CRG
WarehouseManager

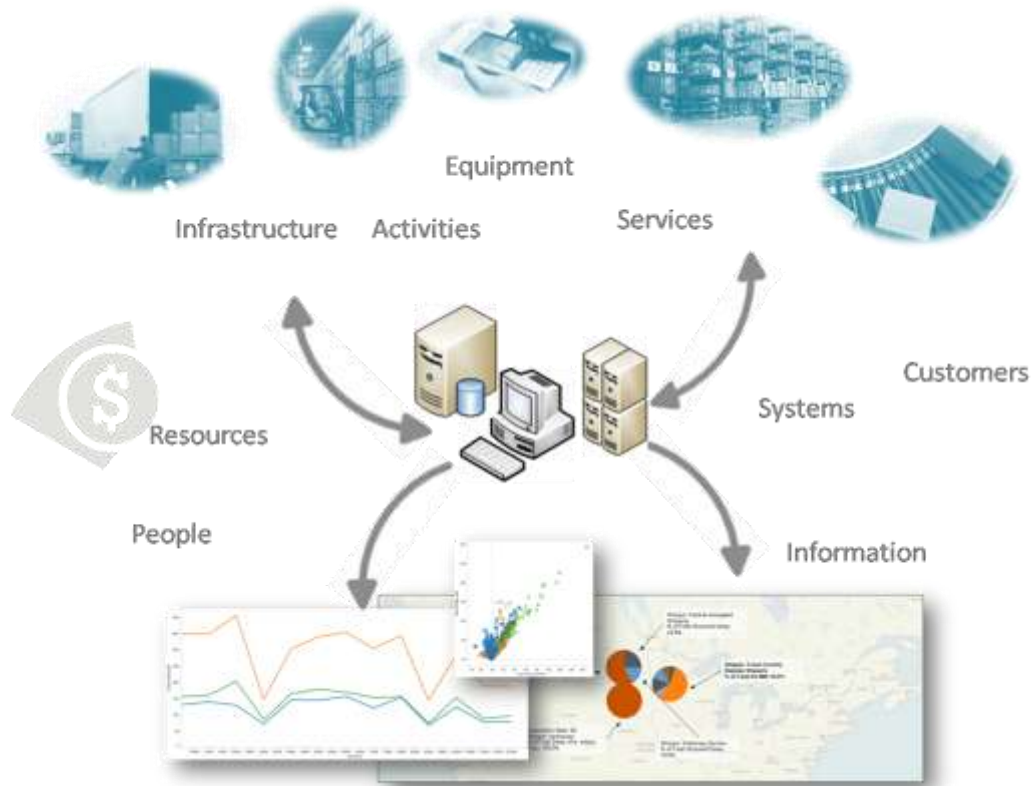**Supply Chain Profitability in a Box**

Corporate Renaissance Group

CRG WarehouseManager: Warehouse Profitability in a Box

CRG WarehouseManager is a dynamic warehousing solution for managing your inventory environment. WarehouseManager comprises of a warehouse management system that is supported by a robust and flexible costing and profitability engine and an exciting data visualisation and analysis reporting system. With WarehouseManager, senior management can now make fact-based and informed decisions about all activities, services and outputs that form part of the warehousing and logistics environment.

WarehouseManager's dynamic design provides logistics managers with a choice, as each of the system's components can be used as stand alone solutions that can be used to enhance a company's current warehousing and inventory movement system.

WarehouseManager has three integrated components: AdOr™, an inventory movement processing application, used for stock control, warehouse management and material issuing; FlexABM®, a robust, flexible and enterprise scale costing engine; and, Tableau™, an exciting world-class multidimensional analysis and visualisation application. WarehouseManager also contains the FlexWeb™ module to collect data over the web, which is not currently resident on any system. An added benefit is that Tableau is a stand-alone rapid Business Intelligence (BI) development tool that seamlessly integrates with most databases to provide added information without any technical (IT) expertise required to generate ad-hoc reports. This enables management to access other data and applications for better reporting and analysis.

