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Effective Electronic Patient Record Implementations

Testing for Excellence

May 2021

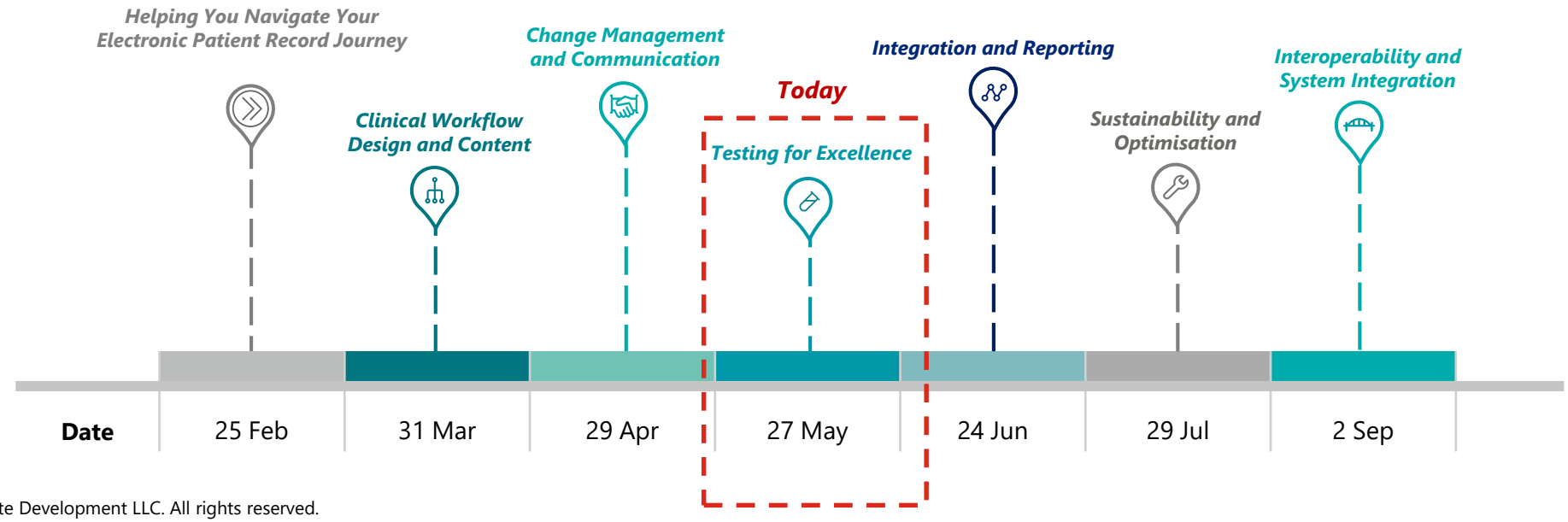
Effective EPR Implementations: Overview of the Series, Purpose, and Schedule

The Effective EPR Implementations webinar series is a set of seven one-hour virtual sessions with Healthcare providers. This series is focused on EPR implementations and driving your success through a holistic implementation approach

Purpose

- ✓ Focus on effective partnerships necessary to succeed in EPR implementations
- ✓ Highlight common pitfalls faced by clients and areas needing support
- ✓ Share key strategies necessary for healthcare practice transformation through EPR implementations

Schedule



Speaking With You Today

Fran Cousins

Partner, UK

Marc Perlman

Global Digital CARE Leader, US

Rohit Pereira

QE Practice Leader, Principal, US

Ali Rauf

QE Specialist Leader, US

Greg Appel

QE & EPR Senior Manager, US

Agenda

Why Test?	Define vision for the program and align testing objectives to the vision
Testing Scope	Determine what and how much to test to meet testing objectives and achieve program vision
Testing Approach Planning & Execution	How to test in support of the EPR implementation, program vision and testing objectives
Common Pitfalls & Best Practices	Avoid common mistakes and apply lessons learned from the experience of others

Setting the Foundation: Governance, Guiding Principles, and Effective Decision Making

Setting a strong foundation from the beginning enhances overall outcomes and Programme success.

