WP2 Building pathology – progress

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Overview presentation

- Short reminder of objectives
- Program of work and planning
- WP2 activities June – December 2013
- Illustration of the description of a pathology case
  - PV-panels with a fire risk
  - Thermal cellulose wadding insulation.
- Next steps

Overall objectives of WP2 (reminder)

- Development of an EU-wide knowledge base on building pathology, that could support (re)insurers in their risk appraisal of new innovative technologies, especially eco-technologies.
- To make collected information available in a *pilot* database.
- Its primary goal is to create a support mechanism which will allow construction actors and (re)insurers in EU-27 to share information on pathology.

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

Program of work

- 1. State of the art on building pathology
  - Definition of ‘building pathology’;
  - Review of existing research work and data sources;
  - Developing a questionnaire;
  - Collection of information on availability of data sources and pathology data for 10 selected eco-technologies;
  - Assessment of the value of the existing research work, data sources
- 2. Needs and criteria to develop an EU knowledge base
  - Analysis of the needs and the criteria of insurers;
  - Program of requirements for the pilot database;
- 3. Format and informatics requirements for the database, including validation
- 4. Developing, testing, validating the database
- 5. Filling the database with pathology cases

Planning

	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19	M 20	M 21	M 22	M 23	M 24	M 25	M 26	M 27	M 28	M 29	M 30	M 31	M 32	M 33	M 34	M 35	M 36
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																																				

Colour coding		
	Green	Finished
	Orange	In progress
	Grey	A future deliverable

WP2 activities Jun-Dec 2013

- Finishing the specifications for the EU pathology database for eco-technologies, including the IT-related aspects.
- Validating the proposed pathology database architecture by introducing the information from a number of pathology cases into the database.
- Meetings and discussions with the WP2-project partners and other potential external organisations, on their possible contribution to the EQEO.

Output-screen, to select the pathology cases

PRINT

FREE SEARCH

In the following table you can specify the criteria for selecting the pathology cases:

items	*= /≥ ≤*	*selection criteria*	*remark*
Type of eco-technology - category	=	predefined categories, plus empty field for free search text	all eco-technologies by default
Specific type of eco-technology		*free search text, for example *insulation**	
Countries where the construction work of project were executed	=	predefined categories	all countries by default
Geo-climatic character of the location of the construction work or project	=	predefined categories, plus empty field for free search text *free search text, for example *facade**	all geo-climatic characters by default
Type of construction work	=	predefined categories, plus empty field for free search text *free search text, for example *office**	all construction works by default
Works/projects executed between .... and	≥≤	≥ 01-05-2010 ≤ 01-07-2012	default selection: ≥ 01-01-1970 ≤ present
Date of the defect/failure	≥≤	≥ 01-01-2011 ≤ 01-12-2011	default selection: ≥ 01-01-1970 ≤ present
Type of defect/failure	=	predefined categories, plus empty field for free search text *free search text, for example *warranty**	all defects/failures by default
Defective/failed building component	=	Predefined categories	all components by default
Consequences/effects of the defect/failure	=	Predefined categories	all conseq. by default
Cause of the failure/defect	=	predefined categories, plus empty field for free search text *free search text, for example *installation**	all causes by default
Quality signs involved	=	Predefined categories selection on specific type of quality sign: *name of the sign*	all signs by default
Lessons learned	=	*free search text, for example *control**	

OK

Output screen: results

Number of results desplayed (by default: 10): 5

RESULTS OF THE SELECTION CRITERIA

Type of eco-technology (sorting)	*Type of defect/failure*	*Cause(s)*	*Effect/consequences*	*Type of source*
heat pump	functional failure	product manufacture	Lack of performance with regard to energy yield	literature
heat pump	system failure of components	other	Material damage of the building	claim

Total numer of hits: 2

when you click on a line you get a pdf with the complete description of the pathology case