WarehouseManager provides:

- Warehouse management information for inventory and cycle counting
- Replenishment information for inventory movement
- Order Processing information for demand of goods
- Shipment information for the dispatching of goods
- Electronic handling of movement of materials from one location to another
- Full tracking of resources to warehousing processes, activities and services
- Accurate attribution of overhead costs to activities thereby providing the true cost of service delivery
- End-to-end cost flow transparency – from resources through activities/services to products and clients
- Key Performance Indicators (KPI's) linked to activities thereby providing integrated performance management information
- Information on value versus non-value work
- Unit cost information of all outputs being delivered
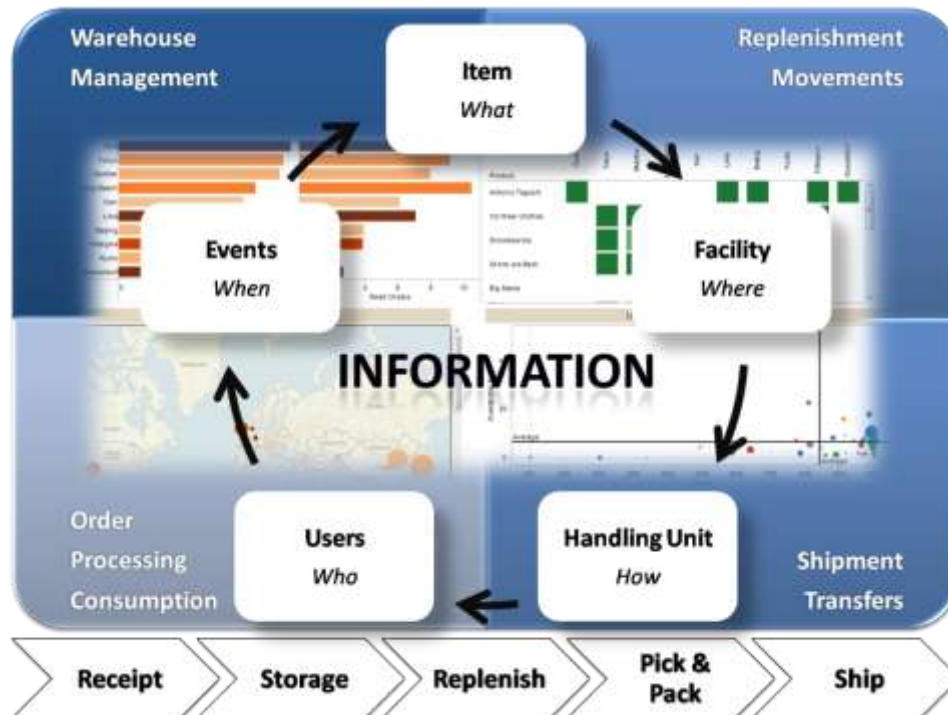- Profitability information of outputs, services and clients

Figure 1: Warehouse Profitability "In a Box"

The Potential Benefits of using WarehouseManager are:

- Improved productivity up to 30%
- Greater inventory accuracy - >99% at location level
- Improved management and control
- Reduced handling
- Greater visibility

- Reduced inventory up to 20%
- Increased perfect order rates
- Reduced direct operating costs and increase profitability

Inventory Movement and Management

WarehouseManager, through AdOr, is an inventory movement processing solution that is used for stock control, warehouse management and material issuing. Its dynamic and flexible architecture is ideal for 3PL service providers, multi business units and stand-alone entities. It supports business processes in a multi client environment consisting of, customers, products, facilities and other entities with commercial attributes. Its o*bject* driven data design and functional User Interface (UI) provide a flexible platform for managing and tracking of multiple items contained in various locations in a warehouse.

AdOr consist of four inventory management modules:

Warehouse Management Module for Inventory

- Identification and tracking of goods and Handling Units (HU's)
- Inflow receipt - validation options
- Storage - facility demarcation, mobile handling/storage and unit tracking
- Movements - routing, user logging
- Composition and attribution of changes
- Counting - Cycle or Standstill

Replenishment Module for Movement

- Forecasting of forward pick faces
- Planning and modelling of stock Pick Units (PU's)
- Min/Max refill settings
- Standardised batches (Kanban)

Order Processing Module for Demand

- Order consolidation selection
- Allocation determination
- Direct or Let-down
- Route-to-Target processing area
- Pick into predetermined Dispatch Units (DU's)
- Pack DU's
- Assurance control

- Consolidation
- Administration
- Consignment
- Loading

Managing by Facts

WarehouseManager provides managers, planners and analysts with dynamic interactive web reports made possible through Tableau Server. Visual analytics and dashboards to a server can be published effortlessly with no IT involvement and any user (with right permissions) can access them through a browser. Deployment is fast, and maintenance is almost effortless. Analytical views are linked to current information to display accurate and current information, which can be compared with historical information. There's no need to repeat the same analysis every week or quarter. WarehouseManager provides a 21st century reporting and analytics solution – out of the box.

