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NETWORKING FROM ABOVE?
Information Technology in the
Norwegian Health Services

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Information Technology in the Norwegian Health Services.

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1. Introduction:

This paper describes a part of the implementation of the **Norwegian National Plan of Action for Information Technology**. At this stage of my study, I have chosen to concentrate on how this general and very broad national plan was put into concrete terms in the form of one particular subprogram, "**IT in the Health Services**". In other words, I have studied the process leading to the selection of, and formation of this particular subprogram. How is an instrument of public research and industrial policy, like the Norwegian IT Plan, put into concrete form, and possibly transformed, through its implementation? By means of studying a concrete example of a process of implementation, I hope to be able to say something more general about the implementation of public policy in this rather new and, at least in Norway unknown, territory of technological and industrial development.[1]

In the framework of traditional political science, the main focus of this kind of study would be the "problems of implementation", as seen from above. The analysis would be limited to how a political decision, made on the macro-political level, is being transformed into concrete political action on the micro-level.[2]

Alternatively, we might use a theoretical approach with its main focus on the reverse process, from micro to macro. The object of study will then be the way in which micro-level actors seek to influence macropolitical decisions. In this theoretical and empirical tradition you study how micro actors seek to become so-to-speak macro-actors, through the construction of actor networks centered around political goals or scenarios, in the present

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[1] For an international presentation of this field, see fx **Rothwell, R. & W.Zegveld**: Industrial innovation and Public Policy: Preparing for the 1980s and the 1990s, London 1982 or **Freeman, C.**: The Economics of Industrial Innovation, London 1982.

[2] See **Mayntz, R.**: Die Implementation politischer Programme, <u>Die Verwaltung</u>, 10, 1977.

case scenarios for technology and R&D policy. This is the approach described by, among others, Michel Callon, Bruno Latour and John Law, that has been named the **Translation perspective**.[3]

One way to describe my study, would be to say that it is situated in the tension between these two different approaches. I will try to look at the way in which processes, originaly initiated at the micro-level, meet political institutions and processes originating at the macro-level, and to a certain degree are changed by this fateful encounter. Consequently I will follow the shaping of a political instrument, from the micro-level all the way up to the macro-level, and then go on following it all the way down, from macro-level political actors back to researchers, producers and users on the micro level.

Through a study of the shaping and implementation of the Norwegian plan for "IT in the Health Services", I expect, in due time, to be able to say something about the two alternative theoretical approches and their relevance as a basis for understanding and explaining the implementation of R&D policy. You should not, however, expect to find the answer to this very broad question at the end of this paper. It is clear that much additional work in this field is required before a such a complete picture can be drawn.

2. Some remarks on the research method

The data on which this paper is based, have been collected in two ways. Most important, I have interviewed a broad selection of the actors involved in, first the shaping of the National plan of action for IT, and then in the process leading to the subprogram IT in the Health Services. In addition I have analyzed written material related to the same two processes. It should

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[3] Latour, B.: Science in Action, Milton Kaynes 1987, Callon,M.: "The Sociology of an Actor-Network: The Case of the Electic Vehicle" i Callon, Law & Rip: Mapping the Dynamics of Science and Technology, London 1986, Law, J.:Notes on the theory of translation. Paper prepared for meeting on Research and Innovation Policy, University of Trondheim, 2nd-5th November 1987.

be noted that my work is still in progress and that this paper therefor is a preliminary study.

It has proved difficult to get access to the relevant documents. As I am studying on-going political processes archives are not easily accessible. However, the interviews of key-actors, have been quite simple to arrange. Not everyone has been as informative as one could wish, partly due to the fact that my object of study still is very much a part of the Norwegian political controversies.

3.1. The birth and formation of "The National Plan of Action for Information Technology".

"The National Plan of Action for Information Technology" was passed as a part of the Norwegian National Budget for 1987.[4] This plan, meant to be a coordinated plan of action for R&D and industrial development in the IT field, managed by several of the Norwegian Ministries, was in the Norwegian context, an example of a new kind of industrial and reserach policy. With a budget of approx. 1 billion NOK, divided among the main areas Education, Technical Equipment, Product development, Basic research and Applications/ Technology Diffusion, this plan of action made a considerable impression upon the Norwegian research institutions as well as upon the small but economicaly quite healthy Norwegian IT industry. The goals of the IT-plan were said to be nothing less than to stop Norway's competitive lag in the IT-field, strengthen the Norwegian IT-related R&D and the Norwegian IT-industry, and make way for an increase in efficiency of both the public and private service sectors. The IT-plan was in short said to be the tool that would initiate new growth, and create new jobs, in an economy that at last had started to feel the stagnation well known to other industrial societies in the late seventies and early eighties.[5]

The plan was officially started in January 1987. A **National Coordination Commitee** was appointed to be responsible for the implementation of the plan.

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[4] St. prep. nr 1 (1986-87): Statsbudsjettet (The National Budget)

[5] OECD: Technical Change and Economic Policy, Paris 1980

This commitee was composed of members representing the IT-industry, the traditional industry, the R&D- and educational sector, the public services and the trade unions, totaling 11 persons. The intention behind the election of commiteemembers was obviously to get a varied group of actors, representing all the sectors and trades that were to be involved in the IT-plan. The secretariat of this national commitee was placed at NTNF, The Royal Norwegian Council for Scientific and Industrial Research, the main institution for the formulation and implementation of Norwegian R&D policy.

The present IT Plan was the result of a significant pressure from several actors/communities of the micro-level of the Norwegian R&D- and industrial complex. Of greatest importance in this process was the IT industry, and at least one important institution for education and research in the IT field (NTH, the Norwegian Institute of Technology in Trondheim). These "actors" played a crucial role in the early parts of the formation of the IT-plan.

