VIPERLAB – an infrastructure platform to accelerate the development of perovskite PV technology in Europe

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VIPERLAB stays for 'Fully connected **VI**rtual and physical **PER**ovskite photovoltaics **LAB**'
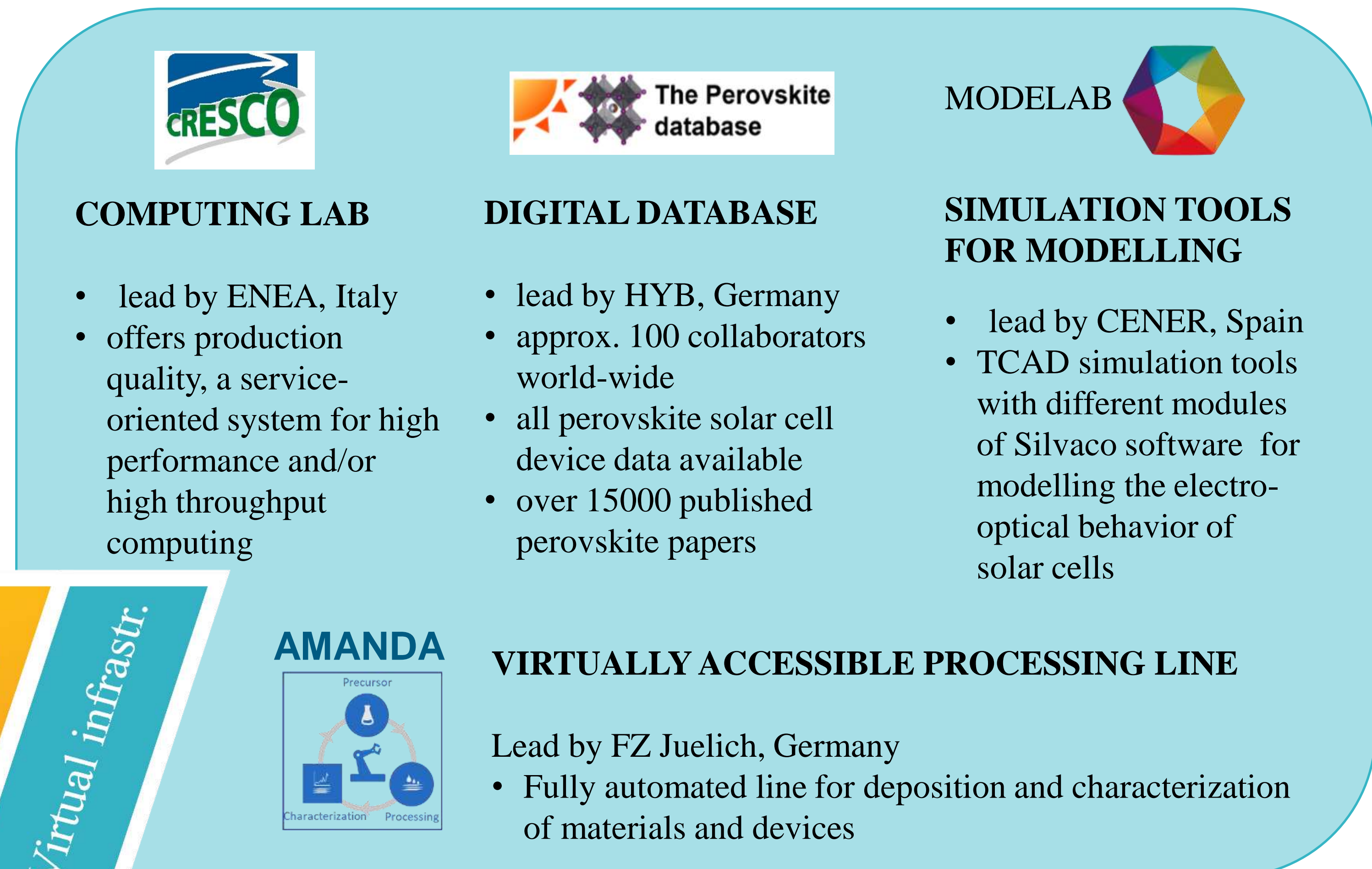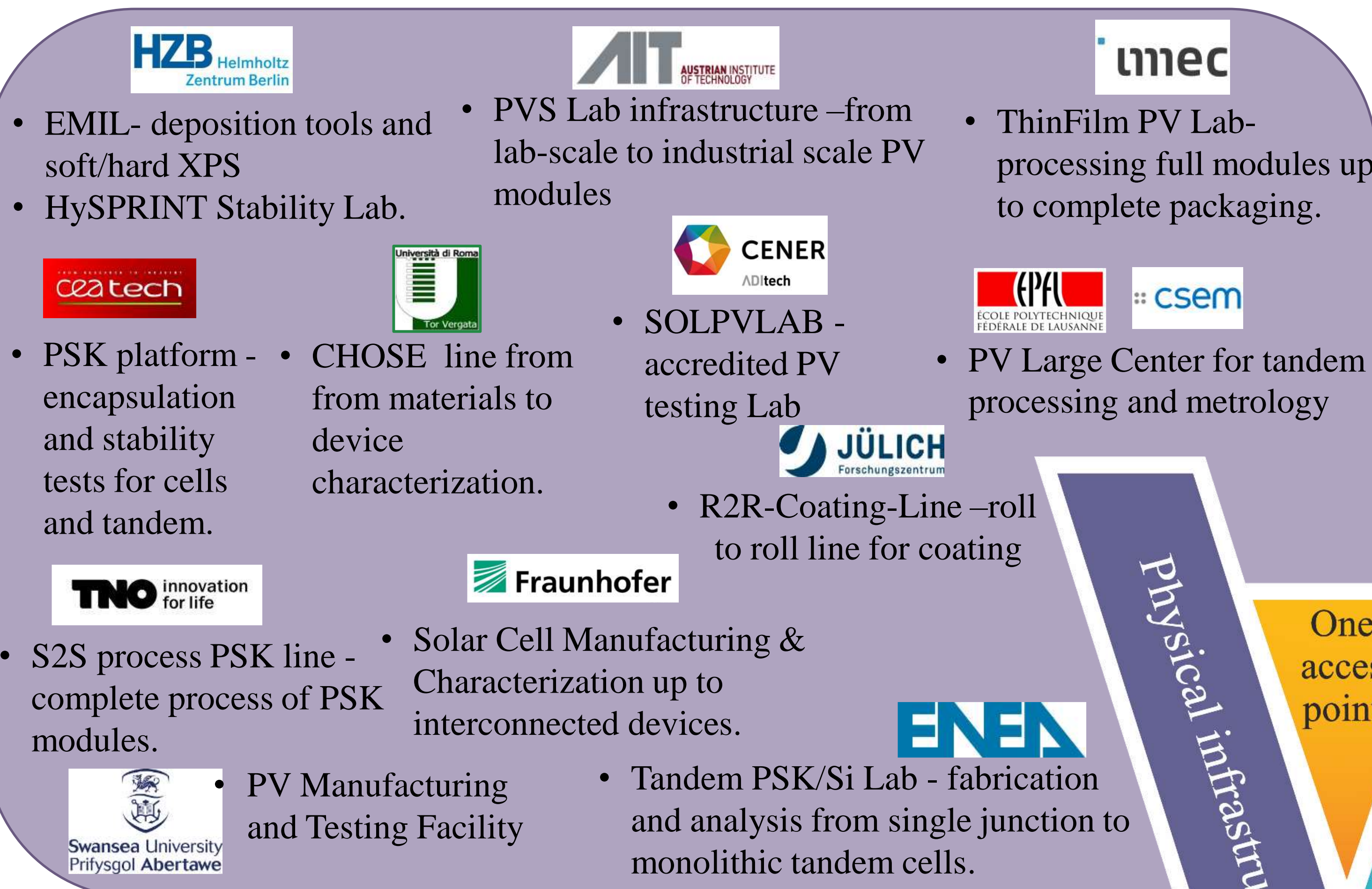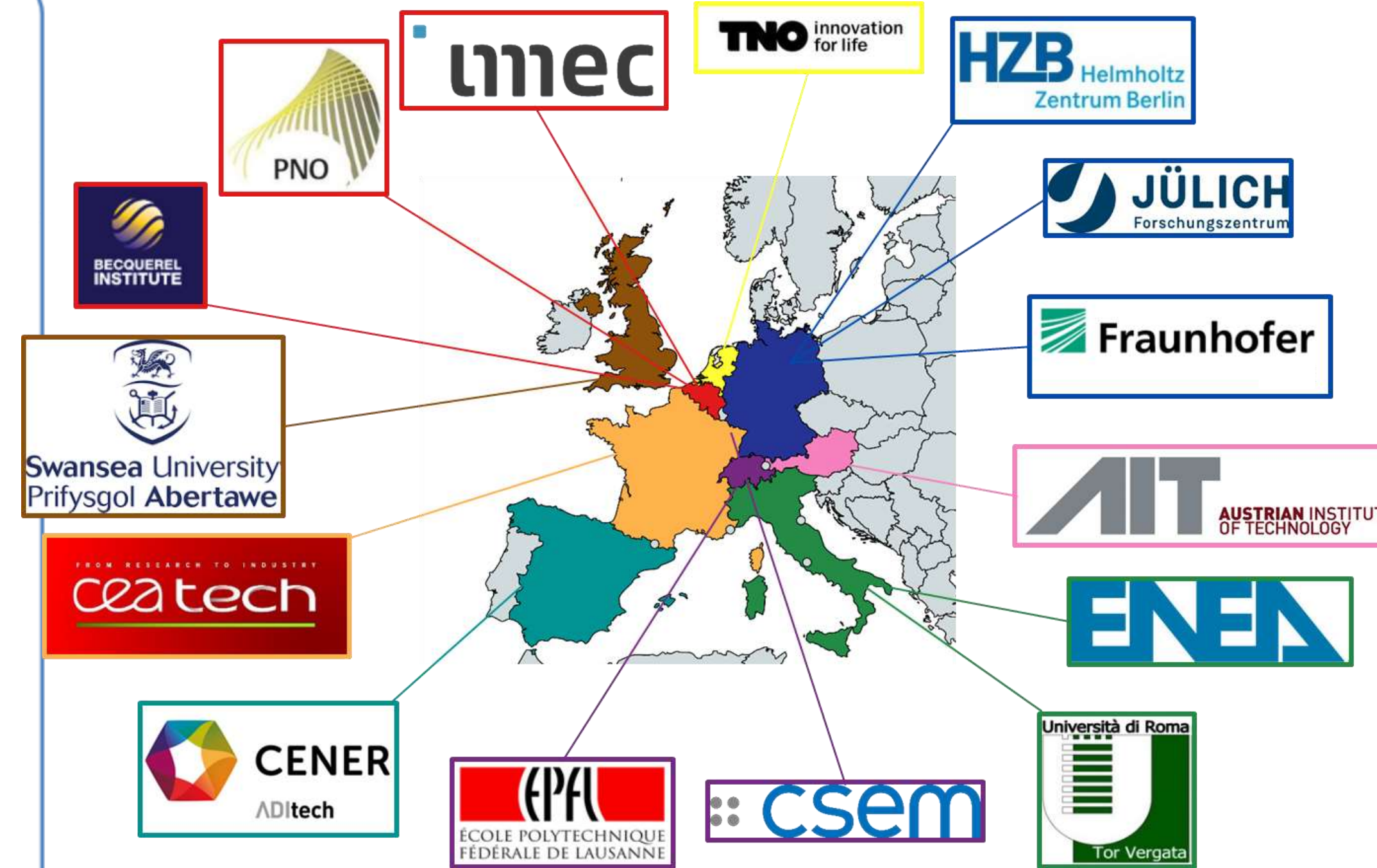
Motivation
A European strategy including relevant and dedicated infrastructure to develop the perovskite (PSK) devices is missing so far.

