



TEST-4-SME Network's Long-term Sustainability Action Plan

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Summary

During 3-year project network structures were built, suitable stakeholders involved, and cooperation with other networks established. The summarized outcome in a form of network strategy is delivered as output 5.2. In this document concrete actions to sustain the network and maintain its service provision are described. Action plan covers facilitations of the network activities, internal and external communication and maintenance of IT tools for it, constant learning and infrastructure update, and financing issues.

The ownership of the network and organizational coordination is undertaken by Tartu University, facilitation of the network will be implemented as rotation and all partner will be involved into management during the prescribed period and decision making in the network. The network partner will seek for new R&D and training projects to support constant development of new knowledge. Network activities are part of each organization activities and therefore they are naturally incorporated into financial structures of each organization.

1. Collaborative leadership and member driven decisions

Rotation is chosen as a mechanism for facilitation of the network activities during next 5 years. Each network's service providing (core) partner will facilitate the network activities during 6-month period as presented in Table 1.

The main role of the facilitator is to supervise the operability of the network, while each partner is responsible for providing with information, which relates to network's operations and services. More specifically roles are described below:

Responsibilities of the facilitator

- Report at the end of own period to the next facilitator about activities pending and being transferred to next period,
- Organize online meeting with all partners for issues which needs attention of all the partners,

- If new changes are coming, supervise that the list of service table for internal use (found in MOODLE) is updated and that RTU is informed and performed needed changes in the website,
- If new needs from industry are identified during period, facilitate discussion with network partners on its development and/or new partner involvement,
- Supervise that the list of contact persons in each network's organization is updated and valid

Responsibilities of all network members

- Promote the network and its services,
- Respond to the client about service provisions or transfer the request to another relevant organization,
- Develop and maintain staff knowledge and expertise related to the services in the current list (internal use),
- Maintain infrastructure for service provisions listed in the list of network's services
- Inform the facilitator if service is cancelled and update internal service lists in Moodle. If change needs update also in website, inform RTU,
- Inform the facilitator of the period if contact person is changing and update the list of contacts, inform RTU is changes in website are needed
- Inform network facilitator about new services industry would need.
- Invite other network partners into relevant to the services events

Inclusion of new partner

Organization, which was approached first with the interest for joining the network, is responsible for quidding new potential partner through network joining procedures (as in <http://www.testelectronics.eu/governing-rules/>), sharing filled "Declaration of Intent" with partners and gathering votes from partners. If no objections until agreed deadline are obtained, the new partner is accepted to the network and information is to be provided to RTU for updating the list of partners in the website. New partner fills in the service list table for internal use.

Table 1. Schedule of network facilitation and contact person for the period

Organisation	Period	Main contact	Deputy contact
Tartu Ülikool (University of Tartu)	01.10.2020- 30.03.2021	Tiia Lillemaa tiia.lillemaa@ut.ee	Giorgi Davidovi giorgi.davidovi@ut.ee
Centria-ammattikorkeakoulu Oy (Centria University of Applied Sciences Ltd)	01.04.2021- 30.09.2021	Egidija Rainosalo egidija.rainosalo@centria.fi	Mervi Liesi mervi.liesi@centria.fi
Rīgas Tehniskā Universitāte (Riga Technical University)	01.10.2021- 30.03.2022	Jūlija Gušča julija.gusca@rtu.lv	Alise Ozarska alise.ozarska@rtu.lv
Hochschule Wismar, University of Applied Sciences: Technology, Business and Design	01.04.2022- 30.09.2022	Gunnar Prause gunnar.prause@hs-wismar.de	Laima Gerlitz laima.gerlitz@hs-wismar.de
Latvijas Universitāte (University of Latvia)	01.10.2022- 30.03.2023	Dace Grauda dace.grauda@lu.lv	Dalius Butkauskas dalius.butkauskas@lu.lv
Ventspils Augstskola (Ventspils University College)	01.04.2023- 30.09.2023	Baiba Reimane baiba.reimane@venta.lv	Aleksejs Klokovs aleksejs.klokovs@venta.lv
VšĮ Perspektyvinių Technologijų Taikomųjų Tyrimų Institutas (Applied Research Institute for Prospective Technologies)	01.10.2023- 30.03.2024	Eglė Urbonienė egle.urboniene@protechnology.lt	Algirdas Galdikas galdikas@protechnology.lt
Tartu Ülikool (University of Tartu)	01.04.2024- 30.09.2024	Giorgi Davidovi giorgi.davidovi@ut.ee	Tiia Lillemaa Tiia.lillemaa@ut.ee
Centria-ammattikorkeakoulu Oy (Centria University of Applied Sciences Ltd)	01.10.2024- 30.03.2025	Egidija Rainosalo egidija.rainosalo@centria.fi	Mervi Liesi mervi.liesi@centria.fi
Latvijas Universitāte (University of Latvia)	01.04.2025- 30.09.2025	Dace Grauda dace.grauda@lu.lv	Dalius Butkauskas dalius.butkauskas@lu.lv

