Management Outlook

WMS Market 2004

Jeroen van den Berg Consulting

In a constantly evolving universe, it seems that nothing is changing more than the world of WMS. The situation is usually clouded by hype and promotion, and by the concentration of consultants and the trade press on the issue du jour. But, what are the real facts about the WMS market? Jeroen van den Berg Consulting and the Supply Chain Group (SCG) have investigated this market. The results of the survey are available at www.JvdBconsulting.com via WOLF, the online selection engine. In this report we discuss our findings on the WMS market in the Benelux.

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In a constantly evolving universe, it seems that nothing is changing more than the world of WMS. The situation is usually clouded by hype and promotion, and by the concentration of consultants and the trade press on the issue *du jour*. But, what are the real facts about:

- the death of legacy systems
- reliance on ERP systems capabilities
- trends in functionality
- RFID and technology
- continuing tough times in the industry
- who the players in the WMS marketplace are, and what will happen to them?

To answer these, and other questions, Jeroen van den Berg Consulting and the Supply Chain Group (SCG) have investigated the global WMS market. They have applied their many years of intimate experience with the marketplace – both customers and vendors – to put current findings and conclusions in a real-world business context.

Additionally, the approach of the survey was unique. Instead of conducting a tedious detailed examination of the functionality of the various WMS's, we asked the vendors to specify their target groups. This approach gives a quick and objective insight into the WMS market for anyone who is looking for a new system.

This report answers the important questions about what is really going on in the Benelux WMS market. The results of the survey are available at www.JvdBconsulting.com via WOLF, the online selection engine. In total, 27 WMS and ERP systems available in the Benelux were examined. Table 1 lists the number of customers and warehouses using each participating vendor's WMS. Notice that there are four ERP vendors on top of the list, with the largest number of new customers.

Tough Times for the WMS Market

The years 2002 and 2003 were difficult for WMS vendors. The global economy continued slowing its pace, and potential customers were predominantly focused on cost cutting and personnel reduction. The investment in a new WMS was never on top of the to-do list.

However, things will change in 2004. A recent survey by Reed Business Information of 300 logistics managers indicated that investments in WMS will increase [1]. The same survey showed that a slim majority of companies (52%) still run the warehouse with legacy systems, including home-grown varieties. This is remarkable, given the maturity of the marketplace and the products available to it.

A legacy system is software which has been specifically built for a company, and which predates current generations of enterprise systems and databases. Initially, it provided excellent support of warehouse processes. However, the maintenance and support of legacy systems is complex, since only few – and steadily fewer - people understand the code. Hard-coded tables and logic make it difficult to accommodate process and decision changes. This is a significant handicap to acceptable performance in modern logistics, in which continuous optimisation and process redesign are vital to keeping up with evolving market requirements and increasingly savvy and nimble competition.

Table 1 shows that the vendors represented, took in 85 new WMS customers in 2003. We expect a growth of 30-50% in the 2004-2005 period, compared with the 2003 level. However late in the game, companies will turn away from legacy systems. We believe this accelerated shift will be driven by some key factors, which, in summary are:

1. Legacy systems were typically built ten or more years ago. At that time, radio frequency (RF) scanning was not generally available. Today, RF capability is standard functionality in any WMS. In fact, RF technology has established a massive breakthrough in warehousing because of its real-time registration and decision support. The efficiency and accuracy levels achieved with RF, as well as its "track & trace" capabilities have set the standard in modern logistics operations. Companies still driving their warehouse operations with paper realise they are lagging behind. In addition, the introduction of the General Food Law in 2005 will be a compelling incentive for many to upgrade their track & trace capabilities with a new WMS.

2. Responding to reduced demand and stiffening competition, WMS vendors have slashed their license fees, often by 50%. Also, RF equipment and computer hardware prices have fallen by a similar rate. This makes it much easier for managers to build a feasible – and realistic – business case. A payback within one or two years is now the rule rather than exception.

