SASPARM 2.0

Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

SASPARM 2.0

2014 PROJECT FOR CIVIL PROTECTION FINANCIAL INSTRUMENT PREPAREDNESS AND PREVENTION SCHEME

PROJECT OVERVIEW

ECHO/SUB/2014/694399 - SASPARM 2.0 Support Action for strengthening PAlestine capabilities for seismic Risk Mitigation
Project co-funded by ECHO - Humanitarian Aid and Civil Protection

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Building the resilience of nations and communities to disasters

بناء قدرات الامم والمجتمعات لمواجهة الكوارث

ايجاد البنية الفعّالة و السّياسة الحكيمة و الجهاز القادر

Examples from ME and ..

Events, Activities, and Issues Contained in the Project
فعاليات ونشاطات وإصدارات يتضمنها المشروع

- Meetings
- Mini Workshops
- National Workshops
- International Workshops
- Lectures
- Training Courses
- Training Workshops
- Brochures, Posters, Newsletters and Films
- Public Awareness Programs through available Media: TVs, Radios and Newspapers.

- لقاءات
- ورشات عمل قطاعية
- ورشات عمل وطنية
- ورشات عمل دولية
- محاضرات
- دورات تدريبية
- ورشات عمل تدريبية
- إصدار نشرات وبوسترات وصحف ألكترونية وأفلام صغيرة
- برامج توعية عامة من خلال وسائل الاعلام المتوفرة من تلفاز وراديو وصحف.

An-Najah University Launches Disaster Risk Mitigation Project (SASPARM Project) funded by European Union

26/02/2013

SASPARM 2.0

EUCENTRE European Centre for Training and Research in Earthquake Engineering

IUSS Scuola Universitaria Superiore Pavia

An-Najah University Launches Disaster Risk Mitigation Project (SASPARM Project) funded by European Union

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ECHO/SUB/2014/694399 - SASPARM 2.0 Support Action for strengthening Palestine capabilities for seismic Risk Mitigation
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Workshops

Disaster Risk Mitigation Workshop
Ramallah-Palestine
26/03/2013

Disaster Risk Mitigation Workshop
Bethlehem- Palestine
30/04/2013

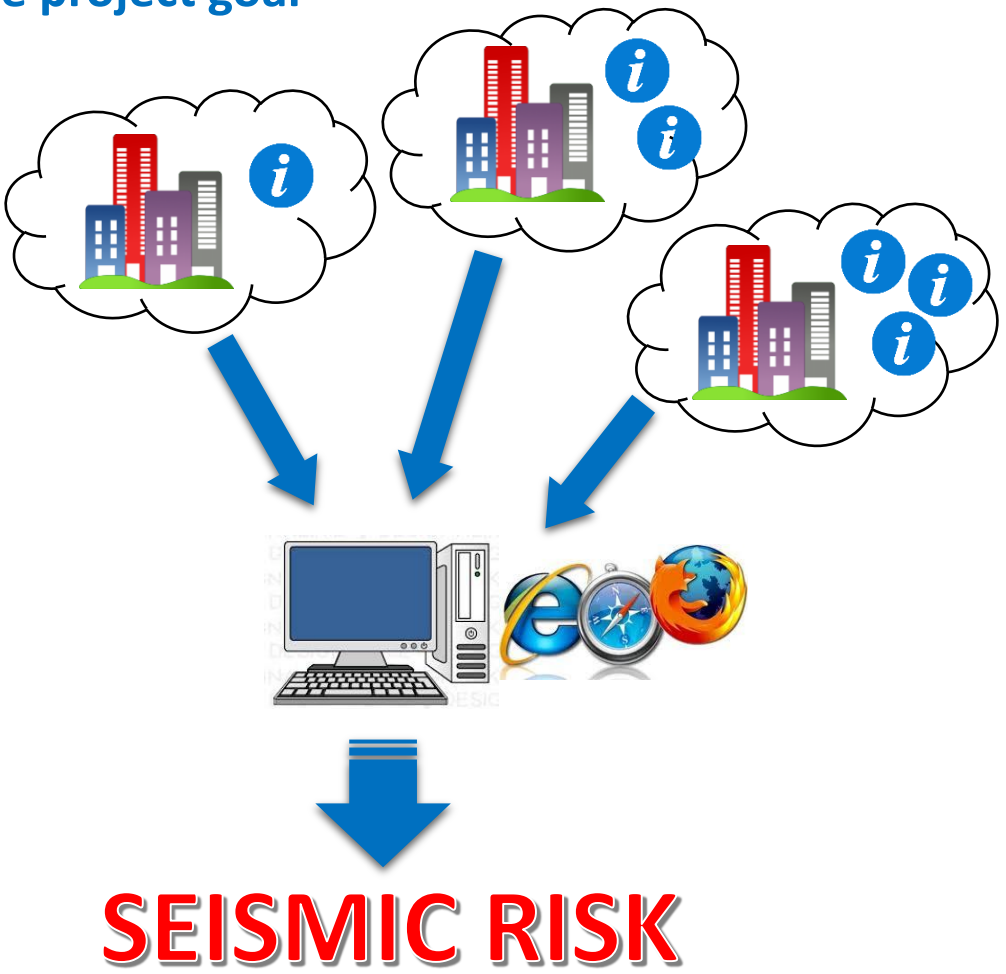
Lecture on Disaster Risk Mitigation at Haja Rashdah School in Nablus city

