SLICES-SC – Offering the Community of Academic and Industrial Researchers the Means to Perform Advanced Experiments on Research Infrastructures around Europe

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SLICES-RI (Research Infrastructure)

The ambition of **SLICES-RI** (https://slices-ri.eu/) is to **provide a fully programmable and virtualized, remotely accessible, European-wide research infrastructure**, providing advanced computing, storage and network components, interconnected by dedicated high-speed links.

It will be a flexible platform **designed to support large-scale, experimental research** focused on networking protocols, radio technologies, and services as well as data collection, distributed control and various edge-based computing architectures.

SLICES-RI Projects

SLICES-RI consists of three individual projects:

- **SLICES-DS (Design Study)** - design, deployment and operation of complex and continuously evolving digital infrastructure
- **SLICES-SC (Starting Community)** - foster the community of researchers around SLICES-RI ecosystem
- **SLICES-PP (Preparatory Phase)** - validate the requirements to engage into the implementation phase of

SLICES-SC Vision

With SLICES-SC, we aspire to organize and engage the community in using digital science research infrastructures and address the key issues for providing the infrastructure to a larger audience.

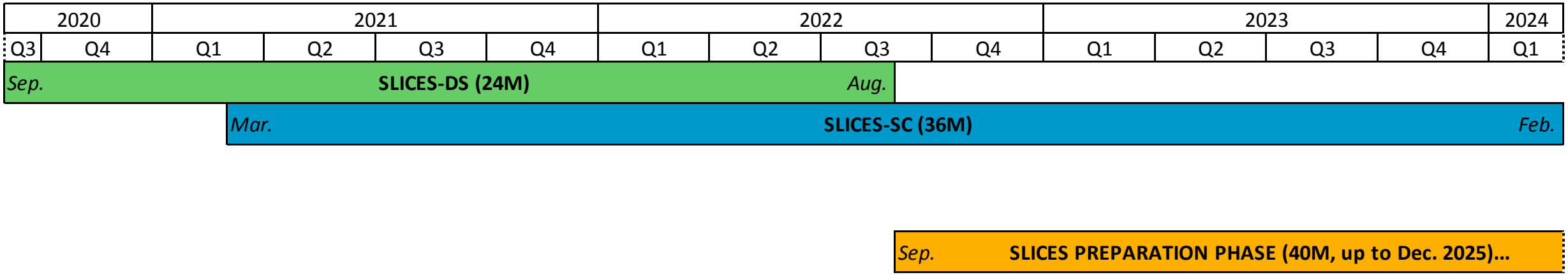
We try to create a starting community of academic and industrial researches through a Harmonised access, use and sharing of the different platforms, knowledge, technologies and resources (both human and technical) to different groups of users, irrespective of location.

Consortium

- SU
- UTH
- MI
- PSNC
- IMDEA
- CNR
- EURECOM
- COSMOTE
- IOT LAB
- UOULU
- INRIA
- IMEC
- SZTAKI
- TUM

Greece, Italy, France, Spain, Poland, Switzerland, Finland, Belgium, Hungary, Germany

