

COMMISSION OF THE EUROPEAN COMMUNITIES

information management

**A descriptive model of an
INFORMATION MARKETING SERVICE
applied on the structure of technological services in
DENMARK**

Report elaborated at the request of CIDST
(Committee for Information and Documentation on Science and Technology)

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A descriptive model of an INFORMATION MARKETING SERVICE applied on the structure of technological services in DENMARK

Report elaborated at the request of CIDST
(Committee for Information and Documentation on Science and Technology)

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The fact that the CIDST Ad Hoc Working Group "Information for Industry" has agreed the publication of this report does not necessarily imply that the Working Group endorses its content.

The views expressed in this report are those of the author and do not necessarily reflect the views of the Commission.

Directorate-General "Scientific and Technical Information
and Information Management" - Luxembourg



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1. GENERAL INTRODUCTION

The project INDUSTRY 7 'Elaboration of Proposals for Guidelines for Information for Industry' was initiated by the CIDST ad hoc Working Group 'Information for Industry'.

Reference is made to the initial studies of the Working Group 'INDUSTRY 1, 2, 3 and 4', including the analysis of these studies, the minutes of the Working Group meetings and the final specification to the contract.

The consultant has found it practical to use following outline for the final report on this project INDUSTRY 7 :

Part one of project INDUSTRY 7 :

is a general document which on the basis of the above mentioned written material and the Working Group discussions summarizes the conclusions of the work of the Working Group. It includes some of the observations and conclusions made by the consultants to the projects Industry 1, 2, 3 and 4 and refers to results of some existing studies carried out by other bodies.

It also enumerates recommendations on matters which merit inclusion in a continuing programme of Community action in the Information for Industry area with a specific focus on the needs of small and medium-sized industrial entities.

The document is titled "Report and Recommendations by CIDST Ad Hoc W.G. Information for Industry" (Doc. CIDST 283/77) and has primarily been worked out for the purpose of submission to CIDST acting as the report on the work of the Working Group for the 12 months of its existence.

Part two of project INDUSTRY 7 :

is this document which suggests a tool considered to be useful for the establishment of a total synthesis of existing knowledge and experience of information for industry organizations serving specifically small and medium-sized industry.

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Introduction to Part Two of Project Industry 7

It is generally accepted a fundamental fact that knowledge is a raw material which through transformation during adequate processes is converted into a useful commodity to such an extent that those having a requirement for knowledge (= information) are even prepared to pay money in order to obtain it. Knowledge does not in this sense differ from any other industrial commodity.

A description of the process used for the transformation of knowledge into a useful commodity will therefore inevitably follow the description of the classic industrial process, - as well as the basic scheme for models regarding manuals on information services will closely follow corresponding basic schemes regarding industrial processes.

The classic industrial process can adequately be subdivided into the following 6 phases:

- 1) Basic philosophy
- 2) Construction of service
- 3) Operational pattern
- 4) Marketing and contact activities
(sales activities)
- 5) Control activities
- 6) Reconsideration of utility and feedback.

Using the abovementioned scheme on information services the following interpretation of the six phases could be given:

- basic philosophy (market information)
 - basic documents and information regarding needs of such services,
 - basic statutory documents,
 - how has the service measured the size of the market for their activities?

- construction of service (product engineering)
 - how are the products offered by information services built up?

...



- operational pattern (production engineering)
 - what are the tools used by the information services in transforming knowledge into useful commodities?

- marketing and contact activities (sales activities)
 - how do the services present their products, how do they "sell" them and how are they distributed?

- control activities
 - what means are the services using in controlling costs, effectiveness and quality level?

- reconsideration of utility and feedback
 - how do the services critically reconsider their own activities and the impact of them?
 - how do the services benefit from the experiences gained?

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The model outlined above has been tried out on 6 different technological institutes in Denmark, five of which are working on different levels nationally, regionally or locally, and one R&D institute is acting vertically in the technology structure in Denmark.

A general survey of the Danish technological service structure is given below:

Technological service is in Denmark based upon the Technological Service Act of March 1973. This Act is managed by the Technology Council.

Although the technological service structure is considered to be under constant development, and although certain considerations of restructuring are made at present with the aim of bridging gaps and deficiencies and omitting overlaps, a very rough instant picture would be as follows:

...



The technological service structure is aimed at transferring knowledge to industrial entities, public services and authorities, and others with the object of fostering the socio-economic progress. The basic concept is that the most effective transfer is based upon the person-to-person contact.

One part of the structure is acting primarily on the national level having as its main objective to transfer technology by marketing of information. DTO (Dansk Teknisk Oplysningstjeneste) is an example of an organization thus working within the information structure.

Another part of the structure is constituted by the institutes working primarily with consultations, based upon own intellectual resources and own R and D facilities. The two regional technological institutes, JTI (Jydsk Teknologisk Institut) and TI (Teknologisk Institut) are good examples of important institutes working within the consultative part of the technological service sector. Other important examples are the 17 specialized R and D institutes acting vertically.

All technological service institutes are in their input-work - apart from own facilities - using outside sources of knowledge such as

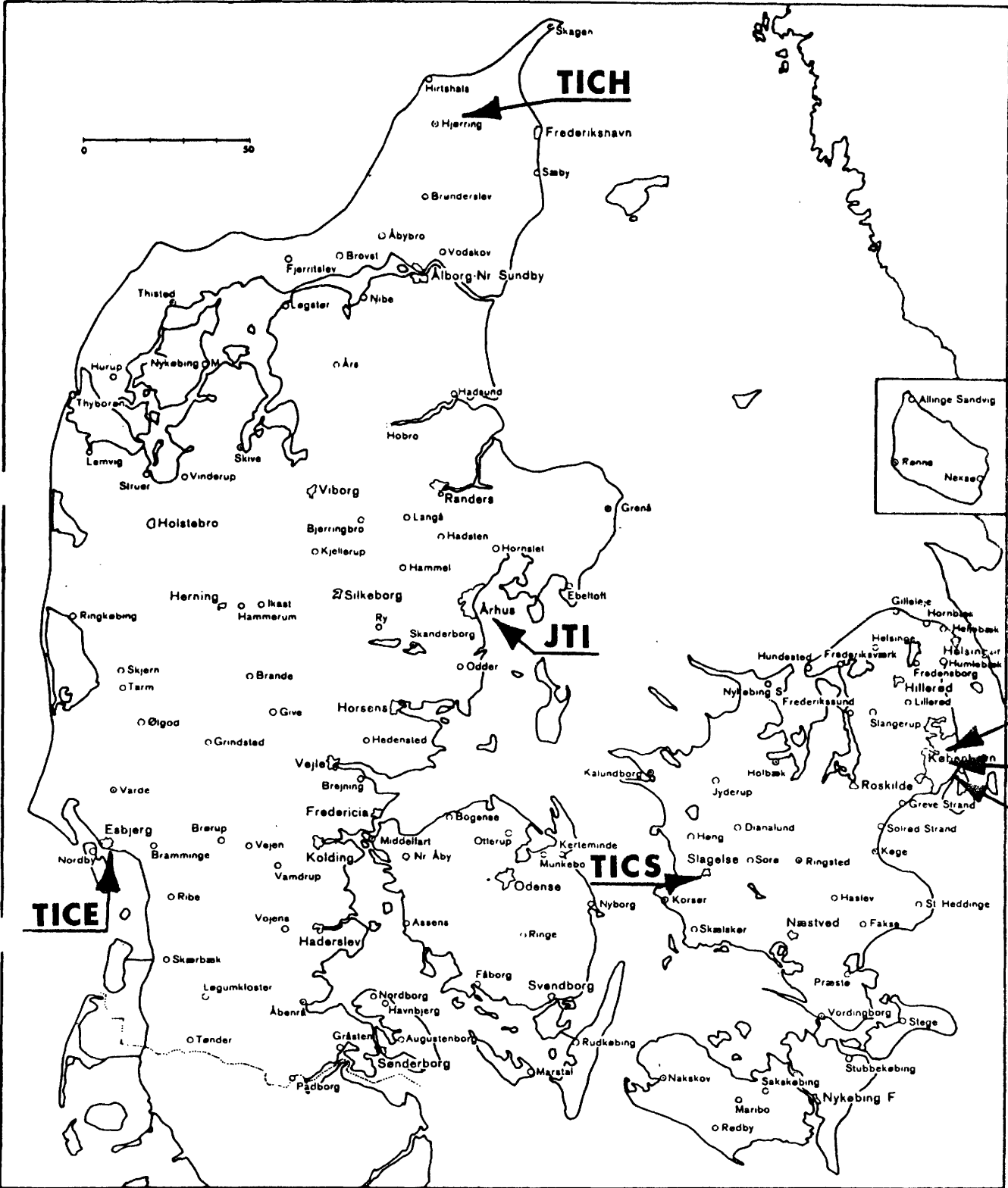
- libraries
- documentation services, computerized as well as non-computerized
- networking arrangements with other centers of knowledge, nationally and internationally.

In the transfer of technology a repackaging of information is considered to be of the utmost importance regardless whether this transfer is carried out verbally or in written form.




Attached map indicates the geographical position of the institutes treated in this report.

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CIDST ad hoc working group
"Information for Industry"

Project Industry 7

II

Application of suggested
descriptive model

on

DTO
Dansk Teknisk Oplysningstjeneste
Ørnevej 30
DK-2400 Copenhagen NV
Denmark

DTO is a private, non-profit organization
financed substantially by public funds
and working with Information for Industry
all over Denmark.

April 1977



1. Basic philosophy

- 1.1 The basic ideas for the creation of DTO are described in the pamphlet "What is DTO?" 1966.

Since the creation in 1955 DTO has had several official affiliations. The present status dates back to October 1, 1973, and is described in the statutes of the abovementioned date.

According to the statutes DTO is a private non-profit organization receiving the majority of its funds from public means.

The motivations for maintaining DTO as a public technological utility service are given in the deliberations by the governmental committee on technological services (1972).

The considerations of the committee were confirmed by Statute in the Technological Service Act (No. 421) of 21st March 1973.

- 1.2 The target group for DTO is:

- national private and public entities placed geographically all over the country and offering physical or intellectual commodities or services.

Among the entities mentioned DTO concentrates on medium-sized and big enterprises. It is an important criterion for DTO in identifying the target group that there should be in the management of the enterprise at least one person with advanced education.

The methodology for specific selection of enterprises is described in chapter 4.

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The geographic area covered by the activities of DTO is 43,074 km².

The population is 5,036,184 people (1974 figures).



2. Construction of service

DTO offers to undertake the solution to tasks characterized as follows:

- 2.1 Primary tasks on DTO initiative - no fee
- 2.2 Derived tasks on DTO initiative - no fee
- 2.3.1 Primary tasks on client's demand - no fee
- 2.3.2 Primary tasks on client's demand - against fee
- 2.4.1 Derived tasks on client's demand - no fee
- 2.4.2 Derived tasks on client's demand - against fee

The detailed description of the above-mentioned tasks is as follows:

2.1 Primary tasks on DTO initiative - no fee

2.1.1 Liaison service to enterprises and public services

- identification of enterprise and person
- establishment of personal contact
- performing of interview in order to expose the client's needs and profile of interest
- "sale" of DTO service activities
- follow-up

2.1.2 Liaison service to knowledge centres

- identification of centre and persons
- establishment of personal contact
- performing of interview in order to expose the service possibilities of the centre, the profile of interest and needs for supply of information
- "sale" of DTO service activities to the centre
- follow-up, inclusive of communication of the service possibilities of the knowledge centre to potential clients in enterprises and public services



2.1.3 Liaison service to organizations

- identification of organization, services and persons
- establishment of personal contact
- performing of interview with the object of exposing reciprocal service possibilities towards the mutual target group
- follow-up

2.1.4 Dissemination of information

- dissemination of selected abstracts etc to clients according to their needs and profile of interest with the object of releasing a reaction from the client
- dissemination of information to clients with the object of stimulating the professional interest and curiosity of the client, - and with no expectations as to reaction from the client

2.2 Derived tasks on DTO initiative - no fee

- participation in and reporting on national and international I and D activities
- study tours with the object of identifying international knowledge centres. Reports on such tours are to be made available to anybody having a professional interest in the subject

2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service (question/answer service)

- immediate reply
- reply after uncomplicated looking up in own directories, handbooks etc.
- reference to relevant knowledge centre
- instructions in the use of generally accessible directories, files, registers, etc.
- giving access to and instruction in the use of DTO library



2.3.2 Primary tasks on clients demand - against fee

2.3.2.1 Procurement of publications

- deliver documents identified and requested as a reaction to dissemination of identified selected information
- assistance to client in procuring national or international documents, standards, public regulations etc. according to the client's own specification

2.3.2.2 Information analysis

- define the task to be performed in cooperation with the client
- search for information
- analyse material procured
- characterize material received in relevant and irrelevant part
- elaborate total survey
- conclude the task and offer further assistance
- follow up

2.3.2.3 Comprehensive accounts

- define the task to be performed in cooperation with the client
- search for information
- analyse material procured
- characterize material received in relevant and irrelevant part and work out digests with personal evaluation
- discussion - person to person - with the client regarding results so far obtained
- possible continuation of task according to new instructions
- deliver final comprehensive report including conclusions and recommendations
- follow up



2.3.2.4 Consultant service

- organization and running in of company information services
- participation as a critical member in company working groups
- organize, participate and report on company conferences
- performance of particular secretarial tasks for branch organizations
- management of courses, conferences, seminars.

2.4.1 Derived tasks on client's demand - no fee

- national representation in Danish I and D organizations
- national representation in Scandinavian I and D organizations
- national representation in UN, OECD, FID and EEC I and D organizations
- performance of secretarial task for specific international I and D organizations

2.4.2 Derived tasks on client's demand - against fee

- consultancy tasks for foreign information services
- training in Denmark of information officers from foreign or national services
- comprehensive analysis and accounts for foreign clients.

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3. Operational pattern

In this chapter a description is given of

- DTO organization
- Selection of staff and staff policy
- Procedure for selection and dissemination of information
- Procedure for solution of specific tasks demanded by clients.

3.1 DTO organization

The DTO organization is built up as follows:

A Board of directors consisting of 9 members of which 4 are nominated jointly by the Federation of Danish Industries and The Danish Academy of Technical Sciences. 5 members are pointed out by DTO.

The Board holds the final responsibility for budgets and finance and for the professional performance of the working programme.

The majority of the board members holds leading positions in private industrial enterprises.

A managing director responsible towards the Board regarding all DTO activities.

A deputy director jointly responsible with the managing director and deputy for him on all matters.

A technical staff consisting of 10 engineers all holding M. of Sc.

Office head responsible of administrative matters towards the management.

Secretary, accountant and 2 correspondence clerks.

General office staff - 7 persons



3.2 Staff policy and selection of staff

It is the general staff policy of DT0 to maintain a staff of high quality on all posts thus enabling DT0 currently to provide solutions of high professional standard to the tasks it is involved in. The criteria for selection of the staff are in this respect of decisive importance.

