

Intellectual Property as a Strategic Tool for Collaborative Projects

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1. Introduction

The preparation of the *Seventh Framework Program (FP7)* of the European Community for research, technological development and demonstration activities (2007-2013) [1] revealed the interest of “intellectual property” as a strategic tool and many documentation and intellectual property guides [2] have been issued to help project participants to use intellectual property principles and develop the policy adapted to their project.

In this frame, the objective of the *IDEALCELL* project was to respond to European community’s needs and progress of science by going beyond the state of the art in the field of high temperature fuel cell technology, after the invention of a *dual cell concept* made in 2004, by the Material Center, common research center to ARMINES and MINES ParisTech, protected by a patent proprietary to ARMINES.

The advantage of gathering knowledge and competences in a collaborative research project is to develop innovation, prepare new technologies or products adapted to market needs but also to enhance interest of stakeholders in emerging technologies. The participation to a project is largely beneficial as it is an opportunity for each participant to develop its data, gain knowledge and competences. But this dissemination can also constitute a danger that can be limited by well organized intellectual property principles playing a key role to the extent they offer sufficient comfort to project participants to allow them to exchange in safe conditions with sufficient incentives to reach project goals.

The key concept for an intellectual property approach is “*recognition*” of partners respective background and of the inventions made during the project.

IDEALCELL has been built up and managed on the basis of these principles with a view to developing a technology at the right level of excellence with a balance

between scientific breakthrough, costs and risks on the one hand and interest to industry on the other hand.

The implementation of these keys has been made at 3 stages : first during the construction of the project (1) with the description of work (1.1) and the negotiation of the consortium agreement (1.2) and then during the performance of the project (2) with the implementation of the intellectual property principles (2.1) and the choice of adequate protection of the foreground (2.2). The last stage is essential and difficult as it relates to the organization of a transfer package (3) attractive to industrials as potential licensees (3.1) or for subsequent research programs (3.2) .

2. Project Preparation and Negotiation

2.1. Intellectual Property Strategy in the Dow

The IDEALCELL project has been built up mainly based on ARMINES's patent published in 2005 with international extensions [3]. The participation of the partners to IDEALCELL project aimed at gathering top class competences in the various scientific fields that were to be worked on and the final objective of the project was to prepare the ground for the fabrication of a dual cell short stack based on the concept of three independent chambers.

In parallel, the intent of the project was also to give opportunities and room for the development of components and technologies of each partner either as component of the aimed dual cell short stack or as a stand-alone product or self standing technology that could live its own life on the market.

The advantage of this *dual approach* combining two strategic visions, was to open the scope of the project and give consideration to each component or technologies while concentrating on the initial objective of the project : the high temperature fuel cell technology. The construction of the Description of Work (DOW) together with the allocation of tasks specified the grounds for a logical and practical intellectual property approach useful to the consortium agreement negotiations.

The DOW is very important and constitutes a guide to establish and apply intellectual property principles as it gives material grounds for their application. Indeed, intellectual property rules in a consortium agreement are written in so general words that they can take away from the nature of the technical data and the specification of adapted means for their protection and dissemination.

2.2. Goals of the Consortium Agreement Intellectual Property Principles

IDEALCELL project partners have decided to use the DESCA Model [4] to establish the consortium agreement in line with the FP7 Rules of Participation and the Grant Agreement general terms and conditions together with the help of the Guide to Intellectual Property Rules for FP7 Projects [5]. The clear and flexible provisions of this model appeared to be the appropriate frame to respond to partners's needs to organize an intellectual property scheme in line with the IDEALCELL's project objective while allowing each partner to enhance its *intellectual property patrimony* and possibly get the chance to develop a new product out of the project.

On these basis, common *DESCA principles* were applied with one exception to preserve the intellectual property patrimony of each partner and limit the joint ownership cases. The rationale behind this exception was to allocate to a background owner, the ownership of an improvement of its background : indeed what is the interest behind splitting the ownership into shares for one improvement which technically can only be used with the background it has improved ? The collaborative spirit and the balance between inventor and owner was preserved with the allocation of free access rights on such foreground improving the background and the promise for a fair and reasonable compensation in case of industrial or commercial use of such foreground.

The advantage of preserving the integrity and *coherence of an intellectual property patrimony* is to ease the preparation of the intellectual property package that will later on be exploited or licensed for a transfer of technology. Cross licensing preserves the balance and prevents from attraction by one partner only. Some experiences have shown that such consistency helps also to pilot the development of the technology.

A parallel goal is also to give room to *open innovation* and organize access rights so that the technologies can be developed and exploited in some other fields.

For the purpose of the project, all these provisions and contractual principles were thought of by the partners to push the main technology of the project but also to allow others to emerge and be recognized. To that aim, during the project, it is essential for the partners to have a strategic vision for the implementation of the intellectual property principles.

