Lifelong Learning Programme

Leonardo da Vinci
Multilateral Projects - Transfer of Innovation 2011,

Project n.: CZ/11/LLP-LdV/TOI/134005

Project name: Vocational Training in Assessment of Existing Structures

Minutes

of the second plenary meeting of partners
held at the University of Pisa, via Diotisalvi 2, on March 8 – 9, 2012,
and tri-lateral meeting of P1, P3 and P5 on March 10, 2012

Participants:
P1 (contractor) – CTU KI: M. Holický, Jana Pallierová
P2 - SPSS: apologized
P3 – HR: Dimitris Diamantidis
P4 – IETcc: Angel Arteaga
P5 – UOP: Pietro Croce, Paolo Formichi, Maria Luisa Beconcini
P6 – TNO: Ton Vrouwenvelder
P7- PAU: apologized

Thursday March 8, 2012, 6 p.m.

1) Opening of the meeting
P1 (M. Holický) opened the meeting and welcomed the participants.
P2 (R. Gottfried) and P7 (S. Senel) apologized for time and health reasons.

2) Upcoming deadlines and duties
Then basic administrative rules and upcoming deadlines and duties of all the partners were
reminded by P1 (J. Pallierová), namely the documentation that all partners are supposed to submit
to P1 (KI) with Interim Report by October 2012 (see the PPT presentation “Leonardo - admin + fin
rules”, which forms a part of these minutes).
3) Printing of the handbooks
Then partners set responsibilities for editing and printing the handbooks.
HB 1 – P3 (HR) – September 2012 / P1 (KI) - Czech version
HB 2 – P5 (UOP) – June 2013 / P1 (KI) - Czech version
HB 3 – P2 (SPSS) – June 2013
P1 (J. Pallierová) will find out prices for printing the handbooks in the Czech Republic and will inform the partners at the next plenary meeting in Barcelona.

4) Budget
Foreseen unavoidable expenditures by partners were summarized with respect to the budget and the rules for possible re-allocation between direct cost categories were reminded.

Friday March 9, 2012, 9 a.m.

5) Discussion of the Handbook 1:
Partners agreed that HB 1 will contain about 200 pages and will be released in 400 hard copies - books (in English and Czech version) and on 400 CDs. Deadline for its completion and printing is September 30, 2012. Nevertheless, by the time of the 3rd plenary meeting in Barcelona, June 14-15, all chapters of HB 1 should be ready for printing.

Texts should basically be theoretical, material independent, with practical examples (not case studies). There should be interconnections between chapters.
P3 (D. Diamantidis) will ask Michael Faber as the respective author of the book of JCSS regarding the frequent references made to this book.

Chapter 1 – Basic concepts – P1 (KI)
Formulae (4), (5), (6) will be transferred to “Verification” section in Chapter 6.
Third dash point “Other decision parameters” will be added to Summary for attaining compatibility between the Summary and text. P3 (D. Diamantidis) will send to P1 (M. Holický) his comments on the topic.
P6 (T. Vrouwenvelder) recommends to extend the second paragraph of Section 7, (page 8).
P1 (M. Holický) will send a pre-final draft of the chapter to all partners by May 4, 2012. Then, by May 18, P1 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 2 – Current standards – P3 (HR), P6 (TNO)
By April 15, T. Vrouwenvelder will send his comments to D. Diamantidis.
P3 (D. Diamantidis) will send a pre-final draft of the chapter to all partners by May 4, 2012.

Chapter 3 - Requirements on performance – P1 (KI)
Partners agreed that the terms criterion and requirement should be clearly defined and distinguished. Further, they agreed that the so far used term design working life should be replaced with the term residual working life. M. Holický will make changes according to these two objections and send the adapted text to D. Diamantidis by April 15, 2012. Then, by May 18, P1 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 4 - Reassessment process – P3 (HR), P6 (TNO)
The title will be changed to “Assessment process”. D. Diamantidis will shorten the text and omit the duplications and make references to Chapter 1 and ISO documents 13822 and 2394 (Figure 2 is adopted from ISO 13822).
P3 (D. Diamantidis) will send a pre-final draft of the chapter to all partners by May 4, 2012.
Chapter 5 - Structural reassessment – P5 (UOP)
Partners agreed that the chapter will be discussed in more detail tomorrow.