3.2.1 Technical staff

Selection is made with special consideration as to:

- convenient distribution of age among staff members
- professional domaine
- degree and currency of industrial experience
- knowledge of language
- international experience
- qualifications as to capability of communication (verbal and written)
- general human qualifications

The level of qualifications of technical staff is maintained by

- adequate current education through participation in courses, seminars etc.
- appointment to membership of professional associations
- study tours abroad
- fixed policy regarding renewal of staff

3.2.2 Office staff

Selection is made according to the following general principles:

- education in relation to job to be performed
- professional experience
- knowledge of language (basic knowledge of English is generally demanded)
- general human qualifications



It is the clear intention to maintain an office staff with many years of DTO experience.

3.2.3 Tasks performed by staff

3.2.3.1 Liaison service

3.2.3.2 Selection and dissemination of information

3.2.3.3 Procurement of documents

3.2.3.4 Solution to requested tasks

3.2.3.1 Liaison service

Marketing of knowledge is considered the primary function of DTO and liaison service the most important tool for this task.

DTO relies very much on the personal contact between the user of knowledge and the information officer. The success of this work depends therefore entirely upon the information officers' personal impact on the liaison service.

The basic operational principle for the performance of this work has been fixed once and for all but the frames are very wide.

The methodology is described in detail in chapter 4. It should only be noted here that the information officer in DTO has a very large degree of freedom as to

- whom, when and why to visit
- selection of geographic area
- frequency



3.2.3.2 Selection and dissemination of information

accomplished by professional staff:

The basis for selection of whom to disseminate information to is the knowledge which DTO has as a result of the liaison service.

The basis for selection of what to disseminate is the choice made by the information officers of DTO in their regular study of

- abstract works
- patent literature
- periodicals with special attention to
 - articles with comprehensive bibliographies
 - announcements
 - advertisements
 - congress-lists
- selected books

The methodology used for dissemination is:

- photo-copies of abstracts (inclusive of patents) and bibliographies accompanied by an invitation to buy the documents in DTO
- books being lent out for a rather limited period accompanied by an invitation to buy the book in DTO
- announcements, advertisements, congress-lists, articles being disseminated in extenso accompanied by a visit card "with the compliments of DTO"
- according to special agreement and against a subscription fee, dissemination of "Tech-briefs" to a limited circle. Selection of contents of "Tech-briefs" is made according to mutual profile of interest of the members of the circle. Documents listed in "Tech-briefs" are delivered upon request against a fee



3.2.3.3 The methodology used by office staff for procurement of documents is:

- requests received to be registered
- written acknowledgement to the client
- ordering of documents
- forwarding of documents with invoice covering price of document plus fee for dispatch (July 1976 about 6 u.a.)

Together with the execution of the requests necessary notes are taken enabling the staff to work out statistics later on.

3.2.3.4 Methodology used by solution of requested tasks

Background sources

The library of DTO contains a rather comprehensive up-to-date collection of technical and commercial handbooks, registers, survey books, containing information on Danish and foreign enterprises etc. The information to be found in such books are:

- company data about creation, capital, management etc.
- production programme
- lists of foreign agencies
- official statistical data
- etc.

Furthermore, books are kept in the DTO library on topics such as

- professional dictionaries
- encyclopedias
- accessible information on knowledge centres with special interest in their survey of:



- R and D activities
- laboratory facilities
- R and D work done, planned,
or in execution
- publications

- special background reports from
professional marketing institutes
at home and abroad. Information
from such sources is received in
subscription
- congress-documents, preferably
as surveys
- surveys of commercial standards,
laws, norms, announcements etc.
- surveys of publications from
international organizations such
as UN, OECD and EEC.

The abovementioned material is registered in DTO according to own DTO regulations. The collection is currently revised and renewed. The abovementioned books etc. are only lent out exceptionally.

Outside DTO background material is found:

- in public and private libraries
- through documentation services
(computerized or manually operated)
- relations to knowledge centres in
Denmark and abroad
- relations to Danish Foreign Service
- relations to professional organizations nationally and internationally
- by correspondence directly with
suppliers of commodities
- by correspondence directly with
professional international marketing
institutes.



Procedure used by solution of
requested tasks

- careful definition of task to be performed (subject, proportions, time schedule, fee etc.)
- systematic looking up of sources of knowledge
- analysis and characterization, possibly inclusive of "repackaging"
- report and conclusions
- evaluation of report together with client
- closing the case.
- follow-up

(Cross-reference chapter 2 Construction of service, point 2.3.1 and 2.3.2).

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4. Marketing and contact activities

The marketing function is - as previously emphasized - considered to be the most important function among the DTO activities. Consequently, any activity aimed at transfer of knowledge from a source to a target group or an individual enterprise is allowed for in DTO's daily operations.

However, a certain operational marketing pattern has developed over the years and experience has shown that the following activities have a remarkable effect in the marketing work:

- 4.1 - liaison service on DTO initiative
- 4.2 - dissemination of information on DTO initiative as an impulse in the day-to-day work of the enterprises
- 4.3 - DTO question/answer service
- 4.4 - participation in seminars
- 4.5 - participation in public debate
- 4.6 - exhibitions etc.

4.1 Liaison service

The contact to the enterprises within the target group is established due to

- systematic research in accessible surveys, registers etc. according to definition of target group
- regular recurrence to enterprises previously visited
- special reference to the enterprise or the branch in the public press
- in rare cases contact is established when information officers occasionally are passing by.

The basis for DTO's knowledge about the enterprises is:

- all kinds of company literature
- general accessible information on balance sheets and annual reports generally open to public



- references in public press
- DTO reports on previous visits.

All information about the enterprise in question is filed in individual charteques numbered in succession of registration. The key to the number system is an alphabetic index subdivided in the following main groups:

- professional organizations
- knowledge centres
- industrial enterprises
- public authorities and services
- daily press and periodicals

The contact visit is accomplished according to the following plan:

- collection/rehearsal of company information
- contact to managing director by letter of introduction
- follow-up on letter and confirmation of appointment
- accomplishment of interview attaching the greatest importance to the company presenting herself
- presentation of DTO offer of assistance, - if convenient with a specific offer
- accomplishment of report on visit with the following standard information
 - company name and address
 - DTO registration number
 - date of visit
 - initiative to visit
 - date of preceding visit
 - person contacted
 - contents of interview
 - definition of profile of interest
 - plan for follow-up



4.2 Follow-up

The main ingredients in the follow-up phase are:

- letter to enterprise with confirmation of possible agreements
- circulation of report on visit to DTO professional staff
- discussion with colleagues during fixed regular meetings regarding possibilities of assistance or specific assistance from colleagues in accomplishing solutions to problems encountered during visit
- reinforced dissemination of information to enterprise
- current contact by telephone
- plan for re-visiting

4.3 Question/answer service

This service is operating as a function of the knowledge the enterprises have to DTO activities. In the follow-up work this service is considered as an invitation from the enterprise to DTO to extension of the cooperation.

4.4 Participation in seminars

The professional staff of DTO is occasionally participating in or managing seminars established on DTO's own initiative or that of other organizations.

This activity is utilized in the marketing efforts in two specific ways:

- lessons are given on information service as a management tool
- personal contact to leading staff members in enterprises within the target group is established. This contact is maintained and improved after closing of the seminar.



4.5 Participation in public debate

There is a permanent obligation to the professional staff of DTO to contribute to public discussions in papers, periodicals, professional meetings when problems in relation to DTO activities directly or indirectly are touched.

In these contributions the staff should preferably point out DTO's possibilities of assistance to enterprises in transfer of knowledge from those who know, to those who want to know.

4.6 Secondary marketing activities

A number of more secondary marketing activities are exercised, such as

- dissemination of general brochures on DTO activities
- participation in technical exhibitions
- press release on special DTO achievements nationally or internationally.

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5. Control activities

The control activities are logical elements in the total managerial function of the service. This function is built up of two basic parts:

5.1 Planning part

- 5.1.1 - objective of activity
- 5.1.2 - transformation of objectives into hours and money
- 5.1.3 - drawing up of budget
- 5.1.4 - application to authorities
- 5.1.5 - drawing up of final budget according to official grant
- 5.1.6 - drawing up of budget control schemes

5.2 Managerial part

- 5.2.1 - correction of actual activity performance according to results appearing from budget control scheme
- 5.2.2 - statement of operations and balances by end of fiscal year
- 5.2.3 - total yearly cost analysis of operations.

- thus leading to the tools necessary for the proper reconsideration of utility and feedback (chapter 6)

The physical control activity mentioned in point 5.1.6 is established as follows:

- 5.1.6.1 Quantitative activity control measured every three months in
 - total number of visits paid
 - analysis of visits paid in relation to
 - geographical distribution
 - industrial branch
 - individual achievement of DTO staff members
 - total costs for visit paid



- total numbers of inquiries by telephone
- total costs per inquiry
- total number of pieces of active selective information disseminated
- analysis of total number disseminated in relation to
 - number of different receivers
 - nature of receiver organization, viz.:
 - professional organizations
 - knowledge centres
 - industrial enterprises
 - public authorities and services
 - daily press and periodicals
 - individuals
 - nature of information disseminated
 - cuttings (abstracts etc.)
 - documents in extenso
 - lending of books
- individual achievements of DTO staff members
- total costs in relation to
 - costs per unit distributed
 - costs per receiver
- total number of requests for documents etc. received
- total number of documents procured
- total number of different orderers
- weekly registration of time consumption of staff members
- monthly comparison of actual time consumption with budget
- monthly comparison of actual costs with budget
- monthly liquidity control.

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6. Reconsideration of utility and feedback

The tools produced as per chapter 5 point 5.2 are the basic tools for intellectual reconsideration of results obtained in the working year.

A report on the working year is together with statements of operations and balances elaborated by the DTO management for the approval of the board, which approval is the official acknowledgement of the board to the management for the execution of their duties during the year in question.

The report of the activities critically reviews the performance and is the basis for the recommendation and directions from the board to the management regarding the planning part (chapter 5, point 5.1) for the year to come.

The board is as per the statutes authorized to set up committees with voluntary participants chosen preferably among the clients of DTO and whose object is to critically review DTO's performance from the users' point of view and to bring forward suggestions for improvement in future services.

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CIDST ad hoc working group
"Information for Industry"

Project Industry 7
II

Application of suggested
descriptive model

on

TICE
Teknologisk Informationscenter
for Ribe Amt
Spangsbjerg Møllevej 72
DK-6700 Esbjerg
Denmark

TICE is one of 5 local technological information centers in Denmark. It is affiliated to the regional Technological Institute in Aarhus.

April 1977



1. Basis philosophy

- 1.1 In 1969 a joint committee with representatives for the Council of Craftsmen and for the two major Danish Technological Institutes (Technological Institute of Copenhagen and Technological Institute of Jutland) recommended that the setting up of local technological information centers in some of the Danish counties should be tried out.

Two centers were established in 1971, of which one was located in Ribe County:

Teknologisk Informationscenter for Ribe Amt
TICE
Spangsbjerg Møllevej 2
DK-6700 Esbjerg

The basic philosophy behind the creation of these centers was that the center should - primarily through direct man-to-man contact with industry - stimulate industrial activities within the area by

- clarifying the need within the area for technological service of any kind,
- informing industry within the area about possibilities for assistance to industrial entities from centers of knowledge on local, regional and national level,
- arranging for cooperation between industrial entities within the area and centers of knowledge and other industrial entities as well,
- acting to a limited extent as trouble shooter for the industrial entities within the area.

In 1973 an account of the activities so far carried out was elaborated (in Danish) and a continuation of the project was encouraged.

The results of the activities of the center were in 1976 considered to be so valuable that it was decided to give TICE a permanent status. Permanent statutes to that effect were consequently worked out in November 1976 (in Danish).



1.2 The target group of TICE is

- entities of industrial and of craftsmanlike character within the area. Thus, the center should pay special attention to small entities inclusive of one-man enterprises.

There are no limitations to the technological character or level of the entities which the center should contact.

The center uses a distinction between industrial and craftsmanlike entities to the effect that

- craftsmanlike entities have less than 20 persons employed
- industrial entities have more than 20 persons employed.

The geographic area covered by the activities of TICE is 3,131 km².

The population is 203,103 people (1974 figures).



2. Construction of service

- 2.1 Primary tasks on TICE initiative - no fee
- 2.2 Derived tasks on TICE initiative - no fee
- 2.3.1 Primary tasks on client's demand - no fee
- 2.3.2 Primary tasks on client's demand - against fee
- 2.4.1 Derived tasks on client's demand - no fee
- 2.4.2 Derived tasks on client's demand - against fee

The detailed description of the abovementioned tasks is as follows:

2.1 Primary tasks on TICE initiative - no fee

2.1.1 Liaison service to enterprises

- identification of all industrial and craftsmanlike entities within the area,
- looking up of as many of such entities as possible within the limit of time available and explaining to them what services are available from the center,
- follow-up visits and contact by telephone.

2.1.2 Liaison service to centers of knowledge

- identification of centers of knowledge within the area and maintaining personal contact with them,
- in cooperation with other centers like TICE, arrangement of visits of the staffs of the centers to centers of knowledge on national or regional level, acting horizontally or vertically, and maintaining personal contact with them. The object is to define the character and the scope of the assistance which the local centers can get from centers of knowledge outside the local area.



2.1.3 Liaison service to organizations and public services

- identification of professional organizations and public services within the area. Establishment and maintenance of personal contact with the head of such organizations and services,
- taking of initiative towards such organizations and public services with the object of assisting such bodies as well as the industrial entities regarding f.inst. interpretation of public regulations and their impact on the local industrial activity. (Example: Identification for the industrial entities of centers of knowledge which can assist in overcoming difficulties as to fulfilment of public regulations regarding health, security, environmental protection etc.).

2.1.4 Dissemination of information

- TICE does not disseminate any information be it in the form of abstracts or Tech-briefs.

The reason for this is that it is judged that the target group of TICE is generally not in a position to be able to utilize such written information.

2.2 Derived tasks on TICE initiative - no fee

- elaboration and publication of a directory of all entities of craftsmanlike or industrial character within the region. The directory contains not only name, address and professional character of the enterprises but lists in addition the equipment of the enterprises and their capacities, - thus presenting the industrial and craftsmanlike offer of the region to potential clients inside or outside the region,
- participation on local level in meetings, conferences etc. which may be of importance to local industry,



- participation to a very limited extent on national and international level in meetings, conferences, etc. which may have a content of interest to the promotion of industrial activity within the TICE area.

2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service (question/answer service)

- immediate reply on basis of own resources,
- immediate reply with specific reference to local supplier/center of knowledge, if available,
- reply with reference to supplier/centers of knowledge outside the region.

2.3.1.2 Uncomplicated problem solving (day-to-day problems)

- problems of technological character which can be solved on the basis of the expertise of the center. The greatest importance in the solving of such problems is placed on showing to the client the methodology used in the problem solving,
- problems of economic/managerial character. By presentation of the answer emphasis is again placed on methodology.

2.3.1.3 Procurement of information (technological, techno/economic etc.)

- identification of the problem through personal contact with the client,
- procurement of information from centers of knowledge,
- repackaging of information in preparation of verbal presentation of the information demanded,
- calling of specialists on the matter from centers of knowledge outside the region if necessary.



