

**HP E-Speak Technology and Marketplace Update**

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## E-speak Technology

HP's e-speak technology is poised to form the basis of a new generation of Internet functionality. If, as venerable scientist Bill Joy predicts, the Internet evolves not into a better World Wide Web, but rather, a half dozen or so networks servicing as many types of services, e-speak has the functionality, scalability and level of abstraction to be an essential part of the Internet's future. As she presented it to a room full of software developers at the Fall '99 E-Services Developers Conference, HP CEO Carly Fiorina calls the new level of interoperability enabled by e-speak "Chapter 2 of the Internet".

### ***Evolving from Web Documents to E-services***

The leap forward that HP envisions is a second generation of the kind of access to worldwide resources we all sense when seated before a Web browser. Whereas today, the Internet provides extraordinary reach for the *interactive user*, e-speak provides a worldwide interaction platform for *applications, devices, and enterprises*. This is no less than the first open, scalable method for Web sites and companies to safely "talk to each other", and further, to identify qualified plug-compatible partners on the fly. E-speak takes the special-case work out of inter-enterprise computing.

The current building block of today's Web is the *document*, whereas the foundation of this evolving subterranean world is the *e-service*. E-services, a term promoted by HP and adopted by many organizations and authors throughout the industry, refer to software functions that may be engaged between one enterprise and another. An ASP might host an ERP e-service for use by numerous client enterprises, or a supplier may offer an e-service as a transaction access point for downstream trading partners. An e-service brings to the marketplace what "distributed object technology" brought to enterprise networks.

Here is e-speak's vision of the next generation Internet:

- ❑ **Dynamic Discovery** - E-services can be found through advertising services, portals or profit-based query. The virtual e-services environment constantly adapts as new e-services are registered or e-services disappear.
- ❑ **Brokering** - Service portal that identifies and negotiates between similar service providers. If multiple airline reservation services are identified, the brokering capability selects the provider that fits your profile.
- ❑ **Composition** - New personalized services are rapidly and efficiently created by dynamically and transparently aggregating component services developed by multiple providers into a "composite service." Lower level e-services are composed themselves into higher level e-services.
- ❑ **Mediation** - Monitor and continuously manage changes. This refers to the capability of notifying or automatically updating all service providers involved in a requested e-service. As this level of inter-enterprise consistency is achieved, the Internet truly fulfills the promise of "Do it for me."

If the flurry of investment in technologies, industry consortia and standards developing around the XML meta-language are any indication of the value business is placing on inter-enterprise transactions, e-speak may emerge as the ultimate market-maker technology of the new decade.

### ***Find & Describe E-services: "Yahoo! for Your ERP System"...***

The first stage of a typical e-speak interaction is *locating a service*. The search might come from a cell phone identifying the taxi service that can arrive for pick-up the quickest, or a procurement system looking for today's lowest price pallet of office paper among both contracted and potential suppliers. E-speak leverages industry-specific *Service Descriptions* and a *Search Recipe* framework that is compliant with the Object Management Group's *trader constraint grammar*.

Leveraging vertical XML-based *Vocabularies* or *Schemas*, trading communities can use e-speak to develop dynamic, decentralized auction and supply-chain relationships. E-speak allows for certification and rating services to participate in the Search framework so that brokerage Web sites can gather up-to-the-minute offers while ensuring meaningful levels of qualification. The facility that delivers this functionality is

known as the *e-speak broker*. Only intermediary companies and service providers necessarily need to deploy an *e-speak broker*.

### **Engage E-services: "On the Fly EDI" for Your Cell Phone**

Constructing an EDI channel between any two corporations is typically a tedious, time-consuming and one-off process, taken on when at least one trading partner is very large. Today, there are alternatives to EDI offering economies of scale and ease of integration that promise dramatic increases in the adoption of inter-enterprise transaction processing. XML schema organizations such as XML.org, CommerceOne, RosettaNet.org and BizTalk.org are crafting spectrums of XML data definitions that support both common and industry-aligned processes and transactions.

E-speak, rather than dictating engagement protocols, allows the delivery of an e-service to be technology independent. Thus video streams, Microsoft SOAP, FTP or any other type of electronic delivery can be arranged for through an e-speak-brokered linkage.

HP is working together with a key eCommerce standards organization, CommerceNet, to create its first reference implementation of CommerceNet's *eCo* XML interoperability framework on HP's e-speak architecture. Early e-speak adopters will take advantage of these emerging document definitions, and implement compliant "service-fronts" for specific commercial initiatives. As the community of companies that do so expands, the speed with which new electronic transaction-enabled partnerships can be implemented will decrease dramatically. HP's vision is that such partnerships can be made and exercised during the response time a user experiences clicking on a web hyperlink.