In an earlier paper[6], I have studied how the formation of the IT Plan went through four distinctive phases. During Phase 1, we could observe the formation of strong actor-networks, built around the above-mentioned actors on micro level. Equipped with a R&D oriented scenario, mainly emphasizing the neccessity of increased support for education and research in the IT field, a actor-network grew, or rather was built. This network argued strongly for the need of a coordinated, national plan of action for IT, if Norway was not to lose its place among the modern, industrialized nations.[7] These original actors, a few, enthusiastic individuals, tried to enrol other actors in the network, by arguing the fruitfulness of their scenario of a future research policy. Their aim was to get a political process, on macro level, into motion, to sell a scenario of IT development to macro-political actors. In this they succeeded, perhaps more than they had hoped for.

In the second phase, the initiatives and proposals for a national IT Plan, were fusioned in the NTNF. This was done through the establishment of the

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[6] Buland, T.: Forskningspolitikk nedenfra? Nasjonal Handlingsplan for informasjonsteknologi blir til. Unpublished paper, Trondheim 1988
Tøssebro, J.& T. Buland: Informasjonsteknologi og Innovasjonspolitikk. Om valg og utforming av hovedinnsatsområdet informasjonsteknologi. IFIM-Rapport, Trondheim 1987

[7] No, I am not exaggerating the argument. Not much in any case...

so-called Kuvås-committee.[8] The appointment of this committee can be seen as an attempt on behalf of the NTNF, and thereby the Norwegian government, to establish an obligatory point-of-passage between the micro-level initiatives and the macro-political level.

In the work of this committee, the original proposals for an IT-plan were melted together into a plan that was still situated inside the original scenario for research policy. This was, among other things, the case with the great importance the original scenario attached to the social impli- cations of IT. The resulting proposal for a Plan, coming out of the Kuvås- commitee, did not in any significant way differ from the original porposals that had been the commitee¬s starting-point. As I have said, this stage of the process resulted in a fusion of the initiatives originating on the micro level.

In Phase 3 of the IT plan¬s formation, the fusioned IT Plan was sent up the rocky road to the macro level, from the Kuvås-commitee to (what was then named) the Ministry of Industrial Affairs. The different initiatives in the IT field, and the few concrete proposals for coordinated action that for some time had been going on inside the different Ministries, were now to be added to the "Kuvås Plan", and melted into a National Plan. This was not to be as easy as some had been hoping for.

After a short time of digestion, it became clear that the attempt to enrol the different Ministries by the way of the existing scenario, and thereby the existing proposal for division of the roles in the implementation of a future national IT Plan, was unsucsessfull.

At this stage the control of the plan was definitively seized by a growing global network. The original actors lost more or less completely control of the process. They could no longer hope to hold on to the ball they had put into play, or should I say the goods they had managed to sell.

The original scenario was gradually changed. The original emphasis on education and R&D is supplemented by, and even to a certain degree replaced by a much stronger emphasizing of the role of the technology as a tool of

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[8] Named after its president, Reidar Kuvås.

social change. The proposed divison of roles in the coming implementation is changed, and the centre of gravity in the areas for action is most definitively changed. In short, the national IT Plan as a whole is changed in focus as well as in content, if not so much in its headlines.

In the final Phase 4, the new scenario is presented in its complete form. Several new actors on the macro-level were now included in the process. These new actors had their own, independent interests connected with a national IT Plan. Some of these interests differed rather radically from the interests of the original initiators. And perhaps more important, the now dominant scenarios for how the society best was to make use of the new technology, differed very much from the scenarios of the original micro level actors.

In this phase we face a scenario of general change and modernization of the Norwegian society, in a broad sense, through diffusion and increasing use of information technology. This stands in marked contrast to the original actors' scenario for R&D and education in the IT field, as a way of stimulating growth in the economy.

In addition to the fact that new actors, with new and different interests, were added to the global network, one dominant and traditionally very strong actor in this network, the Ministry of Finance, was strongly opposed to any plan at all. This was to be a very important factor in the shaping of the Plan.

To conquer this formidable opponent, it became nessesary to involve as many actors as possible in the pro-plan alliance. And to enrol these new actors into this network, it became nessesary that a wide variety of different interests was included in, and satisfied by way of, the IT Plan.

The resulting Plan of Action for IT was characterized by this. This is particularly clear in the role regional policy (traditionaly THE political issue i Norway) and the area Applications/Technology Diffusion was to play in the final drafts of the Plan. The resulting Plan of Action's profile became very broad, and marked a distinct twist away form the original initiators' proposed plan, even though, as I have said, a first look at the

plan will show us many of the original headlines. It is beneath these headlines that the Plan has changed.

Seen from the **translation perspective**, this story can be re-told as follows:
- Through network building, enroling of new actors and a gradually changing scenario for development, actors on the micro level were able to initiate a process that was to lead to a national Plan of action in the IT field.
- Through the first two phases, and some way into phase 3 of the process, the plan was formed directly as a result of this pressure from below, from actors on the micro level.
- Somewhere/sometime during Phase 3 the initiative was taken over by the traditional political actors on the macro level and the original actors lost control over the Plan.
- These new actors transformed the Plan according to their own standard scenarios, and changed the final Plan away from the local network's original drafts of a plan.
- The initiators on micro level had, by the time this process was completed, been removed from the field. They no longer had the possibility to control the shaping of what they had seen as "their" IT Plan.
- The scenario for development that was the focal point for the micro-actors and their mobilization, proved not to be strong enough to enrol the macro level actors, in the global network. - The ultimate control over the process, and over the shape of the Plan, was thereby to a large degree taken over by the political macro level actors.

4. "IT in the Health Services" - networking from above?
As already stated, the control of the IT Plan was moved from the micro-actors to the traditional political actors on the macro-level, during the process that formed the plan. If you wish to look at the ensuing imple-mentation of the Plan in the light of this development, it could be argued that this will have to follow a pattern, using certain political instru-ments, as decribed in traditional political science.

