



Heelys Order Management:

A Reassessment

Gustavo Carrere and Marcus Klintmalm
SMU Senior Design
Spring 2005

Table of contents

Overview	1
Introduction to Solutions	4
Solomon	5
Symbol Technologies	8
EDI and FlexAbility	10
JC Penney Direct	13
Forecasting	15
Acknowledgments	17
Appendix	A – H
Powerpoint	

OVERVIEW:

The Heeling Sports Limited is a Dallas-based footwear designer, manufacturer and distributor. The company was founded in May 2000 by inventor Roger Adams in combination with Capital Southwest Corporation a venture capital investment company. The Company's mission is to generate new and exciting footwear utilizing contemporary and progressive styles with comfort-enhancing performance features. To generate new footwear style HSL will introduce one product per year through acquisition or in-house development.

HSL currently has three patented shoe brands: Heelys, Axis, and Soap. The Heelys shoe line of specialty footwear that incorporates a stealth removable wheel in the heel. This enables users to instantly transition from the traditional walking or running shoes into rolling by merely shifting weight to the heels. The Soap shoe line incorporates a hard plastic composite into the arch used for "grinding". The technique of "grinding" is performed sliding down hard surfaces: handrails, curbs and steps, similar to maneuvers performed by skateboarders. Finally, the Axis line are skateboard shoes which has special features that provide extended durability and performance.

The company targets a market niche of action sports enthusiasts. The shoe market to extreme sports such as: skateboarding, inline skating, snowboarding, surfing, wakeboarding, and BMX biking and motocross enthusiasts. These individuals have unique characteristics: fun, creative, individual achievers who experience and attempting various tricks or maneuvers within these sports.

Currently the company has 14% of the skateboard footwear market. Sale is moving in an upward trend this year especially during the first quarter of the year. The company

expects to have \$30 million in sales this year. Heelys is going to have record profits this year. The company's growth last year was 52%, but they expect to grow even more this year.

GROWTH STRATEGY:

1. Focus on Brand Building: The Company's flagship product is Heelys. Further development of this unique shoe product emphasizing the stealth removable wheel in the heel. Reinforcement of brand image is indicative of a lifestyle embraced by action sports participants. Heelys target age market is: 8 to 14 years old. As for Soap Axis which is a skateboard with high durability the target is: 12 to 21 years old.
2. Protect Patents: History has shown that designers of sporting goods products which are not patent protected have lost control of their products through "knock-offs".
3. Penetrate Existing Markets and Expand Geographically: Heelys is pursuing an expansion into other heavily populated States, such as Florida. Most Western States welcome alternative sports. The Texas market has been penetrated already.
4. Control Product Distribution: The core distributors used to be in surf, skate, and bike retail shops. Nowadays the business has shifted into full-service mall based retail teen apparel and footwear chains.
5. Technologic Innovation: Develop technologies related to: shoe materials, wheels, axels, and styles.

6. Diversifying and Broaden Product Offerings: Develop new complementary product lines. Management's goal is to develop one product per year through acquisition or in-house development.

Solutions:

Extensive interviews and observation lead us to several bottlenecks in the order process. Most often these bottlenecks concerned procedure rather than anything else. There are many simple, no-cost options to optimizing the Heelys order process. Interestingly enough, we could find no process flow problems within the warehouse but instead the process flow problems occurred within the order process before the warehouse as well as in the interaction between the warehouse and the customer service department. Concurrently, there are several problem areas that can be most effectively eliminated through information technology. With proper application of technology, Heelys can position itself strategically to have the ability to grow at an enormous rate without the commonly associated growing pains.

Solomon:

Solomon, the Microsoft Business Solutions program used for nearly everything at Heelys is not be utilized to its fullest extent. An advantage to Solomon is the ease of which it can be customized to the customer's needs. Contracting outside help, Heelys can simply and consolidate much of their information into Solomon.

Currently, Customer Service Representatives (CSR's) provide everything but that which their title implies, customer service. They are simply being overrun with job responsibilities. For example; CSR's must field phone calls from 3 different groups: retailers, sales representatives and individual customers. Often these individual customers can be directed to the FAQ section of the Heelys' website. The CSR's spend approximately 7.6 hours on the phone per week, 18.3% of which is spent with consumers. See Appendix A. Furthermore, CSR's handle consumer email as well as promotional items. The CSR's are currently handling more than the title assumes and Solomon can help in the absence of additionally employees.

Automation is the key ingredient in Order Process efficiency. The Customer Service Department survives on manually created Excel spreadsheets which must be manually updated on a nearly daily basis. Given that both Excel and Solomon are Microsoft products, it would be logical to conclude that Solomon could be programmed to automatically generate Excel spreadsheets for nearly any application. Additionally, as will be discussed in the following section, given real time inventory ability Solomon could keep these spreadsheets updated without human intervention. A few examples of spreadsheets that could be automated are: Sales Representative's Sales/Availability

reports; shipping sheet, a list of what shipped and what did not; a list of shippers that will print that day. Solomon could auto-update the shipping list as well as entering the ship date on one of the empty fields on the packing list of each order.

Orders are often broken into multiple shipments as availability dictates. When an order does a ship an Advanced Ship Notice (ASN) is required to be emailed to the retailer. The ASN informs the retailer to expect a shipment, what is included in the shipment, and the method of shipment. With real time inventory, in conjunction with some Solomon customization, ASN's could be auto-generated and emailed. Additionally the shipper needs a release date indicating when the order went to the warehouse to provide accountability and information to inquisitive retailers.

Heelys has a ship date constraint on multiple shipments to the same retailer. This constraint will hold a shipment to a retailer if another shipment is expected to go out just a few days later. This constraint currently is enforced by the CSR's themselves manually. They print out all the shippers available to ship that day, and then go through them picking out shippers that coincide too closely with the next shipper for the same retailer. Automating this process could be difficult, even with real time inventory, as Solomon has no way of knowing which products are enroute from the factory to the warehouse. However, as mentioned earlier, if Solomon could print a report listing the shipper's to be printed the CSR's could sort out the shippers to be cancelled by the constraint prior to the printing saving both time and material costs.

In closing, Heelys is getting away with not providing customer service because they have the luxury of a monopoly on the skate-shoe market. To date, each CSR is barely treading water. What one CSR has in dollar amount of orders, the other makes up

for in number of orders. With some simple automation, Heelys' can make due with the current number of employees and still become more efficient. At the same time, Heelys' would be preparing itself for future growth.

Symbol Technology Scanners:

When a retailer calls asking for an order status update the CSR has to manually build the order searching Solomon by style; in essence, *manually* creating a total on-hand inventory. Not only is this time consuming for the CSR's, taking time away from other tasks. Real time inventory status would be a boon to customer service freeing up tie to be used in providing real customer service.

“Symbol Technologies is the leader in enterprise mobility solutions that create new advantage – streamlining supply chains; empowering people to do more with less; driving productivity and profitability.” (<http://www.symbol.com/about>) Symbol Technologies, like Management Engineering, applies science to business. Specifically, Symbol is the leader in customizable scanner technologies.

Observing at Heelys', everything continually pointed to 2 major bottlenecks: the need for real time inventory and the convoluted and time consuming way in which Universal Commercial Codes (UCC) are generated. Initially, the latter problem was thought to be solvable with some elaborate and complex programming that would plan out shipping box allocations in advance. However, as we progressed, this solution seemed less tenable with every passing day. Symbol Technologies is the firm that can kill two birds with one stone with a very elegant solution.

We spoke with Symbol Representatives, who after taking our basic requirements, put us in contact with DataScan Technologies in Houston, the Symbol distributor for our area. We needed scanners to work wirelessly working to keep real time inventory. This would allow the warehouse to reduce the amount of time it takes to receive a new shipment radically as well as allowing the entire order process to function more

efficiently. Additionally, we wanted the ability to scan individual shoeboxes as they are packed and have the scanner automatically generate UCC codes for that particular shipping box at the touch of a button. We were informed that this is a relatively simple process to achieve our goals. We were given estimates for three scanners as well as the necessary software at \$4,970.26 (See Appendix B). Estimating the installation of the wi-fi system could not be given without a site visit. At this point, we did not feel comfortable going further with DataScan and leave the decision on whether or not to pursue this solution further to the discretion of Heelys Ltd.

Electronic Data Interchange:

By definition this standard is unambiguous, independent of any particular machine and flexible enough to handle the simplest electronic transactions. A better depiction would be an EDI as a standard, but not a protocol envelope from point A to point B. In Heelys case the standard has a Microsoft stamp on its envelopes.

EDI was used for the first time in 1948-1949 during the Berlin blockade and airlift. The U.S. Army quickly discovered that the normal manner of transacting business could not keep up with the necessary flow of goods into Berlin. To break the paper bottleneck, Edward Guilbert, a logistics officer in the army, set up a new system of ordering through: telex, radio-teletype, and telephone. Various industries elaborated upon this discovery especially the automobile industry. They ordered their components to suppliers through EDI. With the advent of the Internet EDI became a natural fit for exchanging parts electronically in retail companies. EDI over the Internet runs through a XML protocol in Microsoft's case for Heelys distribution of information.

Microsoft's Solomon has a Customer Resource Management capability for EDI. On the front-end Microsoft has some forms to be filled with the necessary information demanded by customers. The front-end is characterized as the "hand shaking" process with the customers. Here the contract specific information is displayed. Then these fields are entered into SQL language into the database. The Database is the middle-ware where the information is stored for its use at the back-end by Customer Service Representatives. In the back-end the information is manipulated in a real-time fashion producing the necessary output. This output consists of: I.D. code specific reference files, proprietary

code, and through the cookie system Heelys can identify customers buying habits. At the back-end the order has been processed and a sales-order, accounts payable, and the advance shipment notification get sent automatically to the retailers. The advanced shipment notice and compliance shipping label is created all along with quality control stream-lined and to be received at the customer's store. The timely order processing for Heelys is critical and to validate this process Solomon is the way to do it.

FlexAbility EDI Link by Coalition Computing:

The speed of reaction, automated and timely transaction processing along with customer satisfaction are key to remaining competitive in a marketplace. The number one element is a drive or a need to reduce business transaction costs. FlexAbility EDI link and TrueCommerce Integrator for Solomon provides an ideal business solution for Heelys. It integrates and automates the business transactions processing along with customers, vendors and remote warehouses via EDI. (See Appendix C)

FlexAbility will optimize orders in:

- Reducing business transactions costs.
- Minimize errors and paperwork.
- Comply with customer and vendor EDI mandates.
- Ensure timely order processing and reconciliation.
- Improve shipping and receiving accuracy.
- Provide for faster fulfillment and shipping.

Automated Business Transactions:

The EDI pathway retrieves transaction information, creates the outbound EDI documents and transmits them electronically to the customer's destination. The EDI purchase orders from a customer automatically becomes a sales order in Microsoft Solomon, allowing Heelys in turn to transmit a paperless EDI Solomon invoice back to the customer's system as an accounts payable. The acknowledgement is automatically transmitted back to the customer to validate receipt of orders, and terms and prices are verified appropriately.

Advance Shipment Notification:

- Support Standard Pack and Pick and Pack processes.
- Transmit processed Sales Orders into Advance Shipment Notices.
- Automatically generates and prints UCC-128 compliance shipping labels at pick ticket release time.

Set up options in FlexAbility allows businesses to automate the pick ticket processes by building shipment detailed information over the internet. This information includes weight and dimensions, bills of lading, carrier information, and tracking shipments via the Internet. Advance Ship Notice also allows Heelys to automatically generate and print UCC-128 compliance shipping labels at the pick ticket release time using the label design software.

JC Penney's Direct:

Heelys Ltd. has a contract with JC Penney in which Heelys' ships orders off the JC Penney website directly to the consumer. For this service, JC Penney pays Heelys' \$2.00 per pair of shoes. Heelys' receives approximately 60-70 pairs of these orders a week. The CSR's spend approximately 15 minutes on each order and the warehouse spends approximately 10 minutes per order. If the particular show happens to be backordered Cathy Callahan receives an 869 report and she can spend up to 20 minutes processing one pair of backordered shoes. 869 can run 40%-50% Additionally, Cathy must help JC Penney keep their website up to date with availability 1-2 hours. Our calculations show this is no longer a favorable contract for Heelys' to partake in. Using an average of 65 orders per week and a backorder status on 45% of orders we found the following:

$$\text{\$2} \times 65 \text{ orders} = \text{\$130 / week}$$

If the shoe is available:

$$(\text{Warehouse Wage rate})(\text{Warehouse Time}) + (\text{CSR Wage Rate})(\text{CSR Time})$$

$$(\text{\$20/hour}) (10 / 60) + (\text{\$35/hour}) (15 / 60) =$$

$$\text{\$12.09 / pair}$$

If the shoe is not available:

$$(\text{CSR Wage Rate})(\text{CSR Time} + \text{CSR 869 Time})$$

$$(\text{\$35/hour})[(15/60) + (20/60)] =$$

$$\text{\$20.42 / pair}$$

Using 45% 869, the total per week is:

$$[(45\% \times 65)(\text{\$20.42})] + [(55\% \times 65)(\text{\$12.09})]=$$

Cost \$1029.50 / week

Income \$ 130.00 / week

Net Gain \$ - 899.50 / week

This shows a loss of \$46,774.13 per year on average. This amount does not include the time required to keep the JC Penney website up to date. It would be our recommendation to cancel the JC Penney Direct Order contract as soon as possible.

