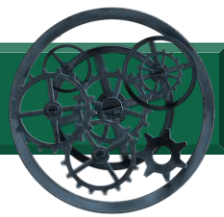# A Survival Guide
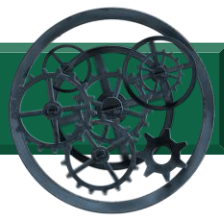
Leveraging Business Intelligence …

2011 CIO 100

Leveraging BI …

… to drive immediate value and mitigate risk in environments where the legacy transactional systems are being, or will soon be replaced by a new ERP system …
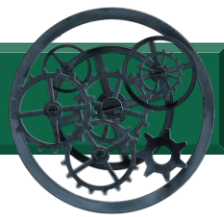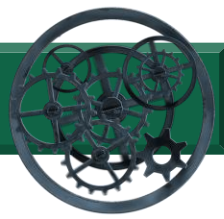
OR

… how a turn-around CIO survives the first 12 months …

. . . at The Hillman Group (THG) and Steel Technologies (STTX)
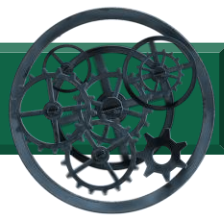
✓ Programmer
  - Fortran, COBOL, PL/1, Assembler
  - IBM Mainframe, DEC, UNIX

✓ Management at General Electric
  - Aircraft Engine Group
  - Capital

✓ IT Exec, turn-around specialist
  - ERP initiative in play
  - $500M to $2B in revenues
    - Gradison & Company (Stock Brokerage)
    - Guardian Royal Exchange (Insurance)
    - Clopay Corporation (Manufacturing)
    - The Hillman Group (Distribution)
    - Steel Technologies (Manufacturing)

The Mission:

To be a strategic partner with the business by providing vision, services and tools for ***competitive advantage***.
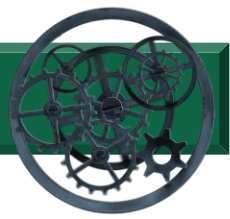
The goal is . . .

. . . to provide the business with technologies that can be used as tools to strengthen customer relationships . . .

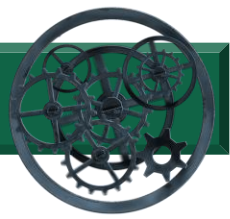We find **THIS** model works **BETTER** for US!
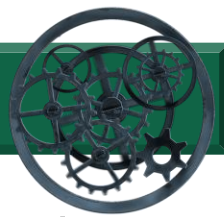
. . . or as weapons against the competition

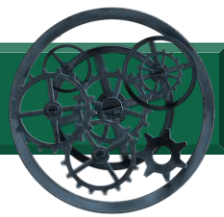*. . . as American as Baseball, Apple Pie and Motherhood . . .*

. . . how can the goals be realized **QUICKLY** *???*

The Secret Sauce

- ✓ ERP systems generally <u>*do not*</u> provide a competitive advantage in the market place.

- ✓ <u>*ROI for ERP is extremely rare if it even exists.*</u> ERP systems are typically justified as 'cost of doing business' initiatives.

- ✓ The extremely long lead times for ERP projects <u>*and*</u> large data warehouse projects are unacceptable (especially for a turn-around guy).

- ✓ The legacy database(s) usually hold(s) most, if not all, of the data needed but it is either difficult to get at or the legacy reporting engine cannot present it in a user-friendly and meaningful way.

- ✓ <u>*BI is the secret sauce. If done correctly, BI can quickly and dramatically improve the way a company does business.*</u>

- ✓ <u>***BI can deliver real value in the short term, take the pressure off of the ERP initiative and, in some cases, completely eliminate the need for a new ERP system.***</u>

The Definition of Business Intelligence: (Ralph Kimball)
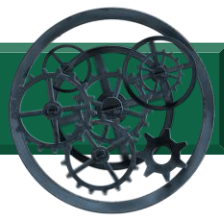"Making business decisions based upon data"

The Mission of Business Intelligence:
"Publish the Right Data"

- ✓ "Publish" means to most effectively serve the needs of the readers (who must make the decisions)

- ✓ "Right Data" means the most carefully selected and qualified data supporting current relevant business content

The Introduction of Business Intelligence:
"Crawl, Walk, Run"

"Publish" means to most effectively serve the needs of the readers

. . . the publishing goals . . .

