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## Ten Years of TECHNOPARK® Zurich: An Enjoyable Milestone!

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**Abstract:** The TECHNOPARK® Zurich was created ten years ago from the desire to facilitate technology transfer from science (ETH Zürich) to the market thus enabling the ETH to concentrate on its core competence of basic research. Careful selection of innovative startups and spinoffs followed by support in networking and coaching have led to a much lower failure rate than average for such companies and the creation of more than 1000 jobs with the associated generation of tax revenue. Comparisons with similar projects in other countries such as the US have yielded concrete points for improvement in Switzerland but also the recognition that the TECHNOPARK® concept works for Switzerland and will continue to grow and thrive in the future.

**Keywords:** Spinoff · Startup · Technology transfer · TECHNOPARK® Zurich



Compared to the 150 years of ETH Zürich, which will be celebrated in two years' time, ten years is a mere song and does not really justify a mention. Nevertheless the 'junior' jubilee found an enjoyably great interest with its 600 guests. For what reason?

### The Idea TECHNOPARK®

The readers of CHIMIA have already had the opportunity to look into the TECHNOPARK® Zurich (CHIMIA 4/2000) – hence today I would just like to recall the major points behind its concept. TECHNOPARK® Zurich is – in short – a visible and operative centre of technology transfer from science to market, *i.e.* in its vertical sense. New scientific results are transformed into successful innovations on the market along the following axes:

- i) co-operative projects between ETH Zurich or the University of Applied

- Sciences Zurich and private industry,
- ii) foundation and development of new technology ventures, and
- iii) continuing education.

The first axis is exemplified by the successful CCS (Centre for Chemical Sensors and Chemical Information Technology) of Prof. Dr. Ursula E. Spichiger-Keller, which is portrayed in more detail in this issue of CHIMIA. This Centre has already produced two spinoffs, namely SENSORIX AG and C-CIT AG. Both are examples for the second axis and are also described in this issue. The third axis is formed by some 600 events per year in the Technopark, organised by a large number of active individuals. One of the most recent examples again stems from Prof. Spichiger: 'The Economic Forum on Sensors' (Chemical Sensors, Biosensors, and Novel Physical Platforms), held in Technopark with 53 participants on March 28, 2003. Our house is characterised by a large multiplicity of actions and networking.

### Why a TECHNOPARK®?

My motivation to create a TECHNOPARK® Zurich originated from my wish to contribute to the ETH's ability to continue to obtain the necessary state support for its high level basic research in the future – today once again a very actual topic. Nowadays basic research is increasingly concentrated in state-supported institutions (IBM and the chemical industry being rare

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commendable exceptions). Free basic research is a particularly important topic for Switzerland: it allows the active presence of the ETH Zürich in the global context to participate in the give and take of scientific conferences. By this the ETH is able to attract the best candidates worldwide for its professorial chairs. This again is the prerequisite that Switzerland can remain at the forefront of technological development in industry – both in the sense of time and content. To be the first with leading innovations means that high margins can be requested – the basis again for high salaries and wealth in the future.

In the meantime we have created in the TECHNOPARK® Zurich more than 1000 sustainable new jobs. This means some 20 Mio CHF of taxes each year which – so I hope – will be transferred back in full to the university sector. Since the Technopark has received no state subsidies at all since its creation any deduction from this sum would be unjustified.

