

Inspection Manual

Procedures, rules, checklists and other texts
for use in Inspections

Version: 0.45

Date: April 15, 2008

Owner: Niels Malotaux

Status: not inspected

Intended readership: anybody interested in or busy with inspections

Note: Most of these texts are originally taken from the book:
"Software Inspection" by Tom Gilb and Dorothy Graham
Addison Wesley, 1993, ISBN 0-201-63181-4, and from
web-sites, such as www.gilb.com (Tom Gilb's web-site)
This is a starting point from which the procedures, rules, etc.
may be adapted to the local culture.

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A One-page Inspection Handbook

ID tag: IN.HB

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

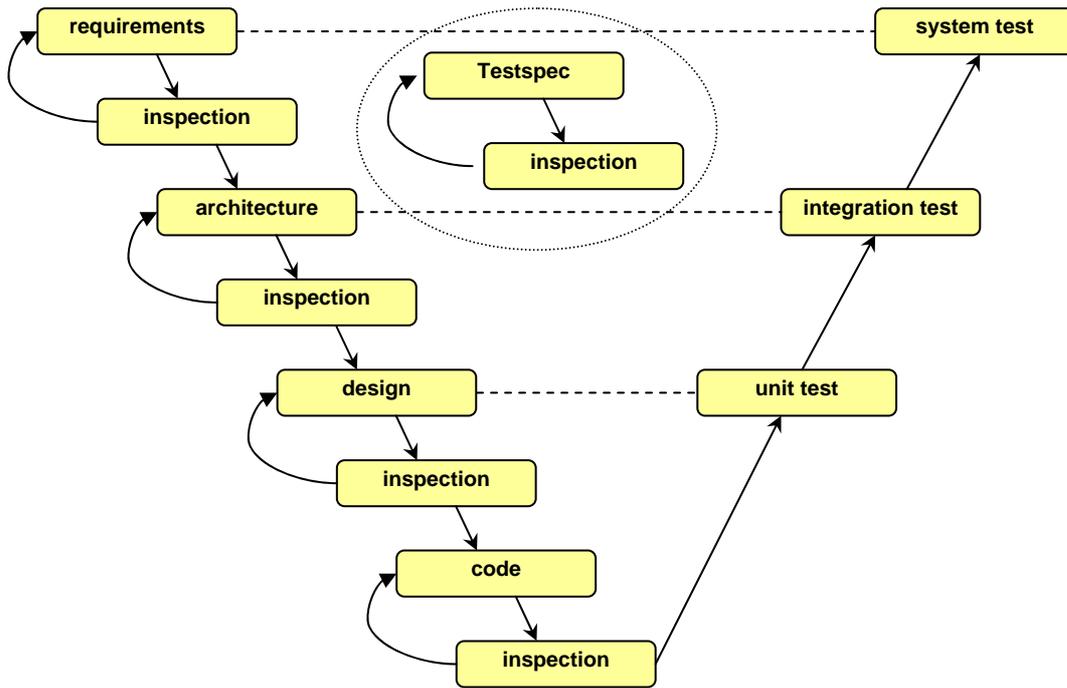
Intended readership: anybody interested in or busy with inspections

This Handbook shall never be printed on more than a page after updates. This note will always be included.

