

TOWARD FULLPOS IN OOPS

*On the benefits to re-write the post-processing
package in an object-oriented spirit*

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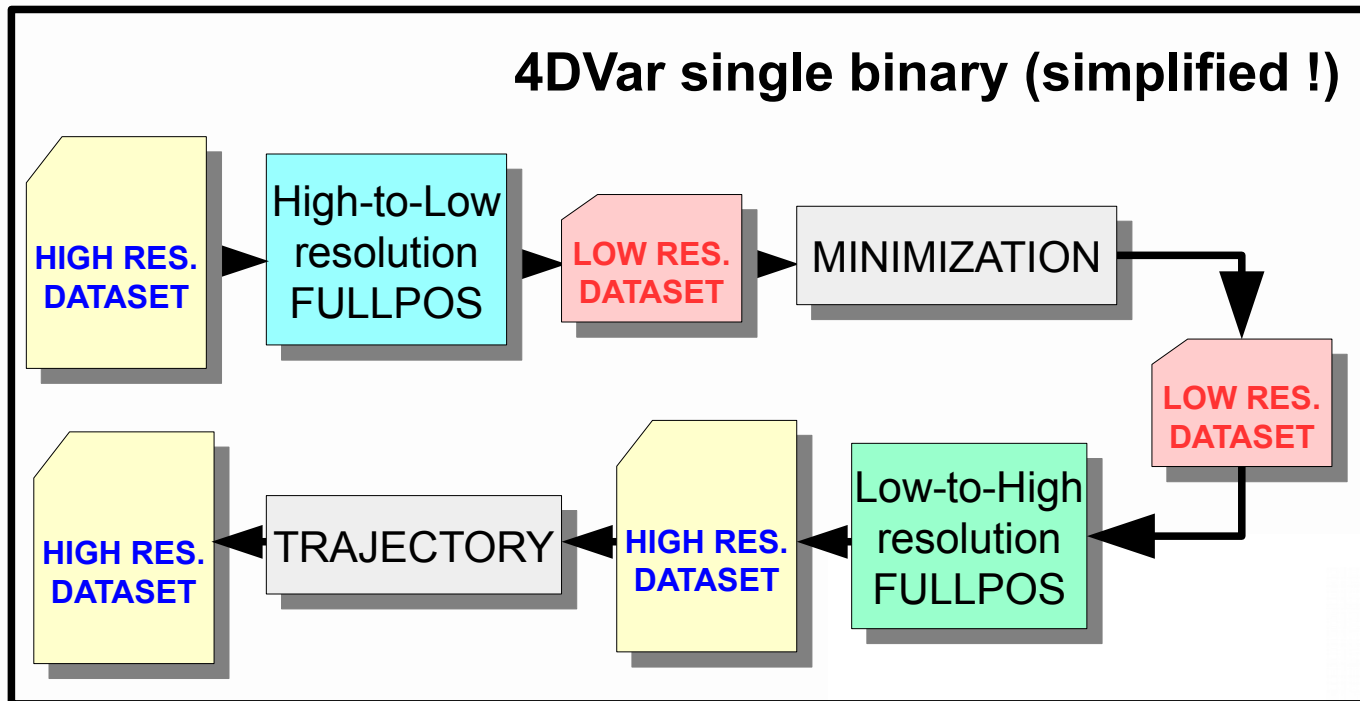
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INTRODUCTION

The so-called « OOPSification » of the post-processing package FULLPOS aims to execute the 4DVAR assimilation inside a single binary application.



MOTIVATION ?

We assume that we shall port the ARPEGE 4D-VAR into OOPS ; though today :

- the precise timing of OOPS in IFS remains open (as it has drifted during the past years)
- the precise strategy in Meteo-France remains open :
 - 4DVar with external loops still in scripts ?
 - Development of the 4DEnVar
(in the OOPS context, anyway)

Nevertheless, several code refactoring actions will be necessary for IFS (namely : in-line post-processing on the model geometry) and a part of this task will be conducted by Meteo-France (ie : I/Os excluded)