2.3.2 Primary tasks on client's demand - against fee

- performance of uncomplicated tasks on behalf of the client in such cases where
 - the client does not possess the necessary qualification (mainly administrative/ clerical exercises),
 - no other expertise than that of the center is available.

The fees claimed in such cases are always higher than those demanded by private consultants on similar jobs.

The number of jobs handled according to this point is deliberately kept very low.

2.4.1 Derived tasks on client's demand - no fee

- on behalf of bigger (regional) centers and on the request of clients within the local area the center will arrange for special training courses developed by the regional centers to be held within the local area.

2.4.2 Derived tasks on client's demand - against fee

None.



3. Operational pattern

In this section a description is given of

- TICE organization
- Selection of staff and staff policy
- Staff impact on liaison work
- Performance of some requested tasks.

3.1 TICE organization

The TICE organization is built up as follows:

A board whose 11 members are pointed out

- partly by the regional technological institute (in Aarhus)
- partly by the members of the sitting board.

Members of the board are preferably pointed out among persons representing

- the community authorities
- the professional organizations of the local area
- employers associations
- associations of industrially employed persons
- local banks.

The board is responsible to the board of directors of the regional technological institute.

The board establishes a secretariat responsible of the day-to-day contact with the local center.

A head of center responsible towards the board regarding all TICE activities.

The head of the center is one of two permanent members of the abovementioned secretariat.

A center staff of 3 members.



3.2 Staff policy and selection of staff

3.2.1 and 3.2.2 Selection of staff

It is the general policy that the center staff should consist of 4 persons and not more. The distribution of qualifications should be

- one holding an economic/commercial degree
- one holding a bachelors degree in engineering
- one holding the technical qualifications of a skilled craftsman
- one office staff.

In the selection of the staff special emphasis is - apart from the abovementioned qualifications - placed upon

- profound knowledge of the local area. The staff selected should preferably have lived a substantial part of their life within the area,
- industrial experience preferably from small enterprises,
- a certain basic knowledge of at least one language other than Danish,
- considerable qualifications as to capability of verbal communication,
- general human qualifications.

The level of qualifications of the staff as a whole is maintained by

- study tours to other centers,
- occasional participation in courses, seminars etc.,
- appointment to membership in local professional organizations.

It is the fixed policy of the board of the center that professional occupation in the center is considered a lifetime job. This is very important because the degree of success of the center's work depends to a very great



extent upon the degree of personal contact and confidence between the staff of the center and the clients.

3.2.3 Tasks performed by staff

3.2.3.1 Liaison service

3.2.3.2 Transfer of information

3.2.3.3 Procurement of knowledge

3.2.3.4 Performance of some requested tasks

3.2.3.1 Liaison service

The liaison service to the clients is considered the most important part of the center's work. The work has an analytical character and is based upon establishment of a very high degree of personal confidence between the center staff and the clients. (43% of the staff-time is allocated to liaison work).

Many of the clients are running very small enterprises, involving also their personal economy. It is therefore very often the delicate task of the center staff to try to make a distinction between the private and the professional part of the enterprise, - thus enabling the client to establish a general overview on his own situation and enabling the center staff through this analysis to identify the problems of technical, techno/economic or management character which the enterprise is faced with.

The carrying out of such an analysis is a very delicate and time-consuming task, - but inevitable as a means of learning the character of the needs and the level of the technology which can be transferred to the enterprise; such transfer can only start after the carrying out of the analysis described.



As it is the duty of the center to serve industrial activities of any kind within the area, the establishment of comprehensive surveys of industrial entities in the area is a necessary basis activity of the center. On the basis of this directory the staff mutually plans the contact visits.

3.2.3.2 Transfer of information

Having identified and clearly defined the information needed by the enterprise the center tries to find the answer within the resources of the local area.

When the information needed is found, the center staff will have to repackage the information and to transmit it in verbal form.

The follow-up activity consists of visits during which the staff on the spot controls whether the information transmitted has been understood, applied and useful. If not, another attempt has to be made.

It is only in a few exceptional cases that the center transmits information in the sense of technology transfer in written form.

3.2.3.3 Procurement of information

As mentioned above the center will in the initial stage look for information needed through own or other local sources. In the majority of the problems encountered this is sufficient (21% of the staff-time is allocated to such information and documentation work).

But if the problems have a character beyond the expertise of the local sources, the center staff will abstain from looking for adequate information by themselves.



Instead the problem is transmitted to centers of knowledge outside the local area (3% of the staff-time is being used on such arrangements with outside centers of knowledge).

The outside centers will in most cases use the center as intermedium for transfer of the information needed. Again a verbal repackaging and control visits to the client are indispensable.

3.2.3.4 Performance of some requested tasks

The tasks requested by the clients are of very different character and no fixed methodology is possible, - apart from some basic office-routines, viz.:

- internal center report on the problem,
- discussion between all four center-staff members on possible solutions,
- the answer to the problem is written down, - but again personal contact for transfer of the answer is indispensable.

Some examples of requested tasks are presented below:

"-Have I to extend my premises to obtain an increase in production."

"-Is there a more economical technology available instead of the welding operations I am using at present."

"-How do I cope with the public regulations regarding toxicity of the wastewater from the production."

"-Does my product cope with the public standards and regulations in the country of"



4. Marketing and sales activities

From the very beginning, the board and the staff of the center has held the opinion that the success of the work of the center would depend upon the confidence which the clients would have to the centers

- reliability and absolute discretion
- professional competence
- profound knowledge regarding overall technical and techno/economic problems within the area.

These basic elements have been decisive for the definition of

- staff policy
- marketing and sales policy

Staff policy has been described in point 3.2.

The marketing policy has been agreed to consist of two major elements

4.1 Primary activities focussing on liaison service on TICE initiative

4.2 Secondary activities.

4.1 Liaison service

The basic philosophy, scope and overall policy of TICE liaison service have previously (point 3.2.3.1) been described. The following is a pragmatic description of the methodology used in the day-to-day operations.

Identification

is made according to accessible surveys and registers. It is the aim of the center to establish a comprehensive survey of enterprises within the area for which reason comprehensive identification directories, arranged according to industrial branch, are elaborated and published.

Primary contact

is established either by telephone or by simple looking up ("knock-on-the-door-principle").



Performance of interview

- with the head of the enterprise on the basis of
- preceding knowledge about the enterprise and its situation
 - talks on a very concrete basis about products, technology applied etc.
 - careful approach to the more delicate matters of economy, finance etc. (delicate because it very often involves matters of private character)
 - attempts to identify current problems
 - after interview, - compiling of report with the following elements:
 - name, address etc.
 - registration number
 - data regarding visit
 - description of enterprise
 - identification if possible of some concrete problems
 - discussion of report with total center staff
 - decision regarding methodology for problem solving
 - establishment of solution
 - presentation of solution to client through renewed interview.

Follow-up activities by

- current contact by telephone
- question/answer service
- plan for revisit
- solution of requested tasks.

4.2 Secondary marketing activities

The main secondary marketing activities are:

- current presentation of the activities of the center in local newspapers
- current presentation of the center's possibilities in local professional organizations
- current contact to public authorities within the area
- participation in exhibitions related to the economic life of the area.



5. Control activities

TICE has not any income of its own of any substantial importance. The funding is ensured by

- 2/3 from the Technology Council (governmental support)
- 1/3 from the County (the local area administration)

The control activities could be divided into two parts:

5.1 financial control of the center's performance

5.2 control of activities carried out.

5.1 Financial control

The center has no bookkeeping of its own. All financial operations are carried out through the secretariat of the Technological Institute of Jutland.

The control activities are carried out as a simple comparison of expenditures with a budget accepted by the board. The main expenditures are salaries, office-rent and travel expenses, the budgetting and control of which involve no problems.

5.2 Activity control

The activity plans are worked out by the center staff and presented for acceptance by the board. The plans are worked out in terms of hours spent on the activities:

- Liaison service (about 43%)
- Information and documentation work (about 21%)
- Arrangement of contact to centers of knowledge outside the area (about 3%)
- Performance of tasks - no fee (about 13%)
- Performance of tasks - against fee (about 1%)
- Education of staff etc. (about 4%)
- Administrative work (about 15%)



Hours actively spent are regularly compared with the budget. It should be noted anyhow that substantial corrections as to the distribution of the hours spent are not possible apart from the liaison service and the administrative work. All other activities are consequences of the liaison work carried out.

Control of the liaison activities are carried out in regard to

- geographical distribution over the area
- distribution in relation to professional area, i.e.:
 - machine and metal-working industry (about 25%)
 - centers of knowledge, trade, authorities, banks etc. (about 30%)
 - building construction (about 15%)
 - wood-working industry (about 8%)
 - other industries (about 11%)
 - professional organizations (about 10%)
 - unspecified (about 1%)

The total number of contacts per annum amounts to about 2,500.



6. Reconsideration and feedback

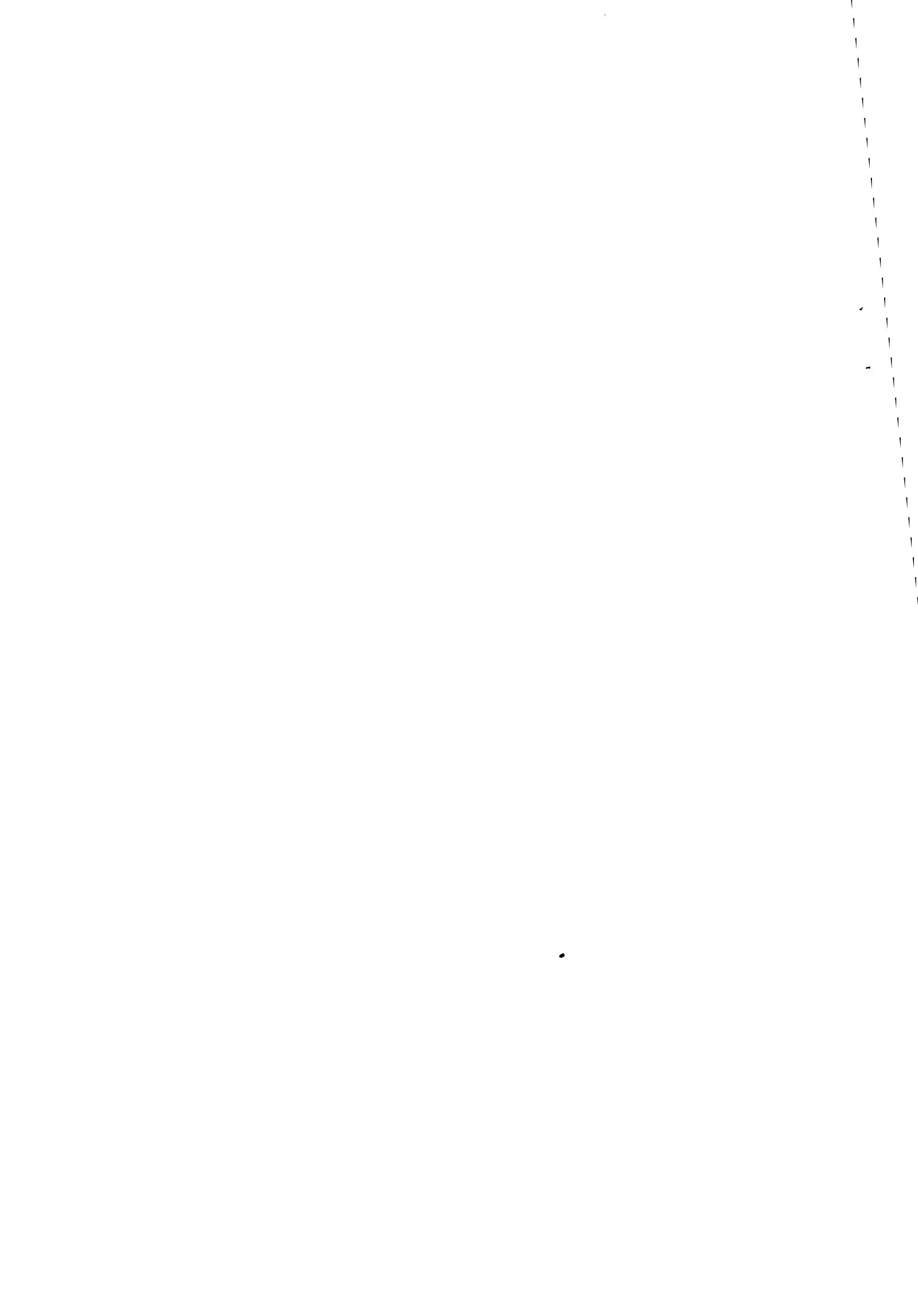
The center staff is currently keeping accounts on its activities..

The board is gathered at least 4 times per year on which occasions the activities carried out and those planned are being discussed.

It should be noted that the background for establishing for a small center a board as big as 11 members chosen among people with very different professional background, is that the board acts as a panel with which the impact of the service of the center can be discussed. On this background a short-term correction of the activities can be carried out.

Long-term corrections of the activities are a matter for discussions between the board and the authorities who are granting the funding of the center.





CIDST ad hoc working group
"Information for Industry"

Project Industry 7

II

Application of suggested
descriptive model

on

TICH
Teknologisk Informationscenter
for Nordjyllands Amt
Hestkærvej
DK-9800 Hjørring
Denmark

TICH is one of five local technological information centers in Denmark. It is affiliated to the regional Technological Institute JTI in Aarhus.

April 1977



1. Basic philosophy

- 1.1 In 1969 a joint committee with representatives for the Council of Craftsmen and for the two major Danish Technological Institutes (Technological Institute of Copenhagen and Technological Institute of Jutland) recommended that the setting up of local technological information centers in some of the Danish counties should be tried out.

In 1974 a study was carried out by the Technological Institute of Jutland regarding the needs for the establishment of a local center in the northern county of Jutland.

As a result of this it was decided to establish a center in February 1975 in Nordjylland County, i.e.

Teknologisk Informationscenter for
Nordjyllands Amt
TICH
Hestkærvej
DK-9800 Hjørring

The basic philosophy behind the creation of the center was - like that of the centers already established in other Danish counties - that the center should, primarily through direct man-to-man contact with industry, stimulate industrial activities within the area by

- clarifying the need within the area for technological service of any kind,
- informing industry within the area about possibilities for assistance to industrial entities from centers of knowledge on local, regional and national level,
- arranging for cooperation between industrial entities within the area and centers of knowledge and other industrial entities as well,
- acting to a limited extent as trouble shooter for the industrial entities within the area.

The organizational basic elements as regards the establishment and operation of the center were laid down in temporary statutes valid throughout a test period after the expiration of which permanent ones are going to be worked out.

...



1.2 The target group of TICH is

- entities of industrial and of craftsmanlike character within the area. Thus, the center should pay special attention to small entities inclusive of one-man enterprises.

There are no limitations to the technological character or level of the entities which the center should contact.

The center uses a distinction between industrial and craftsmanlike entities to the effect that

- craftsmanlike entities have less than 20 persons employed
- industrial entities have more than 20 persons employed.

The geographical area covered by the activities of TICH is 6,172 km².

The population is 466,176 people (1974 figures).

...



