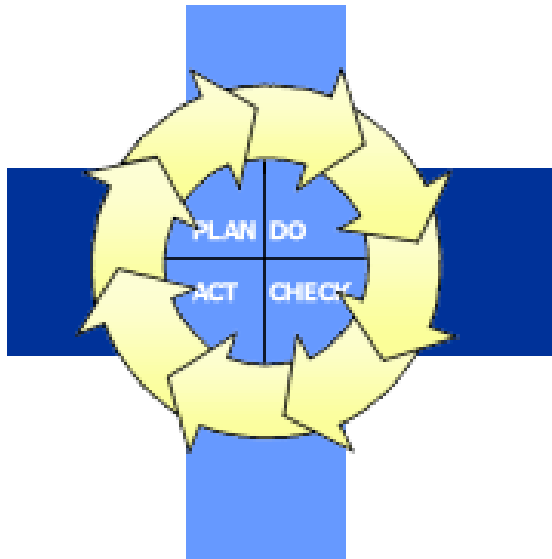




Software Process Training



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Purpose of Reviews

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- ***To improve the quality of the item under review directly***
 - Early error detection
 - Ensure compliance with necessary quality guidelines
 - Check conformity with standards
 - Check interfaces to system components

- ***To improve process quality indirectly***
 - Communications improvement within the project
 - Close cooperation with technical department
 - Project progress becomes readily apparent
 - Reducing work and cost of testing.

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- **Uses human thought/analysis capabilities**
→ *Cognitive capabilities*
- **Suitable for formal and informal documents (all types)**
- **All aspects of quality can be reviewed**
- **Cuts work and expense of testing**