Governance

A well-structured governance model helps ensure decisions are made at the right level, by the right stakeholders, at the right time

Guiding Principles

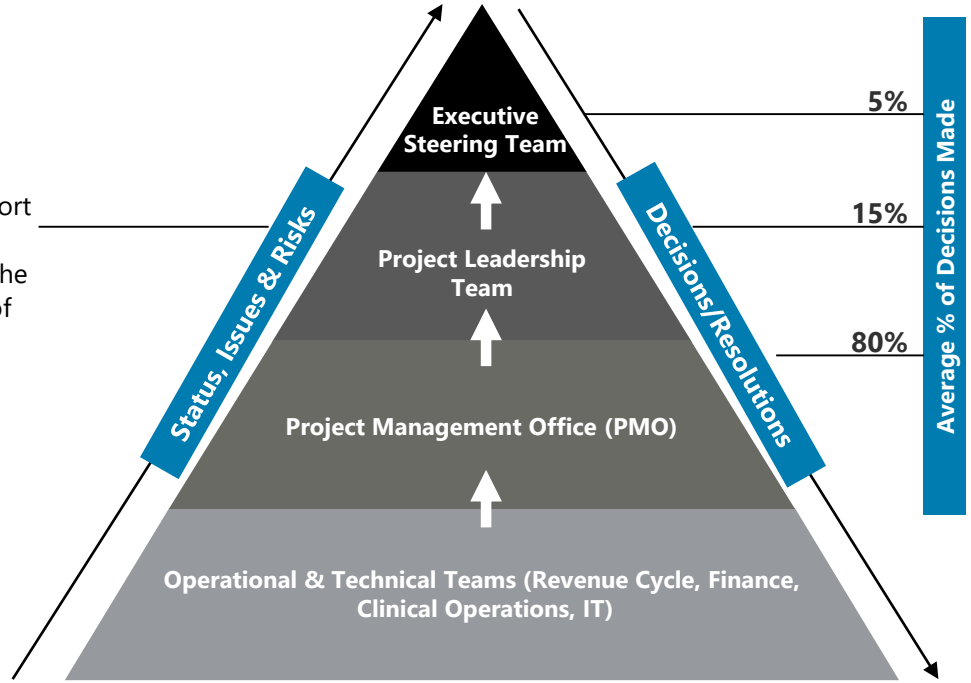
Establishing appropriate Guiding Principles sets the ground rules for system design and implementation, guides decisions, and keeps teams focused on overall goals, objectives, and the desired end state

Effective Decision Making

Decisions that could potentially impact the programme timeline, cost, quality, safety and/or future-state operating model should be escalated to programme and clinical governance

Establish Leadership Support

Leadership support and buy-in is cultivated from the very beginning of the Programme



Key Success Factors

- Program Testing Strategy is fully understood, and leadership is committed to treating testing as a discipline like any other part of the program
- Testing exit and entry criteria are understood and treated as key milestones
- Steering committee members are vocal testing advocates; testing is not an afterthought

Guiding Principles

- Manage risk; Test as early and as much as possible
- Involve testing team early in the programme lifecycle, to enable higher quality testing outcomes
- Define, adhere to testing processes and procedures
- Build the full testing team for the implementation and carry over to post implementation

Importance of Governance, Guiding Principles and Effective Decision Making

1. **Commitment from key stakeholders**
2. **Align direction**
3. **Better decisions**

Why Test?

Why do Testing?

Healthcare organisations are in the **midst of change…**

Whether it be restructuring technical delivery within your organisation, or undergoing significant modernisation to address a burning platform, for example an EPR Implementation, major capability gap, or enable digital capabilities

… and facing increased pressure to **optimise technology spend…**

Antiquated processes and/or tools entrenched within an organisation can drive unnecessary spend and elongate timelines

Risk Mitigation!

Testing Objectives

Testing strategies must align with an organisation's EPR implementation vision to validate clinical workflows, integration, and functionality to mitigate patient safety, regulatory and compliance risks.

