



UNIVERCITY
ACTION LAB

Finland

Good Practice Case Study

ITS Factory

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PROJECT PARTNERS



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GENERAL INFORMATION

Title of the case	ITS Factory		
Sales pitch	The ITS Factory community seeks solutions for mobility challenges through close co-operation of the public and private sectors.		
Organisations	• Tampere University		
Country	Finland		
Authors	• Fernando Fernandez		
Nature of interaction	Innovation, experimentation and development environment		
Level of mechanism	<input type="checkbox"/> Government policy (e.g. law, funding framework) <input checked="" type="checkbox"/> Organisational strategy (e.g. university/business/agency) <input checked="" type="checkbox"/> Structural element (e.g. centre, lab, office) <input type="checkbox"/> Operational level (e.g. activity or programme)		
Length of programme	Dependent on project	Formality	Informal
Curricula-bound, co or extra-curricular?	Extra-curricular	Level of initiative	Cross-disciplinary

Summary

ITS Factory is a public-private collaborative platform that aims to maximise synergies to develop innovative solutions in the field of Intelligent Transport Systems (ITS). Reflecting the complexity of modern urban challenges, the ecosystem facilitates communication between the public sector, academia and businesses.

The development of solutions through the ITS structure creates a two-way exchange, from which developers and researchers gain access to the available data from public sources, and the region benefits from the production of the latest concepts in urban mobility. For the student community, this collaborative environment creates an opportunity to gain exposure to the iterative process that informs technological creativity, and to become more aware of the social component that is attached to the development of solutions for the modern urban environment.



CASE STUDY PROFILE

BACKGROUND

The creation of ITS Factory is closely related to the long-term commitment to innovation by the City of Tampere and the Tampere Region. The support to different initiatives that promote the attraction of talent, the development of scientific expertise and the implementation of advanced technologies, facilitated the establishment of Business Tampere. This economic development agency, created in 2009, intends to optimize the business environment at a regional level, focusing on renewing industries, smart city solutions and experience economy (1).

As well as the commitment by public institutions, universities in Tampere and the surrounding region have been consistent innovators and promoters of the development of collaborative solutions. The University of Tampere, Tampere University of Technology and Tampere University of Applied Sciences have engaged in a variety of partnerships amongst themselves and with public and private stakeholders to establish Tampere as a cornerstone of Finland's economic transition.

CONTEXT

ITS Factory welcomes the participation of any actor engaged in the creation and development of commercialization of mobility solutions. This can include, amongst others, the supply of equipment for intelligent transport, the provision of information services, research and education, or the manufacturing of vehicles (2).

The support of public organizations and the accessibility of data aims to kickstart creativity in an open environment, protecting the economic viability of private ventures while accessing the latest technology solutions for the local and regional environment.

Modern mobility solutions, and the application of technology, relies heavily in the collection, storage and distribution of data. There is an increasing awareness of the potential for open data to unlock unlimited solutions to deliver the promise of smart communities and sustainable urban ecosystems. However, the cost related to the creation and management of data, together with the potential competitive advantage, has resulted in a tendency for businesses to offer access to formal partnerships within well-defined corporative arrangements.

OBJECTIVES AND MOTIVATIONS

The main objective of the initiative is to generate a collaborative community specialized in the delivery of intelligent transport solutions (3). By attracting as many stakeholders as possible, ITS Factory aims to make Tampere an international pole in the field of mobility innovation.

Operationally, the aim is to establish partnerships within the field of intelligent transport systems, connecting areas of expertise with commercially viable opportunities.

Within the ITS ecosystem, creating a large structure that attracts a variety of players and facilitates the implementation of innovative solutions, aims to achieve a dominant position within the mobility industry, where concepts delivered in Tampere are implemented across Europe and established as industry standard.

