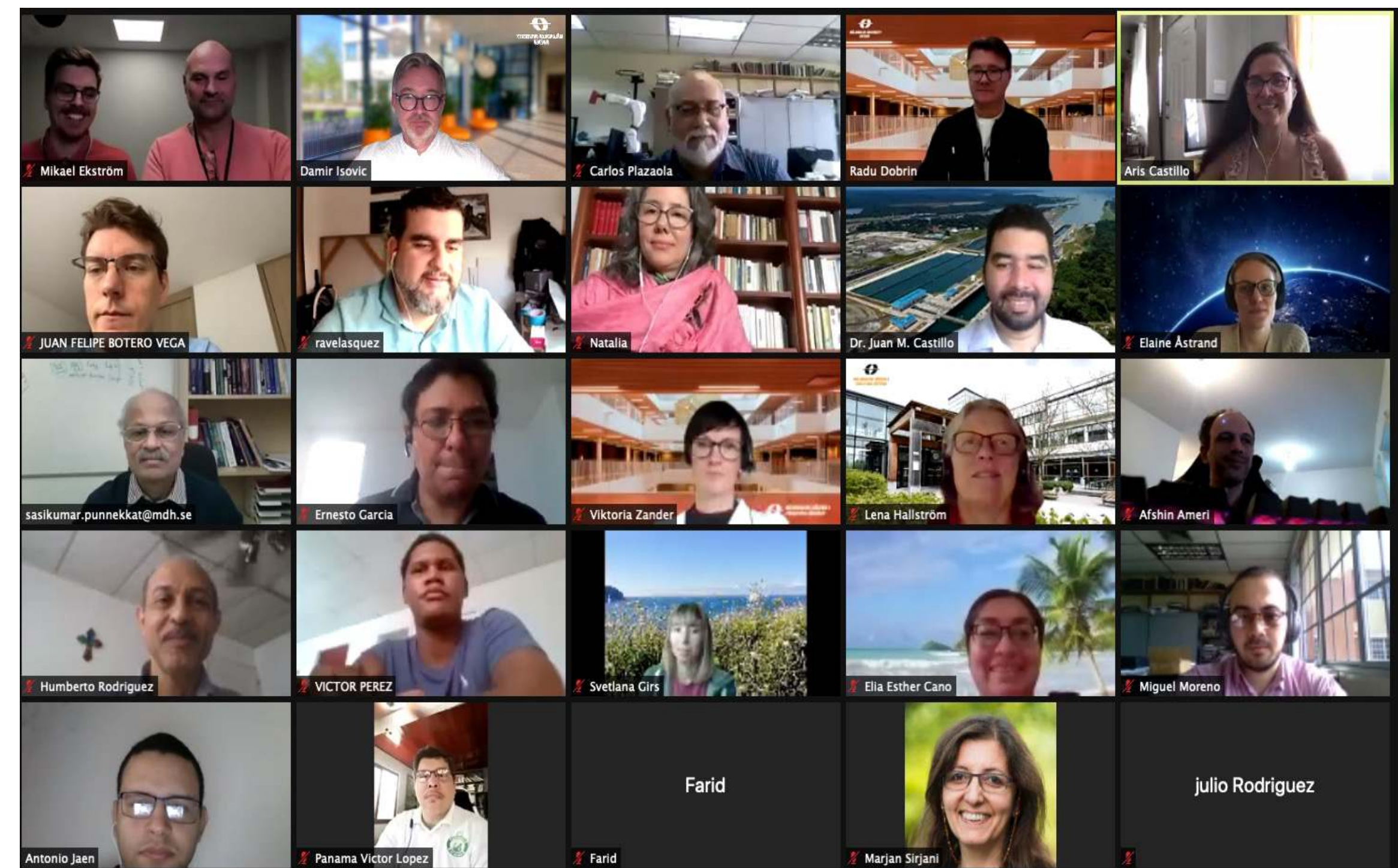
- Solar Boat
- Smart Cities
- Interactive Digital Platform for Elders

November 20th,  
14:30 Sweden / 7:30 a.m. Panama & Colombia

Join the event scanning the QR Code:



Many people from all three universities participated...





