
Food for Innovation: The Food Valley Experience

WIM M.F. JONGEN

Wageningen Business Generator

Wageningen, the Netherlands

For hundreds of years, universities in the various European countries have been *the* place to be for scientific developments. Science developed in an independent manner and research was financed by the respective governments supplemented with money from special funding bodies. The primary aim was to further the various scientific disciplines, to ensure that scientific knowledge was made available for colleagues and the public at large, and to educate and train students in thorough scientific methodology. All of this was almost totally separated from general economic development.

Development of the sciences has been extremely successful and scientific discoveries now form the foundation of economical development such as in the fields of chemistry, pharmaceuticals and biotechnology, and, more recently, in the food area. The latter has presented universities with a new challenge, which in the European context has been termed the “knowledge paradox”: developed knowledge cannot necessarily be put to work.

The question is how to combine the general task of informing society of relevant scientific developments with applications for specific economic benefit. This has resulted in debate of whether universities should “go commercial” and, if they do, whether they still can fulfill their societal role adequately. In my view, these elements should not be considered contradictory but complementary. In many areas in which science plays a crucial role in economic development, the only way to create value from research findings is to bring them into an economic context by protecting them as intellectual property (IP). To develop an idea into a commercial product usually requires significant investment, which will be made by a company only if it creates specific commercial advantage such as a monopoly. Consequently, IP formulation and technology transfer are crucial to the achievement of societal benefits, through licensing patents. Additionally, there are findings that will not be picked up by existing companies because the economical risk profile is too high or the business fit is insufficient. These findings can result in the establishment of spin-out companies that create the desired value. Universities can and should be actively engaged in such developments as part of their societal role.

Food Valley is an example of regional-cluster development. Originating from an initiative on the part of three local city councils, it has developed into a leading regional economic force as a result of collaborations with a clear thematic focus.

FOOD VALLEY AS A CONCEPT OF THEMATIC REGIONAL NETWORKING

If we accept that science-based economic development is crucial for general economic development and competitiveness, then the question arises as to how to organize these processes. Food Valley, developed in the Netherlands, is an example of regional-cluster development. Originating from an initiative on the part of three local city councils, it has developed into a leading regional economic force as a result of collaborations with a clear thematic focus.

Food Valley is needed for a number of reasons:

- To create a network for innovation and business
- To provide solutions for the knowledge paradox
- To create flexible responses to changing market dynamics
- To develop new markets for knowledge application
- To create new jobs

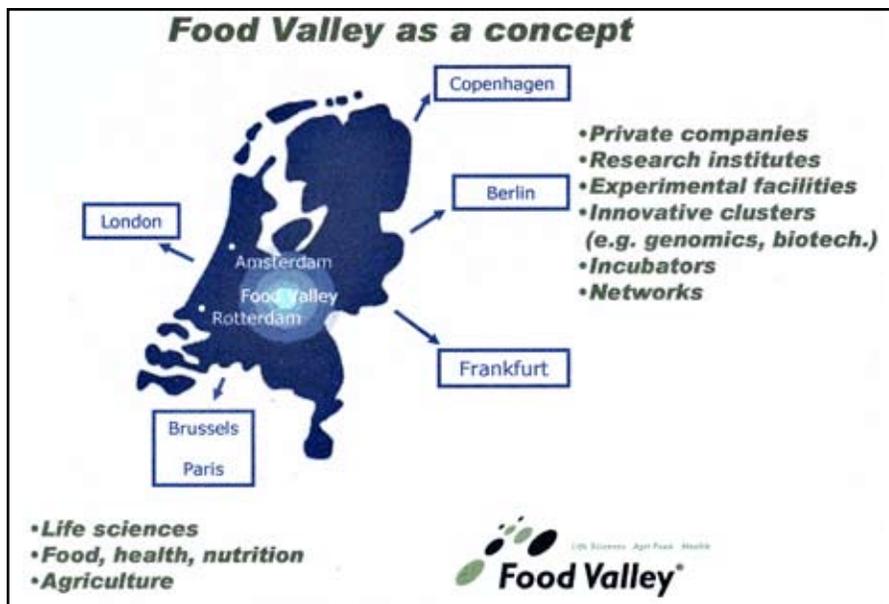


Figure 1. Food Valley as a regional concept.

