ARR 525 Recommendation

Windows Browser Evaluation

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SSG Workstation Software Technical Services
10/27/97
Priority: 1

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ARR 525 - Standards Board Responsibilities

- PCSB Lead
- USB Joint
- A&IT Presentation
- DMSB Presentation
- ISTT Presentation
- ISDS(?) Presentation
- BDSB Presentation

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Agenda

- Objectives
- Assumptions
- Schedule
- Key Issues
- Evaluation

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Team Members

• Ann Bassetti	SSG - Web products manager
• Scott Vesey	SSG - Windows Web browser product manager
• Marc Amis	SSG - UNIX Web browser product manager
• Jerry Hackett	SSG - Macintosh Web browser product manager
• Dennis Lebbin	ISDS - Wichita
• Karl Guenther	Philadelpia
• Deanna Kelley	ISDS - Puget Sound
• Heidi Lewis	ISDS - Puget Sound
• Troy Colyer	ISDS - Puget Sound
• Cathy Neal	BNA
• Alan Roman	St. Louis
• Kris Ballew	Irving, Texas
• Bob Goudie	Corporate Support
• Ron Hanson	Executive Support
• Nick Feldhaus	SRC
• Dan Murphy	BCAG Architecture
• Wendy Jackson	BCAG Architecture

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Boeing Web Objectives

- The primary benefit that the Web brings the Boeing Company is the ability to put information in one place that can be accessed by anyone from any platform.

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Boeing Web Assumptions

- Platform neutrality
- Browser independance
- All recommendations must support the use of the Web as the primary information distribution system to all Boeing employees.
- Anything that we do that reduces the universal accessibility of information on the Web, diminishes its value as an information distribution system.

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Boeing Architecture Assumptions

- **Windows/Intel based personal computers are the bulk of our desktop computing environment.**
  - Windows 95 is the current standard operating system for new Intel based PC's.
  - Windows NT Workstation is the stated operating system direction for Intel based PC's.
- **DCAC and other Line of Business (LOB) applications are moving to Web-based interfaces.**
  - These applications will require a stable cross-platform environment on which they can run.
- **Alternate platform workstations make up a portion of our desktop computing environment.**
  - More than 16,000 Unix workstations running 4 UNIX variants
  - Approximately 2500 Macintosh devices
  - Approximately 4500 X-Terminals
- **Single product standard to reduce variation.**

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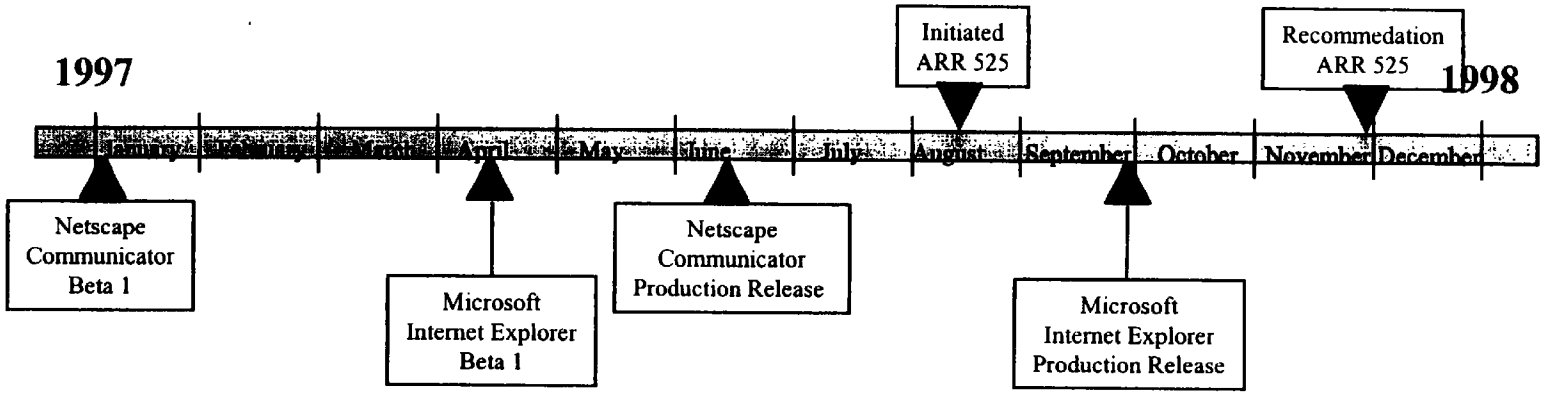
Schedule



- Neither product can be consider Boeing production hardened at this time.
- Evaluation of both products is on going. The evaluation team is made up of individuals from many parts of the company.
- Recommendation on ARR-525 will be available at the end of November, presentation to the PCSB is scheduled for: 11/24/97.

