



Case Study:

**Migrating from Microsoft Desktop Tools to Demantra
Demand Management for Sales Forecast Management**

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CASE STUDY: MIGRATING FROM MICROSOFT DESKTOP TOOLS TO DEMANTRA DEMAND MANAGEMENT FOR SALES FORECAST MANAGEMENT3

INTRODUCTION 3

BACKGROUND 3

Legacy System Forecasting Business Requirements 4

Legacy Forecasting Desktop Solution..... 4

THE PROBLEM 6

Maxtek’s Changing Business Environment..... 6

The evolving business environment... 6

Creates problems for the legacy forecasting solution... 6

Shifting Forecasting Business Requirements 7

SOLUTION ANALYSIS 8

Understanding the Demantra’s Architecture..... 8

Demantra Demand Management Server Configuration 8

Server Configuration Notes & ‘Gotcha’s’ 8

Extendible Multidimensional Data Modeling 10

Primary Business User Interface 10

IT Analyst Tools 12

Core Concepts & Integration Notes & ‘Gotcha’s’ 12

SOLUTION IDENTIFIED 13

How the Demantra Solves the Problem 13

SOLUTION IMPLEMENTED 15

How We Implemented Demantra 15

Solution Approach Overview 15

Dynamic Business Systems Solution 16

CONCLUDING REMARKS 17

Straight Forward..... 17

Emulates Desktop User Interface (UI)..... 17

Oracle EBS Integration..... 17

Feature and Function Rich 17

BACKGROUND OF THE AUTHOR 18

Case Study: **Migrating from Microsoft Desktop Tools to Demantra Demand Management for Sales Forecast Management**

Introduction

Historically, Maxtek has made extensive use of Microsoft desktop tools (e.g., Excel, Access) to support the sales and production forecasting business process. Yet, due to rapid customer base and product mix growth the legacy forecast tools are no longer keeping up with the business user needs. The need to automate the forecast generation, deliver advanced forecast analysis tools, and create a *web* based collaborative forecast business process has forced Maxtek to consider and implement an alternative forecast management solution.

This presentation is a case study of the migration of Maxtek's legacy sales and production forecasting systems to the Oracle Demantra Demand Planning platform.

Background

Originally created in 1970 as the Hybrid Components Organization within Tektronix, the Maxtek group was chartered to supply high-performance components for Tektronix' high-speed test equipment. In 1994, the organization was spun out as a joint venture between Maxim and Tektronix. Re-named Maxtek, the company began to apply expertise in the design, assembly and test of demanding microelectronics for customers in a variety of industries.

As part of its evolution, the Maxtek sales and marketing organization needed a business process that provided desktop tools to support development of annual, monthly, and weekly sales forecasts and master production schedules. The early production forecasts were simple in their design as Maxtek had primarily one customer, Tektronix. The sophistication of the forecast systems increased in complexity as Maxtek's product mix and customer base increased.

To support the business needs of the Maxtek sales & marketing and production operations teams, Maxtek IT developed a series of desktop tools that supported forecast development, team collaboration, and integration with the Oracle E-Business suite.

Understanding that the production and revenue forecasting systems are critical to its business model Maxtek engaged with OnPlan Solutions to document the 'as-is' legacy solution, analyze the changing business requirements, and to identify solution alternatives and next steps.

OnPlan Solutions is the trusted advisor of choice for industry leaders using Oracle Applications in the Pacific Northwest. OnPlan Solutions has extensive industry experience delivering "complex" projects involving Oracle Applications.

Legacy System Forecasting Business Requirements

As business growth occurred, the Maxtek marketing and sales business owners found that a 'single spreadsheet' production and revenue forecast solution was no longer scalable for the growing data volumes. Working directly with the marketing and sales business owners the Maxtek IT team gathered the original set of business requirements for the legacy solution.

Development of the legacy desktops solution was driven by the following business requirements:

Requirement 1: Ability to collect & consolidate product forecasts generated by customers, partners, and direct sales delivered in spreadsheet and flat file formats

Requirement 2: Access to 'data show' based presentation tools enabling forecasting teams to collaboratively review, modify, and approve forecasts based on a business process schedule

Requirement 3: The desktop tools must provide the ability to document the decisions, modifications, and approvals for historical review and audit trail analysis.

Requirement 4: The database schema for the forecast data elements will include; Customer/Product, Forecast date (day/week), Forecast quantity, Revenue forecast (based on time phased price list), Cost forecast (based on time phased standard costs)

Requirement 5: The final forecast will be integrated with Oracle MRP and will drive the weekly MRP run.

