



**VP Synex
ViewPort**

SGML/HyTime Browser Engine

Synex ViewPort™ is a cross-platform SGML/HyTime browser engine for adding SGML support to any application. A Synex ViewPort™-based application can process and display SGML data from any source, even in a single document: some parts may be retrieved from databases, others from files, through networks, or even created on demand, when needed. The engine accepts both SGML and an efficient preprocessed binary format designed for CD-ROM or network delivery.

Synex ViewPort™ is designed to meet the complex requirements of CBT (Computer Based Training) and IETM (Interactive Electronic Technical Manual) applications. The API offers roughly 300 functions for advanced rendering, navigation, and content retrieval, and about 50 callbacks to tailor the application behavior. Yet a fully functional SGML browser application can be made using a mere handful of API calls.

The **Hypermedia and Graphics support** of Synex ViewPort™ acts directly on links defined by the document markup, including linking into and out-of hot spots in graphics. The built-in HyTime support allows cross-document links to any element or textual span, complemented by τ E extended pointers which provide a compact and efficient notation for link specification. References to graphics are resolved automatically, with images displayed inline or in zoomable windows.

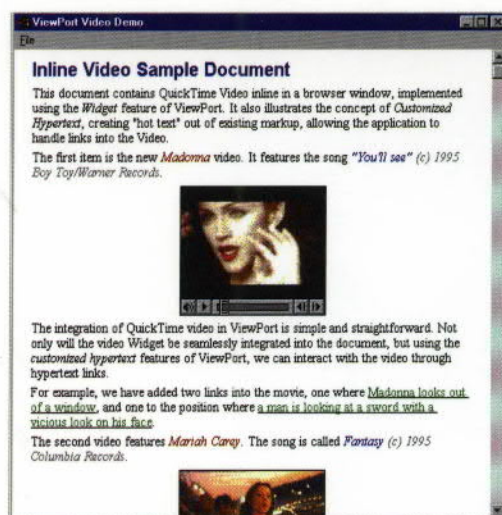
Synex ViewPort™ supports a wide variety of graphics formats and additional formats can easily be added using an open interface.

Style sheets describe rendering of SGML data for complex formatted presentation using property inheritance, contextual criteria, and tests for attributes and attribute values. Any element can be hidden behind an icon for display in a separate pop-up window, and any style sheet can be used for printing. The API supports run-time changes of style settings.



Full Extensibility

The Synex ViewPort™ **Widget Interface** allows developers to integrate any rectangular objects into the browser. This way, applications can support non-SGML data such as in-line QuickTime video, HTML forms, or Java applets in Synex Viewport™-based applications—even though Synex ViewPort™ itself knows nothing about these media types.



Any GUI

Since Synex ViewPort™ does not have an **interface** of its own, the look-and-feel of the application is up to the developer. Synex ViewPort™ can even be used in applications without any user interface at all, parsing and processing SGML files in batch. Making SGML plug-ins for Netscape Navigator or Microsoft Internet Explorer is a simple exercise, and no matter what programming tools, toolkits, or application frameworks you use, Synex ViewPort™ will cooperate.



Total Control

The Synex ViewPort™ **Entity Manager** is easily customized to fit any requirement. The document contents can be read from an SGML database, retrieved over the internet, or even generated on-the-fly—your application is in control. Documents can be delivered on CD-ROM, with updates seamlessly downloaded over networks as Synex ViewPort™ can retrieve its input from wherever it resides, whenever needed. The customizable entity manager also allows sophisticated encryption schemes to be added between Synex ViewPort™ and the data, where information is decrypted only when displayed on-screen. The same mechanism can be applied to selective display of document contents—the first chapter of a book can be given away freely while the remainder is displayed after obtaining a software key.