# So far so good!

...but then it started to go downhill due to **covid-19**...

- **Physical workshop** in Panama in January 2021 → **cancelled!**
- **Short-term student exchange** in August 2021 → **cancelled!**
- We needed to act fast and find an **alternative way** to go on with the student projects...



# We organized a **virtual 2-weeks workshop** in August 2021

**Easy to say, not so easy to pull of...**

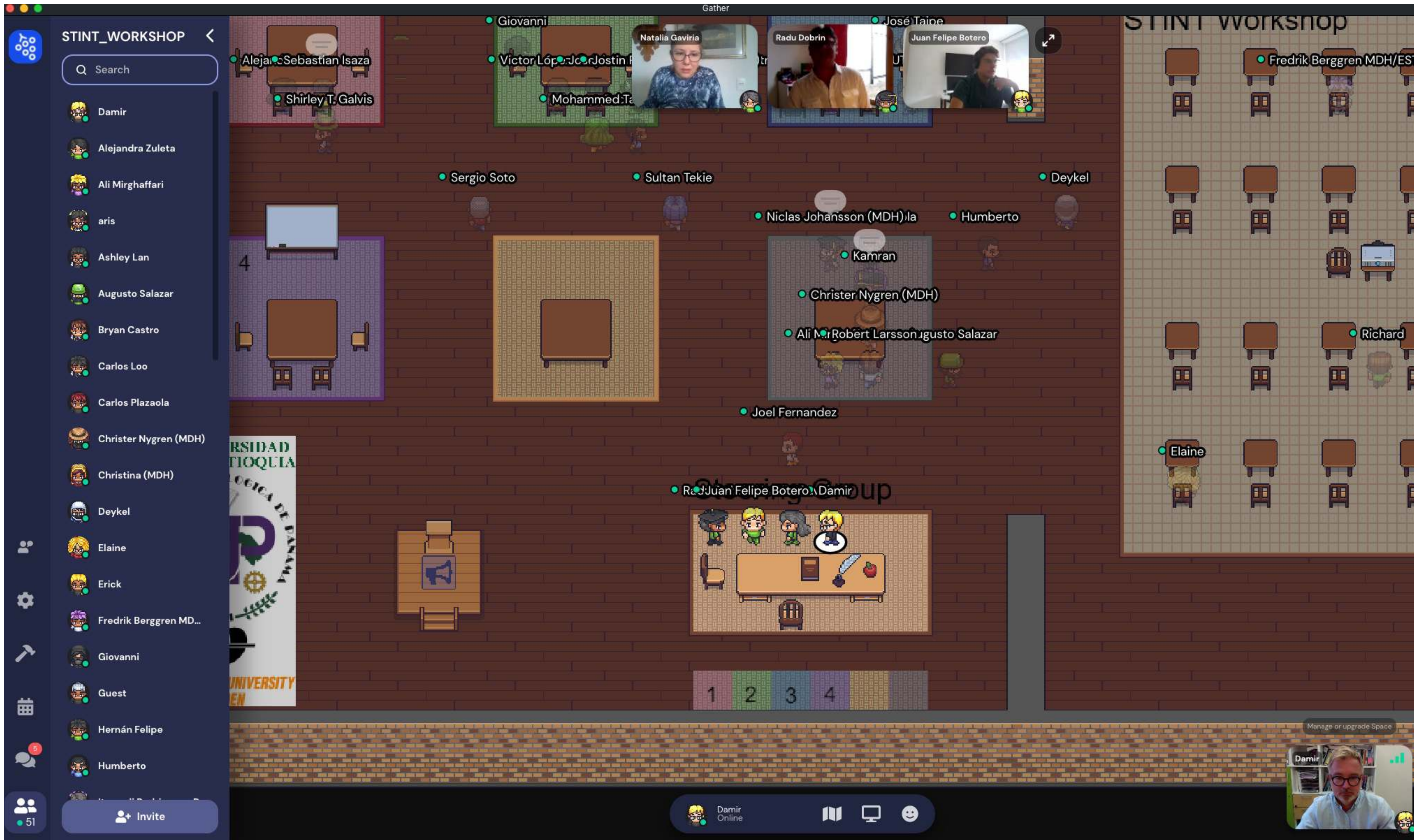
- **Technical discussions** – complex technical issues sometime require face-to-face
- **Integration** – some subsystems must be integrated in a real lab
- **Time difference** – we can only meet a few hours per day (*15-18*)
- **Lack of engagement** – other things in the background, easy to turn-off camera
- **Technical challenges** – you need reliable network, meeting platform,...
- **Cultural exchange** – having a beer over Zoom is not that exciting...



