

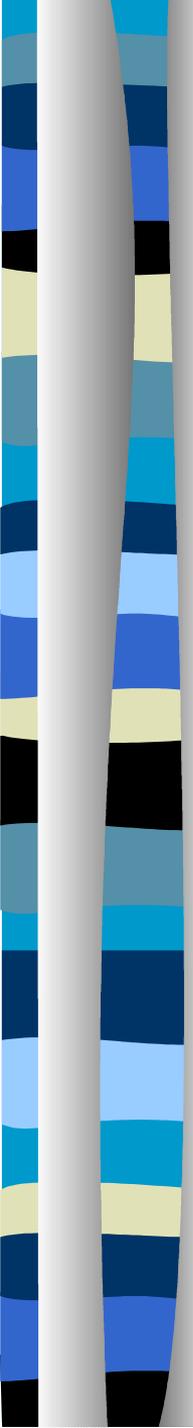
Proposed adjustments to the ALADIN-2 strategy and plans for ALARO-10



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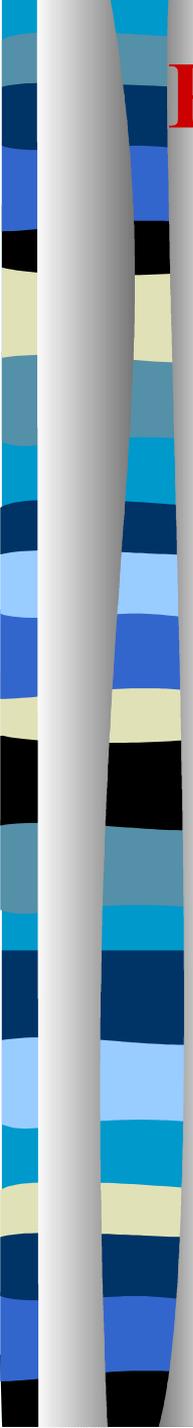
9th Assembly of ALADIN Partners
Split, Croatia, 29-30/10/2004

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 - Practical proposal
 - Interfacing : what does change, doesn't, remains to be done
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 - Possible ALADIN-2 work plan: high level overview, details about physics and guidelines for the coming year, outlook

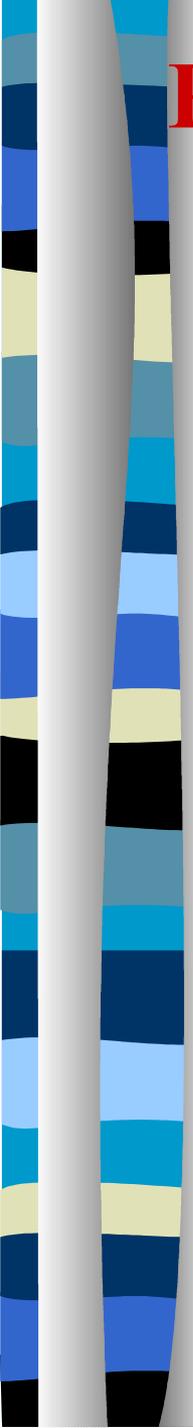
consensus on high-level guidelines

- Capitalise on successful developments (all, except integration of the KFB convection scheme in the ALARO-10 prototype)
- Preserve the chances of a smooth re-convergence between AROME & ALARO
- Capitalise on the **science** rather than the **algorithmic** of Meso-NH physics, in order to progress simultaneously on **quality**, **stability** and **cost-efficiency**
- Minimize risks: go back to a 'step by step' way of progressing (lessons learnt)



