



**Σ**IGMA2

RESEARCH & DEVELOPMENT  
PROGRAM

First Symposium

November 28th, 2017



# Reasons for a new project

- Many R&D programs and actions have been performed in the field of SHA,
- Nevertheless, the practice of seismic hazard assessment still suffers many uncertainties.
- The funding partners of the project operate industrial facilities, including NPPs. In order to conduct industrial projects, it is necessary that natural hazards are estimated with a clear reliability, and be stable.

# Reasons for a new project

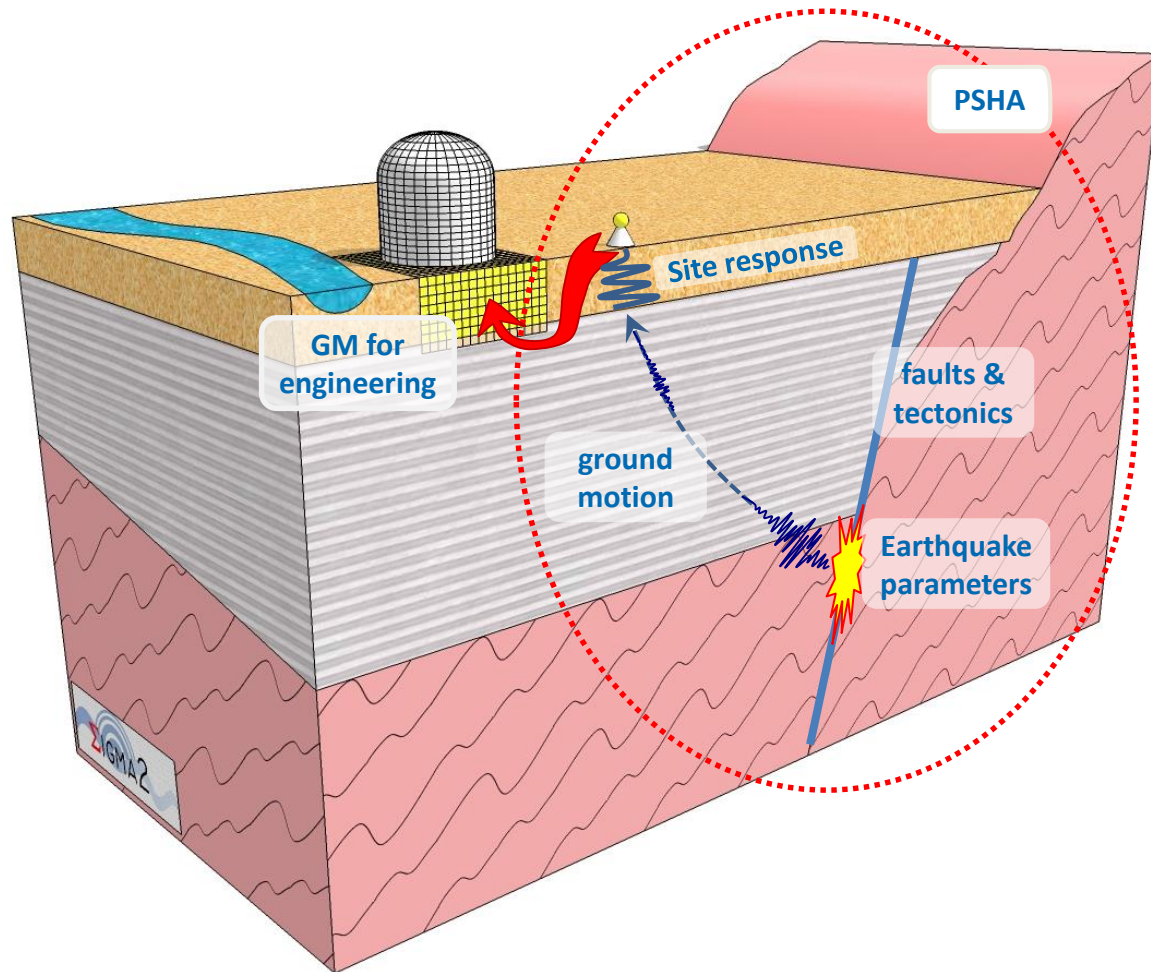
- Still a lot of uncertainties,
  - Mmax
- Still a lot of expert judgment in the SHA process
  - Weights of branches in logic trees
- A need to stabilize some steps of the SHA process
  - GMPs for hard rock (Host to target adjustment ?)
- A need to determine hazard levels more adapted to sites
  - Vs30 is only a proxy, not a parameter precisely predicting site response
- A need to compare results of models to recorded data, for validation / verification of models