WarehouseManager gives users the power to not only view data visualizations and dashboards, but also interact with them from an individual perspective. With intuitive filtering and sorting tools, users can focus in on their own regions, departments, or other specialized interests.
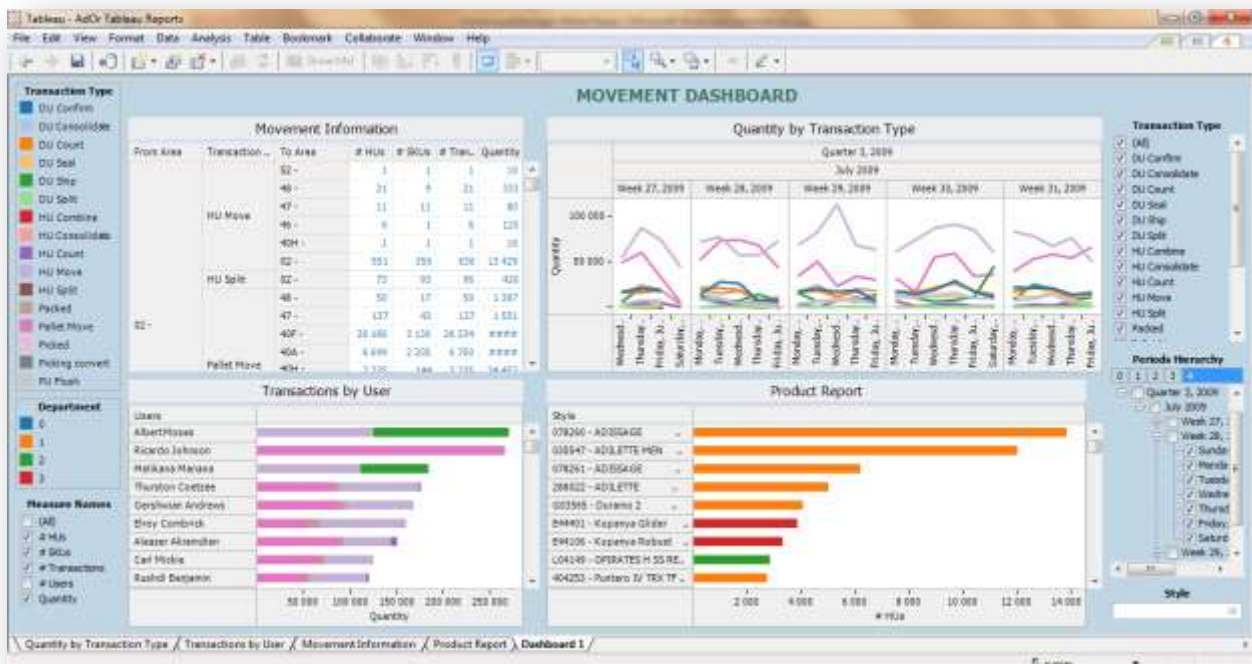
Figure 2 shows an inventory movement dashboard based on AdOr data.

Figure 2: Inventory Movement Dashboard

This web-published inventory movement dashboard is fully interactive, with all four of the reports embedded in the dashboard linked to one another. The left-hand top report shows the movement information from the originating department to the delivery department by transaction type. The number of HU's, SKU's, Units and Transactions are shown for a given period as selected on the Period Hierarchy Quick Filter shown in the right-hand bottom of the dashboard. The user has full access to select any required period and the total dashboard will then be updated accordingly. The top right-hand report shows the movement over time for each transaction type in graphical format. The Quick Filter adjacent to the report enables the user to select any transaction type after which the total dashboard will be updated to show the information pertaining to the selection. A Product Report is shown at the bottom right. The report shows by product style the number of units moved by department. A specific style can be entered into the Style wildcard match at the bottom right of the dashboard which will update all the other views accordingly. The fourth report at the bottom left of the dashboard shows who handled the transactions. Each bar shows the number of units handled by a particular user by Transaction Type. The dashboard's functionality and clarity is further enhanced by colour legends and a quick filter for the selection of any, part, or all of the four measures.

How does WarehouseManager link Resources to Activities?

Once the financial data has been mapped to the activities, WarehouseManager, through FlexABM imports the financial data from the financial system. Employee effort is imported from the time management system or captured through the FlexWeb module. The reports generated through Tableau will answers typical questions such as:

- What is the direct cost per process and activity?
- What is the fixed/variable split?
- What resources are being consumed by each activity?
- What are the resources used and what are their associated costs within each business unit, cost centre or work team?
- What are the top 10 most costly activities?
- What are the most expensive resources and where are they being consumed?