11/04/2013

28 – 05 - 2013

The project goal

The project goal is to create a web portal where different users (**students/citizens/practitioners**/GO and NGO **stakeholders**) will be able to input and manage all the data on buildings, with increasing level of detail, and obtain all the information about the corresponding seismic risk.



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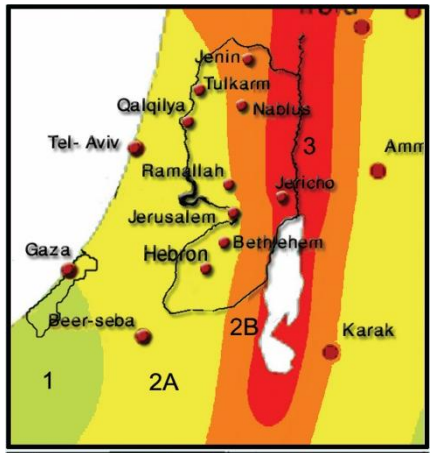
Hazard



Zone	1	2A	2B	3
Z	0.075	0.15	0.20	0.30

Vulnerability

Exposure

$$R = V \cdot E \cdot H$$

SEISMIC RISK

evaluation of the total losses caused by earthquakes that will be of interest in a given temporal period in a specific area

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Mathematical Definition of Vulnerability

$$P_{ik} = P[D \geq d_i \mid S = s_k]$$

Damage | Shaking

Methods to quantify vulnerability

- Empirical methods based on post earthquakes observation
- Mechanic methods
- Hybrid methods

Methods to quantify vulnerability

- Damage Probability Matrix (DPM)
- Fragility curves

Project main targets

- ✓ The increase of risk perception by citizens and the development of the citizens' science
- ✓ The capacity building of local practitioners and building contractors
- ✓ The engagement of local stakeholders and policy makers leading them to establish prevention plans in the development of urban resilience strategies

Project expected results

- ✓ An increased awareness of seismic risk by the actors involved in the project: citizens, students, practitioners, GO and NGO stakeholders
- ✓ A shared database including a large number of vulnerability data
- ✓ A Web-Based Platform that integrates the data above and treats them through vulnerability models developed for the Palestinian building typologies, to evaluate seismic risk
- ✓ Guidelines on the implementation of measures to reduce vulnerability and, hence, mitigate seismic risk
- ✓ Guidelines for risk management policy aimed at mitigating the impact of socio-economic losses

