Updates on requirements

Technical Forum, 03/03/2011

Marc Verderi

On behalf of the Geant4 Collaboration

RECENT REQUIREMENTS

2801: Anti-ion interactions

- Responsibles: D. Wright / V. Uzhinskiy
- Requestor: ALICE (A. Morsch)
- Light Anti-Ion Transport with Geant4
- Scope
  - Light anti-ions: anti-deuteron, anti-triton, anti-He3 and anti-He4
  - Energy loss, absorption, (quasi)elastic scattering
  - Materials: H, C, N, O, Si, Al, …
  - Momentum range 0.1 – 4 GeV
- Status : march 2011
  - Reminder about physics approach (see nov. 2011):
    - Anti-proton cross-sections from "Simplified Glauber"
    - Cross sections anti-d, anti-t and anti-He with full Glauber approach
  - Cross-sections included in release 9.4
  - Model beta-version in 9.4-ref-02, today.
  - Validation against anti-d data and tuning ongoing.
  - Open to feedback / joint validation.

2703: Regularize error messages

- Originators: (LHCb, Gloria Corti) – March 2010
- Responsible(s): general to G4
- Context: Need to create scripts to extract G4 errors from 50K job files/day.
- Requests
  - A unique way of messaging errors/warnings to enable a generic script to find ALL of them
  - And/or a summary of error messages
- Status (March 2011)
  - Requirement is part of the development plan for 2011.
  - Analysis: Potential implementation would be
    - One format for the 'header'/first line of errors/warnings
    - One format for the last line of errors/warnings.
    - + string to ease identifying the package that issued the message.
- **Open**

2701: Cross-sections for K⁻/K⁺

- Originators: (LHCb, Gloria Corti) – March 2010
- Responsible(s) : M. Kossov / G. Folger
  - Identified significant differences between charged Kaon cross sections and PDG values. This has impact on LHCb measurements.
  - Physics lists QGSP_BERT still utilises Gheisha cross-section for K+/K-
  - Request
    - hadronic physics builder with well-modeled Kaon interactions
- Previous update (Sept 2010)
  - Physics builders and QGSP_BERT_CHIPS physics list provided in 9.4 beta (June 2010)
    - Kaon cross-sections use revised CHIPS parameterisations
    - Kaon interactions unchanged (Bertini < 9.9 GeV, 9.5 < LEP < 25, QGSP > 12)
  - Note: K0/K0bar oscilations not modelled.
- Status (March 2011)
  - Feedback is awaited.

2702: Interfaces of Physics Builders

- Originators: (LHCb, Gloria Corti) – March 2010
- Responsible(s): V. Ivantchenko
  - Need to allow the full set of G4 constructors arguments to be passed. Context: LHCb customises physics list, using physics builders as components.
- Requests
  - rationalize the constructors of the PL builders
    - Make regular the order and types of arguments
  - create an extender of G4VPhysicsConstructor to allow the setting of class arbitrary parameters.
- Status (March 2011)
  - Additional interface of physics builders were created and made in 9.4-beta (Jun 2010) and are included in 9.4.
  - **Propose to close**

2901: Lateral displacement in large volume

- Originator: G. Corti (LHCb)
- Bad correlation between displacement and angular deviation when delta rays are turned off (in large volume)
  - Due to displacement lost on steps ending on boundary
  - Proposal to use EM-Opt3 incurs too large CPU cost
- Status (Mar 2011)
  - New limitation for MSC in "default" EM-Opt0
    - Default value = 20 X_0
  - Next: can provide assistance to create custom Physics List with per-region choice of MSC.

2902: Displacement in thin volumes

- Originator: S. Miglioranzi (LHCb)
- Issue
  - Displacement lost for steps in thin vol. (Si layers)
  - Need to recover displacement for all charged particles (not just e-, as in EM opt 3)
  - Need to avoid extra CPU cost.
- Status (March 2011)
  - Agree to provide a customized physics List based on EM Option-0, which limiting all charged particles' steps – in order to
  - For use in production,
    - Easiest is to impose step-limit by volume. Else
   - Further development to configure by region will be needed.