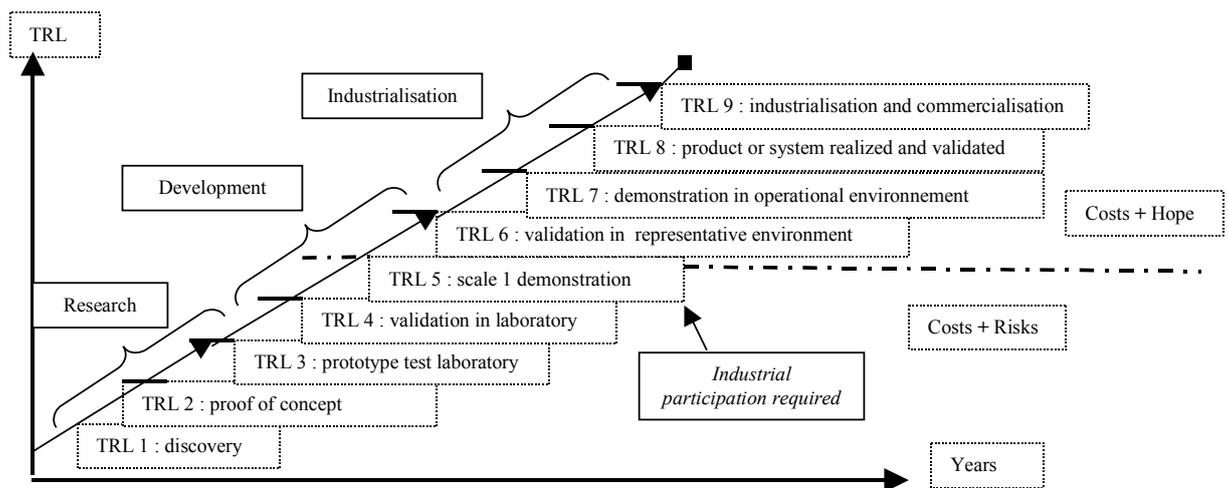
3. The Interest of a Strategic Vision for the IP Implementation during the Project

3.1. Some Tools as Help for the Intellectual Property Strategy

The signature of the consortium agreement is the beginning of the story and the work around it does not stop with its filing. All project partners must bear in mind that the objective is to obtain one or several products or technologies that could go on the market in short, middle or long term. For that purpose, it is important to

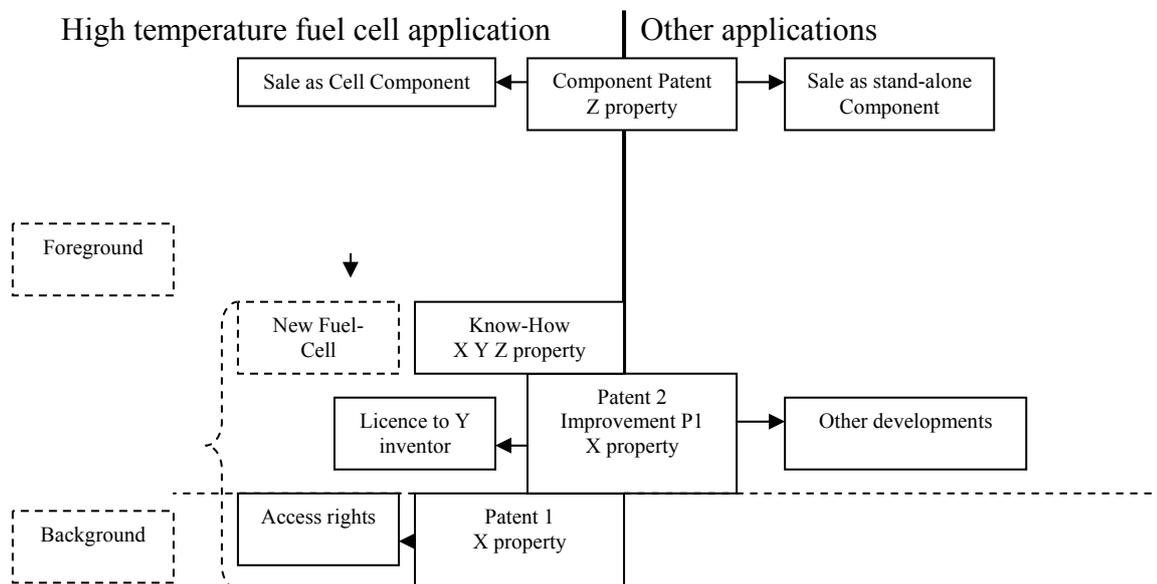
have a clear view of the context and the road to follow to apply intellectual property rights and obligations in the most practical manner.