The domiant actor would be the State, or rather the political and bureau-cratic establishment. During the implementation process these actors could make use of a whole range of traditional political tools. Very briefly, these political tools can be classified as following:
a) Imperative tools: prohibiton and commands

b) Qualified permissions; such as prohibition with possibilities for exemption

c) Positive and negative incentives: subsidies and taxes, simple financial transfers

d) Offering infrastructural assistanse through public administration

e) Offering technical and personal services, services through public administration.[9]

In the case of the IT Plan, the tools of greatest interest are tose of categories c, d and e. The use of public development contracts would be an example of public policy in this field.

The important point is that you would expect that, applaying the conceptual framework offered by political science, the implementationprocess to be directed from the macro-level but executed in micro, using known political instruments. Ministries and government agencies, having gained control over the IT Plan, are thus facing the problems connected to its implementation.

4.1. From IT Plan to "Flagship-areas".

The National Plan of Action for IT that was passed in the Norwegian parliament ("Stortinget") was formulated in very open and general terms. One of the actors situated at the core of the implementation, a member of the Coordiantion Commitee, has described the situation by saying that the Plan that was passed in the national budget was a declaration of good intentions, rather than a plan of action.

Seen in the light of traditional implementation-theory, this poses a problem. To be able to implement a policy, you need goals that are not too ambiguous, goals that can be said to be of an operative character. In addition such goals you will also need specific and applicable instruments of implementation, as well as a deadline for the operations to be implemented. As already said, both goals and tools were notably degree absent from the IT Plan at this stage.

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[9] Maynts 1977, op.cit.

In other words, the first problem that faced the responsible national commitee, was to put this existing declaration of good intentions into concrete terms, in a way that would make it meaningful to speak of an implementation in the first place. They had to indicate concrete goals, they had to present limits in economical terms and in terms of time, and they had to come up with subprograms that could be completed inside these limited economical, organizational borders, and inside the existing time limits.

To start this process of concretisation, the National IT Commitee appointed a subcommitee who got the task of making a strategy for the coming Plan of Action. This "Strategy Group IT" was composed of four members, two of whome came from the Norwegian School of Management, and one representing the National Commitee (and incidentally also representing the Norwegian IT industry). This group was appointed as early as the autumn of 1986, immediately after the National Plan of Action was presented in the National Budget on September 25, that same year.

The mandate of this "Strategy-group IT" was to recommend areas that would be particularly suitable for concentrated action in the IT field in Norway, within the framework of the National Plan. In the terms of the implementation theories, this can be said to have been the first step on the road leading to the implementation of the IT Plan. The actor taking that first step, was the traditional macro political actor, the ministries and the central autorities, acting through a commitee, the National Coordination Committee, and an group, the Starategy Group IT. That this commitee, and this Strategy Group was composed of members with clear connections with the micro level of the field, is a fact that should not be forgotten. These commitees were not pure bureauratic instruments of implementation. They are also bodies of interst representation.

As early as December 1986, after what some of the Strategy Group¬s members describe as a very swift and effective period of work, the "Strategy Group IT" presented their report; "National areas of concentrated R&D-action in Information Technology".[10]   Through the process of work leading to this

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[10] **Strategigruppe IT**: Nasjonale satsningsområder for forskning og utvikling innen informasjonsteknologi, Oslo 1986.

report, we can observe how a concrete scenario for the further development of the IT plan is being formed.

The Strategy Group's proposition started by outlining criteria to be followed when choosing areas for concentrated action. The report divides these into three main groups:

1) **Fundamental conditions**; conditions constituting the general framework for the effort in the different areas of action. The commitee points at five subcategories:

    - The importance of information technology as a resource within the field

    - Natural conditions (natural resources, physical pecularities and demographic characteristics)

    - Social system and set of values (dominant values and patterns of social action in different areas; work, family, leisure time, nature, local environment etc)

    - Economic structure (the different trades' relative importance for the formation of values and employment, geographic distribution, size of firms, trends of development etc)

    - Lack of resources in areas of high priority in Norwegian society (lack of money, manpower, information, qualifications, time/capacity etc.)

2) **Competence**, divided into the following dimensions:

    - Technical profile (areas, level, scope, experience)

    - Size (number, organization, location)

    - Supply (flexibility, interest/involvment)

3) **The Market**, composed of three elements with different status and time horizon:

    - Home market (size, growth ratio, caracteristica of customers)

    - Export market (size, growth ratio, barriers)

    - Need of stimulation (would this area be developed in Norway if it were not chosen as an area for special action in the IT Plan?)

Of these criteria, the Strategy Group selected the **information technology's role as an resource, possible markets at home (and eventually globally), lack of resources (are the problems critical?) and specific Norwegian conditions and needs of stimulation**, as the criteria that should be met. In particular the technology's role as a resource of the production was emphasized. It is clearly said that an area with a low score on this

criteria, could not be considered of current interst. The pronounced market orientation is another important aspect of the Strategy Group's outline of a scenario.

The report of the Strategy Group concludes by selecting three main areas, what was to be known as "Flagship-areas".[11] These "Flagships" were:
- The Health Services
- Administrative work in information-based business
- Mobile services.

The purpose of naming these "flagship-areas" is said to have been two-fold. First, it was meant to concentrate activity in a few areas, to achieve a great "national effort" in these areas. It was therefor important that the flagship-areas was of great nation importance. The second reason for naming "flagships", was that these areas, and the action taken there, should function as an example for other sectors in society. By means of successfull projects, projects showing results, within the national IT Plan, you would show that it was possible to get things done. (Several of the key-actors now emphasize that this public relations effect after all was not the main reason for establishing the "flagships".

Of the three "flagship-areas", the Health Services is the one that was most clearly in tune with the majority of the listed criteria. The report calls attention to the fact that this sector is very large i Norway, as in most other countries. It will not be possible to satisfy all the sector's needs of resources within the seen future. Another important element in the process of choosing this sector, is the large and stable political consensus for increasing the activites in this sector. The fact that the health services is a sector that might be relatively easy to protect against foreign competition, was also taken into acccount. The existence of a large and largely unused market is the factor that today is most often given as the decisive argument for choosing the health sector.

