Solid Basis with the Help of the Information Technology

Raimo Tikka

Architect, Researcher, University of Oulu, Department of Architecture, P.O. Box 4100, FIN 90014 Oulun yliopisto, Finland, North Ostrobothnia Restoration and Refurbishment Centre Project, P.O. Box 26, FIN 90015 Oulun kaupunki, Finland

To start, the newest framework of restoration and renovation in Finland will be described. The main items are the Built Heritage Strategy (2001), Land Use and Building Act (2000) and the Finnish Government Programme for Sustainable Development (1998) containing the Programme for Ecologically Sustainable Construction. These documents stress the use of information technology to improve the management of the building heritage. They also link the cultural heritage to sustainable development.

Secondly, the Finnish Environmental Administration is explained, and one of the new actors, North Ostrobothnia Restoration and Refurbishment Centre Project, is introduced.

Finally there is an example of a multimedia solution that is meant to give an easy access to information on a specific problem.

1. Backround

The dominance of the natural environment is very characteristic for Finland. Almost three-quarters of the land area is covered with forest. Finland is one of the most extensively forested countries in the world and the forests are very important outdoor recreation and leisure areas. Finland also has more lakes and islands than almost any other country in the world. There are tens of thousands of lakes, covering one-tenth of the surface area. The coastal archipelagos are unique, dotting the landscape with islands and skerries.

Migration has been strong in Finland during the whole 1900s, especially 1960s and again 1990s, and is continuing. This is an economical problem, but also a social problem when the people loose direct contact to their roots and the local environment is not familiar to them. In developing areas there is strong stress to intensify the land use by replacing the historic building stock with new. In recessing areas there is no resources to maintain the existing structures.

In general, Finland's building stock is new in comparison with other European countries; Only 5 % was built before 1921 and just 15 % before 1950. The buildings being renovated differ from the European renovation projects in that, in Finland, 20 to 30-year-old building stock is now being brought up to the same standard as new construction. In general, property upkeep and maintenance has become an important focus in Finland in the 1990s. New repair technologies for problematic structures and technical equipment have been developed on a commercial basis to produce user-friendly methods for repairing and renovating concrete and brick structures and heating, water, drainage, ventilation and electrical services. This has not been without problems, and as whole, the building sector in Finland is very production orientated. Cultural values have been very much neglected.

2. Introduction

Legislation in Finland has been renewed a lot during the last few years. The newest guidelines have also an effect to possibilities to preserve the built heritage.

1. The guiding principle is now that the cultural environment should be protected through land use planning.

2. Also, the emphasis in conservation has shifted from the preservation of individual building to the preservation of whole milieus.

In the new legislation the conservation matters are strongly linked to sustainable development and ecological construction. There is a good intention to tackle several problems parallel. The legislative framework is now well linked and gives a good basis to work. The weak point is the implementation. The system is not tested and there is very little experience how to run it.

The new Land Use and Building Act gives local authorities more extensive powers to make independent decisions in land use matters. Central government control will be reduced by abolishing the requirement for land use plans approved by local authorities to be submitted to the Ministry of the Environment or the Regional Environmental Centres for confirmation. At the same time, the local authorities will adopt a more open and interactive approach to planning.

Main problems to meet in the near future are ageing population, migration and environmental matters. These have direct consequences to the built environment. In towns a lot of block of flats will either get lifts installed or they will be replaced with new construction. In the rural areas all the building stock is supposed to have modern wastewater treatment systems within the next 10 years. That concerns all the new buildings and all the existing buildings when they are to be renovated.

Above that the construction sector is very production-orientated. Cultural values do not meet the demands of the productivity.

In large the chosen policy is that administration has the supervision and guidance tasks and the private property owners have to make the investments. To carry out this plan the authorities need more accurate information and that information has to be better connected together. The property owners need more help and advice.

As information technology, specially mobile technology, has been a great success in Finland during last 10 years, the natural consequence is that solutions are looked for from there. According to BHS the information for authorities is to be organized with help of GIS-technology. For the property owners are the local renovation and restoration centres the considered to be the source of advisory. The Internet is to be an important media to help to supply the information.

3. Built Heritage Strategy (BHS)

There is a national inventory of valuable built environments, which contains less than 1800 items. Regional inventories contained more than 13 000 items at the beginning on 1990s and local authorities have drawn up inventories at the local level.

The guiding principle is that the cultural environment should be protected through land use planning. An estimated 25 000 items are protected by town plans and building plans, and about 200 individual buildings or groups of buildings are protected by the Act on the Protection of Buildings.

The aims of the new strategy are

- Attend to transmission of building heritage values to the citizens and the future generations
- Ensure the variety and good management
- Supplement of the knowledge and skills
- Ensure economical conditions
- Create efficient and customer orientated administration

The strategy includes 16 actions that are grouped as follows:

Information and knowledge basis (5)

Qualifications (6)

Execution and liable actors (5)

The difficulty to control the state of the build environment is that the information is very inexact and scarce. Indicators that portray the alteration are not developed or used. The need is for better inventories, information about the state of the processes and how the preservation has been realized. One of the new technologies to be used is GIS database for land use (GISALU).