Overarching Vision for EPR Implementations

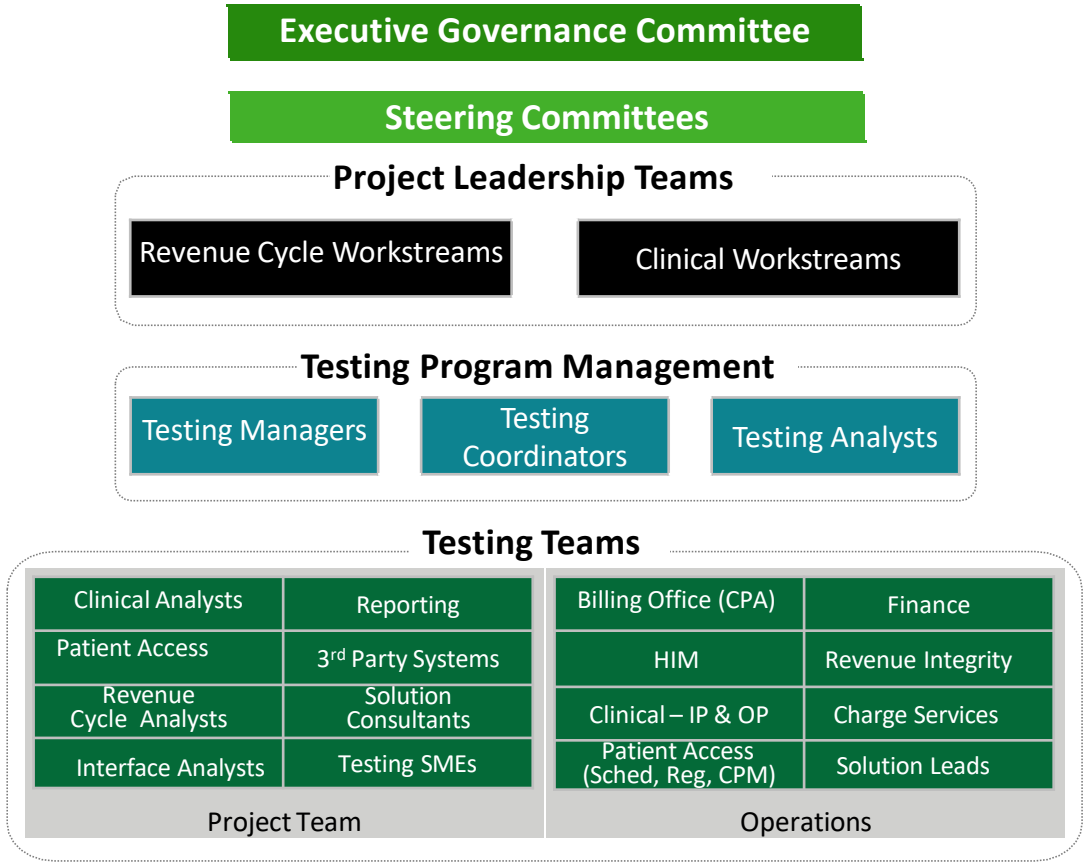
- The needs of the **patient come first** (core value)
- Established **patient safety**, **regulatory** and **quality** will not be compromised
- Integration supersedes specialisation
- Best practices will be leveraged from the organisation and other EPR implementations
- Decisions will be made collaboratively based on doing **what is best for the organisation**(s)

Objectives of Testing

1. **Operations Consistency**: System maintains **patient safety**, **regulatory** and **quality** consistent with implementation goals.
   - Clinical and operational workflows are validated thoroughly
   - Integrity of historic data is being maintained
   - All operations consistently maintained on the new systems across sites
2. **Income Integrity**: All activity is correctly recorded and reimbursed
3. **Technical Validity**: All applications installed, configured and tested to enable identified operational workflows. External System are connected and working as expected. Converted data elements appropriately populated in the EPR system

Test Execution – Testing Governance Model

Testing should be treated like any other part of the EPR Implementation program with dedicated testers. The budget and plan for staffing should adequately staffing for testing.



Executive Governance:

- Defines program objectives and outcomes, sets direction, and measures performance
- The committee establishes governance criteria for the program around guiding principles to achieve implementation success

Steering Committees:

- Establishes objectives, defines activities, and establishes execution direction based on program goals established by the Executive Governance Committee. This includes applying filtering criteria established by governance to assess any customisations
- Responsible for any escalated issues that cannot be resolved by earlier governance levels

Project Leadership team:

- Approves of the overall test strategy and plan, phase entrance and exit criteria
- Identifies resources to participate in testing scenario development and testing script reviews
- Responsible for resolving escalated testing issues
- Evaluates and approves completion of established test phase entrance and exit criteria

Testing Program Management:

