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Project led by the **city of Bilbao**



JOBS & SKILLS
IN THE LOCAL ECONOMY





The AS-FABRIK project

Considering the challenge faced by manufacturing industries in the Bilbao area that are moving towards a 4.0 dimension, the AS-FABRIK project seeks to increase the competitiveness of the advanced services sector of Bilbao (Knowledge intense Business Services – KIBS), that will prepare current or future workers of the KIBS sector, to acquire the needed skills, in order to supply digital transformation demands.

Bilbao City council is therefore leading a strategic alliance between leading businesses and universities, local service providers and entrepreneurs, in order to shape a collaborative pilot ecosystem based on innovative pillars and hosted in a tailor made space for experimentation and incubation of new services. New education programs for university students, entrepreneurs and professionals addressing the new challenges of the industry 4.0 and the digital economy will be tested, while networking actions among the main stakeholders, supported by tailored IT tools, will ensure a good match between demand and supply. New business models will be prototyped to support specialised start-ups that will benefit from a Minimum Viable Product (MVP) test Fab Lab for the market validation of new products/services.

At the end of the project, KIBS providers from Bilbao will have access to AS-FABRIK, the "factory for the creation of advanced services for industry", that will gather in a physical space an integrated kit of tools in order to shape new products and services for the new industry needs, and to reinforce their competitiveness. This new model will lead to create a new generation of young and advanced service providers able to supply the challenging digital transformation demands the manufacturing sector is growingly facing.

The content of this journal does not reflect the official opinion of the Urban Innovative Actions Initiative. Responsibility for the information and views expressed in the journal lies entirely with the author.

Partnership:

- Ayuntamiento de Bilbao
- Bilbao Ekintza Public Agency
- Mondragon Goi Eskola Politeknikoa J.M.A. S.COOP Research Centre
- Mondragon Unibertsitatea Enpresagintza S.COOP Research Centre
- MIK S. COOP. Research Centre
- GAIA Association of Electronic and Information Technologies in the Basque Country - NGO
- Deusto Foundation Basque Institute of Competitiveness Research Centre
- Asoc. Cluster Audiovisual de Euskadi EIKEN BASQUE AUDIOVISUAL NGO
- Mondragon Centro de Promocion, S.COOP Business Support Centre
- IDOM Consulting, Engineering, Architecture, S.A.U. (IDOM) Private Company

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1. Executive summary

This journal summarizes the key activities that took place in the last months in the AS-FABRIK project. It focuses on the partnership brokering activity, aimed at promoting new innovation partnerships between companies to increase the competitiveness of the industry and develop new knowledge-intensive business services.

First, it describes how AS-FABRIK maps the competences of players in the Industry 4.0 sector through a process of tracking, tracing and matching. Next, this journal describes the ins and out of partnership brokering: bringing new collaborators together, making optimum use of existing collaborative organisations (such as cluster organisations or industry associations), but also more specifically by bringing together individual stakeholders that want to enter into some form of strategic collaboration with each other. Also, we describe how collaborators are coached or mentored along the way, and how the tools and methods for collaboration are designed and shared.

Third, this journal provides an update about the construction of BETA II, the new building that should become the hotspot of Industry 4.0 and related activity in Bilbao. The journal ends with an overview of the key implementation challenges that lie ahead. The main challenges are:

 Communication to several groups: citizens, potential new participating companies, and more in general, finding new ways to communicate the added value and results of new partnerships to firms;

- 2) Maintaining an integrated/participative approach, especially mainly its continuation after the UIA funding ends, and related to that
- 3) Local scaling and financing, that relies on the ability to reach more companies and continue the activities on the long run.

Our conclusion is that the project is very well on track and delivers results as planned. At the same time, some work has to be done to ensure the sustainability of the project after the UIA funding ends.