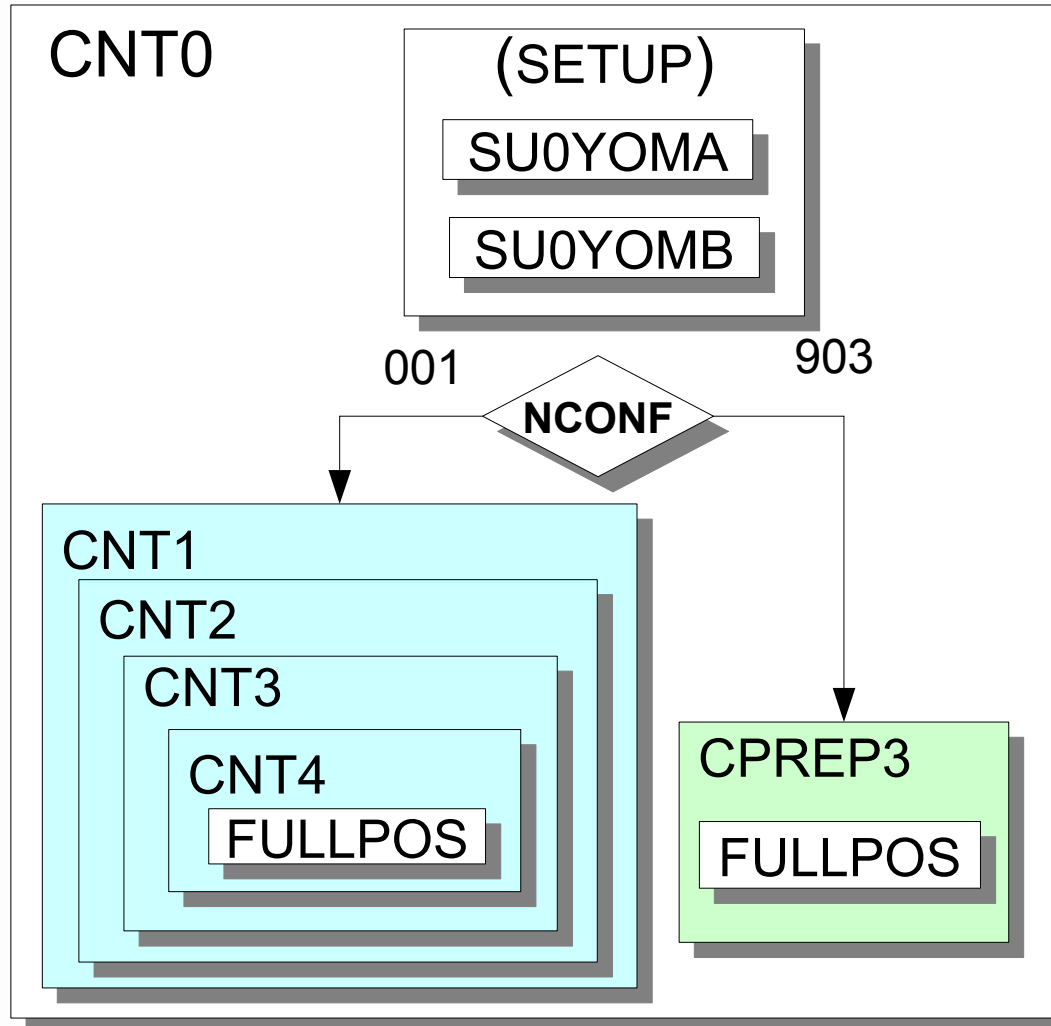
STRATEGY !

There was a little risk of discouragement due to that lack of visibility of the future.

The proposed strategy against that risk is to progress via intermediate steps where the code refactoring enables innovations in the post-processing package to the benefit of flexibility and performance.

