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<http://www.one-stop-shop.org>

One Stop Shop - “From demonstration projects towards volume market: innovations for one stop shop in sustainable renovation”

WP 5 - Development of One Stop Shop Tool in Sustainable Renovation

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Project description

Start date project 01-09-2010 Duration: 24 months

European and national ambitions for renovation lead to the prescription of increasing energy performances, including objectives such as reaching the passive house standard, zero-energy building or CO2 neutral. By doing this, the awareness grows that, considering energy-efficient renovations, the market will drastic change, both in volume and necessity for the execution of more thoroughgoing renovations. These renovations include innovative solutions to reach different target groups and to find solutions for technical bottlenecks. At present throughout all European countries (to higher or lesser degree) advanced renovations of residential buildings is an emerging market, implemented in demonstration projects only (typically financially supported by subsidies). SMEs that are involved are the front-runners on the market /trend setters in renovation activities of the residential sector. One of the existing barriers is on one hand, in fragmentation of the renovation process that is shared between many SMEs doing fraction of a number of renovation measures. On the other hand, a house owner lacks a possibility to find in a structured way for all information concerning decisions on renovation solutions, examples, contacts with building companies and quality assurance, and financial support opportunities. These two problems are the core that we want to address in this project, by specific actions towards clustering innovative technologies to reduce the fragmentation of the renovation process for single-family houses, and increase competences, knowledge and innovations by SMEs; and development of the one stop shop (tool) as platform for both house owners and companies offering holistic renovation solutions.

Objectives

The overall project aim is to facilitate market penetration (volume market) of housing renovations for single family houses of very high energy standard while providing superior comfort and sustainability to occupants. Following hypotheses will be investigated within the project: By clustering the different innovative technologies, the client receives a less fragmented renovation process. The clustering also assures a structured transfer of innovations to SME's. The development of a 'one-stop-shop' tool as platform for both client as company, gives the opportunity to create demand and offer for holistic and integrated retrofit solutions. The clustering of innovative technologies can give SME's the opportunity to develop skills, knowledge, capacity and a competitive marketing formula for holistic and cost-effective retrofit solutions. A 'one-stop-shop' tool for sustainable renovation can give house owners the opportunity to form a well-informed investment decision. It simplifies the access to quality-oriented constructors and companies. Together these companies offer integrated retrofit solutions. The communication about project results and the dissemination of these results can convince clients and SME's to implement innovations.

Project Website

<http://www.one-stop-shop.org>

Project partners

Project partners:



PHP, Passiefhuis-Platform, Belgium, non-profit

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1. Introduction

One Stop Shop (OSS) Tool in Sustainable Renovation is a web site template for creating OSS Tool web sites in different locations and markets. It is only one way, but an efficient way of promoting energy renovations in today's Internet based world. The purpose of the web sites is to present energy renovations as a way to improve building energy efficiency by sharing links to information, implementation, executor companies and demonstration projects of energy renovations. Users are able to exchange their renovation experiences and rate renovation companies, which improves the whole renovation process that suppliers are offering.

The tool is based on the concepts and points of view presented in the One Stop Shop work package 3 report [1]. Also the five-step innovation-decision learning processes are applied here. In this report in the OSS Tool they are named as 'general information', 'detailed information', 'executor selection', 'implementation' and 'certification'. The steps help learning more about energy renovations and their implementation. It also enables user experience and feedback exchange. It is aimed to be a better alternative to the renovation web sites analysed in the partner countries in 2011. [2]

This document contains the web site questionnaire results, web site information content, a template for creating an actual OSS Tool web site and finally an example OSS Tool like web site in Finland.

2. One Stop Shop web site questionnaire to renovation stakeholders

Our web site questionnaire to renovation companies in partner countries asked their views about the OSS Tool energy renovation web site. The renovation companies have much knowledge about marketing renovations and about customer needs. The questionnaire was sent to a few dozen companies and we got only a few answers to it. The reader should therefore be aware that results might not be representative for the whole housing renovation market in partner countries. The results and conclusions of the questionnaire are presented in this chapter.