The time involved with each order for the CSR's has already reduced since we began our investigation. Prior to our arrival we found that the CSR's were touching each individual order twice. The first time was the initial processing of the order. The CSR would then send the shipper to the warehouse who would prepare the shipment for mailing; however, the warehouse would then send the shipper back to the CSR's to produce a UCC label. Upon our recommendation, the CSR's have now begun producing the UCC label before sending the shipper to the warehouse the first time thereby cutting on process out of the overall process of JC Penney Direct Orders.

Forecasting:

An essential aspect of managing Heelys is planning for the future. Forecasting then becomes an essential tool for management. A competitive manager has to be able to anticipate the future and develop appropriate strategies. Quantitative forecasting methods can be used when little or no historical data are available. Qualitative forecasting methods also are considered most appropriate when the historical pattern of the time series is not expected to continue into the future. (See Appendices D & E)

In general, the sales graph represents the sales month from 2002 until the first quarter of 2005. The sales month represents orders that were received and not the month the product was actually shipped. In the sales time series it seems that September and November '03 are below one million. The explanation to these months' low sales was the large shipments of international orders in the second half of 2002. To make the cup even more pronounced the first quarter of 2005 was Heelys' record month in sales now due to domestic orders. As a result of these movements, September and November of 2003 were less active and left a marked base below that the \$1,000,000 figure. Without any technique and by sheer common sense we expect orders to go down, but new information coming in the next couple of months could prove us wrong. We need to use a forecast technique that is accurate so Heelys can implement a new strategy in its near future.

As for the forecasting method of choice, we picked the exponential smoothness with an alpha of 0.25. We calculated this time series using the Mean Absolute Deviation (MAD) which simply is the average of the absolute values of all forecast errors. This measurement is better than the MSE which squares the forecasting errors making them larger and inaccurate.

3-Month Moving Average: (See Appendix F)

It uses the average of the most recent 3 months. This is a specific case of the weighted average. It is *moving* since new observations replace oldest ones. In choosing a forecasting technique, simplicity and ease of use are important criteria. The MAD is showing us that sales are going to decrease next month, but it doesn't show this accurately as the exponential smoothness. (See Appendix F)

Exponential Smoothness with an alpha = 0.25: (See Appendix G)

This is our forecast of choice since it gives the most weight to the most recent observations. It is simple and has few data requirements making it an inexpensive and useful approach for firms that make many forecasts each period. The MAD is the lowest of all the forecasts meaning that the next sales will be lower and this technique is the most accurate since it gives the most weight to the last data values. (See Appendix E)

Deseasonalized Order Time Series: (See Appendix H)

This order time series is adjusted for seasonal variations. This technique is used by well known publications such as *The Wall Street Journal* and *Business Week* to compare sales in successive periods. Last quarter's posting record profits in the time series seems to move slightly upwards. The deseasonalized order time series showed that the next point in the order time series will be lower. The general movement is capped between two max and min imaginary lines between \$10,000,000 and \$4,000,000. (See Appendix F)

Acknowledgements

We would like to thank the Staff at Heelys Sports Ltd for their support and assistance.

Thank you for allowing us a glimpse into your business. In particular, Charlie Beery for his excellent coordination, Mike Hessong for his friendly smile and helpful information, and Cathy Callahan for her unflappable patience in answer our questions.

A special thanks goes to Dr. Thomas Siems for his guidance and help in all aspects of this undertaking.

APPENDIX A

Heely's CSR Phone Time Recordings in Minutes

	Week 1	Week 2				Total
	Tues.	Tues.	Wed.	Thurs.	Fri.	
Retailers	20	2	2	2	16	
	13	3	4	1	5	
	6	2	2	3	2	
	12	1	4	20	8	
	2	4	8	5	22	
		1	3	1	4	
		8	4	1	12	
		6	2	3		
		4	5			
		8	15			
			3			
			6			
			2			
			22			
Total	53	39	82	36	69	279
Sales Reps	1	1	1	10	25	
	16	3	2	1	1	
	4	3	4	1	2	
	3		6	4		
	2			5		
Total	26	7	13	21	28	95
Consumers	2	1	3	8	5	
	2	2	2	1	4	
	2	2	2		7	
	2	3			4	
	1				2	
	7				1	
	1					
	4					
	2					
	1					
	3					
	10					
Total	37	8	7	9	23	84
Grand Total	116	54	102	66	120	458

Calculations:

458 / 60	7.633333 hours / week on the phone
7.6 / 5	1.526667 hours / days on the phone
84 / 458	18.34061 % of which is spent with consumers
279 / 458	60.91703 % of which is spent with retailers
95 / 458	20.74236 % of which is spent with sales representatives

APPENDIX B



DataScan Technologies Inc.
 10700 North Freeway
 Suite 550
 Houston, TX 77037
 Tel: 281-260-3200 FAX: 281-260-3215

Price Quotation

To: Klintmalm
 Marcus Klintmalm

 2217 Ivan St Apt 307
 Dallas, TX 75201
 Tel: (214) 855-3766
 eMail: mklintma@smu.edu

Quote Number: mk00138
 Quote Date: 4/19/2005
 Total Quote: **\$4,970.26**

Line Item	Product Number	Product Description	Qty	Unit Price	Extended Price
1	PPT 8846	PPT 8846 WIRELESS 11B SE 800 HP WINCE 32MB 15 KEY	3	\$1,548.09	\$4,644.27
2					
3	DS-MY ADC	Software Package			
4		My ADC Data Collection Software (Check in-Check out)	1	\$325.99	\$325.99
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

FOB Point: Product Point of Origin
 Ship Date: In accordance with product availability
 Quote Valid Until 05/19/05
 Quote Total Note Does not include shipping or applicable taxes.

Payment Terms: Net 30 With Approved Credit
 Warranty: New Equipment - OEM Warranty Applies
 Project Services: Additional project services, not listed, are available upon definition and separate quotation

Signed:
Mohammed Konte
 Mohammed Konte 281-260-3223
mkonte@datascan.com

Thank you for the opportunity to present this quote, please call for further details or questions!

- Orders received as a result of this quote are subject to DataScan Technologies standard terms and conditions
- Once product is purchased and shipped to customer, any returns are strictly limited as follows; limited to first thirty (30) days on most products, certain products are not returnable once seal is broken, all returns require an advance RMA and must be returned in original manufacturers boxes with packing materials. A restocking fee applies.
- Credit card sales are subject to a 3% processing fee
- Leasing arrangements are available

DataScan Technologies Inc. - Confidential and Proprietary

Delivering Value One Customer At A Time

PPT 8800 Series



ENTERPRISE PDA

The PPT 8800 Series: Small, Rugged and Packed with Power

The PPT 8800 from Symbol Technologies combines superior data capture capability and wireless communications in a rugged handheld computer that is the smallest and lightest device in its class.

The PPT 8800 puts powerful real-time information right in the pocket of the mobile worker and is available with software, peripherals, accessories and services that add compelling value to the operations of companies and enterprises worldwide.

The PPT 8800 is ideal for use in many environments where up-to-date information is needed at the point of activity, including but not limited to:

- ▶ Retail
- ▶ Field Service
- ▶ Public Safety
- ▶ Healthcare
- ▶ Hospitality

Mission-Critical Applications

Designed for mobile workers and managers within the enterprise who require a rugged, high-performance, handheld computer far more durable and reliable than typical consumer devices, the PPT 8800 is powerful enough to execute mission-critical applications, yet small and light enough to be carried in a pocket or on the hip.

The enterprise-friendly PPT 8800 comes packed with features that make it easy for global organizations to manage broad systems deployments.

For more information on the PPT 8800 Series visit www.symbol.com/ppt8800

About Symbol

Symbol Technologies, Inc. (NYSE:SBL), founded in 1975, is a global leader in secure mobile information systems that integrate application-specific handheld computers with wireless networks for data and voice and bar code data capture. Symbol products and services increase productivity and reduce costs for the world's leading



Features	Benefits
Small and lightweight	Fits in a pocket or on the hip
Large vibrant color display	Easy to see in many environments
Extremely rugged	Endures extreme temperatures and multiple drops to concrete
Sealed to IP54 standards	Protects against water and dust to ensure reliable performance in rough conditions
Laser bar code scanning	Accurate information capture every time
Wireless networking based on the standard IEEE 802.11b (WLAN) or Bluetooth™ (WPAN)	Enables real-time communications and decision making; secure mobile transactions and investment protection
Microsoft® Windows® CE 4.1 (CE .NET) embedded operating system	Easy application development, worldwide support and a large global developer base
Intel® XScale™ architecture	High-speed CPU performance for robust enterprise applications
Rechargeable/replaceable lithium-ion battery	Maximum usage between charges helps to make mobile workers more efficient
Multi-language support	Deployable across the global enterprise
Multiple keypad options	Flexible functionality and keypad layout that is perfectly suited for targeted applications
Supports AirBEAM®	Wireless device management specifically for enterprises

retailers, logistics and transportation companies, government agencies, manufacturers and providers of healthcare, hospitality and security.

PPT 8800 Specification Highlights

Physical Characteristics	
Dimensions:	1.3 in. H x 3.1 in. W x 5.7 in. L 33 mm H x 80 mm W x 146 mm L
Weight (including battery):	10.5 oz/ 300 g
Display:	Transflective color TFT-LCD. 65K colors, 240 (W) x 320 (L) (QVGA size)
Touch Panel:	Glass analog resistive touch
Backlight:	LED backlight
Main Battery:	Rechargeable Lithium Ion 1700 mAh (3.7V)
Backup Battery:	Ni-MH battery (rechargeable), 15mAh (2.4V) 2 cells

Performance Characteristics	
CPU:	Intel® Xscale™ PXA250
Operating Platform:	Microsoft® Windows® CE 4.1 (CE .NET)
Memory:	32MB RAM/ 32MB ROM
Interface:	RS-232, max. 115.2 kbps min. 1200bps
Communications:	IrDA, 1.2 standard SIR, max. 115.2 kbps, max. standard RS-232 interface
CF Card Slot:	Type II
Cards Supported:	802.11b Spectrum24® card; Bluetooth™ CF card; Type II Flash Memory card
Audio:	Speaker, microphone
Keypad Options:	Standard version and 15-key with power button version
1D Decode Capability:	UPC/EAN/JAN, Code 39, Code 93, Code 128, Interleaved 2 of 5, Discrete 2 of 5, NW-7, UCC/EAN-128
LED Display:	Upper front center (amber and green)
Scan Triggers:	Left and right trigger buttons

User Environment	
Operating Temperature:	14° to 122° F / -10° to +50° C
Storage Temperature:	-13° to 158° F / -25° to 70° C
Environmental Sealing:	IP54 Category II
Humidity:	5% to 90% relative humidity (noncondensing)
Drop Specification:	4 ft./1.2 m drop to concrete
Ambient Light:	Indoor: 450 ft.-candles (4,842 LUX) Outdoor: 8,000 ft.-candles (86,112 LUX)
Electrostatic Discharge (ESD):	+/-15 kVDC (air); +/- 8 kVDC (contact)

Wireless Data Communications	
Wireless Local Area Network (WLAN):	Optional IEEE standards-based Spectrum24® 802.11b
Data Rate:	11 Mbps (direct sequence)
Frequency Range:	Country dependent; typically 2.4 to 2.5 GHz
Output Power:	100 mW US; 100 mW international
Spreading Technique:	Direct Sequence
Antenna:	Internal
Wireless Personal Area Network (WPAN):	Optional Bluetooth™ Compact Flash™ card version

Peripherals and Accessories	
Cradles:	Single-slot serial charging cradle; four-slot Ethernet; four-slot serial cradle
Communication and Charging Cables:	Synchronization cable; Charging cable; Daisy chain cable; worldwide power supplies and cables
4-Slot Universal Battery Charger (UBC):	Simultaneous charge of 1-4 batteries; requires adapters for PPT 8800 batteries
Other Accessories:	Holster with easy release clip; holster with Velcro belt clasp and belt; slim carrying case; hand strap; neck strap, 3400 mAh larger capacity battery

Regulatory	
Electrical Safety:	Certified to UL1950, CSA C22.2 No. 950, EN60950/IEC950
EMI/RFI:	FCC Part 15 Class B, ICES-003 Class B, European Union EMC Directive, Australian SMA
Laser Safety:	CDRH Class II, IEC Class 2
Hazardous Locations:	Certified to UL 913 and CAN/CSA C22.2 no. 157 for use in Class I, Division 2, Groups A, B, C, D

EN410 CE



Specifications are subject to change without notice. All product and company names are trademarks, service marks or registered trademarks of their respective owners.



