Integrating Accessibility into the Development Process

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Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Program Agenda

• Accessibility in the Development Process
• Creating an Accessible Product
• Resources
• Accessibility by Role
• Wrap Up
Where does Accessibility Fit in the Development Process
Define, Approve, and Implement an Accessibility Policy

• Have approval from the top (Executive, Legal, Government Affairs...)
• Have guidelines to enforce, e.g. WCAG 2.1 A/AA (checklists)
• Testing Procedures
• Development Best Practices
• Bug Tracking System
• Training
• Communication
• Voluntary Product Accessibility Template (VPAT)/Accessibility Conformance Report (ACR) Approval Process
Define, Approve, and Implement an Accessibility Policy

• Applicability and Scope
  – Policy applies to all products and services. Be sure to include authoring tools, hardware, documentation, training, developer tools.

• Authority, Enforcement, and Violations
  – Entity to track checks & balances (success, failure)

• Grace Period
  – Accessibility does not happen instantly and teams need to build remediation roadmaps
Where Does Accessibility Fit in the Development Process

Development Models:
- Waterfall (years)
- Iterative (weeks)
- Continuous (hours)
Accessibility in All Development Models

• Add accessibility to planning and design
  – Create user stories with Person with Disability (PwD) use cases
  – Put accessibility into each use case

• Add accessibility to implementation and verification
  – Make platform/architecture decisions that include accessibility
  – Make accessibility part of unit testing
  – Include testing by a PwD
Waterfall Development Model

• Process flows in one direction from planning to release
• Can take several years to implement
• Build accessibility into each phase
  – **Planning/Analysis:** Include Accessibility requirements
  – **Design:** Accessibility is built into the product design
  – **Implementation:** Accessibility features and capabilities are part of the code deliverables
  – **Verification:** Accessibility needs to be tested as part of unit, function, and system testing
  – **Release:** Accessibility features are highlighted in the documentation
Iterative Development Model (Agile)

- Development process completes in weeks
  - Multiple iterations might be required to release a product
- Sprint
  - Product features: described by stories in the voice of the target user
  - Tasks identified, implemented and tested
  - At end of sprint provide working software to stakeholders for review or ship
- Integrate accessibility one of two ways
  - Dedicated accessibility sprint(s)
  - Accessibility in each sprint
Dedicated Accessibility Sprint(s)

• Advantages
  – Focus completely on accessibility
  – May save implementation time
  – Supports accessibility specialists for development and test
  – Supports focused system testing for accessibility

• Disadvantages
  – Adding accessibility in later sprint likely involves rework; takes more time
  – Accessibility issues found later could be harder to fix
  – Design could be “locked” by the time accessibility is implemented
  – Resistant to change and no undoing of previous sprints

Source CSUN 2013 IBM Presentation: Integrating Accessibility in Rapid Development
Accessibility in Each Sprint

• Advantages
  – Usable features at end of each cycle will include accessibility
  – Stakeholder (including PwD) feedback can include accessibility
  – Supports rapid incremental and continuous development
  – Supports consistent development and test resources
  – Catch and eliminate accessibility problems earlier

• Disadvantages
  – Accessibility knowledge can be rare among team
  – Require an expert to provide guidance on accessibility

Source CSUN 2013 IBM Presentation: Integrating Accessibility in Rapid Development
Continuous Development Model

• Small chunks pushed to production frequently
  – Can have multiple releases in a day
• Generally automated as much as possible
• “Done” means working code is deployed
• Integrate accessibility into every chunk/deployment
Creating an Accessible Product
New Product

• Design, build and test accessibility features from the beginning

• Identify type of product you are building
  – Software: CLI, Web, Mobile, Non-Web, etc.
  – Hardware

• Refer to appropriate accessibility checklist for information for that type of UI

• Ensure that your new documentation is also coded and tested for accessibility
Existing Product

• Evaluate product for current level of accessibility
• Make sure any new features being added are designed, coded, and tested for accessibility
• Prioritize existing features for integrating accessibility
  – Start with core product tasks and most commonly used features
  – Consider complex or unusual features as they might require redesign
Resources
Accessibility Standards

- Accessibility Guidelines/Standards
  - WCAG 2.1
  - 2017 Revised Section 508 of the Rehabilitation Act of 1973 as amended

- Checklists for Different Technology Stacks
  - Web Software
  - Non-Web UIs (CLI, Java Swing Based, etc.)
  - Mobile (iOS, Android)
  - Documentation and Support Services
  - Hardware
Checklist Content

• What do the checklists look like? Each checklist has information on the accessibility standards and how they impact each tech stack.