2.1 Questionnaire results

The questionnaire revealed some important points about the actual renovation business. Some tools like simulation tools and LCC/LCA analysis are considered to be too expensive or not suitable for customers. Here are listed the main points from the questionnaire answers (most popular answers in bold):

General principles

- **Neutral site that doesn't sell or push any products**
- **Information from government and trustworthy independent sites**
- **Innovations presented by intermediaries like architects or energy experts**
- Easy to access web site
- Suggestions on what to do, where to start
- Easy overview of companies

- Information on how to reduce energy when doing renovation
- Web site updating important for keeping it alive, companies could add innovative products
- Directed for the laymen
- Stepwise providing information to the user
- Teach basic renovation, not the newest innovations

Demonstration projects

- **Info on demonstration projects and the solutions**
- Calculated effect on energy consumption based on building type
- Demonstration projects as pictures and heating values before and after
- Example projects presented with testimonies on the increased comfort (e.g. short video)
- Environment information only as complementary information in demonstration projects
- Examples of the use of innovative products

Reaching customers

- **Target houses constructed before 1990**
- **Want to reach people who just bought a house or want to increase comfort or learn about renovation measures and execution methods**
- Values to emphasize in a renovation offer: reliability, quality, timing, service, the added value of a certain company
- Simulation tools (energy, finance, environment) may be used if wanted
- LCA analysis may be used as a complementary information
- Customers should select suppliers based on experience, education, references and user feedback
- Actors can be differentiated (e.g. points 1-5) in actor listing by delivered performance based on user feedback
- Renovation companies would like to show positive feedback regarding the work and quality on the web site

Collaboration

- **Renovation companies want to cooperate with actors that they have worked with before**
- **Collaboration with non-profit organizations and knowledge institutes wanted**
- **Energy experts who do the energy performance certificates must be independent**
- Collaboration with entrepreneurs and suppliers important
- Reach customers better by collaborating with consumer organizations
- Collaboration with architects wanted in some situations
- Collaboration with designers, consultants not wanted
- Maintaining information easier if partners can input new information to the web site
- Brainstorming with like-minded parties wanted

Quality control

- Use of local knowledge and collaboration with local actors
- Renovation projects monitored frequently to evaluate quality
- Partner quality assurance may be too expensive
- Project certification methods may be used

2.2 Conclusions

It was hard to get answers from the renovation companies to the questionnaire. They are often busy and it seems that they are not so motivated to answer these kinds of theoretical questions. They may have different point of view and thinking. Or they may think it does not profit them in anyway. In the future it could help if the questions were prepared with a renovation supplier, who could write the questions so that other renovation companies could more easily understand them.

Here are the points that were selected from the results to be applied in the OSS Tool template:

- Neutral site that doesn't sell or push any products
- Basic renovation information for laymen, innovations presented by architects or energy experts
- Example projects presented with testimonies on the increased comfort (e.g. short video)
- Add information how to reduce energy when doing renovation
- Show heating values in demonstration projects (before and after)

- Target mainly houses constructed before 1990 and customers that have just bought a house
- Simulation tools (energy, finance, environment) may be used if wanted
- LCC/LCA analysis may be used as complementary information
- Actor listing with experience, education, references
- Actors can be differentiated and rated by delivered performance (user feedback) in actor listing
- Show only positive feedback on the web site, but all the feedback can be collected
- Web site updating important, companies can help by adding products
- Collaboration wanted with entrepreneurs, suppliers, consumer organizations, non-profit organizations, knowledge institutes and other independent experts
- Quality assurance or certification may be used
- Better quality with use of local knowledge and actors
- Renovation project monitoring frequently to evaluate quality

3. One Stop Shop Tool information content

The general idea of the OSS web site should be that it is a neutral site aimed mainly for single-family houses. This means that it doesn't sell or push any products. It just provides information and links to neutral and independent web sites that can be helpful when considering an energy renovation. Although it is a neutral site, it needs updating that is important for keeping it alive and holding always fresh information and links. The companies can be helpful in this matter if they are allowed to update and add their newest product and service links to the site.