Here comes the configuration 903

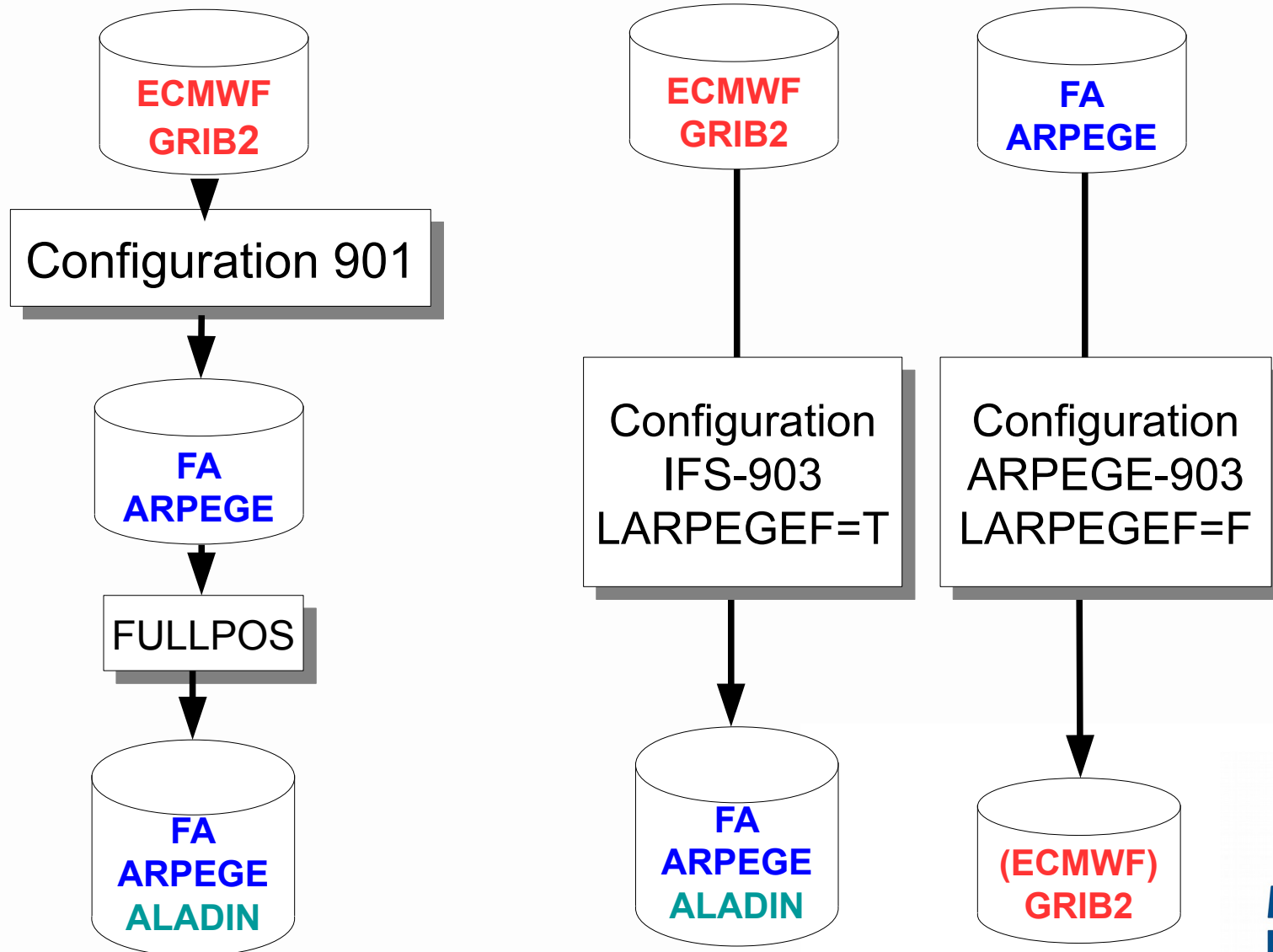
THE CONFIGURATION 903



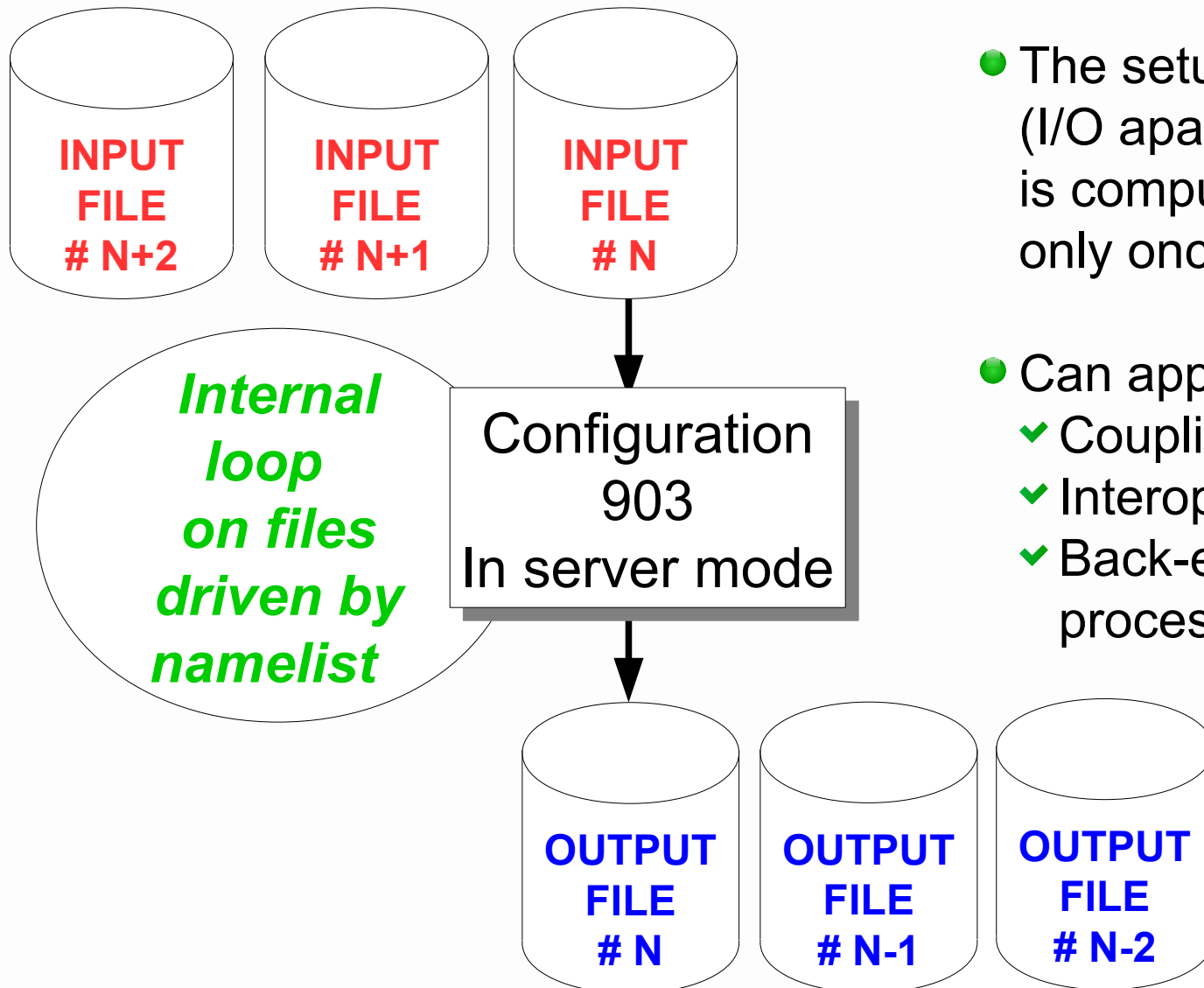
- ▶ **Off-line FULLPOS for Interoperability purposes**