Legacy Forecasting Desktop Solution

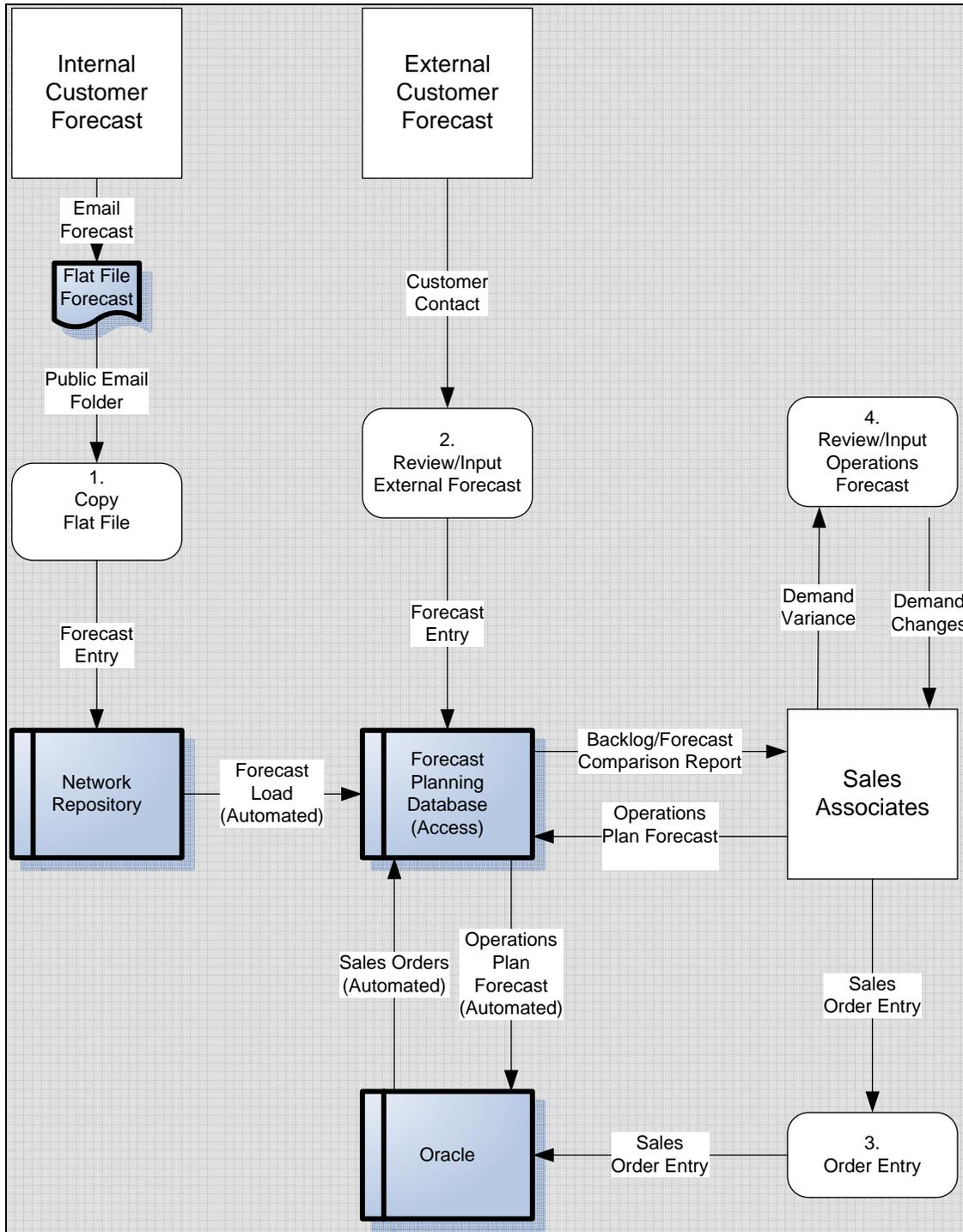
As the original forecasting business process needs were simple, Maxtek IT delivered the simplest possible solution using tools familiar to the business users. Specifically, for initial collection and consolidation of a rolling production forecast standardized *MS Excel templates* were developed. For forecasts from external sources *delimited flat file formats* were developed and published. This solution approach supported the population of an MS Access database designed as the source for end-user collaboration activities.

