COST Action FP 0702

Net-Acoustics for timber based lightweight buildings and elements

Michel Villot
CSTB, Action Chair

Final conference Grenoble France, October 18 2012
COST Action FP0702

- **Action FP0702** is a COST action in the field of Forestry and Forest Products, which entered into force in February 2008 and finished in August 2012.

- **Scientific context:** Lack of knowledge in the evaluation and prediction of the acoustic performances (including low frequencies down to 50 Hz) of **timber based lightweight constructions**, as well as of their vibration performances (walking induced vibration below 25 Hz).

- **Objectives:** Increase knowledge by gathering existing knowledge, defining goals and promoting new research activities at national level. Cooperate with European standardization Committees in order to bring results (measuring methods, prediction methods, relevant quantities…) to standardization.
COST Action FP0702

• Action plan:
  - gather institutes from Europe and beyond
  - organize Workshops in order to gather knowledge
  - support and guide research proposals at national level in order to benefit from this research work (no research financially supported by COST)
  - initiate Short Term Scientific Missions (STSM) between member institutes

• Action focused on the acoustics and low frequency vibration of timber based lightweight buildings, mainly
  - airborne and impact sound performances over a frequency range including low frequencies (50 to 100 Hz)
  - low frequency vibration (below 25 Hz), especially walking induced vibration
  - work distributed to 4 Working Groups
COST Action FP0702

- **Gathering European institutes:**
  - 14 European (COST) countries: AT, BE, CH, DE, DK, ES, FR, IE, LT, NL, NO, SE, SI, UK (mainly Technical Universities and Building Research Centers)
  - 2 non-COST countries: AU, NZ

  Remark: participation of Canada in two workshops

- **Organizing the Action:**
  - Steering Committee
  - Working Groups
  - Web site
Action FP0702 organization (people)

Chair: Michel Villot, CSTB, France
Vice-chair: Jean-Luc Kouyoumji, FCBA, France

Working Group Leaders:
WG1: Eddy Gerretsen, TNO, Netherlands
WG2: Delphine Bard, Lund University, Sweden
WG3: Ben Zhang, Napier University, Scotland and Birgit Rasmussen, SBI, Denmark
WG4: Bart Ingelaere, BBRI, Belgium

- Cost officer following the action: Melae Langbein, COST office, Brussels Belgium
- Action rapporteur (to COST): Marc Van Leemput, Belgium
Main objectives - Working Groups

1. **Working group 1**: adapt methods predicting acoustic and vibration building performances from the performance of elements, to lightweight constructions

2. **Working group 2**: adapt measuring methods (field and lab) to timber based lightweight buildings and elements, with emphasis on the low frequency range and the measurement of parameters required for prediction

3. **Working group 3**: rate annoyance associated with sound (down to typically 50 Hz) and low frequency vibration (typically < 25 Hz); possible need of specific descriptors for lightweight buildings

4. **Working group 4**: gathering and categorizing main timber based lightweight building types in Europe, making sure these types are considered by other WGs
Action main activities

• Combined **MC** (Management Committee) and **WG meetings** twice a year in Växjo (SE), Biel (CH), Bruges (NL), Bordeaux (F), Delft (NL), Bilbao (ES) and Zürich (CH).

• **Workshop in Vaxjo** (SE), May 2009, with various presentations clearly stating the problems to be solved and the ongoing research

• **Workshop in Delft** (NL), November 2010, with presentations on studies and results obtained at national level by member institutes

• **Workshop in Zürich** (CH), November 2011, gathering COST Actions FP0702 and TU0901 (see next slide) with presentations on their activities and technical presentations on descriptors and different objective and subjective studies

• **5 STSM’s** (Short Term Scientific Mission) have been performed during the action between member institutes.
Links with Action TU0901

- Action **TU0901** (2011-2013) is focused on **Harmonizing sound descriptors and classification schemes in Europe**
- TU0901 covers all types of buildings
  - FP0702 covers only timber based lightweight buildings
- FP0702 considers low frequency **sound** (<100 Hz) and **vibration** (<25 Hz)
- TU0901 only considers **sound** (low frequencies included)
- TU0901 focuses on universal sound **descriptors** and **classification**
- Both actions collect typical **designs** and **performance data** for buildings to illustrate effects and demonstrate possibilities.
- Several common members in both actions
Main outcomes and results

- The **main results** obtained during the Action will be presented at this **Final Conference**
- The **outcomes** of most of the Action activities are presented in a **E-book** distributed to the conference attendees (USB key) and also accessible from the **Action Website** [http://extranet.cstb.fr/sites/cost](http://extranet.cstb.fr/sites/cost)
- The first four chapters of the E-book correspond to the four WG main outcomes respectively
- Since all the research results are not presented, an **overview of research activities** (and associated papers) performed at the main member institutes is presented in **Chapter 5 of the E-book**
Thank you for your attention

Enjoy this Final Conference

Any questions?