Agile Accessibility

Ensuring accessibility throughout the Agile development process

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Overview

- What is Agile?
- Addressing Accessibility in an Agile Environment – Key Integration Points
- Keys to Success

The Issue

Agencies are increasingly migrating toward Agile methodologies for Information Communication Technology (ICT) development

- Creates need for IT professionals to revise system development lifecycle approaches
- Creates need for updating related governance policies and practices

What is Agile?

Broad set of concepts that share the same four common values:

- **Early and continuous delivery** of valuable software
- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Responding to change** over following a plan

http://agilemanifesto.org/

12 Principles of Agile

Some of the key principles of agile include:

- **Early, continuous, and frequent delivery of valuable software**
- Continuous **attention to technical excellence and good design**
- From **self-organizing teams** emerges the best architectures, requirements, and designs
- At regular intervals, the **team reflects** on how to become more effective, then **tunes** and **adjusts** its behavior accordingly

http://agilemanifesto.org/principles.html

Agile Approaches

Allows various interpretations using a number of models

- Focus on **practices** (e.g., Extreme Programming)
- Focus on **workflow** (e.g., Kanban)
- Hybrids and **combinations** using many of the same principles

To illustrate accessibility practices within an Agile approach, we'll look at a Scrum approach (one of the most common workflow models)