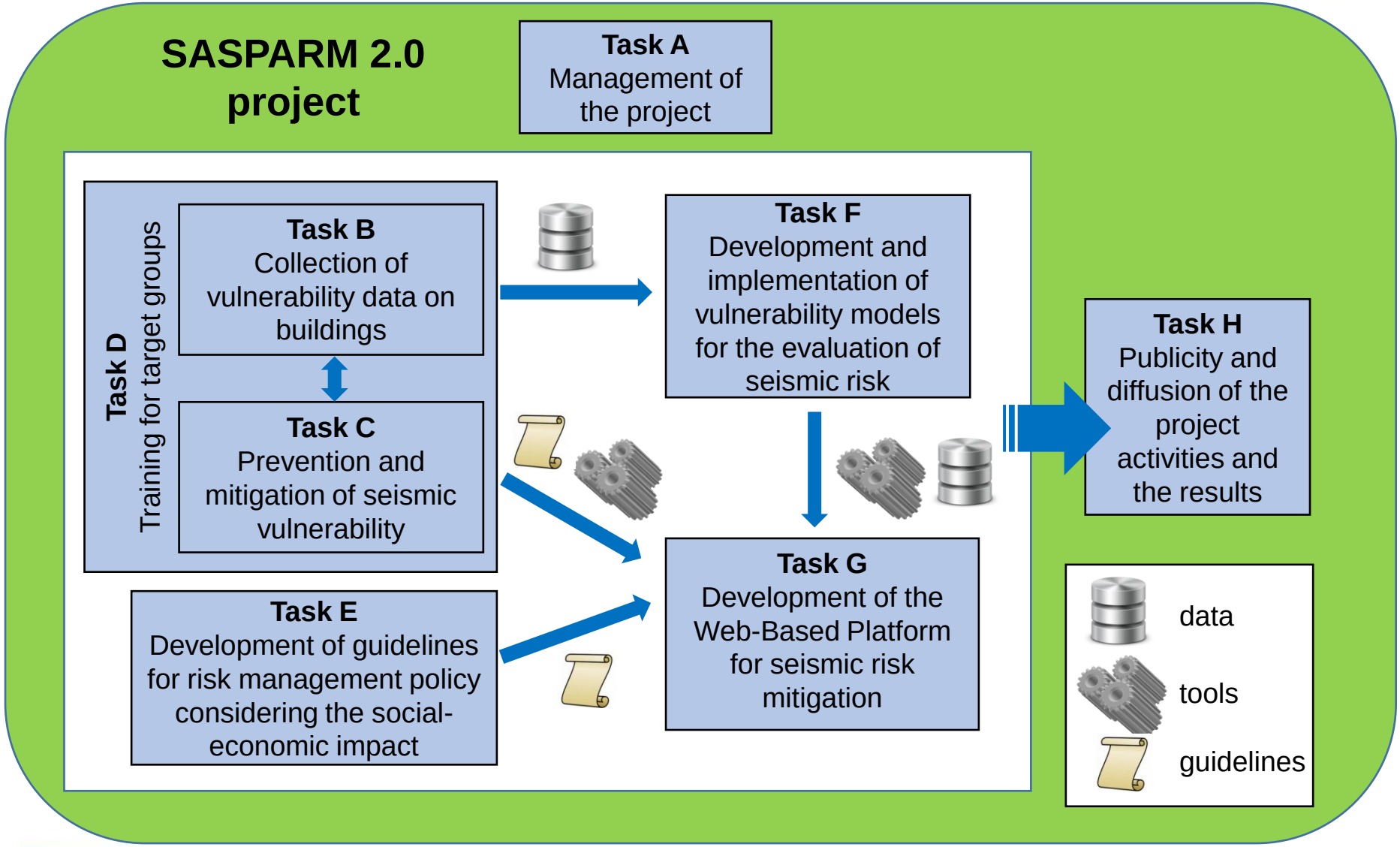
The project is made of 8 different tasks:

- **TASK A**: organization of all the activities and management of the project;
- **TASK B**: Task B: Collection of vulnerability data on buildings
- **TASK C**: prevention and mitigation of seismic vulnerability through retrofit measure identified using the data collected in task B;
- **TASK D**: training courses for students, practitioners and citizens on the compilation of the forms and the use of the collected data;

The project is made of 8 different tasks:

TASK E: Development of **guidelines for risk management policy** considering the socio-economic impact

- **TASK F**: development and implementation of **vulnerability models** for the evaluation of seismic risk using the data collected in the task B;
- **TASK G**: development of the **Web-Based Platform** which has to integrate all the tools for performing seismic risk analysis;
- **TASK H**: identification and organization of **publicity** and the diffusion of the project activities and results.