Proposed revised strategy for ALARO-10: some characteristics of the proposal

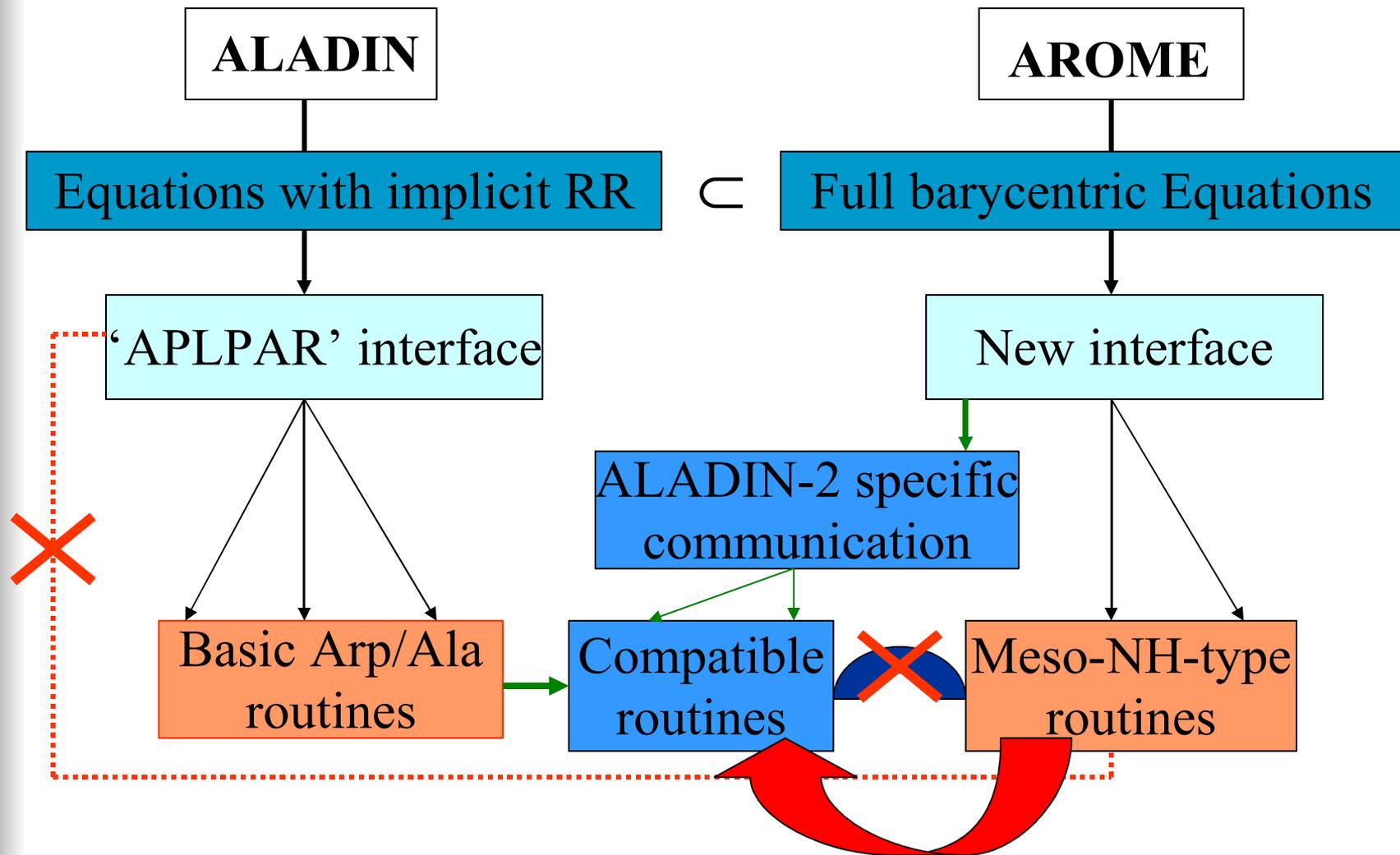
- In the 'step by step' strategy, one distinguishes the N°1 step from the others (N°2, N°3, etc...)
- Step N°1 must indeed be coupled with specific (already planned) phasing actions for the prototypes' developments and the interfacing constraints
- In any case it better be done rapidly to confirm the viability of the whole proposal
- If successful, step N°1 will set an example for the following steps and its use in ALADIN Partners Services shall concretise the 'ALARO turn'