✓Provide the user with secured access to BI **any time of day, from any device, anywhere in the world**.

- Internet-based delivery via a corporate portal is **the only way** to access BI applications

- At THG approximately 725 remote users access BI
  - almost always after normal business hours
  - primarily from home using family-owned PCs

. . . the publishing goals . . .

✓Remove IT as a bottleneck by placing the right tools in the hands of the users

- Provide users with highly parameterized BI 'applications'

- Train users to use ad-hoc reporting tool

✓***Reduce the time between business issue identification and issue resolution***
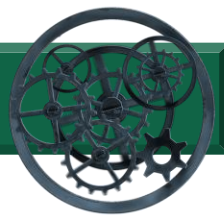
"Right Data" means the most carefully selected and qualified data supporting current relevant business content

. . . the data challenges . . .

✓The data might not be normalized, it may not be accurate and it may be scattered across disparate repositories.

✓There may not be a data warehouse and there is no time to build one.

✓We must have a tool that can be layered on top of disparate data sources (Oracle, SQL Server, DB2, Excel, Progress, flat files, etc.) to provide consolidated reporting.

Analytics

Competitive Advantage

Level	Question
Optimization	What is the best that can happen?
Predictive Modeling	What will happen next?
Forecasting/extrapolation	What if these trends continue?
Statistical Analysis	Why is this happening?
Alerts	What actions are needed NOW?
Query/drill down	Where exactly is the problem?
Ad hoc reports	How many, how often, where?
Standard reports	What happened?

Degree of Intelligence

Reporting

Case Study: The Hillman Group
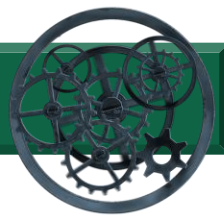
The Hillman Group

The Hillman Group
10590 Hamilton Avenue
Cincinnati, Ohio 45231-0012, USA
www.hillmangroup.com

✓ **THG is a leading supplier of small, inexpensive, durable hardware items and a manufacturer and distributor of key duplication and engraving systems. The Company's principle product lines are fasteners, keys, letters, numbers and signs (LNS), and engraving products and systems.**
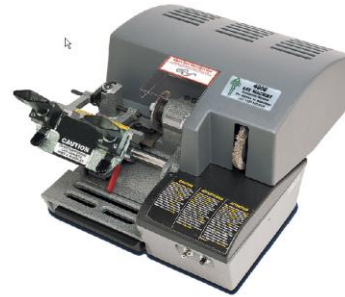
✓ **THG products are sold primarily into traditional hardware stores, home centers, lumber yards, mass merchants, grocery and drug chains and retail pet stores in North America, Canada and Mexico.**
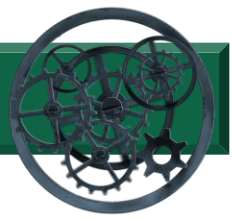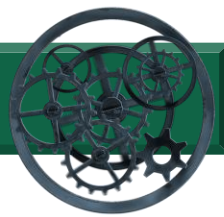
✓ Annual revenues approximately $900Mm (FY2009)

✓ 10 distribution centers across the US, Canada & Mexico
- Bakersfield, California
- Dallas, Texas
- Hamilton, Ohio
- Jacksonville, Florida
- La Crosse, Wisconsin
- Nashville, Tennessee
- Portland, Oregon
- Tempe, Arizona
- Toronto, Canada
- Monterrey, Mexico

