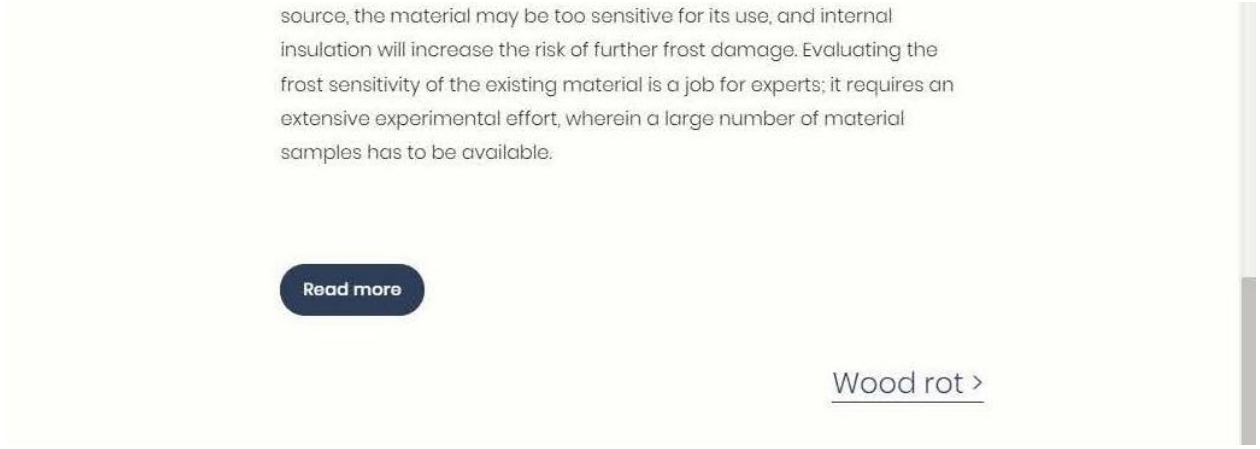
User guide to the RIBuild website www.ribuild.eu

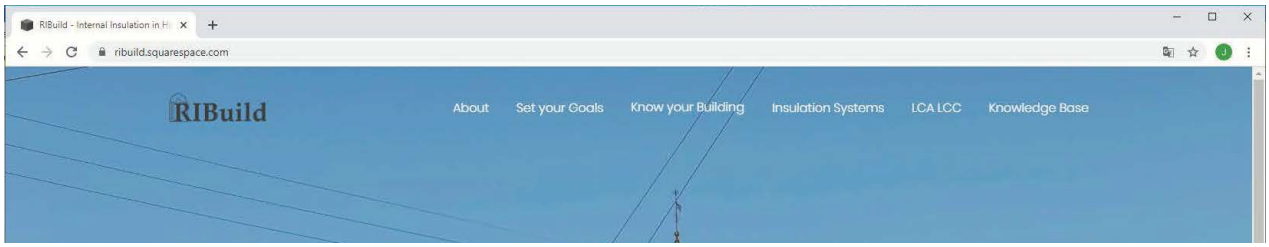
The RIBuild website is created as a user-friendly and intuitive platform for knowledge sharing of valuable research about internal insulation in historic buildings.

General structure

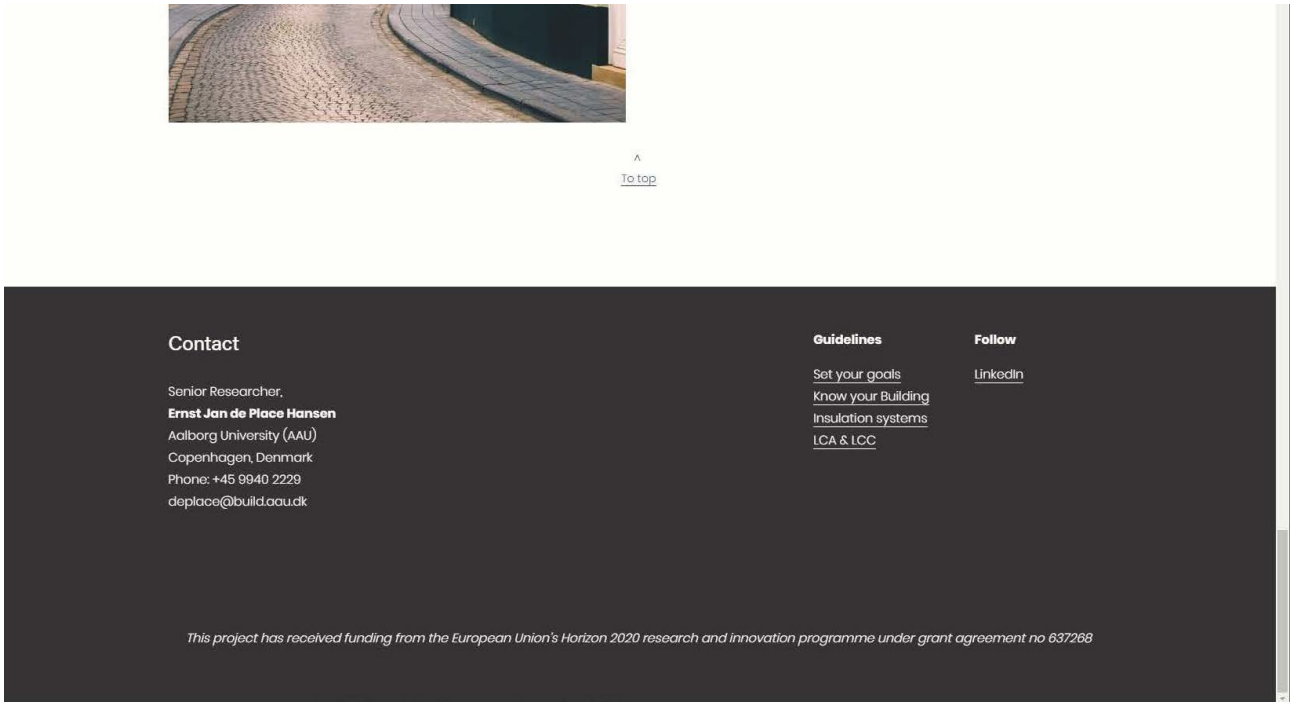
- *Two levels of knowledge*: first level on website, second entered through *Read more*-buttons presenting text parts from deliverable D6.2



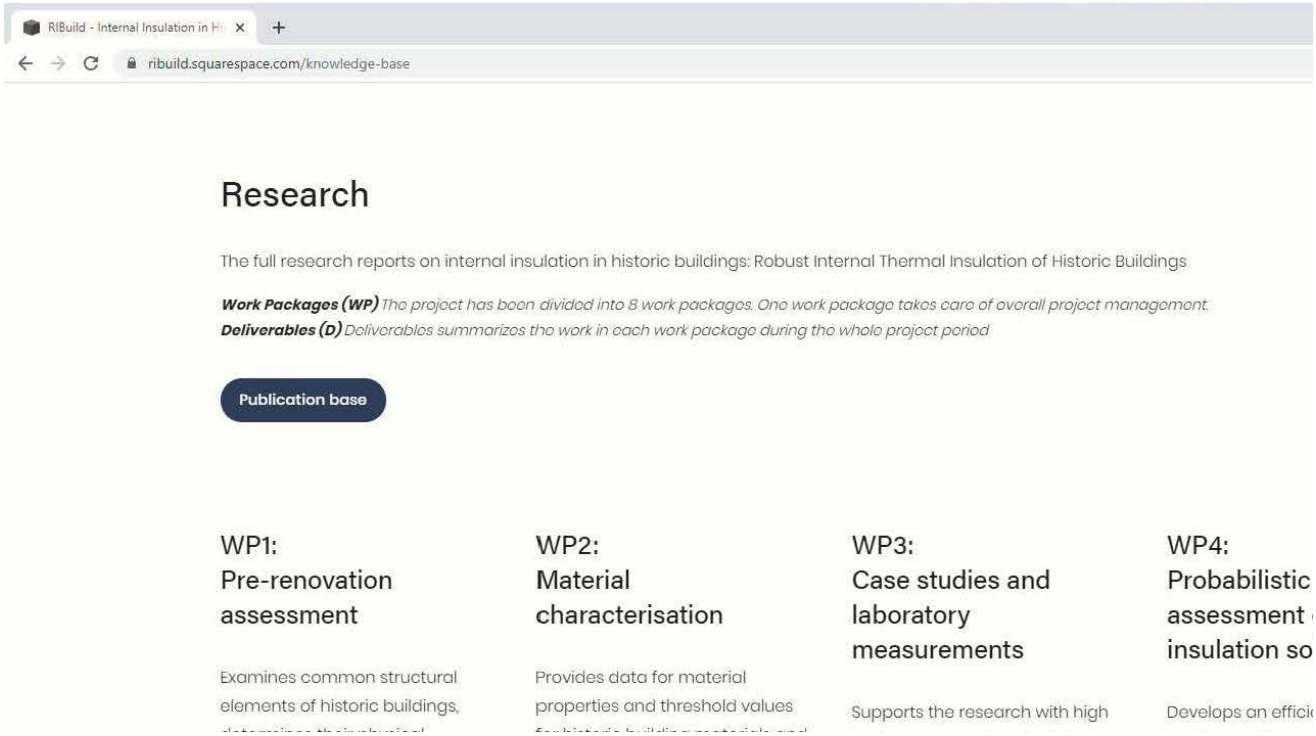
- *Fixed top menu* is a direct access to all topics and provides the user with a constant overview of the multiple options wherever they are
- The themes and topics have been ordered to naturally follow the content of the written guidelines (D6.2) without the need to explore sections or features in a specific order



- *Fixed footer* holds contact information, direct access to the four guidelines and link to LinkedIn to follow news about project
- *To top-function* on each page to minimize scrolling and quick navigation back to top menu with access to all topics



- *Links* to related information on the RIBuild-webpage or to external relevant sources of information for easy access to valid sources of information relevant to the project
- *Links to the publication base* are placed at the end of each *read more*-text

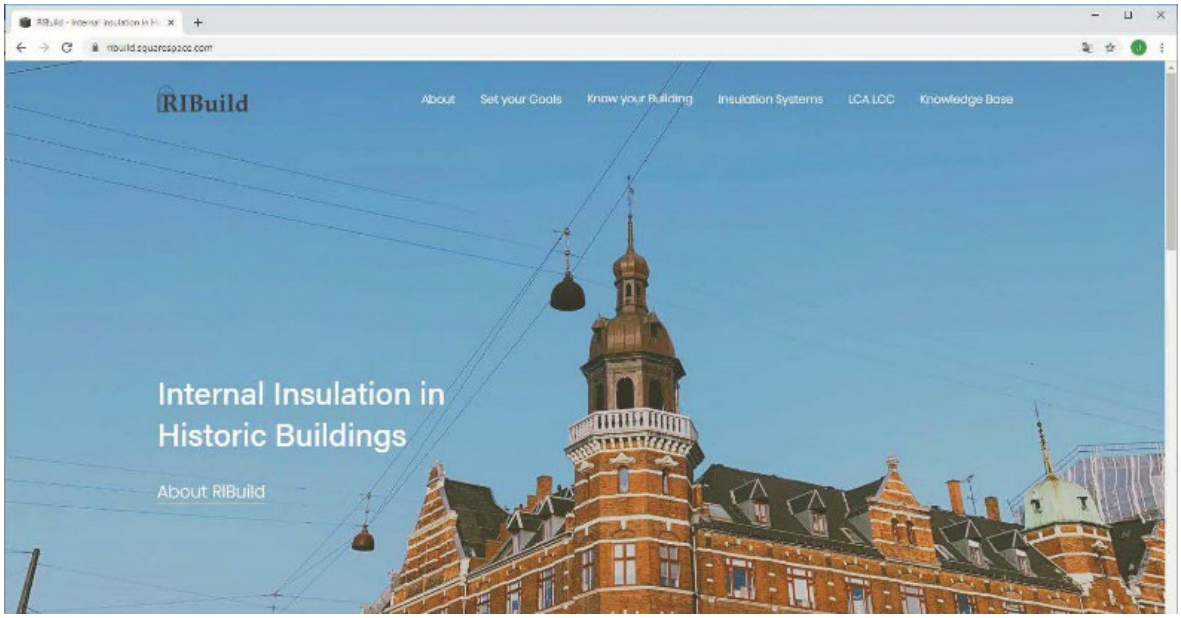


- *Clicking on the RIBuild-logo in the left corner leads back to the landing page*
- If the website is accessed in a google-browser as Google Chrome, the website can be translated into any national language by right-clicking at a random place on the website and selecting translate.