2. Construction of service

- 2.1 Primary tasks on TICH initiative - no fee
- 2.2 Derived tasks on TICH initiative - no fee
- 2.3.1 Primary tasks on client's demand - no fee
- 2.3.2 Primary tasks on client's demand - against fee
- 2.4.1 Derived tasks on client's demand - no fee
- 2.4.2 Derived tasks on client's demand - against fee

The detailed description of the abovementioned tasks is as follows:

2.1 Primary tasks on TICH initiative - no fee

2.1.1 Liaison service to enterprises

- identification of all industrial and craftsmanlike entities within the area,
- looking up of as many of such entities as possible within the limit of time available and explaining to them what services are available from the center,
- follow-up visits and contact by telephone.

2.1.2 Liaison service to centers of knowledge

- a certain identification of centers of knowledge within the area has been carried out but so far the contacts are not very well developed. Since its establishment TICH has instead relied very much on its parent organization JTI (Technological Institute of Jutland),
- to some extent the staff of TICH has participated in contact visits to other centers of knowledge on national or regional level acting horizontally or vertically within the technological service structure in

...



Denmark. It is the intention of TICH to reinforce this contact work in future with the object of clarifying the character and scope of the assistance which TICH can get from centers of knowledge outside the local area.

2.1.3 Liaison service to organizations and public services

- identification of professional organizations and public services within the area. Establishment and maintenance of personal contact with the heads of such organizations and services. TICH pays special attention to contact with consultants, who are professionally employed by communities within the area and having as their duty generally to encourage existing industries and specifically to promote establishment of new industries,
- taking of initiative towards organizations and public services with the object of assisting such bodies as well as the industrial entities regarding f.inst. interpretation of public regulations and their impact on the local industrial activity. (Example: For the industrial entities identification of centers of knowledge which can assist in overcoming difficulties as to fulfilment of public regulations regarding health, security, environmental protection, etc.).

2.1.4 Dissemination of information

- In a very casual way and to a small extent TICH disseminates information to industrial entities within the area. This information is in the form of abstracts and short technical notes, preferably in Danish. The center feels that only to a limited extent the target group is able to utilize written information.

Nevertheless the center holds the opinion that a regular dissemination of some sort of tech-briefs to the entities within the area might be useful.

...



The contents of such tech-briefs could be

- announcement of courses of technical, commercial or administrative character arranged by other organizations within the area,
- short notices on subjects of general interest to specific industrial branches in the area.

2.2 Derived tasks on TICH initiative - no fee

- elaboration and publication of a directory of all entities of craftsmanlike or industrial character within the region. The directory contains not only name, address and professional character of the enterprises but lists in addition the equipment of the enterprises and their capacities, - thus presenting the industrial and craftsmanlike offer of the region to potential clients inside or outside the region,
- participation on local level in meetings, conferences etc. which may be of importance to local industry,
- participation to a very limited extent on national and international level in meetings, conferences, etc. which may have a content of interest to the promotion of industrial activity within the TICH area.

2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service (question/answer service)

- immediate reply on the basis of own resources,
- immediate reply with specific reference to local supplier/center of knowledge, if available,
- reply with reference to supplier/centers of knowledge outside the region,

...



- follow-up in the majority of cases; by visiting or calling up the enterprises regarding appropriateness of answer delivered.

2.3.1.2 Uncomplicated problem solving (day-to-day problems)

- problems of technological character which can be solved on the basis of the expertise of the center. The greatest importance in the solving of such problems is placed on showing to the client the methodology used in the problem solving,
- problems of economic/managerial character. By presentation of the answer emphasis is again placed on methodology.

2.3.1.3 Procurement of information (technological, techno/economic etc.)

- identification of the problem through personal contact with the client,
- procurement of information from centers of knowledge,
- repackaging of information in preparation of verbal presentation of the information demanded,
- calling in of specialists on the matter from centers of knowledge outside the region if necessary. If specialists from outside centers of knowledge pay visits to the enterprises, TICH will be represented by a staff member during such visits.

2.3.2 Primary tasks on client's demand - against fee

- TICH is very disinclined to carry out tasks against a fee. The center staff feels that it would be to misuse the limited manpower of the center on tasks for which the enterprise is prepared to pay as private consultants or other bodies exist and are prepared to do such work.

...



TICH puts instead - at least in the present stage of its existence - its major emphasis on liaison work carried out on its initiative and free of charge.

2.4.1 Derived tasks on client's demand - no fee

- on behalf of bigger (regional) centers and on the request of clients within the local area the center will arrange for special training courses developed by the regional centers to be held within the local area.

2.4.2 Derived tasks on client's demand - against fee

- in case demands for carrying out such tasks arise, the TICH center will convey the demand to the parent organization JTI who will handle the case further on without any assistance whatsoever from TICH.

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3. Operational pattern

In this section a description is given of

- TICH organization
- selection of staff and staff policy
- performance of some requested tasks.

3.1 TICH organization

The TICH organization is built up as follows:

A board whose 12 members are pointed out

- partly by the regional technological institute (in Aarhus)
- partly by the members of the sitting board.

Members of the board are preferably pointed out among persons representing

- the community authorities
- the professional organizations of the local area
- employers associations
- associations of industrially employed persons
- local banks

The board holds the responsibility of the center activities and reports to the management of the regional technological institute (JTI).

The board is in the starting phase of the center assisted by an advisory group of 30 representatives of

- public bodies
- industrial entities
- professional organizations
- etc.

It is not the intention to maintain this advisory group after the establishment of the permanent status of the center.

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At the regional technological institute (JTI) a secretariat is responsible for the day-to-day contact with the center.

A head of center responsible towards the board regarding all TICH activities.

The head of the center is one of two permanent members of the abovementioned secretariat.

A center staff of 3 members.

3.2 Staff policy and selection of staff

3.2.1 and 3.2.2 Selection of staff

In the stage of the creation of TICH it was the general policy (although not written down) that the center staff should consist of 4 persons and not more. The distribution of qualifications should be

- one holding an economic/commercial degree
- one holding a bachelors degree in engineering
- one holding the technical qualifications of a skilled craftsman
- one office staff.

It is the experience of the center staff that - due to the size of the area within which the center is operating - the number of 4 staff members is too small. Especially the liaison service suffers from lack of manpower.

In the selection of the staff, emphasis is - apart from the abovementioned qualifications - placed upon

- industrial experience preferably from small enterprises,
- a certain basic knowledge of at least one language other than Danish
- considerable qualifications as to capability of verbal communication,
- general human qualifications.

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It should be noted that when new staff is employed, no emphasis is placed on the applicant's previous knowledge about the local area.

The level of qualifications of the staff as a whole is maintained by

- study tours to other centers,
- occasional participation in courses, seminars, etc.,
- appointment to membership of local professional organizations.

The professional occupation in the center should not be regarded as a lifetime job. 4-5 years of work in the center is considered to be a suitable period although renewal of the staff should be carried out with due consideration to preservation of continuity in the daily work.

3.2.3 Tasks performed by staff

3.2.3.1 Liaison service

3.2.3.2 Transfer of information

3.2.3.3 Procurement of knowledge

3.2.3.4 Performance of some requested tasks

3.2.3.1 Liaison service

The liaison service to the clients is considered the most important part of the center's work. The work has an analytical character and is based upon establishment of a very high degree of personal confidence between the center staff and the clients. (About 60% of the staff-time is allocated to liaison work).

Many of the clients are running very small enterprises, involving also their personal economy. It is

...



therefore very often the delicate task of the center staff to try to make a distinction between the private and the professional part of the enterprise, - thus enabling the client to establish a general overview on his own situation and enabling the center staff through this analysis to identify the problems of technical, techno/economic or management character which the enterprise is faced with.

The carrying out of such an analysis is a very delicate and time-consuming task, - but inevitable as a means of learning the character of the needs and the level of the technology which can be transferred to the enterprise; such transfer can only start after the carrying out of the analysis described.

As it is the duty of the center to serve industrial activities of any kind within the area, the establishment of comprehensive surveys of industrial entities in the area is a necessary basis activity of the center. On the basis of this directory the staff mutually plans the contact visits.

3.2.3.2 Transfer of information

Having identified and clearly defined the information needed by the enterprise, the center tries to find the answer within the resources of the local area.

When the information needed is found, the center staff will have to repackage the information before transmitting it in verbal form.

The follow-up activity consists of visits during which the staff controls on the spot whether the

...



information transmitted has been understood, applied and useful. If not, another attempt has to be made.

It is only in a few exceptional cases that the center transmits information in the sense of technology transfer in written form.

3.2.3.3 Procurement of information

As mentioned above the center will in the initial stage look for information needed through own or other local sources. In the majority of the problems encountered this is sufficient (about 15% of the staff-time is allocated to such information and documentation work).

But if the problems have a character beyond the expertise of the local sources, the center staff will abstain from looking for adequate information by themselves.

Instead, the problem is transmitted to centers of knowledge outside the local area (3% of the staff-time is being used on such arrangements with outside centers of knowledge).

The outside center will in some cases use the center as intermedium for transfer of the information needed, but direct contact by phone is very often used from the outside center to the enterprise. Verbal repackaging and control visits (together with TICH representatives) are indispensable.

3.2.3.4 Performance of some requested tasks

The tasks requested by the clients are of very different character and no fixed methodology is possible - apart from some basic office-routines viz.:

...



- internal center notes on the problem,
- discussion if necessary with other members of the center-staff on possible solutions,
- the answer to the problem is written down, - but again personal contact for transfer of the answer is indispensable.

Some examples of requested tasks are presented below:

"-Have I to extend my premises to obtain an increase in production".

"-Is there a more economical technology available instead of the welding operations I am using at present."

"-How do I cope with the public regulations regarding toxicity of the waste-water from the production."

"-Does my product cope with the public standards and regulations in the country of"

...



4. Marketing and sales activities

From the very beginning, the board and staff of the center have held the opinion that the success of the work of the center would depend upon the confidence which the clients would have to the centers

- reliability and absolute discretion
- professional competence

The basic elements have been decisive for the definition of

- staff policy
- marketing and sales policy.

Staff policy has been described in point 3.2.

The marketing policy has been agreed to consist of two major elements

4.1 Primary activities focussing on liaison service to TICH initiative

4.2 Secondary activities

4.1 Liaison service

The basic philosophy, scope and overall policy of TICH liaison service have previously (point 3.2.3.1) been described. The following is a pragmatic description of the methodology used in the day-to-day operations.

Identification

is made according to accessible surveys and registers. The center intends to elaborate comprehensive surveys of all industrial entities within the area. Such surveys have till the present date been elaborated on some branches of industry and have proved to be not only useful tools for the center but also to be very valuable for private and public bodies within the area.

...



Primary contact

is established either by telephone or by simple looking up ("knock-on-the-door-principle").

Performance of interview

with the head of the enterprise on the basis of

- preceding knowledge about the enterprise and its situation
- talks on a very concrete basis about products, technology applied, etc.
- careful approach to the more delicate matters of economy, finance, etc. (delicate because it very often involves matters of private character)
- in some cases compilation of notes on the visit carried out, but till now no systematics in compilation of reports has been established.
Liaison service is considered more important than report-writing, especially in the initial stage of the center where the outside demand for service is prepondering.

Follow-up activities by

- current contact by telephone
- question/answer service
- plan for revisit
- solution of requested tasks.

4.2 Secondary marketing activities

The main secondary marketing activities are:

- current presentation of the activities of the center in local newspapers
- current presentation of the center's possibilities in local professional organizations
- current contact to public authorities within the area
- participation in exhibitions related to the economic life of the area

...



- in cooperation with local banks arrangement of meetings with representatives of small industrial enterprises to present the service possibilities of the center.

...



5. Control activities

TICH has not any income of its own of any substantial importance. The funding is ensured by

2/3 from the Technology Council (governmental support)

1/3 from the County (the local area administration)

The control activities could be divided into two parts:

5.1 financial control of the center's performance

5.2 control of activities carried out.

5.1 Financial control

The center has no bookkeeping of its own. All financial operations are carried out through the secretariat of the Technological Institute of Jutland.

The control activities are carried out as a simple comparison of expenditures with a budget accepted by the board. The main expenditures are salaries, office-rent and travel expenses, the budgetting and control of which involve no problems.

5.2 Activity control

The activity plans are worked out by the center staff and presented for acceptance to the board. The plans are worked out in terms of hours spent on the activities:

- Liaison service (about 60%)
- Information and documentation work (about 15%)
- Arrangement of contact to centers of knowledge outside the area (about 3%)
- Performance of tasks - no fee (about 7%)
- Performance of tasks - against fee (about 0%)
- Education of staff etc. (about 2%)
- Administrative work (about 13%)

...



Hours actively spent are regularly compared with the budget. It should be noted anyhow that substantial corrections as to the distribution of the hours spent are not possible apart from the liaison service and the administrative work. All other activities are consequences of the liaison work carried out.

Control of the liaison activities are carried out in regard to

- geographical distribution over the area
- distribution in relation to professional area, i.e.:
 - machine and metal working industry (about 45%)
 - centers of knowledge, trade, authorities, banks, professional organizations (about 15%)
 - building construction (about 24%)
 - wood-working industry (about 7%)
 - other industries (about 5%)
 - unspecified (about 4%)

The total number of contacts per annum amounts to about 3,000.

...



6. Reconsideration and feedback

The center-staff is currently keeping account on its activities.

The advisory group is gathered twice a year on which meetings the impact of the activities of the center are discussed and assessed. The observations of this group are conveyed to the board of the center for further consideration and possible corrections in the day-to-day work.

The board is gathered at least 4 times a year. An annual report is worked out by the end of the financial year.

Long-term corrections and decisions regarding continuation of support to the center are matters for discussion between the board and the authorities who are granting the funding of the center.



CIDST ad hoc working group
"Information for Industry"

Project Industry 7

II

Application of suggested
descriptive model

on

TICS
Teknologisk Informationscenter
for Vestsjællands Amt
Bredahlsgade 1
DK-4200 Slagelse
Denmark

TICS is one of five local technological information centers in Denmark. It is an organizational part of the regional Technological Institute TI in Copenhagen.

April 1977



1. Basic philosophy

- 1.1 In 1969 a joint committee with representatives for the Council of Craftsmen and for the two major Danish Technological Institutes (Technological Institute of Copenhagen and Technological Institute of Jutland) recommended that the setting up of local technological information centers in some of the Danish counties should be tried out.

Two centers were established in 1971, of which one was located in Vestsjællands County:

Teknologisk Informationscenter for
Vestsjællands Amt
TICS
Bredahlsgade 1
DK-4200 Slagelse

The basic philosophy behind the creation of these centers was that the center should - primarily through direct man-to-man contact with industry - stimulate industrial activities within the area by

- clarifying the need within the area for technological service of any kind,
- informing industry within the area about possibilities for assistance to industrial entities from centers of knowledge on local, regional and national level,
- arranging for cooperation between industrial entities within the area and centers of knowledge and other industrial entities as well,
- acting to a limited extent as trouble shooter for the industrial entities within the area.

In 1973 an account of the activities so far carried out was elaborated (in Danish) and a continuation of the project was encouraged.