Setting the standard in SGML browsing

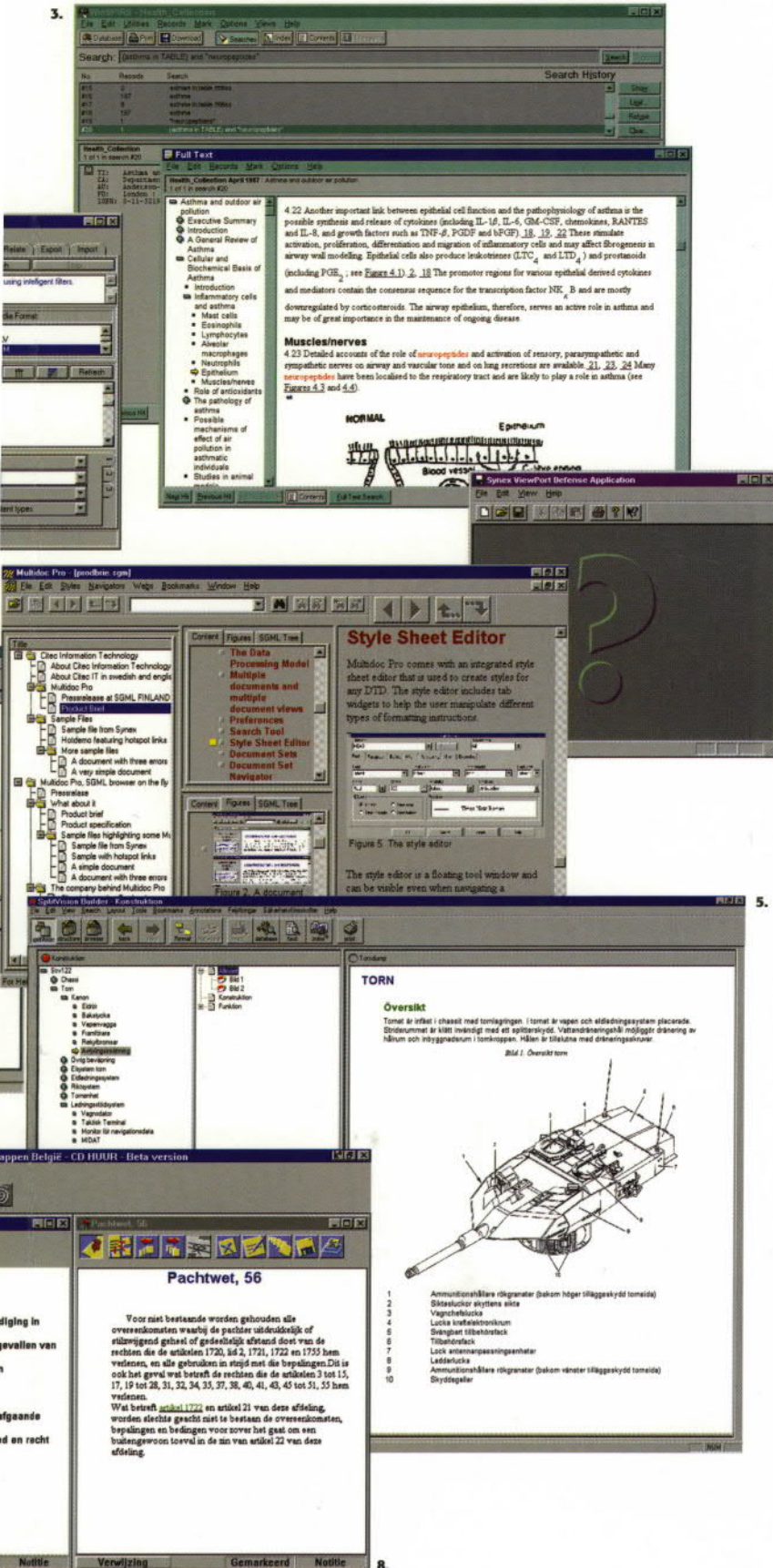
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HEN WE ASK OUR CUSTOMERS what Synex ViewPort™ feature they value most, two answers stand out: the **ease** with which Synex ViewPort™ can be **integrated** with any application, and its **customizability**—the ability to adapt to any needs, using any development environment. Even though the two might seem contradictory, they are actually consequences of the Synex ViewPort™ architecture.

