

MODEL OF ENVIRONMENT FOR INTERNET BASED SYSTEMS FUNCTIONING

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Abstract: Internet based information systems (IBIS), their functioning and design features are presented in this paper. The requirements to IBIS information-computation processes are specified and IBIS architecture is proposed. The model of the IBIS functioning environment, document and business-process models are presented.

Keywords: IBIS, distributed environment, business-processes, computing processes, data flows, document model.

Internet-based information systems became one of the most widespread software systems.

IBIS's are running in global environment (Fig.1), they support the parallel work and intercommunication between distributed users and provide variable services including data communication and processing [2], distributed information-computation resources (DICR) [3] and possibilities of high performance computing [4].

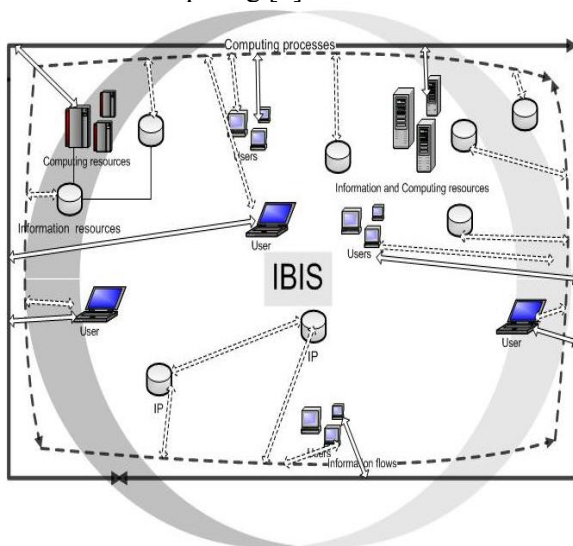


Fig. 1 – IBIS

However being incredibly efficient from one hand, IBIS's are incredibly complex from the other hand.

Besides distributed systems characteristics [5], relevant to IBIS's, they have their own functioning and realization features. Here should be mentioned such IBIS features as: service-oriented architecture; flexibility and extensibility; unified entry point to

WEB; information interactive management and its publication; coordination of software applications function and interaction; realization of distributed services global infrastructure; availability of complex information flows and necessity to control and manage them; efficient provision IBIS users with network resources; integration of different technologies within the bounds of IBIS; multi-processing and multi-computing; information and service support of distributed users intercommunication and work in global environment, storing network DICR and its efficient management, efficient realization of distributed high-performance computing, and lots of others.

Thus, IBIS design and realization key points are: development of integrated information communication environment; support parallel work and intercommunication between great number of distributed users, providing them with variable services, including data communication and processing with minimal delays; efficient distribution of DICR great number for providing high-speed and high-performance distributed computing.

Realization of specified IBIS features can be achieved by using suggested IBIS tree- (from user perspective) and five-tier (from developer perspective) architectures (Fig.2, Fig.3) while its design.

Enterprise functioning is based on the business processes (BP) and permanent data exchange inside and outside of the enterprise. Thus, functioning of the up-to-date enterprise is based on the business processes and document flow, which is a very important component of BP realization. That's why

the correct modeling of the enterprise functioning requires modeling at least two main components, providing its functioning: document flow modeling and BP modeling.

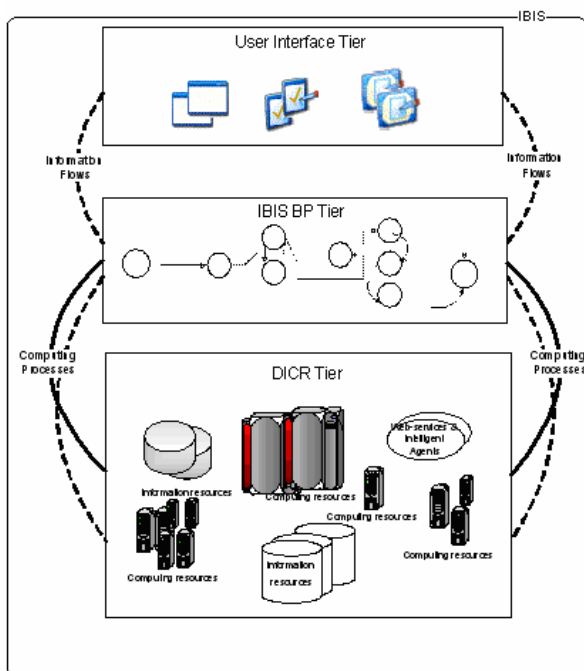


Fig. 2 – IBIS three-tier architecture

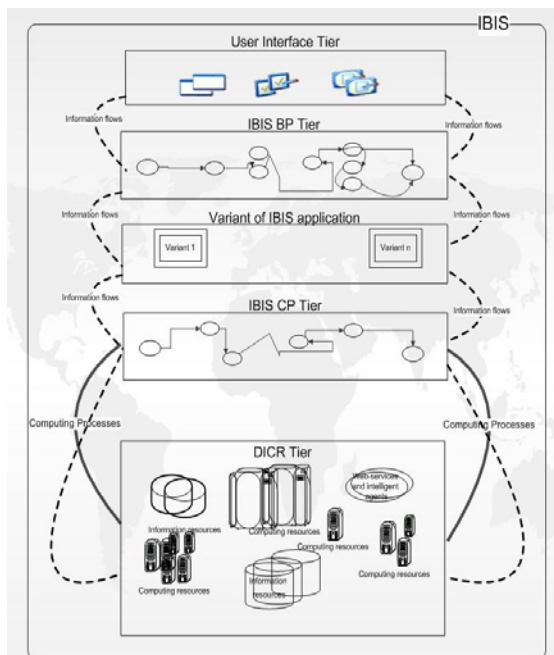


Fig. 3 – IBIS five-tier architecture

There exist different approaches to document flow modeling [6], including graph model of document flow [7], but as it was specified above, the model of document, not of document flow, should be represented for correct development of enterprise information structure.

The document model is suggested, where the document template concept is used, main document parameters are specified, required for enterprise

informational structure development and BP modeling. The document model is extensible and based on the graphical notation and mathematical apparatus of semischeme [8].

BP model is developed, which allows to provide correctness of modeling the enterprise functionality and document flow; to reduce faults when enterprise functionality development and improvement; to except faulty usage of documents and document patterns; to find time and resources, required for BP execution; to redistribute resources between operations efficiently and reduce time of BP execution.

The experience of applying the developed models while modeling the environment for IBIS functioning has shown that modeling time is considerably reduced. The costs of modeling are also reduced at the expense of minimizing the modeling faults.

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