



Production Tracking and Scheduling System

for

Engineer-to-order and Project-based Manufacturers

Introduction

The purpose of the Production Tracking and Scheduling (PTS) System is to assist engineer-to-order (ETO) / project-based manufacturers in managing their production operations in an efficient and effective manner.

The system's focus is to support the company's key requirements in the areas of production scheduling, resource allocation and cost control.

Key goals of the system are to:

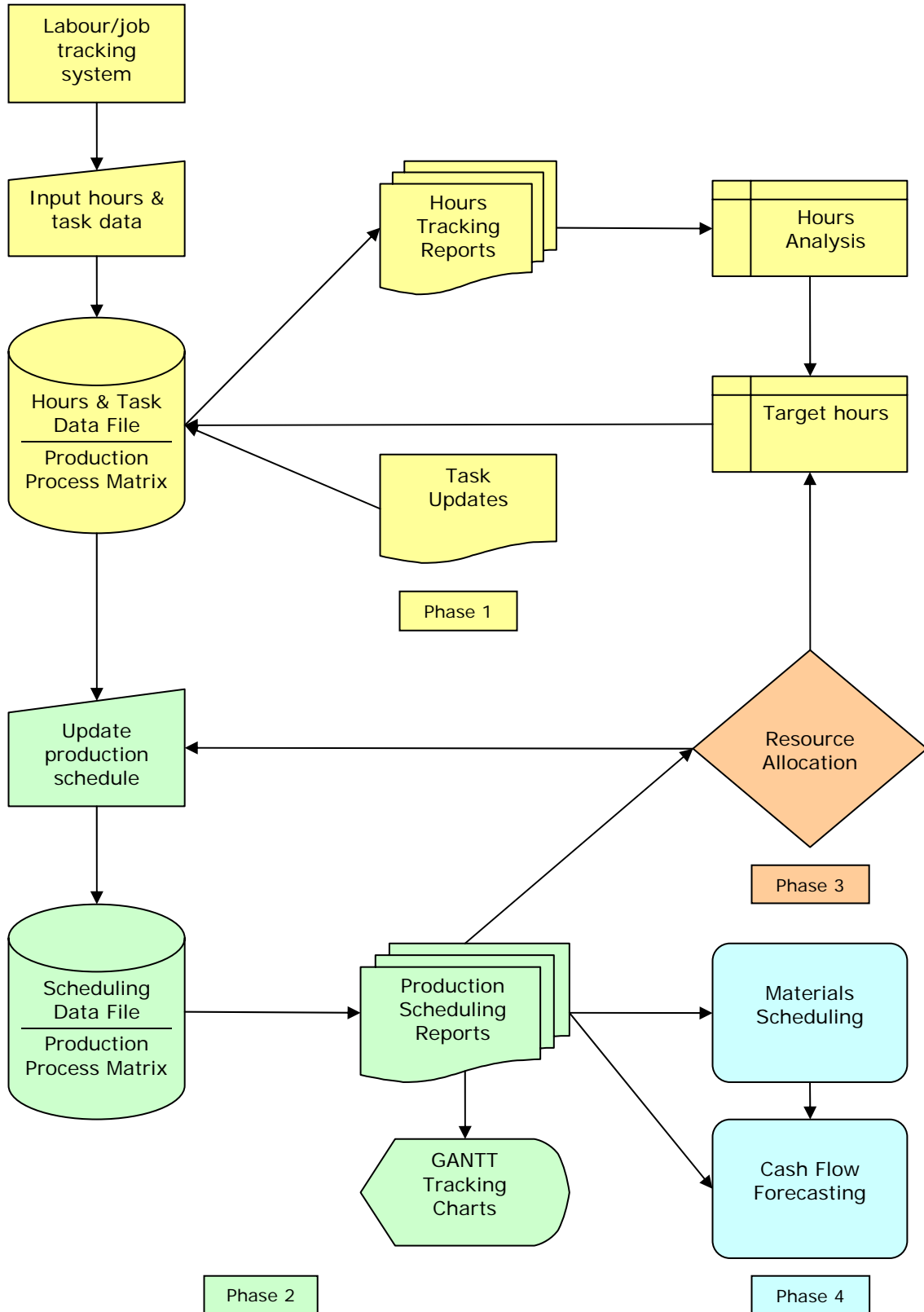
- o Track labour hours per person / task / project
- o Establish achievable production schedules and delivery dates
- o Track progress of production projects against planned schedule
- o Measure production efficiency; monitor quality control processes
- o Improve resource scheduling and allocation process
- o Provide a production planning tool
- o Provide a basis for materials planning and scheduling
- o Assist in cash flow planning and forecasting

The phases described in this document are intended to provide an outline of the system's functionality rather than to indicate an implementation guideline.