This journal summarizes the key activities that took place in the last months in the AS-FABRIK project. It focuses on the partnership brokering activity, aimed at promoting new innovation partnerships between companies to increase the competitiveness of the industry. It starts with outlining AS-FABRIK's method to map the competences of players in the Industry 4.0/Knowledge Intensive Business sector through a process of tracking, tracing and matching. Next, we focus on the practice of partnership brokering: bringing new collaborators together, by engaging existing industry associations or other business communities, but also more specifically by bringing together individual stakeholders. We describe how AS-FABRIK provides coaching to innovation partners along the way, and how the tools and methods for collaboration are designed and shared. Third, we provide an update about the construction of BETA II, the new building that should become the hotspot of Industry 4.0 and related activity in Bilbao. The journal ends with an overview of the key implementation challenges that lie ahead.

2. Tracking, tracing, matching

Developments in manufacturing and related services are very fast. How can regional companies make the most out of the new opportunities? Business intelligence is key here. An important feature of the AS-FABRIK project is to map the relevant changes in these dynamic fields (in markets and technologies), and also to track and trace the actual competences and needs of companies in Bilbao to deal with these changes.

The research partners in AS-FABRIK play an important role in this process. They collect and share the latest market and technology trends related to industry 4.0 (in a report titled "Technological and International Market Trends"), and share it with the partners of the consortium and beyond. In the first half of 2018, several "roadmapping seminars" were organised, with industrial companies, services providers and ICT firms, in order to systematically assess current challenges, competences, to identify gaps, and to pinpoint specific areas where regional players in the industry 4.0 field might benefit from each other through collaboration (see the 2018 Zoomin report for more details).

The outcomes of these seminars provided a quite detailed picture of the needs of industrial companies in terms of new technologies and competencies. It became clear that industrial firms face big challenges to make the shift to a more service-based orientation, and make optimal use of the possibilities of new technologies such as remote monitoring, big&open data, internet-of-things, etc. New types of collaboration are needed to reap the fruits, however, most industrial

companies cannot do it alone —even if they try. In the words of Antonio Martínez from IDOM Consulting, Engineering, Architecture, "Industrial firms have a tendency to develop solutions inhouse; it is part of their business culture to find their own answers. They must learn to engage in partnerships with specialists, to make faster steps forward". Bilbao has a strong presence of service & ICT firms with competencies in technology and tech-related services. It is one of the central challenges of AS-FABRIK to reach a stronger integration and collaboration between services, IT competences, and industrial firms.

Bilbao is not the only region looking for new approaches to stimulate Industry 4.0, ICT, and servitization. A benchmarking exercise was conducted, in order to learn how other leading industrial regions approach the challenge. It includes case studies from Brno, Tallin, Rotterdam, Emilia Romagna, Aarhus, Tampere, and Manchester. The results will be published later this year.

The tracking and tracing activities sketched above were organised in the last six months, but they are a recurrent activity in AS-FABRIK: in a dynamic field such as Industry 4.0 it is impossible to make a once-and-for all assessment, as the field is constantly evolving. Next year, trend reports will be updated, new road mapping seminars will be held, as a basis for new collaborations, ventures and start-ups.

3. Partnership Brokering

Now that a clear picture has emerged of the competences and challenges, AS-FABRIK has recently entered the stage of "Partnership Brokering": an intricate process of matching, with the aim to foster new types of collaborations between regional firms, in order to grasp synergies and complementarities. By March 2020, this process should have resulted in 15 Partnership Agreements (collaborating businesses), and 6 educational agreements (business-university partnerships).

The brokering is led by MIK (Mondragon Innovation & Knowledge), and done in two ways, as Nekane Morales (work package leader)

explains. First, there is a group approach. Industrial cluster organisations in the region (some of them are also part of the AS-FABRIK consortium) mobilise their members to explore new partnership opportunities. For example, on 11 October 2018, AFM, the cluster organisation of machine tool producers, organised a seminar for their members. The aim of that seminar was to explore opportunities in the specific domain of IOT, cloud, and data. 15 companies attended the session; service companies showed best practices and solutions, and the participants were invited to explore the potential for their own businesses. Similar sessions are planned with the automotive cluster (ACICAE), the aerospace cluster, and



Partnership brokering session

the Mondragon Group. Second, and in parallel, there is an individual approach, focused on specific potential partnerships, in which firms involved which are interested in collaborating are mentored on the partnering process (for example, see the short case study under "mentoring").