### What Is Essential?

In my eyes the following elements are essential to make a technology park useful and successful:

- **Quality address:** innovations are new by definition, and small and new companies, unknown on the market, often create them. These companies are exposed to much scepticism, since they will ‘die anyway’ three years later (new statistics of Creditreform show that 50% of start-ups do not survive their 5th birthday: *Cash ENTERPRISE 2003*, April 11, p. 9). With a consistent selection according to quality of the entrepreneurial strategy, with a widespread network to potential customers and financiers and with coaching adapted to the needs, the success rate of startups can be raised strongly. In the TECHNOPARK® Zurich we have proven this thesis: all innovation-oriented startup-candidates, *i.e.* those with the greatest challenge due to new products and new markets, are selected by our special Advisory Board consisting of experts of all entrepreneurial aspects (sponsored by UBS AG). Their rate of bankruptcy is below 10% (total over eleven years with mean time of observation of about five years, but in several cases going up to ten years). At the jubilee event Thomas Wagner, president of the Technopark® Foundation, put it like this: “in earlier times people called the quality seal ‘Made in Switzerland’, today it is “Made in TECHNO-PARK®”.

- **An excellent personal network** to decision-makers in large enterprises as poten-

tial customers for innovative small companies of proven quality. Our goal in the TECHNOPARK® Zurich is the creation of sustainably successful new employment, not a number of IPOs (Initial Public Offerings) set as high as possible. Customers are the most important ingredients for new enterprises. Venture Capital is often absolutely necessary too, but it can be compared to the petrol in transportation: you can move forward on a bicycle without petrol, and to move fast, it needs petrol. But petrol without a motor is useless. Hence the shareholder’s success depends on the presence of a motor (customers) and a good driver (company with motivated employees).

- **A stimulating environment** with very many competences of complementary character and of different experiences within the same general area, namely innovation and entrepreneurship. This environment has the effect of being attractive to large parts of the population – as many visits, the great success of Open Doors and recently the jubilee event have shown – and can hence improve an important point, namely the entrepreneurial culture in society. In the TECHNOPARK® we network the competences of innovators (the segment called INNOVATION), of applicators of existing technology (PRODUCTION) and of service suppliers for the transfer to the market (TRANSFER).

### Today’s Importance of the Idea TECHNOPARK®

After the overheated, booming phase at the end of the millennium, characterised by keywords like New Economy and by blind belief in fast money multiplication by IPOs, reality has returned. This is a healthy recovery effect. And I do hope a similar recovery process will take part soon in the fields of excess salaries and bonuses seen in many large companies recently. Nothing can be created out of nothing, and empty structures will collapse sooner or later – the feudal system did, too.

The flop of the highly celebrated New Economy is, however, not a sign that new technologies or innovation have become less useful or less important. On the contrary. The Internet, for instance, usually taken for the trigger of the bubble inflation, is undoubtedly an instrument that not only has changed the world but will continue to change it enormously in the future. It has the power for a Kondratieff-cycle. These cycles of some 50 years cycle-time are induced by basic inventions. Therefore, in this case we are still by far too close to the point of invention and cannot yet perceive

the entire potential of this basic new technology in future. Therefore for me it is the wrong reaction to reject everything beginning with ‘e-....’ *a priori* as is often done today. This is a consequence of the dangerous short-term thinking and short-term actions fostered mainly by the financial institutes – a result of the quarterly accounting periods in order to optimise the short-term profits. The shareholder value in fact is not a short-term concept but unfortunately is often implemented in this way.

Today we observe difficult situations of many large and well-established Swiss companies, their ongoing strategy to concentrate on a few core competences, and an increasing unemployment rate – similar to 1993 when the TECHNOPARK® Zurich was opened. Together with the growing complexity of the global economy as well as of key technologies and the ever-decreasing life-times of technology the idea and the goal of a TECHNOPARK® have an ever increasing importance. Ten years is the starting period, not its life cycle.

### How Do We Compare with Foreign Developments?

Worldwide there are a number of centres and clusters which can be taken as benchmarks for TECHNOPARK® Zurich. In particular I would like to pick out Cambridge UK, the Research Triangle Park in North Carolina, and the Silicon Valley. Let’s shortly characterise them.