The decision to go on with the "flagship-project" "IT in the Health Services" was made quickly after the process of naming individual "flagship" was completed. This was clear by the time the national IT Plan was offici-

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[11] The Norwegian term used was "fyrtårn", meaning "lighthouse".

ally launched at January 1. 1987. In a way it looks as if the subprogram "Health IT" in an early phase has emerged, or rather has been appointed, THE main area for action within the National Plan. This happened in much the same way as IT in an earlier phase emerged as THE area for national action, when the problem was to make the initial decisions on national R&D priorities. A quick glance at the process seems to reveal a series of relatively easy choices. Until recently, the initiators have with only a little scepticism, and even if a certain amount of downright opposition has occured, but it seems as if these minor difficulties have been easily overcome. The scenarios that are outlined by the "IT Strategy Group" managed to dominate this phase of the process of concretisation without serious problems.

The present social democratic government has repeatedly expressed priority to strengthen the health and social sector (e.g. during the last local election). Seen in this light, one could easily take for granted that the government hade made it clear, or at least given signals, that a part of the IT-plan should be directed towards this sector. As far as I have been able to find out, this has not been the case. Nor, it seems clear, have the different parts of the health sector taken initiative to become a part of the IT-plan. The Health Sector was, by the time the IT-plan was passed, already involved in various independent projects related to IT, and did not show any marked interst in the National IT-plan.

The idea of the health sector as a "flagship" and subprogram in the National IT-plan seems to have been born within the "IT Strategy Group". Most probably this idea came from one of the groups members, Professor Rolf Høyer. Professor Høyer is working at The Norwegian School of Management, and ti should be empasized that his idea of chosing the helath-sector most probably was a result of his theoretical consideration. Høyer is not himself connected to the healt sector, or the It industry.

At an early time Høyer presented his idea for the other members of the Strategy Group, as well as for the president of the Coordination Committee of the National Plan. At this stage, during the selection of "flagship areas", no initiatives were taken to build contacts between the Strategy Group and the Health Sectore. This process was carried out in a very

independent way, within the Strategy Group, in close cooperation with, but without pressure from the National Coordination Committee.

The idea of making a go at the health sector was at first met with some sceptisism. Professor Høyer indicates that they had several meetings with the National Coordination Committee before the idea was accepted. Several members of the National Commitee pointed to mixed previous experiences of cooperation with the health services at earlier times. Some of the members of the National Committee today state that the idea of taking action within the health services was new, and in some ways a little unfamiliar. The National Coordination Committee had, before the report of the Strategy Group, thought in terms of the traditional heavy Norwegian sectors, such as off-shore technology, mapping/geographical survey and so on.

The idea of chosing the health services as an area of special action is today refered to as an attempt to think untraditionally. It is also implied that this innovative attempt was not immediately met with roaring applause.

In a short time the National Coordination Commitee was won over to the idea of making an effort in the Helath Sector. As soon as this was accomplished, actors from industry and R&D began to show interest for projects in this sector. The same can be said for a few enthusiasts in the health services. The latter seem to have been more or less isolated actors that for a long time had been eagerly argueing the importance of an improved IT-action in the Health Sevices, without catching the ear of anyone.

Today, different sources emphasize that there never were strong alternative strategies for the implementation of the IT plan in the National Coordination Commitee. The process of choosing "flagship areas" was the only, and thereby the dominant, operative strategy. The arguments that have been raised against the Health Services have to a very little degree managed to move or change the scenario that was outlined by the "Strategy Group IT".

Seen in the light of traditional implementation theory, it is stiking how sparse, at this point of the process, the use has been of tradition implementation instruments. On the contrary, very much of the process can still be understood in the light of a translation perspective. Actors formulate scenarios, and try to enrol other actors to the network with the help of

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these scenarios. The IT-plan is being operationalized and implemented through the construction of an actor network. The main difference from the early phase of the making of the IT-Plan, is that the "network-builders" now are situated on the traditional macro-level, and that the actors they seek to enrol are situated at lower levels in the system.

4.2. From "Flagship" to Subprogram.
The "flagship" "IT in the Health Services" meant one long step down the road towards a concrete and practical IT Plan. In spite of this, the subprogram "IT in the Health Services" still was both open and general. The next step would therefore be to develop a concrete subprogram within of the "flag-ship".

As a part of this process, the National Coordination Committee in the NTNF organized a "brainstorming"-meeting. This was held on March 1, 1987. The main focus of this meeting was to form the first alliance with resourecfull actors within the health services. It was hoped that this would, sooner or later, bring into being a proposal for a concrete subprogram. However, the choices of whome to invite to this meeting were made more or less by chance. Some persons were invited that had been known to take an interest in the development of the IT field, and it was the expressed aim to bring together actors from as wide a spectrum as possible. The National Commitee tried to invite a representative range of actors from the parts of the Health Servicies that were seen as necessary for putting together an IT Plan of the proposed class.

The initiators also tried to get to the meeting representatives of a wide range of the IT Industry, together with the leading R&D institutions and the hospitals. When inviting actors from the hospitals, the organizers felt they had little choice but to invite those actors that had been enthusiasts in past years.

Of course the Ministry of Socal Affairs, and their own "Coordinating Commitee for Electronic Data Processing in the Health Services" was also invited to the brainstorming. The intention was obviously to draw represent-atives of the micro- as well as the macro-level of the health services into the network that was beeing established. It has been stated that it was

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unthinkable to go through an extensive IT Action in the health services without the active cooperation of the Ministry of Social Affairs.

A very wide group of actors was tentatively mobilized/enroled in a network built around the scenario outlined through the choice of the health services as a "flagship" for the National Plan of Action. In this network the Ministry of Social Affairs was seen as an necessary actor. In spite of the importance of enroling the Ministry of Social Affairs, this brainstorming was the first time such a contact was made, at least at the formal level of the administration. It is unclear what happened at this meeting.