# We decided to try a new meeting platform (*Gather Town*)

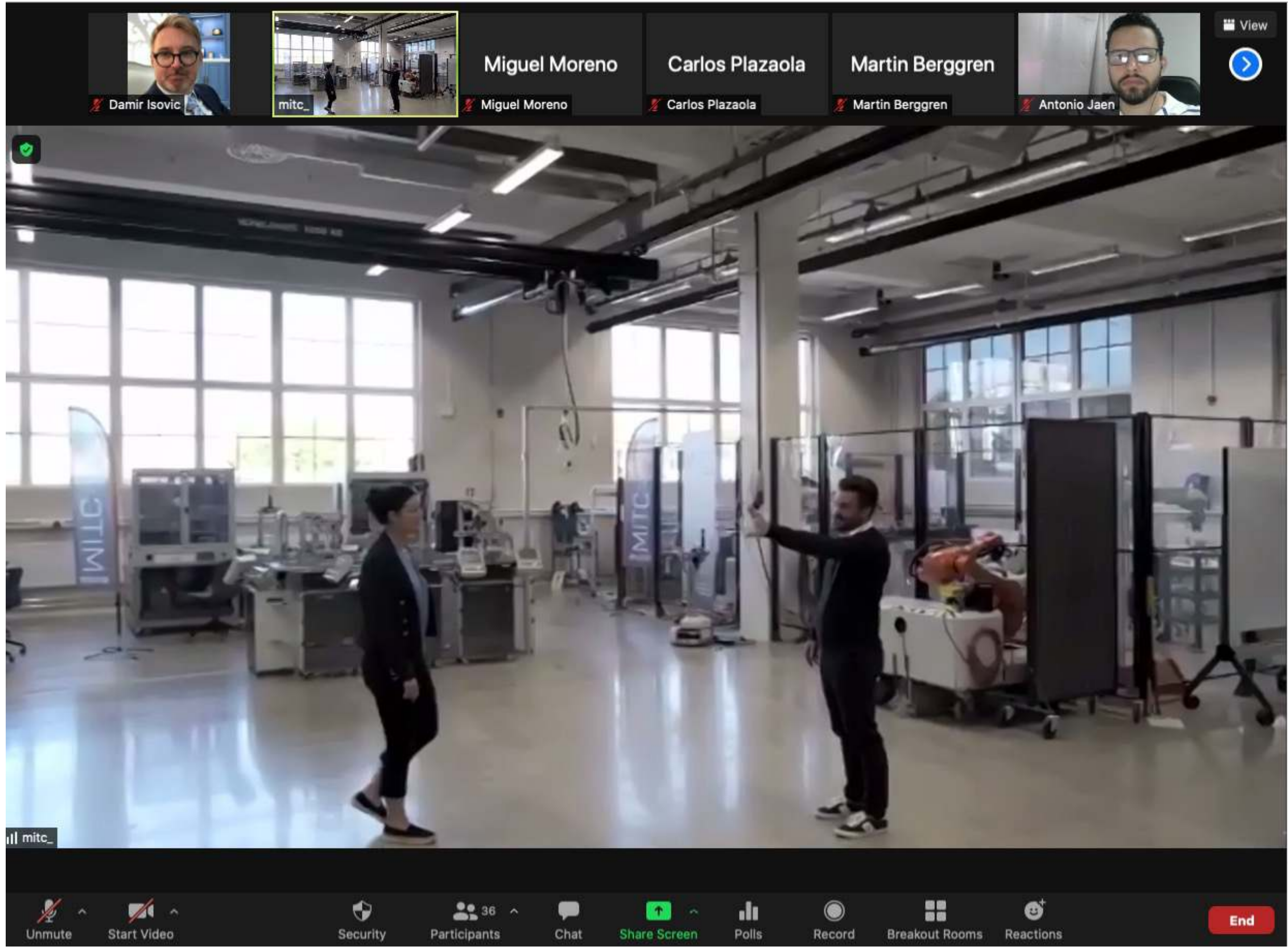