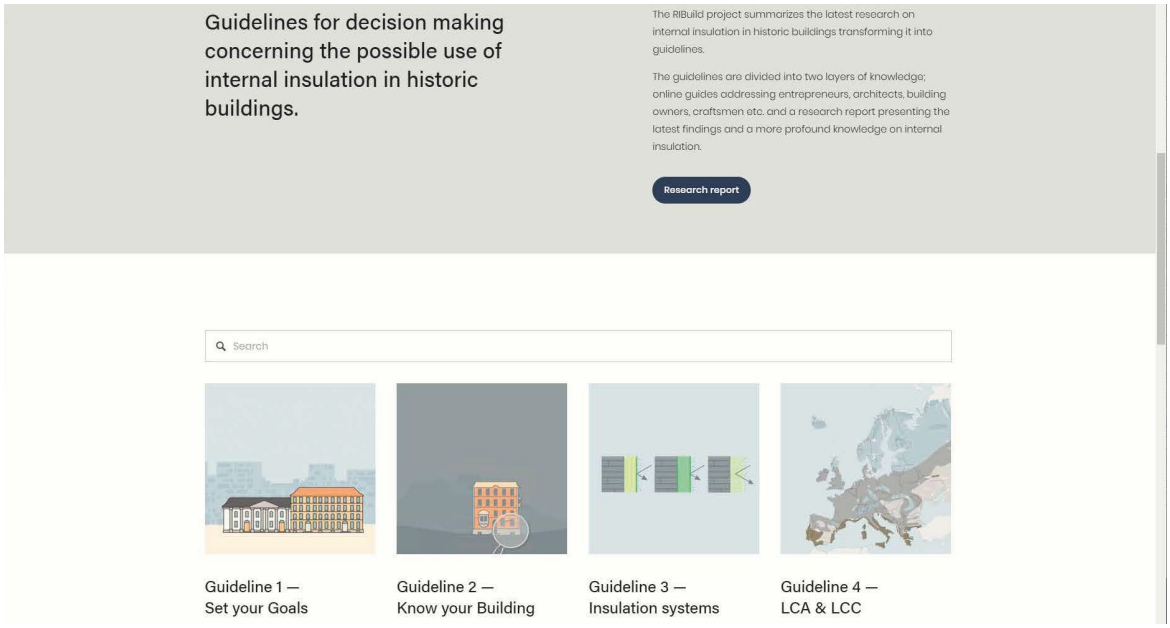
The following presents a step-by-step list of the topics, knowledge and features presented on the website, proceeding through topics in the top menu:

Landing page includes

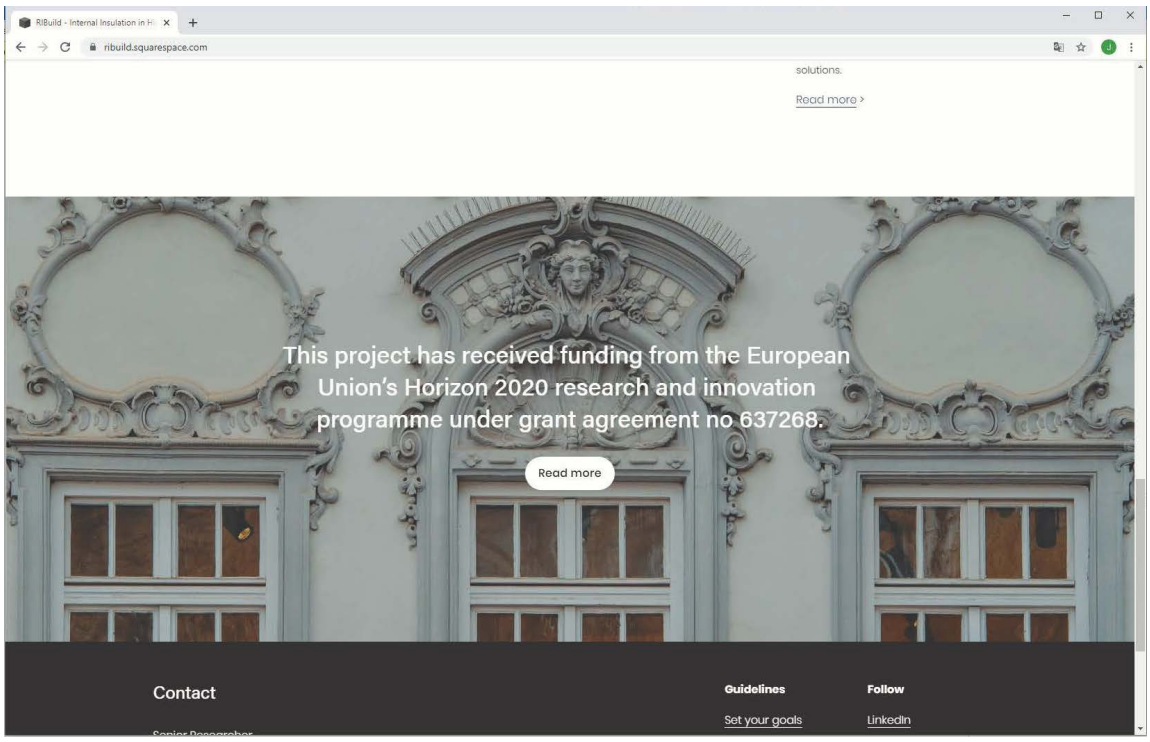
- Link to *About RIBuild*
- A brief presentation to the RIBuild-project through text and video
- Link to the full written report (deliverable D6.2)



- Search function
- Presentation and direct access to the four guidelines (1. Set your Goal, 2. Know you building, 3. Insulation Systems and 4. LCA/LCC)



- Clicking on *Read more* leads directly to the European Commission-website (for further knowledge about the European Union's Horizon 2020 research)



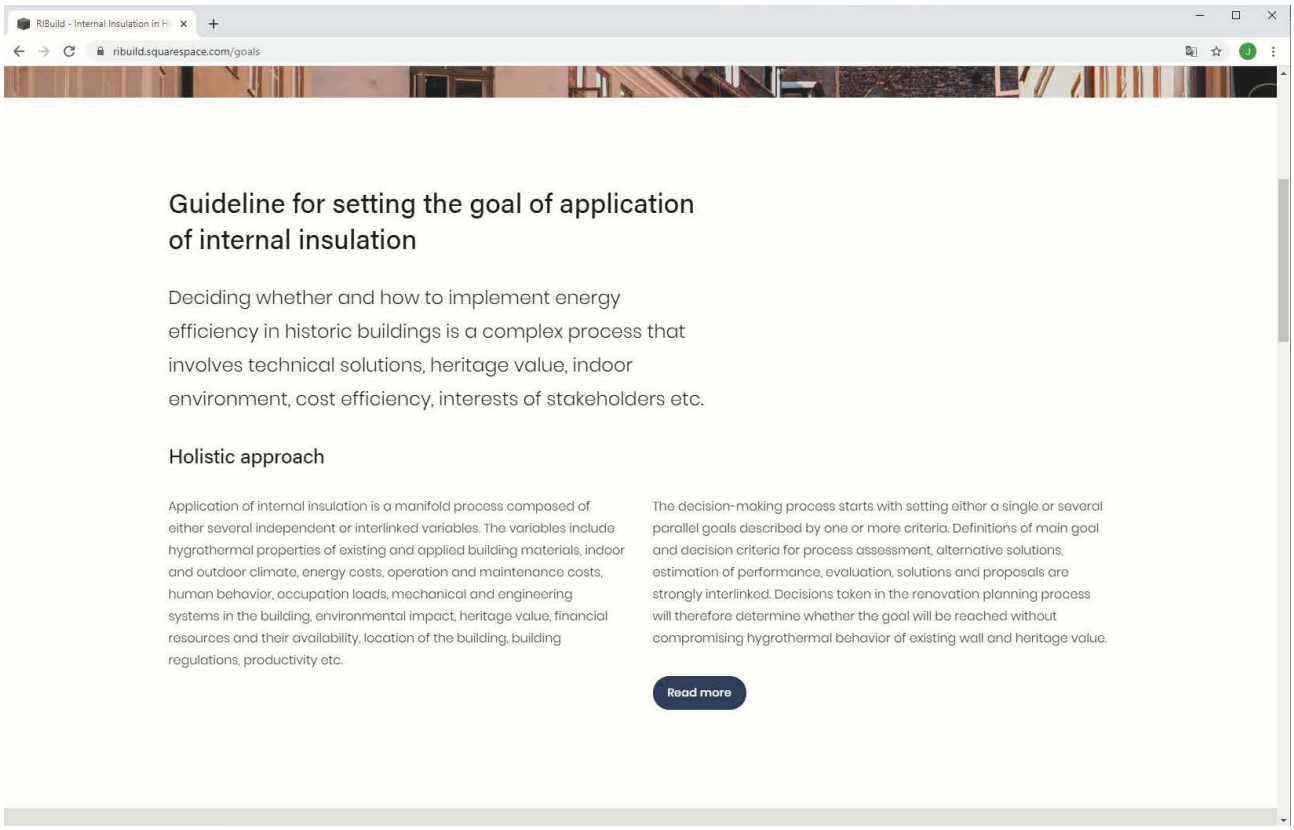
About

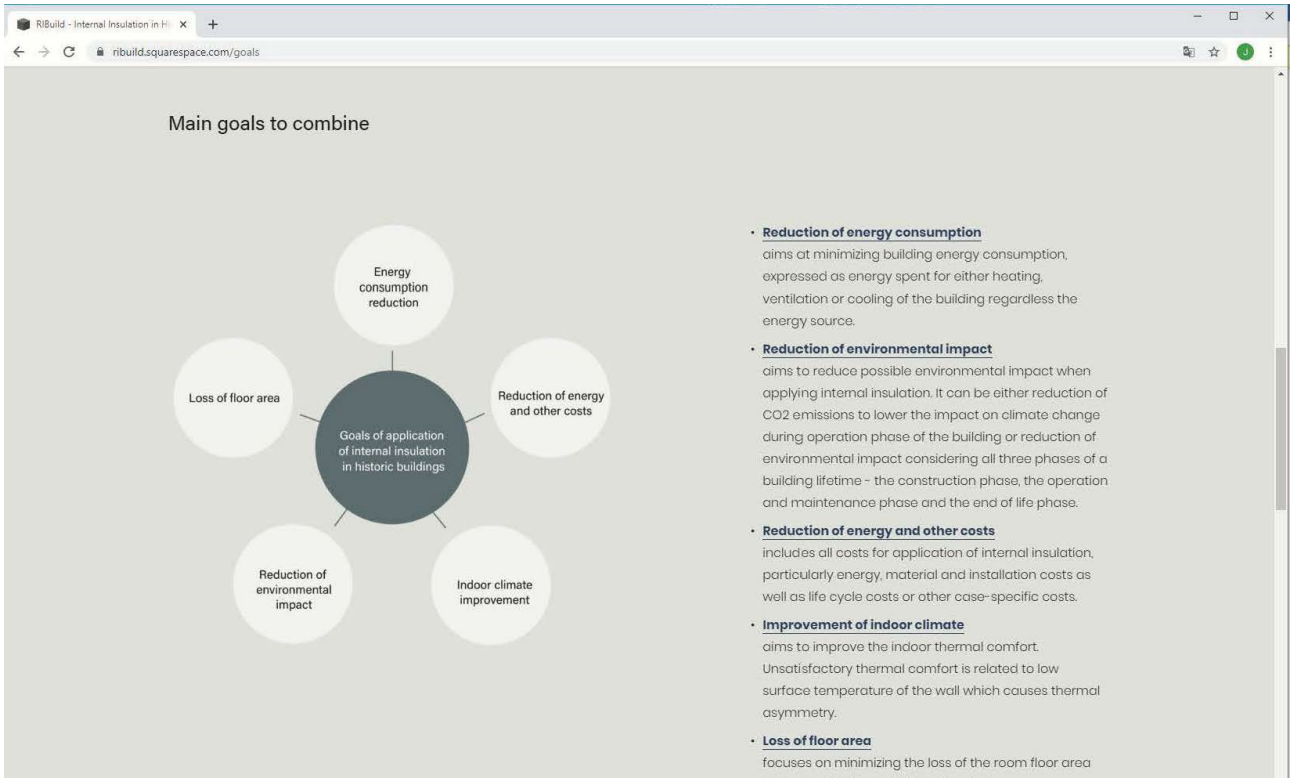
- Summarizes the RIBuild-project and research process through text and videos
- Presents involved project partners through logos from institutions
- Direct link to deliverable D6.2

