

SOFTWARE QUALITY ASSURANCE



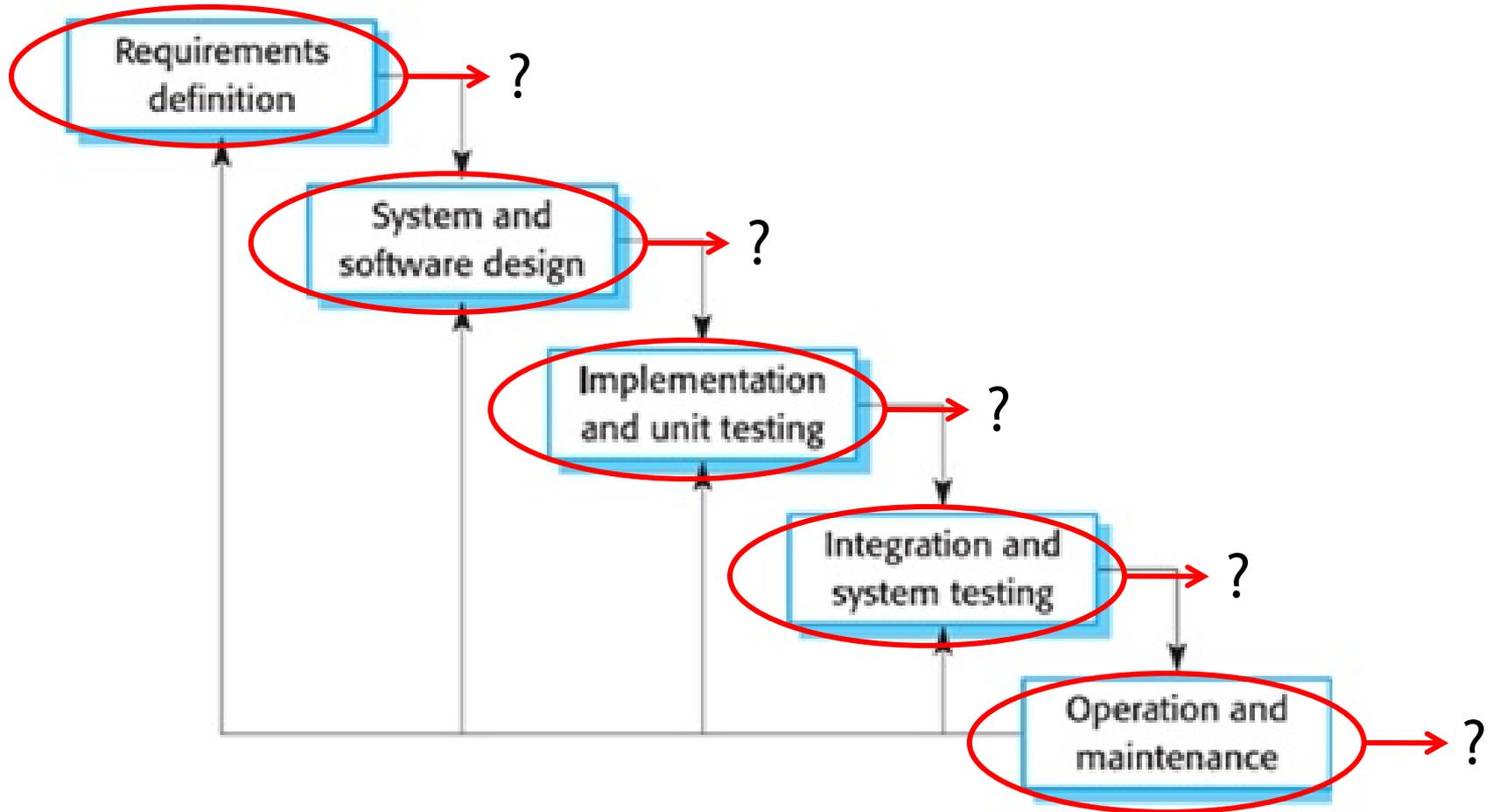
Review – Formal Design Review

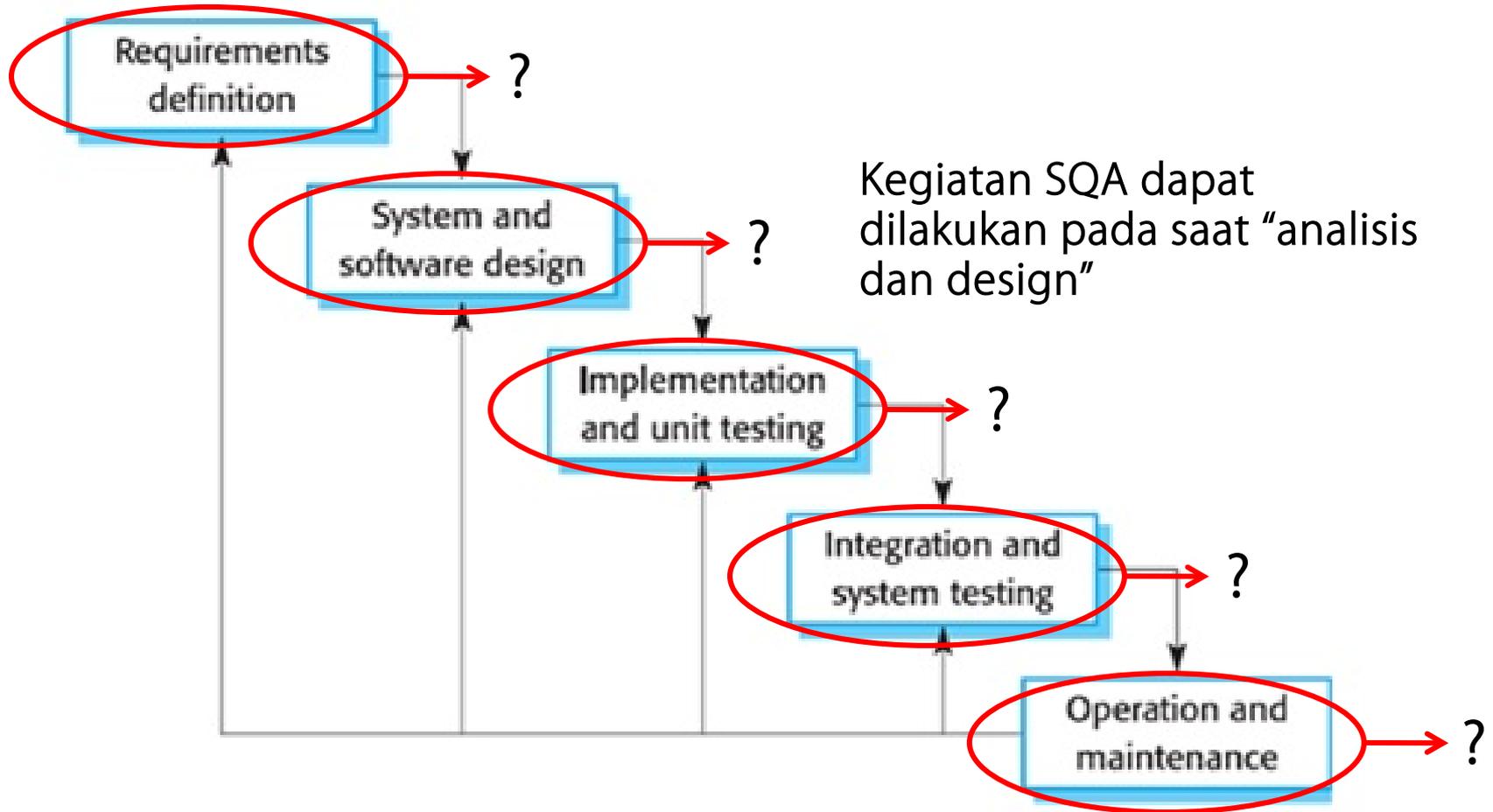
TKB5351 – Penjaminan Mutu Perangkat Lunak

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Introduction

- Kegiatan SQA dilakukan secara bersamaan dengan kegiatan atau siklus hidup pengembangan PL.
- Pada tahap/aktivitas apa baiknya kegiatan SQA dilakukan?





