



# **A.C.I.D. INC.**

## **Applied Communication Internet Design**

### **OVERVIEW**

#### **A.C.I.D., Inc.**

has over 30 years experience in modernizing legacy applications software. We specialize in migrating COBOL, FORTRAN, ASS, PLI, RPG and other languages to web-enabled systems using JAVA, J2EE, C, C++, and HTML and a variety of relational Data Base Management Systems (ORACLE, ORACLE-9i, SQL, DB2, IMS.DB, VSAM, ISAM, and others).

#### **A.C.I.D., Inc.**

has developed, maintains and currently uses the only STRUCTURED JAVA, J2EE and C source code generator in the industry.

#### **A.C.I.D., Inc.**

JAVA and C Applicator (JCAP) Tool Suite provides our clients with rapid software engineering services, reduces risk involving the web-enabling of legacy applications software and reduces the time and expense associated with software modernization.

## **OVERVIEW of the eBUSINESS and LEGACY SYSTEMS MODERNIZATION**

Organizations throughout the world have over \$5 trillion invested in legacy systems (mission-critical applications software supporting the infrastructure of their business) [Garvey, Martin J., Information Week Online July 28 (1997)]. According to William Ulrich, a leader in our industry, most legacy applications developed in the '60s and '70s using COBOL, FORTRAN, PASCAL, ASS, PLI, RPG and other languages have evolved over 20 to 30 years without common modeling and structured design concepts, with obscured and complex program logic which is difficult to change and maintain, with little or no documentation and an aging population of competent specials to support such systems. Most firms have been unwilling and unable to "modernize" such systems due to their recent focus on Y2K, and the lack of cost-effective and risk-averse tools to aid in transitioning these legacy systems to modern technologies.

As time has passed, the problem has become critical to many industries. Most corporations are now forced to keep pace or surpass their competition by reducing the expanding costs and risks associated with these antiquated systems. Furthermore, most firms now recognize "upside" benefits associated with migration of their legacy applications software, including the ability to:

- Meet changing business requirements in a timely fashion;
- Integrate legacy applications with modern Enterprise Resource Planning & Customer Relationship Management software; and
- Conduct eBusiness via Intranet (internal to an organization) and/or Internet (outside of the organization) communications.

**A.C.I.D. Inc.** is addressing both the eBusiness and Legacy Systems Modernization markets. Forester Research identified the eBusiness market in 1998 as a \$70B market which will expand to \$1T by 2003. The Gartner Group believes that this market will become as accepted as telephone-based "1-800" commerce by the end of the year 2000. Legacy Systems Modernization is often considered a prerequisite for companies to implement their eBusiness objectives. In 1996, the legacy to web market was a \$35 million business; it is expected to exceed \$1 billion by the end of this year [Garvey]. Indeed, a recent survey of Fortune 1000 companies showed that 70% were either building, or intended to build, Intranets (Forester Research). Finally, the Gartner Group predicts that legacy systems modernization will be running strong into the 21st century, and predicts that 50% of all large businesses will have some enterprise application(s) deployed on the Internet by the end of the coming year. **A.C.I.D. Inc.** is well situated with unique tools, expertise and experience to successfully address these markets.

## **A.C.I.D.'s eBUSINESS**

### **SOLUTIONS and LEGACY SYSTEMS MODERNIZATION SERVICES**

**A.C.I.D. Inc.** provides an industry-leading, mature software product, which assists corporations in modernizing their legacy applications software to web-based technologies. Our Structured Software Generator for "C", "JAVA" and "J2EE" product has been built over a 20 years period and our research has concluded that it is the only technology of its kind within our industry.

Why have we chosen "C" , "JAVA" and "J2EE?" It is commonly accepted within our industry that both C and JAVA are languages of the future, providing for lower maintenance costs associated with their structured design. Furthermore, C, JAVA and J2EE are widely -used (and in fact have been recognized as a de-facto standard) for both eBusiness and other complex applications, with the ability to operate on any operating platform (from microcomputers to mainframes). The result is total elimination of any reliance upon hardware and software vendors, which is considered a critical success factor in legacy systems modernization.

