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Welcome!

First Steps to Achieving Effective Inventory Management

Tuesday, January 25, 2011

10 a.m. – 11 a.m. EST

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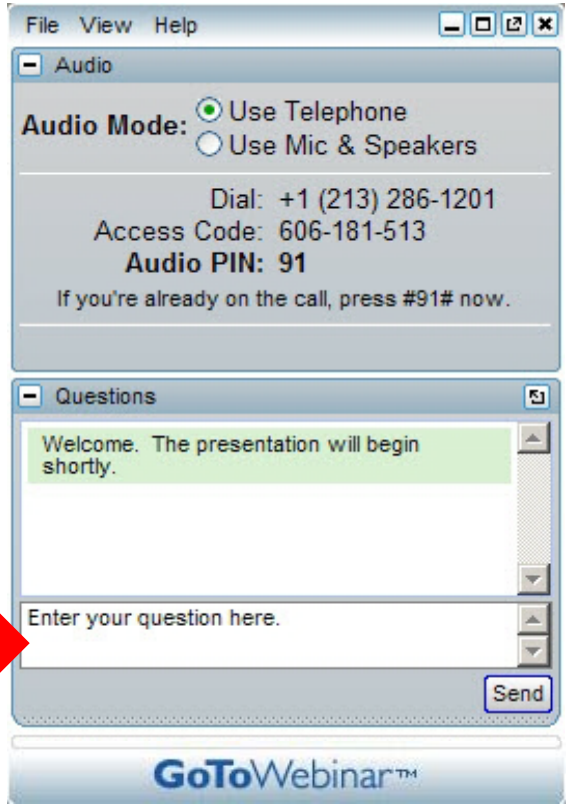
Housekeeping Items

- This meeting will run for approximately one hour.
- Submit all questions throughout the presentation via the GoToWebinar question box.
- If you think of a question after the presentation, e-mail cdaniels@schneiderdowns.com.



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Today's Agenda

Brief Introduction

Patrick Armknecht, Senior Business Development Manager

Schneider Downs Technology Advisors

First Steps to Achieving Effective Inventory Management

Jon Schreibfeder, President

Effective Inventory Management, Inc.

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About The Schneider Downs Technology Advisors

What we do for the wholesale, distribution and manufacturing industries:

- Software Implementation, Training and Support
- Systems Requirement Definition
- Project Management
- GAP Analysis
- Technology Assessment Planning
- Network Security Assessment
- Diagnostic Engagements – A.K.A. Building the Business Case

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Upcoming Schneider Downs Webinars

- April, 2011 - Forecasting
- July, 2011 - Logistics/Supply Chain
- October, 2011 - Analytics, Metrics and Industry KPI’s

First Steps to Achieving Effective Inventory Management

EIM

Jon Schreibfeder
Effective Inventory Management, Inc.

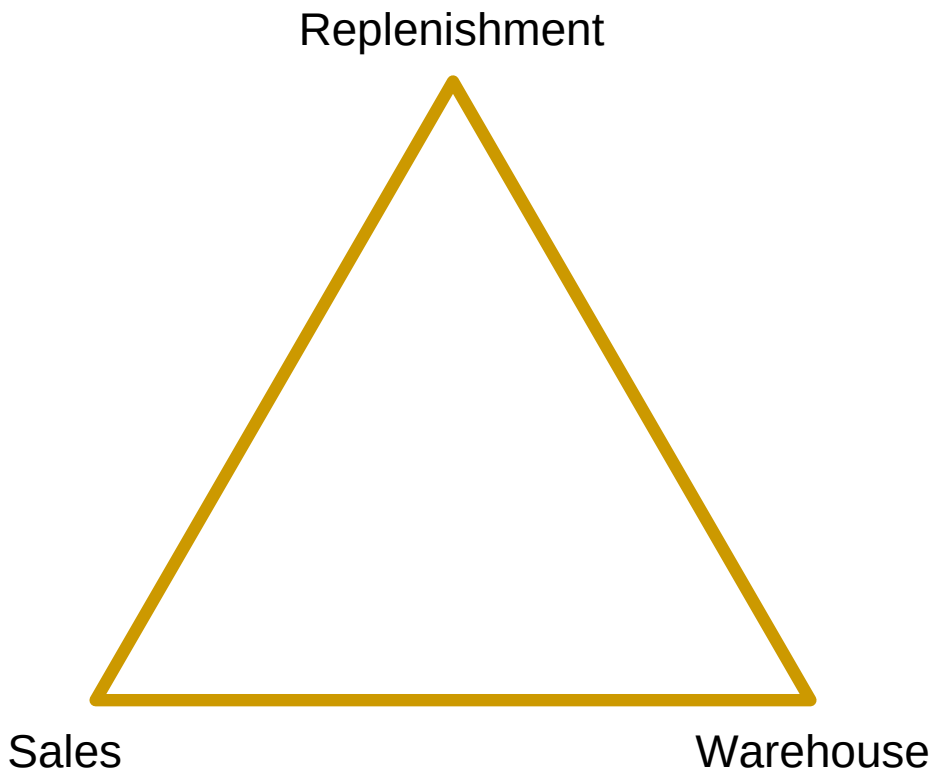
The Goal of Effective Inventory Management