• **Guideline:** Actual text of the standard

• **Understanding:** Contains links to additional information to help with understanding the guideline.

• **Sample Remarks:** Text that can be used as a starting point to author the VPAT.

• **Testing Techniques:** Example methods for testing
Bug Tracking

• Track accessibility bugs in your bug tracking system
  – Tag them for accessibility (ACC, A11Y, etc)

• Assess bugs as you would any other defect with no weight given to whether they impact disabled or non-disabled users

• Document your open accessibility bugs
  – Voluntary Product Accessibility Template (VPAT)
Bug Tracking

How to write a bug

• Do not file one bug for “Fix Accessibility”
• Make a balance between one bug per issue to many issues included in one bug
• One bug per screen or one bug per criteria is very hard to track when ‘done’
• Consider “publishing” a bug so the customer can get access to it
  – Include reproducible steps
  – Document any workarounds
Testing Tools

• Automated Testing can be used to find and correct problems when they are coded and tested
  – JDeveloper Audit for ADF applications to catch common accessibility problems

• HTML Evaluation Tools
  – Web Accessibility Evaluation Tools List
  – The Paciello Group Colour Contrast Checker
  – Add-on tools for Google Chrome and Firefox (WAVE, AXE, etc)

• NetBeans A11Y Checker for Java
Release Management Tools

- Use tools so that your products have VPATs before your product is released
- Map your VPAT to your release
- The VPAT must be completed before the release can happen
Accessibility by Role
Accessibility Program Office (APO)

• What is done
  – Determine what accessibility standards products should follow
  – Develop coding and testing guidelines
  – Provide training material and classes
  – Provides help, advice, and spot testing of complicated scenarios
  – Review and posts VPATs

• What not done
  – Make each product accessible
  – Write VPATs
Accessibility Applies to Everyone

• Abide by the Accessibility Policy if your company has one
• Understand Accessibility Guidelines (WCAG, Section 508)
• Receive Accessibility Training
  – Some roles may require more training than others
Program and Product Managers

• Program Manager
  – Tracks accessibility progress
  – Ensures engineering is implementing features and unit testing for accessibility
  – Ensures QA knows the criteria to be tested
  – Coordinates how the VPAT is going to be done and when

• Product Manager
  – Responsible for accessibility requirements and ensuring accessibility is in the release
  – Responsible for working with product team to evaluate, prioritize, and support integration of standards
User Experience (UX) Designers

• Ensure the User Interface (UI) is designed to adhere to accessibility standards

• Responsible for integrating accessibility design attributes and tooling into UI

• Create and refer to an Accessibility Checklist for UX Designers
  – Specify how all functionality can be achieved from a keyboard
  – For each image, specify meaningful alternative text or if the image is decorative
  – Ensure text has a contrast ratio of at least 3:1 for large text and 4.5:1 for all other text to its background
  – Ensure the reading order is the same as the visual order
Engineering

• Receives training on accessibility coding and testing methodology
• Responsible for developing products and using accessibility best practices based on standards
• Understands technology stack and how it addresses accessibility
• Responsible for first level accessibility testing of UI
  – Runs automated accessibility tests, if available
  – Builds Unit Tests for accessibility, if possible
Quality Assurance (QA) and Documentation

• QA
  – Receives training on accessibility testing methodology
  – Responsible for using recommended accessibility testing procedures to identify and submit accessibility defects
  – Builds Regression Tests for accessibility, if possible

• Documentation
  – Receives training on accessibility testing methodology
  – Provides and tests accessible documentation for the product
  – Responsible for documenting accessibility features of the product
VPAT Authoring

• VPAT Author
  – Gathers accessibility testing information for product
  – Creates accurate VPAT based on testing information
  – Responsible for keeping the VPAT information up to date (including price list information)

• VPAT Reviewer
  – Dedicated person manages interaction with APO for line of business
  – Reviews test results to verify VPAT information is correct
  – Reviews and approves VPATs
Training and Sales Organizations

• Customer facing training that you provide needs to be accessible
  – Online training including videos
  – In person training

• Sales
  – Ensures correct VPATs are supplied to customers
  – Involves the APO as appropriate for product demos
Wrap Up
Summary

• Create a corporate accessibility policy
• Incorporate accessibility into all phases of development process
• Ensure product team understands how accessibility will impact them and is trained on accessibility
• Utilize Accessibility Checklists, tools and resources
• Start Accessibility testing early in the testing cycle
• Document the accessibility of the product in a VPAT
• Accessibility is not something that can be done once and forgotten
Questions and Answers
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Integrated Cloud
Applications & Platform Services