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The Ubiquitous Web: A Position Paper

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1. Location



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Ubiquitous means present everywhere. We see a need to extend the usual concept of the World Wide Web in two additional ways, both eliminating confinement to fixed ground locations:

(i) Rapidly moving users:

This means agile applications extensions to discover and bind resources as the connection changes, drops or re-attaches. In military applications, there may be hundreds or thousands of Web devices and they can move very quickly. Ubiquitous wireless connectivity requires rapid connection, management and maintenance of network applications.

(ii) The Web above 10,000 meters:

Connexion by Boeing is bringing the Web to commercial and business airplanes. The Web has been, and will be used on near earth and planetary missions. Protocols for an Interplanetary Internet have been

proposed. Very large network latencies are the norm.

2. Security



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Some key security drivers are:

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Static, long-term business relationships

Dynamic, global business partnerships

Assets protected by perimeters from external threats

Internal and external threats amplified by cross-enterprise requirements

Traditional computing environment used by an office-based workforce

Mobile and wireless devices used by a virtual workforce

Data relies on operating system controls and applications for protection

Data exposed by XML, web services and grid computing environments

3. Devices



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New devices offer challenges for the ubiquitous Web. Multiple human readable display formats are the usual targets for alternate representations of Web information, from cell phone, PDA and tablet to laptop, desktop and multimedia HDTV.

However, in many environments (eg. factory) there is a need to accommodate printing, plotting, scanning, imaging, audio, intelligent tooling and many different sorts of sensors. The ubiquitous Web will be most valuable when it allows things to talk to things, using common languages.

We expect airplanes to be part of a factory network as they are assembled, then seamlessly transition to daily operation using the World Wide Web. For our enterprise information infrastructure, we also have an ongoing strategy to reduce complexity by getting application footprints off the desktop onto a Web-based or thin client.