Kegiatan SQA dapat dilakukan pada saat "analisis dan design"



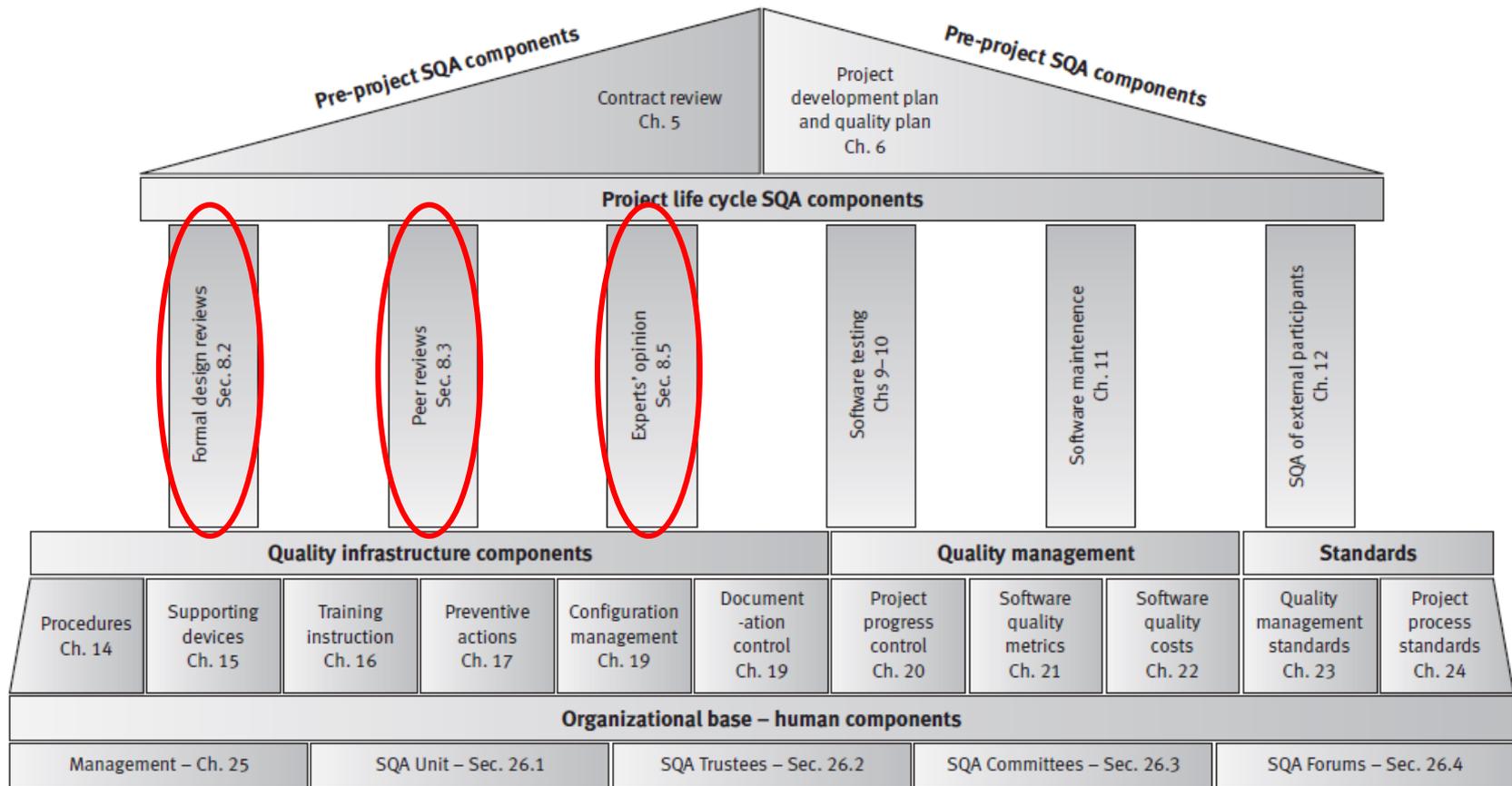
Review (IEEE, 1990)

“A process or meeting during which a work product, or set of work products, is presented to project personnel, managers, users, customers, or other interested parties for comment or approval”

Review Methods

- Kegiatan review adalah kegiatan penting dalam proses SQA karena dapat mendeteksi secara awal dan mencegah kesalahan yang dapat berakibat fatal/kerugian.
- Beberapa metode (*methodologies*) review yang dapat diimplementasikan, antara lain:
 - *Formal design reviews* (review formal)
 - *Peer reviews* (review sejawat)
 - *Expert options* (opsi ahli)

SQA Architecture



Review Objectives

- Tujuan langsung
 - Mendeteksi dan mengkoreksi kesalahan analisis dan desain, perubahan dan penyelesaian yang berhubungan dengan spesifikasi awal, dan persetujuan perubahan.
 - Mengidentifikasi resiko baru yang cenderung dapat menghambat penyelesaian proyek.
 - Menemukan penyimpangan-penyimpangan yang mungkin terjadi (untuk meningkatkan komunikasi dan koordinasi).
 - Persetujuan tahapan analisis dan desain produk.