The resulting dynamic is a commercial environment (an "eCo-system") in which enterprises can focus more squarely on their own core competencies, taking advantage of rapid, dynamic engagement of supplementary services from other companies. To participate in an e-speak enabled eCo-System, you only need to run an *e-speak engine*. Not to be overlooked is the prediction by some (e.g. Giga) that fully functional e-services frameworks will begin to finally obsolete programmers in the enterprise transaction arena.

### **Partner Adoption**

HP's e-speak team has garnered partners in many areas of electronic commerce. A clear early focus is in handheld device access. Here are some highlights:

Wireless Access	Nokia, Ericsson, WapIT Ltd., Motorola
Communications	Comptel, Telia, Nortel, Helsinki Telephone, Bell Canada
E-service Hosting	Qwest Communications, Yahoo
Integration	Anderson, Ernst & Young, NexGenix, Sapient, USWest, Viant
Exchanges/Marketplace	Ariba, i2, Intelisys
ERP	PeopleSoft, SAP
Platforms	BEA, Novell, Oracle, WebMethods
Infrastructure	BMC, SoftCell Software
Financial	OkoBank
Storage	Seagate
Portal	Yahoo, HiTel
Vendor Rating Services	CompareItAll

As of this writing (June '00), many of these partnerships are still in the post-announcement stage. Collaborations such as the HP/Nokia WAPserv suite of software, services and integration have delivered .

### **Market Adoption**

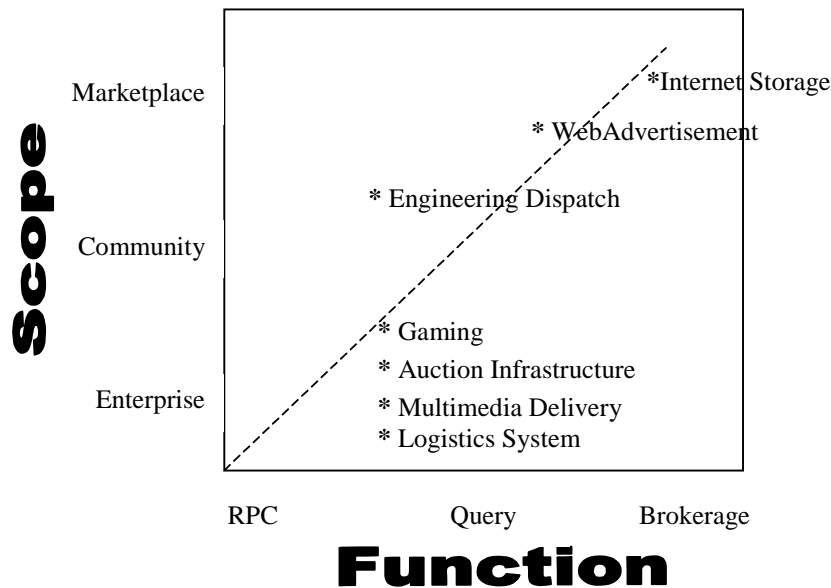
While various solution spaces can be implied or are cited in the e-speak community Partner list, a number of key "customer applications" were identified early on, and still others are beginning to emerge.

- ❑ Auction Infrastructure – Trade2Gain
- ❑ “WebAdvertisement” Service
- ❑ Logistics System (consulting firm)
- ❑ Engineering Dispatch (Ericsson)
- ❑ Internet-based Storage (Seagate)
- ❑ Multi-media Training, Entertainment (Helsinki Telephone)
- ❑ Gaming (Helsinki Telephone, HiTel)

### Levels of Adoption

How far along e-speak’s potential value scale do these projects fall? Much can be learned by plotting two axes:

- ❑ *Scope of service access.* Do project service-point linkages span an *enterprise, a community or a marketplace*? We define *marketplace scope* as one in which participating e-speak *engines* or *brokers* are expected to join (and leave) a service community ongoing, and without prior identification to the project. We leave solutions in which individual *users* join and leave a community if those *users* are not represented by independent e-speak engines/brokers. Similarly, *community scope* is intended to refer to solutions for which more than one enterprise implements an e-speak engine/broker.
- ❑ *E-speak function.* Is e-speak being used as an Internet RPC (“remote procedure call”) interface, a networked application query service, or an e-service brokerage.



**Figure 1: Levels of Adoption Among Early Entrants**

The clear message here is that the marketplace has only begun to take advantage of the full vision of e-speak. On the surface of what may appear to be a slow adoption of higher-order functions are marketplace issues. Until many members of a trading/service community have e-speak participant points, a brokered marketplace will serve little function. One might also look to the state of XML schema definition and adoption to cite impediments to high-order implementations. While these are real issues, the subtle yet substantial area of new business models and inter-enterprise workflow will largely gate e-speak’s loftiest implementations.

