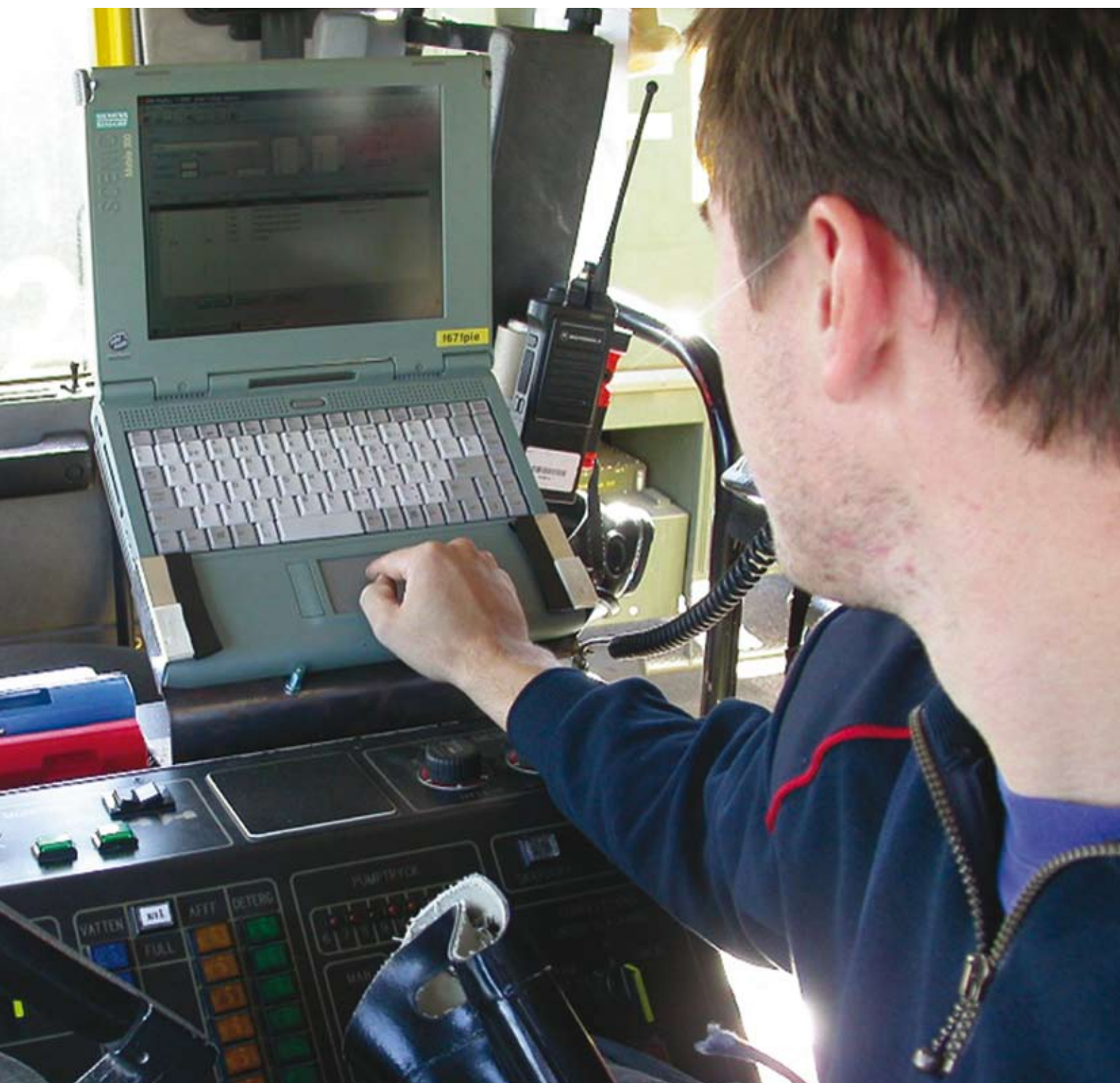


Future services for risk management within the field of hazardous substances

A factsheet about Preview, autumn 2006





and the environment. Such emergencies are often a major challenge for the emergency and rescue services to deal with. Despite the fatal consequences an emergency with hazardous substances can have, it has been shown that there are currently very few IT related aids and tools to assist in this work.

