

STE||AR

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ADCIRC-HPX

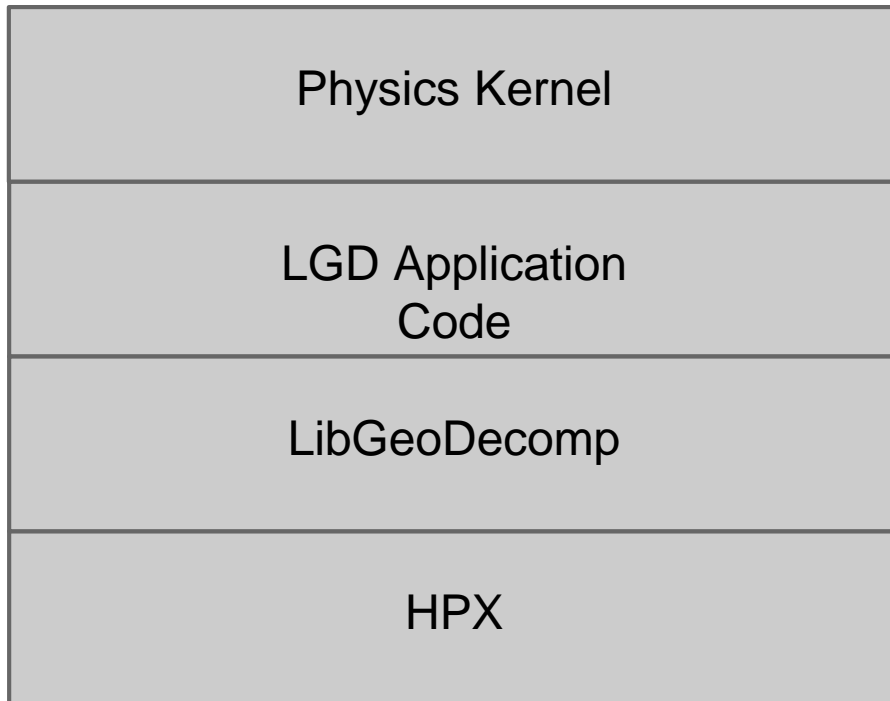
STORM Kickoff Meeting
October 21, 2014

Our Goal

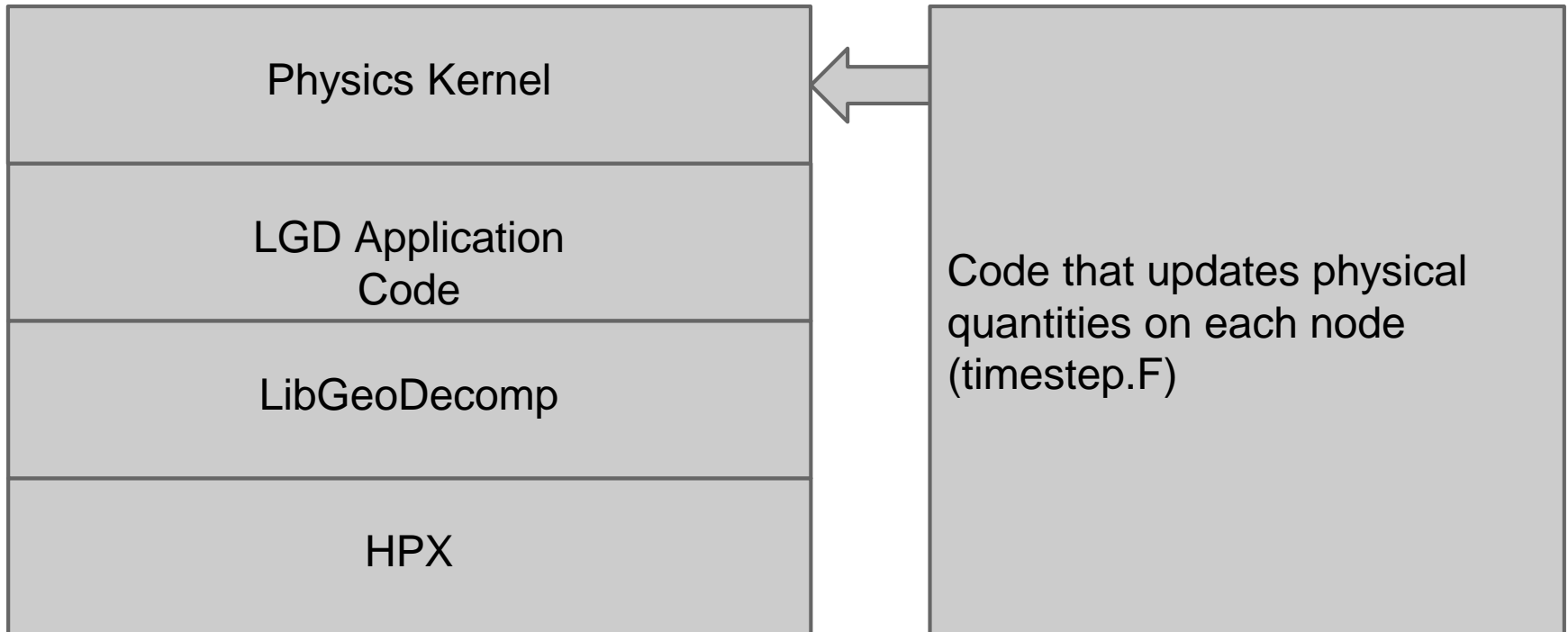
Build a next-generation ADCIRC code