3. Many WMS vendors have grown up. A WMS

Vendor	System	Customers	New customers 2003	Warehouses	New warehouses 2003
1. SAP	SAP R/3 LES	100	10	200	20
2. Microsoft Navision/Qurius	WMS Advanced	60	10	40	7
3. CSB-SYSTEM	CSB-Inventory	80	6	80	6
4. IBS	IBS-DYNAMAN	22	6		6
5. Centric - Locus	Locus WMS	45	5	65	11
6. Fujitsu Services	MLS	38	5	83	5
7. RedPrairie	Dispatcher-WMS	25	5	25	5
8. WICS Solutions	WICS	48	4	65	6
9. Oracle	Oracle Warehouse Management	5	4	8	6
10. Interchain	Chainware® iWarehousing	105	3	400	
11. Swisslog	WarehouseManager	94	3	100	3
12. Inther Logistics Engineering	Inther LC	25	3	30	3
13. MARC Global	MARC-CS	22	3	27	4
14. DCS	DCSi.Logistics WMS	22	3	40	1
15. Manhattan Associates	Manhattan Associates WMS	10	3	15	5
16. AXI	AXI WMS	25	2	60	5
17. Rasputin	Rasputin	12	2	15	2
18. Gateway Software	FreightWare	11	2	11	2
19. CAL Consult	CALwms	3	2	10	3
20. SSA Global	Warehouse BOSS	6	1	6	1
21. KærtSoftware	BRIDGE/WMS	5	1	5	1
22. Savoye ASIS	LM Execution	4	1	4	1
23. Equinox	VISION	1	1	1	1
24. Consafe Logistics	SattStore	10	0	15	8
25. CAL Consult	CALwms400	7	0	12	2
26. Vanderlande	VISION	5	0	5	0
27. Yantra	7x Networked Warehouse Management	0	0	0	0

Table 1. Number of customers and warehouses in the Benelux per vendor.

implementation used to be nothing short of an Indiana Jones adventure, except that the management team had to bring its own pot of gold and the implementation team had to finish the crusade without a treasure map. Current software has become easier to configure, and

> vendors have gained painful, but valuable, experience in avoiding pitfalls . . . and their technological skills have improved over time. A six month implementation lead-time has become the standard for an average warehouse operation, contrasted with previous expectations for 12-18 month adventures fraught with peril, and easily derailed.

In summary, more companies know the need is real, the payback is apparent (and believable), and the risks are controllable. This is a cocktail that will appeal to many logistics executives, and their senior management.

Best-of-Breed vs. ERP

Beyond the 52% of warehouses using legacy software, the Reed Business Information survey [1] identified that a mere 10% use a standard WMS, while the remaining 38% operate their warehouses with ERP systems.

Essentially, there are three alternative ways to use an ERP in the warehouse. In the most basic alternative, only the ERP inventory module is used. Customer orders are printed for picking and the inventory is updated at each receipt and departure. The second, and more sophisticated, alternative is an ERP with an AIDC (automatic identification and data collection) module bolted onto it. AIDC provides a friendly user interface, and even RF scanning. The third alternative is a full-blown warehouse management (WM) module incorporated within the ERP.

The WM modules of ERP vendors have become more and more competitive with the so-called *best-of-breed* WMS packages. Essential WMS functions such as wave planning, configurable put away rules and RF scanning are becoming standard features of WM modules in many ERP systems.

The Reed Business Information survey showed that one-third of the companies willing to invest in warehouse management software will choose an ERP module, while only 12% will prefer a best-of-breed WMS. The remaining 55% have not yet made up their minds. We believe that the choice for an ERP module is often, perhaps too often, made out of convenience. The WM module in the ERP wills almost certainly be an improvement over the old legacy system, and it will easily integrate with the ERP. However, in many instances a WMS package provides greater flexibility and more opportunities for logistics optimisation than its ERP counterpart.

We recommend the following positioning to help decide between ERP and WMS. If warehousing is a plain vanilla operating function in your company and you have compelling IT problems to solve, then examine the WM module of your ERP as a primary option. If your warehouse and distribution operations need to be competitive differentiators in cost and performance, then consider best-of-breed WMS candidates as the point of attack.

Mergers and Acquisitions in WMS

An investment in a WMS is a long term commitment. An average company will plan to use its WMS for at least seven years. However, in the competitive marketplace, most vendors do not survive that long.

