

# Peer Review

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This section describes what constitutes a peer review, where within the agile process peer reviews may be conducted, and how peer reviews may be conducted. Requirements, Architecture, Design, Software, User Documentation, Tests, and Test results should all be peer reviewed as part of an Agile project. This peer review process is tailored from Boeing's Common Process for [Performing Peer Reviews](#).

Agile software development addresses many of the short comings of the traditional waterfall process. The BASP approach meets the Peer Review objective to find and remove errors before going on to the next phase of program development. The application of peer reviews in a project using BASP can be streamlined to facilitate quality software while meeting program data collection requirements. Examples in this section for conducting code Peer Reviews range from the lowest overhead method of Pair Programming to a more formal Peer Review process using one of the Boeing standard Peer Review tools. Teams practicing the BASP should use the least-overhead method that still meets their program needs.

**Responsibility:**  [Product Owner](#)

**Support:**  [ScrumMaster](#)

**Deliverable:** Peer review templates and guidance

**Guides and other resources:** none

**Relevant BPG(s):** [BPG-07-10004 Software Design Method](#), [BPG-07-10005 Software Coding Method](#), [BPG-07-10007 Software Integration Method](#), [BPG-07-10009 Software User Documentation Method](#), [BPG-10-10002 Perform Peer Review Method](#)

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## Prerequisites

The [Product Vision](#) has been completed.

## Activities

### Peer Reviews During Planning

The  [Product Owner](#) considers where in the process peer reviews will be conducted.

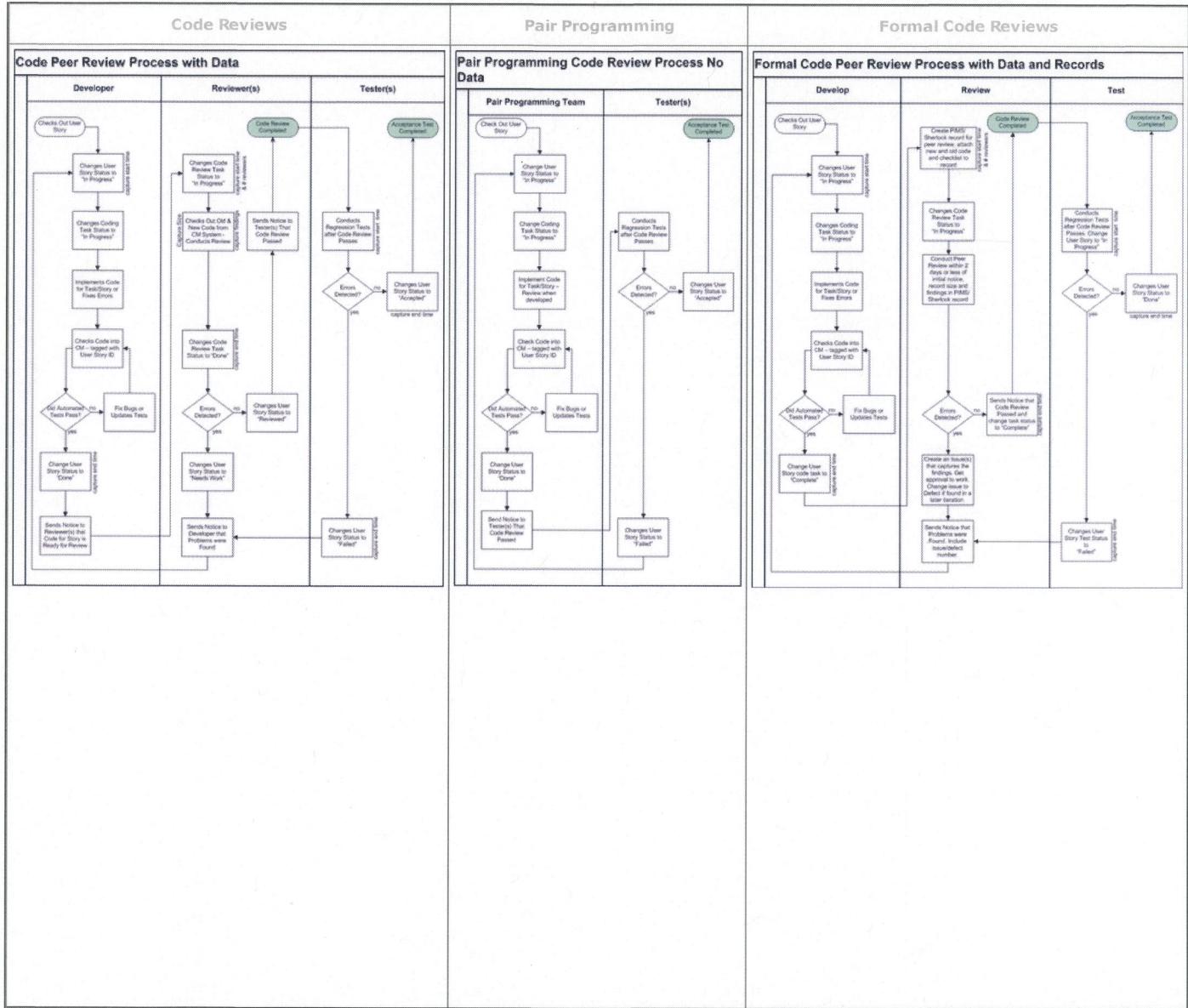
- Peer review of requirements can be done during the Roadmap and Release Planning meeting to verify the team understands the intentions of the customer (the term "customer" can also mean "key stakeholder") based on the requirements.
- During Roadmap and Release Planning, the development team explores the technical issues with the requirements and estimates the complexity of the requirements. The final review and agreement of the Roadmap and Release Plan before iteration execution starts may be considered a Peer Review of the requirements if it is identified in the program's Software Development Plan (SDP) and the Peer Review Method preparation, documentation and records are all captured, as required.
- There is an automatic review process underway during Iteration Planning because the team selects only the highest priority requirements for an iteration based on business value and difficulty. This could be considered an informal peer review.