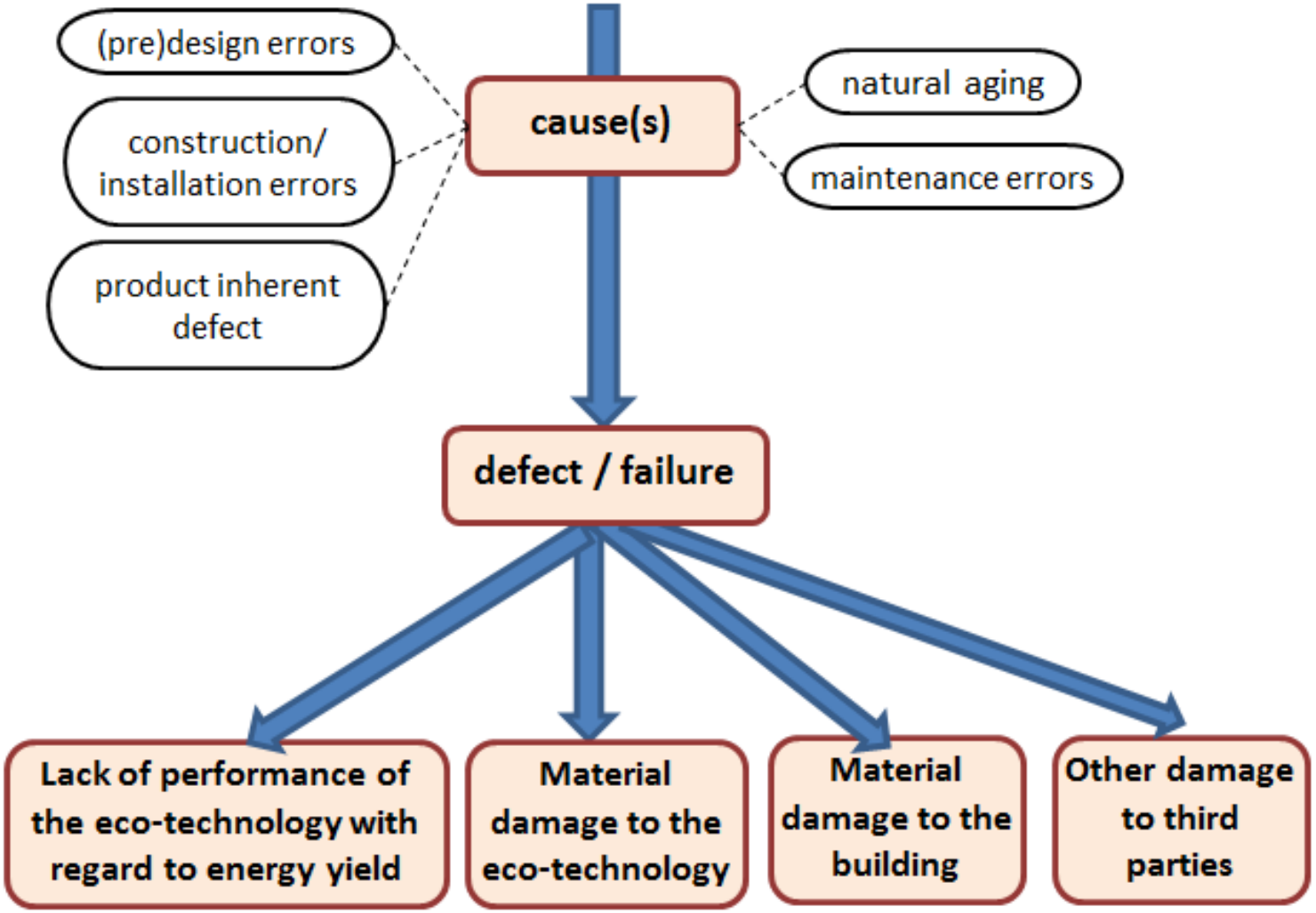
EXPORT

Example of PDF export of a building pathology sheet

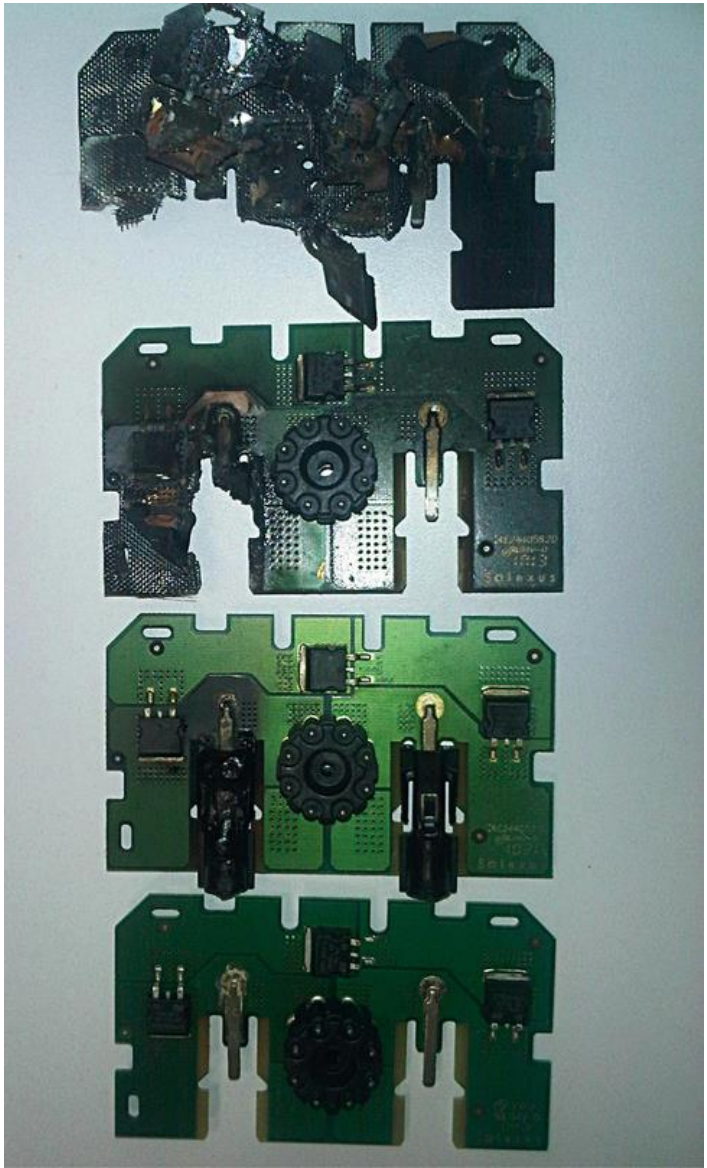
Pathology sheet (as pdf, when you click on a line in the results-screen)

Name of information provider: NHBC
Date of filling in this pathology record: 2013-12-13
Source
Type of source for the description of the pathology case: Inspection report
Name/title of the source: www.greentower.uk
Construction work where the eco-technology is installed and the defect/failure occurred
Name of construction work or project: The Green Office Tower
Country or countries: UK
Town: London
Geo-climatic character: Near the coast
Type of construction work : New / Office building / high intrinsic technical risks
Starting date of the work : 2010-01-01
End date of the work : 2012-01-01
Has the construction work or project been completed? : yes
Was there a completion survey: yes
If yes, what was the date of the completion survey? 2011-12-30
Technical Inspection Service (TIS) contracted?: no
Eco-technology
Type of eco-technology involved in the defect/failure: PV-panels
Specific type of eco-techology: Superimposed PV panels
Description of the defect/failure
General description of the pathology: defective power supply caused fire
Type of defect/failure: System failure of components
Defective building component: Other: power supply
Failed building component: Other: PV-panel
Type of consequence/effect: Material damage to the building
Was the defected product repaired or replaced?: Not yet
