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HIGH-LEVEL ADVISORY ASSISTANCE ON BUSINESS INCUBATORS AT TECHNOLOGY INNOVATION CENTRE

SI/CZE/92/803

CZECH REPUBLIC

Technical report: Advisory assistance on the design and start-up of the technology oriented business incubator*

Prepared for the Institute of Chemical Process
Fundamentals of the Czech Academy of Siences
by the United Nations Industrial Development Organization

Based on the work of C. Varotto,
consultant on technology oriented business incubators

Backstopping officer: J. Pavlik
Insitutional Infrastructure Branch

* This report has not been edited

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EXPLANATORY NOTES

Local currency: Czech Crowns: 1 U$S equiv. approximately to 28,5 Czech Crowns.

List of Abbreviations

A.A.	Academy of Sciences of the Czech Republic
ATE	Academy Technology Enterprise
BIC	Business Incubator Centre
ICPF	Institute of Chemical Process Fundamentals
TIC/BI	Technology Oriented Business Incubator/Technology Innovation Centre or Business Incubator at Technology Innovation Centre.
UNIDO	United Nations Industrial Development Organization

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Abstract

This is a progress report. It refers to the activities and proposition suggested after the termination of the first part of a mission at the Institute of Chemical Process Fundamentals of the Academy of Sciences in Prague.

The mission was centered on:

i) The Objective:To advise on the establishment of a technology oriented business incubator at Technology Innovation Centre. The basis or even better, the back up of the said centre (TIC/BI) should be the Institute of Chemical Process Fundamentals, of the Czech Republic.(ICPF)

ii) How to achieve the Objective:It is related to the formal organization and structure of the said TIC/BI as well as its capability to interact with the industry, to auto generate business and to help to the establishment of new high-tech enterprises. It should include some preestablished, reliable and long lasting mechanism to help on the financing of these activities.

iii) As a result of the activities of both the ICPF staff and this mission, it is suggested that in the near future, (6 to 12 months), TIC/BI be transformed into a full integral Technology Company. Such an organization will be able to take advantage of the available facilities and know-how at the Academy of Sciences.

CHAPTER 1: INTRODUCTION

1.1) Terms of Reference.

The Terms of Reference for the consultant's mission are attached as ANNEX I to this report.

The report is intended as a working paper. Fundamental changes may be introduced in the terminal report.

1.2 On the purpose of the mission

There are two aspects of the project that should be considered:

i) The objective.

ii) How to achieve the objective.

i) The Objective.

The objective of the mission is to advise on the establishment of a technology oriented business incubator at technology innovator centre. The basis or even better, the back up of the said centre (TIC/BI) should be the Institute of Chemical Process Fundamentals, Academy of Sciences, of the Czech Federal Republic.(ICPF)

ii) How to achieve the Objective.

It is related to the formal organization and structure of the said TIC/BI as well as its capability to interact with the industry, to self generate business and to help to the establishment of new high-tech enterprises. It should include some preestablished, reliable and long lasting mechanism to help on the financing of this activities.

1.3) Remarks on the March 1993 situation with respect to the April 1992 situation.

Since the project proposal was prepared, mid 1992, and the date of this consultant's mission, some very important developments took place in the former Czech and Slovak Federal Republic as well as at the Academyof Sciences.

i) The country splitted in two independent Czech and Slovak Republics. The mission only will refer to the Czech Republic.

ii) There was a change of authorities at the Czech Academy of Sciences, few weeks before the arrival of the consultant.

iii) The Academy of Science approved as per February 01, 1993, the activities of a "Technology Innovation Centre" Business Incubator,(TIC/BI), as a department of the ICPF.

1.4) Situation at the Academy of Sciences in April 1992 and early elaboration on a proposal for the establishment of a Science-Technology Park at the ICPF.

At the time of the preparationof the project proposal there was a very particular situation at the Academy of Science, which gave origin to an internal paper prepared by some of the ICPF staff members (circa March 1992). It is a very disputable paper but it does seem to express the feelings of some of the senior scientists at the ICPF, and besides it proposed the organization of some sort of technology park.

The paper has certainly had some influence on the outcome of the objectives and services offered by today's approved TIC/BI.

1.5) Main characteristics of the TIC/BI at ICPF, as extracted from the TIC/BI official English pamphlet.

a) Objectives.

"TIC is a business incubator"

TIC improves the start-up and survival chances of small and medium-sized private companies involved in the high-tech development"

"TIC promotes technology transfer"

TIC helps in commercial development of new scientific ideas in the area of Environmental Sciences and Engineering, Biotechnologies, Informatics, Communications Technologies, Computer Science and System Engineering.

b) Location

"TIC is located near the major Research Institutes and the Technical Universities of Prague".

c) What TIC Provides

. Incubator space
. Technical equipment rental
. Shared services

d) International Assistance. UNIDO Support.

The pamphlet states that TIC/BI is established with the support of UNIDO.