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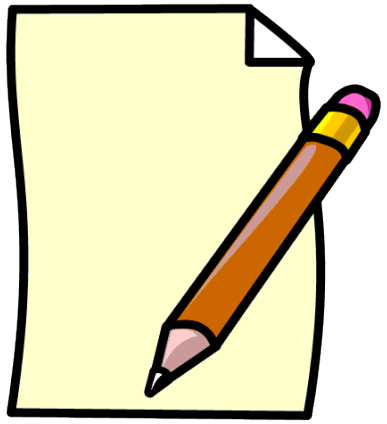
Web GIS platform

A Web platform will be realized, by managing the structural data collected on field, the vulnerability and the seismic risk will be assessed. Mitigation measure as a function of the identified vulnerabilities will be suggested through the platform.

The platform will also be equipped with GIS functionalities (WEBGIS) thanks to which the stakeholders will have the possibility to identify critical conditions, since the results of seismic risk will be published in maps with a very high resolution graphical support.

Data collection



The in **situ building data collection** will be done through forms by general citizens and practitioners.

All the information collected through the forms will be used to **identify the vulnerability class** of the buildings according for their structural typology.

Appropriate **retrofit measures** for the mitigation of seismic risk will be suggested to the end users of the platform.

Taxonomy for Practitioners and Students

1. Identification (address, coordinates, position)
2. Description (height, m^2, age, use..)
3. Structural Data (material of resisting system, roof..)
4. Regularity
5. Geomorphological data
6. Notes

Form for the building

Citizens

Name of the compiler

Education Level

1) Identification of the Building

Municipality

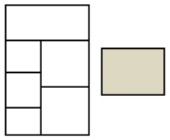
Address

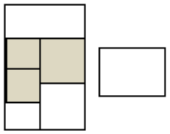
Street Number | District/Municipality | Zip Code

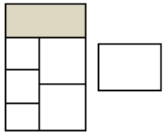
Name of the building

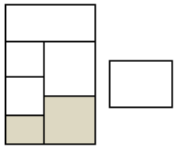
Geographical Coordinates (WGS 84 System) — Lat. / Long.

Position of Building :

1 ○ Isolated Building 

2 ○ Internal Building 

3 ○ End Building 

4 ○ Corner Building 

2) Description of the Building

N° of floors

N° Total floors with basement

○ 1 ○ 2 ○ 3
○ 4 ○ 5 ○ 6
○ 7 ○ 8 ○ 9
○ 10 ○ 11 ○ ≥12

N° Basements

○ 0 ○ 1 ○ 2
○ ≥3

Age

Construction and renovation [max 2]

1 ❑ ≤ 1919
2 ❑ 19 ÷ 45
3 ❑ 46 ÷ 61
4 ❑ 62 ÷ 71
5 ❑ 72 ÷ 81
6 ❑ 82 ÷ 91
7 ❑ 91 ÷ 02
8 ❑ ≥ 2002

Use - Exposure

Type of Use

❑ Housing
❑ Productive
❑ Trade
❑ Offices
❑ Public Service
❑ Deposit
❑ Strategic
❑ Touristic - Accomodation

N° Units of use

% of Use

A ○ > 65%
B ○ 30÷65%
C ○ < 30%
D ○ Not used
E ○ Under Construction
F ○ Unfinished
G ○ Abandoned

Occupants

100	10	1
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

Property

A ○ Public
B ○ Private

3) Main Material of the Building's Vertical Structure

Masonry	Reinforced Concrete
○ A	○ B

If the building is in reinforced concrete:

B.1 ❑ The building has no walls at floor(s):

❑ 1 ❑ 2 ❑ 3 ❑ 4
❑ 5 ❑ 6 ❑ 7 ❑ 8
❑ 9 ❑ 10 ❑ 11 ❑ ≥12

B.2 ❑ The building has partially walls at floor(s):

❑ 1 ❑ 2 ❑ 3 ❑ 4
❑ 5 ❑ 6 ❑ 7 ❑ 8
❑ 9 ❑ 10 ❑ 11 ❑ ≥12

B.3 ❑ The building is composed totally by walls

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HOW TO COLLECT DATA?