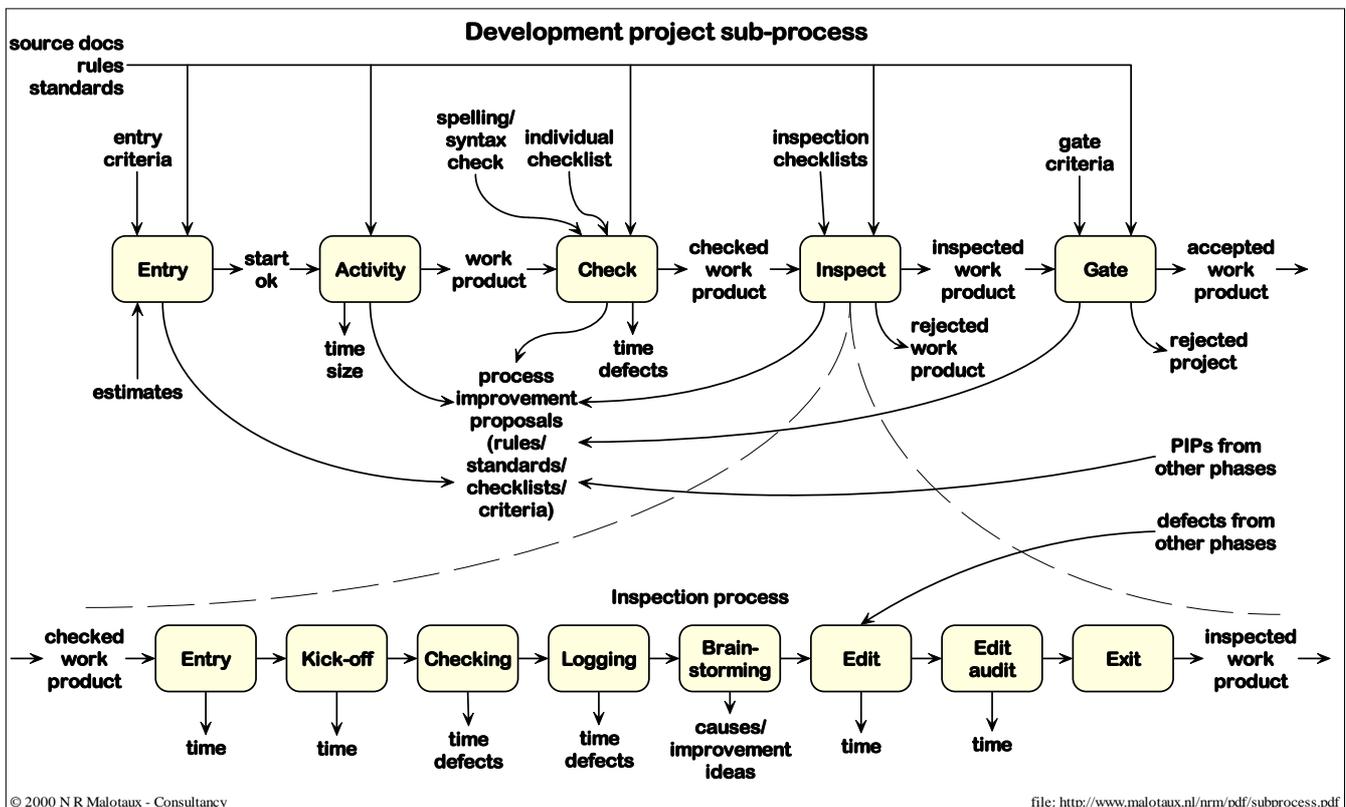
- HB1 The Inspection process is always managed by a trained and certified Inspection leader.
- HB2 The leader is responsible for managing the process in all respects for productive results.
- HB3 The first objective of Inspection is to identify and correct major defects.
- HB4 The second, but most important, objective of Inspection is to identify and remove the source of defects.
- HB5 The fundamental measure of Inspection success is the quality-to-cost ratio of the total development and service life cycle.
- HB6 Short-term measures include major issues found per work-hour used (efficiency), and the percentage of defects identified and treated compared to the total defects (effectiveness).
- HB7 The productivity measure of Inspection is the net hours saved, estimated statistically, due to defects found and removed earlier than they otherwise would be.
- HB8 **Entry.** The rest of the Inspection process is only entered when a specified set of entry criteria have been met.
- HB9 **Planning.** The leader selects a set of source documentation, candidate documentation, checklists, rule sets, checking rates, people, roles, and logging meeting rates to ensure maximum productivity.
- HB10 **Kickoff.** The leader can elect to run a 'kickoff' meeting prior to checking. Team improvement goals and corresponding strategies are adopted. Any necessary instruction is given.
- HB11 **Checking.** The checking phase has a recommended time or rate, but checkers have instructions to deviate from that whenever individual ability, role or situation dictates, in order to increase productivity.
- HB12 The objective of individual checking is to identify a maximum of unique major issues which no other checker will bring to the logging meeting. To do this each checker should have at least one special 'role'.
- HB13 **Logging meeting.** The team concentrates on logging items at a rate of at least one per minute. Items logged include potential defects (issues), improvement suggestions, and questions of intent to the author. The leader permits little other verbal meeting activity. Meetings last a maximum of two hours at the known optimum rate. If necessary, work must be chunked to avoid tiredness. Optimum checking rate for the meeting is determined by the percentage of new issues identified in the logging meeting as well as quantity of documents.
- HB14 **Process brainstorming.** Immediately after each logging meeting, time is used to brainstorm the process causes of major defects, and to brainstorm improvements to remove these causes. These suggestions are stored in the QA database for the Process Change Management Team. This meeting shall last no more than half an hour. The objective is to maximize production of useful ideas and personal commitment to change within that time.
- HB15 **Edit.** Issue analysis and correction action is undertaken by an editor. Some written action must be taken on all logged issues - if necessary by sending change requests to other authors. The editor makes the final classification of issues into defects, and reports final defect metrics to the leader. Edit also deals with improvements and can deal with 'questions to author.'
- HB16 **Follow-up.** The leader shall determine that some appropriate written action has been taken on all logged issues. The leader is not responsible for the correctness (the editor is).
- HB17 **Exit.** The leader determines whether the formal exit criteria have been met before signing off completion of the Inspection. These include follow-up completed, metrics delivered, planned rates kept to, and level of remaining defects within acceptable bounds.