1.6) Comments on the present TIC/BI

As we have been informed by the ICPF Director and TIC/BI responsible, the Centre as it is organized today should be considered as a first step towards the definitive TIC/BI, both in scope as well as in its legal status and organization.

The final organization should arise as a consequence of this UNIDO project.

However some comments will be made on TIC/BI present scope and organization which will, inter alia, help in the advice to be given by the mission.

a) On the Objectives

Present TIC/BI objectives are very broad and fit classical business incubators objectives for high-tech companies. It would be necessary to work out some more specific details, specially in the so called Technology Transfer Activities.

b) On the Location

Special attention will be dedicated to the location of the TIC/BI, even when today's location at the ICPF premises may be considered appropriate.

c) On what TIC/BI may "provide" to the future companies.

This section seems to be directed toward a very sharp market sector, that is: Those high-tech considered companies, that are willing to establish themselves at the TIC/BI premises where they will be able to receive services, equipment and space at very low prices.

d) On the UNIDO Support.

The ICPF received financial support and high level advisory assistance from the United Nations Industrial Development Organization aimed at design and establishment of a business incubator for small and medium-sized industries involved in the development of new technologies.

Additional comments on the TIC/BI are included in ANNEX II, and are relevant to the recommendations to be advanced in this Report.

1.7) Comparison of the Situation between April 1992 and April 1993.

	1992	1993
Entrepreneurs from inside the ICPF:	yes	yes
Entrepreneurs from outside the ICPF:	?	yes
Incubator activity as objective	?	yes
Science and Technical Park to be established by the ICPF:	yes	no
TIC/BI as ICPF activity:	?	yes
STP and/or TIC/BI formally submitted for approval to the Academy:	no	yes
TIC/BI approved as ICPF activity by the Academy:	no	yes
ICPFinvolvement in the establishment of an Institute based Technology Enterprise, (analysis of):	some	not fully
ICPF involvement in R & D in connection with large industries, (analysis of):	some	some
Financial sources, analysis of needsof:	yes	yes
Formal organization of TIC/BI (alternatives of):	yes	not yet

CHAPTER 2: METHODOLOGY APPLIED TO THE STUDY

2.1) Consulted People and Organizations.

The methodology that is being applied is based on the observations of the present situation at the Czech Market and at the Academy of Sciences in general and at the ICPF in particular. In consequence meetings have been made with:

- Managers of large, still State owned chemical companies. Managers of some private, already on-going companies, formed by former ICPF employees.
- Managers of already on-going companies that haveapplied for admission at the TIC/BI.
- Managers "to be" of companies being formed bystaff members of the ICPF which it is supposed will be admitted verysoon at the TIC/BI.
- ICPF authorities and senior scientists.
- Management of TIC/BI.
- Management of others Business Incubator Centers.
- Other authorities and senior scientists of Institutes of the Academy of Sciences.
- Authorities of the Academy of Sciences.
- Government officials related to SME promotion.
- Management of private organizations related to the SME as well as the promotion of marketing practices.
- Management of Financing Institutions, both private and State owned.

In the first phase of the mission meetings have been held with all the above mentioned sectors. A list of interviewed people is presented in Annex IX.

However, and due to the speed of changes that are taking place in the Czech Republic, it is anticipated that some meetings will be reproduced and new meetings will be necessary, particularly with Czech law experts,previous to the preparation of the Terminal Report.

Following this first part of the mission, visits to some European Centres will be made by the director of ICPF and the responsible of TIC/BI.

From the above meetings and visits and other information gathered it is expected that the final proposal for the TIC/BI will arise.

2.2) Technology Innovation / Business Incubator Centre.

Since the meaning and limits of applicability of the title concepts may vary according authors and circumstances, they will not be elaborated in this Report.

As a guide it may be said that in this Report the analysis will be focused on what the market may need from the high-tech sector and how SME originated by the intervention of the TIC/BI at the ICPF (and at the Academy) may help to those needs. Besides, if no clear needs may be detected, how they may be induced by the SME originated at the TIC/BI.

It will be analyzed if the TIC/BI should have a passive attitude or an active attitude towards the appearance of business for the SME. According to the type of attitude that may be found as more convenient, proposals for completely different legal status and organization structure for the TIC/BI may be needed.

It is also accepted that both types of SME, either dedicated to the so called high tech services or production of goods will be valid enterprises for the TIC/BI.

CHAPTER 3: COMMENTS ON TECHNOLOGY AND MARKETS

3.1) General.

In a few years, the market situation in the Czech Republic may be very similar to that of other countries of the European Community. Besides, the geographical position of the Czech Republic is ideal as a bridge country from the Community to the former East Countries, as it is recognized in many Press articles and experts Reports.

The main handicap for the Czech Republic is the lack of experience in an open market economy. Many initiatives are being developed to help to the solution of this problem, including various assistance programs from industrialized countries and international Agencies.