Cambridge used to be a purely academic city until the 1970s. In a national initiative for the promotion of technology transfer and the creation of Science Parks Cambridge University started its well-known Science Park on a piece of land owned by Trinity College in 1973. Its goal was to foster the science-based industry around Cambridge, to maximise the concentration of scientific expertise, instrumentation and libraries and the feedback from industry to the scientific community. It was the beginning of what became known as ‘The Cambridge Phenomenon’ – a real firework of spinoffs and it attracted high-tech industry. But this took its time: at the end of the seventies – after seven years of operation – the Cambridge Science Park counted 25 tenant companies. When we started TECHNOPARK® Zurich in 1993 the investors had expected the large property with its 44,300 m<sup>2</sup> of rental space to be filled within one or two years. After five years we had achieved this goal: with no less than 185 companies – over seven times more than Cambridge in seven years.

North Carolina had to compensate for the simultaneous decrease of its three main industries in the fifties, namely tobacco, textiles, and furniture. At the geographic centre of its three universities in Raleigh, Chapel Hill, and Durham the Research Triangle Park was created with the goal to attract high-tech industry to the vicinity of the three universities. At the beginning, this was a pure flop. After a few years the Governor asked IBM to install a Research Lab in the Park, in the sense of a seed. But IBM agreed to an assembly line only, since enough research labs already existed, namely in Yorktown Heights (NY), San Jose (CA), and Zürich. But the presence of IBM was decisive: it ignited a phenomenal development. Today – after more personal intervention of the Governor himself – the Research Triangle Park is one of the most impressive concentrations of high-tech industry of all types. Some 14,000 employees today represent IBM, belonging to the following business units: the Personal Computing Division, IBM Credit Corporation, IBM Global Services, Microelectronics Division, University Recruiting and Relations, and Marketing and Services. Taken the fact that North Carolina in size does not compare to a Swiss Canton, but to the entire Confederation, the strong personal influence of the Governor is extraordinary.

If we have a look at the development of Silicon Valley we notice that its admired success in the second half of the 20th century was largely induced by the National Administration – but not in the sense of subsidies. The Department of Defence with its immense demand for military developments particularly in IT and telecommunications was the ‘power-supply’ for research and development at Stanford University in California, for the foundation of spinoffs and also for the necessary large manufacturing mandates to them (e.g. Intel) inducing their fast growth. We do not have these ingredients in Switzerland and cannot create them. One point, however, has been disadvantageous in Silicon Valley: after the semiconductor boom they concentrated – again triggered by a large national initiative, namely the Moon Landing Program – very much on software. This pronounced focus on one technology – the usual idea of clusters – has had the disadvantage of a particularly heavy depression after the explosion of the Internet- and IT/ICT bubble in 2000.

The decisive support of the National Ministries in Washington for the fast growth in Silicon Valley (today a similar effect can be seen again, see the article ‘Kriegsstimmung im Silicon Valley’ in the *Neue Zürcher Zeitung* 2003, April 3rd,

p. 27) makes comparison with Silicon Valley difficult.

### **A Comparative Study of the Start-up Cultures and Startup Support Cultures between the US and Switzerland**

In order to gain a more comprehensive basis for comparison to the success in the US and to learn about measures to be taken in Switzerland, we organised an on-site visit to the US in May 2001. The report with the title ‘Enable Our Future’ is available as a PDF-file on our homepage [www.technopark.ch](http://www.technopark.ch) (in German). The expert group consisted of representatives of practically all relevant participants in the field, namely startup entrepreneurs, existing companies, universities, state support organisations (CTI), technology parks and incubators, venture capitalists, and banks. Unfortunately no representative of the media joined us. Hans J. Bär with his personal Bär-Kaelin Foundation made the study possible by generous support.

We visited four places: the Boston area (Massachusetts), Fairfax County (Virginia), North Carolina, and Silicon Valley (California), collected qualitative and quantitative information from interviews, compared them to similar information collected from Swiss entrepreneurs and drew concrete conclusions.