Process models

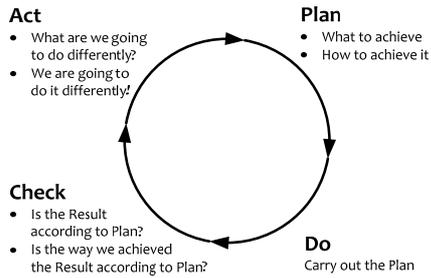
The V-model for development, with Inspections added:



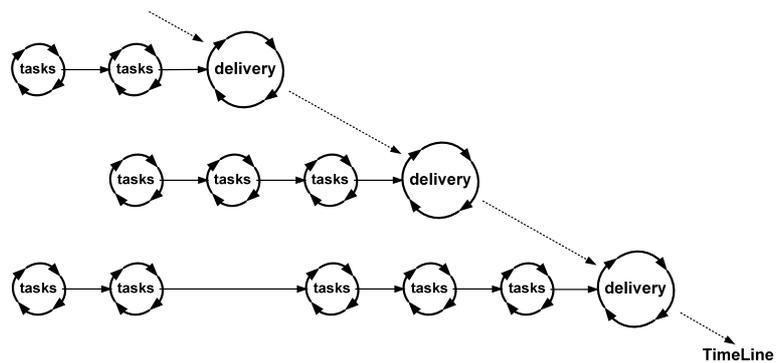
Every sub-process in this model can be split-up in detailed process-steps with the phases of the Inspection process at the bottom:



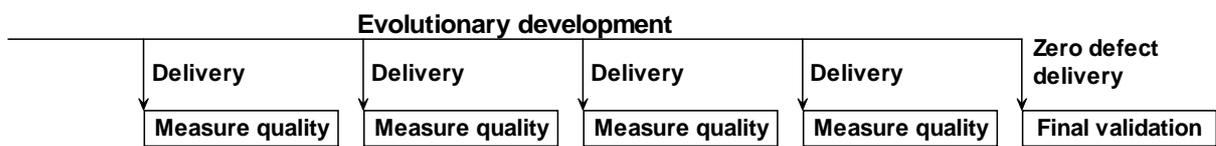
Shewhart cycle, Deming cycle, PDCA cycle:



Evolutionary Development: Current tasks feed the current delivery cycle, as well as prepare for future delivery cycles.



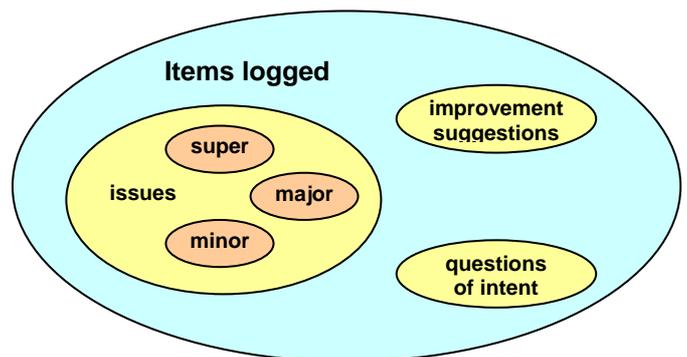
Testing of early deliveries in Evolutionary Development helps the developers to get ready for zero-defect final delivery:



Classification of Items found in Inspections

Items found in Inspections are logged as:

- **Issues**
 - **Major**
The defect will probably have significantly increased costs to find and fix if found later, say at least 10 engineering hours extra.
 - **Super**, super major
Order of magnitude more risk than major, the defect is threatening the whole project/product.
 - **minor**: not major
The cost of finding and fixing this type of defect is not different if found now or later. However, they are still logged and fixed, since what first appears to be minor may turn out to be major, and there is not point in leaving even minor defects in software products.
- **?, 'question of intent'**
Item logged which requires some oral reply or explanation from the author at the end of the logging meeting. During editing the author may decide that it indicates a defect and re-classify it as defect (S, M, m). For example, if something is not intelligible for novices, they may not be confident enough to raise it as an issue, when in fact it is a defect.
- **Improvement**, process improvement suggestions
Proposal to improve any process. Adding of changing rules, checklists or other procedures.



Inspection Procedures

Overview of Inspection Procedures

The following Inspection procedures are used, shown as procedure tags (IN.PR.XX), representing written procedures below. - means not applicable, ...means maybe a procedure could be written.

