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
  o Strategic question: Where is that happening
  o 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?
        o 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
        o 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:
  o X-XPI   UH (IU-LSU)
  o Threads-Parcels LSU IU
  o Threads-LCOs  LSU IU
  o Threads-APEX  LSU UO
  o Parcels-LCOs  IU
  o Parcels-APEX  IU UO
  o LCOs-APEX  IU UO
  o APEX-RIOS  UO Sandia (Renci LSU)
  o APEX-RCR  UO Renci
  o LXK-RIOS  Sandia
  o LXK-RCR  Sandia Renci
  o RIOS-HPX  Sandia IU LSU
• Closing Remarks