

## **Open Access Portal for Scientific Data and Expertise**

Or

## **How to turn a Data Model into a Business Model**

Paper presented by  
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### **Abstract**

There is a demand for research results outside of the science community. Small and mid-sized companies need research results that allow them to develop new products and services and thus create new jobs.

The value chain of turning research results into innovation and innovation into jobs requires multiple translation steps resulting from the cooperation of various stakeholders with different but complementary skills.

A portal that provides stakeholders with a platform to cooperate and share information is an important prerequisite to kick-start such value chains.

Innovation portals are readily and cost-effectively available from MatchingNeeds. For technology transfer initiatives to be successful, portals have to be complemented by incentives for all participants, comprehensive marketing plans and real life events that complement the online offering.

### **Introduction**

What is the value of information? To those who have the expertise to understand the information, it might be tremendous.

To those that lack this expertise, the information is most likely worthless.

In the field of research this means, that only another researcher can adequately interpret research results. The number of specialized scientific journals and periodicals proves that there is a need for the exchange of highly technical and specific information.

These paper-based exchanges for research results have their equivalents in cyberspace: These are websites where specialists place and find information for specialists.

In this manuscript we explore the possibility of opening up this closed circle of specialist – information – for – specialists.

Using the methodology of a marketing plan, we assess whether there is a market for research information outside the research community. Who are potential customers and stakeholders in this market, what kind of services and products are traded, what are the rules for demand and supply? We explore how such an exchange could actually create wealth for its participants and the communities they represent.

## **What makes a market?**

A functioning market needs a supply of a service or good as well as a demand for it. The interaction between supply and demand will then determine the value (and its surrogate price) for the product or service.

### **The supply: Research information**

Since we are presenting this paper at the annual conference of euroCRIS, we consider it as a given that information about research and research results are readily available in specialized databases around the world.

Furthermore, we assume that this information is structured and made available in a machine readable form. Information can be searched for and found by using search tools, from simple category matches to highly sophisticated technologies such as fingerprinting.

### **The demand: New jobs**

Unemployment is one of the biggest, if not the biggest issue facing European societies. All statistics show that large multinational companies are more likely to reduce their workforce than to increase it. Any possible new jobs will be created in small and mid-sized companies.

However, these small and mid sized companies face a fierce worldwide competition with the disappearance of protected markets and the abolishment of tariffs and trade barriers.

Politicians were quick to recognize that when small and mid sized companies sneeze, the economy will soon have the flu and budgets and national welfare will get sick with it too.

Innovation is propagated as the solution to re-vitalizing small and mid-sized enterprises. Politicians therefore demand from researchers and publicly funded research institutions to make their research results available to these small and mid-sized companies.

Every European country is currently in the process of implementing so called Research and Technology Transfer initiatives and programs. The promise is creation of new jobs and new wealth by turning research results into innovative new products and services that allows European companies to stay ahead of competition.

### **So do we have a market?**

We believe not. We have observed that company owners and managers are in desperate need of innovative products and services but do not have the resources to understand research results – especially not in the form they are presented today.

We call this phenomenon the “academic divide”.

Business owners are specialists in running a business, optimizing processes and selling their products and services. Most often they do not have the time to follow developments in basic research. Unlike big companies they cannot afford the “liaison persons” to keep in touch with research.

Additionally, how would the owner find the research and researcher who could help him or her innovating their products and services? If one doesn't know what one is looking for, how are they going to find it in Google? How can they define their interest and need if research and business use a completely different vocabulary?

As long as demand and supply remain divided by space and language barriers, no information exchange and therefore no market can develop.

### **Can the supply of research results satisfy the demand for jobs?**

We think it can.

Like in chemistry, it sometimes needs a catalyst to get a reaction going. In the case of "technology transfer" it needs translators, interpreters, and networkers

- who speak both the language of science and business
- who bring together the right group of people who can identify the marketable product in a research result
- who create opportunities for ideas to develop.

We are convinced that research results can only be turned into marketable services and products through personal interactions in a diverse team. The researcher who goes out, founds a company and has success in the market will remain the exception.

### **The value network**

Turning research results into jobs is a value chain. Contributors to the value chain only continue to contribute as long as they derive a personal benefit from it.