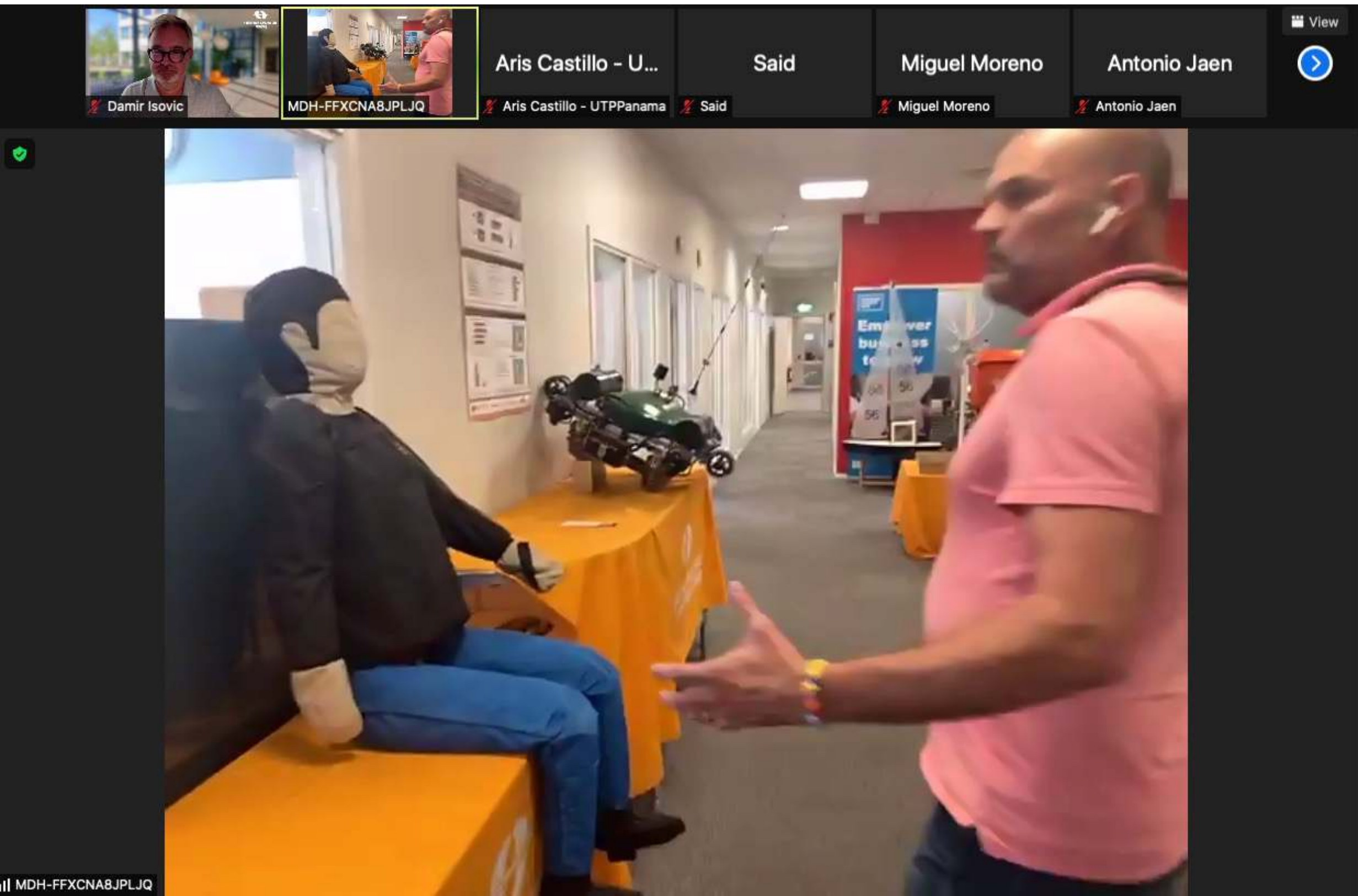
**Virtual world** where you can move with your avatar and enter different rooms

