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## Production and Action Oriented Model for Renovation Projects

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### Summary

The paper presents a product and action oriented model from the tenants' and customers' point of view in renovation projects for prefabricated apartment buildings. The basic idea is to extend and utilise the concept of industrialised building methods but also to take into consideration the individual needs of each project. To take into consideration the condition of the building, damage and amenity valves as well as needs of owners and tenants. The system is based on co-operation between all parties in the project and on considering each step taken on the building to carry it out as a complete project.

### 1. Introduction

The system has been created for renovation which embraces the whole process of renovation from inspecting damage to the implementation of construction work. The system is based on the methods of finding the right measures according to the damage to the building, the needs of the building owners and the wishes of the tenants related to the possibilities of financing. The system also embodies a technique for determining the right working methods and inhabitant - friendly implementation.

The system is based on the 'Entra Philosophy', which is to go through the whole process from the research to the implementation. The basic idea of the philosophy is to divide the building in smaller parts according to the decision - making process. With 24 different material producers and subcontractors, 53 solutions have been created for different parts, with different levels of renovation solutions. There are proposals so that the client can choose from a variety of different solutions.

Entra 2000 is also an example of co-operation with material producers in a big company where the information for different solutions and the cost estimating system is created as a system for project managing, marketing and implementation. The system includes:

- marketing and information material for different solutions
- PC-based supporting system for project management, planning and implementation
- measure - based cost estimating method.

## 2. Background

The industrialisation of Finnish society had a strong impact also on the housing sector. Half of the apartments at present are in prefabricated buildings built 1965-1975. Because of the fast implementation and technical solutions, many of the buildings have problems in their facades, roofs, energy efficiency and technical systems. Also because the housing stock is relatively new, maintenance and overhauling culture has not been developed.

A special aspect is also the ownership method of the buildings. The owners of every single apartment have to decide on action jointly. That means they have to think the same way and also have the same financial situation. Otherwise deciding is difficult and the decisions are 'low level'. This is why there has been a need to create a system which is easy to understand and graphic, where the marketing in the project has greater meaning.

## 3. 'ENTRA Philosophy'

The ENTRA philosophy is based on the idea of an industrialised building. The prefabricated buildings are quite equal in the point of view of different rooms, building parts, technical systems, envelope, etc. The method separates building parts, rooms and technical systems according to the decision making system. (See figure 1)

Building part or technical system	measure level		
	maintenance (light renovation)	renovation (medium renovation)	refurbishment (extensive renovation)
<b>Room</b>	DEM DEM	DEM	DEM
<b>Technical system</b>	DEM DEM	DEM	DEM
<b>Envelope</b>	DEM		DEM DEM DEM
<b>Total</b>	ca 500 DEM/m <sup>2</sup>	... 800 DEM/m <sup>2</sup>	... 1200 DEM/m <sup>2</sup>

Fig. 1: The concept of the ENTRA 2000 system