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ExaMA General Assembly 2026

Closing Remarks

Hélène Barucq & Christophe Prud'homme

January 21, 2026

Arts et Métiers ParisTech, Aix-en-Provence

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Acknowledgements

Thank You

Our Hosts

Arts et Métiers ParisTech for the excellent venue and organization

Participants

- All WP leaders and members
- Scientific Board members
- Remote participants

Special Thanks

- Local organizing team
- Session chairs and note-takers
- Administrative support

Outstanding Organization

A special thank you to **Lucas** and **Juliette** for their wonderful work in coordinating this General Assembly!

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Three Days of Collaboration

Day 1: WP Progress Reviews

All 6 Work Packages presented progress, highlights, and next steps

- **WP1** – Discretization
- **WP2** – Model Order Reduction & Scientific ML
- **WP3** – Solvers for Linear Algebra
- **WP4** – Data-Model Integration
- **WP5** – Optimization
- **WP6** – Uncertainty Quantification

Intra-WP Meetings

Productive internal discussions within each work package

Day 2: Framework Integration

Four core frameworks presented

Feel++ **Scimba** **Composyx** **Uranie**

Nine breakout sessions connecting frameworks with WPs

- Round 1: Feel++ × WP1 × WP2 | Composyx × WP3 | Scimba × WP5
- Round 2: Scimba × WP1 × WP2 | Feel++ × WP4 × WP6 | Uranie × WP5
- Round 3: Composyx × WP1 × WP2 × WP4 | Feel++ × WP3 | Uranie × WP2 × WP6

Scientific Board Meeting

Strategic discussions with board members and project leadership

Day 3: AI-HPC & Work Planning

Morning: AI-HPC Integration

Sage-HPC	Daimos
AI for HPC	HPC for AI
Laetitia Giraldi	*Julien Herrmann*

Morning: WP Feedback & Work Plans

All WP leaders presented feedback from breakout sessions and updated work plans for the coming period

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Scientific Advisory Board Feedback

SAB Feedback: Lois Curfman McInnes

Congratulations & AI Challenge

"Congratulations to the team for such integrated and progressive work."

Key Challenge Raised

The **influx of AI technologies** is impacting work throughout all of scientific computing and high-performance computing – a challenge we face internationally.

This requires careful consideration of how AI integrates with traditional numerical methods while maintaining scientific rigor.

SAB Feedback: Jed Brown

Verification & Validation under AI

"Under the banner of AI, we have – without a lot of reflection – abandoned verification and validation as practices."

Key points:

- V&V held critical epistemic role in mechanistic models
- **Validation**: suitability of the underlying continuous model
- **Verification**: correctness of the software implementation
- Referenced the 1986 JFE editorial: called it a *"professional crisis"*

Recommendation

In AI-oriented activities, maintain serious critique of reliability standards and compare fairly with classical numerical methods.

SAB Feedback: Christophe Geuzaine

GPU Verification Challenge

"How do you verify and run your verifications on GPU systems?"

- Most frameworks moving towards GPU acceleration
- CI/CD on diverse GPUs remains a practical challenge
- Easy to break performance without knowing it

Positive Assessment

"Quite impressed by the diversity of work… the concept of mini-apps, extended mini-apps, and demonstrators is in the right direction. This will be a major outcome of the project."

SAB Feedback: Gianluigi Rozza

Strong Integration & Unique French Model

"There is a strong integration creating further cohesion… This is reflecting the French structure of interaction between institutions – something very unique in Europe."

Key observations:

- Usually institutions compete; here there is **osmotic interaction**
- Creates critical mass on specific problems
- Enables transition to manufacturing and complex applications

Impact on Society

"A real added value… creating impact from computational technology through technology transfer and innovation. This is a clear demonstration of what applied mathematics can do."

SAB Feedback: Lars Nerger

Data Assimilation & Stochastic Methods

Questions on WP4 visibility and connection to ensemble methods:

- Uranie can support ensemble runs for data assimilation
- **Stochastic methods scale very well** – easy to fill a computer with ensembles
- Transport-based and Bayesian methods applicable for high-scale models

Climate & Application Connections

Asked about connections to climate models and numerical weather prediction.

Response: Contacts made via PC5 (ExaDI) with the PEPR on numerical weather prediction – cross-fertilization planned at NumPEx level.

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Key Themes

Major Themes Emerging

1. Framework-WP Integration

Concrete collaboration opportunities identified between computational frameworks and work packages through targeted breakout sessions

2. AI-HPC Convergence

Bidirectional synergy between AI and HPC: Sage-HPC (AI enhancing HPC) and Daimos (HPC enabling AI) represent a strategic direction for ExaMA

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Looking Forward

Immediate Next Steps

1. **Within 2 weeks**: WP leaders finalize and share meeting minutes
2. **Within 1 month**: Follow-up on breakout session action items
3. **Ongoing**: Cross-WP collaborations initiated during the GA
4. **Quarterly**: Progress reports on GA action items
5. **new framework sessions**: Schedule additional framework-WP interactions soon
6. **Website updates**: the GA material is on the ExaMA site, make sure the information is up to date regularly, bring up news items, etc.

Merci !

Thank You for Three Productive Days

Safe travels home

See you at the next ExaMA event!

ExaMA – Exa-scale Methodologies and Algorithms
Part of the NumPEx France 2030 Program

Questions?