Role of Agent Technology in Designing of Auto-Control Platform in Steel Pipe Manufacturing Plant

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Abstract— **Software agents also called "Agent-Mediated e-commerce". Agent - Based Role Modeling (ABRM) approach and MA CBR approach of Multi Agent in Case Base Reasoning, which is started to achieve better designs in agent technology. In the recent past, more than a dozen methodologies have been proposed. They offer a range of modeling concepts, amplification and analysis techniques, and opportunities for tool support. They vary in ripeness and range of coverage The diversity of approaches offers rich resources for developers to draw on, but can also be a obstacle to progress if their commonalities and divergences are not readily understood. The traditional tools used in steel pipe industry are very slow in process execution and they have lack of automation and decisions. By Using the Agent base architecture of auto-control tools it over come the limitation of traditional tools.**

Keywords— **Agent; Auto- control, PDAA (Primary Data Arranger Agent), OIAA (Online Information Arranger Agent), Business Intelligence (BI).**

I. INTRODUCTION

One of the most pervasive technologies used in steel pipe industry tool is software agents. Software agents also called "Agent-Mediated e-commerce". Software agents are now used to support virtual business processes and facilitate them to enhance e-market places. Software agents have received their importance over the last decade. Increasing work has been done in which intelligent agents support software tools and other Internet-based transactions. Agents deployed to perform tasks such as matchmaking, monitoring, negotiation, bidding, auctioning, relocate of goods, and follow-up support. These agents collect in order from multiple commercial sites, filter it and provide suitable responses for client tools. The agent metaphor, due to its suitability for open environments, has recently become popular with distributed, large-scale, and dynamic applications such as virtual enterprises. Agent design methodologies are therefore evolving to re-engineer business processes and several designs have been introduced for agent designs. Agent - Based Role Modeling (ABRM) approach and MA CBR approach of Multi Agent in Case Base Reasoning, which is started to achieve better designs in agent technology. In the recent past, more than a dozen methodologies have been proposed. They offer a range of modeling concepts, elaboration and analysis techniques, and opportunities for tool support. They vary in maturity and scope of coverage The diversity of approaches offers rich resources for developers to draw on, but can also be a hindrance to progress if their commonalities and divergences are not readily understood. One way to advance the state of research in agent-oriented methodologies is to define a suitable example problem that can serve as a focal point for discussion and exchange of research ideas and results. The role embeds all the information needed by the agent to interact with the system. In steel pipe industry tools information is kept in databases. Suppose an agent in charge of querying databases is sited on different hosts. Despite rapid advances in agent technologies, their adoption in mainstream application areas such as large-scale information systems is still limited. It is generally recognized that a major reason is the lack of systematic methods to guide the development of agent-oriented systems. Agent-oriented methodologies have thus become an important and urgent area of research.

II. RELATED WORK

In 2009 Leo Sennott worked on the architecture of the business intelligence solutions used at Skyworks and details how this integrated system is being used to improve our competitiveness in a global marketplace. In 2010 A. TEJASWI & J.N.V.V.S. PRAKASH introduced business intelligent decisions that take place from the data-warehouse through the Actionable-Knowledge Discovery (AKD) in Domain Driven Data Mining (D3M for short). The general architecture of D3M for enterprise decisions was proposed and the model storage was presented, and its characteristics would be analysed. In 2009 Reza Khajavinia presented the paper titled "THE BASIS FOR BUILDING A BUSINESS CASE IN SOFTWARE DEVELOPMENT, A CASE STUDY" in which in many software companies, software engineers and business decision makers live in separate worlds, using their own terminology, decision criteria, and working methods. Venkatadri. M [2010] presented the paper titled as A Novel Business Intelligence System Framework that states Business Intelligence (BI) systems plays a vital role in effective decision making in order to improve the

business performance and opportunities by understanding the organization's environments through the systematic process of information.

European Journal of Scientific Research shows - Agent design patterns form a new methodology used to improve the development of software agents. Agent design patterns can help by capturing solutions to common problems in agent design. Patterns are applied in different systems such as knowledge management systems, real-time systems, and network management systems. Agent design patterns for business-based systems, aim to support different e-commerce paradigms business-to-business (B2B), business-to-consumer (B2C), and Consumer-to-Business (C2B). In 2006 Samo Bobek showed to make qualified decisions managers combine information arriving from BI applications with disperse information about global economic state, their customers, partners and competitors

In 2003 Celina M. Olszak focused on the Business Intelligence systems. At the beginning, knowledge as an important and strategic asset that determines a success of an enterprise is presented. Next, some characteristics of the Business Intelligence systems are discussed and their architecture is described. Purposefulness of applying such solutions in an enterprise is highlighted. An integrated approach to build and implement business intelligence systems is offered. The systems are shown in four dimensions: business, functional, technological and organizational.