In recent months, we have seen various acquisitions. LIS was taken over by competitor RedPrairie. Locus was acquired by Centric, a local IT services provider. ABB sold its WMS division to Consafe Logistics, a subsidiary of JCE Group, which already owns MA-system, another WMS. SSA Global, owner of the Baan ERP system, acquired two WMS's: Warehouse Boss from Computer Associates and Exceed from EXE Technologies. Also, there have been a few bankruptcies. We have seen Sybe, the Robocom dealer for the Benelux, ending its activities in 2003 as well as low-end WMS vendor Covil Universal.

In several of the examples, the new vendor owns multiple WMS's. Such an acquisition increases the market share of the vendor. However, it is costly to develop and maintain multiple WMS packages simultaneously. In particular, if the systems aim at the same target group, then the revenues probably will not outweigh the development costs. Sooner or later, and this might be after several years, the vendor will have to focus on one system only and gradually phase out the others. This causes a major problem for users of the latter systems. A simple upgrade to the preferred system is an illusion, and development on their system will be slow.

The consolidation of the WMS provider market is inevitable. In our 2002-report on the WMS Market [2], we showed that it is hard to win market share in the Benelux. A significant 60% of the vendors withdrew from the region after a few years with disappointing results. Nevertheless, we still see five to ten vendors attempting to enter the Benelux market each year.

We expect that an additional three to five names will disappear from the Benelux market in the next year, either through acquisition, bankruptcy or

Unique Selling Point	Times Mentioned	Success Factor
1. Specific functionality	12	Functionality
2. Broad functionality	10	Functionality
3. Configurable	9	Implementation
4. Integrated system	9	Integration
5. Technology	8	Technology
6. SCE modules (TMS, OMS, customs)	8	Integration
7. Implementation	7	Implementation
8. Fitted to customer needs	6	Implementation
9. Connectivity	6	Technology
10 Scalable	5	Technology
11 International	5	Implementation
12 Consulting skills	4	Implementation
13 Partnership with customer	4	Partnership
14 Material handling integration	4	Integration
15 Price	4	Price
16 Local	3	Implementation
17 Continuity	3	Customer base
18 Support	3	Partnership
19 Visibility (web) functions	2	Integration
20 Customer base	1	Customer base

Table 2. Unique selling points mentioned by the vendors.

withdrawal.

Unique Selling Points

Continuity of a WMS vendor is a key criterion when selecting a new WMS. In our 2002-report [2] we listed five factors for successful survival:

- Functionally complete system
- State-of-the-art technology
- Excellent implementation capabilities
- Large customer base
- Professional partnership with customers

Any company contemplating a new WMS should thoroughly examine the vendors on all success factors, not just on functionality.

For our 2004 survey, we asked the participating vendors to list their unique selling points (USP's), i.e. how they distinguish themselves in the WMS market. Each vendor mentioned several USP's, and we divided the answers among twenty categories.

Subsequently, we arrayed the responses among seven success factors. These are the five success factors from our 2002 report [2], together with two additional factors, *Price* and *Integration*. By the latter we mean that the vendor offers other integrated functions in addition to WMS, e.g. ERP, TMS, customs, material handling control or web visibility. Tables 2 and 3 show how often the vendors mentioned each USP and success factor, respectively.

It is clear that *Functionality*, *Integration*, *Implementation* and *Technology* are all considered important differentiators. In particular, *Integration* is gaining importance with the ERP vendors entering the marketplace and best-of-breed vendors enriching their product range with customs, transportation, order processing and visibility modules. Vendors have developed these enhancements and extensions in response to facing customers who prefer to approach as few vendors as possible – one being the preferred number – to meet all of their logistics systems needs.

The factor of *Implementation* is also becoming more important. Lengthy and unsuccessful implementations have been the cause of quite a few unprofitable projects and dissatisfied customers in recent years. Vendors have responded by simplifying configuration of the system and

Success Factor	Times Mentioned
Functionality	19
Integration	19
Implementation	18
Technology	16
Partnership	6
Customer base	4
Price	4

Table 3. Success factors addressed by the vendors.

improving their implementation approach.
The factor of *Technology* refers to the user interface, hardware platform, operating system, database, connectivity protocols and programming language. Vendors typically are reluctant to invest in new technology. Unlike functional adjustments, there is no direct sponsorship from the customers for technological upgrades. Nevertheless, vendors need to quickly respond to recent technological developments such as dotnet, Java, XML and the dominance of the Oracle database to keep their systems up to date.