	General	Planning and Entry	Kickoff	Checking	Logging	Brainstorm	Edit	Follow-Up	Exit
Leader		LE	LK	LC	LL	LB	LS	LF	LX
Author/Editor		-	CK	CC	AL	CB	EE	CF	-
Checker		-	CK	CC	CL	CB	-	-	-
Scribe		-	-	-	SL	SB	-	-	-
QA	QA								

Procedure for Checker during Kickoff: CK

ID tag: IN.PR.CK

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- CK1 Make sure you have all pages of all documents you are supposed to have.
- CK2 Ask for clarification if you do not understand the master plan or your role.
- CK3 Adopt quantitative team objectives.
- CK4 Adopt a suitable strategy to meet the objectives.
- CK5 Agree to your specialist assigned roles or ask the Inspection leader to modify them.
- CK6 Ask for detailed briefings on rules, checklists, source documents so you can do your checking better.
- CK7 Ask any questions you like about the Inspection process.
- CK8 Make any suggestions you like for the team or your role in it.
- CK9 Make a commitment to spending the necessary checking time before the logging meeting.

Procedure for Checker during Checking: CC

ID tag: IN.PR.CC

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- CC1 Try to identify a maximum number of potential issues on behalf of your team, and to help the author.
- CC2 Your job is to help 'make the author a hero'.
- CC3 If you get a ridiculously high number of issues:
 - a. Consult with the leader
 - b. Generalize and estimate quantity by type.
- CC4 Play your primary assigned role to the full.
- CC5 Don't be shy of noting any kind of issue you think you have found (you can later decide whether or not to report it).
- CC6 You do not have to write a perfectly presented log. It is better to concentrate on finding more issues, but you may write any notes you like, any way you like. They are normally your private notes.
- CC7 If you have trouble finding issues, consult with the leader or another team member.
- CC8 If you have any time difficulty, consult with your Inspection leader.
- CC9 If you believe the assigned rate is too fast for your purposes, slow down. Consider consulting with the leader about this.
- CC10 Focus on major (and super-major) issues, do not spend a lot of time and effort finding and noting minor issues.
- CC11 Classify as you go as S (super), M (major), m (minor), ? (question of intent), I (process improvement).
- CC12 Fill in the section called Data Collection at the bottom of your master plan, with your personal checking data, so you can swiftly report your data at the beginning of the Logging Meeting.

Procedure for Checker during Logging: CL

ID tag: IN.PR.CL

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- CL1 Contribute your checking data quickly at the beginning to the leader so it can be noted. Use about one minute or less. Be brief. Use the sequence in your master plan.
- CL2 Follow the agreed logging priority and sequence.
- CL3 When someone has logged an issue you also had identified, keep silent, and go on to the next one.
- CL4 Speak clearly, so everyone can hear.
- CL5 Direct your remarks to the scribe.
- CL6 Make sure the scribe is following you.
- CL7 Reports should be in seven words or fewer in total. Think before you speak.
- CL8 Report document tag, page, line, rule or checklist tag and number, keyword of violation, severity.
- CL9 Do not discuss anybody else's issue reports. We want them logged whatever the misunderstanding.
- CL10 Do not justify or explain your report.
- CL11 If you absolutely must discuss something, make a note and do it later with the appropriate parties.
- CL12 Do not attack or belittle anybody.
- CL13 Be supportive and encouraging, especially to novices.
- CL14 Enjoy yourself! Learn! Joking and laughter are permitted and encouraged.

Procedure for Scribe during Logging: SL

ID tag: IN.PR.SL

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- SL1 Make sure the author/editor can see that your writing is visible. Type directly into a computer if possible.
- SL2 Note down only those words necessary for the editor to understand the issue (let him be the judge).
- SL3 Insist on a standard reporting sequence (use a table tent card with the sequence on the table).
- SL4 Don't let checkers go too fast. Ask them to slow down and to wait for your OK signal to report a new issue.
- SL5 If you are not sure, check it with the leader and the editor before continuing.
- SL6 If you are exhausted, consider passing the pen to a team-mate.
- SL7 Report your own issues last, possibly letting another person log them.
- SL8 When there are many of the same generic error, log multiples by getting a guess as to approximate quantity, and noting it in the right-hand margin.

Procedure for Author During Logging: AL

ID tag: IN.PR.AL

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- AL1 Report your own noted issues after giving your team-mates a chance.
- AL2 Don't say 'I found that too!'
- AL3 Thank your colleagues for their efforts on your behalf.
- AL4 Learn as much as possible about avoiding issues as an author.
- AL5 Respect the opinion of team-mates. Do not justify or defend.
- AL6 Check the logging for legibility and intelligibility.
- AL7 Answer any 'questions of intent' logged by checkers at the end of the logging meeting.

