

Centrally Organized Temporary Traffic Control Team

Piloting an Independent Profit Center

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At the end of 1998, the South Finland Production Area of the Finnish National Road Administration (Finnra) decided to create and pilot test a new service system to take care of temporary traffic control during road work. The new Finnra team offers all-inclusive temporary traffic control services to anyone who needs them—inside or outside Finnra. The team applies for working permits, takes care of traffic arrangement, and develops and tests new traffic control equipment under local conditions. The team, a pioneer in work-zone safety, works toward four goals: maximum safety to the road users, maximum safety to workers, minimum delay on site, and optimal economy for the client. The project started at the end of 1998; the pilot “traffic control team” idea was tested in 1999; and the team officially started work at the beginning of 2000.

Since the beginning of 1998, the Finnish National Road Administration (Finnra) has operated as an agency divided into two units: Road Administration, a public authority that commissions road maintenance services (“client”), and Production, a unit that specializes in road management products and services (“contractor”). Figure 1 is the new organizational chart. This internal division clarifies the roles and responsibilities of the branches, intensifies the efficiency of road management, and helps prepare the agency for open competition in public road management scheduled to be implemented in January 2001.

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BACKGROUND

Specific requirements for temporary traffic control are written into Finnish law. In addition, Finnra set guidelines for temporary traffic control in the early 1990s (Traffic on the Construction Site [TIEL 2272000] and Traffic Arrangement and Work Safety on Road Works [TIEL 2270011]). The basic principle in temporary traffic control has been that each traffic arrangement will follow both the law and Finnra’s guidelines. The basic problem always has been the attitudes of road users, Finnra’s workers, and administrative personnel. The importance of temporary traffic control is not understood; on the contrary, many people think that “nothing will happen today because nothing happened yesterday.” Finnra Road Administration has not paid enough attention to traffic and work zone safety during work on the road.

For Finnra Production, one of the site’s staff typically takes care of the temporary traffic control in addition to other site work. This kind of system is still common among private companies, within Finnra Production’s maintenance unit, and at small construction sites on the lower class road network. Typically, having 10 sites dealing with traffic control translates to 10 ways of interpreting the guidelines.

The question is also one of money, because all equipment costs money and is costly to maintain. The guidelines that Finnra Road Administration uses as a standard for temporary traffic control are not diverse enough to cover the whole country, which is why the range of quality in traffic control is so wide.

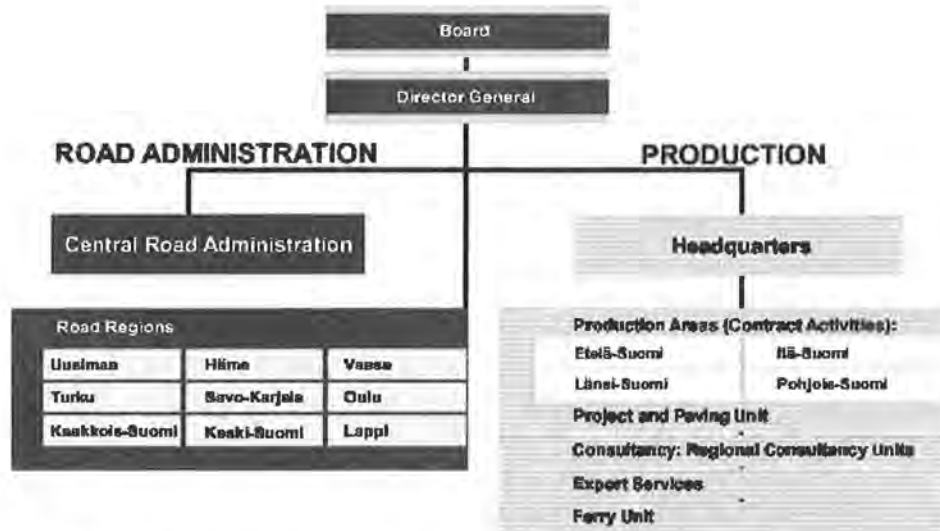


FIGURE 1 Organizational chart of the Finnish National Road Administration.