**A.C.I.D.'s JAVA and C Applicator ("JCAP")**  
provides a cost-effective solution for our customers  
(reference the following page):

- o Legacy Enhancements
  - Cleaner Interfaces
  - Reduced Maintenance Costs
  
- o Web Enhancements
  - Web front-end: Both Intranet & eBusiness
  - Structured with Web-Objects
  
- o Environmental Enhancements
  - Reduced Training Costs
  - In Sync with Society
  - Non-Reliance with Hardware & Software Providers
  
- o Integration with Enterprise Applications including the Supply Chain

## **A.C.I.D.'s JAVA and C APPLICATOR (JCAP) TOOL SUITE**

### **A.C.I.D.'s**

JAVA and C Applicator (JCAP):

The most comprehensive legacy system migration and structured applications development tool-suite available today.

**A.C.I.D.'s** JAVA and C Applicator (JCAP) is a comprehensive application generator and legacy software migration product that produces highly-structured JAVA and C language applications software which utilizes various Database Management methodologies (including SQL, ORACLE, and others). The componentized software yields the highest performance standards in today's micro-, mini- and main-frame computer systems. The generated application programs are SAA- and ANSI-compliant and are completely hardware and operating system independent since they are able to run on any architecture which supports JAVA and/or C programming languages. No other software products are required to run the JCAP solution and application software generated by JCAP. The following presents the basic components of the JCAP tool:

Screen Map Generator – A composition tool for data entry/update screens. Features multi-screened data records; variable and constant field definitions; textual graphics; automatic user messages, prompt and command bars and windows; full compliment of built-in, SAA-compliant, editing/control keys; ASCII screen import/export capabilities for interfacing to other software products in the marketplace; pre-screen, post-field and post-screen exits to JCAP-generated user functions shells and integrated screen print option for all print streams created by JCAP programs. Field types include:

- Character string (left-justified);
- Character string (right-justified);
- Numeric (integrated decimal arithmetic);
- Numeric (string, right-justified);
- User date;
- System date;
- User time;
- System time;
- Password (no echo);
- Join (string, left-justified); and
- Join (string, right-justified).

The Screen Map Generator operates from the following menus:

- Screen specifications;
- Screen layout;
- Variable field definition;

- C and JAVA code generation;
- Save composition;
- Load composition;
- Import ASCII file;
- Export ASCII file; and
- Exit.

Screen Source Generator – Links output from the Screen Map Generator and Database Definition, producing JAVA and/or C language data entry/update programs. Generated source features include pre-header, post-header, post-field, pre-data and post-data screen user function shells for data validation, and function key processing for saving and deleting disk data records and paging forward and backward through multi-screened data records.

Print Map Generator – A composition tool for printed reports. Features include multi-blocked print definition – 1 header, 1 footer and 8 detailed blocks; variable and constant field definitions; textual graphics; variable-sized forms and margins; full compliment of built-in, SAA-compliant editing/control keys; ASCII screen import/export capability for interfacing to other software products in the marketplace; post-field exits to JCAP-generated user function shells; forms name control; integrated report header file maintenance and integrated screen print option for all print streams created by JCAP programs. Field types include:

- Character string (left-justified);
- Character string (right-justified);
- Numeric (integrated decimal arithmetic);
- Numeric (string, right-justified);
- User date;
- System date;
- User time;
- System time; and
- Page number.

The Print Map Generator operates from the following menus:

- Print specifications;
- Print layout;
- Variable field definition;
- C and JAVA code generation;
- Save composition;
- Load composition;
- Import ASCII file;
- Export ASCII file; and
- Exit.

Print Source Generator – Links output from the Print Map Generator and Database Definition, producing JAVA and/or C language data report programs. Generated source features include automatic file joins, array processing and user function shells. Operates with the following screen input data:

Program name;  
Detail file name (in Database Definition);  
Print map name;  
Detail key file names (for automatic record selection and sequencing of the data to be printed);  
Header screen name (for initial program screen);  
Up to 6 join-from files including data file name (in Database Definition) and data field name (composite key);  
Up to 6 join-to files including data file name (in Database Definition) and key file name (in Database Definition); and  
Print Control including data file name (in Database Definition) and data field name (simple or array variable).

Process Source Generator – Utilizes the Database Definition, producing JAVA and C language data processing programs. Generated source features include automatic file joins, automatic disposition of detail and join files (re-write or update, no re-write nor update, and delete), array processing and user function shells. Operates with the following screen input data:

Program name;  
Detail file name (in Database Definition);  
Detail key file names (for automatic record selection and sequencing of the data to be processed);  
Header screen name (for initial program screen);  
Up to 6 join-from files including data file name (in Database Definition) and data field name (composite key);  
Up to 6 join-to files including data file name (in Database Definition) and key file name (in Database Definition); and  
Process control including data file name (in Database Definition) and data field name (simple or array variable).