Proposed revised strategy for ALARO-10: “what we propose” in practice

- To do step N°1 of the new path through a short-sharp-shock effort relying on the success of the choice of the new equations and of the preliminary studies of the interfacing constraints.
- To choose the perimeter of the N°1 import as maximal in its content and minimal in its impact on the ALADIN structure: obvious solution = prognostic treatment of the ‘dry turbulence’ + detailed ‘large-scale-only’ microphysics.
- To prepare further steps, in all directions, in a spirit of flexibility and portability and not of ‘yes/no packages’.

Proposed revised strategy for ALARO-10: interfacing (what changes and doesn't)



Proposed revised strategy for ALARO-10: interfacing (what remains to be done)

Thanks to the **green** part, the **blue** one can be finished in **reversed order**, this allowing to start at once on the **red** one!

Done



Full barycentric Equations

New interface

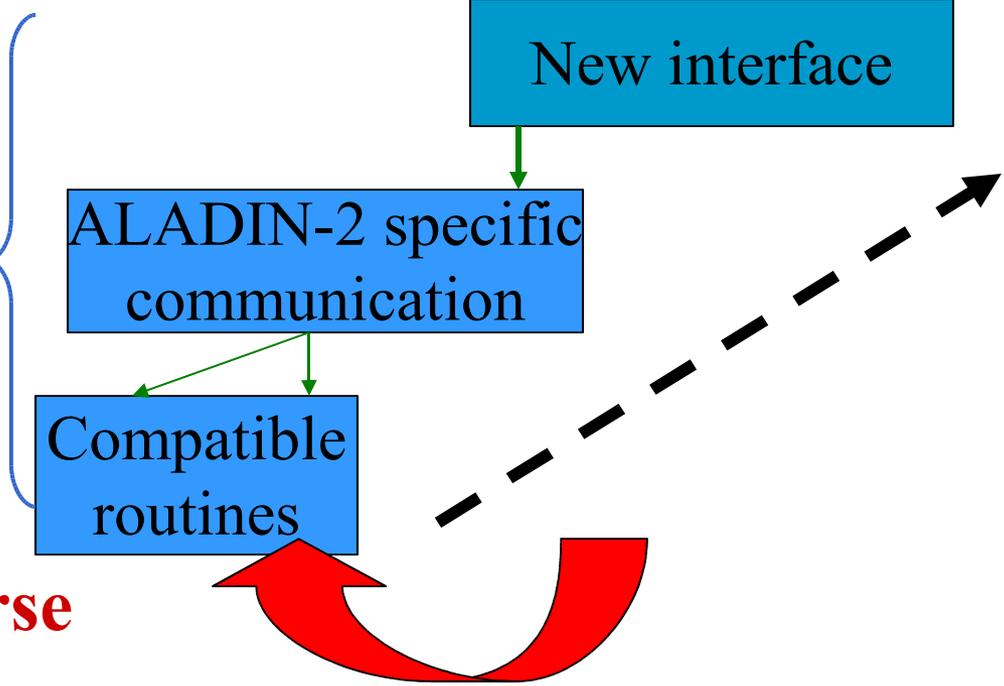
In (good) progress

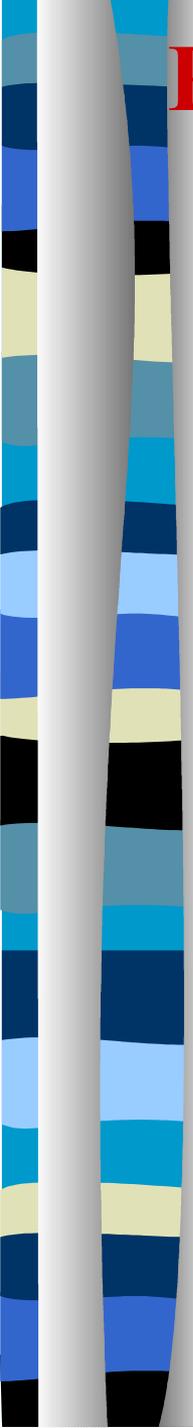
ALADIN-2 specific communication

Compatible routines

To be done, of course

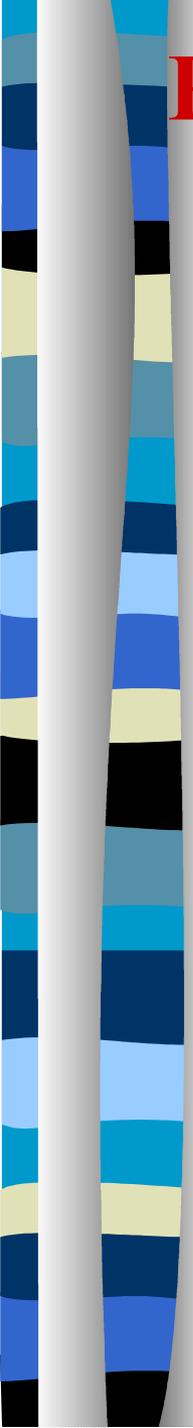
ALARO





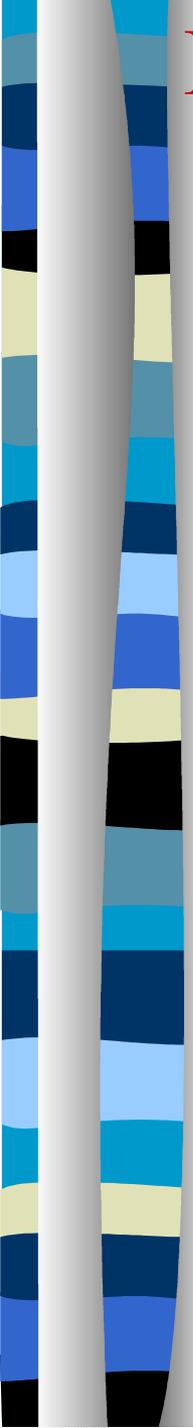
Proposed revised strategy for ALARO-10: 'software evolution' (1/2)

- ***Minor on the organisational side***, but ***major for the basic issues at stake*** => the crunch point will therefore be the 'phasing and maintenance' steps
