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KnowRISK

Know your city, Reduce seISmic risK through non-structural elements

Prevention and preparedness projects in civil protection and marine pollution. Prevention Priorities

Deliverable Report

Deliverable D2 – Giving voice to building sector stakeholders and to end-users

Task D – Approaching target communities

Deliverable/Task Leader: IST & LNEC

March 2018

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Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Preface

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1.1 INTRODUCTION

The purpose of this task is to hear the opinions of designers, practioners, other stakeholders and the general public about practical measures to reduce risk from non-structural elements and obtain contributions that help identifying priorities and the most representative and relevant elements. This will help in building the main tools that the project will yield, the Practical Guide (Task E1) but mainly the Portfolio (Task C4). It is also intended to spread information to help stakeholders as well as the general public to reduce seismic risks due to non-structural elements.

This task comprises action in the three countries participating in the project.

1.2 ACTIONS IN PORTUGAL

This action started with the first project Meeting, held in Lisbon in February 2016. Several stakeholders were invited, but sucess was small, as few accepted the invitation. The companies present were CTT, that manages postal services troughtout Portugal, and Jerónimo Martins, one of the largest supermarket chains in Portugal. Even though the number of participating companies was small, this preliminary contact was relevant as it allowed the identification of the major concerns of these very large stakeholders.

After the kick-off meeting owners and operators of some of the main infrastructures providing vital services to a country (electricity, water, communications, transports, food distribution, commerce, industry) were contacted. The KnowRISK project wants to know their awareness, interests and concerns on this topic, as well as to learn whether they are willing and able to start taking actions. Some meetings were undertaken:

EDP (Energias de Portugal) - 2 May, 2017

The main electric energy supplier to domestic and industry costumers. A first meeting served to present the project. Later the company identified what are the non-structural elements that can cause major damage in its facilities and provided some technical solutions to the problems. Some of these solutions were considered in the KnowRISK Portfolio of Solutions. EDP communicated to the various enterprises comprising EDP Group the interest in this topic.

Olivais markets - 24 March, 2017

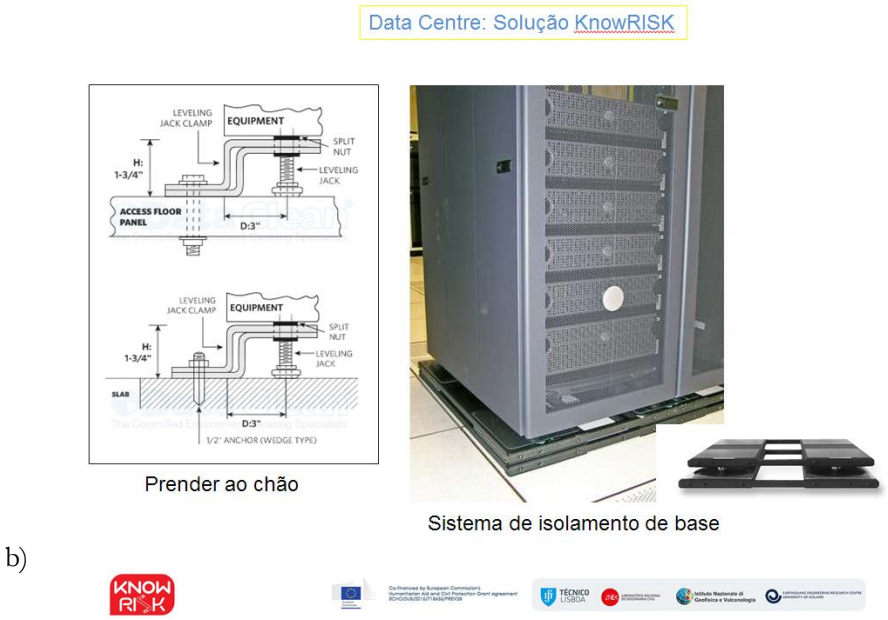
Four large markets where several fresh products (fish, meat, fruit, vegetables) and other products are sold to the general public were visited. The KnowRISK team interacted with shopkeepers, presented the project and discussed measures to reduce non-structural risk in the market.

Meetings with other stakeholders took place in the months of July to November 2017. The meetings were in-person interviews, of one hour duration and the KnowRISK team presented a power point (Figure 1) explaining the project and asking the collaboration of the stakeholders for the completion of the Portfolio of Solutions. In Figure 1 we present two slides of the power point presented, one with the list of most important NSE and the second with an illustration of technical solution to reduce of NSE damages. The Practical Guide, the "Move, Protect and Secure" video and a premilinary version of the Portfolio of Solutions were distributed to the participants. The KowRISK researchers visited some facilities of these organizations and identified vulnerabilities and good practices. For each meeting a roadmap was prepared according to the topics that each stakeholder would probably be more interested in.The meetings were very productive with the discussion about the main non-structural elements concerning each stakeholder.

PORTFOLIO
LISTA DE ELEMENTOS NÃO-ESTRUTURAIS

nº	Componente	Life Safety	Property Loss	Functional Loss	Required Interventi	Priority
1	Televisões e monitores de trabalho (fixados)	H	H	L	DIY	H
2	Armários com material perigoso (laboratórios, farmácias, escolas)	H	M	H	DIY	H
3	Armários técnicos/bastidores (para computadores, comunicações)	M	H	M	NE	H
4	Extintores e armários	M	H	H	DIY	H
5	Condutas de climatização/ventilação	M	H	L	NE	H
6	Estantes e prateleiras (metálicas, madeira, etc.)	H	M	M	DIY	H
7	Armários, roupeiros e cacifos	H	M	M	DIY	H
8	Luzes de bloco operatório, Pantógrafos	H	M	M	NE	H
9	Luzes fluorescentes, candeeiros de tecto	H	M	M	NE	H
10	Esculturas, quadros, vasos, obras de arte (pesado)	H	L	L	DIY	H
11	Tectos falsos	L	H	H	NE	H
12	Computadores, torres, impressoras, acessórios, etc	L	H	M	DIY	H
13	Cobertura (entrada de hotel)	H	H	M	ER	M
14	Tectos falsos	H	H	H	ER	M
15	Paredes de fachada e empena em alvenaria	H	H	H	ER	M
16	Revestimento de fachadas: colados	H	H	L	ER	M
17	Revestimento de fachadas: ancorados	H	H	L	ER	M
18	Painéis pré-fabricados	H	H	M	ER	M
19	Paredes interiores em alvenaria	H	H	H	ER	M
20	Parapeitos, cornijas, balaustradas, elementos decorativos (frontões)	H	H	L	ER	M
21	Escadas de serviço exteriores	H	M	H	ER	M
22	Botijas de gás, botijas de gás comprimido	H	H	L	ER	M
23	Termoacumuladores, caldeiras	H	H	L	ER	M
24	Pavimento flutuante (técnico)	M	H	H	ER	M
25	Divisórias de vidro	M	H	M	ER	M
26	Paredes interiores em pladour	M	H	H	ER	M
27	Antenas	M	M	H	ER	M
28	Elevadores	M	H	H	ER	M
29	Toldos e publicidade	H	M	M	ER	M
30	Fachada em blocos de vidro	H	M	M	ER	M
31	Fachadas de vidro	H	M	M	ER	M
32	Chaminés	M	M	M	NE	M
33	Biombos	M	M	M	NE	M
34	Geradores	L	M	H	ER	M
35	Painéis solares	L	H	M	ER	M
36	Transformadores	L	H	H	ER	M
37	Estuques trabalhados	L	L	M	NE	M
38	Frigoríficos e electrodomésticos	L	L	M	DIY	M
39	Quadros e objectos de decoração (Practical guide)	L	L	L	DIY	M
40	Quadros eléctricos	M	M	M	ER	L
41	Tanques	M	M	M	ER	L
42	Baterias/suporte de baterias	L	M	M	ER	L
43	AVAC	L	M	M	ER	L
44	Ar codicionado (caixa exterior)	H	L	L	NE	
45	Marquises (vidro e cerâmica)	H	M	L	NE	
46	Varandas (edifícios antigos)	H	H	M	ER	M

