Training Action 2

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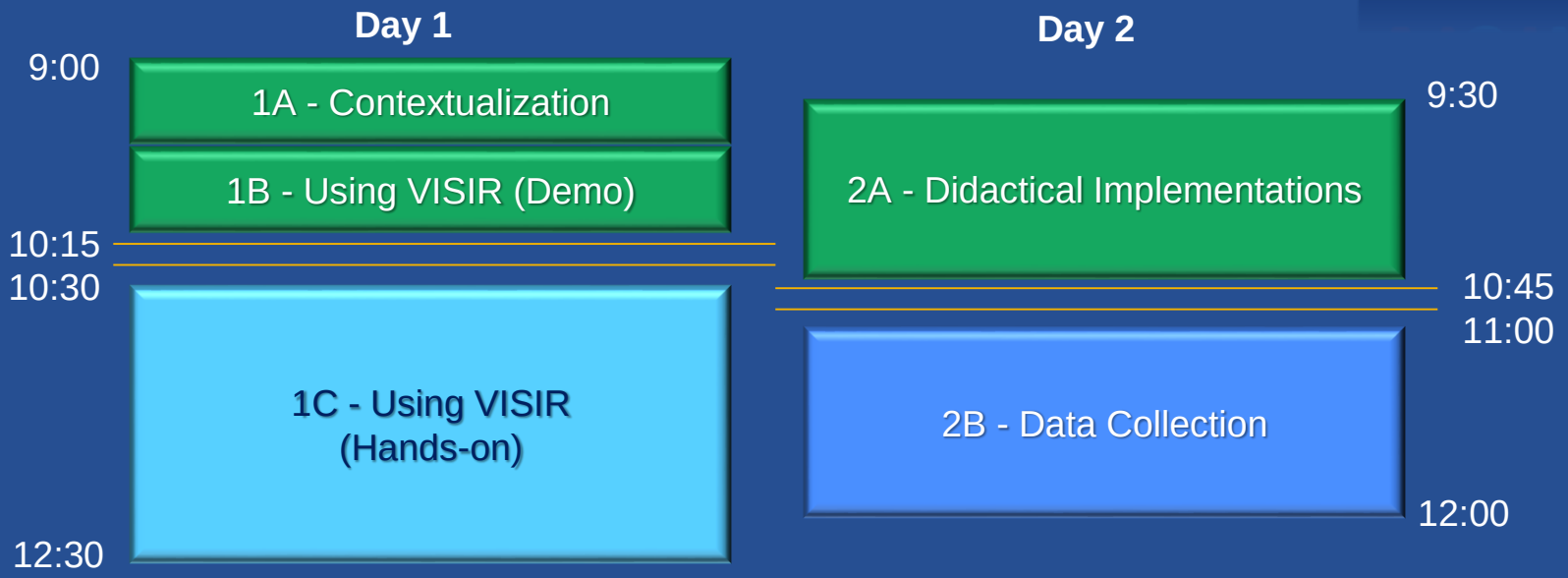
TA2 Structure



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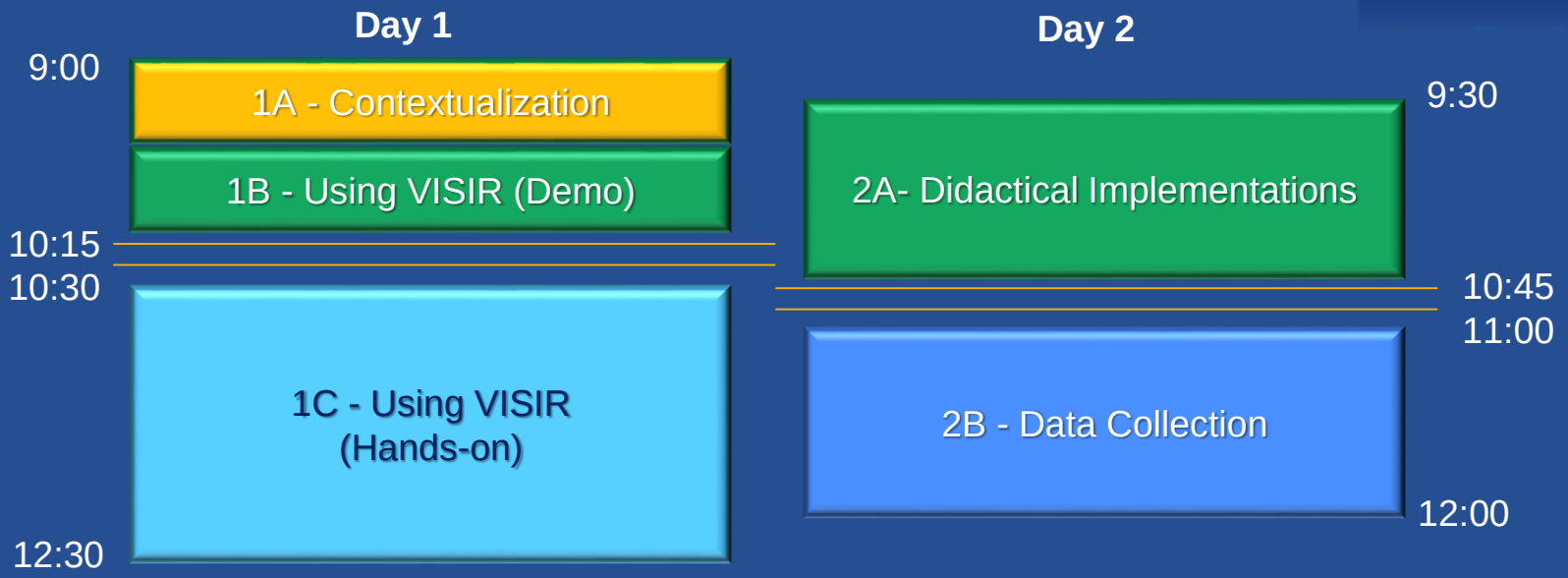