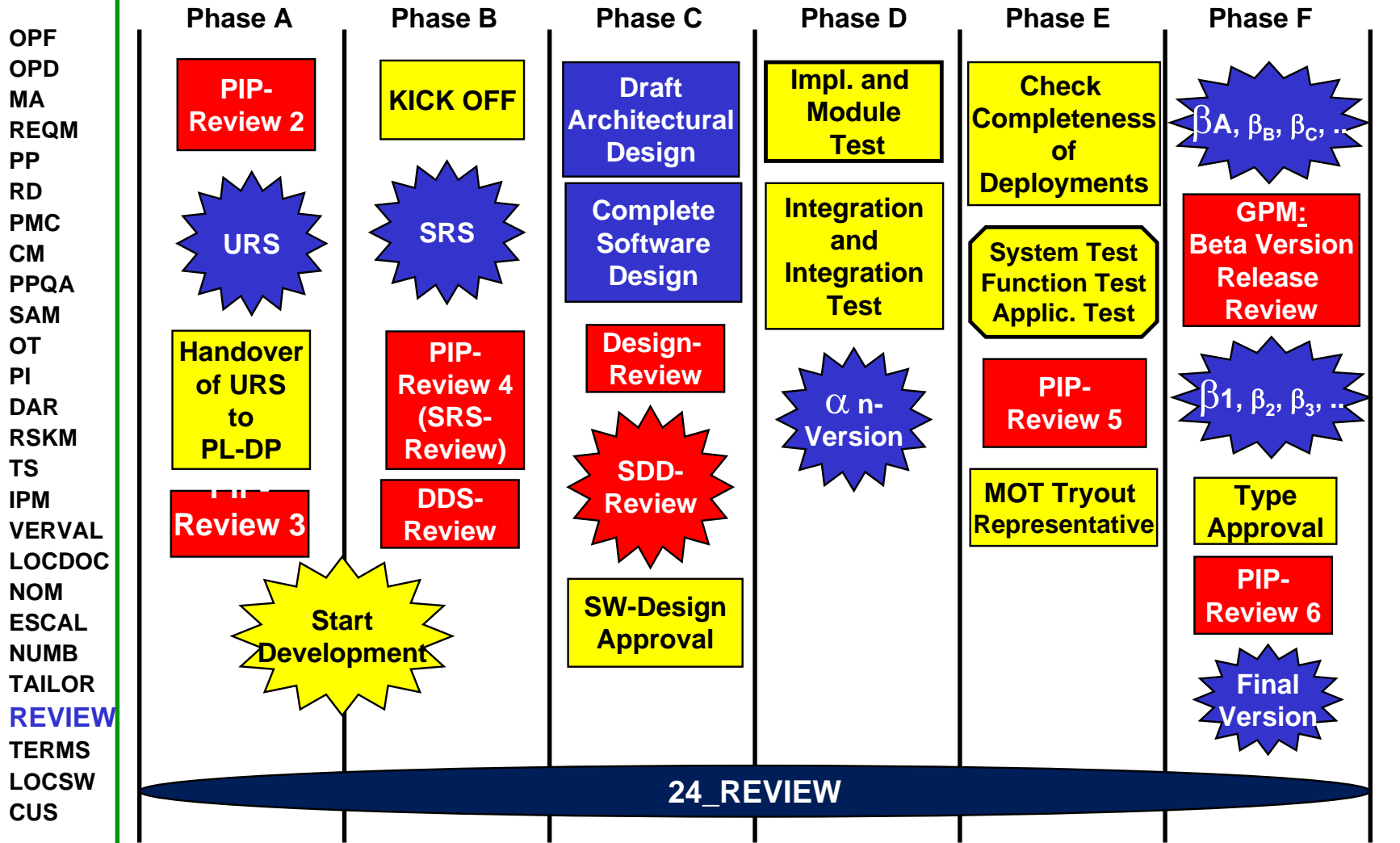


How We Find Bugs!

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SW Development Overview: Rule 24 (REVIEW)



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■ Policy

According to the Quality-, Environmental- and Safety-Manual (chapter 5.3) the policy establishes the evaluation for

- Performed processes, work products and services against applicable process descriptions, standards and procedures
- Identifying, documenting, addressing and tracking of non-compliance issues
- Providing feedback to relevant stakeholder of the results of quality assurance activities.

■ Scope

All SW producing units in AVL SBU MES.

■ Purpose

The purpose of this rule is to define systematic procedures for AVL reviews applicable to software acquisition, supply, development, operation and maintenance. This standard describes how to carry out a review.

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- **Method:** *Plenum*
- **Timing:** *10'*
- **Form:** *Brainstorming and discussion*
- **Documents:** *none*
- **Deliverable:** *Documentation on flipchart (Trainer)*



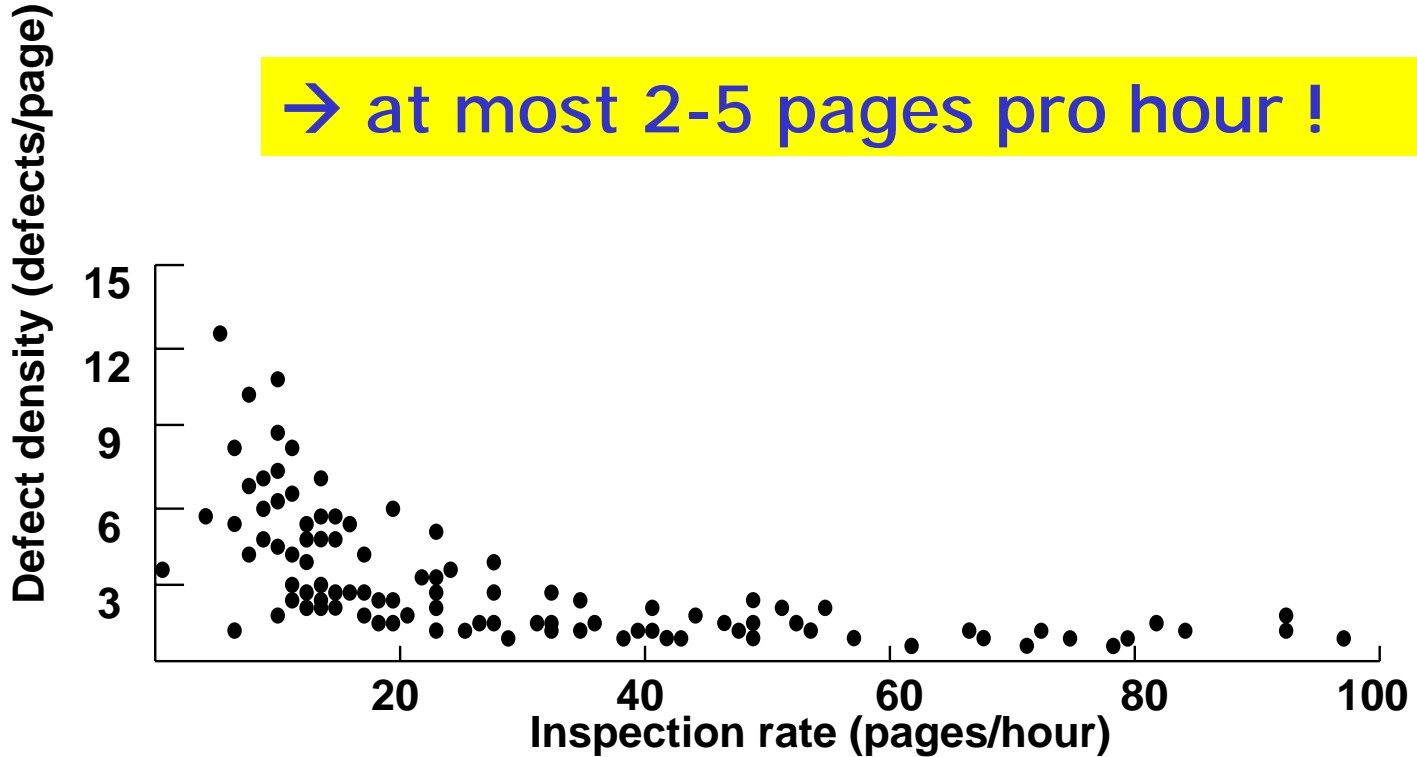
- **Questions:**
 - I. What are your experiences with reviews?*
 - II. What worked well in the past?*
 - III. What did not work so well?*