- Since all scientific parts will now evolve more 'continuously', the main change will come from the 'externalisation' of ISBA and its associated file-structure modifications. This will tell us **when we will go from ALADIN to ALARO**
- This major step continues to impose a rapid upgrading to **CY28t3** for everyone



Proposed revised strategy for ALARO-10: 'software evolution' (2/2)

- Yet fully open choice between two options for some parts of the physics (later we hope to have an identified ALARO physics, of course)
- The prototypes will soon be phased with the main library but still in 'incompatible' mode
- We then aim at bringing-in together (i) the new interfacing rules, (ii) the 'imported' pieces and (iii) safe preliminary solutions for non-precipitating convection and the surface. **This is a formidable challenge for which the adherence of all Partners is required (be it only for testing)**



Proposed revised strategy for ALARO-10: (minimized) risks

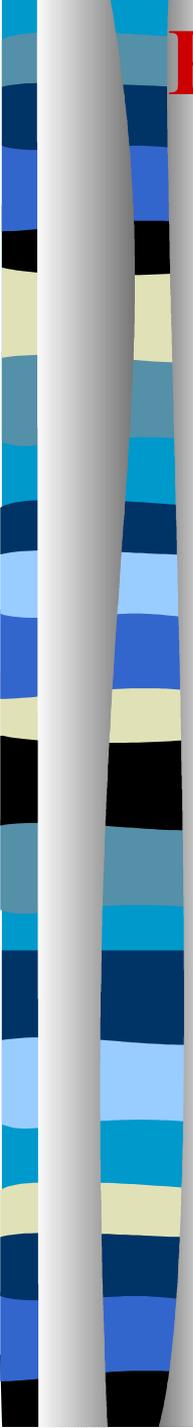
- Scientific failure of step N°1
 - not excluded but minor, owing to the choices made for this step
- Lack of interest of the ALADIN Partners in front of some allegedly ‘pure M-F issue’
- Disconnection of the ALADIN community from the ‘grey zone’ challenge
- Failure to re-converge at a later stage (induced coexistence of AROME and a high-resolution version of ALARO)

