



TIM Joint Open Labs:

Joint Open Labs: When industry research and universities come together

Rome, Italy





General Information

Title	TIM Joint Open Labs	
Pitch	Joint Open Labs: When industry research and universities come together	
Organisations	Telecom Italia, JOL WAVE University of Catania	
Country	Italy	
Author	Dr. Richard Woolley (Ingenio (CSIC-UPV))	
Nature of interaction	<input checked="" type="checkbox"/> Collaboration in R&D <input checked="" type="checkbox"/> Commercialisation of R&D results <input type="checkbox"/> Mobility of staff <input type="checkbox"/> Academic entrepreneurship <input type="checkbox"/> Governance	<input type="checkbox"/> Lifelong learning <input type="checkbox"/> Joint curriculum design and delivery <input type="checkbox"/> Mobility of students <input checked="" type="checkbox"/> Student entrepreneurship <input type="checkbox"/> Shared resources
Supporting mechanism	<input type="checkbox"/> Strategic <input checked="" type="checkbox"/> Structural <input type="checkbox"/> Operational <input type="checkbox"/> Policy	
Summary	<p>Joint Open Labs (JOLs), research and innovation laboratories set up within university centres, are the result of partnerships and agreements between Telecom Italia and major Italian universities in specific fields of scientific and technological interest. JOLs are fully-functioning joint interdisciplinary laboratories where ideas and solutions are generated and new value added to the shared goals of research and innovation. Activities at the JOLs are part of a virtuous cycle of three main components: Education (implementation and teaching of Master courses), Research (joint laboratories for selected areas of interest) and Trial & Industrial Transfer (field testing in areas of interest to the company, in which the universities excel).</p>	



Introduction & Overview

1. BACKGROUND

Telecom Italia (TIM) is the largest telecommunication company in Italy and it has a long history of R&D and innovation. The Joint Open Labs (JOLs) programme is itself an innovation in TIM's approach to collaborative R&D and reflects its model for embracing open innovation (Chesborough 2003).

The digital world and digital economy was evolving very rapidly in the early 2000s- The way innovation was being done in the 'over the top' companies was clearly along the traditional lines of incumbent companies. The so-called new economy companies such as Google, Facebook and Amazon, were taking a radically different approach with respect to traditional R&D centres of the big incumbent companies such as AT&T, IBM, etc.

A starting point for JOLs was the open innovation model, which inspired an approach to innovation that would be very different. This approach involved opening up to the external world, to other companies and to the universities and academia as partners. Even being open to cities and their needs – what could the industry contribute in a particular city?

TIM identified the importance of not only a new approach to innovation, but also to have company sites within university campuses to exploit this model. A later *Nature* article entitled 'Companies on Campus' captures this dynamic that TIM anticipated to some extent. The basic question posed by this article was '*what value is created when you locate company researchers within universities where the cutting edge of innovation is happening?*' JOLs reflect TIM's recognition that some of this cutting-edge research and innovation was happening in Italy's top notch universities.

2. OBJECTIVES AND MOTIVATIONS

The major objective of the JOLs was to enter into a new model of R&D and innovation. The model involved co-location for co-creation – not doing technology transfer but co-design, co-development and co-creation, which is profoundly different.

An open innovation approach meant that anything could be an idea to bring inside the company, or vice versa, ideas in the company could create value by interacting with the world outside. A key motivation was the belief that the model would sometimes drive a significant reduction in the time to market for new ideas or products.

A broader objective for JOLs occurs in terms of the generation of 'corporate shared value'. Here the aim is 'to attract talent and generate new job opportunities, promoting technological innovation and diffusing it at a local and regional economic ecosystem level'. The '**company on campus**' model encourages spontaneous interactions between academia and industry,

putting **co-planning** and **co-developing** innovative solutions first, not seeing them as an end-result. **Co-location** is thus an important factor: an open space for open minds, in which researchers from different fields come together to combine their diverse skills (both internal and external to the company), acquire know-how, develop new business strategies, and open up new avenues for economic and employment growth.

3. STAKEHOLDERS

Telecom Italia conceived and established eight JOLs in five major Italian universities through joint agreements with academic institutions and research centres.

Italian Universities host JOLs on campus space and participate in their governance and management. The full list of Universities and JOLs as of September 2016 includes:

- ▶ Polytechnic University of Turin: JOL CRAB (Robotics); JOL MobiLAB (Mobile social apps); JOL Swarm (Swarm Intelligence), JOL VISIBLE (Video & image analytics)
- ▶ University of Trento: JOL SKIL (Big data)
- ▶ University of Catania: JOL WAVE (Internet of Things)
- ▶ Sant'Anna School of Advanced Studies Pisa: JOL WHITE (Well-being & health application technologies)
- ▶ Polytechnic University of Milan: JOL S-Cube (Smart social spaces)

Academics and students at the five Italian universities participate in research training, research projects and other technology innovation activities.





