

AIRS® Adaptive Integrated Retail System

flexible deployment model



Enterprise retail operations are growing more complex and therefore demand increasingly sophisticated IT solutions. The world population is exploding, and that includes the U.S. population, which is forecast to double from 300 million to 600 million in the next fifty years. That means we are adding twice as many new consumers per day as we have added in the past fifty years.

The result of this worldwide population explosion is a comparable growth in retailing. However, competition is fierce among retailers, especially with companies like Walmart that use a comprehensive and proprietary enterprise retail system to drive profit margins down to where they are measured in tenths of a percent. Costs continue to skyrocket, forcing retailers to look for ways to compete, increase revenues, and cut costs, all while improving the customer experience.

In the retailers' quest to achieve success, knowledge, as always, is power. Retailers need to know the status of every product in every store at every second. They need to streamline communications from the Point-of-Service, which is often an Internet browser or a Mobile POS device, back to the manufacturer. Tracking transaction data in real-time is required to ensure proper inventory levels at all points in the supply chain to maintain store level inventory.

This critical need for real-time transaction data is further aggravated by exploding losses from shrinkage. The

National Retail Federation recently reported a

staggering \$37.4 billion in retail shrinkage

due to employee theft, shoplifting,

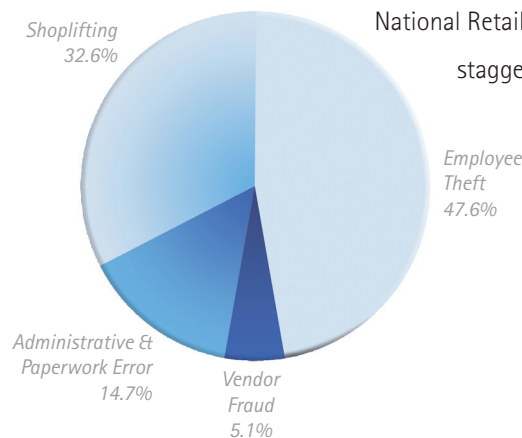
administrative errors, and

vendor fraud. As in other

industries, Forrester, Gartner and

AMR all report that retailers are

turning to technology for help.



ALPHA BAY CORPORATION



AIRS Adaptive Integrated Retail Systems

The problem is, today's enterprise retail software infrastructure is a conglomeration of legacy systems, multiple databases, end-of-life products, patchwork interfaces, and expensive consultants, all which carry huge overhead.

Retailers cringe at the thought of the expense, both in time and money, of updating their enterprise software and often choose instead to continue to bear the higher costs of supporting and managing what they currently have. Still, the cries from retailers continue: "We can't get the data we need soon enough to increase revenues and profits, improve customer satisfaction, reduce overstock, eliminate out-of-stock situations, prevent shrinkage and reduce expenses!"

What's needed is a completely new, fifth-generation enterprise retail system based on proven, state-of-the-art technologies. The answer is AIRS from Alpha Bay, the Adaptive Integrated Retail System.

AIRS is adaptive. Adaptive can be defined as: *helping to adjust and function well within a changing environment.* AIRS has taken this concept, generally applied to humans, and incorporated it into the architecture of the system. The result is a highly flexible enterprise software solution which adapts to any SQL database, any modern hardware, including new iPhone point-of-sale devices and more importantly, to the unique environment of every retailer.

For example, GUI screens are not preconfigured and instead can be easily customized to match each retailer's needs. Even more powerful is the adaptive nature of AIRS

workflows, which almost self-modify to match the workflow of each retailer rather than making the retailer adapt to the vendor's software.

Beyond flexibility is a completely new application of adaptive technology where it can be implemented to address inventory shrinkage. Through its Loss Prevention Agent, AIRS provides the functionality to dramatically enhance the system's ability to identify, track, monitor and report on the people and processes associated with theft and fraud.

AIRS is integrated. Integrated can be defined as: *formed, coordinated, or blended into a functioning, unified whole.* Most enterprise retail solutions today are patched together, with different products, databases, hardware, operating systems, and interfaces.