Guideline 1: Set your Goal

- Information on how to set a goal for the building renovation and decision criteria
- Three areas of knowledge:
    a. the holistic approach when setting a goal
    b. the five types of goals described in the RIBuild project (reduction of energy consumption, reduction of environmental impact, reduction of energy and other costs, improvement of indoor climate and loss of floor area)
    c. an introduction to building regulations

- Interlink leads to a more profound explanation of each goal with examples
- Link to the Directive of the European Parliament and of the Council on energy performance of buildings
- *Read more* leads to part of deliverable D6.2 about national building regulations

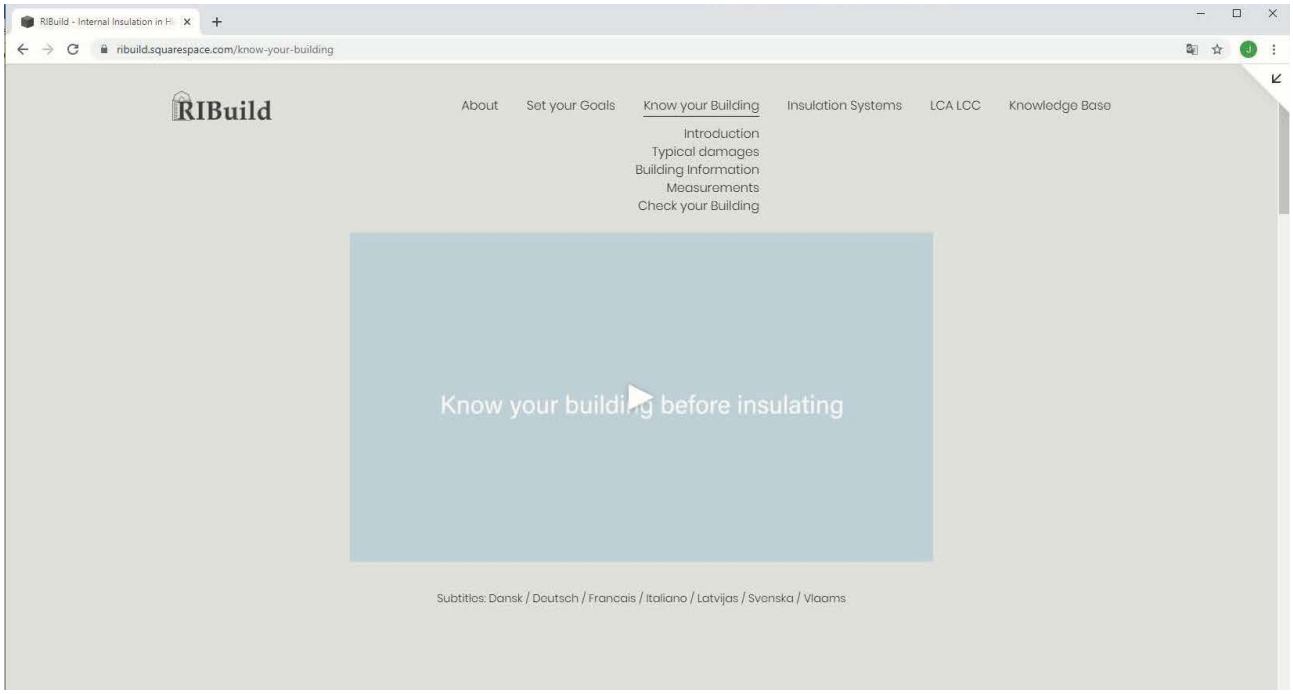

RIBuild - Internal Insulation in H
ribuild.squarespace.com/goals
Guideline for setting the goal of application of internal insulation
Deciding whether and how to implement energy efficiency in historic buildings is a complex process that involves technical solutions, heritage value, indoor environment, cost efficiency, interests of stakeholders etc.
Holistic approach
Application of internal insulation is a manifold process composed of either several independent or interlinked variables. The variables include hygrothermal properties of existing and applied building materials, indoor and outdoor climate, energy costs, operation and maintenance costs, human behavior, occupation loads, mechanical and engineering systems in the building, environmental impact, heritage value, financial resources and their availability, location of the building, building regulations, productivity etc.
The decision-making process starts with setting either a single or several parallel goals described by one or more criteria. Definitions of main goal and decision criteria for process assessment, alternative solutions, estimation of performance, evaluation, solutions and proposals are strongly interlinked. Decisions taken in the renovation planning process will therefore determine whether the goal will be reached without compromising hygrothermal behavior of existing wall and heritage value.
Read more


RIBuild - Internal Insulation in H
ribuild.squarespace.com/goals
Main goals to combine
Energy consumption reduction
Loss of floor area
Reduction of energy and other costs
Goals of application of internal insulation in historic buildings
Reduction of environmental impact
Indoor climate improvement
Reduction of energy consumption
aims at minimizing building energy consumption, expressed as energy spent for either heating, ventilation or cooling of the building regardless the energy source.
Reduction of environmental impact
aims to reduce possible environmental impact when applying internal insulation. It can be either reduction of CO2 emissions to lower the impact on climate change during operation phase of the building or reduction of environmental impact considering all three phases of a building lifetime - the construction phase, the operation and maintenance phase and the end of life phase.
Reduction of energy and other costs
includes all costs for application of internal insulation, particularly energy, material and installation costs as well as life cycle costs or other case-specific costs.
Improvement of indoor climate
aims to improve the indoor thermal comfort. Unsatisfactory thermal comfort is related to low surface temperature of the wall which causes thermal asymmetry.
Loss of floor area
focuses on minimizing the loss of the room floor area

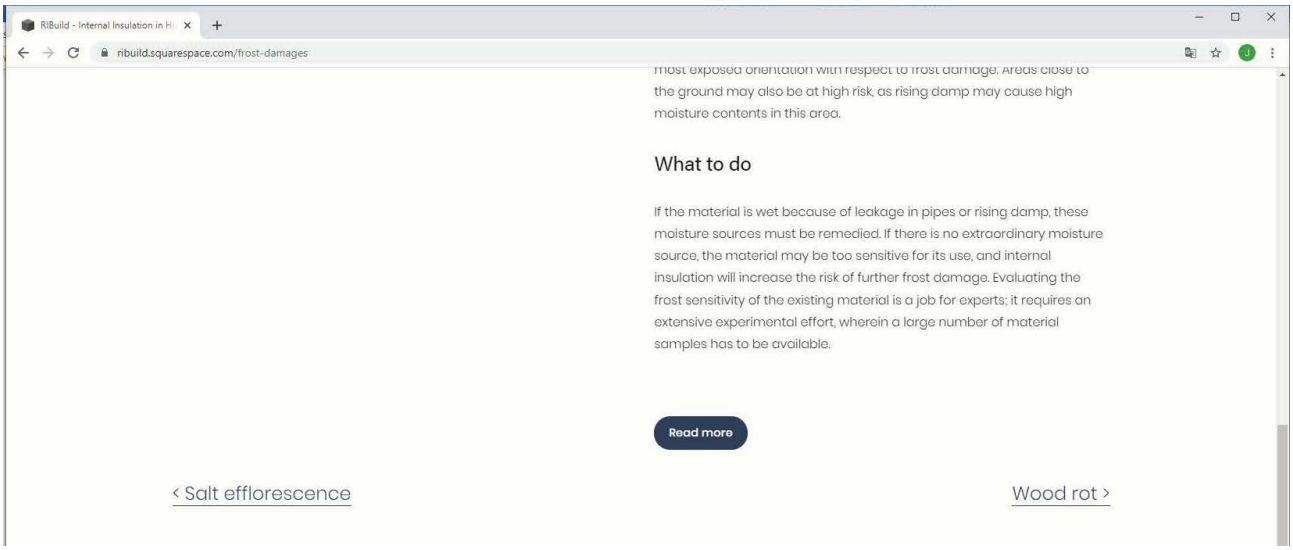
Guideline 2: Know you Building

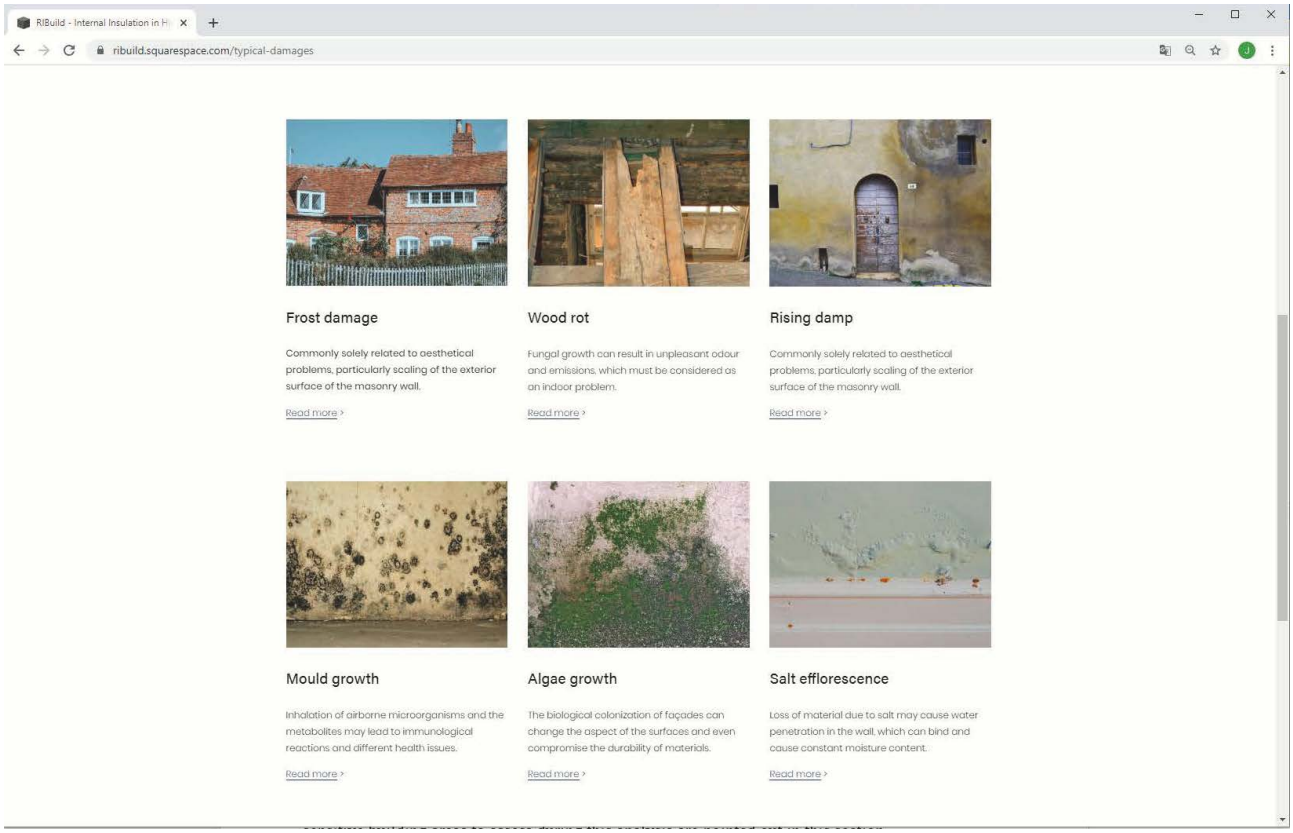
- Contains five topics: Introduction, Typical damages, Building information, Measurements and Check your Building

