Chapter 3
Principle for Engineering Service Based System by Swirl Computing

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ABSTRACT

When we look at the living creatures in the world, most of them have the communication methods in order to recognize within same species each other for protection, getting food, being multiplied, or seeing the world, et cetera. And they mostly use the five senses as the basic mechanisms for the communication among them in a quite natural way with a seamless manner without any difficult manipulation. These five senses in those behaviour look like being swirled around their bodies.

Today, we have "an external communication method among us beyond the five senses" by using Information Technologies (IT); TV, telephone, cellular phone, laptop computer, the Internetworking, software (SaaS, VPN, SAP, SOA, Cloud, etc.), etc. But they are costly and need cutting edged high skills and technologies for the usages. And what is more, they are not yet intellectually and technologically matured for the usages compared with the five senses.

Under these circumstances, if we have a system "swirled" around us (Burgess 2008) like the five senses in a relation to networking for communications with other entities (a system, a facility, knowledge, data, etc.) which will be neither necessary to be conscious about the related facilities nor the high level of the technological manipulations, this environment will give us convenient services and also will give us important knowledge of extended entities in many aspects.

So in this chapter, the main theme is to discuss and to introduce "The Principle for Engineering Based Service System by Swirl Computing" in Service Science.

INTRODUCTION

Pre-historically speaking, all that we were doing was to eat fruits, nuts, insects, animals, buds, and leaves that were naturally raised on the earth. That is to say, these eras were nothing to do with a creative knowledge for mankind (vague in creativity). Historically speaking, we started the civilization by the engineering (tooling) for Hunting and Cultivation within a movable area, and then by the engineering of Farming in a living area (vicinity of mankind), and then by the engineering of Motorization, and then now by the engineering of the Information Technology with a networking and communication at a place around us (not necessarily to move). And then, we will be facing to an engineering of "Knowledge of Science with extended entities", which is mostly concerned with knowledge (brain itself).

So by considering the history of the engineering, we may say that the way of engineering development in the history of the civilization is coming from "vague" to "environment around a movable area", and then to "vicinity of mankind", and then onto "mankind itself", and then into "the center of mankind; knowledge (brain)".

If we look at this phenomenon from another aspect -physically speaking-, the direction of the civilization is from the outside world into the center of mankind. On the other hand -relatively speaking, a mental matter involved in mankind is expanding from "Ourselves" to "Every Dimension in space of the world (Expansion of Ourselves)".

In chronological order, we may have the following schematic expression about the trend of the civilization contents in terms of engineering.

- Hunting and Collecting (**Collection with Simple Tools; Awakening of Culture**)
- Farming (**Creation with Technology**)
- Motorizing (**Creation of Artificial Power**)
- Informing (**Creation by Science**)
- Knowing (**Pure Creation of Knowledge by Science**)

During the eras of "Hunting and Collecting" and "Farming", an individual had little power to do anything. And during the era of "Motorizing", an individual was able to have relatively big power for "Hunting and Collecting", "Farming", Production, and Transportation by using an artificial power. Now, as we are at the age of "Informing", an individual is not individual any more if one uses Information Technologies for relations and connections with others. Because the principal matter of "Informing" is intangible and the entity itself of an intangible matter is invisible. So it might be easier to handle it if we will have a transparent facility by an ideal environment of IT around us. So in this framework, we may be able to be individually independent on our own thoughts and activities in societies. Under this situation, the way of life may depend on individual "thoughts and activities". What is more, we are likely to think that we can do anything what we want to without interruption by or about others. On this stage, the most important thing to get is "free and freely accessible atmosphere into any environment surrounded us".

But this environment is not always easy to get even though we have some methods and the facilities to access into surroundings in the world. Because the present technologies and the theories cannot assist us in an ideal manner (technologically less maturity). And also necessary facilities of infrastructure are quite expensive and need time for constructions. So it will not allow us easily to accomplish these environments at the time when we want to. In another words, if it is possible, it will offer an ultimate service for us.

Here, it will mention about definitions of "Service" and "Service Science" in engineering.

- "Service" is to benefit another or others tangibly or intangibly by an activity or an action."
- "Service Science" is a method or a thought for Service that is created or invented newly by means of Science.

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