## ***“Who’s your Momma, and can she make a roux?”***

The relatively slow rate at which human processes identify and foster business relationships are attended by equally lengthy processes for screening. As already evidenced in online exchanges, the new economy provides new opportunities for rating organizations to step to the fore, and integrate themselves with lightening-fast brokerages. In order for an enterprise to a) engage in a goods or service purchase with another company or b) aggregate goods and services from a variety of related companies (e.g. financial packages), several Old World analogs must be provided. These will in many cases include not only reputable, independent ratings, but even prior arrangement, depending on the nature of the brokerage.

Businesses that aggregate goods and services will have extraordinary opportunities to automate deal construction. Yet even here, important Old World business models still apply. A tourism company might not want to approve a real-time defined package for a vegetarian cooking tour punctuated by a Mongolian barbecue!

## ***Looking Ahead...***

Here’s a quick look at expected adoption rates for various points along the adoption curve.

### **Handheld/Device e-Marketplace**

This marketplace offers strong benefits from an e-speak enabled service marketplace while minimizing client-side preparation and co-ordination. The key here is that wireless service providers can collaborate with device vendors to simply “push” e-speak engines into what is a booming market. Additionally, for most offerings, users are consumers, and so established process and computing infrastructures are not issues. The ability of a wireless user to be “located” through telemetry, and for (you knew this example was coming) your local Starbucks to direct you to the nearest caffeine fix is well within reach. Dynamically identified wireless services are expected to provide a great deal of value (unless, of course, you’re in Manhattan, where you can walk the length of any block to get to the next Starbucks!).

### **Usage-based Software Services**

This model refers to a dynamic ASP framework in which services are available and paid for only as used. Compared by some with the old “time-sharing” model, this framework is expected to level cost of ownership profiles by eliminating capital investment. Perfect for start-ups, it cites an e-services world in which companies stop and assess “what is it that we do best”, and form that service into an e-service. All other needs are outsourced to peer e-service providers. This marketplace requires restructuring of software as well as changes in business models for many existing firms. It’s notable that SAP, a widely considered candidate for usage-based services, has elected not to incorporate this model into its product line. It will take time for this market to find widespread adoption.

### **Inter-enterprise Business Processes**

This marketplace has broad technical and process hurdles, but will be fueled by potential operational efficiencies and economies. As with EDI implementations, high costs will be overshadowed by gains in not only cost structure, but enterprise competitiveness and profitability. Stages include XML schema standardization and management advances, software infrastructure support, business model development, and large enterprise initiatives. In the near future, large companies will be in a position to elect to forge ahead in forming large-scale electronically enabled inter-enterprise processes. They will find vendor and partner cooperation, as well as waiting technology and standards. Open bodies to consider for modeling paradigms are the Open Business on the Internet organization (OBI) and various public workflow organizations.

### **Enterprise e-Marketplace**

In its loftiest form, e-speak would enable an enterprise to make global inquiries for goods and services that are responded to by real-time provided-listed entries or highly dynamic proxy entries. (The latter might be real-time while also providing, for example, anonymity.) The trader constraint grammar on which e-speak queries are based is ideally suited for such functions, and together with the global scalability and security

models built into the e-speak framework, places it in a very strong position. In terms of adoption, however, such marketplaces require an interesting type of “coop-etition”. Who is going to run out ahead of a pack with an industry e-speak listing when it’s useless without the rest of the pack’s presence? For that matter, while commodity industries have long been comfortable having purchase decisions based primarily on “listable” attributes, many others will strain to make the e-transition.

It is the “quorum-building among competitors” aspect of the viability of any individual marketplace that will make e-speak plays very measured. Some strategies for advancing e-speak in such markets are to a) implement the underpinnings of traditional web-based markets under e-speak, eventually offering e-speak network connectivity to buyers and sellers, and b) approaching web-based markets with providing cross-marketplace capabilities through real-time e-speak linkages. This would be a shrewd move on the part of the e-speak community, since the meta-market marketplace is due for significant continued rapid-expansion to be followed by significant rapid consolidation. An e-speak play among a set of vertical market providers could mean the difference between merger-survival and simple extinction.

## Conclusion

HP’s e-speak technology excites imaginations. Yet its early adopters have shown only a small fraction of its potential utility. If one applied typical adoption models to e-speak, it could appear to be like the “Betamax” video format of a new age – technically superior, yet lagging in market adoption. Such models don’t apply, however, when a marketplace isn’t fully formed. Basically, e-speak is comfortably ahead of its time. There are competitors for its solution space, but few meet the many criteria HP had set for e-speak early in its conception. These include:

- world-wide search performance
- heterogeneous operation
- support for third party identity authorization and rating services
- a more meaningful service "reference" model (i.e. references to services that, unlike a Web URL, can survive changes in naming, host IP addresses, etc.)
- security and insulation of the enterprise
- support for anonymous transactions
- vocabulary translation (critical for enterprises that participate in various supply chain communities)
- open service delivery policy

As of this writing, e-speak’s marketplace adoption appears slow but steady. Technologies such as e-speak, however, are critical components of business computing paradigms that appear certain on the horizon.