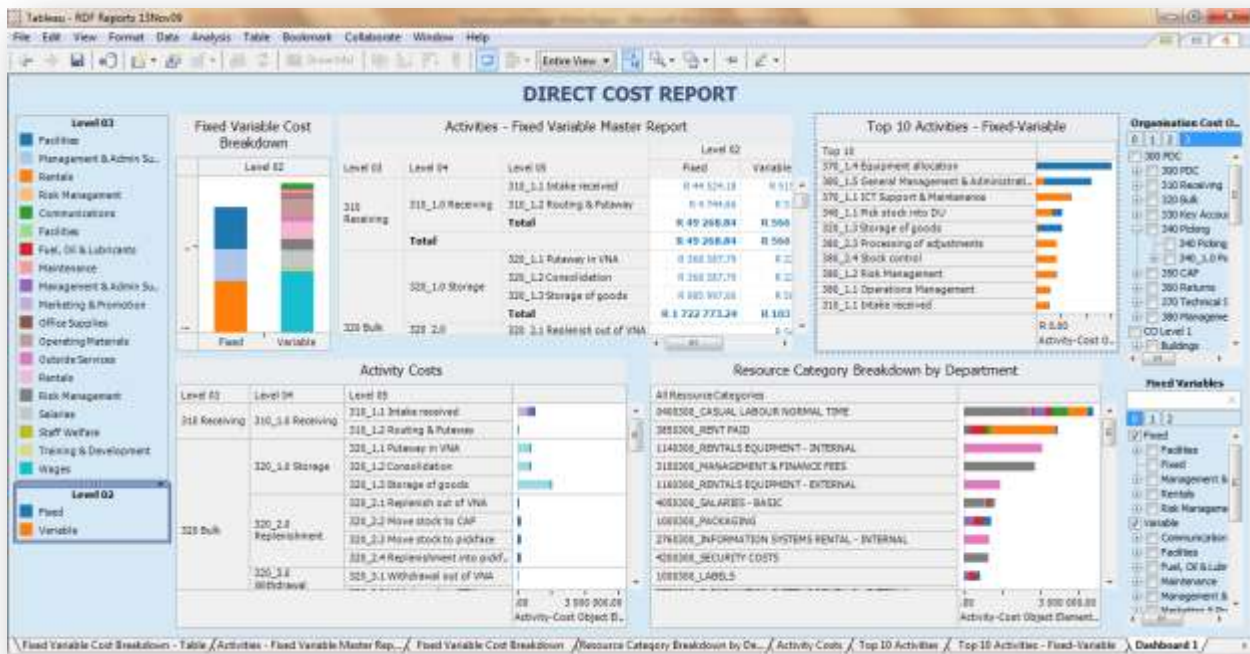- What are the Resource Drivers and their quantities?

Figure 3: Dashboard Visualising some Answers to These Questions

An unlimited number of multi-dimensional reports and dashboards can be created and presented as single reports or in an executive briefing book. The dashboard depicted above shows at the top left the overall costs of the organisation by cost centre, process and activity, in a cross-tab and bar chart format. The bar chart is included to be used as a Quick Filter to see the influence of a specific Resource Category on the operations of the warehouse. The report at the top right of the dashboard shows the ten most expensive activities with the colours showing the fixed and variable split. The colour legend is at the bottom left of the dashboard. Quick Filters for the organisational structure and resource category structure are shown on the right hand side of the dashboard. The report at the bottom right shows the total cost by Resource Category, with the various colours depicting the General Ledger accounts that make up each category. The legend explaining the colours is shown on the left hand side of the dashboard. The report at the left hand bottom of the dashboard shows the total direct cost of each activity with the colours depicting the various Resource Categories. All of the reports are interlinked and the Quick Filters apply to all the reports shown in the dashboard.

The True Cost of Providing Warehousing Services

The direct cost model only shows how the various resource costs are linked to activities, which is an important first step as it shows management exactly where they are spending their budget. However, what is more important is that managers are made aware of the true cost of providing services to clients. It is here where the true power of WarehouseManager, made possible by FlexABM's powerful calculation engine, is applied.

True cost information for a supply chain is essential due to the diversity of cost categories such as warehouse infrastructure and other overhead costs. One of the main challenges for warehouse managers is determining the charges to clients, what the actual or true unit costs are of the services rendered to clients? WarehouseManager enables management to determine the true cost of services through accurate attribution of overhead costs to the various services through the activities that are performed by the support and operational entities within the organisation.

This functionality answers the following questions:

- What is the total cost of providing services?
- What is the unit cost of every activity output?
- What proportion of the total cost of a particular service can be attributed to support services?
- What is the cost of operating a particular type of equipment?
- Where does this cost come from?

