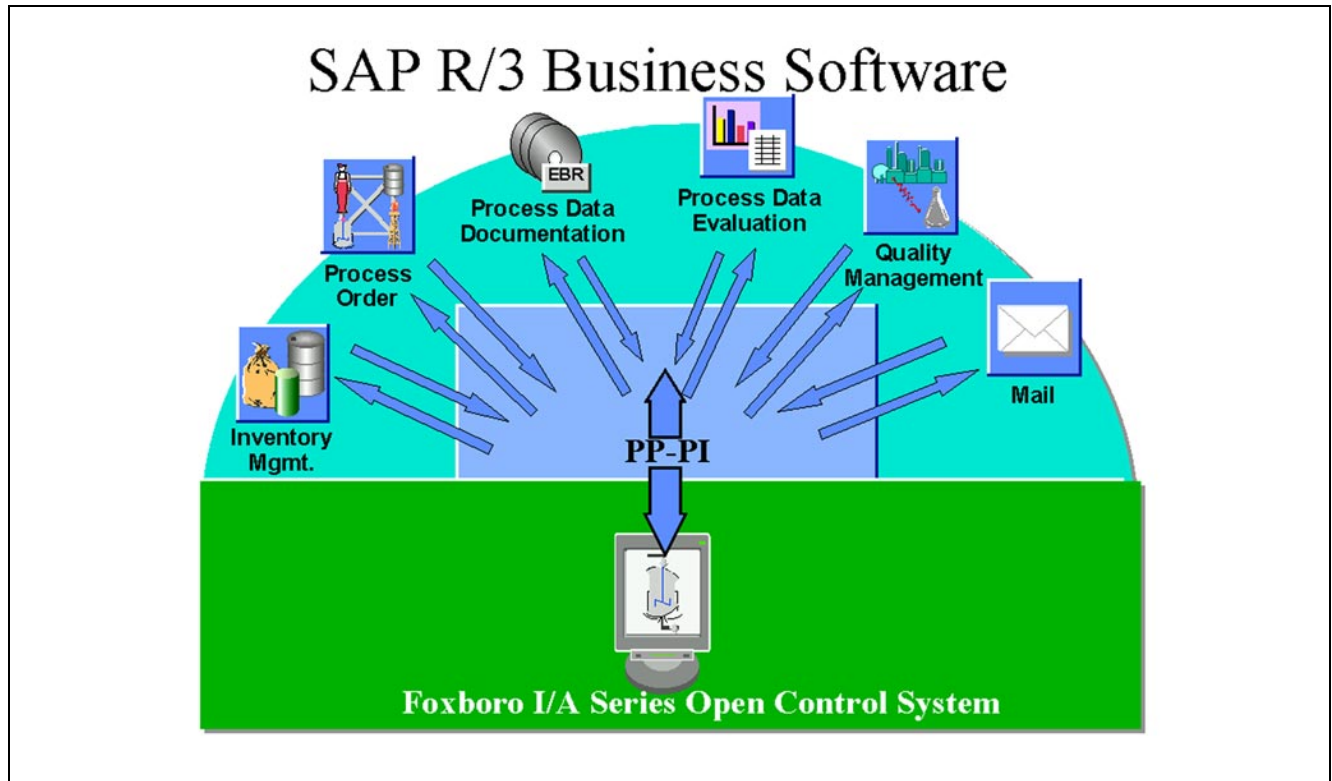


I/A Series® Software

Business Integration Software for FoxBatch Integration with SAP R/3 PP-PI



This I/A Series Business Integration Software (BIS) enables information sharing between SAP and the Foxboro I/A Series Automation System, thus allowing the enterprise to react quickly to changing business needs such as sales orders and inventory changes. Basic configuration and implementation services are bundled with this software package to ensure application integration success.

This integration software is the first SAP Certified interface in the world for SAP's Production Planning-Process Industry (PP-PI) module.⁽¹⁾

OVERVIEW

I/A Series BIS is an industry leading enterprise integration product which transparently brings together the worlds of business management and planning systems with real-time process control systems.

This standard software integrates the Foxboro I/A Series systems with the leading integrated business suite, SAP R/3, specifically with the PP-PI Module. The underlying BIS software architecture permits a number of permutations including customized integrations with different modules of SAP, even different I/A Series applications.

⁽¹⁾ The Foxboro Company is a SAP Certified Complementary Software Partner.

The SAP R/3 system performs business and production planning tasks. The PP-PI (Production Planning - Process Industries) module of the R/3 package is a planning and business information gathering tool. The I/A Series Batch Application software, FoxBatch, executes, monitors, and controls batch production. This Business Integration Software is unique in that it communicates via an information network and intelligently translates application information between FoxBatch on the I/A Series system and the PP-PI module on the SAP R/3 system. Unlike other competitive approaches, no other hardware, software, databases, or configuration is involved.