Chapter 6 - Probabilistic assessment – P1 (KI)
Formulae (4), (5), (6) from the Chapter 1 will be added in the text of the Chapter 6. Section 5 “Target reliability” (page 20) will be confined to minimum and a reference will be made to Chapter 8, which will be, on the contrary, extended by this material.
In Example 9 on the page 19 Sk for skewness will be used.
By May 15, Ton Vrouwenvelder will send to M. Holický some more text to be added to the draft of the chapter.
P1 (M. Holický) will send a pre-final draft of the chapter to all partners by May 4, 2012.
Then, by May 18, P1 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 7 - Reliability updating – P1 (KI), P3 (HR)
D. Diamantidis will undertake part of the text. The number of case studies can be reduced. Case studies 1 and 2 on page 18 – examples - can be extended and used in the Handbook 2.
On pages 6, 7 the use of symbol θ will be checked.
Text of evaluation of the example on pages 8, 9 will be simplified. T. Vrouwenvelder will send his recommendations to M. Holický.
On page 12, g instead of M will be used.
On page 15, fractile instead of percentile will be used.
P1 (M. Holický) will send a pre-final draft of the chapter to all partners by May 4, 2012.
Then, by May 18, P1 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 8 - Acceptance criteria – P3 (HR), P6 (TNO)
Relative costs of safety measures should be emphasized in the text. They are often omitted in the JCSS, fib and ISO documents, with mentioning only the consequences of failure.
D. Diamantidis will extend some part of the text regarding global failure and failure of a large part of a structure.
P3 (D. Diamantidis) will send a pre-final draft of the chapter to all partners by May 4, 2012.

Chapter 9 - Life cycle optimization – P1 (KI)
T. Vrouwenvelder will send some editorial comments on remaining life of a structure to M. Holický.
P1 (M. Holický) will send a pre-final draft of the chapter to all partners by May 4, 2012.
Then, by May 18, P1 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 10 (previously Chapter 11) – Proof loading – P4 (IET), P7 (PAU)
P4 (A. Arteaga) will complete the text and send it to all partners by May 4, 2012.
Then, by May 18, P4 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 11 (previously Chapter 12) - Seismic retrofit of structures – P7 (PAU), P4 (IET)
So far, the text is material oriented, not really consistent with the rest of the Handbook 1.
Section 2 will become Annex C of the Handbook 1.
Section 3 will be handled in Handbook 2.
Section 4 will be extended to fulfill the scope of Chapter 12.
P7 (S. Toprak) will send a pre-final draft of the chapter to all partners by May 4, 2012.
Then, by May 18, P7 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 12 (previously Chapter 13) – Heritage structures – P5 (UOP)
Partners agreed that the chapter will be discussed in more detail tomorrow.
Chapter 13 (previously Chapter 10) – Verification methods – P1 (KI), P3 (HR)
It can possibly be re-allocated to Handbook 2.

Chapter 14 - Concluding remarks – P3 (HR)

Annex A – Terminology

Annex B – Bayesian method

Annex C – Earthquake analysis will be developed by partner P7.

By the time of the plenary meeting in Barcelona (June 14-15, 2012), the chapters should be ready for printing.

6) Discussion of the Handbook 2
Handbook 2 in more detail will be discussed tomorrow at the meeting of P1 (J. Pallierová), P3 (D. Diamantidis) and P5 (P. Croce). Partners agreed that HB 2 will contain more case studies than Handbook 1, about 200 pages and will be released in 400 hard copies - books (in English and Czech version) and on 400 CDs. Deadline for its completion is May 31, 2013.

7) 1st international seminar in Barcelona, June 14, 2012 (afternoon)
Partners scheduled the program of the seminar – see the PPT presentation “Leonardo 2 Pisa”, which forms a part of these minutes.
Drafts of the PPT seminar presentations (including the LLP logo) should be sent to all partners by June 1, 2012.

Seminar programme

Thursday June 14, 9:30 a.m.

