Call for Participation
NASA Workshop on the
Knowledge Integrating *Virtual Iron Bird*
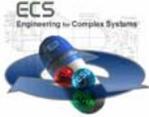
March 31, 2004	April 2, 2004
NASA Ames Research Center	**Naval Postgraduate School**
Moffett Field, CA	**Monterey, CA**

With the decrease in cost of 3D hardware, and the simultaneous impressive growth in capability, it becomes clear that 3D will be an ubiquitous desktop technology. It makes sense to reexamine where it can become a fundamental technology for IT and knowledge management.

At the same time, knowledge management is an increasing requirement for development of large projects. Ontologies provide an advanced way of describing a system at a very high level, closer to the original intent of the design.

The NASA ECS (Engineering for Complex Systems) Virtual Iron Bird (VIB) is a program to research virtual vehicles that are actually knowledge management systems for the vehicles. It includes CAD/CAM data and also repurposed data for visualization and outreach, systems descriptions, documentation, actual and derived risk knowledge, materials requirements, derived functional information, design decision histories, simulation parameters, and any other pertinent data. The concept is to have a single location as a starting point to find out anything about the vehicle, and be able to access that information with different mechanisms (a Model-View-Controller approach). The Knowledge Integrating VIB is one where new developed knowledge in turn becomes part of the knowledge base.

Day 1: The Knowledge Integrating Virtual Iron Bird

Day one of the workshop will be for presenting and discussing research topics regarding the IVIB, as well as to present relevant products and technologies, both current and in development. One topic in particular is simulation, especially as a derivative activity from the knowledge base. Knowledge capture is also a pertinent topic.

Aerospace systems are increasingly challenging to manage, and system interactions are growing more complex. An integrated data model could access knowledge that is currently spread across many people and organizations, addressing issues of:
- Structural: Where are the parts? How are they connected?
- Functional: How does it work? What roles do parts play?
- Behavioral: Under what conditions will parts do that? How can they fail?
- Data: Access for data mining, analysis, and model refinement.

The goals for the first day are:
- To define current and forthcoming research areas relevant to NASA's VIB
- To identify topics for collaboration between NASA, academia, and industry in support of the VIB, and even kickstart some joint projects.

Day 2: The Confluence of 3D Graphics, Information Technologies, and Knowledge Management

Day two of the workshop is for pure research topics. Start by making a 3D scene subgraph a basic unit of information, a peer to date, string, etc. Then the datastore can manage the database of the scene graph, creating the paradigm shift of making 3D applications into 3D information clients. It also creates a richer information environment, in that the 3D knowledge becomes integrated with the "business" intelligence.

Raising the bar on the level of abstraction that a database understands in turn provides a higher base level of technology for many types of visualization. Integrating the knowledge areas together provides a more cohesive base for the visualization. With 3D as a primitive, however, there is a better basis for visualizing metadata and information structures. This in turn enables better visualization and interaction with graphs and semantic networks, especially those built on standards and common protocols.

Day 2 of the workshop will focus on the confluence of all the above ideas. The goals are to produce a scope statement for this area of research, and potentially a CFP for a conference.

Topics (in no particular order)

Semantic webs	Knowledge management	Visualization
Ontologies	Metadata navigation	RDF
Object relational databases	Object oriented databases	X3D
Graph databases	Graph visualization	OWL
Ontology visualization	Query standards	

Workshop Structure
The workshop is two days of discussion and presentations. Each participant will have a short time to present their abstract, and the discussions will commence from there. The topics and agenda will be determined by the content of the submissions. Since presentations are limited to abstracts, there will not be time for demos, but time for those will be reserved between sessions and during lunches.

How to participate
Contributors have priority for participation. If you plan just to attend, contact the workshop organizer to be placed on the list.

To contribute to day 1, you must submit an abstract of the topic you want to present; please have these in by 1-March-2004.

To contribute to day 2, you must submit a position or experience paper. Please send an abstract of your paper ASAP so it can be reviewed by the organizing committee. Abstracts should be followed up by full papers, which will be published on CD.

Selected contributors will be invited to submit extended papers for publication in a special journal issue.

Venue

Lunches and dinners are included.

The nearest major airports are San Jose, San Francisco, and Oakland. We will be working on making arrangements with local hotels for participants. We do not expect to make arrangements with any airlines.

Registration details

There is no cost for registration. The registration process will be defined at a later date. The early deadline for foreign nationals has been eliminated.

Workshop organizer

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Organizing committee

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