Delivering the Network Centric Capability to the Warfighter Today
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Executive Summary

• Ultra-Thin-Rich-Client User Interface (UTRC-UI) Technology can deliver net-centric applications today overcoming the limitations of
  ▪ Network bandwidth and connectivity
  ▪ HTML-based Web application development

• Many success cases illustrate the value creation potential of this new innovation as applied to network centric warfare:
  ▪ Timeliness
  ▪ Relevancy
  ▪ Accuracy
  ▪ Security

• Compelling value proposition is that the potential scope of application areas is quite diverse, enabling the warfighters to realize the transformational NCW vision today
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NCW Challenges

Environment

- Bandwidth
- Limited Connectivity
- Legacy System
- Dispersed Force
- Control Mindset
- Lengthy Acquisition Cycles

Source: Network Centric Innovation Center
# Challenges with Current Web Approach

## End-User Experience Issues
- Page-based navigation
- No desktop look and feel
- No real-time data
- Slow application response

## Development Issues
- Multiple development and testing environments
- Limitations in GUI design
- Security concerns
- Limited options for application performance and functionality
• Rich software functionality - yet thin client - zero footprint

• On average 10x faster than HTML

• Event-driven Alerts

• Real-time data

• Secure

• Own channel outside browser

• Branded desktop icon - no navigation

• Easy distribution via e-mail or browser

• Standards: Java, C++, SSL; J2EE, XML
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Mini-Case 1: Real-time Deployment of CSS

Combat Support System Deployment Configuration

- System Server Role
- DB Server + UTRC-UI Engine
- UTRC-UI Engine + User Client
- System Server + Data Input
- Data Input By End-user
- User Client
- Tablet PC
- PDA
- Data Input By End-user
- System – U.S.
- Satellite
- Battlefield Based LAN
Improved User Interaction Screens

Original CSS Screens

Improved Screen

UTRC-UI Collapsed Multiple CSS Page Screens Into a Single Interactive Screen.
High Performance through Low Bandwidth Consumption

Bandwidth Usage Analysis
Comm. Traffic (Bytes)

42.1Kb

93%+ Reduction

2.7Kb

Original HTML Screen

Droplets Screen

Source: Droplets Analysis – Screen 517
Investment Protected through 90% Re-use of Existing Code

Code Re-Use Analysis: Total Asset Inquiry Screen

Code Size (Bytes)

120Kb

13Kb

107Kb

Original CSS Code*

Code Replaced By UTRC-UI**

Re-Used CSS Code***

* Servlets, JSP and JavaScript
** JSP and JavaScript
*** Servlets

Source: Droplets Analysis

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ILLUSTRATIVE
Fits within AF Standard Architecture Framework

Multi-tiered CSS Architecture

Before

Browser

Internet

Web-Sphere

Oracle

UTRC-UI

Screen or Browser

Internet

App. Server

Web-Sphere

Oracle

After

Browser

Internet

Web-Sphere

Oracle

UTRC-UI Engine

CSS UI Logic

Servlets*

EJBs

EJBs

As of: 13

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UTRC-UI Engine

CSS UI Logic

Servlets*

EJBs

EJBs
Mini Case 2: Modernizing Legacy Applications

Original Green Screen

Improved Web Screen

As of:
## Real-time Performance at 3300 Baud Rate

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data screen components (drop down fields)</td>
<td>0.5</td>
<td>218</td>
<td>17</td>
</tr>
<tr>
<td>Data entry (text and number entry)</td>
<td>2</td>
<td>371</td>
<td>21</td>
</tr>
<tr>
<td>Screen change (new screen loading)</td>
<td>6</td>
<td>2,014</td>
<td>70</td>
</tr>
<tr>
<td>App. start up (new session initiation)</td>
<td>38</td>
<td>14,223</td>
<td>7</td>
</tr>
</tbody>
</table>
Communications Over EPLRs and SINCGARs

Application Response Time

Transmission Time (Seconds)

Bytes Transmitted

- **UTRC-UI App.**
- **Max. Limit @ 3.33kbps**
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Industry Standards

- **Standards:** Java, C++, SSL, J2EE, XML
- **Java Server Faces:** Sitting Expert on Java Community Process
- **IBM Tested:** WebSphere, eServers and Linux (zSeries, iSeries, pSeries-WIP, xSeries)
- **Sun Tested:** Solaris, Sun Tone Certified
- **Oracle Tested:** 9i, JDeveloper
- **Borland Supported:** JBuilder 8
- **Microsoft Tested:** Windows 2000, Windows NT, Windows 95 or higher
- **PDA Environment:** Personal Java, Linux
- **Portals:** Oracle, Sun ONE, Plumtree, Websphere, any J2EE compliant portal
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## Value Proposition

### Potential Business Impact

<table>
<thead>
<tr>
<th>Key Issues</th>
<th>UTRC-UI Value to NCW</th>
<th>Solution Effective.*</th>
<th>Tech. Complex.**</th>
<th>Low Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity (End-User)</td>
<td>Unified system front-end</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usability</td>
<td>Consolidation of multiple screens; Eliminate web pages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Points</td>
<td>Web, Wireless, Desktop</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Legacy Extension</td>
<td>Extend ROI; Web enable, Enhance usability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D,T, M, &amp; S***</td>
<td>Central control (server-based)</td>
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</tr>
<tr>
<td>Reliability &amp; Performance</td>
<td>High performance: 90%+ bandwidth reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>Inherently secure: NorthCom, NAS</td>
<td></td>
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</tr>
</tbody>
</table>

* Solution Effectiveness
** Technology Complexity
*** Deployment, Training, Maintenance, & Support

- Lower development risk
- Fast deployment
- Improved system
- Potential savings in the hundreds of millions $$$

As of:
Implications to Network Centric Warfare

1. Bandwidth reduction of 90%+ [$$ savings]
2. Real-time data [Information superiority]
3. High security [Dominant position]
4. Improved usability [Productivity increase]
5. Multi-platform deployment from single code base (web, desktop, wireless) [faster development, $$ savings]
6. Industry standards based [low risk, $$ savings]
Vision Delivered Today

Network Centric Capability

UTRC-UI Powered Implementation of Interoperability

Sustaining Innovation
• Legacy Systems
• Disjointed Infrastructure
• Data-driven

Disruptive Innovation
• “Net Ready”
• Infostructure
• Sharing & Collaboration