Part No. PPT8800 Printed in USA 12/02 ©2002 Symbol Technologies, Inc. Symbol is an ISO 9001 and ISO 9002 UKAS, RVC, and RAB Registered company, as scope definitions apply

For system, product or services availability and specific information within your country, please contact your local Symbol Technologies office or Business Partner

Corporate Headquarters
Symbol Technologies, Inc.
 One Symbol Plaza
 Holtsville, NY 11742-1300
 TEL: 1-800-722-6234/1-631-738-2400
 FAX: 1-631-738-5990

For Asia Pacific Area
Symbol Technologies Asia, Inc.
 (Singapore Branch)
 Asia Pacific Division
 230 Victoria Street #05-07/09
 Bugis Junction Office Tower
 Singapore 188024
 TEL: 65-6796-9600
 FAX: 65-6337-6488

For Europe, Middle East and Africa
Symbol Technologies
 EMEA Division
 Symbol Place, Winnersh Triangle
 Berkshire, England RG41 5TP
 TEL: 44-118-9457000
 FAX: 44-118-9457500

For North America, Latin America and Canada
Symbol Technologies
 The Americas
 One Symbol Plaza
 Holtsville, NY 11742-1300
 TEL: 1-800-722-6234/1-631-738-2400
 FAX: 1-631-738-5990

Symbol World Wide Web Internet Site
 For a complete list of Symbol subsidiaries and Business Partners worldwide contact us at <http://www.symbol.com>
 E-mail: webmaster@symbol.com



PDT 8100 Series



PORTABLE DATA TERMINAL

Tap, Type, or Scan—Maximum Versatility in a Portable Data Terminal

The PDT 8100 Series from Symbol Technologies bridges the gap between pure pen-based and key-based mobile data collection solutions. The first Pocket PC device available with multiple keyboard options, the PDT 8100 is a versatile, large-screen hand-held that delivers the functionality of Pocket PC with the convenience of tactile, key-based data entry.

Understanding and Anticipating Diverse Business Needs

Designed to meet mobile data management demands in an array of markets, the PDT 8100 offers features and options to suit diverse applications and business needs. For instance, multiple keyboard options are available for maximum data entry efficiency in different environments. Route accounting professionals may prefer the 28-key numeric keyboard, whereas retail customers may opt for either a 37- or 47-key alphanumeric keyboard.

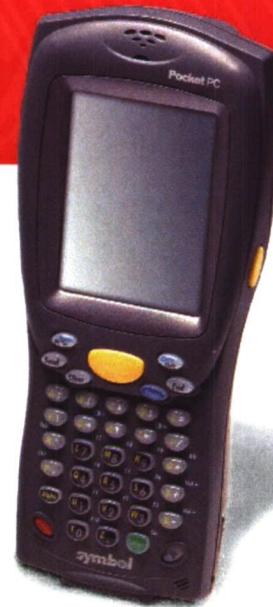
Sealed to IP54 standards, the rugged durability of the PDT 8100 meets the needs of many industrial environments. This, coupled with communication options that include batch, WLAN and WWAN connectivity, enables the PDT 8100 to deliver data where and when it's needed, enhancing productivity where business is conducted—whether taking inventory in the warehouse, or checking on an order from a customer site.

Ease of use and reliability are benefits that are valued across all markets. The PDT 8100 features a large, easy-to-read 1/4 VGA display, backlit keyboard and rechargeable, extended-use lithium-ion battery, which contribute to the PDT 8100's dependability and universal market appeal.

Power and Performance for Today and Tomorrow

The innovative PDT 8100 Series is a powerful hand-held that combines the strength of Microsoft's Pocket PC platform with the power of the Intel® StrongARM processor, operating at 206 MHz. Equipped with 32 MB of ROM and RAM, the PDT 8100 is designed to keep pace with your business. Reinforcing this are the expansion possibilities offered by the user-accessible CF slot, which can accommodate a flash memory card or the CF-based VoIP option.

With the dynamic PDT 8100 Series, route accounting professionals are able to conduct business and complete transactions while on site with a customer. Retail clerks can perform price checks and inventory counts conveniently and accurately, or speak with a manager on another floor. Combined with the optional magnetic stripe reader, the PDT 8100 can also be used for line busting or Portable POS applications. And healthcare workers can manage patient data through bar code scanning,



key-based input or touch-screen selection. The list of markets and applications for this feature-rich hand-held is virtually unlimited. To learn how the PDT 8100 Series can work for you, or to find out more about Symbol's products and solutions, contact us at any of the locations listed on the back panel or visit www.symbol.com

Features	Benefits
Microsoft® Pocket PC platform	Portable convenience and a familiar, flexible computing platform
Rugged construction—sealed to IP54 standards with 4 ft. drop to concrete	Operates in harsh environments
WLAN or WWAN communication	Anytime, anywhere information access
Symbol's miniature scan engine	High-performance scanning even in bright light
32 MB RAM, 32 MB ROM	Ample storage capacity for data and applications
1/4 VGA display with 16-level grayscale	Large, easy-to-read display
Rechargeable lithium-ion battery	Maximum usage between charges
Keyboard and touch screen data entry	Multiple modes of data entry for maximum efficiency
Flexible key configuration (Choice of 28-, 37- and 47-key)	Optimized features, functionality and key layout for mobile applications
Back-lit keyboard	Usable under low-light conditions
IrDA port	Enables data transfer to peripherals such as printers
User-accessible Compact Flash card slot	Provides flexibility for expansion and storage; protection against data loss

PDT 8100 Series Specification Highlights

Physical Characteristics	
Dimensions:	Overall: 8.4" L x 3.7" W x 1.8" D/213 mm L x 93.9 mm W x 45.7 mm D; Grip Area: 3.0" W x 1.0" D/76.1 mm W x 25.4 mm D
Weight:	14.5 oz./410 g w/battery batch; 15.5 oz./440 g w/battery RF
Drop Specification:	4 ft. (1.2m) to concrete
Battery:	1550 mAh lithium-ion
Environmental Sealing:	IP54
Operating Temperature:	-4° to 122° F/-20° to 50° C (or better depending on the application)
Storage Temperature:	-13° to 122° F/-25° to 50° C
Humidity:	5% to 90% RH noncondensing
Electrostatic Discharge (ESD):	8 kVdc air; 4 kVdc contact
Scan Engine:	1-D bar code scanner
Expansion Capabilities:	Type 2 PC (internal); Type 2 CF (user-accessible)
Back-lit Display:	EL
Back-lit Keyboard:	LED
Keypads:	Choice of 28-, 37-, 47-keys; plus 2 side scan keys

Performance Characteristics	
CPU:	Intel SA1110 @ 206MHz
Operating Platform:	Microsoft® Pocket PC
Memory (RAM/ROM):	32 MB/32 MB
Application Development:	Fully compatible with Microsoft SDK for Pocket PCs; Symbol SDK available to support bar code scanning
Display:	1/4 VGA (320 x 240 portrait) with 16-level grayscale
Communications:	IrDA 1.1; RS-232

RF Data Communications	
Wireless Local Area Network:	Optional 802.11 (2 Mbps Frequency Hopping) or 802.11b (11 Mbps Direct Sequence)
Data Rate:	2 Mbps and 11 Mbps
Frequency Range:	Country dependent; typically 2.4 to 2.5 GHz
Output Power:	500 mW U.S.; 100 mW international
Antenna:	Internal
Wireless Wide Area Network:	Optional (CDPD, GSM, GPRS); user-accessible SIM socket for GSM/GPRS
Antenna:	External
Voice-over-IP:	Optional with CF card

Peripherals and Accessories	
Cradles:	1 slot serial charge cradle; 4 slot Ethernet charge cradle; Vehicle cradle (spare battery charge, terminal charger data interface)
Communication and Charging Cables:	DEX cable; auto-charge cable; serial/charge cable; printer cables
Speaker/Mike:	Integrated, plus headset jack
Magnetic Stripe Reader (MSR):	Snap-on serial connection/swipe reader attachment
4-Slot Universal Battery Charger (UBC):	Simultaneous charge of 1-4 batteries; requires adapters for PDT 8100 batteries
Other Accessories:	Snap-on land line modem; carrying case; portable printer (8.5" format) with terminal slot

Regulatory	
Electrical Safety:	Certified to UL 1950, CSA C22.2 No 950, EN60950/IEC950
EMI/RFI:	CDRH Class II, IEC Class 2
Laser Safety:	FCC Part 15 Class B, ICES-003 Class B, European Union EMC Directive, Australian SMA



Specifications are subject to change without notice. All product and company names are trademarks, service marks or registered trademarks of their respective owners. For system, product or services availability and specific information within your country, please contact your local Symbol Technologies office or Business Partner.



Corporate Headquarters
Symbol Technologies, Inc.
 One Symbol Plaza
 Holtsville, NY 11742-1300
 TEL: 1-800-722-6234/1-631-738-2400
 FAX: 1-631-738-5990

For Asia Pacific Area
Symbol Technologies Asia, Inc.
 (Singapore Branch)
 Asia Pacific Division
 230 Victoria Street #04-05
 Bugis Junction Office Tower
 Singapore 188024
 TEL: 65-337-6588
 FAX: 65-337-6488

For Europe, Middle East and Africa
Symbol Technologies
 EMEA Division
 Symbol Place, Winnersh Triangle
 Berkshire, England RG41 5TP
 TEL: 44-118-9457000
 FAX: 44-118-9457500

For North America, Latin America and Canada
Symbol Technologies
 The Americas
 One Symbol Plaza
 Holtsville, NY 11742-1300
 TEL: 1-800-722-6234/1-631-738-2400
 FAX: 1-631-738-5990

Symbol World Wide Web Internet Site
 For a complete list of Symbol subsidiaries and Business Partners worldwide contact us at:
<http://www.symbol.com>
 E-mail: webmaster@symbol.com



Part No. PD81 Printed in USA 6/01 ©2001 Symbol Technologies, Inc.
 Symbol is an ISO 9001 and ISO 9002 UKAS, RVC, and RAB Registered company, as scope definitions apply.



MC50

symbol
The Enterprise Mobility Company™

ENTERPRISE DIGITAL ASSISTANT

Redefine Mobility for Enterprise-Class Applications

The MC50 from Symbol Technologies is first in a class of mobile computers that combines an enhanced PDA-style form factor with optimal performance to operate enterprise-level applications. This small, lightweight mobile computer features advanced data capture options, flexible voice and data communication and easy wireless local area network (WLAN) synchronization.

Increase Productivity and Gain Access to Real-time Information

With data capture, voice telephony, smart battery, device level management, wireless and security options, on-the-go professionals are empowered to make rapid, informed decisions. This convenient mobile computer delivers enterprise-class functionality, including support for e-mail, phone, scheduling/calendar, signature capture, CRM, sales force automation and other enterprise applications. With the MC50 in hand, retail store managers, merchandisers and salespeople have the necessary tool to create and maintain a competitive advantage.

Deploy and Manage Mobility Systems More Effectively

The MC50 enables superior manageability and rapid integration into new or existing IT infrastructures. Its Microsoft® Windows Mobile™ software platform offers compatibility with Microsoft, Oracle®, Siebel®, SAP® and IBM® customer relationship management (CRM) software for easy, fast rollouts into any environment. Adding mobility management software allows you to quickly deploy and manage thousands of MC50 devices with instant visibility and control over all the mobile computers, wireless networks and applications from an intuitive, Web-based interface.

Enhanced Durability for Frequent, Extended Use

The MC50 is designed to be more durable than a consumer-grade PDA. Extra reliability is built into every aspect of the MC50 – from battery contacts to keypads to acoustics – to ensure it exceeds the performance demands of daily, high-volume usage. Managers, supervisors and sales professionals can feel more confident using the MC50 from anywhere at anytime, whether it is on the road, on the sales floor or at a customer site.

