POOL Token Scatterer

Peter VanGemmeren (ANL)
Kenny Umenthum (Summer Student @ ANL)
Vakho Tsulaia (LBNL)

Event Service Phone Meeting
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Reader Processes for AthenaMP

- Peter developed first implementation of an I/O worker process for AthenaMP two years ago: **Shared RAW Reader**
  - Implemented as an AlgTool: **ByteStreamSharedMemoryTool**
  - Works only for ByteStream format
  - **Reader sends event data to the event processors via shared memory segment**
    - Event data: raw buffer `void*`
  - For more details see Peter's presentation at S&C Week in October 2011
- Next step: extend the existing mechanism for working with POOL files
  - Reader process sends event POOL tokens (`string`) to the worker processes
  - **After receiving the token, the worker process reads event data either from local file or from remote file (using ROOT mechanisms for remote file access: TWebFile, TNetFile)**

New code

- **IAthenaIPCTool** (***New***). Abstract interface for AlgTools implementing shared reader mechanism
  - Lives in AthenaKernel, already in dev/devval
- Updated **EventSelectorAthenaPool**.
  - In dev/devval
- **AthenaSharedMemoryTool** (***New***). Reader process communicates with event processors via Shared Memory segment
  - Lives in AthenaServices. In SVN, not yet in dev/devval
- **AthenaYamplTool** (***New***). Reader process communicates with event processors via Yampl channel
  - Not yet in SVN. Will be added to AthenaServices

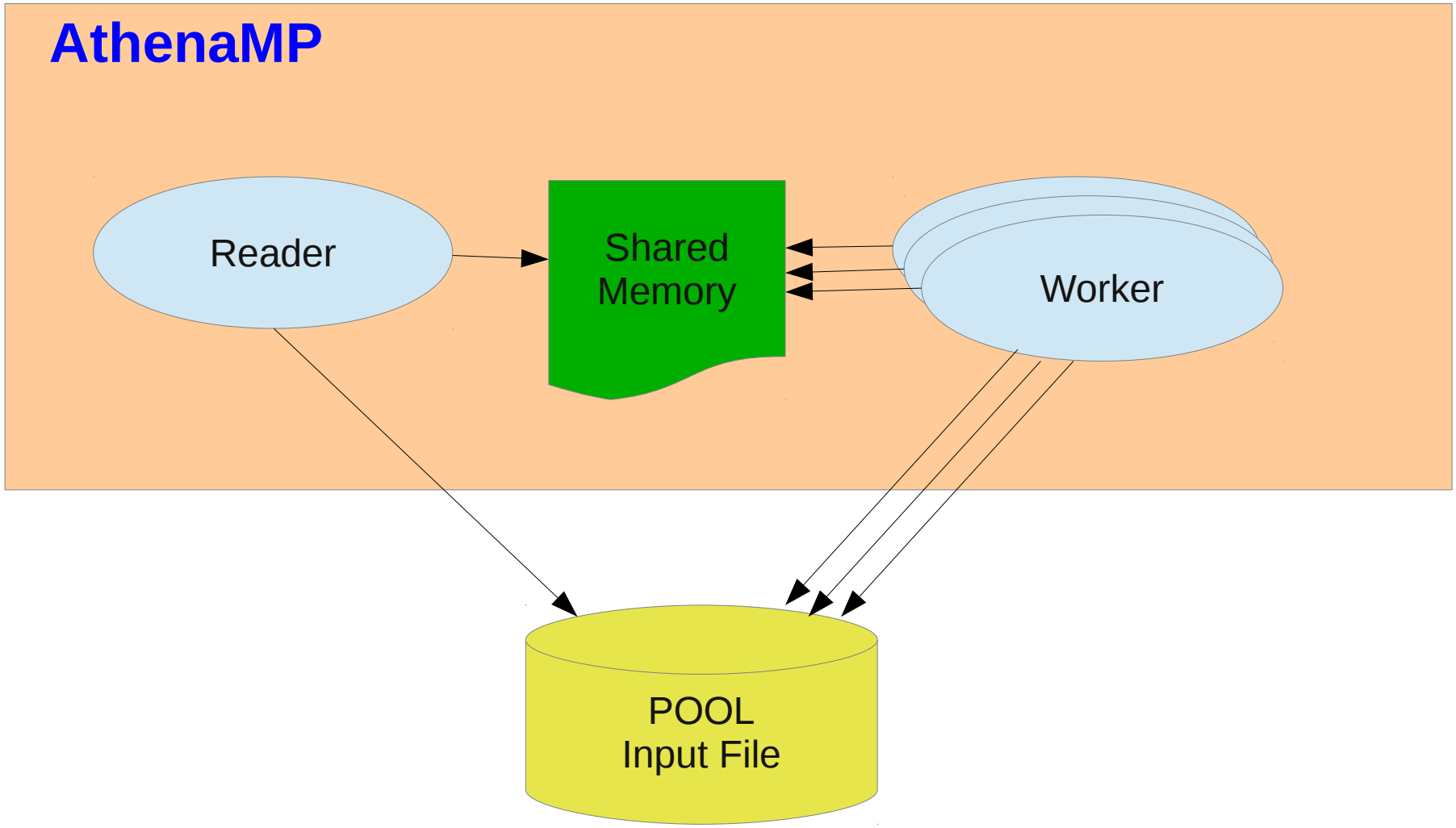
Extensions to AthenaMP-2

- Modify the existing SharedBSReader strategy
  - Rename it with **SharedReader**
  - Will run either over ByteStream or over POOL inputs
  - A quick comparison of single particle simulation outputs made with the Shared POOL Reader and with the default AthenaMP strategy (Shared Queue) showed no differences between them!