Besides, the privatization process installed in the country may derive in a general population attitude towards the market economy much better than the population attitude of former closed economy countries that practised some form of market economy.

In the near future it is expected, from our point of view, that the rate of company failures due to mismanagement, will not be much higher than those in countries with already established market economies.

3.2) The Technology Industrial Situation in Czech Republic

It is generally agreed both in the country and abroad that the Czech industry was not allowed to keep pace with technological developments since the end of the War.

The above situation recognizes many reasons, and we will not elaborate on it.

Some of the major industrial complexes have very important research facilities, which, together with other research facilities in the country certainly helped to prevent large technological delays in their particular field. However this seems to have happened mostly in the heavy industry, which was not the most innovative high tech-industrial area all around the world. Besides, according to the available information, even in this area, and mostly due to investments limitations, technological upgrading was slower than what most Czech engineers would have liked.

We learn that most of ICPF interactions with the industry were centered in this area.

In the so called high-tech arena the situation is very different. There seems to be a kind of gap between the country capability to generate very advanced knowledge and the opportunity to have it related to the production and services sectors.

The above situation is very clear at the Academy of Sciences, although some of its institutes are related to applied research. The establishment of a permanent technology capacity as defined in ANNEX IV to this Report is missed.
The problem of having the body of knowledge related to the production and services sectors, which is not easy at all even in the western (market economy) countries, was certainly more difficult in the central planned economy ones.

Besides high-tech productions and services is the natural field of action for SME, a typical characteristic of amarket driven economy. One of the methods, either spontaneously generated or purposely designed to promote and help the start up and consolidation of this high-tech companies is the so called Business Incubator and Science-Technology park.

It is clear tha the original idea of the ICPF authorities in the establishment of an TIC/BI was driven mostly by this problem and their own capabilities in some areas of the technical knowledge.

3.3) Requested or Offered Technology.

Technology requirements may arise in many different ways. However it is possible to differentiate two typical approaches:

i) Starting from the body of knowledge towards the market. In this case the technology demand is produced by induction. It is an offer driven situation.

ii) Starting from the market towards the body of knowledge. It is a demand driven situation.

high-tech company may be based on an already (or near to be) available technology, applied to satisfy market needs.

If this is the case, this enterprise will not consider either technology development or technology transfer as a business by itself.

It is required that a company presents a business plan (to be evaluated by specialized and conservative marketing people), in order to be accepted by TIC/BI. (See Annexes III and IV). This aspect seems to show that TIC/BI is focusing on those kind of companies.

Under the circumstances just discussed, two very important points remain open:

i) If TIC/BI insists on its present organization and goals how will the bridge between market and the body of knowledge be built, even for new requirements arising from the market?.

ii) How will attention be paid, from the body of knowledge, to precompetitive opportunities so important in the high tech field?.

CHAPTER 4: ACADEMY TECHNOLOGY ENTERPRISE

4.1) Rationale for the establishment of a TIC/BI at the ICPF.

The establishment of Business Incubator Centers (BIC) is related to the decision of promoting the start-up and survival of very creative business. There may be different reasons acting as driving forces towards the decision for the establishment of a BIC in a given region. Some of the most important are:

a) The continuous search for ways to bridge the world of knowledge with the world of production and services,

b) To stimulate the creation of job opportunities in underdeveloped areas.

c) In former countries with centrally planned economies, it is actually a very good road toward an acceleratd market economy. In fact, business innovation is mostly a characteristic of individual attitudes which can find good ground for its development in SME. As it was commented this kind of enterprises certainly cannot flourish in a Centrally Planned Economy system.

In the case of Czech Republic it can be said that all of the above characteristics (and some more) may be present, even when the Prague region does not yet present symptoms of recession as in other regions of the country.

The point that has to be clarified is on the rationale for the establishment of such a BIC at the ICPF.

This rationale has to be analyzed from three aspects:

i) Academy of Sciences in general.

ii) ICPF in particular.

iii) Unido industrial development policies.

Besides, in our opinion, any business oriented organization should fulfill the survival (extended) criteria for an enterprise. (See Annex VI)

As it was commented in earlier chapters, the first idea of having ICPF involved in some kind of business related activities arose more than a year ago. It was connected with the desire to help the start-up of high-tech companies but it was also related to problems of budgetary reductions and policies from the Academy of Science towards the ICPF. And it was also related to personal attitudes of some of the Institute's scientist staff members.

As the idea of a TIC/BI was being developed it became evident that the Academy would accept it. Finally, (after 13 drafts), the formal approval by the Academy of Sciences arrived on February 01. 1993.

It is the author's opinion that present TIC/BI may have some difficulties to fulfill the survival criteria in the medium future.

In order to facilitate the fulfillment of those criteria it would be convenient, in our opinion, to change the legal status and the organization of TIC/BI as proposed in the next chapter. It will also allow for a progressive incorporation of other institutes of the Academy to the TIC/BI scheme. (See Annexes IV, V, VI and VII). It will also help TIC/BI to have an active rather than passive attitude towards business.