- ▶ **Testbed for Fullpos in OOPS**

Configuration 903 used for Interoperability



Configuration 903 as post-processing server

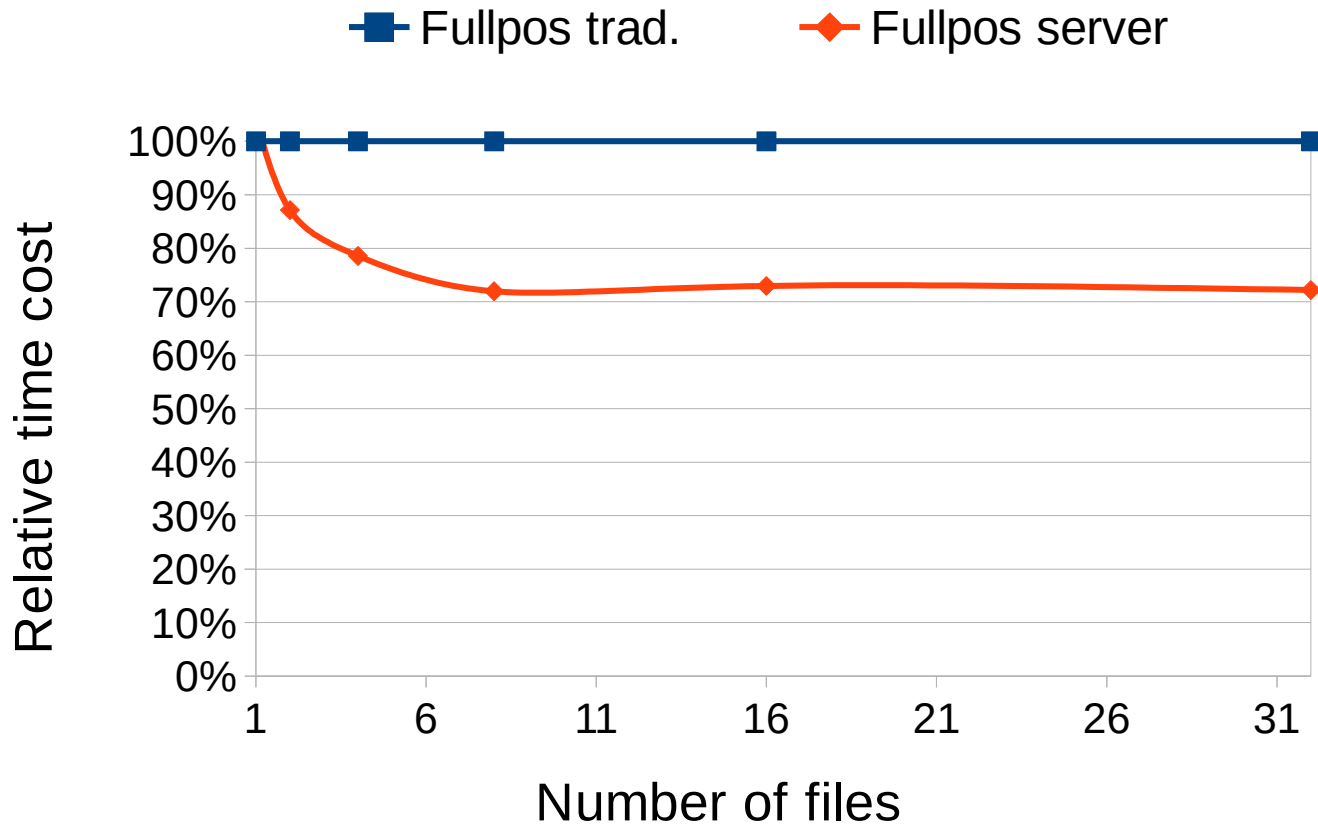


- The setup (I/O apart) is computed only once
- Can apply to :
 - ✓ Coupling files
 - ✓ Interoperability
 - ✓ Back-end post-processing