a)



b)

Figure 1: Examples of power point presentation figures used in stakeholders meetings: a) List of most important NSE; b) example of solution to reduce NS damages

The following meetings took place:

METROPOLITANO DE LISBOA - 6 July, 2017

A total of eight participants from METRO (engineers and architects) and three from the KnowRISK team. A list of non-structural elements with their priorization was sent and the company identified the main non-structural elements that can cause cause major damage in its facilities and provided significant technical solutions to the problems. Some of these solutions were considered in the KnowRISK Portfolio of Solutions.

EPAL (Empresa Portuguesa das Águas Livres, SA) - 7 July, 2017

A total of five participants from EPAL (engineers and architects) and three from the KnowRISK team. A large list of non-structural elements with their priorization was sent to the KnowRISK Team.

SONAE MC - 21 July, 2017

SONAE is one of the largest supermarket chains in Portugal. The main problem in their stores is related to the shelves which are not fixed to the floor or to strong walls. Their policy is to renovate frequently their store layout. This poses a considerable number of problems which were pinpointed by the KnowRISK team. A list of non-structural elements with their prioritization was sent.

They apply textile ducts for air conditioning in their supermarkets instead of traditional spiral or rectangular steel ducts, which is a good protective measure.

They were very interested in dissemination of KnowRISK solutions to their personel and enterprises of the Group.

IKEA Portugal - 2 August, 2017

Two participants from the IKEA Loures Communication Department were present. IKEA Country communication manager mentioned their campaign "Bem Seguro" and asked our opinion on need contents. We have sent the "Move, Protect & Secure" spots campaign, as well as the Practical Guide, but their present objectives do not contemplate earthquake threat. Unfortunately, the IKEA team was not aware of this topic because they where interested only in Marketing.

The main problem in this type of business is the existence of very high shelves (storage racks), full of heavy materials and without any seismic restraints, presenting a high risk to the customer and staff.

In a separate visit to the recent inaugurated IKEA Loulé (Algarve) store we found that the rack storages were better prepared to resist seismic action than what we saw in the Lisbon facilities (Loures and Alfragide).

JERÓNIMO MARTINS - 23 August, 2017

Just one expert from Jerónimo Martins was present. The main problem in their stores is related to the shelves, rack storages and suspended ceilings.

As in the case of SONAE, Jerónimo Matins applies textile ducts for air conditioning in their supermarkets instead of traditional spiral or rectangular steel ducts, which is a good protective measure.

A metallic frame to anchor tiles to the walls is used in Colombia, in Jeronimo Martins supermarkets. They are now trying to apply this technology in Portugal.

CP (Comboios de Portugal) - 25 August, 2017

Several experts (engineers and managers) were present. CP Comboios de Portugal is a Group concerned with stations, trains and traffic. The maintenance of rail roads and the managing of the trains are in another stakeholder (IP- Infrastructures Portugal). Their main problems were with the stations where the population concentration is very high. They are much concerned with all problems related to the presentation of the correct indications to the public. So all placards with information should be functioning in rush hours or when anouncements are needed. The access to the platforms to enter the station and the cars is of great concern as well. Another concern is with all the old buildings that still house a great number of services and museams, stores, etc. They consider that an Earthquake Early Warning (EEW) might be of great value.

A large list of non-structural elements with their priorization was sent to the KnowRISK Team.

NOS (telecommunications and entertainment group) - 7 September, 2017

Only one expert was present. Like other stakeholders, the main call centers concentrate most of the problems. A list of non-structural elements with their priorization was sent to KnowRISK Team. A problem identified not only in this stakeholder is the emergency evacuation. In general these new structures are not plenty aware of this problem and a note should inform their managers of the dificulties posed to this situation. Even in normal times the concentration of employees is very large at rush hours, provoking lines to enter the elevators. Building architecture is not prepared for emergency evacuation.

IP (Infraestruturas de Portugal) - 23 October, 2017

Two Engineers were present in the meeting. Infrastructures of Portugal is a stakeholder in charge of maintenance and future developments of all roads, railways, bridges, tunnels, etc., as well as trains. A list of non-structural elements with their priorization was sent to KnowRISK Team. Main concerns are with the functioning of most arches of their lifelines and try to keep to a minimum the non-operational period of all facilities. Further points not yet considered are the electric lines (catenery). They consider that an Earthquake Early Warning (EEW) might be of great value for reducing the speed of trains to Algarve.

CTT - 25 October, 2017

One engineer was presente. CTT is a company aiming at distributing the mail throughout the country. It has great traditions and a close relation with the population. They got very interested in the tools developed within KnowRISK and they propose to use all internal devices (Portal, Newsletters, etc) to disseminate internally the main findings of KnowRISK. They call the attention to the fact that they use lighter pipings coming from

the top roof (Solar Tubes), a new technology they are not prepared to deal with in case of shaking.

PT Altice - 23 November, 2017

A full group of technical experts (engineers, managers, etc) were present in the meeting. PT Altice is the new Communication Group in charge of most telecommunications in the country and to neigbouring countries. So they are very interested in non-structural measures to cope with all their facilities. The main building housing the decision center is full of devices of great criticality because they are responsible for all the communication traffic. Call center with all fracilities, store racks, computer racks, electrical power, suspended ceilings, control tables and man-power, all this is inside the same huge room. Large computer screens, table computers, large window panels, etc. complete a short list of important points. Outside they need antenas (on top of high buildings or communication towers on the floor) and all system need a great deal of redundancy. They also work with satellites and their supportive gadjets, optical cables, submarine cables, control centres, etc. They serve a huge number of customers which depend on them largely. For instance SIRESP, the system for emergency communications is part of PT Altice.

