# HOW BGN MAKES PROGRESS


## REVOLUTIONIZING BOOK RETAILING WITH SMARTSTORES

Matthijs van der Lely, CEO of the Netherlands' premier book retailer—Boekhandels Groep Nederland (BGN)—wanted to build a successful business in a price-regulated market where competition is a Web browser click away. BGN has 40 "bricks and mortar" stores and 11 million visitors a year. But he knew that BGN had to go online to grow. And he knew that to win online he had to innovate: to embrace new processes to transform internal operations and exploit state-of-the-art enabling technology.

The result was Selexyz Scheltema, the world's first item-level RFID and SOA-based retail store. This store and subsequent Selexyz "SmartStores" are fully automated—with no in-store IT administrative staff required. Thanks to the smart technology from Progress software supporting the SmartStores, BGN is reducing supply chain costs and responding more quickly and effectively to shopper requests—to increase market share and revenues.

BGN

### CHALLENGE

*Grow market share in a price-regulated environment and offer a rich customer experience*

### SOLUTION

*Integrate applications using a SOA and implement RFID tagging to optimize the supply chain*

### BENEFIT

*Labor savings, lower inventory reconciliation costs, faster response to shopper requests*

## SECURE AND GROW MARKET SHARE

Today Selexyz stores carry between 25,000-275,000 books, with the chain selling between 15,000-40,000 books per day. This success is no accident. The strategy for keeping and enhancing market share was to offer a rich customer experience: to fully automate the Selexyz stores to enable a faster response to customer requests and deliver a tightly integrated tightly integrated warehouse-to-consumer supply chain. BGN embarked on a Progress-based automation program using a service-oriented architecture (SOA) and implemented item-level radio frequency identification (RFID) technology.

BGN capitalized on the unique technical strengths and business value of the Progress Software portfolio. The Progress® OpenEdge® Business Application platform is the core business platform for the applications managing the Selexyz book inventory. The Progress® Apama® Event Processing Platform provides RFID event processing services that monitor and analyze (in real-time) inbound RFID data received at the store. Information captured by the Apama platform is correlated with data sent by the distributor via Advanced Shipping Notices (ASNs).

Bringing it all together is the Progress® Sonic® Enterprise Service Bus (ESB), the Progress SOA-based integration fabric built on a standards-based messaging infrastructure. The result is a distributed solution that requires no in-store administrative staff, a critical component for future scaling of the system.

## RFID: ENABLING SUPPLY CHAIN AND RETAIL PROCESSES

Unlike RFID solutions that tag at the pallet or case-level, the BGN solution uses RFID to track the movement of *individual* books. Item-level tagging provides the retailer with unique real-time visibility into both store inventory and its supporting supply chain activities.

As a result, BGN can trim manual inventory steps, reduce the possibility of errors and dramatically improve the management of their supply chain. The process begins with Centraal Boekhuis (central book warehouse),

Holland's leading book distributor. It distributes 50 million books annually throughout the Netherlands and supplies 80%-90% of BGN's inventory. BGN's supply chain begins with the distributor and ends with books quickly in the hands of the customer.

## ANATOMY OF THE SELEXYZ SYSTEM

### *Shipment preparation and processing*

A Selexyz-branded store will issue an order to the Centraal Boekhuis' database via the Sonic ESB. RFID tags are generated—each encoded with an item-level serial number—and affixed to the books. The books are packaged for shipping with an Advance Shipping Notice (ASN) generated that lists each book in the shipment, the box in which it is placed, and the destination within the store. The ASN captures the connection between the individual RFID tag and the ISBN (International Standard Book Number) for the tagged book.

### *BGN central operations processing*

The ASN is sent to BGN's central IT operations. Here it is automatically updated with customer and order information from BGN's Progress-based back-office system and distributed to the individual store through the Sonic ESB. At the order's final destination, another Progress-based application, Atlas, manages BGN's RFID-based physical stock and updates it with the ASN data.

### *Store receipt and processing*

As shipments arrive at a Selexyz-branded store, the boxes pass through an RFID tunnel. At this point RFID readers scan the book tags while the books remain in their boxes. According to BGN CEO Matthijs van der Lely, "Previously people had to check each box manually, and it would take up to five or six minutes to check a box of books. Now, the time is reduced through this technology to less than ten seconds."