Subsequent to a decision made by the Finnish Parliament to separate the Finnish National Road Administration into a Road Administration unit and a Production unit (a state-owned enterprise), Finnra Production will compete for contracts with private contractors. In the near future, Finnra Production will receive most of its work through open competition, and one of its goals is to be able to compete on quality as well as on price.

Based on the low quality of the current guidelines, it is reasonable to expect that Finnra Road Administration will modify its contract documents to reflect the new situation. There are at least three reasons to clarify the expected quality of temporary traffic control in the standard contract papers:

- Finnra's goal to improve safety on construction sites;
- Finnra's division into Road Administration and Production units; and
- Out-of-date guidelines on temporary traffic arrangement, traffic safety, work safety, and the quality of these tasks.

Finnra Production realized that the only way to obtain a competitive advantage over the other contractors was to adapt to the new situation well in advance and to change its operation process, for example, by standardizing temporary traffic arrangement. Traffic arrangement was identified as a key competence of Finnra Production.

Since the late 1990s, for large projects located mostly in the surroundings of Helsinki or in road networks with heavy traffic, the responsibility for temporary traffic

control has been assigned to one full-time employee. As a result, fewer than 10 people overall have become real experts in temporary traffic control.

CREATING A PILOT PROJECT FOR TRAFFIC CONTROL SERVICES

To improve traffic safety in relation to temporary traffic control practices and to increase the quality of temporary traffic control during construction phases, a new scope of services was created in Finnra Production. It offers all-inclusive temporary traffic control services to anyone who needs them, both inside and outside Finnra, through a centrally organized traffic control team.

The pilot project started at the end of 1998. The project task force (steering committee) and follow-up group consist of five people: three from Finnra Production (the South Finland Production Area, the Research and Development Unit, and the Consulting Unit) and two from Finnra Road Administration (Central Administration and the Uusimaa Regional Administration). Information about the project also was regularly provided to the managers of contract units and the production areas of Finnra Production as well as other regional administrations.

The traffic control pilot team was set up to operate as an independent profit center of Finnra Production within the area of the Helsinki Contract Unit, but in response to demand, the operational area could be enlarged. Main clients of the traffic control team during the pilot phase were identified as Finnra Road Administration, other units of Finnra Production, local cities, municipalities,

and private companies (such as electricity companies and other contractors). Figure 2 is the organizational chart (task force, pilot team, and clients).

The tasks relating to the core competence of the pilot team were identified as

- Preparing temporary traffic control plans,
- Creating the traffic arrangement,
- Renting equipment,
- Repairing equipment,
- Handling traffic arrangement during the construction phase, and
- Testing and developing new equipment under local conditions.

The basic principles of piloting the concept were to improve the safety and quality of temporary traffic control and to create a profitable service through a pioneer team for traffic and work safety services. The pilot team's four goals were to provide maximum safety to the road users, maximum safety to the workers, minimum delay on the construction site, and economy of traffic control.

SELECTING THE PILOT TRAFFIC CONTROL TEAM

The active phase of the pilot project was scheduled to last 7 months, from June through December 1999. During that time, the pilot team reviewed and developed its plan of action, selected a team leader for the pilot phase, and chose the specific test sections or jobs in which the process could be tested. The team also reviewed and mapped the costs of temporary traffic control services and conducted market research for its services. Part of this active phase was to decide what kind of operational system should be created to implement the concept starting in the beginning of 2000 and what kind of a report should be written about the experiences of the project's pilot phase.

In selecting the members of the pilot team, some qualifications were required to ensure the quality of the operational principles of the team. Each team member should be interested in traffic and work safety, be innovative, and like to work with traffic. In addition, each team member should be able to do almost any task required within the team's scope of services. The team members were trained on work and safety issues, specifically through a Finnra Road Administration training program,

