



European Technology Infrastructures in the EU R&I Landscape

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1. Diversity of the landscape
2. Variety of business models
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4. Funding models and needs over the TIs' lifecycle
5. Role of TIs in R&I ecosystems
6. Turning challenges into opportunities to boost TIs' capacity to foster knowledge valorisation





1. RIs & TIs: diversity of the landscape

Different levels of maturity in the policy context:

-  RIs as consolidated landscape through ESFRI & previous ERA policy agenda
-  TI landscape is much less integrated: developed according to place-based conditions, including ad hoc funding opportunities, technology expertise and market needs, often in alignment with smart specialisation strategies

Different concepts behind TIs: testbeds, pilot lines, living labs, test and experimenting facilities

TIs have two main purposes:

-  Co-creation, development and maturation of upcoming, “breakthrough” and highly innovative key enabling technologies with the potential of creating new markets
-  Transfer to and effective uptake of existing commercially available technology by the market, often in different domains, also called “broad roll-out” of technology



reimagine
TEXTILE



terraXcube
eurac research



umec

eurecat

Reimagine Textile

- Textile experimentation labs
- Tech/application: advanced materials & manufacturing
- Mataro (ES)
- Created in 2013 (€1.5m investment)

**eurac
research**

TerraXcube

- Extreme climate simulation center
- Tech/application: product testing in many different application fields
- Bolzano (IT)
- Created in 2018 (€8m investment)

FAB3

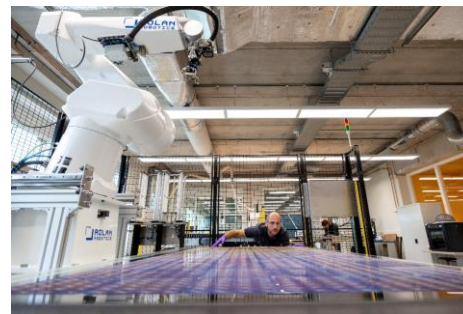
- Cleanroom with leading semiconductor industry relevant equipment (300mm)
- Tech/application: nano and digital tech, semiconductors 4
- Leuven (BE)
- Created in 2016 (€1bn investment)



RI.
SE

Astazero

- Testbed for transport industry
- Tech/application: automotive, telecom, transport
- Sandhult (SE)
- Created in 2014 (€43m investment)



TNO innovation
for life

Solar Lab

- Custom and high efficiency tandem photovoltaic
- Tech/application: Solar photovoltaic technology
- Petten (NL)
- Created in 2021 (€23m investment)



2. TIs' variety of business models

Ownership/management model:

- Fully managed by an RTO/tech university (e.g. terraXcube – EURAC; FAB3 – imec ; SolarLab - TNO)
- Co-ownership models: Reimagine Textile – EURECAT (50%)/Foundation Technocampus Mataro-Maresme (50%) ; RISE-Astazero – RISE/Chalmers University

Types of users:

- Large / small enterprises as primary users, but also other public organisations, etc.: depending on the structure of the targeted value-chains
- Examples:
 - Astazero: small share of contract with SMEs (large Original Equipment Manufacturers)
 - SolarLab: 55 (€1m) b2b projects in 2020, 20% share of contracts with SMEs, 30 projects including use of TIs in publicly funded collaborative programmes
 - TerraXCube: almost exclusively SME clients









2. TIs' variety of business models

- ↗ **Different TRL focus and different scales of TRL covered:** e.g., TRL2-5 – Astazero, TRL 3-7 - TerraXcube
- ↗ **Access model/conditions:** open to all types of stakeholders
 - ↗ Business-to-business contracts
 - ↗ Use in collaborative publicly funded projects
 - ↗ Resident model to access the facility under well-defined conditions and subject to training certification (imec cleanrooms)
- ↗ **Examples of processes to reach new users and foster the access to SMEs:**
 - ↗ Communication strategy (webplatform, events, etc.)
 - ↗ Use in multistakeholder competitive projects
 - ↗ Industry affiliation programme model (imec): long-term pre-competitive activities where imec defines the research along a roadmap in a multipartners context sharing costs and risks and creating critical mass
 - ↗ Venture activities: business accelerator programmes (e.g. imec istart)

3. TIs' service delivery: tech & non-tech

Examples of tech services and special expertise provided:

-  Feasibility studies to test design, support in conducting the test, data acquisition (terraXcube)
-  Advanced prototyping (e.g., TerraXcube, SolarLab)
-  Testing and advanced diagnostics
-  Support for material development
-  Measurement technology competences, production line audits
-  Company technological diagnosis (e.g. increase productivity, digitalisation, etc.)