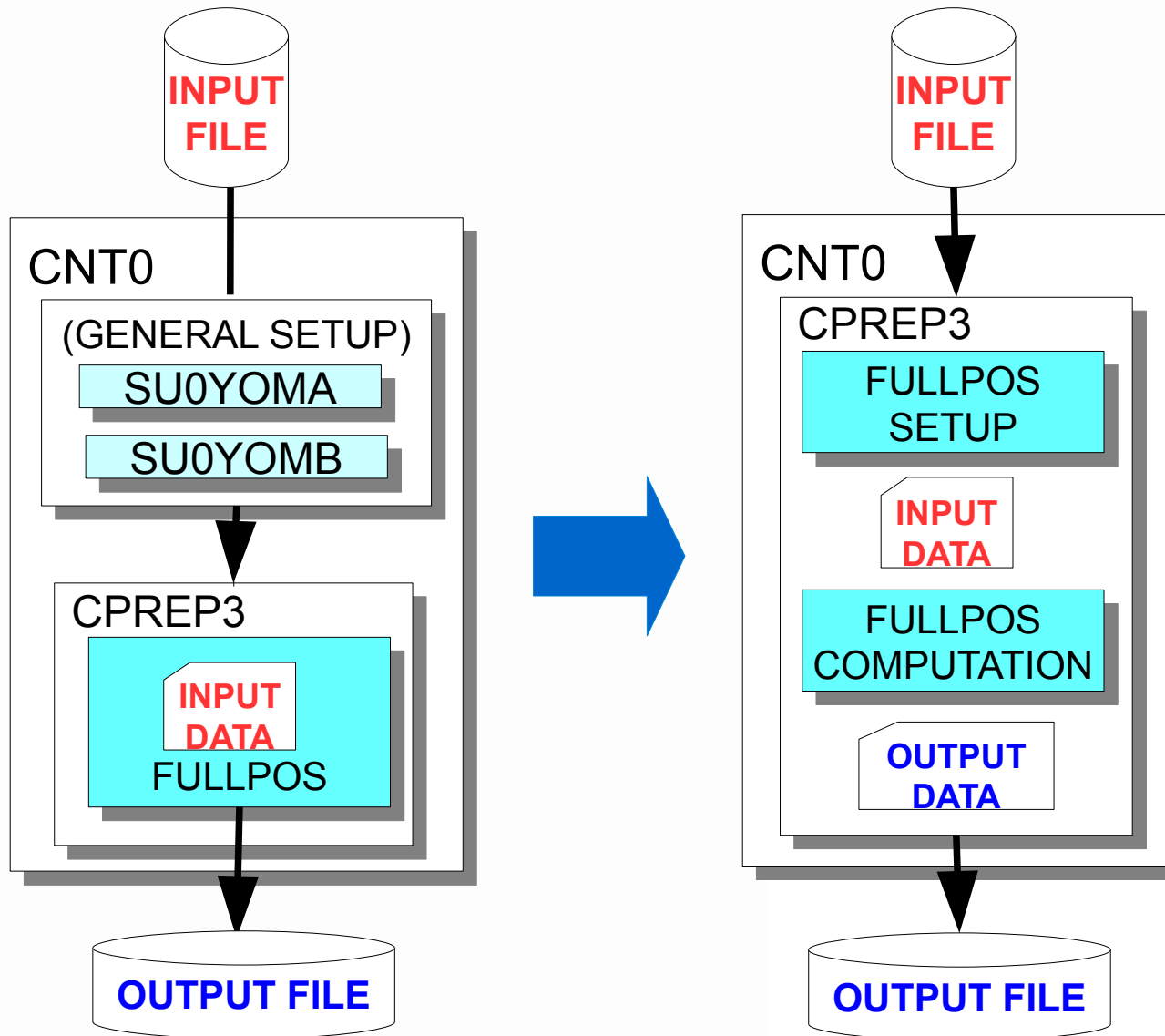
Performance of the post-processing server