Review Objectives

- Tujuan tidak langsung
 - Menyediakan tempat pertemuan informal untuk pertukaran pengetahuan baik tentang metode, alat atau teknik pengembangan.
 - Merekam kesalahan analisis dan desain yang akan berfungsi sebagai dasar untuk perbaikan dimasa depan.

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Formal Design Reviews (DRs)

- Sauer dan Jeffery (2000) membahas berbagai faktor yang mempengaruhi efektivitas DRs, yaitu:
 - *The participants*
 - *The prior preparations*
 - *The DR session*
 - *The recommended post-DR activities.*

Participants of DR

- *The review leader*
 - Memiliki pengetahuan dan pengalaman dalam pengembangan proyek.
 - Senior atau tingkat yang sama dengan pimpinan proyek.
 - Memiliki hubungan yang baik dengan pimpinan proyek dan tim
 - Berada di posisi eksternal dari tim proyek

- *The review team*
 - Profesional
 - Perwakilan pengguna
 - Development team

Prior Preparations

- *The review leader*
 - Menunjuk anggota
 - Menjadwalkan sesi review
 - Mendistribusikan dokumen review kepada anggota
- *The review team*
 - Anggota review diharapkan meninjau dokumen dan memberikan komentar sebelum sesi review
 - Alat bantu checklist
- *Development*
 - Mempersiapkan presentasi singkat tentang dokumen

DR Sesion

- Presentasi singkat tentang dokumen
- Komentar team review
- Verifikasi dan validasi dari komentar review untuk menentukan tindakan
- Keputusan
 - Full approval
 - Partial approval
 - Denial of approval



Post-Review Activities

- DR report
 - Ringkasan dari diskusi review
 - Keputusan tindak lanjut proyek
 - Daftar lengkap koreksi yang diperlukan
 - Nama anggota yang ditunjuk untuk menindaklanjuti kinerja koreksi
- Follow-up process

Pressman Golden Guidelines (2000)

Design review infrastructure

- Develop checklists for each type of design document, or at least for the common ones.
- Train senior professionals to treat major technical as well as review process issues. The trained professionals serve as a reservoir for DR teams.
- Periodically analyze past DR effectiveness regarding defect detection to improve the DR methodology.
- Schedule the DRs as part of the project activity plan and allocate the needed resources as an integral part of the software development organization's standard operating procedures.

The design review team

- Review teams should be limited in size, with 3–5 members usually being the optimum.

The design review session

- Discuss professional issues in a constructive way while refraining from personalizing those issues. This demands keeping the discussion atmosphere free of unnecessary tension.
- Keep to the review agenda. Drifting from the planned agenda usually interferes with the review's efficiency.
- Focus on detection of defects by verifying and validating the participants' comments. Refrain from discussing possible solutions to the detected defects so as to save time and avoid wandering from the agenda.
- In cases of disagreement about the significance of an error, it is desirable to end the debate by noting the issue and shifting its discussion to another forum.
- Properly document the discussions, especially details of the participants' comments and the results of their verification and validation. This step is especially important if the documentation is to serve as input or a basis for preparation of the review report.
- The duration of a review session should not exceed two hours.



Post-review activities

- Prepare the review report, which summarizes the issues discussed and the action items.
- Establish follow-up procedures to ensure the satisfactory performance of all the corrections included in the list of action items.



Proses formal design review (DRs)