The AIRS Suite is fully architected from the ground up and is based on Alpha Bay's more than 120 years of combined experience in system software design and implementation. AIRS represents the fifth generation of enterprise class system software architecture.

AIRS provides a unique, object-oriented approach to all aspects of the solution, not just at the programming language layer with Java or C#. Instead, AIRS utilizes object-oriented structures at both the business logic layer and the GUI layer, providing ease of use and ease of management in a distributed, scalable, high performance, secure, transactional environment.

The architecture is built from the perspective of millions of transactions, managed real-time over a virtual private network, using Internet infrastructure across multiple continents, with sub-second response time and guaranteed security. AIRS provides a lightweight portal interface for the user, including support of multiple devices including all types of Point-of-Service devices such as: iPhones, PDAs, Tablet PCs, and more. At the same time, AIRS offers a full-featured Web 2.0 interface for complex tasks like knowledge management, which provides a flexible lightweight alternative to traditional Windows clients.

AIRS is retail. Retail can be defined as: *the sale of goods/merchandise for personal or household consumption either from a fixed location such as a department store or kiosk, or from an e-commerce website with its related subordinated services.* AIRS is designed and developed from the ground up with a specific focus on retail.

Unlike enterprise resource planning (ERP) solutions that attempt to be all things to all markets, AIRS is developed to specifically service the unique needs of retailers. AIRS tracks every item sold or returned at every location, physical or virtual, across the enterprise in real-time.

When it comes to truly knowing your customers, optimizing the way you do business, and maximizing profits, AIRS steps to the front of the line. Inventories are finitely controlled for each store, distribution center, and warehouse based on historical product flows, reducing costs at all levels of the enterprise. Staffing is planned and managed

based on the same business intelligence that drives inventories and includes historical trends, daily weather conditions and more. AIRS integrates with an ERP and utilizes a SQL database but the architecture is uniquely retail.

AIRS is a system. System is defined as: *an assemblage of entities/objects, real or abstract, comprising a whole with each and every component/element interacting or related to at least one other component/element.* The AIRS architecture is a multi-tiered system with layered services. This architecture has five major tiers: client, presentation, business logic, base services, and database.

- The client tier provides the GUI and client side of the remote interface to the backend systems.
- The presentation tier is a set of discrete components that live on the client and servers, implementing a distributed model-view-controller design pattern.
- The business logic tier provides the business rules and access to data needed for an intelligent user session.
- The base services tier provides security, workflow, data access, naming, logging, search, and transaction management services.
- Finally, the database tier provides data services, legacy system connectivity, and access to external web services.

While there are five logical tiers in the architecture, the deployment model for the system will typically incorporate no more than three physical tiers: web server, application server, and database server.