STAKEHOLDERS

Participation is open to any interested parts at a national or international level. Together with the constantly expanding network of private actors, there are several institutions within public governance and education that participate in a more permanent role:

- University of Tampere (School of Information Sciences)
- Tampere University of Technology (Transport Research Centre, VERNE)
- Tampere University of Applied Sciences
- The City of Tampere
- The Council of Tampere Region
- Pirkanmaa Region (Centre for Economic Development, Transport and the Environment)
- VTT Technical Research Centre of Finland
- Business Tampere
- Local, national and international industry

- Central government agencies
- Other research institutions

PROCESS

INPUT

The role of public bodies within ITS Factory can be divided in three main areas:

- Financial: the provision of funding for the functioning of the platform
- Infrastructure: ideas that are developed within the initiative that have access to the local transport infrastructure to carry out their testing and evaluation phases, bypassing the potential limitations of small enterprises
- Data: all members of the platform are provided with free access to data available from public sources.

Government bodies contribute with the funding and maintenance of the network, supporting the existing structure to enhance the robustness of the co-creative community in the area. It also allows for new initiatives to be tested on the local transport infrastructure, contributing to the faster development of proposals.

For private stakeholders, their input consists on the depletion of creative concepts and commercial prototypes within the local and regional environment. Their engagement in the co-creative process is recognized as an exchange of expertise amongst stakeholders and with governing bodies, allowing for an optimization of their future product, service or idea, while benefiting the local community.

Universities participate through the academic expertise of their researchers and PhD students.

ACTIVITIES

The different partners are allowed to develop their own ideas and execute specific projects within the realm of ITS. The core of activities carried out by the network can be divided in:

- ITS Factory development
- Commercialization and marketing activities

The services provided by the ITS Factory platform for their members are presented as:

- Facilitation for developers: this is promoted through the formation of a community of creators, allowing for formal collaboration or informal dialogue, and through the provision of data to support the design process. Information includes road traffic, pedestrians, cyclists and parking provision.

- Testing facilities: the city of Tampere allows designers to make use of the road network, public spaces and physical transport system to implement their concepts and refine their design. Facilities and assets within the public transport network are monitored in real time (4).

- Interaction with end-user: through the facilitation by public bodies, developers have the opportunity to integrate the development of their products in real-life environments, enabling communication with citizens and interest groups.

Participation of universities is currently focused on targeted research, with PhD students and academics developing concepts on the basis established with other partners. Despite not having specific activities for students as principal stakeholders, researchers and academics often invite master's students to participate in the testing phase, collecting data and helping in the production of results.



OUTCOMES AND IMPACT

OUTPUTS

- Establishment of a cooperative culture and the development of ideas for further implementation and commercialization:

ITS Factory allows for existing partnerships to continue, expand or modify their composition, insisting on previous research lines. This is the case of WiSafeCar (5), a project that aims to develop wireless traffic systems to improve road safety. The venture started as a reiteration of CarLink, a previous project carried out within the ITS Factory, focusing on wireless platforms for public transport networks. The collaborations from the first venture created the possibility to further develop the concept, integrating other stakeholders and increasing the marketability of the available expertise.

- Standardization of open interface solutions:

When engaging with the members of the network, government bodies highlight the importance of developing standards applicable for developers, as well as final users. By reinforcing this, the consortium strengthens the ITS market in the region and allows for more efficient depletion of resources in current and future hardware, software or scientific research.

IMPACTS

- Commercialization of products and services:

Collaboration within the ITS Factory framework creates an environment that facilitates the delivery of commercial solutions. The provision of testing environment, access to open data platforms and access to alternative talent sources create an opportunity to complete the later stages of development.