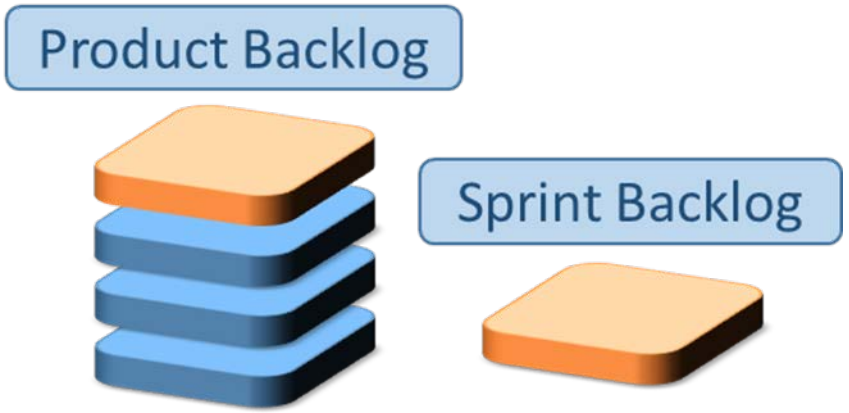
Backlogs

Product Backlog –

Contains all requirements prior to initiating a product build

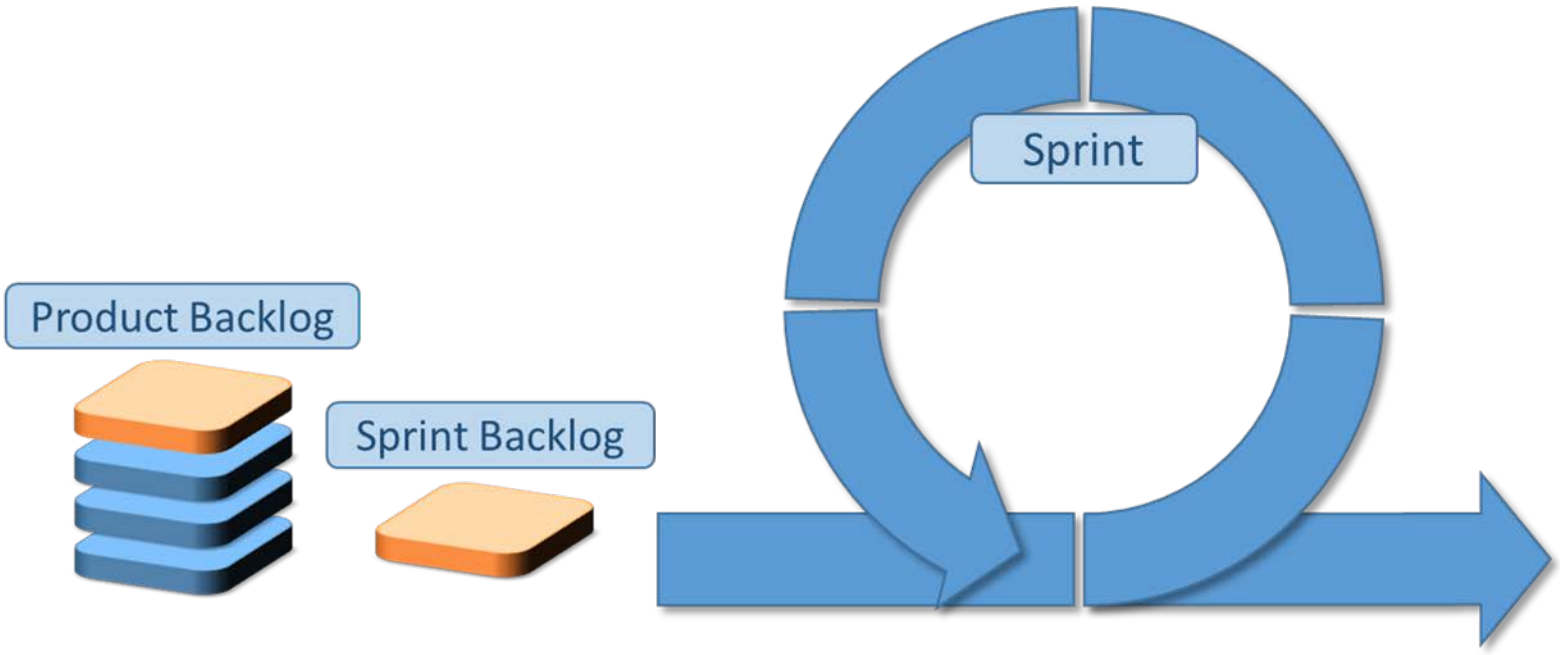
Sprint Backlog –

During planning, a subset of these requirements