The deadline for presenting proposals for pilot projects to the subprogram "IT in the Health Services", was set to May 14, 1987. On that same day, a new meeting with the Ministry of Social Affairs was held. The purpose of this meeting was to discuss the further development of the subprogram. It seems that it was of great importance to the National Coordination Commitee to get the Ministry of Social Affairs involved in the process. It is clear that it was deemed of great importance that the macro-level of the Health Services should be involved in the coming implementation process. As I have said, it was percived neither as possible nor desirable to take action, without at the least partial cooperation and support of the Ministry.

However, it proved difficult to get the desired approval and support from the Ministry of Social Affairs. The reasons for this are yet to be etablished, but several of my sources have pointed to the cultural conflict between the initiators of the IT Plan, and the Ministry. The IT enthusiasts approached the Ministry with the proposal of an IT Plan that, in content as vwell as verbally primarily was industrial policy. The Health Services were to play the role of a advanced and highly competent customer, and a large market, within this plan. To the Ministry of Social Affairs this was an alien thought. The area of operation for this ministry had always been exclusively social affairs, and industrial policy was seen as something exclcompletly outside the ministry's domain. The entusiastic initiatives from the IT Plan's core actors was concequently recived with mixed feelings by the Ministry of Social Affairs.

To a certain degree this "cultural conflict" had its roots in different concepts and different style of the approaches to the "problem" of IT. This

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beeing said, it is impossible to ignore the actual differences of interests, present in the situation. The presentation of an IT plan for the Health Services that was made by the core-actors of the IT-plan, undoubtedly placed the Health- and social-political aims of the plan in an secondary position. The development of new products, and thereby of new industry and new employment, was the focus of the plan.

These core IT actors, and the network they were building, centered on a scenario that was mainly focused on industrial development, now faced an actor that would have to be enroled in the network in order to get it working. This important actor constituted an entire and well established network within the health sector. This network was in turn constructed around a scenario that, to an overwhelmingly degree, was focused on health- and social-political goals, such as higher efficiency in the health sector, better treatment of the individual patient, improvement of working con- ditions etc. The attainment of these goals was not automatically seen as being supported by, or even being compatible with, the IT Plan and the scenario existing there.

We here face two established networks, with two clearly defined scenarios. One of these networks then tries to enrol the other, but without making the necessary adjustments of their scenario. It is stated in the presentation of "IT in the Health Services" that the plan is meant to assist in reaching the major health-political goals, but this is clearly given a secondary role when compared to with the aims of industrial development. From the Ministry of Social Affairs' point of view it is quite clear that the IT Plan's mentioning of health-political goals could be seen as little more than cosmetical.

It also seems as if the new IT initiators had, or used, little knowledge of what was already being done in the IT field in the sector they were now approaching. It looks as if they did not know very well the very complicated organizational terrain of the Health Services. This probably led to a few toes being bruised in the complicated dance that now took place. As a hypotesis, the question can be raised as to whether this process conflicted with internal institutional relations in the Ministry of Social Affairs, and the rest of the Health Sector? By doing this it is possible that the IT-

initiators bruised some toes that would have been better unbruised? So far in my study, this can be little more than a suggestion.

In the meantime, a report of the pilot projects was presented. This report presented the criteria that had to be met by projects to be supported. May 21, 1987, a new meeting of the National Coordinating Commitee was held. Here it was resolved to go ahead with 6 pilot projects. When these pilot projects were completed, by the end of 1987, the final choice of the actual projects would be made.

June 25, 1987 a paper[12] from the Strategy Group IT presented the pilot projects. All the pilot projects had been evaluated with regard to three central criteria. First, it was seen as a great advantage if the project consisted of a clear business idea. The projects should point toward the development of an actual product. Projects focused mainly on organizational development were thereby eliminated. The goal was products that could be sold in the market.

The second crtiteria was that procjects should, as far as possible, involve communities with competance on R&D, on the user-side as well as the production/marketing side. In other words it was seen as important to base the projects on the triangle R&D-institution - Hospital - IT Industry. If we, for a brief moment jump forward in time, to the presentation of the IT plan in the National Budget for 1989,[13] we still can find this triangle mentioned as the central part of the plan.

Thirdly, not very surprisingly, it was seen as a favoralbe if the projects contained a considerable amount of IT. This was meant to exclude projects focused on developing "traditional" medical equipment.

The scenario that had been outlined, survived through this part of the process. The focus on the market-side is intact. The goals are still formulated in mainly industrial terms. In addition to this the triangle R&D - Industry - Hospital is established as the structure of the plan. In time

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[12] Strategigruppe IT: Forprosjekt "IT i helsesektoren". Committee Report, Oslo 1987.

[13] St.prop. nr. 1 (1988-89): Statsbudsjettet (The National Budget)

this triangle would prove a little difficult to establish, but as a central element in the initiator₁s scenario for industrial and innovation policy, it has survived to this very day.

The following projects were proposed:
1) Pasient information systems. Medical journal/case sheet
2) IT-integrated health services.
3) Mobile health services.
4) Digital speech processor.
5) Picture processing.
6) Welfare services for the elderly/handicapped
In addition to these six projects, two supplemtary activities were proposed:
7) Contact/information Center.
The purpose of this was to contribute to the coordination of the activites covered by the pilot-projects, as well as stimulate interest for IT in the health services.
8) Survey of the use of IT in Health Services in other countries.

The pilot projects started in June 1987, and were completed by the end of the same year. At the end of the pilot period, 38 proposals for projects had been evaluated, and 6 projects were carried out. The attention of the producers as well as of the R&D-institutions was great. Finding the third side of the triangle, the users, proved a little more difficult. In the end however, this was also managed. Involved in the final 6 projects we find, not very surprisingly, quite a few well known actors from both industry and R&D. Norsk Data (one of the largest and until lately possibly also the strongest, firm in the Norwegian IT industry, if not in the entire Norwegian industry) is involved in 3 of the 6, and the Norwegian KommuneData (regionalized firm providing IT services to both public and private sector) was involved in 2. At the R&D corner of the triangle, SINTEF[14] was involved in 4 of the 6 projects.