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Key Issues (details follow)

- Platform support
- Security
- Operating system modifications
- Internal support
- Java
- Application integration
- Dynamic HTML standards

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Key Issues

- Platform support
  - Microsoft Internet Explorer 4.0 for UNIX will not be available until first quarter 98.
    - Solaris support will release first to be followed by one additional UNIX platform every 90 days.
    - Solaris, HP-UX, Irix, and AIX are standard UNIX variants within the Boeing company.
  - Netscape Communicator 4.0 is available for all platforms (except Apollo)

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Key Issues:

Platform support

- Microsoft Internet Explorer 4.0 for UNIX /Solaris is in Beta test now and will not be production until first quarter 98.
  - Solaris support will release first to be followed by one additional UNIX platform every 90 days.
  - Solaris, HP-UX, Irix, and AIX are standard UNIX variants within the Boeing company.
- Netscape Communicator 4.0 is available for all platforms (except Apollo)

Conclusion:

Some level of Netscape support will be required for at least one full year and likely will remain a requirement indefinitely for some UNIX devices.

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Key Issues

- Security
  - Netscape and Microsoft employ different security implementations.
    - Capabilities-based trust model (Netscape)
    - Security zones (Microsoft)
  - Each vendor employs a different object signing implementation.
    - JAR (Netscape)
    - Authenticode (Microsoft)

- Each security implementation has strengths and weaknesses. The current implementations are be somewhat mutually exclusive.
- The Sun JDK 1.1 also has its own security implementation.
- Competing security implementations make supporting multiple browser difficult or impossible.
- The Computing Security - Technical Working Group has spawned a sub-team to define security guidelines for executable content.

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Key Issues:

Security

- **Microsoft**
- Active content
  - Security Zones
- Object Signing
  - Authenticode

- **Netscape**
- Active Content
  - Capabilities based trust model
- Object Signing
  - JAR

Conclusion:

Neither vendor has third party support for security initiatives. The W3C has separate security initiatives that may form the basis for standards. Both vendor solutions would produce non-interoperable applications.

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Key Issues

- Operating System
  - Internet Explorer 4.0 introduces changes to the Windows 95 operating system
    - Can be configured to change the user interface.
    - This adds variation to the desktop environment which will increase support cost.
  - These changes may have unpredictable side effects on existing applications.

    Adobe PhotoDeluxe and Norton Utilities were both affected by the upgrade to Internet Explorer 4.0.

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Key Issues:

Operating System

- Microsoft
  - Internet Explorer 4.0 introduces changes to the Windows 95 operating system.
- Netscape
  - Netscape does not have platform specific operating system integration features.

Conclusion:

The affect of Internet Explorer 4.0 operating system integration features needs to be better understood. The risk of potential conflicts with existing applications must be documented.

Longer term this integration may offer significant strategic benefits to the Windows desktop environment.

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Key Issues

- Support
  - Internet Explorer has a limited Boeing pre-merger installed base and limited support infrastructure.
  - Existing support infrastructure can readily support Netscape Communicator 4.0.
    - Technical Services
    - Service Response Center (SRC)
    - Site Operations

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Key Issues:

Support

- Internet Explorer has a limited support infrastructure in place throughout most of the company. Boeing St. Louis being the notable exception.
- Netscape Navigator has an enterprise wide support infrastructure and extensive technical expertise that will continue to be leveraged by Netscape Communicator

Conclusion:

Existing technical support can easily support Netscape Communicator. End users familiar with Navigator should be able to make the transition with little or no training.

Technical support would have to be trained and support infrastructure created to effectively support Internet Explorer. End users familiar with Navigator should be able to make the transition with some basic user interface training.

Scott Vesey - WSTS 9/16/98

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Key Issues

- Java
  - Java 1.1 support
    - Internet Explorer supports COM/DCOM.
    - Communicator supports RMI/IIOP/CORBA.
  - DCAC and other LOB application initiatives will be dependant on the Java implementation.
    - BCAG architectural direction is IIOP/CORBA
    - The LOB Web Interface team is coordinating DCAC requirements for Web browser features.

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Key Issues:

Java

- Internet Explorer supports COM/DCOM.
- Some Java 1.1 extensions are tied to the Window API.
- Communicator supports RMI/IIOP/CORBA.

Conclusion:

Internet Explorer will allow the development of Java applications that are platform dependant.

BCAG and ISDS stated architectural direction is CORBA for remote object software.

Internet Explorer does not provide support for CORBA.

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Key Issues

- Integration
  - Internet Explorer offers high levels of integration with the Windows 95 operating system, Office 97 applications and Exchange. It allows the display of Web content on the Windows desktop: "Active Desktop".
  - Communicator supports the Office 97 integration features (including OLE) and will support some level of Exchange integration. It will not be integrated into the operating system, although it does have a desktop presentation: "Webtop".

