Common Industry Format: What It Is, What It Isn’t and Why It’s Useful

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Managing Director
User Centric, Inc
9 out of 10 Doctors Prefer the Common Industry Format for Reporting Usability Testing Results

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What is the Customized Common Industry Format (CIF)?

- **Purpose:** Provide greater visibility and consistency in describing usability testing processes and reporting those results

- ‘Customized’, in this case, means an illustrative example template for electronic health records
  - Primarily, intended for ‘summative’ or validation usability testing
  - Extended for ‘formative’ or exploratory usability testing
What it is...

- Document outline for reporting usability testing methods and results

- By providing a standard outline we can demonstrate evidence of usability activity in a format that allows
  - independent evaluation of tasks in a single product and
  - comparison across multiple products.

- Reporting framework within current best practices
What it isn’t…

Guidance
Who uses the CIF?

- User Experience and Usability Professionals
  - Read and report using CIF

- Evaluators of application usability \( \rightarrow \) i.e., Providers
  - Make informed decisions concerning the release of software applications
  - Evaluate an application’s usability test results

- Stakeholders in any organization
  - Many organizations have incorporated the CIF

- Some important points…
CIF Creates Basis for Dialog

• CIF provides a ‘report card’ for usability testing

• The CIF can create a productive dialog across developers, requirements, project managers, vendors, providers, and end users.

• Areas of discussion include:
  - Who are the users? User population definition
  - What is their context of use?
  - How to measure “success”
    - Functionality vs. clicks
    - Learning: ‘Walk up and use’ vs. one trial vs. training
    - What is the role of satisfaction?
CIF Provides Background and Context for Reporting…

- Measures of effectiveness and efficiency, and recommends including subjective satisfaction data

  - Measures for efficiency may include:
    • ‘Too many clicks’
    • Task time
    • Completion rate efficiency
    • Number of references to the manual

  - Measures for effectiveness may include:
    • Completion Rate
    • Number of Errors

  - Measures of satisfaction may include:
    • System Usability Scale (or SUS)
Illustrative Example
Conducting a Test and Reporting in CIF

• Identify the key user groups
• Identify critical and frequent tasks
• Define measurable usability goals
• Conduct usability testing
• Report using CIF to ensure goals have been met
Identify the key user groups
- Users who will be doing the tasks
  - Physician
  - Nurses
  - Administrative staff
### Measuring Usability

**User Groups:** Physicians | Nurses | Administrative

<table>
<thead>
<tr>
<th>Task</th>
<th>Measuring Usability Relative to Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td></td>
<td>Unassisted task completion rate of:</td>
</tr>
<tr>
<td></td>
<td>Efficiency</td>
</tr>
<tr>
<td></td>
<td>Maximum user time</td>
</tr>
<tr>
<td></td>
<td>Satisfaction</td>
</tr>
<tr>
<td></td>
<td>Post-task ratings on 5-point usability scale:</td>
</tr>
</tbody>
</table>

- **Task A**
- **Task B**
- **Task C**
- Identify critical and frequent tasks
- Critical tasks and frequent tasks will help prioritize EHR features.
Measuring usability

<table>
<thead>
<tr>
<th>User Groups:</th>
<th>Physicians</th>
<th>Nurses</th>
<th>Administrative</th>
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<tr>
<td></td>
<td>Unassisted task</td>
</tr>
</tbody>
</table>

- **Create an appointment for a new patient**
- **Check patient insurance eligibility**
- **Enter patient vitals**
Benchmark current task efficiency

- Benchmark current critical and frequent tasks in order to:
  - Show that the EHR system produces better task efficiency than paper methods
  - Show improved efficiency over an existing electronic system
  - Project ROI for a given period

- Benchmark by:
  - Directly measure in current environment
  - Expert estimation
# Measuring usability