4.2) Enlarged Objectives and Capacities for the TIC/BI.

Based on the comments made in the previous chapters it is suggested to enlarge the objectives and capacities of the TIC/BI to cover the following aspects:

a) To serve as incubator of high-tech companies.

b) To generate by itself high-tech companies.

c) To generate high-tech companies with any other Czech or foreign partner.

d) To be able to direct knowledge originated at the Academy of Sciences and other related organizations toward the solution of technological problems, either requested by or induced to the market.

e) To have the capacity tolook for business with no limitations other than those arising from the law and sound business practise.

f) To have the capacity of receiving loans and to deliver guarantees.

g) To have the capacity of entering in venture capital business

h) To have the capacity for the installation and management of the so called Science-Technical Parks.

4.3) Conditioning to the Above Enlarged Objectives and Capacities.

The above enlargement of objectives and capacities should:

a) not hamper today's TIC/BI on-going business;

b) not increase budget expenses either by the ICPF or the Academy;

c) allow for a progressive incorporation of other Institutes of the Academy, without running into some kind of organization superstructure;

4.4) What is (or should) be Available.

a) TIC/BI, approved by the Academy of Science as department of the ICPF.

b) Acceptance of Academy authorities of the involvement of other Academy Institutes in an organization with the enlarged objectives and capacities as indicated above.

c) Apparent acceptance by the Academy of Sciences, subject to compliance with existing legal procedures and conditioning of point 4.2), of the utilization of Academy facilities and human resources, to fulfill the enlarged objectives and capacities.

d) Possible involvement of the National Property Fund if the privatization scheme is applied to some of the Academy facilities.

e) Possible formation of venture capital Investment Funds, under conditions to be studied.

f) Other source of financing, particularly through the combined system of i development Investment Bank/Commercial banks as well as classical financing that may be available under usual banking conditions.

g) Full support of the Czech government to the generation of SME from the Academy institutes.

h) Possibility to have some of the large industries in the country that may consider being partners in the formation of SME as own spin off, through orders generated by the mother company.

4.5) The Available Spectra of Facilities and Know-how. Academy Technology Enterprise.

The question is: how to generate an organization that, taking advantage of the available facilities and know-how of the Academy of Sciences is able to fulfill the enlarged objectives and capacities stated above.

It is emphasized "from the Academy" because ICPF will be considered as a nucleus or seed of the new organization. It will grow with the gradual incorporation of other Academy Institutes to the said organization, the incorporation of enterprises to the incubator or the detection of new business.

From all the considerations of the previous chapters it is suggested that in the near future, (6 to 12 months), TIC/BI be transformed into a full integral Technology Company.

The incubator activity will take place as one (and the initial one) of the activities of the technology enterprise which for sake of brevity will be called ATE. (Academy Technology Enterprise).

For a technology enterprise it is meant an organization which is able to respond to a particular request with a full spectrum of capacities.

The broad spectrum is fabricated from some well distributed strong lines where the Organization has its own capacity to generate and apply knowledge.

In the case of the Academy of Sciences the capability of generatingknowledge exists. It lacks capability for its applications.The proposed ATE is actually a spin off of the Academy. It will act as the bridge between the market and the world of knowledge, that is the Academy and possibly other research organizations. This bridge will be a two way road: coming from the market with requests of knowledge (external actions) and feeding the market with new ideas from the world of knowledge, (internal actions).

The external actions and the internal action may be developed with different methods and organizations, in the lines of the capacities indicated above.

ATE will certainly be a technology transfer center.

CHAPTER 5: MAIN DOCUMENTS RELATED TO ATE

5.1) Basic Documents

It is foreseen that the following documents should be elaborated.

a) Statutes (by laws) of ATE.

b) Shareholders Agreement.

c) ATE/Academy special agreement related to matters not covered in the previous documents.

d) Chart of internal organization of the TIC/BI, with indication of the main positions to be covered.

e) Besides the above documents:

e1. Guidelines for a marketing strategy for the TIC/BI, including suggested ways of linkage to the industry.

e2. Recommendations on prefinance and guarantee services.

Final drafts of the documents will be finished during the second part of the mission. However early drafts will be prepared and discussed through the mail. Besides suggestions on marketing strategies are being and will be given as it is found convenient.

f) Even when it may look too pretentious it is suggested that a special legislation should be considered for the so called Technology Enterprises, should present taxation in Czech Republic be too onerous.

5.2) Some Comments on the Documents.

a) Statutes (by laws) of ATE. They should clearly state the character of the Company. However it is convenient to draft them in the most standard version compatible with the character of the enterprise.

All specific matters that according to the law are not necessary to be explicitly stated in the Company's Statutes, should be left to the other documents.

b) On the Shareholders Agreement. Before any drafting of this document it is necessary to define who will be the share holders, and whether they intend to last as such or whether they will be willing to leave room to others.