The agri-food complex is an important economic pillar of the Dutch economy and the aim of Food Valley is the creation of a network for innovation and business involving companies, research institutes, experimental facilities, incubators and public-private-partnership based R&D programs. The focus is on food, health and nutrition.

The Food Valley organization consists of a small office and a consortium of more than sixty companies that participate in collective activities. The organization set itself the following targets for the first 4 years:

- To attract three major R&D centers to the area
- To establish twenty-five R&D-based companies
- To create twenty-five new innovative R&D projects
- To create 500–800 new jobs

WAGENINGEN UR AS A LEADING CARRIER FOR DEVELOPMENT

Food Valley is in Wageningen at the same location as the offices and laboratories of Wageningen University and Research Center (Wageningen UR). Wageningen UR, which provides education and generates knowledge in the fields of life sciences and natural resources, is a collaborative entity involving Wageningen University, the Van Hall-Larenstein Polytechnic and specialized research institutes belonging to the DLO foundation, formerly under the Ministry of Agriculture. This combination of knowledge and experience has a staff of 6,500, a student body of 9,000 students and 86, 500 alumni.

Wageningen UR is a leading European academic and contract research organization. Among the top three in the worldwide publication index in the field of agriculture, it comprises:

- Research
 - Agriculture/food-wide portfolio of expertise
 - The continuum from academic to applied research
- Education
 - University (BSc, MSc)
 - Graduate schools (PhD)
 - Polytechnic institute
 - Business School for Life Long Learning
 - Wageningen International, for international products and services
- Commercialization
 - Research Institutes for Industrial Contract Research
 - Wageningen International for institutional collaboration and capacity building
 - Wageningen Business Generator for IP and spin-out companies

Its central mission is *To explore the potential of nature, to improve the quality of life.*

In general, the ways in which scientific developments are commercialized can be characterized by a number of features that add up to the so-called “Wageningen approach.” A basic element is that complex problems are addressed using a systems approach. Wageningen UR’s objective is to impact economic development via research and education in the life sciences. Innovation is key. A basic feature of many R&D programs is that technological aspects are studied in their societal context to provide not only solutions that work but also insight into the possibilities and/or limitations for implementation of new findings.

Wageningen UR policy includes being open to strategic alliances within Europe and globally.

NEW INITIATIVES IN FOOD VALLEY: THE FRAMEWORK OF PPPs

The networks of dedicated players within Food Valley and Wageningen UR recently have resulted in a number of new activities, such as the Wageningen Center of Food Sciences (WCFS), a virtual research institute. The WCFS has been selected as a focal area for increasing the competitiveness of the Dutch economy. Financed by a conglomerate of industries, the government and research institutes, with an annual budget of €25 million, it carries out a selective number of so-called “pre-competitive” research programs.

Comparable initiatives are underway in the areas of biobased technology, bio-nano technology and green genetics. In addition, the government has established a total of five genomics-based research programs, two of which are under the auspices of Food Valley, namely Nutrition Biology and Systems Biology. A characteristic of all of these activities is that industrial participation is a prerequisite, not only intellectually but also financially: public-private partnerships (PPPs). Thus, strong foundations are laid for future innovations.

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PRE-SEED ACTIVITIES: MAKING SCIENCE WORK

One vital element in connecting science and the economy is the question, “How can we make science work?” Of course, an important element is that through intensive collaboration between existing industries and research institutes, the chances for innovation are increased and that the translation of science into products that can serve the market is taken up by companies. However, they will do so only if the product matches with their business plans and if the financial risk profile of the product is acceptable. In practice, a large number of potential opportunities are not explored and additional activities would be required to justify their exploitation. In addition, within the research environment in general, ideas are developed on the basis of individual activities that merit further exploration.

In general, academic researchers lack experience in translating ideas into products. This type of R&D requires a specialized environment. One advantage of Wageningen UR is extensive experience in industrial R&D within its research institutes.

The development of new spin-out activities from academic research within Europe has stagnated in recent years. One important reason is unfavorable risk profiles for investors who consider these early-stage developments. For example, the promises of early biotech developments have simply not been fulfilled; appropriate analyses of the chances of successful product development were lacking. Specific technologies were too immature to predict successful product development. Early-stage investors had no way of judging the state of affairs appropriately. On the other hand, the current situation provides opportunities for universities and research institutes. In principle, they can develop—or sometimes already have in place—the skills to become technological partners for investors. In future, partnerships between academia and early-stage investors may result in spin-out companies with greater potential for success.