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Contextualization

Day 1 – Session 1A

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Outline

1. Remote Laboratories
2. VISIR (Virtual Instrument Systems in Reality)
3. Advantages of using VISIR
4. VISIR + project
5. Training action outline

Remote Laboratories

Teaching classes can be gathered in several groups such as Theory, Tutorial, Laboratorial, etc. An alternative is to complement them with **real experiments** but without scheduling limitations through ***Remote Laboratories***.

Remote Laboratories are platforms that allow to perform real experiments in a platform physically distant.

Do not confuse **REMOTE EXPERIMENTATION** with **SIMULATION**

where models are used instead of real objects!

VISIR
(Virtual Instrument Systems in Reality)

VISIR (**V**irtual **I**nstrument **S**ystems in **R**eality)
This Laboratory was developed for remote experimentation on electricity and electronics. It is based on ***virtual Instrumentation***, i.e., real physical instrumentation accessible through virtual interfaces.

VISIR includes Control and Monitoring instruments, power supplies and a switching matrix to interconnect them to several components.

Contextualization (VISIR)

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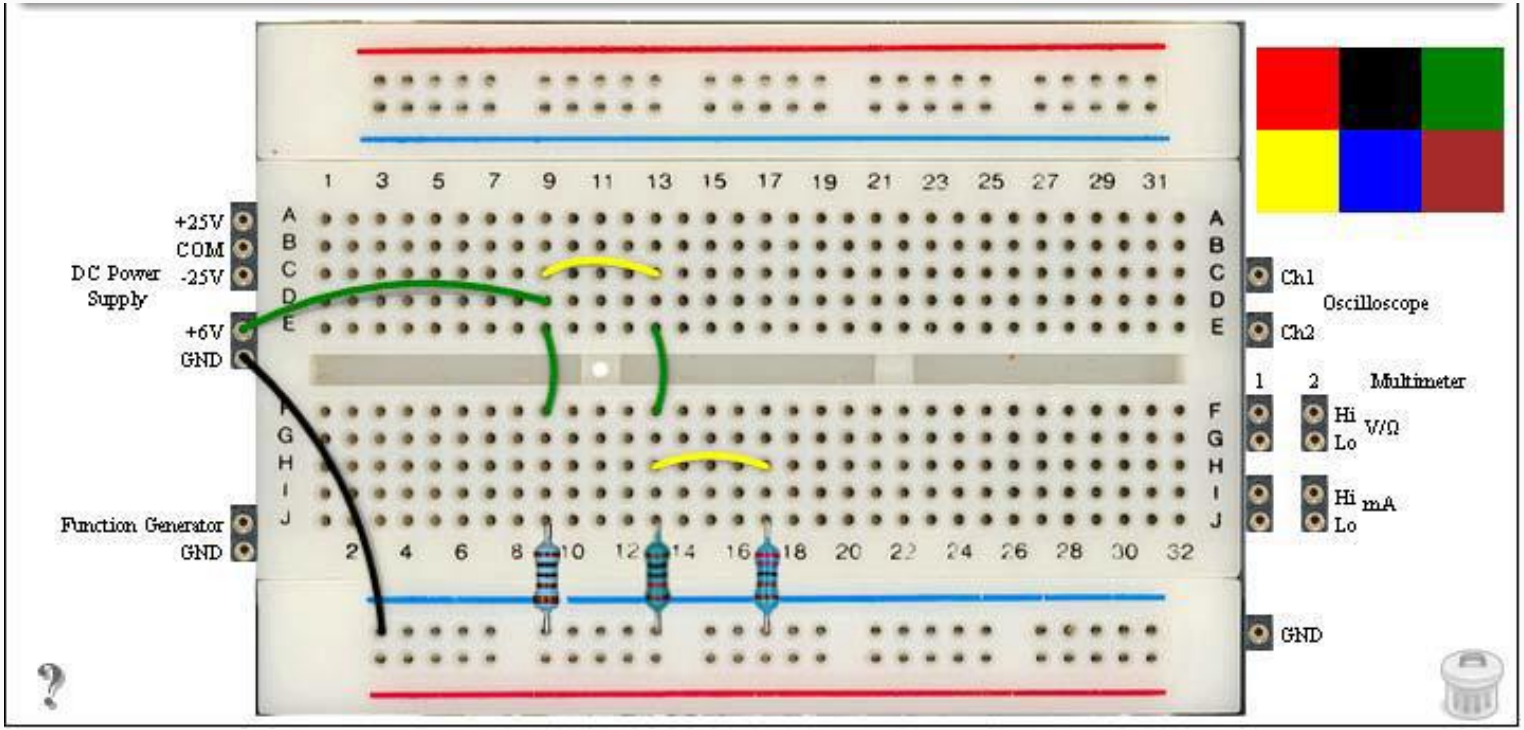