Has the cause of the defect/failure been analysed, or is it known?: Yes
If yes, what has been the cause (global or in detail)?: Construction/installation problems
Other, please describe the cause:
Quality signs and qualifications
Were there quality signs in place at time of construction?: yes
Type of quality sign related to the ecotechnology: Products and competences
Name of quality sign: Qualibat, Avis Technique
Is the contractor/installer specialized in that technology? : 5-10 years of experience
Lessons learned: Don't know
Other comments or remarks:

Description of a defect/failure



1st case: Scheuten Multisol PV panel



Defects/failures

Scheuten Multisolar PV-panel case	
Name of information provider:	BBRI
Date of filling in this pathology record:	2013-09-10
Source	
Type of source for the description of the pathology case:	Based on literature, research papers, defect information sheets, website
Name/title of the source:	www.vwa.nl "NVWA warns for flammable solar panels"
Construction work where the eco-technology is installed and the defect occurred	
Name of construction work or project:	15 known cases in EU
Country or countries:	several European countries
Town:	650.000 installations placed in EU
Geo-climatic character:	Several
Type of construction work:	New and existing Individual housing/dwellings
Starting date of the work:	Don't know
End date of the work:	Don't know
Has the construction work or project been completed?:	Yes
Was there a completion survey?:	Don't know
Technical Inspection Service (TIS) contracted?:	Don't know

