



FormXtra™

Comprehensive and powerful automated forms processing thanks to Parascript's Total Recognition® Technology

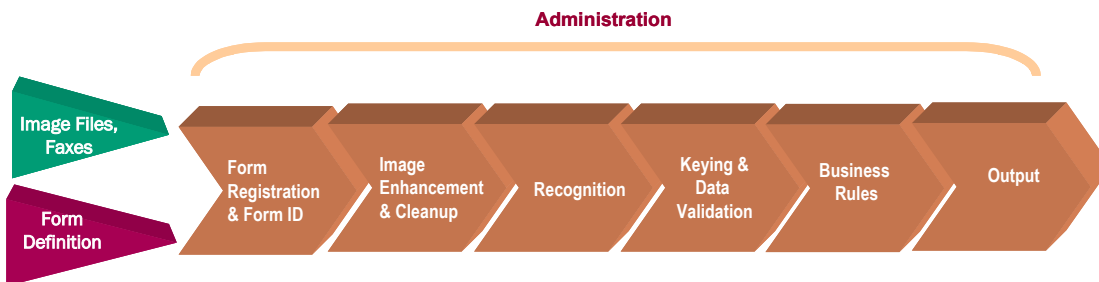
- **FieldScript®** for recognizing fields on any type of form
- **AddressScript®** for accurate postal application recognition
- Streamlined document-capture
- Automatic distinguishing of document types
- Enhanced character recognition
- Reduced keying costs
- Easier integration
- Ongoing support and regular performance improvements

Go ahead – check under the hood. The closer you look the more you'll appreciate *FormXtra*, Parascript's new and powerful forms processing solution. *FormXtra* has the horsepower to get you through the toughest processing requirements and the flexibility, thanks to its user-friendly modules, to become the cost-effective solution for all your forms processing, including data capture and reporting.

Through its unprecedented ability to recognize hard-to-read documents and handwriting, *FormXtra* significantly augments the capabilities of existing data-capture and forms-processing systems. It is, simply and clearly, the best available option for optimizing even the most demanding recognition applications – including postal, banking and financial services, service bureaus and other forms-intensive industries.

FormXtra solutions feature Parascript's advanced recognition engines which recognize information in handprint, machine print and cursive, reducing reliance on manual keying and cutting processing cycle times.

FormXtra—A scaleable architecture with options



The *FormXtra* solution's modular architecture means easy integration, with systems customized for your specific business needs.

- (1) The full Enterprise solution includes all of the modules required for a complete forms workflow, including the capture of input images, form definition, automatic recognition, keying center tools, data output in whatever form required by your application and administration tools providing easy management of recognition and keying jobs.

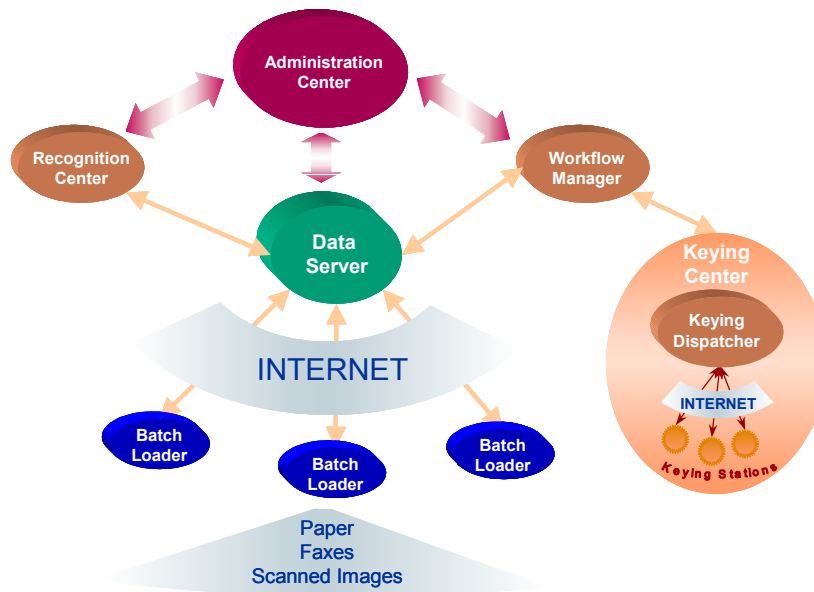
- (2) The Kit option consists of the *FormXtra* recognition component provided as an executable file. Its command-line interface receives directory names with form images, applies specific business rules and context to the batch and outputs data in ASCII format. The recognition module is also available in a C and C++ API operating on a single image and also outputs files in text format.

Backed by complete support

Document-processing requirements also vary from one project to the next and from day to day. Parascript's extensive training and support streamlines implementation, and its ongoing maintenance program ensures reliability. In our long-term partnership with customers, Parascript makes sure that the *FormXtra* solutions always perform at their optimal levels.

Modular Components for Easy Integration and Scalability

Several modules make up *FormXtra*, each functioning efficiently at various stages in the forms processing cycle and each seamlessly interfacing with the others.



