

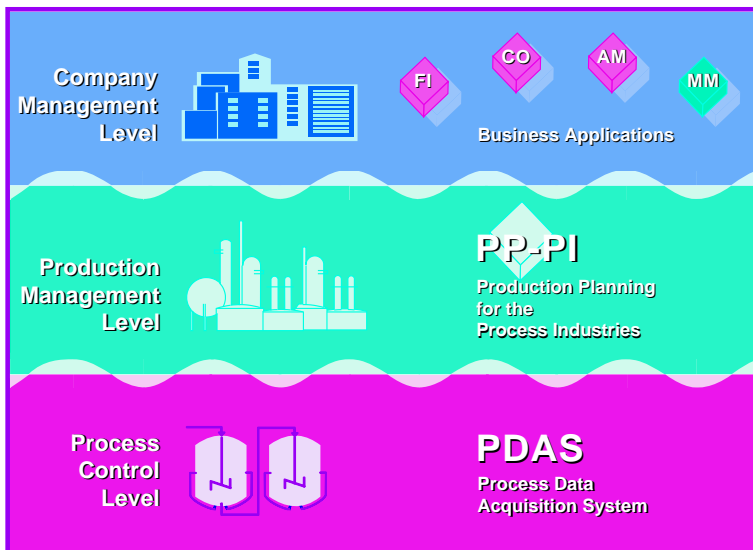
## Process Data Acquisition System

Integrating SAP R/3 with the manufacturing process

To meet the needs of increased competition and constant change and to enhance customer satisfaction, process industries must maximize their use of information. By ensuring that timely, accurate information flows through the enterprise — from the process plant systems to business offices — companies can gain a competitive edge, whether the pressure in the environment comes from market conditions, green issues, legislative requirements, or business demands.

### Highlights

- New approach to real-time integration
- Open, platform-independent, configurable, extendible, and scalable solution, built upon proven systems integration technology
- Provides the failover and high availability required by 7 x 24 manufacturing environments
- Modular structure applicable to a variety of process industries
- Flexible management reporting and control capabilities
- Graphical user interface



Process Data Acquisition System (PDAS) provides a way to seamlessly link real-time process control systems, laboratory systems, and business systems. By integrating event- and transaction-based applications and devices, PDAS creates an integrated process planning and execution environment. This reduces the time and information gaps between corporate planning systems and process control — gaps that impede productivity and decision making.

**Addressing customer needs** SAP and Digital Equipment Corporation bring together application development and practical industry knowledge to the Production Planning for the Process Industries (PP-PI<sup>®</sup>) and Process Data Acquisition System (PDAS). PP-PI, developed by SAP, provides many of the functions required by a process manufacturer by using SAP's R/3<sup>®</sup> product as the basis. PDAS, developed by Digital,

integrates PP-PI to process control systems and Laboratory Information Management Systems (LIMS). SAP and Digital collaborate to define and develop the tools to address the needs of users throughout the manufacturing enterprise — from operators to process engineers to planners to managers. And Digital's integration expertise and knowledge of the manufacturing environment enable us to help customers realize the full benefits of a PP-PI/PDAS implementation.

**Meeting process manufacturing planning needs through PP-PI**

PP-PI addresses manufacturing requirements through a suite of modules for the tasks of scheduling and management reporting and control; the management of inventory resources, recipes, and batches; and links to business systems.

*Resource management*

The resource management module provides necessary information on production requirements, such as labor, materials, equipment, transport, recycling, waste, energy, and other services.

*Inventory management*

An inventory management module tracks raw materials, by-products, and co-products during all phases of production. The information required to complete the production record is filtered and then communicated by PDAS.

*Recipe management*

The recipe management module contains the data on which planning, control, and documentation of the processes are based. The recipes contain information about required raw materials, ingredients, and their quantities as process input, intermediate products, finished products, and the by- and co-products. They also provide information about waste, environmental impact and hazards, and required production resources, such as equipment and human resources.

*Scheduling*

The scheduling module provides the short-term schedule, taking into account events originating from the process floor and notified by PDAS. At the campaign scheduling stage, PP-PI refines the planning, optimizes production resources, and determines the

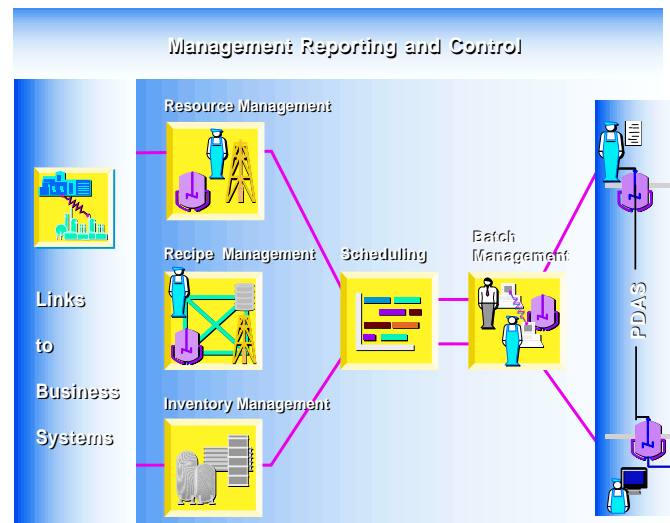
sequence of production orders. Detailed scheduling calculates the exact times of equipment loading and adjusts it to the shift patterns based on the information received from PDAS.

*Batch management*

Batch management provides the link between the planning and execution of a batch. It facilitates communication with other PP-PI modules concerning the actual status of resources and key events associated with the batch. This information can then be passed to Resource Management or Scheduling for real-time refinement of the schedule.