### Peer Reviews During Each Iteration

How

- During each iteration the tasks of the iteration product backlog items (PBIs) are worked. Those tasks may include requirements analysis, detailed design or design updates, software development, and unit testing. If deliverable work products are being developed or updated during these tasks the definition of "Done" may include the completion of a peer review as defined in the software development plan for the project. Peer reviews of formal deliverable artifacts are conducted following the [BPG-10-10002 Perform Peer Review Method](#). These examples are provided to show how the implementation of peer reviews may vary. Your project's work instructions and work flows may vary from this as long as the peer review requirements are met as described in the tailoring guidelines [Performing Peer Reviews](#).

- Peer reviews of the code may be accomplished through code walkthroughs, code inspections, pair programming, or formal code reviews. The code reviews used by your project will be determined by the contract requirements and should be defined in the SDP. Three examples are described here and shown in the figures below. These figures are available in pdf format at this [link](#).
  - An example of how to conduct a Code Reviews using the Agile Application Lifecycle Management (ALM) Tool VersionOne to capture your data is described [here](#). The same set of steps can be implemented using an Excel spreadsheet or [another standard Peer Review tool](#).
  - An example of how pair programming code reviews may be accomplished is described [here](#). This is a tailoring of the Peer Review Method described in [Performing Peer Reviews](#).
  - An example of how to conduct formal code reviews using a formal repository where the records and measures are captured is described [here](#).



#### Who

- The project team determines how it chooses reviewers. Some possibilities include:
  - The reviewers are determined by including all affected parties
  - The story developer picks a single person (the two-sets-of-eyes-before-checkin strategy)
  - Verification by team members who did not write the code

#### When

- A story may be flagged for an eventual peer review when it is created if it is a high priority, critical, and/or a very difficult story needing additional attention.

- Peer reviews may be scheduled when the unit testing results are complete for a story, thus focusing the review on a story basis and not simply on code implementation
- A scheduled peer review may be identified as a story task or as a separate story that is added to the iteration backlog
- What
  - Peer reviews may be scheduled when stories are of sufficient magnitude or complexity to warrant review. Short and simple tasks may be completed without formal reviews. Scheduling reviews via team consensus may be part of the iteration planning process since these reviews will impact the schedule
  - The peer review should include the test script(s), product code and test results
  - The decision to perform peer reviews during Iterations shall be documented in the program's Software Development Plan (SDP).

## Peer Review During a Retrospection

- Following an iteration, or a release, or a customer demonstration, a retrospection is performed that could be described as a Peer Review. This is an opportunity to improve the process and implement improvements for future iterations. To meet the requirements of a Peer Review with a Retrospection the [BPG-10-10002 Perform Peer Review Method](#) must be followed.
- The Software Development Plan should include the retrospection findings as additional peer review findings. Those findings could be captured in the product backlog as stories or defects.

## Issues and Considerations

Peer reviews and the subsequent removal of findings are a significant part of developing a quality product.