It is obvious that the criteria have been followed, or at least this has been tried as far as possible. The triangle industry-R&D-users is a marked

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[14] SINTEf is the largest industrial orientated R&D organization in Norway, situated in Trondheim, in close connection with the Norwegian Institute of Technology (NTH). The institution employs some 800 scientists, in addition to an extensive use of NTH-employees in various projects.

element in all the projects. As stated, the hospitals, as the user in the triangle, seem to have been the actor that in most cases proved most difficult to enrol.

On January 11, 1988 the proposed allocation of grants for 1988 was presented by the Coordination Commitee for IT in the Health Services. They proposed to start 6 projects, with a total budget of 15 millions NOK.

The recently concluded pilot projects are presented in connection with the proposal for budget. It is stated here that the projects have been followed with great interest. Because of the short timespan under which the work had been done, it has been impossible to reach all potential and interested actors in industry and R&D.

The pilot project is said to have strenghtened the Coordination Commitee in its belief that the health services will be a suitable area for an extensive IT offensive, as a part of the National Plan. The Health Services are still seen as an important market for the Norwegian IT industry, and the belief that it will be possible to establish a fruitful cooperation between the industry and the health services is said to be confirmed.

In spite of this, the report show clearly that the process has had its difficult stages. First, the report mentions structural barriers being an obstacle to the necessary cooperation between industry and the health services. It is also noticed that the hoped for economical support of the macro-level of the health services have been difficult to obtain. The total budget for the coming projects is therefore smaller then hoped for. In the dispatch note to the budget proposal it says, clearly and concisely:

> "A satisfactory economical contribution from the Health Sector has not been attained."[15]

If we, once more, travel forward in time to the proposed National Budget for 1989, where "IT in the Health Services" is presented as one of the main areas in the National Plan of Action for IT, we can find a certain difference in interest between the different involved actors. In the proposed

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[15] NTNF: Program for informasjonsteknologi i helsesektoren, forslag til bevilgning for 1988, Internal Report, Oslo 1988

budget of the Ministry of Industrial Affairs, where the main presentation of the IT Plan is found, the subprogram of the Health Services is given considerable space. "IT in the Health Services" are referred to as one of the "main areas" of the IT Plan.[16] The actors responsible for the implementation of this subprogram are said to be NTNF and the Ministry of Social Affairs.

If you, in contrast, take a look at the budget proposal of the Ministry of Social Affairs, you will find, to the extent that you will find anything at all, the IT Plan mentioned in a somewhat more subdued mode. In a paragraf mentioning general efforts to strengthen the efficiency of the health services by the use of information technology, it is said:

> "In connection with this, we refer to the fact that the health services has been appointed a main area of action in the National IT Plan."[17]

This is in fact the only time the IT Plan is mentioned in the budget proposal from the Ministry of Social Affairs. When, in the rest of this document, the use of IT in the health services are briefly mentioned, this is always done within a perspective of health-policy, and without referring to the IT Plan.

When speaking of the requirements for projects that are to be supported, the report ofthe pilot project is very strict in its demand for market orientation:

> "The Coordination Commitee has consistently taken into consideration the intentions in the national IT plan of making a "market-oriented effort", and has followed the principles that made the basis of the report of Desember 1986. This message has been proclaimed in depth in the invitation of the different actors to take their place in the project, and is the basis for the final evaluations and priorities. The Coordination Commitee will not make a secret of the fact that this principle involves a clear choice of policy, when making priorites in the distribution of public R&D-founds between Basic Research, Applied Research and Product Development."[18]

In other words, a choice has been made. Basic Research has been moved completely out of this part of the IT Plan, to the benefit of applied research and product development. The fact that the program now being

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[16] ibid page 73

[17] Ministry of Social Affairs: Proposal for budget 1989, page 108.

[18] NTNF 1988, op.cit.

started is mainly a program of product development, is emphasized later in the same report:

"The Coordination Commitee has emphasized that the main objective of the projects is to be the establishment of profitable business. This involves development and marketing of products needed and beeing demanded by the health services, both in Norway and abroad. It is therefor not sufficient to start on the basis of the different needs of the health services. The main pont will have to be an expected commercial market."[19]

This marked market-orientation is also repeated in the National Budget]s presentation of the IT-Plan.

In addition to this, the report of the pilot projects says clearly that projects to be supported will have to support present priorities of the national health policy. Such projects will primarily have to be financed through the health services' own budgjets. Projects of lesser health political significance are to a large extent assumed to be financed by the industry itself.

At this stage two things seem clear:
First, we see the desire to kill two birds with one stone. The IT effort in the health services is supposed at the same time to help solve the problems of the health services, and contribute to economical growth in the electronic industry of Norway. However, the dominant aspect of the IT plan is allways the industrial goals. The initial basic scenario, with its focus on market-orientation, has survived quite unchanged through the whole process, at least as far as I have studied it. It is clearly stated that no project will be supported just because of its value in terms of health-policy.

In addition to the wish to kill two birds by means of one IT Plan, we also see the traditional Norwegian institutional closueres in the science policy field. NTNF, and thereby the Coordinating Commitee, define their role clearly as industrially motivated, their job is to support the development of technological knowledge. When faced with projects with a mainly social political orientation, the responsibility is placed on the shoulders of the Ministry of Social Affairs and its agencies. The same happens when faced with the important and necessary organizational changes and reorientations that will have to follow in the footsteps of, or preceed, increased use of

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[19] ibid., side 3

IT in the health sector. These kinds of problems, and projects, are defined as being outside the field of responsibility of NTNF and the Coordinating Commitee.

The perhaps greatest problem so far has been that the parts of the Health Sector that are supposed to play an active role in the IT effort, have been quite passive. It can be argued that these agencies have shown far too little interest in the plan in this phase of the planning.

This lead to the question whether the Health Services are ready to catch the ball that is played in their direction by the NTNF, through the outline of borders of responsibility implied in the report of the pilot projects. If this is the case, we can be facing a situation where the IT effort in due time will be balancing on one foot, the industrial/technology- and know-ledge-developing foot.