It is suggested to consider possible shareholders:

. Academy of Sciences
. National Property Fund

- One on-purpose created investment fund, under the concept of venture capital.
- Management of ATE
- Municipal District Prague 6
- TIP (Technology Investment Program, see ANNEX VI) % of shares reserved for companies to be admitted to the TIC/BI of ATE (and/or the future STP (Science-Technology Park)
- Others.

The "Shareholders Agreement" will be tied to the marketing policy applied by the ATE trough its activities, (The first initial one being TIC/BI activity), and some conditioning related to the "class" of shareholders.

However in order to assure full appreciation by the management of ATE it should include a clause stating that the management can be removed by the board only under certain conditions.

c) Remaining Documents. No additional comments are necessary at this time regarding the other documents.

5.3) Home Work for the ICPF and TIC/BI Authorities.

It is expected that after their visit to various centres in Europe, the authorities of the ICPF and TIC/BI will relate different approaches that have been adopted on the subject of Business incubators, technology innovation centers, science and technological parks.

Assuming that the proposed formation of ATE may receive serious consideration, some activities should be realized by the authorities of both the ICPF and TIC/BI . Besides additional information should be gathered and delivered to the UNIDO consultant as it is available. It is information related to the preparation of some of the above documents.

The list of activities and information was agreed upon between the said authorities and the consultant.

ANNEX I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

JOB DESCRIPTION

SI/CZE/92/803/11-51/J12101

Post title: Consultant on technology oriented business incubators

Duration: 1.2 month

Date required: As soon as possible

Duty station: Prague, CSFR

Purpose of project: High level advisory assistance to the Institute of Chemical Process Fundamentals of the Academy of Sciences on design and establishing of a business incubator for small and medium-sized industries involved in the development of new technologies.

Duties: The consultant is expected to provide a high-level advisory assistance on design and start-up of the technology oriented business incubator - Technology Innovation Centre. The consultant will specifically be expected to:

1. Discuss with the Institute and the TIC management in particular and Academy in general the problems and needs. Based on these discussions advise on the strategy for establishment of technology transfer centre and business incubator;

2. Make recommendations on financing of technology development and transfer.

3. Advise on legal aspects related to establishment and activities of the TIC.

ANNEX II

ADDITIONAL COMMENTS ON TIC/BI AT ICPF

i) There is a strong emphasis on present TIC/BI "mise em scene" on the availability of space, infrastructure, equipment and services from the ICPF. from

ii) There are people working in R&D at ICPF with many years of experience and contacts with others researchers and the former state owned industry.

iii) TIC/BI accepts on going companies. Those companies seem to be attracted not only by the cheap rent but also by the possibility of being in contact with a science media, from the ICPF and other Academy and University Institutes located in the same area.

iv) At the time of our arrival, ICPF and TIC/BI authorities indicated that they were willing to transform TIC/BI into a non profit organization once the pertaining legislation was approved.This kind of organization was preferred because high taxes reduction were expected. Income tax in Czech Republic ranges up 44%.

v) TIC/BI would have a receptive non passive attitude towards the newcomers. From this point of view business should always originate from entrepreneurs who are willing to start the new companies, with TIC/BI helping them.

vi) With the above TIC/BI attitude it may be expected that almost no high-tech SME, that may originate as a spin off of large corporations, will ever be involved with the TIC/BI.

vii) Some of the large industries in Czech Republic have very serious pollution problems. They will try to solve them by themselves or with foreign partners. Now, ICPF and other related Academy institutes have a potential capacity to get involved in the solution of this type of problems, which may be also a source of business. The present attitude of TIC/BI does not seem to be the most appropriate to this purpose.

viii) Today's relationship between the Academy and TIC/BI is almost nil, apart from the hidden support of the Academy allowing the rental of ICPF facilities at very low prices.

ix) The methodology applied by the TIC/BI for the admittance of a new enterprise seems to be appropriate to assure both the high-tech characteristics and the market survival of the new company, (see Annex III). However it is difficult to imagine how it may work in the case of a development "to be".

x) The incubator period is expected to last three years after which it may be extended only under very special conditions.

Now, even when it may be assumed that the companies after those three years should be in a condition to function by their own, the question would again arise about the convenience for the TIC/BI to detach itself from the future outcome of those companies. In other words: What is the business of TIC/BI?

xi) The business of TIC/BI is to get companies that start and survive. From this point of view special care should be dedicated to that how those companies are originated, from were they will feed themselves with knowledge, and how they will be financed. Every high-tech venture is usually of high risk characteristics in its beginning.

The entrepreneur of such company is willing to take the risk. However, as usual in this sophisticated sector of entrepreneurial activities, what the entrepreneur is able to risk may be impressive from his economic possibilities and still not enough for the start-up and consolidation of a high-tech company.

xii) It is expected from the ICPF that some income will originate from the TIC/BI that will help the Institute to solve some of its budgetary problems. However it cannot be expected that this will happen in the near future.

xiii) Board and Management of TIC/BI.

