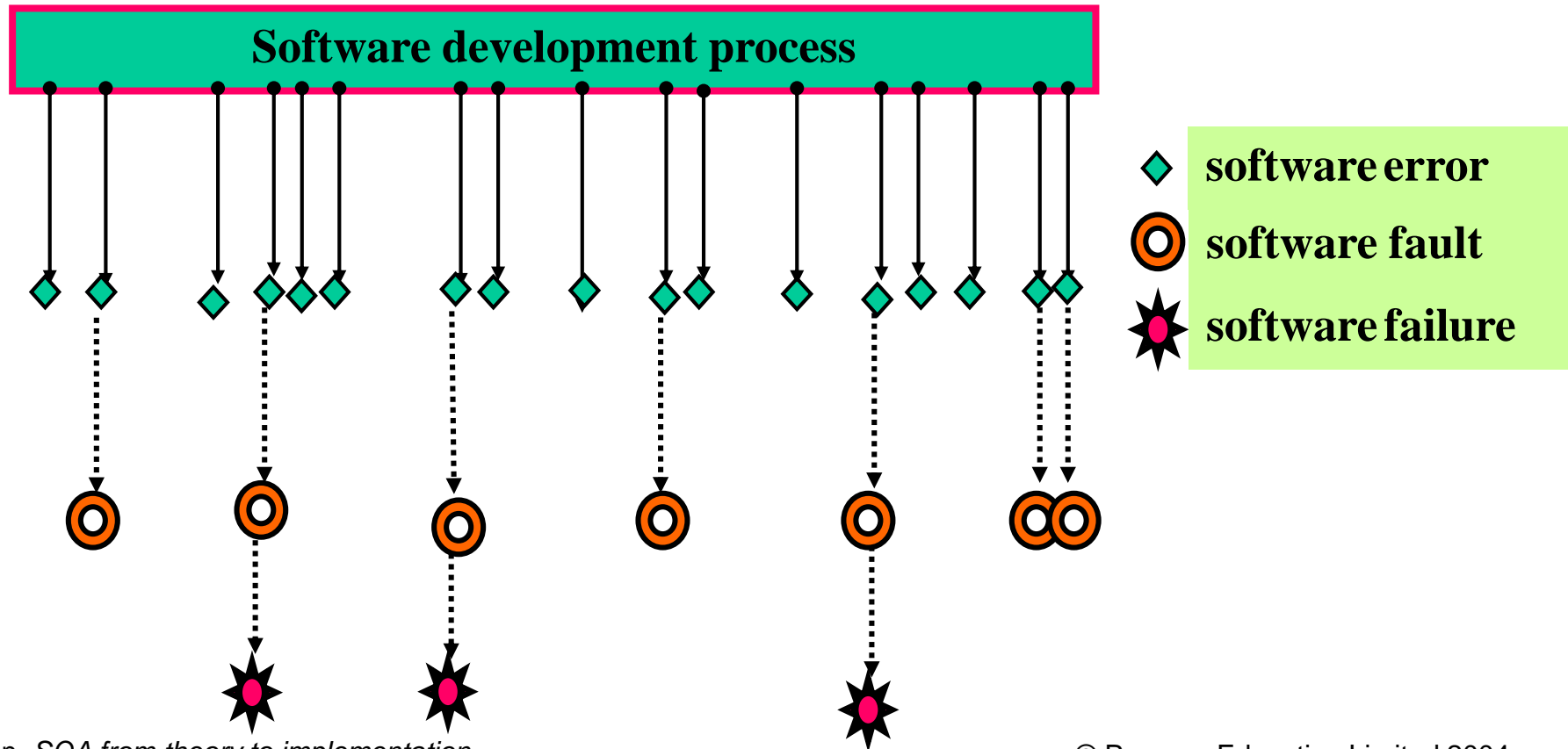# Presentation 2

What is software quality?

- **What is software?**
- **Software errors, faults and failures**
- **Classification of the causes of software errors**
- **Software quality – definition**
- **Software quality assurance – definition and objectives**
- **Software quality assurance and software engineering**

Software - IEEE definition

Software is:

Computer programs, procedures, and possibly associated documentation and data pertaining to the operation of a computer system.

Software errors, software faults and software failures

Software development process

◆ software error

⊙ software fault

✳ software failure

Galin, *SQA from theory to implementation*

The nine causes of software errors are:

1. **Faulty requirements definition**

2. **Client-developer communication failures**

3. **Deliberate deviations from software requirements**

4. **Logical design errors**

5. **Coding errors**

6. **Non-compliance with documentation and coding instructions**

7. **Shortcomings of the testing process**

8. **User interface and procedure errors**

9. **Documentation errors**

Galin, *SQA from theory to implementation*

Software quality - IEEE definition

Software quality is:

(1)   **The degree to which a system, component, or process meets specified requirements.**

(2)   **The degree to which a system, component, or process meets customer or user needs or expectations.**

Software quality - Pressman's definition

Software quality is :

Conformance to explicitly stated functional and performance requirements, explicitly documented development standards, and implicit characteristics that are expected of all professionally developed software.

SQA - IEEE definition

Software quality assurance is:

1. A planned and systematic pattern of all actions necessary to provide adequate confidence that an item or product conforms to established technical requirements.
2. A set of activities designed to evaluate the process by which the products are developed or manufactured. Contrast with: quality control.

SQA - expanded definition

Software quality assurance is:

A systematic, planned set of actions necessary to provide adequate confidence that the software development process or the maintenance process of a software system product conforms to established functional technical requirements as well as with the managerial requirements of keeping the schedule and operating within the budgetary confines.

Galin, *SQA from theory to implementation*

The objectives of SQA activities in software development

(1) Assuring an acceptable level of confidence that the software will conform to functional technical requirements.

(2) Assuring an acceptable level of confidence that the software will conform to managerial scheduling and budgetary requirements.

(3) Initiation and management of activities for the improvement and greater efficiency of software development and SQA activities.

The objectives of SQA activities in software maintenance

(1) **Assuring an acceptable level of confidence that the software maintenance activities will conform to the functional technical requirements.**

(2) **Assuring an acceptable level of confidence that the software maintenance activities will conform to managerial scheduling and budgetary requirements.**

(3) **Initiate and manage activities to improve and increase the efficiency of software maintenance and SQA activities.**

Galin, *SQA from theory to implementation*