

# Service Science & Engineering: Transdisciplinary Epistemology

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**Abstract.** In the absence of an axiomatic and rigorous foundation, Services risk, at best, being a narrow multi/inter-disciplinary domain. At worst, it is a trade or a craft like plumbing or hairdressing. To address this weakness, we propose an *epistemological foundation* for a *transdisciplinary* Service Science and Engineering. The epistemology is predicated on a set of normative axioms, first principles, and a differential equation. We argue that a truly convincing transdisciplinary foundation must be able to derive and uncover new, novel, and quantitative transdisciplinary themes, which have escaped conventional qualitative analyses. To that end, we reveal and discuss the property of *chilarity* and the principle *takchronicity* for services. Physics, unlike services, has the laws of nature and mathematics to serve as a normative base. Similarly, mathematics is grounded on lemmas and theorems. This base enables new insightful theorems and novel mathematical theories like geometry and topology. All sciences require normative axioms, but they are not sufficient to frame a transdisciplinary science or engineering. There must be also a right way that legitimizes the praxis. For example, the Scientific Method. Hence, we will introduce our Services Method. Altogether, our epistemological base, analytic equations, new transdisciplinary themes, and Service Method help frame Services Science and Engineering more rigorously.

**Keywords.** Transdisciplinary Service Science. Service Science epistemology. Service Method. Service Science axioms. Service Value equations

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