AIRS Adaptive Integrated Retail Systems

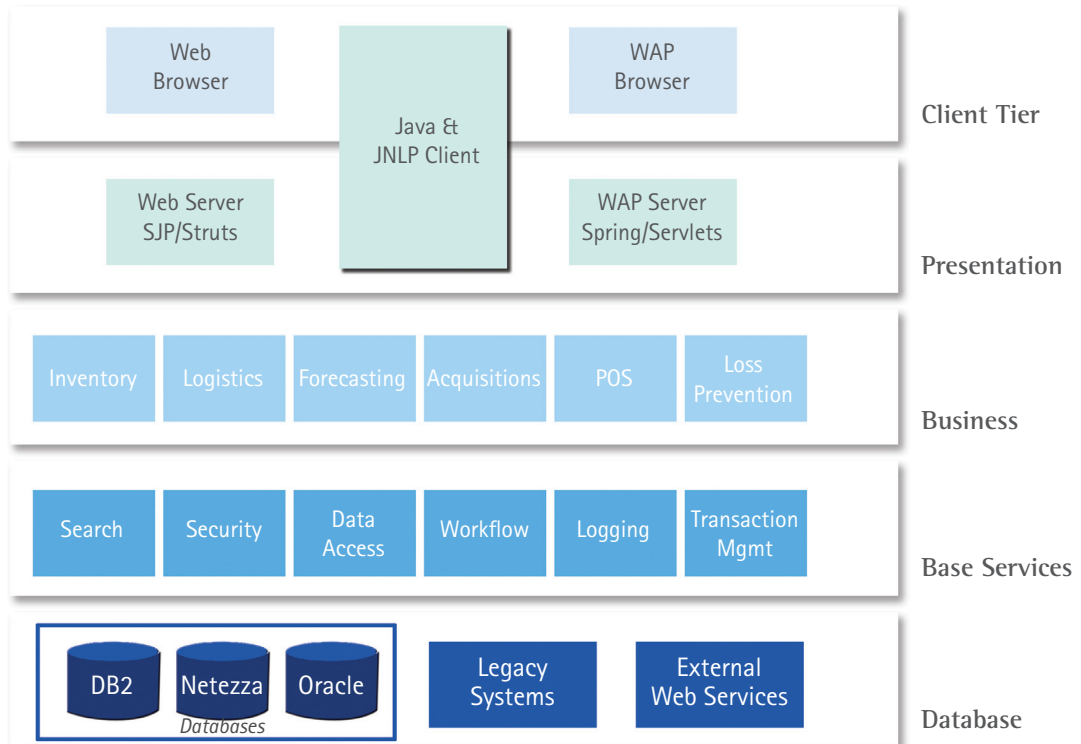
The architecture provides for maximum flexibility in your deployment model, allowing for all of the logical tiers to be typically implemented onto a single server for small systems, two physical layers for medium-sized systems, and three independent physical layers (web, application, and database) for large systems. This is the backbone of Alpha Bay's unique Hybrid Information SystemsSM solution.

In addition, each of the three possible physical layers can be implemented in a high availability configuration, providing complete redundancy for each layer through the use of clustering and load balancing technologies. This flexible architecture allows even a small retailer to affordably enjoy the benefits of a Fortune 100 multi-tiered architecture.

AIRS utilizes proven, leading edge Java-based technologies, Microsoft .NET, Apple iPhone, Linux operating systems, and 64-bit dual and quad-core processors to speed up lines and give managers the real-time information they need to optimize the supply chain. This permits retailers to flow-cast, not just forecast, and greatly improve the customer's experience and loyalty.

AIRS simplifies the creation and integration of retail business applications using a service oriented architecture (SOA). This makes it easy to integrate with the extended functions of any business enterprise system (CRM, ERP, HR, etc.). The full SOA implementation exposes business logic as discreet web services, providing well-defined accessible application interfaces. Whether you're

AIRS SOA Logical Architecture Layers



implementing a point solution in a local store or an enterprise system worldwide, AIRS provides a tightly integrated software environment.

AIRS is a full-featured, easily customizable retail product line, which includes applications such as Merchandising, Point-of-Service, Mobile POS, Inventory Management, CRM, Store Operations, and more. AIRS permits the use of all leading-edge technologies plus provides the opportunity for radio frequency identification (RFID), touchscreens, biometrics, and other beneficial technologies most current systems can't fully support.

AIRS Next-Generation Features and Functions

AIRS provides the full set of features and functions you'd expect from a best-in-class solution, plus a number of features not available in most retail applications.

Customizable Client

Alpha Bay recognizes the uniqueness of every retailer and has therefore developed a powerful architecture that provides unparalleled flexibility in both the graphic user interface and in operational workflows. This flexibility is supported through the SOA object layer, which separates the business logic from workflow and interface. No longer do retailers have to conform their operations to fit the mold of a software vendor's application.

AIRS supports easy changes to the GUI and workflows to adapt to the retailer's process without months or years of expensive consulting services. This allows the addition of functions, features, and workflows that give retailers the benefits of increased productivity and dramatic reductions

in training, greatly reducing the stress of system upgrades and the cost of retraining.

Single User Interface

Typical retail environments today have many different application interfaces based on legacy systems implemented over many years. Analysts report that the average retailer uses between ten and twenty different retail software applications to cobble together an enterprise solution.