Speedup by the post-processing server facility

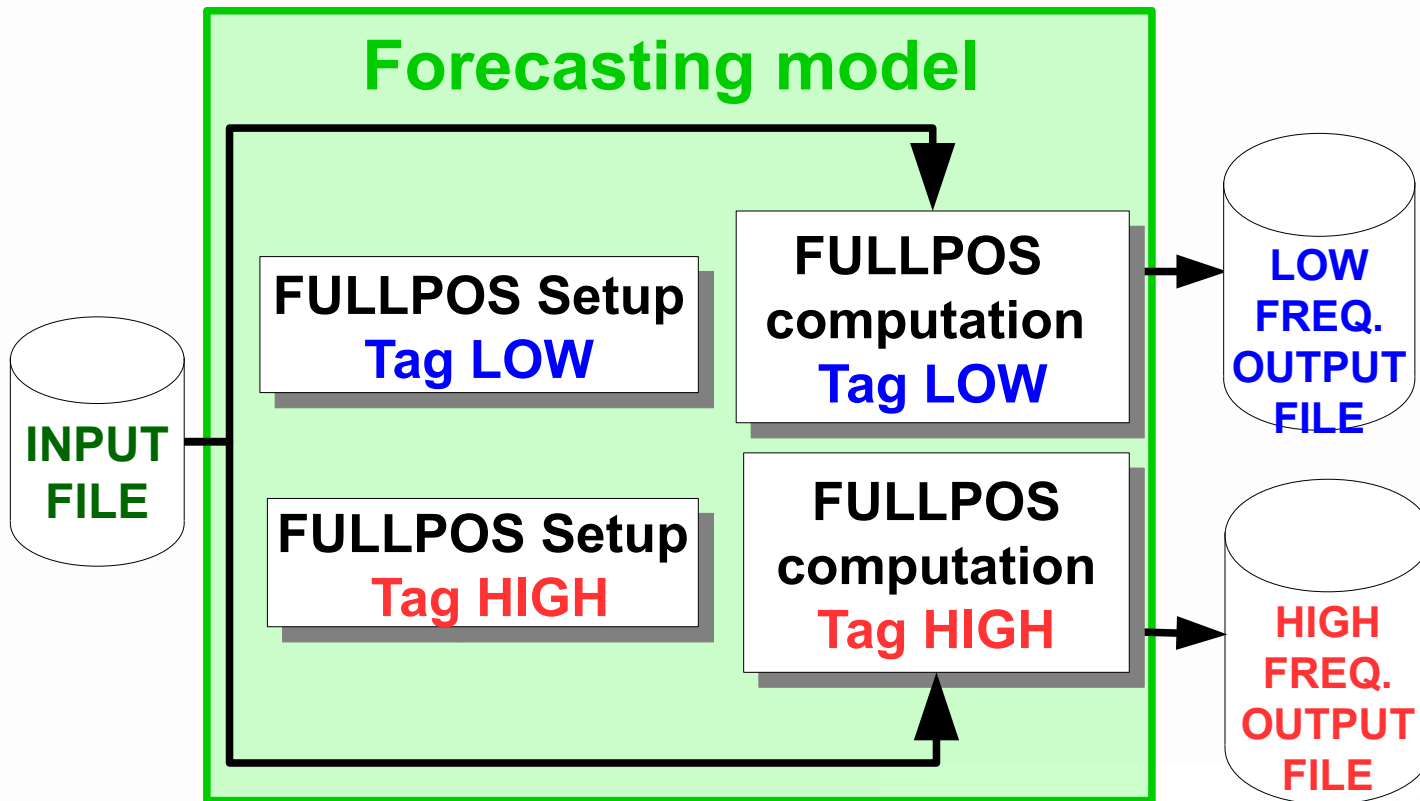
Transformation from ARPEGE to AROME



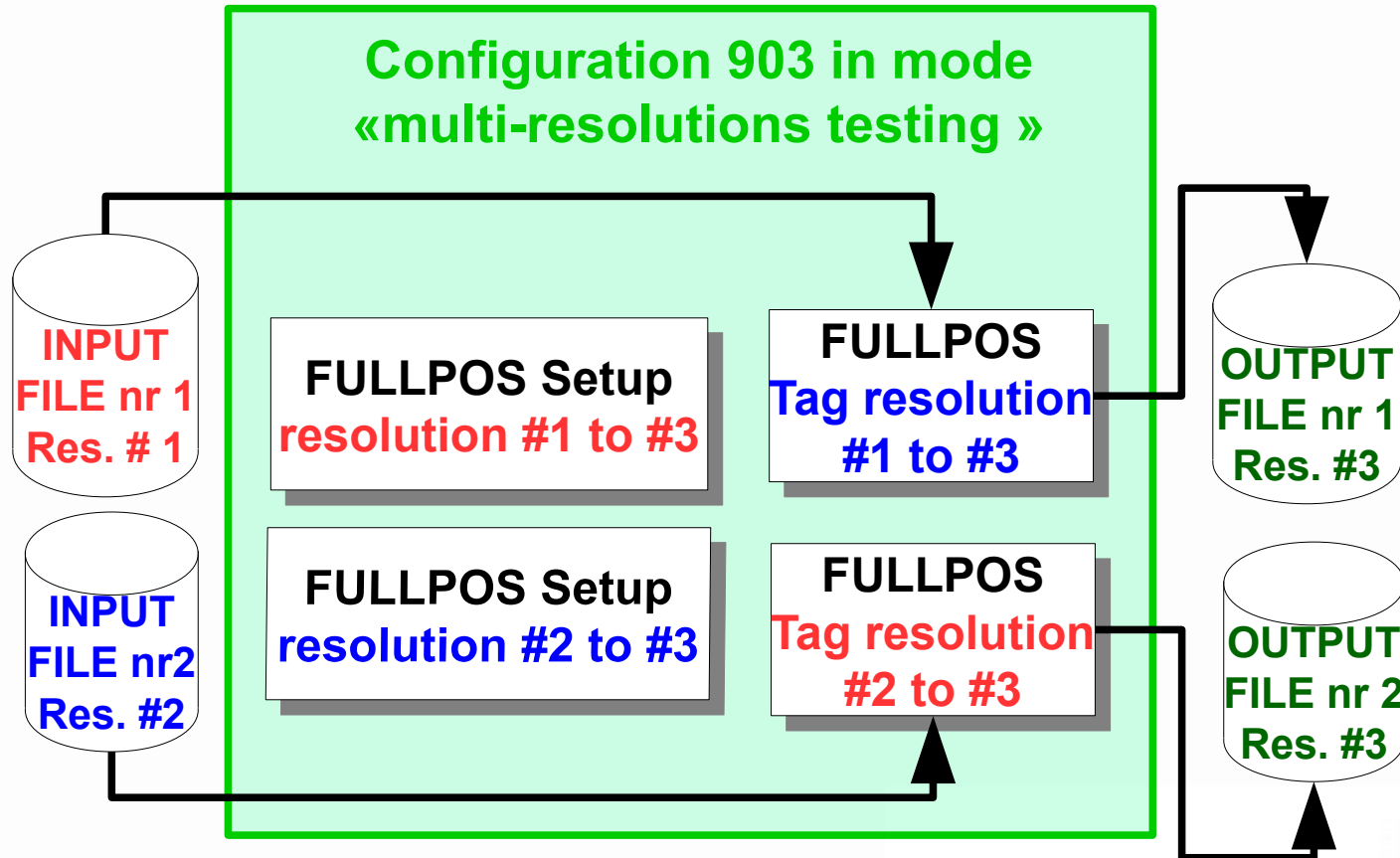
Progressive externalization of Fullpos



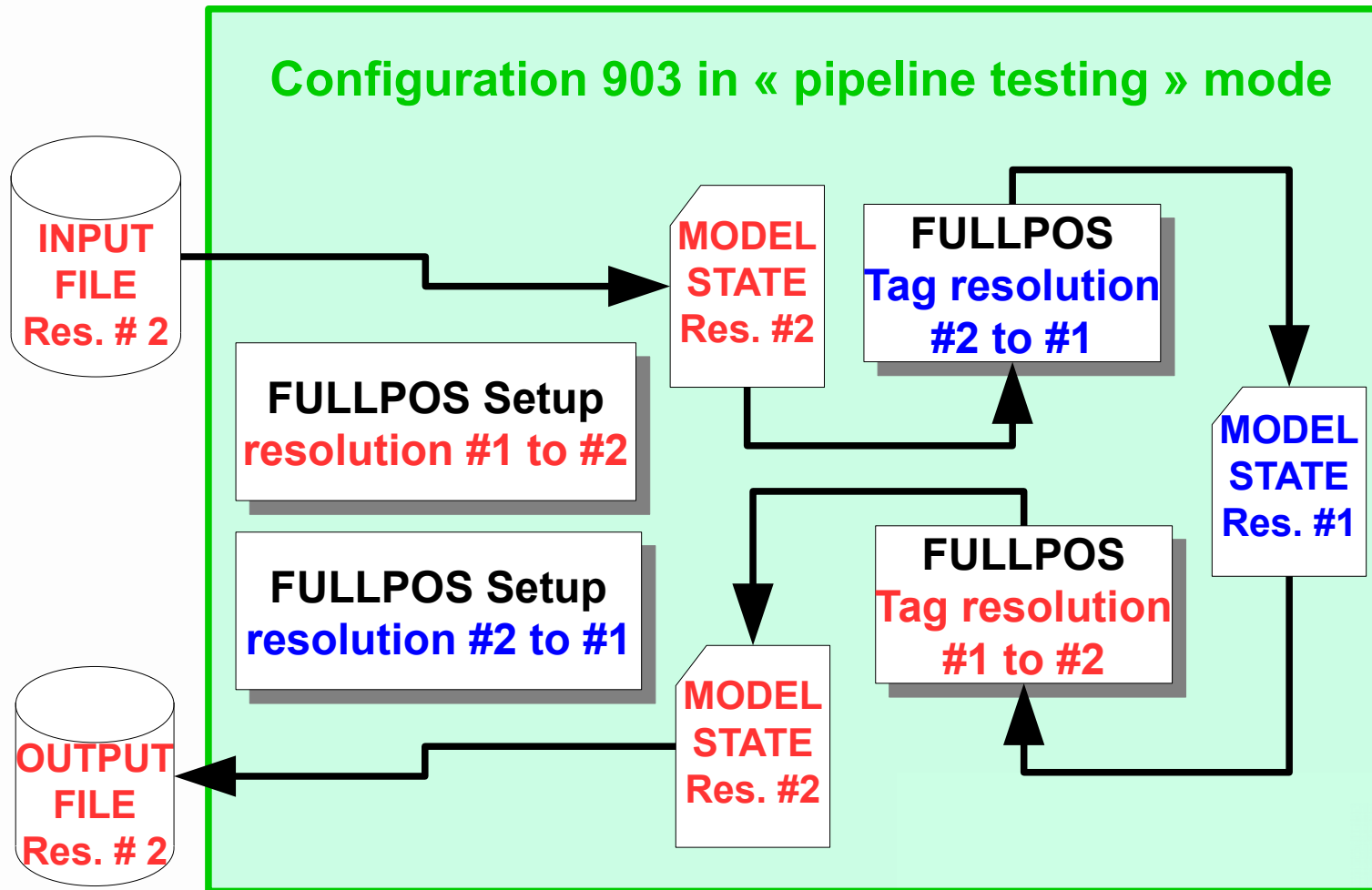
Multi-frequency post-processing



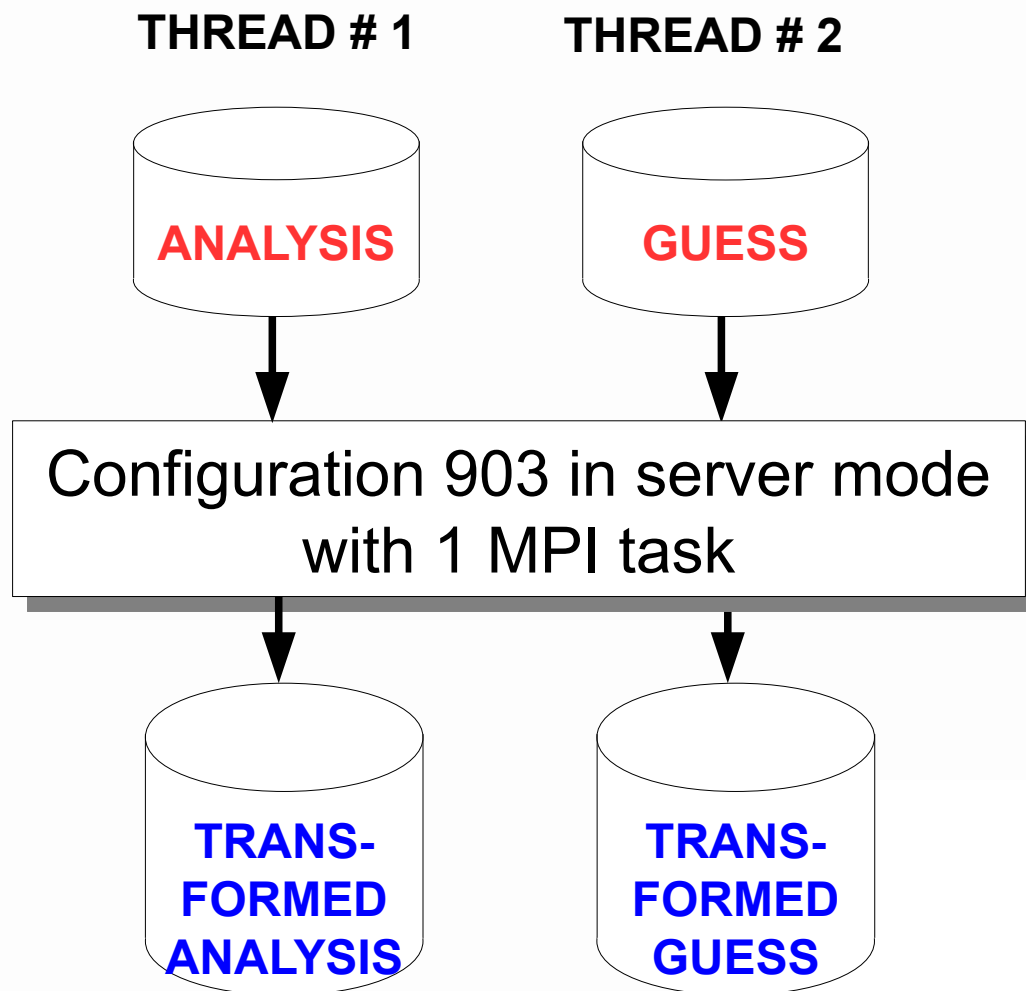
Fullpos-in-OOPS of the poor : use files



