

# Redefining Enterprise Search

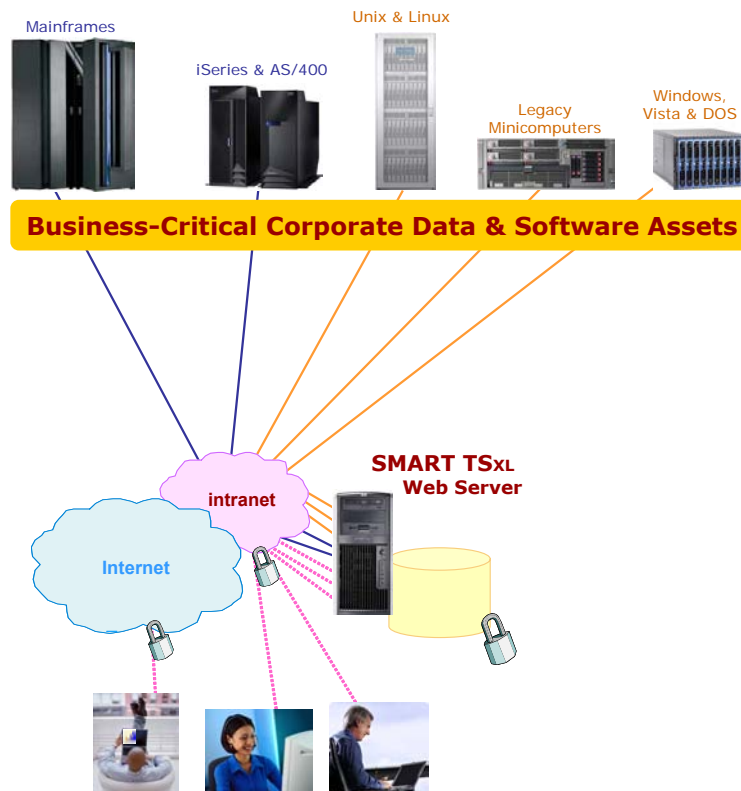
Fast ⊕ Accurate ⊕ Inclusive ⊕ Patented



SOFTWARE DIVERSIFIED SERVICES  
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# SMART TS<sub>XL</sub>

Software Intelligence  
Search. Analysis. Impact. Review.



The smartest way to realize cost-competitive, cross-platform, federated search.

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IN PARTICULAR 'GOOGLE' IS A TRADE MARK OF GOOGLE INC.  
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'SMART TS XL' AND 'FIND, FOLLOW, FORMULATE METHODOLOGY' ARE TRADEMARKS OF IN-COM DATA SYSTEMS, INC.

# REDEFINING ENTERPRISE SEARCH

FAST # ACCURATE # INCLUSIVE # PATENTED



SOFTWARE DIVERSIFIED SERVICES

## SMART TS XL

*Helping IT professionals to work SMART  
when it comes to managing data and software assets*

*'Doing more with less'* has already become a hard-earned badge of honor for many IT departments around the world. Despite budget constraints they have successfully added online functionality, accommodated stringent compliance regulations, kept pace with increasing transaction volumes, and in general helped enhance corporate competitiveness. But there are limits to what can be further realized per the *'doing more with less'* paradigm unless these gallant professionals are provided with tools that, at a minimum, will:

1. Dramatically, and irrefutably, increase software developer productivity enabling them to do in minutes what would have taken hours, and
2. Substantially reduce hardware resource consumption—in particular expensive mainframe CPU MIPS.

**SMART TS XL**, extensively proven at Fortune 1000 corporations and government agencies, is such a paradigm-redefining tool. **SMART TS XL** is a *cross-platform, SEARCH, ANALYSIS and RETRIEVAL* tool that supports all relevant enterprise software and data assets—whether they be mainframe-, iSeries-, Unix- or Windows-based. With **SMART TS XL**'s search process every possible data or source-code element is hyperlinked, *across platforms*, and everything is graphically cross-referenced. **SMART TS XL** is the SMARTEST way to monitor, analyze, document and manage today's cross-platform software and data inventories—particularly so when there is a large concentration of mainframe-resident assets, such as Java, CICS Maps, COBOL, DB2, BAL, CLISTS, IMS, VSAM, Natural, PL/I, Focus, etc.



SMART TS xL the SMARTEST solution for today's cross-platform enterprise search, software asset management, SOA/SaaS initiatives and Web 2 readiness.

**MAINFRAME OFF-LOAD EXTENDS REACH; LOCKS-IN ROI**

SMART TS xL was engineered from ground-up to be an ultra-efficient, extremely fast, cost-reduced mainframe off-load solution. Though providing uncompromised support for mainframe data and software assets SMART TS xL does not rely on costly mainframe MIPS for its search, indexing, analysis and reporting functions. Instead all of these functions, some covered by patents, are performed on a Windows-based off-load platform—thereby delivering immediate and quantifiably significant cost savings compared to non-off-load solutions.

A leading Wall Street financial services firm found that using SMART TS xL saved it \$36 to \$205 in mainframe MIPS per search. Similar savings, i.e. \$50 to \$250 savings per search, were also reported by a large U.S. cellular service provider. A

large global bank with 450 SMART TS XL users calculated that its first year net savings with SMART TS XL was in excess of \$500,000 in MIPS alone. Anticipating that the SMART TS XL user base will double within the year, this bank is projecting even greater cost savings thanks to SMART TS XL.

The cost savings delivered by SMART TS XL, however, are by no means just restricted to eliminating MIPS usage—even though the MIPS savings alone, in most cases, guarantee an expedited *Return-On-Investment (ROI)* in the 24-month range. SMART TS XL's off-load architecture coupled with its incisive, patented technology also enables corporations to lock-in ROI by:

1. Facilitating convenient, low-overhead *federated* search, index and analysis operations involving heterogeneous data software and data assets across multiple disparate platforms. For example a search involving mainframe COBOL CICS applications, iSeries RPG code, Java libraries on a Linux server, .NET source on Windows 2003 server and API documentation provided by a software vendor in PDF format for an SOA project.
2. Reducing the amount of time analysts and developers have to spend on *administrative, data entry and set-up tasks* before they can invoke a cross-platform search-analyze-print operation.
3. Significantly compressing, in most cases by a few orders of magnitude, the *elapsed time* taken to complete a complex, cross-platform search-analyze-print operation.
4. Curtailing *lost opportunity costs* by minimizing the productivity-sapping wait times associated with other search methodologies, thereby accelerating new function delivery and application change management.