- **Sustainable**
- **Extensible**
- **Scalable**
- **Flexible**

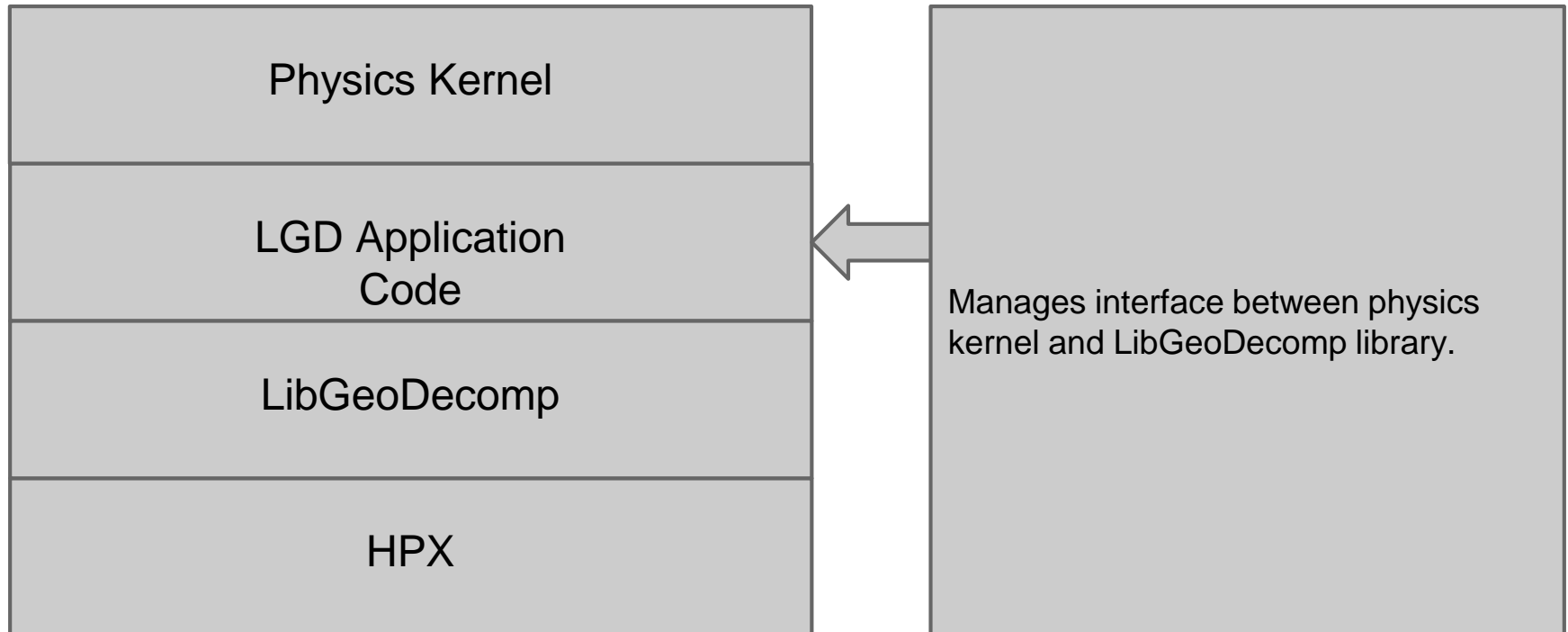
Proposed Software Stack



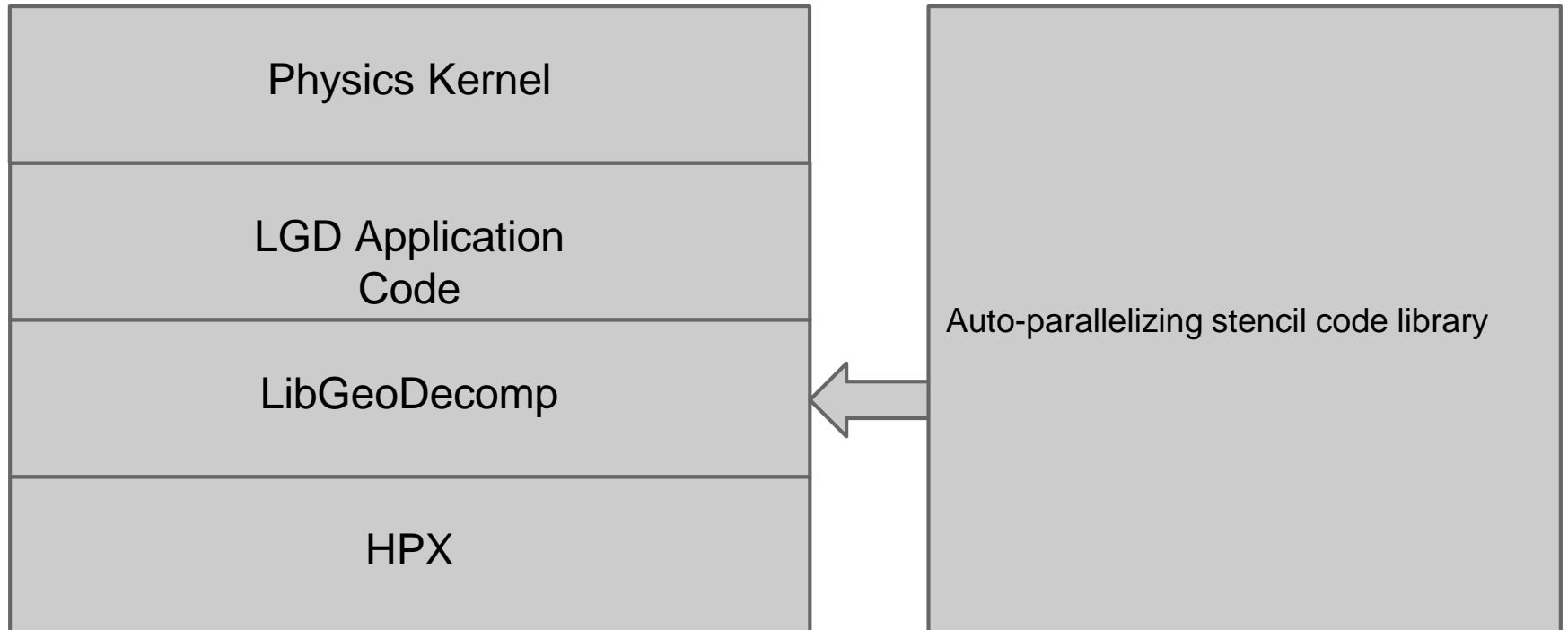
Proposed Software Stack



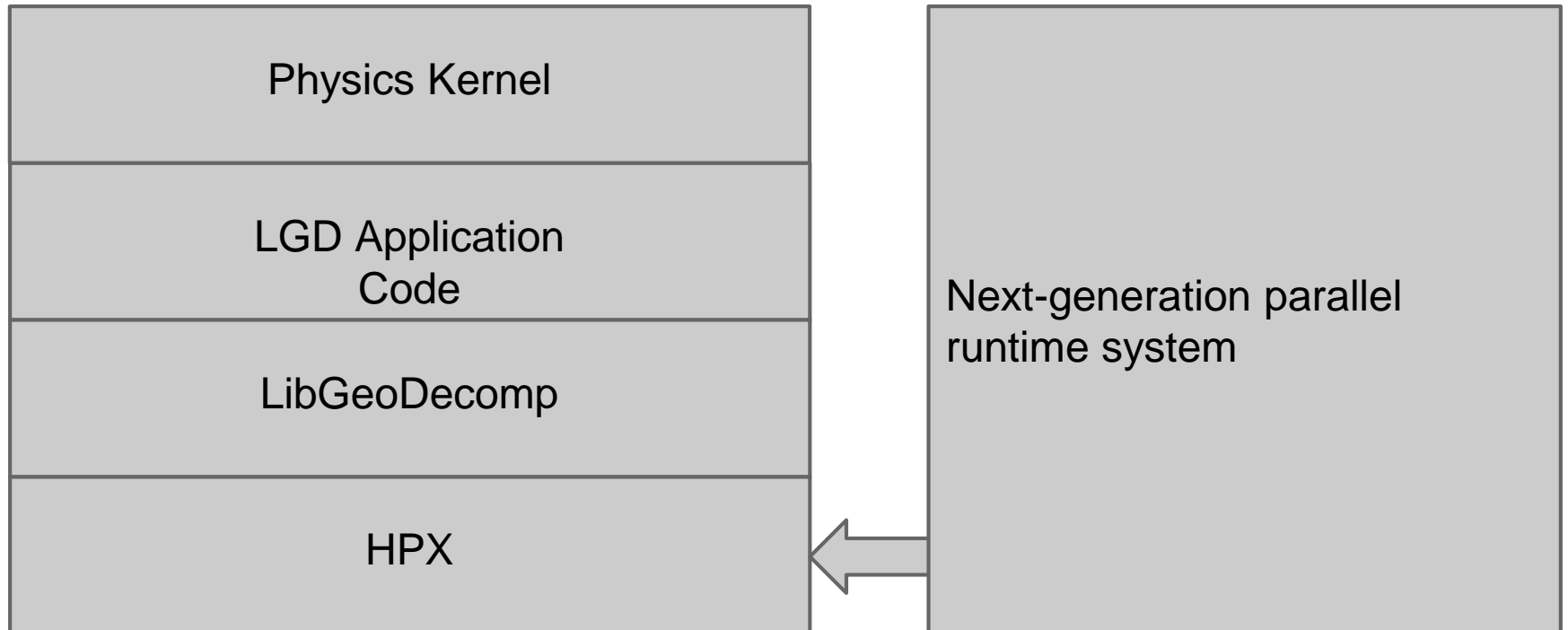