achievements on which to build

- Preparatory work for the networking of the software convergence with AROME
- Development of physical parts that are either irrelevant for AROME or more specifically targeted at the ALARO efficiency goal
- Preparatory work for the structure of the future AROME-ALARO physics/dynamics interface
- Development in Toulouse of the so-called ALARO-10 prototype (in parallel with its AROME 'twin')

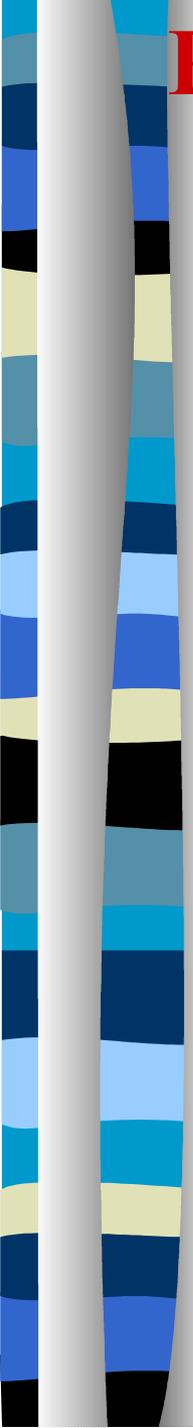
Proposed revised strategy for ALARO-10: expected benefits (1/2)

- Quick operational access for ALADIN-Partners to a more advanced physics without loss of quality and at an affordable cost
- At a later stage, increased number of compatible options for the physics of the model used for coupling AROME (from ALARO- , from ARPEGE- and maybe from HIRLAM origins), with true mixing possibilities
- Better maintenance strategy with 'one interface and two (three?) physics' rather than 'one physics for two purposes'



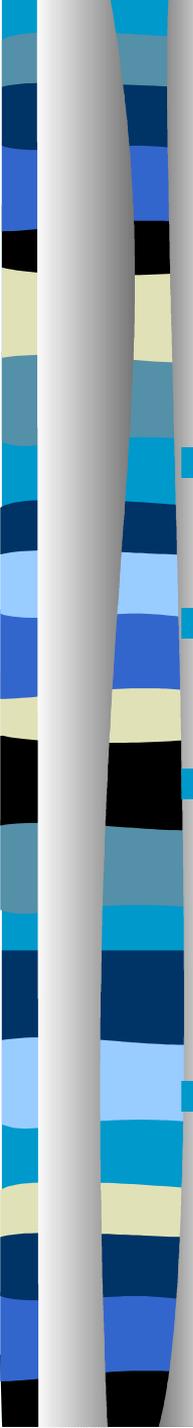
Proposed revised strategy for ALARO-10: expected benefits (2/2)

- An insight in the reasons of the failure of the first attempt, as perhaps required for preventing AROME from the consequences of a 'sleeping' problem
- A sound basis (after step N°1) for discussing the best *aims* and *means* of the re-convergence
- A good (even if not optimal) platform for scientific progress, in particular around the 'grey zone' problem