The results of the activities of the center were in 1976 considered to be so valuable that it was decided to give TICS a permanent status. Permanent statutes to that effect were consequently worked out in November 1976 (in Danish).

...



1.2 The target group of TICS is

- entities of industrial and of craftsmanlike character within the area. Thus, the center should pay special attention to small entities inclusive of one-man enterprises.

There are no limitations to the technological character or level of the entities which the center should contact.

The center uses a distinction between industrial and craftsmanlike entities to the effect that

- craftsmanlike entities have less than 20 persons employed
- industrial entities have more than 20 persons employed.

The geographical area covered by the activities of TICS is 2984 km².

The population is 266,582 people (1974 figures).

...



2. Construction of service

- 2.1 Primary tasks on TICS initiative - no fee
- 2.2 Derived tasks on TICS initiative - no fee
- 2.3.1 Primary tasks on client's demand - no fee
- 2.3.2 Primary tasks on client's demand - against fee
- 2.4.1 Derived tasks on client's demand - no fee
- 2.4.2 Derived tasks on client's demand - against fee

The detailed description of the abovementioned tasks is as follows:

2.1 Primary tasks on TICS initiative - no fee

2.1.1 Liaison service to enterprises

- identification of all industrial and craftsmanlike entities within the area,
- looking up of as many of such entities as possible within the limit of time available and explaining to them what services are available from TICS and from other technological service centers as well,
- follow-up visits and contact by telephone.

2.1.2 Liaison service to centers of knowledge

- occasionally contact to centers of knowledge within the area,
- in cooperation with other centers like TICS, arrangement of visits of the staffs of the centers to centers of knowledge on national or regional level, acting horizontally or vertically, and maintaining personal contact with them. The object is to define the character and the scope of the assistance which the local centers can get from centers of knowledge outside the local area.

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2.1.3 Liaison service to organizations and public services

- taking of initiative towards organizations and public services with the object of assisting such bodies as well as the industrial entities regarding f.inst. interpretation of public regulations and their impact on the local industrial activity. (Example: Identification for the industrial entities of centers of knowledge which can assist in overcoming difficulties as to fulfilment of public regulations regarding health, security, environmental protection etc.).
- no systematic work is done as to identification of professional organizations and public services within the area.

2.1.4 Dissemination of information

- TICS is to some extent - although not systematically - disseminating information to industrial entities of all kinds within the area.

2.2 Derived tasks on TICS initiative - no fee

- participation on local level in meetings, conferences etc. which may be of importance to local industry,
- participation to a very limited extent on national and international level in meetings, conferences, etc. which may have a content of interest to the promotion of industrial activity within the TICS area.

2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service (question/answer service)

- immediate reply on basis of own resources,
- immediate reply with specific reference to local supplier/center of knowledge, if available,
- reply with reference to supplier/centers of knowledge outside the region.

...



2.3.1.2 Uncomplicated problem solving
(day-to-day problems)

- problems of technological character which can be solved on the basis of the expertise of the center. The greatest importance in the solving of such problems is placed on showing to the client the methodology used in the problem solving,
- problems of economic/managerial character. By presentation of the answer emphasis is again placed on methodology.

2.3.1.3 Procurement of information
(technological, techno/economic etc.)

- identification of the problem through personal contact with the client,
- procurement of information from centers of knowledge,
- repackaging of information in preparation of verbal presentation of the information demanded,
- calling of specialists on the matter from centers of knowledge outside the region if necessary.

2.3.2 Primary tasks on client's demand - against fee

- performance of tasks on behalf of the client especially in relation to financial problems (application for loans etc.).

Fees are only claimed in cases where the center staff is involving more than 4 hours of work. Fees claimed are of same height as those claimed by private consultants in similar cases.

- arrangement of training courses for which a fee is claimed.

The center has an obligation as to having an income of its own (20% of the budget). The center aims at covering as much of the 20% as possible by performance of tasks as described.

...



2.4.1 Derived tasks on client's demand - no fee

- on behalf of bigger (regional) centers and on the request of clients within the local area the center will arrange for training courses developed by others.

2.4.2 Derived tasks on client's demand - against fee

None.

....



3. Operational pattern

In this section a description is given of

- TICS organization
- Selection of staff and staff policy
- Performance of some requested tasks.

3.1 TICS organization

The TICS organization is built up as follows:

A contact committee of at least 11 members
pointed out

- partly by the local authorities and institutes involved,
- partly by the professional organizations involved.

Members of the committee are preferably recruited from the local area and are pointed out among persons representing

- the community and county authorities
- representatives of publicly employed trade and industry counsellors within the area
- employers' associations
- associations of industrially employed persons.

A center staff of 4 members jointly responsible for the day-to-day operations of the center towards the head of the information department of the regional technological institute in Copenhagen.

3.2 Staff policy and selection of staff

3.2.1 and 3.2.2 Selection of staff

It is the general policy that the center staff should consist of 4 persons and not more.

...



The distribution of qualifications should be

- one holding an economic/commercial degree
- one holding a bachelors degree in engineering
- one holding the technical qualifications of a skilled craftsman
- one office staff.

In the selection of the staff special emphasis is - apart from the abovementioned qualifications - placed upon

- practical experience preferably from industrial enterprises,
- considerable qualifications as to capability of verbal communication,
- general human qualifications.

The level of qualifications of the staff as a whole is maintained by

- study tours to other centers,
- occasional participation in courses, seminars etc.

3.2.3 Tasks performed by staff

3.2.3.1 Liaison service

3.2.3.2 Transfer of information

3.2.3.3 Procurement of knowledge

3.2.3.4 Performance of some requested tasks

...



3.2.3.1 Liaison service

The liaison service to the clients is considered the most important part of the center's work. The work has an analytical character and is based upon establishment of a very high degree of personal confidence between the center staff and the clients. (42% of the staff-time is allocated to liaison work).

Many of the clients are running very small enterprises, involving also their personal economy. It is therefore very often the delicate task of the center staff to try to make a distinction between the private and the professional part of the enterprise, - thus enabling the client to establish a general overview on his own situation and enabling the center staff through this analysis to identify the problems of technical, techno/economic or management character which the enterprise is faced with.

The carrying out of such an analysis is a very delicate and time-consuming task, - but inevitable as a means of learning the character of the needs and the level of the technology which can be transferred to the enterprise; such transfer can only start after the carrying out of the analysis described.

TICS is very well-known and highly estimated within its area. There is an urgent need for assistance to the enterprises within the area, and the visits have therefore to be carried out according to the actual demand (ad hoc).

In the event that especially planned activities are to be carried out, a more systematic planning of the contact visits is being made.

...



3.2.3.2 Transfer of information

Having identified and clearly defined the information needed by the enterprise the center tries to find the answer within the resources of the local area.

When the information needed is found, the center staff will have to repackage the information and to transmit it in verbal form.

The follow-up activity consists of visits during which the staff on the spot controls whether the information transmitted has been understood, applied and useful. If not, another attempt has to be made.

It is only in a few exceptional cases that the center transmits information in the sense of technology transfer in written form.

3.2.3.3 Procurement of information

As mentioned above the center will in the initial stage look for information needed through own or other local sources. In the majority of the problems encountered this is sufficient (17% of the staff-time is allocated to such information and documentation work).

But if the problems have a character beyond the expertise of the local sources, the center staff will abstain from looking for adequate information by themselves.

Instead, the problem is transmitted to centers of knowledge outside the local area (4% of the staff-time is being used on such arrangements with outside centers of knowledge).

The outside centers will normally contact the clients directly without using the center as intermediary. Verbal transmission of information demanded is considered necessary in most cases.

...



The outside centers are expected to keep TICS currently informed about any action carried out within the local area. This does not always apply.

3.2.3.4 Performance of some requested tasks

•• The tasks requested by the clients are of very different character and no fixed methodology is possible.

TICS relies very much upon leaving to the individual members of the center staff to find solutions by themselves and to follow up upon requested tasks.

Only the more complicated problems are discussed among the staff members in the initial stage.

Some examples of requested tasks are presented below:

"-Have I to extend my premises to obtain an increase in production."

"-Is there a more economical technology available instead of the welding operations I am using at present."

"-How do I cope with the public regulations regarding toxicity of the wastewater from the production."

"-Does my product cope with the public standards and regulations in the country of"

"-How can I exploit good product or production ideas?"

"-How can I be informed about ways and means for obtaining financial support?"

...



4. Marketing and sales activities

From the very beginning, the managing director of the regional Technological Institute of Copenhagen, the contact committee and the staff of the center have held the opinion that the success of the work of the center would depend upon the confidence which the clients would have to the centers

- reliability and absolute discretion
- professional competence
- profound knowledge regarding overall technical and techno/economic problems within the area.

These basic elements have been decisive for the definition of

- staff policy
- marketing and sales policy.

Staff policy has been described in point 3.2.

The marketing policy has been agreed to consist of two major elements

4.1 Primary activities focussing on liaison service on TICS initiative

4.2 Secondary activities

4.1 Liaison service

The basic philosophy, scope and overall policy of TICS liaison service have previously (point 3.2.3.1) been described. The following is a pragmatic description of the methodology used in the day-to-day operations.

Identification

is made according to accessible surveys and registers. The center has no ambition as to working out by themselves surveys of enterprises within the area.

Primary contact

is established either by telephone or by simple looking up ("knock-on-the-door-principle").

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Performance of interview

- with the head of the enterprise on the basis of
- preceding knowledge about the enterprise and its situation
 - talks on a very concrete basis about products, technology applied etc.
 - careful approach to the more delicate matters of economy, finance, etc. (delicate because it very often involves matters of private character)
 - attempts to identify current problems
 - after interview, - compilation of report with the following elements:
 - name, address etc.
 - registration number
 - data regarding visit
 - description of enterprise
 - identification if possible of some concrete problems
 - decision regarding methodology for problem solving
 - establishment of solution
 - presentation of solution to client through renewed interview.

Follow-up activities by

- current contact by telephone
- question/answer service
- plan for revisit
- solution of requested tasks.

4.2 Secondary marketing activities

The main secondary marketing activities are:

- distribution of brochures on special TICS activities
- current presentation of the activities of the center in local newspapers
- current presentation of the center's possibilities in local professional organizations
- current contact to public authorities within the area
- participation to a **very limited extent in exhibitions related to the economic life of the area**

...



5. Control activities

TICS' income-structure is the following:

- 70% is granted by the Technology Council (governmental support)
- 10% is support from local authorities
- 20% is TICS' income on activities paid for by clients.

The control activities could be divided into two parts:

5.1 financial control of the center's performance

5.2 control of activities carried out

5.1 Financial control

The center has no bookkeeping of its own. All financial operations are carried out through the secretariat of the Technological Institute of Copenhagen.

The control activities are carried out as a simple comparison of expenditures with the budget. The main expenditures are salaries, office-rent and travel expenses, the budgetting and control of which involve no problems.

5.2 Activity control

The activity plans are worked out by the center staff and presented for acceptance to the managing director of the regional Technological Institute of Copenhagen and the contact committee. The plans are worked out in terms of hours spent on the activities:

- Liaison service (about 42%)
- Information and documentation work (about 17%)
- Arrangement of contact to centers of knowledge outside the area (about 4%)
- Performance of tasks - no fee (about 4%)
- Performance of tasks - against fee (about 10%)
- Education of staff etc. (about 9%)
- Administrative work (about 14%)

...



Hours actively spent are regularly compared with the budget. It should be noted anyhow that substantial corrections as to the distribution of the hours spent are not possible apart from the liaison service and the administrative work. All other activities are consequences of the liaison work carried out.

Control of the liaison activities are carried out in regard to

- geographical distribution over the area
- distribution in relation to professional area, i.e.:
 - machine and metal-working industry (about 26%)
 - centers of knowledge, trade, authorities, banks, professional organizations (about 12%)
 - building construction (about 31%)
 - wood-working industry (about 7%)
 - other industries (about 14%)
 - unspecified (about 10%)

The total number of contacts per annum amounts to about 2,500.

...



6. Reconsideration and feedback

The center staff is currently keeping accounts on its activities.

The contact committee is gathered 4 times per year on which occasions the activities carried out and those planned are being discussed.

It should be noted that the background for establishing for a small center a contact committee as big as 11 members chosen among people with very different professional background is that the committee acts as a panel with which the impact of the service of the center can be discussed. On this background a short-term correction of the activities can be carried out.

Long-term corrections of the activities are a matter for decision by the managing director of the regional Technological Institute of Copenhagen according to the recommendations from the contact committee.





CIDST ad hoc working group
"Information for Industry"

Project Industry 7

II

Application of suggested
descriptive model

on

JTI
Jydsk Teknologisk Institut
Marselis Boulevard 135
DK-8000 Århus C
Denmark

JTI is one of two regional technological service institutes in Denmark. It is a private, non-profit institute receiving the substantial part of its funding from public means.

April 1977



1. Basic philosophy

- 1.1 The creation of JTI was planned at a meeting on May 3rd 1942 by a self-established committee of master artisans. The fundamental aim of the institute was to educate artisans by training courses and to act as consultants to small industry and artisans on day-to-day trouble-shooting. If necessary, the institute would as economic and practical realities made it possible carry out experiments, - but answers to problems would primarily be sought by looking up in literature available in own files or those of others.

The financial foundation was established by contributions partly from the municipalities of Jutland, partly from professional organizations and to some extent from trade and industry.

The preponderant weight in the activities of the institute was for many years kept on education and consultant work.

The institute held - until the Technological Service Act was passed in March 1973 - a position as a semi-public institute, partly subsidized by different public means and partly subsidized by private contributions.

The general basic philosophy for the activities of JTI has from its very beginning been phrased as follows:

"The purpose of JTI is to work to the benefit of Danish trade and industry by fostering of technological progress through development, experiments, consultation and education.

Technological progress is hereby interpreted as being the systematic application of scientific knowledge or any other organized comprehension aimed at procurement of solution of practical problems."

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In accordance with this philosophy and with the aim of the founders of the institute, the activities of JTI could be characterized by: Transfer of knowledge primarily to small entities by way of

- direct man-to-man transfer of existing knowledge (consultant service)
- direct transfer by training courses
- assistance to trade and industry by the carrying out of standardized tests
- assistance to trade and industry by applied research.

The basic philosophy described above is valid also after JTI in 1974 was recognized as a private, non-profit public utility service institute. Official statutes to this effect were approved by the Minister of Trade and Industry on April 18th 1974.

1.2 The target group of JTI is

- entities of industrial and craftsmanlike character in Jutland. The activities are in principle directed towards all entities regardless of size and professional character,
- professional organizations, public or semi-public institutes and services and public authorities primarily within Jutland.

The geographical area covered by the activities of JTI is 29766 km².

The population is 2,235,848 (1974 figures).

Note The following description concerns the JTI situation as it is in 1977. It refers only to activities of the institute in Aarhus, Jutland, and does not deal with a description of any of the local information centers (TICE, TICH etc.).

...



2. Construction of service

- 2.1 Primary tasks on JTI initiative - no fee
- 2.2 Derived tasks on JTI initiative - no fee
- 2.3 Primary tasks on client's demand - no fee
- 2.4 Primary tasks on client's demand - against fee
- 2.5 Derived tasks on client's demand - no fee
- 2.6 Derived tasks on client's demand - against fee

The description of the abovementioned tasks is - in a summarized form - as follows

2.1 Primary tasks on JTI initiative - no fee

2.1.1 Liaison service

JTI is not carrying out any regular or systematic liaison service from the main office in Aarhus.