III. AUTO CONTROL PLATFORM IN STEEL PIPE MANFATURING PLANT

Auto control tool is use to gather information about plant, manufacturing process, customers and their competitors in the market. It is a very important component of business strategy. The auto control tool is concerned specifically about handling manufacturing processes and help in control the various problems related to c handling, logistic, production problems and both the outer edge and inner edge of the company level so that they got maximum business and maximum profit from this business and they work all these by smoothly and highly efficiently. In auto-control tools there few fields majorly come under high processing.

3.1 Interaction with the supplier and stockholder - Through interaction with supplier and stockholder, decision regarding the time of delivery and the pace of manufacturing are taken. The supply and the demand information effects the whole process of manufacturing industries

3.1.1 Interaction and Interfaces

In Auto control tool interfaces and interaction and each and every edge is required. In inter processing of tools, interaction with supplier pipe-outlet stores, stockholders and other company and communication within inter and intra layer of

tools systems, and different-2 application need communication, interaction in same tools

IV. PROBLEM WITH THE TRADITIONAL TOOLS AND SOLUTION

The traditional tool is very slow in process execution and they have lack of automation and they did not have any concept of artificial intelligence so that they make self-decision in the absence of manual guidance so they have lack of automation in both tool operations and decisions. Designing the architecture of Agent based tool to which overcome the limitation of traditional tools

V. DESIGNING OF TOOLS USING AGENT TECHNOLOGY

The architecture for designing these tools systems have three layer or three tier structure
1. Application layer
2. Communication/ Interface/middle layer
3. Data collection & handling layer or information get and controlled layer

These three layers further divided in sub layers according to the system requirements

5.1 Application layer

In this layer so many agent work there first agent is CSSHIA(Customer, supplier, stockholder interaction agent) this agent basically deals with the Customer, supplier, stockholder of the company. In this the work communication is done for collecting the information which is required for the manufacturing plant pacing.

PSA (Parameter setting agent) This agent interacts with the CSSHIA and then set the parameter for the application task which is functioning on the instruction set by the every user and the core decision makers.

AGA (Applications Generating Agent) This agent creates the different -2 application agent for the different-2 the task. The agent for task 1to n interacts with the terminal end operators and users for various purposes for solving auto control system

5.2 Communication/ Interface/middle layer

This layer basically deals with control communication and message passing b/w the agents. For interaction of the agent it provides an interface. It has special type of agents for this work and this layer is also deals with the planning and coordination between the tasks. In this system agent communication languages (ACLs) use and It is based on speech act theory where in human utterances are viewed as actions in the sense of actions performed in the everyday physical world. ACLs specify message types called per formatives, such as ask, tell, or achieve which by virtue of being sent from one agent to another. Two agents is play important role in this layer
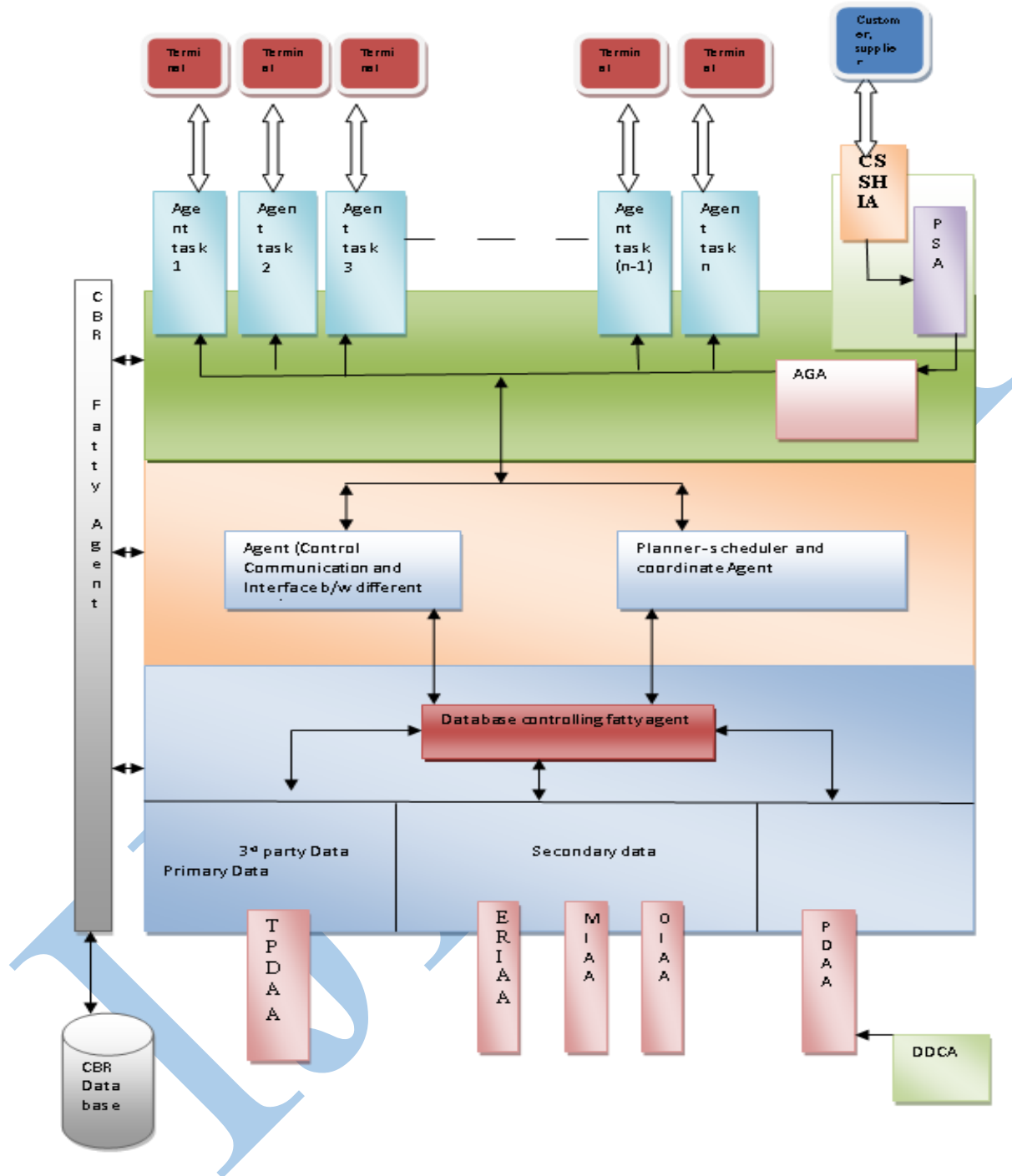
Fig 1: Frame work of Agent approach in Tools Designing

