Position Statement by Ellis Horowitz

I see three major impacts of the WWW on the software development process:

1. Database Interoperability
   Many (all) of the artifacts of the software development process: requirements documents, design documents, code, test data, bug reports are currently captured in proprietary databases. This has substantially retarded a corporation’s ability to move the data throughout the organization. The WWW will provide a platform independent, consistent front end to this information. This will make the software process more open and accessible.

2. C++ is Dead and Object-Oriented Programming Will Be Replaced by Java.
   For applications that demand performance, C will still be the primary development language. But C++ with its very complicated semantics will quickly be replaced by Java.

3. Collaboration Will Not Be Facilitated by the WWW.
   There is still no substitute for a group of people being in the same room speaking face-to-face about software requirements, design or implementation. In situations where this is not possible, video teleconferencing will improve upon email and phone contact. But the WWW in support of collaboration does not appear to me to be its strength.

Position Statement by Dr. Rami Razouk

The impact of the web on software engineering can be looked at from a number of ways.

- Using web technology to support software engineering and development processes (web-based software repositories, web-based documentation, ...). I know this type of work is going on, but have little to contribute on the subject. Although I think the Web is a good way of building unstructured data repositories, I have a somewhat negative view (based on some experiments we've done) of web technology as a "workflow" technology. Lotus Notes looks far superior as a...
way of supporting “processes”.

- Web technology (e.g. Java) as a tool to be used in building software systems. In the Sun view of the world, everyone is a Java expert and building Java-based spreadsheet programs to download on the web. This includes using web browsers in place of custom user interfaces. From the DoD perspective there is an increased demand for building flexible systems that can be rapidly reprogrammed to address new missions. Java would be a potential solution, but would face tremendous technical (e.g. performance) and non-technical (e.g. security) challenges. I don’t know of any programs that are contemplating using something like Java as the implementation language for their ground or flight software.

- Web technology as the basis for building world-wide information repositories. This is a topic that is of great interest to the DoD, where information dissemination is becoming the key element of their information system, and web technology is being looked at as a substitute for having to build software systems from scratch. I think there is a good deal to be said about how complex databases and networks can be hidden away behind a web-based information system. The tie into software engineering is that these systems would be substitutes for custom written-software.

Position Statement by Walker Royce

The WWW is a significant technology step towards a paperless environment. Besides the minor cost benefits of reduced resources (paper, printers, shipping, documentation labor), the truly major benefit should be the reduced cycle time for review, coordination and concurrence. A typical DoD project today spends 1-2 months (1 week for document production, 1 week for CM and QA, a few days for shipping, a few weeks for paper review, a week for comment preparation, a few days for shipping comments back, etc.) to “negotiate” agreement on a given artifact. These 1-2 month interrupts are significant schedule obstacles.

Today’s environments provide semantically rich browsers that mostly eliminate the need to commit information to paper. The hypertext and navigation facilities of today’s graphical CASE tools and source code environments enable high fidelity review of the true engineering information (as opposed to some error prone paper artifact that describes the engineering information) in half the time with double the value. The WWW provides a vehicle for achieving review and concurrence in semi-real time thereby eliminating many of the inhibitors to improved cycle time of DoD or commercial contractual projects.