Only a few artisans - acting as consultants locally as the "extended arm" of JTI - are currently carrying out some "looking-up" service.

The consulting artisans were part of a contact programme implemented in the early 60ies. Gradually as JTI is now implementing local technological information centers in various counties of Jutland, the consulting artisans will join these centers and exert their activities from this basis.

2.1.2 Liaison service to centers of knowledge

As mentioned later on JTI is operating within 9 principal professional areas each of which holding its own responsibility as to maintenance of contact to other centers of knowledge within their specific profes-

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sional area. The maintenance of contact with such centers of knowledge is thus one of the tools used by the 9 JTI divisions in order to keep up and to develop the professional level of the divisions.

2.1.3 Liaison service to organizations and public services

Contact to professional organizations and public services is maintained through the representatives of such relevant organizations and services who are - directly or indirectly - represented in the Council of JTI.

2.1.4 Dissemination of information

JTI is disseminating a periodical in which the activities of JTI are currently described by

- case stories of assistance rendered
- new development of technology of interest to the target group.

This periodical is used merely as a general PR instrument for the institute and cannot be considered as a means for regular dissemination of technical information.

2.2 Derived tasks on JTI initiative - no fee

- participation on national and international level in meetings and conferences having a content of interest for the activities of JTI
- participation on high level in national bodies working with national policy matters regarding trade and industry.

...



2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service
(Question/Answer service)

JTI has a division for information and liaison services. This division has at the present stage as its main responsibilities

- to act as the intermediary between JTI, the local technological information centers, and the consulting artisans
- to act as a referral center to clients calling JTI for assistance and not knowing which division to contact with their problem.

The referral service officers does not themselves deliver answers to any problems, - nor are they procuring documents or disseminating information to clients. Such matters are directed to the adequate professional division for direct treatment.

It is the intention of JTI to establish an effective question/answer service capable of

- treatment of matters of general nature
- solution of uncomplicated day-to-day problems
- procurement of technological and techno/economic information from sources within or outside the house.

The possibility of establishing some kind of repackaging of such information is being considered.

2.3.2 Primary tasks on client's demand - against fee

Each one of the 9 divisions of JTI is treating tasks on the client's demand according to the following list:

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- education of apprentices
- arrangement of courses with the purpose of qualifying craftsmen for official authorization
- arrangement of courses with the purpose of general posteducation of craftsmen and technicians
- assistance to bodies granting loans or other financial support to industrial entities
- assistance to persons or entities wishing to start up new activities
- assistance as lecturers on courses arranged by other institutes
- performance of authorized tests
- performance of demanded technical assistance regarding
 - product development
 - production development
 - development of organizational structures.

This assistance is carried out by

- search for existing knowledge
- planning and carrying out of design, calculation and experiments.

It is the aim of the staff of the division not only to deliver this assistance in a written and easily understood way but also to ensure by direct personal contact to the client that the information thus transferred is appropriately applied.

2.4.1 Derived tasks on client's demand - no fee

No particular activities are carried out.

2.4.2 Derived tasks on client's demand - against fee

None.

...



3. Operational pattern

In this section a description is given of

- JTI organization
- Selection of staff and staff policy
- Performance of some requested tasks

3.1 JTI organization

The JTI organization is built up as follows:

A council whose members are pointed out among representatives of

- public authorities within the area
- professional organizations representing employers
- professional organizations representing the unions
- professional organizations representing other categories of JTI staff
- professional technical organizations in Denmark
- representatives of consumers appointed by the Minister of Trade and Industry
- representatives of all categories of users of JTI services
- representatives of local technological information centers (TICs')
- the managing director of JTI
- others.

At present the number of council members amounts to 94. The electoral period is 4 years. Re-election is possible.

The council is the superior authority of JTI and holds the final responsibility as to JTI maintaining its status as a self-contained public utility organization.

The council gathers 4 times per year at least and holds the authority of giving the final approval of the statements of accounts.

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The council points out a total of 18 members of the board of JTI. The chairman and the two vice-chairmen of the council are born members of the board.

The board holds the responsibility towards the council as to observance of the statutes of JTI.

An executive committee of 5 members is elected among the members of the board and is responsible to the board for decisions beyond the power of the managing director.

The managing director is responsible for the day-to-day management of the institute.

The operational pattern is as follows:

The institute is divided into one administrative division, one information and contact division and 9 special divisions each of which is headed by a manager.

The 9 divisions are:

- division for management consultancy
- division for product development
- division for production technology
- division for construction technology
- division for metal working technology
- division for polymer technology
- division for food technology
- division for automobile technology
- division for wood-working technology.

The total number of persons employed is about 380 of whom 116 are professionals, 56 office clerks and 208 technicians with various background. The divisions are of very different size, varying from a total of about 50 to about 20.

The information and contact division has a staff of 5 at the main office in Aarhus.

The divisions mentioned above are formally subdivided into specific working groups but the organization acts merely ad hoc in the day-to-day operations.

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3.2 Staff policy and selection of staff

3.2.1 and 3.2.2 Selection of staff

The selection of the members of the staff is made according to the character of the work to be performed. As the spectrum of work of JTI covers approximately all levels of technology, all levels of education are found among the staff members just as several non-technical disciplines of various educational levels are represented.

The level of qualifications of the staff is maintained by

- study tours to knowledge centers of all kinds
- participation - as far as possible regularly - in courses, seminars, etc.
- participation in own training courses, jointly with the other regional technological institute.

3.2.3 Tasks performed by staff

3.2.3.1 Consultant service

3.2.3.2 Education and training

3.2.3.3 Research and development

3.2.3.1 Consultant service

The consultant service was originally only a spin-off of the activities of JTI. To-day this activity covers about 44% of the activities and the tendency is a further increase.

The methodology used by the divisions is rather different according to the very varied demands for assistance within the sectors.

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However, it can be considered to be a general policy that the staff members should to an increasing extent take the initiative as to the contact with the industrial and craftsmanlike entities.

In some cases contact visits are planned and carried out as part of an agreement between JTI and a specific professional branch.

It is the duty of the consultants to maintain a sufficient level of professional competence which means that they are self-supplying as to information input. Information which they professionally absorb is used in their day-to-day problem solving as part of their transfer of technology during the problem solving but they never disseminate any information received on their own initiative.

A substantial part of the visits paid and the consultancy offered by JTI could be characterized as being "here-and-now" assistance due to the very heavy demand for technological assistance from entities of all kinds. JTI is striving at a more systematically planned contact and information service in future activities.

3.2.3.2 Education and training

Education and training has been the most important activity of JTI since the foundation of the institute. Roughly, this education and training can be divided into the following activities:

- education and training of apprentices
- education of artisans with the object of qualifying them for official authorization
- arrangement of courses on themes regarding new technology.

The instructors at such education and training courses are attaching much importance to the methodology in the transfer

...



of new technology. This is done not only by keeping currently informed about recent developments through studies in books, articles etc. but also by practical studies at home and abroad.

JTI is aware of the fact that arrangements for more systematic supply of information to instructors and other staff members is necessary.

The development in allocation of productive time (exclusive of administrative work) at JTI shows that

1972/73	51%	allocated to education and training
1973/74	50%	" " " " "
1974/75	45%	" " " " "
1975/76	42%	" " " " "

In spite of this tendency JTI still maintains the opinion that education and training courses with man-to-man contact are the most important means for transfer of knowledge. The decline shown above is merely a relative fall in education and training activities. The tendency is less marked in absolute figures (hours)

3.2.3.3 Research and development

It should be noted that JTI is not carrying out any basic scientific research. The facilities for research and development are purely used for the purpose of solving practical problems encountered or expected to be encountered by the industrial and craftsmanlike entities within the region.

The research and development is therefore closely related to impulses received from

- the work of the consultants (specific tasks to be performed)
- public requirements to products manufactured by the industrial entities (authorized tests)

...



- the knowledge which the institute has or obtains regarding changes in production technology, product performance, market developments etc.

All three items are considered to be equally important, but whereas the two first-mentioned seem to be merely straightforward trouble-shooting on very concrete matters for which specifications and payments can easily be clarified, the last-mentioned is more complicated and involves two important problems

- knowledge about important technical and techno-economic tendencies in the surrounding world
- financing of efforts to keep up with the level of the surrounding world as regards these items

The staffs of the divisions suggest problems to be treated according to the last items as a function of

- own input of information regarding trends
- impulses received from clients
- cooperative work with other technological service institutes.

The Technology Act of March 1973 has given very wide opportunities as to financing of such projects.

There is a good understanding within the staffs of the divisions that existing knowledge about the subjects should be utilized prior to launching R and D projects (libraries, abstracts, periodicals etc.). But again there is an impression that a more systematically organized input of such knowledge would be useful.

...



The trend in the development of hours spent on R and D is shown in the following figures (% of productive hours (exclusive of administrative work)):

1972/73	2%	allocated	to	R	and	D
1973/74	2%	"	"	"	"	"
1974/75	3%	"	"	"	"	"
1975/76	4%	"	"	"	"	"

3.2.3.4 Consultant service

Basically consultant service must be interpreted as being man-to-man transfer of knowledge about very specific problems. The basic qualifications and the maintenance of the professional level of the consultants are therefore considered to be of utmost importance by JTI.

The consultant service originally started as a question/answer service to the individual specialists of the divisions. The initiative to call came from the clients, and in the initial stage of the activities of JTI the specialists only exceptionally looked up the clients.

As the professional reputation of JTI grew over the years, this service developed from purely being transfer of knowledge by telephone to be direct man-to-man transfer on the spot. But the initiative rests in most cases still with the clients.

The council of JTI, its management and the public authorities, who are granting the substantial part of the fundings of JTI, are putting a steadily increasing weight not only on this service as such but also on changing the character of this service from being a service to be dialed up into a service merely looking up the clients on JTI initiatives.

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The trend in the development of this service is shown in the following figures (% of productive hours (exclusive of administrative work) spent on consultant service):

1972/73	38%	allocated	to	consultant	work
1973/74	39%	"	"	"	"
1974/75	41%	"	"	"	"
1975/76	43%	"	"	"	"

The growth of industrial activities within the region is not the only reason for this increase. The strong and firm belief in direct man-to-man transfer of knowledge plays a vital role.

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4. Marketing and sales activities

Recently, JTI has clearly emphasized its intentions as to marketing and sales activities:

"JTI should market itself as being a power-center for development and application of technology to the benefit of industry and trade, legislators, and any other relevant collaboration partner within the Danish community."

Activities related to marketing the institute along these headlines are scheduled but for the time being withheld to some extent, the reason being that a general overall policy discussion about information marketing activities is taking place in Denmark right now.

The object of this policy discussion is to study possible gaps and deficiencies as well as overlaps in the work of national, regional, local and specialized technological information services in their information and marketing work.

Anyway, the basic marketing philosophy of JTI should be mentioned the aims being

- to offer the users easier access to technological service
- to give JTI the possibility of being the offensive seller of its activities
- to ensure that JTI knowledge (= information) reaches all relevant target groups
- to ensure that the service offer of JTI is in accordance with or even ahead of the market demand
- to cooperate with other relevant technological service institutes with the object of avoiding overlaps as well as gaps and deficiencies in the total Danish technological service-offer.

JTI therefore intends - within a 5 years period - to strengthen the following general PR activities

- information to daily press and periodicals
- internal information service (within JTI divisions)
- general public image

and specifically

...



- to increase direct sales efforts
- to coordinate marketing efforts between the JTI divisions
- to coordinate and increase the use of direct sales catalogues and sales letters
- to increase investigation of market demands
- to extend the liaison and direct looking-up service
- to extend the question/answer and referral service
- to extend and to further support the implementation of local information centers

As previously mentioned, JTI realizes that these efforts can only succeed through coordination and cooperation with other technological information services.

It further realizes that the proper organization of the information input through adequate use of existing sources of knowledge (libraries, abstracts, periodicals, computerized services, other technological institutes, R and D institutes, etc.) is essential just as the proper organization of the information output (dissemination of information and transfer methods in general) is essential for the proper success of the JTI activities.

As to the actually used marketing methodology, it should at this stage be mentioned that these efforts are very much left in the hands of the heads of the divisions except for general marketing such as

- press releases
- general brochures
- participation in exhibitions
- etc.

which activities are conducted by the central information division reporting directly to the managing director of the institute.

...



5. Control activities

5.1 Financial control

The income structure of JTI is (ref. 1975/76 figures):

Income from training courses etc.	20%
Income from consultations	21%
Other income	<u>2%</u>
JTI own income	43%
Public support (basic activities)	53%
Public support (specific projects)	<u>4%</u>
	100%

corresponding to about 8.4 mill. u.a.

The budget 1977/78 shows an increase in the total balance of about 1.7 mill. u.a. as compared with 1975/76 corresponding to about 21% (and 9% as compared with 1976/77). These increases correspond to a real increase in activities.

In accordance with what has been mentioned earlier, there is a remarkable increase in the allocation of fundings aimed at an increase in the information input to the JTI divisions.

The public support to basic activities implies a very detailed budget on activities to be carried out. Hence, the different divisions will have to budget not only their expenses but also the hours planned to be allocated to the different activities.

The administrative division elaborates the total budget on the basis of the divisional budgets.

It should be noted that the final settlement of the account with the authorities granting the funding is made according to activities actually carried out. Activities not budgetted are in principle not refunded.

It is therefore a matter of utmost importance to maintain a very careful current control of actual activities. This control has to be carried out by the divisions individually and is supervised by the administrative division.

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Substantial differences between budgetted and actual activities can occur. Such differences will only be accepted after preceding negotiations with the granting authorities.

5.2 Activity control

The control mentioned in chapter 5.1 are carried out not only for financial reasons but also because such control and comparison of budgetted activities with actual ones shows the trends of the services demanded.

The following table shows how the total number of productive hours of JTI is distributed (exclusive of administrative division):

- consultation and tests	25%
- education and training	23%
- R and D	8%
- question/answer service (with the individual divisions)	4%
- specific R and D projects	3%
- education of staff	5%
- other basic activities	14%
- miscellaneous	<u>18%</u>
	100%

corresponding to a total of about 462,000 productive hours in 1975/76.

A very detailed record on the activities in regard to professional area is currently worked out just as a control of the educational and consultancy activities in relation to geographical distribution is carried out.

The total number of courses was in 1975/76 976. The number of consultations was 7,101 and the number of different R and D projects amounted to 207.

...



6. Reconsideration and feedback

The divisional staff and the administrative staff attached to the managing director are currently keeping accounts on expenses and activities. Day-to-day corrections are carried out and - and if necessary for reasons of the grant of funding - negotiated with the granting authorities.

The executive committee works closely with the managing director by directing and advising on matters of immediate importance.

The board controls not less than 3 times per year the activities carried out and the actual expenses and compares the results with the budget. Substantial deviations need the approval of the board.