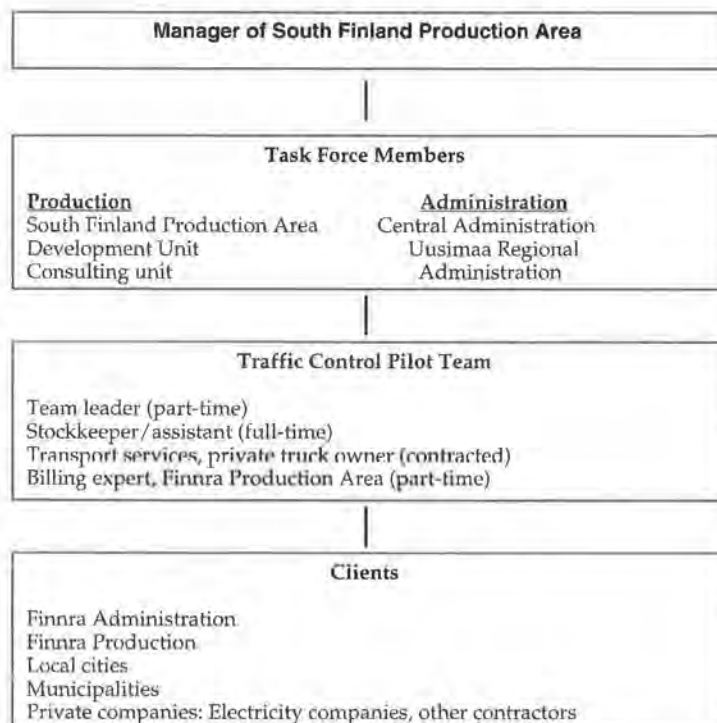


FIGURE 2 Organization chart of the task force, pilot team, and clients.

In 1997, the Finnra Board of Directors decided to create a systematic training program to improve the safety of road services. In 1998, Finnra Central Administration presented two training courses: Road Safety I and Road Safety II. Both courses end with a test that attendees must pass in order to obtain a certificate. Road Safety I is a one-day compulsory basic training course for everyone who works on the road. The topics cover the risks, the basics of traffic arrangement, and work safety. Road Safety II is a two-day training course aimed at technicians, engineers, and contract supervisors. The topics emphasize employer functions and the planning of work safety and traffic arrangement. Successfully completing Road Safety I is a prerequisite for taking Road Safety II.

As of the end of 1999, about 4,300 people (Finnra personnel and private contractors) had received the Road Safety I certificate (Figure 3 is an outline of the course). As of the end of 1999, about 100 people from Finnra had received the Road Safety II certificate. By April 1, 2003, all Finnra personnel and all outside contractors working on the road must have officially completed both standardized road safety training courses.

PILOT PHASE

During the pilot phase, the team contracted to work for Finnra Road Administration and Production at 26 work sites around Helsinki and in the Uusimaa region (Figure 4). The team also worked as a subcontractor for five private companies at 25 work sites in the Uusimaa region (Figure 4). The team and task force estimated that during the pilot phase, about 500 different work sites in the Uusimaa region required traffic arrangement. The team did not market its services; on the contrary, the team received all its work through negotiations or by word of mouth. We estimate that after the team has completed the operation process and fixed prices to the right level, the team can reach about 20 to 30 percent of market share.

The project's task force—acting as the follow-up group—wanted to keep the general costs of the pilot phase as low as possible. Therefore, the pilot team's organization was kept as light as possible. The team leader worked on both the pilot project and a regular road project for improving airport entrance roads; he contributed about 70 percent to the pilot project and 30 percent to the regular project. The stockkeeper/assistant was assigned to the team at the beginning of August 1999 but also worked with other Finnra units as much as possible. The required transport services were procured from a private truck owner, who worked for the team when needed. Billing was delegated to a billing expert from a Finnra Production area. The team leader had identified possible sources of deputy personnel, but the team managed to handle all tasks and work sites themselves.