As Figure 1 shows, contributors to the chain must have different, but complimentary skills. The first person has the skill to understand research results and see their potential in applications the researcher might not even have considered.

This expertise is then shared with a person who has the capability to turn this potential into a business concept. A further person then identifies a product or service. And yet another person will be able to assess the market potential. The next links in the chain are the company owner who can make and distribute it and the financier who provides the necessary funds.

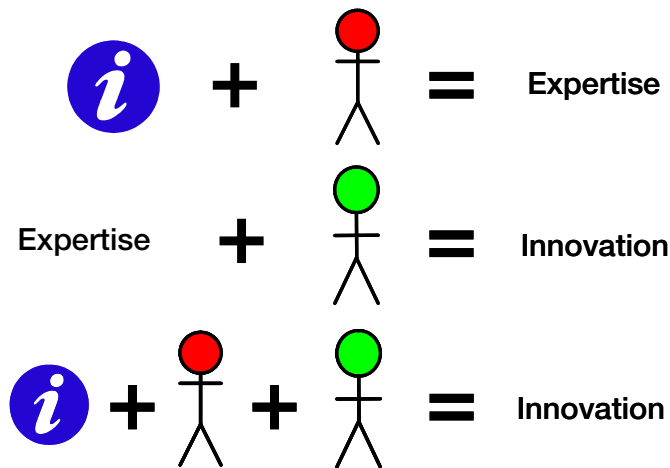


Figure 1: Value chain

The value chain can only form if there is a large network of people who have a great variety of skills. This so called “Value Network” provides the pool out of which value chains are formed. The value network provides the referral system that makes sure, that the right person is at the right place at the right time.

### **The meeting place creates the market place**

Members of the value network are most likely dispersed all over the world. In order for the market to solve the issue of new jobs, these experts have to meet, have to be able to share their ideas, ask their questions and challenge the answers.

Various organizations, both for-profit and non-profit, have been successful in providing such forums.

Holding such forums is expensive. The success depends on bringing together the right experts who also match in their communication skills and are willing to step out of their box.

One way to reduce the likelihood of failure of such events is to have a virtual forum first. A “Portal” is such a virtual meeting place where people with the right expertise can connect and share information.

### **The Portal as the first step**

As opposed to an outlet for scientific information, a portal is a place where people meet and share information and ideas.

The portal has to offer the following:

- A stakeholder directory with
  - Those offering research
  - Those able to translate it into products and services
  - Those seeking to innovate their products and services
  - Those seeking to finance new ventures

- Information and decision support by
  - Gathering information
  - Standardizing information so that it can be compared and easily screened
  - Quality control to make sure that the information complies to the highest standards
  - Need-based distributing information
- It enables collaboration
  - Networking
  - Creating value chains through “Social Networking”
  - Providing workspaces
  - Creating work flows

### Forming value chains through „Social Networking“

Participants in the value chain are matched through a concept that is called “Social Networking”. It is based on the assumption that even though I might not be able to help, I might know somebody who can. If you know me and trust me, you are more likely to trust somebody I trust.

Portals based on social networking have proven powerful and commercially successful in the field of personal matchmaking and sales leads referrals.

We are convinced that it has an even bigger potential in the market of turning research results into jobs.

### Stakeholder profile

In order for social networking to become operational, each stakeholder of the value network has his or her own profile. The profile defines the affiliations, interests and expertise of the stakeholder as well as the roles they have (Figure 2).