Should make it easier for decision-makers

The work on creating a safer society is based to a great extent on creating scenarios and performing risk analyses from these with the aid of various tools. The knowledge gained from various scenarios can be of vital importance during the risk analysis for a dangerous goods accident. Scenarios are partly created for emergency prevention purposes but also to enable the making of the right decision during critical incidents. Various scenarios will be constructed for the work with developing new tools for risk management. This can include road traffic accidents, or rail or maritime accidents as well as emergencies at fixed sites, and emissions of various sorts of hazardous substances, for example, flammable liquids, liquid chemicals or substances that create toxic gases. The overall objective for Preview is to develop and test new data and services for systems that are used for risk management and risk mapping. This will be achieved with the help of, for example, satellites and in-situ data to facilitate matters for decision-makers at local and regional levels. Part of the objective is to develop quality assured methods that can be of use in a preventive role, during an operation, and in the work subsequent to an emergency response.



The work for creating a third generation GIS platform is included in the Preview work.

GIS-platform

As early as the end of the 1980s the SRSA began development on fact data-bases and IT tools with the aim being to reduce risks and thereby create a safer society. Since then there has been successive development in close contact with the end-users at a local level. A new generation of the agency's decision-support system has been developed and now also includes a GIS platform and the risk management tool Risk-Era. This generation also includes method and tactical support to reduce risks to society – a tool that can perform effect calculations and probability prognoses of risks during emergencies. The system is today well integrated and used by the municipal fire and rescue services.

The great opportunity with the Preview project is to create a third generation GIS platform which includes method and tactical support, risk management tools, dispersion models, and various scenarios for use in the field of hazardous substances.

The aim is that the user should be able to work on a GIS platform to enable the making of the right decision and correct assessments during an operation, and to be able to use it during prevention work in the user's home municipality.

A European network anchored locally

The work of the SRSA on man-made risks was intensified in July 2005. In order to obtain a proper idea of the situation and the needs of other European Member States the agency contacted about 20 organisations in Europe within the CTIF network. They were given a questionnaire and then later visited and interviewed in depth and also interviewed by post and telephone. This has resulted in 18 replies from 11 countries, and aided by these the SRSA has been able to compile a good overall picture of current and future needs within the field of man-made risks around Europe.

The answers reveal that there is a huge need for tools and method-support within the area of risk management, but also that there are major differences between countries and in certain cases even the domestic differences are vast. In general there is a great need to develop scenarios based on different types of hazardous substances. There is also a need for better digital map-support, dispersion models, and interactive exercise models. The answers also reveal that satellite and EO data are under-developed areas with regard to the handling of hazardous substances, and that there is a need for exchanges of experience and observations between countries.

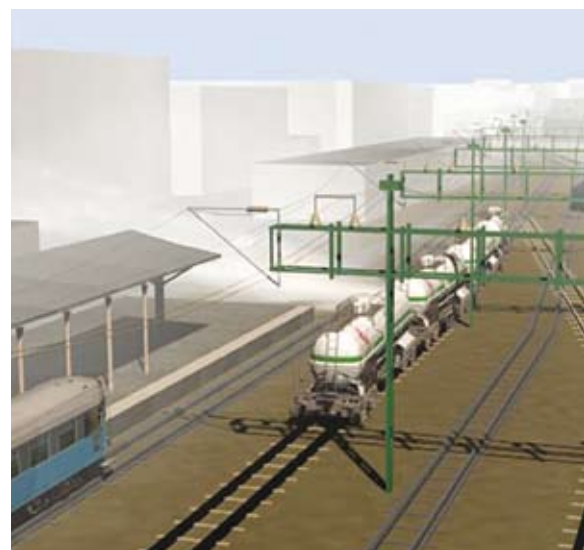
The Swedish Meteorological and Hydrological Institute (SMHI) is involved in the project

Based on the answers compiled the SRSA intends to commence development on a GIS platform based on a risk management tool called Risk-Era. The SRSA has extensive experience in this field, and as early as the end of the 1980s began development on a database with tools that could be used in day to day work to reduce risks and thereby create a safer society. The product has been developed in close contact with the end-users at a local level. And today there is, for example, Risk-Era, with the aid of which one can carry out a comprehensive risk inventory and analyse risks and estimate the consequences for a municipality; and Lupp which is a command and monitoring tool for detailed documentation of incident events before, during and after an emergency response operation.

The continued work will also include a study of what role satellites and data-transfer via satellite could have in the future, for example, how one could with the help of a satellite pull up detailed incident site images. The SMHI, who are also involved in Preview, are working on the development of a dispersion model that can determine what effect the wind and weather could have on an emergency situation



To obtain a fundamental idea of the need for tools and network.