From several quarters attention has been called to the fact that one of the main challenges facing the IT Plan is to establish the necessary coordination and cooperation between the different involved agencies and institutions. In many ways the IT Plan has been threatened by the tendency to become several small IT plans instead of one coordinated plan.[20] There is no apparent dominant force mentioned in the report of the pilot projects that can counteract this tendency, and thereby stimulate the necessary coordination. This has not been the responsibility of the Coordination Commitee. This committee¬s mandate was from the beginning defined clearly in the industrial sphere.

Support of the following projects was recommended in the report dated January 11, 1988:

1) Work station for patient journals.
2) Computer integrated community health services.
3) The Southern Norway project - alarm telephones and EB terminals..
4) PACS
5) Magnetic resonance image processing.

On a supplementary list was recomended:
6) Ultrasound Cariovascuær diagnosis, Scenario 1990

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[20] Tøssebro, J.: Norsk IT-satsning - Strategisk klatting? Workingpaper, IFIM, Trondheim 1988

In addition to this it was proposed to grant 0,6 millions NOK to admini-
stration of the projects. The total NTNF grant ended up at 15 millions NOK.
This can hardly be said to be a very clear and strong economical carrot i
front of the participants.

All the proposed projects implied a direct continuation of the pilot
projects. Involved in the projects we once again find heavy actors such as
Norsk Data (2 projects) and SINTEF (3 projects). The triangle industry-R&D-
hospitals is still a striking aspect of all the projects.

In the concluding comments of this report, a scenario is once more outlined.
Here we see the health services as the natural area for a Norwegian IT
effort, an area where Norway can draw on "our natural competetive ad-
vantages". We are internationally known as a country with a large and
advanced health sector.[21] This is said to compose our largest competetive
advantage with regard to export markets.

The report also points out some difficulties in connection with such an IT
effort. There is little previous experience with cooperation between
industry and health services. Apart from some large firms having established
such a cooperation, we find lots of small, enthusiastic industrial actors
engaged in this field. These actors are characterized by weak economy and
only fragmented contact with the health sevices. Their connections in the
health services typically are more or less isolated individuals, the IT-
enthusiasts, those I am tempted to call "the medical hackers".

As is the case of the producers, the user side of the triangle is very
fragmented. Among other things this results in the lack of a coordinated
policy of capital investments. The single units are, on their side, too
small to make specific product recuirements and support development indi-
vually. The health sector is not very well suited for the use of public
development contracts. Compared to other public services, where capital
investment is coordinated or carried out by one central agency, this is a

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[21] For a brief presentation of of some aspects of the health sector i
Norway, see Sætnan, A, B.Backe, A.Kolstad & T.Lamvik: "LOOK TO NORWAY! (But
Not Uncritically)", International Journal of Technology Assessment in Health
Care, vol. 4, No.3, 1988.

obvious drawback of the health sector with regard to a coordinated IT effort.

On January 15, 1988 the National Coordination Commitee of the IT Plan met again. At this meeting the budget for 1988 was presented by the commitee¬s secretary, Helge Kildal. The budget¬s size corresponds to the earlier propositions.

The process so far can to a certain degree be described as a set of attempted constructions of actor-networks, with the driving forces behind them located at the macro level. Traditional tools of implementation have, until the present stage of the process, been used sparingly or not at all. It can be argued that this is somewhat surprising, seen in the light of the final profile of the It Plan. Instead of using the traditional implemen- tation tools, the macro actors have concentrated on enroling new actors to the plan's network. These new actors are situated on both macro and micro level, and are enroled by means of the scenario for development we could see outlined by the time the "Flagships" were chosen. Furthermore it looks as if this scenario has been incomplete as a means of enroling the main actor at the macro-level of the health services, The Ministry of Social Affairs to the actor network. In other words: Seen in the light of my studies so far, the implementation of the IT-plan in the health services seem very much like an attempt to implement public policy through networkbuilding from above.

5. An attempted summary and conclusion:
"The National Plan of Action for IT" was born partly as a result of pressure from actors on micro-level. Some dominant actors from the industry and R&D- institutions managed, through active networkbuilding, to knock on doors that some belived were non-existing.

In the process of operationalizing the actual IT plan, the plan that resulted from the micro-actors knocking on closed doors, the situation is completely changed. Now the door not only exists, it is flung wide open. The IT plan is a hard fact to the Norwegian R&D- and industrial community. We now face a situation where actors on macro-level, in NTNF, in the National Coordinating Commitee and in the Ministry of Industral Affairs, are att- empting to mobilize other actors to the plan, and to the scenario for development and implementation of the plan that came into existense with the

choice of "Flagship-areas". These actors that are now being searched for, we can find on both micro and macro level. To use the picture of the closed and open door a little bit more: At this stage of the implementation actors from micro level are being led to, and in through the wide open door of the IT Plan, although some of the those living on the other side of this door may not be to happy about it.

The IT-Plan's centre of gravity is now situated at the macro level. What we now are facing is an implementation-process like those described in traditional political science. As I have hinted earlier, this is not to say that the tools being used at the present time are those of traditional implementation theory.

In addition to the activities on behalf on the macro level actors, we will of course find actors on the micro level trying to get control over parts of the plan, and thereby changing the plan in their general direction. This will mainly be done through constructing actor networks around these actors and their alternative scenarios of development. Actors will also in many cases try to define their own role into the framework of the IT-plan and the planₙs existing scenarios. It has been suggested that this kind of activity has been/is quite extencive. This activity has so far yet to be covered by my study.

Seen in the light of the present situation, with the IT Plan's centre of gravity firmly placed in the macro level, we could expect an implemetation dominated by the traditional policy-tools. With reservations for the fact that my study is yet a long way from being completed, this does not seem to be the case. On the contrary, implementation has so far to a large extent been attempted through network building, very much as it is described within the framework of a translation approach. The main deviance from that approach is that the network builders in this situation are situated on the macro level.