**A MAJOR AIRLINE AND A WORLDWIDE TRANSPORTATION SERVICE PROVIDER** (one of the largest in the world) can attest to the impressive cost savings made possible by SMART TS XL. At the airline some search and analysis jobs that used to take 120 hours are now being completed, thanks to SMART TS XL, in 6 hours!

The transportation service provider found that a specific search-analyze-report function that had previously taken 2 weeks could now be successfully completed with SMART TS XL in 30 minutes. Thus with SMART TS XL ROI is never just a vague promise or a distant hope. Instead it is always a lock-in.

## SMART TS XL: MANY USES FOR MANY USERS

SMART TS XL, although widely used and greatly favored by an ever increasing population of developers, is designed to be used—with minimal, if any, training—by a wide cross-section of corporate employees. SMART TS XL's Web-browser-based user-interface (AS SHOWN BELOW) is very graphical, intuitive and forgiving; it is simple to use and mastery can be easily achieved after a few invocations.

Consequently, the corporate-wide search, impact analysis and detailed reporting features of SMART TS XL can be gainfully used by a very diverse population of corporate users—whether they be 'C'-level management, business analysts, project managers, system programmers, support staff or technical writers.

Given that SMART TS XL also supports all corporate document types, including Word documents, *e-mail*, Excel spreadsheets, PowerPoint presentations, HTML Web pages, PDFs, text files and ZIP archives, it can serve as a very powerful search tool for any *authorized* corporate user—especially administrative assistants, executive support staff, corporate auditors, HR personnel and *compliance enforcers*. The bottom line here is that SMART TS XL is extremely versatile and nimble with no built-in restrictions or boundaries as to the types or scope of the searches it can perform. *The rule-of-thumb here being that SMART TS XL can and will support any type of data that a terminal, PC or workstation user can display and read. It is as simple and all-inclusive as that.*

The screenshot displays the SMART TS XL Web Search interface within a Microsoft Internet Explorer browser window. The browser's address bar shows the URL: `http://localhost/SMART%20TS%20Server/SmartTS/smarts11280.asp`. The interface features a search bar with the text "Enter search string" and a "SMART Search" button. Below the search bar, there are navigation buttons for "Docs", "Hits", and "Stats".

The main content area is divided into several sections:

- Search Syntax Samples:** A table listing various search syntax options and their descriptions.
 

Search Syntax	Description	
Simple Char Includes:	A-Z a-z 0-9 and _ @ #	
Special Char Includes:	A-Z a-z 0-9 ! @ # \$ % ^ & * ( ) _ - + = ' " \ [ ] : ;	
Search for Boolean Words:	"BILLING NOT VALID" "NOT" and "OR" and "AND" "DISP=(NEW,DELETE),"	Enclose whole phrase in double quotes Enclose Boolean words in double quotes Enclose in double quotes
Search contains Parenthesis:	DISP=?NEW,DELETE?,	Substitute single char wildcard ? For parenthesis
Multiple Char Wildcard *:	S9*V99	* can be any combination of multiple chars
Single Char Wildcard ?:	"S9(??)V99"	?? can be any combination of 2 chars
Single Digit Wildcard `:	**** or *****	find 4 or 5 digit numbers
Search for Char Asterisk:	"I"	[ is the substitute char for searching *
Search for Char Question:	"I"	] is the substitute char for searching ?
Proximity Both Directions:	READ W/10 UPDATE	read within 10 words of update
Proximity Preceding:	MOVE PRE/1 ("Y" or 'N')	move must precede 'Y' or 'N' by 1 word
Numeric Range Search:	10~25	find numbers between 10 and 25
Searching by Element Size:	[00500] NOT [00500]	programs with at least 500 lines programs have at most 500 lines
- Extended Query Analysis Language (EQAL):** A table showing EQAL commands and their descriptions, with checkboxes for COBOL, NATURAL, Other CX, and None CX.
 

EQAL Command	Description	COBOL	NATURAL	Other CX	None CX
DATANAME	Program name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

On the left side of the interface, there is a "Hits" section showing search results. It indicates that 2,322 documents were searched in 0.020 seconds, and 74 hits were found in 20 documents. A list of hits is displayed, including document names like COBOL/VAXVIR20, COBOL/OJYWO940, COBOL/KOGOQ055, COBOL/XXK004, COBOL/TOBOI060, COBOL/YOBOM285, COBOL/AAWHG118, COBOL/OOTUE120, COBOL/CDJR40, COBOL/HACN35, COBOL/FJP855, COBOL/KBB850, and COBOL/VAV960.

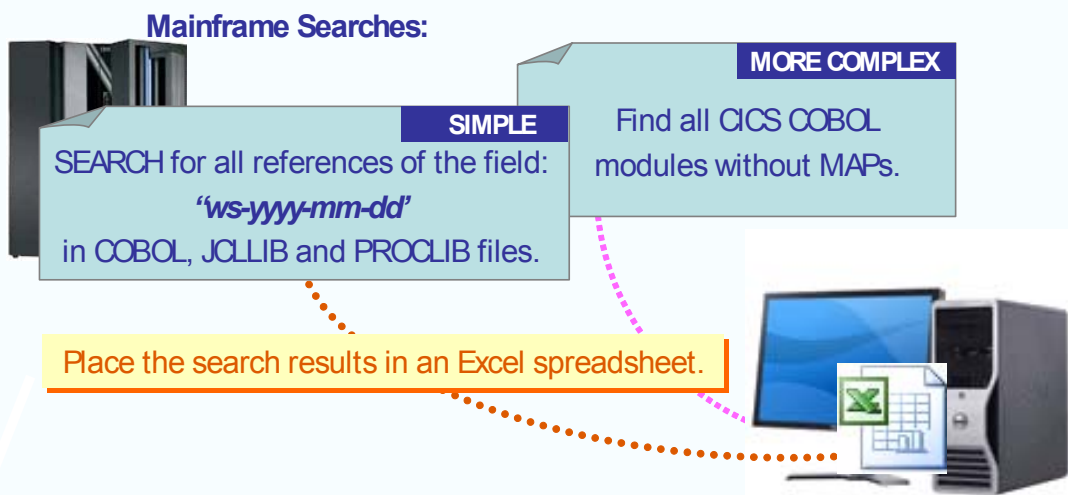
SMART TS XL's easy to follow, Web-browser-based main window.