The collage consists of ten numbered screenshots illustrating the Synex ViewPort™ software architecture:

- 1. Scenario Multi:** A multi-view interface showing a 3D exploded view of a mechanical component (cylinder head) on the left and a table of parts with columns for 'Part No.', 'Description', and 'Quantity' on the right.
- 2. Repair Manual:** A technical document window titled 'REPAIR OF WINDSHIELD TRIMMING' with numbered steps and diagrams. A pop-up 'Annotation' dialog is visible over the text.
- 3. Product Catalog:** A 'PROSIS - Products Volvo BM EL70' window displaying a grid of product images and a list of model numbers (e.g., Volvo BM EL70C, Volvo BM L120B).
- 4. Chemical Database:** A window showing chemical information for 'Amtriaz', including its chemical structure, formula, and physical properties.
- 5. Maintenance Schedule:** A table listing maintenance tasks with columns for 'Signal', 'Interval', 'Last Change', and 'Status'.
- 6. Multi-view Interface:** A complex interface with multiple panes, including a tree view on the left and a main content area on the right.
- 7. IntroView - IntroView:** A software introduction screen for 'CAISSY IETM' featuring a large image of a vehicle and logos for 'Bruker Vedlikehold' and 'HÄGGUNDS VEHICLE INCENTIVE GROUP'.
- 8. Product Structure:** A hierarchical tree view showing the structure of a product, with categories like 'Chassis', 'Engine', and 'Transmission'.
- 9. Safety Training:** A window displaying safety-related content, including a search results list and a 'Safety Training' section.
- 10. Nexus Media Asset Manager:** A media management interface showing a search for 'SGML' and a list of media assets with details like 'Media Type' and 'Media Format'.