The factors of *Partnership* and *Customer Base* have only been mentioned by a few vendors. Unlike the initial four, these factors concern the long-term relationship with customers. However, for the vendors' business continuity, revenues from the customer base are essential. Finally, very few vendors mention the factor of *Price*. This might be puzzling, unless severe price competition is a "given" in this hotly contested marketplace. That would indicate a scenario in which everyone is so price-competitive that the other factors are the decision-making differentiators.

Past and Future Market Trends

We asked the 27 vendors what have been their most important developments in the past two years, and what are likely to be their most important ones in the next two years. They enumerated a total of 107 development issues for the last two years and 75 for the next two years. We categorised the issues into twenty distinct developments. Table 4 shows how often each development was mentioned, as a percentage of the total.
The top five development areas cited for the past two years were: Enhancement of core warehouse functionality (10%), Resource capacity planning (8%), RF (8%), Task management (7%) and Web visibility (7%).

The focus on core warehouse functions is not new. However, the strong focus on *Resource capacity planning* is, we think, remarkable. In a warehouse it is difficult to compute the workload in advance. Unlike a manufacturing facility, for example, orders tend to arrive at the last possible moment and it is difficult to increase or decrease the workforce with such short notice. Additionally, several major activity drivers for warehouse activity are directed from far outside the four walls, and require extraordinary communications processes to even be recognised, never mind quantified. However, warehouse managers do need tools that give at least some insight, and help with high-level planning.

RF and *Task management,* ranked 3 and 4, relate to the real-time execution in the warehouse, an important area of optimisation. It is noteworthy that

Market Trend	Share '04-'05	Share '02-'03	Market Trend	Share '04-'05	Share '02-'03
1. System integration	15%	(4%)	11. Mobile Devices	4%	(1%)
2. RFID	13%	(4%)	12. RF	4%	(8%)
3. Technology	11%	(6%)	13. Dock & yard	3%	(4%)
4. Resources capacity planning	8%	(8%)	14. Tracking & tracing	3%	(6%)
5. Management information	7%	(6%)	15. Task Management	3%	(7%)
6. Warehouse functions	7%	(10%)	16. Transport	3%	(4%)
7. Configuration	5%	(5%)	17. Third-party logistics	1%	(5%)
8. Web visibility	5%	(7%)	18. Cubing/load building	1%	(3%)
9. Customs	4%	(3%)	19. Multi-site operations	0%	(4%)
10. Material handling integration	4%	(5%)	20. Voice recognition	0%	(3%)

Table 4. Future and past developments in WMS.

all surveyed WMS's do support RF, quite a difference from two years ago. The popularity of the worldwide web is exhibited by developments in *Web visibility*. Also notable are the efforts in *Tracking & tracing* primarily due to the imminent introduction of the General Food Law.

The main developments in the next two years are expected in System integration (15%), RFID (13%), Technology (11%), Resources capacity planning (8%), Enhancement of core warehouse functions (7%) and Management information (7%).

We will elaborate on the great interest in *System integration* in the section *Dynamic Integration,* on the right. *RFID* has lately received overwhelming attention in the trade press. Clearly, it will be an important information carrier in the warehouse and WMS's should support it. Rising to number 3 is *Technology*. We have already advocated that vendors should update their software to meet modern standards and capabilities. Customers become more and more reluctant to purchase software perceived as being "old-fashioned," regardless of its intrinsic robustness and capability. *Resource capacity planning* and the *Enhancement of core warehouse functions* remain important development areas.

Finally, we see an increased – and long-overdue – interest in the provision of *Management information.* Nowadays, management information is essential to run a warehouse and continuously improve its performance. WMS's register a lot of detail data. Traditionally, the WMS vendors left it to the user to extract management information from this data with the aid of business intelligence tools. Users find this a complex and painstaking exercise. And, too many less-experienced managers do not distinguish between data and information, or worse, between information and intelligence.

