Parallel Session Report of P2 on October 1, 2002

Interactivity & External Frameworks: Picking

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Participants (alphabetic order)

- Jacek Generowicz (CERN)
- Fred Jones (TRIMUFH)
- Joseph Perl (SLAC)
- Satoshi Tanaka (Rits)
- Lassi Tuura (NEU)
- Hajime Yoshida (Naruto Univ.)
Overview

- Proposals were made for trajectory picking, and agreed.
- Demos with HepRep+WIRED were made.
- More details are reported by Satoshi in the morning session on Wednesday ➔ “Visualization status/development”
Attribute displaying of trajectories with picking (1) Problem

- Visualization drivers have access to detailed information about geometry
  - Easy to perform the attribute displaying with picking.
- Visualization drivers, however, have no access to detailed information about trajectories (or sensitive detector hits).
  - We cannot execute the attribute displaying with picking.
Attribute displaying of trajectories with picking (2) Solution

- We introduce attribute classes in `graphics_reps` category.
- `G4AttDef` defines new kinds of attributes that can then have values set for a Trajectory, Trajectory Point or Sensitive Detector Hit.
- `G4AttValues` can be attached to a Trajectory, Trajectory Point or Sensitive Detector Hit.
  These attributes are then made available to the end user in interactive graphics system (such as WIRED, OPACS).
- `G4AttValueList*` is returned by `G4Vtrajectory` and `G4VtrajectoryPoint` by `GetAttValueList()` method
  
  ```cpp
  virtual const G4AttValueList* GetAttValueList() const
  {
    return 0;
  }
  ```
- The draft codes are committed to the head of the tracking reps category
Attribute displaying of trajectories with picking (3) Action

- Classes G4AttDef, G4AttValues, G4AttValueList will be implemented
  - The draft codes already exists at the head of the graphics_reps category
  - Work will be made in collaboration of John Allison, Joseph Perl, Jacek Generowicz, Makoto Asai, and Satoshi Tanaka.
- Test implementation of picking will be done with the HepRep driver (Joseph)
- The project of visualizing smoothly curved trajectory should be continued simultaneously.
Parallel Session Report of P3 on October 2, 2002

Interactivity & External Frameworks: Visualization

Satoshi Tanaka
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Participants (alphabetic order)

- John Allison (Manchester)
- Jacek Generowicz (CERN) and his little Max
- Fred Jones (TRIMUFH)
- Juna Osborne (NEU)
- Joseph Perl (SLAC)
- Satoshi Tanaka (Rits)
- Evgueni Tcherniaev (CERN)
- Lassi Tuura (NEU)
- Hajime Yoshida (Naruto Univ.)
Overview of the discussion

- Most of the time was devoted to one topic, i.e., “How IGUANA (CMS) (and Panoramix (LHCb)) can be plugged in to Geant4 more easily”.
- No explicit decision was made in the session.
  – We need more time to find a best way.
- But the attendants agreed to continue discussion.
Opinions from users (1)
(Note: These are “raw” opinions, not agreements)

- IGUANA (and Panoramix) can supply better interactive frameworks to Geant4. So Geant4 should use them more positively.
- IGUANA does not adopt the G4-native visualization policy. It sometimes makes it inconvenient to follow Geant4 updation.
- There exist user requests to revise the Visualization Category and the Run Category.
  - It is to realize more flexible notification of kernel information.
- We request that Geant4 team make milestones for the design changes to respond to the requests.
Opinions from users (2)
(Note: These are “raw” opinions, not agreements)

- Sorry to say, it is hard to make big design/policy changes at IGUANA side, because of the experimental schedule of CMS.
- Geant4 has not been adopted the recent key software technology, i.e., “framework”.
- It is beneficial for users that advanced examples on dynamic geometry loading are provided.
Opinions from developers (1)
(Note: These are “raw” opinions, not agreements)

- We should seek for co-existence (co-development) of external interactive frameworks and the current visualization drivers.
  - For this purpose developers recommend to reuse visualization/modeling sub-category, which the current drivers are using, as much as possible.
- It is difficult to make big design changes in Visualization Category (or Run Category) before the coming release in December 2002.
- We need more discussion before making milestones for the design changes of Geant4 for plugging in external interactive frameworks.
- Geant4 is designed as a toolkit:
  - G4 is so designed as demanding users write their own Run Managers, Visualization Managers, etc. In fact, this policy is realizing plugging in of external interactive frameworks, though developers never deny necessity of improvement.
  - Geant4 should be free from any framework such that it can be plugged in to any framework.
Opinions from developers (2)
(Note: These are “raw” opinions, not agreements)

- Discussion should be continued for easier plugging in of external interactive frameworks such as IGUANA, Panoramix, etc.
- It is a good idea that CMS people and LHCb people discuss together to construct a harmonized request to Geant4.
- Geant4 should be continuously updated to improve its easiness in plugging in external interactive packages.
- It is beneficial for users to create advanced examples of dynamic geometry loading.
One thing made clear through the discussion

- Plugging in external interactive framework is closely related to Run Category and Global Category.
  - It is not an issue inherent to the so-called “Interactivity Category”
  - Therefore the name “Interactivity Category” is confusing.
  - Satoshi Tanaka proposes to use the old name, i.e., “UI/Visualization Category”.