We could state that Switzerland differed far less from the situation in the US than we had expected. In general, the Swiss system is not much inferior to the US system with respect to environment and success of startups. Nevertheless we defined eight concrete points that we should improve in our country. These are the following:

1. We have to increase the esteem of the risk-taking entrepreneur in society.
2. In the US decisive services to startups are often compensated in part (typically one third) by equity and not in cash. This reduces the liquidity problem and distributes the risk-taking. This attitude should be fostered in Switzerland.
3. The Swiss universities have not yet – with the exception of the two ETHs – taken an active leadership role in creating incentives for generation and support of spinoffs compared to their US equivalents. There are a number of concrete actions to be taken.
4. To compensate for the competitive disadvantage of the lack of influential ministries in Switzerland we have to be particularly supportive to technology transfer in our country by other means, including coherent state actions.

5. The culture of business angels and of coaching has to be strengthened in Switzerland.
6. The culture of ‘serial entrepreneurship’ has to be developed in Switzerland.
7. Swiss startups are by no means weaker in terms of technology but rather in market orientation and market aggressiveness. This should be improved.
8. Switzerland has too few statistics available in the field to form a sufficient base for benchmarks.

In the same way that research results are no innovation before they have been transformed to successful products and services being bought on the market, it is important not only to publish such results from a benchmark study but also to take the necessary actions to implement them. This, on the other hand, needs ‘locomotives’ and also some ‘coal’. We have discussed the results at a national event organised by Swiss-Parks.ch, the Swiss Club of Technology Parks and Incubators, in fall 2001. In order to be able to implement at least a part of these findings, the workshops have given first priority to the topics 1, 3, 5, and 7.

Concerning the actual state of implementation we can state the following:

1. The fading glamour of large consulting companies and of financial institutions with respect to fast financial careers will have a positive effect in this context. And two new actors have started in the meantime: The first is ‘Cash ENTERPRISE’, created by Claus Niedermann, a very informative monthly newspaper portraying people and their performances taking high risks and carrying on to the end. The second is the creation of the new ‘ENTERPRISE Foundation for the spirit of entrepreneurship in economy and society’ by Gustav E. Seewer, which held its first event on this topic in May this year.
2. Our own contribution to this goal is the creation of TECHNOPARK® Winterthur (opened in May 2002) and TECHNOPARK® Lucerne (to be opened in June 2003). Both directly involve the local Universities of Applied Sciences.
3. In the field of Business Angels we have recently founded the Swiss Association of Business Angels Networks (ASBAN). Its main goals are to lobby for a substantial improvement of the political conditions for private investors in startups and to attract more potential Business Angels to active participation in start-ups by promotion of Business Angels’ activities. Eight networks from both the German and the French speak-

ing parts of Switzerland have already become members.

4. In the field of coaching the federal organisation 'CTI Start-up' has created and implemented an effective national coaching program.
5. Already some three years ago we started the project 'StartupPartners' (see [www.startuppartners.ch](http://www.startuppartners.ch)) with the goal to strengthen the management and market power of technology startups by matching people with technology and with management know-how to form the management team. However, this goal has turned out to be more difficult to achieve than expected.
6. The educational program of the Branco Weiss Chair of Entrepreneurship at EPFL, held by Prof. Jane Royston, is being extended to Switzerland as a whole. In our house they have recently started the first courses. Additionally we are about to launch complementary actions to companies after their first years in order to increase their international market presence. Co-operations with OSEC and with Fargate Inc. (a young enterprise in our house, specialised in international market approaches) are in the pipeline. Furthermore, on the university level, developments are under way to improve the high-level management education.