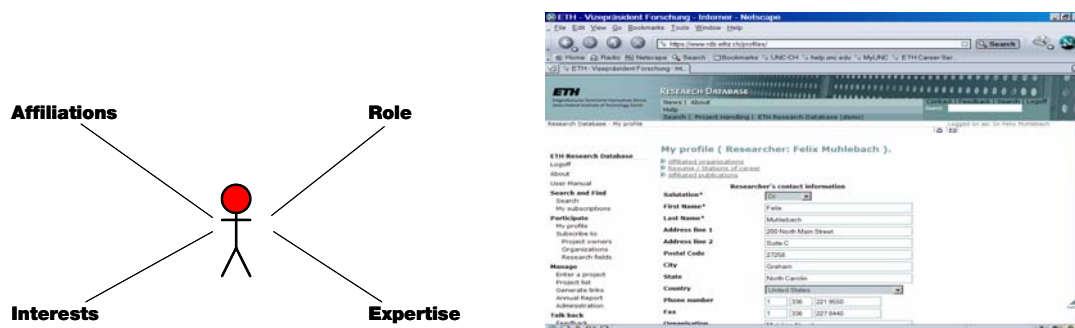


Figure 2: Concept of the stakeholder profile

### Role based access control

Stakeholders meeting on the portal can have different roles in different value chains. In one chain I might be the researcher who provides the research results. In another chain I might be the translator who turns the scientific language into business language.

The portal has to be able to assign roles to stakeholders. A stakeholder can have one role in one value chain and another role in the other value chain. What I can do in a value chain depends on my role. The role defines access rights, user privileges and permissions.

### The Business Object Profile

The “innovation” that the stakeholders of the value chain move forward along the chain is called a “business object”. Business object stands for the “research result to be turned into an innovation to be turned into a product or service to be turned into a market success”.

Figure 3 shows how business objects are also described through a profile.

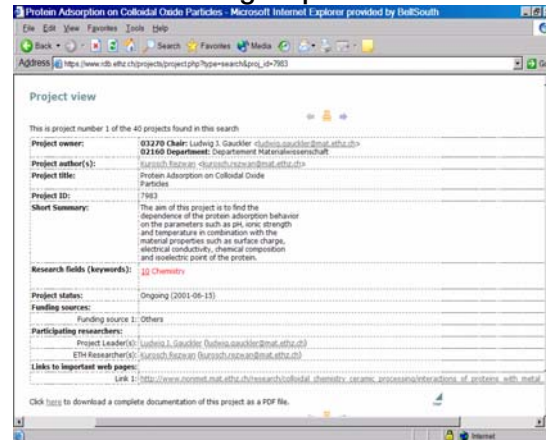
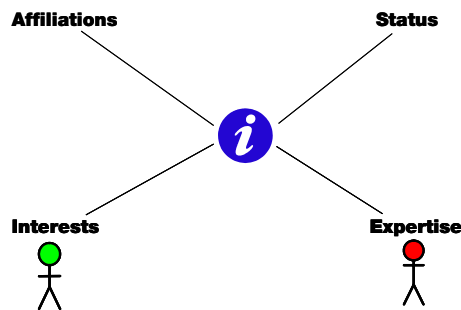


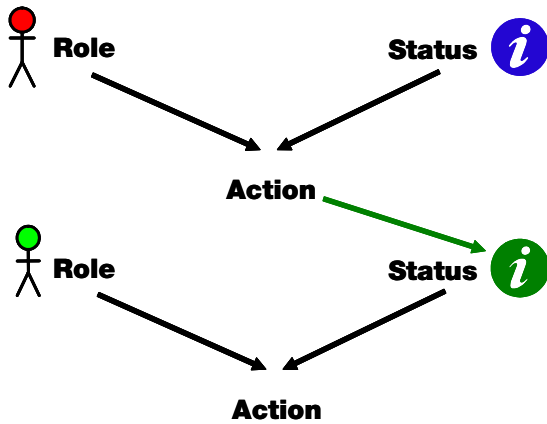
Figure 3: Concept of a business object profile

### Status based work-flows

Moving a business object along the value chain is not a process that follows any strict rules. In the value chain where the researcher founds her/his own company the chain has only stakeholders but still follows all the steps along the chain. At the same time, there might be other business objects with dozens of stakeholders.

In order to handle a process with only exceptions and barely any rules, a work-flow process based on the Turing engine is used.

