

WP5

Testing verification and validation of models

Workshop Beacon 19-20 June 2017



Strategy for verification and validation of models/Structure of WP5

◆ Tests cases with different objectives and degrees of complexity

● Verification/validations cases

- Tests with simple physic
- Tests with coupled processes

Task 5.1 - Very well instrumented lab tests

● Large scale experiments

- complex geometry
- coupled processes
- Uncertainties on boundary and initial conditions

Task 5.2 - Experiments well described, dismantled and showing heterogeneities effects

● Predictive simulations

- Lab tests
- Ongoing field scale experiments

Task 5.3 – Ongoing Experiments

● Assessment cases

- Andra tunnel plug,
- Nagra disposal cell
- KBS-3 deposition tunnel backfill

Task 5.4 – cases based on real bentonite component design



List of participants in WP5

◆ 13 partners are involved in WP5

- **Task 5.1: Laboratory tests used to verify and validate models:**
 - *Posiva, Andra, UPC, CTU, CU, VTT, ULg, BGR, LEI, Clay Technology, EPFL, ICL, Quintessa, JyU*
- **Task 5.2: Well-documented large-scale experiments to compare models with situations close to disposal conditions**
 - *UPC, ULg, BGR, CU, CTU, LEI, Clay Technology, ICL, Quintessa*
- **Task 5.3: Predictive simulations**
 - *UPC, CU, CTU, ULg, LEI, Clay Technology, Quintessa*
- **Task 5.4: Models applied to assessment cases**
 - *Posiva, Andra, EPFL, UPC, VTT, ULg, LEI, Clay Technology, ICL, Quintessa*

| Assessment case | Partner |
|-----------------------------|-----------------|
| KBS-3 backfill | Clay Technology |
| | LEI |
| | ICL |
| | VTT |
| Engineering barrier (Nagra) | EPFL |
| Tunnel seal (Andra) | Andra |
| | Ulg |
| | UPC |
| | Quintessa |



Selection of basic test cases to calibrate models

◆ Identification of lab tests well defined

● Some criteria...

- THM parameters known
- Geometry
- Boundary conditions
- If possible with identified heterogeneities...(hydration, density...)
- A strong link with experiments at larger scale...

● How many tests should be selected?

● In any case a detail description of the selected tests is needed

◆ A clear objective is needed in terms of processes

Selection of integrated test cases to verify/validate models

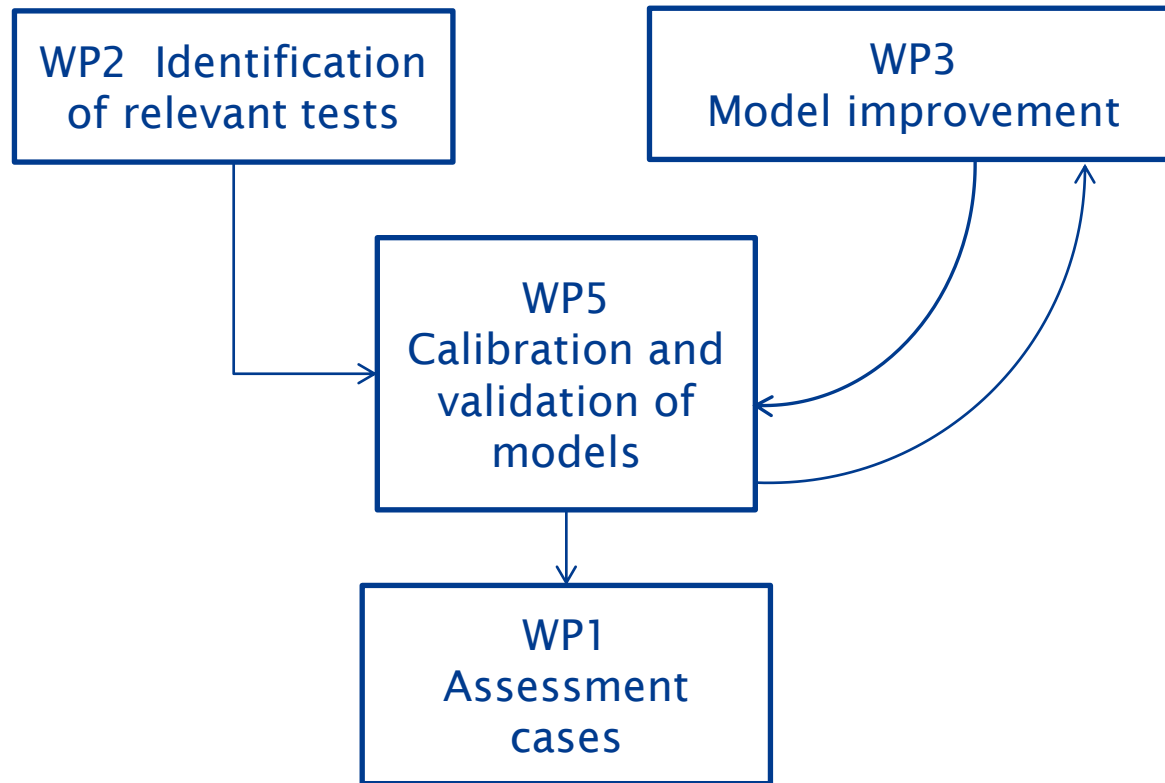
◆ Identification of lab tests with coupled processes

● Same criteria as basic tests



Links with other Work packages and planning

Strong dependencies with WP2 and WP3



Planning

January 2018 : WP5 Meeting → with WP3

First report may 2018 : Specifications for verification test cases – task5.1

Suggestion for test cases : **As soon as possible**

