Web Services : In support of Competitive Advantage

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Abstract

Opportunities for competitive advantage arising from the emergence of web services can be realised by any of the players from cloud computing providers to Software as a Service (Saas) providers and users (Armbrust, et al.). However, the focus here will be on web services providers and users.

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Competitive advantage (Grant, 1995) requires the use of human, tangible and intangible (including information, communication and technological) resources and capabilities to develop core competences on which organizational strategies are developed to address industry key success factors and thus develop competitive advantage. Further, there are four conditions which must exist of resources for sustainable competitive advantage (Peteraf, 1992). Resources are imperfectly immobile (cannot be traded), there must be ex ante limits to competition (they cannot be too costly to acquire), there must be ex post limits to competition (once advantage is gained competitors cannot easily acquire the resources to compete) and finally resource heterogeneity must exist.

The interoperability features of service oriented architecture are expressly the factors which prevent web service consumers from realising competitive advantage from mere adoption. The only limit to the acquisition and use of web services by competitors may be locating them. However, Universal Description Discovery and Integration registries and Web Service Crawler Engines (Al-Masri & Mahmoud, 2008) are continually improving the visibility of web services. In addition WSDL and SAOP provide readily available means for accessing exposed functionality and communication with it. If we assume that functionality provided by web services are predominantly commodities (more so for fine grained than coarse grained however) an adopter would not have an ex post or ex ante limit to competition advantage. Thus, use of web services themselves confers no advantage of itself. The advantage is more likely to stem from how they are used in context, i.e. integrated effectively within a business model. This puts the focus on effective SOA design, a point to which I'll return.

On the other hand, as a web service provider how could I look to drive a competitive advantage position from a commodity product? Well I need my services to be highly visible. An addition to UDDI would see my services categorised and ranked very specifically for availability, reliability and completion time – 'dynamic' information (Ambrosi, Bianchi, Gaibisso, Gambosi, & Lombardi, 2009) which would hopefully benefit me at bind time for a user and is a path to more favourable ranking. Further, additional published categorisations around the capabilities and constraints of web services (Arroyo, Bussler, Kopecky, & Lara, 2004)could enhance visibility for the correct audience. A paradox in the categorisation approach is that looser categorisation would increase visibility to new 'markets' thus enabling product extension (Ansoff, 1957).

The previous has suggested 2 potential routes. Namely, the effective integration of web services with the business model and differentiation of the offering. Effective integration points towards effective design. Architecture Frameworks provide a means to "facilitate the successful delivery of Network Enabled Capability" (Government, 2004 - 2008). The Ministry of Defence Architecture Framework, like others reviewed, including The Open Group Architecture Framework, seek to provide a holistic viewpoint of the organisation with a view to understanding, design and maintaining an increasingly complex environment made potentially more confusing by finely grained functionality. Thus, there is a role for the consultant in the implementation of web services. This is just one of the means via which a web service provider could differentiate his own product in the search for a competitive advantage. Thus the second route for players seeking competitive advantage. Other modes of

differentiation may be to vertically integrate to differentiate from the competition at the service, not product, level For example, backwards integration into Cloud Computing to host SaaS is one route. Or, forwards integration into extensive after sales support. Another approach would be to better address the needs of the customer. Availability, reliability and completion time have been discussed. We could add security. Obviously, a point of interest in an open, interoperable environment. The Organization for the Advancement of Structured Information Standards (Oasis) provide guidance on XML.

Future research, for me, would be in the area of how the players in web services and related technologies would strive for competitive advantage. This is a fascinating one to watch as the raison d'être is interoperability but to me the commercial necessity will bring out lead player in web services. Perhaps this will be via sector with context specific knowledge as a barrier to entry.

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