17417 – Exploring Next Generation Fire Control User Interfaces
2015 Armament Systems Forum
April 22nd, 2015
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• Classification: UNCLASSIFIED

• Distribution A: Approved for Public Release. Distribution is unlimited.

• Type of Briefing: INFORMATIONAL
Background System

1985
• Not a renovation or translation

• Complete clean slate

• Foundation of core requirements

• Not just ‘what we did before’
Requirements

• Move, shoot and communicate

• “Common” fire control system across all artillery platforms

• Easy to develop, easy to maintain

• Challenge user assumptions and habits
Screen Options

[Image of interface screens with options for setting propellant temperature, fire modes, and inventory management.]

DISTRIBUTION A: Approved for Public Release.
Input Options
Can’t Do It In One Shot

Agile/SCRUM

Wrong
Wrong
Wrong
Needs Work
Good
Excellent

24 h
30 days
Working increment of the software

Product Backlog
Sprint Backlog
Sprint

Requirement Analysis

Review/Test
Integration Testing
Ongoing Support

High Level Design
Detailed Specifications
Coding
• Initial planning meeting to gain commitment and strategy with the user

• Iterative user testing every three months

• Various environments and user experience levels
Pre-Season (NOW)
## Marginally Functional Screen Prototypes

<table>
<thead>
<tr>
<th>Screen Prototype 1</th>
<th>Screen Prototype 2</th>
<th>Screen Prototype 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
<td><img src="image3.png" alt="Image 3" /></td>
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</tbody>
</table>

## Subjective User Evaluation

- Regular Season
- Distribution: Approved for Public Release. Distribution is unlimited.

## Screen Finalists

<table>
<thead>
<tr>
<th>Finalist 1</th>
<th>Finalist 2</th>
<th>Finalist 3</th>
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<tbody>
<tr>
<td><img src="image4.png" alt="Image 4" /></td>
<td><img src="image5.png" alt="Image 5" /></td>
<td><img src="image6.png" alt="Image 6" /></td>
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</table>
## Mostly Functional Finalists

### Objective Evaluation on Mission Threads

<table>
<thead>
<tr>
<th>Input Method</th>
<th>Environment</th>
<th>Screen Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Mission</td>
<td>Fire Mission</td>
<td>Fire Mission</td>
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<tr>
<td>Ammo Update</td>
<td>Ammo Update</td>
<td>Ammo Update</td>
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<tr>
<td>Initialize</td>
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### Data

- Execution Time
- Error Rate
- Variability

Baseline against the current system
Winning Design

Thread Completion Speed

Objective + Subjective Feedback

Overall Soldier Feedback

Horrible Poor Fair Good Excellent
Post Season

- Iterate on an increasingly more complete prototype
- Polish and refine specific components on user feedback
- Re-test when necessary for non-obvious decisions
Benefits

- Data driven designs not ‘gut feel’ guess
- Transparent, documented, and justified decisions
- Help dissuade late term major rework
- User buy in
What’s Next?

• First user testing in ~3 months

• Continue to iterate for about the next 2 years

• Return with data to share