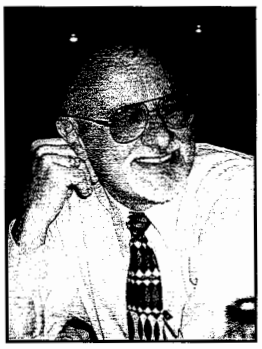
ESI Technology Corporation Moving M Technology into the Future with Object Technology



Terry L. Wiechmann

by Terry L. Wiechmann

ESI Technology Corporation is located in Natick, Massachusetts and has been serving the M community for over twelve years as a service and tools provider. ESI has trained thousands of M programmers, system managers and File Manager users through lecture, workshop and computer-based instruction. Within the last 6 years, ESI has become the leading supplier of object oriented M database tools through its Distributed EsiObjects product. The Distributed EsiObjects product suite is an integrated object oriented client server development and runtime system.

ESI's mission: ***Provide Object Technology solutions to health care organizations using the latest open industry standards.***

ESI Technology Corporation is a Bronze Distinguished Member of MTA.

ESI exhibits at MTA conference

M Technology is basically a fast, hierarchical database system with a powerful, easy to use, standard string-oriented scripting language. The database is represented as multiway balanced trees that permit persistent string subscripted arrays.

M by itself can be viewed as an enabling technology. We've learned over the years that implementing applications at the raw M level without the aid of an organizing paradigm has led to heterogeneous, unwieldy systems that create serious support and extensibility problems, not to mention the lack of reusability. The beauty of M is that it enables the implementation of an organizing paradigm that provides a solid framework for development of database applications.

Numerous paradigms exist—all have pros and cons. However, in an era where competitive pressures are forcing organizations to expect long-term benefits from technology investments, it is only natural to select the paradigm that builds on all of M's strengths. ESI believes that Object Technology naturally extends the powerful features of M, giving M a clear, mainstream path into the future. It extends the power of M into the object domain in a natural, homogeneous fashion because Object Orientation is inherently hierarchical, as is M. Objects benefit from the dynamic nature of M, that is, the dynamic allocation of space and execution of code at runtime. M indirection features along with persistent and non-persistent arrays enable the efficient implementation of objects.

Although traditional M does not implement the object paradigm, it does provide a solid, functional foundation to build upon. Just as the fundamental concepts of the relational paradigm are not inherent in traditional M, the fundamental features of object orientation such as encapsulation, inheritance and polymorphic behavior are also lacking. EsiObjects has added these using the fundamental features of M. It is not hard to understand why many people confuse the features of M Technology as being object oriented since it forms a smooth continuum with Object Technology.

Object Technology incorporates the best features of good software quality practices that have evolved over many years. It solves some of the more pervasive problems IT organizations are faced with today and is a natural evolutionary path for M.

Building for the Future

ESI's goal has always been to join M and Object technology in a seamless fashion, producing an integrated development and runtime environment that is faithful to the tenets of both paradigms. We are accomplishing this by

implementing the following steps.

Step 1: Extend the M language with object extensions by building a compiler. Build the kernel services required to implement all the necessary features of object orientation such as encapsulation and inheritance.

Step 2: Provide a modern Windows development environment for building object classes, methods and events.

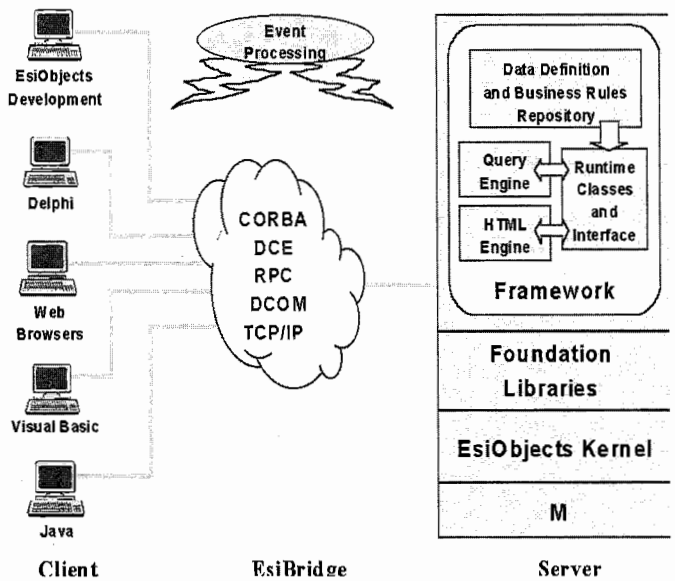
Step 3: Build reusable libraries of robust database classes that implement foundation objects such as Collections (Lists, Sets, Bags, Arrays, Maps, etc.) and framework classes that implement the fundamental, common objects required by a business system.

Step 4: Build a set of conversion tools that can extract data elements and business rules from legacy DBMS systems like File Manager. (See *Migrating the CHCS Clinically Relevant Database and Business Rules to Object Technology* in the December 1997 issue of *M Computing.*)

Step 5: Build a query engine based on the Object Data Base Management's (ODMG) Object Definition Language (ODL) and the Object Query Language (OQL). This permits commercial off-the-shelf report generation packages to extract data using standard SQL calls.

Step 6: Additionally, build an HTML interface into the runtime environment, exposing the runtime objects to the Web.

Step 7: Open up M environments with industry standard middleware such as CORBA, DCE, RPC, and DCOM (or simple TCP/IP socket sessions). Add event watch and event firing capabilities to the database objects and ensure client-side reception of callbacks.



Step 8: Allow access to the object database, via any of the supported middleware avenues, by popular client-side presentation products such as Visual Basic, Delphi, Java, Web Browsers or other commercial off-the-shelf products.

What has resulted from this effort is the Distributed EsiObjects product.

Distributed EsiObjects

As the leader in Object Technology for M-based systems, we firmly believe the future of M Technology is inextricably linked to Object Technology. We're encouraged to see that the M vendors are now following our lead and adding object-based extensions to their implementations. This can only lend credibility to our efforts to give M a new future. Welcome aboard! **M**

Terry L. Wiechmann is President of ESI Technology Corporation. He can be reached at twiechmann@esitechnology.com. To learn more about ESI, browse the ESI Web page at www.esitechnology.com.