is selected; these requirements are used to build a product increment within the sprint



Sprints

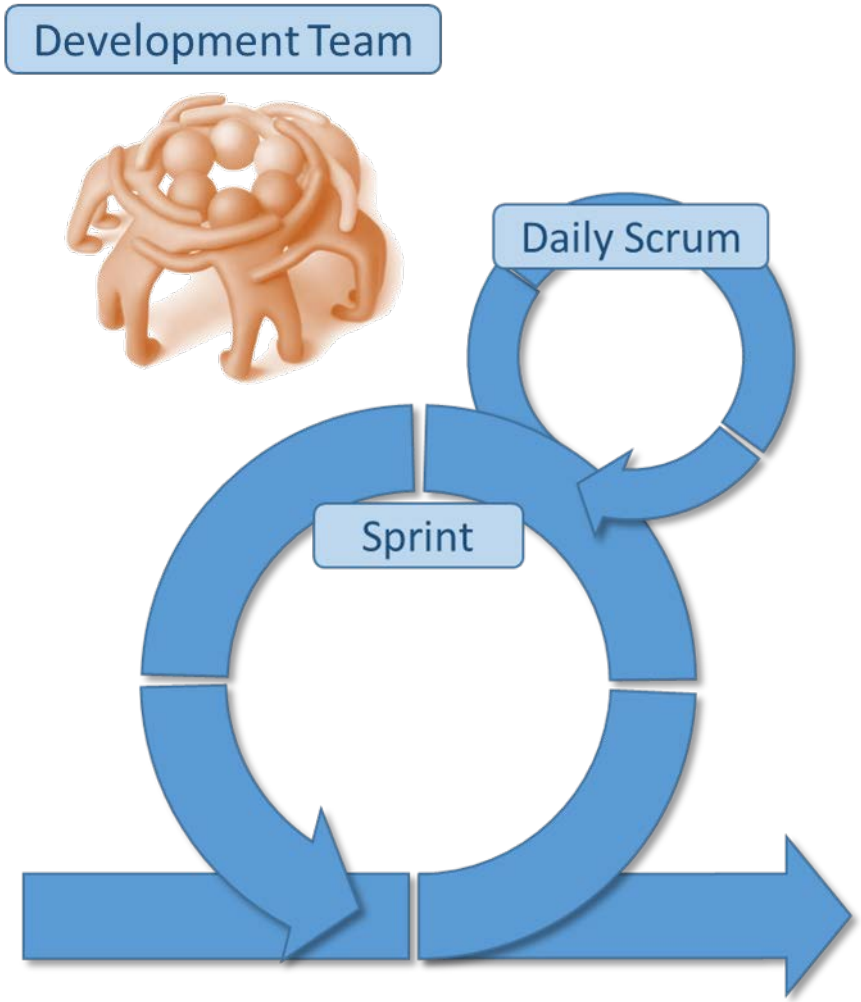
Sprints - Product is built in constrained increments of time (typically two to four weeks)