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Key Issues

Integration

- Internet Explorer offers high levels of integration with the Windows 95 operating system, Office 97 applications and Exchange. It allows the display of Web content on the Windows desktop: "Active Desktop".
- Communicator supports the Office 97 integration features (including OLE) and will support some level of Exchange integration. It will not be integrated into the operating system, although it does have a desktop presentation: "Webtop".

Conclusion:

Internet Explorer may offer significant strategic benefits to the Windows desktop environment.

Some risk may be present if our architecture causes applications to be dependant on any browser to provide specific functionality.

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Key Issues

- Dynamic HTML (DHTML) Standards
  - Both vendors have proprietary and incompatible dynamic HTML implementations.
  - Differences in the Document Object Model (DOM) makes creating browser-neutral DHTML difficult. Standards are still emerging in this area.
  - Both vendors have some level of support for World Wide Web Consortium (W3C) initiatives for dynamic HTML.

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Key Issues

Dynamic HTML (DHTML) Standards

- Internet Explorer implements <IFRAME …>
- Communicator implements <LAYERS …>

Conclusion:

Both browsers support basic CSS and CSSP. Creating browser neutral Dynamic HTML is somewhat difficult due to a lack of standards in specific areas. Web developer guidelines should be developed to assist developers with Dynamic HTML.

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Evaluation Matrix

	Internet Explorer 4.0	Communicator 4.0	Comments
Multiple platform support		✓	
Security	✓	✓	Competing incompatible strategies
Java 1.1 support	✓	✓	Possible incompatibilities
Offline browsing	✓	✓	
Integration	✓	✓	OLE Embedding and Exchange
Auto proxy configuration	✓	✓	
Dynamic HTML (CSS1, CSS Positioning, ECMAscript)	✓	✓	Each product also has its own proprietary implementation
Plug in support	✓	✓	
ActiveX controls	✓		

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Test Scenarios

- HTML 3.2
- Cascading Style Sheets (CSS) and
  CSS Positioning
- Dynamic HTML using CSS, CSS Positioning, Javascript (ECMA-262)
- Testing against a range of Boeing Websites and external internet sites that use a range of browser capabilities.
- **Testing emphasizes W3C standards wherever possible.**
- Test files are accessible at:
  http://rain.cs.boeing.com/web/browser/test/

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Technical Analysis

Is there a technical reason to drop the current standard?
Is there a technical reason to change the standard?
Is there a technical reason that supports a dual standard?

- The answer to all three questions is "not right now".
- Most features are available in both products.
- Support for most W3C standards are available in both products.
- Operating system integration is a two edge sword.
  - This characteristic needs to be studied in greater detail.
  - Its impact will take some time to fully understand.
  - Coordinate with operating system product manager.

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Financial Analysis (in work)

Does a single product standard lower the Total Cost of Ownership?
Would a dual product standard increase Total Cost of Ownership?

- Support: installation, certification, consultation, problem resolution.
- Training for end users, SRC, and technical support
  - How much training, at what level
- Functional testing, Integration testing, Deployment readiness
- Product management
- Production support
- Application development

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Next Steps

- Resolve Communicator Exchange integration issue.
- Continue technical analysis of Internet Explorer operating system integration.
- Complete financial analysis for browser standard.
- Come back to the PCSB with recommendation on 11/24/97.

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Web Browser Recommendation

- Standardize on Netscape Communicator 4.04
  - Allows phased or on-demand (as required) deployment
  - Minimal re-training for technical support or end users.
  - Allow exploitation of new administrative features.
    - LAN based (Node) installation. (to support S3 and other ESD strategies)
    - Multiple profile support

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Web Browser Recommendation

- Allows developers to leverage emerging technologies.
  - Should be based on Developer Guidelines (ARR ###) and established W3C's standards.
  - Computing Security Working Group recommendations.
  - Use of proprietary implementation features should be prohibited(/discouraged) (may be based on application category)
  - Should preserve browser neutrality to allow for future browser migration.

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Web Browser Recommendation

- Continue to study the implications of Internet Explorer integration with operating systems and applications.
  - Begin planning for eventual complete O/S integration.
  - Require compatibility for any applications that require Internet Explorer be installed. (Outlook '98, Internet Studio, MS Developer suite, etc)

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Web Browser Recommendation

- Situation:
  - Incompatibilities between browsers combined with the cost of training and support compel us to select a single product browser standard.
- Target:
  - Browser vendor irrelevant. Users can install the browser that they prefer without compromising the accessibility of Web based information systems.

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Web Browser Recommendation

- Proposal
  - Develop effective guidelines for Web based application development.
  - Begin to develop support infrastructure for alternative browser support.
    - Structured pilot implementations with controlled populations.
    - Document metrics and lessons learned to leverage into the general installed base.

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