In today's corporate world business analysts, project managers, developers, compliance auditors and documentation writers are constantly faced with requests or challenges that require them to carefully search through application source code, data library meta structures, job control procedures or systems logs. It could be an urgent request to further bolster the security of an online system by adding a second challenge question to the logon screen. It could be the need to comply with yet another regulatory standard or the need to provide additional authorization data for an online credit card transaction. **SMART TS XL** is a proven solution that will simplify and expedite any and all of such software change management scenarios.

### SIMPLIFYING SEARCH TO MAKE IT MORE POWERFUL

There are search tools, other than **SMART TS XL**, available for all of today's major computing platforms. These search tools, however, tend to be rather platform-specific, inflexible and cumbersome to use. They do not facilitate cross-platform interactions—even something as 'simple' and obvious as providing the results of a mainframe-based search in the form of an Excel spreadsheet. Trying to realize federated searches across disparate platforms using such tools in tandem tends to be frustrating, very time consuming and thus hugely expensive.

Lets take two, very representative mainframe search examples—one relatively basic and simple, the other more complex—as shown here:



Without **SMART TS XL**, completing the simple, basic mainframe search mechanisms involving TSO/ISPF, COBOL search and JCL could take between 3 to 11 hours.

*With **SMART TS XL** this search and deliver-to-Excel operation could be successfully completed in less than a minute!*

Polling various mainframe customers has indicated that it might take them as long as 20 hours to get the results from the more involved CICS COBOL search operation.

*With this search also, SMART TS XL could yet again deliver the requisite results, accurately and without caveats, in less than a minute.*

These examples of the time compression possible with SMART TS XL, despite their extraordinariness, are in no way fictional, hyperbolic or unrepresentative. The actual numbers quoted for the major airline and transportation service provider (ON PAGE 5 AND BELOW) attest that such time (and thus cost) savings are indeed easily attainable with SMART TS XL.

Given the importance of these numbers to potential customers they warrant being summarized:

	<u>WITHOUT SMART TS XL</u>	<u>WITH SMART TS XL</u>
Simple mainframe search	3 to 11 hours	< 1 minute
Complex mainframe search	5 to 20 hours	< 1 minute
Airline	120 hours	6 hours
Transportation Service	2 weeks	½ hour

SMART TS XL thus, at a stroke, eliminates the hassle factor hitherto associated with corporate searches—particularly when they involve mainframe or iSeries assets. SMART TS XL makes mainframe, iSeries and cross-platform searches as easy and *gratifying* as doing a Web search with Google™. *That, in a nutshell, is SMART TS XL's value-proposition.*

In reality this Google™ analogy needs to be taken further.

As with a Web search, SMART TS XL's search results when displayed with a standard Web browser, in addition to being fully cross-referenced and color-coded, are hyperlinked. With SMART TS XL users do not have to expend time and energy keying in various filenames to follow the flow of a search reference. Instead, they can effortlessly SURF the search results by clicking on the hyperlinks.

SMART TS XL encourages developers and analysts to perform the searches that will enable them to make better decisions—and thereby improve productivity and expedite results. That is the beauty of SMART TS XL. It makes federated, cross-platform corporate searches appealing and affordable. The oft heard refrain at IT-related meetings of: *"well, it is going to take us a couple of weeks to pull together that information"*—will become a distant memory. IT groups will be empowered to indeed do more with less.

## SMART TS XL: THE SMART SOLUTION FOR SOA TO OUTSOURCING

SMART TS XL is also an invaluable tool—one could even contend that it is a prerequisite—for any SOA or SaaS initiative. In order to be able to gainfully exploit Web services, analysts and developers need to know what software functionality is already available; how such functionality could be extracted for reuse, and how to streamline existing applications to benefit from these callable, component-like services. SMART TS XL has all of the cross-platform search and analysis capabilities required for evaluating, planning, scoping, implementing and testing SOA and SaaS projects—whether it involves service creation, service sourcing or service consumption.

Once SOA or SaaS starts to gain traction, IT departments quickly discover the need for maintaining accurate ‘registries’ of all the Web services being created, acquired and used by the various development groups. Since SOA and SaaS, by definition and design are platform agnostic, the Web services being used and the applications that are making use of them are likely to span multiple, diverse platforms. As should be very clear by now, lightning fast, low-cost multi-platform search and analysis is SMART TS XL’s undeniable forte. Consequently, SMART TS XL is ideally suited to proactively help developers, analysts and technical writers create and maintain accurate Web services registries.

COBOL conversion to Java or .NET is another popular, contemporary IT undertaking. In some cases this conversion effort is outsourced to off-shore companies in India and Eastern Europe. Off-shore outsourcing of software development, testing and maintenance, independent of COBOL conversion, is another overarching IT theme being pursued by many corporations. Suffice to say that SMART TS XL can play a pivotal role in all such undertakings—from the preliminary project estimation stages all the way to the acceptance of the completed software modules. It can and should be the basis for monitoring and managing the entire software change process—at both ends, if outsourcing is involved.

Mergers and acquisitions (M&A) continue to occur around the world—and the pace is likely to accelerate as the global economy recovers from the 2007-2008 credit crisis. With any M&A there is always a need to consolidate some databases, integrate certain applications, enhance other applications, end-game a few others, develop new functionality and streamline business processes. Again, SMART TS XL can deliver unsurpassed, comprehensive cross-corporation, cross-platform search-index-analyze-report functionality—quickly, easily and above all affordably. IT departments tasked with handling M&A ‘integration’ should insist on having SMART TS XL as a mandatory prerequisite—so that they can accurately map and survey the software terrain they have to traverse and conquer.

The bottom line is whether it be ongoing software maintenance, new application development, M&A, outsourcing, SOA/SaaS or COBOL conversion, SMART TS XL provides corporations with the SMARTEST solution for today's cross-platform, multi-language search-index-analyze-report functionality.

### Find Instantly

Searched: 2,324 docs in 0.031 sec  
 For: REPORT-START-CONTROL  
 Found : 48 hits in 8 docs  
 1 - 8

Hits	Document
6	<a href="#">COBOL/YAW500</a>
6	<a href="#">COBOL/XAT420</a>
6	<a href="#">COBOL/UAL480</a>
6	<a href="#">COBOL/TAM540</a>
6	<a href="#">COBOL/SAY640</a>
6	<a href="#">COBOL/RAS580</a>
6	<a href="#">COBOL/NAV4</a>
6	<a href="#">COBOL/FAF4</a>

**All Hits** | **A**

I13-INPUT-CONTROL  
COPY [W&J13I](#).