2903: Stability of Energy Deposition

- Reporter: S. Miglioranzi (LHCb)
- Find difference in energy scale between G4 7.1, 9.1 and 9.2
  - 9.2 agrees with 7.1, but 9.1 was different
    - Diff was 15% (ECAL) – 30% (ECAL)
- Status (March 2011)
  - Cannot reproduce this result
    - Energy scale is stable from 7.1 to 9.1 (EMV) to 9.3(EMV)
  - Details in talk of V. Ivantchenko

DEVELOPMENT OF A NEW REQUIREMENT TRACKING SYSTEM

Prototype page of the requirement tracking system
system based on JIRA
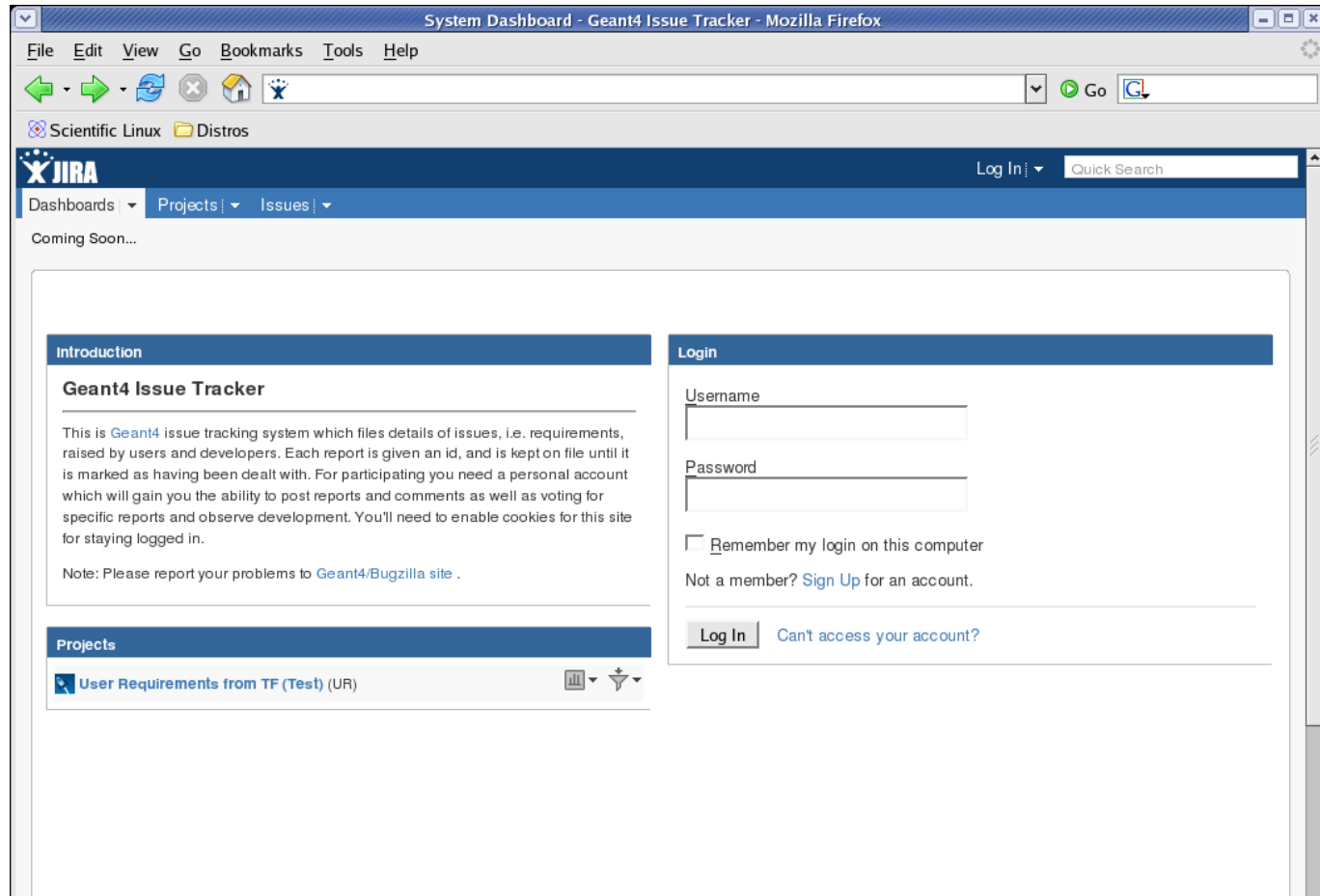
- Collect requirements through usual channels (HN, TF, meeting, etc.)
- Accepted requirements are entered into the system by the Geant4 team.
- Tracking of requirements made visible by the system.