Scenarios are an important part of risk management at fixed sites



Scenarios

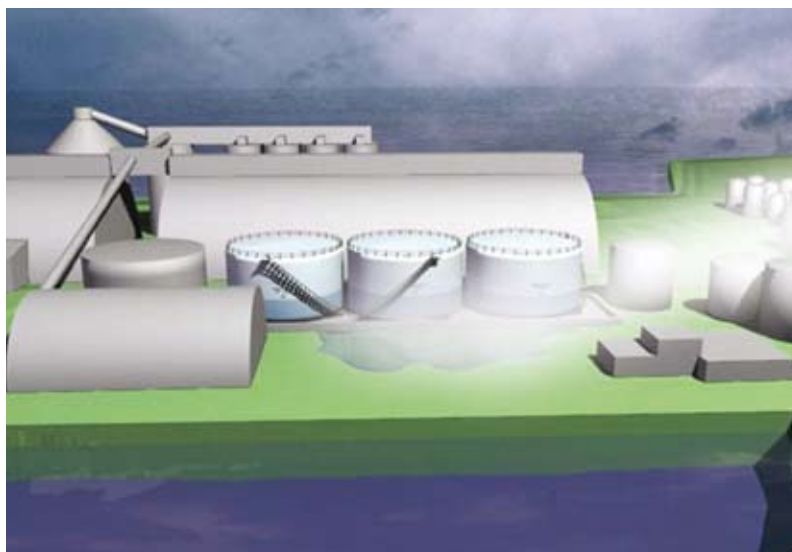
In general, the construction of scenarios is a crucial step in risk analysis. These are used to understand and plan prevention, preparedness, and response. The idea is to build reference or generic scenarios during accident preparation, based on critical release events. These reference scenarios can then be used to estimate risk by combining in-situ data with aggregated earth observation data, and perhaps more importantly so, to identify the services required to generate the scenarios.

Accident scenarios or use cases will be developed for the purposes of the project. These can be either a road, rail or sea transport accident or an accident located to a terminal or port or at a chemical factory. Three examples of incidents have been chosen for the study to determine the needs for planning, execution and investigation. These examples are a:

- release of flammable liquid
- release of liquefied toxic gas
- fire in connection with a release of liquefied flammable gas.



...s and method-support within risk management around Europe the SRSA has used its own



...ment work. Different scenarios will be developed for various forms of transport, and for