- Responsible for the overall success of testing
- Provides testing event leadership and is responsible for developing testing processes, tools, oversight and direction

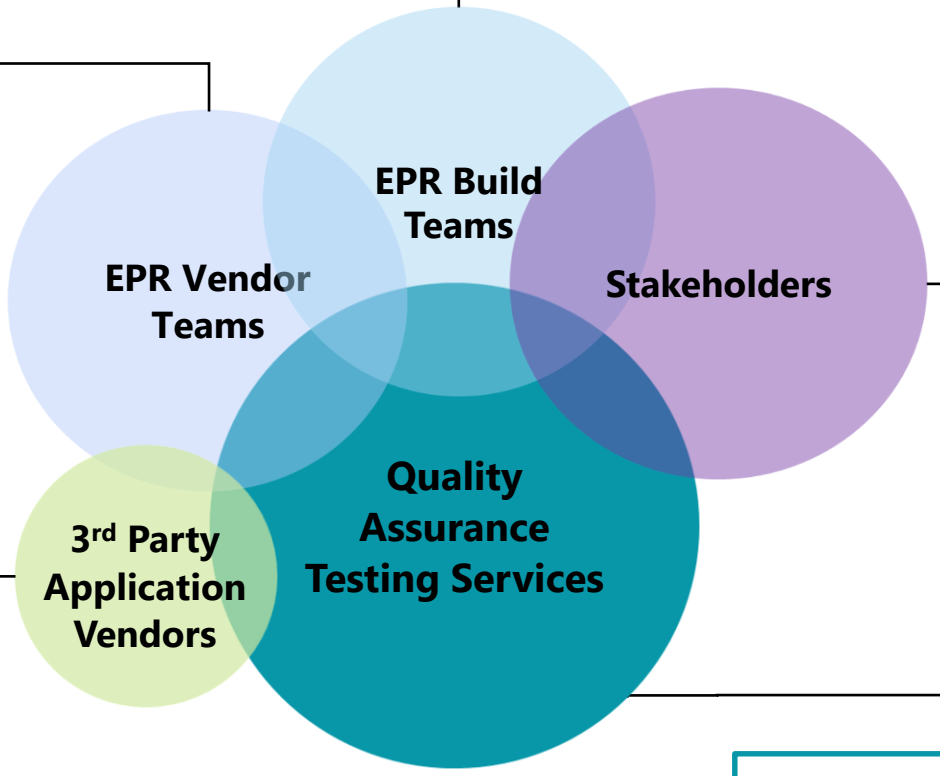
Testing Teams:

- Collaborates with other teams to develop test scripts
- Executes test scripts
- Reports and track testing issues
- Review and approve test results

Testing requires involvement from all stakeholders on an EPR implementation. Asking the same resources to own testing, along with build, supporting operations, training etc., is a major pain point for ALL organisations.

Key Partnership Roles – Coordination with Stakeholders

Close alignment between the EPR vendor, Stakeholders, EPR Build Teams and Testing Services is critical to your journey. Consider and make the best testing approach for your organisation.



EPR Vendor Teams
Vendor teams working in concert with your Stakeholders, Build and Testing Teams to ensure workflow functionality, integration, device and unit testing is successful

EPR Build Teams
Application build analysts assist in test script development to ensure all functionality and integrations are tested, address testing failures, and resolve defects

Stakeholders
Provide timely direction for workflows and critical operational needs to minimise build changes, define effective testing scenarios, and mitigate risk/issues at go-live

3rd Party Application Vendors
Work closely with EPR, Operations and testing teams to integrate effectively with EPR modules, define testing scenarios, resolve testing defects caused by 3rd party application integration

QA Testing Services
Developing, coordinating and executing testing scenarios in alignment with EPR and Operational requirements. Team is responsible for documenting and coordinating testing failure and defect resolution

Testing Scope

Testing Scope

EPR implementations are complex and require extensive testing via different test phases to achieve success.

Facilities / Locations

Clinics

Hospitals

Ambulatory Centres, Laboratories

Surgery Centers

Systems / Technologies

Applications

Workflows

Interfaces

Converted Data

APIs

Other Enterprise System Dependencies

Test Phases

- Application Testing
- Interface Testing
- Integrated Testing
- Regression Testing
- Content / Volume Testing
- Pre-Go-Live Testing

Testing Phases

The following types or phases of testing are recommended to be conducted to meet the objectives of EPR Implementations and to meet the objectives of Testing.