Procedure for Checker during Brainstorming: CB

ID tag: IN.PR.CB

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection participants

- CB1 When the leader suggests a defect to be analyzed, find it in your documentation as quickly as possible and confirm that you have found it.
- CB2 Help to brainstorm the defect cause classification (Communication, Oversight, Transmission, Education)¹.
- CB3 Brainstorm keywords about the root cause. (Do not use more than one minute as a team for this. You can contribute several conflicting ideas.)
- CB4 Brainstorm keywords about a suggested process cure which would prevent such errors happening in the future. One minute maximum for the team.
- CB5 Do not try to get to the whole truth. You do not have time. The Process Change Management Team will study this in more depth later.

Procedure for Editor during Editing: EE

ID tag: IN.PR.EE

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection editors

- EE1 Correct logged issues according to your sources and rules.
- EE2 If, in your opinion a logged issue is due to, or first requires correction of a source, rule or checklist - then write a Change Request to the owner of the source document.
- EE3 Insert a note in your candidate document about the pending CR you sent.
- EE4 You may, if you wish, make annotation or written answers in your product to any 'questions of intent' which were logged. This will answer questions from future readers for you in advance.
- EE5 You may change a severity (Super, Major, minor) classification to one which you believe is more correct than originally logged. Change the final count appropriately.
- EE6 Indicate on the log how and where you have edited for each issue, so as to make the leader's follow-up process obvious and easy.
- EE7 You do not need to respond to an issue in the way indicated by the checkers. Fix the real issue in a responsible way. An issue becomes a defect only when you acknowledge it by making a correction.
- EE8 You may make corrections to defects which you spot yourself during editing work. Include them in your defect count.
- EE9 You may make improvements and optimizations to your document without counting them as defects, but take great care as these changes will not have been Inspected. Inform the Inspection leader about any additional changes you have made.

¹ **Communication:** information not received, incorrect information received.

Oversight: didn't include something, not enough time to do the job thoroughly, or simply forgot something.

Transmission: knew and understood what to do, but a 'slip of the finger' resulted in an unintended outcome.

Education: didn't realize that something else or something different should have been done, didn't understand the problem, the solution, the context, the job.

Procedure for Leader at Planning and Entry Check: LE

ID tag: IN.PR.LE

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LE1 Plan the process:
 - a. Assemble a team
 - b. Assign roles to team members
 - c. Identify relevant documents
 - d. Determine optimum rates
 - e. Determine meeting places and times
- LE2 Lead meetings.
- LE3 Collect basic metrics.
- LE4 Make sure rules and procedures are followed.
- LE5 Determine if entry conditions are fulfilled:
 - a. If not, return to author for cleanup
 - b. Or discuss what to do about source documents, rules
 - c. Work to remove failed entry condition
- LE6 Determine which documents are to be used:
 - a. Procedures
 - b. Master plan
 - c. Checklists
 - d. Rules
 - e. Sources
 - f. Candidate document chunks
- LE7 Determine specialist roles to be played:
 - a. User (concentrate on user point of view)
 - b. Tester (concentrate on test considerations: testability, test requirements, ...)
 - c. System (concentrate on wider system implications: hardware, documentation, selling, timing of delivery)
 - d. Financial (concentrate on cost and revenue implications, estimates, uncertainty, dates, quantities)
 - e. Quality (concentrate on all aspects of quality attributes)
 - f. Service (concentrate on field service, maintenance, supply, installation, customer assistance)
 - g. Rules (special attention to rules used)
 - h. Sources (special attention on source documents)
- LE8 Get or make role checklists, role procedures, assign individual Inspection procedures.
- LE9 Determine checking rates for individual checkers (pages/hour).
- LE10 Determine logging meeting optimum rates (pages/hour and issues logged/minute).
- LE11 Prepare suggested team objectives (numeric).
- LE12 Prepare suggested team strategy (to meet objectives).
- LE13 Book meeting rooms.
- LE14 Make sure team members agree to timings and location.
- LE15 Make and distribute copies (physical or electronic).

Procedure for Leader at Kickoff: LK

ID tag: IN.PR.LK

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LK1 Distribute documents.
- LK2 Ask if any questions as to the master plan.
- LK3 Train novices on rules, procedures, checklists.
- LK4 Get team to agree on kickoff objective (numeric).
- LK5 Get team to agree on kickoff strategy.
- LK6 Get team to agree on assigned roles.

Procedure for Leader during Checking: LC

ID tag: IN.PR.LC

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LC1 Check novices after a while to make sure they are finding issues.
- LC2 Help them to learn to find issues if they have trouble.
- LC3 Check for issues yourself only if you deem it the best use of your time for the team results, otherwise concentrate on managing the team.
- LC4 Be available to any team member needing help.
- LC5 Check that checkers have really had time to check at the optimum rate. If necessary consider delaying the planned logging meeting to allow time for all checkers to do their job.