3.1 Explaining and planning energy renovation

OSS web site should provide general information and experiences about energy renovations, what kinds of energy renovations are possible, what they mean and why they are needed. The renovation information should be aimed for laymen and it should be quite basic. Information about new innovations should be presented by experts.

How the age of the building relates to the planned renovation is also important to be aware of. The meaning of energy renovations as a way to save energy costs should be presented. The estimated effectiveness of energy renovations should be presented with numbers that show how much energy or resources are approximately saved with energy renovations.

There are also other useful topics that the user should be aware of. For example a group renovation might be a good idea in some cases to cut the renovation costs. In that the house owner gathers a group of people possibly neighbours for ordering the same kind of renovation activities from a renovation company. Some suppliers could offer some discount from such renovations actions.

For the house-owner it would also be interesting to know about possible renovation training that is available. That would help them implementing renovations on their own or specifying better what kind of renovation would be possible.

The site could also offer information about current legislation related to renovations. Some legislation could restrict renovation or on the other hand offer some tax reductions. The web site could also have links to sites that offer financial support for renovation to house-owners.

3.2 Information about demonstration projects

Demonstration projects offer practical examples how energy renovations have been executed before and what are the results. The saved money or energy is important for the house owner. The energy consumption should be shown before and after the renovation. And there should also be calculation about how much money will be saved in the future.

The demonstration projects could be from different decades to show the house-owner how the renovation tasks and energy savings differ. The user should be able to concentrate on his own building decade so that he wouldn't have to watch uninteresting demonstration projects. The presentation of the demonstration projects could be done with user feedback and user testimonies so that the user experiences of the renovations would be easily seen. The renovation companies of the demonstrations should be usually linked.

3.3 Technology information

Technology information could include examples of existing energy efficient building part solutions and their details compared to inefficient parts. The site could have instructions or links to pages that show how energy efficiency in building parts and systems can be improved and how they should be maintained without replacing them with new ones if that is possible. This could also include instructions and information about buildings built in different decades and how they could be made more energy efficient.

Another point of view when speaking about technology is the energy production sources in single-family houses. There should be some basic information and links to possible energy sources e.g. solar panels that can be installed to single-family houses.

3.4 Estimation and simulation tools

Different estimation and simulation tools are available nowadays. These include energy, finance (LCC: Life Cycle Cost) and environment effect (LCA: Life Cycle Assessment) estimations. Energy, environment and finance simulation can be calculated with a software product for consumers that shows the energy and financial savings and environmental impacts of particular energy renovation actions and is able to recommend most suitable actions for the customer. Also building models can be simulated with energy software that shows the energy efficiency of the building structure and materials. But that kind of software is aimed mainly to experts, not normal house owners.

OSS web site could have links to companies that offer these analysis services or software. But based on the received feedback from renovation stakeholders, these simulation tools can be too complicated for average customers. If they are used, they should be presented only as supplementary information prepared by an expert.

3.5 Quality control

The renovation quality control is essential both during the renovation and after the renovation. The renovation company is responsible for that, but for the house owner it would be good if he could do some quality checking and monitoring when the renovation is being implemented. In that way possible flaws would be noticed and handled earlier. The site should give the house owner basic understanding about the different quality assurance possibilities for his renovation. These are for example air-tightness tests, thermography, certifications etc.

There are some renovation certificates that ensure renovation quality and good working practises when for example handling certain materials etc. These practises help reduce the environmental impact of the renovation. These certificates could interest a house owner too. Also the possible renovation warranty should be explained and how it works in renovation projects.

3.6 User experiences and feedback

The web site should have functionality to collect user experiences and show some of them to all the users. That is an efficient way to attract users to order an energy renovation and it shows the real experiences and feelings the users have had. These experiences would be related both to different renovation companies and to different renovations and house types etc. The user should be able to rate the companies and see the company ratings. The web site should also include links to renovation and house building discussion forums, where users can exchange their experiences.