Dynamic Integration: A Breakthrough

Vendors see system integration as the most important development area in the next two years. Figure 1 shows how systems are typically connected. Orders are accepted in the OMS based on the available inventory. The OMS communicates the accepted orders to the TMS. The TMS, in turn, plans the trips for the delivery of the orders to the customers. Finally, the WMS organises the waves in the warehouse such that the orders are picked before the anticipated departure time of the truck. After the departure, the WMS confirms the orders to the OMS, which completes the order cycle. We call this *static integration*, i.e. one system decides and communicates the result to the next system.

We predict that *dynamic integration* will be a major breakthrough in logistics within two years. With dynamic integration the interfaces between systems become more intelligent. E.g. we do not just regard the available inventory when we accept an order, but we also look at the costs and capacities in transportation and warehousing. With dynamic integration, a feasible plan is developed considering resources, capacities, inventories, costs and service levels. The required information is gathered from multiple systems. Figure 2 depicts various decisions that affect two or three systems.

We have seen that the core intelligence of logistics information systems has increased considerably in recent years. However, the interfaces between the systems have remained the same, which are now becoming a major cause of inefficiency. Surprisingly, even the modules in ERP systems and integrated TMS/WMS systems are predominantly integrated in a static manner.

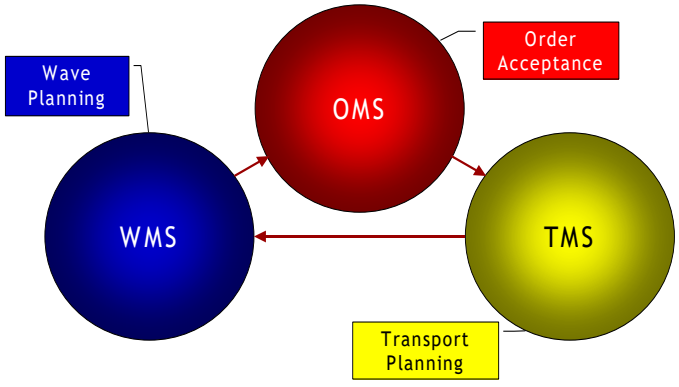

Figure 1. Static integration.

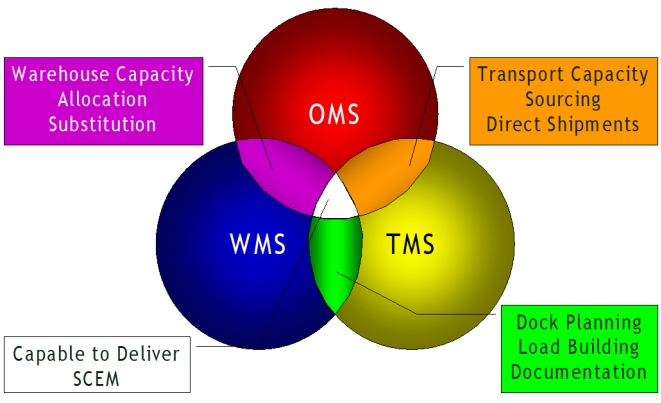

Figure 2. Dynamic integration.

Colourful Competition

We asked the 27 vendors to mention their three main competitors. Table 5 shows the results. Most often mentioned were: Centric-Locus (10), Manhattan Associates (10), MARC Global (10), RedPrairie Dispatcher (10), Microsoft Navision (8), Interchain (5) and SAP (5).

In Table 5 we subdivide the market into six categories:

- Advanced WMS vendors - Green
- Third-party logistics specialists - Yellow
- Wholesale specialist - Orange
- Material handling specialists - Red
- ERP vendors - Purple
- New to the Benelux - Blue

Each category is discussed separately. The vendors of advanced WMS (green) provide broad systems with advanced functionality for all types of warehouses. Table 5 shows that these vendors recognise one other as their own main competitors. The only competitor that they mentioned outside their category is SAP. Since the vendors in this category focus on large companies, potential customers are very often using SAP as their ERP system.

The yellow category contains the WMS vendors specialised in third-party logistics. These vendors tend to offer integrated systems that include WMS, TMS and customs. Their WMS provides medium functionality. They compete with each other, but also with the vendors of advanced WMS, and with Microsoft Navision, a popular ERP in the mid-market.