Since TIC/BI is a department of the ICPF, it has not a different formal authority from the Director of ICPF. A staff member of the ICPF, with the help of a secretary, has been assigned the task of running the TIC/BI. It is not yet a full time activity. It should happen very soon.

Besides of the responsible manager, TIC/BI it intended to have a Board of the Centre. According to the present TIC/BI dependence on the ICPF it will be mostly an advising body. One of its main tasks will be to have the final word (advising function?) on the acceptance of company candidates, as will be indicated in ANNEX III.

The members of the board are or will be:

. Director of ICPF

. Responsible of TIC/PI.

. One representative from Prague 6. (The City District to which the ICPF belong to).

. A lawyer (To be designated, if possible from the Academy of Sciences)

. One person from "The Entrepreneurship Center"

. One representative from a financial organization.(There is not yet one formally nominated).

ANNEX III

ADMISSION PROCEDURE AT TIC/BI

As per today TIC/BI the following procedurewill be applied to a company in order to be admitted to the Centre.

a) The company must submit a dossier containing the main technical aspects of the project that the company intends to develop at the TIC/BI.

   The project will be evaluated by two specialists in the corresponding field, Their names will be kept anonymous.

b) If the technical project is approved, then the company must present a second dossier, with the Business Plan.

   Its preparation should be made following the guidelines submitted by TIC/BI. The guidelines were prepared as a collaboration to TIC/BI by "The Entrepreneurship Centre", an organization supported by American private Foundations, organized to help SME in Czech Republic.

   "The Entrepreneurship Center", also as a collaboration to TIC/BI, makes the evaluation of the company's Business Plan.

   It was not yet available an English version of the guidelines. However we were informed that the evaluation procedure will put special attention in clearing what the applicants know about business, risks, competitivity, financing and other related matters.

c) If the Business Plan is approved, then the applicants are interviewed by the board of the TIC/BI. In this interview, besides the personal knowledge that is certainly produced, board members can ask any question they feel might be necessary, either to clarify points of the two previous dossiers or to ask new questions.

d) After the interview the Board will resolve on the applicant's acceptance.

   There are already seven organizations (enterprises or equivalent) that have applied for admittance at TIC/BI. They are distributed according to the following main fields of activities:

   2 Waste treatment and environmental related matters.
   1 Biotechnology
   1 Image analysis and optics equipment.
   1 Electronic devices and control devices and algorithm.
   2 Automatization and computer-aid design.

Note: The previous procedure will not be applied to SME formed by former ICPF staff members until May 01, 1993.

ANNEX IV

THE ESTABLISHMENT OF A PERMANENT TECHNOLOGY CAPACITY (THE CULTURAL STATE)

The development process starting with pure knowledge up to the production of goods and services has four stages, relatively differentiated, all of them requiring a common element: the continuous use and development of human resources.

The four stages are: basic and applied research, technology development, and the production (or delivery of services) stage.

Technology should be considered an adjusting parameter to the production process (or service delivery capacity) in any, but over all, in high tech production and services.

In order to reach the capacity of mastering, simultaneously all four stages, it is necessary to establish a Cultural State, that is the establishment of a permanent technology capacity. This is achieved by means of a sustained effort and considerable financial cost.

It is precisely the concept of Technology Transfer (in its very general approach) that comes up as a possibility to shorten this time span and lower costs , not only in a specific production process (or service delivery), but most important, to shorten time span and lower cost in at least some portions or sectors of the process toward the establishment of the said cultural state. From this approach technology transfer may be considered itself a technology.

ANNEX V

TECHNOLOGY INVESTMENT PROGRAMME

1) General

It is usually accepted that an important portion of high-tech companies are not capital intensive but brain intensive.

Actually the main problem for this kind of enterprises is how to get enough money to support salary expenses during start up periods. In many cases this enterprises also have a need for building and services facilities as well as laboratory equipment and instruments.

It is also recognized that many well prepared research people that may be willing to go into business cannot do it because they are people lacking of personal savings to support themselves during the first time of any business start up.

In consequence they have no chances of leaving their low-paid research positions for risky enterprise ventures. And it is a problem that gets worse with age. So, when more personal knowledge is available, less personal capability is available to spill it over the market.

One possible solution is to get money from the financial system but then there is the problem of guarantees.

There is a need for the research institutions to live with lower budgets. And they also need to find some method to have their new generated knowledge spread over the production and services sectors.

The situation just described may be considered common to many countries. In Czech Republic there are constraints of its own.

Beside the above "shortages" there are some capacities such as:

At the Academy of Sciences, where there is knowledge, buildings, services and equipment available at its Institutes.

At the State Property Fund there are properties, in particular buildings and land that, if an appropriate way is found, could be used as "real" guarantees for financial operations.

The above panorama shows that it is necessary to work out some methodology in order to allow all the available capacities to come in assistance to the needs.