# Main Objectives

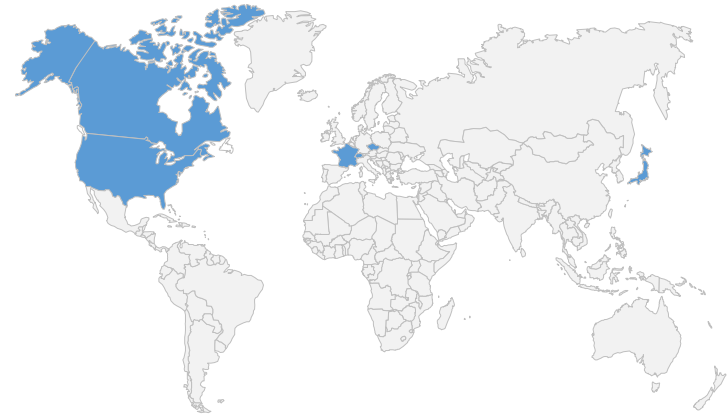
- Make the estimation of hazard more robust and stable,
  - Make the definition of seismic ground motion directly usable by engineers,
  - Improve the representation of seismic motion, adapted to site conditions
    - reliable data,
    - validated models,
    - procedures to test both data and results
  - Deliverables
    - Internal reports
    - Scientific publications
    - Guidelines and recommendations
    - Databases
    - Softwares
- no direct hazard assessment for any site

# 6 work packages

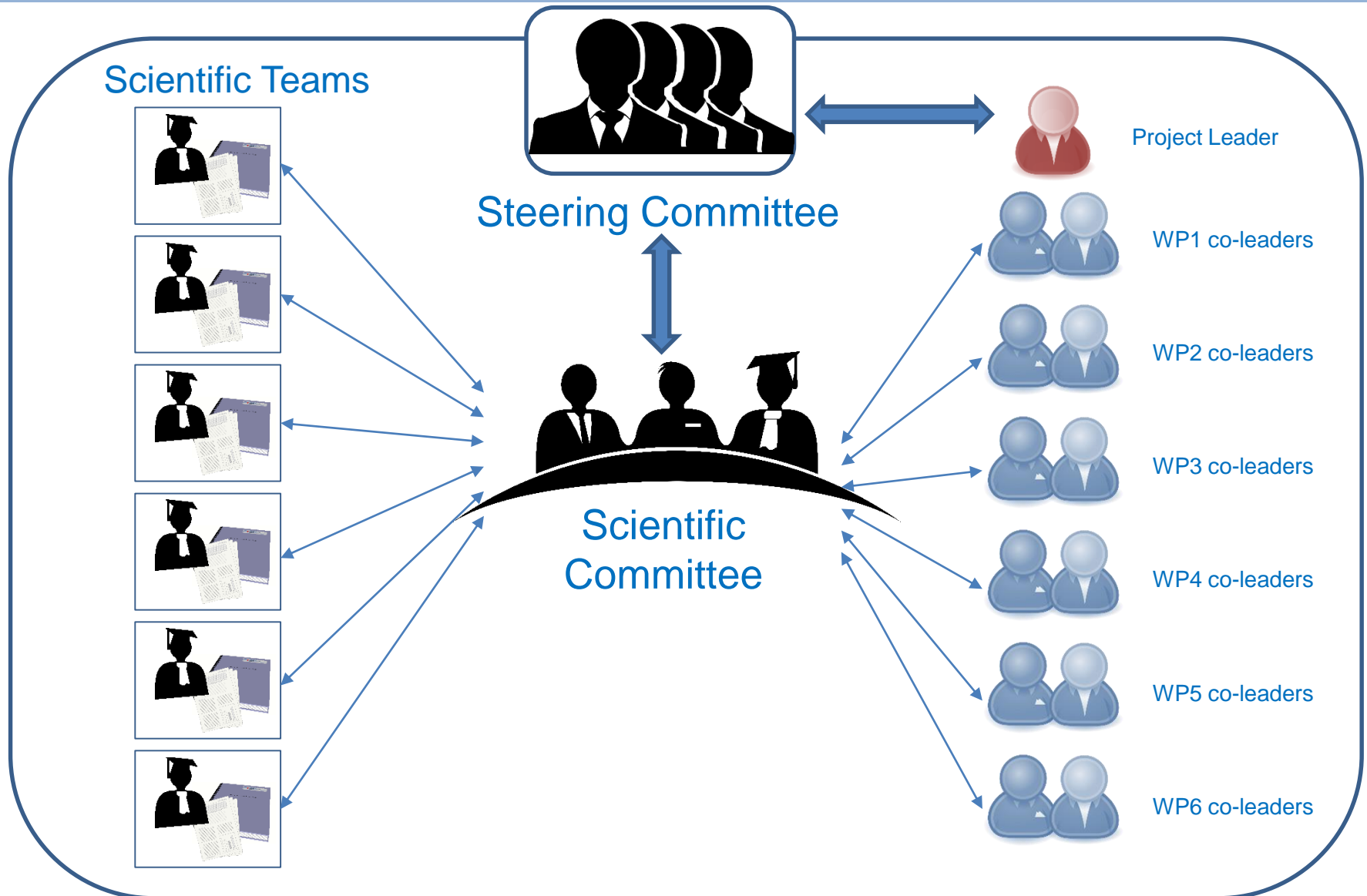
- 1 – Faults & tectonics
- 2 – Earthquake Parameters
- 3 – ground Motion
- 4 – Site Response
- 5 – PSHA
- 6 – Needs for engineering