2. Communication and Management of IT tools

2.1. Internal Communication

Internal communication between network partners will be conducted through e-mail in written or online meetings when needed. MOODLE is used to keep document for internal use, access to MOODLE is granted by Tartu University up to 20 person.

2.2. External communication

External communication covers communication of service provisions of the network. <http://www.testelectronics.eu/> website is open information source. Website is maintained by RTU, RTU is responsible for its operability for at least 5 years. Contact person for website related matters alise.ozarska@rtu.lv. RTU is obliged to keep all network members informed if the contact person is changing. RTU is also responsible for sharing request from customers contacting network through website.

Project partners are involved into numerous projects as well as promoting services on own costs. Through activities, related to product development and testing services of TEST-4-SME will be communicated to the directly related industries, such as electronics, but also to other industries, who would utilize the same knowledge based and infrastructure for their products development, for example composite industry, building industry, plastic producers, machinery producers, etc. List of relevant projects is presented in Annex 1.

3. Change-Ready and Adaptable Workforce and Continuous Improvement

Network partners are R&D organizations and naturally constant learning and development of novelties is the most important activity in those organizations. Numerous projects, those organization are carrying out, are utilizing same equipment, what facilitates constant knowledge update and know how, which then in turn is used for service provisions to SMEs and other industries. Also new testing methods are being developed constantly and will be provided to the future customers through the TEST-4-SME network.

Additionally, project partners are constantly seeking for new cooperation initiatives/projects, which would facilitate more coordinated learning from each other and development of new

services. New TRAIN-ECO project will start 1.11.2020-31.8.2023, project main goal is to train professionals and entrepreneurs on eco-innovation in electronics product development. TEST-4-SME partners will be able to gain new knowledge on new materials and new design of products, which are developed considering their ecological performance.

Partners are committed also to maintenance of the equipment for service provisions and purchasing new when needed. Annex 2 presents the list of investments planned by network partners.

4. Financial infrastructure

The activities which need contribution from the network partners include staff effort related to the facilitation and marketing of the network. Other costs, as training and investments into equipment we estimate to be regular activities of partners and are planned (Annex 2).

The network's facilitation related costs during facilitation of the network will be covered by partners' organizations.

Services of the TEST-4-SME network is implemented as co-marketing of other services organizations of the network are providing or through the relevant projects.

Additionally, for further development of services in the network new grants are explored and will be applied for in the future.

Annex 1. Ongoing and planned projects in 2020-2025 by the TEST-4-SME network members.

N	Test-4-SME members	Country	Name of Project (relevant to testing/lab activities)	Funding Source (relevant to testing/lab activities)	Implementation period	Public or Private?	Project budget, EUR	How funding can benefit the Test-4-SME network
1	UT	Estonia	TRAIN-ECO	Erasmus+ Strategic Partnerships VET (KA202)	1.11.2020-31.08.2023	Public	196 310	Partners will learn about eco-innovations in electronics industry, including new materials, new product design, recycling of products. TEST-4-SME services is crucial for placing new products into market. Services of TEST-4-SME network will be marketed directly through events organised to industry as 4 partners from the consortium are performing the TRAIN-ECO project.
2	Centria UAS	Finland	ECOLABNET	Interreg BSR	2019-2021	Public	2,25 mln	Network of service providers for eco-innovation in manufacturing SMEs. TEST-4-SME will benefit from knowledge, development of new services and marketing
3	Centria UAS	Finland	Centria services	Centria own	ongoing constantly	private	50 000	Marketing network services, developing new services
4	Centria UAS	Finland	Battery Recycle - Akkupuisto	ERDF, PPLiitto,	2020 – 2021	Public	434 214	Marketing network services
5	Centria UAS	Finland	Internal development	Centria own	ongoing constantly	Private	yearly 23 000	Meeting SMEs, marketing network services
6	PROTECH	Lithuania	Optimisation of Photovoltaic Power Plants Worldwide by	MSCA, (ITN), Call: H2020-MSCA-ITN-2020	2020 – 2023	Public	ProTech 223 947, total 3 869 403	During the project, one PhD student will conduct research and testing of innovative solar modules designed to work in a variety of climatic conditions. the research is planned to be carried out in ProTech and in the laboratories of the EU partner countries. In this way, the PhD student and ProTech will gain international-level knowledge and skills in testing various types of modules. This will increase ProTech's and Test-4-SMEs