In order to work the business object can have various statuses. Depending on the status of the object, a stakeholder with the appropriate role can perform certain actions on the object. One action, for instance is to move the object to the next status (see Figure 4 and Figure 5)



**Figure 4:** Concept of status and role based work-flows

Possible project statuses:		No project	INC	PEN	PBL	SPD	DEL
15	Create project	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	View project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Update project information (+ View)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	View project's internal information	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	View subscribers list	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Accept participation in a project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Decline participation in a project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Can delegate rights	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Add / delete authors for project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Subscribe to project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Unsubscribe from project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Submit project for approval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Publish project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Reject project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Suspend project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Resume suspended project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Possible project statuses:		No project	INC	PEN	PBL	SPD	DEL
15	Create project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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	Unsubscribe from project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Submit project for approval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Publish project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Reject project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Suspend project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Resume suspended	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Figure 5:** Role and status based access to actions

### Collaboration

The portal provides the stakeholders of the value chain a place to meet and collaborate. They can share information and create new versions of the business object. They also have the possibility to contact other value chains – and even merge the chains if appropriate.

### Search and filters

Search feature enable the stakeholders to find and retrieve information.

The stakeholder can also use the search tool to create sophisticated filters. In combination with a push service, these filters make sure that the stakeholders only receive the information they are interested in.

### **Aggregation and categorization**

In order for the portal to become a preferred destination, it must also be capable to aggregate information from a variety of sources.

This is achieved by having interfaces to CERIF based research databases. These interfaces allow preserving the structure of the research information and merging it into one information pool.

The search engine provides access to unstructured, non-CERIF based data sources and maps their information to the structure of CERIF. For each such information, the relevancy for the specific CERIF structure is given.

### **Such portals are no longer concepts, they exist**

Our company, MatchingNeeds, has built several of such portals. Our customers include among others ETH, the Swiss Federal Institute of technology in Zuerich and the Swiss BioteCHnet, the biotechnology network of the Swiss universities.

MatchingNeeds offers a modular, fully CERIF compatible software framework

- Web based
- Multi-lingual
- Easily integrated in all existing IT infrastructure

The solution easily integrates existing data sources and connects with other systems

- Interfaces to all database types
- Data import and export
- OAI data provider

It satisfies all needs for collaboration in the Value Network and along the Value Chain

- Collaborative
- Communication engine for push, pull and stakeholder communication
- Role based data and functionality access
- Work-flow
- Collaboration

It includes the Eurospider Relevancy Retrieval system for

- Search
- Search filter definition
- Data gathering and automatic categorization

### **The portal is only the first step**

The objective of turning research results into new jobs can only be achieved if the portal is supported by

- A comprehensive marketing to all stakeholders
- Strict quality control
- Real life events supporting the virtual efforts
- Incentives for stakeholders to participate such as the opportunity to benefit and maybe even make money



- Success stories that are then widely publicized

### **Common pitfalls: too much technology, not enough market(ing)**

There are several examples of so called „technology transfer platforms“ that have never really taken off.

We analyzed some of these cases. In all cases substantial budgets were spent on developing the technology for the platform itself rather than on the marketing of the service and its benefits.

None of the initiatives implemented a process where all stakeholders have a direct benefit and therefore an incentive to participate.

We suggest that in any initiative, only 10 to 20% of the budget is spent on the portal – the rest has to go in providing incentives in the business process and into marketing.

## **Conclusion**

- There is a demand for research results outside of the science community
- The business model of turning research results into innovation and innovation into jobs works
- A portal is one important prerequisite to kick-start the business model
- Innovation portals are readily and cost-effectively available from MatchingNeeds
- Don't waste your time and money developing a portal – spend it wisely to market and promote the service of turning research into jobs to all interested stakeholders

## **About MatchingNeeds**

MatchingNeeds is a software and consulting company and was established in 1999 by Dr. Felix Mühlebach. MatchingNeeds has customers all over Europe.

The mission of MatchingNeeds is to use our expertise and the power of social networking software to enable our customers to not only master complexity but to turn it into their competitive advantage.

MatchingNeeds provides cost-effective solutions for

- Stakeholder communication that is not a cost factor but a corporate asset
- Turning information into intelligence, and intelligence into the right decision
  - Research and Innovation management
  - Corporate intelligence that detects developments early so that they can be used to the company's advantage
  - Competitive intelligence that keeps you synchronized with market developments

- Skill management that puts the right person at the right place at the right time
- Accreditation and quality assessment
- Profitable mass customization
  - One-to-one marketing
  - Need-based communication
- Exception handling

### **Contact information**

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