elios 2 European Liability Insurance Organisation Schemes

Pathology in construction... where do we stand?

WP2: Building pathology

ELIOS II forum meeting-1
Brussels – 2012 March 20

Menu

- Call of tender
- Key questions
- Definitions, concepts, types of risks
- An example
- The proposal
- Planning
- Questions

WP2 addresses the following requirements of the call for tender

"Development of an EU-wide knowledge base on quality indicators in construction and building pathology"

Objectives:

- To develop indicators and a mechanism to monitor the evolution of quality in construction and pathology related to construction design and techniques and the integration of eco-technologies;
- To make this information available in a pilot database.

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Objective: ‘Quality’ is a series of criteria, characteristics or performances…:

- Clients’ specifications;
- Compliance with building regulations and standards/norms;
- Qualification of construction professionals, companies, persons;
- Certification of products, processes;
- State of the art

‘Building pathology’

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Building Pathology : the study and diagnosis of defects and damages of a building

- Provides a detailed knowledge of how buildings are constructed, used, occupied and maintained, and the various mechanisms by which their structural, material and environmental conditions can be affected.

Pathology and insurance

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- So: the pathology knowledge is supposed to be necessary to know the risks and make a better risk assessment.

Key questions

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- Which risks?
- How, and for what purpose, do they use information on pathology:
  - *Qualitatively*: for defining preventive actions, building control and inspection items;
  - *Quantitavely*: for establishing the risk coverage and insurance premium.

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d) Inappropriate maintenance and operation, so that a certain performance (for example energy consumption) cannot be achieved until the end of the guarantee period; or even healthy/safety risks.

e) Gradual disruption;

Example: Heat pump

Quick scan from literature:

- In general defects have not to do with the product or the installation, but with the design and esp. the whole concept for heating, ventilation, cooling and the building quality → lack of integral design and lack of coordination of installation disciplines;

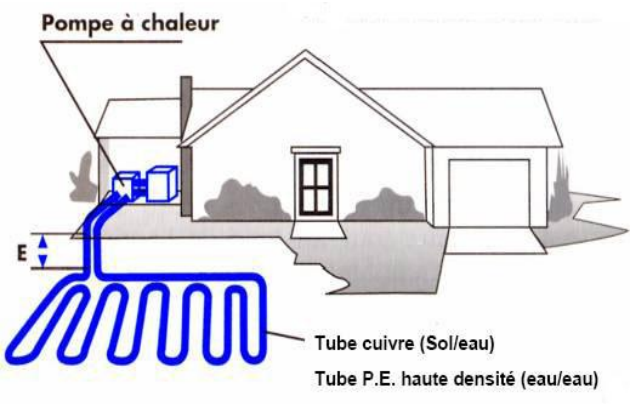
- There are some papers on defects and user problems (higher energy use than expected), but no data bases with defects, or how frequent these defects occur.

Example: Heat pump

Specific design problems mentioned:

- Installation is not getting warm enough:
  - The heat pump is too small;
  - The installation is not fit for low temperatures;
  - The natural heat source is overloaded;
- The installation is using too much energy:
  - The heat pump is too small;
  - The desired delivery temperatures are too high;
  - The natural source is overloaded;
- The operating life time is too short:
  - The heat pump is too big;
  - The heat pump can only switch on and off and has no intermediary steps (different compressors);
  - The heat pump is continuously overloaded.

An example



« geothermal » Heat pump installation

Life cycle phases	Design	Product characteristic	Installation	Usage period/ Maintenance
Context (depends on country)	requirements	requirements	Installation requirements	Maintenance requirements
Risks	No integral design	Not reaching requirements	Lack of coordination	Non-performance
Pathology (damage/ defect/cause)		…….	…….	Higher energy use than expected

Insurance concepts

- In insurance a claim is defined by a ‘technical cause’.
- If there are two causes for the same damage, it constitutes two claims (and therefore two deductibles).

→ Database should contain information on damages and ‘technical causes’.