To support the partnering process, a "Guidebook" has been written, with inputs from several partners in the AS-FABRIK project. The guidebook systematically describes the series of steps to be taken to assess opportunities, challenges and competences, and to create new partnerships. Also, it offers a wealth of practical tools, formats, tips, tricks and pitfalls related to partnering. The Guidebook is currently only available in Spanish, but an English language version will be published later in 2018.

The guidebook is meant as a tool to foster new types of partnership, and it is probably useful also in other cities and regions. At the same time, Aitor Marcos from IDOM Consulting, Engineering, Architecture stresses the role of context: "Every partnership is different, and requires a tailored approach. Inter-firm partnerships are very sensitive, it requires strong mentoring to guide this process". Many questions arise in the field of intellectual property rights, ownership, and division of risks and returns. For example: if two or more firms develop an innovation together, who owns the intellectual property? Who carries the risks of failure? What kind of partnership agreement works best in a particular situation? How much control do you lose when you share ownership? Etc.

Steps and activities in partnership brokering

The AS-FABRIK team identifies the following steps in the partnership brokering process:

A: DESIGNING partnerships

The knowledge partners created a guidebook, with steps and tools to create smart interfirm

collaborations. The guidebook presents the following "substeps" for the process:

- Focus: Assessing the Why, What and How of the collaboration
- Create: project design, partner selection, choice of the type of alliance, and development of the negotiation process;
- 3. Manage: the start-up, development and monitoring of the cooperation project;
- 4. Sustain: to continue or institutionalise the cooperation.

B: SCOPING partnerships:

- Identification of spaces of opportunity: this was done in the Road mapping exercises
- Identification of network partners with collaboration potential (also done in the Road mapping exercise)
- 3. Definition of Map of Stakeholders
- 4. Identification of existing "conversation spaces" of partners with cooperation potential (conferences, meetings)

C: CREATING partnerships

- Activation of conversation spaces: Fostering discussions between potential partners.
- Identification of collaboration projects:
 Active search for matches between potential partners

D: MANAGING & SUSTAINING partnerships:

Mentoring: Specialist support for potential ad promising partnerships throughout the partnership design process steps (focus, create, manage & sustain).

4. Mentoring is needed to achieve results

Partnership formation is a difficult trajectory. It can be enhanced when an independent third party takes an intermediary, mentoring role. This is why AS-FABRIK has provided for a mentoring activity. 90 hours of mentoring are available to firms that want to partner with other firms or with a university. The mentoring is provided by a range of knowledge partners in the project. The mentors are seasoned advisers, knowledgeable in the field of industry 4.0. They use the "Guidebook" with tools, and are able to help the partners in the process. So far, two pilot mentoring trajectories have been done, and several lessons came out of that. First: mentoring helps. Companies appreciated very much the role of an intermediary expert that can help to find a balanced approach in the interest of both parties. Second: there is a grey field as to where mentoring

ends and technical/legal advice starts. From the outset, the idea was to help firms from a strategic point of view, asking questions such as "how could this partnership add to your general business strategy", or "how does it expand/supplement your core competencies". But it turned out that the questions asked by the partnering firms became very technical/legal. A third lesson from the two pilot cases is that the mentoring process could and should be faster and more structured. In the two pilot cases, it took too long before the partnerships were secured, meaning foregone business opportunities. As Aitor Marcos, from IDOM Consulting, Engineering, Architecture said, "we need to develop a more systematic and fast approach, with less time between mentoring meetings". That lesson is taken into the next round of mentoring missions.

5. Case: Purple Blob & Techfriendly

Purple Blob is a young firm specialised in big data analysis. TechFriendly is a larger company that does consulting work for a large number of municipalities in Spain. Both wanted a deeper partnership with each other. Before they entered the mentoring process, the two firms had worked together on a project basis to analyse big data sets from Spanish cities. The project was a success, but both felt the need that a more structured and formalised partnership would be needed to extend and deepen their joined activity. But how? IDOM, one of the AS-FABRIK partners, mentored the process, using the guidebook and

applying it to the specific case. Several options were considered: a radical one (TechFriendly buying Purple Blob), and more light collaboration types. In the end, after long deliberations, Purple Blog agreed a 20% ownership increase, but still maintains full control over its own decisions, and can use the valuable network of TechFriendly. Legal advice was hired for the more technical legal details of the deal. What were the results of this partnership? It is always hard to assign causes to consequences, but fact is that Purple Blob grew from 2 to 4 employees, and proudly presented itself at the prestigious B-Venture event.