Daily Scrum Meetings

Daily scrum meetings –

Conducted to assist the development team in collectively building the product increment within the sprint

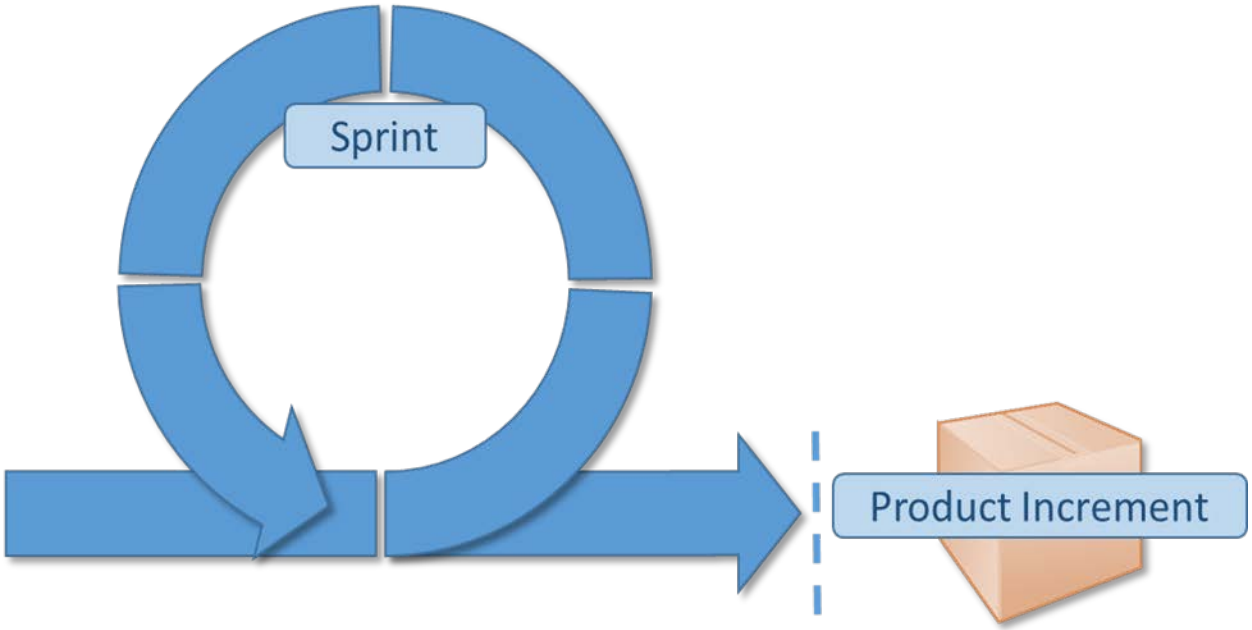


Build in Accessibility Requirements

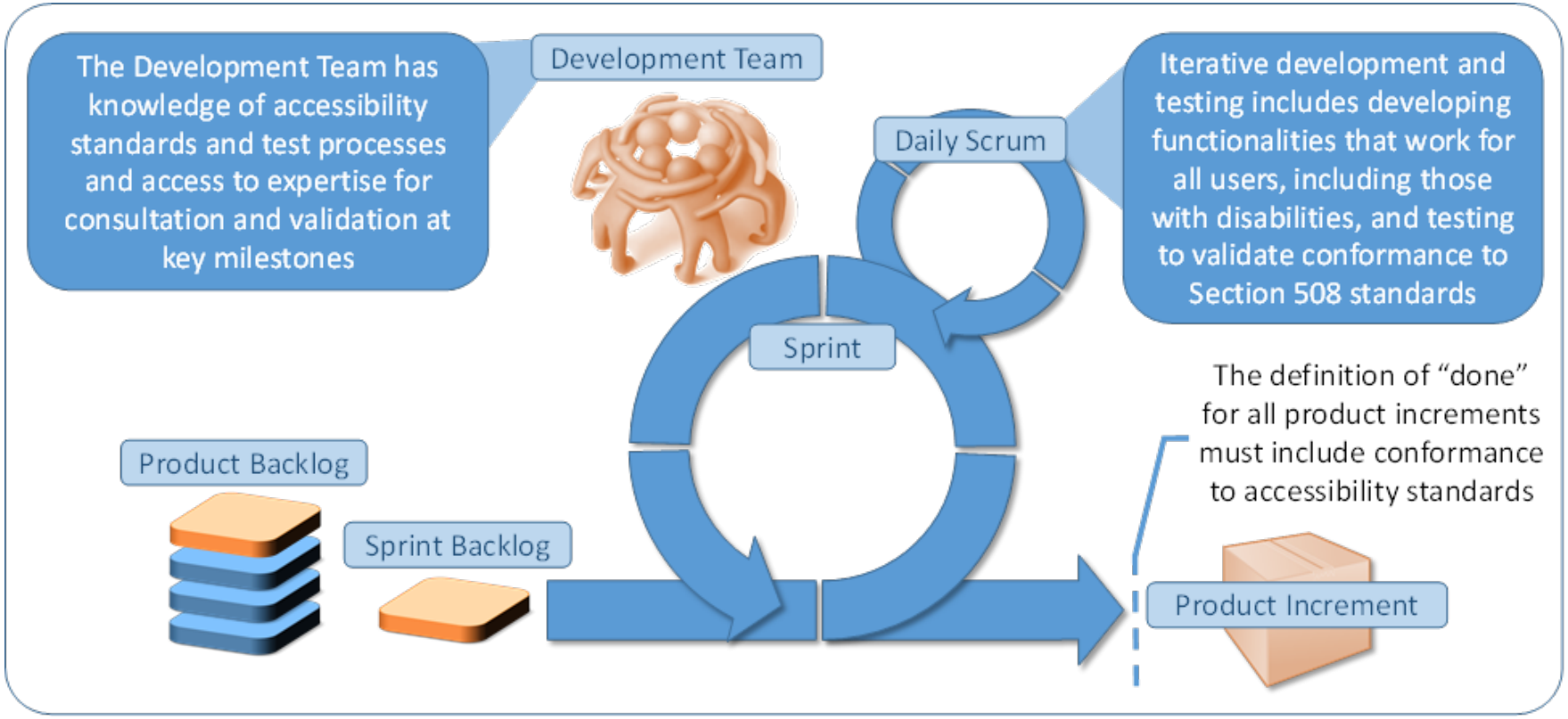
“Definition of Done” –

When products do not require additional work in another sprint – and are ready to provide to an end-user

The definition of done includes an accessible user interface (UI)



Scrum Overview



Accessible Functionality

Developed content must be **functional and usable for all users**

- Team has **knowledge of accessibility standards**
- Developers **know how to write code that conforms** to accessibility standards
- Testers **follow a standard test process** to reliably validate conformance and overall accessibility
- **Adequate training** must be provided if any of these skills are missing

Keys to Accessibility Integration

- Team has access to accessibility expertise
- Iterative development and testing includes developing functionalities that work for all users
  - "Definition of done" for all product increments must include conformance to accessibility standards
- ICT accessibility must be included in all key artifacts
- Identify **early** deficiencies in accessibility knowledge and abilities to implement accessibility techniques
  - Train team members
  - Hire or subcontract to obtain an IT accessibility resource
  - Working with an agency's Section 508 office, etc.