- Creation of new research and development opportunities:
As well as the projected outcome from a specific collaboration, the community of creators, investors and clients frequently identify the necessary conditions to extend their research, either related to the previous project or within a new field of urban mobility.
- Development of industry standards for the creation, exchange and management of data:
Part of the core structure of ITS Factory is the agreement of a common framework for the exchange of data. All participants have to engage in these terms, to facilitate the expansion of projects and the benefits for all stakeholders. As a consequence of the growth of the network, ITS Factory is recognized as one of the main contributors to the establishment of industry standards.
- Access to innovative transport solutions for the City of Tampere, the Tampere Region, and the citizenship:
Initially presented as the main promoters of Business Tampere and its different initiatives, the local and regional government take an active role in the development of solutions that improve urban mobility. This translates into improved services and more efficient mobility networks within the local environment, enhancing connectivity within the city, and creating positive impact in users.
- Associated societal impacts, including a more efficient transport network, reduction in emissions, optimization of costs, road safety, accessibility and public health.

SUPPORTING ENVIRONMENT & SYSTEM

SUPPORTING MECHANISMS

The integration of ITS Factory within the Business Tampere structure allows for a more streamlined co-creation process. Contributions from investors, developers, researchers and public bodies are channelled into a well-established forum, enhancing the capabilities of the different stakeholders and bypassing potential barriers in the form of framework development.

By supporting the initiative with financial and organizational capital, the City of Tampere and the Council of Tampere Region allow for an open collaboration environment that encourages actors to engage without entry barriers, and with the possibility of creating products and services with real commercial value.

BARRIERS AND DRIVERS

Due to the fluidity of the concept, the production of ideas and development of solutions is inherently related to the initiative of stakeholders. The easy access to the support structure provided, and the extensive support offered by other partners and the staff of ITS Factory, enables creators to accelerate the delivery of ideas. However, the potential contribution of academics can be hindered in the case of products that are already in advanced stages of development. This potential barrier can be mitigated with future interactions amongst partners, with investors and businesses developing their future concepts within the ITS framework from early stages, and therefore accessing the scientific expertise of the academic community.

In order to reach the highest levels of innovation and co-production, ITS Factory aims to create an ecosystem in which all stakeholders feel free to engage in research, collaboration and development of concepts. The difference in business size, capital endowment and network can create an obstacle for successful cooperation. For Business Tampere and ITS Factory, overcoming this barrier is essential to deliver mobility solutions that will benefit all partners as well as the local and regional institutions.

Related to this barrier, the main driver for ITS Factory is to complement the shortcomings of all their partners by providing a network of easily available contacts that will communicate with thinkers, creators and clients to align their interests and maximise the outcome of their investment. The comprehensive reach of the framework allows any actor to improve their competitive position.

With regards to the potential benefits that the ITS Factory activities can bring to university students, there is currently a barrier related to the lack of official lines of engagement beyond the assistance in field work and collection of data from students. Despite this representing valuable experience for their development, the role of universities and future professionals could be expanded with a clearer cooperation structure.



LESSONS LEARNED

MONITORING AND EVALUATION

Thanks to the creation of ITS Factory within the pre-existent framework of Business Tampere, the collaborative method enjoys a well-tested foundation where investors, governance bodies, academics and the public have been providing feedback that improves the efficiency and reach of the model.

For ITS Factory in particular, stakeholders are in direct contact with the members of staff, regardless of the type of activity they are engaged in. In any stage of the development process, even after final commercialization, all partners are invited to offer their insight through qualitative and quantitative input. While the monitoring of financial turnover, productivity and staff engagement is continuously tracked, individual feedback from creators is welcome to

maximize the efficiency of their input, and to create opportunities to generate more leads for future mobility solutions.

Within the variety of projects that are simultaneously supported, and in line with the concept of open data, ITS Factory offers public information with regards to the stages of development of ongoing and past projects via the ITS Roadmap (6). This facilitates the follow up of the different initiatives for members of the public, and the possibility of creating new collaboration opportunities for new or existing partners, as well as generating commercial leads for the services in development.

SUSTAINABILITY MEASURES

ITS Factory is underpinned by the sustainability principles that inform the Intelligent Transport Systems as a discipline, as well as the commitment of Business Tampere to sustainable development.