Defect Detection Rate



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→ at most 2-5 defects pro hour !



Source: Tom Gilb, Denise Leigh Software Inspection p 334, 230 inspections of Sema Group (GB)

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EXAMPLE VERIFICATION ACTIVITIES

Inspect 100% SyRS/SRS	Peer Review 100% Designs	Inspect 100% Critical Implementation	Reliability/ Statistical Testing	Verify Changes
REQUIREMENTS	DESIGN	IMPLEMENTATION	TEST	RELEASE
Use Cases; User Reviews; Customer Priorities	Prototyping; Decision Analysis & Resolution	Simulation	Acceptance Testing	User/ Customer Feedback Reviews

EXAMPLE VALIDATION ACTIVITIES

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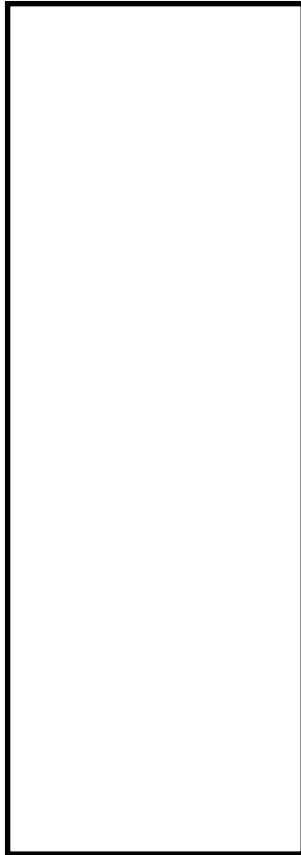
- **Method:** *Individual*
- **Timing:** *15'*
- **Form:** *Individual elaboration*
- **Documents:** *Process Rule 24; form: next foil*
- **Deliverable:** *Filled in form*

Question:

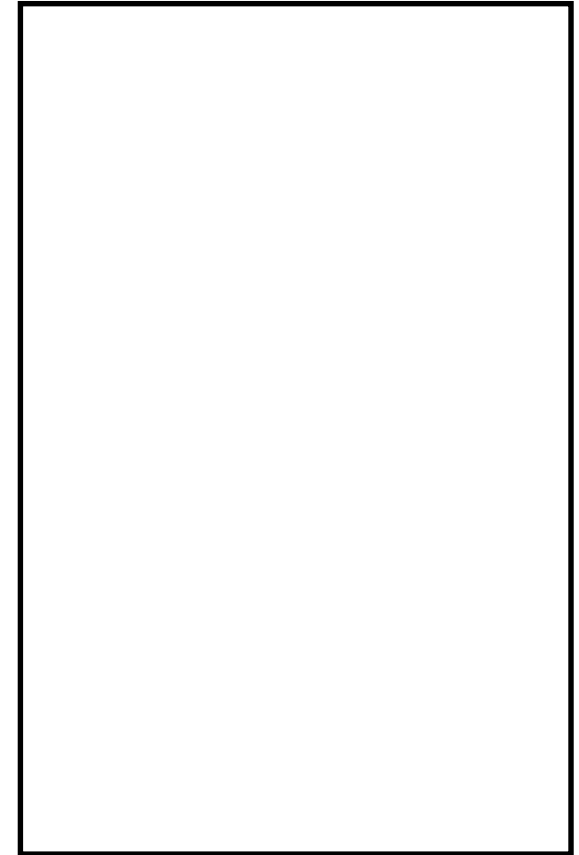
- I. *Based on your experience, the prior discussion and the **REVIEW** process definition list the involved roles, the performed activities, and the produced work products.*