1	RISKS IN WORKING ON THE ROAD
1.1	General
1.2	Danger caused by traffic
1.3	Danger caused by circumstances
1.3.1	Perceiving the work area
1.3.2	Factors that hinder perception
1.4	Worker risks
1.4.1	Getting accustomed to risks and workplace blindness
1.4.2	Poor perceptibility of workers
1.4.3	Danger of machines
1.5	Danger to other road users
1.5.1	Motor vehicle traffic
1.5.2	Bicyclists, mopedists and motorcyclists
1.5.3	Pedestrians
1.5.4	Children
1.5.5	Other road users
1.6	Problems of working
1.6.1	Lack of space
1.6.2	Material storage
1.6.3	Workers' cars
1.6.4	Hindrance caused by traffic
1.6.5	Young, inexperienced workers
2	HOW DO I LOOK AFTER THE SAFETY OF OTHER ROAD USERS?
2.1	Basic principles of traffic arrangements at the work area
2.1.1	Goals of traffic arrangements
2.1.2	Implementation of traffic control
2.1.3	Structure and erection of traffic signs
2.1.4	Traffic signs needed in road work
2.1.5	Barriers and warning devices
2.1.6	Warning flashers
2.1.7	Shielding the work area
2.2	Limiting speed
2.2.1	Temporary speed limit
2.2.2	Selection of a speed limit
2.2.3	Repetition of a speed limit sign
2.2.4	Emphasizing a speed limit
2.2.5	Ending a speed limit
2.3	Working as a traffic director
2.4	Informing about road work
2.5	Operating machines in traffic
2.5.1	General
2.5.2	Working as a driver
2.5.3	Caution when working on the road
2.5.4	Exceptional regulations when operating a machine
2.5.5	Warning devices
3	HOW DO I LOOK AFTER MY OWN AND OTHER WORKERS' SAFETY?
3.1	Looking after safety is part of professional skill
3.1.1	Working on the road requires a high level of safety
3.1.2	Safety is a part of work and work planning
3.1.3	Workers' safety measures
3.1.4	Workers' responsibilities and rights in job safety matters
3.1.5	Getting acquainted with the work
3.2	Visible clothing and other personal protective equipment
3.2.1	Visible clothing
3.2.2	Other personal protective equipment and its use
3.3	Instruction and familiarization
3.3.1	Providing instruction
3.3.2	Information flow on the job
3.4	Instructions in case of an accident
3.4.1	General responsibility to provide help
3.4.2	General instructions in case of an accident
3.4.3	Estimation of a situation
3.4.4	Sequence of action
3.4.5	Rescuing someone in danger
3.4.6	Preparing for an accident in a work area
3.4.7	Fire safety
3.5	Safe operation of machines and work equipment
3.5.1	Looking after the condition of machines
3.5.2	Daily operational tests
3.5.3	Safe work procedures
3.5.4	Watching out for equipment and structures in the road area

FIGURE 3 Finnra Road Safety I training course: outline of the training manual.



FIGURE 4 Maps of Helsinki and the Uusimaa region, Finland.

At the beginning of the pilot phase, the team leader made a list of all the necessary equipment and sent an invitation to bid to local equipment manufacturers and importers. He also made detailed agreements with other Finnra Production units and projects for allowing the pilot team and the Finnra Production units and projects to share some equipment at work sites. This cooperation would enable both the team and the units to organize and maximize the use of required equipment. The team was housed in a central location so that travel would be efficient and convenient for all members. The team leader organized a basic office space for the team's use with office tools and communication equipment (computer, fax, and so on).

The role of the team leader was to design and prepare plans for each work-site traffic control arrangement. He also took care of plan approval by the local road inspector and participated in carrying out the arrangement. Traffic control arrangement was well documented with a video camera or a still camera. Every time the team was on the road, the Uusimaa Regional Traffic Management Center was informed in the morning of the working day so that it could provide accurate information about temporary traffic control activities to the local radio stations or newspapers if necessary.

The members of the selected pilot traffic control team were committed to safe working methods, personal safety, and the use of efficient warning equipment. In doing their job, the team intended to seal off a working area as soon as possible. Achieving fluency of traffic flow and the safety of road users and workers was ensured by using clear paved driving routes, collision protectors, and other available safety equipment.

Costs

For implementing the pilot project, the team leader was authorized to spend up to 500,000 Finnish markka (Fmk 500,000/US\$83,300) for procuring new or repairing old equipment. Out of this budget, the team spent Fmk 229,000 (US\$38,200) on equipment procurement. The total costs of transport services were Fmk 181,000 (US\$30,200). Personnel costs—including salaries, daily allowances, and reimbursements for using a personal vehicle—were Fmk 193,000 (US\$32,200). The total earnings of the pilot traffic control team's work during the pilot phase were about Fmk 425,000 (US\$70,800). The costs of the pilot project are summarized in Table 1.