Data associated with peer reviews are important to show defect removal and to support the development of highly reliable software.

## Other Details

### Scope

Peer Reviews are defined in the BDS training as the "Close Scrutiny of Your Product by Your Fellow Teammates at Each Phase of Development per Peer Review Rules to Remove Errors." The need for Peer Reviews has been accepted under various process and assessment requirements. For example, Peer Reviews are part of BDS common software process set, BASP, and CMMI assessments. The Boeing Agile Software Process provides an opportunity to apply Peer Reviews in a manner to facilitate quality products without the need for burdensome overhead. The BASP is a highly collaborative and transparent process conducted by self-organizing teams with "just enough" ceremony to produce high quality software in a cost-effective and timely manner. Peer Reviews are just one more tool in the BASP process to be used when and where appropriate.

### Application

Peer Reviews were designed to address short comings of development and to facilitate higher quality products. Listed in the table below are the objectives and benefits of Peer Reviews provided in the BDS Peer Review training. Additionally, the table lists how these objectives are met by the standard activities of the BASP. Given BASP's ability to inherently meet many of the objectives of Peer Reviews, the application of Peer Reviews should be evaluated based on program requirements, site metrics, and QA.

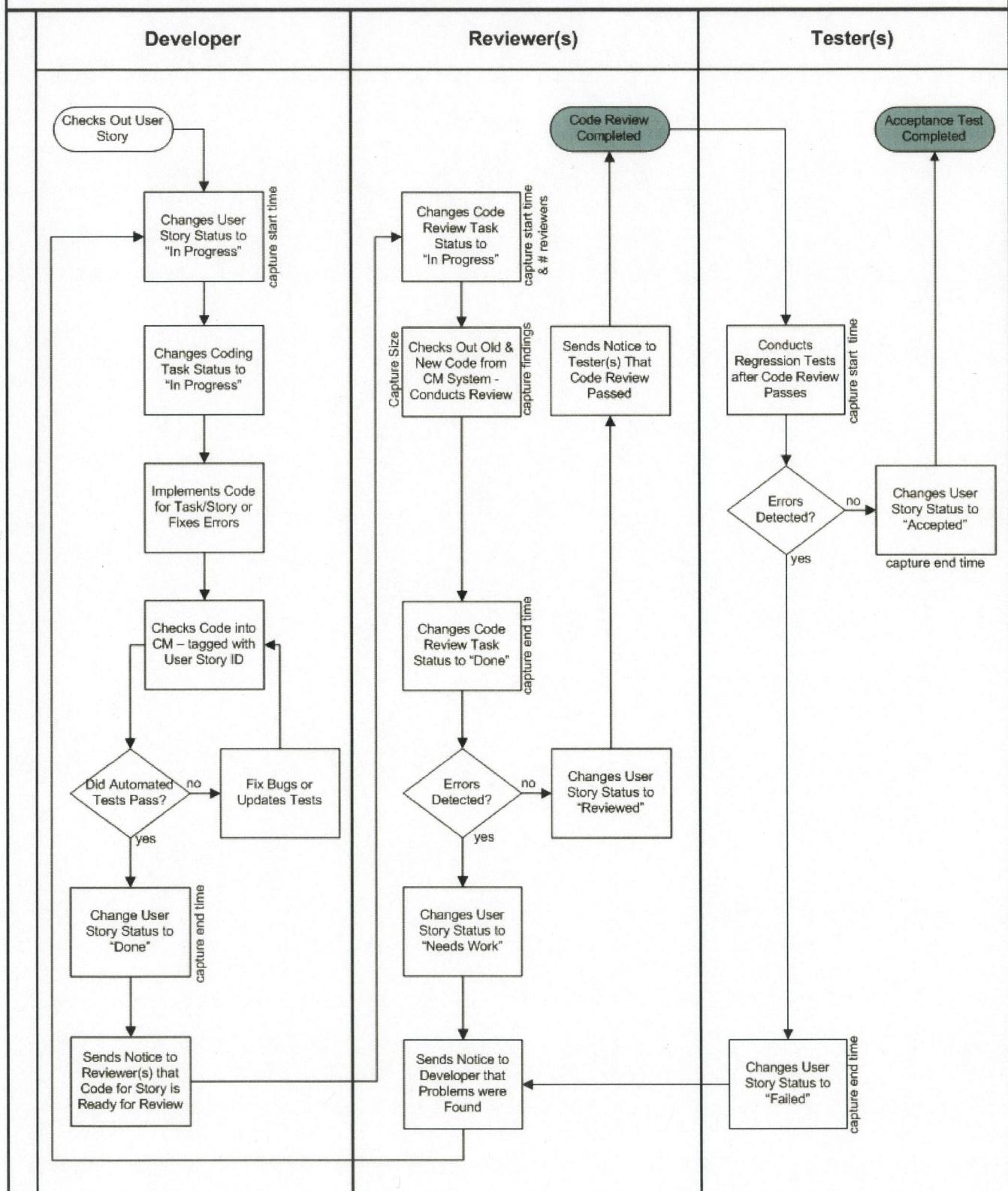
Peer Review Objectives	BASP Overlap
■ Defect elimination and prevention in a timely and cost effective manner	■ Strive to reduce/eliminate errors escaping to the customer as a defect, but Peer Reviews still needed. (Automated Testing, Acceptance Testing to close out a story, pair-programming or high level of developer interaction. The pair-programming review process is shown below this table.)
■ Product improvement by intense peer group scrutiny rather than only one set of eyes	■ Agile iterations are intense, highly-focused meetings of all team members who actively participate in the creation of work products
■ Process Improvement by identification of weak or error-prone areas of development	■ Retrospection is focused on identification of weak or error-prone areas of development. Retrospection is a process review where the team analyzes process effectiveness.
■ Increased communication and better personal interaction among team members	■ Team member interaction at all phases, iteration planning, daily scrum, demonstration, and retrospection
■ Brings together Multiple Viewpoints focused on building the right product	■ Agile teams consist of highly focused and small cross-functional teams empowered to make decisions. Multiple viewpoints are achieved in the five levels of Agile planning.
■ Team member motivation to create best product since it is subject to review	■ Agile empowers the team to be self managing and to complete meaningful work. An integrated product team is always reviewing and improving the software being developed.
■ Morale boost since praise, in addition to criticism, is received	■ Motivated teams are a principle of Agile. ScrumMasters help remove impediments and allow team members to be successful. Customer driven development encourages critical feedback from the customer.