Each student project had an **own room** – the place to discuss and present results to others





# We organized virtual lab visits...



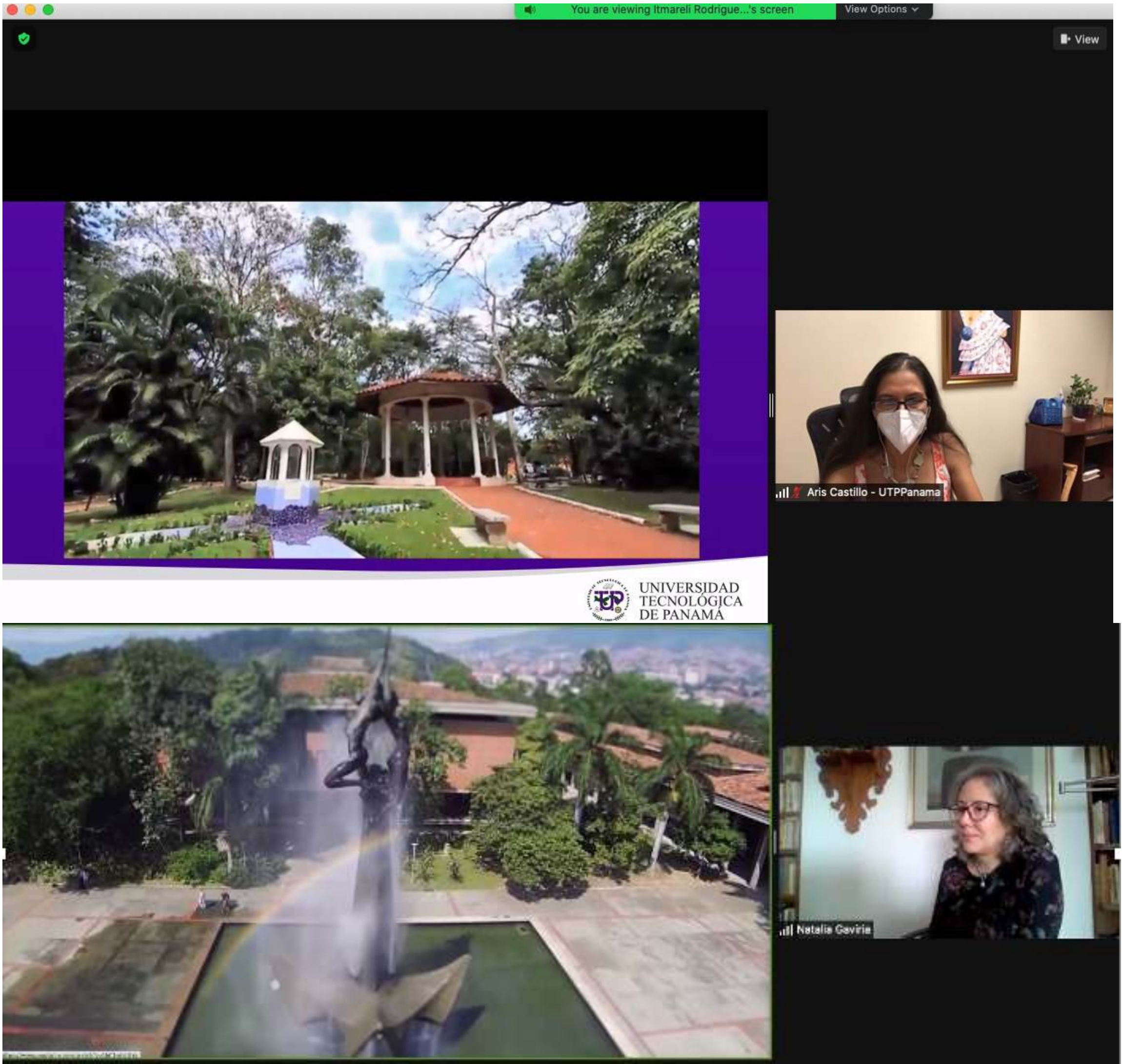


...and we had some meaningful **social activities...**

**Live streaming** of traditional Panamanian dans



Virtual campus visits





# Most importantly, we made a **significant progress** with student projects...

**Real smart room** built in Sweden, to be connected to UdeA and UTP



**Real boat** built in Panama, we need to integrate MDU and UdeA results to make it autonomous



But now, we really need to meet physically!

**Digital health platform** built in Colombia, we need to integrate MDU and UTP results





# Some **other** projects activities and outcomes...

So far, I presented mostly the activities related to student projects, which have contributed considerably to several overall project goals.

Of course, we discussed and implemented many other things in the project:

- **Integration** of internationalization at home universities
- Boosting up **entrepreneurship** and **innovation**
- Offering **lifelong Learning courses** to UTP, UdeA and their local partners
- Spin-offs, e.g. **new project application** and **joint research initiatives**

○ ...



# New Action Plan for internationalization

Goals	Activities
All education and research at MDH contain international features.	Develop a model for integrating and following up internationalisation in the quality work (see e.g. EPAS model)

Goals	Activities
Internationalisation forms the basis of staff qualifications.	<p>Investigate how international experience can form a basis for staff qualifications in appointments and promotions, as well as salary criteria.</p> <p>Raise the question of internationalisation during performance reviews, make an agreement that time for mobility is planned into the work schedule where necessary.</p>

Goals	Activities
The proportion of study programmes offering relevant outgoing and incoming student mobility is to increase in all areas of education.	<p>Each area of education is to ensure that there are relevant study programmes within the area which have:</p> <ul style="list-style-type: none"><li>at least one semester for outgoing student mobility</li><li>at least 30 credits of continuous courses in English for incoming student mobility.</li><li>at least three suitable international partners for mobility (agreements)</li></ul>