1) The first tool is the **Technology Readiness Level Scale (TRL)** built up by ESA [6] that can ease to have a vision of the maturity of a technology and of the level reached by its development : what are the steps already made and to be made, who should reasonably benefit from what and what remains to be done ? The advantage is to **objectivize** the situation and allow the project to be positioned on the TRL scale.



IDEALCELL project started with TRL2 as it was based on a TRL1 invention discovered by the Material Center, common research center to ARMINES and MINES ParisTech. The results of the project showed that TRL3 was reached and even overtaken, starting TRL4. The TRL tool can show what is the outcome of IDEALCELL project and what should be next : i.e the remaining steps required to push the technology towards industrialization, the need for industrial partners, the way to go forward, and the efforts to be done so that the technology goes “commercial”. It provides for objective grounds to a communication for dissemination of the foreground as an outcome of the project.

2) The second tool is a **Technology Tree (AGT)** [7] describing its history and ramifications. It gathers on one chart the technology description with its main components, the intellectual property rights attached to it and the related licenses and contracts. In one glance, anyone can identify the owner, co-owners, and beneficiaries that have access rights to it. It allows also to identify the possibilities for open innovation and the organization of necessary access rights to organize a broad dissemination.



This picture allows to check if the ownership and access rights are reasonable and adapted to the needs. The example above shows that the component owner and the fuel cell manufacturer would need a sale agreement rather than a license agreement allowing the fuel cell manufacturer to manufacture and commercialize the component. It shows also that Y as licensee of patent 2, would need, if it wishes, expanded access rights to develop this patent as a stand alone for other applications than the fuel cell.

These two tools are useful to specify a strategy, to show the vision and therefore, to use the intellectual property principles as a practical tool and not as goal : IDEACELL project is an example of their interest and practicality.

3.2. Foreground Protection: A Day To Day Management

Among the partners, thanks to the confidentiality provisions of the consortium agreement, all exchanges are protected and cannot be interpreted as being public disclosure.

However the partners must take care to identify the foreground generated whether sole foreground or joint foreground and to carefully trace its production and exchange among the partners. Attention must be given to patentable invention but also to new processes, information, data, methodologies that may arise out of the performance of the project. Due care is generally given to patent but experience shows that the interest of an invention is not always obvious when it arises : tests or studies are often necessary to confirm its value. All partners must therefore

preserve the confidentiality of what they generate before making the decision of protecting or disseminating as per the project principles.

Disclosures must be made by decision and not by omission : this is also a strategic decision to be made by the owners and co-owners and by the project committee as a whole in compliance with the project objectives. Filing of patent is interesting but partners must remember that the publication of a patent is a publication to the entire world : secret know-how can be an interesting alternative to consider.

4. Organisation of a Technology Transfer Package for Further Projects and for Industrialisation

4.1. Intellectual Property Package for Further Projects

The performance of a project is a real adventure and the incentives in the FP7 rules and conditions for dissemination show that the performance of the project must also prepare the next ones. The conclusion of a project and to that extent, IDEALCELL is a good example, is to show what must be next and how the initial goal can be achieved. This is also a way to show that public money has been properly used as care is given to the satisfaction of the objectives. The results of the project formed with the foreground and the background attached to them will not remain in partners documentation and will have a real future.

To allow the partners to prepare this “after-project” a chart of technologies, in the form of the technology tree presented above, can be established. The interest is not to have an exhaustive list but rather a list per technology, product, component with the intellectual property rights attached to them, list that can constitute a clear basis for subsequent developments. Dissemination is facilitated on this basis and can ensure that innovation will continue and that, at the end of the day, the European Community will benefit from research efforts and funding.

4.2. Intellectual Property Packages for Transfer to Industry

As the goal is to have a technology industrialized and commercialized, the intellectual property package must also be prepared for licensing purposes to industry. This vision is necessary to prepare the future of the research project and build up an attractive package for technology transfer : one could say that the “research baby” must find “industrial parents” which will take care of its growth and success.

The project must identify all intellectual property packages and organize cross licensing among partners so that the technology can be further exploited or developed and transferred; consideration being organized through fair and reasonable financial returns.

From an intellectual property principle point of view, as mentioned before the main principle up to TRL5 is to preserve the intellectual property patrimony to guide the development of a technology. After the demonstration has been made, the industrial interest comes first and the intellectual property of foreground generated after demonstration must put the exploiting company in a safe legal position to industrialize and commercialize. The intellectual property principles used in the first place change to be adapted to this industrial goal.

As a conclusion the main recommendation is to have a *practical approach* of intellectual property principles and to organize allocation of ownership and access rights to satisfy European community goals and progress.

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