Eco-technology	
Type of eco-technology involved:	Photovoltaic panels (PV's)
Specific type of eco-techology:	Polycrystalline Superimposed PV panels, Types Multisol P6-48, P6-54, P6-60 and P6-66, supplied in the period August 2009 to February 2012 by Scheuten Solar Systems.
Description of the defect/failure	
General description of the pathology:	In these solar panels there is a faulty electrical connection with a fire risk. These solar panels have caused 15 roof fires in several EU countries. A cable in the junction box behind the solar panel makes a poor contact with the PCB. This may cause sparks and can make the housing of the terminal box damage, melt and smolder. Then sparks can skip to the roof and cause fire. This risk increases as the sun gets stronger and as the solar panels age.
Type of defect/failure:	Defect or failure of materials
Defective building component:	Power supply of PV-panel
Failed building component:	PV-panel
Type of consequence/effect:	Material damage to the eco-technology itself / Material damage to the building

Was the defected product repaired or replaced?:	Not yet
Has the cause of the defect/failure been analysed?	Yes
If yes, what has been the cause:	Other
Other, please describe the cause:	Faulty electrical connection in the junction box behind the PV-panels causes sparkes and makes the housing of the terminal box melt and smolder. The risk increases as the sun gets stronger or as the PV-panels age.

Quality signs and qualifications	
Were there quality signs in place at time of construction?:	Yes
Type of quality sign related to the ecotechnology:	Don't know
Name of quality sign:	Don't know
Is the contractor/installer specialized in that technology?:	Don't know

Lessons learned:	For now a good solution hasn't been found. When a save method is available the NVWA will post it on its website www.nvwa.nl. Owners of the PVinstallations are to be advised to contact a installer and to have their installation safely turned off by an installer (risk for electroshock!).
Other comments or remarks:	The manufacturer went bankrupt and neglects to take appropriate measures and/or responsibility in this case.

2nd case: thermal cellulose wadding insulation

- Eco-technology: Cellulose insulation waddings (with addition of ammonium salts), used as thermal insulation in homes that can be blown in lost roofs , blown into walls or projected by flocking.

Description of the pathology

- In humid weather conditions , ammonium salts can react with water molecules and produce ammonia (gaseous state). Inhalation of ammonia has a health risk.
- Due to the high volatility of ammonia , it could enter the living room.
- Moreover, the ammonium salts are used for their flame retardancy (either flame retardant), their degradation - and thus their loss of efficiency - may increase the risk of fire.
- -
- *Type of defect/failure:* 'Irreversible defect/failure'
- *Type of consequence/effect:* 'Other damage to third parties (including situations with a risk for health and safety)'
- *Cause:* 'construction/installation problems. Ageing and degradation (biological, chemical, physical, mechanical)'

Next steps

- Developing of the IT-tool for the pathology database /EQEO
- Set up of the organisation for populating the pilot database with information on pathology of eco-technologies, and collecting this information in the EU
- Further orientations on the future set-up (organisation, business models) for the EQEO after Elios2

About the EQEO (reminder)

- EQEO: Eco technologies Quality European Observatory
- The EQEO is a pilot database making extensive information on some eco technologies available at the European level