Non-structural elements resilience towards seismic risk has not always been considered a top priority for the company. Nevertheless a set of good practices are already in place. For example, equipment racks are fixed with thresded screws, electricity transformers have the wheels locked and flexible connections are used in pipes.

SIEMENS - 27 November, 2017

Two experts were present in the meeting. Siemens Portugal is a company that sells products of many kinds such as transformers, gas turbines, control centers, etc. They care for certification of what they sell. So a good performance is essential for their business. And information on non-structural element performance is of most interest for them, where earthquake resilience is considered.

As for the design of working places, earthquake safety is considered. Small cabinets are a rule. Higher cabinets are bolted to walls. Emergency plans are updated and trained regularly in drills and exercises.

The Main Considerations from stakeholder's involvement are:

Meetings with stakeholder need to be made with technical personel (engineers, architects, managers, economists, etc.). People from marketing, selling agencies, etc. are not interested in the topic of DDR and DDM.

The list of non-structural elements is not universal. Each stakeholder stablishes its priorities which may not be similar to the other stakeholders. The KnowRISK Team started with a set of priorities which were mainly reflecting the inhabitant's preocupations. This list is changed by each stakeholder and is costumized accordingly.

However, the preocupations rose by the stakeholders both at the joint meetings and from the material received by the KnowRISK Team were essential to understand the most common situations present and prepare the Portfolio of Solutions.

In general, owners and facility managers care very much about their facilities and equipment but they did not give value to the opportunity to present themselves as the benchmark in safety measures ("earthquake-proof" slogan or stamp). In some cases they simply inform their employees by internal channels of communication. However, organizations that give more importance to people's safety are those who have a large concentration of individuals (customers and employees) or must ensure that the service is guaranteed 24h/24h (e.g. super- and hypermarkets, call centers) (Ferreira et al., 2018).

Another problem is due to interdependencies. Many agencies have subcontracted companies for some specialized services. And these are not always obliged to cope with earthquake resilience, as this issue may not be included in the contract specifications. This is often the case of call centres that are subcontracted to specific organizations and are vital to the functioning of the companies.This question concerning earthquake resilience measures should be addressed when contracting outsource services.

1.3 ACTIONS IN ITALY

In Italy the action involved citizens and selected stakholders in the the Northern Italy pilot area and the Association of Engineers of Sicily in the Mt Etna pilot area. The aims were different: in the Northern Italy pilot area we collected opinions in order to tune up the risk communication to citizens, inlcuding the preparation of the Practical Guide; in Mt Etna pilot area we assessed professionals priorities useful for the preparation of the Portfolio of Solutions.

1.3.1. Northern Italy pilot area: Ferrara city

Ferrara (Figure 1) is a city of 130.000 inhabitants located in the Northern Italy pilot area and recently stroke by earthquakes, the 2012 Emilia sequence that caused extensive non-structural damage (Figure 2). The structure of the ancient centre of Ferrara, similar to many other Italian cities and villages at seismic risk, resulted to be a useful example of the necessity of raising participation in order to carry on effective prevention activities.

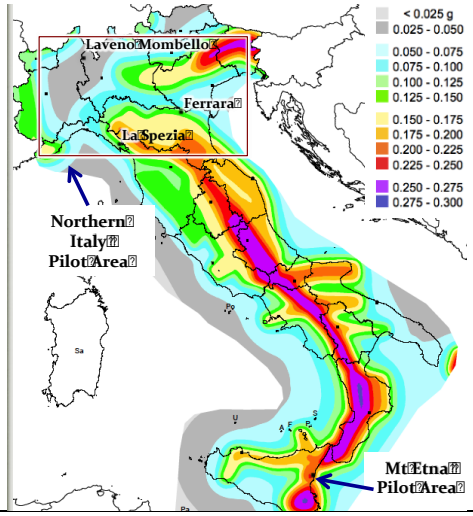


Figure 2a: The location of the city of Ferrara on the seismic hazard map (PGA for excedance probability of 10% in 50 years)

Figure 2b: an immage of a typical downtown street in Ferrara

Figure 3: Example of in-door non-structural damage caused by the 2012 earthquake

Stakeholders for Action D2 in Ferrara are citizens living in the downtown, local administrators, communication officers and relevant experts inside and outside the Academia. KnowRISK intercepts a public engagement path that started after the 2012 earthquake when the municipality promoted "Laboratori per la prevenzione del danno

sismico" (Laboratories for seismic damage prevention, referred now on as *The Laboratories*). KnowRISK analysed lessons learned, addressed needs and barriers to implement prevention of non-structural damage. The work was done within the partnership that KnowRISK established with the Master in Scientific Journalism and Institutional Communication of Science (MSC) at the University of Ferrara.

In 2012 the Emilia seismic sequence hit the city and found citizens highly unprepared. Earthquakes occurred in the past were not anymore in people's memory, as their story telling got lost over the decades and centuries.

The Municipality of Ferrara promoted several activities to help citizens work out the fear of earthquake and take actions towards prevention. Among of these there were participative events with citizens living in the downtown: *The Laboratories*, financed by the Emilia Romagna Region, that took place with the support of MGS and the participation of the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), the Ferrarese Naturalists Society, and the Waseda University of Tokio.

The Laboratories stood on participative democracy approach that relied on Open Space Technology, Urban Planning techniques, Focus Groups, Negotiating Tables. Participants had been 50 citizens living in the downtown and 20 experts representing a broad range of institutions and disciplines: university (engineers, geologists, historians, architects); Municipality (civil protection representatives, councillors for urbanistic and infrastructures, communicators); Civil Society Organizations (cultural heritage, urban renewal, social instances); professional associations (geologists, engineers).

Major achievements of *The Laboratories* had been (1) a **leaflet** listing **shared good practices** to mitigate seismic risk "10 good practices to make our home safer" (Figure 1_Italy); (2) a **serious game** to involve schools goers and citizens into risk communication, namely the "Playdecide- Earthquakes, when and how to communicate an emergency"; (3) a **participative proposal**, a formal document in which it was declared to City Council and approved by its members the need to implement strong communication and social cohesion actions by the public administration.

10 GOOD HABITS TO MAKE OUR HOME SAFER

1. KNOWLEDGE FIRST OF ALL: the site (down to bedrock) of your house, what interventions of the building over the years and what damage caused last earthquake

2. *NOT ALONE*: in the downtown buildings performance is depend on each other (building are attached one to the other). Actions for prevention must be done taking into account of your neighbors

3. **SOME MINIMUM INTERVENTION**: furniture anchorage, heavy objects on lower shelves, check on false ceilings, light furniture on higher floor bindings

4. UNBURDEN ATTICS: avoid storage of heavy and unnecessary objects in attics as they can overload

5. CARE FOR **ROOFS MAINTENANCE**: tiles may fall in case of shaking; tiles may only just move and cause water seepage that will lower performance of beams in case of shaking

6. **SECURE CHIMNEYS AND EVES**: chimneys, eves, balconies, ornaments can all fall in case of shaking

7. CHECK GUTTERS: they may cause damage to walls and reduce their performance

8. CHECK DRAINAGE AND WATERSPOUT: liquids spill may damage foundation

9. REMEMBERING THAT.... to have a proper knowledge on the vulnerability of your house you *need to ask to an expert*

10. **FINALLY, FIND A SAFE PLACE IN YOUR HOME**- You should not run away, unless you may quickly get to a safe open space; find a safe place in your house (e.g. a load bearing beam), make sure that exits doors are not blocked by furniture that may topple; make sure that a sturdy table, under which you may drop, cover and hold on, is in a safe place of your house.