WMS vendor Rasputin (orange) focuses on the mid-market of wholesale warehouses. They meet the same competitors as their yellow colleagues.

The red category contains the WMS vendors who specialise in automated warehousing. Their systems are suited to control complex material handling equipment. However, the systems also provide adequate functionality for manual warehousing. Their main competitors are the advanced WMS vendors who also are able to control automated warehouses. In the grey column some other material handling specialists, who did not participate in our survey, were mentioned.

We subdivided the vendors of integrated systems into two segments. The top segment of the ERP vendors, i.e., SAP, Oracle and SSA Global, primarily compete with the advanced WMS vendors. SAP and Oracle have developed their own WMS, while SSA Global owns two best-of-breed WMS's: Warehouse Boss and Exceed (not in this survey).

The remaining vendors of integrated systems compete with the advanced WMS vendors, the material handling specialists and their peer, Microsoft Navision.
Finally, Yantra was not classified because they are not yet active in the Benelux.

Unique Survey Approach

As mentioned, our survey approach is unique. Instead of examining the functionality of the various WMS's, we asked the vendors to specify their target group according to nineteen different topics. The topic *Region* was scored considering the local presence of a vendor in a region, and the number of implementations in that region. The remaining eighteen topics were scored by the vendors themselves. To illustrate, for the topic *Number of warehouse staff*, every vendor distributed 12 points among three options: "Up to 15 operators", "Between 15 and 45 operators" and "More than 45 operators". A vendor who only focuses on warehouses with few operators, could assign 12 points to the first option. A vendor who focuses on all warehouses alike, irrespective of the staff size, could assign 4 points to each option. In fact, any distribution of the 12 points was allowed.

We encouraged the vendors to make choices and not to spread the scores evenly among the available options, even when the WMS is useful to all.

General Food Law

We asked the vendors for their support of the new General Food Law. It appears that 85% of the WMS's in the Benelux support the requirements of the General Food Law. This European law requires that per 1 January 2005 all product in the food supply chain is tracked. For the new law it is necessary that the WMS registers the lot numbers of the product at receipt and dispatch. Also, inside the warehouse the WMS tracks all movements of the product and the associated lot numbers. More complex are restacking and value added logistics activities. Tracking & tracing is a standard function of a WMS. The fact that four out of 27 systems do not support the law, is because these vendors do not focus on the food industry.

Vendor	Competitors	Centric - Locus	Manhattan Associates	MARC Global	RedPrairie Dispatcher	Fujitsu Services	Interchain	DCS	CAL Consult	WICS Solutions	Swisslog	Vanderlande	Savoye ASIS	SAP	Microsoft Navision	Other competitors
Centric - Locus	10		■	■		■										
Manhattan Associates	10			■	■	■										
MARC Global	10		■		■									■		
RedPrairie Dispatcher	10	■		■										■		
Fujitsu Services	3	■	■		■											
Interchain	5		■	■				■								
DCS	2			■					■							1
CAL Consult	1			■			■								■	
CAL Consult	1						■	■							■	
WICS Solutions	1	■					■								■	
Gateway Software	0						■								■	1
Rasputin	0				■					■					■	
Vanderlande	2		■	■	■											3
Savoye ASIS	1															
Swisslog	1	■	■		■											
Consafe Logistics	0	■		■	■											
Equinox	0	■												■	■	
Inther Logistics Engineering	0											■				2
SAP	5		■	■												1
Oracle	0						■							■		1
SSA Global	0		■		■											1
Microsoft Navision/Qurius	8	■									■					1
AXI	0	■				■									■	
CSB-SYSTEM	0											■			■	1
IBS	0	■	■		■											
kærtSoftware	0	■		■									■			
Yantra	0		■		■									■		

Table 5. Main WMS competitors in the Benelux market.

Namely, if a vendor spreads the scores evenly, its system will seem average and will never appear on top in the selection engine. So vendors considered their strengths and specified their target group accordingly.