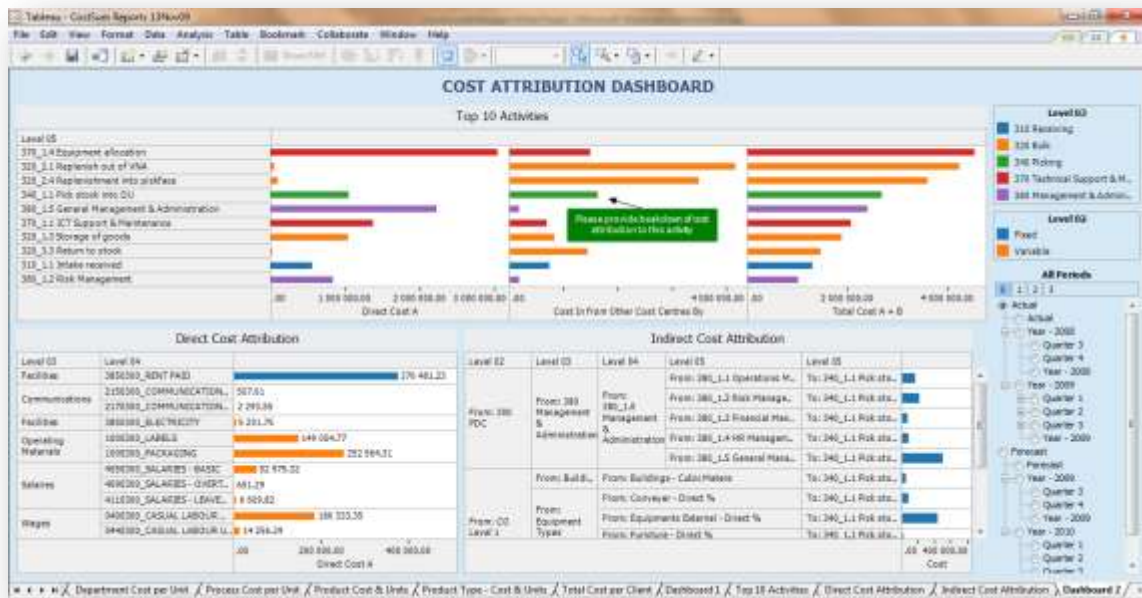Figure 4 answers the question "Where does this cost come from?"

Figure 4: Cost Visibility

The dashboard above shows how costs are attributed to the various activities. The report at the top of the dashboard shows the ten most expensive activities in terms of total or

true cost. Also shown are the direct cost attributions as well as the indirect costs. An annotation shows that clarity is requested as to the cost breakdown of activity 340_1.1 Pick stock into DU. The bottom two reports show where the cost originates from - direct cost (left) and the indirect cost (right).

Determining the Cost of Outputs – Unit Costs

Due to a lack of true cost information, warehouse owners find it challenging to determine unit cost information on which they can base their pricing strategy. In most cases an inflation factor is applied from year to year based on the previous year's figures. Clients are however placing more pressure on warehouse/distribution centre operators to lower the cost of their services as the cost pressures on them have also increased. Internally, managers are also placing more emphasis on the reduction of the overall supply chain costs of which the warehouse makes up a large percentage of total supply chain cost.

WarehouseManager provides warehouse owners with the "true" unit costs of providing services due to the accurate way in which it attributes overhead costs to activities.

Figure 5 shows a dashboard consisting of three unit cost reports.

Figure 5: Unit Cost Dashboard

This dashboard shows the unit cost per warehouse activity. The Cost per Unit – Activities report provides a total view of all activities along with their respective cost and output drivers and measures. The bottom left report shows the unit cost per product category

against total costs and total units for each product category. The bottom right report shows the same information but for each individual product. The quick filter on the right of the dashboard gives the user the ability to filter on a particular date which will automatically update all the reports contained in the dashboard and workbook if it was defined as a global filter. Filtering by product category is also possible through the product category legend sown at the bottom right corner of the dashboard.

From this it can be seen that pricing strategies can now be determined by product type/category rather than just though a fixed/variable analysis, as each product category/type determines what activities are required and what resources are consumed by a product's specific requirements. The same is possible for clients as their needs can also vary considerably.

Performance Management

WarehouseManager is the ideal performance management tool. Tableau's ability to access the data of any system supporting the warehouse and its functional dashboard capability, enable managers to create performance dashboards on the fly. Key Performance Indicators on cost, productivity, DC Utilisation and many others can be developed based on the data that resides on AdOr and other warehousing systems.