Batch Loader

- Scanning and Import
- Image batching
- Internet connection
- Batch statistics

Scanning and import

The Batch Loader module allows for the acquisition of form-data images from virtually any source, including faxes, paper documents and existing electronic images. *FormXtra* accepts batch submissions of scanned images,

supports more than 150 ISIS-interface scanners and processes multi-page and duplex documents. Forms can be scanned, saved and automatically routed for further processing. And the remote scanning capability allows paper to be scanned from any location.

Creating and dispatching batches

The Batch Loader module groups documents into batches and automatically uploads them to a Microsoft SQL 2000 Data Server.

Through the Batch Loader module, local and remote users can:

- Access the Data Server via the Internet
- Download scanning parameters for scanner and form type from the Data Server
- Scan documents or use already scanned images to create a batch
- Upload batches of images to the Data Server
- Review batch statistics uploaded from the data server

Data privacy

Via Batch Loader, recognition results may be downloaded by the originating user or any other authorized party. To provide data privacy, the data transfer may be encrypted using Secure Socket Layer (SSL) protocol.

Form Definition Studio Module

- **Creating form definition**
- **Tuning form definition to achieve the highest read rates and accuracy**
- **Testing recognition results**
- **Collecting test result statistics**

Creating form definition

The Form Definition Studio module allows for the easy description of all of a form's contextual information - critical for text recognition quality. It's specifically designed to team up with Parascript's powerful and proven recognition engine to maximize recognition results.

The Form Definition Studio's interface lets users automatically define all of the necessary parameters for form recognition, including the number of pages per form, registration zones for identifying the form and all form field locations and context. The module is also used to specify all cleanup parameters. For further efficiency, predefined contexts are included for more than 20 common field types such as phone number, address and date fields.

Tuning form definition

The Form Definition Studio module's simple tools let users evaluate individual field results so that each field can be tuned for maximum recognition. The tuning process establishes optimal settings for snippet cutting, cleanup and data recognition. Special mechanisms set thresholds for data field recognition sets and error definitions - and then collect statistics about test results.

Business rules mechanism

The business rules mechanism, imbedded in the Form Definition Studio module, lets the user specify the format of answers, specify or describe relations between several fields on a form, set the guidelines for field processing or set keying specifications and refer to field answers. It uses VBScript to code additional processing tasks. The user has access to all standard VBScript functions for scripting form definitions.

Export scheme

Users may also define the formatting style of the output recognition answer file and the output format (ASCII or XML). Data output can be customized at the file structure level and at the field data level.

Workflow Module

- Data flow automation
- Distributed tasks
- Tracking of system performance, recognition results, and user productivity

The Workflow module supervises large-scale *FormXtra* operations, automating the flow of data from one task to another, distributing and prioritizing jobs to avoid bottlenecks and tracking system performance and recognition. After a batch is recognized, the Workflow module sends rejected forms to manual data

entry to undergo processing by the Keying and Verification module.

In addition, the Workflow module:

- Supports concurrent processing of different form types on multiple computers
- Publishes processed data on an FTP server or web site
- Automatically notifies the system administrator, via e-mail, of any problems.

Recognition Module

- Enables any type of form and provides for complete freedom-from-form restrictions
- Negates need for form redesigns
- Automates form identification
- Has an advanced preprocessing technique
- Reads machine print, handprint, and cursive
- Offers highest available read rate and accuracy

Once the form definition is created, batches are ready to undergo processing by the Recognition module.

Freedom from form restrictions

The adaptive features of the *FormXtra* Recognition module provide for complete freedom-from-form restrictions. It can process any type of data field entry including address lines, checkboxes, social security numbers and dollar amounts. It doesn't require combs or boxes and can adapt to the documents at hand, whether new or legacy, thus improving the success of form recognition processing and

expediting data capture. Data modifications generally do not require a complete form redesign.

Form recognition stage one

This includes form registration and form identification. In this stage all form images are identified as matching the required form definition. Any form images that do not match are rejected, as are any that are overly skewed or noisy.

As soon as form images are registered, the form is preprocessed. This *FormXtra* preprocess stage includes all de-skewing, field cut, field image cleanup and enhancement. It removes all preprinted data, noise and other extraneous elements from the field images.

Data field recognition

Parascript's Total Recognition[®] Technology, the core of the Recognition module, integrates several state-of-the-art recognition engines based on different fundamental approaches. This includes an engine based on a special descriptive proprietary language embodying the essence of all cursive handwriting and 19 neural network-based classifiers that read and re-read machine print, handprint and numbers.

Having different but complementary recognizers, each with its own sphere of expertise, lets Total Recognition Technology cope with virtually any text regardless of type and quality, resulting in unprecedented accuracy and reliability. Because of this, the self-contained Recognition module can accurately process an endless variety of text and character images.

In addition, the *FormXtra* Recognition module increases accuracy and reliability by incorporating several other advanced recognition techniques, including:

- Context sensitivity
- Fuzzy logic
- Whole-word and whole-phrase recognition
- Dynamic vocabularies
- Address validation
- Confidence value

Recognition output, as ASCII files, can be formatted according to customer requirements.