SYSTEM ARCHITECTURE

This system consists of the SAP Server of customer choice, on which the PP-PI module resides, and the Foxboro I/A Series Application Processor/Application Workstation 51 (AP/AW51) that communicates via an information network. Communication between the I/A Series integration software and SAP systems is based on SAP's PI-PCS protocol. This protocol is implemented through a series of remote function calls (RFCs), which are implemented on both the SAP and I/A Series systems.

FEATURES AND BENEFITS

The I/A Series architecture handles integration for all control equipment from Foxboro and other integrated, third party vendors. Therefore, the physical manufacturing configuration can change without changing the integration software.

Seamless Integration

I/A Series BIS is seamlessly integrated with both the SAP R/3 business system and the I/A Series system. Once the integration software package is installed and configured, no further intervention is needed for transparent and efficient information flow between the Foxboro I/A Series system and SAP's R/3 business system.

Compatible Systems for Integration

This integration software's flexible data driven integration is possible because both FoxBatch and PP-PI have recipes which essentially speak the same language. For each product produced, both FoxBatch and PP-PI must have compatible recipes defined on their respective systems.

The FoxBatch recipe has all the information necessary to execute a batch. The PP-PI recipe must comprise the information for a process order and may also contain information for process control as well as message construction requirements and information

needed by other SAP modules. The SAP recipe can be as simple or complex as customer needs dictate.

Customer Controlled Integration

The user has total control over the level of integration that I/A Series BIS provides between the SAP system and the I/A Series system. The BIS is data driven; therefore, the customer does not need to change the BIS package when modifying the level of integration between the I/A Series and SAP systems. These dynamic levels of integration are achieved through configuring process instructions in the SAP Control Recipes.

The customer can use the standard BIS product to provide:

- light integration: a process order passes from the SAP system to the I/A Series system and a high level status message is returned, or
- tighter integration: the SAP process order is sent with detailed process instructions to the I/A Series system including formula changes and equipment process parameters and instructions for data returns, while detailed process messages are returned from I/A Series to SAP with material usage and production data including detailed time and cost information about the process.

OPERATION OF THE I/A SERIES BIS

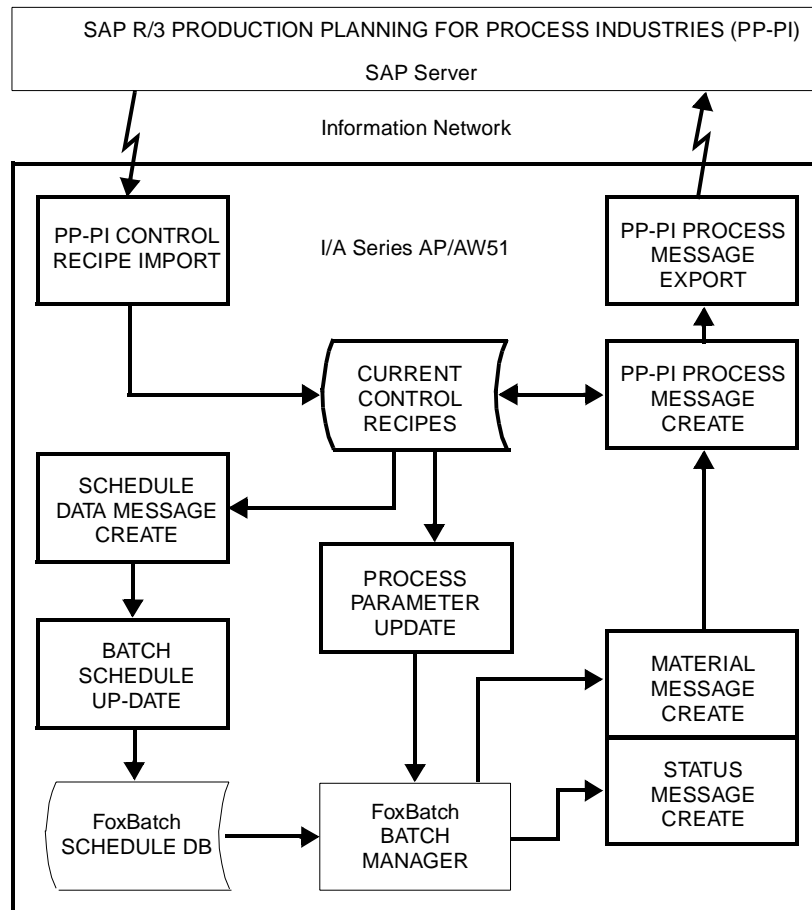
SAP's PI-PCS protocol defines communication via two structured mechanisms; Control Recipes and Process Messages. Control recipes are sent from the SAP system to the I/A Series system, while Process Messages are generated by the I/A Series system and then sent to the SAP system.