The AIRS user interface is consistent throughout all of the AIRS applications. The unique architecture of the AIRS solution provides a consistent Web 2.0 client interface to all users of the system, from customers at in-store kiosks to financial analysts with laptops. This powerful advantage dramatically reduces training and empowers employees to move throughout an organization with ease.

Dashboards and Alerts

The AIRS software fully supports unlimited real-time dashboards and alerts that allow the user to analyze all transaction activity at a glance. From the dashboard, the user can dynamically drill down to the lowest level of data in order to make important decisions. AIRS business intelligence dashboards and alerts use role-based security so each user can have their own dashboard without having to filter out unnecessary data. In addition, users receive critical information in dynamic alerts sent as emails or SMS messages. AIRS applications are fully integrated with the central database and other AIRS applications, supporting updated reporting in real-time to each individual's dashboard.

AIRS Adaptive Integrated Retail Systems

Loss Prevention Agent

AIRS uses a proprietary technology to bring the power of artificial intelligence and computational analysis together through neural networking to recognize, track, and report potential theft and fraud. This technology is not a stand-alone application but is an integrated component of the base transaction architecture.

The loss prevention agents address all areas of threat including: employee theft, customer theft, administrative errors and vendor fraud. While no technology can stop all theft, AIRS can dramatically improve a retailer's ability to identify the people and processes responsible for the billions of dollars retailers are currently losing every year.

Role-based Security

At sign on, the system determines the rights and privileges of each user. The user's security level is automatically applied, activating their application environment. With this role-based security model invoked, all the functions, applications and features are customized for that individual, including access rights for read, write, edit and delete.

For example, an executive could log on to an AIRS Point-of-Service terminal and access HR files and other corporate data, while a clerk would only see the standard Point-of-Service functionality. Each user in your organization can be defined by the role they play and then in turn be presented information pertinent to that specific role on any computer in your environment.

Integrated Real-time Business Intelligence

Business intelligence (BI) is an integrated design foundation of the AIRS architecture, rather than an afterthought

or add-on product. Real-time querying, analysis and reporting support is built in as part of the foundation of the system.

In today's e-commerce environment, BI must be integrated to provide the real-time reporting, monitoring, tracking and analysis required to support a successful enterprise. This includes data-driven notifications, alerts, automated reporting, mass report distribution and real-time querying capabilities. For the first time, you can access all the data in your system in real-time, to see the information you need, when you need it.

Open Database

Many of today's retail systems store data in multiple proprietary and/or locked databases that do not allow employees to access the necessary data. Often these databases have duplicated and inconsistent data. This results in high maintenance costs and costly time-consuming reporting and analysis to convert data to competitive information.

All AIRS applications are database independent, letting you select from today's most popular and proven databases, including Oracle, DB2, MSSQL, Netezza, and Teradata. The database-independent design supports a flexible data model where all data, from transactions to warehouse inventory, resides either in a single database for real-time querying and reporting or in a tightly integrated component of a larger data warehouse.

Scalability and Clustering

AIRS can support retailers from the largest Tier 1 retailers to the typical entrepreneurial SMB retailers without any

change in code. Tier 3 retailers and some Tier 2 retailers will choose to use AIRS either through a Software as a Service (SaaS) offering, where the server will reside at a hardened data center managed by Alpha Bay professional services, or choose to install on a single, low cost server located in their store.

Larger Tier 1 and Tier 2 retailers may implement an enterprise based server farm in either a single corporate datacenter or in a distributed multi-tier server farm where servers reside in stores and at corporate headquarters. AIRS can support a broad range of implementation scenarios due to its flexible distributed architecture.

AIRS has been engineered to support full scalability across multiple servers and multiple databases or to run on a centralized multi-processor server. Server farms support clustering to guarantee 99.999% uptime where required.