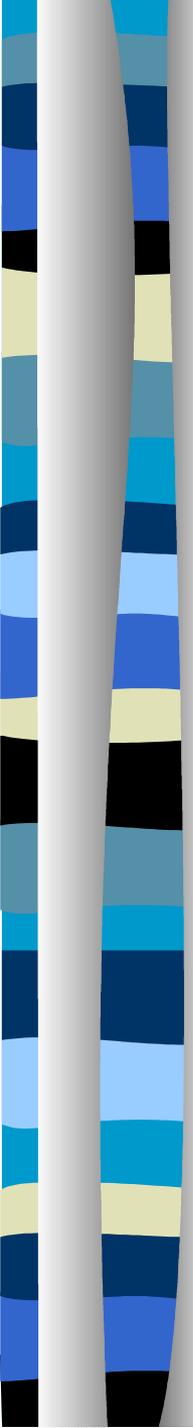
Proposed revised strategy for ALARO-10: constraints

- **NOW:** upgrade as soon as possible to Cy28t3, with help of ALADIN-2 coordination team
- **SOON:** join in the networking preparations:
 - of the change of file structures for externalised ISBA
 - of the assembling effort of the ‘big jigsaw’
- **SPRING 2005:** fully participate in the testing, debugging, improving effort for the **first ALARO version**
- **THEN:** start again to get progressively back in ‘anticipation’ mode for our research efforts



Potential ALADIN-2 work plan

- General overview
- Details about physics
- Focus on the coming year (up to the Bratislava Assembly, i.e. still under the original ALADIN MoU umbrella and with moderate interactions with HIRLAM)
- Outlook



Potential ALADIN-2 work plan: overview

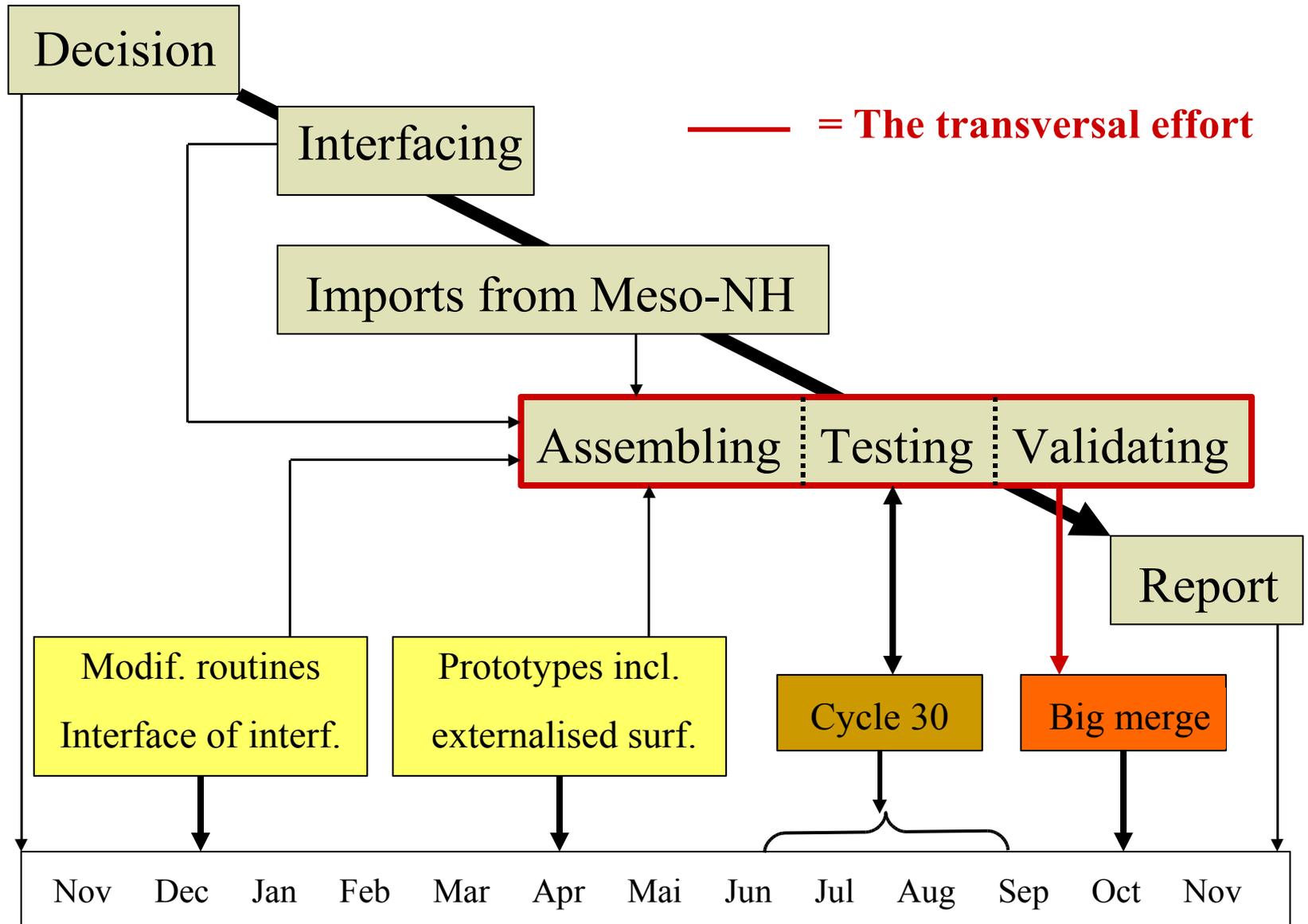
- No changes for dynamics and data-assimilation
- Revised objectives for the effort on physics: will ask for a more networking approach
- Concepts of 'tool-box' and 'convergence' still central to the new proposed thinking, even if their scope is more limited than originally anticipated
- Problem of increased manpower commitment (for transition N°1) replaced by:
 - team priorities issues for 2005
 - issue of long-term shift of interest towards physics