"Effective Inventory Management enables a company to meet or exceed customers' expectations of product availability with the amount of each item that will maximize net profits or minimize your inventory investment."

First Steps to Achieve Effective Inventory Management

- Understanding everyone's role in achieving effective inventory management
- Stocking the products your customers expect you to have available for immediate delivery
- Using different rankings for different purposes
- Developing accurate forecasts of future demand of products
- Making intelligent decisions for stocking new items

The Inventory Triangle of Cooperation



Good information is usually less expensive than additional inventory

What is Sale's or User's Role in Effective Inventory Management?

- Determine what products should be stocked in each branch or warehouse
- Help develop the forecast of future sales/usage of each finished good product
- Decide what new products should be introduced to the customer base
- Help keep inventory records accurate

What is Replenishment's Role in Effective Inventory Management?

- Making sure that inventory is available in each store/warehouse/branch to meet the sales or usage forecast
- To minimize the "total cost" of inventory and maximize the firm's net profits or minimize total cost
  - Determining the most economic purchase quantities
  - Deciding the best source of supply for each product

What is the Warehouse's Role in Effective Inventory Management?

- Store products to minimize the cost of filling orders
- Maintain accurate on-hand quantities
- Protect inventory from breakage, spoilage and theft

What Do Your Customers Expect You to Have in Stock?

- Stocking a product is a commitment to have that product available in reasonable quantities
- Your warehouse is probably filled with:
  - Stock (Merchandise you intend to stock)
  - Stuff (Material that inadvertently got stuck in your warehouse)

Which Product(s) Would You Stock?

Item	Annual Customer Orders	Annual Sales (Units)	Annual Sales ($)
A100	2	12,000	$300,000
B200	4	6,000	$75,000
C300	50	2,500	$6,500

Summary of Mo w/Sales					
Mo w/Sales	Items	COGS$	% of Items	12-Mo-Sls$	Invty $
12	437	$2,806,171.64	3.0%	$3,933,945.81	$568,206.20
11	212	$590,193.47	1.5%	$861,377.50	$156,183.62
10	228	$580,633.70	1.6%	$820,650.74	$124,416.30
9	208	$397,991.57	1.4%	$530,181.09	$107,104.19
8	214	$400,851.92	1.5%	$494,684.23	$85,289.95
7	243	$279,543.94	1.7%	$430,809.67	$70,863.52
6	289	$356,281.22	2.0%	$495,126.83	$81,752.07
5	339	$802,965.51	2.3%	$1,125,730.95	$70,755.77
4	464	$514,495.45	3.2%	$884,844.20	$87,501.92
3	648	$312,787.93	4.5%	$544,703.34	$81,947.82
2	1157	$471,906.21	8.0%	$768,226.42	$89,029.82
1	3309	$658,793.82	22.9%	$1,272,282.04	$154,214.95
0	5235	-$9,959.23	36.3%	$48,459.07	$601,187.76
New Items	1450	$573,449.53	10.0%	$975,795.88	$68,022.39
Total	14433	$8,736,106.68	100.0%	$13,186,817.77	$2,346,476.29

Question Why Each Slow Moving Product is Stocked

- Do customers *realistically* expect it to be available for immediate delivery?
- Is it a critical item that must be stocked in case of emergency?
- Does the profit margin offset the cost of carrying inventory for a prolonged period of time?
- Can a more popular item be used in its place?