SLICES-SC as part of SLICES



SLICES-SC objectives

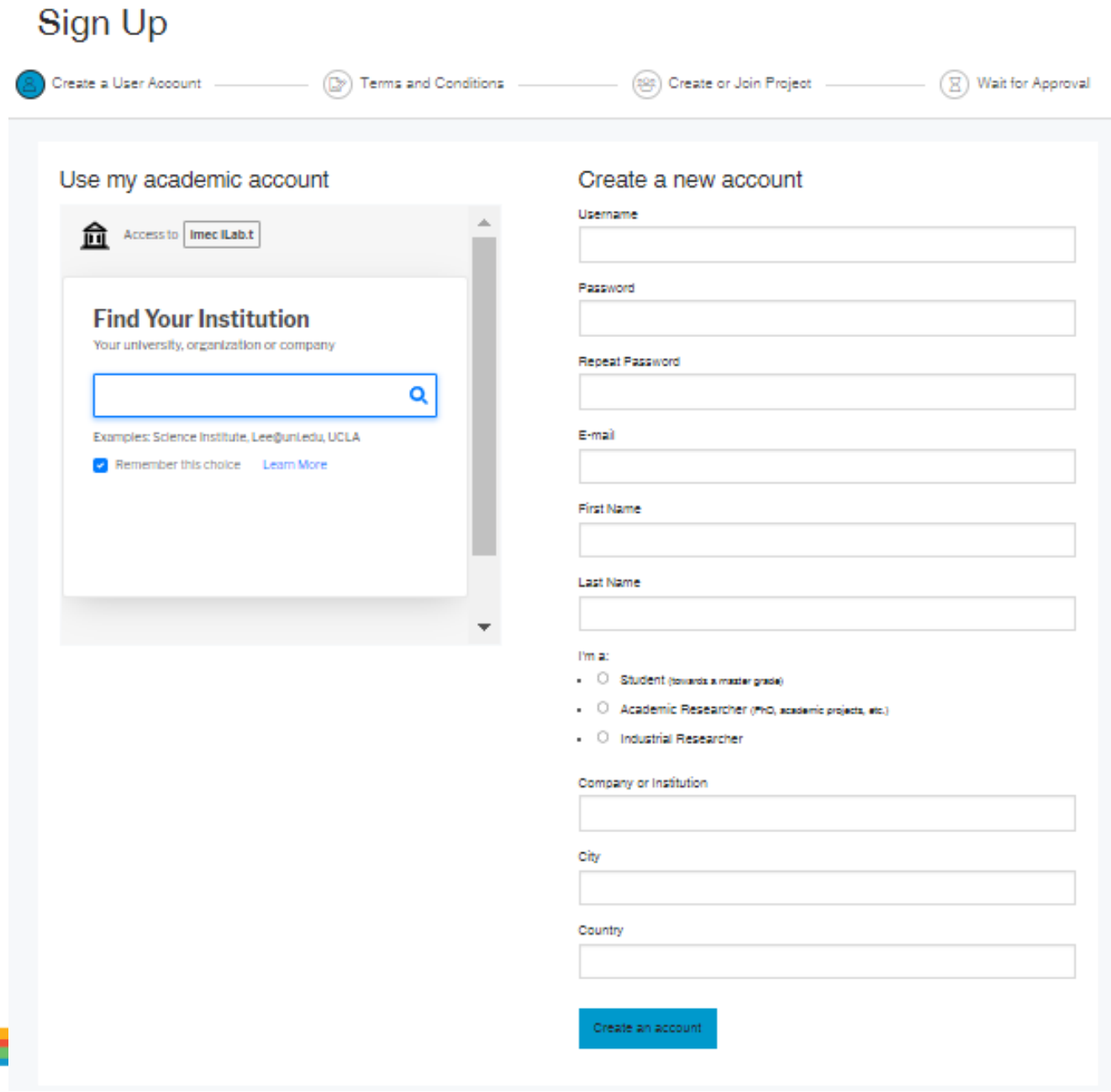
1. To **provide access to a fully-customizable Internet-scale ecosystem** for driving experimental research with Digital Infrastructures.
2. To **enable virtually-anywhere access** to the SLICES infrastructure.
3. To **provide common experiment descriptions** for cross-disciplinary domains over the converged research infrastructure.
4. To **ensure repeatable and reproducible experimentation** and validation of novel protocols.
5. To **raise the awareness of the digital sciences key industrial players** and promote the usage of the infrastructure.

SLICES-SC objectives

6. To **empower, assist and sustain the growth of SLICES-RI user community** through the engagement of stakeholders for broad socio-economic impact creation and reinforce the access to the SLICES-RI.
7. To **launch and organize joint training programmes** for higher education and training of researchers, for attracting young researchers and students (with enhanced female participation) in order to support digital sciences careers.
8. To **support the sustainability and exploitation potential** of the SLICES-RI by facilitating promotion of their results towards the interested stakeholders via a set of tools towards new sustainability and exploitation paths.