From an ITS perspective, the objective is to deliver mobility solutions that will enable greater levels of connectivity, while reducing the environmental impact of our transport systems. These principles transfer to the projects and activities supported by ITS Factory, with a focus on the optimization of traffic, reducing congestion and emissions.

For Business Tampere, the creation of sustainable economic frameworks is a key objective. Their specialization in initiatives such as circular economy, renewed economies and the implementation of smart city concepts, aim to achieve a local and regional environment that is inviting to investors while ensuring a positive impact for the environment and the local communities. In the case of ITS Factory, this commitment transpires in the form of projects and services being made available to the public. Whether it is via testing or full implementation, communities and citizens benefit from the positive impact introduced by these mobility innovations.

CHALLENGES

While mobility solutions are tested and improved within the local and regional environment in Tampere, the development of ITS Factory could benefit from a longer commitment from its stakeholders. However, the possibility of establishing a well-defined timescale and terms of engagement can be contrary to the ethos of the initiative, which is based on the freedom of participation, the mutual benefit for all creators and the concept of future mobility being improved by the prioritization of the public interest.

With regards to the role of universities, the existing framework does not establish a direct connection to HEI courses and students. The possibility of integrating the academic expertise and the innovative approach of students within the creative process for ITS solutions is recognized as a desirable scenario.

KEY SUCCESS FACTORS

The facilitation by government bodies to attract innovative solutions is key for the development of the network. The availability of open source data, the potential for local infrastructure to be used as testing grounds, and the free entry of any interested actors, allowed ITS Factory to attract a great range of partners from public and private sectors.

The flexibility of the creative model allows for extensive adaptability to the needs of developers and researchers. Due to the wide range of projects that can be integrated in the ITS ecosystem, the structure offers the possibility to benefit from the platform, including access to public data and real-life testing, to any type of venture. This includes projects involving a single external partner, and public bodies taking the role of co-creators, to allow small scale projects to be included in the ITS Factory network.



FURTHER INFORMATION

AWARDS AND RECOGNITION

ITS Factory was shortlisted for the Eurocities awards 2014 (7).

TRANSFERABILITY

The possibility of applying the structure of ITS Factory to other locations is subject to the comprehensive commitment by governmental bodies and associated businesses. It is reasonable to assume that firms and investors will be interested in a programme that will facilitate testing and access to data from public sources, but it is important to recognize the consistency shown by the region of Tampere and the different public agencies to create an ecosystem that provides competitive advantages for all stakeholders.

PUBLICATIONS

(Presentation) Kulmala, M. and Lumiaho, A., 2013. Open Data as Enabler for ITS Factory. In *20th ITS World Congress ITS Japan*.

Viri, R., Aunimo, L. and Aramo-Immonen, H., 2019, September. Connected and Multimodal Passenger Transport Through Big Data Analytics: Case Tampere City Region, Finland. In *Working Conference on Virtual Enterprises* (pp. 527-538). Springer, Cham.

LINKS

<https://businesstampere.com/business-environment/business-ecosystems/mobility/>

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RESOURCES:

- 1) Business Tampere. About us. <https://businesstampere.com/about-us/business-tampere/>
- 2) Business Tampere. How ITS Factory works. <https://businesstampere.com/business-environment/business-ecosystems/mobility/mobility/>
- 3) Euro Cities – Unique environment for innovation. <http://nws.eurocities.eu/MediaShell/media/Fast-transport-Tampere.pdf>
- 4) Business Tampere. The Test environment a size of a city. <https://businesstampere.com/business-environment/business-ecosystems/mobility/the-test-environment-a-size-of-a-city/>
- 5) WiSafeCar. <https://www.celticnext.eu/project-wisafecar/>
- 6) ITS Factory Roadmap. https://app.productplan.com/p/BPFJwPm28bZxuiU2Ljxn6kJe_y8ZbVA3
- 7) Eurocities – 2014 awards. <http://wsdomino.eurocities.eu/v2/eurocities-awards/awards2014>



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