### The Present Situation in Switzerland

Unfortunately recent developments in Switzerland are disappointing. At the beginning of 1997 – already very late in comparison to other countries – a Venture Capital industry was initiated, to create a New Market for the exit, to implement early stage and seed financing programs such as UBS 'Startcapital'. In the following years with the bubble-boom the investments were very easy, and the quality of the business models were not really decisive. As soon as the situation changed and short-term profits were not as expected these offers started to be withdrawn to a large extent. This shows that the fact that building up a real startup culture for a sustainable growth of employment is a long-term strategy and not a short-term fashion has not yet been fully accepted. I am very reluctant to host VC events with the selection criteria of 'world class technology, fast growing markets, ...': startups really fulfilling these criteria will find venture capital anyway. But they are extremely rare. We have to adapt to Switzerland's unchangeable frame of being an extremely small country with a tiny and

fragmented home market, without powerful state ministries and with self-inflicted political barriers to the EU and the European Economic Area. Within this frame the growth of large international companies is unlikely and at least slow. On the other hand we do have excellent academic institutions – e.g. do you know 40 'ETHs' in the US (40 in relation to the respective populations)? – and the highest density of Nobel laureates in natural sciences. Furthermore, in contrast to the seventies and eighties the numbers of spinoffs produced by ETHZ and EPFL today are on the same level as those from MIT and Stanford! The startups from our academic institutions will to a large extent be successful as long as we accept that they will grow steadily and according to the market responses. This is anyway the only growth strategy as the bubble has shown. Therefore we have to create financing and support instruments suitable to this type of startups: companies which will have 10–100 employees at the end of their growth phase, but being leaders worldwide within their niche.

In the TECHNOPARK® Zurich we are happy to have a number of such companies: let us take the four examples which have obtained national prizes in the last 18 months (all spin-offs from ETH Zurich):

1. **Supercomputing Systems AG** by Anton Gunzinger – Entrepreneur of the Year 2001. Specialised in the field of high-performance computing in embedded systems. Over 50 employees.
2. **Levitronix GmbH** by Reto Schöb and others – winner of the ZKB Pionierpreis TECHNOPARK® 2002. Specialised in the field of bearing-less motors for the transportation of blood and of very pure liquids in the semiconductor industry. About 30 employees worldwide plus six PhD-students in co-operative projects with ETHZ (see page 331 of this issue).
3. **IDS AG** by Alexander Stoev, winner of the Swiss Economic Award 2002. Specialised in the field of miniaturised power machines, e.g. for wind energy power stations. About 30 employees.
4. **Autoform Engineering GmbH** by Waldemar Kubli – Entrepreneur of the Year 2002. Specialised in the field of software modules for the design of sheet metal parts and stamping dies. World leader in the market of automotive industry. About 90 employees worldwide.

These companies are examples of sustainable, market-driven growth. With the exception of Levitronix none of them needed Venture Capital!

In this context I am happy that our three shareholders – Swiss Life, Winterthur Insurances, and Zurich Cantonal Bank – have

shown long-term thinking after the opening of TECHNOPARK® Zurich and have kept consistently to the concept in the first years despite the slower growth of rented square-meters than they had expected. Today, this clear concept and its success are an advantage for them – but it takes time!

### Conclusions

The recent investigations of the institution 'Präsenz Schweiz' have shown that Switzerland is well known for its beauty, but is not perceived as an innovative country. This perception is simply wrong, and we have to do more to promote Switzerland internationally. At least we have managed that our country for the first time will not be represented by one single participant at the world conference of IASP (International Association of Science Parks) only, but that we shall be present with a booth and a presentation of SwissParks.ch with its 13 members from all over the country. This is done in co-operation with LocationSwitzerland, a national organisation within the seco. We do hope that this shall contribute to a small extent to attract foreign technology-companies expanding to the Continent to Switzerland – as has been actively achieved by the Governor of North Carolina.

### Switzerland – the Boston Area of Continental Europe!

According to our findings in the US we have come to the conclusion that we do have all the necessary ingredients to position Switzerland as 'The Boston Area of Continental Europe'. This vision – so I do hope – will strengthen the future of our extraordinary country. But we shall achieve this goal by pragmatic national co-operation only – seen from the example of the US our cantonal structure is irrelevant in global competition.

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