The negative result of the pilot phase (a net loss) is attributable to the long-term procurement investments that could not reasonably be expected to be covered in 7 months and to insufficient marketing efforts. The follow-up task force did not want active marketing during pilot phase because the basic idea of the pilot phase

TABLE 1 Total Costs of Pilot Project During June–December 1999

	FIM	\$US
Total expenses of the pilot project	604,000	100,700
• Procurement of traffic control equipment	229,000	38,200
• Transport services, contracted	181,000	30,200
• Personnel cost (salaries, daily allowance, etc.)	193,000	32,200
Total income of the pilot project	425,000	70,800
• Total earnings from work contracts	425,000	70,800

was to test and determine total expenses and see whether a market existed for this kind of service. The negative result in the budget was both anticipated and planned for at the start of the project; thus the follow-up group had accepted the negative result before the pilot phase had ended.

Experiences

The personnel involved in the pilot traffic control team during the pilot phase found most of their work interesting, flexible, and varied. The main reason for the positive attitude of the personnel appears to be that everyone was a volunteer for the project. The initial idea of creating the temporary traffic control team came from the pilot team leader, and he had actively participated in all the phases of the process. The team leader was personally allowed to interview for and then select the stock keeper and the truck contractor.

On the basis of customer surveys conducted, a true market exists for all-inclusive temporary traffic control services among outside contractors outside of Finnra Production. The in-house customers (i.e., other Finnra Production units) also were pleased to contract the traffic control services separately. The Production units realized that by using the traffic control team, they were able to concentrate on more critical work tasks. This situation in turn provided them an opportunity to further develop their core competencies and work more efficiently in their resource planning.

The customer surveys also revealed that clients found the price of the offered traffic control services rather expensive, which is quite a normal initial reaction to a new service. It is always difficult to accept the true cost of quality in the beginning. Another reason for not being able to easily relate to the standard cost of traffic control during a construction project is the fact that in Finland, the budgeting procedure for construction projects does not separate the cost of traffic control as its own item. To the pilot team leader, it became obvious that construction personnel were not aware of the cost of temporary traffic control because these costs usually were lumped with other costs resulting from general project services based on a percentage of the construction project's overall budget.

AFTER THE PILOT PHASE

At the end of 1999, the pilot traffic control team was transformed into an official unit as part of the bridge group of the Helsinki Contract Unit. The team will work within the area of the Helsinki Contract Unit and then increase its working area as necessary. Also at the end of 1999, the manager of the South Finland Production Area assigned a new permanent leader for the traffic control team. The new team leader started by creating a comprehensive operational and quality process for the team's services. He also was challenged with forming the team's services into a product and completing the final report of the pilot phase.

The team leader created an operational and quality process for the team to present to the clients how the team plans to implement temporary traffic arrangement. A top-level outline of the operational and quality process is presented in Figure 5. Details cover, for example, quality demonstration, given in Paragraph 8.2: "Because of quality demonstration we have operational and quality file of every contract, into which we collect all the documents. The operational and quality file is in open view in our office. After the completion of the contract we will give one copy of the quality file to the client. During the contract we will keep a diary where

- | |
|-----------------------------|
| 1. General |
| 2. Resources of the team |
| 2.1 Personnel |
| 2.2 Point of support |
| 2.3 Material |
| 2.4 Machinery |
| 3. Special tasks |
| 4. Master plan of contract |
| 5. Work and traffic safety |
| 6. Environmental aspects |
| 7. Information |
| 8. Quality control |
| 8.1 Common quality control |
| 8.2 Quality demonstration |
| 8.3 Quality deviation |
| 8.4 Completing the contract |
| 8.5 Guarantee |

FIGURE 5 Outline of the operational and quality process of the temporary traffic control team.