Figure 6 and Figure 7: Productivity Report show a dashboard and KPI report respectively.
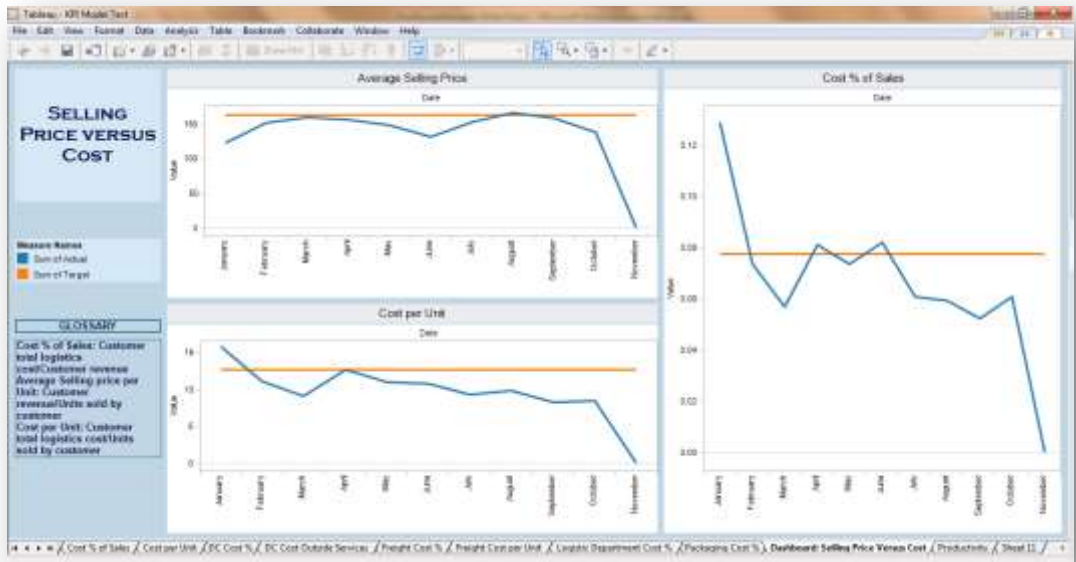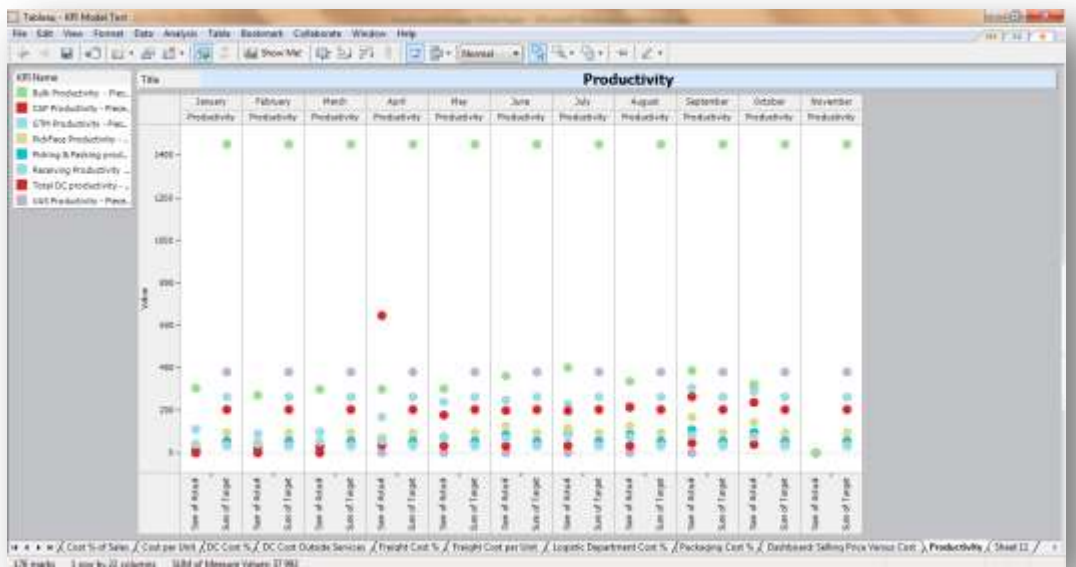
Figure 6: Linking Data to the World

Figure 7: Productivity Report

Rapid-Fire Business Intelligence!

WarehouseManager seamlessly integrates with sixteen different data sources without any programming being required. This is called, "Rapid-Fire" BI!

Rapid-fire BI is a self-service business intelligence approach that provides true business intelligence to information users. It is much easier to deploy, administer and scale. It also allows users at all levels to ask and answer questions themselves – in a matter of seconds. Rapid-fire business intelligence lets business users explore and analyze their data independently, while reducing the burden that heavy BI platforms place on IT.