6. A new building as living room for knowledge-intensive business services

The AS-FABRIK project is a coin with two sides: on the one side, it promotes "smart specialisation", aiming to make manufacturing -a traditionally strong sector in the city- and related knowledge intensive business services (KIBS) services more competitive. The activities described above fit in this picture. But at the same time, it is an instrument to improve the spatial conditions of the local economy, through the regeneration of the Zorrotzaurre area, a former industrial peninsula that will be turned into an innovation district: a knowledge-based new part of the city, with a mix of residential areas, R&D, and leisure. For the city of Bilbao the redevelopment of Zorrotzaurre Island is a priority for the next decades. It is a multi-million Euro programme, to be developed in stages, with a large number of stakeholders, public and private, and with involvement of the citizens that currently live there. The AS-FABRIK project is one piece of this very large and long puzzle. It is part of a portfolio of other projects (European, national, regional and local) that should contribute to the revitalisation of the area.

Innovation in advanced manufacturing and services will be one of the economic engines of Zorrotzaurre. The island will be the home for many of the innovative activities of AS-FABRIK described above and in earlier journals. To achieve that, the city acquired a building (named BETA II) in Zorrotzaurre, and decided to refurbish

rather than demolish it: the costs would have been similar but the building has authentic features that are worth preserving. During the first months of the project, the building quality was analysed, and the process of the functional design of the building was initiated. According to the original plan, around 2 floors (4000 m²) of the building would be dedicated to (and co-funded by) the AS-FABRIK project. However, the interest to use the building was bigger than expected. By September 2017, it was decided to allocate additional funding to develop 4 floors of the building (totalling 10,000 m²), to house the industry 4.0 ecosystem. There are plans to acquire also a plot surrounding the BETA II building; that would allow to develop a public plaza, to give the building an open and welcoming character, connected with the neighbourhood.

After some initial hickups (the purchase of the building was delayed because the private owner of the building was reluctant to sell it) progress has been substantial in the development of BETA II. The building programme design is finished. The refurbishment of the buildings' structure and the 1st floor is planned to start early spring 2019, and should be ready by September 2019; From then on, AS-FABRIK's activities can take place in the building, and a number of other tenants have announced they set up shop there.

BETA II should develop as a "living room" for the Industry 4.0 community in Bilbao and the Basque Country. It should become a venue for partnership building, showcasing good practices, hosting innovative start-us, and also a location for professional training and all sorts of events related to smart manufacturing and knowledge-

intensive business services. The building should also help to show the added value of partnering: by making the results of partnerships more visible, it could induce reluctant companies to take new steps in this direction.







Some pictures of the BETA II building under construction/renovation

7. Key implementation challenges

This section summarizes the main types of implementation challenges as identified by UIA (summarized in table 1).