Figure 4: The leaflet of "10 good habits to make our home safer " translated into English. Non-strucural element items are in Bold. The leaflet in Italian is in Appendix A

Ferrara is a laboratory itself where to understand what were the most successful paths to implement prevention and what did not work non matter the recent earthquake and the actions undertaken. The Ferrara case study involved the following three main steps:

1. **Analysis of the past** participative path on seismic risk reduction: strengths and weaknesses of the process, define the lessons learned and make them available for the Knowrisk project's further initiatives

2. **Involvement of citizens**, experts and key-stakeholders in co-designing a common strategy to reduce the seismic risk caused by non-structural elements of buildings (the Knowrisk Practical Guide).

The organization of Playdecide events in order to **engage the general public** and the school goers on the topic of earthquake communication and risk prevention (see Deliverable E2)

Analysis of past engagement experience and involvement of stakeholders were done with the focus groups and in-depth interviews methods.

Methodology and sample

The frame for the analysis was that of the discourse analysis (Manetti e Violi 1979; Bauer e Gaskell 2000); focus groups and interviews were transcribedand processed through the software Atlas ti (Paulus e Lester 2015). Main characteristic of this software is that it allows to preparing and organizing the data for analysis, then reducing the data into themes through a process of coding and condensing the codes, and finally representing it in description, images or figures. The coding went through a double check process: after the first codes generation – based on our research objectives, they have been discussed by the other members of the research, till reaching the definitive settlement, represented by the flow of this report. Appendix B includes the guidelines followed for the Focus Groups and in-depth interviews.

(i) Focus groups

Two focus groups were held with (1) citizens who did- and with those who did-not-participated at *The Laboratories*, but are living in the downtown. Major issues focussed were:

- memory of the earthquake
- memory of the Laboratories and their detailed results
- meaning of structural and non-structural seismic damage
- contents and media for risk communication, specifically for prevention

- comment on the booklet called "10 good practices to make our home safer"

proposal for an efficient risk communication

(ii) In-depth interviews

Between November 2016 and January 2017 we have selected 12 stakeholders based on their institutional and professional involvement in seismic damage prevention:

- involved in *The Laboratories*: (1) the responsible of *The Laboratories*, (2) municipality press release officer, (3, 4) two local civil protection officers
- members of Academia: (5) a social scientist, (6) a geologist (7) a structural engineer, (8) a member of the High Risk Committee
- architects: (9) an expert on cultural heritage and (10) on residential building retrofitting
- a professor involved in risk communication with INGV (11)
- a technical responsible of the local Church (structural engeneer, 12)

Stimula for the interviews were derived from the major highlights of the focus groups. Questions revolved around the following issues

- **Recollection** of the earthquake: most relevant elements of the story telling
- **Recollection** of the participative actions towards prevention that took place within *The Laboratories*
- **Seismic damage knowledge**: meaning, knowledge/relevance of the distinction between structural and non-structural
- **Seismic damage prevention**: definition, measures, enforcement and controls
- **Communicate** prevention: obstacles, contents and media for efficient prevention
- **Communication** and experts: understanding what they think their role, in terms of delivering messages on prevention, should be
- **Comments** on the leaflet "10 good practice for have safer houses"

- **Proposals** for a more efficient risk communication to general public

Results

Following the aims of the research and the characteristics of the qualitative research as narration of narrations (Melucci, 1998), the presentation of the results is organized in a table where, on the left column, the main evidences resulted per each topic are summarized; on the right one, the quotations of the interviewee make the evidence alive.

Main evidences	Interviews quotation pointing to the evidences
MEMORIES OF THE EARTHQUAKE	
In Ferrara, where damages have been limited to buildings, without human losses, **the first memory is linked to non-structural elements**. The earthquake is remembered as a **human experience**, producing fear and both reinforcing and weakening social relations. The stakeholders underline that **the memory of the earthquake gets easily lost**, also inside the experts' community itself.	*I went downstairs. All the neighbours were on the street… objects, cornices fell. (FG2)* *…being the building so close, a cornice can fell on me. What to do? There are squares a bit bigger and I thought I could try to reach them… I discovered that the urban setting is very important. (FG2)* *Everyone was very frightened, but I'm convinced that everyone has tried to do what they could in that situation ... as I did after all ... what I could ...(FG2)* *Human relationships are strengthened because solidarity comes out, but aggregation sites are lost (FG1)* *Even technicians are not used with the idea of earthquakes. But it can always happen, at any time… Certain things should never be forgotten…Everyone should always remember it, starting from the local administrators and the technicians. (Architect 1)* *In 2012, shortly after the shocks, many people participated to prevention initiatives. Since the next autumn there were fewer people.It always happened: after the initial shock, people tend to cancel the event and today the risk is denied. Within 10-20 years everyone forgets, not just the citizens. (Geologist 1)*
STRUCTURAL AND NON-STRUCTURAL DAMAGE	
In the lay-people perception, there is **scarce distinction** between the two terms. Even for the stakeholders closer to technical professions (civil protection, engineer), **to draw a clear and communicable difference is complicated**.	*When I think about an earthquake, I do not think on the damage from non-structural elements. I think that* ***if the house doesn't crash, then I will be safe****. I know that if a shelf falls down I can be in danger. Still, talking with many people after the shake, we were all relieved not to see cracks on the walls. The prevention stops there. (FG2)* *When the 2012 earthquake stroke, my son was a little baby. He used to sleep in my bedroom, just next to a drawer: on top of that drawer* ***a mirror was standing, not anchored****. The day*

