ABSTRACT

A major challenge for virtual organizations is the integration of their various corporate organizational and information assets, as well as their communication infrastructures and personnel. There also remains a need for greater understanding of how such virtual enterprises will operate in a “shared data / information / knowledge environment”, through distributed working approaches and based on the paradigm of using the situation room metaphor as the core paradigm for carrying out joint operations. In this chapter, we present a methodology for modelling corporate interactions using the concept of the situation room (SR) as a supporting paradigm. Such an approach enables a way to model interactions of a virtual enterprise nature by means of a information and knowledge auction market that is concerned with the communications and interactions within a virtual enterprise (VE). This forms part of a wider research in defining a methodological framework for situation room analysis (SRA), and its deployment for complex corporate intelligence systems study.

INTRODUCTION

In this chapter, we present a methodology for modeling corporate interactions using the concept of the situation room (SR) as a supporting paradigm. Such an approach enables a way to model interactions of a virtual enterprise nature by means of a information and knowledge auction market that is concerned with the communications and interactions within a virtual enterprise (VE). This forms part of a wider research in defining a methodological framework for situation room analysis (SRA), and its deployment for complex corporate intelligence systems study.

Using this approach we propose the use of ontologies as a powerful means to support the
implementation of multiparty collaboration and
decision-making activities that build on the para-
digm of a situation room (SR).

The approach is characterized as top-down in
that the SR paradigm is conceptualized through
three related models: the situation room model
(SRM), the information management model
(IMM) and the situation analysis model (SAM).
The ontology-based approach includes the se-
monic features of the exchanged auction-related
information thus offering the integration of the
SRA framework with existing corporate deci-
sion-making grids (Ankolekar, Burstein, Hobbs,
Lassila, Martin, & McIlraith, 2001).

From the viewpoint of the architecture of the
SRA-based auction system, Web services are
used as a means for organizing the interactions
amongst the SR participants, and the latter may
assign their tasks (e.g., look up, identify and clas-
sify, relevance check, etc.) to them.

In this respect, SRA-based auction services
can be divided into three general groups:

- **Information retrieval services:** A par-
ticular Web service is designed to support
its “owner” in finding data or locating
documents within the corporate Intranet
environment. It searches structured (e.g.,
auction profile) and semistructured (e.g.,
auction-related support documentation)
data, extracts information, processes it and
filters it. Such a service is expected to “know”
the desires and interests of its “owner” or its
“invoker”. It knows where to look for this
data and needs no assistance by the user. The
autonomy is the main reason why someone
should use such a service.

- **Cooperation services:** These are used to
solve more complex problems. The coop-
eration Web service interacts and coopera-
tes therefore with other Web services, its
environmental resources and the users.
Generally the cooperation service is more
intelligent than the information retrieval
service because the ability of collaboration
demands complex algorithms and functions.
(Imagine for instance an SRA-based auc-
tion for a subject that needs involvement of
experts from two different disciplines; in the
simple case where no cooperation services
exist, no initiative for a joint action could
be taken.)

- **Transaction-related services:** These are
used in the distributed SRA-based auc-
tion environment and are mainly assigned
responsibility of carrying out valuation
transactions to / from the participating
(sub)systems or applications with a defined
level of security. It is easy to understand that
this third level of services can be treated as
a black box, without causing any loss of the
generality of the provided solution.

A focus aspect is the number of VE users, that
is, the SR members to populate such a system. If
just a few people participate in the SRA sessions,
the resulting outcome is of marginal benefit with
respect to the costs related for establishing and
operating the system. The appropriateness of
the proposed approach therefore lends itself to
the case of larger VE organizations and schemes
where there is an actual need to support multi-
party decision-making with use of asynchronous
session-based interactions. The individual SR
members would be asked then to provide their
individual views and contribute to parts of a
global problem or issue, and coordinate their
(individual) information appropriately through
an auction process.

For instance, it is a totally different exercise to
employ a thematic relevance check procedure for
an amount of 10,000 documents with an average
of circa 15 separate thematic keywords in each
one of them, than it is to use it for a base of 1,000
documents with a complicated (nested) average
of 15 keyword items for each document. Similar
limitations to the appropriateness of the solution
apply for the amount of involved parties.