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Roles



Work Products



Activities



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Roles

- Author
- Moderator
- Inspector
- Leader
- Recorder
- Stakeholder



Activities

- Planning
 - Initiation
 - Preparation
 - Meeting
 - Report
 - Rework
 - Walkthrough
- Management Review
 - Technical Review
 - Code Review

Work Products

- Review Protocol

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■ Author

- Responsible for the creation of the work product under review.
- He hands the completed elements over to the moderator, (with other material used).
- Contributes to the review by answering questions of the review team members.

■ Moderator (Review Leader)

- Responsible for admin. tasks (initiating the review, collecting input, assigning tasks to the inspectors, managing the review meeting, generating recommendations within the team, issuing the review report, and possibly re-inspection of rework).

■ Inspector

- Identify/describe defects according to the specified tasks and criteria.
- Present the findings in the review meeting.

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■ Recorder

- Responsible for the meeting minutes (assists with the review report).

■ Leader (Resp. for Planning)

- Responsible for planning the review, identifying the review team, and determining the criteria for the work product evaluation.
(Usually the project manager assumes this role. Alternatively: Higher level management, product management, or head of department).

■ Stakeholder

- The stakeholder represents his interests in the project.

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Formal review types:

- **Management Review**
- **Technical Review**
- **Code Review**

and the special review type

- **Walkthrough**

AVL Mandatory Reviews



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	PIP Design Review 3 to 6	PIP Status Review	URS	SRS	SDD	DDS	Project Plan	Configuration Plan	Verification & Validation Plan	Test cases	SW Quality Assurance Plan	User documentation	Code
Management Review	X	X					X	X	X		X		
Technical Review			X	X	X	X				X		X	
Code Review													X

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A management review is a formal evaluation of project plans (monitor progress). It determines the status of plans and schedules against applicable standards and guidelines.

Purpose:

To support decisions about corrective actions, changes in the allocation of resources, or changes to the scope of the project.

Reviewed Documents:

- **All project management deliverables as:**
 - **Project Plan,**
 - **Configuration Management Plan (CM Plan),**
 - **Verification & Validation Plan,**
 - **Software Quality Assurance Plan (SQA Plan),**
 - **Design Reviews (PIP),**
 - **...**

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A technical review is a formal evaluation of a development result against applicable standards, guidelines, checklists, or documented alternative solutions by a team.

Purpose:

To identify any discrepancies from specifications and standards and to provide recommendations after the examination of alternatives.

Reviewed Documents:

- **Development documents assigned for a technical review (refer to Rule 17: VERVAL)**

Code reviews are a regular part of the development process. Code reviews focus on identifying insecure coding techniques and vulnerabilities that could lead to safety and security issues.

Primary Review Goal:

Finding as many errors and deviations as possible before the code is implemented

Review Goals:

- Identifying as many potential safety and security vulnerabilities as possible before the code is deployed,
- Defect free and well documented software,
- Software that is compliant with enterprise coding standards
- Teaching and sharing knowledge between developers.
- Other goals may be included regarding other attributes:
 - maintainability,
 - safety and security,
 - consistent end-user documentation,
 - adequate comments in code,
 - complete unit tests,
 - scalability,
 - ...

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- **Plan the Review**
- **Initiate the Review**
- **Prepare for the Review**
- **Conduct Review Meeting**
- **Write Review Report**
- **Rework the Work Product**
- **Closure of the Review**

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The Walkthrough offers the author the opportunity of having his work product (provisional result) evaluated by a team, without much formal effort being required.

Purpose:

To examine provisional results within certain development phases in order to find anomalies, improve the software product, consider alternative implementations, evaluate conformance to standards and specifications.