Ranking Your Inventory

- Sort products in descending order based on activity
- Determine how may items contribute what percentage of total activity. For example:
  - “A” items contribute the top 80% of activity
  - “B” items contribute the next 15% of activity
  - “C” items contribute the next 4% of activity
  - “D” items contribute the last 1% of activity
  - “X” items are dead and contribute no activity

Cost of Goods Sold and Hits Ranking

Rank Summary COGS	Items	COGS$	% of Items	12-Mo-Sls$	Invty $	% of Invty$	12 Mo Excess Invty $	Excess% of Invty
A (80% of COGS)	966	$6,653,625.60	6.7%	$9,295,550.34	$1,137,951.34	48.5%	$31,163.44	2.7%
B (15% of COGS)	1824	$1,181,231.71	12.6%	$1,943,547.75	$304,206.14	13.0%	$54,906.62	18.0%
C (4% of COGS)	2004	$290,608.96	13.9%	$538,894.80	$130,182.62	5.5%	$53,582.83	41.2%
D (1% of COGS)	2817	$71,313.62	19.5%	$131,692.80	$86,837.48	3.7%	$62,006.62	71.4%
X (0% of COGS)	5372	-$34,122.74	37.2%	$301,336.20	$619,276.33	26.4%	$619,276.26	100.0%
New Items	1450	$573,449.53	10.0%	$975,795.88	$68,022.39	2.9%		
Total	14433	$8,736,106.68	100.0%	$13,186,817.77	$2,346,476.29	100.0%	$820,935.76	35.0%

Rank Summary (Hits)	Items	Hits	% of Items	12-Mo-Sls$	COGS$	% of Tot COGS$	Invty $	% of Invty$	12 Mo Excess Invty $
A (80% of Hits)	1752	67,196	12.1%	$7,699,296.04	$5,371,039.00	61.5%	$1,198,074.87	51.1%	$59,816.99
B (15% of Hits)	3044	11,777	21.1%	$3,636,752.70	$2,263,711.17	25.9%	$357,643.59	15.2%	$82,428.25
C (4% of Hits)	2368	2,612	16.4%	$630,849.43	$406,290.32	4.7%	$111,112.87	4.7%	$72,855.57
D (1% of Hits)	605	623	4.2%	$223,565.57	$133,822.64	1.5%	$13,628.81	0.6%	$8,273.46
X (0% of Hits)	1087	0	7.5%	-$8,547.48	-$6,319.73	-0.1%	$156,470.22	6.7%	$156,268.78
New Items	5577	2,220	38.6%	$1,004,901.51	$567,563.28	6.5%	$509,545.93	21.7%	
Total	14433	84,428	100.0%	$13,186,817.77	$8,736,106.68	100.0%	$2,346,476.29	100.0%	$379,643.05

Combination of Rank Analysis

Cust Orders → Cost of Goods ↓	A	B	C	D
A	AA	AB	AC	AD
B	BA	BB	BC	BD
C	CA	CB	CC	CD
D	DA	DB	DC	DD

Types of Stocked Inventory

- The GOOD: Inventory that you stock that provides an acceptable return on your investment
- The BAD: Inventory that doesn't provide an acceptable return on your investment, but contributes to other profitable sales
- The UGLY: Inventory that doesn't provide an acceptable return on your investment, and doesn't contribute to other profitable sales

Can You Base Actual Profitability on Gross Margin?

- Gross Margin is defined as:

$$\frac{\text{Sales Dollars} - \text{Cost of Goods Sold Dollars}}{\text{Sales Dollars}}$$

No, gross margin dollars don't vary as the amount of inventory increases

Is This Item Profitable?