			Application of Advanced Diagnostics (OptiPlant)					network's capabilities and allow for better performance of module tests ordered by module manufacturers, installers, and users.
7	PROTECH	Lithuania	Advanced powder-based photovoltaics (PowderPV)	Baltic research program (Agency LSC)	2020 – 2023	Public	total 998 512	PowderPV is developing an innovative technological platform for the cost-effective fabrication of combined solar cells based on Si and CZTS. Obtained knowledge and testing/ measurement skills can be used by the Test-4-SMEs Network laboratories and proposed for their customers.
8	PROTECH	Lithuania	Advanced powder based and hybrid tandem solar cell technologies for next generation PV (NextPV)	H2020, LC-SC3-RES-1-2019-2020	2020 – 2024	Public	ProTech 249 875, project total 4 469 252	The proposed powder-based approach will be based on incorporation of relevant Si powders to modify the light harvesting properties of tandem solar cells consisting of conventional Si PV and perovskites-based cells. This approach is far beyond the state-of-the-art for conventional PV and is currently not anticipated for such well-established solar cell material as Si. It is hoped that this method will allow to expand the solar spectrum absorbed by tandem, taking advantage of the different optical properties of Si and perovskites. Physical and chemical measurements will be widely used during project implementation, thereby improving the ability of ProTech, as well as the Test4SMEs Network, to perform such measurements.
9	RTU	Latvia	Improving Cold Chain Energy Efficiency (ICCEE)	Horizon 2020	05.2019-04.2022	Public	NA	Improvement of the RTU laboratory basis
10	RTU	Latvia	Advancing Sustainable Circular Bioeconomy in Central and Eastern European countries: BIOEASTSUP	Horizon 2020	05.2019-04.2022	Public	NA	Improvement of the RTU laboratory basis

11	RTU	Latvia	"Use of biodegradable by-products for the manufacture of protein-rich animals and fish-feed extracts Single-cellu proteins"	ERDF	01.04-30.09.2020	Public	NA	Improvement of the RTU laboratory basis
12	RTU	Latvia	Sustainable solutions for biomass plates	ERDF	01.04-30.09.2020	Public	NA	Improvement of the RTU laboratory basis
13	UT	Estonia	ECOSME	Interreg BSR	Oct 2020 - July 2021	Public	543 808	NA
14	MET	Lithuania	SoleHP: Solar hybrid collection envelopes for smartly dualcoupled heat pumps towards zero energy buildings	EUROSTAR S	2020 - 2023	Public	MET-212 344 total – 829 114	Development of electrical and thermal measurements of the efficiency of building integrated PV system, efficiency of heat pumps, efficiency of combined BIPVTD system. These measurements have a unique significance for the implementation of the project, as only their results will show the correctness and viability of the chosen technological solution. Obtained knowledge and measurement skills can be used by the Test-4-SMEs Network laboratories and proposed for their customers. The developed measurement and testing methods adapted to the BIPVTD system and the acquired knowledge and skills will complement the available MET capabilities to meet customer requirements. MET will offer an improved measurement and test infrastructure for the needs of network participants and customers.
15	HSW	Germany	Accelerating ICT students' startup development competence via interdisciplinary modular courses in the	Erasmus+	2020-2023	Public	815 906	Project aim: Development of information & communication technologies major students' entrepreneurial competences;