SLICES-SC Testbed Portal

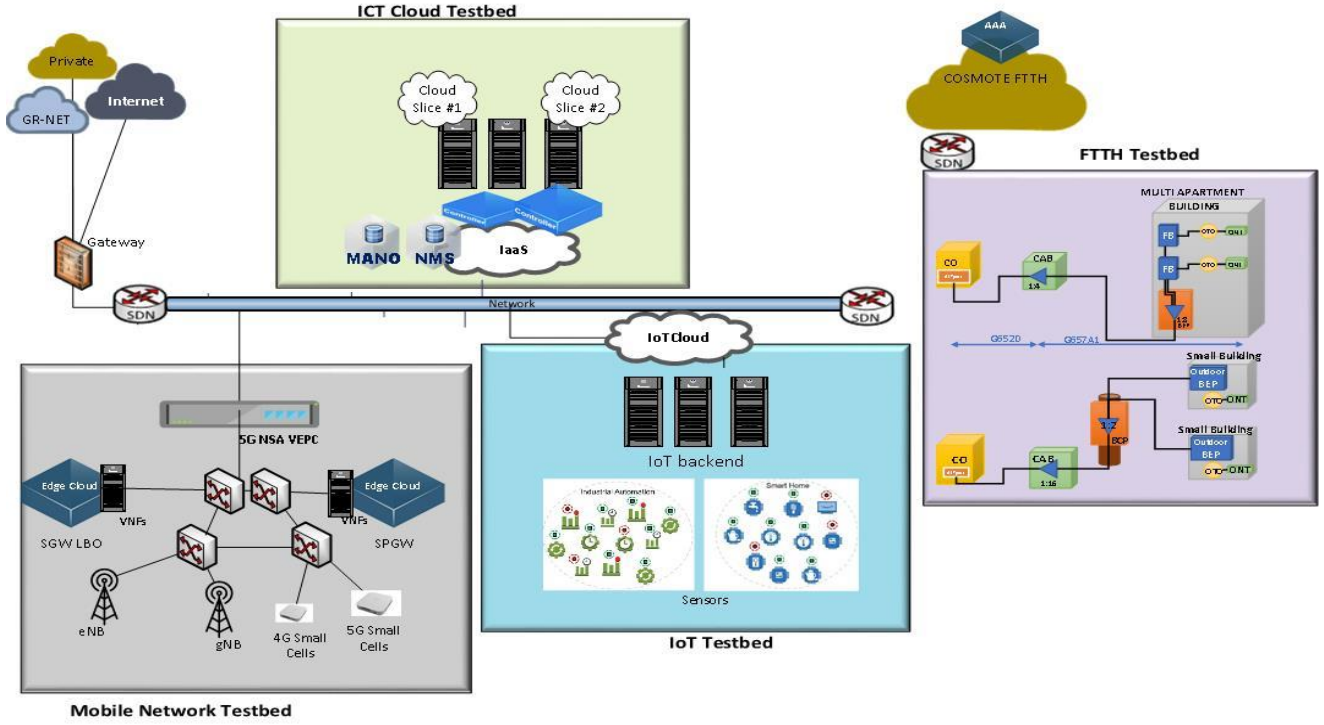
https://portal.slices-sc.eu/signup



Role of COSMOTE within SLICES-SC

- Work Package leader – Liaison with industry and other stakeholders.
- Task leader – Engage industrial researchers to the use of research infrastructures.
- Requirements, dissemination, exploitation.
- Availability of LeonR&Do testbed.

LeonR&Do Lab Infrastructure overview



Four (4) interrelated Domains

- **ICT Cloud**
  hosting Ubuntu, Linux & Centos OS VMs
- **4G/5G NSA & 5G SA Testbeds**
  gNB/eNB, MEC & core network nodes
- **IoT Platform**
  e2e solution developed in-house
- **FTTH Testbed**
  multi-apartment building, small buildings simulations

Interconnected with Research Institutes/Centers

- NCSR DEMOKRITOS (and other academic institutions) over 1G GRNET
- NTUA over dark fiber (10G)

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The LeonR&Do IoT Platform

The LeonR&Do IoT platform is a flexible, scalable and secure e2e solution - *developed from scratch-* that can integrate any sensor (commercial or custom) and any technology, supported by a common backend/cloud infrastructure

The LeonR&Do IoT testbed is accessible from anywhere.
Any sensor can be integrated (through a common API), while data monitoring/visualization, alerting, data retrieval, etc. services are available.