✓ Over 1,800 employees

19
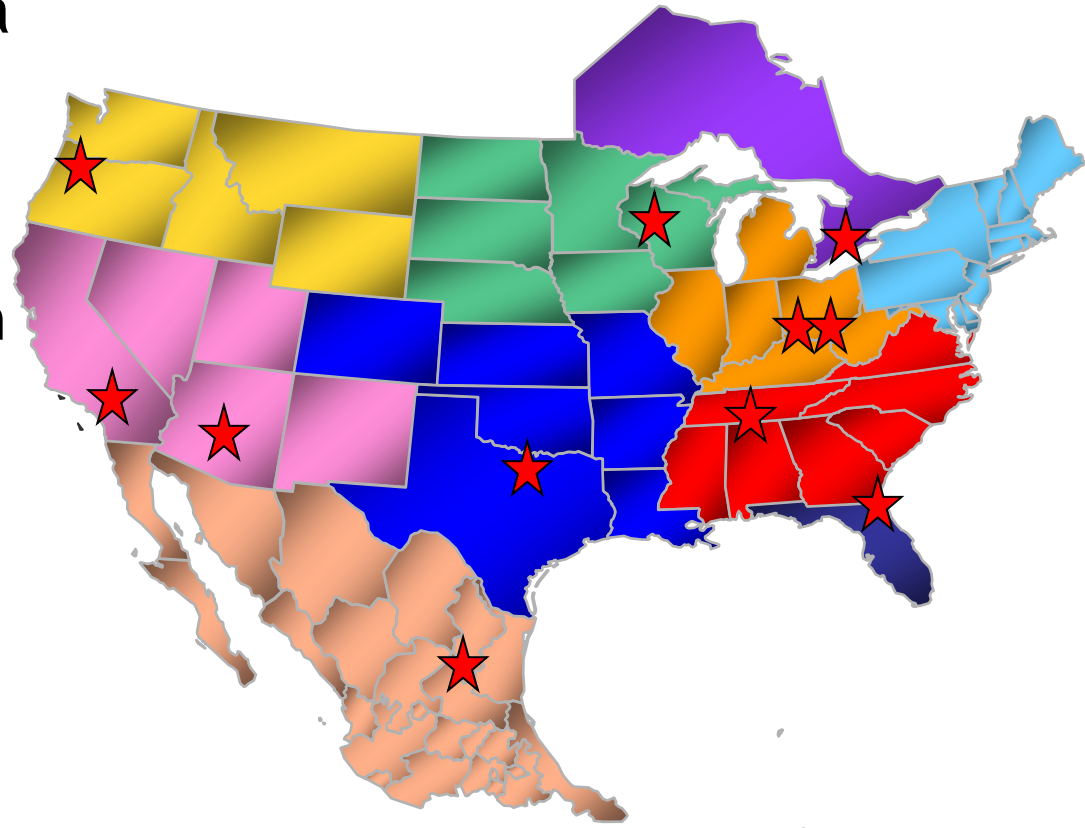
. . . the low lights . . .

- ✓ Three non-integrated ERP systems supporting the business
- ✓ Largest & most critical is AS/400-based
    - • 80% RPG, 20% Lansa-generated code
    - • Custom built
    - • Completely undocumented
    - • Author is IT Director with 'pride of authorship'
- ✓ No consolidated reporting or business intelligence
- ✓ Stale, brochure-ware external website
- ✓ No collaboration
- ✓ No internal portal
- ✓ Multi-year, multi-million dollar ERP initiative planned

. . . the turn-around plan . . .

✓ Meet the current and mid-term needs of the business by adequately and cost-effectively maintaining/enhancing the legacy applications

✓ Leverage BI to quickly deliver high-value solutions to the business while the ERP project was being planned

✓ Reduce the scope of the pending ERP effort by completely eliminating the reporting phase of the project

✓ Reduce the training effort associated with ERP by introducing the new BI-based reporting engine to the user community well in advance of ERP project completion

With the Right Tools You Can Build Anything

✓ BI Investments:
  - IBI WebFOCUS BI Tool
  - DB2, SQL Server, Oracle DB Connectors
  - ESRI Arc/GIS Mapping & Spatial Analysis Tool

✓ ERP Investment:
  - JD Edwards Enterprise One

. . . in Operations we wanted to . . .