4. One Stop Shop Tool implementation template

One Stop Shop Tool template may be used as a guideline when developing OSS Tool web sites in each country. It is divided to 5 consecutive steps in innovation-decision processes discussed in OSS WP3:

- information
- persuasion
- decision
- implementation
- confirmation

In this tool the steps are named to better describe the situation as

- general information
- detailed information
- executor selection
- implementation
- certification

These steps that are described better in this chapter facilitate adopting energy renovation actions and thinking. They should serve the house-owners' planning an energy renovation, but also act as an information circle. The feedback and experiences collected from the users should have an effect to improve quality assurance and demonstration projects, which in turn act as exemplary renovation projects that persuade new house-owners to apply energy renovation.

5.1 Template step content

In this chapter each OSS Tool template step is described with more details. In a web site the steps could act like pages for showing the recommended order of learning and adopting the contents. The information on the pages is mainly presented as texts, pictures and videos. More information is provided through links to neutral or independent sites. The flow chart is shown in Figure 1.

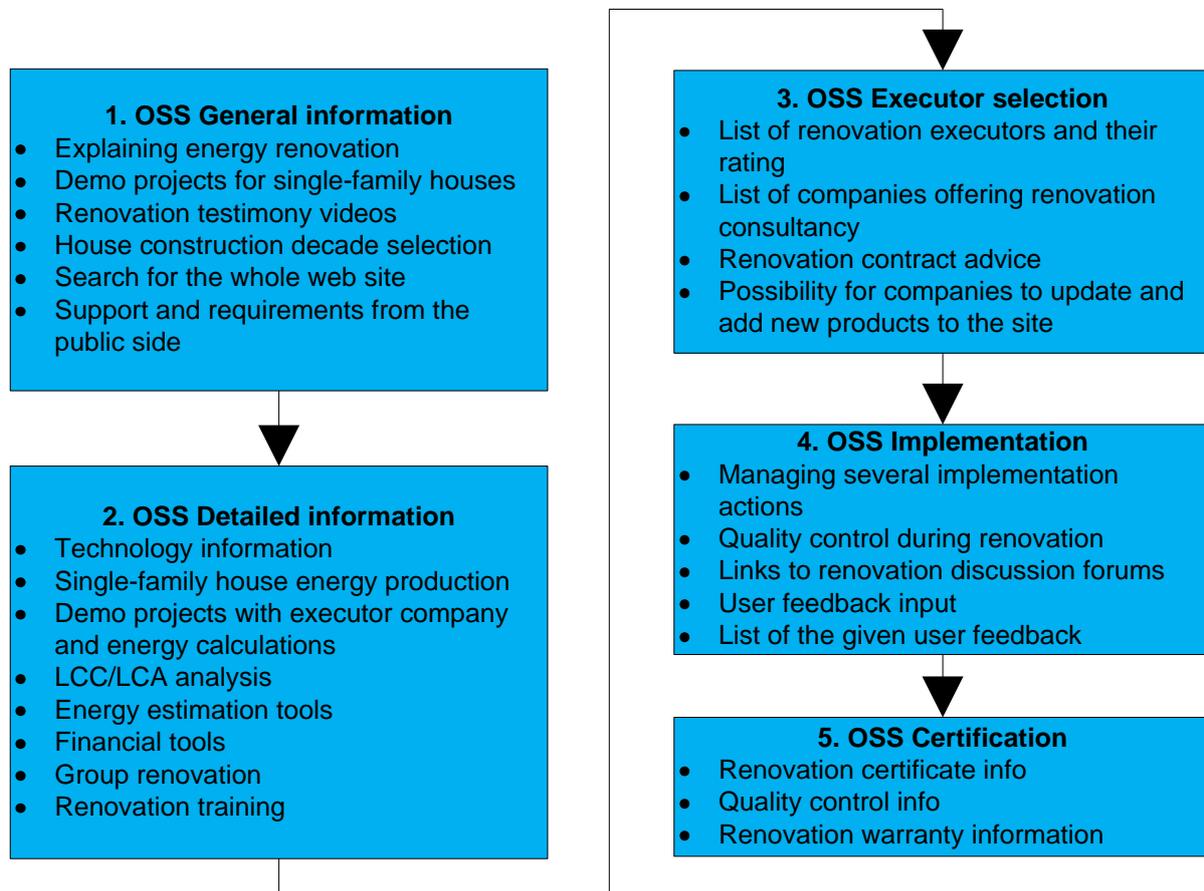


Figure 1 One Stop Shop Tool flow chart

Every step includes also some coding point of view that means some coding tips and principles for creating a One Stop Shop tool web site. First of all the web site needs a server and a database to store the information and handle the client-server interaction. The information that needs to be stored is:

- The products and references of the executor companies
- User ratings and comments related to the executor companies
- User experiences and comments related to different renovation types
- User information and passwords for authentication (at least for the executor companies)

The server-client interaction requires the use of some server side programming languages like ASP.NET, PHP, JSP etc. They are used to retrieve the dynamic web page content data from the database. HTML and style sheets are used to code the outlook of the web pages.

5.1.1 Step 1: General information

The first step includes general energy renovation information. It explains what energy renovation is and why it is important especially for single-family houses for which the site is aimed. Demonstration site examples of single-family houses could be shown as pictures and short introductions. Also videos could be linked to the site. Demonstration sites could be from each relevant decade and be related to the typology of houses in each country to demonstrate the variety of actions taken in them. And also links to the demonstration site web sites and sites having more general renovation information should be included.

The relevant decades depend on the variety of buildings in the area. In the first step the user may be offered to select the decade of the renovation targets that he is interested in. This selection would affect the content of the next steps so that only the relevant decade specific information and links would be shown in the following steps. This would be helpful for the user as he doesn't then need to browse so much unrelated content.

The first step could have also a search box for searching the content in the whole OSS tool web site. That would be an easy way to find quickly specific content on the web site.

From the coding point of view this steps could include in addition of the normal web page text and links also the decade selection. That selection could be stored to the web browsing session related variables. That way it would be available also later during the browsing session and the web page content could be filtered with that setting.

5.1.2 Step 2: Detailed information

In the second step there should be more detailed renovation advice that is going beyond the basics presented in the first step. For example different energy saving building types and their characteristics could be linked. This step would include also some more detailed technology information and information about single-family house energy production solutions e.g. solar panels.

This step could have also energy simulation tools and financial tools explained generally. The former one calculates the energy flows of the houses and the latter one calculates the financial costs of the renovation. Energy simulation tools can be used for calculating the energy problem spots and where to save energy. Financial tools can be used to show how much money the renovation actions cost and estimate the savings achieved by the renovation.

Related to financial tools, it would be useful to link some financial support or loan providers to the site. These can be public or private related to the country. LCC/LCA (Life Cycle Cost/Assessment) analysis could also be included related to the building decade selected by the user.

The demo projects introduced in the second step could be related or linked more to the information and actions mentioned in the step. For example a demonstration project could include solar panel use also. At this stage the executor company related to the demonstration projects could be mentioned also to prepare the user for the executor selection in the following step.

Finally group renovation could be explained shortly and how it may reduce the renovation costs for a group of house owners. On the other hand renovation training possibilities are good to be explained and linked with some training actors and self-learning web sites.

The coding of this step requires probably linking some videos into the web page. The videos could be on YouTube or on the server.

5.1.3 Step 3: Executor selector

The third step would have a list and links of the renovation executors and what kind of renovations they offer. If there are companies that offer just renovation advice (consultancy), such companies could be listed also. The companies could each have if possible a rating based on their earlier renovation performance. This way it should be easy to compare executor companies, their performance and what renovations they offer. Also users could be able to rate the companies by giving them some number of points based on experiences about them.

Renovation contract tips and how to make them should be one part of this step also. Information and links about renovation contracts should be included. This should help house owners to make more beneficial contracts from their point of view.

This step could be modifiable so that companies could add and edit the services they offer. It would help keeping the web site updated if the companies are willing to do it.