- Develop new **TokenScatterer** strategy to be used in the context of the **Event Service**
  - The Scatterer process gets event tokens from an external source (Yampl channel) and sends them over to the workers
  - **Workers read input events from remote ROOT file**

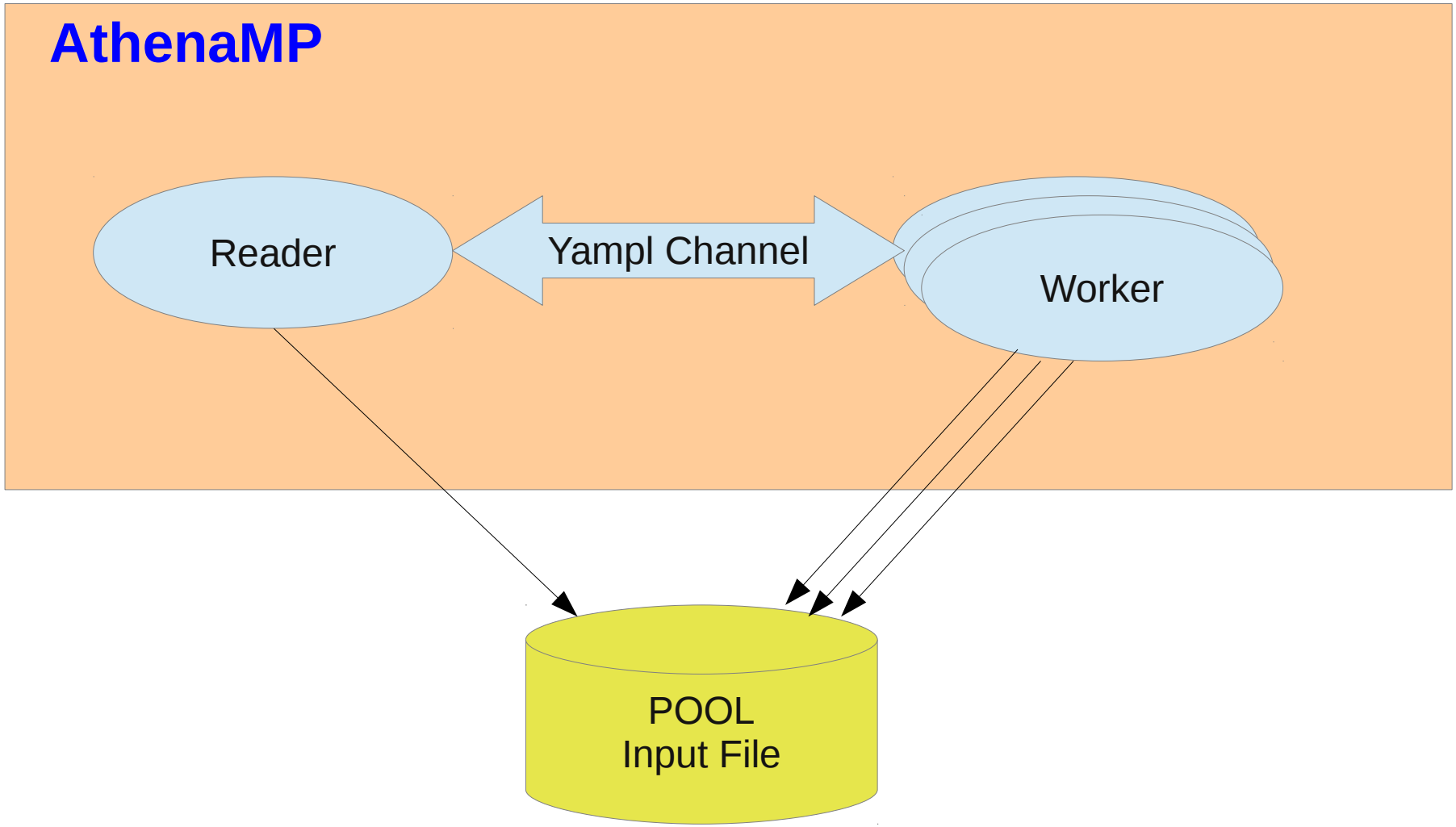
Shared POOL Reader

Shared Memory implementation



Shared POOL Reader

Yampl implementation



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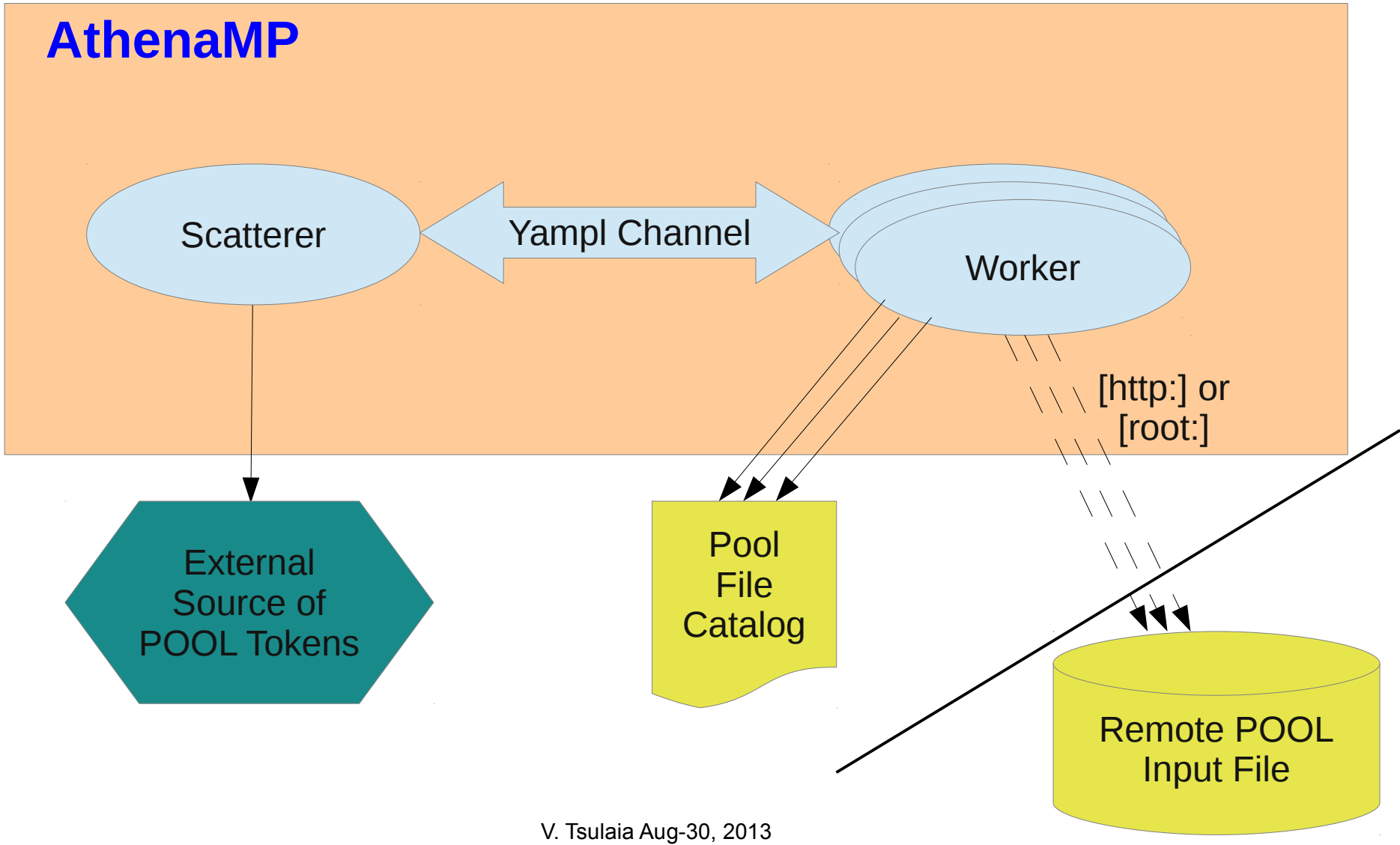
Yampl implementation



POOL Token Scatterer

- The first implementation exists
  - Developed quickly for this meeting, rather dirty
  - Not in SVN yet
  - The Scatterer process reads POOL tokens from an ASCII file
  - Workers read event data from remote file over **http:**
    - Have not tried **root:.** Do we need it? Will require dealing with rootd server, authentication, etc.
  - Needs to have a special entry for the input file in the PoolFileCatalog.xml on the worker node indicating the access protocol

- This mechanism was successfully tested by running a sample AtlasG4_tf job (single particle)
  - The job needs to have some input file at startup
    - For this purpose an one-event file was extracted from the input EVNT file.
  - **The remote reading worked as expected!**
  - And the outputs of this job were identical to the outputs obtained with local reading of the EVNT file

POOL Token Scatterer

Summary

- First implementation of the POOL Token Scatterer strategy for AthenaMP exists and is functional

- In order to to run with the Token Scatterer strategy AthenaMP requires
  1. An one-event input file for startup
     - We need to check what needs to be done in order to lift this restriction at least for simulation jobs
  2. A special entry in the local PoolFileCatalog for accessing events in the remote input file
     - With file location and the access protocol: either **http** or **root**