✓ **build a supply chain that was aligned, optimized and synchronized to the demand curve**

- Reduce Order Cycle Times
- Reduce Put Away Cycle Times
- Improve Fill Rates
- Better Open Order Management
- Better Labor Management
- Better Vendor Management

. . . these are typically ERP deliverables . . .

that were quickly achieved by applying BI to the legacy data stores . . .

Reducing Order Cycle Times

Order Cycle Time Report By Warehouse

Warehouse	Entry To Complete Hours	Entry To Download Hours	Download To Complete Hours	Printed To Complete Hours	Picked To Complete Hours	Packed To Complete Hours	Orders Shipped
04 Jacksonville	58.25	22.48	35.77	2.56	1.83	.94	318
05 DALLAS	39.66	25.41	14.66	3.32	1.50	.36	468
07 BAKERSFIELD	26.17	4.38	21.79	2.42	1.54	.72	517
09 CARILLON	52.36	34.34	18.06	6.74	5.07	1.40	1279
** Report Total	44.11	21.65	22.57	3.76	2.48	.86	2582

Report - ortr0005
Download time is first time order downloaded
Complete time is when order is Manifested (Parcel) or Load closed (LTL)
Printed time is when order is waved
Picked time is time of first pick
Packed time is when picking completed
Hours is calculated as elapsed time (24 hours subtracted for each Saturday and Sunday crossed)
Criteria:
Date Range 01/22/2010 - 01/22/2010

✓ reduced order placement to delivery for Lowe's from 13 to 3 days

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Reducing Put Away Cycle Times
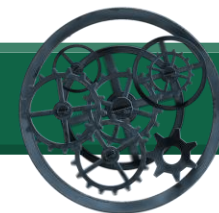
Put Away Cycle Time Report

Warehouse	From Date	To Date	Origin Type	Vendor	Shipment	
ALL ▼	2010/01/22 🔲	2010/01/22 🔲	⊙ All ○ International ○ Domestic			Run Report

Put Away Cycle Time Report By Warehouse

Excel   Back

Warehouse	Shipped To Put Away Days	Shipped To First Receipt Days	First Receipt To Put Away Hours	Last Receipt To Put Away Hours	Shipments Put Away	Units	Cases
004 Jacksonville	15.82	15.82	.10	.07	3	13736	1287
005 Dallas TX	2.13	2.10	.67	.01	3	79719	3313
009 Carillon Blvd	2.21	2.13	2.00	1.93	16	251697	10562
** Report Total	6.72	6.69	.92	.67	22	345152	15162

Report - patr0015
Shipped Time is when ASN was created
Put Away Time is when last carton reaches put away status
Hours are calculated as elapsed time (24 hours subtracted for each Saturday and Sunday crossed)
Days are calculated as elapsed time (including weekends)
Criteria:
Date Range 01/22/2010 - 01/22/2010

Improving Fill Rates

Fill Rate Report

Report Options

| Sort By | Warehouse ▼ | View | Dollars ▼ | | Run Report |

Filters

Warehouse	All ▼	Bill To		
As Of Date	01/27/201 ▼	GL Class	All ▼	Level	All ▼
ABC Code	ALL ▼	Item Class	All ▼	

Bill-To / Item / ABC Code Only

Show

⦿ Daily Only   ○ Daily / MTD   ○ Daily / MTD / YTD

Caution
Due to data volumes, Daily / MTD and Daily / MTD / YTD may result in significant delays while producing a report.