Although the PTS system can be implemented in four phases, it is generally recommended that phases 2 and 3 are undertaken together. This is a more efficient overall approach that avoids some duplication of effort that can result from implementing the phases separately, and enables full functionality of the scheduling system from the outset.

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Phase 1 – Hours Tracking

What it does

- Tracks hours worked by task
- Tracks start / finish dates for each task
- Tracks who worked on each task
- Tracks time spent on non-production activities

Benefits

- Improved labour management information reports, with three reporting levels (summary, major production phase and detailed task)
- Detailed task level tracking increases ability to analyze causes of deviations from plan and enable corrective action
- Task level data provides a comprehensive record of each step of the manufacturing process and also serves as a production check list
- Builds history as a basis for developing detailed hours targets/standards by product and tracks the impact of customer options, change orders and process changes
- Provides a basic measurement of production efficiency
- Tracks task hours* for (a) input to the Production Scheduling System, (b) future production planning and (c) new product estimating
- Increases accountability throughout the organization for achieving production targets

Key inputs

1. Task descriptions
2. Production hours by person / by task
3. Actual task start and finish dates

** (Start/finish dates also tracked but calculation of task durations requires input to production scheduling system in Phase 2)*

Phase 2 – Production Scheduling (without detailed resource allocations)

What it does

- Tracks progress and duration of each phase of production
- Automatically calculates revised project completion dates based on current data updates and compares to targets (baselines)
- Provides an automated system for creating production plans

Benefits

- Improved management information for better control of project duration and costs
- Automatically reflects impact of scheduling changes and highlights changes in critical path and project completion dates
- Earlier identification of deviations from planned progress increases opportunities for early corrective action
- Provides an automated system for calculating “what if” scenarios for assessing the impact of production scheduling changes and engineering change orders
- Highlights when task sequence changes or a realignment of priorities need to be considered
- Assists with cash flow planning and forecasting
- Improved production planning and control processes
- Monitors adherence to scheduled quality control procedures
- Improved communication of project progress to customers, to sales and production staff, and to sub-contractors
- Provides basis for assessing ability to commit to delivery dates for new orders

Key inputs

1. Target duration of tasks
2. Data from Hours Tracking System
3. Task dependencies and constraints

Phase 3 – Resource Allocation

What it does

- Provides systems support for allocating and scheduling resources
- Tracks resource requirements by job type/classification
- Enables consolidation of multiple production projects and facilitates allocation of resources from resource pool
- Tracks labour costs by task/phase if required

Benefits

- Provides automated approach for improved resource scheduling and allocation
- Tracks under/over allocation of resources and highlights need for reallocation or task scheduling changes
- Increases ability to efficiently allocate total resource pool across multiple projects
- Multiple projects can be prioritized to set allocation sequence for limited resources
- Automates “what if” calculations for assessing impact of overtime work, shift changes and engineering/customer change orders

Key inputs

1. Available resources (by job type / classification)
2. Resource requirements by task
3. Updates (revisions) to planned resources based on current data

Note: Resources can include outsourced services

Phase 4 – Materials Scheduling and Cash Flow Forecasting

What it does

- Provides a mechanism for allocating materials to each production task or phase
- Automates the creation of a materials requirements schedule
- Tracks changes from planned materials requirement dates resulting from revisions to the production schedule
- Provides key data for cash flow planning and forecasting

Benefits

- Improved control of materials scheduling and allocation
- Acts as a reminder system for placing purchase orders
- Provides key inputs for cash flow planning and forecasting by tracking schedule for materials purchases and customer progress payment dates

Key inputs

1. Planned materials required by task (or production phase)
2. Customer progress payment milestone events
3. On-going updates to the above

Note: System can be used to schedule special equipment and facilities requirements