Requirement Artifacts

- Product Backlog, System-Wide Specifications, or other designation of requirements
  - In acceptance criteria
  - As separate user stories
  - In other ways

Design and Architecture Artifacts

- Influences design and architecture decisions
  - Consider specific technologies or UI design
  - Identify applicable accessibility standards early on in the design and architecture stages
  - Create and use an accessible design pattern for each type of element
- User experience (UX) designers must include accessibility when developing wireframes
  - Typically have experience or education in designing elements that are universally usable

Test Plan Artifacts

- Standardized accessibility test process informs test planning
  - Utilize the relevant elements of the test script
    - Only perform applicable element tests
    - There are a handful of tests that will apply each time
      - Ex: Color contrast, keyboard access, focus control, heading structure, etc.
  - Help validate “working software”
    - Functionality must also work for those with disabilities

Standard Accessibility Test Process

- **Minimizes subjectivity** – by adopting and implementing a standard test process for each application and for all features or functions of ICT
- **Promotes a common understanding of requirements** – by documenting the standard test process and following the applicable test procedures throughout iterative development
- **Improves confidence that the ICT conforms** to the standards before it moves to production

Automated vs. Manual Testing

- Automated Testing
  - Can facilitate Test-Driven Development (TDD)
  - Can drastically reduce time to test many common issues
- Manual Testing
  - Still required to validate some functionality, usability, and accessibility

Benefits of Waterfall Development

Benefits	Accessibility Implications
Well-defined milestones and deadlines	• Predictable testing timelines • Helps Section 508 Program Managers coordinate shared resources: subject matter experts and testing resources • Lends to the ability to coordinate resources under a more centralized management structure • Helps facilitate governance and review of conformance at specific development milestones
Standardized documentation	• Facilitates centralized location and standardization of accessibility-related information (e.g., requirements, test plans, milestone reviews) • Helps facilitate governance and conformance review at milestones via documentation assessments

Drawbacks of Waterfall Development

Drawbacks	Accessibility Implications
Difficult, costly change	• Accessibility testing often performed late in the project lifecycle causing late detection of accessibility-related defects and inappropriate solutions becoming more wide-spread • Late accessibility defect detection impacts the ability to have sufficient time to research and apply fixes; undetected accessibility defects are perpetuated throughout the application; end of schedule fixes are costlier to remediate
Slow delivery and subsequent release schedules	• Results in defects going into production and/or being grouped with similarly large collections of enhancements or modifications targeted for subsequent releases • Accessibility defects tend to have longer lifespans while awaiting the next release to include fixes to address the accessibility issues

Benefits of Agile Methods

Benefits	Accessibility Implications
Adaptability	• Ability to reprioritize requirements to respond to evolving project objectives • Ability to prioritize accessibility issues when identified
Immediate user feedback	• Users, including those with disabilities, begin to use the functions and features earlier and can provide feedback to developers • Accessibility issues can be identified and remediated early in development rather than perpetuating the defects throughout later stages of development
Quicker delivery and shorter release timelines	• Accessibility-related defects, once identified, don't have to wait for a large collection of enhancements and modifications as part of a large subsequent release • Shorter, more flexible release timelines can more easily accommodate updates to specifically address accessibility issues

Drawbacks of Agile Methods

Drawbacks	Accessibility Implications
Ambiguous timelines	• Unclear release schedules can make it difficult to predict when accessibility enhancements will move to production • Challenge to coordinate shared IT accessibility resources • May continue to apply a waterfall-oriented accessibility test process (i.e., attempting to test an application from top to bottom through a comprehensive accessibility test at each iteration) rather than testing each newly applicable Success Criterion incrementally
Dependence on team's skills	• Smaller (4-9 developers/testers) teams may result in individuals being spread thin with multiple roles • Specific accessibility subject matter expertise may be lacking in team members • Training team members in accessibility requirements can be time-consuming
Neglect of documentation	• Focus on functioning work products over documentation may result in inadequate documentation of accessibility requirements • Inadequate documentation of test procedures can lead to inadequate validation of accessibility

Provide Section 508 subject matter expertise

- Developers should be able to build accessible ICT
- Testers should be experienced in validating that it conforms to accessibility standards
- Consult subject matter experts
  - Confirm conformance/nonconformance to standards
  - Help troubleshoot and remediate issues
  - Evaluate the risks associated with non-conformant work products

Keys to Success in Agile Accessibility

Accessibility is an integral part of development

- Include accessibility conformance in the "definition of done"
- Incorporate accessibility standards in key artifacts
- Follow a standard accessibility test process
- Test incrementally
- Provide accessibility subject matter expertise

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