FOOD VALLEY CONSORTIUM FOR PRE-SEED ACTIVITIES

Within the Food Valley community, a consortium of partners for pre-seed loans has been set up to address these questions and to provide an environment that stimulates and facilitates commercialization. The consortium has selected a number of starting points for its work:

- Bring initiatives together to create synergy
- Unify patent policy and spin-out policy
- Provide a professional business environment with IP and legal expertise
- Operate independently and be able to say no
- Have adequate risk management
- Provide good funding capacity for pre-seed activities
- Be a professional technology partner for investors

Wageningen Business Generator has taken the initiative in setting up a consortium together with Oost NV, our regional development agency, the Food Valley Foundation and the Biopartner Center, our incubator. The aim is to build a sustainable structure that offers potential start-ups the means of developing ideas into commercial products.

The Wageningen Business Generator was set up by the board of Wageningen UR to create an environment for conversion of knowledge into commercially viable products.

WAGENINGEN BUSINESS GENERATOR FOR PRE-SEED DEVELOPMENTS

The Wageningen Business Generator (WBG) was set up by the board of Wageningen UR to create an environment for conversion of knowledge into commercially viable prod-

ucts. It operates independently and creates economic value from science in the agri-food domain by identifying and selecting ideas with business potential, guiding them to the market place. In other words: making science work.

The WBG consists of a small team of domain-specific investment managers responsible for scouting and screening ideas and inventions that have business potential. At the same time, the investors are responsible for IP development at two levels. Operationally they assist in IP formulation based on ongoing research, the regular technology-transfer work. Strategically they work on IP development in a selected domain to build technology platforms. Also, WBG can provide expertise in legal and financial matters.

Annually, WBG aims to set up three to six new companies based on discoveries and findings from research within Wageningen UR.

TARGET GROUPS OF THE CONSORTIUM

The activities of the Food Valley Consortium have a regional focus, targeting two groups

- Inside Out—Spin-out activities from academic research, contract-research organizations and companies
- Outside In—Individual techno-starters within the agri-food domain unconnected to a Food-Valley organization

And services include:

- Coaching—To create successful spin-out companies neophytes are connected with experienced business coaches for advice and support
- Finance—Pre-seed loans are available to entrepreneurs who have the ambition to translate a business opportunity into a business plan, up to €300,000
- Facilities—Wageningen UR provides access to almost every kind of equipment, with housing infrastructure made available at reduced fees
- Patenting—Professional assistance is available for development of adequate IP positions in the agri-food domain.

FROM SCIENCE VIA SKILL TO PROFIT: THE PROCESS

Figure 2 provides a schematic of the process. It is important to note that, at various stages, independent expert judgment is brought to bear, to determine whether the situation is “go” or “no go”: at the level of the business challenge, at the start of the business case and at the start of the company.

When a business opportunity is screened, the project team makes an intake analysis. Following a positive decision, a “business challenge” is made. The initiator has to organize a team to prepare and participate in the business challenge and to prepare the plan, taking into account the technology, market, business model, benchmark, *etc.*

For the business challenge, which is a 1-day session, each team is assigned an expert to help explore their idea or invention; other experts are available for consultation in specific areas such as IP, financial aspects, *etc.* Each part of the session closes with presentation of

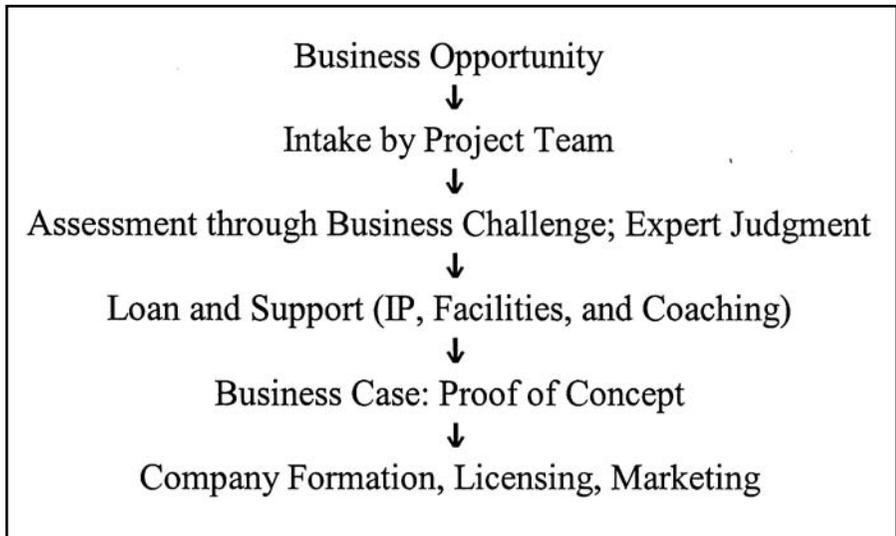


Figure 2. A schematic of the commercialization process.