Symbol Enterprise Mobility Services

Symbol Enterprise Mobility Services ensure that your mobility solution works seamlessly and at maximum efficiency – from defining your business requirements through ongoing service and support.



 Windows Mobile

Features	Benefits
Enterprise-level foundation	Combines mobile computing, data capture and wireless networking for a totally integrated solution
Durable design	Enhances product lifecycle with less downtime than consumer-grade devices
Deployment-ready systems	Designed to run – out of box – fast and easy
High-speed CPU performance	Operates enterprise-level applications
Diverse data capture options	Captures information accurately and quickly every time
Wireless networking based on the standard IEEE 802.11b (WLAN)	Enables real-time communications and decision-making with secure mobile transactions
Ready voice over IP (VoIP)	Designed to perform seamless voice communications via push-to-talk, peer-to-peer, PBX connectivity, 1-to-1 or 1-to-many
Mobility Services Platform (MSP)	Reduces TCO with accelerated rollout and ongoing visibility into mobile devices, networks and applications
Smart battery	Ensures maximum uptime
User-accessible SDIO slot with cover	Provides technology flexibility while improving acoustics
User-friendly keypad options	Offers flexible functionality and keypad design for efficient, productive data entry

About Symbol Technologies

Symbol Technologies, Inc., The Enterprise Mobility Company™, manufactures and services enterprise mobility systems, delivering products and solutions that capture, move and manage information in real time to and from the point of business activity. Symbol enterprise mobility solutions integrate advanced data capture products, radio frequency identification technology, mobile computing platforms, wireless infrastructure, mobility software and services programs under the Symbol Enterprise Mobility Services brand. Symbol enterprise mobility products and solutions are designed to increase workforce productivity, reduce operating costs, drive operational efficiencies and realize competitive advantages for the world's leading companies.

For more information, contact us at +1.800.722.6234 or +1.631.738.2400, or visit us on the web at: www.symbol.com/mc50

MC50 Specification Highlights

Physical Characteristics			
Dimensions:			
NAV	1D	4.77 in. H x 2.95 in. W x .94 in. L (12.1 cm H x 7.5 cm W x 2.4 cm L)	
	2D Imager	4.77 in. H x 2.95 in. W x 1.13 in. L (12.1 cm H x 7.5 cm W x 2.9 cm L)	
	CCD Camera	4.77 in. H x 2.95 in. W x 1.11 in. L (12.1 cm H x 7.5 cm W x 2.8 cm L)	
Qwerty	1D	5.35 in. H x 2.95 in. W x .94 in. L (13.6 cm H x 7.5 cm W x 2.4 cm L)	
	2D Imager	5.35 in. H x 2.95 in. W x 1.13 in. L (13.6 cm H x 7.5 cm W x 2.9 cm L)	
	CCD Camera	5.35 in. H x 2.95 in. W x 1.11 in. L (13.6 cm H x 7.5 cm W x 2.8 cm L)	
Weight (including standard battery):	NAV	1D	6.42 oz/ 182 g
	QWERTY	1D	6.77 oz/ 192 g
Display:	Transflective color TFT-LCD, 65K colors, 240 (W) x 320 (L) (QVGA size)		
Touch Panel:	Glass analog resistive touch		
Backlight:	LED backlight		
Main Battery:	Rechargeable Lithium Ion 3.7V, 1560 mAh		
Extended Capacity Battery:	Optional 3.7V, 3600 mAh		
Backup Battery:	Ni-MH battery (rechargeable) 15mAh 1.2V, 1 cell		
Expansion slot:	User accessible SDIO slot (with secure cover)		
Notification:	Vibrator and LED		
Keypad Options:	NAV: 4 application keys and 5-way navigation key QWERTY: 37-key		
Audio:	Speaker, receiver, microphone, headset jack Software support for full duplex record and playback (stereo)		

Performance Characteristics	
CPU:	Intel® XScale™ 520 Mhz processor
Operating System:	Microsoft® Windows Mobile™ 2003 Second Edition
Memory:	64MB RAM/ 64MB ROM
Interface/ Communications:	RS-232, USB 1.1

User Environment	
Operating Temperature:	0° to 50° C (32° to 155° F) operating temperature
Storage Temperature:	-25° to 60° C (-13° to 140° F) storage temperature
Humidity:	95% non-condensing
Drop Specification:	3' drop to tile over concrete, 1 drop per side at 21° C (70° F)

Electrostatic Discharge (ESD): +/-8kV air discharge, +/-8kV direct discharge

Wireless Data and Voice Communications	
Wireless Local Area (WLAN):	IEEE® 802.11b
Data Rate:	1/2/5.5/11 Mbps
Frequency Range:	Country dependent; typically 2.4 to 2.5 GHz
Output Power:	14.5dBm (typical)
Security:	WEP, TKIP, LEAP, PEAP, EAP-TLS, WPA (pre-shared key)
Spreading Technique:	Direct sequence
Antenna:	Internal
Voice Communication:	Integrated Voice-over-IP ready (P2P, PBX, PTT) Wi-Fi™-certified, IEEE 802.11b direct sequence wireless LAN

The Symbol MC50 is warranted against defects in workmanship and materials for a period of 12 months from date of shipment, provided that the product remains unmodified and is operated under normal and proper conditions.

Specifications are subject to change without notice. All product and company names are trademarks, service marks or registered trademarks of their respective owners.

NOTICE: Repairs of this product may require the use of Symbol proprietary parts (and/or Symbol proprietary information). Symbol will sell these parts (and provide this proprietary information) only to end-user customers for self-service. It is Symbol's policy not to sell these parts to third-party service providers and not to allow a third-party service provider to act as an ordering or receiving agent for the parts necessary to repair this product. Applicable in the US. For all other countries, please contact your Symbol account manager or the local Symbol Customer Service representative in your area for further details.



MC50 10/04

Part No. MC50 Printed in USA 10/04 ©2004 Symbol Technologies, Inc.
Symbol is an ISO 9001 and ISO 9002 UKAS, RVC, and RAB Registered company, as scope definitions apply.

Data Capture Specifications	
Options:	2D imager, linear CMOS or CCD camera
2D Imager Engine (SE 4400) Specifications:	
Field of View:	Horizontal: 32.2°, Vertical: 24.5°
Optical Resolution (gray scale):	640 (H) x 480 (V) pixels
Roll:	360°
Pitch Angle:	+/- 60° from normal
Skew Tolerance:	+/- 50° from normal
Focal Distance from Front of Engine:	Near: 5 inches, Far: 9 inches
Aiming Element (VLD):	650 nm +/- 5 nm
Illumination Element (LED):	635 nm +/- 20 nm
Minimum Print Contrast:	Minimum 25% absolute dark/light reflectance measured at 650 nm
Symbologies:	1D Symbology: UPC/EAN, Code 128, UCC.EAN128, RSS, Code 39, Code 93, I 2 of 5, Discrete 2 of 5, Codabar, MSI 2D Symbology: MaxiCode, PDF417, DataMatrix, QRCode Postal Codes: U.S. Postnet, U.S. Planet, UK Postal, Australian Postal, Japan Postal
Image File Formats:	BMP, TIFF, JPEG
Linear CMOS (CSE600):	
View Angle:	40° +/- 2°
Pitch Angle:	+/- 50° from normal
Roll:	+/- 20° from vertical
Skew Tolerance:	+/- 30° from normal
Minimum Print Contrast:	35% MRD measured at 675 nm
Supported Symbologies:	UPC /EAN, Code 39, I 2 of 5, Discrete 2 of 5, Code 128, UCC.EAN128, Code 93, Codabar
CCD Camera:	
Image Sensor:	1/4 in. type 1.1 mega-pixel CCD
Maximum Frame Rate:	7.5 fps
Minimum Subject Illumination:	2 lux (at 5 fps)
Number of Output Pixels:	1144 (H) x 880 (V)
Image Output Interface:	UVVY 8-bit
Lens F-Number:	f2.8
Scan Triggers:	Left and right trigger buttons
Peripherals and Accessories	
Cradles:	Single-slot USB with spare battery (1X and 2X) charging, four-slot Ethernet or USB
Communication and Charging Cables:	USB v1.1, vehicle charging cable, power/charging cable
Battery Chargers:	4-slot battery charger (1X and 2X), universal battery charger (requires adapters for 1X and 2X capacity batteries)
Vertical-specific attachments:	Snap-on magnetic stripe reader, universal cable cup adapter attachable cables
Regulatory	
Electrical Safety:	UL60950 (UL marking), CSA C22.2 No. 60950 (c-UL marking), EN60950/IEC 950
EMI/RFI:	EU/International EN 301 489-1, -17 EN61000-4-2: 1995, ESD ±8kV air/ ±4kV contact EN61000-4-3: 1997, Radiated Immunity 3V/m EN61000-4-4: 1995, EFT ± 0.5kV EN61000-4-5: 1995, Surge ± 0.5kV EN61000-4-6: 1
Laser Safety:	IEC Class2/FDA Class II in accordance with IEC60825-1/EN60825-1

ON410 CE



For system, product or services availability and specific information within your country, please contact your local Symbol Technologies office or Business Partner.

Corporate Headquarters
Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, NY 11742-1300
TEL: +1.800.722.6234/+1.631.738.2400
FAX: +1.631.738.5990

For Asia Pacific Area
Symbol Technologies Asia, Inc.
(Singapore Branch)
Asia Pacific Division
230 Victoria Street #05-07/09
Bugis Junction Office Tower
Singapore 188024
TEL: +65.6796.9600
FAX: +65.6337.6488

For Europe, Middle East and Africa
Symbol Technologies
EMEA Division
Berkshire Place, Winnersh Triangle
Berkshire, England RG41 5TP
TEL: +44.118.9457000
FAX: +44.118.9457500

For North America, Latin America and Canada
Symbol Technologies
The Americas
One Symbol Plaza
Holtsville, NY 11742-1300
TEL: +1.800.722.6234/+1.631.738.2400
FAX: +1.631.738.5990

Symbol Website
For a complete list of Symbol subsidiaries and business partners worldwide contact us at:
www.symbol.com
Or contact our pre-sales team at:
www.symbol.com/sales

symbol
The Enterprise Mobility Company™

APPENDIX C

FlexAbility™ Devices

FlexAbility Data Collection Devices

For the best hardware solutions available in the marketplace today, we have partnered with several industry-leading vendors to provide you the highest quality in today's data capture technology. Some of our partners include Symbol, Intermec, Texas Instruments, HHP, Zebra, 3Com, Eltron, and Unitech among others.

SYMBOL®

Symbol PDT 8000 Series Pocketable Computer

The PDT 8000 Series is rugged enough for use anywhere along the supply chain, and provides the speed power and functionality needed to effectively manage data at the point of activity.

128MB RAM; 1D
 Intel® XScale, 400 MHz
 Microsoft Pocket PC 2002 Premium Edition
 1/4 VGA; 320x240 Portrait with 64K Color
 23-Key Numeric Keypad
 VGA Color Display with Touch Panel
 Single Slot Serial Cradle with Line Cord,
 Power Supply & Spare Battery Charger

Wireless - PDT8046

\$2,784

Batch - PDT8000

\$2,545



Options:

Lithium Ion Battery \$60
 4-Slot Battery Charger with Power Supply & Line Cord \$610

INTERMEC®

Intermec 700 Series Mobile Computer

This flexible design allows configuration of the 700 Series based upon the scanning, radio, and data storage requirements of the application. The integrated, numeric keypad provides for accurate data entry and preserves the full-screen area for application use.

64 MB RAM; 1D
 Intel® XScale, 400 MHz
 Microsoft Windows for Pocket PC
 LCD 3.8"; 240x320 Display
 16-Key Numeric Keypad
 VGA Color Display with Touch Panel
 Single Slot Cradle with Power Supply, Power Cord,
 Null Modem Cable & Spare Battery Charger

Wireless - 750

\$2,512



Options:

Lithium Ion Battery \$60
 4-Slot Battery Charger with Power Supply & AC Adapter \$366

INTELLIGENT INSTRUMENTATION® LANpoint CE®

Intelligent Instrumentation offers an affordable, high-value bar code warehouse and shop floor data collection terminal that features a 640 x 240 1/2 VGA display with large keys for easy input of data. This Windows® CE® device offers real-time data collection solutions for shipping and receiving, logistics and warehousing, picking, inventory tracking and work-in-process, in addition to labor reporting and attendance capabilities.



