A communication model of distributed information sources bacteria colonies inspired

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Abstract- **The implementation of communication organizational strategies constitutes an essential performance factor. Nowadays, the organization becomes Companies competitiveness element (organisational structures), networks, knowledge and competences management, and co-operation. This, to be better reactive to ensure the competing character, to support better new information technologies, concerning the data exchange inside as outside an organization. The information systems specification gives a partial description of the organization, which integrated with other descriptions is regarded as being the organization model.**

Using the abstraction level of an information system (information source) was proven to be not sufficient to face the conflicts confronted by the organizations. These conflicts are the improvement and the change with an aim of adapting constantly to the environment new requirements. These latter are essential to support the dynamic character which tends to characterize the current organizations and which is often nature taken. In order to implement this dynamism, we took as a starting point the biological sciences and more particularly the bacteria colonies.

This paper presents a correspondence model between a communication system of distributed information sources and a bacteria colony.

I INTRODUCTION

An evolution into the Companies organizations was clearly noticed in the latter decade [1]. It took into account the networks, the knowledge management and competences, the co-operation, the organisational structure of the company. This is in order to ensure the economic change which requires reactivity, the competing character, to reorganize the organization in order to better answer the customers increasing capacities, and to well exploit new information technologies concerning internal or external data exchange [3]. All these reasons showed that implementing organizational strategies constituted an essential factor of performance and that the organization became an element of the Companies competitiveness. These organisational changes result in two heavy and common tendencies to many companies which are the explosion of the borders of the organization and the emergence of new communication strategies, there is a principle of reorganization.

II ORGANIZATION FUNCTIONING

The organization functioning influences much its structuring; its key factors are the elements which form part of it (tasks and activities, competences and responsibilities, interactions network [4]) as well as the bonds which connect these elements [5]. A whole of distributed information sources (IS) interacting between them, translate the existence and the organization functioning. The basic elements constituting an organization [5] are connected by varied and complex flows (authorities, materials, communications....) which are all significant and explain how an organization functions (by considering the whole of these flows). The interactions networks connect the organizational positions to form organizational structures. However it is significant to distinguish the transportations networks from information networks.

III SELF ORGANIZING

A Self Organizing Principles

Actually the idea of self organization is nature taken, where natural phenomena are well analyzed and their mechanism is then adapted for the complex information systems. A self organizing system consists of several components in interaction such as the molecules, the insects, the neurons, or the population. The system is dynamic in the meaning that its components change constantly state; only belonging to a mutual dependence, the change is not arbitrary; some states are more preferable than others and for this reason they must be stabilized whereas others are blow eliminated. Any system which is self organized is stable or robust, without meaning that it is static or rigid. When the environment changes the components, which interact directly with him, must adapt their state until they are the best possible ones. Thus the system reorganizes constantly, by mutually balancing internal and external pressures for the change, and while trying to maintain its essential organization. The more the system meets disturbances, the more it exploits a significant variety of configurations, and the more the best possible solution is established. This fact is recognized by the cybernetician Heinz von Foerster "the order starting from the disorder", and is recognized by the thermo dynamist Ilya Prigogine "the order through fluctuations"[2]. In [6] we find various definitions given to the self organization in the chronological order of their appearance, and we retain the one given by Camazine:

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