Procedure for Leader During Logging: LL

ID tag: IN.PR.LL

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LL1 Entry to logging:
 - a. Gather individual checking data
 - b. Record it on data summary sheet
 - c. Evaluate if it is worth holding logging meeting
 - d. Cancel meeting if necessary
- LL2 Remind team of kickoff objectives and strategy agreed earlier.
- LL3 Decide and announce a recording sequence and content ('majors only', 'sources first' for example).
- LL4 Assign scribe task or take it on yourself.
- LL5 Remind author to validate the written log, and seat accordingly.
- LL6 Begin logging process.
- LL7 Make sure that unique majors not in checklist get evaluated for inclusion as a suitable question in an updated checklist whenever rule is not specific enough.
- LL8 Keep recording pace high (one to four logged per minute).
- LL9 Stop discussions, defensiveness: focus on logging.
- LL10 Have fun, joke, help people to learn and enjoy.
- LL11 Announce results, in relation to kickoff objective, at end.
- LL12 Decide how to handle lack of time:
 - a. Reschedule continuation
 - b. Re-chunk the remainder
- LL13 Consult with author. Is this sample enough?

Procedure for Leader during Brainstorming: LB

ID tag: IN.PR.LB

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LB1 Remind team of basic rules (reporting structure, three minutes each, brainstorming mode, purpose).
- LB2 Suggest a strategy for selecting issues to be discussed ('all supers, first logged majors, for example).
- LB3 Be the scribe (usually).
- LB4 Keep rigorous timing three minutes maximum each.
- LB5 Log issue identification, classify (education, and so on). One minute.
- LB6 Log team suggestions as to root work process cause: keywords; conflicting views OK. One minute limit.
- LB7 Log team suggestions as to improvements in work process: keywords; conflicting views OK. Solicit practical, 'we could and would do it ourselves' ideas. One minute.

Procedure for Leader during Editing Supervision: LS

ID tag: IN.PR.LS

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

Similar to leader during checking. For a novice editor, the leader must:

- LS1 Give guidance on issue classification.
- LS2 Help to deal with issues logged against source documents (for example, via change requests).
- LS3 Give guidance on dealing with issues that, in the editor's opinion, are not really issues.
- LS4 Set expectations as to how long the process will take (estimate it and tell editor).
- LS5 Give advice concerning the next step (follow-up).

Procedure for Leader During Follow-up: LF

ID tag: IN.PR.LF

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LF1 Make sure editor feels properly finished (not pressured by a deadline to give it to you).
- LF2 Check completeness:
 - a. All logged issues responded to in writing
 - b. Claimed fixes entered in updated version
 - c. Sampled fixes look credible and reasonable (to you). Please note, you do not have to prove each fix is correct.
- LF3 If the editor is new or novice to editing, then you must sample enough to guarantee that the editing rules have been followed.
- LF4 If Change Requests (CR) (or other memos to other authors and owners) are issued, then check that they are logged in the configuration management system you have, and that the editor has made appropriate notes in the candidate document about the pending CRs.
- LF5 Collect and analyze the now final (adjusted by editor) checking/logging/brainstorming/editing metrics in the Data Summary. Put them in the QA database.
- LF6 Did the team meet their kickoff objectives? Tell them.
- LF7 Were checking/logging rates close to planned optimum rate? (If not you may fail to exit.) Compute % deviation.
- LF8 Compute number of probable major defects remaining for the pages you have checked (for exit check).
- LF9 Compute probable total major defects in entire candidate document, if you have only checked a sample or a chunk to that time.
- LF10 Compute net value (total hours probably saved) of your team work. This is the time saved due to 'major defects corrected now', minus time used for the entire Inspection process needed to eliminate the defects.

Procedure for Leader during Exit Check: LX

ID tag: IN.PR.LX

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader.

- LX1 Check all written exit conditions (generic and specific).
- LX2 Help others meet exit conditions which have failed.
- LX3 If all conditions are met, release the document chunk as exited.
- LX4 Include data about remaining issues per page average. Put this in the document under your signature.
- LX5 Document the release (as 'document EXITED') on the latest version of the document (electronically rather than a stamp upon a document).

Procedure for Chief Inspection Leader: CI

ID tag: IN.PR.CI

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Chief Inspection Leader.

- CI1 Certify new software Inspection leaders after their training course.
- CI2 Remove certification for software Inspection leaders who persist in practices such as allowing too fast checking rates.
- CI3 Assist leaders with any difficulties they may have.
- CI4 Convey updates in the method to the Inspection leaders.
- CI5 Keep up to date with new software Inspection methods and the overall metrics for all in company groups.
- CI6 Represent the interests, experiences and views of Inspection leaders to management and other bodies such as quality assurance and process improvement groups.