[About This Report]   [View Exclusions]

Improving Fill Rates

Fill Rate

Lines   Qty   Pieces

Shipped Dollars By Warehouse

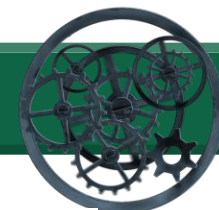| Whse #	Warehouse	Daily Shipped	Daily Outs	Daily Fill Rate		MTD Shipped	MTD Outs	MTD Fill Rate		YTD Shipped	YTD Outs	YTD Fill Rate	
1	HAMILTON AVE	22,606	553	97.61%	⬆	288,620	8,611	97.10%	⬆	288,620	8,611	97.10%	⬆
4	Jacksonville	169,859	1,583	99.08%	⬆	3,821,091	50,627	98.69%	⬆	3,821,091	50,627	98.69%	⬆
5	DALLAS	251,546	1,590	99.37%	⬆	4,274,728	46,898	98.91%	⬆	4,274,728	46,898	98.91%	⬆
6	LA CROSSE	129,515	1,429	98.91%	⬆	1,910,209	33,522	98.28%	⬆	1,910,209	33,522	98.28%	⬆
7	BAKERSFIELD	264,567	5,833	97.84%	⬆	3,808,807	98,420	97.48%	⬆	3,808,807	98,420	97.48%	⬆
8	PORTLAND	69,858	598	99.15%	⬆	1,209,184	21,918	98.22%	⬆	1,209,184	21,918	98.22%	⬆
9	CARILLON	779,063	18,127	97.73%	⬆	12,244,583	247,353	98.02%	⬆	12,244,583	247,353	98.02%	⬆
12	Tempe	1,676	131	92.74%	⬇	68,038	2,068	97.05%	⬆	68,038	2,068	97.05%	⬆
14	Denver - SW	125,583		100.00%	⬆	1,233,984	-1,076	100.09%	⬆	1,233,984	-1,076	100.09%	⬆
15	NASHVILLE					7,686	1,787	81.14%	⬇	7,686	1,787	81.14%	⬇
TOTAL		**1,814,272**	**29,845**	**98.38%**		**28,866,929**	**510,129**	**98.26%**		**28,866,929**	**510,129**	**98.26%**	

Page 1 of 1

Criteria

Dollars by Warehouse As Of 01/27/2010

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Improving Open Order Management
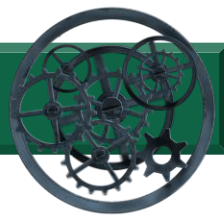
Open Orders

By Warehouse
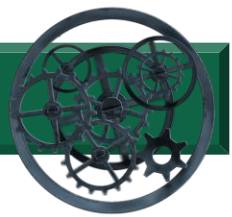
#	Warehouse	Total Dollars	Lines	Orders	Hold Dollars	Lines	Orders	Active Dollars	# Days Active	Lines	Orders	Daily Plan	To Be Invoiced** Dollars	Lines	Orders
1	HAMILTON AVE	$427,801	35,296	1,367	$86,941	5,891	221	$338,161		28,886	1,127		$2,699	519	19
2	ALBANY	$0	1	1	$0	0	0	$0		1	1		$0	0	0
4	Jacksonville	$531,832	52,656	369	$287,695	15,339	127	$184,627	.82	29,889	198	$224,390	$59,510	7,428	44
5	DALLAS	$386,973	49,338	1,503	$39,652	4,181	88	$255,186	1.01	32,412	1,104	$253,080	$92,136	12,745	311
6	LA CROSSE	$171,657	18,744	263	$52,427	4,850	77	$100,910	.85	11,255	136	$118,930	$18,320	2,639	50
7	BAKERSFIELD	$226,179	25,505	519	$46,310	4,343	132	$135,872	.73	15,441	245	$186,870	$43,997	5,721	142
8	PORTLAND	$96,199	9,766	86	$46,701	5,280	51	$47,984	.82	4,414	33	$58,850	$1,514	72	2
9	CARILLON	$1,759,318	197,229	4,917	$413,005	33,038	814	$929,969	1.25	128,522	2,752	$746,550	$416,345	35,669	1,351
11	BKRSFLD Bulk	$3,534	25	17	$3,386	19	13	$147		6	4		$0	0	0
12	Tempe	$20,276	697	51	$2,867	194	11	$17,409	4.85	503	40	$3,590	$0	0	0
14	Denver - SW	$409,131	30,162	554	$74,063	6,836	178	$335,069	8.24	23,326	376	$40,680	$0	0	0
15	NASHVILLE	$4,680	34	17	$4,606	33	16	$0	7.68	0	0	$600	$74	1	1
17	VNDR DIRECT	$166	24	23	$11	1	1	$155		23	22		$0	0	0
	TOTAL	$4,037,747	419,477	9,687	$1,057,664	80,005	1,729	$2,345,488	1.44	274,678	6,038	$1,633,540	$634,594	64,794	1,920

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. . . Conveyor Dashboard . . .