Maxtek IT also developed several MS Access forms designed to facilitate team based collaboration for forecast review and modification. The MS Access forms allowed forecast changes, notes, and approvals to be documented in a group format while projecting the production and revenue forecasts using a data show.

Once the final forecast has been collected, consolidated, manipulated, and approved an export file was generated from the MS Access database and uploaded through the Oracle Master Scheduling open forecast interface.

Following is a data flow of the *legacy* Maxtek production forecasting process:

Maxtek Legacy Forecasting Process Data Flow



The Problem

Maxtek's Changing Business Environment

The only constant in business is change. As Maxtek business and market share grew, the sales and marketing teams forecasting process evolved and adapted. Following is a summary of the business factors that have impacted the forecasting process and resulting problems they have created for the legacy forecasting solution.

The evolving business environment...

Area	Element Driving Business Change
Product Mix & Profitability	<ul style="list-style-type: none"> ➤ <u>Success of ETO</u> product lines ➤ Ongoing <u>cost reduction & lean manufacturing</u> programs ➤ <u>Rapidly growth</u> in customer base
Data Complexity	<ul style="list-style-type: none"> ➤ Significant increase of <u>data volumes</u> ➤ Enhanced use of <u>ASCP & Finite Production Scheduling</u> ➤ Need for better <u>revenue & production forecast visibility</u>
Customer Driven Enterprise	<ul style="list-style-type: none"> ➤ Drive to <u>exceed customer service level</u> goals ➤ <u>Integrating customer</u> through enhanced collaboration ➤ <u>Time to market</u> improvement through better forecasting

Creates problems for the legacy forecasting solution...

Area	Legacy Solution Limitations
Enterprise Solution	<ul style="list-style-type: none"> ➤ MS tools employed lack enterprise level access, security, approval layers, and reporting ➤ Maintenance and enhancement of the legacy tools and interfaces became cumbersome & time consuming
Enabled Collaboration	<ul style="list-style-type: none"> ➤ Collaboration is disjointed due to multiple files involved ➤ Integration with Oracle E-Business suite is not efficient
Process Automation	<ul style="list-style-type: none"> ➤ Lacking executive presentation capabilities ➤ Lacked automated statistical forecasting methods ➤ MS Desktop is not workflow enabled

Shifting Forecasting Business Requirements

As the problems and challenges of the legacy forecasting system mounted the list of user requested enhancements grew. Rather than deliver each of the enhancement requests on a one-at-a-time bases, Maxtek IT and OnPlan Solutions used process improvement techniques to understand and document the situation. After completing an 'affinity analysis' of the enhancement requests and problem tickets associated with the legacy forecast solution, the following new requirements emerged in addition to the original Maxtek forecasting business requirements:

Requirement 6: Enhanced collaboration through direct access of forecast from Tektronix, other customers, and field sales facilitating a consensus forecast business process.

Requirement 7: Ability to plan to actual forecast status relative to real-time sales information (enabling a demand-driven enterprise).

Requirement 8: Ability to complete advance analysis of proposed forecast by sales region, customer, and customer business unit as well visibility to forecast and actual values by product family, demand class, and item category.

Requirement 9: Ability to limit the viewing and manipulation of public sector compliant sensitive data based on user identity and data security clearance.



Solution Analysis

Understanding the Demantra's Architecture

Before reviewing the implemented solution let us overview the key features and functions of the Demantra Demand Management product.

Demantra Demand Management Server Configuration

The Demantra Demand Management solution is tightly integrated with the Oracle E-Business Suite and the Advanced Planning & Scheduling (APS) Operational Data Store (ODS).

The following technology components were utilized during the Maxtek initial implementation:

- ✚ Oracle Applications 11.5.10.2 centralized ASCP instance running 10.2.0.3 RDBMS
- ✚ Demantra Windows Server with Complete Installation and Tomcat Application Server
- ✚ Oracle Application Server 10.1.3 J2EE Server and Web Server for hosting Demantra
- ✚ Windows Client machines for access the Business Modeler and Collaboration Workbench

Server Configuration Notes & 'Gotcha's'

The following upgrades where required on the Maxtek 11.5.10.2 centralized ASCP instance:

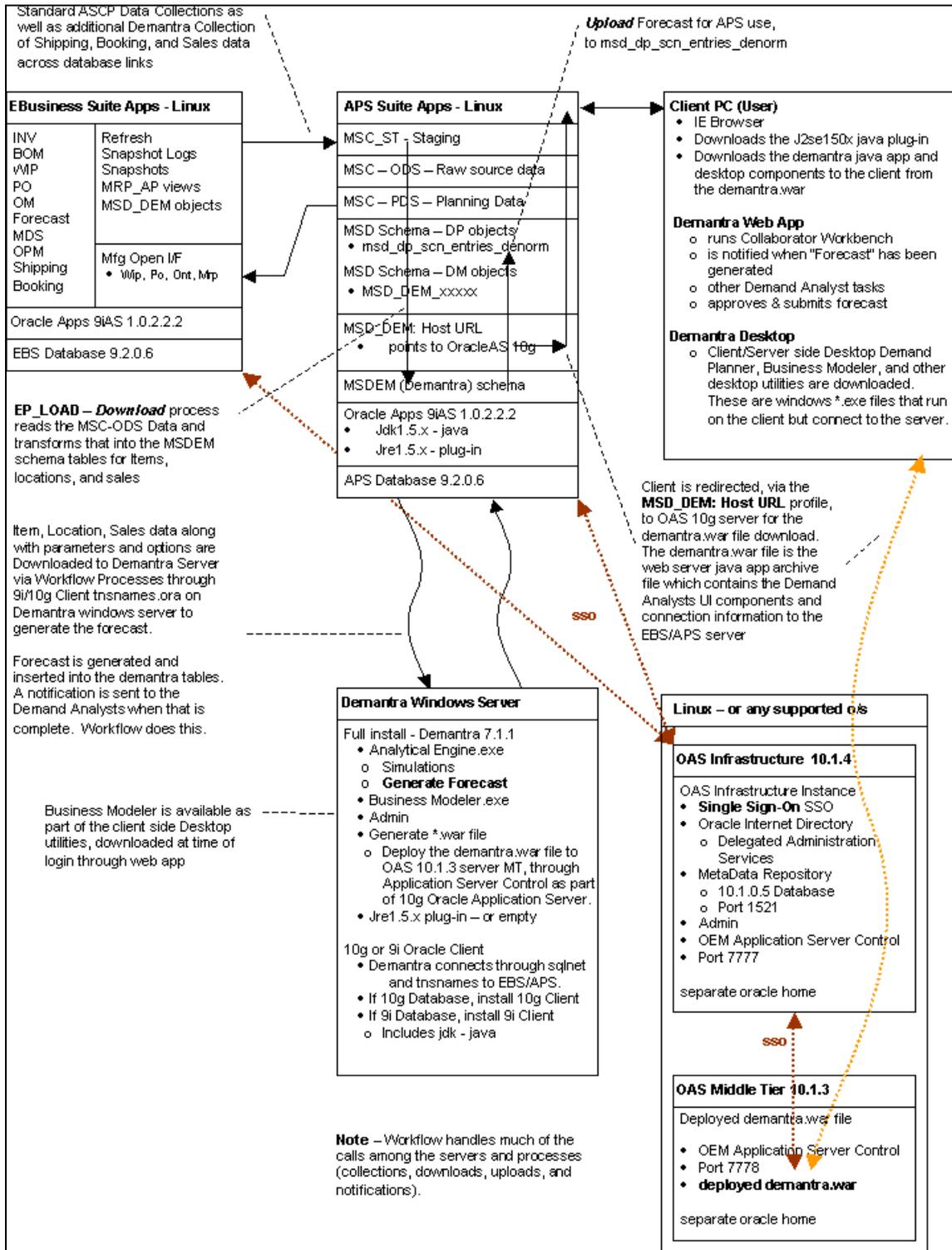
- ✚ Upgrade EBS/APS 11i (11.5.10.2) applications to J2SE 1.5.0.12
- ✚ Upgraded Sun J2SE with Oracle Applications 11i
- ✚ Upgrade EBS/APS 11i (11.5.10.2) applications Developer 6i to the latest patchset
- ✚ Upgrading Developer 6i with Oracle Applications 11i
- ✚ Install latest ASCP Collections and Engine patches on EBS/APS

These notes are critical to the install of the Demantra Demand Management toolset:

- ✚ Identify and apply the latest EBS Demantra Integration Patches
- ✚ Install a Demantra Windows Server
- ✚ Install the full Oracle Client to exactly match the database version:

For installations where you are launching the installer from a Windows PC but the database is on an AIX, or other UNIX environment, you need to ensure that your Oracle Client version matches EXACTLY the version of your Oracle Database. Also ensure that the full Oracle Client has been installed.

