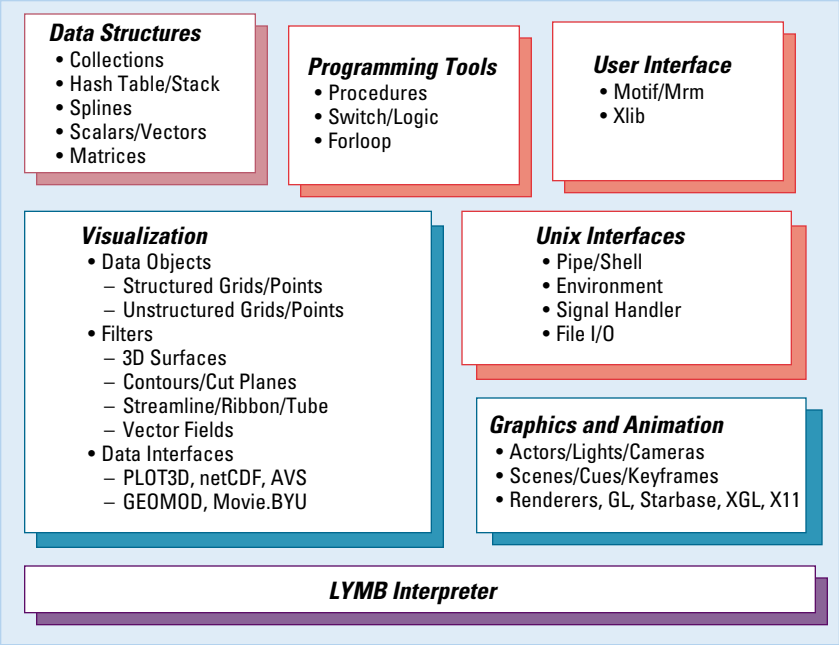
# Object-Oriented Development

***A software development environment created at the GE Research and Development Center significantly reduces the time and cost to prototype and create software applications.***

## Technical Highlights

The ability to create software applications rapidly and cheaply is an important requirement. LYMB is an object-oriented development environment aimed at developing applications that require combining graphics-based user interfaces, visualization, and rapid prototyping. These are some of LYMB's main features:

- A library of over 600 classes of objects that have been reused or extended for applications in engineering design, medical imaging, command and control, quality control, and maintainability/service.
- The rapid creation of prototypes achieved by combining an interpreted environment with object classes that are compiled for fast execution.
- Highly portable environment that runs on Unix workstations, including HP, Sun, SGI, DEC, and IBM. LYMB has direct links to specific workstation display renderers and also integrates directly with Motif and X Windows.
- A built-in mechanism to distribute applications over a network of servers and clients.




***The full selection of building blocks, or* classes, *available with LYMB give it the flexibility and speed for developing today's applications.***

## Applications

- **Visualization**—LYMB has been used to create a variety of visualization applications: *Visage* is a generic tool for understanding 2D and 3D data sets from engineering design, medical scanning, and test measurements; *Decimate* is a tool for reducing the number of polygons required for visualizing geometry models; and *Swept Volumes* is a tool for determining the surface that a physical object sweeps as it moves along a specified path.
- **Medical**—Biomagnetism is an approach to diagnose disease conditions in the brain and the heart by measuring very small magnetic fields generated by currents in these organs. LYMB is being used for real-time waveform displays (256 channels of data) and analysis of the time-varying magnetic fields and currents.
- **Command and Control**—LYMB has been used to create graphics-based user interfaces rapidly and to simulate the communications among display consoles on surface ships and submarines. The time saving over conventional approaches is a factor of five.
- **Air Traffic Control**—Airport traffic control of aircraft on the ground is an important problem because of the growing number of scheduled flights and weather conditions such as fog and wind shear. A 3D visualization of airport traffic control demonstrates the benefits of automation and new sensors, such as radar, to meet traffic demands and improve safety.
- **Entertainment**—LYMB has been used by NBC to show "ideal putts" on 3D shaded displays of a golf green, enhancing the TV viewer's perspective of a tournament.

## What's Next

**Extension to C++**—LYMB is written in the C language. About 200 visualization objects in LYMB are being rewritten for standalone execution in the C++ language. This enhancement will provide a powerful visualization capability on personal computers having a C++ compiler.

***Size of Program:*** **15 professionals**

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***For more information on Object-Oriented Development, call Peter Meenan at 518/387-5764.***

***GE Corporate Research & Development***