	before the earthquake I decided that he should sleep in his bedroom. *And* ***the quake stroke****.... was horrible... and he's safe...* *He's alive just by chance. The mirror crashed into pieces.* *This is the image of non-structural damage that I have, my personal image. My home had structural damage, but that mirror is stuck in my mind. (FG2)* *Non-structural elements are extremely varying elements.* ***To ask a citizen to make a checklist it's impossible****. If you ask me - I am a professor on structural engineering - I would really need to concentrate to draw a list. (Structural engineer)* *People don't think about the difference. This is because they fear more that the buildings resists.* ***A heavy object falling on your head is just bad luck****. It could help make them aware of the weight of eaves or false ceilings.* *People don't think that* ***non-structural damage can occur also years after the earthquake****. Being the risk spread over time, the awareness and the memory progressively weaken. (Civil protection)* *The non –structural factor is secondary: risk is spread in time and is confused with the ordinary ageing of buildings and things.* *Usually a few people care about the countertops over their heads. You can tell people to fix wardrobes and bookshelves, but they react as "I cannot do it", "It's not my task". It happens something like with a smoker having heart problems; he thinks "why should it happen to me?".* ***Non-structural risk is part of the things that could happen to others****. The falling cornice is not considered a risk but an accident, while the collapse of the house is.* (Civil protection)
FROM THE LAY-PEOPLE PERSPECTIVE: THE EXPERTS' ROLE	
In the lay people narration, ***the*** **experts are both scientists** (academia) and **technicians** (in buildings' retrofitting and maintenance, installers). There is no distinction. Even for the simplest checks and evaluation of possible damages from non-structural elements, people need and ask advices by dedicated professionals. Lay-people do not consider that to	Moderator - *Let's start from this claim from our leaflet: "first of all, it is necessary to know our own house; the land where it has been built; the architrave under which to find a shelter; if the electrical, gas, and water systems are safe". Let's also be realistic: is that feasible?* Participant - experts have to do it, not us. (FG1) Moderator: *Also the house systems, like the electrical system, are non-structural elements…* Participant: for that we have to rely on technicians, to who built the system… The other checks…surveyors or the Civil Protection technicians or even the Fire Department technicians are in charge for inspections…

operate autonomously (do it yourself), - that is without asking advices to expert's even though they are provided with support by reliable websites or leaflets- as being neither effective nor efficient measure of prevention.	and professionals do not do it for free… Moderator: *According to you, if you were looking for information on how to make your home safe…You don't see structural damage, but you prefer to be sure. Where would you look for them? Who can provide them?* Participant: At a professional firm ... On the Internet, at Fire Dept., I would ask to my installer... There must be a third impartial actor that should ensure that the work is done properly; I always wonder ... I trust professionals, but how do I know their expertise? My electrical system is certified, but if there is a shock that causes something unpredictable it falls… I have to request intervention, and rely on someone competent (FG2)
FROM THE EXPERTS' PERSPECTIVE: CONFLICTING VIEWS	
While the non-expert citizens totally rely on the expertise of both academics (for the scientific explanations of the phenomena) and technicians (to check the possible risks at their homes), it is clear and well known that the experts themselves **are not a unique community**. On the contrary, every specialist shows to be critical towards the colleagues of other fields. **Better forms of dialogue among stakeholders should be studied and fostered, allowing a better *knowledge transfer and exchange*.** As a consequence, this would finally ensure a better dialogue with the decision makers, from an international level to the authorities governing the local risks.	*It is just a matter of normal construction rules, which are mostly common sense: fixtures paths should be done avoiding weakening structural elements. Walls are not just a container for tubes!* ***Installers are not aware of the problem. A better awareness should be raised***. (Architect) ***The check by an expert, someone you trust, is the best thing to feel reassured***. *Beyond all the recommendations, an expert eye can help. But here the question arises about the level of technicians' expertise and ability to intervene.* ***The knowledge and competence of technicians are not homogeneous****, there are so many different "schools" for historical buildings retrofitting...* (Geologist) *I remember that during the Laboratories a geologist asked a politician why the local seismic zoning was still at that poor level and claimed that much more should have been done. Then the Association of Geologists asked for greater investments in geological investigations. There was a bit of bad mood around: the institutions explaining the situation from the local administration point of view, on one side, the experts arguing, on the other.* *In the end, in between, there were the citizens, listening and feeling confused. Their question was: "So, what should I do to make my house safer?"* (Civil protection) *After the earthquake in Ferrara, we organized some initiatives dedicated to the seismic prevention, such as the Laboratories. During these meetings, good practices to prevent the seismic damage have been explained, even for non-structural elements.*

	The geologists said that Ferrara, after experiencing the earthquake, needed a seismic micro-zoning. This was their main concern. They argued that they were starting a big micro-zoning project, while the local administration was just limiting its actions to the production of a leaflet where to explain people how to make their attics lighter. (Municipality press office) ***A conflict had been triggered by some experts*** *who criticized us for inculcating the idea that individual citizens could do something autonomously to protect themselves from the seismic damage, while – in their view - it is always necessary to request the interventions by experts.* (Municipality press office)
INDIVIDUAL AND COLLECTIVE DIMENSIONS IN PREVENTION	
Prevention measures are dependent on two main factors: one, wider, based on the societal dimension and one, more specific, based on communication techniques. On the first, prevention can be successful only if citizens *participate* and, therefore, **if social cohesion measures are put in place.** On the second, an effective communication has to be based on a mix of techniques. At the base of both the dimensions, **the role of the institutions** (the local administrations first of all) **cannot be replaced by private entities, single citizens, or academia**. **At the individual level**, the reasons not to assume preventive measures autonomously mainly lie in a scarce awareness of the risk and a better trust in experts more than in their own possibility to make their places safer.	***Neighbours have to find an agreement and help each other*** *[in spreading information and in practicing trainings].* *After the Laboratories, I involved also other people leaving around me. We leave in an ancient building, from the fifteenth century. We met all together and checked the roof. I think it is something good to do: to keep a relationship with the neighbours doing something together. An earthquake is not a joke.* (FG1) ***Without a public institution that guarantees access to information, as well as access to training processes for all the population, we cannot talk about prevention*** *as an element of progress for the community.* *A shared training process, always supported by institutions, will give to all groups and individuals the opportunity to acquire useful skills and to have a positive impact on reducing possible damages, both during seismic events and in the recovery phase.* *The setting up of "houses of prevention" in every neighborhood could help. A milestone is what happened in the city of Milan in the 1970s; the workers' struggles passed from the factories to the living spaces in the more modest neighborhoods. A deeply-felt discussion on prevention started and the best centers for cancer preventions were born there, not in the rich areas.* (Sociologist) *There are other institutions besides the Municipality. I am thinking to the University, the volunteers' associations and the role they could play, the Civil Protection and the professionals' associations.* ***We should work on the awareness that building prevention paths can only be done when working together and that there is no a main actor****: the municipality can act as a coordinator, but the professional figures cannot be replaced. We must make sure that they are*