- The funding partners (sponsors) of this project operate, manage and control industrial facilities, including nuclear installations
  - PG&E (USA)
  - CEZ (Czech Republic)
  - Swiss Nuclear (Switzerland)
  - CEA (France)
  - EDF (France)
  - AREVA (France)
  - CRIEPI (Japan)
- EPRI (USA) is associated through a co-funding of actions included in WP3 performed by Berkeley Univ.
- CNSC (Canadian Nuclear Safety Commission) will be associated through a co-funding of actions (on hard rock ground motion) that will be performed by University of Western Ontario



# Management of the project



# People involved in project management

| role                    |   | name                             | organization  |
|-------------------------|---|----------------------------------|---------------|
| Project leader          |   | Christophe DUROUCHOUX            | EDF-CEIDRE    |
| Steering com (chairman) |   | Pierre LABBE<br>Emmanuel VIALLET | EDF           |
| Steering Com            |   | Norm ABRAHAMSON                  | PG&E          |
|                         |   | Fabrice HOLLENDER                | CEA           |
|                         |   | Jiri FUZER                       | CEZ           |
|                         |   | Philippe RENAULT                 | Swiss Nuclear |
|                         |   | Yves GUEGAN                      | AREVA         |
| WP leaders              | 1 | Kevin MANCHUEL                   | EDF-CEIDRE    |
|                         | 1 | Laurent BOLLINGER                | CEA           |
|                         | 2 | Emmanuelle NAYMAN                | EDF-CEIDRE    |
|                         | 2 | Jessie MAYOR                     | EDF-LAB       |
|                         | 3 | Paola TRAVERSA                   | EDF-CEIDRE    |
|                         | 3 | Luis DALGUER                     | Swiss Nuclear |
|                         | 4 | Cyril SIMON                      | EDF-CEIDRE    |
|                         | 4 | Evelyne FOERSTER                 | CEA           |
|                         | 5 | Irmela ZENTNER                   | EDF-LAB       |
|                         | 5 | Norm ABRAHAMSON                  | PG&E          |
|                         | 6 | Matthieu CAUDRON                 | EDF-SEPTEN    |
|                         | 6 | Gloria SENFAUTE                  | EDF-LAB       |



# Agenda of the symposium

- 6 Work Packages : presentations of the reasons for the actions scheduled + discussions
- 4 keynotes : state of the art, main questions
  - Fabrice Cotton *hazard evaluation*
  - Thierry Camelbeeck *engine of seismicity*
  - Norm Abrahamson *GM for hard rock*
  - Etienne Bertrand *site response*
- Open discussions during lunch and pause

**THANK YOU**