

# 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

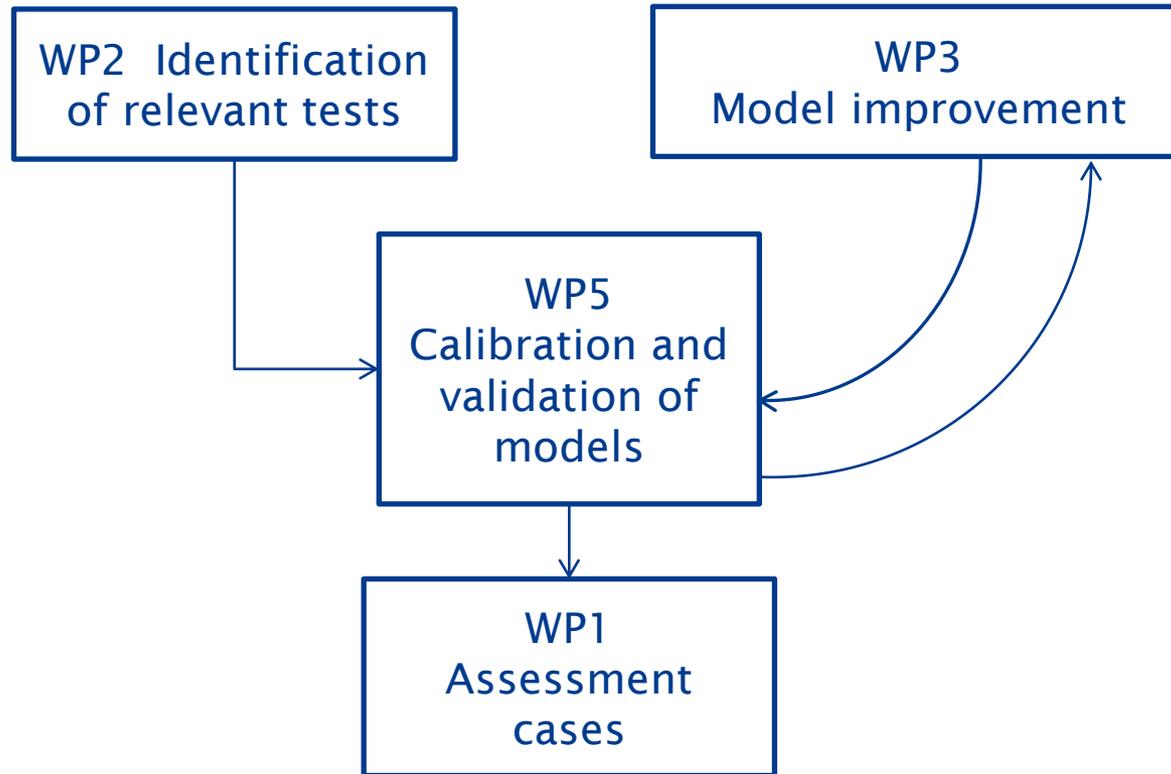
### ◆◆ Identification of lab tests with coupled processes

#### ● 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**