1. Opening and introduction (15 min.) – AA, MH
2. Codes and recommendations (20 min.) - DD
3. Basic concepts (20 min.) - MH
4. Reliability aspects (30 min.) - TV
5. Assessment and procedures (20 min.) - DD

Coffee break (20 min.)

6. Case studies (3 x 20 min.) – PC, PT, ST
7. Closure and discussion (30 min.) – AA

8) Following plenary meetings and international seminars
- 3rd plenary meeting will be held in Barcelona on June 15, 2012, the day after the first international seminar. Meeting is supposed to reflect the seminar and to be focused mainly at the final discussion of HB1.

- 4th plenary meeting and 2nd international seminar will be held in Regensburg on October 11-12, 2012. Meeting is supposed to reflect the seminar and to be focused mainly at the discussion of a zero draft of HB2 and Interim report.
- 5th plenary meeting and 3rd international seminar will be held in Pisa in April, 2013. Meeting is supposed to reflect the seminar and to be focused mainly at the discussion of a first draft of HB2.

- 6th plenary meeting and 4th international seminar will be held in Denizli, Istanbul or Izmir in June, 2013. The place and date will be fixed at the meeting in Barcelona (Istanbul or Izmir is preferred). P1 (Jana Pallierová) will send an inquiry about the location to P7.

- It was suggested by P6 (T. Vrouwenvelder) to organize mini symposium during the IABSE conference in Rotterdam (May 6-8, 2013). P6 (T. Vrouwenvelder) will send to all partners proposal of its program.

**Saturday March 10, 2012, 10 a.m.**

Participants:

P1 (contractor) – CTU KI: Jana Pallierová
P3 (HR): Dimitris Diamantidis
P5 (UOP): Pietro Croce

**Discussion of the Chapters 5 and 12 of Handbook 1**

Chapter 5 - Structural reassessment – P5 (UOP)
The term “assessment” shall be applied instead of “reassessment” throughout the chapter. P5 (P. Croce) will send a pre-final draft of the chapter to all partners by May 4, 2012. Partners agreed that the chapter will be discussed in more detail tomorrow. Then, by May 18, P5 will send the improved draft of the chapter to P3 (D. Diamantidis).

Chapter 12 (previously Chapter 13) – Heritage structures – P5 (UOP)
Reference will be made to Annex I of ISO 13822. P5 (P. Croce) will send a pre-final draft of the chapter to all partners by May 4, 2012. Then, by May 18, P5 will send the improved draft of the chapter to P3 (D. Diamantidis).

**Discussion of the contents of Handbook 2**

Preliminary contents of the Handbook 2 was reminded and discussed, regarding the possible changes suggested during the meeting (examples 1, 2, p.18 in Ch.7 of HB1 extended to a case study, Ch.13 and section 3 of Ch.11 of HB1 1 will probably used here in the Handbook 2). The book shall contain a lot of case studies.

- Review of operational methods (structural, probabilistic) P5, P2
- Verification procedure (specification of partial factors, other) P3
- Updated Actions and action effects P4
- Updated Material properties P4
- Updated Geometric data P4
- Evaluation of measurements/tests/inspection planning P1, P2
- Case studies
  - bridge P5
  - concrete building P4
  - pipeline P7
  - heritage structure P5, P7
Discussion of dissemination possibilities
The following possibilities of the project results dissemination were outlined and discussed

- presentations/lectures on project results at European Universities
- preparation of common papers
- implementation of project results in consultancy cases
- implementation of project training material in courses (master courses)
- discussion in national committee meetings and with national organizations

#

Pisa, 10/3/2012  Minutes prepared by P1 (J. Pallierová)
Vocational Training in Assessment of Existing Structures

Agreement number: CZ/11/LLP-LdV/TOI/134005

Welcome to the second meeting in Pisa on 8. and 9.3.2012

Draft agenda

Thursday, March 8 (19:00 to late evening or early morning)
1. Opening at 19:00.
2. Adoption of the agenda.
3. Administrative issues (Jana Pallierova, Milan Holicky).