Some Customer Applications



- Scania Multi** is an interactive, CD-ROM-based product information system. Developed by **Enea Data AB** for Scania AB, Multi is currently in use in 30 countries worldwide. This support and maintenance system adapts the documentation and parts catalogue dynamically to a precise, individual vehicle using the chassis number as key. The flexible design simplifies the repair procedure and cuts down the time required for maintenance.
- Sogitec Industries SA** specializes in SGML document management systems supporting the entire life cycle from creation to publication. **ViewTec** is a set of tools designed for building and viewing electronic publications. The ViewTec Builder constructs electronic publications from SGML/HyTime databases, and the ViewTec Viewer enables you to browse and search the electronic publications created with ViewTec Builder.
- SilverPlatter Information** publishes over 280 bibliographic and full text databases of reference information, used at more than 20,000 institutions worldwide. The SilverPlatter client-server retrieval technology ERL provides access to these databases on CD-ROM, LANs, WANs, or across the Internet. SilverPlatter's latest version of their search-and-retrieval software, **WinSPIRS** for Microsoft Windows, supports the display of SGML documents contained in ERL-compatible databases, and includes the ability to limit searches to a particular SGML element.
- SigmaLink** is a document management and editorial system with full SGML and XML support, developed by **STEP Stürzt Electronic Publishing** for publishing houses who publish on multiple media, and for different purposes. All document management, editorial, and workflow components, can be used with data of arbitrary format. The system can be configured for any SGML editor. SigmaLink integrates tools like RDBMS, full text retrieval, an SGML transformation and communication engine, workflow, HTTP server, and an SGML browser developed using Synex ViewPort™. For SGML data, SigmaLink provides a wide variety of HyTime-based linking methods, controlled through the database, and split-and-join mechanisms to define information items according to specific needs.
- The **SplitVision™ Lite Builder** from **Sörman Information** is an easy-to-use tool for IETM (Interactive Electronic Technical Manual) authors, which features drag-and-drop support of both SGML and graphics, editors for navigation, style sheets, and webs. It is also straightforward to launch external applications from the Builder, making it an ideal complement to an SGML authoring environment. The SplitVision™ Lite Browser is typically used to present content-related information modules following the SGML and HyTime standards, for operation and maintenance of high technology systems.
- Multidoc Pro** from **Citec Information Technology** is used for publishing and browsing multiple SGML documents, which can be located on the Internet, Intranet, LAN, WAN, or on CD-ROM. Multidoc Pro lets you search and navigate through these document sets, with support for markup-based queries using an intuitive interface. The browser supports a wide variety of media including inline video and an easy-to-use style sheet editor with wsrwvvg preview.
- Enator Information Management** has developed **InfraView™** for simplicity and flexibility in supporting standards such as SGML and HyTime. Navigation in Interactive Electronic Technical Manuals (IETMs) based on InfraView™ can be done using hot spots in graphics or one or more material structures presented as expandable trees. This methodology is particularly useful for modular information; storage of the document components can be done in SGML or using relational databases, with data exchange between LSAR and/or STEP databases. The InfraView™ application is built using an in-house component-oriented toolkit written in C++, based on the Microsoft Foundation Classes and Synex ViewPort™. Custom-made IETMs can be created quickly and configured for a variety of user requirements.
- Kluwer Legal Publishers** (Kluwer Rechtswetenschappen België, a division of Wolters Kluwer) publishes legal information for professional legal customers. This application, currently in development, is an integration of Dataware's CD-Author retrieval software and Synex ViewPort™—the program is developed using Borland Delphi. The image shows a customized navigator, containing the structure of a law, and a browser window, displaying one particular article of the law. Synex ViewPort™ is used both for the data preparation, to convert SGML input files to a record-based file for Dataware CD-author, and for the on-line display of each retrieved record.
- PROSIS** is a Product Support Information System made by **Enea Data AB** for Volvo Construction Equipment AB. The quarterly published CD-ROMs are distributed worldwide. It features sophisticated hyperlinking capabilities for moving between parts catalogue data and corresponding maintenance manual sections.
- Nereus™** from **Vicom Multimedia** is a collaborative authoring system designed for rapid creation and revision of media-rich works and custom specifications, with no programming. The Nereus™ Media Asset Manager is a comprehensive, centralized management system for classifying and managing media assets such as audio, video, images, and text—including SGML. Its authoring support features scheduling, production monitoring, and activity-based job costing. Nereus™ provides a high-speed solution for the development, delivery, and management of large-volume, complex multimedia projects. The fully integrated tool set includes a simple-to-use user interface, reusable templates, and full drag-and-drop capabilities.
- As SGML is a CALS requirement, a fair number of Synex ViewPort™ applications are in **Government and Defense**. Unfortunately, these are often not public. Among their reasons for using Synex ViewPort™ is its customizable Entity Manager that lets you add encryption—of any strength—as part of the document processing; it is also straightforward to integrate with database and workflow systems.

Technical Description

Hyperlinking

- Built-in support for:
 - SGML ID/IDREF
 - HyTime linking and addressing
 - Comprehensive TEI-P3 extended pointer syntax
- Customizable hypertext, turning any element into an arbitrarily processed link
- Extensible SGML-based hot spots in graphics, including support for:
 - magnification
 - colored hot spots
 - animated boundary
 - rectangle-, ellipse-, or polygon-shaped hot spots

Navigators

- Generalized table of contents extract any element for navigation
- Platform independent
- Coupled to DTD or specific document instance
- Automatic encapsulation reflecting the document hierarchy
- Any SGML document can be displayed as a navigator

Webs

- Containers for user/publisher annotations, bookmarks, and hyperlinks
- Platform independent
- Apply ISO standard HyTime for portable addressing persistent across document revisions
- Excellent tool for electronic review
 - Attach data to documents on non-writeable media (CD-ROM, Internet)
 - Separation of user/publisher-added data from document contents
 - Multiple webs can be active simultaneously

Style Sheets

- Platform independent
- Coupled to DTD or specific document instance
- Conditional formatting based on kinship, attributes, and occurrence
- Inheritance for default appearance
- Font family, size, slant, weight, scale, color, and baseline offset
- Left, center, and right justification
- Leading and horizontal/vertical spacing
- Page background color or bitmap
- Underlining, overlining, and strike-through
- Hide any element behind a configurable icon and reveal it on user click
- Element pre- and post insertion of text, icons, and attribute values
- Horizontal rules and vertical change bars
- Engineering math (such as fractions, radicals, and indices)
- Content hiding
- Comprehensive CALS table support
- Support for SoftQuad table cells
- Any tabular markup can be displayed as a table
- Run-time query callbacks