■ Promotes team decision making and cooperation	■ Agile teams are self-organizing. So product planning, release planning and Iteration planning involve the entire team. The Agile team creates, evaluates and prioritizes stories, sets goals, and defines completion criteria. The team decides who should work on which stories during the iteration.
■ Definition of a Repeatable Process allows consistent review and quantitative evaluation of the process	■ The flow of the product vision from iteration planning, to execution, daily scrums, demo/review, and retrospection all within a 2-4 week period allows for a consistent review and improvement of the iteration process.
■ "Phantom Reviewer" – individuals each review and find things, but group reviews end up finding even more issues	■ The iteration planning, iteration execution, demonstrations, and retrospections include a cross-functional team that provides multiple inputs into development and evaluation of products.

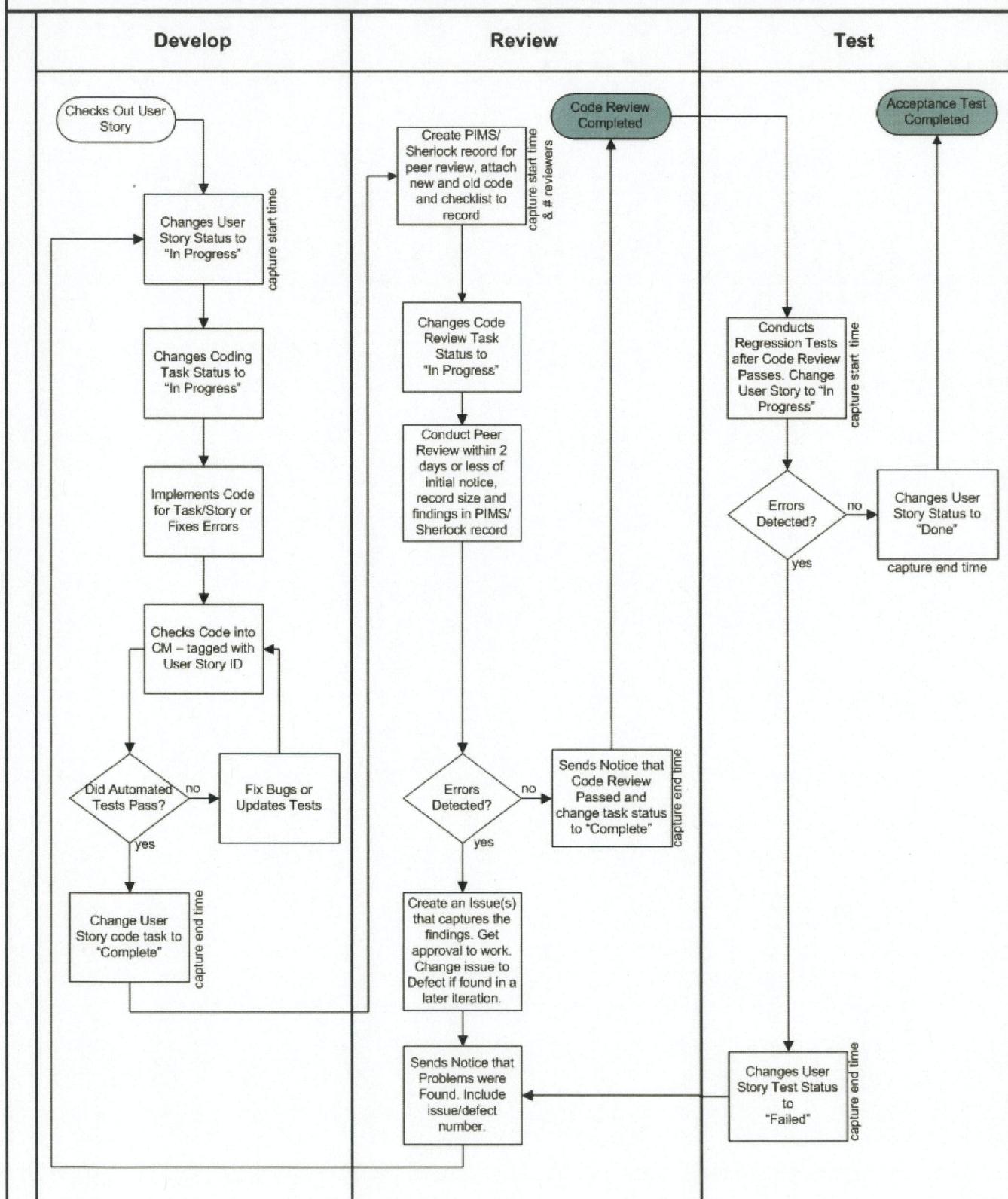
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## Code Peer Review Process with Data



## Formal Code Peer Review Process with Data and Records



# Peer Review Method

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This is a map of the Boeing Agile Software Process (BASP) to the Business Process Guide (BPG)  
**BPG-10-10002 Perform Peer Review Method.**

All the BPG process steps are implemented in the BASP.

BPG Requirement	Change Indicator*	BASP Tailoring Notes
<b>1.</b> A review package shall be prepared and distributed per the program's peer review guidelines.	NC	If the peer review is defined as a task to be completed for a given user story, the review task description for the user story constitutes the review package, and the source code that implements the story. The review package may just be the code under review. Peer reviews range from formal, planned reviews to more informal reviews, such as pair programming during code development.