	recognized by the citizens. (Mayor's speaker) *We were aware that we can do little autonomously, or with an immediate effect. Though, it is necessary to continue to say that doing little things all together we build up a more resilient society. It is banal, but that's the base for building a culture of the seismic prevention, and also easy to communicate.* *Some experts didn't not just consider it. They refused it.* (Municipality press office)
COMMUNICATING THE RISK 1 - *THE LABORATORIES* AND THE LEAFLET "10 GOOD HABITS TO MAKE YOUR HOUSE SAFER"	
The experience of the Laboratories has been highly appreciated by the participants, both by lay-people and experts, **mainly for its objectives and methods used (participative democracy) more than for its actual results.** Some of them note that it turned into a political arena, exploited in some occasions for political uses than for practical ones. **The expectation of a continuation was unfulfilled**, while the local administration - who received the funds for the Laboratories under the Regional law for Participative Democracy - underlines the scarcity of further funding for this type of activities and its more general mission than that of the seismic prevention. **The leaflet "10 Good Habits"**, as practical result of the Laboratories, was not given enough value, not being spread enough and in the right places (i.e. building administrators). Despite the undiscussed value of its contents and overall positive judgment as a communication tool (readiness, layout, graphics), **its distribution was unsuccessful**. **Possible solutions** are a better involvement of **key-stakeholder** who can act as hubs for the distribution	*After the Laboratory i come back with a different perspective on my house, a different awareness.* *I fund the Laboratory useful when we worked in groups. I expected a follow up, though.* *It was a pilot experience. the Municipality should continue. It was not given value enough.* (FG1) *We as the Urban Center of the Municipality don't have the power to establish permanent activities on the seismic prevention.* ***Our mission is to enhance social issues also inside the Administration, engaging the citizens in participative processes****. Then we cannot give a continuity in time because* ***this process have to be transferred in other more appropriate contexts****. After the Laboratories, we delivered all the results to the offices that are in charge of fostering the seismic prevention.* *We are aware that we can improve our communication processes, but a certain continuity has been given in the last years organizing the evacuation plans and with dedicated trainings in schools, working places and neighborhoods.* (Mayor's Speaker) *The starting idea was good and very well designed. The Laboratory was focused on a certain group of citizens leaving a very vulnerable area, the ancient Castrum.* ***As well, the method was very effective, with group discussions, questions to the experts, confrontations – the only way to do effective communication, i believe****.* *To try to understand all together is the best communication chgannel.* *Instead, the results were weakened by a decreasing participation by the citizens, maybe because we were not able to take it out of an institutional aura. At the very end it turned into a meeting of experts.* (Civil Protection)

among citizens (i.e. buildings administrators), a monitoring phase of what people need to know about the measures stated in the leaflet (partly matter of this report) and a more careful dissemination during other engagement events in town (i.e. festivals, science cafès).	*We have to start from a* ***better distribution*** *of the materials the Municipality already have: the 10 Good Habits are very well written, they are clear, let's give them to friends and acquaintances. The* ***building administrators, starting from their associations****, should have it and distribute them during the annual meetings. Those are* ***occasions when people must listen, where their attention is focused****.* *And then they should* ***monitor what people did afterwards****: a questionnaire to understand what people did and did not for make their flats safer. (*FG1)
COMMUNICATING THE RISK 2 – OBSTACLES TO AN EFFECTIVE COMMUNICATION	
Choosing, elaborating and disseminating proper contents via proper tools for an effective seismic prevention is a task which can be realized by skilled professionals, through a rigorous research process, testing and involving their publics in a genuine co-production frame. However, **when talking about prevention, this apparently linear process clashes with lack of investments (both cultural and economic), political aims, conflicts among experts, bureaucracy routines, attitudes of the citizens who are invited to participate**.	*Citizens are simply not informed. Sociologists that say that science is a shared knowledge are wrong.* ***As a matter of fact, in the last 15 years, earthquakes caused heavy damages in areas at high seismicity, where very little prevention has been done.*** *We leave in a society where a lot of communication is produced in the field of prevention on all possible risks: criminality, illnesses, catastrophes… then all this mass of social consciousness is not assumed assimilated.* ***It is recognized but not translated into practice, in a collective action****.* (Sociologist) *We need to agree on the most efficient way of story telling... often communication campaigns are just a way to trigger political consensus.* ***Administrations often just want to say that they are doing a good job****.* (Municipality press officer) *There aren't guidelines for a good communication.* ***You must take into account local needs****: communication for a city like Rome is different than that for a town like Ferrara.* *... if I have a risk map I need also to deal with the contraction market, with buildings that may lower their value… information is linked to politics.* ***If the local administration communicates a risk to the population****, a solution must also be offered. We don't always have ready solutions.* (Civil protection) *Why we don't share the same idea of natural hazard? (1) because natural hazards have a large return period. The memory gets lost (... I heard that from my grandfather... grandfathers tell lots of stories... where is the truth); (2) there is no awareness towards natural hazards because we are used to be (or seek) in a zero-risk live.... we forget all the hazards that surround us...*

	they are different from zone to zone. (Geologist2) *To involve the citizens is not easy at all if they don't see an immediate effect. We expected much more participants to the Laboratories. Then we understood that it was important to work with the ones who came…* (Mayor's speaker) *People don't feel to have time to participate.* (FG1)
COMMUNICATING THE RISK 3 -PERSPECTIVES FOR A BETTER COMMUNICATION	
To build an effective narration of the seismic prevention, the main elements of the narration of an earthquake experience must be taken into consideration: • **actors**: defined the main target as the lay-citizens (school included) and the stakeholder in areas at risk, they must be involved since the very planning of the communication activities • **tools**: a mix of tools appear as the only solution for rising awareness and likely produce a change. The production of leaflets and other communication materials should be linked to face-to-face activities (e.g. in schools, during public events in cities squares, public conferences, and above all organized trainings/simulations) • **time**: ***repetition*** is the key-word. To reach an effective communication, periodic trainings, participatory arenas and events must be organized.	*Undeniable: to repeat what we have to do to protect ourselves is helpful.* ***Newspapers and websites published guidelines for the damage prevention****. However, if something as the 29th May [earthquake] happens, I do not honestly know where I have to protect myself… to find the external stairs… under the table… right…* ***we need to have adequate information. And periodical****!* (FG2) *Administrators of buildings, technicians in charge of the buildings' maintenance: they should be also involved in the communication of the seismic prevention.* ***They should be mediators of preventive measures.*** (FG2) *We, as citizens, should involve the people we know, and then somebody has to monitor what happens.* *Regular trainings at the building and neighbourhood level. Today they are obligatory in schools, public offices, big companies, but not in built up areas and blocks; this kind of events are worth "thousands of folders".* (FG1) *Invite the people, make them meet and talk, understand what are their ideas and needs. This is the best way to communicate.* (Civil protection)
BEYOND THE COMMUNICATION OF THE SEISMIC RISK: *OBLIGATIONS* AND *SANCTIONS*	
In a complex situation as that of the seismic prevention, • involving many actors • with an open conflict among experts • in a context where the institutions appear weak and politicized	*There are obligations imposed by law. On this base, we have to produce additional plans and documents proving that our retrofitting interventions respect the regulations.* *The Emilia Romagna region established that we have to arrive to reach a threshold of 60% of safety, so to allow the building to respond to the shakes and let the people escaping.* *On the other side, even if only five years passed from the earthquake, my clients tend to ask me if we can skip all that*

a clear solution for a better seismic prevention is that of the obligation, a law regulating what has to be done and avoided and sanctioned, also for non-structural elements. This topic comes to light in different narratives, both from the lay-people and the experts, since the very beginning of the interviews and group discussions. As a consequence, the theme of **who should control** is discussed, being the precondition for effectiveness.	*expensive measures. If there wasn't a law, they would skip the prevention.* (Architect2) Obligations and preventions, regularization of the buildings, certifications, ok. But, who checks that everything is done professionally? That certificates are produced? I've heard many times of an **identity card of the buildings**, how do we get there? *(FG2)* Obligations… the attempts to set a dedicated file per each building has been done after all the recent earthquakes. It has an economic and political price: politicians tend to do choices that take an immediate result. A file that describes the status of each building wouldn't take votes. The expenses for controlling the building cannot be charged on the community. The single owners have to provide them. The public administration should cover a widespread control and in Italy we don't have the structure. Just a sample check can be done. (Engineer)