Printing and Copying

- Print document or document portion using any style sheet
- Supports copying of user selection as ASCII or as SGML
- Supports end-user annotations in hard copy output
- Supports customizable headers and footers
- Print preview
- Pre- and postprocessing of hard-copy pages (to add arbitrary text and/or graphics such as logotypes)
- Page count and numbering specifications
- Multi-page CALS tables with repeated table headers and footers
- Extraction of any element to header/footer
- Optional printing of navigator(s) with resolved page references
- Optional page numbering and date insertion

Customization and Extensibility

- Over 300 API functions and 50 callbacks
- Widget feature for insertion of any rectangular object into browser contents (e.g. Java applets, HTML forms or inline video clips)
- Open interface for integrating third-party graphics libraries
- Capable of launching any external viewer

Entity Manager

- Customizable to retrieve entities at run-time:
 - from a file
 - from a RAM memory buffer
 - piece by piece through a generating procedure
- Dynamic document assembly from multiple input sources
- Supports the SGML Open CATALOG format
- Can easily be configured for any type of encryption scheme

SGML Parser

- Supports any DTD and an extended core syntax
- Very fast, designed to read SGML on-the-fly for immediate on-line presentation
- Supports all entity types except SUBDOC
- Full SHORTTAG and limited OMITTAG support
- Supports #CONREF attributes and #DEFAULT entities
- Can pre-parse and re-use DTDs and document instances for efficient processing
- Supports nested marked sections (IGNORE, INCLUDE, CDATA, RCDATA, and TEMP)
- Supports parsing of the document type declaration subset

Information Retrieval

- Textual content, markup, declared entities, and processing instructions
- Element by generic identifier, ID, TEI pointer, and textual content
- Element parent, children, siblings, and attributes
- Attribute types, default value, and actual value
- Web annotations, bookmarks, and links
- Style sheet and navigator configuration

Document Searching

- Full text string searching (case-sensitive or exact)
- Markup-based searching
- Regular expressions (in both search modes)
- Using TEI extended pointers
- Combinations of the above
- Search hits indicated using graphical occurrence density display and/or hit count in navigator at corresponding entry

Graphics Support

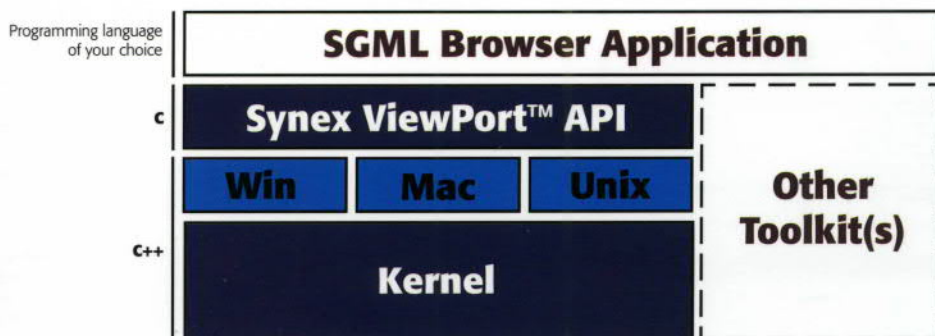
- Raster and vector graphics
- Extensible open interface
- Supports graphics tear-off/zoom/pan
- Optional autoshrinking of graphics
- Zoom overview

Miscellaneous

- Built-in history list maintains backward and forward user movements
- Graphical view of document instance as an SGML tree
- Show Tags option to display markup
- Support for Japanese Shift-JIS encoding
- UNICODE support (during 1997)