✓Shows layout of Distribution Center

✓Pulls data from 3 different systems

- Carton data from the WMS – where is the work?
- Carton data from the conveyor system – where is the work going?
- Labor data – where are the people?

✓Enables THG to "manage the flow" of work by reallocating people to the right place when necessary

✓Enables shipping to track down missing cartons to get trucks off the dock faster

✓Enables administrators to configure shipping to meet the flow of boxes

✓Helps to identify bottlenecks as the DCs go "Lean"

Conveyor Dashboard

Wave
Blue ☑ Green ☑ Purple ☑ Yellow ☑ Orange ☑ White ☑ Red ☑

Wave Day: ● All ○ Today ○ Previous

Order Carton

*ALL   *ALL   *ALL

Reset Rebuild Report

OC Locs Pct Comp

Carton in Picking
As Of: 13.03.35

| D-Module | | | C-Module | | B-Module | | A-Module |

Induct	Pod1	Pod2	Left	Trvl	To Car	To Shp	Induct	Left	Right	Trvl	Induct	Left	Right	Trvl	To A	To C	Induct	Left	Right	Trvl

Floor 3
	6		7					4	26	11	54	34	19	2			1	5	4	9
		21	36					6	2	20		11	1	16				2	24	5
												1	1	7				4	4	4
												5	7	10				3		12

Floor 2
		23	4								1	8	4				8	11	18
		18	17									2	6				10	2	5
								4	6	25		1	3				56	5	11
								9	9	5		3	1	13			22		11

Floor 1
29	1	14	24	1			1	6	12	4	1	9	7			5	14	4
		24	2					33	35	5		1	15	3			5	15	8
												2	1	7				4	3
													3				23	4	25

Shipping
As Of: 13.03.44

| Upstairs | Induct | 67 | B-Lower | | B-Upper | 10 | Audit | 27 | ClsOut | 92 | ClsOutLst | 2 | No Read | | Unknown | 2 |
| Downstairs | OC06 | | OC05 | | OC04 | | OC03 | | OC02 | | OC01 | | OC00 | | PCL1 | | PCL2 | | PH01 |

Pick To Light Current Users
As Of: 13.03.35

| B-Module | | A-Module |

Left	Right	Left
Floor 3		
Lois Brooks HBM	Tracy Sims	Kathy Berry
Tiffany Dipaolo		
Stacey Clemons		
Marie Ann Ackman	Joseph Payne	
Floor 2		
		Scott Axers
Cindy Spiers		Du Juan Kennedt
Nancy Wynn		James Callopy
Floor 1		
	Sherry Harper	Irene Ellis
Judy Strafford	Fred Stewart	

Shipping Configuration

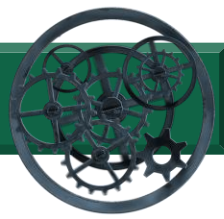| Divert	Last	Last Maint
SS-DIVERT11	N	2010/01/07 22:05:40.000
SS-DIVERT12	N	2010/01/21 20:55:50.000
SS-DIVERT14	N	2010/01/22 16:04:16.000
SS-DIVERT15	N	2010/01/25 11:58:09.000
SS-DIVERT17	Y	2010/01/25 06:55:30.000

. . . Vendor Schedules . . .

✓Supplies a sliding six month demand to THG's vendors, allowing them to reduce the large cycle variations in production and shipment of products.

- This smoothing effect produced an inventory reduction of over $10Mm in 2008.