From the coding point of view this step requires a lot of interactivity. First the user should be able to browse a list of the executors. This could be a grid or a table that has the executor information and offered renovations in their own columns. Users' ratings could be asked through HTML forms including some points selections and a text box for comments. There should be a database or other storage on the server having all the company ratings and comments about the executors also. The rating could be some kind of a number and the rating value shown to users could be an average of the ratings. That number would represent the rating of a company. If user authentication would not be implemented, at least user computer IPs should be saved to the database. This should prevent getting too many ratings from the same user for one company.

Each executor company's offered renovations should be stored in a database too. These could be just boolean type of fields in the database table. It would tell if a certain renovation is offered by the company or not.

There should be an authentication on the web site at least for the executor companies that update their offered products and services. Companies could modify their information only if they have authenticated. This would protect the company information from unwanted changes of the data.

5.1.4 Step 4: Implementation

The fourth step would have implementation and do-it-yourself advice. Implementation advice could include some implementation tips and information related to the renovation implementation phase even when the house owner himself wouldn't be doing the renovation. Although this is about a one stop shop web site, it could include information about how to manage many renovation actions executed by different suppliers and in what order should the renovation projects be done. The renovations could even be simultaneous. This kind of information would give a better impression for the house-owner about the different renovation action implementations and would make it easier to follow the process. The information could also include some do-it-yourself advice having instructions and links for doing the different renovations by themselves if that is what they want.

In this fourth step user renovation experience exchange is also important. There should be links to possible discussion forums where people can discuss renovation related things and exchange experiences. There could be a list of user experiences in the OSS web tool also. The site could allow entering of user experiences through a web form. The results would then be saved to the experience list visible on the site. The site administrator should be able to approve the comments that are made visible to all users. The experiences should be sorted to a few categories based on the renovation type.

This step could also include tips on how to control and monitor quality during the renovation. There could be some basic principles for different kinds of renovation quality assessment. Information on how to find flaws during different renovation phases and types would be useful.

From the coding point of view the step needs a form, which users would use to enter their experiences. And a database table for the comments, user's name and user's IP address. When new comments are entered to the site, the IP address and name should be checked if it exists in the database. If the same user is adding many comments, the administrator should be warned about this. The database should also have a field for the visibility of the comment. When showing the web page to the user, the user experiences with the visibility checked would be shown on the page. This way the experience list doesn't get too long and only the approved comments would be shown.

5.1.5 Step 5: Certification

The final step would include information about certification that should ensure a certain level of quality achieved with the renovation. Renovation certifications include also certificated work practices that minimize environmental impact. This gives the house-owner confidence that the renovation is executed with safe working methods and practices. There should be basic information about this and some links to sites that explain it more.

This step would also have some basic renovation warranty information. That includes both the executor's and the manufacturer's responsibility when installing a product. The manufacturer is responsible that the product is flawless and the executor that the work is done well. These issues should be discussed with some links to related web sites.

5.2 Tool future development

There is probably lot of improvement that can be done with the OSS Tool template. It has not been used in any country yet, so there is no feedback about its usage. With some comments and experiences from web site developers that have really used it when developing a real web site it would be easy to develop the tool further. Also by browsing other similar existing web sites could help improving it.

5. OSS Tool like web site: K-Rauta and Rautia

K-Rauta and Rautia in Finland have made a web site tool called "energy test" that is close to the idea of the OSS Tool [3]. It serves house owners guiding them to save energy and learn more about energy renovations. The tool asks first basic housing information from users about their apartment or house (Figure 2). After that the user is asked to select a housing field from which he wants energy advice from (Figure 3). Selectable housing fields are

- Windows and doors
- Heating
- Insulation
- Water
- Air conditioning
- Electricity

Next the tool asks from the user detailed housing questions related to the selected housing field and gives some useful energy hints. Finally the tool lists all the recommended energy saving actions based on the given housing information and offers energy renovations executed by K-Rauta and Rautia (Figure 4).