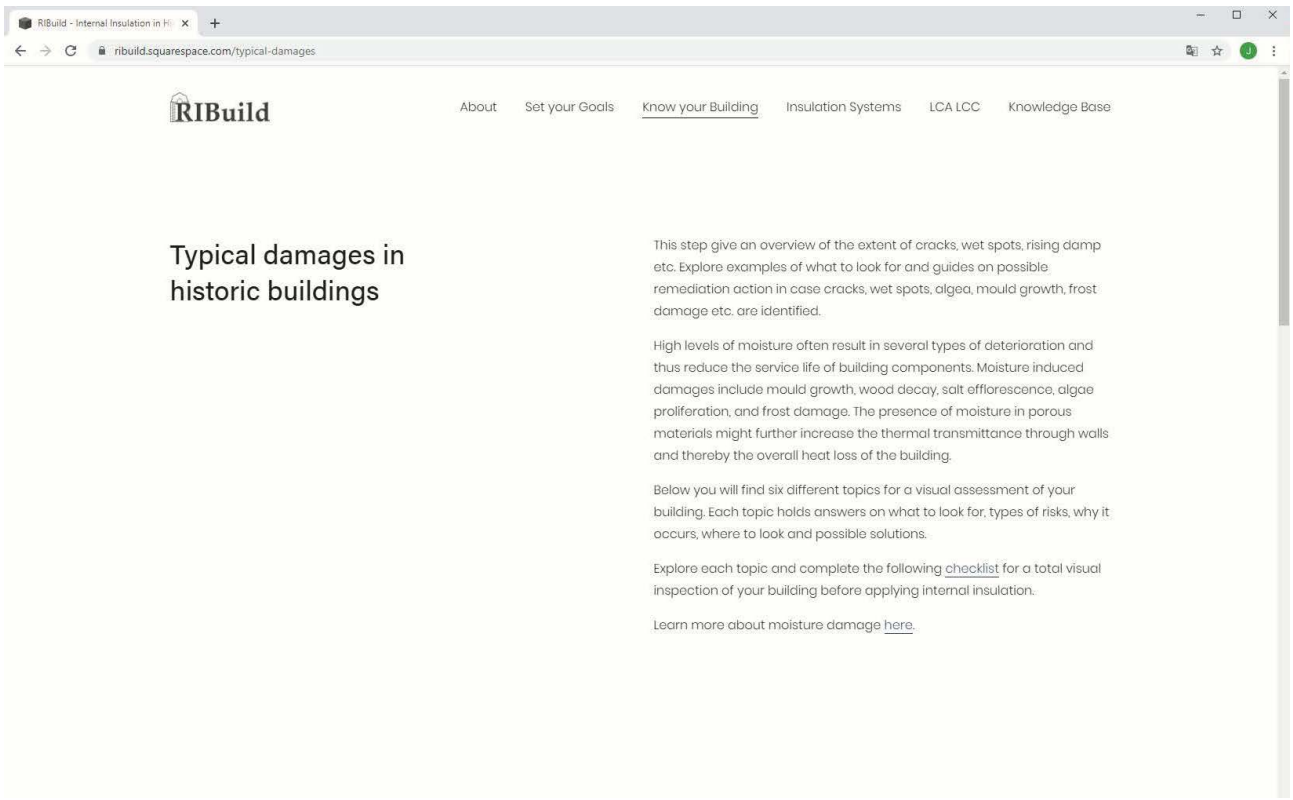
- ***Introduction***



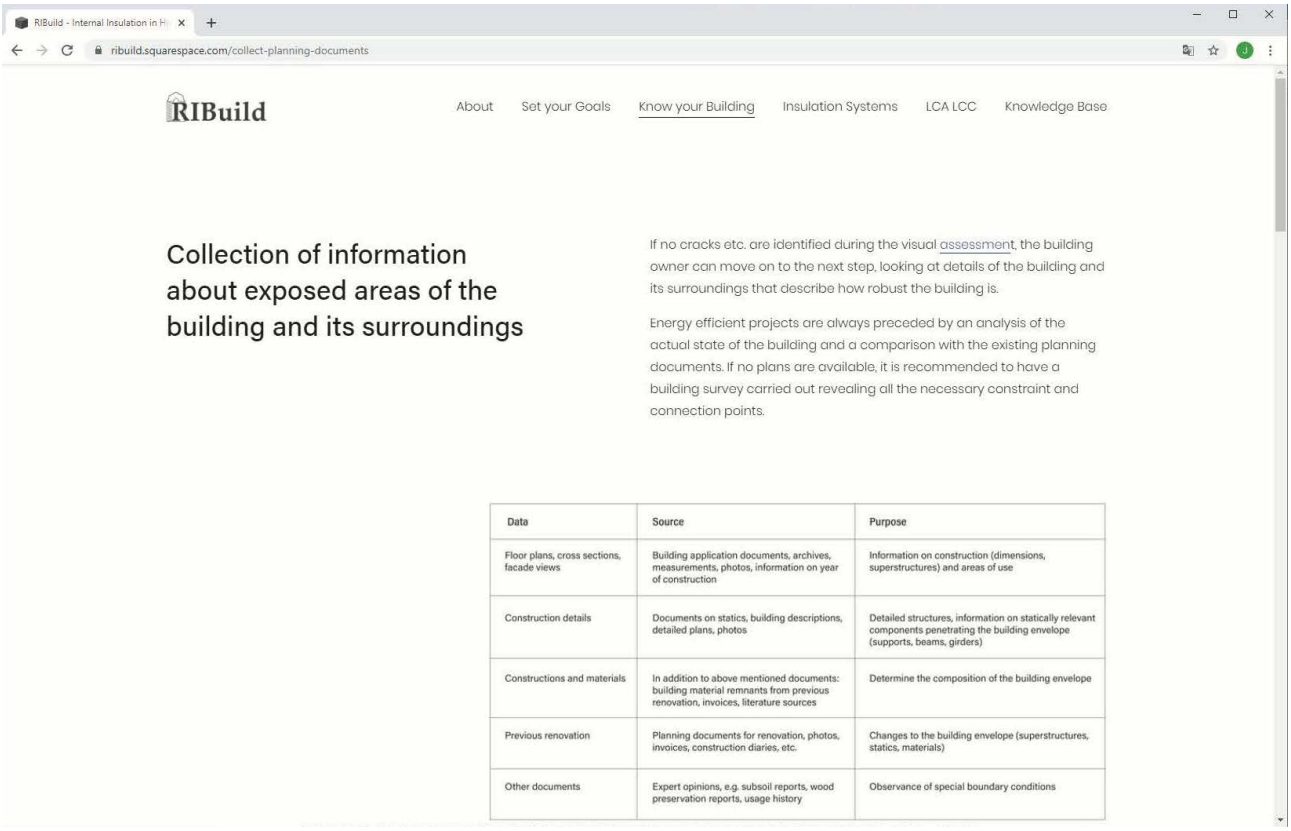
- ***Typical damages*** cover six most common areas of risks to assess before starting a renovation process; frost damage, wood rot, rising damp, mould growth, algae growth and salt efflorescence, with brief answers on what, why and where to look for occurring risks and what to do
- *Read more* leads to text part from deliverable D6.2 covering the topic
- A visual gallery at the bottom presents examples of damages
- Arrows guide to other typical damages among the six



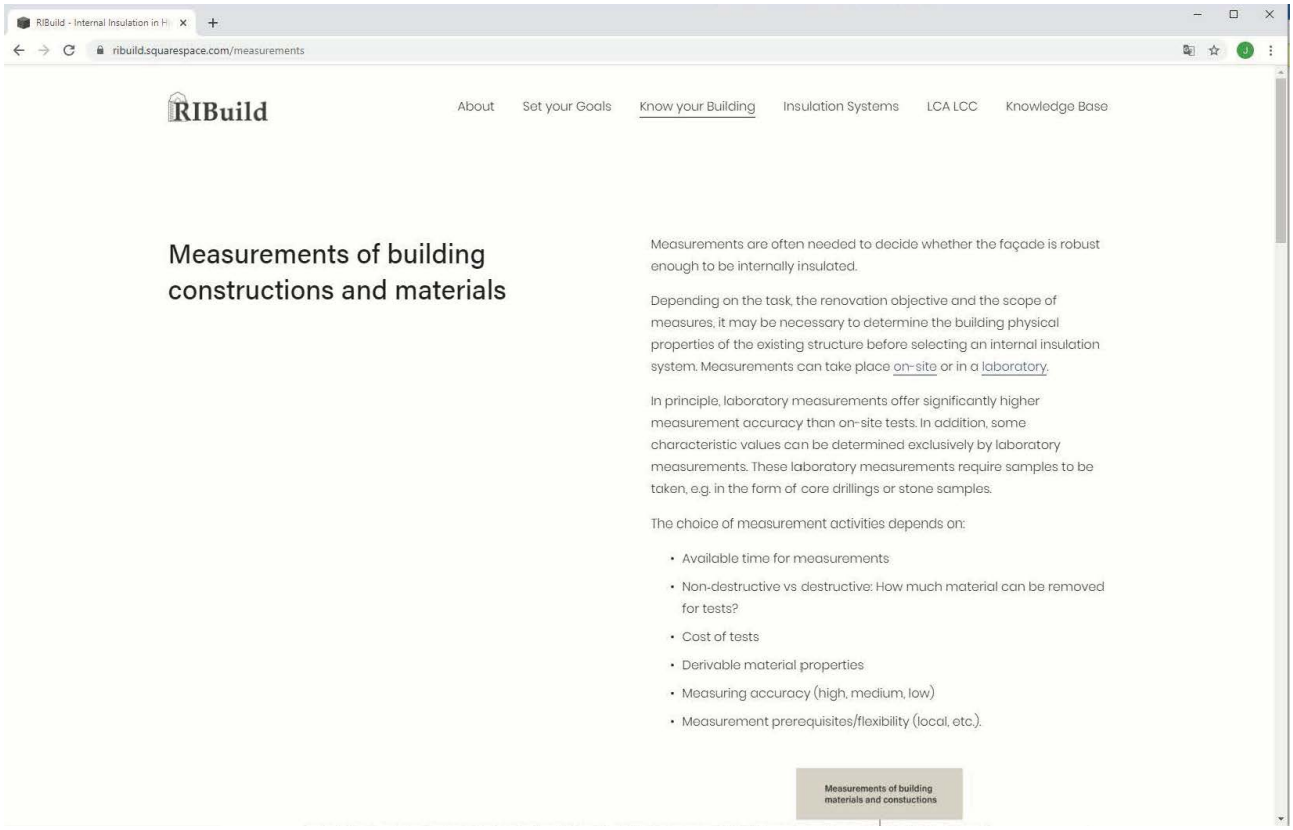

RIBuild - Internal Insulation in H
ribuild.squarespace.com/typical-damages
Frost damage
Commonly solely related to aesthetical problems, particularly scaling of the exterior surface of the masonry wall.
Read more ›
Wood rot
Fungal growth can result in unpleasant odour and emissions, which must be considered as an indoor problem.
Read more ›
Rising damp
Commonly solely related to aesthetical problems, particularly scaling of the exterior surface of the masonry wall.
Read more ›
Mould growth
Inhalation of airborne microorganisms and the metabolites may lead to immunological reactions and different health issues.
Read more ›
Algae growth
The biological colonization of façades can change the aspect of the surfaces and even compromise the durability of materials.
Read more ›
Salt efflorescence
Loss of material due to salt may cause water penetration in the wall, which can bind and cause constant moisture content.
Read more ›