كيف تستطيع جمع البيانات؟

Form for Citizens (helped by students)

نموذج للمواطنين

النموذج العام للابنية
(نموذج المواطن)

اسم المدون	__|__|__|__|
المستوى التعليمي	__|__|__|__|

1) التعريف بالمبنى

البلدية __\|__\|__\|__\|

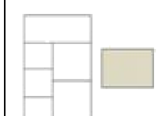
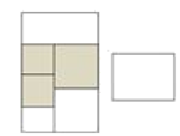
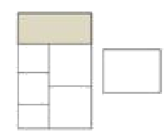
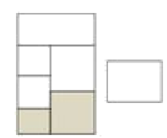
العنوان __\|__\|__\|__\|

اسم الشارع __\|__\| الحي/ البلدية __\|__\| الرمز البريدي __\|__\|

اسم المبنى __\|__\|__\|__\|

الاحداثيات الجغرافية	نظام WGS 84	خط عرض __|__|.__|__| خط طول __|__|.__|__|

موقع المبنى

O1. البناء منفصل/معزول	O2. البناء موجود داخل منطقة مباني	O3. البناء موجود على الأطراف	O4. البناء موجود في الزاوية
			

2) وصف المبنى

عدد الطوابق	عمر المبنى	الاستخدام use exposure				الملكيه
عدد الطوابق مع التسوية	البناء و الترميم	نوع الاستخدام	عدد الوحدات المستخدمة	% الاستخدام	السكان	
O1 O2 O3 O4 O5 O6 O7 O8 O9 O10 O11 O≥12 عدد التسويات O0 O1 O2 O≥3	1 ❑ ≤ 1919 2 ❑ 19 ÷45 3 ❑ 46÷ 61 4 ❑ 62 ÷71 5 ❑ 72 ÷81 6 ❑ 82 ÷91 7 ❑ 91 ÷02 8 ❑ ≥2002	❑ سكني ❑ انتاجي ❑ تجاري ❑ مكاتب ❑ خدمات عامة ❑ مخازن ❑ استراتيجي/ عام ❑ سياحي – اقامة	__|__| (×10)	A O >%65 B O30 ÷%65 C O <%30 D O غير مستخدم E O قيد الانشاء F O غير منتهي G O مهجور	100 10 1 0–9 0–9 0–9	A. O خاص B. O عام

3) المواد المستخدمة في البناء العمودي

A O	جدران حجرية حاملة	إذا كان المبنى مسلح
B O	خرسانة مسلحة	❑B1 : المبنى بدون جدران في الطابق ❑1 ❑2 ❑3 ❑4 ❑5 ❑6 ❑7 ❑8 ❑9 ❑10 ❑11 ❑≥ 12 ❑B2: المبنى به جدران جزئية على الطابق ❑1 ❑2 ❑3 ❑4 ❑5 ❑6 ❑7 ❑8 ❑9 ❑10 ❑11 ❑≥ 12 ❑B3 : المبنى مغطى بالكامل بجدران

مبنى بدون جدران في طابق واحد	مبنى بدون جدران في طابق واحد فقط	مبنى مغطى بالجدران بالكامل
		

4. ملاحظات:

التاريخ: / /	اسم المقيم في المسكن :	توقيع

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HOW TO COLLECT DATA?

Form for the building

Practitioners

Name of the compiler

Education level

1) Identification of the Building

Municipality

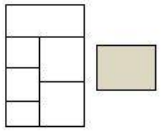
Street name — Street number

Name of the building

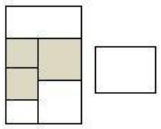
Geographical Coordinates (WGS 84 System) — Lat. — Long.