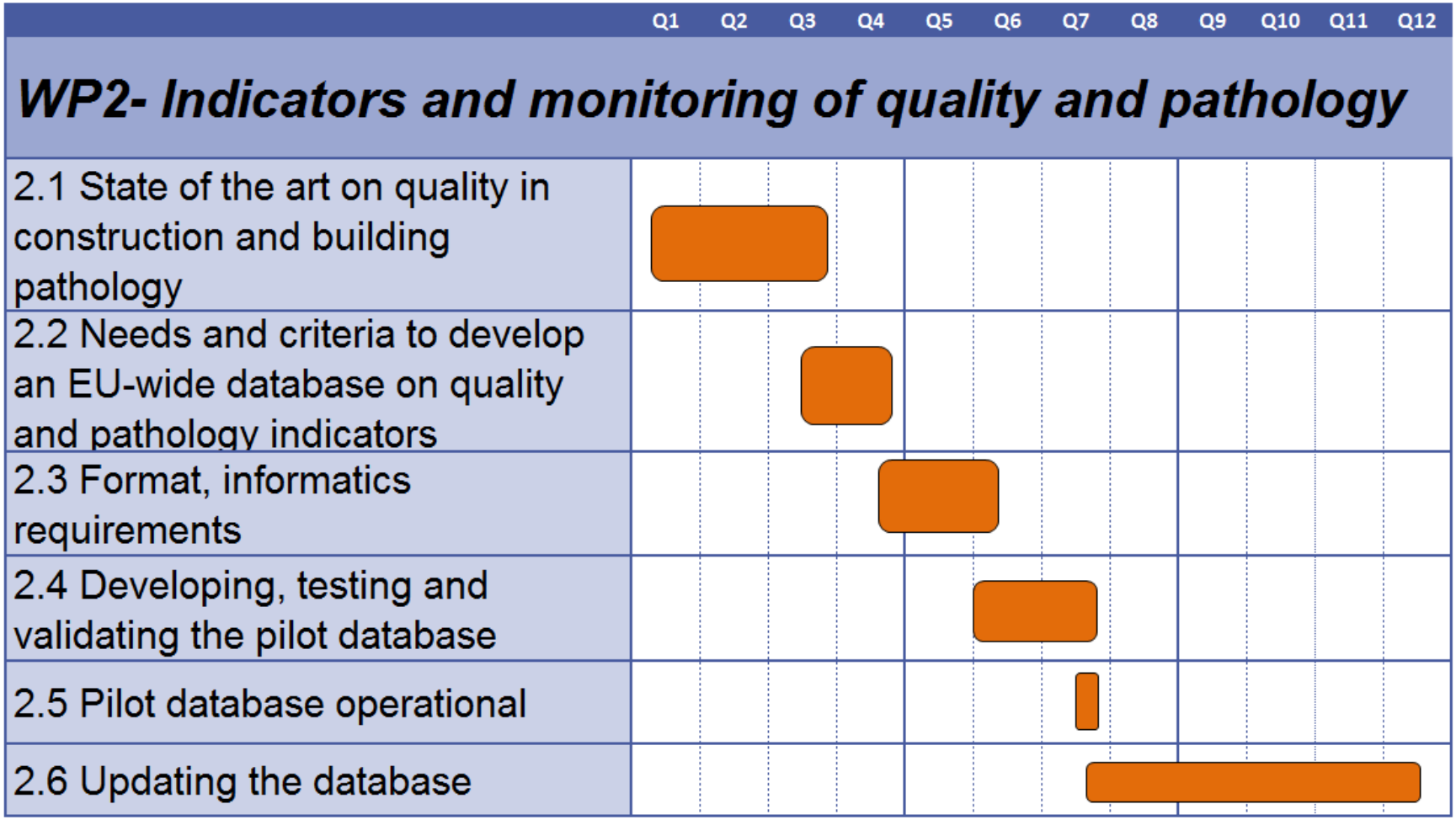
Structure of database, example

Claim ID	*Name of risk / owner*	*Loca-tion of risk*	*Date of claim*	*Begin-ning / End of construc-tion*	*Damage*	*Defective part*		*Technical cause*	*Insurance info*		
						Type of product	Descrip-tion of defect		Type of guaran-tee	Name insure d	Cost of claim
01					Fire - Whole building burnt		Electric wire of the heating pump	Wires not protected from rain. Installer forgot to install them in some places.			
02					Collapse of the building		Failure of the Column n°25 in the second basement	Effective quality of the wood does not comply with requirements : 10 MPa			
								Some assembly reinforcements foreseen in the design where missing			

Proposal

1. State of the art on quality in construction and building pathology
   - Definition of ‘construction quality and ‘building pathology’’;
   - Review of existing research work and data sources;
   - Selection of 10 eco-technologies
   - Assessment of the value of the existing research work, data sources
2. Needs and criteria to develop an EU database on quality and pathology indicators
   - Analysis of the needs and of the criteria
   - Program of requirements for the pilot database
3. Setting up a format for the database, validation, data requirements
4. Development, testing and validation of pilot database

Planning


Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
WP2- Indicators and monitoring of quality and pathology
2.1 State of the art on quality in construction and building pathology
2.2 Needs and criteria to develop an EU-wide database on quality and pathology indicators
2.3 Format, informatics requirements
2.4 Developing, testing and validating the pilot database
2.5 Pilot database operational
2.6 Updating the database

Questions

- Access to information on building pathology with insurers
- Participation of insurers and stakeholders in round table discussions