TABLE 1. MAPPING AS-FABRIK AGAINST THE ESTABLISHED UIA CHALLENGES

Challenge	Level	Observations
1. Leadership for implementation	Low	The leadership (city of Bilbao) is clear, consistent, accepted by all partners, and it delivers results.
2. Public procurement	Low	The building was procured by the city. Some hick-ups (a remaining tax debt by the owner, the question whether to demolish or refurbish the building) were resolved, and led to some delays of the project implementation, but it is on track now. Contracting processes have started to select construction and design companies.
3. Integrated cross- departmental working	Medium	The development of the physical space of AS-FABRIK is part of a wider and longer term challenge to regenerate Zorrotzaurre Island; for this, an intensive interdepartmental collaboration is in place (uniting departments responsible for environment, planning, transport, economic development agency). Other funding sources are used to develop the building and its surroundings. The Mayor's Office and the department for Public Works co-ordinate their actions well.
4. Adopting a participative approach	Medium	Participation of the private sector and higher education/knowledge institutes is well developed, and key players are partners in the project. In the development of BETA II the participation of local citizens could be strengthened in the next stages.
5. Monitoring and evaluation	Low	At project level, the lead partner (the city) closely monitor progress in frequent steering committee meetings in which the partners come together. On the level of actual results and impacts in the local economy, the "observatory", founded as part of the project, plays a key role to systematically monitor and evaluate the project's impact.
6. Financial Sustainability	Medium	So far, there are no indications of financial concerns. On the longer run, it remains to be seen how AS-FABRIK will be able to be effective without EU support: this would require structural financial commitments of all partners, to update courses, to maintain startup support, to fund the brokering/networking activities, and to keep the observatory in the air.

Challenge	Level	Observations
7. Communicating with target beneficiaries	Medium	The communication with the beneficiaries —companies in manufacturing, KIBS, startups, students— is in full swing and provided by all partners. A concern is how to reach industrial firms. Second, in the redevelopment of Zorrotzaurre, it is a challenge to engage citizens, young and creative people and students more in the design process.
8. Upscaling	Medium	Upscaling will be a challenge in two respects. The first task, locally and regionally, is to engage "first mover" companies in this new ways of working. Over time, more companies may want to participate if they expect real benefits, and if they hear positive stories about the project. The communication of early success stories is essential in this respect. Second, the project might scale up to the national or international level. The Guidebook with strategic roadmaps and tools for partnering is useful for other regions as well.

The *leadership* of the project is strong, overall and on work package level. The work packages are strongly interrelated functionally; frequent contacts and briefings makes sure that the leaders are well informed about the progress in each domain, and can play on that.

As to *public procurement*, after some delays, the procurement process of the BETA II building —which should become the hotbed of Bilbao's Industry 4.0 innovation and knowledge-intensive services- is on track now. The procurement is traditional; no specifically innovative types of procurement are applied in this case. It could be considered to apply more aspects of PPI (public procurement of innovation) in later stages of the implementation of the building.

Concerning *integrated/cross-developmental* working, the development of the physical space of AS-FABRIK is part of a wider and longer term challenge to regenerate Zorrotzaurre Island; for this, an intensive interdepartmental collaboration is in place (uniting departments responsible for environment, planning, transport, economic

development agency). Other funding sources are used to develop the building and its surroundings. The Mayor's Office and the department for Public Works co-ordinate their actions well. Moreover, AS-FABRIK is fostering a deep collaboration between the city (Mayor's office) and armslength economic development agency Bilbao Ekintza, and this works well. A main challenge is to safeguard this way of working after the UIA funding ends. In principle, the very heart of AS-FABRIK, the partnership brokering, mentoring and start-up support activities, could be taken over by public structures such as Bilbao Ekintza, incubators, and/or cluster organisations. But a co-ordinated approach might be needed to ensure that these activities do not become scattered and fragmented among many public agencies, but remain in place as a coherent whole. In other words: AS-FABRIK now acts as a glue that sticks partners together, but what will replace this glue?

A *participative approach* is a red thread throughout all activities of AS-FABRIK, where the focus, naturally, is on the participation of industry

4.0 firms and service providers as beneficiaries of the project. Their inputs and comments feed back into the organisation of the work in the different aspects of the project. With regard to the development of the BETA II building, citizen participation has so far not been part of the script; this needs improvement because the development activities will affect local inhabitants directly. In the redevelopment of Zorrotzaurre, it is a challenge to engage citizens, young and creative people and students more in the design process. In the further process of building/restructuring the BETA II building, efforts are needed to look beyond the building and its immediate environment, and assess the linkages with the surroundings and citizens that live nearby. Currently, the energy of the people engaged in the construction and planning is focused on getting the practicalities done, to complete the building, to host the new tenants, and to find additional funding. But if BETA II is to be an engine for Zorrotzaure, it should be part of a larger vision.