Advantages of using VISIR

Students can verify the ***real behavior*** and compare it with expected results.

Lab Classes are fundamental to achieve learning outcomes, but they present several constrains such as time limited.

With VISIR Students can perform real experiments anytime from anywhere.

Students have the possibility to test alternative experiment variations (**What if**…)

VISIR+ Project

…and it's all in the title:

To develop Educational Modules

for Electrical and Electronic Circuits (Theory and Practice)

following an Enquiry-based Teaching and Learning methodology

supported by VISIR (Virtual Instrument Systems in Reality)

There has been an increased interest in science and engineering education due to:

1) the shortage of professionals required in scientific and technical areas;
2) the considerable low ratio of students opting for science and engineering related degrees in higher education institutions; and
3) the number of dropouts exhibited in the initial years of undergraduate studies.

All stakeholders have devoted a great deal of attention and concern to this problem, considering the high number of reports published about and initiatives taken in recent years.
In sum, the solutions have been dealing with:

1. raising the society awareness for such a problem (1)
2. increasing the interest for STEM (1, 2), and
3. promoting new teaching & learning methodologies, specially student-centred ones, involving the use of ICT-tools, for coping with a new generation of digital natives (3).

This project targets the broad area of Electrical & Electronics Engineering, and, within it, the subject of circuit theory & practice.

It aims to **define**, **develop** and **evaluate** a set of educational modules comprising **hands-on**, **virtual**, and **remote experiments**, the later supported by a remote lab → VISIR.

The nature of each experiment (hands-on, virtual, real-remote) has an impact on the students' perception of circuits' behaviour, being therefore mandatory to understand how these different learning objects can be arranged together, in order to scaffold their understanding and increase their laboratory-based skills.

This is the concern of the underpinning teaching and learning methodologies, favouring in particular the students' autonomy for discovering how circuits work, through an enquiry-based approach.

O1. Allow teachers enriching course curricula on electric and electronic circuit theory and practice including hands-on, simulations and remote labs

O2. Scaffold students' learning and foster their autonomy

O3. Increase students' meaningful knowledge acquisition and retention by enabling them to compare results from calculus, simulation and real experimentation (hands-on and remote)

O4. Increase students' success rates in continuous assessment modalities

O5. Allow partner institutions the use of ICT tools to attract students to STEM careers

A1. Provide the labour market with high-skilled professionals in the area of Electric and Electronics Engineering (O1, O3)

A2. Reduce the number of dropouts from initial years in higher education, in particular in science and engineering degrees (O2, O4)

A3. Increase the number of students that opt for STEM careers, when applying to higher education (O5)

Contextualization (VISIR + project); Partners

VISIR+ brings together the power of the best remote lab for experiments with electrical and electronics circuits and the long history of collaboration among the consortium partners from Argentina, Austria, Brazil, Portugal, Spain, and Sweden.