✓How it works

- BI app does analysis of SKU history identifying ordering patterns at the DC level and in aggregate by supplier

- Creates a replenishment schedule which considers costs of fulfillment and lead times

- Creates a 26 week schedule which is updated every week and distributed to the supplier

✓Vendor Portal - a secured page on THG external web site for vendors to access their schedules. Includes a 'Vendor Scorecard' that tracks performance against schedule.

. . . in Sales & Marketing . . .

✓ Better customer analysis through BI/GIS

- Introduce new product lines
  - Hurricane Hardware in coastal regions
  - Agri-Center Hardware in rural areas
- Expose product penetration opportunities
  - Marine-Grade Hardware near larger bodies of water

✓ Set an intrusive hook into the customer

Q: How do you set an intrusive hook into your customer?

A: Tell the customer something about his business that he does not already know.

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Customer Analysis - The Intrusive Hook
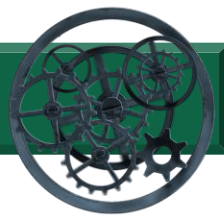
Michelle,

Our IT department was able to pull data on farms per square mile.   I will call you to explain the layers. I hope you find this information beneficial.

Best Regards,
Justin Fox
National Project Manager

New Product Line for Lowe's:
Agri-Center

Justin,

You are my hero!!!! Thank you so much and tell your IT guys they ROCK! These are awesome.

Kindest Regards,,
Michelle Goodin
Merchandising Specialist in General Hardware, Lowe's

Ron,

Please read the email from Lowe's   According to our buyer you "rock"! On behalf of the Lowe's Team, thanks for the effort on the map. They will be using this data to determine where to add our Agri Center product.

PS....Michelle said it will be "cool" in the presentation they have to complete for the VPs!

Best Regards,
Justin Fox
National Project Manager

Mick, Rick,

It appears that our BI/GIS reporting is playing a role in helping to increase our Agri-Center sales. If you have not seen the agri center maps that Ron generated for Justin and Dante, stop by his cube when you have a minute. I think that you will be impressed and I know that Ron would be thrilled if the CEO and/or President came over and asked about his work.

Jim
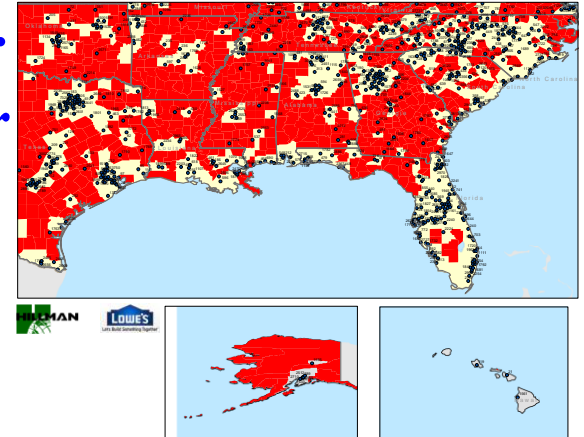
Other BI/GIS Applications

Objective is to supply spatial information as an additional dimension to existing sales, distribution and operations BI applications. Specific areas of focus:

- ✓ **Field Service Rep Assignments -** Using the home addresses of our remote sales and service reps, overlaid with customer locations, we are able to analyze sales region and territory alignments geographically**.**

- ✓ **Territory Optimization -** Combining the mapping of customer locations with route optimization to identify coverage gaps enables us to proactively address these gaps, possibly adding or removing reps and/or realigning territories as necessary.

- ✓ **Route Optimization -** Using straight line distance calculations and other services from ESRI, we can optimize the reps daily route and provide driving directions.

- ✓ **Customer Analysis -** Provides a macro-geographical view of our sales and service regions with drill-down capability into real-time customer level detail.

- ✓ **Product Penetration -** We can expose product sales patterns geographically; allowing our account managers to work closely with our customers to maximize our sales potential.

- ✓ **Distribution Optimization** - We can map DC locations and shipping destinations with carrier rate tables to identify inefficiencies for corrective action and subsequent cost savings.