Following is diagram of the server configuration and their associated services:



Core Concepts of Demantra Demand Management

Extendible Multidimensional Data Modeling

From a technology perspective Demantra Demand Management resembles an extendible data warehouse with a fairly rigid set of predefined dimensions. The extendible dimensions, or levels, of the tool are *items, locations, and time resolution*.

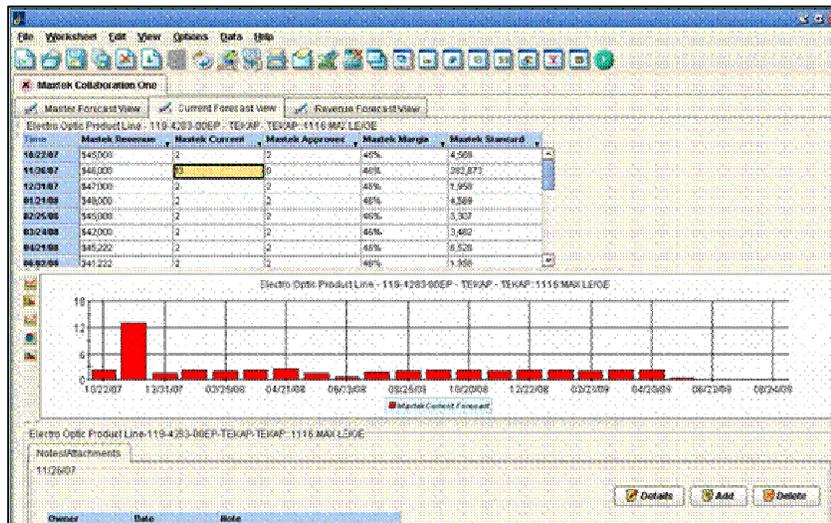
Demantra allows the IT analyst to define a hierarchy of levels included in the item, location, and time dimensions, then populate data, or members, for each of the unique levels. An example of predefined levels for an EBS item is *Product Family, Category, and Item*. An example of predefined levels for an EBS location is *Region, Customer, & Ship To*. An example of predefined levels for time resolutions is *Quarter, Accounting Period, & Production Week*.

A set of pl/SQL procedures and extract, transform, and load (ETL) workflows are seeded as part of the Oracle EBS and Demantra Demand Management integration. This pre-seeded ETL logic supports the flow of data from the Oracle EBS transactional store into the Demantra Demand Management database.

Once the IT Analyst has configured the Demantra database using the extendible design tools a semi-dynamic data warehouse 'cube' is generated with pre-defined ETL logic for ongoing refresh of the Demantra database. Although Demantra makes available a very advanced Bayesian based forecasting engine, the multidimensional data modeling with extendible data hierarchies and simple easy to understand user interface represent its greatest strength.

Primary Business User Interface

Worksheets - A worksheet (often referred to as a query) is the primary user interface to Demantra data. Demantra worksheets allow for end user customization and 'what if' analysis. The Demantra worksheets represent the window into the multidimensional data warehouse are user customizable with regarding to layout, data presentation, data modification, and security.



Following is a simple lexicon for business users involving Demantra Worksheets:

Area	Description
Basic Input Data	<ul style="list-style-type: none">➤ Create, modify, and manipulate a collected data series. <i>Example</i>; review and modify a sales forecast generated by the forecast engine.
Time Resolution	<ul style="list-style-type: none">➤ Change the time resolution dimension of the multidimensional data warehouse. <i>Example</i>; review a forecast data series in weekly time buckets or aggregate the data into monthly accounting periods.
Levels	<ul style="list-style-type: none">➤ Create & load a hierarchy within a single data warehouse dimension. <i>Example</i>; View sales forecast by region, state, account rep, customer, etc.
Combination	<ul style="list-style-type: none">➤ View data based on user defined combinations of levels. <i>Example</i>; show me the sales forecast for this product family in a specific geographic region.
Series	<ul style="list-style-type: none">➤ A series is any data set that a business user identifies as part of the business process. <i>Examples</i>; sales forecast, production forecast, revenue projections, margin analysis, etc.
Filters & Exceptions	<ul style="list-style-type: none">➤ Filter visible data within a worksheet. <i>Example</i>; Show all the data for a specific product category with the exception of a single customer's forecast.➤

IT Analyst Tools

To support the highly extendible multidimensional data warehouse toolset Demantra Demand Management provides several functions that allow the IT analyst to setup, configure, and deploy a data management solution.

