

# VALUE WEBS

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## *Evolution and Pricing in Service Networks*

Over the last years a strong trend towards a service-centric society and economy has impacted traditional theories, models and concepts. The previous conception of static value chains is giving way to highly dynamic value networks [1] and agile value Webs [2] that follow the rules of a service economy. In these networks the process of producing tailored integrated services is abstract in a sense that its contributors are not statically set at design time but are dynamically selected during the production process. Service providers are aware of the fact that they all share “the fate of the network as a whole” [3].

This leads to the challenge of modeling such networks and consequently to design mechanisms and payment schemes for online allocation and compensation of service providers.

Our contribution is structured as follows: First we present an abstract model that formalizes complex service networks, service configurations, service requests and offers. In this model, service networks are represented as a graph in which each path from source to sink denotes a complex integrated service meaning each path contains a sequence of services that in combination fulfill an overall functionality in form of a complex service. Service providers offer configured services denoted as graph nodes at a certain price. Service requesters formulate their request as a utility function that weights types of attributes and price. Based on such networks we conduct a simulation-based evaluation that analyzes the strategic behavior of service network participants in value webs.

We then introduce a measure based upon Shapley, Myerson and Jackson [4] to express the balance of power of the players involved in such value webs. Based on this power ratio of players, we consider some value web properties such as low lock-in and lock-out costs and the interplay of stability and efficiency [5]. Furthermore we analyze the impact of different approaches to allocate produced value and risk among service providers that contribute to integrated services for customers. One possible approach is to distribute gained value based on the power ratio of a service provider (which is measured with the metric based on the Shapley Value mentioned above).

### **References:**

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