Proposed Software Stack



Proposed Software Stack



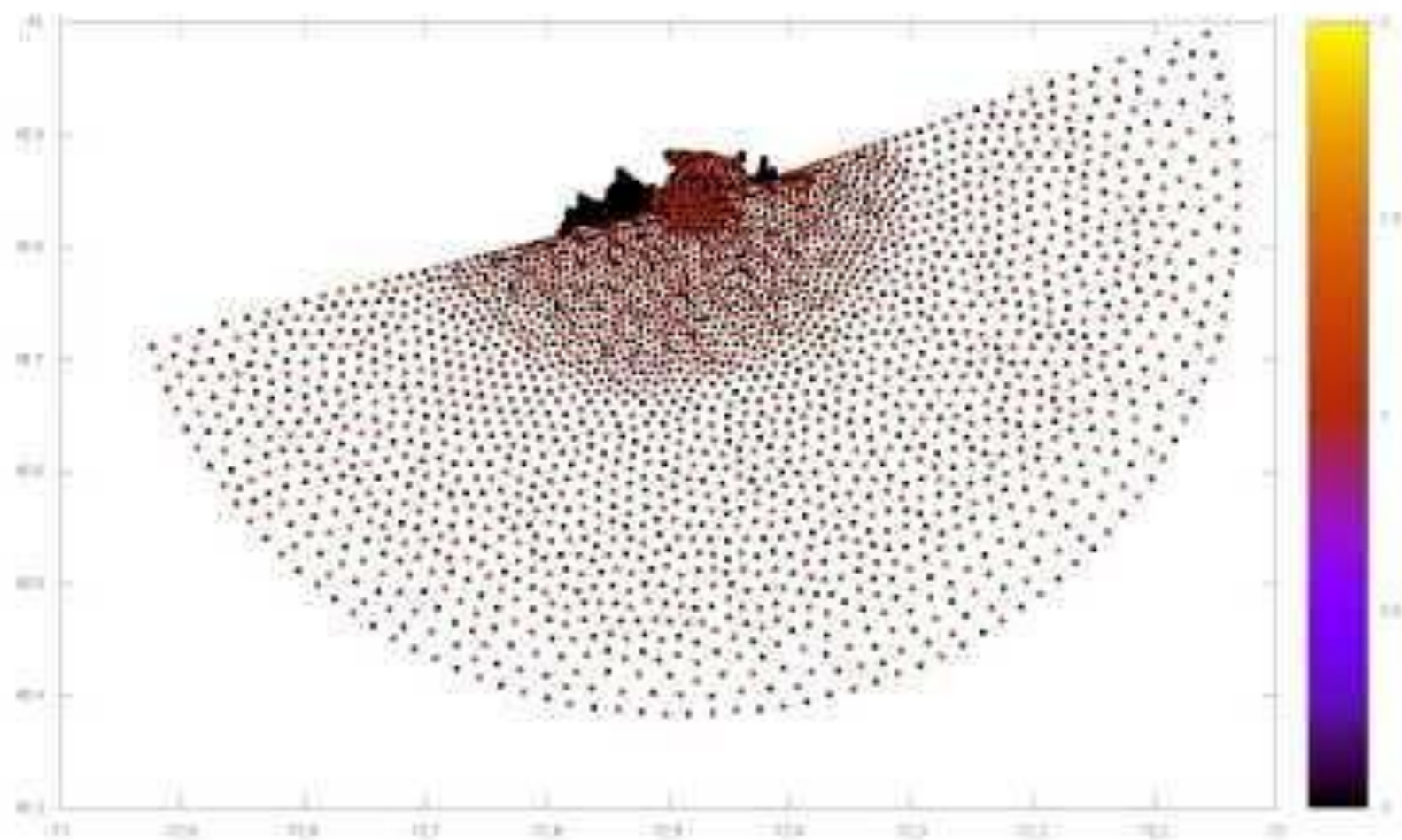
Proposed Software Stack



Current Work

gameoflife_adcirc:

- Toy code using ADCIRC mesh and communication patterns
- `adcprep` is used to decompose full ADCIRC mesh into subdomains
- Each subdomain is one LGD “Cell”
- `fort.80`, `fort.18` and `fort.14` files are used
- Simple “game of life” kernel implemented



Future Challenges

- Internode Communication Patterns
 - gameoflife_adcirc uses PADCIRC's patterns
 - new algorithms may have new requirements
- Validation and Verification
- Load Balancing
- Incorporating ADCIRC's physics kernel
 - Semi-automatic code translation?
 - C++/FORTRAN interface?
 - rewrite ADCIRC physics kernel in C or C++?