L13-LOAD-DPR-RAQSEI  
COPY [Z&O13O](#).

R14-REPORT-START-CONTROL  
COPY [X&X14R](#).

E15-ECQARTIKT-MEIV-KDEIZ  
COPY [EIC15E](#).

S15-WEGUL-LJEAG-FIELD  
COPY [BAE15H](#).

### Follow Seamlessly

- Fast split second results
- Supports Complex, Boolean & Proximity

### Formulate Graphically

#### Cross Reference Report

Module: LAYDZFZN

Module Cross References

Module: LAYDZFZN No Lib  
 Data Type: COBOL  
 Levels: 3 HTML EXL\*

View Cross Reference

Module: COBOL/LAYDZFZN is referencing:

LAYDZFZN	COBOL			
IAWA0001	COBOL			
WAPRFHEI	COBOL			
IAWA0001	COBOL			
UAZYEHKS	COBOL			
CAPPIXSR	COBOL			
IAWA0001	COBOL			
RAQSEI	NATLIB			

- Programs across entire enterprise are automatically hyperlinked.
- Supports multiple open windows for easy navigation (MDI).

- Generates graphical X- REF reports which reveal missing connections.
- One click to Word and Excel

SMART TS XL's compelling FIND-FOLLOW-FORMULATE paradigm for software change management.

# INESCAPABLE DIFFERENTIATING FEATURES OF SMART TS XL - AT A GLANCE

REFER TO PAGES 12 TO 19 FOR MORE DETAILS

## TECHNICAL

- ⊕ Perform **syntax-based**, programming language-specific source code searches—targeting PROCEDURE names, comment lines, numeric values, key words, etc.
- ⊕ Precisely determine source code module complexity using Halstead *cyclomatic* analysis and other industry-standard schemes.
- ⊕ Support for RACF and ACF2 policy-based security for controlling file access and user authentication.
- ⊕ **Cross-referencing** across files, with *'click-to-follow'* hyperlinks, without the need for predefined rules, to permit seamless tracking of items.
- ⊕ Comprehensive, pan-enterprise **federated search** capability across disparate platforms, across languages, across data types and across corporate documents.
- ⊕ Powerful criteria specification syntax that permits incisive searches based on free-text, Boolean relationships, **proximity**, range and wildcards.
- ⊕ Customizable **color-coding** of words and phrases in the search results to facilitate visual tracking.
- ⊕ XML/SOAP **Web-services-based** 'APIs' to permit unconstrained programmatic access to all of SMART TS XL's functionality and search results.
- ⊕ Built-in utility that converts Java, .NET, other OO languages and PC documents to a common canonical format compatible with traditional source code layouts.

## FINANCIAL

- ⊕ Realize compelling mainframe MIPS savings, with some SMART TS XL customers reporting savings of **\$45,000** a month.
- ⊕ Mainframe off-load design precludes the need for Systems Programmer involvement—reducing **staffing costs**.
- ⊕ **Web-browser-based access** eliminates the cost of installing and maintaining search-specific clients on user desktops.
- ⊕ Intuitive, self-prompting interface results in a very **shallow learning curve** thereby obviating the need for costly training and familiarization.
- ⊕ Lightning fast searches, thanks to patented technology, slashes **elapsed times** thereby turbo-charging overall productivity.
- ⊕ SMART TS XL's **self-maintaining**, 'intelligent' database scheme does not require database administrators—thus yet again minimizing staffing costs.
- ⊕ Cross-platform, **federated search** capability eliminates the cost of maintaining multiple search schemes.
- ⊕ Simple, **Windows-based** installation, set-up and customization, achievable within *2 to 6 hours*, results in minimal implementation costs.
- ⊕ Proven, solid and **stable software** rules-out productivity disruptions due to system errors or system downtime.
- ⊕ Demonstrable increase in IT department **productivity** that makes it feasible to continue *'doing more with less'*.

## SMART TS XL: TEN (10) STANDOUT FEATURES THAT SET IT APART

1. Innovative and unique EXTENDED QUERY ANALYSIS LANGUAGE (EQAL) permits *ultra-precise* searches based on actual programming or procedure language syntax. At present SMART TS XL supports: COBOL, ASM, NATURAL, JCL, PROC and RPG out-of-the-box. However, any language can be added in minutes using the built-in language configurator toolkit. EQAL ensures that developers can perform smart-searches for exactly what they are looking for—without being inundated with irrelevant false hits.

A relatively simple example will immediately highlight the potential and power of EQAL. Take a search for the keyword 'READ'. In the context of source code 'READ' could have very different meanings and significance depending on where it occurs within a source file. Finding 'read' within a comment line is totally different from finding 'read' as a programming language keyword. Similarly, 'read' occurring inside a literal string is not the same as 'read' mentioned within a Procedure Name. *EQAL lets developers pin-point what they want searched—with surgical precision.*

With EQAL searches can be constrained to specific targets such as: only comments, only code lines, only keywords(/reserved words), specific columns [e.g. COBOL columns 1 to 6 or columns 73 to end], *numeric values* only, procedure names only, within literal strings only, etc. Given SMART TS XL's innate flexibility and power it is even possible to freely combine multiple EQAL statements to create extremely sophisticated, tightly constrained searches.

```
SYS.DAL.DEV.COBOL (COBOL/QAXPOVAL)
...
* 030598 HWH AIPEA DAHE-C CEOUYPT AS OUTPUT FIELD FOR JEEQEPAVB PCL0298
PROCEDURE DIVISION
...
0020-CALL-CAFERLJ.
CALL CAFERLJ-PGM USING DATE-CONVERT-RECORD
...
IF CW-LENGTH (CW-SUB) > 10
  EVALUATE TRUE
    WHEN DCR-CAFERLJ-ERROR-PTAX = 'B'
      PERFORM J705-CVT-ERR-IZSOLFEEUE-DATA
    WHEN DCR-CAFERLJ-ERROR-PTAX = 'C'
      PERFORM O706-CVT-ERR-INVALID-DATA
    WHEN OTHER
      PERFORM M751-FAZDB-FROM-CAFERLJ
  END-EVALUATE
END-IF
```

The diagram illustrates various EQAL search annotations applied to a COBOL code snippet. A red line highlights the comment line with the annotation 'xCmnt - Search within comments only'. A blue line highlights the procedure name '0020-CALL-CAFERLJ.' with 'xProc - Search within Procedure name'. A purple line highlights the reserved word 'CALL' with 'xKeyw - Search within language reserved words'. An orange line highlights the number '10' in the conditional statement with 'xNbr - Search within numbers'. A green line highlights the string 'B' and 'C' with 'xStr - Search within Strings'. A yellow line highlights the column range '73 to End of line' with 'x73 - Search in position 73 to End of line'. A green line highlights the procedure name 'PROCEDURE DIVISION' with 'Procedure - Search within Procedure Division'. A light blue line highlights the string 'M751-FAZDB-FROM-CAFERLJ' with 'xLtr - Search within all words that are NOT language reserved words'.