1.3.2. Suggestions for the KonwRISK communication actions

This paragraph will highlight suggestions derived by stakeholders (including citizens) ideas and needs that can be usefull for the KnowRISK communication action.

Communicating the risk: testing the leaflet of "10 good habits to make our home safer" Three years later the most relevant product of the participative process resulted into: unfulfilled expectation for actions to be continued; appreciation was more for the participative democracy (lay people feel to be part of the process and they not feel left alone) than for its actual results; distribution was not successful

- Communication may involve **key-stakeholders** who can act as hubs for the distribution among citizens (i.e. buildings administrators), a **monitoring** phase of what people need to know about the measures stated in the leaflet (partly matter of this report) and a more careful dissemination during other **engagement events** in town (i.e. festivals, science cafès).

Non-structural damage is remembered only **when** there were **no building collapse** and/or **human losses**. It is remembered as a human experience producing fear and at

times both reinforcing and weakening social relations. However, stakeholders (both experts and citizens) underline that memories get **easily lost**.

- Communication should consider that **non-structural** is **perceived** as having a **low priority**
- Communication should work on the **memory**

Non-structural damage is not seen as a clear and isolated item, even among experts stakeholders.

- Communication should take into great consideration to make a clear distinction and a useful listing of what is Non-structural.

Lay-people seek for experts help. They do not feel comfortable operating on their own. They have been told this many times as all communication campaigns surf the motto "ask to an expert". The same is in the "10 good practice..." leaflet there is a clear suggestion to ask to an expert (advice n° 9).

- Communication of "do it yourself" practice that will be included in the KnowRISK Practical Guide should make a **clear cut on when is needed an expert and when not**.

Conflicting views from experts cause distrust by lay-people. Non-expert citizens totally rely on the expertise and feel left alone when they realize that experts themselves are not a unique community.

- Communication should include a better knowledge transfer and exchange

Prevention has a societal dimension and can be pursued within a participative process. The is not jus a low awareness, but lay-people rely so much in experts that they do not think they can act on their own to make their home safer.

- Communication should include participative dimension and **reinforce lay-people thrust in their own abilities**

Prevention has a communication dimension and is strongly dependent on the tools that are used. Lay-people ask for a mixture between high-tech and more traditional tool

- Communication should include a **mixture of tools** in order to reach the most lay-people needs

Prevention has an institutional dimension (e.g. administration) that should not be replaced by the community of experts

- Communication should **involve institutions**

Risk reduction is a matter of **obligations** and **sanctions**. This is a key concept in stakeholders' discussions. There is a demand for regulation also for non-structural elements.

- Communication should also refer to regulation

Finally we have to say that there is a common ground on the comments of stakeholders (lay-people and experts): it is the need unwillingness of being left on their own. This comes also out in the need for obligations and sanctions. Law is above all (erga omnes) and puts on citizens the duty for being informed.

1.3.3. Roundtables: feedbacks

Within the summer schools for earth science communication and education held at the university of Camerino (16-19 July) KnowRISK had a roundtable with school stakeholders. Teachers and schhols' principles coming from all over the country assessed the Practical Guide and Students' Short Guide as concerning their efficacy of communication.
On October 5th in Ferrara was held a roundtable to presents local stakeholders and citizens who had been engaged in KnowRISK focus groups and interviews the communication actions of the project in the participating countries. Project team members presented these in person.
They were also specifically involved in the evaluation of the KnowRISK Practical Guide and Short Students Guide. The general public very well accepted these tools; local civil protection and the municipality offered to distribute and print copies of them.

1.4 ACTIONS IN ICELAND

The EERC´s part in this action was to invite a set of building-related stakeholders to join the KnowRisk Special Session at the International Conference on Earthquake Engineering and Structural Dynamics in Iceland. The KnowRisk Special Session was held in the afternoon of the 14th of June 2017. A total of six stakeholders were invited to listen to KnowRisk presentations and give a 5-10 min talk on their perspective of earthquake damages, in particular on non-structural components, under a session called: Discussion with Stakeholders. Upon arrival at the Conference Hall the stakeholders were given a copy of the practical guide developed within the KnowRisk project. The stakeholders represented the following institutions and perspectives:

Mayor of town in a seismically active area that has been hit with both moderate (between M 5 and 6) and significant (between M6 and 7) earthquakes.

Icelandic Standards (IST), the national standards body of Iceland. It is an independent association whose role, by law, is the publication of Icelandic standards and the representation of Iceland in international and regional standards bodies. The person representing IST at the KnowRisk Conference was a member of the building sector committee that operates under the auspices of Icelandic Standards.

Iceland Construction Authority. The Iceland Construction Authority is in charge of matters regarding building regulations, fire safety, and electrical safety.

Engineering Consultant

Head master of a primary and secondary school in a seismically active area that has been hit by significant earthquakes during school time.

The stakeholders were asked to focus on:

Identification of building sector stakeholder needs, experiential information and knowledge gaps; and

Identification of barriers and facilitating factors towards non-structural seismic protection.

The following are main points made by the stakeholders in their short talks.

Mayor

The mayor stated that it was reassuring that buildings did not collapse during past significant earthquakes. But since they did not collapse, it has become clear that falling objectives are the hazard that people should be addressing.

In Iceland, hot water is pumped directly from the ground from geothermal hot water sources. Natural hot water is not potable due to the sulphur and other chemicals. During the earthquake, due to damage in the pipelines, hot water got into the cold water system. Bottled cold water was therefore brought to the town and distributed for free at distribution stations.

It was noted that no windows broke during the earthquake.

Fashion trends in furnishings have shown to influence the level of damage to building content. Nowadays, kitchen cupboards have doors that open out. The doors need to be installed with special fasteners to ensure that the doors do not open during earthquakes.

However, earlier cupboard design had sliding doors. This meant that the older homes with sliding door cupboards, which did not open during the earthquake, were less likely to sustain content damage in the kitchen than the newer homes.

On the same note, many modern tables are on wheels. If such tables do not have lock-down devices then these tables will move very fast during an earthquake, are damaged when they impact walls and other objects, can severely injure people, and damage other structural and non-structural components.