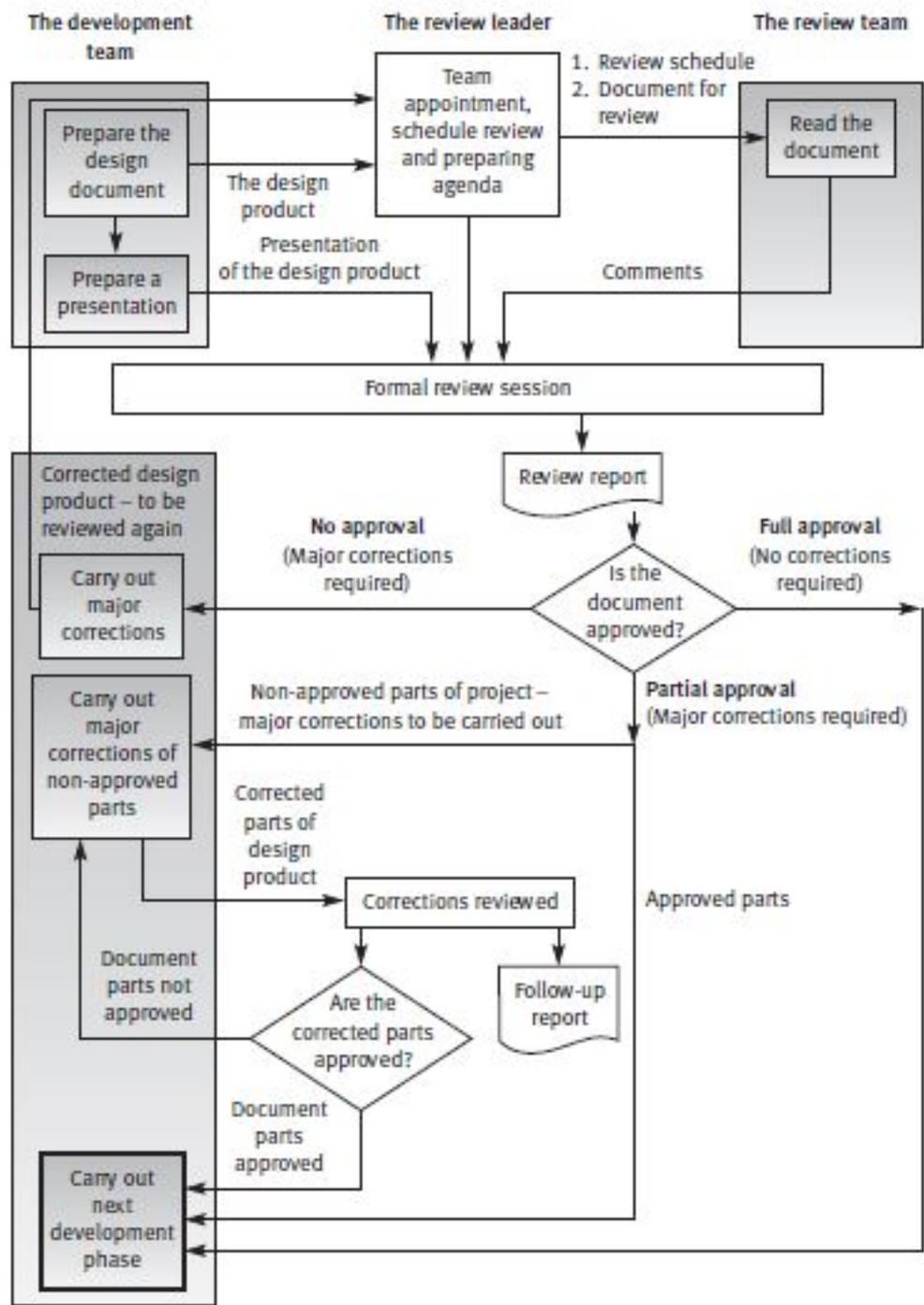


Table 8.2: The Litton project's inspection efficiency according to Madachy

Type of document	No. of inspections	Total number of defects and major defects	No. of pages	Inspection resources invested (work hours)	Inspection efficiency metrics	
					Defect detection density (defects/page)	Inspection detection efficiency (work-hours/major defect)
<i>Design inspections</i>						
Requirements description	21	1243 (89 major)	552	328	2.25	3.69
Requirements analysis	32	2165 117 major	1065	769	2.03	6.57
High-level design	41	2398 (197 major)	1652	1097	1.45	5.57
Test procedures	18	1495 (121 major)	1621	457	0.92	3.78
<i>Code inspections</i>						
Code	150	7165 (772 major)	5047*	4612	1.42	5.97

*276 422 lines of code.

Source: After Dobbins (1998)

- Total number of defects detected 1849
- Number of major defects detected 242
- Total preparation time (minutes) 22 828

Accordingly:

- Average preparation time per detected defect
12.3 minutes (0.2 hours)
- Average preparation time per detected major defect
94.3 minutes (1.57 hours)

Considering the different environments, a comparison of the defect densities detected in the National Software Quality Experiment and those found in the Litton project reveal relatively small differences, as shown below:

	National Software Quality Experiment	Litton Project
Total defect detection density (defects per KLOC*)	20.3	25.9
Major defect detection density (defects per KLOC*)	2.66	2.80

*KLOC = 1000 lines of code.



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