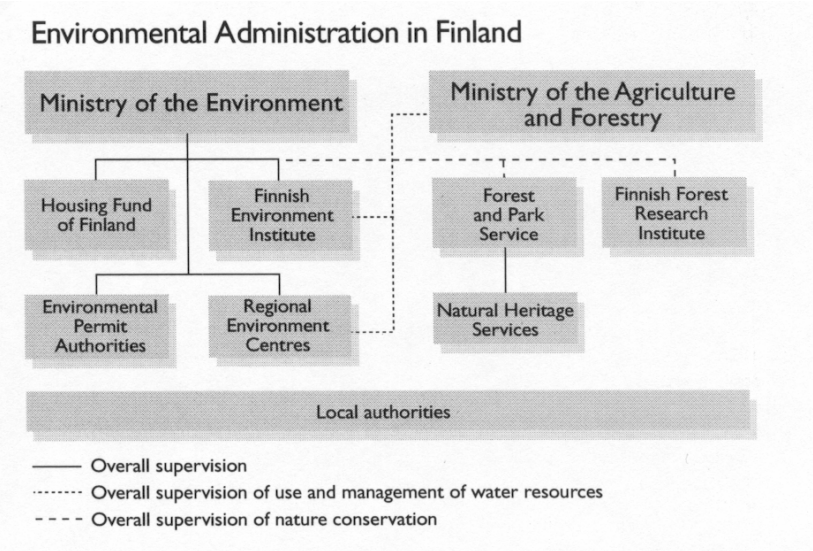
4. Programme for Ecologically Sustainable Construction

The Programme concentrates on ecological sustainability in construction, repair and property maintenance and it also touches on the economic, social and cultural aspects of sustainable development and the problems of community land use. The Programme does not, however, deal with community planning and development, although land use and community structure have a key influence on the volume of traffic and the emissions it causes.

The building stock is an important resource providing cultural, economic and ecological benefits. The requirement for eco-efficiency will extend throughout all construction and maintenance. More efficient use of the existing building stock will cut down the use of resources. Ecologically sustainable construction and renovation will be promoted by requirements set for construction which provide that a building must be fit for its purpose and also repairable and serviceable, and its use must be flexible. The use of eco-efficient building materials, products and systems will be encouraged, as will recycling.

5. Finnish Environmental Administration

The building and cultural heritage matters are under the environmental administration. The National Board of Antiquities is a preservation authority, but does not have any administrative power, it only gives statements and guidance. The Board is responsible for the protection of antiquities, built heritage, cultural-historically valuable environments, and cultural property in collaboration with other authorities and museums. But the decision maker and executive power is the Ministry of Environment and its local authorities.



The new system has three levels of land use plan with a clearer division of labour between them: **the regional land use plan**, **the local master plan** and **the local detailed plan**. In addition, the Government defines national land use goals which are supervised by a central government or

regional environmental authority when implemented in land use planning. The goals may apply to regional structure, quality of the living environment, infrastructure, ecological sustainability and natural and cultural heritage of national importance.

The regional land use plan transfers national and regional land use goals to land use planning at the local authority level. When the plan is being drawn up, special attention is given to ensuring that there is an appropriate regional and community structure, to preserving landscape values and ecological sustainability, and to providing the proper operating conditions for business and industry. The plan is compiled by a regional council made up of local authorities and confirmed by the Ministry of the Environment.

Within a local authority, **the local master plan** is an instrument for guiding and coordinating land use at a general level. It can be either a very general strategic plan or a more detailed one for direct regulation of building, depending on the need. The local master plan is used to resolve questions concerning the functionality and economics of the community structure, the accessibility of services, the preservation of natural and cultural values, the quality of the living environment and the reduction of environmental hazards. When the plan is being drawn up, consultations have to be held with the Regional Environmental Centre, which ensures that national goals are taken into account in local plans.

Local detailed plans, such as town plans are used for regulating building and the formation of the physical townscape. The emphasis is on taking local conditions into account and promoting the use of the existing building stock. Special attention has to be given to ensuring that there are enough parks and local recreation areas, and detailed plans must not reduce the quality of anyone's living environment without very good reason. In addition, every local authority has its own building ordinance, the content of which is defined according to local needs.

Finland’s 13 Regional Environment Centres are participatory and guiding authorities having a task to assure the prerequisites of sustainable development in their region. Central to their function, alongside of permit-related supervision and general surveillance, is active co-operation with various interest groups. The Regional Environment Centres oversee matters concerned with environmental pollution, zoning and construction, nature and landscape-related preservation, the nurturing of cultural environments, as well as the use and management of water resources.