Adding up the individual vendor scores (total score) leads to some interesting conclusions. We also

counted how many vendors have assigned an above average score (special interest) and a non-zero score (interest), respectively. Table 6 considers the platform and operating system. We find that this category is dominated by Windows NT, with a total score that more than doubles second-place Unix. Also note the popularity of *shareware* Linux. The AS/400 platform is a separate technology with a limited market.

Table 7 shows that Oracle definitely is the most popular database among WMS vendors. Runner-up Windows SQL-server seems to be the only serious competitor remaining. Progress and Informix are losing ground. Number 3 is DB/2, the database for the AS/400 platform.

We also asked the vendors with which ERP-systems they have the best integration. Table 8 shows that SAP/R3 is the most popular ERP with a total score that exceeds number 2, Oracle, and number 3, Microsoft, combined. The surprising number 4 is local ERP vendor Exact.

In table 9 we ranked the popularity of communication devices. Radio frequency (RF) completely dominates this category. With a special interest of 96% of the vendors, the technology has been fully adopted. Paper is still doing well, with RFID as the emerging technology.

In table 10 we considered the target group by company type. We noted that the third-party logistics service providers are the most popular target group in this category, closely followed by the finished goods warehouses of manufacturers, wholesale & distributor warehouses and retail distribution centres.

Table 11 shows the target group by product. WMS vendors are most interested in fast moving consumer goods (FMCG). In fact, the top six belong to this segment. The interest in industrial products, such as automotive products, industrial hard goods and chemicals is much lower. On one hand this is because of the business nature of the Benelux which is dominated by trade rather than heavy industry. Also, large order volumes and track & trace requirements make the FMCG market an interesting target group for WMS vendors. Also note that *special interest* is relatively low beyond the top six.

Conclusions

- The payback of WMS has improved considerably in the last two years. Typically, the payback is within two years.
- Three to five names will disappear from the Benelux market.
- Five to ten companies will try to enter the Benelux market.
- The number of new WMS users will grow with 30% to 50% over 2003 numbers.
- 85% of WMS's support the General food law.
- The main developments in the past two years were: core warehouse functions, resource capacity planning and RF.
- The main developments in the next two years will be: system integration, RFID and technology.
- Dynamic integration will establish a major breakthrough in logistics within two years.

References

[1] Beerens, H., Companies consider warehouse

Platform and operating system	Total Score	Special Interest	Interest
1. Windows NT	45%	78%	89%
2. Unix	22%	41%	70%
3. Linux	19%	33%	63%
4. AS/400 (OS/400)	14%	15%	37%

Table 6. Target group popularity by platform and operating system according to 27 vendors in the Benelux.

Relational database management system	Total Score	Special Interest	Interest
1. Oracle	49%	67%	85%
2. Windows SQL-server	21%	37%	59%
3. DB/2 (AS/400)	17%	22%	44%
4. Progress	10%	11%	26%
5. Informix	4%	4%	26%

Table 7. Target group popularity by RDBMS according to 27 vendors in the Benelux.

software again (In Dutch), *ITLogistiek*, 3, pp. 22-23, 2004.
[2] Berg, J.P. van den, WMS Market 2002, www.JvdBconsulting.com.

ERP	Total Score	Special Interest	Interest
1. SAP/R3	25%	85%	96%
2. Oracle Applications	12%	52%	85%
3. Microsoft Navision	9%	44%	70%
4. Exact	8%	37%	74%
5. BPCS	8%	15%	70%
6. JD Edwards	8%	37%	74%
7. Baan	8%	41%	74%
8. Peoplesoft	5%	22%	56%
9. MFG/Pro	4%	15%	59%
10. Movex	4%	7%	59%
11. IFS	3%	0%	44%
12. Microsoft Great Plains	2%	4%	37%
13. Ecometry	2%	0%	37%
14. Geac	2%	0%	33%

Table 8. Target group popularity by ERP according to 27 vendors in the Benelux.

Communication	Total Score	Special Interest	Interest
1. RF barcode	39%	96%	100%
2. Paper	21%	30%	89%
3. Pick-to-light	17%	11%	81%
4. RFID	16%	19%	81%
5. Voice recognition	7%	0%	59%

Table 9. Target group popularity by communication device according to 27 vendors in the Benelux.