- **Currently Utilized in INTERCONNECT, AEOLUS, LIFE SAFE-CROSSING, Int5Gent, and 5G-COMPLETE EU Projects and @Telco Sites**
- **Continuous Expansions (@sensor, @GW, @backend level)**

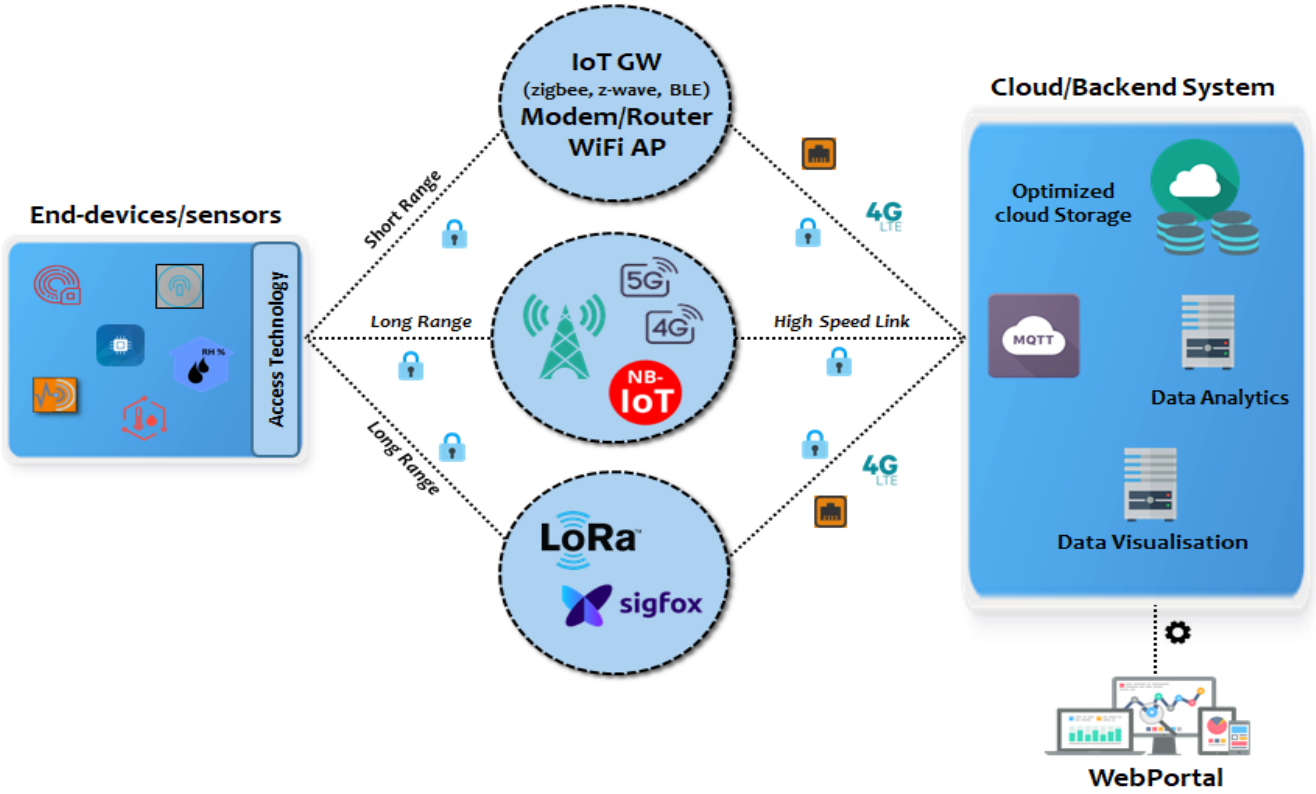
The LeonR&Do IoT Platform HW/SW

Custom and commercial end-devices/sensors such as, power/energy-related (relays, power meters, smart plugs, etc.), air-quality, temperature, humidity, pressure, activity/motion, luminance, smoke/fire, etc.

IoT hubs/gateways supporting multiple access technologies/protocols incl. WiFi, z-wave, zigbee, BLE, LoRaWAN, 2G/3G/4G/4G+, NB-IoT.

Common backend for data storage, processing and visualization (MQTT, InfluxDB, Grafana, Kapacitor).

Docker deployments and remote configuration device management.



LeonR&Do IoT Platform aim: Smart Buildings

Energy Management
[@phase, relay, plug/socket, lights switch, device level]

Energy monitoring
[1/3 phase energy meters, smart plugs, socket energy meters]

Advanced Automation
[based on events/rules, scenes, etc.]

Home Comfort
[cooling/heating, boiler, TV, Music Player, Lights, air-quality, temperature, humidity, etc.]

Alerting
[push notifications @smartphone, e-mail, etc. based on rules/events]

Security
[cameras, motion detection, flood, fire detection, door/window, siren]

Other
[voice commands, WOL, wifi/location presence, etc.]

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Scientific Large-scale Infrastructure
for Computing Communication
Experimental Studies
Starting Communities

Thank you

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