Implementation

4. INPUTS

TIM established company sites on the campuses of the partner universities. These sites retained typical characteristics of company sites in terms of access, security, IT, etc. Investments included the top of the line technology of the company, such as networks, fibre, etc., creating a world class infrastructure.

TIM then placed researchers in the new sites, focusing on fields that fit with the company research strategy. Resources in terms of research grants and some PhD scholarships were provided. The total 'social value' invested in the consumables, projects and facilities in 2012-15 totalled €1.6 million.

Approximately €5 million was received by TIM and the universities through research project funding in the same period. Much of this funding was received from the European Commission (EC) and European Institute of Technology (EIT) project calls.

Taking the example of the JOL WAVE laboratory in Catania, the university contributed a central location on the campus. This location was close to the engineering, maths and science departments and has been a key aspect in developing the synergies between the company researchers and their academic counterparts. The University contributes logistics and the necessary administrative support to WAVE.

Academics provide the teaching and supervision required for the advanced training of students based in the JOLs. Students provide the creativity, talent and new ideas that are crucial to the development of new open innovation projects.

5. ACTIVITIES

Interaction activities are intensive at the very beginning of a JOL undertaking, as new relationships have to be built and trust established. The model involves really working together, co-creating ideas, technologies and opportunities. Major groups of co-productive activities include learning activities, prototyping activities, and field trialling and testing activities.

Field activities are also called 'demo to the customer', as this is not just done in the lab but with the customer, involved at the very beginning, to gain insights that do not typically emerge in a R&D centre – or these insights may come from marketing but are not in the researcher's language. Customers give insights that are not technological but functional and use based, and these insights are sought from the very beginning with both academics and company staff involved.

Conjoint research activities tend to sort out those who are suited to the model. Academics realise through shared activities that industry researchers are also potential intermediaries with the wider industrial environment. They end up not just interacting with TIM, but also with the company's pool of partners, customers, etc. Co-creation quickly becomes multi-

sided, with the core reinforced by being day-to-day in the same place and going out into the field together. Academics learn to broaden their sense of scientific responsibility, by interacting with partners with a broader knowledge of the market and science and learning to exploit this in the earlier stages of their thinking.

More formal education activities are mixed in with the learning through cooperative job experience. Seminars, workshops and other dissemination activities help to share experience. Education of academic researchers occurs mainly in how to take ideas and create different types of value including market opportunities.

JOL activities are also designed to try and reduce the time to market for new products. JOLs follow the approach of the 'over the top' companies in being fast and agile in their approach by getting to the minimum viable product as soon as possible. Then this minimum viable product can be tested with users, thus gaining service awareness and technical acceptance at a very early stage.

An important activity is research income generation. The JOLs business plan sets out an economically sustainable model. The aim is co-creation that is economically sustainable, with the money for research inputs, for software and hardware to build prototypes and other elements, won through European funding calls. In this sense research funding organisations such as the EC, EIT, the Italian Ministry of Innovation, Universities and Research, are important supporters of the JOLs.

6. OUTPUTS

The JOLs have produced substantial outcomes in a relatively short history. Selected outputs include:

- ▶ 10+ innovative ideas that have been transformed into fully formed business proposals and commercial opportunities for TIM;
- ▶ 27 patents filed;
- ▶ 30+ international collaborating institutions;
- ▶ 60+ PhD completions;
- ▶ 50 new young participants in JOLs, now employed by TIM;
- ▶ 250+ academic papers;
- ▶ 40+ training seminars; and
- ▶ 2 Big data challenges in which more than 1,100 people participated

The maximum value of the model is that really working together leads to a real difference in the quality of the output. There is extra value in outputs that are co-designed with an industry point of view integrated, in terms of market and what the market needs.

7. IMPACTS

In terms of impacts, the major metric that shows JOLs have been successful and influential is that the model is now being used in many other companies in Italy.

The impact on TIM is that when you anticipate something some advantage accrues, and if you can use it well then the company is more competitive.

The impact on universities is varied, depending on whether the specific university is more interested in comprehending the industrial part as this is a totally new way for them to operate. The start-up phase of a JOL is important for understanding how certain researchers with certain skills and topic areas can contribute. An important impact of the JOLs is how increasing numbers of academic researchers come to understand the potential of their research and to think and talk about this aspect from very early stages.

The most significant impact on society is the development of products that have been thought of and designed according to an open innovation approach. These products are more relevant to customers for including the user perspective in their design.

Box: Smart Agriculture

JOL WAVE developed a solution to increase the productivity of agricultural fields while reducing the cost and resources necessary for their management. Following user inputs it was decided to add something related to food traceability – so to guarantee and to certify what have been the inputs into that food - followed from when it was in the soil until it gets to the table. A PhD in the lab integrated some algorithms using off the shelf computing solutions. Something very innovative was done, but in the end it was done really fast. The solution was integrated in a product *Smart Agriculture* that is today commercially marketed and sold by Olivetti. In the development process, such products go back into the field as a new model ready for another round of ‘try and buy’ to see if the product needs another iteration or if it is ready to be prepared for the market. Such cases highlight the benefits of integrating the customer, the TIM business department and the R&D that co-created the solution from scratch in a short time frame as required by the customer.



