

# XPRESS Interfaces Meeting

January 24, 2014

- Adrian Serio, Bryce Lelbach, Hartmut Kaiser, Ezra Kissel, Thomas Sterling, Kevin Huck, Allan Porterfeild, Ben Martin, Kevin Bohan, Maciej Brodowicz, Dylan Stark, Ron Brightwell, Martin Swany, Abhishek Kulkarni, Jeremy Kemp
- Integration: Thomas Sterling:
  - We now need to focus on integration
  - We need a clear idea of how we plan to move forward
  - We need to have a specification
  - We need to be able to walk out and know that we are bringing the required information to take the next step
  - Let's look at the interfaces and note who is taking responsibility and note who are the teams who will take ownership of the interface
  - Others outside of this meeting will have to be involved
- Parcel interface
  - Hartmut: Did we have this conversation?
    - Do we just need a function which posts messages?
      - Photon as an experimental interface
      - Asynchronous interface where messages are posted
    - We need to start sharing out code soon
      - We need to start working together soon
    - Tron: there is a balancing act
      - Some code is purely experimental
  - Hartmut: What is the direction of IU
    - Tron: We need to focus on this project
  - The interface needs to be asynchronous
    - Posting parcels
    - Parcels can be managed by a thread on another machine
    - Semantics similar to isend, itest, and ireceive
    - Hartmut: a parcel must be able to create a thread
      - Does thread creation belong with the parcels? LCOs?
      - Could we use a call back function?
    - IU Thread Creation: 200ns
    - IU Thread context switching: 80ns
      - Three types of threads
        - IO
        - Timers
        - Network
      - Classes of threads
        - Light weight
        - Heavy weight
        - Service Threads
      - Allen: RCR should be below this
    - Ron: What about AGAS
      - Tron: We will need to have a separate meeting about memory
      - Hartmut: Two AGAS Functionalities

- Reporting if something is local
      - Address resolution
    - Allan: when I say data is local how can I migrate it
      - There is some complication that needs to be figured out
      - Dummy threads in queues, other witchcraft possible solutions
      - Errors in this will cause segfaults
  - Integration
    - Strategic question: Where is that happening
    - Ron: Sandia has to manage
      - Tron: will Sandia host a repository
      - Ron: Sandia will host a build
        - Necessary for an applications people
      - Hartmut: What are the parts of the initial system that are needed
        - Ron: What interfaces are they coding to?
          - HPX or XPI
        - Tron: We can set HPX as a low bar to build applications on, aim for XPI
      - Tron: Sandia in the past has created industrial grade software
      - Ron: Sandia is producing exploratory software
      - Tron: What is the community that this exploratory software will be used
        - Ron: Mike Heroux, Alice
        - Goal: 3 or 4 mini apps that has good results
          - Have useful features
      - Tron: in the project plan there is 6 month of experimentation
        - Will this process be incorporated into integration
      - Tron: one of your people [Sandia] will be thinking about integration
      - Ron: Yes, not me but I will be involved
      - Ron: I agree with Hartmut with a process
- Break
- Recording the Interface Partners:
  - X-XPI UH (IU-LSU)
  - Threads-ParcelsLSU IU
  - Threads-LCOs LSU IU
  - Threads-APEX LSU UO
  - Parcels-LCOs IU
  - Parcels-APEX IU UO
  - LCOs-APEX IU UO
  - APEX-RIOS UO Sandia (Renci LSU)
  - APEX-RCR UO Renci
  - LKX-RIOS Sandia
  - LKX-RCR Sandia Renci
  - RIOS-HPX Sandia IU LSU
- Closing Remarks