Monitoring and evaluation takes place at two levels. At the project level, the lead partner (the city) closely monitor progress in frequent steering committee meetings in which the partners come together. On the level of actual results and impacts in the local economy, the "observatory", founded as part of the project, plays a key role to systematically monitor and evaluate the project's impact. There are no specific challenges in this field.

Concerning the **financial sustainability**, there are no direct concerns either, but it remains to be seen how AS-FABRIK will be able to be effective without EU support: this would require structural financial commitments of all partners, to update courses, to maintain start up support, to fund the brokering/networking activities, and to keep the

observatory in the air. If AS-FABRIK is here to stay, fresh thinking and planning is needed to continue the key activities such as roadmapping, training, mentoring and partnership brokering after the UIA funding expires. For the company trainings, fees can be considered to fill the funding gap. The task of gathering and sharing technological and market trends (now funded by UIA) could be continued by the knowledge partners.

The communication with the target beneficiaries —companies in manufacturing, KIBS, startups, students—is in full swing and provided by all partners. A continuing concern is how to reach industrial firms. It remains a challenge to attract more industrial companies to the meetings and seminars. They tend to be very busy (full order books), and AS-FABRIK "competes" with an overwhelming number of industry 4.0 activities and events. A key lesson is to organise meetings that are quite specific and targeted (to differentiate from more generic Industry 4.0 events), to design interactive meetings, to compress them in a short timeslot, and to clearly communicate the added value.

Specifically, it is essential to communicate effective messages about the results and potential of innovation partnering, and make clearer what the added value can be. Many industrial companies have a natural tendency to develop in-house solutions: it gives them more control and ownership, and less complexity. But this approach often leads to suboptimal solutions, because they tend to have insufficient knowledge and competences to achieve powerful servitization and ICT solutions. Firms tend to agree with the general statement that collaboration is "important", but are more reluctant to really actively engage in partnerships. It is a key challenge to highlight and showcase good practices, to show 1) that collaboration yields real returns and 2) that it is feasible in terms of management and control. This is a matter of visualising successes and story-telling, and perhaps the new BETA II building could play a role in that.

Upscaling, finally, will be a challenge in two respects. The first task, locally and regionally, is to enlarge the number of participating firms/ beneficiaries in the city and region. There is

a need to engage "first mover" companies in this new ways of working. Scaling depends on communication: over time, more companies may want to participate if they expect real benefits, and if they hear positive stories about the project. The communication of early success stories is essential in this respect. Second, the project might scale up to the national or international level. The Guidebook with strategic roadmaps and tools for partnering is useful for other regions as well.

8. Conclusion

This journal has highlighted the activities of matchmaking, partnership brokering, and networking, and reported on the progress of the BETA II building that will become the hotspot of Industry 4.0 innovations. Progress in AS-FABRIK project is substantial, the planned activities are on track and on schedule, and have proven their value. And the project has already yielded some lessons that could be valuable for other cities that consider a similar approach.

We also highlighted some challenges that need attention in the remainder of the project. The main ones are 1) communication to citizens, to potential new participating companies, and more in general, finding new ways to communicate how partnering brings added value and results to firms; 2) maintaining an integrated/participative approach, especially after the UIA funding ends, and related to that, 3) local scaling and financing, that relies on the ability to reach more companies and continue the activities on the long run.

The next journals will continue to provide updates on the project's progress. Specifically, the next journal's aim is to take a closer look at a particular output of AS-FABRIK: a comparative study of Industry 4.0/knowledge intensive business service promotion and partnership building approaches in other European industrial regions, and the lessons that were drawn from that.

Interview partners:

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Urban Innovative Actions (UIA) is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Based on article 8 of ERDF, the Initiative has a total ERDF budget of EUR 372 million for 2014-2020.

UIA projects will produce a wealth of knowledge stemming from the implementation of the innovative solutions for sustainable urban development that are of interest for city practitioners and stakeholders across the EU. This journal is a paper written by a UIA Expert that captures and disseminates the lessons learnt from the project implementation and the good practices identified. The journals will be structured around the main challenges of implementation identified and faced at local level by UIA projects. They will be published on a regular basis on the UIA website.



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