SMART TS XL's language syntax specific EQAL feature that permits ultra-precise searching.

- Hierarchically color-coded, CROSS-REFERENCED SEARCH RESULTS, with 'click-to-follow' hyperlinks to permit quick and effortless visual analysis and reference path traversal of search results. Each of the color-coded levels in the Cross Reference report displays the document name and type. Icons displayed next to each reference permit the immediate display of the document in question, extraction of the text that matched the search criteria or immediate drill-down to the next level of that reference.

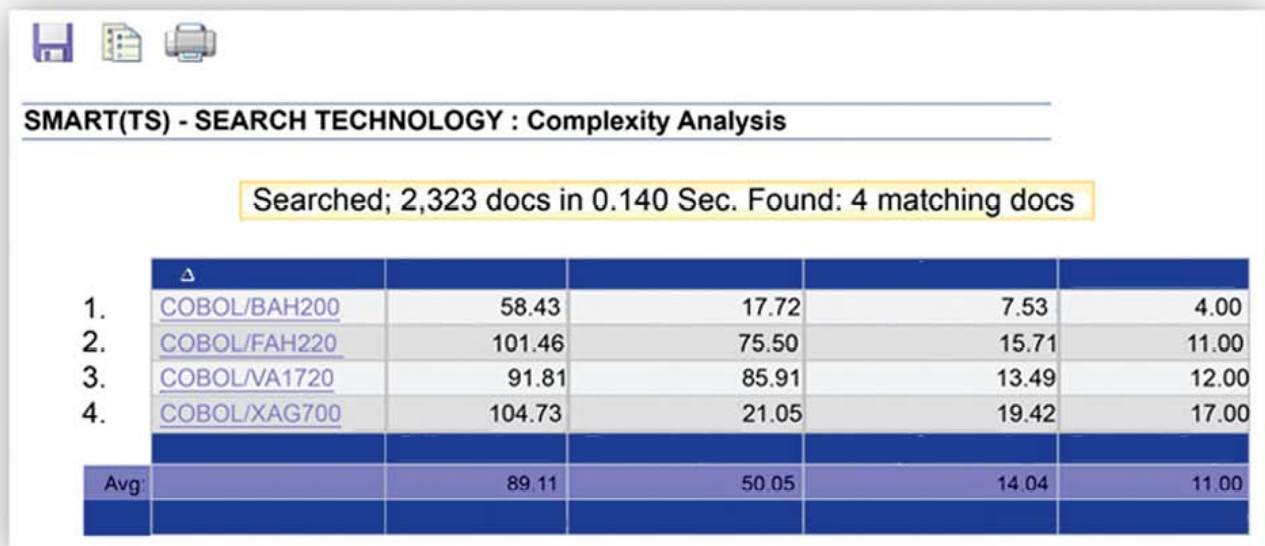
SMART TS XL's color-coded, hierarchical search results Cross Reference report – shown here formatted for HTML display.

LEVEL	MODULE NAME	TYPE	LINKING TEXT
Base	<u>QHRCS010</u>	COBOL	
			[01661] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS HAFMUIR-PARAMETERS.
			[01683] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
			[01689] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
2)	<u>VPKOV040</u>	COBOL	[01693] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS HAFMUIR-PARAMETERS.
			[01762] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
			[01772] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
			[01781] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
			[01791] CALL ' <u>QHRCS010</u> ' USING LAWOAQO-PARAMETERS
3)	<u>BUIR005</u>	PROCLIB	[00170] //PS090 EXEC PGM= <u>VPKOV040</u> , COND=(0,NE)
3)	<u>OOMG010</u>	PROCLIB	[00188] //PS090 EXEC PGM= <u>VPKOV040</u> , COND=(0,NE)
			[00358] //PP150 EXEC PGM= <u>VPKOV040</u> , COND=(0,NE)
3)	<u>UDSK001</u>	PROCLIB	[00262] //PS090 EXEC PGM= <u>VPKOV040</u> , COND=(0,NE)
			[00444] //QK160 EXEC PGM= <u>VPKOV040</u> , COND=(0,NE)

SMART TS XL's Color-coded, hierarchical search results Cross Reference—text mode.

3. **COMPLEXITY ANALYSIS** determines the potential reliability, stability and updatability [i.e. serviceability] of software modules. It provides a metric of 'soundness' for a given software module that enables developers and management to assign varying 'levels of confidence' to those modules.

It is a very useful approach for accurately calculating software maintenance budgets (particularly if maintenance is to be outsourced), software testing requirements and system MTBF estimates (especially so if SLA agreements are at stake). **SMART TS XL** supports a variety of popular, industry-favorite complexity analysis methods including: **LOC** (Lines of Code) evaluation, *Cyclomatic* parameter determination, **GOTO** statement analysis and the **HALSTEAD** complexity model.