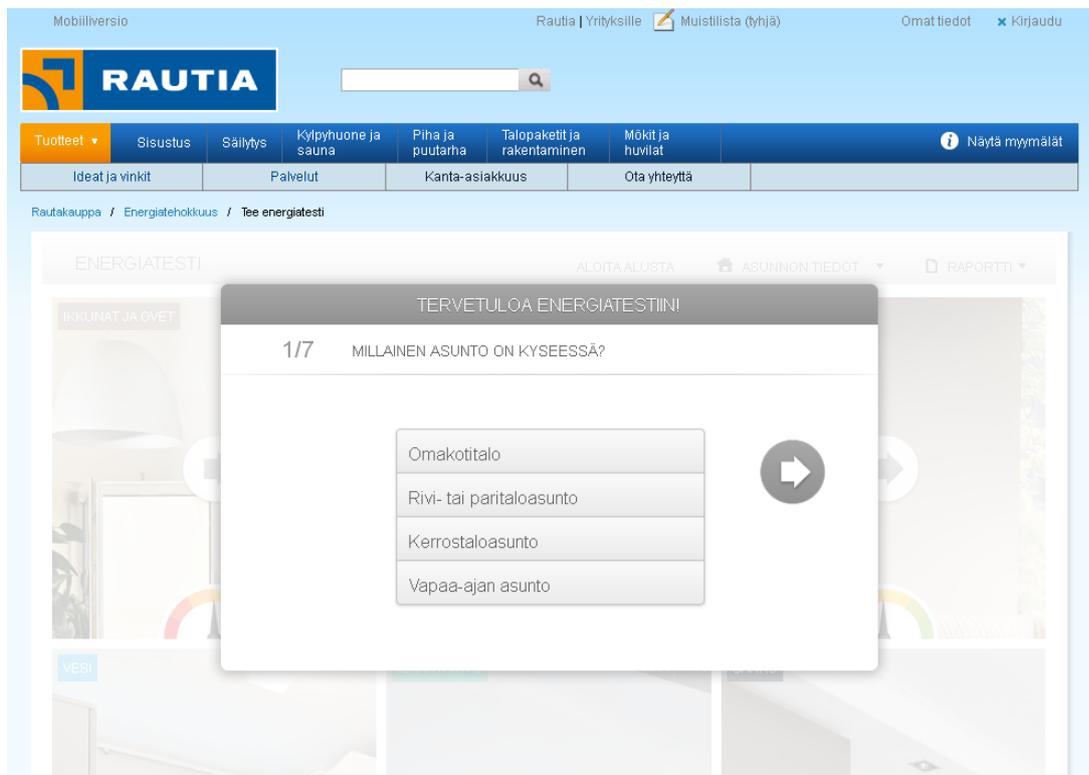


Figure 2 K-Rauta and Rautia energy test basic housing questions

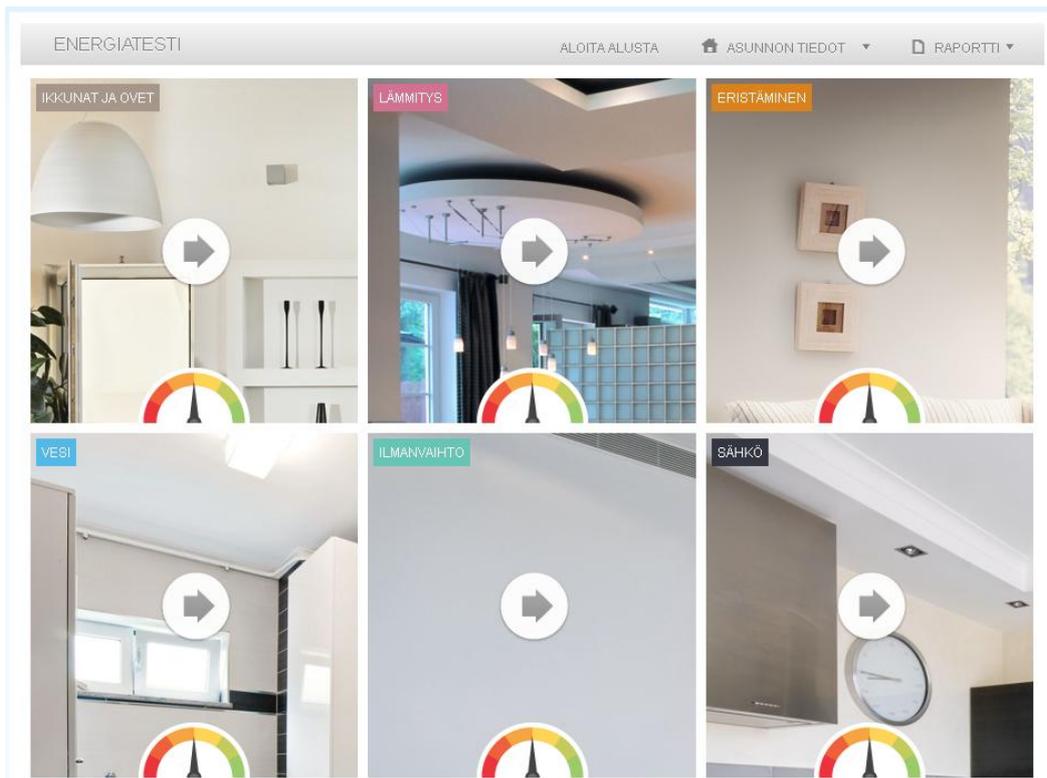


Figure 3 Energy test energy saving fields