Database Definition – JCAP produces highly - structured links and calls to a multitude of Database Management Systems including SQL, ORACLE and others. JCAP also includes a Universal Data Conversion Utility which ports any database or file over to the new database architecture, with full data validation.

File Maintenance Source Generator – Generated source includes complete file maintenance for all of the files defined in the PTREE (an enhanced BTREE) Database Definition. Disk space occupied by unused data records is returned to the system, and all key index files are completely rebuilt thereby re-aligning and normalizing potentially "corrupt" disk files. JCAP produces an ASCII text file which describes the PTREE data and index files .

They can be maintained by any text editor or word processor software product on the market today. Data elements include:

Data file name (structure variable in the generated C and/or JAVA program/function);

Data field including name, link ID, type,, array size and initial "seed" value; and  
Index file including name, composite key fields, key length and duplicates.

Look-up Screen Source Generator – Links output from the Print Map Generator with the File Maintenance Source Generator and/or Database Definition, producing JAVA and/or C language data field lookup functions. Generated source features include windowing, data paging (up/down), circular scroll bar for item selection and user function shells. Operates with the following screen input data:

Program name;  
Detail file name (in Database Definition);  
Detail key file names (for automatic record selection and sequencing of the data to be printed); and  
Lookup control including data file name (in Database Definition) and data field name (simple or array variable).

Parameter Program Source Generator (for user entry/update operations) – Links output from the Screen Map Generator and Database Definition, producing JAVA and C language parameters entry/update programs. Stream-lined source code for single-record PTREE files are created, which is ideal for user-controlled program parameter files and program checkpoint/recovery files. The Parameter Program Source Generator operates with the Program Name screen input data.

Parameter Function Source Generator (for program access operations) – Links output from the Screen Map Generator and PTREE Database Definition, producing C and JAVA language functions for accessing a parameter file. Stream-lined source code is generated for a single-record PTREE file which is ideal for user-controlled program parameter files and program checkpoint/recovery files. It operates with the Program Name screen input data.

Menu Generator with User ID/Password Program Access Security – A system administrator tool for creating and maintaining screen menus for operating application systems generated by JCAP. Features include textual graphics for menu composition; separate menu text and program name files; multi-screened menus for user convenience; circular scroll bar and item number for item selection and multi-layered directory tree incorporating the following structure (defined by the user):

System name;  
Module name(s);  
Data name(s); and  
Program name(s).

Program security is maintained by JCAP at the user level, i.e., the customer can control which Payroll programs Mr. Smith may run with the customer database.

Help Screen Generator – Each application software system generated by JCAP includes a centralized help file. Each entry/update data field managed by the generated

application utilizes Function Key F1 (defined by the user) for help screen information. The JCAP tool includes user tools for creating and maintaining end user help screens at the system, program, screen and field level. Features include textual graphics, multi-paged help screens and help screen paging (up/down).

Integrated Color Control for the User/Developer – Screen color attributes can be changed at run-time by the customer for the following JCAP components (for both the JCAP tool and the applications generated by JCAP):

Data entry/update screens including clear screen, field text, field at rest and field edit;  
Help and lookup windows including border, text, header and footer;  
Command windows including border and text; and  
Message windows including border and text.

Object Library - including Over 100+ C and JAVA Functions and User/Developer Header Files categorized as follows:

Date and calendar function library;  
Database and PTREE link library;  
Data entry/update function library;  
Print function library; and  
General utilities function library for decimal math, windowing and miscellaneous string, graphics and color control.

## **SUMMARY of JCAP FEATURES**

- **A.C.I.D.'s** JCAP tool-suite provides both rapid application development as well as legacy systems migration support. The tool is a "work-bench" (see below) which assists the user in the development of application software by incorporating design components (specifications and/or documentation) and through the extraction of business rules from available source code to produce highly-structured and "componentized" ANSI standard C and JAVA. The generated source code is easy to maintain. JCAP also preserves "user" code across source code re-generation, accelerating program maintenance. Every program generated by JCAP is automatically re-generated, re-compiled and re-linked. Change management can be performed by traditional methods, or by using JCAP's maintenance capabilities;
- Import/Export to customer's text editor from all generator components are provided for accelerated screen, print and menu preparation;
- Automatic validation of database definition is performed for all generated components. JCAP utilizes parameter-driven software that converts or reformats one or more database and/or files from the source computer system to the target computer system. Field (column) parameters include, but are not limited to EBCDIC



