See the Big Picture

Build the Best Software

How are you going to move your idea from your mind’s eye to reality?

Building the best software requires the best development process and tools. Software through Pictures (StP) is the complete development solution — offering the services and the tools which lead you smoothly through the development cycle to the software you envision. It allows you to specify requirements for analysis and design, automates implementation and testing, and takes you all the way to the launch of your application.

In addition, StP doesn’t impose any particular methodology, lifecycle constraints, or process limitations. Rather, it can be customized to fit your style. StP’s unbeatable flexibility and scalability make it the ideal development environment to build systems that are able to grow along with your organization, no matter how large or complex they become. And it’s the best way to build software that does exactly what it was intended to do.
Use StP in Every Phase of the Lifecycle to Ensure a High-Quality Application

- **Requirements**—Requirements tables and use-cases clearly specify the system you are building
- **Analysis**—Static and dynamic class diagrams focus on the “problem domain” and clearly show “what” the applications used in your business processes do
- **Design**—Focus on the implementation choices in the “solution domain” to define “how” your business solutions are built
- **Implementation**—Map the abstract design into a concrete solution and automatically generate code from your design, ensuring your application is implemented as modeled
- **Testing**—Generate test cases from your specification and ensure that your business solutions are built correctly
- **Maintenance**—Update your business model and the application source code as business needs evolve
- **Modernization**—Quickly reimplement your solutions in modern programming languages for the latest platforms
- **Component Reuse**—Reduce cost by reusing components from your models in new applications

**Start with a Model**

StP lets you maximize all the benefits of visual modeling by generating graphical models up-front or from your existing code. Visual modeling is a proven-effective approach that enables you to create accurate models of proposed systems. These models reflect all the subtleties of your system’s requirements and allow you to develop efficient, more cohesive designs which are easier to maintain. Plus, models provide a mechanism for clearer communication between business managers, database designers, and software developers. The result: you’ll be able to see and correct potential design flaws early in the development process—saving time and money.

You’ll be able to easily react to changing business needs, scale to large projects, realize reuse, integrate legacy systems, and reduce risk. And you’ll deliver quality software on-time, on-target, and on-budget.

**Software through Pictures, Modeling Tool and More**

More than a modeling tool, StP is a powerful multi-user, end-to-end development environment with a versatile core architecture. It provides you with unlimited scalability and flexibility in terms of the number of programmers or platforms involved, or the complexity of the software being engineered.
With StP, the whole development team—object developers, data modelers, project managers, structured developers, and domain experts—can function as one by collaborating from shared artifacts, diagrams, notes, answers, and data. Whether your team is using OO methodologies (UML, OMT, or Booch), data modeling, or structured methodologies, StP provides full support for all methodologies within one product family.

**Scalability is Key**
StP uses Sybase’s System 11 SQL Server as its repository instead of a flat file system. SQL Server is a reliable and scalable database that allows even hundreds of developers to work concurrently on enterprise-wide projects.

This multi-user repository allows managed access to all the important information for your application. Best of all, it accommodates a project of any size—scaling easily from simple pilot programs to complex enterprise-wide, distributed applications. With StP, your models become a foundation on which to manage a project as it grows or becomes more sophisticated.

**Complete Version Control**
A completed or partial StP model may be baselined into the process and tools that the team is using for version control and configuration-management. Baselining a version of a project’s artifacts (requirements, visual models, test plans, test cases, source code, user documentation, etc.) is critical to understanding and managing change as the project grows and evolves. By integrating StP’s models with the team’s process and tools, team members leverage one another’s experience and have common access to all related information.

“**We are always improving the quality and performance of our products. Software through Pictures is part of that strategy.**”

—Jean-Marc Jousselin, Director of Development, Renault
StP’s reverse-engineering allows existing software components to be represented in a visual model. It then becomes easy to enhance or reuse components to construct a new system.

**Persistent Component Access Management**

StP’s persistent component access management provides the access control you need to work as a team. This powerful feature provides visibility into the accessibility of the projects’ components, and since it is built on the StP repository, it scales as your project grows.

**An Open, Flexible Architecture**

You may already have discovered that a one-size-fits-all solution is no solution at all.

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**“By using Software through Pictures and the library of components it helps us build, a team can produce the entire application necessary to manage a client’s systems—from the database, to the application, to the security, so everyone can understand it. We call it ‘cartoons to code.’”**

—Terry McLane, Principal, William Mercer, Inc.

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**Powerful Implementation Capabilities—Round-Trip Engineering**

StP generates code in the most popular languages, including:

- Java
- C++
- CORBA IDL
- C
- Ada 95
- Forte
- SQL

With StP you have:

- True code-to-model synchronization
- The unique ability to make design-level changes to your code and easily migrate those changes back to the source models
- Strong reverse-engineering capabilities to allow capture and reuse of your legacy code and documentation

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**Round-Trip Development**

StP’s robust round-trip engineering capabilities will ensure that models and code are fully synchronized.
You need the flexibility to successfully design, build, and maintain quality applications that meet a variety of requirements.

StP’s extreme flexibility stems from its open, meta-model architecture which is language-independent and provides support for heterogeneous, client/server networks (UNIX and Windows). StP includes graphical and table editors, a code and document generation system, round-trip engineering capability, file locking, and a multi-user access-control system—all of which may be customized to suit your project.

StP readily integrates with tools covering nearly every stage of the software development process, such as QSS/DOORS, Microsoft’s Visual C++, Sun’s JavaSoft, ATAs DocExpress, Adobe’s FrameMaker, TakeFive’s SNiFF+, and Aonix’s Object-Ada™. However, it also protects your existing investments in tools and technologies by making custom integrations possible.