			HEI curricula (UXIship)					
16	UL, JLU Technologies	Latvia	IFSITEX Innovative multifunctional biotextile, integrated with silica dioxide and succinite development, and its impact on biosystems.	State Education Development Agency (Latvia), Research Council of Lithuania, privat	2018-2021	Public+private	670 000	The scientists involved in IFSITEX as developers of testing methods of electrical devices will provide opportunities of biotesting in TEST-4SME network.
17	UL, JLU Technologies	Latvia	5D-Nano-Tex, 5D Biotextile with Technological Composition of nanolayer	State Education Development Agency, Latvia, Research Council of Lithuania, Organisations de recherche financées: cf. Règlement	2021-2024	Public+private	785 540	The scientists involved in implementation of 5D-Nano-Tex as developers of testing methods of electrical devices will provide opportunities of biotesting in TEST-4-SME network.
18	UL	Latvia	The development of UL campus: House of Technologies	UL, EU, LV Ministry of Education	2018-2028	Public+private	45,1 mln	The accredited laboratories will be developed providing diverse biotesting services

Annex 2 Technological upgrades/investments planned in 2020-2025 by the TEST-4-SME network members.

N	Network member	Country	Title of Technological Upgrade	Sector of Tech. Upgrade	Brief Description of Tech. Upgrade	Preliminary Cost EUR
1	MET	Lithuania	additional thermal measurement equipment.	Thermal characterization and testing	NA	25 000
2	Centria	Finland	DEWE-43A	Climatic testing	field measurement device for vibration	10000
3	Centria	Finland	ESW	EMC testing (Electromagnetic Compatibility)	emission	100000
4	Centria	Finland	Room	EMC testing (Electromagnetic Compatibility)	NA	50000
5	Centria	Finland	GCMS	Material and compositional characterization, testing and analysis	with headspace technique.	100000
6	Centria	Finland	STA	Thermal characterization and testing	RT-1300 °C(1500°C)	80000
7	Centria	Finland	NIR	Material and compositional characterization, testing and analysis	Fast compositional analysis	35000
8	Centria	Finland	Lab.reactor	Manufacturing processes verification	5 l reactor (Biomass, resins etc.)	20000
9	Centria	Finland	Sampling	Manufacturing processes verification	Sampling equipment: filtration, milling, cutting, heating, pumping, ashing	80000
10	Centria	Finland	TGA	Material and compositional characterization, testing and analysis	Sample mass 1g, 1000°C	45000
11	Centria	Finland	XRD	Material and compositional characterization, testing and analysis	NA	250000
12	Centria	Finland	XRF	Material and compositional characterization, testing and analysis	hand operated	35000
13	Centria	Finland	OES	Material and compositional characterization, testing and analysis	NA	45000

14	Centria	Finland	CHNS/O-analysator	Material and compositional characterization, testing and analysis	carbon, hydrogen, nitrogen, sulfur, and oxygen	130000
15	Centria	Finland	FE-SEM	Material and compositional characterization, testing and analysis		300000
16	Centria	Finland	BIB	Mechanical and structural characterization and testing	Broad Ion Beam milling, sampling for SEM	100000
17	Centria	Finland	Sputtering	Mechanical and structural characterization and testing	sampling for SEM	30000
18	PROTECH	Lithuania	Calibration of equipment at accredited laboratories	Solar modules power measurement	Flash tester PASAN HighLight3, reference solar cell, reference solar module, climate chamber Weiss, hipot tester, I-V analyser Its	15 000
19	PROTECH	Lithuania	Acquisition of measurement equipment	Upgrade of infrastructure, preparation for ProTech laboratory accreditation	Measuring devices to ensure the implementation of testing standards for solar modules	10 000
20	PROTECH	Lithuania	Workplace installation	Upgrade of infrastructure, preparation for ProTech laboratory accreditation	It will ensure the levels of lighting and worker safety required by the standards	10 000
21	RTU	Latvia	Laboratory upgrade		Yearly funds, the scope of upgrades is decided by October each year.	
22	UT	Estonia	kosEST	EMC testing (Electromagnetic Compatibility)	Signal generators, amplifiers and sensors	100 000
23	UT	Estonia	kosEST	Calibration, characterization and measurements of optical systems	Reference standards	30 000
24	UT	Estonia	kosEST	Thermal characterization and testing	Thermal tests in vacuum	50 000
25	UT	Estonia	kosEST	Characterization and testing of batteries, solar cells and electrical systems	Cleanroom environment	110 000
26	UT	Estonia	FRM	Calibration, characterization and measurements of optical systems	Thermal test setup	10 000
27	UL	Latvia	Bio-testing and measurement of electromagnetic fields	Bioelectromagnetic characterisation and testing	Equipment for genetics, microscopy, flow cytometry, biotechnology and for the determination of various parameters of electromagnetic fields.	3100000