- Sales = $10,000
- COGS = $6,000
- Gross Profit = $ 4,000
- Gross Margin = 40%

- *But they have $12,000 in inventory!*
  - *What are the risks of paying commissions on gross margin?*
  - *How could they have accumulated $12,000 in inventory?*

How to Determine if Inventory is Profitable

- Calculate the Adjusted Margin:

$$\frac{\text{Annual Profit (\$)} - (\text{Avg. Invty Investment (\$)} * \text{Carrying Cost \%})}{\text{Annual Sales (\$)}}$$

Carrying Cost ("K" Cost)

- Accumulation of all of the costs involved in maintaining inventory in your warehouse
  - Cost of putting away stock receipts and moving material within the warehouse
  - Insurance and other charges on inventory
  - Rent and utilities for the portion of your facility used to store material
  - Physical inventory and cycle counting
  - Inventory shrinkage and obsolescence
  - Opportunity cost of the money invested in inventory

Questionnaire at www.EffectiveInventory.com

Calculated at no cost and no obligation!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Effective Inventory Management, Inc.
It's easy to turn cash into inventory... the challenge is to turn inventory back into cash!
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Impact of Current Economic Conditions
Now Available at the EIM Store!
Effective Inventory Management enables an organization to meet or exceed customers' expectations of product availability while maximizing net profits or minimizing costs.

Calculating the Adjusted Margin

Sales = $1,000 Gross Profit = $150

Gross Margin Percentage = 15%

K Cost = 20%

Average Inventory = $250

[$150 – (20% * $250)]/$1000 = 10%

Average Inventory = $500

[$150 – (20% * $500)] /$1000 = 5%

Average Inventory = $750

[$150 – (20% * $750)]/$1000 = 0%

Correctly Calculating the Forecast Error

[Absolute Value of (Usage – Forecast)] **Lower of Forecast or Usage**

A100	Usage	Forecast		Error%
Oct	100	50	[ABS(100 – 50)] 50	100.0%
Sep	50	100	[ABS(50-100)] 50	100.0%
Aug	95	100	[ABS[(95-100)] 95	5.3%

The "Average" Forecast Error

- In a study done by ***EIM*** of a wide range of distributors using a wide range of computer systems:
  - The mean forecast error was 682%
  - The median forecast error was 381%
- "Best Practice" companies had an error that was approximately 1/10th of these averages
- The better your forecast, the less you need to stock to maintain your desired level of customer service

Improving the Forecast Accuracy

Average forecast error percentage reduced from 583% to 15%

Serv Level	Prev Inventory	Current Inventory	9 Month Invty Decrease	12-Mo-COGS$	Prev Turnover	Current Turnover
97.8%	$1,276,154.87	$731,676.23	-$544,478.64	$2,627,725.58	2.1	3.6
			-42.7%			

Recurring vs. Sporadic Usage Items

Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
50	0	0	0	20	0	0	0	0	50	0	0

Recurring usage items usually have usage:

- At least eight of the past 12 months
- At least three consecutive months within the last 12 months
- In one or two consecutive months if they are associated with a holiday or annual occurrence

- Sporadic usage items are not sold or used on a regular basis and cannot be forecast

Normal Sales or Usage Quantity

- The quantity sold of used in one transaction (if the computer system accurately records hits) or the quantity normally sold or used in one inventory period

- Usually the greater of the mean hit average, adjusted mean average, median average or mode average

Different Averages

- Mean Hit Average
  - 12 Mo Sales (Qty) 12 Mo Hits
- Adjusted Mean Average
  - 12 Mo Sales (Qty) Months with Sales
- Median Average
  - "Middle" Non-Zero Quantity
- Mode Average
  - Most Common Non-Zero Quantity

Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan
50	0	0	0	20	0	0	0	0	50	0	0