the result. At the end of the entire session, the experts evaluate their findings and observations. Their opinion forms the basis for the selection process.

The business case is that part of the process in which the initiators have to achieve “proof of concept” (business development) for the product they want to put on the market. That can be an R&D period—maximum of 18 months—the establishment of an appropriate IP position, in general whatever is needed to reach the stage of proof of concept. At the same time they have to write a business plan that can be presented to investors. This approach increases the chances for successful spin-out companies: *Quality above Quantity*.

THE PIPELINE AND SOME EXPERIENCES

The Food Valley Consortium initiated activities early in 2006; so far, fourteen business proposals have been received, ranging from production of industrial oils from plants through molecular diagnostics for fresh produce to mucosal application of multivalent vaccines. This confirms that the agri-food pipeline is very good source of spin-out companies.

The “proof of concept” approach works well, and it has become clear that it is attractive to investors. Many informal investors and regional development agencies value the concept of a technology partner willing to invest. Generally, with better economic prospects, it seems that the investment climate is improving.

The Food Valley concept stimulates the development of an entrepreneurial climate and regional developments in general, primarily because it is organized around a theme and its activities are recognizable and transparent for possible business partners. It certainly helps that Food Valley wants to be a leader for Europe as a whole, within the agri-food domain.

Several lessons have already been learned:

- **Be patient: it takes 5–7 years to build a company**
 - Managers have to realize that success from these activities takes time. Return On Investment (ROI) is, of course, a prerequisite, but it can take longer than the longevity of the average manager.
- **To make money you have to invest money**
 - Tech-transfer offices are in operation in many European universities; their success is often hampered by lack of investment funds.
- **Build trust among scientists**
 - In academia, success is often defined by the quality of research dictated by a group leader. In the process of commercialization release of control is often necessary; it is of vital importance that the scientist(s) responsible for the original discovery or invention trust(s) the organization.
- **Create a professional environment for business development (proof of concept)**
 - Further to the previous lesson, trust is built by creating a professional environment in which targets are met, with good communication between scientists and administration.

For business creation, market potential is the deciding factor, not problem solving.

- **Be rigorous in decision-making**
 - Communicating a “no go” is always difficult; it causes disappointment and frustration, not least because scientists are trained to be creative in finding solutions for problems as they arise. However, for business creation, market potential is the deciding factor, not problem solving.
- **Partnering helps**
 - Input from external industrial experts for coaching and evaluating the business-creation processes and results is crucial. They introduce relevant experience and alternative perspectives into the process.
- **Regional support is most helpful**
 - The networking approach, part of the regional concept, is very useful. Innovations are rarely created in someone’s attic; they result usually from multi-disciplinary interactions.

FURTHER READING

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WIM JONGEN began his career as a technician at the former Institute for Insecticide Research in Wageningen, Holland, in 1972. In January 1975, he moved to the Toxicology Department of Wageningen University where he became an assistant professor in 1985. He obtained his PhD in 1988 and took a postdoctoral position at the International Agency for Research on Cancer in Lyon, France.

At the 1990 founding of the Agrotechnological Research Institute (ATO-DLO) in Wageningen, Dr. Jongen became head of the Post Harvest and Product Quality division and in 1994 was appointed professor of Integrated Food Technology. In 1999 he became professor of Product Design and Quality Management while serving as research director of ATO-DLO.

In 2001 he was appointed director of Business Development in the Animal Science Group, responsible for contract research, the IP portfolio and spin-off companies. Since January 2005 he has served as director of the Wageningen Business Generator, an affiliate of Wageningen University, responsible for development of the corporate IP portfolio and maximizing the impact of research through building business ventures. He also acts as chairman of the board of the Food Valley Group for pre-seed activities in building business ventures.