

Geant4-MT migration and UI issues

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Scope of UI

- Interfaces ("*session*")
 - terminal frontend (CL), GUI
 - batch
- Intercoms
 - UI command mechanism

Outlook of Session and G4MT

- Current MT does not use UIsession (CL, GUI)
- Use UIbatch
 - instantiated in each thread by macro execution.
 - UImanager (thread local) dispatches UI commands.
- UI session (CL,GUI) is completely decoupled with the G4 kernel.
 - UI sessions themselves are not affected by MT.
 - Open issues:
 - session is thread-out / run on main thread?
 - UIbatch is free from UIsession?

Some complexity

- Session instance:
 - should be one for CL, GUI
 - #threads for Batch
 - Ulmanager of each thread can dispatch Ulcommands.
- How to distribute Ulcommands in each thread for CL/GUI session?
 - **Some kind of thread manager is necessary.**
 - To know the pointer of Ulmanager in each thread

Other issues on Ulsession

- **Session outputs should be taken care.**
 - output with thread-ID prefix
 - divided file outputs by thread-ID
 - kinds of efforts already done
 - G4coutDistination

A minor concern:

- In case that the "run" of main thread is ended prior to other threads,
 - Command prompt is back to the session?
 - Parallel run manager makes thread-sync?
 - maybe yes, **should be double-checked**
- For the case that session is thread out,
 - more rigorous status check is necessary fro each command
 - commands not protected could break application.

Ulcommand scheme

- Ulcommands are dispatched by the thread-local Ulmanager **in each thread**.
- Concerns
 - Once again, remind that the scheme is applicable for single object (per thread)
 - **Don't forget the object is thread-local, thread-wide or thread-different.**
 - thread-local would be ok for most cases
 - take care for the cases of thread-wide, thread-different
 - Double check for "thread-safety" of each command