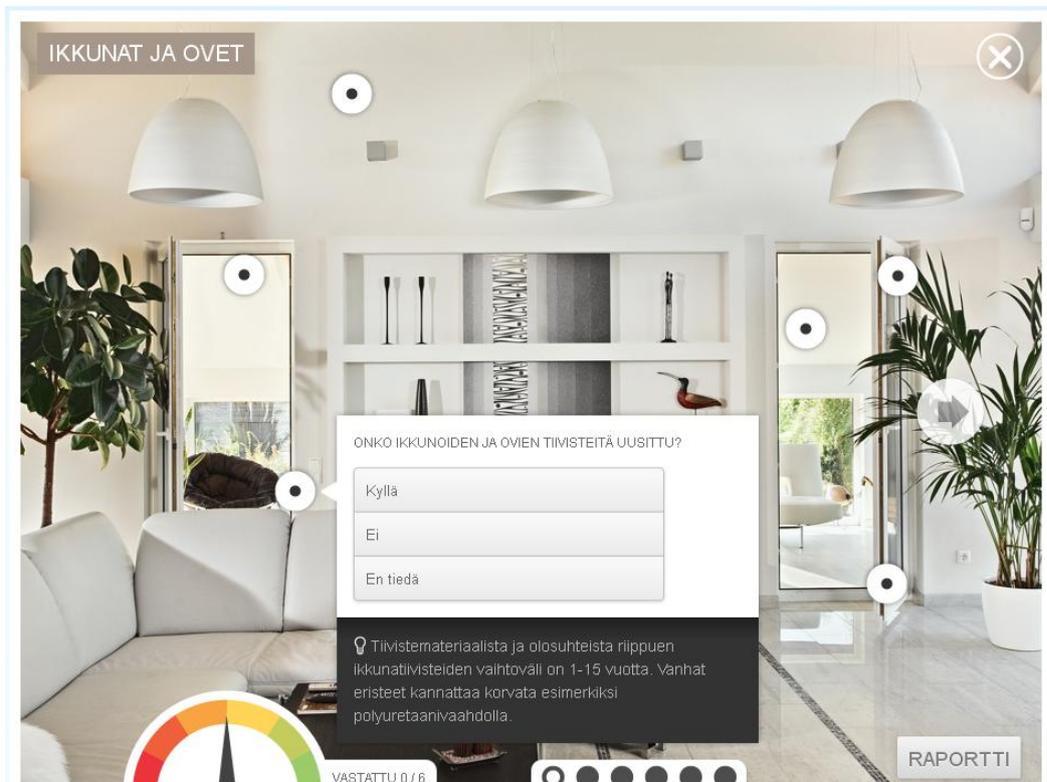


Figure 4 Energy test detailed housing questions and energy saving hints

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