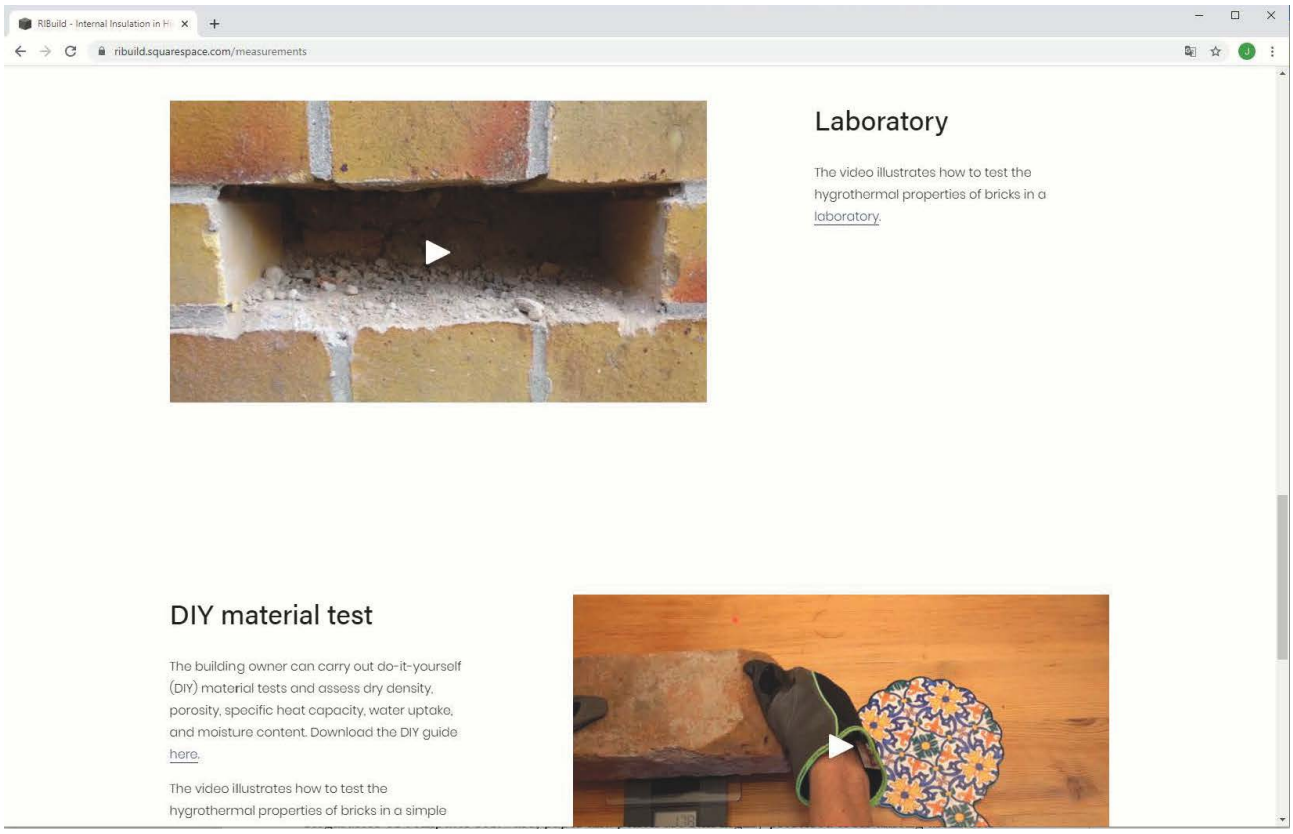

RIBuild - Internal Insulation in H
ribuild.squarespace.com/typical-damages
RIBuild
About
Set your Goals
Know your Building
Insulation Systems
LCA LCC
Knowledge Base
Typical damages in historic buildings
This step give an overview of the extent of cracks, wet spots, rising damp etc. Explore examples of what to look for and guides on possible remediation action in case cracks, wet spots, algea, mould growth, frost damage etc. are identified.
High levels of moisture often result in several types of deterioration and thus reduce the service life of building components. Moisture induced damages include mould growth, wood decay, salt efflorescence, algae proliferation, and frost damage. The presence of moisture in porous materials might further increase the thermal transmittance through walls and thereby the overall heat loss of the building.
Below you will find six different topics for a visual assessment of your building. Each topic holds answers on what to look for, types of risks, why it occurs, where to look and possible solutions.
Explore each topic and complete the following checklist for a total visual inspection of your building before applying internal insulation.
Learn more about moisture damage here.

- ***Building information*** presents types of important data documents and useful sources of information about the building and surroundings
- Five sensitive building areas to assess during the analysis are pointed out

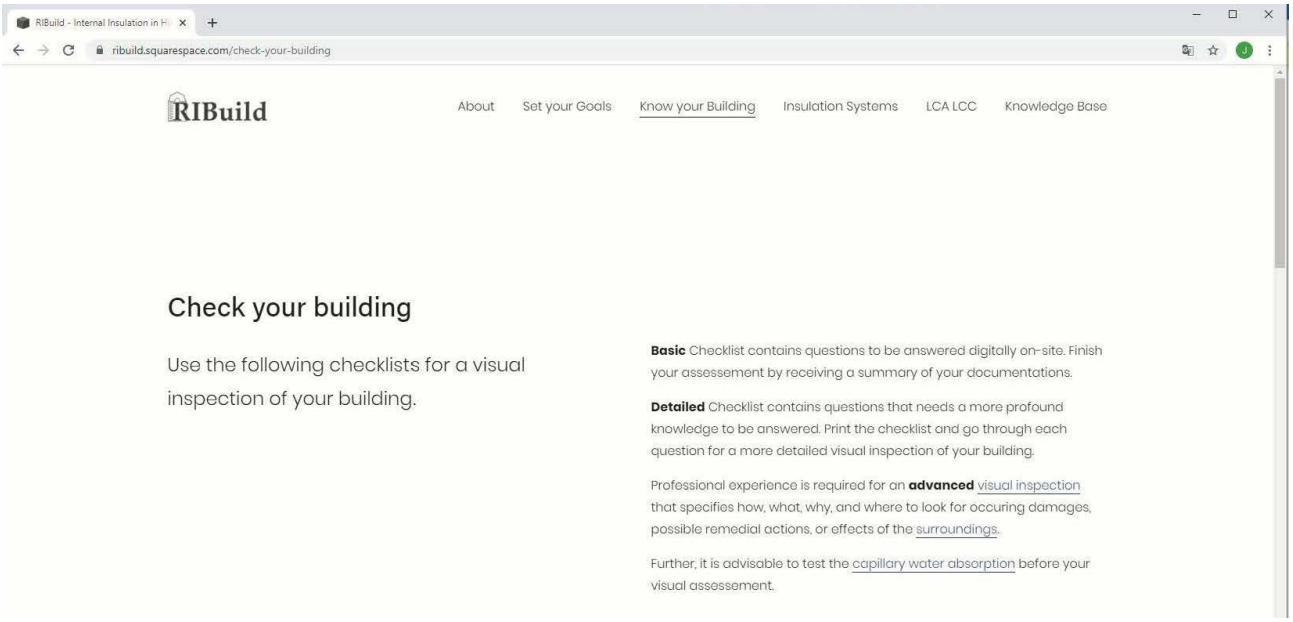


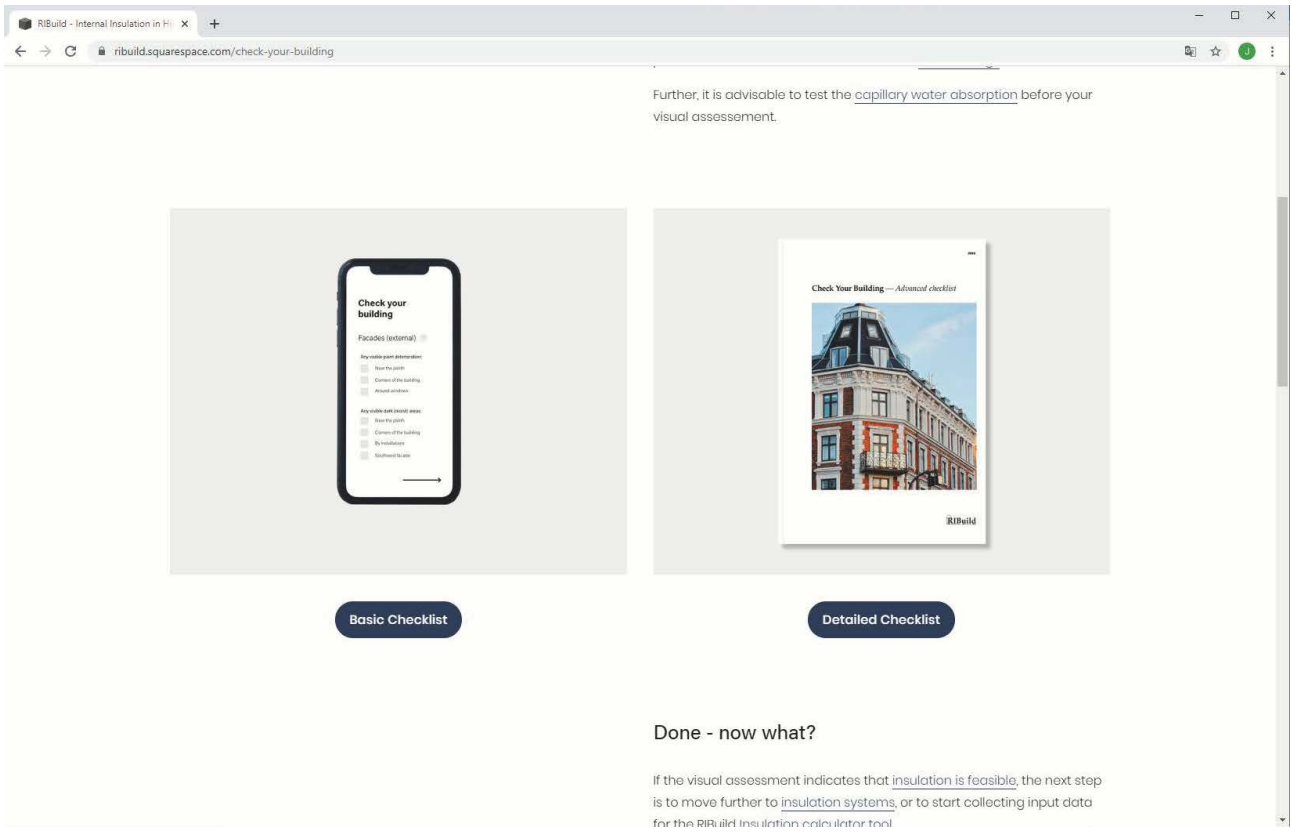
- ***Measurements*** presents on-site and laboratory methods through text, flow charts, videos and photo collections
- Emphasizes the need for measurements as part of the decision process during a renovation
- Interlink leads to printable material on the DIY-material test in Knowledge Base
- *Read more* leads to section describing measurements procedures and equipment for tests in deliverable D6.2


RIBuild - Internal Insulation in H
ribuild.squarespace.com/measurements
RIBuild
About
Set your Goals
Know your Building
Insulation Systems
LCA LCC
Knowledge Base
Measurements of building constructions and materials
Measurements are often needed to decide whether the façade is robust enough to be internally insulated.
Depending on the task, the renovation objective and the scope of measures, it may be necessary to determine the building physical properties of the existing structure before selecting an internal insulation system. Measurements can take place on-site or in a laboratory.
In principle, laboratory measurements offer significantly higher measurement accuracy than on-site tests. In addition, some characteristic values can be determined exclusively by laboratory measurements. These laboratory measurements require samples to be taken, e.g. in the form of core drillings or stone samples.
The choice of measurement activities depends on:
• Available time for measurements
• Non-destructive vs destructive: How much material can be removed for tests?
• Cost of tests
• Derivable material properties
• Measuring accuracy (high, medium, low)
• Measurement prerequisites/flexibility (local, etc.).
Measurements of building materials and constuctions

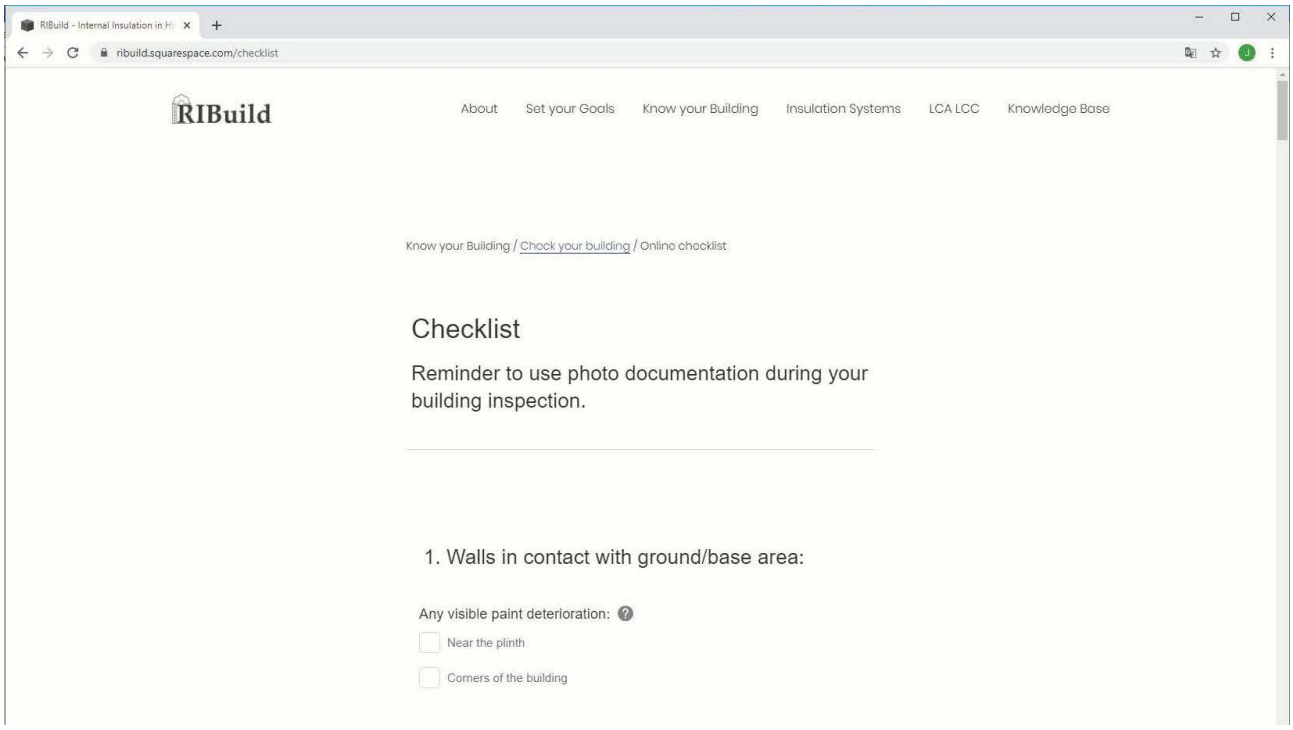

RIBuild - Internal Insulation in H
ribuild.squarespace.com/measurements
Laboratory
The video illustrates how to test the hygrothermal properties of bricks in a laboratory.
DIY material test
The building owner can carry out do-it-yourself (DIY) material tests and assess dry density, porosity, specific heat capacity, water uptake, and moisture content. Download the DIY guide here.
The video illustrates how to test the hygrothermal properties of bricks in a simple