LANpoint CE Vehicle-Mount Data Collection Terminal

32 MB RAM, 32 MB ROM

AMD 486 Processor

Integrated 10/100 Base T Ethernet

Windows CE 3.0

Sealed Elastomeric 1/2 VGA; 640x240 Display

Interface: 69-Key QWERTY Keypad

Vehicle Mount Chassis

Power Supply for 12VDC Vehicle

Batch

Monochrome	\$2,480
Monochrome/Touchscreen	\$2,710
Color Display	\$2,710
Color Touchscreen	\$2,939

Wireless

Monochrome	\$2,572
Monochrome/Touchscreen	\$2,802
Color Display	\$2,802
Color Touchscreen	\$3,031

Options:

Power Supply for 12VDC Vehicle	\$192
Unitech Laser Scanner	\$220
Unitech Wand	\$90
Integrated Infrared Card Swipe Reader	\$325

HHP®

Dolphin 7400RF Series Portable Data Terminal

The Dolphin® 7450RF offers high scanning performance with the added convenience of a pistol grip for high volume scanning applications. An optional advanced long-range laser scanner is available for long-range scanning applications prevalent in warehousing and distribution centers.



Dolphin 7450RF

32 MB RAM, 32 MB ROM

Intel StrongARM 206MHz Processor

Windows CE 3.0

1/4 VGA; 240x320 Display

56-Key Numeric Pad

Monochrome Display with Touch Panel

Integrated Pistol Grip Handle

Single Slot Serial Cradle with Communications Cable,

Spare Battery Charger and Power Supply

Wireless 7450RF

7450RF	\$2,310
7450RF ALR	\$2,673

Options:

Lithium Ion Battery	\$110
---------------------	-------

All features/functions mentioned within are subject to change. This document is for informational purposes only. Coalition Computing Corporation makes no warranties, expressed or implied, in this document. Prices are subject to change.



9370 East Central Avenue
Wichita, KS 67206
(316) 636-4266 Office
(316) 616-0259 Fax

www.coalitioncomputing.com
info@coalitioncomputing.com

APPENDIX D

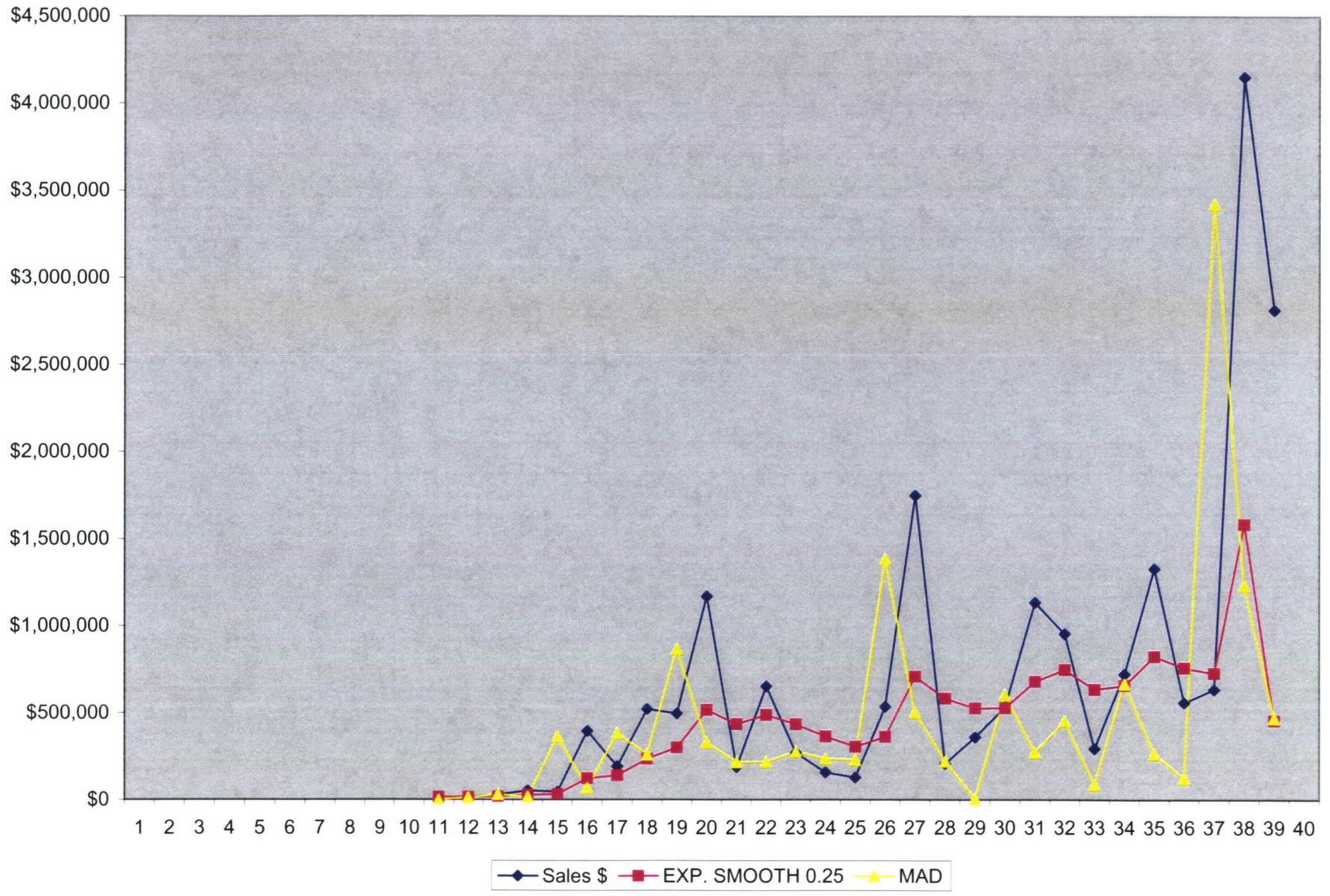
Heeling Sports Ltd.
Order Statistics
As of 4/14/05

	Non-EDI Order Count	Non-EDI Pairs	Non-EDI Sales \$	Avg. Pairs Per Order	Avg. \$ Per Order	EDI Order Count	EDI Pairs	EDI Sales \$	Avg. Pairs Per Order	Avg. \$ Per Order	Total Order Count	Total Pairs	Total Sales \$	Avg. Pairs Per Order
Mar-05	513	99,582	\$ 2,815,089	194	\$ 5,488	435	79,576	\$ 2,818,693	183	\$ 6,480	948	179,159	\$ 5,633,782	189
Feb-05	457	52,113	\$ 1,699,787	114	\$ 3,719	634	129,709	\$ 4,154,087	205	\$ 6,552	1091	181,822	\$ 5,853,874	167
Jan-05	324	33,040	\$ 915,484	102	\$ 2,826	396	19,344	\$ 638,135	49	\$ 1,611	720	52,384	\$ 1,553,619	73
Dec-04	296	18,593	\$ 570,838	63	\$ 1,929	541	14,513	\$ 562,835	27	\$ 1,040	837	33,106	\$ 1,133,673	40
Nov-04	249	27,983	\$ 700,781	112	\$ 2,814	393	47,105	\$ 1,331,118	120	\$ 3,387	642	75,088	\$ 2,031,899	117
Oct-04	288	26,734	\$ 735,963	93	\$ 2,555	300	22,628	\$ 727,691	75	\$ 2,426	588	49,362	\$ 1,463,654	84
Sep-04	313	30,064	\$ 880,391	96	\$ 2,813	278	9,575	\$ 298,085	34	\$ 1,072	591	39,639	\$ 1,178,476	67
Aug-04	275	63,388	\$ 1,863,314	231	\$ 6,776	301	24,639	\$ 959,021	82	\$ 3,186	576	88,027	\$ 2,822,335	153
Jul-04	177	45,741	\$ 1,419,224	258	\$ 8,018	427	32,232	\$ 1,138,472	75	\$ 2,666	604	77,973	\$ 2,557,696	129
Jun-04	222	84,186	\$ 2,329,141	379	\$ 10,492	311	16,250	\$ 537,130	52	\$ 1,727	533	100,436	\$ 2,866,271	188
May-04	297	26,742	\$ 824,879	90	\$ 2,777	178	10,479	\$ 364,634	59	\$ 2,049	475	37,221	\$ 1,189,513	78
Apr-04	364	30,053	\$ 921,531	83	\$ 2,532	228	5,559	\$ 210,526	24	\$ 923	592	35,612	\$ 1,132,057	60
Mar-04	455	68,819	\$ 1,891,883	151	\$ 4,158	400	48,344	\$ 1,752,658	121	\$ 4,382	855	117,163	\$ 3,644,541	137
Feb-04	348	98,409	\$ 2,629,608	283	\$ 7,556	266	16,215	\$ 540,134	61	\$ 2,031	614	114,624	\$ 3,169,742	187
Jan-04	344	40,949	\$ 1,093,267	119	\$ 3,178	102	4,041	\$ 131,966	40	\$ 1,294	446	44,990	\$ 1,225,233	101
Dec-03	356	56,811	\$ 1,620,161	160	\$ 4,551	289	4,160	\$ 160,386	14	\$ 555	645	44,991	\$ 1,780,547	70
Nov-03	275	23,073	\$ 621,486	84	\$ 2,260	70	6,960	\$ 274,367	99	\$ 3,920	345	44,992	\$ 895,853	130
Oct-03	323	35,170	\$ 1,114,132	109	\$ 3,449	201	18,529	\$ 655,738	92	\$ 3,262	524	44,993	\$ 1,769,870	86
Sep-03	318	20,418	\$ 614,133	64	\$ 1,931	89	5,524	\$ 190,413	62	\$ 2,139	407	44,994	\$ 804,546	111
Aug-03	322	30,384	\$ 800,201	94	\$ 2,485	139	28,777	\$ 1,170,626	207	\$ 8,422	461	44,995	\$ 1,970,827	98
Jul-03	282	44,844	\$ 1,348,825	159	\$ 4,783	71	12,602	\$ 500,233	177	\$ 7,046	353	44,996	\$ 1,849,058	127
Jun-03	286	34,123	\$ 944,364	119	\$ 3,302	127	2	\$ 524,815	0	\$ 4,132	413	44,997	\$ 1,469,179	109
May-03	355	136,118	\$ 4,071,830	383	\$ 11,470	73	(126)	\$ 194,310	(2)	\$ 2,662	428	44,998	\$ 4,266,140	105
Apr-03	408	94,843	\$ 2,924,561	232	\$ 7,168	127	-	\$ 398,779	-	\$ 3,140	535	44,999	\$ 3,323,340	84
Mar-03	504	56,316	\$ 1,865,965	112	\$ 3,702	43	-	\$ 48,045	-	\$ 1,117	547	45,000	\$ 1,914,010	82
Feb-03	204	116,388	\$ 2,886,744	571	\$ 14,151	60	-	\$ 54,664	-	\$ 911	264	45,001	\$ 2,941,408	170
Jan-03	245	39,501	\$ 1,110,204	161	\$ 4,531	33	-	\$ 31,534	-	\$ 956	278	45,002	\$ 1,141,738	162
Dec-02	339	36,527	\$ 1,365,404	108	\$ 4,028	21	-	\$ 17,795	-	\$ 847	360	45,003	\$ 1,383,199	125
Nov-02	341	45,005	\$ 1,477,225	132	\$ 4,332	0	-	\$ -	-	\$ -	341	45,004	\$ 1,477,225	132
Oct-02	267	196,254	\$ 5,268,486	735	\$ 19,732	0	-	\$ -	-	\$ -	267	45,005	\$ 5,268,486	169
Sep-02	339	139,658	\$ 3,949,623	412	\$ 11,651	0	-	\$ -	-	\$ -	339	45,006	\$ 3,949,623	133
Aug-02	384	39,789	\$ 1,262,142	104	\$ 3,287	0	-	\$ -	-	\$ -	384	45,007	\$ 1,262,142	117
Jul-02	333	144,918	\$ 4,110,140	435	\$ 12,343	0	-	\$ -	-	\$ -	333	45,008	\$ 4,110,140	135
Jun-02	336	127,249	\$ 3,941,191	379	\$ 11,730	0	-	\$ -	-	\$ -	336	45,009	\$ 3,941,191	134
May-02	445	58,494	\$ 1,851,707	131	\$ 4,161	0	-	\$ -	-	\$ -	445	45,010	\$ 1,851,707	101
Apr-02	508	41,052	\$ 1,446,482	81	\$ 2,847	0	-	\$ -	-	\$ -	508	45,011	\$ 1,446,482	89
Mar-02	473	79,606	\$ 3,466,601	168	\$ 7,329	0	-	\$ -	-	\$ -	473	45,012	\$ 3,466,601	95
Feb-02	350	26,939	\$ 1,188,649	77	\$ 3,396	0	-	\$ -	-	\$ -	350	45,013	\$ 1,188,649	129
Jan-02	456	44,384	\$ 2,190,537	97	\$ 4,804	0	-	\$ -	-	\$ -	456	45,014	\$ 2,190,537	99