*Management reporting and control*

Through end-user reporting tools, the management report and control module provides access to information in a variety of areas, including safety, health and environment, production, plant performance, resources, inventory, process recipes, quality, and administration. It also offers the capability to transfer data to Microsoft® Windows™ standard applications such as Excel®.



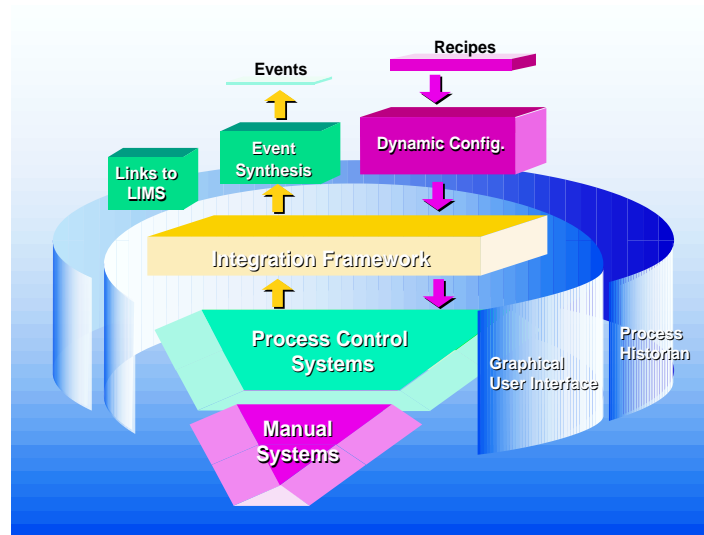
R/3 PP-PI — Major Modules

### Gaining maximum integration flexibility with PDAS

Digital's PDAS provides the means of integrating plant-level devices and applications typically found at the execution level to business systems, specifically SAP's R/3. Based on the international standard SP88, PDAS provides the interface between transaction-oriented PP-PI modules and real-time process control systems. PDAS takes information from recipes and provides it to the production systems that need to know recipe details. It also takes the information gathered from manual or control systems and sends it to PP-PI. Among PDAS's capabilities are device integration, dynamic configuration, event synthesis, graphical user interface, and links to process information and LIMS systems. PDAS is built on Digital's manufacturing middleware technology, BASEstar.

#### *Device integration*

Device integration uses the device access software module to process control systems to communicate device data points, dynamic configuration, and control recipe parameters. Data from manual systems or process control systems, such as Distributed Control Systems or PLCs, can all be integrated through this module.



PDAS — Major Modules

#### *Dynamic configuration*

Standard recipes are received from PP-PI and converted to device formats for efficient execution by process control systems.

#### *Event synthesis*

Process events are translated into the summary data required by PP-PI for significant batch-related reporting. The events are then communicated to PP-PI to comply with batch record and SP88 needs.

#### *Graphical user interface*

Users can configure the way in which real-time data trending and event logging are presented. This allows the timely access required to proactively monitor and control the production process.

#### *Links to process information*

The Links to Process Information are supported by Digital's ObjectBroker and BASEstar technologies.

#### *Links to LIMS*

The Links to LIMS module integrates the quality-related information to the production execution process. Laboratory results can be recorded with the batch record, and the subsequent process activities can be determined according to the features in the control recipe.

#### **Getting a complete manufacturing overview**

By fully integrating the plant processes with the company's business systems, PDAS improves process planning, reduces waste and lead times

over a multisite enterprise, and reduces inventory of both raw materials and work in process. Minimizing information and time gaps helps plant operators and managers make more timely decisions, accelerating manufacturing excellence through continuous improvement.

#### **Increasing customer satisfaction**

Improved service, quality and lower costs all add to customer satisfaction. Because PDAS can provide an integrated planning system — even across multiple plants — it optimizes production and better fulfills customer expectations. It offers greater levels of service to customers by improving scheduling and understanding of the production cycle.

PDAS facilitates the thorough quality investigation and quality improvement by capturing manufacturing data and presenting a clear view of the factors influencing quality. By providing a comprehensive picture of the manufacturing process, PDAS improves response to changing customer or market demands.

**Delivering measurable improvements at the process plant level**

PDAS can help companies achieve significant savings through improved process management.

- Lowers rework due to off-specification batches
- Reduces raw material stock use and production leads through better control of process scheduling
- Decreases energy and service usage, waste/effluent, and abnormal occurrences
- Delivers appreciable gains in raw materials conversion, production capacity, and plant availability

**Providing open client/server computing on Alpha platforms**

PDAS is available on the Digital UNIX Alpha platform and is designed to be portable to other platforms as required. Digital's Alpha platform provides the world-class speed and performance capability needed in the real-time environment. Designed as a 25-year architecture and based on Digital's 64-bit technology, Alpha provides a truly open architecture.

Digital's technology leadership provides robust, manageable client/server computing solutions for the manufacturing environment. Open client/server computing allows users to run applications of their choice, share file and printer services, and access data easily — regardless of where it resides — while IT organizations gain enhanced data management and security capabilities. By adhering to standards, Digital's open client/server computing approach mitigates the problem of constant change within the computing environment, ensuring that new technologies can be integrated as needed and new PDAS modules can be added as they become available.

**Proven services capabilities ensure an efficient implementation**

From planning to project management, and at every step in between, Digital will deploy manufacturing experts from around the world who can create a solution to your specific challenges. Our process consultants bring a wide range of expertise to customers' varying requirements, as well as an average of over twenty years' experience delivering process manufacturing services.

Because we have been working closely with SAP — including co-developing the application programming interface to PP-PI — we are uniquely well positioned to oversee a PP-PI implementation. Digital's knowledge at the manufacturing level, combined with SAP's business level knowledge, offers customers the opportunity to take full advantage of PP-PI/PDAS.

**For more information**

To learn more about PDAS, please call your local Digital sales office.

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EC-F5634-70  
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