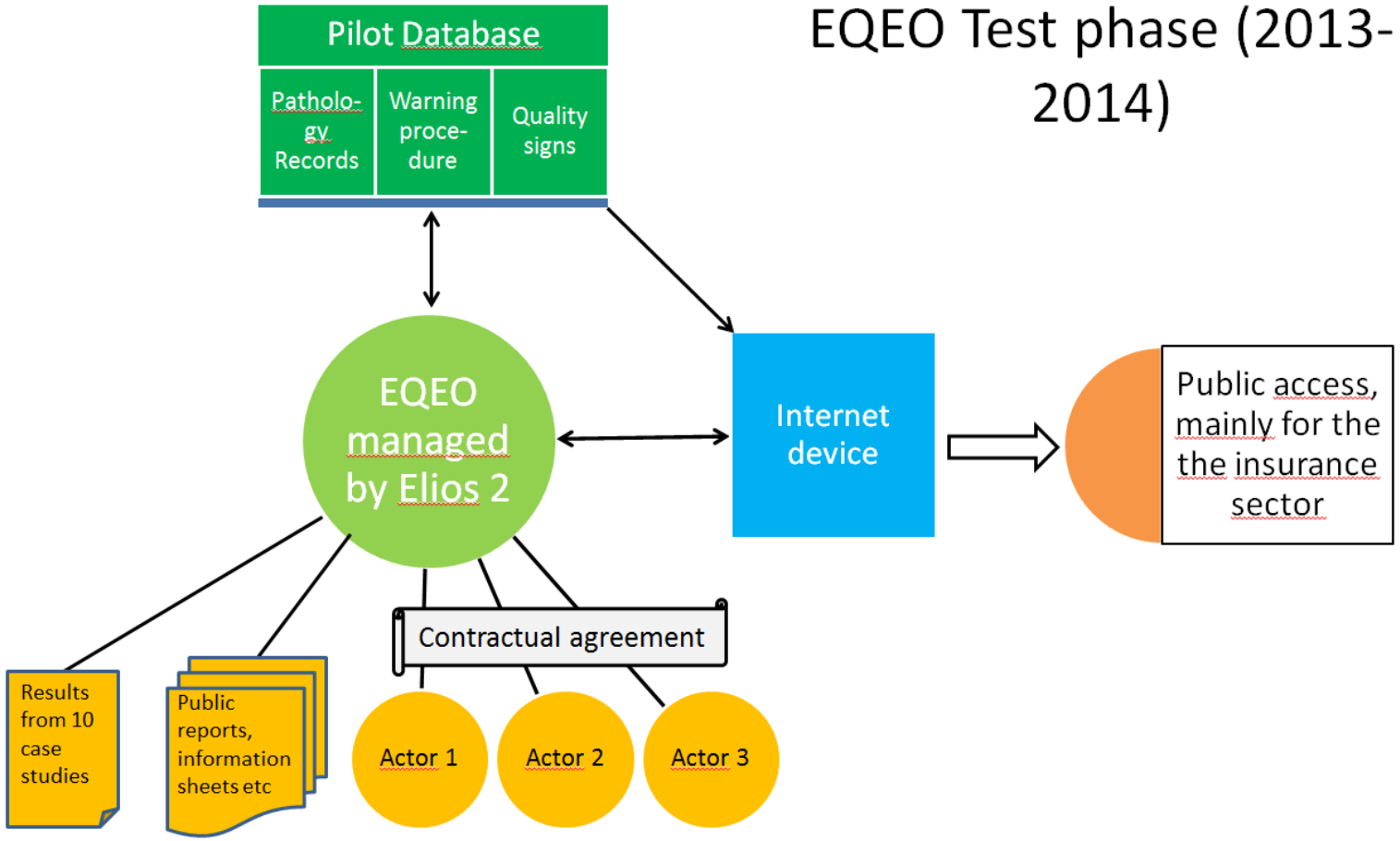
Objectives (reminder)

- To promote the quality of eco-technologies used in the construction sector
- To support insurers in their risk assessment and, consequently, to facilitate the access to insurance, especially for SMEs

EQEO: two phases

- Test phase (2014): pilot database managed by Elios2 and focused on a limited scope (3 ecotechnologies)
- Project for the future (after Elios2): towards an European Observatory!

About the EQEO (reminder)



EQEO: choice of three eco-technologies

- Criteria:
- The selected technologies are expected to be clearly identifiable, mature enough, available on the market and commonly applied in most EU-countries.

EQEO: choice of three eco-technologies

- Photovoltaic Panels (PV's)
- Ground source heat pumps
- Bio material based insulation

EQEO: main lines of the contractual agreement

- Organization of the platform of exchange *between the partners*:
  - Commitment of the different signatories to communicate on the information they have got about the pathology (input)
- Role of the EQEO *towards the public* (output)
  - Treatment and dissemination of the information
  - Functioning and responsibilities

EQEO: a call for interest from the EC

- To the representatives /stakeholders of the insurance and construction sectors
- To the possible partners: national actors holding some records or databases about pathology for their markets

EQEO: possible partners

- Two key national actors have already confirmed they are, in principle, interested
- The contacts with three other ones are in progress

Topics for debate

- How can the Forum help the Elios team with providing relevant pathology cases to fill the pilot database?
- Any suggestions for the EQEO?

Thank you for your attention

There may be other questions