Configuration 903 used to test « pipelining »

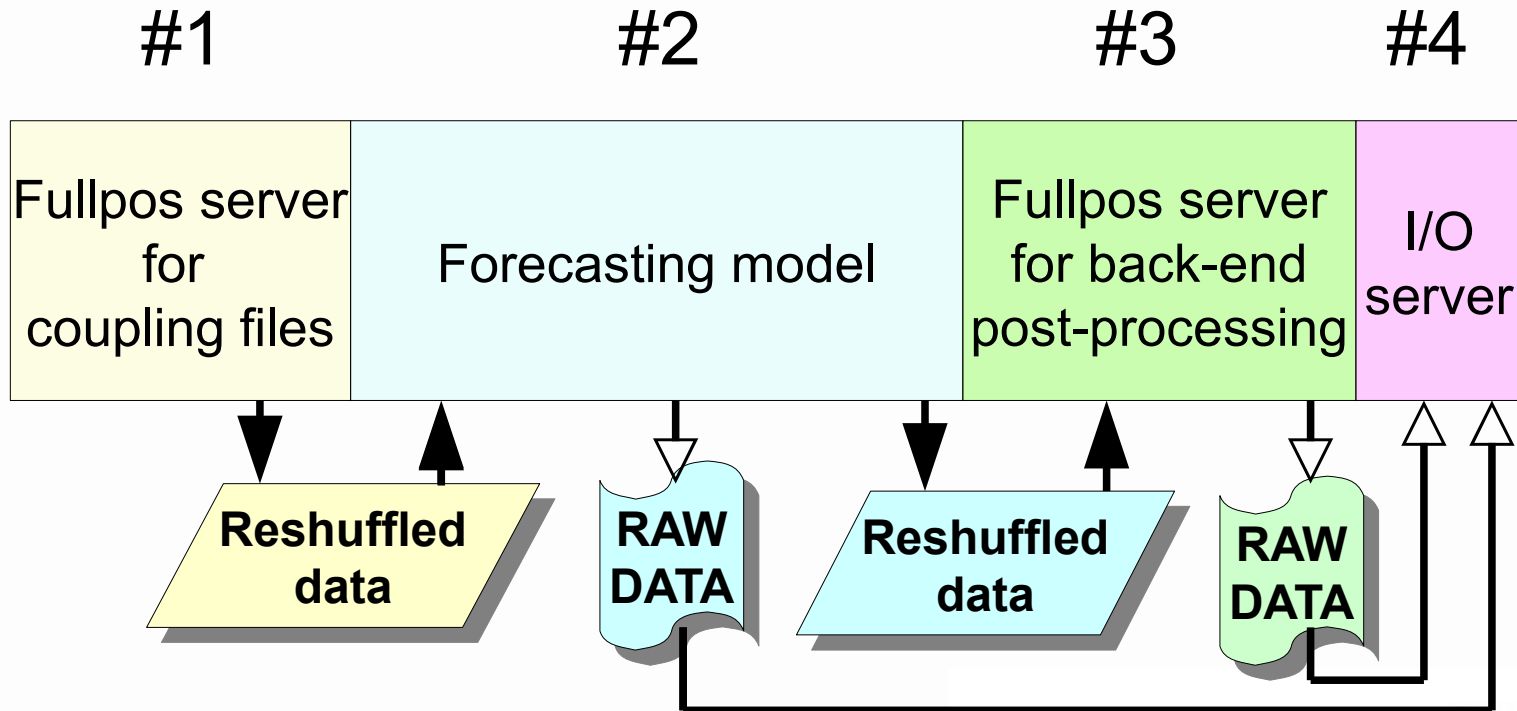


A test of simultaneous instances of Fullpos



Second generation post-processing servers

Multiple MPI communicators



Expected status in cycle 43T1

- Configuration 903 already available for use as basic off-line post-processing in cycle 43
- Configuration 903 in server mode ready for use
 - ✓ Robustness to be confirmed by intensive usage.
 - ✓ Documentation will be sent.
 - ✗ Not yet fully working with the I/O server
- Replacement of the configuration 901 coded ; to be validated (lacks expected here and there !)
- ✗ Interoperability in server mode not ready
- Refactoring for OOPS on its way ...

**Thank you
for your attention !**



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