4 Total Annual Hits Were Recorded for this Item

Determine Orders to Maintain for Each Sporadic Usage Resale Item

Lead Time (Days)	≤ 30 Days	≤ 60 Days	≤ 90 Days	> 90 Days
1-2 Hits/Yr	1	1	1	2
3-4 Hits/Yr	1	2	2 - 3	3
5-6 Hits/Yr	2	2 - 3	3	4

Determine Orders to Maintain for Each Sporadic Usage Item

Lead Time (Days)	Target Value < $25	Target Value < $100	Target Value < $250	Target Value > $250
Usage in 1-2 Months	1	1	1	1
Usage in 3-4 Months	2	2	1	1
Usage in > 4 Months	2 - 3	2	1	1

Target Stock Level = 1 Average Order

	June	May	April	March	February	January
Usage	**10**	**0**	**0**	**0**	**10**	**0**

Minimum = 9

Maximum = 10

Target Stock Level = 2 Average Orders

	June	May	April	March	February	January
Usage	**50**	**0**	**0**	**50**	**0**	**50**

Parameters for this item include a safety stock equal to one sale:

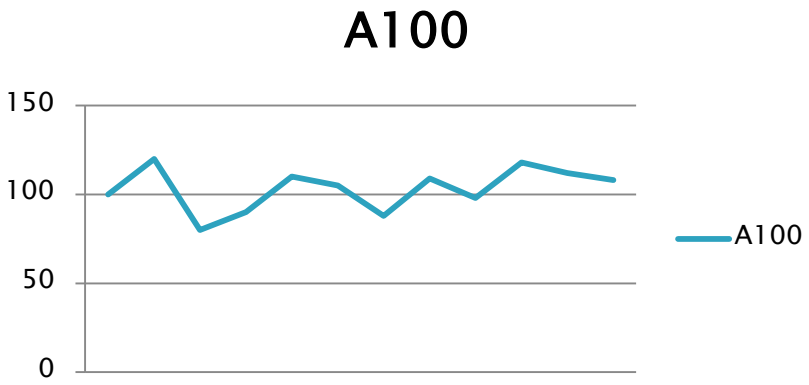
Minimum = 99

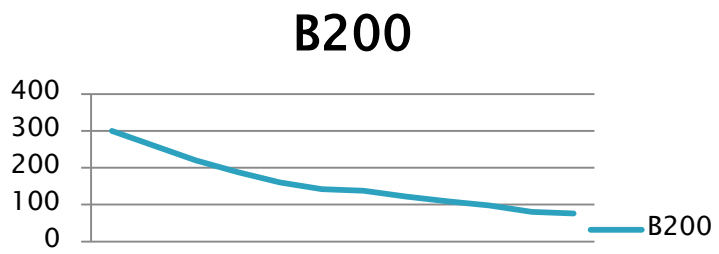
Maximum = 100

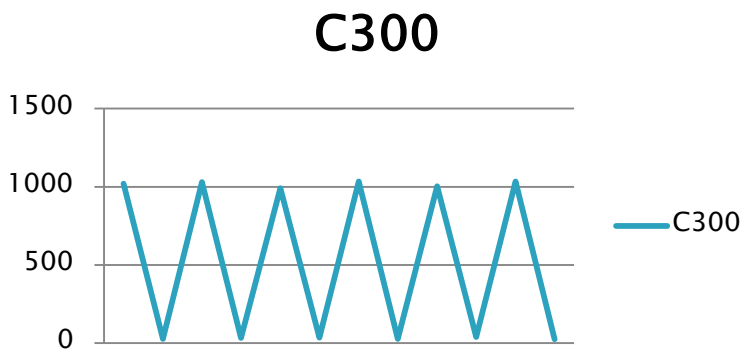
Different Patterns of Usage Require Different Forecasting Methods