Application Testing	• Verifies build and application workflows are correct before starting Integrated Testing • Confirm Application readiness for identified workflows	Technical Validity
Interface Testing	• Validates application interfaces involved in clinical "real-world" scenarios are working as expected. • Validates data communicates to ancillary and downstream systems as expected	
Integration Testing	• Testing of high-impact/risk business process scenarios linked together to achieve the larger goal of validating business lifecycle – validates business rules, configurations and technology	Technical Validity & Operations Consistency
Regression Testing	• Validates previous passing test cases in prior testing cycles still pass due to new functionality or build with upgrades	
Content / Volume Testing	• Volume-based scenarios to validate operational consistency and revenue integrity: • Device Testing • Reports Testing • Security Testing • Conversion Testing • Mapped Record Testing • Clinical Focus Testing • Charge Testing • Claims Testing	Operations Consistency & Revenue Integrity
Pre-Go-Live Testing	• Verifies that the build and configuration meets the expectations of clinicians • Verifies system performance thresholds under normal, medium, high loads	

Testing Approach

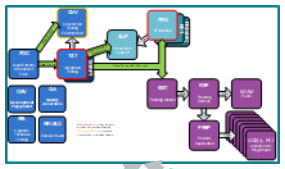
Testing Methodology

Consistent Testing Methodology is needed to achieve testing objectives. Testing is like any other discipline in an EPR implementation requiring a robust strategy, planning and execution.

Testing Lifecycle

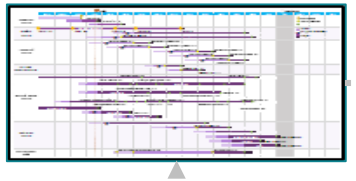
Requirement Analysis → **Test Planning** → **Test Case Development** → **Test Execution** → **Defect Management** → **Test Reporting**

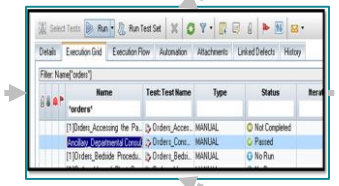
Test Environments
Mimic end state production-like functionality for meaningful testing



Test Execution
- Automated Test Execution
- Manual Test Execution

Testing Timeline
Establishing a feasible timeline based on the overall EPR implementation timeline





Test Cases
- Clinical Workflows
- Operational Workflows

Test Signoff
- Entry/Exit Criteria reviews
- Business / Operations signoff

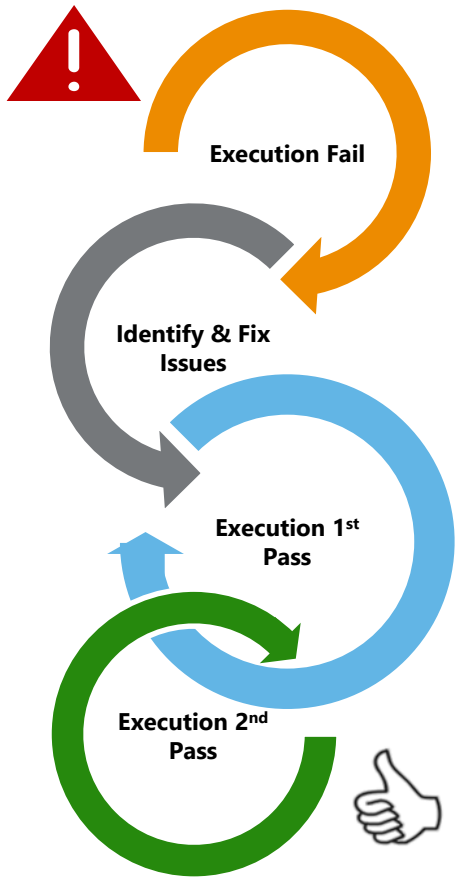
Test Tools Setup
- Test Management
- Test Automation

Test Data
- Manufactured Data, Converted
- Patients, Appointments, Admissions, Dx., Px., Rx., etc.

The overall testing methodology describes the testing process at a high level and helps programme and project stakeholders conduct testing consistently across the programme

Test Execution – Test Case Execution

Test execution may vary by testing event, but all events should adhere to a set of common principles and best practices defined in the test plans by test phase.