SMART(TS) - SEARCH TECHNOLOGY : Complexity Analysis

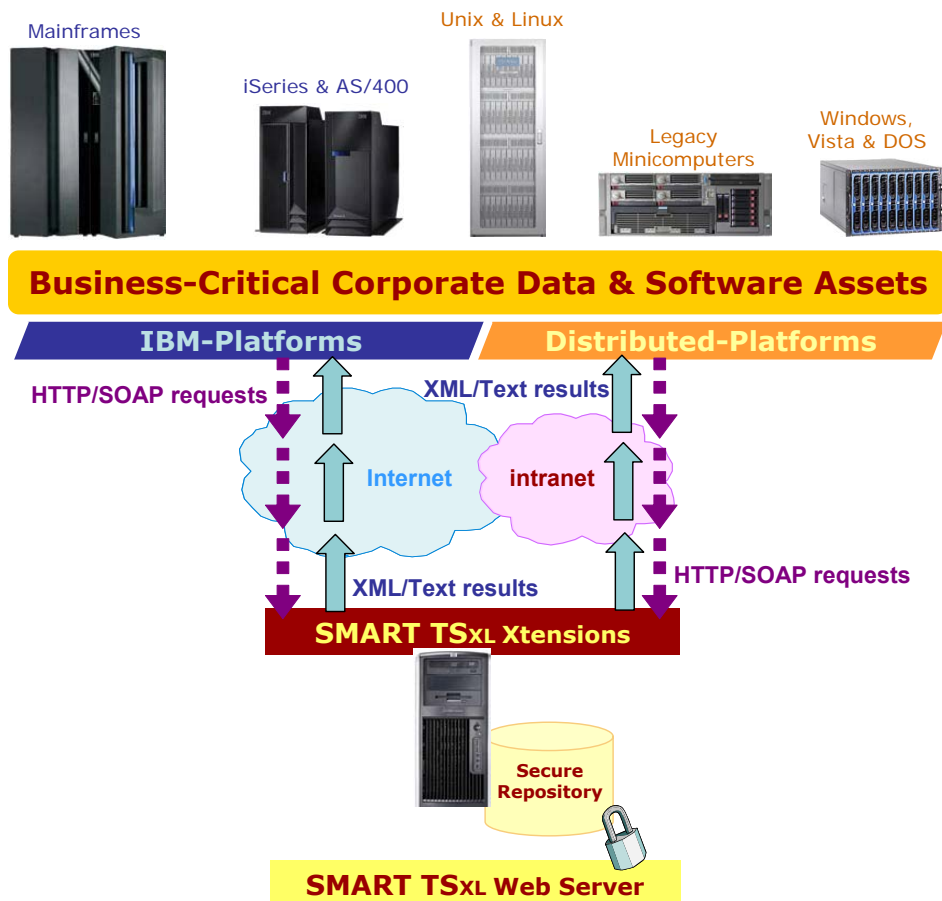
Searched; 2,323 docs in 0.140 Sec. Found: 4 matching docs

	Δ				
1.	<a href="#">COBOL/BAH200</a>	58.43	17.72	7.53	4.00
2.	<a href="#">COBOL/FAH220</a>	101.46	75.50	15.71	11.00
3.	<a href="#">COBOL/VA1720</a>	91.81	85.91	13.49	12.00
4.	<a href="#">COBOL/XAG700</a>	104.73	21.05	19.42	17.00
Avg:		89.11	50.05	14.04	11.00

Results from a **SMART TS XL** complexity analysis of COBOL modules showing: 'difficulty level,' 'industry-standard complexity metric,' 'lines of code,' etc.

4. **SMART TS XL Xtensions** which provide a set of XML/SOAP Web services 'APIs' that enable totally programmatic invocation and interaction with **SMART TS XL**. What a human user could hitherto do in terms of search-and-analysis using **SMART TS XL**'s graphical user interface can now be done programmatically—without the loss of any functionality. **Xtensions** even make it possible to seamlessly integrate **SMART TS XL** capability into a standard Web browser.

With Xtensions, SMART TS<sup>XL</sup> becomes a *smart search-and-analysis utility* that can be gainfully invoked, in the form of a standard Web service, by other applications—*running on multiple platforms*. Xtensions thus further enhances the scope and value of SMART TS<sup>XL</sup>. Rather than rely on CPU- and memory-intensive mainframe or iSeries search programs corporations can now use SMART TS<sup>XL</sup> as a low-cost, off-load solution—with immediate savings in overall IT costs. SMART TS<sup>XL</sup> can even be used to search DB2 and other database content when such data is made accessible to SMART TS<sup>XL</sup>.



XML/SOAP Web services-based programmatic access with SMART TS<sup>XL</sup> Xtensions.

5. SMART TS<sup>XL</sup> supports tight integration with RACF and ACF2 security systems. *In reality SMART TS<sup>XL</sup>'s security interface has been painstakingly engineered to permit easy, but uncompromised, accommodation of any mainframe, OS/400, i5/OS or Unix/Linux security system being used by a customer.* Consequently security is never jeopardized or impeded when using SMART TS<sup>XL</sup>—even with heterogeneous, cross-platform operations.



conversion. The default conversion used by SMART TS XL is the standard mainframe EBCDIC to ASCII translations as specified and used by IBM.

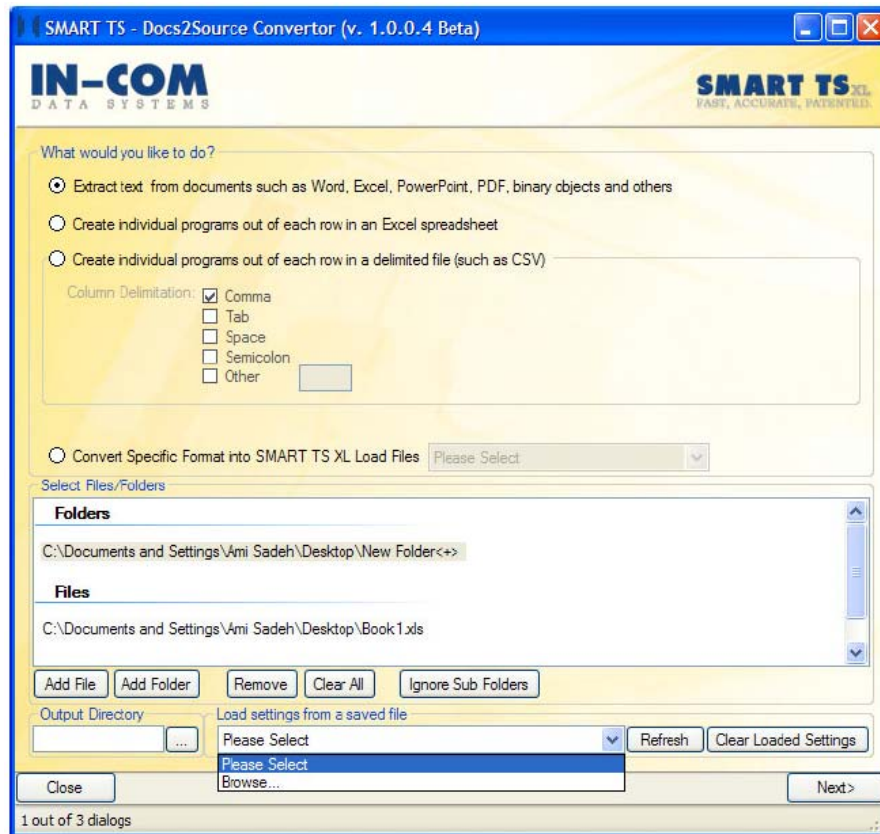
There are, however, instances where this standard conversion is not optimum—resulting in ‘lost’ characters. To preclude this possibility SMART TS XL permits customers to define their own conversion tables—*per file type if necessary*—to override the default translations. This eliminates any danger of data misrepresentation.