Support & Influencing factors

8. SUPPORTING MECHANISMS

The Joint Open Lab agreements institutionalise a fluid co-creation approach to university-business cooperation. Situating an industry site within collaborating university campuses ensures daily productive interactions between academics and industry researchers. The JOLs thereby function as a mechanism to align academic and industrial research agendas somewhat and for capitalising on their complementary capabilities.

9. BARRIERS AND DRIVERS

Drivers of collaboration in JOLs are the gravitation toward territorial industrial strengths and gaining direct access to key academic talent.

The other major driver of cooperation activity is the need to reduce time to market.

10. FUTURE CHALLENGES

The sustainable business model of JOLs constitutes a serial challenge, to procure sufficient financing from research funding programmes or other sources. Many of these funding sources are increasingly competitive.

11. CONTEXT

The telecommunications industry is very dynamic and has changed rapidly. Mobile devices and services are increasingly important. In this context, TIM sought a more agile and open approach to some of its R&D&I. Universities contain some of the best minds and creative young people and represent a pool of talent from where new innovations are very likely to emerge.

The context for the JOL WAVE lab in Catania is unique in the programme in being situated in one of the relatively socio-economically disadvantaged regions in the south of the country. Catania is a city where some ICT and Pharma multinationals are present, while Sicily is one of the four '*regioni della convergenza*' that receive structural funds from the European Union. The focus of JOL WAVE is aligned with the region's smart specialisation strategy (S3) and in this sense can be a catalyst for further interactions that may expand activities and potentially contribute to the creation of additional local employment, advanced degrees, or other impacts.

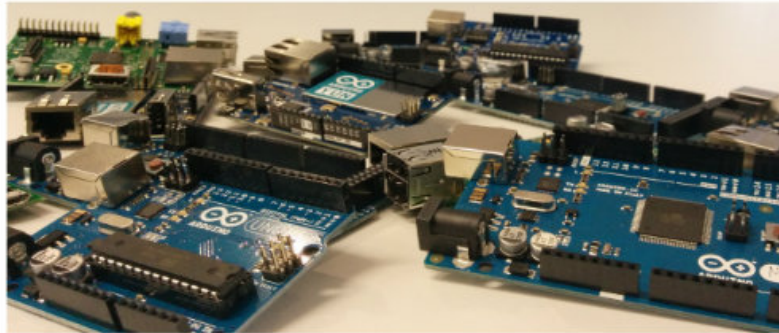
12. KEY SUCCESS FACTORS

Two key success factors pertain to the JOLs:

1. Learning agility – the ability to learn new things, very quickly, and to be capable of learning new things even if something has always been done another way; and
2. Speed – JOLs require people who are fast thinking and acting, who are eager to find something that works, pilot something new, and develop a solution – before moving on to the next challenge.



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Further Information

13. MONITORING AND EVALUATION

The JOLs can be monitored using KPIs such as the amount of funding obtained from external sources, participation in European projects, or the number of patents.

An alternative approach to evaluating the JOLs is to look at six broad streams of value creation:

- ▶ Market position – the capability of a JOL to create value for the company through business ideas;
- ▶ Financial – the capability to attract funds from the EC and elsewhere;
- ▶ Knowledge – value through knowledge creation, know-how and IPR;
- ▶ International footprint – collaborating with other research institutes abroad, reach of network and talent is enlarged;
- ▶ Brand reputation – when communicated about, or communicating, in the broader society, JOLs provides visibility and impact for the company; and

Way of working – the way JOLs do things remains totally innovative, JOLs continuously innovates in the way the company does innovation (e.g. design thinking, user-centred service design, agile programming, lean start-up methodology, etc.).

14. AWARDS AND RECOGNITION

Favour Exchange, a new social innovation application based on the trusted exchange of favours, which emerged from JOL SKIL, was featured as a success story in the European Commission's Business Innovation Observatory in 2016.



15. PUBLICATIONS AND ARTICLES

Chesborough, Henry (2003) *Open innovation: the new imperative for creating and profiting from technology*. Harvard Business School Press, Boston.

Chesborough, Henry, Wim Vanhaverbeke, Joel West (Eds.) 2006. *Open Innovation: Researching a New Paradigm*. Oxford University Press, Oxford.

Watson-Capps, Jana J., Thomas R. Cech (2014) Companies on Campus, *Nature* Vol 514 (October): 297-298.

16. LINKS

Telecom Italia JOLs <http://www.telecomitalia.com/tit/en/innovazione/joint-open-labs.html>

JOL WAVE Catania <http://jol.telecomitalia.com/jolwave/>

Olivetti *Smart Agriculture* product <http://www.olivetti.com/en/industries-and-utilities/machine-machine-internet-things/vertical-offers/smart-agriculture>

17. CONTACT PERSON



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