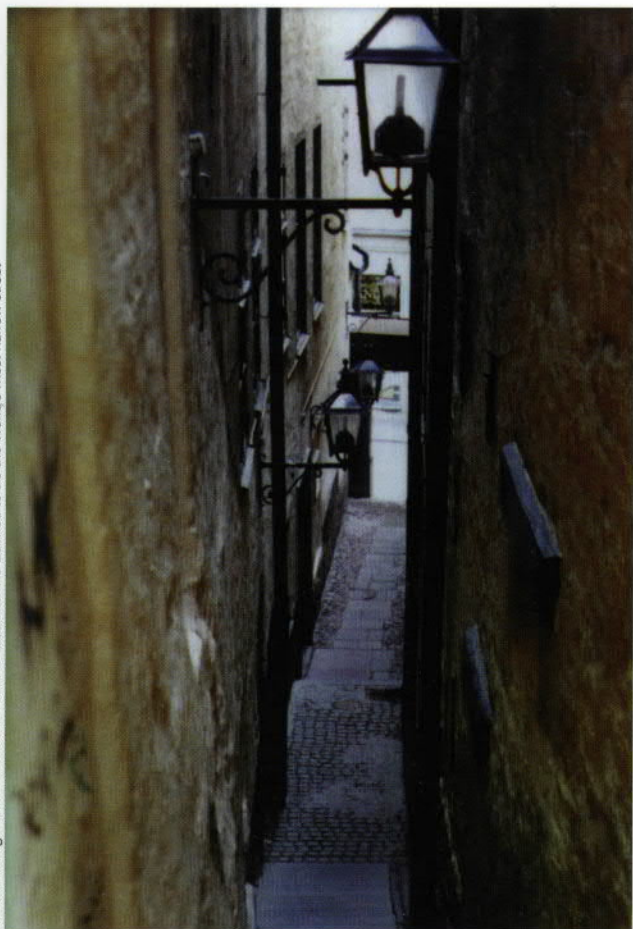
Available Platforms

- Microsoft Windows NT/95/3.1x
- UNIX/Motif
- Macintosh 68K/PPC



Internally, Synex ViewPort™ is divided into three separate layers—the kernel, the platform-dependent layer and the Synex ViewPort™ API itself. The **kernel** is the largest part, the heart of Synex ViewPort™. All platform-specific dependencies are kept in the **platform-specific layer**, whereas the Synex ViewPort™ **API** is identical across all supported platforms.

Company Information



Mårten Trotzigs Gränd in the Old Town of Stockholm is claimed to be the World's most narrow street

Synex Information AB is a high-tech development company specializing in SGML browsing technology. The company was founded in 1993, as a result of years of research and development at the **Royal Institute of Technology** in Stockholm, Sweden. Synex Information has its offices in a 17th century building in the scenic **Old Town** of Stockholm.

Synex Information is a sponsor member of **SGML Open**. The company has been profitable every year of operation, is privately held, and financially independent.

The company flagship **Synex ViewPort™** has set the standard for SGML browsing. It is represented by resellers throughout Europe, North-America, and Asia.

Synex Information is at the leading edge of SGML browsing technology, and committed to stay there.

Synex ViewPort™ Reseller information:



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Viewers and Electronic Delivery

We were surprised by the number of SGML viewing packages. But, at second glance, even more surprising was the fact that most of them are built from technology provided by Synex, the Swedish company that is quietly challenging EBT as the leading tool vendor in the SGML viewer market. It seems that Synex's OEM strategy is beginning to pay dividends as integrators discover its utility in configuring custom applications. We got a chance to find out what new features the company is working on, and we also saw (at the Sörman Information AB booth) the first viewer to use the HyTime standard for hypertext links.

Synex ViewPort covers the floor

Synex Information AB, makers of the ViewPort SGML-HyTime browser engine best known as the basis for SoftQuad's Panorama, announced upgrades supporting multi-byte Japanese and new graphics formats including CGM. Even more impressive than these announcements was the news that of the approximately 32 other vendors exhibiting at SGML Europe '96, seven were showing or developing browser applications based on ViewPort. These seven, which amounted to almost one out of four exhibitors, were Open Text, Sörman, Information Dimensions, Enator Information Management (which is the representative of Grif), STEP, OCLC and, of course, SoftQuad.