Position of Buiding :

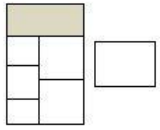
1 ○ Isolated Building



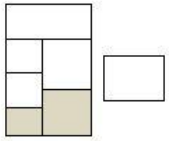
2 ○ Internal Building



3 ○ End Building



4 ○ Corner Building



2) Description of the Building

Metrics

N° Total floors with basement	Average of floor height [m]	Average of floor area [m²]	N° Basements
○ 1 ○ 9	1 ○ < 2.50	A ○ < 50 I ○ 401 ÷ 500	A ○ 0 C ○ 2
○ 2 ○ 10	2 ○ 2.50 ÷ 3.50	B ○ 51 ÷ 70 L ○ 501 ÷ 650	B ○ 1 D ○ ≥3
○ 3 ○ 11	3 ○ 3.51 ÷ 5.0	C ○ 71 ÷ 100 M ○ 651 ÷ 900	
○ 4 ○ 12	4 ○ > 5.0	D ○ 101 ÷ 130 N ○ 901 ÷ 1200	
○ 5 ○ >12		E ○ 131 ÷ 170 O ○ 1201 ÷ 1600	
○ 6		F ○ 171 ÷ 230 P ○ 1601 ÷ 2200	
○ 7		G ○ 231 ÷ 300 Q ○ 2201 ÷ 3000	
○ 8		H ○ 301 ÷ 400 R ○ > 3000	

Age

Construction and renovation [max 2]
1 ❑ ≤ 1919
2 ❑ 19 ÷ 45
3 ❑ 46 ÷ 61
4 ❑ 62 ÷ 71
5 ❑ 72 ÷ 81
6 ❑ 81 ÷ 91
7 ❑ 91 ÷ 02
8 ❑ ≥ 2002

Use - Exposure

Type of Use	N° units of use	% of Use
❑ Housing	|_|_|	A ○ > 65%
❑ Productive	|_|_|	B ○ 30÷65%
❑ Trade	|_|_|	C ○ < 30%
❑ Offices	|_|_|	D ○ Under Construction
❑ Public Service	|_|_|	E ○ Unfinished
❑ Deposit	|_|_|	F ○ Abandoned
❑ Strategic	|_|_|	
❑ Touristic - Accomodation	|_|_|	

Occupants

100	10	1
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

Property A ○ Public B ○ Private

3) Structural Data

Vertical Structure of the Building

Masonry	Reinforced Concrete	If the building is in reinforced concrete:
○ A	○ B	B.1 ❑ The building has no walls at floors: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ ≥12
		B.2 ❑ The building has partially walls at floors: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ ≥12
		B.3 ❑ The building is composed totally by walls
		B.4 ❑ The building has RC shear walls

Horizontal Structure

Not identified	Solid slab with drop beams	Reinforced concrete ribbed slab	Reinforced concrete slab	Steel concrete slab
○	❑	❑	❑	❑

Roof

Heavy and flat	Heavy and sloped	Light and flat	Light and sloped
○	○	○	○

4) Regularity

In plan		In elevation	
Regular	Not regular	Regular	Not regular
○	○	○	○

5) Geomorphological Data

Morphology site				Landslides		Category of soil foundation
Ridge	Strong slope	Slight slope	Lowland	Absent	Existing	
○	○	○	○	○	○	

