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# SUMMARY OF ACCOMPLISHMENTS – REAL-TIME HETEROGENEOUS DATA FUSION AND DISPLAY FACTORY

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**5 June 2002**

**Final Report**

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**13. ABSTRACT** *(Maximum 200 words)*

In March 99, a contract was placed with I-Kinetics, Inc., to design and develop software components from AFRL legacy applications. The contractor was planning to advance their ComponentFirst methodology through application to Air Force legacy software integration problems. After developing and maturing I-Kinetics's Data Fusion Component Factory, they would transform a set of Air Forrce legacy assets into Data Fusion components suitable for deployment. The contractor had difficulties in determining exactly how the AFRL codes were wirtten and, therefore, had problems in developing an actual product that could demonstrate the new computing environment. When the contractor lost key investigators, the contract was descoped to just cover the work performed.

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AFRL/VSBC
Attn: Capt. Paul Gilbert
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From: Bruce H. Cottman, Principal Investigator

Subject: Summary of Accomplishment
Contract: F19628-99-C-0024

This Summary of Accomplishment covers the time period from start of contract through 31-January-2000, the revised end date, of the performance period.

**1. Research and Design Methodology Process and Practice**

1. Accomplished advancement of component-centered design and analysis of distributed object systems using I-Kinetics ComponentFirst methodology.
2. Identified and analyzed emerging component frameworks. Of particularly significance was the Java 2 Enterprise Edition (J2EE) component framework.
3. Identified and defined a component infrastructure design and analysis lifecycle model called the Component-Container-Connector (or CCC).

The ComponentFirst methodology is a subset of the CCC methodology, as the ComponentFirst methodology specifies the process and practice of transforming legacy assets into Connectors.

**2. Research, Design, Develop Data Fusion Component Factory**

ComponentFactory was developed to prototype level. During this period of work the Component Factory research, design and development has split into three major sub-efforts:

1. Research, design and development of the reverse engineering and extraction of legacy object model.
2. Research, design and development of the high quality of service toolkit for transforming legacy assets independent of object model.
3. Research, design and development integrating semantically-rich two or more legacy asset interfaces into a federated object model.

**3. Research, design and development of the reverse engineering and extraction of legacy object model.**

Research and design was accomplished for extracting legacy interfaces using OOA/OOD tools such as Rational Rose and UML 1.3.

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**4. Research, design and development of the high quality of service toolkit for transforming legacy assets independent of object model**

Research and design was accomplished with the ComponentFactory tool in the following areas:

1. Ability to incorporate of the high quality of service facilities, such as load balancing, failover, and high performance data streaming as "infrastructure features" independent of encapsulating and mapping legacy assets to target object models
2. Ability to integrate semantically-rich legacy objects models by exchanging object model interface specifications explicitly as metadata using XML as the representation.
3. Research, design and development of the reverse engineering and extraction of legacy object model toolkit for ComponentFactory.
4. Research, design and development of the high performance (QoS) legacy adapter toolkit for ComponentFactory.
5. Research, design and development of the rapid development of semantically-rich federated object model integrations for ComponentFactory.

Sincerely,

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Principal Investigator

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