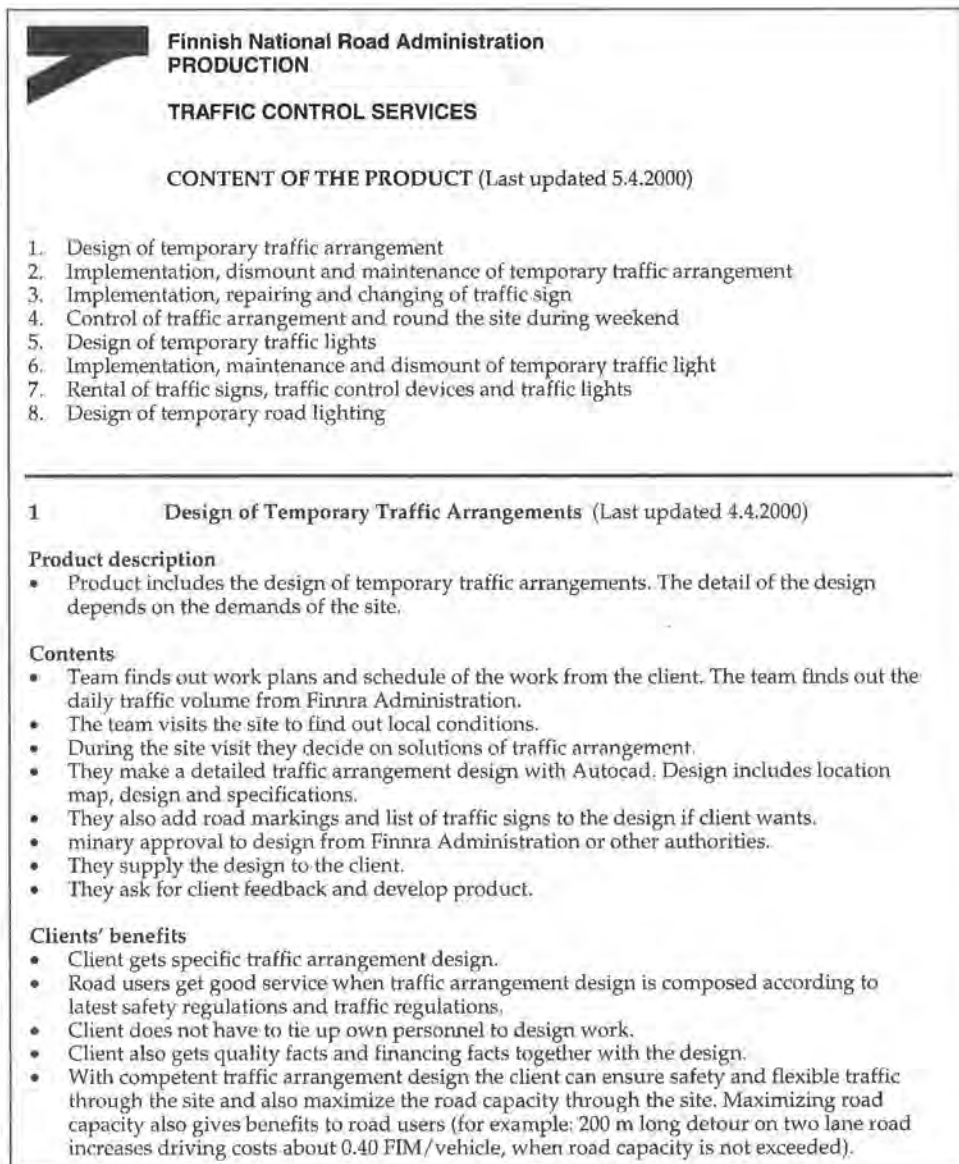


FIGURE 6 Finnra product description of the temporary traffic control team and one part of the product description (translated from Finnish).

we record all the details which might be relevant later on in order to show how we implemented the contract and the quality. We ensure the quality of materials with quality certificate of producer. We report on amount and quality of work according to how is stated in the contract documents.”

The team leader also has drafted a product description that covers issues such as the kind of services the traffic control team offers to different clients. The table of contents of the product description of the temporary traffic control team and one part of the product description are translated as an example in Figure 6.