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Coming Soon...

User Requirements from TF (Test)

Summary

Reports ▾   Filters ▾

Summary
Issues
Road Map
Change Log
Popular Issues
Versions
Components
Labels

Description

Updates on requirements from previous TF meetings

Lead: Makoto Asai
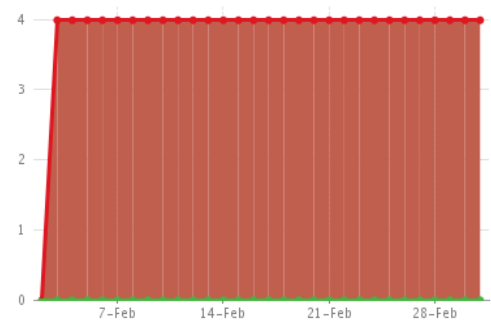Key: UR

Issues: Due

UR-1
Anti-ion interactions

UR-2
Interaction : Physics modeling

UR-3
Regularize error messages

Issues: 30 Day Summary

Issues: **4** created and **0** resolved

Issues: Updated recently

UR-7   03/Feb/11
Alternative models for intermediate energies

UR-6   03/Feb/11
Choice of physics processes (or options) per region

Versions: Due

🟧 9.4   Release Date: 17/Dec/10

🟧 9.3   Release Date: 17/Sep/10

🟧 9.2   Release Date: 16/Sep/10

Activity Stream

February 03 - 6:00 AM

JIRA Great Master changed the Assignee to 'Dennis Herbert Wright' on UR-7 (Alternative models for intermediate energies)

JIRA Great Master changed the Fix Version/s to '9.4' on UR-7 (Alternative models for intermediate energies)

JIRA Great Master commented on UR-7 (Alternative models for intermediate energies) saying:

Update (September 2010)
○ RPG is the direct alternative to the LEP models, but its development is still on hold until it assumes a higher priority.
○ CHIPS in this energy range is still being validated and has some significant problems, both in physics performance and speed.
○ Recent improvements (9.4 beta) in Bertini go a long way toward answering the HARP request, but still more validation is required. It even does a reasonable job in the 10-15 GeV range.
○ The improved FTF model can go down to 3 GeV, but still needs some tuning.

In short, we think the HARP request for a new model is no longer relevant, unless they were referring specifically to an LEP/RPG style model. Their request is probably better satisfied by the existing but improved Bertini and FTF models. By the next release we hope to have a physics list which combines them smoothly.

JIRA Great Master changed the Fix Version/s to '9.3' on UR-7 (Alternative models for intermediate energies)

JIRA Great Master started progress on UR-7 (Alternative models for intermediate energies)

JIRA Great Master changed the Assignee to 'JIRA Great Master' on UR-7 (Alternative models for intermediate energies)

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Coming Soon...

User Requirements from TF (Test) / UR-3
Regularize error messages

[Log In]   👁 Views ▾

▾ Details

Type:	⊞ Requirement		Status:	🔧 In Progress	Assignee:	JIRA Great Master
Priority:	⬆ Major		Resolution:	Unresolved	Reporter:	JIRA Great Master
Affects Version/s:	None		Fix Version/s:	None	Vote (0)	Watch (0)
Component/s:	None					
Labels:	2703					

▾ People

Assignee: JIRA Great Master
Reporter: JIRA Great Master
Vote (0)   Watch (0)

▾ Dates

Created: 24/Jan/11 4:08 PM
Updated: 03/Feb/11 12:29 PM

▾ Description

Context:

Need to create scripts to extract G4 errors from 50K job files/day.

Requests

- A unique way of messaging errors/warnings to enable a generic script to find ALL of them
- And/or a summary of error messages

See also

See slides at http://bit.ly/d18MNp (Powerpoint)
Or (full, PDF)
http://indico.cern.ch/getFile.py/access?subContId=1&contribId=3&resId=1&materialId=slides&confId=87967

▾ Activity

All   Comments   History   Activity

👤 JIRA Great Master added a comment - 24/Jan/11 4:42 PM

Status (Nov 2010)

> - Requirement is acknowledged and accepted.
> - Analysis: Potential implementation would be
>   ○ One format for the 'header'/first line of errors/warnings
>   ○ One format for the last line of errors/warnings.
>
> - Open – will include it in plans for 2011.