Each RFID scan generates a Sonic message event that is sent to the Apama event processing platform. Apama immediately correlates the RFID data with the ASN data previously received. Apama's real-time reconciliation of the RFID data with the ASN data (via the store OpenEdge application, Atlas) confirms box content and updates store inventory.

### *Store distribution*

Based on real-time correlation, books are identified as either standard shipments to be treated as inventory replenishment, special customer orders to be sent to a location for customer pickup, or some form of shipment exception to be put aside for special handling and reconciliation.

### *In-store customer kiosks*

Selexyz store customers can use a search engine available at in-store kiosks to query the store's inventory to find the books they seek. Here, with the assistance of RFID tracking, the customer can tell exactly where the books can be found, even if a copy has been misplaced. Location of books within the store is determined by 'smart shelves', which have their own RFID tags.

A store staffer will make regular passes through the store using a cart equipped with an RFID reader. This mobile scan operation generates Sonic message events for each tag signal and associates the location of individual books with the tag of the shelves, thereby determining the book's location and passing that information to the in-store Atlas system. In turn, Atlas can report to shop employees when books are found at unexpected locations.

Thanks to a combination of BGN's vision, innovative use of technology, and state-of-the-art Progress products, BGN customers get what they want, more quickly and easily. The BGN supply chain has updated, accurate information about book shipments and a more efficient, less labor-intensive process. Information is now more easily accessible to BGN staff and customers, assisted by the real-time information provided through the Apama-enabled RFID data capture process.

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*Matthijs van der Lely*
*Chief Executive Officer for Boekhandels Groep Nederland (BGN)*

## ACHIEVING VALUE WITH PROGRESS

***Application design, development and deployment—in 60% of the time***

The OpenEdge reference architecture accelerated the design and development of the BGN book tracking application— providing faster time-to-market. BGN was able to implement the application in approximately 60% of the time it would have otherwise required.

***Real-time event processing—automated RFID insight***

The Progress Apama event processing platform enables instant recognition of the books in a shipment and gives employees immediate handling instructions as the tagged books pass through the RFID tunnel. It eliminates the need to unpack boxes and search for books. BGN systems can also automatically inform staff on the composition of the shipments—reducing the time and labor needed to process inbound deliveries while increasing shipment handling accuracy.

## SOA-BASED INTEGRATION—CONNECTING EVERYTHING

All the elements of the BGN distributed systems are connected by the Sonic ESB, which provides a SOA-based communications backbone. BGN's back-office functions are integrated with the retail store operations and RFID event data management. With the Sonic ESB, BGN can more easily expand the scope of its solution with new services in the future, incorporating smart shelves, for example.

## ITEM-LEVEL RFID TAGGING AND DATA CAPTURE

Progress teamed with hardware partner CaptureTech to provide BGN with the RFID infrastructure required to support the BGN implementation. CaptureTech provided the readers, antennae, and associated services that enable both BGN and Centraal Boekhuis to deliver market-leading RFID

capabilities. With the assistance of CaptureTech RFID expertise and the decision to use Gen2 RFID tags, BGN achieved high-fidelity scanning of books in their shipping boxes, enhancing data capture significantly.

## THE REAL PAYOFF: CUSTOMER SERVICE

In addition to focusing on operational efficiency, the BGN initiative equally focused on value to its customers. Besides using RFID to improve management of its regular book inventory (with customer access via kiosks), the new system also greatly enhanced the handling of customer-ordered books. Upon delivery of special orders to the store, the books are now easily identified and routed to a separate stockroom, with automatic notification to customers via email or SMS.

In the past, the process required opening the boxes for manual identification and alphabetic sorting on the stockroom shelves. Now the books can remain in their boxes. In the stockroom, tags on the stockroom shelves enable the systems to correlate the book identity with its location. When customers come to the store to pick up their orders, the shop staff can find the book by querying the RFID-enabled system. A previously cumbersome manual process, with ample opportunity for error, has been significantly improved. So the customer experience has been improved, and automation is delivering results—including increased Internet sales.




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Rev. 09/09 | 6252-127857