Agent (Control Communication and Interface b/w different task)- this agent deals with control communication and help in interacting and message passing between the agents.

Planner - scheduler and coordinate Agent- this agent is used to plan and scheduling the task and agent operations so that they work in highly coordinating environment.

5.3 Data collection & handling layer or information get and controlled layer

This layer basically deals with the information collection and handling the data or information, in this layer data is divided on the basis of their resources and the agent set the priority of the data retrieving in case of redundancy.

Primary data - the data is provided by the company or the main source of the company (from each department of company)

Secondary data- the data is collected from the internet, manual resources, marketing agent, and other extra resources of data collection

Third Party Data- this data is given by the other company on which the company owner shows Trust or the other marketing research company.

5.3.1 Database controlling fatty agent

this fatty agent is the group of agent which works with smart coordination. Basically this fatty agent contains agents according to their type of information. it has PDAA For handling the primary data and for collection and handling the secondary type of data it has there type of agent and for Handling Third Party Data a special type of agent is there known as TPDAA

PDAA (Primary Data Arranger Agent) For handling the primary data this agent is used and its interact with other agent which provide the information about the company via DDCA (Departmental Data Collection Agent) or in other sense it collect the primary data. For collection and handling the secondary type of data it has there type of agent. first agent is OIAA(Online Information Arranger Agent)- this agent do three main function first is crawling the web page by downloading the target page and then extract the required information by special type of algorithm , Known as extract target algorithm. Then third function is put the extract information on the database use the font named Times. Right margins should be justified, not ragged.

MIAA (Manual Information Arranger Agent);- this agent handle the information which is collected manually from the market.

ERIAA (Extra Resources Information Agent):- this agent arranges and handles the information which comes from any resource. For Handling Third Party Data a special type of agent is there known as TPDAA.

TPDAA (Third party Information Arranger Agent)- it collect the information from any third party in which company shows trust.

