The Use of Taxonomy for Understanding Service as a Competency in e-Service Systems
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E-Service broadly refers to the provision of services that are delivered electronically, which allows service providers and customers to utilise the information shared between them to co-create value for both parties (Eng, 2008).

A fundamental enabler of E-Services is that it is enabled by digital technology (usually referred to as Information Communication or Internet / Mobile-based technologies). We refer to E-services enabled by digital technologies as an E-Service system, as it facilitates or mediates the application of a competency i.e. a service, by one party onto another (Vargo and Lusch, 2008).

This paper is based on research investigating an E-Service system known as the West Midlands Collaborative Commerce Market Place (WMCCM). This marketplace enables the collaboration among SMEs in the West Midlands by matching their competencies i.e. what service they are able to perform, with the competencies of others, so as to bid collaboratively for tenders issued out by companies or public bodies. The WMCCM platform is able to do the matching through identifying resources underlying the competencies and propose partners that fit the tenders’ requirements (Armoutis et. al., 2010). In other words the WMCCM platform automates the process of matching company competencies (their service) with tender requirements. To do this, WMCCM utilises a taxonomy of company competencies and semantically analyses every incoming tender to identify what competencies are required, and maps these onto the same taxonomy. This allows the WMCCM system to forward tenders to companies that have the right capability, or to form partnerships that would provide all of the required capability for a particular tender. The WMCCM therefore facilitates co-creating platform thereby allowing SMEs access to a greater partnership base, broadening market reach, lowering collaboration cost, enhancing the collaborative experience and achieving “better economic return”.

A key factor influencing the effectiveness of the matching functions is the quality of the taxonomy that enables the linkage between tenders and company capability. This goes back to a generic challenge of language interpretation in many e-service systems, that the analysis and understanding of various parties’ languages require identification of the scope of the language used, followed by an understanding of the relationships between the language entities. The WMCCM’s original taxonomy building followed a mixture of top down derivation from industry standards and bottom up synthesis collecting terms and relationships from actual business users (Fairchild et. al., 2002). However, the taxonomy did not provide sufficient terms and relationships to satisfy the “needs/competence” matching, and the taxonomy building process was heavily relied on domain experts.

Therefore, this research investigated taxonomy (as an ontology) engineering methodologies (Gomez-Perez et. al., 2003) and reports a novel approach developed/evaluated in WMCCM to generate a cross/inter-domain taxonomy economically that does not have to rely on human judgement, with richer internal relationships. This approach was then generalized into an algorithm and computerized as an automated process to generate a new taxonomy within WMCCM. The implementation of the new taxonomy significantly improves (in terms of accuracy and variety) the “needs/competence” matching and organisations’ dynamic configuration capability on the WMCCM, reducing the coordination and operational costs of collaboration and bidding for tenders. The WMCCM subsequently enabled its SME members to identify over 50,000 matching tenders and to won over £7m worth of tenders.

References