Avg. \$
Per Order

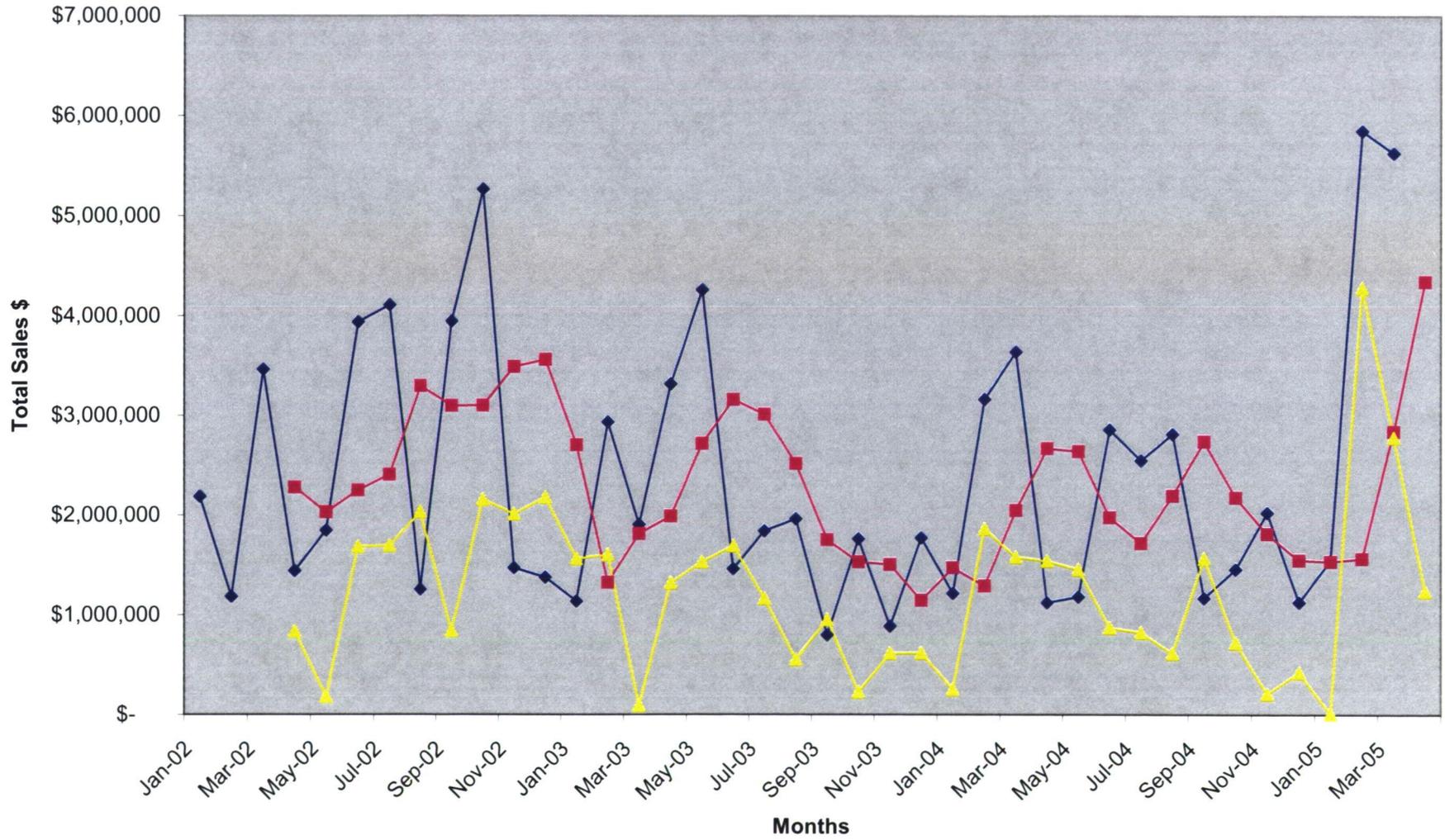
\$	5,943
\$	5,366
\$	2,158
\$	1,354
\$	3,165
\$	2,489
\$	1,994
\$	4,900
\$	4,235
\$	5,378
\$	2,504
\$	1,912
\$	4,263
\$	5,162
\$	2,747
\$	2,761
\$	2,597
\$	3,378
\$	1,977
\$	4,275
\$	5,238
\$	3,557
\$	9,968
\$	6,212
\$	3,499
\$	11,142
\$	4,107
\$	3,842
\$	4,332
\$	19,732
\$	11,651
\$	3,287
\$	12,343
\$	11,730
\$	4,161
\$	2,847
\$	7,329
\$	3,396
\$	4,804