7. SMART TS XL’s over-arching mission is to provide secure, lightning-fast, low-cost *federated search* capabilities *across platforms*—embracing all relevant corporate software and data assets, *without limitations and exceptions*. *In general SMART TS XL will support any type of data that a terminal, PC or workstation user can display and read.*

This unconditional support for data and file types means that SMART TS XL will often have to deal with a very wide spectrum of disparate data structures—ranging from CICS MAPS to EXCEL spreadsheets, or POWERPOINT presentations to PL/I source code. To ensure consistent and accurate search results some of these data types, in particular OBJECT ORIENTED (OO) programming languages and PC document formats, need to be converted to a common canonical form for compatibility with ‘older’ (some would say ‘legacy’) data types. This is especially germane when users want to include PC documents in search operations that involve EQAL [PAGE 12], complexity analysis [PAGE 14], Xtensions [PAGE 14-15] or color-coded, cross-referenced output [PAGE 13].

Rather than expecting customers to perform the necessary conversions prior to invoking any search functions using *ad hoc* tools, SMART TS XL provides built-in utilities that expeditiously take care of all the requisite transformations—without in anyway endangering data integrity. Thus, SMART TS XL’s ‘*Source Prep Utility*’ will automatically convert Java, .NET and other OO files into a common canonical form that permits these files to be included in searches that span non-OO languages such as COBOL, BAL, PL/I, etc.

The companion ‘*Docs2Source Converter*’ intelligently extracts text from various PC document files types [e.g., .doc, .xls, .csv, .ppt] and converts it to a common canonical form that ensures search-level compatibility with traditional source code files. *There are additional value-added features for Excel .xls and .csv files.* This utility is in the form of a step-by-step *wizard* [SEE PAGE 18] that simplifies the process by guiding users through the steps they need to follow.



The first screen in SMART TS XL's '*Docs2Source Converter*' wizard.

8. SMART TS XL, per its demonstrated standing as a *state-of-the-art* search-analysis tool, provides an exceptional range of options when it comes to search criteria specification—as well as search invocation modes. For a start, an intuitive, self-prompting '*search query wizard*' is available. Users can use this wizard to perform both simple or complex queries.

In addition to EQAL [PAGE 12], SMART TS XL users can freely use Boolean criteria, proximity specifications, range-constraints, free-text or wildcards when performing searches. It is even possible to do FUZZY searches—which will pick up specific words as well as variants of those words; in particular misspellings and typos. There is another option whereby SYNONYMS can be associated with various words. Users can also save search queries and reinvoke them at will.

The bottom line here is that SMART TS XL ensures that users are never stymied when it comes to performing cross-platform, federated searches—giving them all the options possible to make the search as precise or as broad [i.e., fuzzy] as they want. SMART TS XL sets a new, higher standard for cross-platform, federated search. It is as simple as that!

9. **SMART TS XL**, though designed to be a cost-reducing *off-load solution* with extremely low *startup, operational and maintenance costs*, is exceptionally scalable—with impressive performance even with heavy loads when performing large, complex searches for multiple users. **SMART TS XL** can and will breeze through searches involving **terabytes** of data—and since it is an off-load solution it does so without using any mainframe MIPS or memory.

Users when asked about their opinion of **SMART TS XL** invariably start off by mentioning search completion times that constantly exceed expectations. *This is because SMART TS XL completes most search operations within seconds.* Users accustomed to the lumbering performance of other search tools, in particular mainframe-based tools, are amazed—but grateful. The quick results possible with **SMART TS XL** enhance productivity—thereby helping employees *do more with less*.

10. **SMART TS XL** demonstrably reduces corporate costs on *multiple fronts*—across *multiple dimensions*. Just some of the cost savings made real by **SMART TS XL** include:

Dramatic reduction in mainframe MIPS usage [PAGE 4] which in turn reduces overall hardware costs (including possible Capacity-on-Demand (COD) charges) and upgrade costs.

Simplified installation, set-up and operations, without the need for Systems Programmers and Database Administrators, curtails staffing costs.

Accelerated search completion times [PAGE 8] reduce inefficiency and lost-opportunity costs.