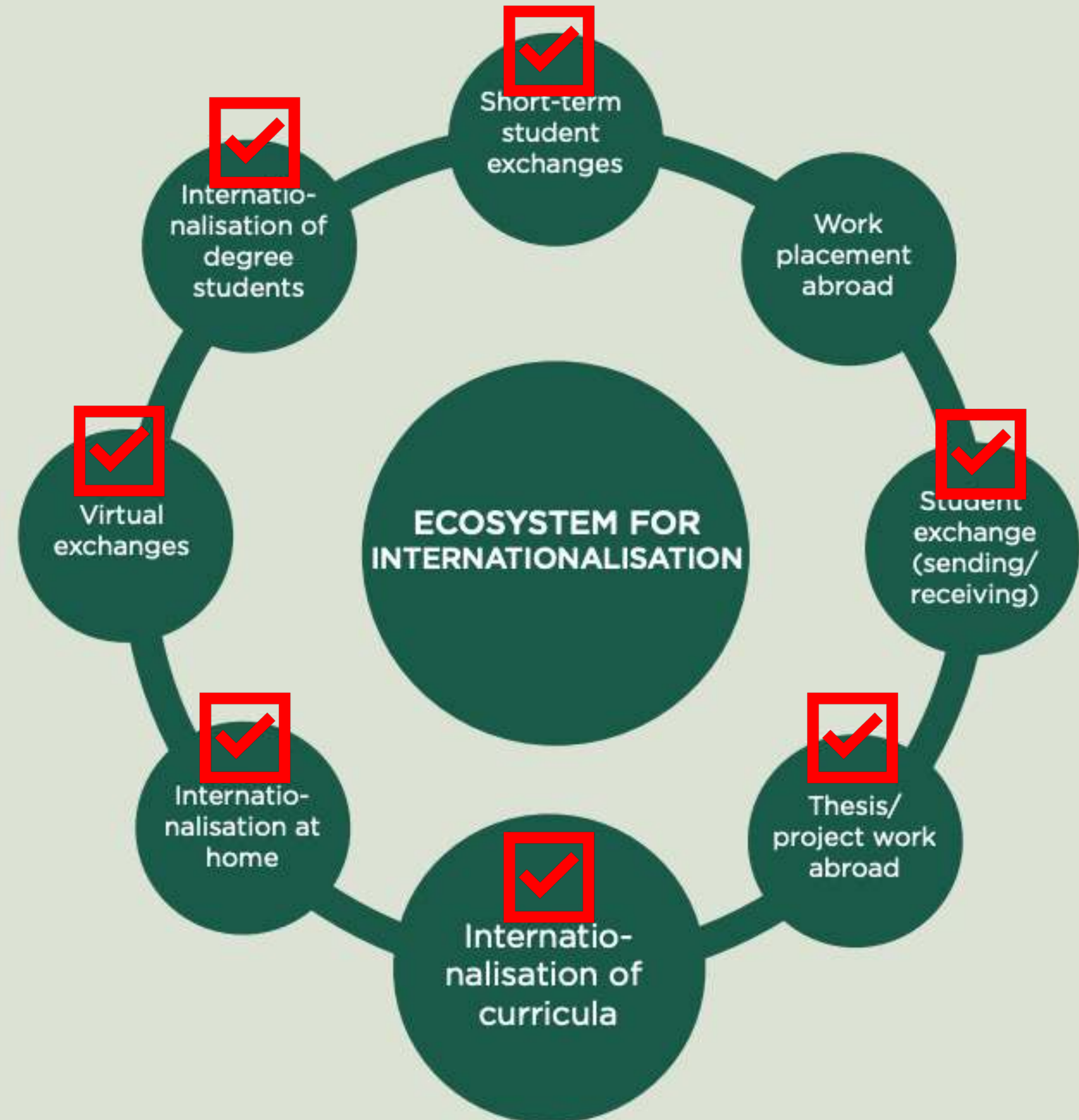


# Goal: to build a **sustainable ecosystem** for internationalization

This STINT project has **already contributed** to the most of all those things...

Some other things that we are currently working on:

- **Internships** – Work placement abroad
- **Talent attraction** – together with industrial partners
- **Remote Labs** – virtual classroom to support LLL and online courses





- **This STINT project has been extremely valuable to us:**
  - **Broad collaboration** – more than 50 people involved so far
  - **Virtual collaboration** – distributed student projects, remote labs, virtual exchange,..
  - **Short-term student mobility** – not yet but hopefully soon
  - **Comprehensive internationalization** – integration in our core business
  - **Internationalization at home** – everybody that contributed to the project so far did it at home
  - **Entrepreneurship and innovation** – new innovation support organization at MDU
  - **Spin-off effects** – new project applications (ICM), joint research initiatives (publications),...
  - ...
- ...and we are only **halfway** in the project (hopefully, we will get extension ;-)