Modern building construction often uses gypsum sheets as the final covering on interior walls. Fixed furnishing, such as kitchen cupboards have been fixed onto these sheets without proper understanding of seismic vulnerability. Many fastenings failed during past earthquakes with the result that the cupboards and their content fell off the wall.

The KnowRisk guidelines were well received by the mayor, who suggested that it be translated into Icelandic.

Standards

The Icelandic Standards deals with everything that is an integral part of a building, i.e., everything that has to be designed. The agency makes sure that all aspects are thought through and that design processes exist for designers to follow. The level of precautions taken within the design process depends on the element. For building contents there are only guidelines, no standards.

Standards are created by the industry itself. When stakeholders within the industry believe that there is a need for a standard, they contact the national body, which organizes the work. The people who participate in the development of the standards are offered pro-bono from their employers. Therefore, the cost for the Standards institution is at a minimum.

Construction Authority

The Construction Authority has nothing in their standards about how to fasten or deal with non-structural components. However, a conference on the matter, such as the KnowRisk session, is very useful in increasing stakeholder awareness of the importance of non-structural damages during earthquakes, especially when structural integrity is maintained. It is obvious to the representative from the Construction Authority after having attended the KnowRisk session that the Construction Authority should have and apply guidelines for non-structural damages.

Consulting Engineering

A consulting engineering perspective is about the design details of non-structural components. For example, false ceilings and light fixtures have been a common cause of failure, in particular in schools causing injuries to children. Design methods exist on how to prevent these from falling.

1.4.1. Conclusion

Increasing stakeholder awareness of the risks associated with non-structural components is important. People in general don´t seen to realize the importance of ensuring the continued functionality of non-structural components to ensure the continued functionality of a facility after an earthquake. Deliverables from the KnowRisk project were well-received, e.g. printed guidelines and conference sessions, however, more work is needed to create a general understanding of non-structural risk and ensure systematic application of risk reduction guidelines. Next steps could be to continue to strengthen the risk communication dialogue among building-related stakeholders in a more formal manner, organized through a standards agency.

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APPENDIX A. "10 good practices to make our home safer"

APPENDIX B. Guidelines for Focus Groups and in-depth interviews

1.4.2. Focus groups with the lay public: Guidelines for conduction

1.4.2.1 *Introduction (10 min)*

- Presentation by the moderator and brief recall of the experience of the *2013 Laboratories* (for FG1)
- Introduction of the context in which the focus group takes place: the European project Knowrisk, the Institute of Geophysics and Vulcanology and the Master in Journalism and Institutional Communication of Science.
- Roundtable: brief presentation of the participants.
-

1.4.2.2 *Part 1: "the seismic damage" (15 min)*

The moderator writes "seismic damage" on the flipchart and asks:
What do you remember about the Laboratories experience?
Participants are free to remind and share their memories with the peers; keywords are annotated on the flipchart. The moderator groups keywords into categories with the help of the participants (eg the role of institutions, experts, citizens, actions that can be taken in an emergency).
The keywords framework on the billboard will be used during the discussion to recall the spontaneously emerging themes, to deepen them, to modify them and work on the central concept of "how communicating the seismic risk".

1.4.2.3 *Part 2: the prevention of the non-structural damage (30 min)*

The aim is to investigate, in relation to the various topics discussed above, what concerns the non-structural damage and which behaviours can help to prevent it, so as to prepare the ground for reflection on how to communicate it in the most effective way.

1 Let's all talk about damage.
→ Spontaneous phase

2 Keeping in mind our memory map of the Laboratories, I re-read the documents that were produced to tell and analyze them. This is the first question that emerged in the third stage of the Laboratories path:

How can I understand and address the safety of my home?
What helpful actions do you remember?
The participants are free to remind and discuss; the moderator marks the keywords on the billboard.
Taking into account the definition of **damage caused by non-structural elements** (including their architectural parts such as dividers, countertops, cornices, gas, electric, water and sewer systems and furniture), be aware if any differencebetween structural and non-structural elements emerge and possibly propose this stimulus.

3 Let's now talk about "behaviors": what did you do?
→Always pay attention to the difference between structural and non-structural elements.

4 What are the competences of citizens? And the institutions?
At the end of this part, resume the points that emerged from the initial map and pay attention to the aspects to be deepen.

1.4.2.4 ***Part** 3: how to communicate the prevention: good practices (40 min)*

The aim of this part is to understand, by taking as an example "The 10 Good Practices" produced after the Laboratories, how to better communicate information on prevention through the involvement of its own audience, listening to its needs, opinions, biases and expectations.
Moderators shows "The 10 Good Practices", only proposing it as an EXAMPLE.
(http://www.urbancenterferrara.it/wp-content/uploads/2014/11/10_buone_abitudini.jpg)

1 Have you ever seen it?
Participants have some minutes to read and explore it, point by point.

2. Who is this decalogue made for? Which is its target audience?

3 What have you done of these things?
The moderator divides the billboard into two sectors, "done"/"not done", and takes note. Looking for the part on what has not been done:

4 Let's see: why you did not follow these tips?

1.4.2.5 *Part 4: how to make these good practices more popular? (15 min)*

The aim of this latter part is to understand how to develop a prevalent culture of the prevention, starting from mistakes and soliciting realistic solutions.

Moderator: *We arrive at the end of our meeting with the commitment to think of something constructive for the future.*
I ask you to divide into couples or groups of three and I remind you that here you are citizens who are heard by the institutions to improve the culture of prevention, on a very precise aspect, that of preventing the seismic damage caused by non-structural elements.
Imagine the civil protection councilor enters here in ten minutes. We should be ready to report our conclusions on this subject in the most concrete way possible.
I invite you to first read the billboards that contains the main elements that we have discussed so far, the decalogue you have analyzed, and to briefly consult with each other. Then a couple / trio representative can explain to me, I'm performing the civil defense councilor, how to make good practice more widespread.
Split your recommendations between formal elements (such as local newspapers, facebook, etc.) and content.

The final goal of the focus group is to build the right balance among technical skills, norms, public values.

1.4.3. Interviews to the stakeholders: Guideline for conduction

1.4.3.1 ***Seismic prevention in Ferrara***

How do you link your job with the themes of seismic prevention?

1.4.3.2 ***The*** *Laboratories of 2013 (for the ones involved or participating)*

• What do you remember from your participant's point of view?
• Opportunity
• Obstacles

1.4.3.3 ***Prevention*** *and damages from non-structural elements*

Let's resume the theme of seismic prevention (shows the definition of non-structural damage according to the Knowrisk project)

- How is it treated in your work?

- And what is the importance of seismic prevention?
- Who are the actors to be involved? First spontaneous phase then

- Institutions: internal and external communication
- Citizens: what? Who listens? Who participates?

1.4.3.4 ***Towards*** *a more effective communication*

• Products
• Critical issues
• Solutions