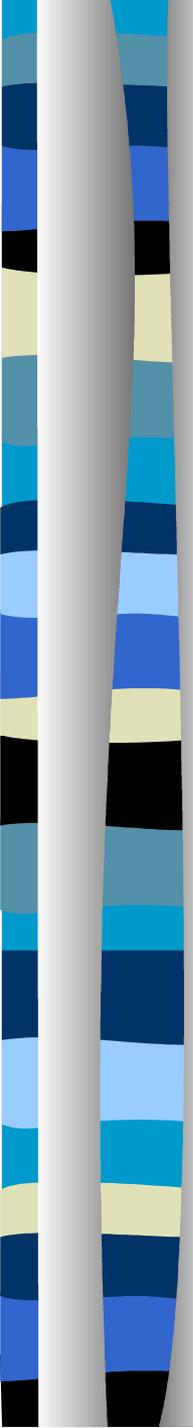
Potential ALADIN-2 work plan:

details about physics

- Training Course & WG meeting on interfacing of Physics and Dynamics (Prague, 22 to 26/11/04)
 - could also play the role of a kick-off for the new efforts
- In any case we should:
 - stick to the reliance on logical and clean solutions (equations => interface => time-stepping => routines)
 - put even more attention than now to the questions of stability, robustness, efficiency and consistency
- Some efforts (surface, non-precipitating convection) may be ad-hoc at the start but shall be streamlined as soon as things are stable again
- Hopefully HIRLAM will join in ... and ECMWF will get a long-term interest into all of this

Potential ALADIN-2 work plan: focus on the coming year





Potential ALADIN-2 work plan: outlook

AROME is your future, alike that of Météo-France

Get your teams involved so that it is not an ‘external’ project for your services

Avoid the ‘wait and see’ strategy on ALARO that might make the AROME step a quite hard one

The past examples of ALADIN-NH dynamics and of ALADIN 3D-Var show that ALADIN Partners have such a capacity when willing it!

Start thus getting really concerned **also** by the physics!

And now ...

- If we managed to converge on some consensus, there will soon be available:
 - An updated ALADIN-2 mission document
 - Some form of scientific strategy stand-point
 - An adapted work-plan