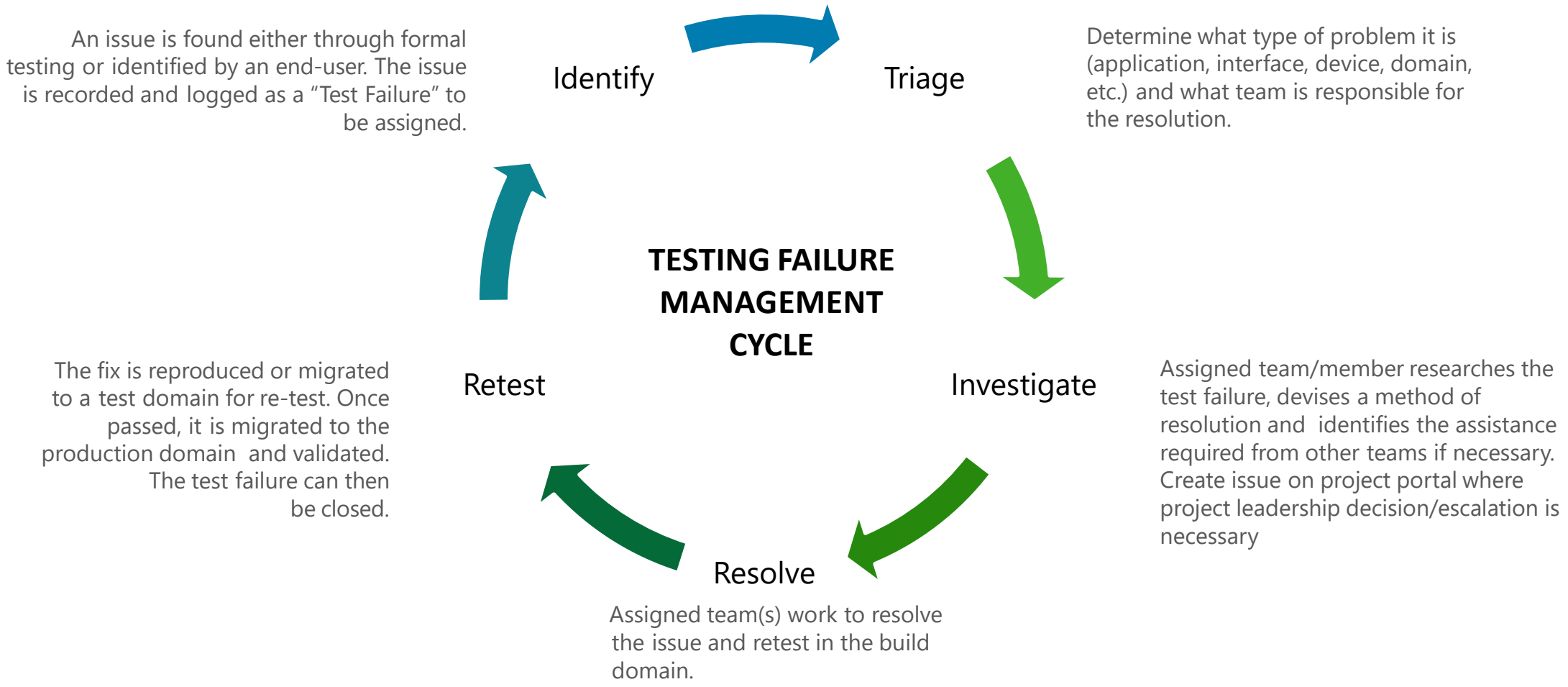


- ❑ Entry criteria should be used to determine when a test phase is ready to begin execution
- ❑ Test cases will be assigned in the test case management tool
- ❑ Testing status will be recorded step by step for each test case
- ❑ Each test case will have set criteria to determine if a test case passes
- ❑ Workarounds should not be used during testing
- ❑ Test execution will utilise a "peer process" so individuals are not testing their own build
- ❑ Exit criteria should be used to determine if test phase is ready to close
- ❑ Any deviations from planned scope will require project leadership approval
- ❑ Testing resources should co-locate for test execution of major test phases

Traditionally, most EPR implementations employ manual test execution, however, significant efficiencies and cost savings can be gained by employing automated testing tools and techniques from the start

Test Execution – Defect management, i.e., Test Failure Management

The illustration below highlights the key phases in the test failure management lifecycle.