6) Notes

Date |_|_|_|_|/|_|_|/|_|_|_|_|

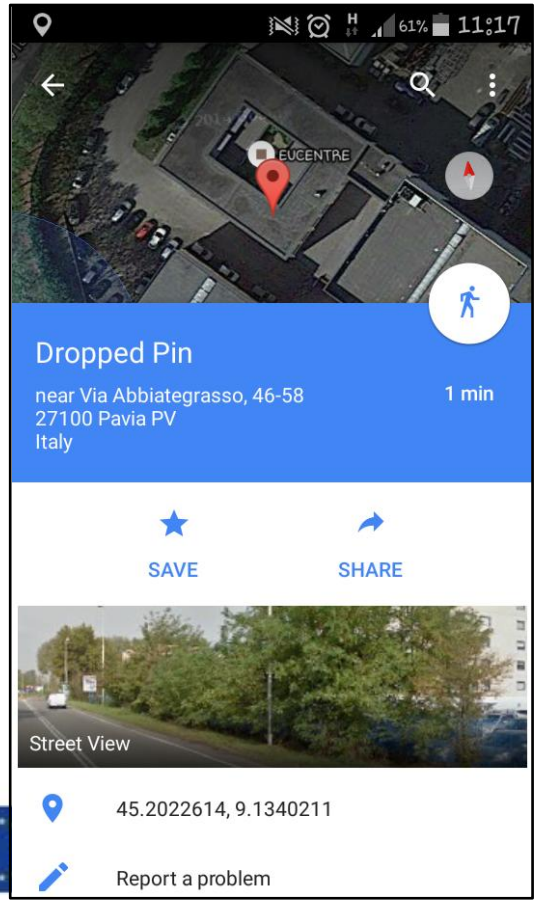
The Compiler (Block Letters)

Sign of the Compiler

Fill the form – Practitioners and Citizens

1. **Identification**: Yours and of the building

Geographical Coordinates (WGS 84 System)	Lat. |__|__|__|__|__|__|__|.|__|__|__| Long. |__|__|__|__|__|__|__|.|__|__|__|



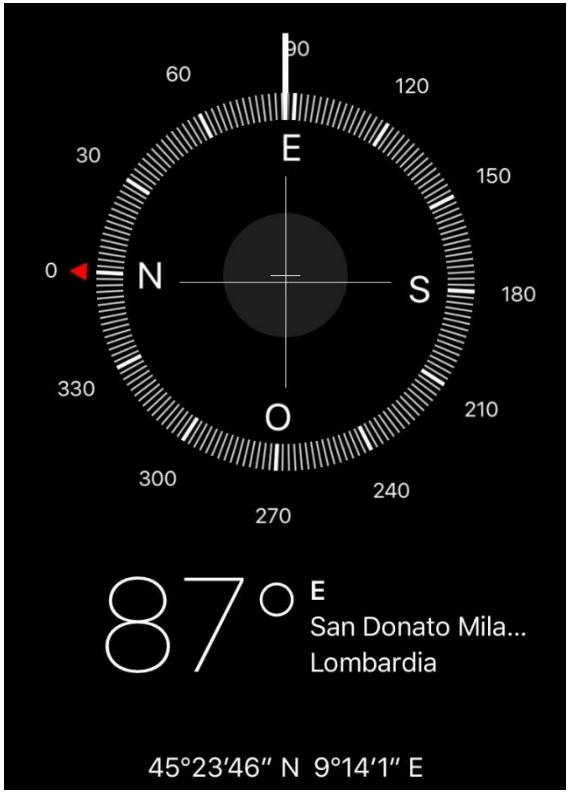
For Geographical Coordinates (Android):

- On Location Service
- Open Google Maps
- Press and hold your location (red pin on the screen)
- Swipe on the bottom part of the screen
- Read Lat and Long (45.2021225, 9.1333706)

Fill the form – Practitioners and Citizens

1. **Identification**: Yours and of the building

Geographical Coordinates (WGS 84 System)	Lat. |__|__|__|__|__|__|__|.|__|__|__| Long. |__|__|__|__|__|__|__|.|__|__|__|



For Geographical Coordinates (IOS):

- Tap on Settings, then tap Privacy
- Location Services ON
- Scroll down until **Compass** (Select "While Using")
- Open the Compass App
- Read Lat and Long (45.2346, 9.1410)

Fill the form - Practitioners

2. Description of Building

Metrics, Age of construction, Use – Exposure

2) Description of the Building

Metrics

N° Total floors with basement

○ 1 ○ 9
○ 2 ○ 10
○ 3 ○ 11
○ 4 ○ 12
○ 5 ○ >12
○ 6
○ 7
○ 8

Average floor height [m]

1 ○ < 2.50
2 ○ 2.50÷3.50
3 ○ 3.51÷5.0
4 ○ > 5.0

N° Basements

A ○ 0 C ○ 2
B ○ 1 D ○ ≥3

Average floor area [m²]