Our Goal
Through the best EU perovskite infrastructures VIPERLAB aims to stimulate EU academic and industrial **researchers to work together and accelerate** the development of PSK technology.

Objectives
Combine and facilitate access to EU top-ranked PSK PV infrastructures.

Connect and support the starting EU PSK community.

Further develop physical and virtual PSK infrastructures, build databases on materials and devices

Physical infrastructures

- EMIL- deposition tools and soft/hard XPS
- HySPRINT Stability Lab.
- PVS Lab infrastructure –from lab-scale to industrial scale PV modules
- ThinFilm PV Lab- processing full modules up to complete packaging.
- PSK platform - encapsulation and stability tests for cells and tandem.
- CHOSE line from from materials to device characterization.
- SOLPVLAB - accredited PV testing Lab
- PV Large Center for tandem processing and metrology
- R2R-Coating-Line –roll to roll line for coating
- S2S process PSK line - complete process of PSK modules.
- Solar Cell Manufacturing & Characterization up to interconnected devices.
- PV Manufacturing and Testing Facility
- Tandem PSK/Si Lab - fabrication and analysis from single junction to monolithic tandem cells.

One acces point

Virtual infrastr.

COMPUTING LAB
- lead by ENEA, Italy
- offers production quality, a service-oriented system for high performance and/or high throughput computing

DIGITAL DATABASE
- lead by HYB, Germany
- approx. 100 collaborators world-wide
- all perovskite solar cell device data available
- over 15000 published perovskite papers

SIMULATION TOOLS FOR MODELLING
- lead by CENER, Spain
- TCAD simulation tools with different modules of Silvaco software for modelling the electro-optical behavior of solar cells

AMANDA

VIRTUALLY ACCESSIBLE PROCESSING LINE

Lead by FZ Juelich, Germany
- Fully automated line for deposition and characterization of materials and devices

Networking an joint research

GATE- One access point platform for all physical and virtaul infrastructures of VIPERLAB:

https://www.helmholtz-berlin.de/pubbin/hzbgate

Students, researcher, SME and industry representatives are invited to **submit** their **proposals** on GATE

First call on 1st October 2021

External and internal experts will **peer review** the proposals

Selected proposals will **get access** to one of VIPERLAB infrastructures with **coverd costs**

STRATEGIC RESEARCH AND INNOVATION Agenda (SRIA) for European perovskite PV technology available

STRATEGIES TO EXPLOIT long term relationships and multidisciplinary collaboration among EU R&DI Community

COURSES

TRAINING WORKSHOPS

PERSONNEL EXCHANGE

ROUND ROBIN REPORTS: Guidelines for aging assessment, encapsulation, and electrical performance measurement

HARMONIZATION/ STANDARDIZATION outcomes to IEC and ISOS

TECHNOLOGY RELATED

Performance differences of cells and modules fabricated under different ambient conditions

The use of industrially acceptable solvent systems for efficient PSK PV devices

Database of material usage, energy demand and process flows

Definition of key device architectures

https://www.viperlab.eu/