- ***Check your building*** presents two checklists for building assessment

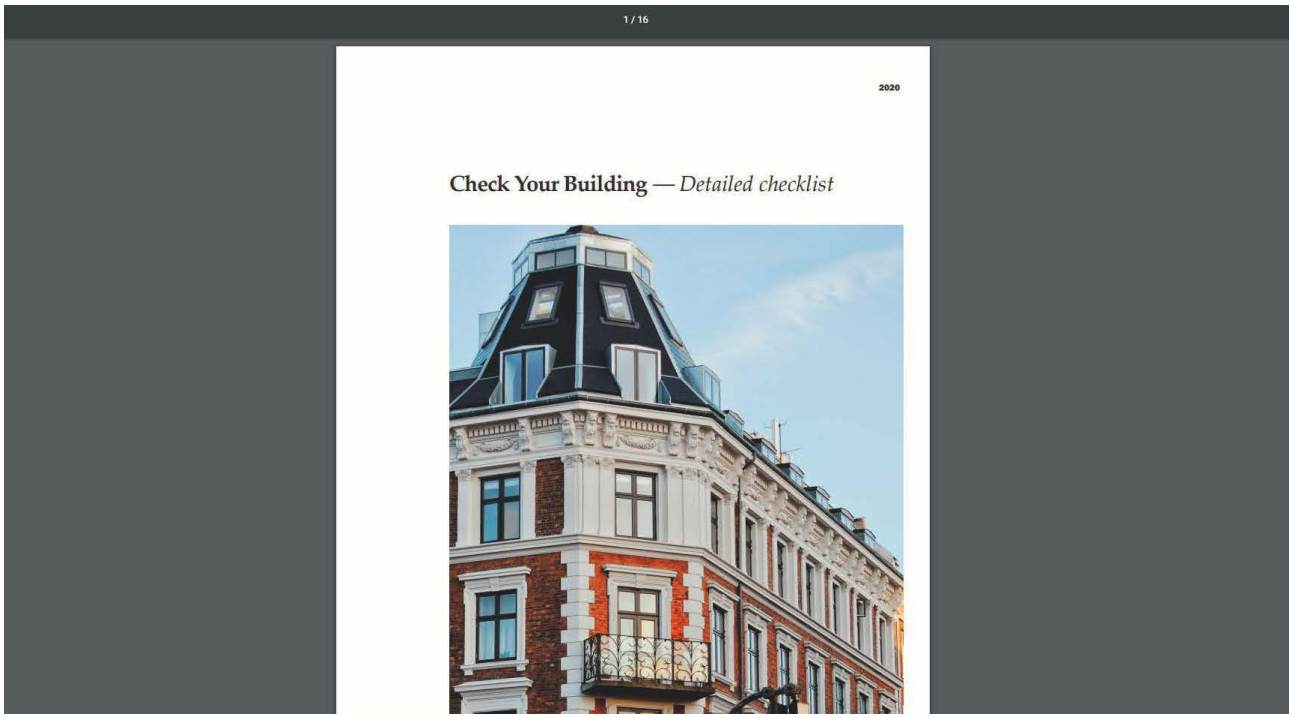




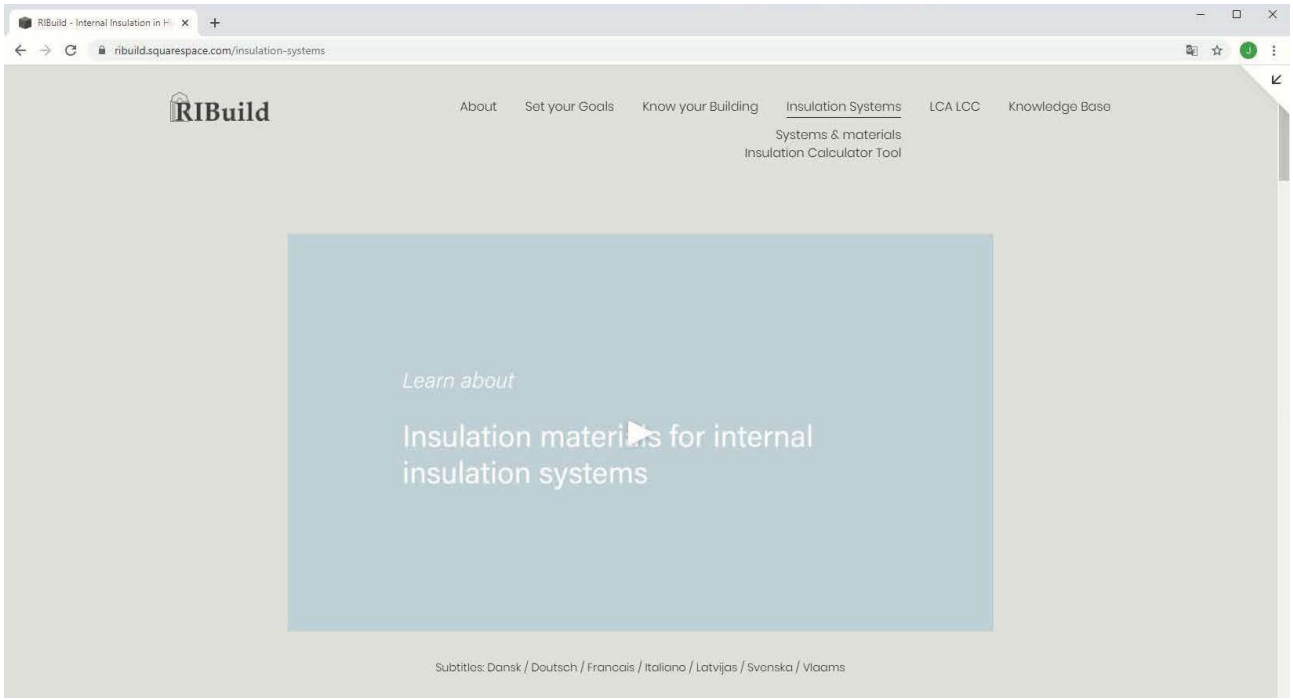
- *Basic checklist* corresponding to first level of knowledge on the website holds yes-no-questions, possible to answer online or on print. Mouse-over function elaborates each question with text and photo. Final replies can be sent directly to personal mail



- *Detailed checklist* corresponds to professional expertise and knowledge from second level (D6.2), aimed at building professionals with elaborated knowledge and need for specific drawings and notes during assessment, therefore in a printable version