An additional benefit of the AIRS architecture is that retailers automatically gain load balancing between the multiple servers, which provides both increased performance and reliability. When properly implemented, there is sufficient power at the server level to take down a server with complete transparency, including no appreciable reduction in performance. This design supports anytime maintenance and resiliency to hardware, software and OS failures.

Flexible Implementation Models

The AIRS distributed architecture allows the retailer the benefit of multiple implementation scenarios, allowing a retailer to choose the option that best fits their needs. The AIRS Software as a Service environment gives retailers

optimal cost savings and performance and reduced maintenance effort and cost, while the traditional, enterprise-licensed software model allows retailers maximum familiarity. Alpha Bay's SOA model and ESB can give retailers numerous hybrid environments that blend the benefits of traditional in-store servers and in-house data centers with new RIA software that leverages state-of-the-art commercial data centers and inexpensive VANs.

Because AIRS has an open, standards-based architecture, a phased approach to implementation from single store to worldwide enterprise is possible. The retailer may choose to implement a single AIRS application tightly integrated with their legacy systems at the store or enterprise level, or they may choose a more aggressive implementation that allows them to deploy a new enterprise solution to replace their existing products, while having the comfort of doing full system testing, trial go-live testing, and parallel production.

Proven Technology

AIRS is a 21st century solution proven in many industries, not just patched-together software from a variety of vendors. The AIRS technology is capable of handling millions of transactions per hour, billions of individual items, thousands of simultaneous users, and hundreds of remote locations on a single distributed enterprise system.

The technology is completely independent of database or hardware and provides the highest availability and performance. AIRS is built using J2EE, J2SE, JMS, JDBC, JMX, Java, ARTS, IX Retail, SOA, ESB, AJAX and other leading industry technology standards.

AIRS Adaptive Integrated Retail Systems

The AIRS Solution

Overview of benefits

- Proven, leading edge, best-in-class architecture
- Faster implementation provides faster ROI
- Lower cost of ownership and management
- Architecture is independent of database and hardware
- Turnkey or point solution
- Built-in loss protection intelligence
- Dynamic fraud trend analysis
- High availability
- High scalability with or without clustering
- High reliability
- High security
- Internationalization – full Unicode support for multiple currencies and languages
- True thin-client, Web 2.0 browser-based solution
- Easy to deploy, update, and upgrade
- Adaptable loyalty program
- Extensive support for Mobile POS and mobile kiosks
- Enhanced up-sell capability
- "Save-the-sale" tools
- Advanced purchasing capabilities
- Flowcasting reduces profit losses from out-of-stock (OOS) and overstock
- Faster, richer customer experience
- Supports new wireless and RFID technologies
- Based on retail technology standards including the clearly defined data model developed by the Association for Retail Technology Standards (ARTS®)
- Faster, more pleasing customer experience
- Customer profiling and suggested-sale capabilities increase customer loyalty
- Real-time data completely available from anywhere in the enterprise
- Minimal training time required for user
- ROI quickly achieved
- Easy to use GUI makes data handling easier and more efficient and requires lower training costs

Elements

Planning

Price management
Sales planning
Merchandise planning
Open to buy (OTB)
Promotion management
Promotion analysis
Assortment planning
Forecasting/flowcasting
Store operations

Sales

Item Publishing
Ticketing & signage
Website selling
In-stock kiosk
Mobile kiosk
Credit authorization
Voucher/gift certificate management
Point of Service
Mobile POS
Layaway
Warehouse management
Customer order management
Offers management
Transportation management
Customer Profiling
Fulfillment
Sales Audit
Catalog management

Buying

Vendor management
Purchase order management
Import/export management
Replenishment
Allocation
Deal Management
Store/DC receiving/distribution
Stock locator

Tracking

Sales analysis
Retail/cost stock ledger
Inventory control audit
Loss prevention analysis
Cash management
General ledger
Time and attendance
Accounts receivable
Accounts payable
Human resources
Employee productivity
Invoice matching

Find out how an Alpha Bay AIRS implementation can reduce costs and improve revenues for your retail enterprise. Call us at 801-838-7600 or visit our website at www.alphabay.com.

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