Examples of non-tech services:

-  Business support: Entrepreneurship programme, corporate accelerator, business incubation, mentoring – Reimagine Textile (EURECAT)
-  Trainings for SMEs and businessess
-  Support for access to finance for SMEs and start-ups
-  Technology roadmapping, foresight, support to national market analyses



4. Funding models and needs over the TI life-cycle

Diverse funding models:

-  Fully regional public funding: e.g. terraXcube (capacity building)
-  Public-public funding programme (ERDF – 75%) and RTO basic funding (25%): Reimagine textile
-  Public-private models: 10% public funding (regional), 90% private funding (90 industrial partners) – FAB3 (imec)
-  Public/loan models: 50% public funding, 50% bank loan (with industry as guarantee of use)





Different scale of funding:

-  Reimagine textile: €1,5m initial funding
-  terraXcube: €8m initial funding
-  SolarLab: €23m initial funding
-  Astazero: €43m initial funding
-  FAB3: €1bn initial funding





4. Funding models and needs over the TI life-cycle

Operational & maintenance costs:

-  Important in scale: e.g., Astazero: €6,8m/year ; SolarLab: €1.4m/year
-  Different types of costs: often mainly personnel costs, variable costs (energy, etc.), rent/lease, materials, maintenance
-  Different coverage models: basic funding, income from industry, public funding
 -  E.g., terraXCube: 70% basic/12%industry/18%publicly-funded projects

Upgrade and enhancement to ensure long-term sustainability:

-  300k/year foreseen (Reimagine textile): 20% public, 80% private through co-funding for projects and annual subscription fees (fablab access, in company trainings, etc.)
-  Regular enhancements success stories: e.g. Astazero: from cars to all types of transportation, digitalisation (5G)



5. Role of TIs in the R&I ecosystem

- ↗ **Most TIs are embedded in their regional ecosystems** and connected to all types of public and private stakeholders, often with a connector role
- ↗ **Focus across more than one technology/application sector:** cross-fertilisation role connecting different value-chains
- ↗ **Different dimensions/scale of outreach:**
 - ↗ Regional focus, embedded into regional ecosystem and S3
 - ↗ E.g. terraXcube: service-oriented lab facility in the NOI techpark in the Bolzano region: extreme weather condition testing, esp. in field of alpine tech
 - ↗ European/International dimension:
 - ↗ E.g., FAB3 imec, AstaZero
- ↗ **Connection with other RIs and TIs:**
 - ↗ FAB3-imec: interactions in the frame of EU projects with other RTOs incl. CEA, FhG, TNO, Tyndall
 - ↗ AstaZero: part of collaboration networks in Europe and at international (US, South Korea)
 - ↗ SolarLab: framework agreement between TNO and FhG



6. Turning challenges into opportunities to boost TIs' capacity to foster knowledge valorisation

Key challenges and needs:

- ❏ Difficulty to secure public investments fast with long-term perspective, which also lead to important timelapse between initial idea and deployment – lack of competitiveness at international scale
- ❏ Fostering accessibility to all types of users incl. SME (key limitation: market price to cover the operational costs for using the TIs are often too high - e.g., FAB3, TerraXcube)
- ❏ Implementation of state aid rules
- ❏ Need for highly-skilled employees

Key opportunities:

- ❏ Multi-level alignment of investments, priorities and synergies between TI initiatives of regional, national and EU level
- ❏ No one-size fits all approach: the diversity of the TI landscape needs to be taken into account
- ❏ Connection between TIs (and with RIs) to consolidate the landscape, share competences and best practice



Thank you for your attention

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