Keying and Verification module

- Double and triple keying
- Special mode for check box keying
- Context usage
- Remote keying location support
- Operator productivity and quality tracking

On-Site and remote keying support

The Keying and Verification module optimizes the scope, productivity and accuracy of all work performed at manual keying locations. Due to the system's unique replication technology, manual data entry can be done at multiple keying sites.

Keying administration

The Keying Dispatcher can delegate and distribute rejected forms—by form or field-type—to assigned keying stations. By assembling and validating output data, the dispatcher also monitors keying station productivity.

Keying techniques

The Keying and Verification module includes several mechanisms that foster precision and productivity during the manual keying and validation processes.

To maximize operator speed while minimizing keystrokes, the Keying and Verification module applies double and triple keying techniques—page mode where one page of a form is displayed for re-keying and field mode where one field is re-keyed. In field mode characters with low confidence are highlighted. In addition, a special mode for check box keying provides checkbox verification at rates of up to 100,000 fields per hour.

To promote keying and verification accuracy, the Keying and Verification module also:

- Forces double or triple verification of critical data fields
- Highlights low-confidence characters
- Uses recognition results during the verification process
- Uses context information to decrease keystrokes and increase speed
- Cross-references the U.S. Postal Service database to verify address fields

Administration Module

- **Full control over the recognition and keying workflow** The Administration allows the system administrator to monitor the system activity at global and detailed levels.

The module provides functionality for:

- Workflow and hardware management, including the ability to configure the system by adding modules and computers to the system and assigning their roles
- User management or the ability to create users and user groups and assign their roles and permissions
- Security management
- Batch management
- System productivity monitoring
- Comprehensive statistics on process status

Output

Flexible output options include:

- Outputting data and indexes to ASCII files with a flexible format
- Outputting data and indexes to XML files
- Publishing ASCII files on the secure Web site for downloading
- Exporting ASCII files to the FTP server
- Offering remote ASCII file access via secure HTTP

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FEATURES

System Architecture, Management, and Administration

- Inputs information from remote scanning outside LAN
- Performs automatic form identification, recognition, and validation at central location
- Distributes keying jobs to remote keying centers for data entry
- Collects data entry results from remote keying centers and validates them at central location
- Publishes processed data on Web site or FTP server
- Uses single administration application to monitor, configure and manage the entire system
- Supports simultaneous processing on multiple computers
- Tracks system performance, recognition results and client computer productivity
- Simultaneous processing of unlimited form types
- Can limit the processing of specific forms to recognition only
- Automatically notifies administrators and users about system problems with e-mail
- Supports user-level security
- Supports Microsoft Windows 2000 Professional Server
- Runs clients on Microsoft Windows 2000 Professional
- Uses Microsoft SQL Server 2000

Remote Capture

- Supports image and document capture at remote locations outside the LAN
- Supports 150+ scanners with ISIS interface
- Scans multi-page and duplex documents
- Controls the scanning process
- Visually verifies image quality
- Transmit scanned images to central processing location using secure HTTP

Form Definition and Processing Features

- Supports the creation and tuning of form definitions at remote locations outside the LAN
- Performs accurate and fast form identification without human assistance
- Locates and recognizes data from paper, scanned images, and structured forms
- Enhances images and performs form removal
- Recognizes machine print (OCR), hand print (ICR), marks (OMR), and cursive handwriting
- Uses 20+ predefined field types to improve recognition rate
- Supports recognition of tables
- Provides the ability to define field locations for all edit operator processes
- Allows for custom business rules with VBScript

Allows for dynamic modification of form workflow with VBScript business rules

Optimizes form identification and recognition with "on-the-fly" testing

Allows for custom keying rules for each field

Remote Keying Centers Support

- Supports on-site keying or simultaneous keying at remote keying centers outside LAN
- Effectively distributes jobs to keying centers based on capacity in man/hours, time zones and working hours
- Specifies form types and field types to key in each keying center
- Tracks keying center productivity
- Uses secure HTTP to transfer data between keying centers and central location

Verification

- Supports operator-level security
- Specifies form types and field types to key by selected operator
- Tracks operator productivity
- Automatically distributes jobs between operators based on job deadlines and operator rights
- Provides single verification application for all type of keying jobs, thus optimizing each operator's load
- Provides keying from the field and keying directly from the image
- Provides unique checkbox verification procedure with speed up to 100,000 fields per hour
- Effectively uses recognition results during verification
- Flags low-confidence characters during recognition
- Uses context information for minimizing keystrokes and maximizing speed
- Forces double or triple verification of critical fields
- Optimizes address fields entry using Parascript postal database
- Supports operators at remote locations outside LAN

Flexible Output Options

- Outputs data and indexes to ASCII files with flexible format
- Outputs data and indexes to XML files
- Publishes ASCII files on the secure Web site for downloading
- Exports ASCII files to the FTP server
- Offers remote ASCII files access via secure HTTP