

WP3

# Innovative Data-assimilation techniques

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# Objectives

**Investigate existing and generate new data-assimilation methods** that allow for **non-linear ocean models** and **non-linear observation operators**,

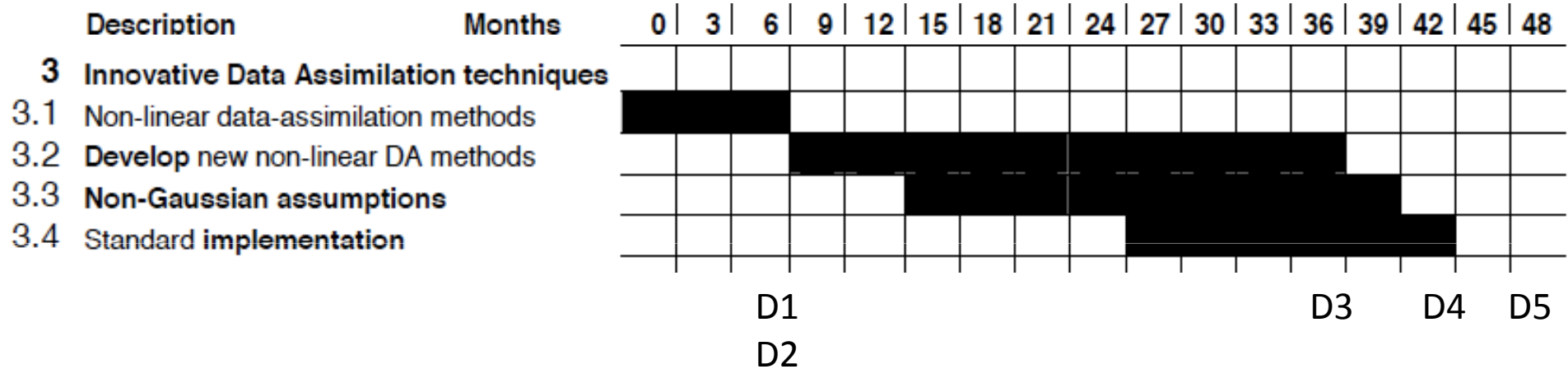
**implement** them as modules for the data-assimilation tool boxes and

**deliver** these to the benchmark WP4 and the SVN.

# Tasks

- Task 3.1: Identify existing non-linear data-assimilation methods
  - D3.1: Report non-linear data-assimilation methods for large-dimensional ocean models (M6, April 2012).
  - D3.2: Generation of living document on new data-assimilation methods (M6, April 2012).
- Task 3.2: Develop new non-linear data-assimilation methods
- Task 3.3 Develop objective comparison of non-Gaussian assumptions.
- Task 3.4: Generate standard implementation of the new methods as modules
  - D3.3: Implementation of one common new data-assimilation method in all toolboxes (M36, Nov 2014)
  - D3.4: Matlab/Octave and FORTRAN codes of the new methods compliant with tool specifications from WP1 (M42, April 2015)
  - D3.5: Report on new non-linear data-assimilation methods (M48, Oct 2015)