Following a summary of the key tools used as part of the Maxtek implementation:

Function	Description
Methods	<ul style="list-style-type: none">➤ A Workflow Engine exists that has a set of pre-defined workflow steps, each with predefined behavior. An IT analyst can define a workflow 'method' in order to enhance the business user worksheet interface.
Security	<ul style="list-style-type: none">➤ The Demantra data and menus are secured, so that not all users have access to the same data and options. You can control the degree of access for members of each level: no access, read-only access, read/write access, or full control.
Expressions	<ul style="list-style-type: none">➤ Series (data) calculations are defined through Expressions. A series can have either or both of the following 'coded' expressions:<ul style="list-style-type: none">▪ A server expression, which aggregates data from the lowest level (dimension) in the database▪ A client expression, which calculates the series data, based on other series at the same level (dimension)
Forecasting	<ul style="list-style-type: none">➤ The Demantra Analytical Engine reads data from the database, generates a forecast, performs other analyses, and writes the forecast to the database. The forecast considers both the historical demand and the causal factors (such as seasons, price changes, and specific events such as promotions). In a Demantra solution, the demand data is ultimately imported from external systems. Typically, the data that is imported needs to be adjusted by the forecasters, as they apply their own knowledge to better describe the history.

Core Concepts & Integration Notes & 'Gotcha's'

Following are our notes and issues encountered during the setup & configuration of the Demantra Demand Management solution:

Seeded Oracle EBS to Demantra Downloads – The following seeded downloads are available with the current EBS 11.5.10 release of Demantra Demand Management:

- ✚ Oracle Order Management bookings & shipment history
- ✚ Oracle Order Management Price Lists
- ✚ EBS Item, categories, product family, and zone hierarchies
- ✚ Oracle Customer, ship-to, demand class, and region hierarchies

Information we found lacking as part of the Oracle EBS & Demantra integration:

- ✚ There are procedural inconsistencies among Oracle EBS to Demantra download steps between individuals data elements that are not outlined the documentation.

- ✦ EBS Item Cost (standard & average) costing are not available for download as part of the seeded downloads (scheduled to be available in the future)
- ✦ Natively the Demantra Workflow engine works with a Windows web server. Special considerations (and patches) are involved when running the Demantra Workflow Engine with an Oracle Application Server (OAS) (i.e. Linux) as the web server.
- ✦ There are special considerations when uploading a Final Forecast to Oracle ASCP 11.5.10 from Demantra Demand Management.



Solution Identified

How the Demantra Solves the Problem

Once the new business requirements were collected, collated, and reviewed the Maxtek IT team identified solution alternatives. Primarily due to the estimated investment costs and projected costs of ownership two solutions alternatives were identified; **1. *Re-design and enhance the legacy forecast management tools*** and **2. *Implement Oracle Demantra Demand Management***.

Although Maxtek was aware of other third party forecasting tools, the Oracle Demand Planning module was already licensed and Oracle had announced the future replacement of Demand Planning with Oracle Demantra Demand Management. Consequently, the decision was made to analyze the Demantra tool on 'confirmed fit' basis. That is, Demantra Demand Management would be confirmed to meet all the identified requirements and if the product could not meet any of the needs the business owners then, and only then, would Maxtek IT add other third party solutions to the alternatives list.

As part of the Demantra confirmed fit analysis a solution matrix was created to map the business requirements to the Demantra Demand Management feature/functions.

Below is a summary of the Demantra solution matrix:

Maxtek Business Requirement	Demantra Demand Management Feature/Function
Better collaboration through direct access of forecast from Tektronix, other customers, and field sales (consensus forecast)	<ul style="list-style-type: none">➤ Integration Profiles - Flat file load of customer forecast directly into Demantra➤ Web Based Worksheets - Customer UI for forecast entry and modification➤ Secure AppsServer Deployment - Field sales UI for forecast entry, review, and modification
Real time look at current forecast allowing for real-time edits (demand-driven enterprise)	<ul style="list-style-type: none">➤ Worksheet Notes & Audit Trails - Share forecast database that allows for independent viewing, manipulation, and analysis➤ Worksheet Methods & Approval Workflows - Shared forecast database that allows for collaborated viewing, manipulation, and analysis
Ability to auto-generate initial forecast	<ul style="list-style-type: none">➤ Bayesian Forecast Engine - Forecast engine can produce base forecast from historical sales➤ Automated Forecasting Workflow - Starting point forecast for sales & marketing groups
Ability to complete advance analysis of proposed forecast by user defined levels	<ul style="list-style-type: none">➤ Worksheet Aggregation - Aggregate forecast based on user defined time, sales geography, and product family hierarchies.➤ Worksheet Layout Design - User definable worksheet design and real-time customization
Ability to collect and consolidate many forecast	<ul style="list-style-type: none">➤ Worksheet Series Definition - Provide users with a limitless number of data series that can be viewed and manipulated
Role-base workflows and analysis	<p>Demantra User Roles - Creation of several business user roles that define methods, data access, and approval capabilities</p>
Forecast to Actual analysis	<ul style="list-style-type: none">➤ Client & Server Expressions - Pre-defined set of user callable methods that display calculated data as requested
Limit viewing of public sector compliance sensitive data	<ul style="list-style-type: none">➤ Security Configuration - Limit access edit & viewing ability based on role based security levels