Company Type	Total Score	Special Interest	Interest
1. Third-party logistics service providers	23%	52%	96%
2. Manufacturing: Finished goods warehousing	21%	56%	96%
3. Wholesale / distributor	20%	52%	96%
4. Retail	19%	52%	93%
5. Direct-to-consumer / e-commerce	9%	7%	85%
6. Manufacturing: Raw materials warehousing	9%	7%	93%

Table 10. Target group popularity by company type according to 27 vendors in the Benelux.

Vendors Specify their Target Group

We list the topics and corresponding options in the survey together with the number of points that the vendors could assign to the associated options. The scores per vendor can be found in our online selection engine WOLF at www.JvdBconsulting.com.

1. Region (0-10 points per option)
   Benelux / Germany, Switzerland & Austria / UK & Ireland / USA & Canada / Italy / Rest of the world
2. Number of warehouse staff (12 points for 3 options)
   1-15 operators / 15-45 operators / >45 operators
3. Warehouse surface (12 points for 3 options)
   0-5,000 m2 / 5,000-15,000 m2 / >15,000 m2
4. Order lines per day (12 points for 3 options)
   0-1,000 / 1,000-5,000 / >5,000
5. Number of processes (9 points for 3 options)
   1 process / 2-3 processes / >3 processes
6. Shipping pattern (9 points for 3 options)
   1-2 departure times / 3-5 departure times / Individual departures
7. Number of warehouses (9 points for 3 options)
   One warehouse / Multiple warehouses in one country / Multiple warehouses in multiple countries
8. Company type (18 points for 6 options)
   Manufacturing: Raw materials warehousing / Manufacturing: Finished goods warehousing / Third-party logistics service providers / Wholesale or distributor / Retail / Direct-to-consumer or e-commerce
9. Products (26 points for 13 options)
   Automotive / High-tech, electronics & computer equipment / Food/ Refrigerated and frozen goods / Consumer goods (non-food) / Healthcare & pharmaceuticals / Fashion, apparel & footwear / Office supplies / Books, printed matter & multi-media / Do-it-yourself equipment / Industrial products / Chemicals / Spare parts
10. Automation (6 points for 2 options)
    Automated warehousing / Manual warehousing
11. Communication (10 points for 5 options)
    Paper / RF barcode / Pick-to-light / RFID / Voice recognition
12. Configuration (4 points for 2 options)
    Standard system / Custom-made system
13. Structure (4 points for 2 options)
    Integrated system / Best-of-breed system
14. Platform and operating system (12 points for 4 options)
    AS/400 (OS/400) / Unix / Linux / Windows NT
15. Relational database management system (10 points for 5 options)
    DB/2 (AS/400) / Oracle / Windows SQL-server / Informix / Progress
16. ERP (28 points for 14 options)
    Baan / BPCS / Ecometry / Exact / Geac / IFS / JD Edwards / MFG-Pro / Microsoft Great Plains / Microsoft Navision / Movex / Oracle Applications / Peoplesoft / SAP/R3
17. Administrative support (12 points for 4 options)
    Documents and labels / 3PL billing / Management information & performance indicators / Customs
18. Advanced warehousing functionality (18 points for 6 options)
    Resource capacity planning & engineered labour standards / Yard management / Dock management / Slotting / Task management / Value added logistics
19. Supply chain functionality (12 points for 4 options)
    Supply chain event management / Transportation planning / Order management / Enterprise application integration

Product Group	Total Score	Special Interest	Interest
1. Food	12%	52%	93%
2. Consumer goods (non-food)	11%	67%	100%
3. High-tech / electronics / computer equipment	10%	41%	93%
4. Refrigerated and frozen goods	10%	37%	89%
5. Healthcare / pharmaceuticals	9%	33%	96%
6. Fashion / apparel / footwear	8%	37%	85%
7. Spare parts	7%	19%	100%
8. Office supplies	6%	15%	78%
9. Books / printed matter / multi-media	6%	15%	78%
10. Automotive	6%	11%	78%
11. Industrial products	6%	11%	70%
12. Do-it-yourself equipment	5%	11%	74%
13. Chemicals	5%	7%	70%

Table 11. Target group popularity by product according to 27 vendors in the Benelux.