CBR Fatty Agent In this complete format the application and agent can face the problem and for each layer is supported by the CBR Fatty Agent which directly interact with their database which collect the previous case data. The Case-Based Reasoning (CBR) is a problem-solving approach that simulates the human problem-solving behavior. In this approach, the problem is being solved out on basis of past experiences gained from during solving the problem in the past. In case of complex system, it is very difficult to formulate the situations with domain rules. Other drawback is that the rules require more input information than is typically available, because of incomplete problem specifications or because the knowledge needed is simply not available at problem-solving time. But in case of CBR approach, if general knowledge is not sufficient because of too many exceptions, or when new solutions can be derived from old solutions more easily than from scuff, then on basis of past experiences, the problem is being solved.
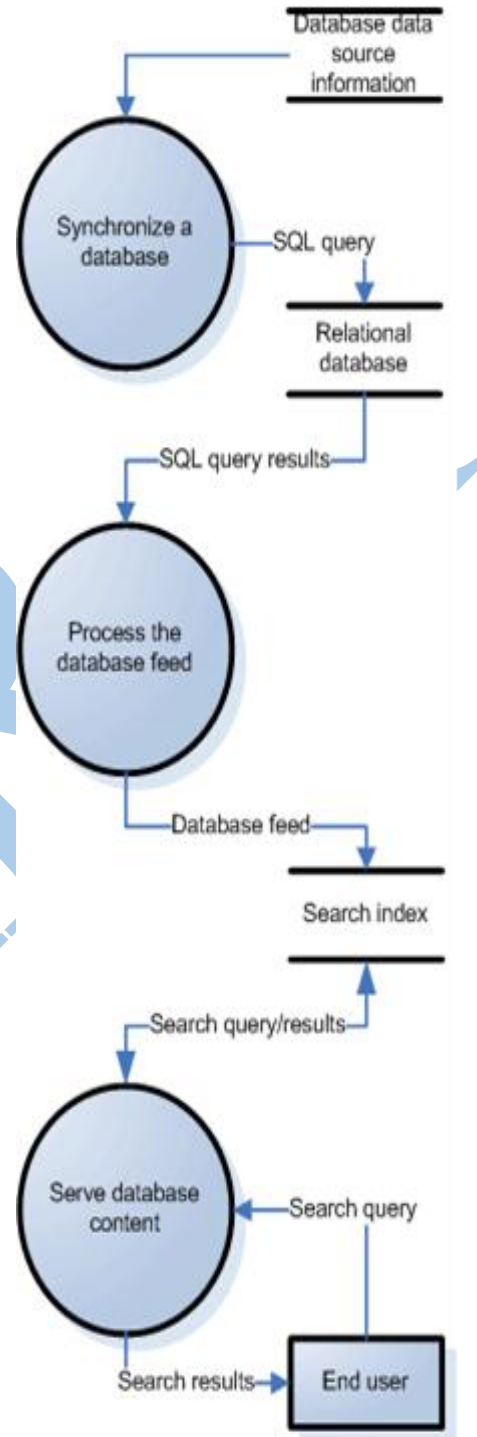

Fig 2: Database crawling & serving

The case based reasoning involves four phases in the problem solving. Each problem specification & its solution are stored in form of the cases. It maintains the collect of the cases that is known as the case base.
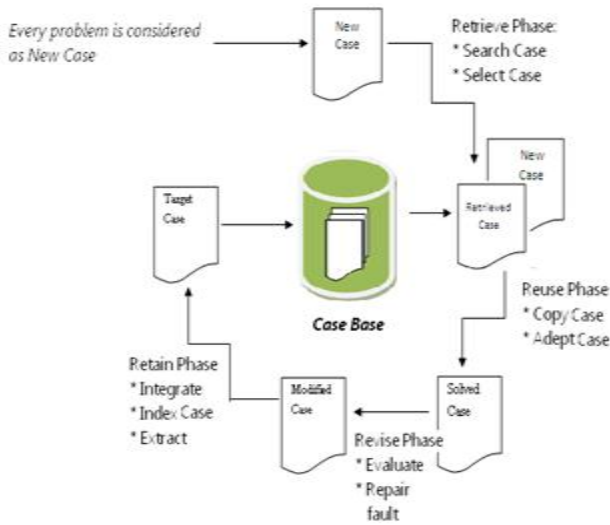
Fig 3: show the case based reasoning fatty agent working

In this system, every problem is considered as the new case. In the retrieve phase according the new case, approximate solution case is being searched from the case base & selected. After the selection of the case, that case is adapted with the new case. It generates the solved case. Now the solved case is evaluated in the revise phase & the faults in that case are being repaired. Now modified case is the solution of the problem. This solution is stored in the case with proper index. This action is mandatory for extracting the cases very efficiently & fast access to the cases in future. For this complete process the CBR fatty agent is design

VI.   CONCLUSION

.Approach of agent oriented technology in designing of auto-control tools, Enhance the efficiency and capability of traditiona auto-control Tools. The traditional auto-control h tool is very slow in process execution and they have lack of automation and decisions. By Using the Agent base architecture of auto-control tools it over come the limitation of traditional auto-control tools.

VII.   FUTURE SCOPE

In the area of argument passing and in area of the agent and agent to agent communication we can improve the efficiency of the tools and improving the decision support algorithms and interaction with user and client agent enhancement can improve the efficiency of the auto-control tools.

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