The council is gathered at least once per year on which occasion the chairman is presenting the annual report and accounts for approval and he furthermore presents the budgets and activity-planning of the coming year for approval.

The reason for the establishment of a council as big as 80 members (minimum) is that the council should act as a panel with which discussions on the effectiveness of the services of JTI can take place. It is the responsibility of the council to advise on long-term corrections of the JTI activities.

The size and the importance of JTI as a tool for the transfer of knowledge to trade and industry are such that no change in the principles along which the institute is operating, can be made without prior negotiations with the authorities granting the funding.



CIDST ad hoc working group
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Project Industry 7

II

Application of suggested
descriptive model

on

TI
Teknologisk Institut
Gregersensvej
DK-2630 Tåstrup
Denmark

TI is one of two regional technological service institutes in Denmark. It is a private, non-profit institute receiving the substantial part of its funding from public means.

October 1977



1. Basic philosophy

1.1 TI was created in 1906 on the private and personal initiative of a manufacturer and a professor. The purpose was to foster the professional development and skill of smaller industrialists and artisans. The institute aimed at obtaining its purpose by

- training courses
- consultation (advisory service)
- information

From the very start TI aimed at employing specialists within all professional disciplines being of interest to Danish trade and industry. Therefore, TI has a tradition now as to disposing of specialists representing all aspects of the activities within industrial enterprises.

The institute held - until the Technology Service Act was passed in March 1973 - a position as a semi-public institute, subsidized partly by funds directly from the Ministry of Trade and Industry. This support was specifically aimed at educational and consultancy work. Further financial support was obtained partly from direct contributions by private firms and organizations and partly occurring from consultancy fees.

In 1974, TI was recognized as a private, independent, non-profit public utility service institute. Official statutes to this effect were approved by the Minister of Trade and Industry on the 20th March 1975.

The general basic philosophy has from the very beginning contained the following substantial elements:

- TI should aim at fostering technological progress to the benefit of trade and industry and society as a whole. The term of technology is here used as being any systematic application of scientific achievements or other organized knowledge for the solution of practical problems.
- TI should achieve this by collecting, adapting and disseminating such information.
- The working methods of TI should be characterized by
 - objectivity, - i.e. independence of economic or other separate interests

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- flexibility, - i.e. adaption of the work to be performed according to current problems in trade and industry or to the specific problems of the enterprise in question
- creation of a technological environment within its own premises of a character which would act encouraging as to the fostering of new ideas and technological progress
- offering possibilities, especially to smaller enterprises of obtaining consultancy, education etc. at reduced prices in order to encourage technological progress,

According to the abovementioned elements of the basic philosophy TI offers its services by

- direct man-to-man transfer of existing knowledge (consultant service)
- direct transfer by training courses
- assistance to trade and industry by the carrying out of standardized tests
- assistance to trade and industry by applied research
- documentation and information work.

1.2 The target group of TI is

- entities of industrial and craftsmanlike character,
 - in principle all over Denmark but with emphasis on the geographical areas of Zealand and Funen.

Special emphasis is in this work put upon entities having no possibilities of employing specialists within all relevant professional areas.

Within the educational work special emphasis is put upon the professional education of all kinds of professional workers and employees.

- professional organizations, public or semi-public institutions and services and public authorities.

TI takes a special interest in the cooperation with professional organizations with regard to training courses on applied research. Other groups are served when this is compatible with the other activities of TI.

Note The following description concerns the TI situation as it is in 1977. It refers only to activities of the institute in Copenhagen and does not deal with a description of any of the local information centres (TICS etc.).



2. Construction of service

- 2.1 Primary tasks on TI initiative - no fee
- 2.2 Derived tasks on TI initiative - no fee
- 2.3 Primary tasks on client's demand - no fee
- 2.4 Primary tasks on client's demand - against fee
- 2.5 Derived tasks on client's demand - no fee
- 2.6 Derived tasks on client's demand - against fee

The description of the abovementioned tasks is - in a summary form - as follows

2.1 Primary tasks on TI initiative - no fee

2.1.1 Liaison service

TI is carrying out liaison service primarily from the local information centres in Slagelse, Odense and Nykøbing F. (TICS, TICO, TICN).

But in addition to this, TI carries out a systematic looking-up service from the main office in Copenhagen. The service is primarily directed towards entities of craftsmanlike and industrial character in the counties of Copenhagen, Frederiksborg, Roskilde and Bornholm. Special attention is paid to entities having no other liaison to TI.

2.1.2 Liaison service to centres of knowledge

Each one of the professional departments of TI has its own obligation as to maintaining on a formal or informal basis contact with other centres of knowledge within or outside Denmark.

In some cases elaborated contracts are the basis of such cooperation. It is in this respect important that the object of fostering the utilization and dissemination of knowledge is based on a high degree of man-to-man contact with the institutes in question.

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2.1.3 Liaison service to organizations and public services

TI has a formalized cooperation with the two principal organizations of the labour-market (The Employers' Association on the one hand the the Unions on the other hand.

Both organizations are represented in the Board and in some of the working committees of TI. Reciprocally TI is represented in some of the technical committees of the two organizations.

Staff members of TI are participants in committees set up by public authorities and by professional organizations of different character.

2.1.4 Dissemination of information

TI disseminates each year a rather comprehensive annual report describing the results and achievements of the work carried out by the various departments of the institute. Special emphasis is in this report laid upon articles describing technological progress. A very detailed description of each one of the various department of the Institute is issued with 3 years interval.

Several of the departments are disseminating periodicals aimed at giving a well-defined target group information regarding important technological progress within the specific area and also aimed at announcing the possibilities and terms of consultancy service from TI within the area.

A few departments of TI are - sometimes in cooperation with other bodies within or outside the house - publishing regular technical periodicals.

Pamphlets, brochures, etc. are sometimes issued and distributed to the public with the object of encouraging the utilization of the practical achievements of the work of TI f.inst. regarding saving of energy, environmental matters etc.

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2.1.5 R and D work

R and D is carried out by TI on own initiative and costs or in close cooperation with professional organizations, other institutes or public authorities.

It is a main principle for such R and D work that it should be directed towards achievement of results directly or indirectly applicable within trade and industry.

A very wide range of professional areas is covered, - f.inst.

- production technology
- working expenses
- specific application problems
- industrial economy in general
- working psychology
- sociological problems
- etc.

2.2 Derived tasks on TI initiative - no fee

- participation at national and international level in meetings and conferences having a content of interest to TI
- participation at high level in national bodies working with national policy matters regarding craftsmanlike enterprises, trade and industry
- creation of new professional cooperative groups in order to foster cooperation on industrial progress in an independent environment.

2.3.1 Primary tasks on client's demand - no fee

2.3.1.1 Referral service (Question/Answer service)

TI has a central department for technical Question/Answer service. The main task of this service is:

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- to answer rather uncomplicated professional questions and problems, the solution of which can normally be found by simple looking up in handbooks etc.
- to act as referral centre regarding answers to problems of a more complicated nature. The information centre is in this regard referring to centres of knowledge within as well as outside the house.

It should be noted that all departments are carrying out similar services. The object of the work of the central information service could in many cases be regarded as that of a central "switchboard".

2.3.2 Primary tasks on client's demand - against fee

The following activities are being carried out by each one of the departments within TI. The services are rendered to all categories of clients, - private persons, companies, organizations, public services etc.

2.3.2.1 Education

- post-education classes for skilled as well as unskilled labour. The classes are supported by public funds, and in many cases they are ending up with diplomas, certificates etc. enabling the participants to carry out classified duties (official authorization)
- special classes for skilled and unskilled workers, foremen, craftsmen etc. with the object of educating them for supervisory tasks. These classes are receiving support from public means.
- similar classes - without public support - are arranged for civil servants, employees from private companies etc.
- courses on management of SME's arranged according to specific demands
- education of instructors, teachers etc. for work in developing countries.

...



2.3.2.2 Consultations

Consultancy service and assistance in R and D activities are carried out regarding problems with

- materials
- products
- processes
- environmental matters
- pollution matters
- energy conservation
- energy resources
- shop mangement
- economic matters
- sales and marketing problems
- organizational matter

TI will take care of simple as well as more complicated matters of the abovementioned nature. Some specific areas should be mentioned

- assistance to inventors
- assistance to private persons wishing to start up craftsmanlike or industrial enterprises of their own
- assistance to persons or smaller companies wishing to obtain grants for loans, - and reciprocally assistance to authorities granting such loans.

2.3.2.3 Qualified testing

Several of the departments of TI are qualified to carry out advanced tests and analyses within specific fields. In many cases, such tests are carried out as certified public tests (authorized testing).

It should be noted that TI is putting much emphasis on not only delivering very comprehensive and understandable reports on such testings but also on the follow-up, - which means assistance to the claimant as to implementation of the results.

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2.4.1 Derived tasks on client's demand - no fee

No particular activities are carried out.

2.4.2 Derived tasks on client's demand - against fee

TI is in some cases taking care of technical secretarial assistance to associations and organizations.

...



3. Operational pattern

In this section a description is given of

- TI organization
- Selection of staff and staff policy
- Performance of some requested tasks.

3.1 TI organization

The TI organization is built up as follows:

A board whose members are pointed out by the following organizations and institutions

- The Council of Handicrafts (2)
- The Danish Trades Union Congress (2)
- The Federation of Danish Industries (1)
- The Employers' Association (1)
- The Association of Supervisory Staff (1)
- The Economic Council of the Labour Movement (1)
- Consumer representatives appointed by the Minister of Trade and Industry (1)
- The Academy of Technical Sciences (1)
- TI Contact Committee (2)
- The managing director of TI U1)
- The joint committee of the TI staff (2)

A contact committee whose about 50 members are pointed out by the TI board. The aim of the contact committee is to represent the target group of TI.

The board of TI is the supreme authority of TI and holds as such the final responsibility for the operation of TI. The board elects among its members an executive committee. The 4 members are

- the chairman of the board
- the managing director
- two further members of the board.

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The managing director is responsible for the day-to-day management of the institute. He is in this work assisted by the heads of the individual departments.

The institute has a general administrative department with attached secretarial functions. Activities within mechanical, civil, chemical and automation engineering as well as business administration and economics are grouped in the following departments, each headed by a manager:

- the Dept. of Production Engineering
- the Dept. of Foundry Technology
- the Dept. of Automotive Engineering
- the Dept. of Wood Technology
- the Dept. of Building Technology
- the Dept. of Acoustics
- the Dept. of Heating Technology
- the Dept. of Surface Coatings
- the Dept. of Chemical Technology
- the Dept. of Plastics Technology
- the Dept. of Cleaning and Maintenance
- the Nordic Leather Research Laboratory
- the Dept. of Automation
- the Dept. of Business Administration
- the Dept. of Organizational Psychology
- the Dept. of Management Engineering
- the Dept. of Educational Technology

Some activities are grouped in smaller units:

- the Innovation Center
- the International Projects Group
- the Danish Invention Center

Furthermore, there is a central information department reporting directly to the managing director and to which the three locally placed information centers (Slagelse, Odense, Nykøbing F.) are attached.

The total number of persons employed is about 500, of whom 180 are academics, 220 technicians with various practical backgrounds, and 100 clerical staff.

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3.2 Staff policy and selection of staff

The general staff policy of TI is such that

- staff members should be selected strictly according to the professional demand required for the performance of the job in question in combination with personal qualities of the accplicant such as
 - capacity to work independently of others
 - capability to cooperate with others
 - capability to communicate with others
 - personal initiative
 - openmindedness
 - having mind to personal development.

It is the outspoken aim of TI to create such working environments that qualified staff members remain within TI and to give such staff members possibly best conditions as to personal development to the benefit of himself and of TI as a whole.

The level of qualification of the staff is maintained by

- R and D work in cooperation with working committees on specific tasks within or outside the house
- participation in courses, seminars etc. with the object of developing not only the professional qualifications but also the personal ones
- study tours to knowledge centers of all kinds in Denmark and abroad
- possibilities of promotion in TI
- offering possibilities of leave for shorter or longer periods thus giving staff members the opportunity of supplementing their qualifications by holding positions in private companies, participation in work in developing countries etc.

3.3 Tasks performed by staff

The consultant service is the most important one of TI's activities. (23% of total TI activities).

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Other important activities are

- teaching on practically all levels within the areas of activities
- testing (authorized and non-authorized) and R and D work

The abovementioned three activities are - in all departments of TI - the most important ones. It differs from one department to another which of them is considered the most interesting one.

3.3.1 Consultant service

The general idea of the consultant service is that TI as a general public utility service should have capability of developing a special knowledge and the related equipment which could be to the benefit of a great number of companies, - especially small ones having neither technical nor economic resources for such work.

The initiative for starting consultancy in specific cases could be

- application from clients
- initiative occurring from TI
- initiative occurring from professional organizations
- initiative occurring from public or semi-public authorities
- initiative from groups or associations of companies to the effect that TI should initiate or provoke technical or businesslike progress at regular intervals.

It is a general characteristic mark regarding such consultant service that most of the consultation is of a very short character and the consultant as such is acting as a catalysing element in the general industrial and businesslike activity of the companies in question.

When focussing on bigger companies one will notice that an essential number of consultations are carried out on R & D problems or rather specific investigations.

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General terms regarding the performance of this consultancy service are in existence in written form, and special attention is shown as to questions regarding the TI responsibility in consultancy service.

The Technology Council can authorize TI to offer consultant service at very reduced prices.

3.3.2 Education and training

Education and training amounts to 16% of the total TI activities and even more than that for some of the departments that are specialized in such work.

The greatest importance in this work is attached to the kind of education and training which makes the officers and general staff of small and medium sized companies fitted for running small and medium sized companies.

Furthermore, rather much importance is attached to the technical education of the professional staffs of such companies.

The instructors of TI are very carefully educated themselves, and TI has at its disposal all kinds of modern equipment for training of people. Experiments are carried out regarding the development of methodology for training of people of all categories. It is important here that the instructors are kept in touch with practical problems through participation in active consultant work.

The development of methodologies for training and education of people is considered to be of the utmost importance, and the experience gained by TI is very often made available to public or private services.

3.3.3 Research and development

The R and D work of TI has two general purposes

- on the one hand it should develop and increase the grounding of TI in order to enable TI to provide industry and trade with new knowledge which is applicable directly on day-to-day problems

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- on the other hand the R and D work of TI is directed towards specific problems pointed out by single-standing companies, trade organizations, public authorities, etc.

R and D work on basic science is normally not carried out as this is considered to be a university matter. Only within such areas as education and training where TI has a very high publicly recognized expertise is such fundamental work carried out. But it should be noted that TI never forgets the perspective of practical application in such matters.

It is further important to note that TI always keeps a close relation to the users, and that users, manufacturers etc. as a general rule should be represented in the advisory boards or committees of such work.

A typical course of a major project within this kind of work is as follows:

- definition of the nature and the demarcation of the problem
- discussion with user representatives about the need for a solution
- gathering of existing knowledge and information on the problem, - especially regarding uncovering of relevant institutions or centers of knowledge having specific knowledge on the matter in question
- after decision of carrying on with the work,
 - investigations and/or application for funding for completion of the work
- according to need, - establishment of related problem groups
- accomplishment of project
- implementation of the results of the project,
 - f.inst. by publication of results in periodicals, through education courses or by making special application to public authorities with the object of initiating new publicly supported initiatives.