<b>2.</b> The review package shall be reviewed using the checklist for the work product under review.	NC	The checklist shall be created or defined per the program SDP peer review guidelines. For pair programming, the checklist is implied by the methodology.
<b>3.</b> The comments shall be categorized and documented as errors, defects, and action items.	NC	<ul style="list-style-type: none"> <li>■ Errors and defects are findings/ issues as defined in Agile BPG 07-10024 ("A finding or problem found and closed during an iteration is classified as an error. A finding or problem closed after an iteration is classified as a defect."), and will be categorized and documented per the program's peer review guidelines in the SDP.</li> <li>■ Action Items will be categorized and documented per the program's peer review guidelines in the SDP.</li> <li>■ For pair programming, evidence of code peer review findings is provided by witness rather than data and artifact records. Code developed by pair programming is tailored out of this requirement.</li> </ul>
<b>4.</b> The identified errors, defects, and action items shall be resolved and documented.	NC	<ul style="list-style-type: none"> <li>■ Errors found and fixed during the current iteration will be resolved during the current iteration, and may not be documented, for example, in the case of pair programming.</li> <li>■ Defects will be documented per the program's peer review guidelines and may be fixed in the current iteration, or will be resolved in a future iteration.</li> </ul>

- Action items will be resolved and documented per the program's peer review guidelines in the SDP.

**\* Change Indicator designators**

Abbreviation	Definition
NC	No Changes (use as is)
MM	Modify with minor changes, such as renaming/substituting a process or requiring more control than the standard process
MS	Modify significantly (with rationale)
N/A	Not Applicable (does not apply in this process or lifecycle)

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