StP’s open, published APIs enable you to integrate with your choice of “best of class” development tools. You use the tools you want, whether focused on object modeling, structured modeling, or data modeling. And with StP’s shared repository, you’re assured that everyone is still working from the same essential set of processes and data.

Plus, StP is completely customizable. You are able to:

- Incorporate your choice of tools, platforms, or languages
- Customize exactly how your code is generated
- Create a customized, corporate methodology
- Write your own editor

You name it. StP is the only modeling tool whose architecture allows this flexibility in creating an end-to-end development environment. Furthermore, it is this flexibility that ensures the tool will be able to adapt gracefully, regardless of the direction your project takes or which way the industry turns.
Software through Pictures Modeling Products:

- StP OO Product Family
  - StP/UML
  - StP/OMT
  - StP/Booch
- StP/IM—Information Modeling
- StP/SE—Structured Environment
- Validator/Req™ for Testing

Software through Pictures Modeling Products at a Glance

Software through Pictures/ Object-Oriented (OO) Product Family

To build the best, most reliable OO applications, you need a development environment that helps you capture your system requirements, enables you to model systems in the method that best suits your application, verifies that the application meets your system requirements, checks the model’s consistency before it is implemented, and then implements the application exactly as modeled. The Software through Pictures/OO (StP/OO) development environment can help you do all this and more.

The StP component-based, model-driven OO product family offers support for the most widely adopted methods, including the Unified Modeling Language (UML), Object Modeling Technique (OMT), and the Booch Notation. Each of these can then generate an implementation in your choice of OO languages, such as C++, Java, or CORBA/IDL. Or, you can use StP’s reverse-engineering feature to get a head start on modeling your legacy applications from a wide variety of languages. Furthermore, StP’s robust round-trip engineering capabilities will ensure that your models stay fully synchronized with your code.

Software through Pictures/ Information Modeling (IM)

Software through Pictures/IM (StP/IM) helps you capture the conceptual model of your data from a business perspective, before concerning yourself with the complexities of database implementation. StP/IM then guides you through the extraction of a logical model from your conceptual model to focus on the detail
required for application development, ultimately leading to generation of SQL for one or more RDBMSs.

**Software through Pictures/Structured Environment (SE)**
Software through Pictures/SE (StP/SE) supports Hatley-Pirdhai, DeMarco-Yourdon, Gane-Sarson, and Jackson structured analysis and design. It automates much of the creation of data-flow and data-structure diagrams, and ensures their consistency. It also supports behavioral and real-time analysis of your system through control-flow diagrams, state-transition diagrams, and control-specification tables. StP/SE also allows you to express your designs with flow-and-structure charts, and then generate C code. In addition, there is a C reverse-engineering tool that can provide a clear picture of an existing implementation so you can reuse or reengineer its components—greatly reducing your maintenance efforts and costs.

**Validator/Req for Testing**
Validator/Req, a requirements-modeling and test-automation tool, may be used with StP to prevent the most probable errors in requirements and automatically generate specification-based tests and scripts. The tool moves the testing process to the front end of the development lifecycle. With Validator/Req, users are able to enter requirements in a requirements table editor and draw these requirements as system-level, test-ready use-cases.

Validator/Req then allows users to leverage the work involved in writing their requirements by including an automatic test-case generator. The tool applies heuristic and algorithmic methods to requirements information to create test cases that reflect all five design techniques: action, data, logic, event, and state-driven. Validator/Req lets you generate the fewest test cases needed to exercise every specified requirement for the most-probable errors in code.

Validator/Req speeds your time-to-market by reducing the time you spend on testing and rework, and improves the resulting quality of your software.

**World-Class Service Completes the Picture**
The StP solution combines the best visual modeling-based development environment with world-class support to bring you a complete solution. To assure your success, we offer a variety of classes, educational workshops, mentoring, and customized consulting services. You can take advantage of our offerings wherever it’s most convenient: at our training centers or at your own facility. We can also develop customized workshops and provide course materials for in-house training.

“After completing the requirements definition, we had a clear picture of the system we wanted to build. Using Software through Pictures to develop the data-flow diagrams helped us review each step, so we stayed on track.”

—Norman Bridge, Supervisor of Software Development, General Motors Electromotive Division
Because today’s multi-platform environments require the integration of many complex technologies, you may need specialized consulting services. We offer skilled technical consulting in areas such as:

- UML (Unified Modeling Language)
- Object-oriented development
- Testing
- Quality assurance
- Database and application design
- Application and performance tuning
- Systems integration
- Large-scale project implementation

From full-scale project management to staff augmentation, mentoring, and formal classroom training, Aonix consultants are certified in all areas to appropriately match your unique needs.

**Getting There**

From requirements all the way to the launch of your application, StP gives you the capabilities to develop software that does what it is supposed to do. It allows you to develop software quickly and cost-effectively, with minimal disruption to you, the people you work with, or your organization as a whole. And it protects you as your needs change by handling any size project with any number of programmers.

Consider StP a long-term solution for your software development needs. It is a complete solution for building software that is not only much more reliable, it actually becomes a catalyst for your organization’s growth—by providing a level of scalability and flexibility that far exceeds that of any other development environment available today. Whatever your need, bring us your toughest problems and walk away with answers. For more information on the StP’s modeling solutions for your business, please visit us at [www.aonix.com](http://www.aonix.com), or contact your Aonix representative.