Synex, based in Stockholm, is a small, privately held company founded in 1993 to develop technology based on years of research and development performed at the Swedish Royal Institute of Technology. ViewPort itself is a browser engine with extensive support for customization. It is actually a C API to a C++ kernel. As such, it is available from all current languages and programming tools. More than 250 API functions and 50 callbacks give developers ample hooks and platforms to create a broad range of user-interface options and user functionality. (Callbacks are integrator-supplied functions that ViewPort can call during processing.) The API is portable across platforms so developers can design applications using the GUI tool with which they are most comfortable.

Commercial products built around ViewPort can take advantage of its availability on multiple platforms to suit a wide-ranging audience. Those integrating custom systems can optimize it for a known environment.

Integrated systems. Synex demonstrated integration relying on simplified graphic interfaces and others using complex, text-based interfaces. A system built by ENEA Data AB for Volvo Construction Equipment uses large, graphic icons representing different types of heavy equipment. This application uses little text and few on-screen choices. You pick your truck and either a parts catalog or a service bulletin.

Custom applications built by Information Dimensions Scandinavia AB and Sörman Information AB rely more heavily on text and structure. These applications give the user access to detailed, multilevel tables of contents as well as graphics and

views into the underlying SGML database. The ability to import any valid SGML document, declaration and document type, and its support for HyTime linking, set the ViewPort engine apart from other current SGML browsing software. (The next release of DynaText from EBT will also support import of any valid SGML, without precompilation.)

General features. ViewPort supports SGML processing and viewing, access and retrieval. The engine takes included fragments, whether off of a network or a CD-ROM, and dynamically assembles them as if the user were viewing one document. ViewPort supports search and navigation based on structural context and attribute values, or a combination of these. The occurrence density display, table of contents navigator and custom navigators, multiple style sheets, and linked annotations used in Panorama are all features of the basic ViewPort engine. It can launch external applications and support printing by any attached style sheet.

Linking. ViewPort uses a HyTime subset for linking, but it doesn't stop there. It supports the basic ID/IDREF mechanism of SGML and the TEI (Text Encoding Initiative) extended pointers. What this means for application and document designers is that once the HyTime entity catalog has been established, any element can be a link anchor or endpoint by virtue of its generic identifier (tag). The endpoint for the link can be resolved on the fly or can be hard coded and links can be bi-directional and one-to-many. This contrasts sharply with Web linking mechanisms that require hard coding of all endpoints on a one-to-one basis.

Entity management. ViewPort provides dynamic SGML entity resolution. This means that a browsed document can consist of multiple files and pieces of files residing on diverse media but linked through SGML entity management. For the user, the document appears as one seamless unit, but in practice, graph-

ics, character sets and whole chunks of text may originate in multiple locations, local and remote, as long as the location is properly identified and is accessible. ViewPort uses the SGML Open Public Reference Catalog and its own internal entity manager to resolve and retrieve entities. The location of an entity is determined using SGML's public and system identifiers, which permit on-the-fly modification based on information supplied during use.

Graphics and "widget" support. New graphics formats supported include CGM (computer graphics metafile, an ISO standard vector format), and raster formats such as TIFF, CCITT Group 3/4, JPEG, BMP and EPS preview. Synex claims it has the best CGM support in an SGML browser, including all three types of CGM encoding. It licenses the CGM technology from Henderson Software, Inc., which has NIST certification for compliance. (We would note that EBT also has CGM support in DynaText, and also developed a CGM viewer for Netscape.) All graphics support hot spots and are viewable inline or in sizable popup windows that support zooming and panning across objects.

Synex "widgets" are part of a plug-in architecture that supports presentation of any rectangular object. The new ViewPort will be able to insert any widget inline, including video, forms and dialogs.

Availability. The new features will be available in ViewPort 1.3, which is expected to be available for all Windows, Macintosh 68K, Power Mac and Unix Motif platforms at the end of June.

Open Text using it, too. In a separate development, Open Text, which for a long time had its own SGML viewer for its text-retrieval software, is developing a more robust SGML viewer for the U.S. Government Printing Office. It is based on the Synex ViewPort.