A ○ < 50
B ○ 51 ÷ 70
C ○ 71 ÷ 100
D ○ 101 ÷ 130
E ○ 131 ÷ 170
F ○ 171 ÷ 230
G ○ 231 ÷ 300
H ○ 301÷ 400
I ○ 401 ÷500
L ○ 501 ÷650
M ○ 651 ÷900
N ○ 901 ÷1200
O ○ 1201 ÷1600
P ○ 1601 ÷2200
Q ○ 2201 ÷3000
R ○ > 3000

Age

Construction and renovation [max 2]

1 ❑ ≤ 1919
2 ❑ 19 ÷ 45
3 ❑ 46 ÷ 61
4 ❑ 62 ÷ 71
5 ❑ 72 ÷ 81
6 ❑ 81 ÷ 91
7 ❑ 91 ÷ 02
8 ❑ ≥ 2002

Use - Exposure

Type of Use

❑ Housing
❑ Productive
❑ Trade
❑ Offices
❑ Public Service
❑ Deposit
❑ Strategic
❑ Touristic - Accomodation

N° units of use

|__|__|

% of Use

A ○ > 65%
B ○ 30÷65%
C ○ < 30%
D ○ Not used
E ○ Under Construction
F ○ Unfinished
G ○ Abandoned

Occupants

100	10	1
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

Property A ○ Public B ○ Private

Fill the form – Practitioners and Citizens

3. Structural Data

3) Structural Data

Vertical Structure of the Building

Masonry	Reinforced Concrete	If the building is in reinforced concrete:	
A ○	B ○	B.1 ❑ The building has no walls at floors: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ ≥12 B.3 ❑ The building is composed totally by walls	B.2 ❑ The building has partially walls at floors: ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ ≥12 B.4 ❑ The building has RC shear walls

- Choose if Vertical Structure is made of **MASONRY** or **R.C.**
- If **R.C.** → concentrate your attention on walls

No walls | Walls everywhere | Partially walls | R.C. Shear Walls

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3. Structural Data

Fill the form

B.1 No walls at one floor

B.2 Partially walls at four floors

B.3 Totally Walls

B.4 R.C. Shear Walls

Computation of seismic risk

TAXONOMY

4 building types in Nablus:

- ✓ Reinforced concrete frame buildings;
- ✓ Shear wall buildings;
- ✓ Masonry buildings;
- ✓ Buildings with soft storey.

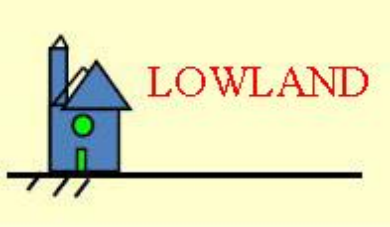
Fill the form

5. Geomorphological Data

5) Geomorphological Data						
Morphology site				Landslides		Category of soil foundation
Ridge	Strong slope	Slight slope	Lowland	Absent	Existing	
❍	❍	❍	❍	❍	❍	

Simple observation of **Morphology Site** of building surroundings:

- Ridge (high vulnerability), Strong Slope (foundation displacement), Slight Slope, Lowland;



Observe if landslide phenomena are present.

Courses

Training courses for **students**, **practitioners** and **citizens** will be organized with the aim to increase their awareness and knowledge of seismic risk. Practitioners and citizens will be trained to fill in the information of the collection form.

The courses for students will contribute to create a new generation of Civil Protection Volunteers who will support the Palestinian Civil Defence Directorate.

Students will help citizens during the collection of data for vulnerability assessment in SASPARM 2.0.

Stakeholders

Workshops and lecturers will be organized for stakeholders and policy makers, as well as members of GO and NGO Institutions of the different Palestinian municipalities, in order to disseminate the main concepts of seismic risk, its prevention and mitigation related to planning and management of cities where the political context cannot be disregarded.

The cultural shift and the development of the “citizens’ science” envisaged by the project actions will only be possible if the stakeholders are aware of the importance of the prevention in the development of urban resilience strategies.

Thank you for your attention!

شكرا لحسن الإصغاء

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