Procedure for Project Manager: PM

ID tag: IN.PR.PM

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Project Managers, Resource Managers and anybody interested in or busy with Inspections.

- PM1 Make it clear that you totally support the effective use of Inspection because it contributes to project success.
- PM2 Promote the spread of Inspection to all project documents, when profitability has been proven in your organization.
- PM3 Practice Inspection on your own personal level of documents.
- PM4 Help to determine key exit criteria such as number of allowed probably remaining defects at EXIT.
- PM5 Help to enforce ENTRY criteria, especially making sure that your project's generated documents are suitably exited before others inside or outside the project make use of them.
- PM6 Make constructive gestures, then loud noises about source documents for your team which have not exited and show signs of poor quality.
- PM7 Help make sure the rules used by authors and checkers are strong and updated with regular improvements. Support the rules.
- PM8 Join your Inspection teams at least once a quarter to see first hand the current practice, and be visibly interested.
- PM9 Make sure that brainstorming improvement ideas are followed up by some effective form of Process Change Management Team, either in your project or in your organization.

Procedure for QA Leader with respect to Inspection: QA

ID tag: IN.PR.QA

Version: 0.1

Date: May 20, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: Quality Assurance Leader with respect to Inspection.

- QA1 Plan and work for successful implementations of software Inspection.
- QA2 Spread Inspection to most areas of your company:
 - a. Top management planning
 - b. Engineering
 - c. Product planning
 - d. Software engineering
- QA3 Continuously improve the power of the method.
- QA4 Audit the use of the method in practice.
- QA5 Provide budgetary support for training, databases, experiments.
- QA6 Learn from outside organizations about Inspection practices and evaluate spreading this knowledge to yours.
- QA7 Establish an Inspection database for metrics, forms, lists, rules and other tools of the Inspection trade.
- QA8 Monitor benefits of Inspection and report them to top management.
- QA9 Make sure that the rules for writing documents are upgraded to make identification of issues easier.
- QA10 Convene practitioners and get their feedback for Inspection process improvement.
- QA11 Bring in suitable outside consultants, teachers, literature and outside practitioners to make sure the Inspection process is as good as it can be.

Inspection Criteria

Generic Inspection Entry Criteria

ID tag: C.GEC

Version: 0.1

Date: Oct 17, 2001

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader and Editors

- GEC1 (author) The author can decide not to enter any substage of inspection
- GEC2 (leader) The leader can decide not to enter any substage of inspection
- GEC3 (writing) All source documents are in writing and successfully exited
- GEC4 (rules) Generic and specific rule sets for the task are available in writing
- GEC5 (masterplan) A master plan has been made with checking rate of one page per hour
- GEC6 (trained) The leader has been trained and certified as Inspection leader
- GEC7 (examination) A cursory (< 5 min) examination of a sample shows < 1 major/page
- GEC8 (checks) Possible machine checks are done
- GEC9 (participate) The author agrees to participate as checker

Generic Inspection Exit Criteria

ID tag: C.GXC

Version: 0.1

Date: Oct 17, 2001

Owner: Niels Malotaux

Status: not inspected

Intended readership: Inspection Leader and Editors

- GXC1 (edit) All editing completed
- GXC2 (CRsent) All change requests sent to owners of other documents
- GXC3 (summary) Data summary completed and in database
- GXC4 (remaining) No more than 0.25 (2 for beginners) major defects remaining
- GXC5 (veto) Author or Inspector can veto exit
- GXC6 (release) Can we release this document for further use?

Inspection Rules

Generic rules for rules

ID tag: R.GR

Version: 0.2 (typo corrected)

Date: May 17, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: anybody writing or checking rules

GR0 (def)	Any statement to guide writing a document.
GR1 (page)	No rule set shall ever exceed a single page (about 60 lines max).
GR2 (exit)	All rule sets should be exited.
GR3 (unique)	All rules shall have a unique reference code.
GR4 (eternal)	Deleted rule codes shall not be re-used.