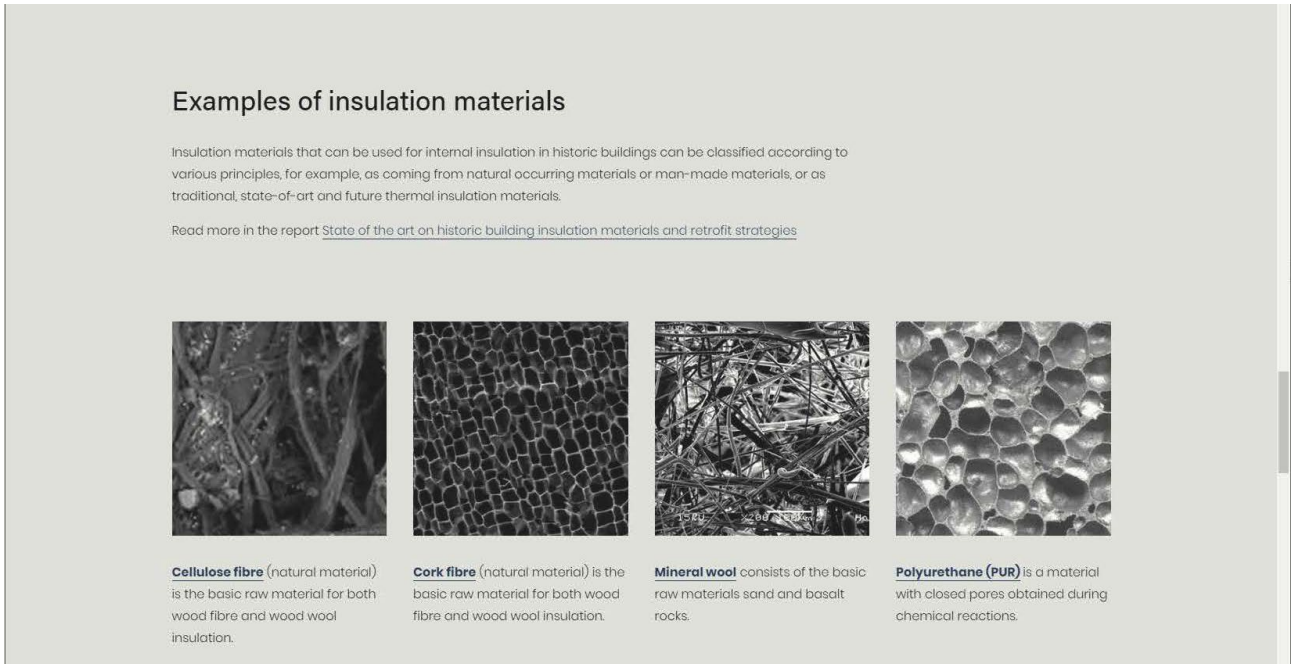


Guideline 3: Insulation Systems

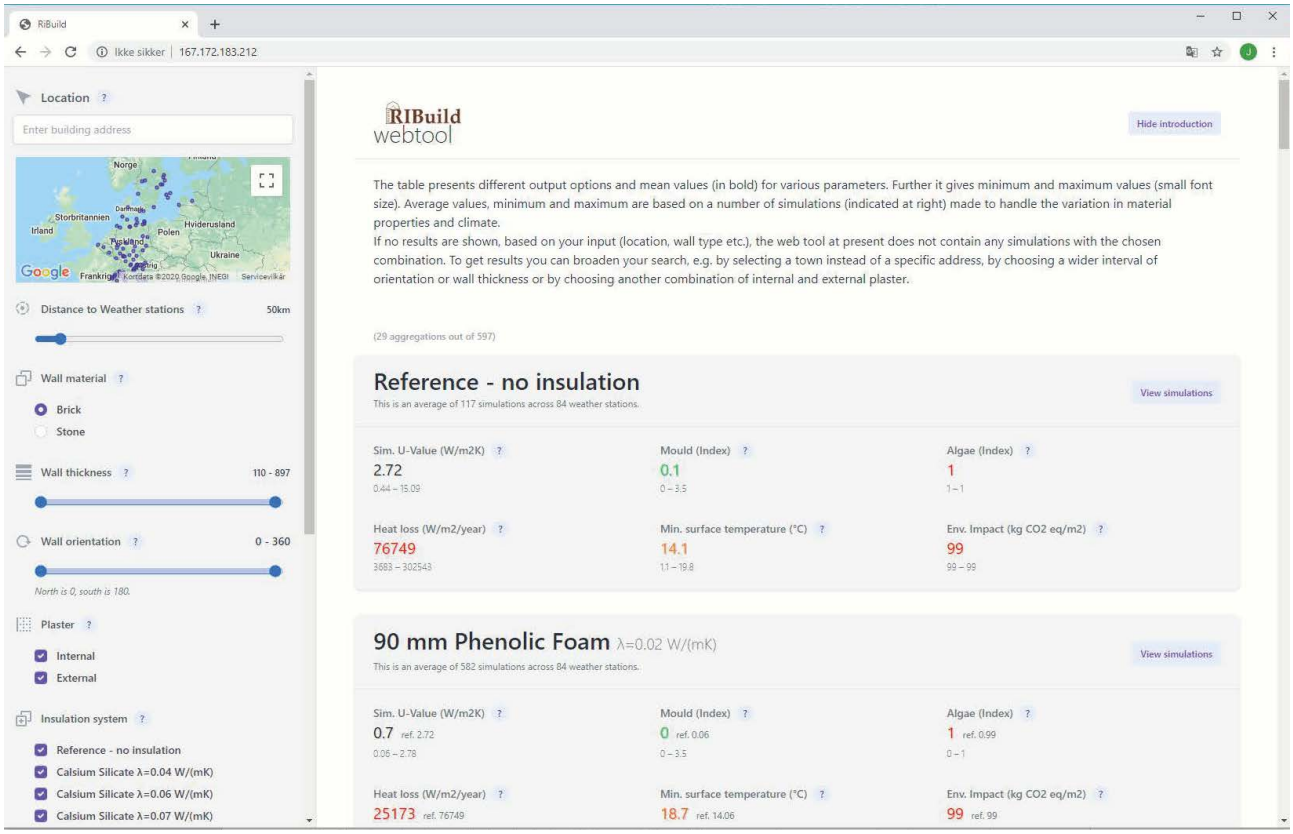


Systems & materials presents

- The main types of systems; vapour-tight and vapour-open internal insulation systems through text, table and illustration
- Phases in the installation procedure
- A photo gallery of examples of insulation materials
  Clicking on the different materials will lead to an extended description of the qualities of each material.
  A interlink leads to deliverable D1.2 with research on insulation materials

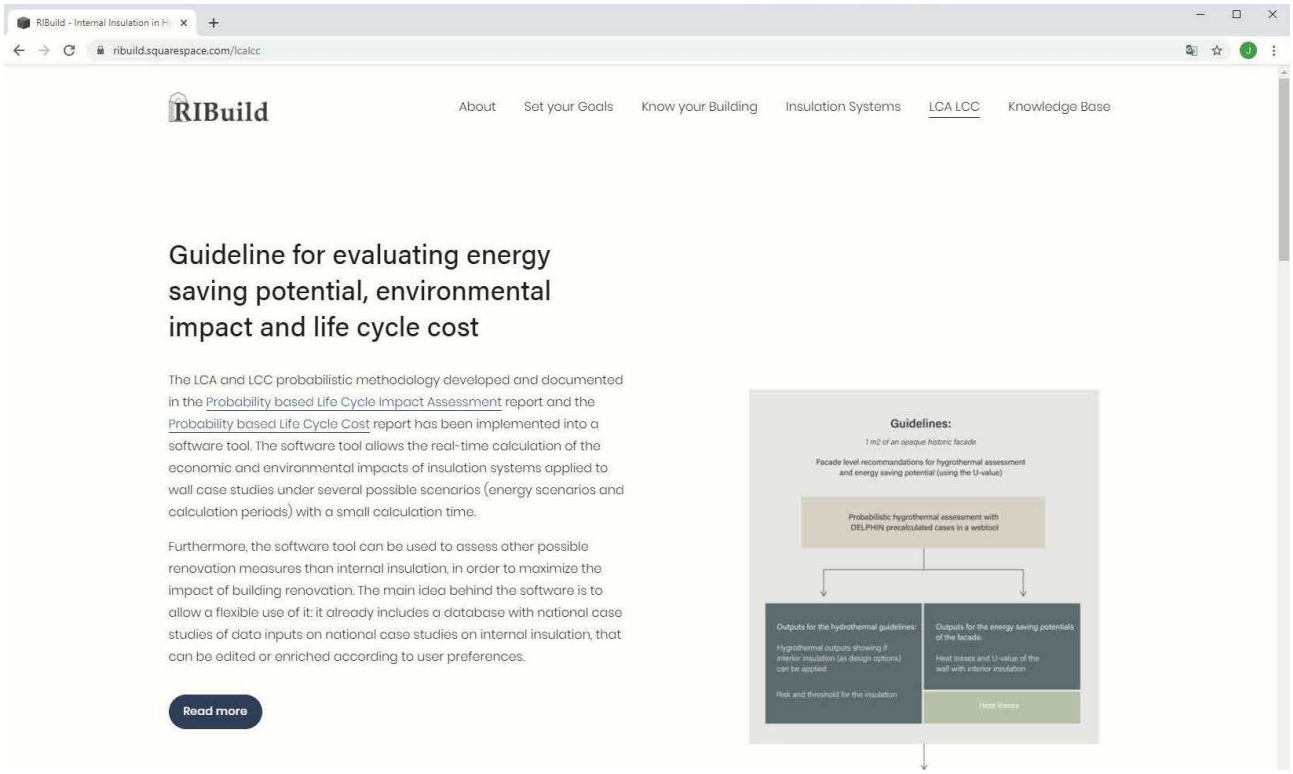


Insulation Calculator tool is a direct link to the WP6 web tool (beta-version) presenting suitable insulation systems for a specific building case.

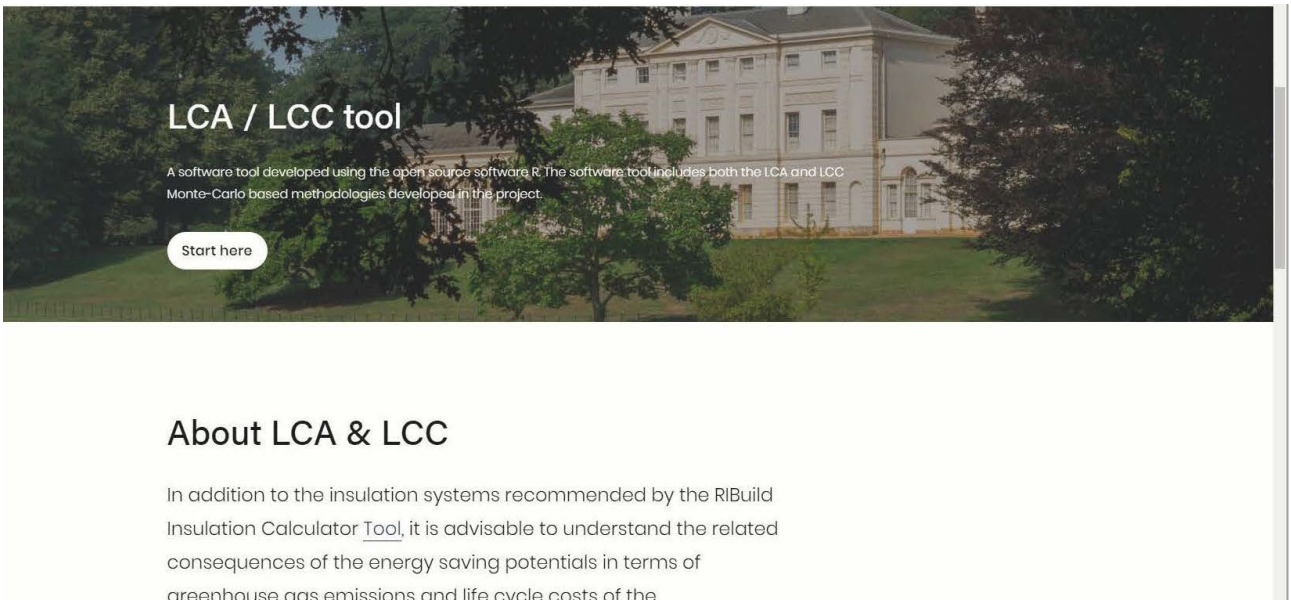


Guideline 4: LCA LCC

- Presentation of knowledge for evaluating energy saving potential, environmental impact and life cycle costs through text and flow chart
- Interlinks lead to deliverable D5.1 and D5.2 presenting documentation for the probabilistic methodologies for calculation of building life cycle and costs



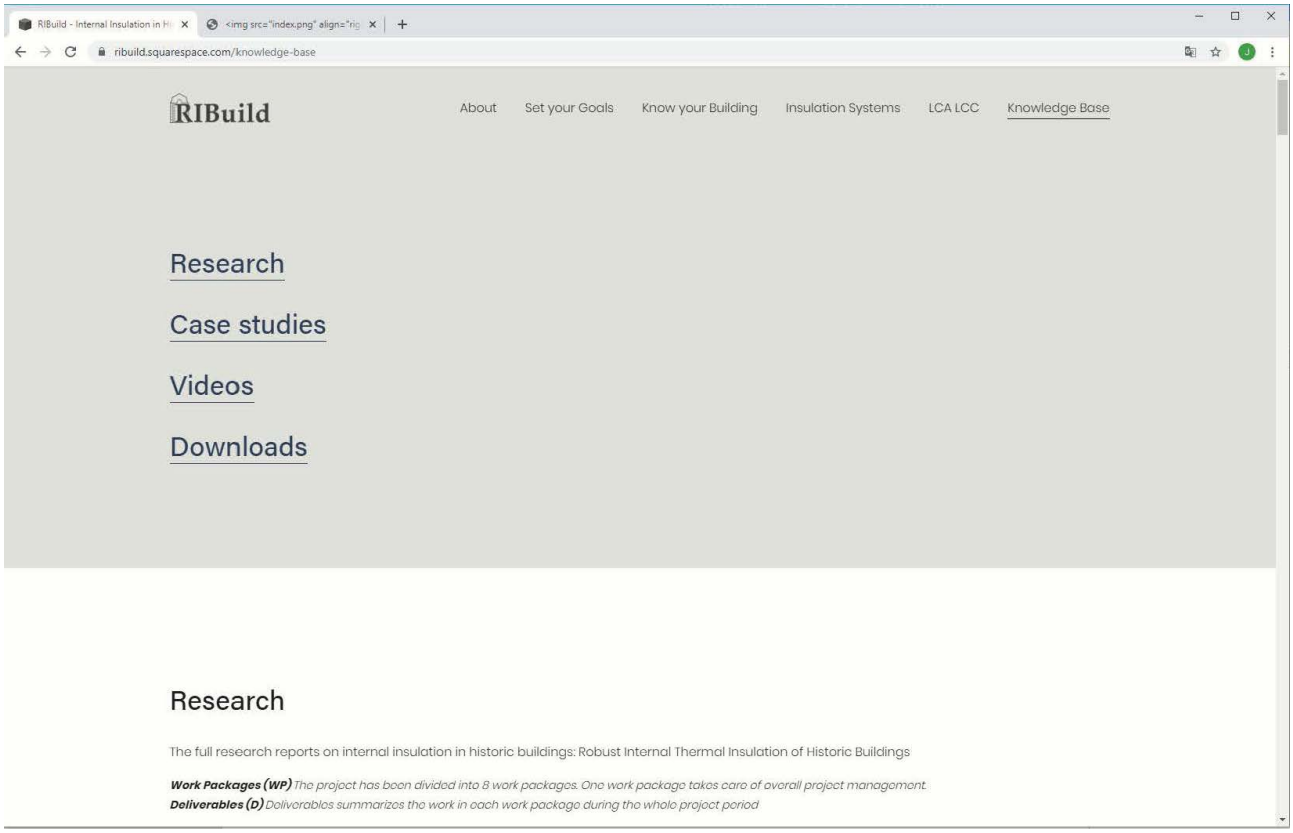
- *Start here* leads to the LCA LCC-tool
- Specification on the related consequences of the energy saving potentials and life cycle costs of the hygrothermal optimized insulation solution