Rapid-fire BI has the following attributes:

- **It is user-driven** – The user creates the reports without IT intervention
- **Easy Visual Interfaces** – Results are visual and interactive. If people don't find the software easy to use, they won't use the software. End of story.
- **Flexible Configurations –** Single user, single data source or multiple users with multiple sources, the software handles it all.
- **High Performance -** BI needs to run fast.
- **Easy Administration** - IT can support the new BI application with existing staff and infrastructure. No professional services (or fees) are required.
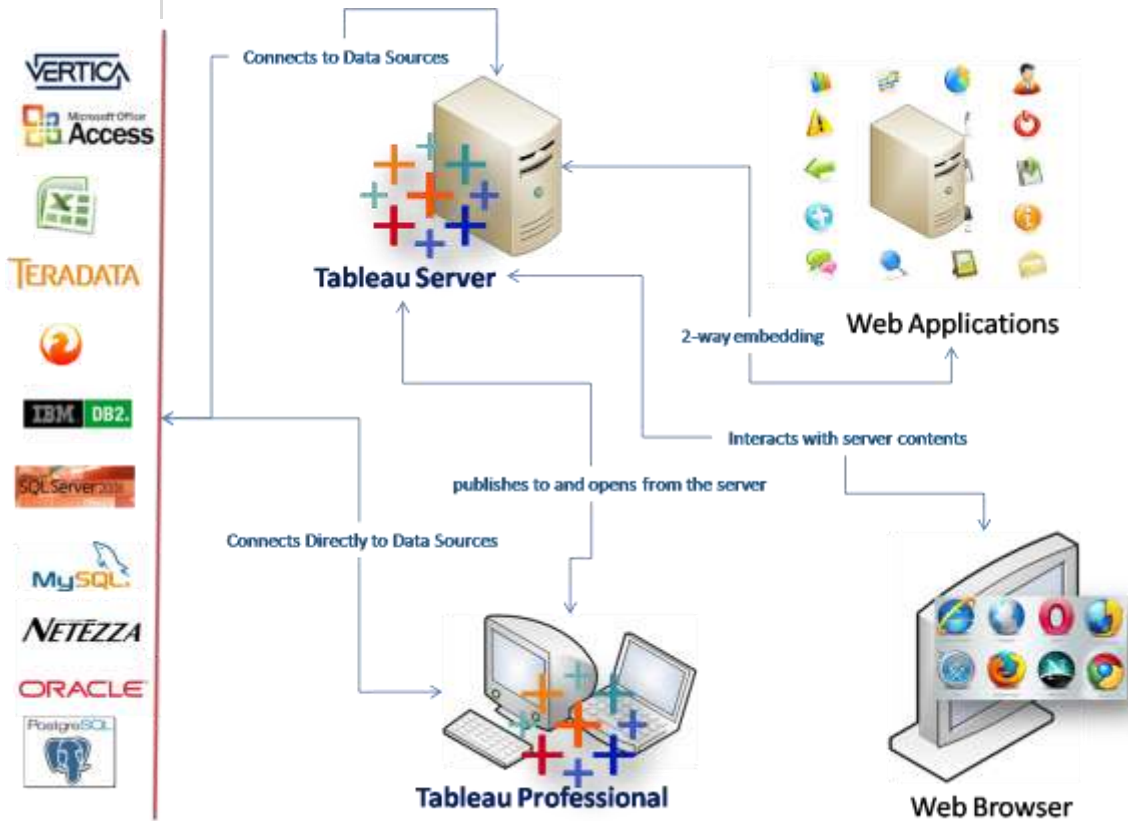

Figure 8: The Rapid-Fire BI Platform - From Data to Information on a Click

Summary

WarehouseManager is an integrated supply chain solution with its core modules providing profitability and operational intelligence to business users. Further modules can be added that provide employee performance management and information, electronic Service Level Agreements (SLAs), e-billing and additional Supply Chain Management (SCM) functionality.

However the power and uniqueness of WarehouseManager lies in the unique inventory movement and management functionality provided by AdOr, the robust calculation strength provided by FlexABM™ and the flexible and easy to use reporting, analysis and visualisation capability of Tableau™, which provides the "WOW" factor.

AdOr is a cost effective, turnkey inventory movement processing application developed by a South African company.

It is a business tool utilised for:

- Stock control
- Warehouse management
- Material issuing
- Performance management

The application can be used by:

- 3PL service providers
- Multi business unit enterprises
- Stand-alone entities

It consists of the following modules and functionality:

- Warehouse Management module for Inventory and Cycle counting
- Replenishment module for Movement
- Order Processing module for Demand
- Shipment module for Dispatch

FlexABM® is a proven, easy-to-use, enterprise-wide cost and profitability solution that identifies the true cost of all activities and provides decision-makers with the analytical tools, models and methodologies to effectively evaluate business processes. FlexABM provides intuitive costing of activities and processes, and is ideally suited to the port environment. By utilizing a familiar 'drag and drop' tree structure, grouping and tagging, and roll up functionality, data modelling is uncomplicated, yet extremely advanced. FlexABM provides:

Unlimited modelling elements

Group and tag activities with multiple roll-ups

Multi-level activity assignments and cost objects

Automatic attributions and activity

Tableau Desktop is a software application that enables anyone to analyze any kind of data quickly and easily. It creates brilliant charts, graphs and other visualizations with a few clicks of your mouse.