Friday March 9 (09:00 – 14:00)
5. Meeting and seminar in Barcelona, 05/2012 (Angel Arteaga).
6. Meeting in Regensburg, 10/2012 (Dimitris Diamantidis).
7. Subsequent meetings and seminars in Pisa, Denizli and Prague.
8. Closure of the meeting on Friday at about 14:00.
Partners – roll call of delegates

P1: KI, Applicant co-ordinator, Milan Holicky
P2: SPSS, Associated p., Roman Gottfried, apologized
P3: HR, Core partner, Dimitris Diamantidis
P4: IET, Core partner, Angel Arteaga
P5: UOP, Core partner, Pietro Groce, Paolo Formichi, Maria Luisa Beconcini
P6: TNO, Associated p., Ton Vrouwenvelder
P7: PAU, Core partner, Selcuk Toprak, apologized
Contracts and subcontracts

- Duration: from 1.10.2011 to 30.9.2013
- Total approved 305909,50 EUR, National Agency support of 74,81%, i.e. 228850,90 EUR

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<th>3. Equipment (up to 10%)</th>
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1st meeting in Prague, 26.10.2011
Adoption of agenda

Draft agenda

**Thursday, March 8 (19:00 to late evening or early morning)**

1. Opening at 19:00.
2. Adoption of the agenda.
3. Administrative issues (Jana Pallierova, Milan Holicky).

**Friday March 9 (09:00 – 14:00)**

5. Meeting and seminar in Barcelona, 05/2012 (Angel Arteaga).
6. Meeting in Regensburg, 10/2012 (Dimitris Diamantidis).
7. Subsequent meetings and seminars in Pisa, Denizli and Prague.
8. Closure of the meeting on Friday at about 14:00.
Administrative and financial rules

- Liabilities of all partners:
  - to inform P1 on a 3 month basis about activities and outcomes, articles, lectures, seminars… next by April 14
  - to provide P1 with the documentation for Interim Report, covering 1.10.2011-30.9.2012 – by 31/10/2012
  - to provide P1 with the documentation for Final Report, covering all project period 1.10.2011 to 30.9.2013 - by 31/10/2013

- All rules are given in Lifelong Learning Programme Guide for 2011 http://ec.europa.eu/education/llp/doc848_en.htm and in PPT Financial Management (e-mailed)

- In an uttermost case, contact please
  jana.pallierova@klok.cvut.cz
Production of Handbook 1

- Innovative methods for the assessment of existing structures
- book + CD (200 pages), 400 pieces
- version ENG, CZ
- available 30/9/2012
- responsibility:
  P3 (D. Diamantidis) – book completion, printing ENG version, sending to partners
  P1 (M. Holicky) – translation + printing CZ version
Production of Handbook 2

- Operational techniques for the assessment of existing structures
- book + CD (200 pages), 400 pieces
- version ENG, CZ
- available 31/5/2013
- responsibility:
  P5 (P. Croce) – book completion, printing ENG version, sending to partners
  P1 (M. Holicky) – translation + printing CZ version
Production of Handbook 3

- Basis for assessment of existing structures
- book + CD (120 pages), 400 pieces
- version ENG, CZ
- available 31/5/2013
- responsibility:
  P2 (R. Gottfried) – book completion, translation, printing ENG + CZ version, sending to partners
## Budget

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Unavoidable subcontracts

• P1  - printing of HB1,2 (CZ version)
  - translations of HB1,2
  - seminar in Prague
• P2  - printing of HB3 (CZ+ENG version)
  - translation of HB3
  - distribution of HB3 to partners
• P3  - printing of HB1 (ENG version)
  - distribution of HB3 to partners
  - seminar in Regensburg
Unavoidable subcontracts

- P4 - seminar in Barcelona
- P5 - printing of HB2 (ENG version)
  - distribution of HB2 to partners
  - seminar in Pisa
- P6
- P7 - seminar in Denizli
Changes to the budget

• re-allocations of money between direct cost categories – allowed up to 10% of the smaller amount – necessary to ask and explain the reason to NA (P1)

• more than 10% between direct cost categories – approved only exceptionally, contract amendment must be made

• **NO!** re-allocations between direct and indirect costs
Technical aspects: key referenced materials