We will call the said methodology: "Technology Investment Programme (TIP)".

2) The Technology Investment Programme (TIP).

TIP is a methodology for:

i) Assist senior researchers to get involved in business related activities. (It does not necessarily mean to go into business).

ii) Assist young graduates to find a job.

iii) Assist in the creation of small high-tech enterprises.

iv) Assist the Academy of Sciences in the near future to overcome problems that arise because of government cuts in the budget.

v) Assist in feeding the market requirements from the body of knowledge.

vi) Assist the body of knowledge to influence the market.

Vii) Assist in financing of above activities.

3) Expenses vs. investment

It is proposed:

1) The Academy to allow (actually to stimulate) its personnel to share either normal or extended working hours, for a preestablished period of time, (it is suggested not more than two years), with work done at:

i) ATE

ii) Companies which are shareholders of ATE.

iii) Companies incorporated in the incubator activity of ATE.

iv) Companies "to be", that is, activities related to future companies to which this people will be related as shareholders, members of the board or in management positions.

b) The working hours dedicated to the TIP programme will be considered by the Academy either as:

i) Long-term loan to ATE or the enterprises.

ii) Debentures convertible into companies shares at the Academy's option.

iii) Direct investment in ATE and/or in companies shares by the Academy.

3) The maximum period of two years may be extended to three years for "companies to be".

4) The total amount of "loans + investment" will be not less than 10% and not larger than 35% of the Academy corresponding annual budget.

It means that any reduction in the Academy official budget will also be reflected in a reduction in the available amount for TIP.

5) The total amount of shareholding participation of the Academy in the full TIP system will not exceed at any time twice the corresponding annual budget.

Any time the above proportion is exceeded the Academy should sell shares, at its choice, to the other shareholders of each company according to the mechanisms for prices and buying preferences established in each particular company.

If no agreement is achieved with any partner in each company, the Academy may retain the shares for one more year, and to attempt for new agreements. After one year the Academy should be free to sell the said shares as it considers it is better for its interests.

Irrespective of the minimum sale of shares established above, the Academy should be free to sell shares at any time without limitation in the number of shares to be sold.

The product from share dividends, share sales, loan interests and loan repayment, should be added to each institute's own budget.

It is important to note that the proposed mechanism:

i) Converts salaries by the Academy into assets.

ii) It facilitates a non traumatic reduction of the staff of the Institutes.

iii) It helps to the institutes budget reductions because of income from shares sale, from dividends payments and from interests on loans.

6) After the 2 - 3 years period, the personnel involved in the TIP programme must decide, if requested, either to leave the Academy or to stop its participation in the TIP programme for the next two years. Should they choose to stay in the Academy, they will not be eligible to the TIP programme for the next two subsequent years.

7) The staff will be allowed to make any personal arrangement with ATE or the other companies, for the work done under the TIP programme. If their salary is paid by ATE or the companies without any salary payment by the Academy, the saved money may be applied by the Academy to hire young graduates.

8) The Academy should allow the Institutes to rent buildings, to supply infrastructure and services and to rent equipment to both ATE and companies (through ATE) with the same methodology, (that is, shares, debentures and loans) as applied for the working hours.

9) It would be very important if some buildings and lands from the Academy could be incorporated to the National Property Fund with the specific objective to be applied, together with other lands and buildings from the Fund itself, to guarantee financial loans from commercial banks to Academy professional staff willing to start high tech companies.

ANNEX VI

SURVIVAL (EXTENDED) CRITERIA

The Survival Criteria and TIC/BI.

Let's look to the subject of TIC/BI survival.It may be expressed through the following question:

What should happen to today's TIC/BI in order to survive as an organization acting as a technology oriented business incubator-technology innovator centre in an open market economy. As such, keeping the capability to interact with the industry, to self generate business and to help to the establishment of new high-tech enterprises. It should include some preestablished, trustable and long lasting mechanism to help on the financing of those activities.

The search for an answer to the above question will be made in function of the information gathered for this study and it will be analyzed whether today's TIC/BI can satisfy the so called survival criteria extended to this special case. Only two criteria will be considered, which in our opinion cannot be satisfied.

A) The first survival criterium can be stated as follows: TIC/BI should have a human organization conceived to work as a whole and able to perpetuate itself".

It is difficult to imagine how TIC/BI as today conceived may have a chance to fulfill this criterium.

In effect, to fulfill this criterium it will require, beside other conditions, that the organization could offer:

i) clear professional objectives of an adequate level to the involved personnel.

ii) That the Institution is being considered by its personnel as an adequate media to achieve a standard level of life in accordance to the average expectations of equivalently prepared people in other sectors of the private economic activity.