Typical test failures are a result of missing and/or incorrect application configuration compared with design decisions, integration technical issues and test data errors amongst others.

Test Execution – Test Tools

A good Test Management Tool should be selected to facilitate test case management, test failure/issue management and test reporting.

Testing Tool Capabilities

- Requirements Documentation
- Test Case Repository
- Traceability
- Test Failure Documentation, Triage, Resolution
- Test Execution Ability
- Automation
- Test Reporting
- Easy Administration

Testing Management Tools

MICRO FOCUS Quality Center

Atlassian

Deloitte. TalkQE

MICRO FOCUS ALM Octane

Testing Automation Tools

Unified Functional Testing

LeanFT

IBM Rational software

Deloitte. COFTA

eggPlant built by TestPlant

WORKSOFT CERTIFY®

UiPath

blueprism

Enterprise Test Management and Test Automation Tools will benefit the organisation beyond the implementation when periodic upgrades and enhancements are implemented for the EPR and any other programs in the organisation

Test Execution and Close – Entrance and Exit Criteria

Project leadership should evaluate entrance and exit criteria by test phase and have sole discretion to allow exception to continue in case these criteria are not met.

Entrance Criteria

TEST SCOPE IS ESTABLISHED

- Test scope and plan documented, and sufficient resources are allocated
- Outstanding workflows, cases and test failures from previous phase/cycle are incorporated into current scope and plan
- All relevant workflows documented and reviewed

TEST DOMAIN(S) ARE ESTABLISHED

- Test domain(s) is created and available throughout test phase/cycle
- Mock and/or de-identified data populated as needed
- Target devices available and configured as needed
- 100% Interface connectivity for downstream systems' test instance established

TEST BUILD IS AVAILABLE

- Change control has reviewed and approved changes
- 100% build changes migrated to the testing domain

TEST SCRIPTS ARE READY

- All test cases for specific cycles are created and uploaded into the testing tool

Exit Criteria

TEST SCRIPT EXECUTION

- 100% test cases are executed
- Test cases with errors are fixed and retested
- All executed scripts meet the threshold pass % criteria. Typically 100% pass requirement.

TEST FAILURES

- All testing failures are logged, assigned and prioritised
- All critical and high severity testing failures are resolved and retested prior to moving to next test phase
- Open workflow decisions are known, documented, and planned to be resolved prior to next phase/cycle
- Plan has been defined to address any unresolved testing failures or those that have temporary workarounds

GO / NO-GO DECISION

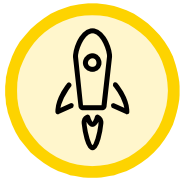
- Quantitative criteria should be reported to leadership to determine go/no-go decisions
- Test summary/status report has been reviewed and signed-off

Establishing and enforcing entrance & exit criteria helps control the quality of THE EPR implementation and is a key factor in preventing issues after go-live

Common Pitfalls and Best Practices

Establishing an effective testing program will reduce unexpected costs and ensure the effectiveness of the EPR implementation by following best practices and avoiding common pitfalls.






Common Pitfalls	Establishing a testing function only for the EPR implementation	Not allowing enough time for all aspects of testing	Underestimating the number of testing execution resources required	Leaving unfinished testing to the build team	Broken communication and reporting between key teams and stakeholders	Assumption that the EPR vendor will make sure the EPR will work within your organisation
Best Practices	Create a robust testing function that engages in during the implementation and will continue after go-live. Plan early for reuse of scripts, automations, and processes for future testing events	Testing should be planned as part of the implementation timeline and be part of the planning to plan for testing design, script development, test automation and execution phases	Use a standard estimation model and include contingency time (~25%) to allow for defects and retesting. Adequately plan for the ramp up of the team	Build and test should be complimentary and separate to maintain independent verification. Use of build team resources to conduct testing other than Unit Testing increases costs and rework	Establish effective governance and reporting for clear understanding of the status of the program, risks, and issues to inform stakeholder decisions	Develop your testing program around the validation of your organisation's EPR program expectations. Test thoroughly all integrated areas and workflows – not just the EPR

Q&A

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