- EN 1990, Basis of structural design, 2002
- ISO 2394, General principles …, 1998
- ISO 13822, Assessment of existing …, 2010
- ISO 3898, Names and Symbols, 2010
- ISO 8930, List of terms, 2010
- RILEM, Probabilistic Assessment …, 2000
- JCSS PMC, present version 2001
  http://www.jcss.ethz.ch/
- JRC-ECCS-Joint report, 2008
- Fib Bulletins, new expected in 2012
- CEN TC250/WG2 Existing Structures, since July 2011
Project set-up

- Work packages: WP1 to WP 10
- Main results: 10 items
  - Handbooks 1 to 3, HR, UOP, KI and SPSS
  - Software tools, PAU and all
  - E-learning, KI
  - Background materials, UOP
  - Web sites, KI
  - Seminars, all
  - Courses, all
  - Papers, all
# Main results

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## Partners involvement

### Main outcomes

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- **•** convenor
- **×** partner
Handbook 1: Preliminary contents

1. Basic concepts, terminology – P1, P4
2. Current standards – P3, P6
3. Requirements on performance – P1
4. Reassessment process - P3, P6
5. Structural reassessment - P5
6. Probabilistic assessment – P1
7. Reliability updating – P1, P3
8. Acceptance criteria – P3, P6
9. Life cycle optimization – P3
10. Verification methods – P1, P3
11. Proof loading – P7, P4
12. Seismic retrofit – P7, P4
13. Heritage structures – P5
14. Concluding remarks – P3
15. Annex A: Bayesian technique – P1

P1: 1,3,6,7,10,15
P2:
P3: 2,4,7, 8, 9,14
P4: 1,12
P5: 5,13
P6: 2,4,8
P7: 11,12
Hierarchy of fundamental terms

- **Reliability**
  - Safety, serviceability, durability, …

  - **Safety**
    - Related to Ultimate Limit States

  - **Serviceability**
    - Related to Serviceability Limit States

- In ISO 8930 „the structural safety is related to the ultimate limit states“ (see ISO clauses 2.3.1, 2.3.6, 2.13.11 and others). The same concept is accepted in existing ISO 2394 and Eurocode EN 1990.

- When used in the sense of „safety of people“, then it should be distinguished, or different terms like “protection” or “security” could be used.
Software tools

P7 and all partners – 31.5.2013

• EXCEL spread sheets
• Mathcad sheets
• Matlab sheets
• Mathematica sheets
• Computer aided training programs
Web sites

P1 and all partners – 31.12.2011

- HB translations, CZ - P1,2 (deadline 07/13)
- E-learning (ENG,CZ) – P1, P2,P3,P4,P5, P7 contributions (deadline 04/12)
- Software tools – P7 and all
- FAQ – (exists in CZ, ENG) - P2,P3,P5 contributions (deadline 06/13)
Background materials

P5, P3, P4

- CEN TC 250/WG2 Development of a new document on Existing structures (deadline 07/12)
- ISO TC 98/SC2/WG 11 – ISO 13822, background materials for a foreseen revision (deadline 07/12)
Barcelona seminar programme

Thursday June 14, 9:30 a.m.

- Opening and introduction (15 min.) – AA, MH
- Codes and recommendations (20 min.) - DD
- Basic concepts (20 min.) - MH
- Reliability aspects (30 min.) - TV
- Assessment and procedures (20 min.) – DD

Coffee break (20 min.)

- Case studies (3 x 20 min.) – PC, PT, ST
- Closure and discussion (30 min.) – AA
Meetings

- kick-off meeting, Prague, 26., 27.10.2011
- plenary meeting in Pisa, 8., 9.3.2012
- plenary meeting in Barcelona, 14., 15.6.2012
- plenary meeting in Regensburg, 11., 12.10.2012
- plenary meeting in Pisa, 04/2013
- plenary meeting in Denizli, 06/2013
- final plenary meeting in Prague, 09/2013

Additional meetings between P1, and relevant partners will be planned depending on work progress. Bilateral meetings (for example between P1 and P2) or other upon need.
Thanks for attending the second meeting

Hope to see you all in Barcelona

Heritage structures are difficult to assess