In today TIC/BI, the personnel involved will have as professional objectives to help business development. They will not have the satisfaction of professional researcher that may help to accept salaries lower than those of the private sector . The TIC/BI people will be in continuous contact with the world of business. And consequently they will be tempted by this world. Since to manage TIC/BI will require managerial mentality, and there is a lack of management in Czech Republic, we doubt that TIC/BI will have a chance to keep good motivated management for enough time for preparation of replacement, (as should happen in order to assure perpetuation of the human organization).

The other criterium that in our opinion cannot be fulfilled by today's TIC/BI is the so called absolute criterium, that is profitability.

During this first part of this mission, many people commented that a serious problem, in order to have the development of science/technology park type organizations in Czech Republic was the lack of a law on non-profit organizations.

It is our opinion that non profit organizations are not the best way to help high-tech business development in Czech Republic. It is a market economy newcomer country. Everybody will have mixed ideas about many aspects of this market economy. It is convenient to have people involved in business development to look at it as a real business.

Besides, experience shows that unless there is money coming as "lost fund" from some other source, a non-profit organization in order to survive will with time develop business habits that will generate a lot of contradictions and suspicious. It will certainly run in problems. It is our opinion that it may be even worse in a market economy newcomer as is Czech Republic.

ANNEX VII

THE PROPOSED ATE SCHEME

a) ATE, no doubt, will take an active role in the development of industrial technologies. It will make it through its capacity to apprehend, with an industrial minded attitude, knowledge from the Academy. Since ATE will act also as a business minded organization, from where its revenue will arise, it will need to have that knowledge spilled over the market as soon as possible.

b) ATE, due to its business attitudes and involvement with the others "actors", e.g. in the incubator activities, it will try to give as much assistance as possible in the adaptation and transfer of technology from and by other organizations, specially enterprises, either from inside or from outside the country.

c) To have ATE installed and working as an integral technology enterprise it is by itself a very "high technology development". Since ATE may be taken as a model for the transformation of the Academies of Sciences of other countries, it is actually a technology transfer by itself.

ANNEX VIII

INTERVIEWED PERSONS

a) In the Czech Republic.

Mr. F. Kastanek, Director, ICPF
Mr. K. Klusacek, Responsible Manager of TIC/BI at ICPF.
Mr. B. Tomas, ASEPO s.r.o.
Mr. F. Maly, ASEPO s.r.o.
Mr. F. Kucera, ASEPO s.r.o.
Mr. J.Trauske, ASEPO s.r.o.
Mr. V. Stuchly, INEC s.r.o.
Mr. B. Rice, The Entrepreneurship Center.
Mrs.J. Kubu, Head of SME dept., Ministry of Commerce.
Mr. S. Vostrel, SME dept., Ministry of Commerce.
Mr. M. Rylek, ECOINVENT and staff of ICPF up to May 1993.
Mr. J. Cervenka, ECOINVENT and staff of ICPF up to May 1993.
Mr. P. Komarek, Director BIC, Technical University in Prague.
Mr. V. Skacha, Director of Strategic Developments, CHEMOPETROL.
Mr. M. Huml, Senior advisor, CHEMOPETROL.
Mr. J. Ledewrer, Director of the R&D Center, CHEMOPETROL.
Mr. J. ZAK, Development Dept. Manager, CHEMOPETROL.
Mr. F. Kopecny, Technical Director, PRECHEZA a.s. Prerov.
Mr. R. Zahradnik, President, ACADEMY OF SCIENCES.
Mr. P.Gibian, President, American Czech and Slovak ENTERPRISE FUND
Mr. K.Kosman, officer, American Czech and Slovak ENTERPRISE FUND
Mr. V. Vyskocil, Executive Director, InvestAGE, a.s.
Mr. J.Koubal, Manager External Relations, Czech and Moravian Development Bank.
Mr. J.Vanik, hlavni metodik, Czech and Moravian Development Bank. Mr J. Princ, Vice-Chairman of Executive Committee, NATIONAL PROPERTY FUND OF CZECH REPUBLIC
Mr. M. Marek, BIOSAN obch.spol.
Mr. I.Dobias, Director, Institute of Thermodynamics, Academy of Sciences.
Mr. P. Sunka, Director, Institute of Plasma Physics, Academy of Sciences.

Special meeting with:

Mr. J. Drahos, Deputy Director, ICPF.
Mrs.M. Hartman, Head of Research Group in "Reaction Engineering in the Gas Phase", ICPF.
Mr. J. Hertflejs, Head of the Research Group for "Biotechnology and environmental processes", ICPF.
Mr. J. Schraml, Head of the Analytical Chemistry Group, ICPF.
Mr. H. Sovova, Head of the Research Group on "Diffusion and separation Processes", ICPF.
Mr. I. Wicthterle, Head of the Research Group of "Laboratory Thermodynamics", ICPF.
Mr. M. Zdrazil, Head of the Research Group on "Catalysis and reaction engineering", ICPF.

At UNIDO, Vienna

- Industrial Development Officer,
  Backstopping Officer,
  Institutional Infrastructure Branch

- Chief, UNIDO Evaluation Staff.