APPENDIX E



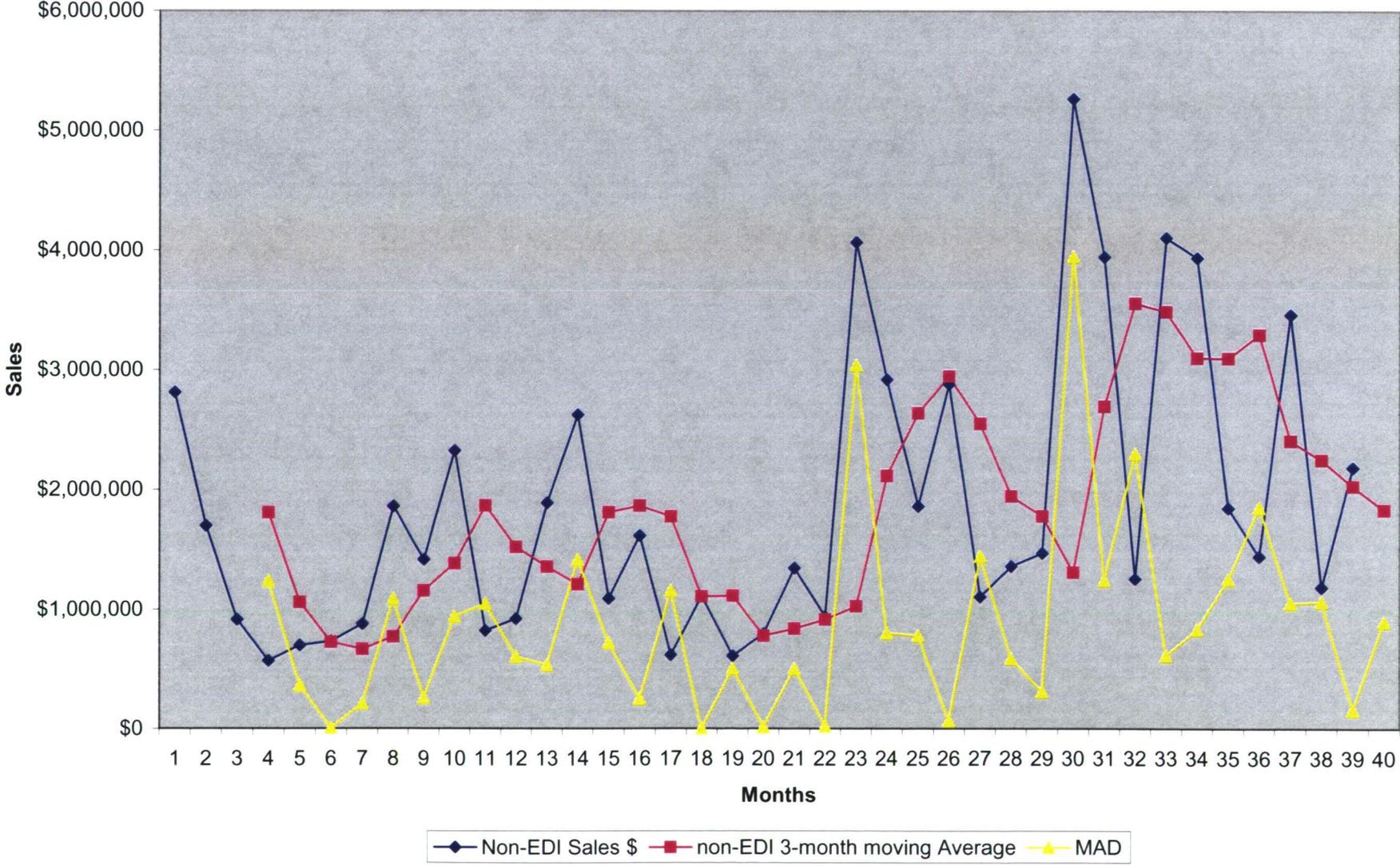
APPENDIX F

3-Month Moving Average

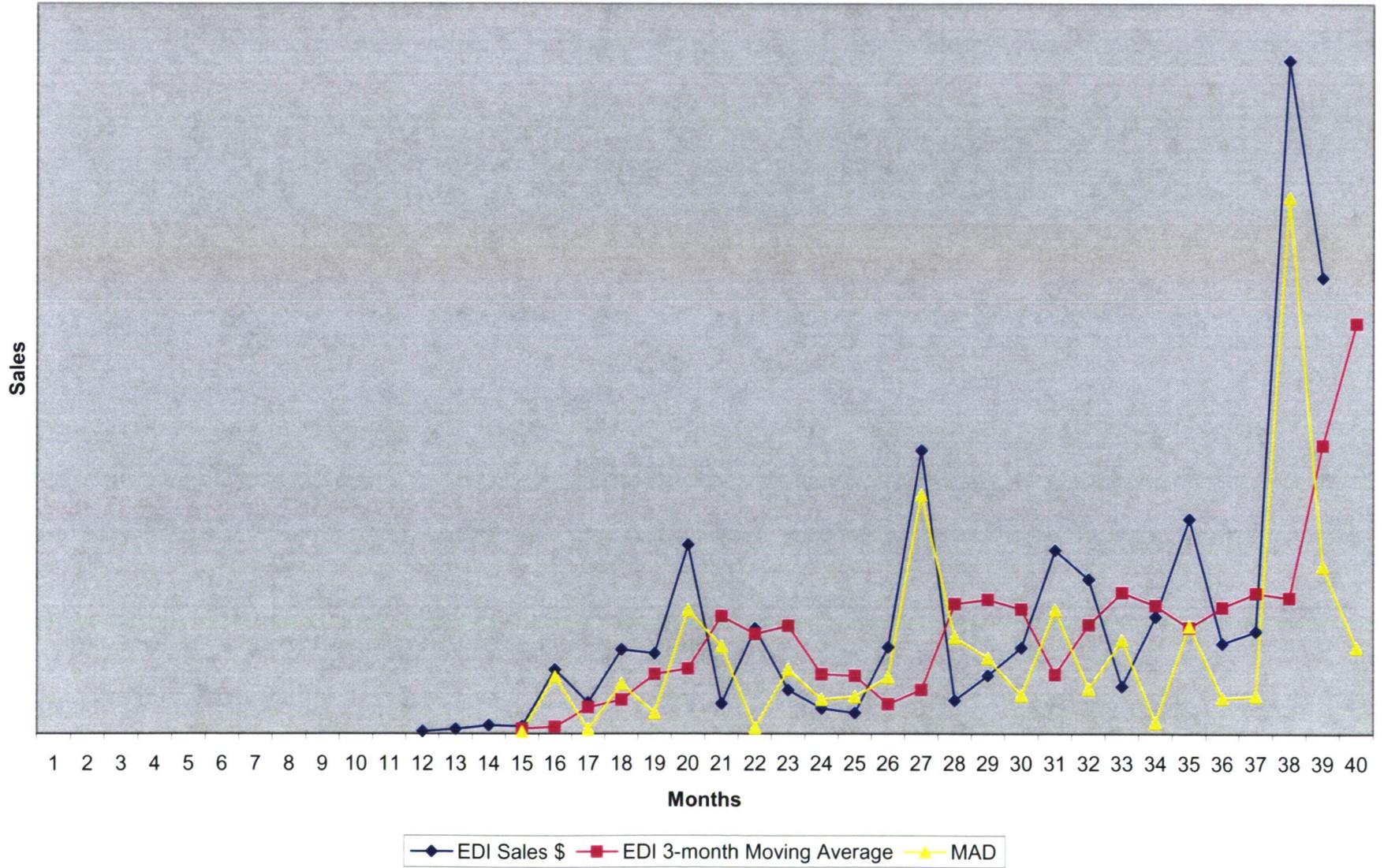


◆ Total Sales \$ ■ 3-Month Moving Average ▲ Mean Absolute Deviation

Non-EDI 3 Month Moving Average

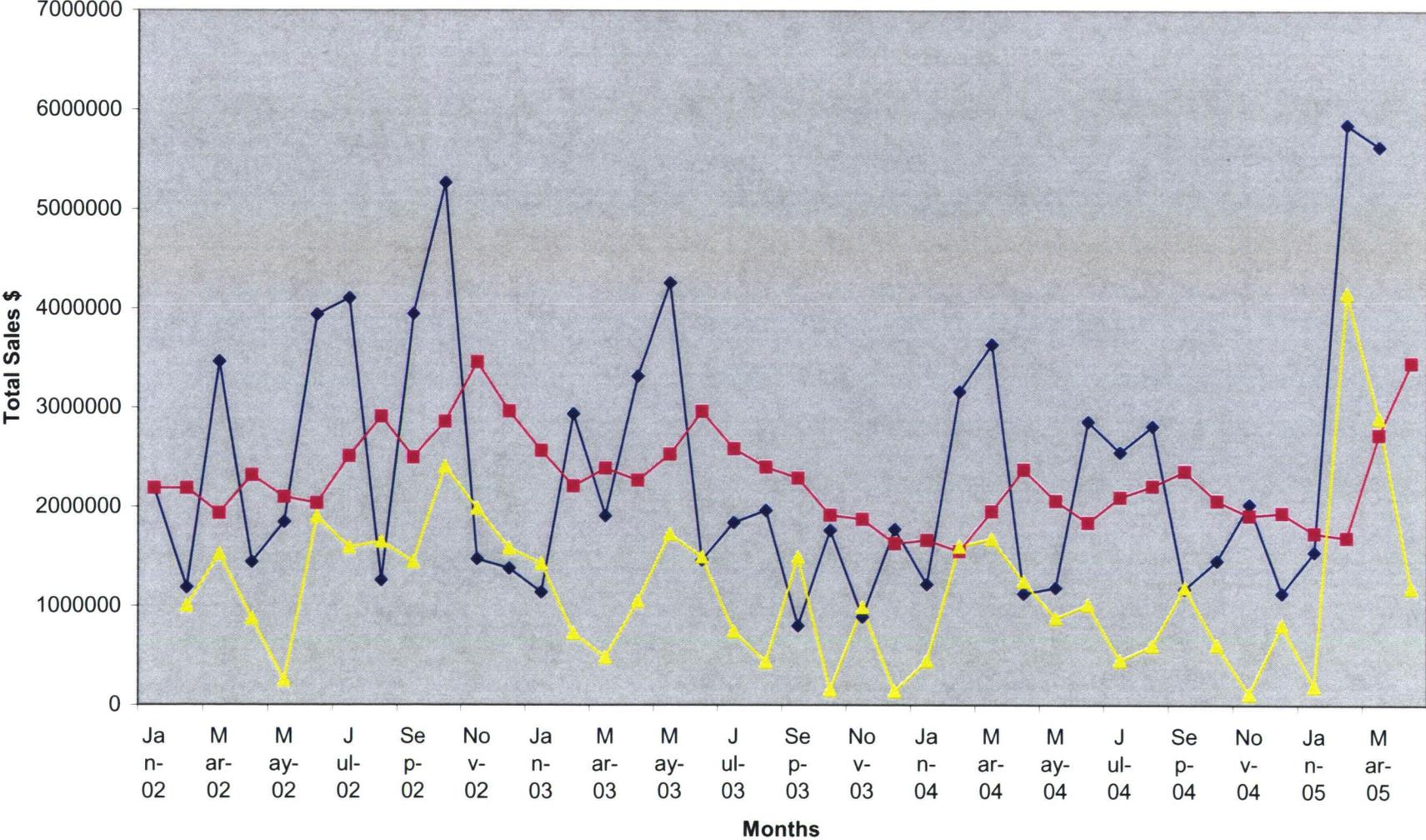


3-month moving average EDI Sales \$



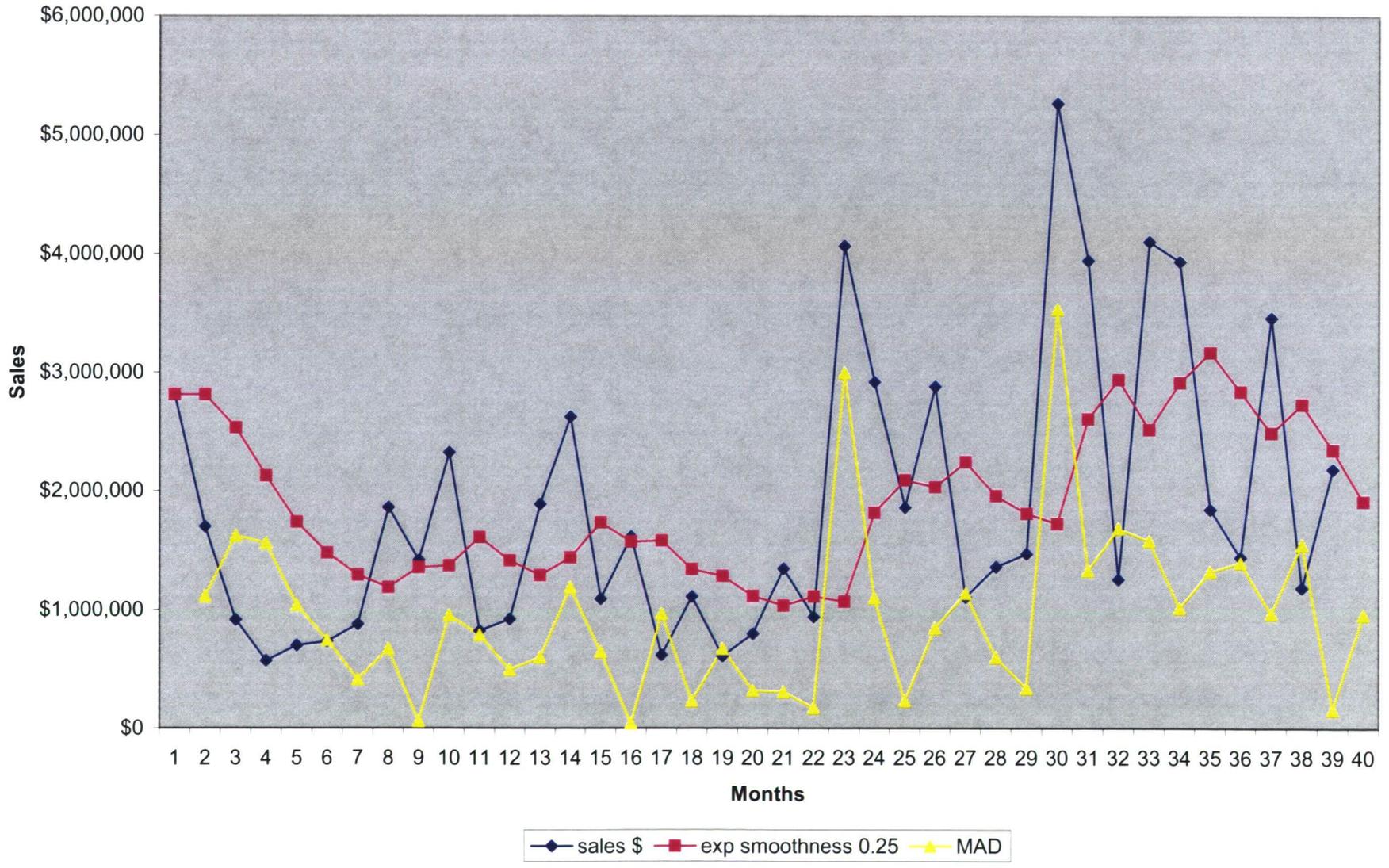
APPENDIX G

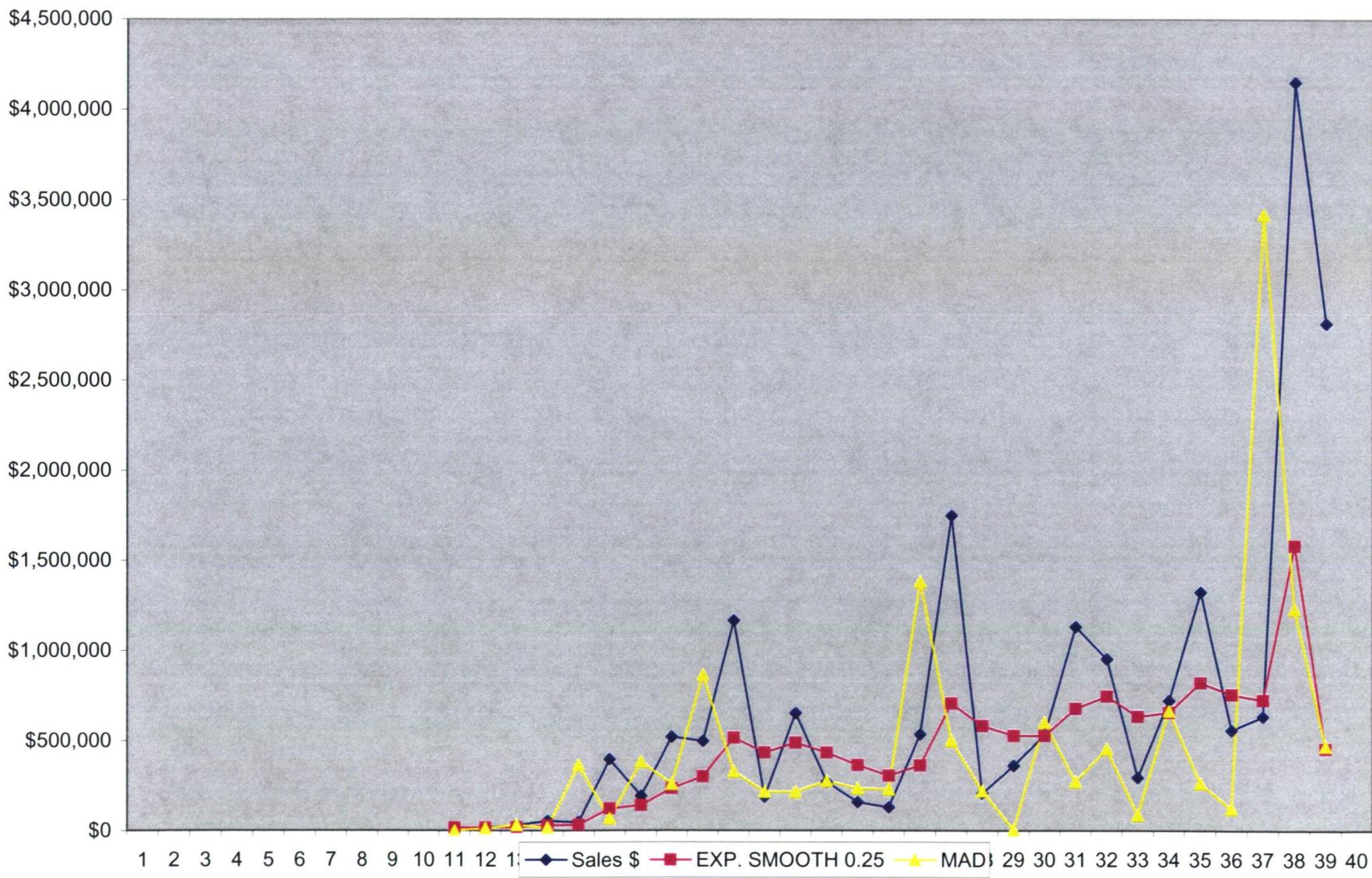
Exponential smoothness Alpha=0.25



◆ Total sales \$ ■ Exponential Smoothness Alpha=0.25 ▲ Mean Absolute Deviation

NON-EDI EXP. SMOOTHNESS 0.25





APPENDIX H

Quarterly Seasonality:

Seasonality		Total	3 month	Centered	Seasonal
S	Quarter	Sales \$	Moving Ave	Moving Ave	Irregular Value
1	1	\$ 6,845,787			
	2	\$ 7,239,381	\$7,802,357		
	3	\$ 9,321,904	\$8,230,066	\$8,016,212	1.16
	4	\$ 8,128,912	\$7,815,991	\$8,023,028	1.01
2	1	\$ 5,997,157	\$7,727,400	\$7,771,695	0.77
	2	\$ 9,056,130	\$6,559,240	\$7,143,320	1.27
	3	\$ 4,624,432	\$6,042,277	\$6,300,758	0.73
	4	\$ 4,446,269	\$5,703,405	\$5,872,841	0.76
3	1	\$ 8,039,513	\$5,891,198	\$5,797,301	1.39
	2	\$ 5,187,811	\$6,595,277	\$6,243,238	0.83
	3	\$ 6,558,508	\$5,458,515	\$6,026,896	1.09
	4	\$ 4,629,225	\$8,076,322	\$6,767,418	0.68
4	1	\$13,041,232	\$5,890,152	\$6,983,237	1.87
	2		\$4,347,077	\$5,118,615	1.05
Seasonal Index		1st Quarter:	1.341980003		
For every quarter		2nd Quarter:	1.049362477		
Seasonal effect		3rd Quarter:	0.995012191		
		4th Quarter:	0.818111136		

Year	Quarter	Seasonal Index	Deseasonalized Sales	MAD
1	1	1.34198	\$5,101,259	\$1,744,528
	2	1.04936248	\$6,898,837	\$340,544
	3	0.99501219	\$9,368,633	\$46,729
	4	0.81811114	\$9,936,195	\$1,807,283
2	1	1.34198	\$4,468,887	\$1,528,270
	2	1.04936248	\$8,630,126	\$426,004
	3	0.99501219	\$4,647,613	\$23,181
	4	0.81811114	\$5,434,798	\$988,529
3	1	1.34198	\$5,990,785	\$2,048,728
	2	1.04936248	\$4,943,774	\$244,037
	3	0.99501219	\$6,591,385	\$32,877
	4	0.81811114	\$5,658,430	\$1,029,205
4	1	1.34198	\$9,717,903	\$3,323,329
	2	1.04936248	\$6,722,202	\$1,044,865

POWERPOINT

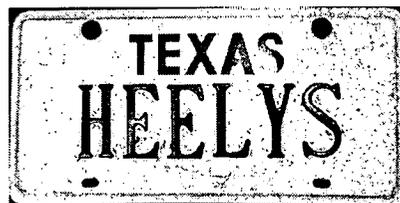
Order Management at Heeling Sports Ltd.