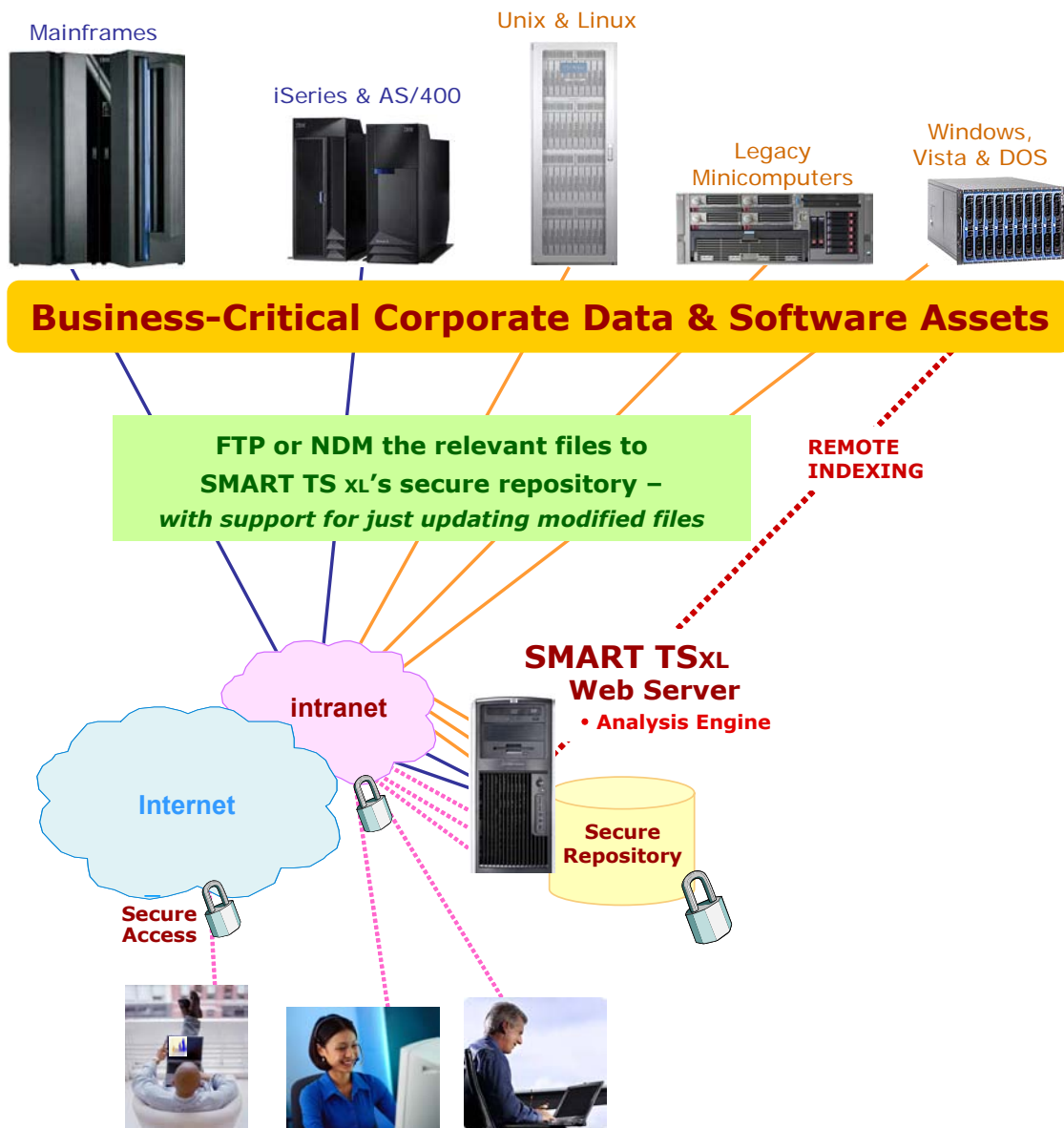
Higher quality search-analysis results that permit better development decision making significantly reduce overall software development and deployment costs—across the entire cycle from start to finish.

Quite a few more pertinent bullets can be easily added to the above list but at this juncture there is little justification for belaboring this point. It should be very clear by now that **SMART TS XL** redefines enterprise search vis-à-vis costs. Moreover, given that **SMART TS XL** delivers cost savings on multiple fronts the cost savings possible with **SMART TS XL** are *synergistic*.

## SMART TS XL: PRINCIPLES OF OPERATION

SMART TS XL, in order to reduce costs, extend cross-platform reach and enhance operational flexibility, is a mainframe off-load solution. All of SMART TS XL's data indexing, federated search, cross-referencing, hyperlinking and GUI presentation-related processing is performed on a Windows platform.

All data to be searched and analyzed with SMART TS XL has to be transferred to the secure repository attached to the SMART TS XL server. Typically this will be realized using standard FTP or Network Data Mover (NDM). SMART TS XL documentation includes sample FTP scripts to realize these transfers. Mainframe customers may also want to evaluate SDS' SDS FTP Manager (SFM) for z/OS that enhances FTP automation, security and management.



SMART TS XL's cross-platform but mainframe off-load architecture.

SMART TS XL can be used with all popular change management and software revision control schemes including CHANGEMAN, Pegasys and Endeavor. Consequently, once SMART TS XL's secure repository has been initially populated with the relevant files from the various platforms, subsequent refreshes can be limited to the *'delta changes'*—i.e., new, modified and deleted files.

As described on [PAGE 16](#), SMART TS XL supports customizable EBCDIC-to-ASCII conversion tables to enable unimpeded text and binary file transfers. In addition, there are the *'Source Prep'* and *'Docs2Source'* utilities [[PAGE 17](#)] to enable the seamless assimilation of Java, .NET, and PC documents. Security, as discussed on page 15, is also not an issue since any mainframe, iSeries or Unix/Linux security system can be tightly integrated with SMART TS XL.

## THE BOTTOM LINE

SMART TS XL is extensively proven at Fortune 1000 corporations and government agencies.

A major Airlines attests that SMART TS XL completes in 6 hours some search and analysis jobs that used to take 120 hours. A worldwide transportation service provider states that a specific search-analyze-report function that had previously taken 2 weeks was successfully completed by SMART TS XL in 30 minutes. Other customers testify to impressive mainframe MIPS savings. A Wall Street financial services firm is enjoying savings of \$36 to \$205 in MIPS per search thanks to SMART TS XL.

*The average overall savings per month (MIPS, time, etc.), across the SMART TS XL customer base, is between \$50K to \$500,000 per month.*

SDS is extremely confident of SMART TS XL's technical prowess, rock-solid reliability, expectations-exceeding performance and cost saving potential. Consequently customers are encouraged to test drive SMART TS XL, with full functionality, support and documentation, for 30 days—for FREE. There are no hidden *'gotchas'* or any *'back door'* charges. It is a *bona fide* offer, from a respected mainframe software provider, meant to be a *'win-win'* proposition.

SMART TS XL genuinely redefines cross-platform, enterprise search. It does so in terms of reach, flexibility, performance, ease-of-use and cost savings. It really does enable organizations to do more with less.



## SOFTWARE DIVERSIFIED SERVICES

Software Diversified Services (SDS), [[www.sdsusa.com](http://www.sdsusa.com)] based in Minneapolis, MN, has been providing premium mainframe solutions to the IBM world since 1982. It currently has in excess of 1,000 mainframe customers worldwide.



SDS' mainframe product repertoire now includes over twenty MVS, VM and VSE products, with the highly regarded Vital Signs VisionNet IP Monitor 7.0 (VIP) being one of these. SDS also markets PC software related to mainframe operations. The products marketed by SDS focus on network management, performance monitoring, report distribution and data compression.

SDS is noted for having the highest quality software, documentation, and technical support in this industry sector. SDS technical support has been rated #1 by the prestigious IBEX Bulletin.