A lot of the involved micro level actors approach the "IT in the Health Services" with a fair amount of sceptisism. Actors from the industry point to the lack of experience in cooerating with the health services. The health services are seen as far too complicated customers, the routines of capital investment are to a large degree unknown and/or unclear etc. The aggregated

result of this sceptisism from the industry is that this actor shows a quite marked reserve, in spite of the fact that the majority of the industry expresses a very positive attitude. The industry is aware of the possibilities of gaining access to public funds through the IT Plan. That this could be a way into a virgin and possible large new market is also clear to the industry. But the price to pay for the access to these green fields, is the need to move into unknown and possible dangerous territories, the health services.

The industry is not the only sceptical actor in this game. In the health services as well we can find actors that are, to put it mildly, a little reserved. A lot of this sceptisism can be brought back to the very complicated organizational structure characterizing this public sector. Here we find a complicated network of professions, involved in a seemingly endless fight to maintain their various gains and advantages. From this system there will therefore inevitably be considerable sceptisism toward being engaged in projects that may result in the disturbance of established positions. Groups of actors will, all the time, see development projects as a threat, aimed against just that group's hard-gained privileges. What kind of results this can cause in a development process, is described by, among others, Ann Sætnan.[22]

This situation will, in the world of hard realities, often lead to the fact that you are left with isolated enthusiasts, "medical hackers", from within the lines of the hospitals. These entusiasts will let themselves be enroled in the network of the IT plan, but they will not neccesarily have the basis in the "hospital-network" that will be needed to enrol the hospital as such.

The IT plan, in addition, implies a combination of industrial and social policy. This has proven a major difficulty in the construction of a network. An actor of central importance to the network of the IT Plan, The Ministry of Social Affairs, has only to a small degree shown any interest in the process. It can be hypothesized that the Ministry has failed to see the IT Plan's scenario as one which could help to solve the problems of the health

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[22] Sætnan, A: Building a network for "PREOP" - Entrepreneurship or sheer luck? Paper to be presented at the 4S Meeting in Amsterdam 1988

services. Neither has the Ministry made much effort to change the dominant scenario by taking an active part in the network.
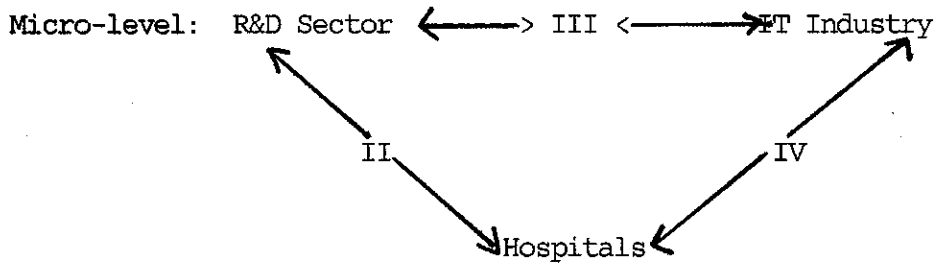
As a sort of conclusion, we can say that what we have been facing so far is a mobilization on two levels, micro and macro. On the macro-level, the network built around the IT Plan has tried to enrol and mobilize the Ministry of Social Affairs. This has not been as successfull as was hoped forand, one may add, as seem necessary for the success of the IT Plan. As said earlier, the Ministry of Social Affairs seems to have defined their own role as one of social policy, and only that. This scenario for action, being the basis of the role that the Ministry has chosen for itself, differs considerably from the mainly industrially oriented scenario of the IT Plan. The role as a market, as a customer and not much more, which seem to be the main role attributed to the health services in the IT Plan, is probably percived as completely alien to the Ministry of Social Affairs. Therefore they have waited, passively, and chosen not to engage themselves in the IT Plan.

At the micro level, the mobilization has been somewhat easier, and therefore also more successfull. The aim of this enrolement process has been to establish the triangle consisting of IT industry, R&D-institutions and hospitals. Of these three actors, the industry and the R&D-institutions have been enroled, with lesser or greater effort. The industry has shown a considerable amount of sceptisism, but these actors has to some extent let themselves become enroled. The situation is similar in relation to the R&D institutions. Some of these have in addition have been involved for some time in certain types of development work, focused at and in cooperation with, the health services.

The most difficult corner of the triangle to establish, has been the users, i.e. the hospitals. This is not only the most difficult micro level actor to enrol, but also the most important one. Without the hospitals, the "IT in the Health Services" is doomed. That the users have been hard to enrol is to a certain degree a result of internal conditions in the hospitals, but in addition to that it is also a result of the so far mainly unsuccessfull attempt to enrol the Ministry of Social Affairs at the macro level.

To summarize once more, the situation can be drawn like this:

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Macro-level:    IT Plan  <-------->  I  <------->Ministry of Social
                                                 Affairs



Micro-level:    R&D Sector <------->  III <-------->IT Industry
                          ↖                        ↗
                       II  ↓                    ↗ IV
                            ↘  Hospitals ↙
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The main aspects of the four indicated processes are as followes:

I) Create a market

II) Map the actual needs

III) Transfer of technology

IV) Sale of technology

The result of process I will influence process IV, and the result of process
III will to a large degree be influenced by the existence of a market, and
thereby by the possibilites of a successful marketing of the tecnology.
Process III and to a certain degree process II have been realized success-
fully. In these areas the necessary bridges exists. The crucial bridge-
building remains in I and thereby in IV.

The macro actors involved in the implementation process have not to any
large degree used traditional tools of implementation. This can partly be a
result of the same unsucsessfull attempt to enrol the major macro-level
actor in the health services. As long as the top of the pyramide is missing,
you cannot use the tools that can only be activated from that very top. We
are then left with a process of network building from above, a process that
may prove to be only partially sucsessfull, because some very important
actors are missing, both on micro and, probably more important, on macro
level.

Whether the actors involved in the IT Plan will manage to span the schism
between their own industrial scenario and the Ministry of Social Affairs'
"health scenario", and thereby enrol the Ministry in the network, is yet to
be seen.