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<td></td>
<td>Unassisted task</td>
</tr>
<tr>
<td>Create an appointment for a new patient</td>
<td>Goal: 100%</td>
</tr>
<tr>
<td>Check patient insurance eligibility</td>
<td>Goal: 100%</td>
</tr>
<tr>
<td>Enter patient vitals</td>
<td>Goal: 100%</td>
</tr>
</tbody>
</table>

User Groups: Physicians  | Nurses  | Administrative
Measure usability

- Test representative tasks with representative users

- Measuring usability can be obtained via:
  - Usability testing
  - Observation
  - Questionnaires
  - Log files
# Measuring usability

## Measuring Usability Relative to Goals

<table>
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<th>Effectiveness</th>
<th>Efficiency</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an appointment for a new patient</td>
<td>Goal: 100%</td>
<td>Goal: 2 mins</td>
<td>Goal: 4.00</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR A: 90%</td>
<td>Actual: EHR A: 4 mins</td>
<td>Actual: EHR A: 3.00</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR B: 100%</td>
<td>Actual: EHR B: 1.5 mins</td>
<td>Actual: EHR B: 4.50</td>
</tr>
<tr>
<td>Check patient insurance eligibility</td>
<td>Goal: 100%</td>
<td>Goal: 1 min</td>
<td>Goal: 4.00</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR A: 95%</td>
<td>Actual: EHR A: 2.5 mins</td>
<td>Actual: EHR A: 4.00</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR B: 100%</td>
<td>Actual: EHR B: 1 min</td>
<td>Actual: EHR B: 5.00</td>
</tr>
<tr>
<td>Enter patient vitals</td>
<td>Goal: 100%</td>
<td>Goal: 30 secs</td>
<td>Goal: 4.00</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR A: 90%</td>
<td>Estimated: EHR A: 45 secs</td>
<td>Estimated: EHR A: 3.25</td>
</tr>
<tr>
<td></td>
<td>Actual: EHR B: 100%</td>
<td>Estimated: EHR B: 30 secs</td>
<td>Estimated: EHR B: 4.75</td>
</tr>
</tbody>
</table>

## User Groups

- Physicians
- Nurses
- Administrative
# Key Elements

- **Executive Summary**
- **Introduction**
- **Method**
  - Participants
  - Study Design
  - Tasks
  - Procedure
  - Test Location
  - Test Environment
  - Test Forms And Tools
  - Participant Instructions
  - Usability Metrics
- **Results**
  - Data Analysis And Reporting
  - Discussion Of The Findings

- **Appendicies**
  - Format for Document
  - Sample Recruiting Screener
  - Participant Demographics
  - Non-disclosure Agreement And Informed Consent Form
  - Example Moderator’s Guide
  - System Usability Scale Questionnaire
  - Incentive Receipt And Acknowledgment Form
<table>
<thead>
<tr>
<th>Task</th>
<th>Measure</th>
<th>N</th>
<th>Task Success</th>
<th>Path Deviation</th>
<th>Task Time</th>
<th>Errors</th>
<th>Task Ratings 5=EASY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean (SD)</td>
<td>Deviations (Observed / Optimal)</td>
<td>Mean (SD)</td>
<td>Deviations (Observed / Optimal)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>1.</td>
<td>[Find item on patient summary screen]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>[Use patient chart to find lab results]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>[Check vital signs]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In Closing

- The **highest cost for any large-scale system is human capital**

- Why is so much time/effort evaluating security, privacy, integration, functionality, etc.? Because these things can be easily measured, reported, understood, and compared.

- If human capital costs are so high and usability is such an important issue, **why don’t we spend as much time/effort understanding human interface...**
In Closing

- Because, it is perceived, there is no easy way to understand the impact of user performance it is often forgotten or ignored.

- CIF is a starting point…

- If you are a provider selecting among several vendors you should be asking those providers for usability metrics around variables important to you.
Thank You

NISTIR 7742 Can be obtained at:
http://www.nist.gov/manuscript-publication-search.cfm?pub_id=907312

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