Generic engineering specification rules

ID tag: R.GE

Version: 0.2

Date: Oct 11, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: any engineer writing or checking any (software) engineering specification

GE0 (def)	Generic engineering specification rules apply to all engineering documents as required best practices. They are separated from related specific rules so as to avoid repeating them and to permit learning well.
GE1 (relevant)	All statements should be relevant to the subject.
GE2 (complete)	There should not be any significant omissions.
GE3 (consistent)	Statements should be consistent with other statements in the same or related documents.
GE4 (unambiguous)	All specifications should be unambiguous to the intended readership.
GE5 (note)	Comments, notes, suggestions, not official part of document shall be clearly marked ("", ital, /**/).
GE6 (brief)	All specifications shall be as brief as possible, to support their purpose, for the intended readership.
GE7 (clarity)	All specifications shall result in clarity to the intended readership regarding it's purpose or intent (the burden is on author, not the reader). Note: It is not enough that statements are unambiguous. They must contain clarity of purpose: why is it there?
GE8 (elementary)	Statements shall be broken into their most elementary form Note: This is so that they each can be cross-referenced externally.
GE9 (unique)	Specifications shall have a single instance in the entire project documentation.
GE10 (source)	Statements shall have source info (spec ← source).
GE11 (risk)	The author should clearly indicate any information which is uncertain or poses any risk to the project, using indications like: {<vaguely defined>, ?, ??, 70% ±20, suitable comments or notes}.
GE12 (verifiable)	All statements should be verifiable.
GE13 (true)	The statement is simply not true.

Requirements specification rules

ID tag: R.RQ

Version: 0.1

Date: May 17, 2000

Owner: Niels Malotaux

Status: not inspected

Intended readership: any engineer writing or checking any requirements document.

- RQ0 (definition) Requirements are any 'desired future end state' input to a design engineering process, which we must consider in order to derive or evaluate any architecture or other technical design.
- RQ1 (classification) Requirements shall be classified as {function (what), quality (how well), cost, constraint}² and specified under these separate main headings.
- RQ2 (scalar) All requirements which can be expressed measurably³ shall be expressed with a defined scale of measure, including at least one target value.
(minimum) The scalar specification shall minimum include {unique scalar specification tag, scale, meter, goal}.
(options) The scalar specification may include {trend, record, past, must, wish, [any interesting qualifiers], source information (who said this when and where), comments}.
Scalar requirements include all quality requirements (how well something should function) and all cost requirements (input resources to obtain the required functions and qualities).
- RQ3 (NoDesign) Requirements shall not contain design (how), unless intentionally imposed as design constraints.
- RQ4 (testable) All requirements shall be specified so that it is possible to define an unambiguous test to prove that it is implemented.
- RQ5 (FuncBinary) Functional requirements are binary in nature (present or absent). Functions must not be described in terms of degree of variability. If something has a certain degree then it has to be classified as a quality or cost of a certain function.

² Functions define what the system does, costs are input attributes to the function and qualities are output attributes, how well the functions are performed.

³ **Description:** Name of the quality requirement

Scale: A scale of measure which permits us to put numbers to quality degrees.

Meter: A defined process, method or device how to measure where we are on the scale.

Past: Previous achieved value (self or competition). Example: Past [old system]: 30%.

Record: Best known past achieved value.

Must: Minimum acceptable level to avoid failure of acceptance.

Wish: Desire as expressed by stakeholder, not yet promised due to technical or cost reasons.

Goal: The minimum value to claim success for this quality.

Limit: No use to try for more, because of technical, physical constraints.

Qualifiers: [when, where, event]. Example: Record 89dB [1999, Hasselt, claim by AM]

Quality attribute requirements specification rules

ID tag: R.QR

Version: 0.2 (small additions during Gilb workshop)

Date: Jun 28, 2001

Owner: Niels Malotau

Status: not inspected

Intended readership: any engineer writing or checking any requirements document.

QR1 (rules.GE)	The generic engineering specification rules (rules.GE) apply.
QR2 (scale)	An appropriate scale of measure shall be defined, or referred to, for every elementary quality objective.
QR3 (explode)	Complex quality requirements shall be detailed into elementary quality attributes. Example: availability.reliability.recoverability, or: availability.maintanability.mtrr (mean time to repair).
QR4 (meter)	One or more appropriate Meter specifications shall be defined. Use a [qualifier] to indicate type of Meter application. Example: Meter [acceptance test]. An outline of, or a reference to a Meter process should be included.
QR5 (benchmark)	Reasonable specification of relevant Past, Record, Trend type of attributes shall be made, or admitted unknown.
QR6 (must)	The Must ('survival') level shall be given. Any place or condition which could threaten the project with failure is to be noted in this way. Example: Must [initial release] 90%, [Asian market] 99.999%, [Medical market Europe] 99.9%.
QR7 (goal)	A success level specification shall be given for any cases worth controlling. Example: Goal [California, release 1] 95%, [Europe] 99%, [USA, release 2] 99.5%.
QR8 (complete)	All arguably critical (to success or failure) qualities shall be identified and defined.

Inspection Checklists

Definition:

Checklists contain interpretations of rules which help checkers find more defects.

Checklists concentrate on major defects. A checklist should be no more than one page per subject area.

Checklist questions interpret specified rules.