Application of new knowledge such acquired through direct information to trade and industry is a very important aspect of the TI R and D activities.

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3.3.4 Authorized testing and laboratory work

2% of the TI activities are allocated to the carrying out of authorized tests and authorized analytical laboratory work.

TI is as previously mentioned covering a very vast area of physical and chemical, techno/scientific areas, which is logical because the fundamental idea of TI is to serve all kinds of craftsmanlike and industrial activities. Therefore, TI is concentrating on having at its disposal the most advanced equipment necessary for such testing and laboratory work because it could be expected that only very few industrial and craftsmanlike enterprises can afford to procure and to utilize such equipment.

It is a general opinion that this policy has been of decisive importance as to the industrial development of especially medium sized and small enterprises in Denmark.

Speaking in practical terms, TI is aiming at utilizing its techno/scientific work mentioned in this chapter not only by transmitting the immediate results of this work to the clients but also to combine it with interpretation of the results and consultation on application of the results.



4. Marketing and sales activities

TI applies a very active marketing and sales activity. Therefore, much emphasis is laid upon looking-up contact visits and PR activities by means of newspapers, periodicals and even radio and TV. The basic philosophy is that such activities should encourage individuals and enterprises to address themselves to TI with their professional problems.

The out-turned marketing activities could be briefly described on the basis of the following aim:

- to place TI in the mind of individuals and especially those in the SME's as a central center of knowledge for craftsmanship and industry of all professional kinds
- to place TI as a focus in the public debate on industrial matters especially regarding the relation of such matters with public activities regarding development and transmission of technological knowledge.

The marketing activities directed towards specific target groups are concentrating on

- transmission of up-to-date technological knowledge on the subject in question and with special emphasis on TI service possibilities within the area
- keeping the target group currently informed - in writing or by direct man-to-man contact about progress and development within the professional area
- performing specific, intensive campaigns whenever the technical development, the general business situation or other factors invite to do so.

The sales and marketing activities are normally carried out independently by the different TI departments. The central information office will only take care of matters of general interest, which is done f.inst. by editing general brochures, periodicals, participation in exhibitions etc.

The central information service of TI is furthermore acting as consultants to the various specialized departments as to their own marketing service.

Finally, it should be endorsed once more that the general management as well as the management of the specific departments are paying the greatest attention to the needs of the users of technology.

...



5. Control activities

5.1 Financial control

The income structure of TI (ref. 1975/76 figures) is as follows:

Income from training courses	14%
Income from consultation and client-paid R and D services	19%
Other income	<u>11%</u>
TI own income	44%
Public support (basic activities)	48%
Public support (Specific activities)	<u>8%</u>
	<u>100%</u>

corresponding to about 12.9 mill. u.a.

The budget 1977/78 shows an increase in the total balance of about 1.2 mill. u.a. as compared with 1975/76, corresponding to about 9%.

This does not give a fair figure of the increased activities of TI, because one of the professional departments of TI was - as a result of a planned rationalization - allocated to another technological service unit in Denmark in 1976.

The real increase in activities is more fairly described by an increase corresponding to about 3.2 mill. u.a. in 1977/78.

It is the financial policy generally to reduce public support and increase income from activities paid by the clients.

The financial management is arranged by rather detailed separate budgets for each department. Such budgets will have to be approved by the general manager and the Technology Council jointly. These budgets do not only account for money but also for hours of activity, activity plans and very detailed specifications of income and expenses on each of the activities.

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The separate budgets of the different departments are unified to one TI budget which is subject to the approval of the board of TI and the Technology Council as well.

The final settlement and approval of the accounts is - like all other technological service institutes in Denmark who are governed according to the Technology Service Act of March 1973 - made by the end of the financial year.

For practical reasons the TI book-keeping activities are placed centrally with the office of the managing director.

5.2 Control activities

Together with the financial control, a control of the activities carried out is made. On the basis of the control in 1975/76 the following analysis could be stated (corresponding to a total of 691,000 working hours)

- consultation and testing	27%
- education and training	19%
- testing and development work (on client's demand)	4%
- testing and development (on TI initiative)	9%
- basic activities aimed at increasing TI knowledge	16%
- education of staff	8%
- question/answer service	4%
- information and documentation	11%
- other activities	2%

A statement of the activities is delivered once a year to the Technology Council for approval.



6. Reconsideration and feed-back

TI is as described in chapter 5 very closed following the detailed activities of the various departments. Any useful conclusion on this follow-up is conveyed to the departments for implementation.

A very useful instrument for the follow-up and reconsideration is the direct contact with the users, which is carried out in many different ways and with application of many different tools.

The general idea is - and has always been - that TI should serve society, and all possible effort should in this respect be made to fulfil this purpose.

CIDST ad hoc working group
"Information for Industry"

Project Industry 7

II

Application of suggested
descriptive model

on

DCC
Korrosionscentralen
Danish Corrosion Centre
Parkallé 345
DK-2600 Glostrup
Denmark

DCC is one of 17 R and D institutes affiliated
to the Danish Academy of Technical Sciences
(ATV).

April 1977



1. Basic philosophy

1.1 Establishment and aim of DCC

DCC was established in January 1965 upon the advice of a committee appointed by The Danish Academy of Technical Sciences (ATV). ATV has existed since 1937 as a self-contained body having as its purpose to foster technical-scientific Research and the application of its results to the benefit of the Danish society and its industry and commerce.

The basic reason for establishing DCC was that the abovementioned committee could point out to the Academy that the ever increasing corrosion problems on constructions and industrial products had a tremendous negative effect on the overall economy of the society.

The scope of the work of DCC would therefore be to fight such negative effects by

- general advice to inquirers as to prevention of and fight against corrosion
- establishment of a consultancy service to assist authorities, industrial entities and others in finding practical solutions to specific corrosion problems
- accomplishment of research - fundamental and applied - within the field
- performance of general technical and techno/economic information activities within the field.

1.2 Target group

DCC considers itself as being a technological service institute, which means that it assists

- industrial entities of all kinds and sizes
- public services on all levels
- other technological service institutes
- individuals

with know-how and practical assistance in prevention of and solution to corrosion problems.

...



The word corrosion is understood as any unintentional form of chemical and/or electrochemical deterioration of metals i.e.

- direct atmospheric attack (by gases)
- electrochemical attack.

...



2. Construction of service

- 2.1 Primary tasks on DCC initiative - no fee
- 2.2 Derived tasks on DCC initiative - against fee
- 2.3.1 Primary tasks on client's demand - no fee
- 2.3.2 Primary tasks on client's demand - against fee
- 2.4.1 Derived tasks on client's demand - no fee
- 2.4.2 Derived tasks on client's demand - against fee

The detailed description of the abovementioned tasks is as follows:

2.1 Primary tasks on DCC initiative - no fee

2.1.1 Liaison service

In principle, DCC does not carry out any systematic liaison service on its own initiative. Although possibilities of carrying out such activities have been contemplated from time to time, it is still not considered necessary to do such work for the time being.

The main reason is that the professional reputation of the institute is recognized so much, and the techno/economic aspects of the problems related to corrosion are so serious that the capacity of DCC is entirely utilized at present.

However, the institute suspects that there are still so many non-perceived corrosion problems involving maintenance and damages that arrangements for a liaison service might very well be justified.

2.1.2 Dissemination of information

DCC does not systematically disseminate unrequested information to clients or potential clients.

...



Results of own R and D are - if the work is not requested and paid by a specific client - published in journals and periodicals inside and outside Denmark.

2.2 Derived tasks on DCC initiative - no fee

- participation on a voluntary basis in the council of ATV institutes (ATV-IR). This council has as its object to attend to the mutual interests of the ATV institutes (totalling 17 institutes of similar statutory character as DCC).

The mutual interests are not only questions of administrative and financial character but also problems regarding reciprocal professional support.

- participation in the activities of mutual character aimed at promotion of the professional utilization of the institutes
- participation in national and international conferences etc. related to the professional area of the institute.

2.3.1 Primary tasks on client's demand - no fee

DCC has a rather comprehensive question/answer service performed without charge as long as this kind of consultation does not involve more than 1-2 working hours.

The exempt for charge only applies if no written instructions, documents etc. are demanded. All such deliveries will have to be paid for.

The institute can answer most of such inquiries on the basis of their own intellectual resources.

2.3.2 Primary tasks on client's demand - against fee

Requested tasks of this nature could be divided into three main categories

- consultancy service to authorities, industrial entities, individuals or others with the object of advising on solutions to problems of prevention of corrosion or solutions to actually existing corrosion problems.

...



These tasks involve normally no research activities but are restricted to inspection on site, laboratory investigations, literature studies and compilation of report and recommendations.

- accomplishment of research closely related to problems of a character as mentioned in the above paragraph.

In the event of such research projects, DCC is in the initial stage searching for existing knowledge on the basis of knowledge in own files or those of others (libraries, documentation and information services, other institutes etc.).

On the basis of this search and the actual problem, the project is launched.

- launching of R and D projects primarily initiated and based upon ideas by DCC but carried out at the expenses of private entities supplemented with funds granted by the Technology Council according to a specific application.

Such projects are coordinated with similar work on corresponding subjects carried out by other institutes, - nationally or internationally.

The results of such projects are made available to the public and are integrated in the basic knowledge resources of the institute.

- research projects of a more fundamental nature are carried out upon request mainly from public authorities or from other technological service institutes.

This activity plays a secondary role as compared with the projects previously mentioned in this paragraph.

2.4.1 Derived tasks on client's demand - no fee

- the professional staff members of DCC are occasionally acting as lecturers on courses and seminars at different levels.

...



2.4.2 Derived tasks on client's demand - against fee

- DCC is to a limited extent preparing written material on matters of corrosion or related areas.

...



3. Operational pattern

In this section a description is given of

- DCC organization
- Selection of staff and staff policy
- Performance of some requested tasks.

3.1 DCC organization

The DCC organization is built up as follows:

A board of at least 6 and maximum 8 members, who are appointed as follows:

- 3 members by the Danish Academy of Technical Sciences (ATV)
- 1 member by the Technical University of Denmark
- 1 member by the Federation of Danish Industries
- 1 member by the Federation of Danish Mechanical Engineering and Metalworking Industries.

The board has the power to appoint two further members.

The board holds the final responsibility to ATV and to the authorities granting the public support as to

- observation of the statutes
- establishment of guidelines regarding the activities of the institute
- appointment of managing director
- approval of budget and statement of accounts.

The board has the power to establish an executive committee to assist the managing director.

The managing director holds the full responsibility for day-to-day operations towards the board.

The staff consists of

- 1 deputy manager
- 11 professionals holding either masters or bachelors degree
- 10 technical staff
- 6 office staff.

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3.2 Staff policy and selection of staff

The specific professional area within which DCC operates, involves that a careful selection of the staff and the maintenance of their qualifications are vital for DCC.

It is therefore demanded that the staff members should hold very high professional qualifications in accordance with the level on which they are going to work.

The qualifications of the professional staff are maintained by participation in as many of the activities of the institute as possible:

- question/answer service
- consultation
- R and D
- lecturing at seminars etc.
- participation in international networking arrangement.

DCC attaches very much importance to international relations both as sources of knowledge and as potential clients.

It is therefore basically required that the professional staff masters at least one language more than Danish. It is desirable that the office staff has at least a basic knowledge of one language more than Danish.

The object of the work of DCC involves that a corrosion problem is only solved when adequate solutions are properly implemented. It is therefore very important, taking the very diversified professional level of the clients into consideration, that the staff among their qualifications holds considerable capability of communication be it written or verbal.

The biggest asset of DCC is the professional knowledge of the staff. It is therefore the policy of the management to keep the qualified staff members of all categories employed as long as possible.

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3.3 Tasks performed by staff

The tasks performed have been mentioned previously. It should only be noted that the allocation of hours spent on the different tasks is as follows (1976 figures):

- Question/answer service	10%
- Consultancy service	45%
- R and D activities	35%
- Marketing and sales efforts	10%

3.3.1 Specific consultant's tasks possibly related to R and D

It is not possible to arrange for any totally fixed schedule as to the performance of the tasks because of the very diversified nature of the problems encountered.

Anyhow, the institute keeps on file descriptions of known and experienced solutions to corrosion problems, and the looking up in own files and those of others is a standard procedure in the day-to-day work.

Some examples of requested tasks (4-500 per year) are presented below:

- Corrosion on steel tubes buried in soil or embedded in concrete
- Electrochemical corrosion in hot water central heating plants and in domestic water supply
- Corrosion related to hard-chroming
- Corrosion in Babbitt-metal bearings
- Stress corrosion in various constructions and exposed to various gases
- Corrosion in sea water.

The necessity of the institute to be very well qualified on metallurgic matters has been the basis for the erection of a metallurgic laboratory. The financial justification was granted in July 1973 on which date an agreement was made with another ATV-institute (The Danish Welding Institute)

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that the two institutes should jointly utilize the facilities of the metallurgic laboratory. Idle capacity of the laboratory is sold as a paid technological service.

Some of the abovementioned requested tasks are closely related to the activities of the metallurgic laboratory.

3.3.2 Lecturing, courses, publications

Lecturing on corrosion problems is performed on many different professional levels. DCC regards such lectures as the most important tool for prevention of start of corrosion. DCC is interested in putting more emphasis on this activity concurrently with the economic realities in the funding of DCC.

Publications are issued not only as reports on R and D projects concluded but also - partly in cooperation with other institutes - as instructions for the carrying out of constructions etc. with the aim of omitting future corrosion problems.

The institute finds it desirable to strengthen these activities as well.

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4. Marketing and sales activities

DCC has till now not made any specific efforts as to marketing and selling its activities. The obvious importance of the work of the institute and the high professional standard have had a marketing effect to such an extent that the capacity of DCC seems to be currently utilized 100%.

However, there is a clear understanding that much more can be done as to limiting corrosion damages. Concurrently with the possibility of obtaining the necessary fundings the institute is considering the possibilities of establishing an offensive marketing and sales policy.

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5. Control activities

DCC's income structure is the following (1976 figures):
36% is granted by the Technology Council (governmental support)
8% public or private support to specific projects
55% own income
1% unspecified

The control activities are concentrated upon the work which is carried out as a condition for the public support. Actual activities and expenses are compared with those budgetted.

As to consumption of resources regarding requested tasks, the staff is currently keeping account of the sake of invoicing.

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6. Reconsideration and feedback

The statutes give no rules as to the number of times per year the board should gather. Anyhow, the usual schedule is 2-3 times per year at least.

Among the duties of the board is to approve the statement of the year, the statement of accounts and the budget. This involves not only a possibility of short-term corrections of the activities on which the board can decide but gives also a possibility of discussing long-term activity corrections.

Such discussions will normally involve not only the authorities granting the funding but also the Danish Academy of Technical Sciences. It should be remembered that DCC was created on the initiative of ATV and that it still feels it a necessity - although it is not written down in the statutes - to plan its long-term activities in cooperation with ATV and as far as practical realities justify it also with the Council of ATV-institutes (ATV-IR).