Tableau enables you to:

- Extract actionable insights from raw data in a matter of minutes.
- Create visual tables of data to reveal relationships, find patterns, and identify outliers.
- Look at one factor a time or any number of factors simultaneously.
- Filters and zoom into data.
- Create Dashboards
- Export vivid and beautifully annotated presentations to other applications, including Microsoft Office

Publish interactive reports on the

- Electronically handles movement of materials from one location to another

Interfaces easily with any well known ERP system

AdOr is a real time system utilising the latest WiFi tecnology. It facilitates lean manufacturing principles with it's revolutionary new

- Pull to line And
- Replenishment Engine modules

Potential Benefits of using AdOr

- Improved productivity from 15 up to 30%
- Greater inventory accuracy
- Improved management and control
- Reduced handling
- Greater visibility
- Reduce inventory from 5 to 20%
- Boost perfect order rates
- Reduce direct operating costs and increase overall revenue
- Improved customer experience

driver weighting

- Detailed models that accurately express expenditures and use of resources across the port
- Models that incorporate revenue and profitability
- Multi-dimensional reporting with any combination of products, customers, or other dimensions
- What-if Scenarios

With one of the most sophisticated, yet straightforward, 'import wizards', FlexABM effortlessly allows you to import the financial and operational data that is so vital to the rapid and cost-effective implementation of any cost and profitability system. Additional functionality includes:

- Automatic data validation
- Integrated view of cost/quality/cycle time
- Incorporates costs as well as performance measures
- Populates models with data from a variety of existing operational sources, such as ERP systems

Web to view and interact with data using Tableau Server. Tableau Server's functionality includes:

- Intuitive filtering and sorting tools
- Links that users can follow through a recommended analysis path of related views. Links can also invoke other web applications to display related information
- All Tableau Server visualizations can be exported as images
- Smart Search™ capabilities
- Control access and minimize IT management

Tableau Server is a complete solution—no other prerequisite software is required. The only infrastructure requirements are a Microsoft Windows environment, at least one publisher using Tableau Desktop, and a web browser. Users can be served analytical views using Microsoft Internet Explorer 6+ or Firefox 2.x.

About Corporate Renaissance Group

At Corporate Renaissance Group (CRG), we have a single focus: *driving better management and performance through innovative solutions*. And, we have been delivering results to public- and private-sector clients, both large and small, around the world since 1989.

Our experience is wide and deep. Our consulting services team is renowned for its expertise and experience in: strategy design and execution; value creation; executive compensation; and costing and profitability analytics. We design all-encompassing enterprise-level dashboards; business intelligence solutions; shared services strategies; and employee performance management programs. Our implementations also leverage our own solutions – FlexABM, Cost Allocator, Shared Services Manager, and emPerform – all deliver the best value for money in their class.

We pride ourselves on being go-to Microsoft experts for business solutions. We use Microsoft technologies to help companies improve financial and operational performance and increase efficiency: Microsoft Dynamics GP, SharePoint, PerformancePoint Services, Microsoft Dynamics CRM, and the Microsoft Business Intelligence Suite of products. We also serve the Microsoft Dynamics GP community through our products: Changer, AA Tools, QuickCubes, Re-Formatter, Reverser, and Merger Series.

We have world-class software development capabilities and we have developed many customized solutions to our clients. We are very proud of our software development centre, located in India. We customize business applications to help our clients become world class performers; our over 3,000 satisfied clients are a testament to our skill as software developers.

We are truly a global company with offices in Canada (Ottawa, ON; Toronto, ON; St. Andrew, NB, and Kelowna BC), South Africa (Cape Town and Port Elizabeth), India (Pune), and the United States (Tulsa, OK) and affiliates in the Caribbean and Europe.

Contact Us

www.crgroup.com

Canada	South Africa	India	United States
6 Antares Drive, Phase 1, Suite 200 Ottawa, ON K2E 8A9 Canada	9 Dolphin Drive Blaauwbergrant Cape Town 7441	5 Ramagovind, Sahawas Society Karvenagar Pune 411 052 India	7712 S. 232nd E. Avenue Broken Arrow, OK 74014 USA
t: 613.232.4295 f: 613.232.7276 e: crg@crgroup.com	t: +27 21 557 5847 f: +27 21 557 4180 e: rkeet@crgroup.com	t: +91 202 5457100 e: crg@crgroup.com	t: 918.357.9304 f: 918.357.5374 e: crg@crgroup.com