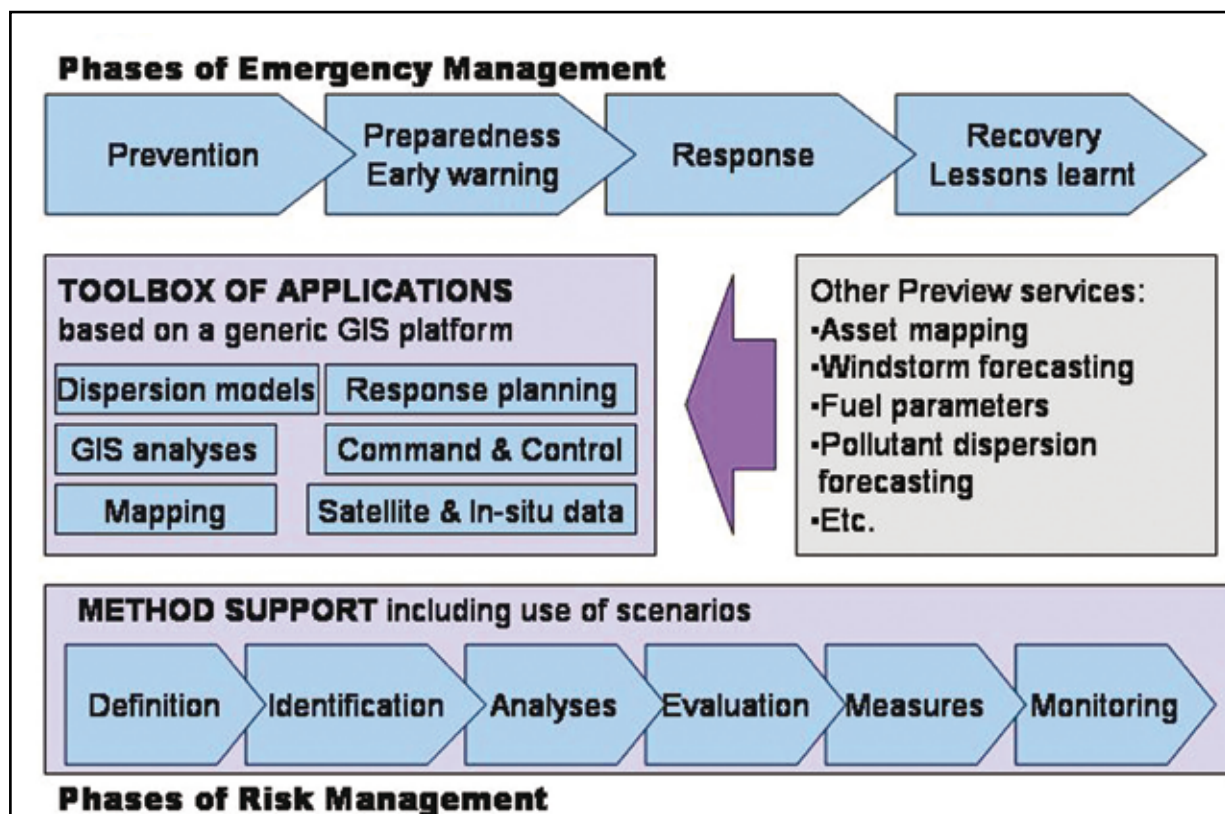
First field tests in the autumn

The goal is to develop quality assured risk management methods via the use of satellites and local data information in systems that cover different types of hazardous substances related to risks for fixed sites and the transport of dangerous goods. According to the Preview concept a lot depends on how satellite services combined with local information can improve upon and further develop tools in decision-support systems so that they aren't just restricted to use as fact data-bases but become an important instrument during planning and operational support during all the phases of the risk management cycle, i.e. prevention, preparedness, emergency response and evaluation. The developed methods are based on various scenarios depending on the hazardous substance in question.

The SRSA views it as vitally important to represent the end-user. Contact with the end-user in the construction of a new GIS platform plays a central role and therefore four Swedish municipalities – Sundsvall, Västerås, Trosa/Vagnhärad and Kristianstad – were chosen as pilot municipalities for the work which is now about to commence. The role of the pilot municipalities is to be actively involved and influence the work on the new GIS platform. They will be involved in the testing of services during the development process and actively contribute to improvements and alterations.

The EU research institute is supporting the work

The first field tests are about to be conducted. These will test the system and new models. For example, the SMHI intends to test its dispersion model for weather data, a development in which work on uncertain measurements in prognoses can be converted to useable measurements with regard to performing risk analysis assessments during an emergency with hazardous substances and their dispersal. The model is intended for use both in a preventive and an operative role,





during which it could provide data on risk distances for varying wind directions. The development work of new tools is also part of the work of the EU's Joint Research Centre in Italy, which develops example scenarios for use as decision-support during emergencies with hazardous substances.

The work with risk management has become topical

End-users want good tools to enable them to visualise the risks for decision-makers and with the help of these display a good base for the decisions those in charge will make in the future. The work with risk management has become topical out in the municipalities during the last 10 years, but today there is no common platform for work with risk management. In the future end-users hope to have a tool from which they can create a common situation report, partly for the emergency and rescue services, but also partly for the police, national road and rail administrations and other authorities that could be involved during an emergency with hazardous substances.

The SRSA feels it is important to get more European end-users involved in the development process; in order to get a representative picture of needs and wishes around the rest of Europe. Therefore the agency views it as extremely important to get more end-users in Europe involved with the work on developing new tools. To achieve the best possible results interest from other developers of risk management programmes around Europe would also be of major importance.

Services for hazardous substances

The need and the objective among users is to be able to work in one and the same environment without needing to change between applications and interfaces. The Preview project provides the opportunity to get closer to this objective. The work on risk management connected to hazardous substances aims to create a good working environment based on a "toolbox" with applications based on a general GIS platform.

The map will be the central point in risk management work in which land and air dispersion models, command and monitoring tools, and risk management tools together with local information, satellite information, and services from other parts of the Preview project should be able to function both for decision-support and during prevention work at an operation. The foundation for this is of course good method-support which includes emergency scenarios for various types of hazardous substances and for different types of fixed sites and forms of transport.

End-user involvement

End-user involvement in the project, i.e. a selection of authorities at local, regional or national level with personnel working with or developing their systems for risk management, wide enough to ensure a representative European dimension, will be of significant importance for achieving practical results. The end-users will provide the opportunity for getting a really comprehensive description of the current situation. This will be accomplished through an in-depth on-site analysis performed together with the municipality representatives. The current level of services and future needs will be visualized and discussed. The recorded needs will influence the further development and progress of the project and form one of the major bases for the service specification development that shall be carried out in the second year of the project. These end-users will furthermore remain involved concerning the level and development of the services during the entire duration of the Preview project.

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