6. North Ostrobothnia Restoration and Refurbishment Centre Project (PORA)

The project has started September 2001 and is to last three years. It is financed by ESF, North Ostrobothnia Regional Council and the City of Oulu. It is administrated by the North Ostrobothnia Museum and is a cooperation project between the City of Oulu and the University of Oulu.

In Finland there is about dozen regional restoration or renovation centres. Most of them are NGOs and are driven by associations. PORA is the only centre that works with the whole building stock, the others concentrate to the historic buildings. BHS has a plan for national centre, but that has not yet started.

The main activity is to give advisory to anybody who has restoration, renovation or refurbishment problem. This advisory might be very detailed as far it is not described as designing, planning or giving a statement. Specially the traditional materials and techniques are preferred and customers are helped to find skilled craftsmen.

Quite radical policy has been chosen:

1. The property upkeep is always preferred to repair, no division is made between restoration, renovation or refurbishment.
2. No division is made between historic and newer buildings.

The change in attitudes is possibly the most important target. The role is a customer-orientated, one-desk service given at the centre, on the phone, by mail or e-mail and on site. In the long run there is a goal to build a regional Internet portal that connects all the local actors and serves as a database.

The centre is also to help to coordinate the education given within the region as well as is arranging special seminars on important and actual issues. Last task is to promote research on this field.

7. Every case is unique

The nature of the advisory is to support the customers decision making through giving practical advise. As the private property owners are the ones who decide over the main resources available there are hoped to be able to launch better projects. The market pressure promotes to replace the old buildings and materials with new and the construction sector is concentrated on the new production. A customer who wants to restore or repair needs all the help and support he can get. One way is to process the information to be easier to access and adopt. One example of this is introduced next.

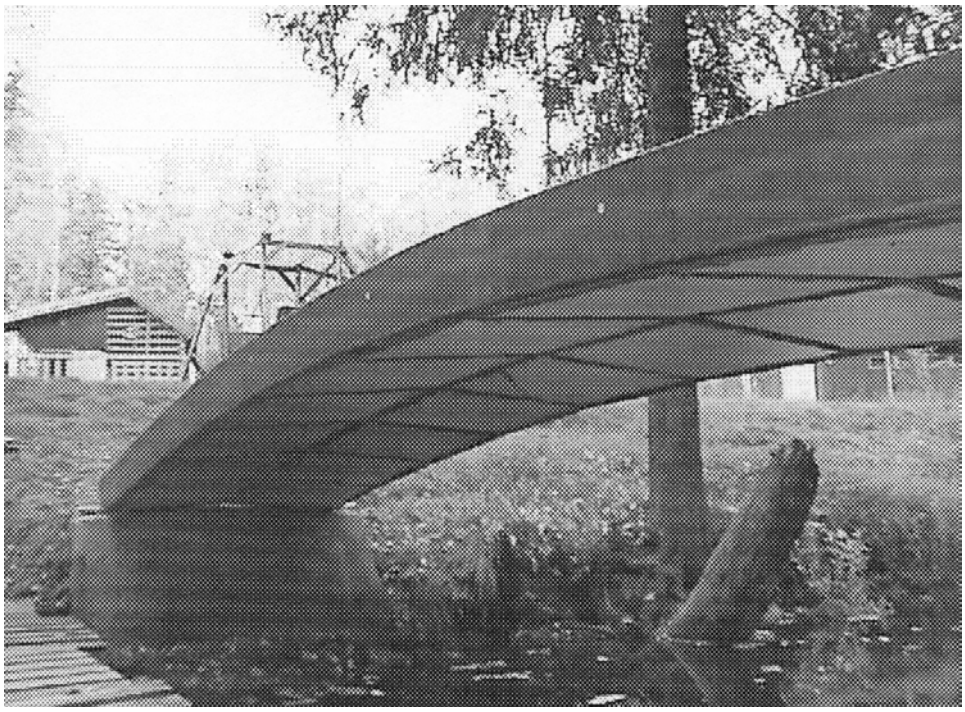
8. Ötökkä, customized information

Information is nowadays very easy to reach. The problem is how find the right information and how to validate it.

Ötökkä is multimedia package that gives concentrated information about most common noxious insects in house. It is supposed to be a first-aid kit in the Internet when there is an insect problem and somebody wants to know what to do. It helps to identify the problem, then step-by-step to check if experts are to be called. The general background is given, then information about the insects. How they can be identified, what harm they might cause, how they can be repelled, who to contact and the contact information. At the end, as on amusement, there is a game that teaches to tackle the problem.

In the recent form the package contains text, pictures, sound and short animations. Later are also video clips and a link library to be added. The basic solution allows the material to be updated and upgraded when needed.

At the end, as an example, an experimental pedestrian bridge of ferrocement and styrofoam.



Jorma A. Eskola and Raimo Tikka, 1999, University of Oulu, Department of Architecture. Span 6,5 meters and weight 240 kilos.