Control Recipes

Control recipes contain Process Orders and Process Instructions.

The SAP system initiates the download of control recipes. The I/A Series BIS transparently extracts process order information from the SAP Control Recipe. It uses the process order to automatically create a batch entry in the FoxBatch scheduler, which the process operator may then select and execute at any time. BIS also protects the I/A Series system from redundant orders, the same process order will not be accepted twice.

I/A Series BUSINESS INTEGRATION SOFTWARE FUNCTIONS



The BIS uses process instructions contained in the SAP Control Recipe to intelligently translate information between the two systems. For example, SAP phase names are sequential numbers stored in character strings while FoxBatch phase names are alphanumeric character strings. Once the control recipe is properly configured, the I/A Series BIS interface works even if the SAP phase numbers change. The process operator always has a consistent view; the phase name HEAT for example, would be displayed even if, for some reason, the SAP phase name changed from 1100 to 1200.

Process Instructions - Control

The SAP Control Recipe contains process instructions which specify how a batch will be executed. The I/A Series BIS extracts these process instructions and uses this information to set FoxBatch process parameters. When the process operator initiates the batch, the process parameters reflect the values from the control recipe.

Process Instructions - Message

The SAP Control Recipe can also contain process instructions to define the types of messages to be returned to the SAP system and specify what the content of these messages will be. The BIS package reads the instructions and makes the corresponding format changes automatically, the user need not intervene.

Process Messages

Message Types

FoxBatch and the I/A Series system continuously gather real-time batch and process information. The BIS filters this data to extract relevant information for the SAP system and performs data translation. This integration software has several types of messages that can be created for SAP, they are:

- Status of Running Batch (PI_CRST)
- Status of Current Operation (PI_OPST)
- Status of Current Phase (PI_PHST)
- Materials Consumed (PI_CONS)
- Materials Produced (PI_PROD)

The BIS creates and formats the process messages based on the process instructions that are contained in the SAP Control Recipe. This gives the user control over information that is sent to SAP by requesting process messages in the SAP Control Recipe.

The BIS up-loads SAP process messages on a timed basis. The user configures how often process messages will be automatically uploaded to SAP. The user won't lose process messages if the network connection is broken because BIS stores them until the SAP system is once again available.

IMPLEMENTATION SERVICES⁽¹⁾

The BIS package includes both software and bundled services. The standard package includes three weeks of on site support by one of Foxboro's SAP certified consultants⁽²⁾. The Foxboro consultant should be a member of the customer's SAP implementation team and the FoxBatch implementation team. As part of the bundled services, the SAP consultant from Foxboro will work with the customer to completely configure a prototype recipe on the SAP system and on the FoxBatch system.

Foxboro's SAP certified consultants are optionally available to remain as a member of the customer's implementation team for the duration of the project.

Bundled Installation

The SAP consultant from Foxboro will install and configure the software so that information flows transparently between the two systems. The BIS is configured for the customer environment, and automatically starts up when the I/A Series system is started.

Bundled Training

The Foxboro consultant will show the customer how to configure future recipes so that information will flow transparently between the two systems. This includes training on how to create process instructions for messages. Foxboro will give the customer a procedure and methodology to create recipes which meets the customer's needs.

HARDWARE REQUIREMENTS

SAP runs on various hardware platforms and is transparent to the Foxboro I/A Series system. It should be properly sized by the SAP implementation consultants.

Foxboro I/A Series BIS requires no additional hardware. BIS runs on the same Foxboro I/A Series platforms as the FoxBatch applications, AP/AW51B and AP/AW51C.

The BIS software requires very little space and processing power. You can rest assured, if the AP/AW is running FoxBatch, it will run I/A Series BIS.

I/A Series Systems Sizing

	Recommended RAM	Recommended Disk Space
AP/AW51 Style B or C	64 MB	1 GB

SOFTWARE REQUIREMENTS

SAP software must be R/3 Version 3.0c or higher and must be network accessible.

The Foxboro I/A Series software should be Version 4.2 or higher and FoxBatch must be Version 1.0 or higher. SAP's CPIC gateway software must also be installed on the I/A Series system.

(1) The Foxboro Company is a SAP National Implementation Partner.

(2) Foxboro has SAP Certified and Trained Consultants who are assigned to BIS Implementation Projects.

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