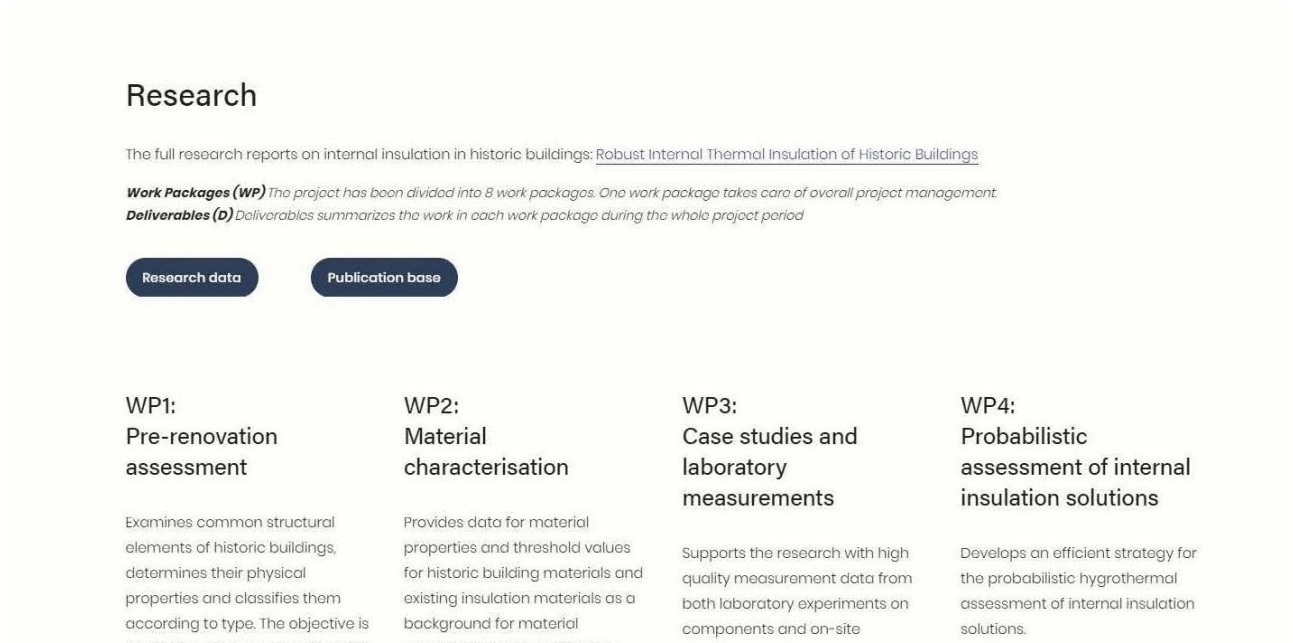


Knowledge base

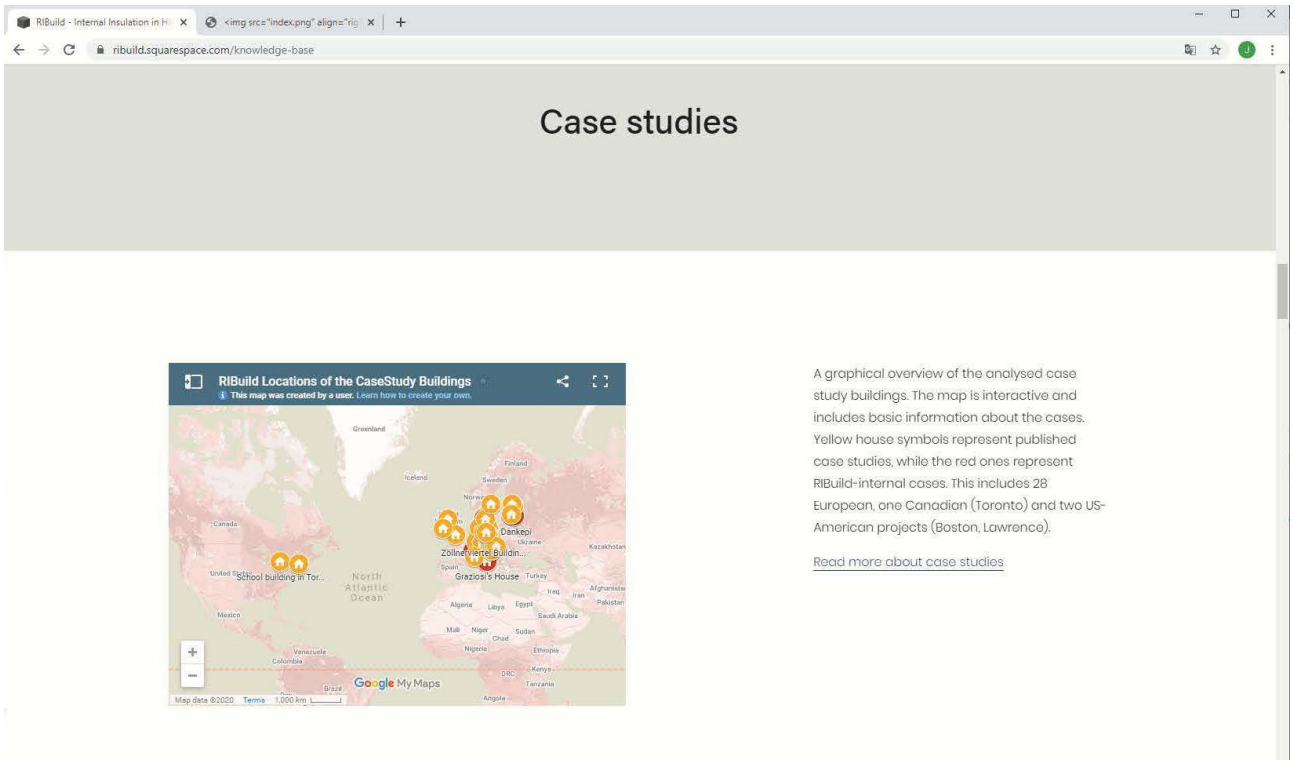
Contains a RIBuild research library with easy overview and access to research materials:

1. Link to the publication base with all scientific publications prepared as part of RIBuild
2. Research deliverables (reports) from all project WPs

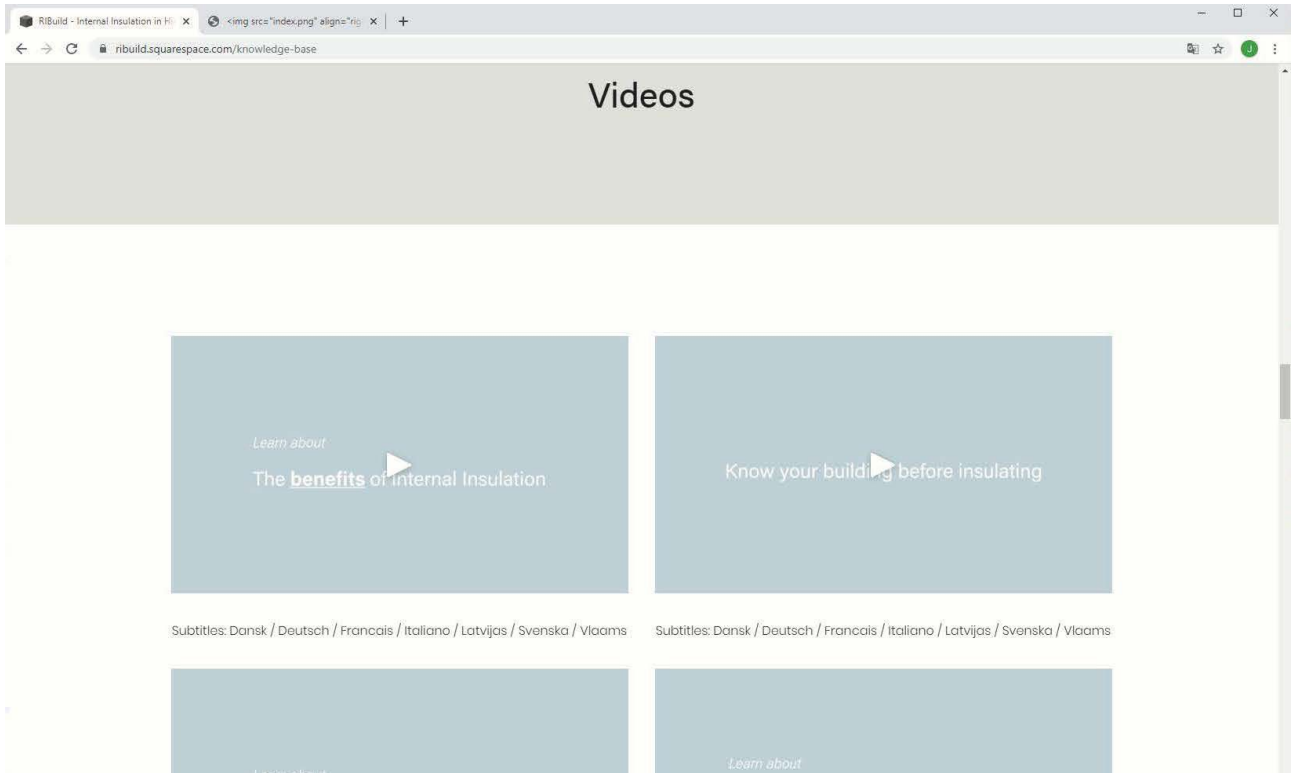




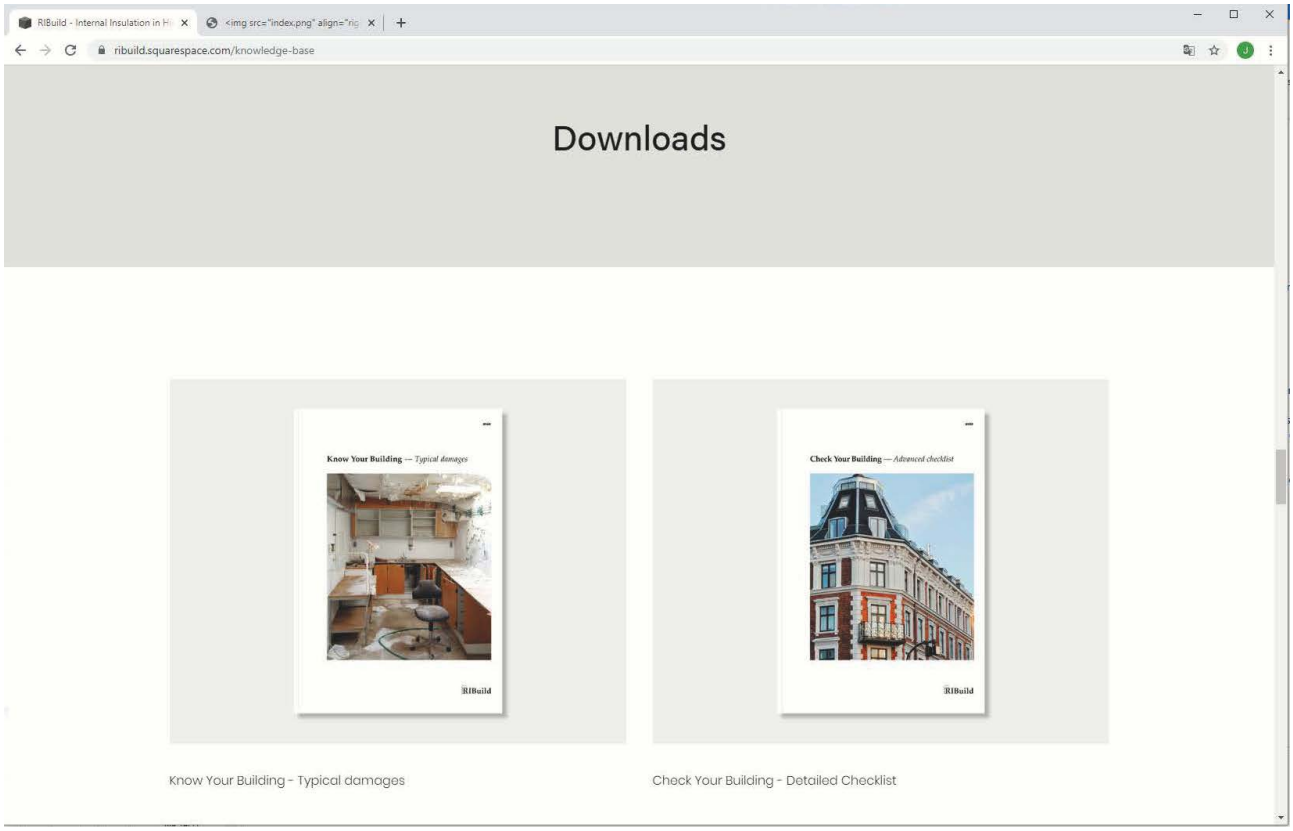
3. Case-studies through an interactive map and a interlink to D3.2



4. Videos with case examples
5. Videos explaining the RIBuild-project



6. Downloads covering information on Typical damages, Detailed Checklist, DIY materials test and Information folder for print or online reading



7. *Research data* includes a link to research data from RIBuild (e.g. measurement data from test stands etc. and data for historic building materials)