

Guidelines of the Design Process of the Geant4 Low-Energy Electromagnetic Physics Working Group

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1 Introduction

This document provides guidelines for the design process in the lowenergy category.

2 Analysis and design process

The following items are under the responsibility of WG coordinators:

1. Identify the WG member responsible for the OOAD of a WG project and agree with him/her about undertaking the responsibility of the task.
2. Examine, discuss and approve the design drafts (or suggest improvements, if appropriate).
3. Freeze approved designs for the implementation phase and re-open them for new design-implementation-testing cycles; convey the related information to WG members.
4. Discuss any interface changes or other design issues external to the lowenergy category with the appropriate WG coordinators.
5. Tag approved design documents in the CVS repository.
6. Maintain in the repository designs corresponding to the released code and designs including new evolutions, not released yet.
7. Implement the traceability control, for what concerns designs.
8. Convey up-to-date designs to the Documentation Coordinator for inclusion in the Toolkit Developer Guide.
9. Collect quantitative information, to be used for improvements of the design process, and analyse it; propose process improvements, based on such analysis.
10. Perform defect analysis and discuss it within the WG, for the purpose of preventing future occurrences of the same defects.
11. Train WG members to the OOAD process.
12. Verify the agreed design process to be correctly applied by all WG members.
13. Maintain the present document.

The following items are under the responsibility of the designer:

1. Perform the design process in agreement with the present document.
2. Test designs against requirements.
3. Perform OOAD for the project agreed with the WG coordinators.
4. Thoroughly discuss the analysis and design drafts with WG coordinators and other experts (theorists, WG members etc.).
5. Make design drafts available to WG members for discussion.
6. Provide design documents in the CVS repository, following the approval of design drafts by WG coordinators.

7. Explain the design to the developers who will do the implementation, if they are novice in OOAD technology.
8. Maintain the design documents, to keep track of design evolutions.
9. Provide information to the WG coordinators to update the traceability map.
10. Provide design documentation for the Geant4 Toolkit Developer Guide in the design repository.

The following items are under the responsibility of the developer:

1. Implement the code according to the approved design.

3 Notes

Only code compliant with the approved design may be released.

No modifications to the design are allowed in the development phase. Modifications to the design, if needed, should be done according to a controlled process, in agreement with the design responsible(s) and the WG coordinators.

Designers for complex projects are identified among WG members with solid OOAD knowledge and experience. In the case of small design projects, not on the critical path, the WG coordinators may propose to pair an experienced designer with a novice collaborator (but already with solid experience in OOP), for training purpose.

Any modification of the design process should be discussed and agreed within the WG. Once agreed, it should be properly documented by updating the present document.