character set, ASCII character set, position within record (row), length, description, type, required or optional, right fill character, left fill character, separator character, database table ID, database column ID, offset, raw value, mask and new value. Field (column) parameters are specified for both the input and the output sides of the data conversion process. The Universal Data Conversion Utility includes comprehensive field (column) validation procedures, producing exception reports identifying failed records (rows) and fields (columns), facilitating subsequent corrective measures and/or actions for failed records (rows). Also optionally utilizes Code-1 standards for conversion of name and address fields (columns);

- Simplified database definition is created, utilizing ASCII text files which is maintainable by any text editor which the customer is comfortable with;
- Four levels of on-line help information is provided by JCAP (field, screen, module and system). Help files are completely maintainable by the application administrator;
- A complete and integrated menu system is provided, incorporating user/password security access at module, data set and program level;
- Customer-controlled screen color selection is provided for data entry/update screens, field lookup windows, command prompt windows, user message windows, help screens, menu screens and all components of the JCAP generators;
- Integrated task control is accommodated, including parent-child and parent-parent invocation for all programs and functions generated;
- An over-abundant number of source "main-body" links to user-functions is provided, eliminating the necessity of user modifications to the generated source code;
- Automatic generation of pre- and post-screen user function "shells" for screen setup and validation is provided;
- JCAP provides the capability for automatic generation of file lookups and joins for any field utilized by the generated source programs;
- Automatic call to optional user functions for any field utilized by the generated source programs is provided;
- Interfaces to KnowledgeWare's Case Product are optionally available;
- Links the optional Windows API library is available, which is compatible with Microsoft Windows. No change is required to the application source; and
- For COBOL applications, JCAP can "parse" the source code into the four separate Divisions (Identification, Environment, Configuration and Procedure) in order to create an automated interface to build screens, database and file definitions and to segment program logic into componentized JAVA scripts (see below).

- For PL/I applications, JCAP can "parse" the source code in order to create an automated interface to screen maps, identify the CICS calls, and generate messaging services into the relational database, when migrating to the state-of-the-art Java language and J2EE compliance.

## **COBOL to JAVA Conversion Using JCAP**

### **JCAP ADVANTAGES and BENEFITS**

- Runs on any hardware platform, from PC to mainframe computers with system software supporting C and/or JAVA. Totally vendor computer system independent, and database independent with SQL capability;
- Application source code proprietary rights can belong to the customer/end user, not an outside third-party organization;
- Source code is highly structured and "componentized";
- Legacy code migration and rapid application development saves time, is cost-effective and risk averse;
- Minimizes the time and expense of enhancements to, and general maintenance of the source code by support staff by a factor of 10:1 (based upon BETA test experienced results). Source code can be maintained by traditional methods and/or via JCAP's comprehensive set of application program generators;
- Incorporates state-of-the-art features for ease of use by the end user (reference JCAP FEATURES section). JCAP is a product of over 20 years of research and development that has been successfully applied to a host of commercial and Government customers (see below);
- Performance can be enhanced via client/server architectures which incorporate some of the top performance metrics in the industry; and
- Minimal training of end-users required since the modernized software can incorporate the same functions as the retired application.

## JCAP Methodology

### SAMPLE of A.C.I.D.'s CLIENTS

**A.C.I.D.'s Inc.** has significant experience in providing application development and legacy systems migration services to a number of clients nation-wide including:

- State of Georgia
- State of Missouri
- State of North Carolina
- State of Oregon
- State of New York
- City of Winder Police Department
- University System of Georgia Board of Regents
- Technical Colleges, Technical Prep Schools and Consortia, & School Districts in Georgia and South Carolina
- Mid-Georgia Ambulance Billing Services
- MedEcom
- Reliance Electric Corporation (Rockwell)
- Oil Well Logging Company
- New York Carpet World
- J. L. Curtis and Son
- Penn Telephone and Telephony
- Tanner Gas Company
- American Software

Sample Application:

Mid-Georgia  
Ambulance Service  
Patient Database

Replacing IBM  
AS/400 RPG with  
Modern Client/Server  
C and JAVA

**A.C.I.D., Inc.**

The Georgia Public Service Sommission No-Call List Database Application and Web Site:

An application using modern technologies supporting the State of Georgia

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