# Time line



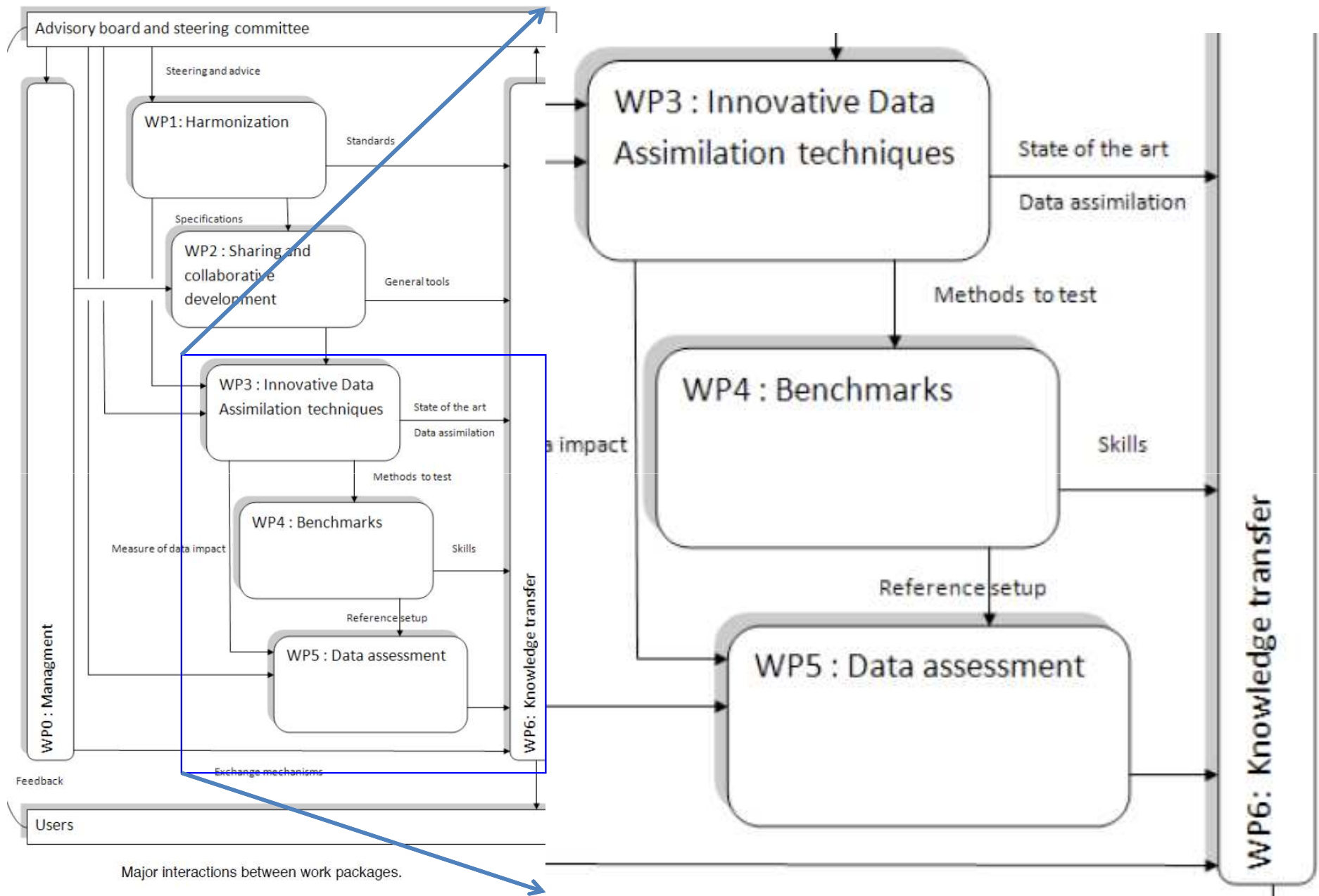
D1: Inventory NL DA

D2: Living document NL DA

D3: Implement one common new DA method

D4: New modules compliant with WP1

D5: Final report NL DA



# Partners

ULg	UREAD	AWI	TUD	CNRS	NERSC
6	12	10	7	13	5

- Task 3.1: Identify existing non-linear data-assimilation methods  
*UREAD with input from all*
- Task 3.2: Develop new non-linear data-assimilation methods  
*All*
- Task 3.3 Develop objective comparison of non-Gaussian assumptions.  
(e.g. maximizing cross likelihood, rank histograms, reliability)  
*All*
- Task 3.4: Generate standard implementation of the new methods  
as modules  
*All*

# Final remarks

- Timing is crucial:
  - WP3 -> WP4
    - Task 4.4 running benchmarks with new DA method(s)  
(small and/or medium case)
      - decide on which DA method
      - implement it
    - Task 4.5 Diagnostics non-Gaussian behaviour large case
  - WP3 -> WP5
    - Task 5.2 Assessing observing systems, non-Gaussian