Solution Implemented

How We Implemented Demantra

The business environment at Maxtek is very fast paced. Sales and marketing business owners must support the customized engineering component of the business and maintain the ongoing production activities of established component product lines. Maxtek IT recognized that an implementation approach that required a high degree of business user environment would not be practical. Yet, the concern that project risk would increase without business user involvement was discussed at length.

Working with OnPlan Solutions, Maxtek IT developed a highly efficient 'Prototype and Parallel Cutover' implementation approach for the Demantra Demand Management implementation. This implementation approach allows Maxtek IT to accommodate the limited project availability of the business users and to ensure the configured solution is adequately reviewed by the teams prior to production cutover.

Solution Approach Overview

'As-is' to 'To-be' Solution Mapping – Classical implementation methodologies were used to define the business flows associated with the 'As-is' legacy business process and solution. Following the documentation and mapping of the legacy business solution a 'To-be' Demantra business solution was proposed primarily developed by the Maxtek IT team.

Prototype Solution Design – Using data and process currently deployed, the OnPlan and Maxtek IT will configure an extensive prototype of the proposed Demantra solution. The solution prototype will have several iterations of configuration and tuning and when complete will be a solid representation of the final solution with current production data and support for active production processes. Maxtek IT will present the prototype to the key Maxtek sales and marketing business owners as part of an extensive 'roll-up the sleeves' working session.

Solution Confirmation & Approval – After the business owner prototype review and working session the prototype is made available for off-line viewing and additional Q&A. Cutover resource commitments are presented to the business management and a timeline is agreed to for a 'move ahead' approval confirmation.

Parallel Cutover – Once 'move ahead' approval is provided by business management the project schedule is activated with the objective of implementation a parallel cutover of the Demantra Forecasting Solution. The Maxtek Demantra solution is available to the business users on a voluntary basis. Over a period of time the business users will access the solution while still have their legacy solution available to them.

Legacy Solution Phase Out – Upon confirmation that the proposed solution is functioning in parallel mode and that the solution provides added benefit to the business users as a legacy phase out program is initiated. Based upon a well-defined project schedule each of the IT and business processes are migrated to the new solution.

