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](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** - 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

The Development Team has knowledge of accessibility standards and test processes and access to expertise for consultation and validation at key milestones.

Iterative development and testing includes developing functionalities that work for all users, including those with disabilities, and testing to validate conformance to Section 508 standards.

The definition of “done” for all product increments must include conformance to accessibility standards.

Product Backlog

Development Team

Sprint Backlog

Sprint

Daily Scrum

Product Increment
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

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

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<th>Drawbacks</th>
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| 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

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<tr>
<td>Adaptability</td>
<td>• Ability to reprioritize requirements to respond to evolving project objectives</td>
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<td>• Ability to prioritize accessibility issues when identified</td>
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<td>Immediate user feedback</td>
<td>• Users, including those with disabilities, begin to use the functions and features earlier and can provide feedback to developers</td>
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<td>• Accessibility issues can be identified and remediated early in development rather than perpetuating the defects throughout later stages of development</td>
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<td>Quicker delivery and shorter release timelines</td>
<td>• 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</td>
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<td>• Shorter, more flexible release timelines can more easily accommodate updates to specifically address accessibility issues</td>
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# Drawbacks of Agile Methods

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| 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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