Online Lab Award

GOLC

Online Lab Award

Dear colleagues,

it is my pleasure to inform you, that the GOLC Executive Comm
present the GOLC Online Laboratory Award 2015 in the catego

- **VISIR - Virtual Instrument Systems in Reality**

The award will be handed over by the GOLC President during t
Virtual Instrumentation (REV2015) in Bangkok.

Michael Auer

GOLC Secretary General

Partners

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- CUAS
- IFSC
- IRICE-CONICET
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Contextualization (VISIR + project); Partners

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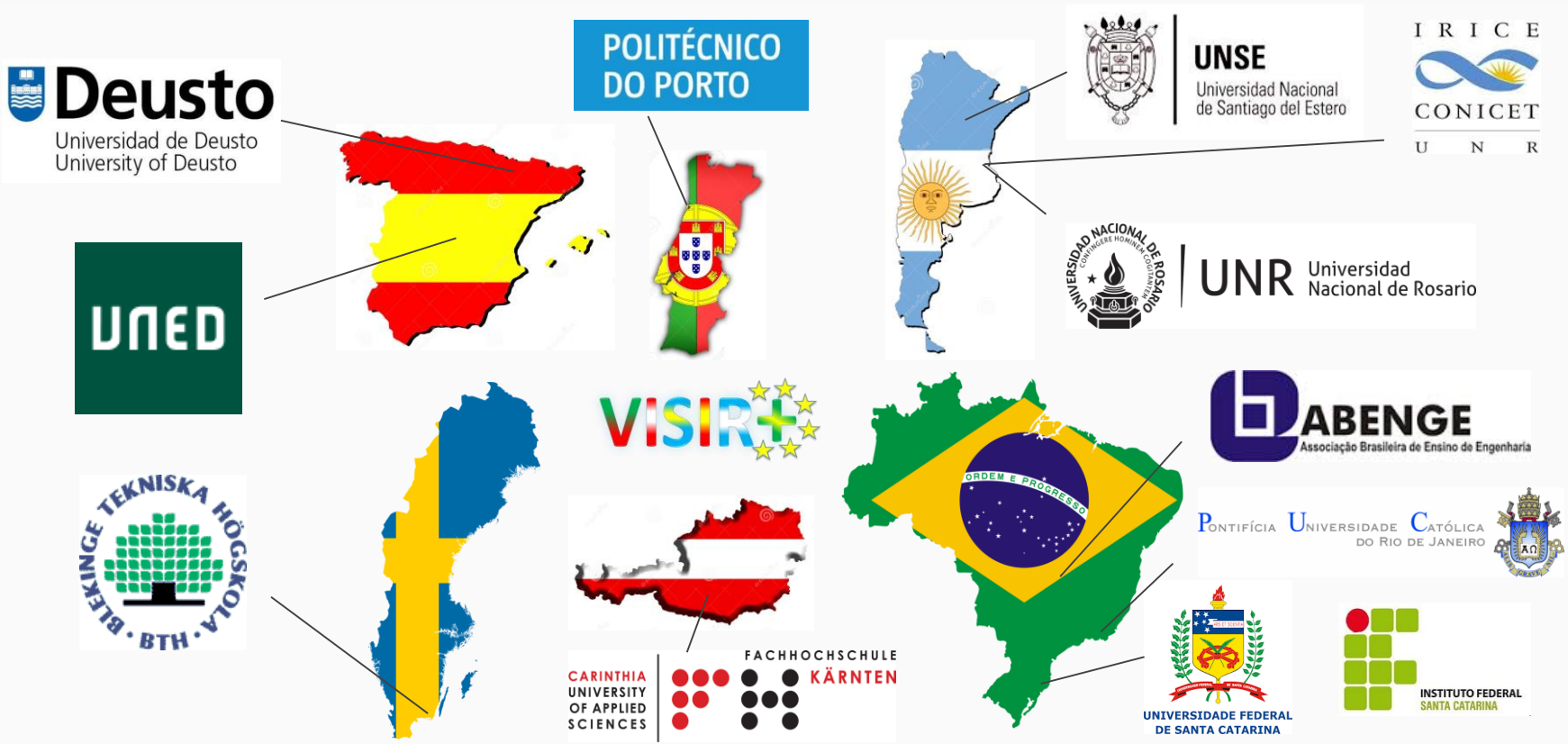

This is…

One idea, one project, one team!

And for so, we are…

Partners !!!

Thank you for your attention!

POLITÉCNICO DO PORTO

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