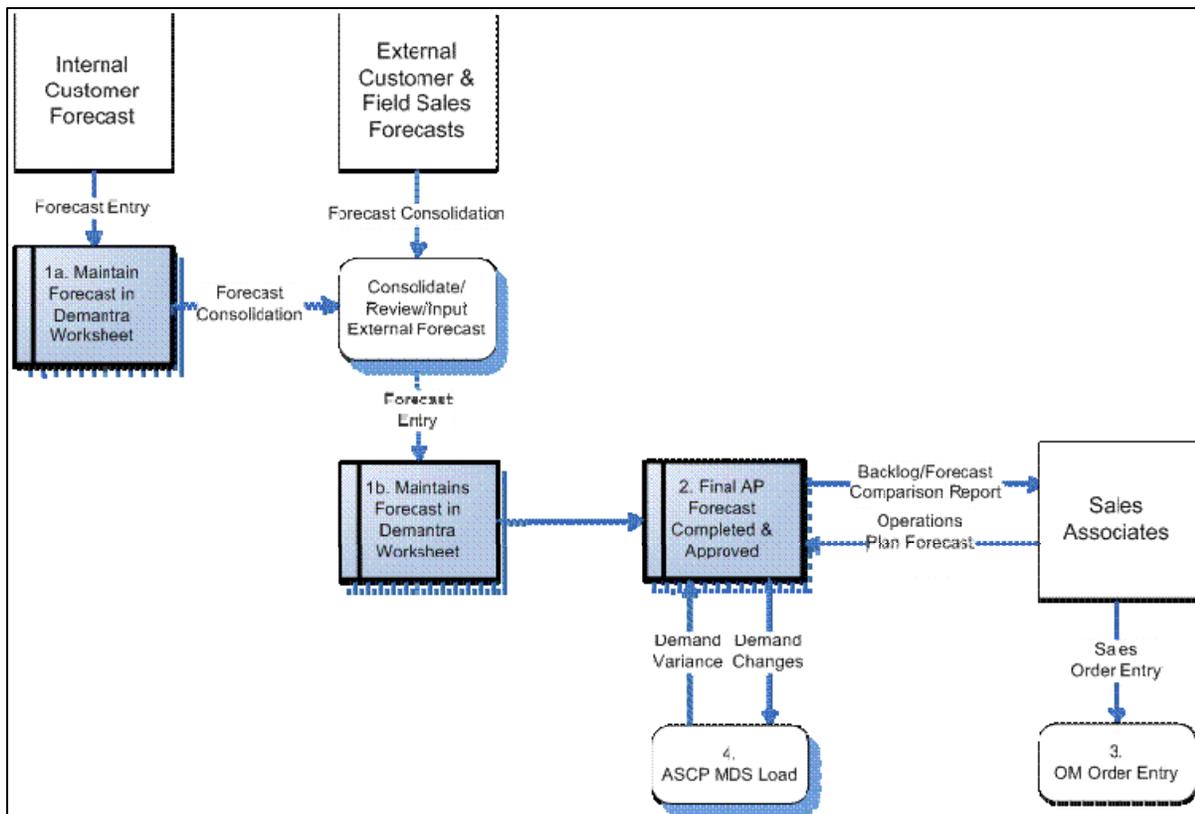
Final Production Cutover – The final groups of legacy processes are migrated to the solution and final training is completed to ensure all business requirements are met and business users have taken full ownership of the Demantra Forecasting Solution.

Production Systems Support Model – As the Demantra tool is highly extendable an ongoing solution review, enhancement, and support program is put in place to ensure the business users are completely satisfied with the final business solution.

Dynamic Business Systems Solution

The Demantra Solution design at Maxtek is dynamic in the sense that it leverages the flexible nature of the Demantra Demand Management toolset. Maxtek IT will leverage on an ongoing basis the Demantra features for defining and deploying user defined methods, creating new series, and including the customer as part of the collaborative sales process.

The following process flow outlines the Current Maxtek Demantra Solution:



Concluding Remarks

Straight Forward

Oracle Demantra Demand Management is a straight forward and simple to understand forecasting and forecast management tool. The Demantra solution has been developed as the primary product offering of a single company and this shows as the tool is well designed, extremely stable, and of highest quality.

Emulates Desktop User Interface (UI)

The primary business user interface for the Demantra Demand Management tool emulates a typical business user desktop. The UI allows an experienced PC user to customize and configure the forecast presentation layout for maximum productivity. If a business user is comfortable using Microsoft Excel then they are productive using the Demantra worksheet interface.

Oracle EBS Integration

The Demantra Demand Management integration with the Oracle E-Business Suite is a sufficient start for a larger enterprise use of the tool. Oracle does plan to add stored procedures in the future that will allow for 'out-of-the-box' downloading of Oracle EBS data elements into the Demantra database not covered by the current release. Documentation of the integration between Demantra and Oracle EBS is lacking at this time as there are many undocumented setup options and procedures.

Feature and Function Rich

The Demantra product suite is extremely feature and function rich. The Demantra Implementation Guide is over 1100 pages and identifies many features and functions that would be deployed across a very broad industry and enterprise spectrum.

Background of the Author

Robert Beltrone has been singularly focused over his 25 year business career. Driven to build a legacy of business solution expertise, Robert has been a project team member on over 30 successful enterprise-wide business application implementations. Mr. Beltrone has experience with every aspect of business application technology including ERP software development, marketing, education, implementation, and sales. Joining Oracle in 1988, Robert was the Implementation Manager for the first three implementations of Oracle Manufacturing. Nineteen years later, Robert has a vast knowledge of the Oracle E-Business Suite and the Oracle organization. Additionally, Robert has gained significant experience with various technologies including web based applications and ERP solutions using the Microsoft technology. Robert Beltrone is a Supply Chain Planning expert with years of private sector industry experience as manufacturing operations senior manager.



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