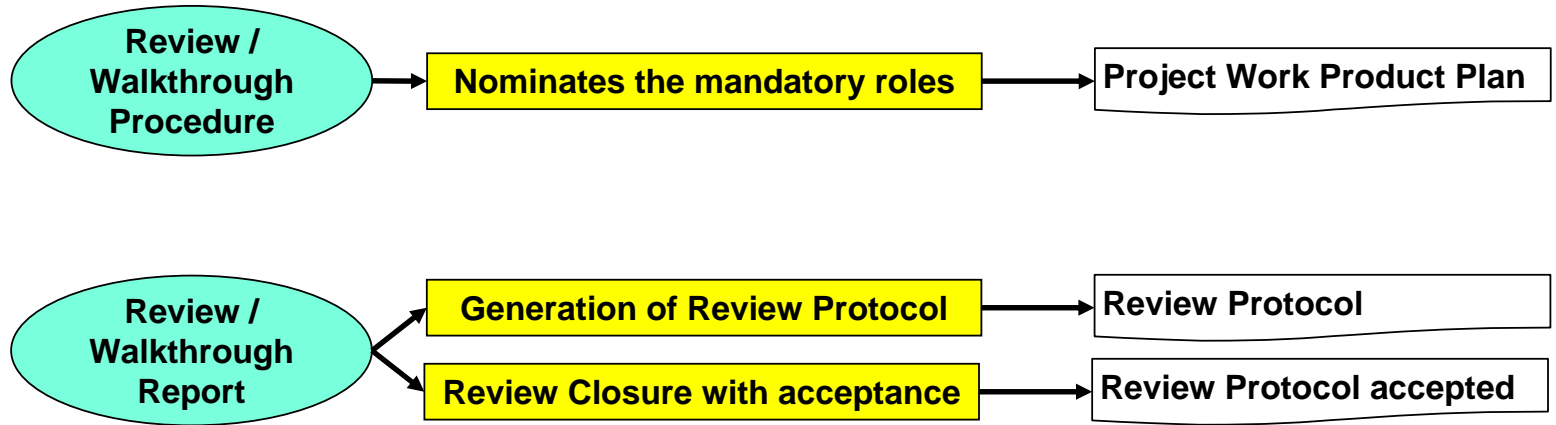
REVIEW Process Tasks

- OPF
- OPD
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Practice

Task

Work Products



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- **Method:** *Group work*
- **Timing:** *20' group work, 15' presentation & discussion (comparative discussion of group results)*
- **Form:** *Group elaboration*
- **Documents:** *Process Rule 24: REVIEW*
- **Deliverable:** *Review description on flipchart*

- **Question:**
 - I. *Describe the selected task 'REVIEW_T02: Generation of Review Protocol' for a Code Review using the presented description technique (→ next foil).*

- OPF
- OPD
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Input

-

ID	Task Name
Description	
Roles	
Tools	
Method/Technique	

Output

-

Task Details 'Generation of Review Protocol'



- OPF
- OPD
- MA
- REQM
- PP
- RD
- PMC
- CM
- PPQA
- SAM
- OT
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Input

- Work Product under review:
 - code
 - documentation,
 - architectural overview,
 - functional overview,
 - code overview
- Supporting material (Regulations, standards, checklists, ...)
- Review objectives
- Findings

ID REVIEW_T02	Task Name Generation of Review Protocol for Code Review								
Description									
<ul style="list-style-type: none"> • Document the review findings. • Establish an action list with responsibilities and schedule to resolve the findings. • Recommend acceptance and bring about a decision on it. • Distribute the report 									
Roles									
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Moderator</td> <td>Resp. for task REVIEW_T02</td> </tr> <tr> <td>Recorder</td> <td>Assists the Moderator</td> </tr> <tr> <td>Experts</td> <td></td> </tr> <tr> <td>Developer(-group)</td> <td></td> </tr> </table>		Moderator	Resp. for task REVIEW_T02	Recorder	Assists the Moderator	Experts		Developer(-group)	
Moderator	Resp. for task REVIEW_T02								
Recorder	Assists the Moderator								
Experts									
Developer(-group)									
Tools									
Template: Template_VERVAL_Walkthrough_and_Review_Protocol*.dot									
Method/Technique									
not specified									

Output

- Review Report

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Severity	Definition	Description
1	Minor nonconformity	defects that would affect only the nonfunctional aspects of the work product;
2	Major nonconformity B	defects that would affect the function to a negligible extent;
3	Major nonconformity A	defects that would result in failure of the software item or an observable departure from specification;
4	Critical defect	defects that could expose individuals or system parts to danger or result in total system failure.

Rule 24: Work Products and Templates



- OPF
- OPD
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WP Id	Type	Description	Task Id	Resp.	Link to Template Excel
REVIEW_W01	M	Review Protocol	Review_T02	Moderator	Template_VERVAL_Walkthrough_and_Review_Protocol.dot

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*What was important for
you concerning this
Process Rule?*



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