*Presented by:
Gustavo Carrere
Marcus Klintmalm*

Presentation Contents

- Overview of Heely's
- Management Information System
- Problems & Solutions
- Forecasting
- Cost-Benefit Analysis
- Recommendations



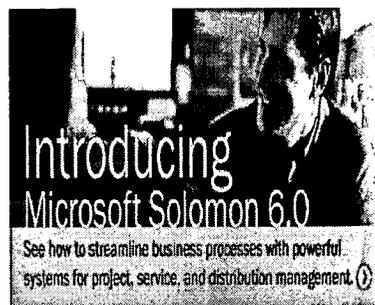
Overview

- Founded May 2000 by Roger Adams and Capital Southwest Corporation.
- 2002 introduced *Axis* skateboard footwear and “grind and roll” *Heelys* brands.
- Patented Heelys-branded premium specialty footwear that incorporates a stealth removable wheel in the heel.
- 2003 acquired the *Soap*-brand of “grind” shoes.
- HSL expects \$30M in sales this year.
- Expect 52% increase in sales.



Management Information System

- Provide comprehensive order processing and production in marketing and manufacturing.
- Operates on Solomon System 5.0 with a Crystal database support all aspects of business:
 - manufacturing purchase orders.
 - customer purchase orders.
 - order allocations.
 - real time inventory management.
 - point-of-sale support.



Management Information System

- **EDI system links HSL and wholesale customers enabling the customer to monitor:**
 - Purchases
 - Shipments
 - Invoicing
- **OBJECTIVE: Reduce operating costs and provide information needed by management to make timely sales and merchandising decisions and to control inventory levels.**
 - New capabilities need to be introduced to optimize management of orders.

UCC Labels

Problem: The current methodology for producing UCC labels is inefficient

Solution: Scanning Technology

- Symbol scanners
- DataScan Technologies

symbol[®]
The Enterprise Mobility Company™

DATA SCAN
TECHNOLOGIES, INC.

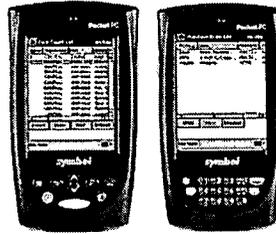


DataScan Technologies

- **Symbol Technologies Scanners with custom software**
 - Allow custom UCC labels custom tailored to each shipment
 - Real-time inventory
 - Maximize efficiency of inventorying incoming shipments

- **Estimated Installation costs**

Wireless Integration (Est.)	\$2,500
PPT 8846 Scanners (3)	\$4,644.27
Software Package	<u>\$325.99</u>
Total (Est.)	\$7470.26



Electronic Data Interchange

- EDI is a global retail standard.
- Many large retailers require suppliers to use EDI.
- Solomon Customer Resource Management capability for EDI.
 - Front-End (Hand Shaking with customers)
 - Middle-Ware (Database)
 - Back-End (CSRs)

Microsoft Business Solutions- Solomon

Problem: Not enough utilization of the capabilities

- Over reliance on manual input of Excel Spreadsheets.
- Manual Advance Shipment Notices.

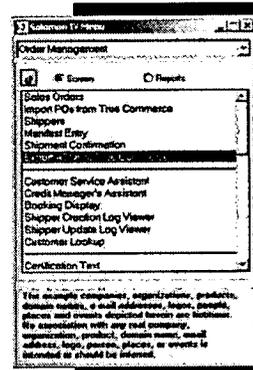
Solution: FlexAbility EDI Link.

- Coalition Computing Corp.



FlexAbility EDI Link for Solomon

- Technologies will optimize orders in:
 - Reducing business transactions costs.
 - Comply with customer and vendor EDI mandates.
 - Ensure timely order processing and reconciliation.
- Automated Business Transactions:
 - Transmits to customer's destination.
 - Purchase orders from customer as sales order.
 - Transmit paperless EDI Solomon invoice to customer's system as accounts payable.
- Advance Shipment Notification:
 - Standard pick and pack and pick processes.
 - Sales Orders into Advance Shipment Notices.
 - Generates and prints UCC-128 compliance shipping labels at pick ticket.

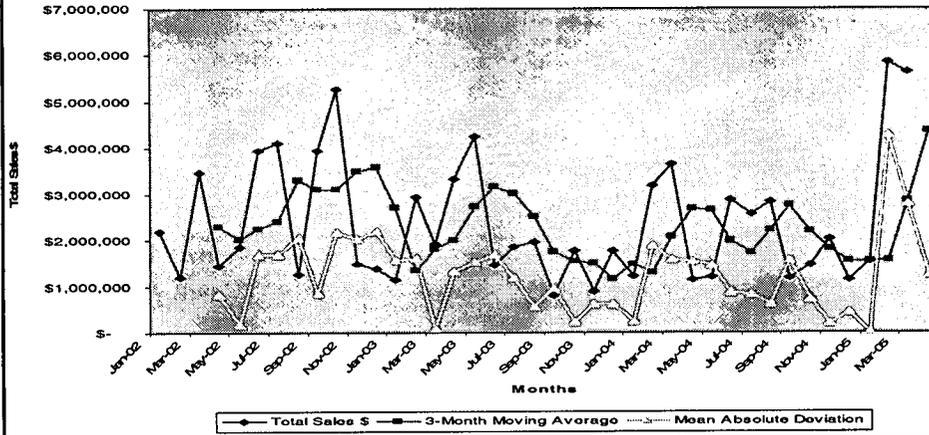


Forecasting

3-Month Moving Average:

- Average of the most recent 3 month data value.
- *Moving*: new observation available replaces oldest observation.
- *MAD*: The average of absolute values of all forecast errors.

3-Month Moving Average

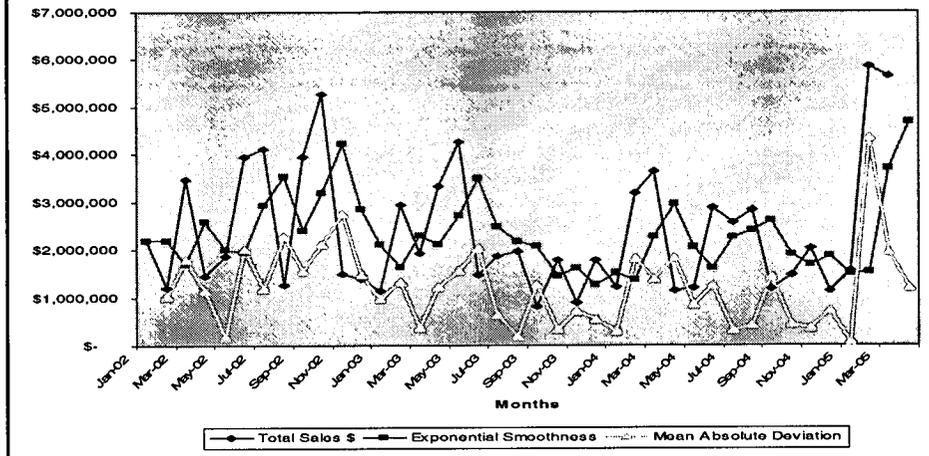


Forecasting

Exponential Smoothness:

- Most weight to most recent observation.
- Alpha = 0.5

Exponential Smoothness

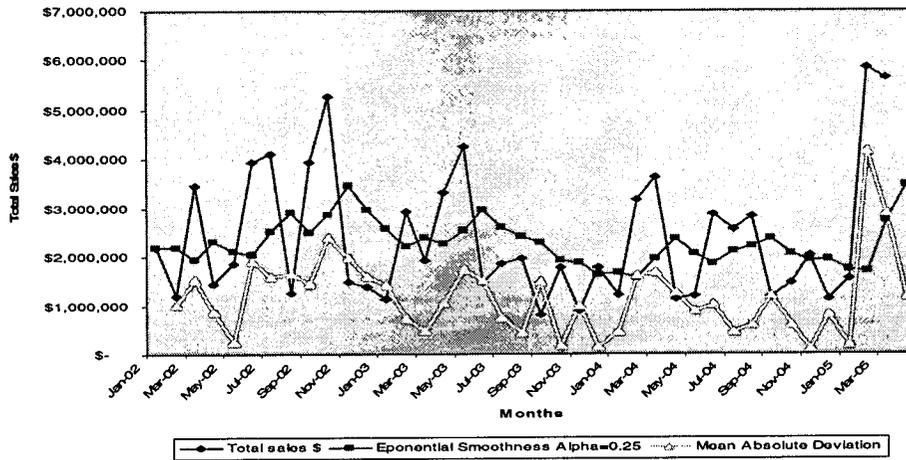


Forecasting

Exponential Smoothness:

Alpha = 0.25

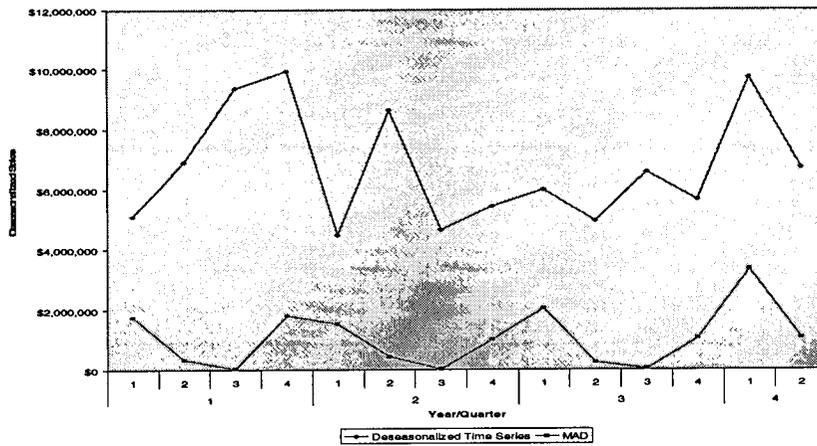
Exponential smoothness Alpha=0.25



Forecasting

Deseasonalized Time Series

- Comparing sales in successive periods makes sense.



Forecasting

- Our Forecast of Choice is:

**Exponential Smoothness
with Alpha=0.25 MAD!!!**

JC Penney Direct Sales

If the shoe is available:
(Warehouse Wage Rate)(Warehouse Time) +
(CSR Wage Rate)(CSR Time)=

\$12.09 / pair

If the shoe is not available:
(CSR Wage Rate)(CSR Time + CSR 869 Time)=

\$20.42 / pair

Using an average of 65 orders per
week we found the following:

\$2 x 65 orders = \$130 / week

Using 45% 869, the total per week
is:

$[(45\% \times 65)(\$20.42)] + [(55\% \times 65)(\$12.09)] =$

Cost \$1029.50 / wk

Income \$ 130.00 / wk

Net Gain \$ - 899.50 / wk

Recommendations

- **Automation!**
 - Customize Solomon software to auto generate Excel reports
 - FlexAbility EDI & ASN software
 - DataScan Technologies
- **Inject scientific methodology into forecasting**
- **Discontinue JC Penney's Direct Contract**

Questions?

We would like to thank the Heely's staff for their help and advice in this undertaking.