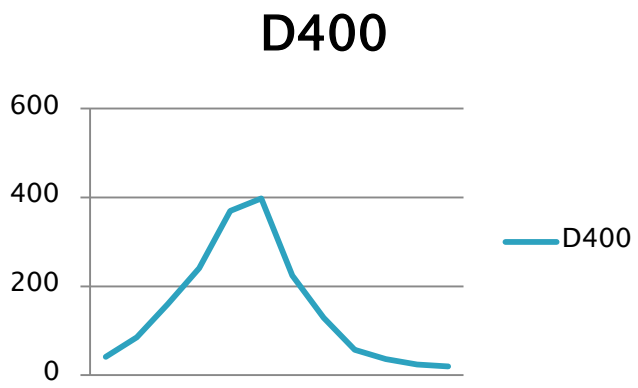
Item	Dec '10	Nov '10	Oct '10	Sep '10	Aug '10	Jul '10	Jun '10	May '10	Apr '10	Mar '10	Feb '10	Jan '10
A100	100	120	80	90	110	105	88	109	98	118	112	108
B200	300	260	220	188	160	142	138	122	109	98	80	76
C300	1020	28	1030	34	990	36	1033	27	1004	39	1034	26
D400	41	85	160	241	370	398	224	129	57	36	24	20

Different Items Have Different Patterns of Usage……









Identifying the Pattern of Usage

- Calculate a forecast for each of the past several months using several forecast formulas
- Compare each calculated forecast to actual usage for that month
- Calculate a forecast error

Events and External Factors will Affect Usage

- Events do not occur at exactly the same time each year
  - Some holidays
  - Promotions
- External factors are outside of your control but may affect usage
  - Changing market tastes
  - Economy
  - Weather

Analyze Each Event & External Factor

- **Hypothesis:** I think this event will affect usage
- **Test:** Does it affect usage?
- **Record results:** When this occurs again, I can adjust the forecast to take into account the results of this event or external factor
- **Clean usage history:** Adjust out the effects of the event from usage history. After all, this event will not occur at exactly the same time next year.

Measuring the Effect of Events

Event	Start Day	End Day	Prior – Event %	Prior–Post Event%
Centennial Founders' Day	04/23/2010	04/30/2010	-25.0%	10.0%
Promo-1	06/01/2010	06/07/2010	26.8%	-0.8%
Promo-1	02/01/2010	2/07/2010	14.0%	-4.7%
Promo-2	09/01/2010	09/07/2010	13.2%	-13.0%

Collaborative Forecasting

- Often future demand is best determined by analyzing customers' predictions of what they will buy or use, rather than past usage history
- Inquiries by salespeople can reveal changes in a customer's anticipated product usage that can be communicated to your buyers
- Customers with "dependent" demand are wonderful candidates for collaborative forecasting

Improving Accuracy of Collaborative Forecasts

- Add to Sales Call Report
  - Previous collaborative estimates along with actual usage by customer over last several months
  - Individual transactions that might represent unusual usage
  - Space to note new collaborative forecasts for specific products

Collaborative Forecasting

- Collect collaborative forecasts and report accuracy to the source of information as well as the forecast personnel
- Consider offering incentives for more accurate forecasts
- Only add collaborative estimates to forecast if accuracy is > 75%
- Do not include collaborative estimates in usage history

Total Forecast for an Item

- Results of a Formula (with/without internal trend percentage)

  +External Trend Factors
  +Effect of Events
  +Sum of Collaborative Forecasts
  =Total Demand

New Item Questionnaire

- Who will buy this product?
- Why will they buy it from us?
- What are the estimates of usage for each of the upcoming six months (Units, Sales $, and Gross Margin Percentage)
- What affect will usage of this product have on usage of other existing stock items?
- How many month's supply must initially be purchased?
- Where will this new inventory be stored?
- How can any unsold stock be liquidated?

Evaluating New Item Questionnaires

- Committee of marketing, sales, management and purchasing
- How accurate has the source been in the past?
- Three or more members must agree to add the product to stock inventory in that location

Keep Sales Focused On New Stock Items

- Provide salespeople with a weekly report of the sales of new stock products. For each item:
  - Item and Description
  - Sales Projections
  - Actual Sales
  - Actual Profits
  - Current Available Quantity
  - Minimum/Maximum Parameters
  - Value of Available Quantity
  - Person requesting that the product be stocked

- Consider a budget for new inventory items

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If you have questions…..

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Thank You

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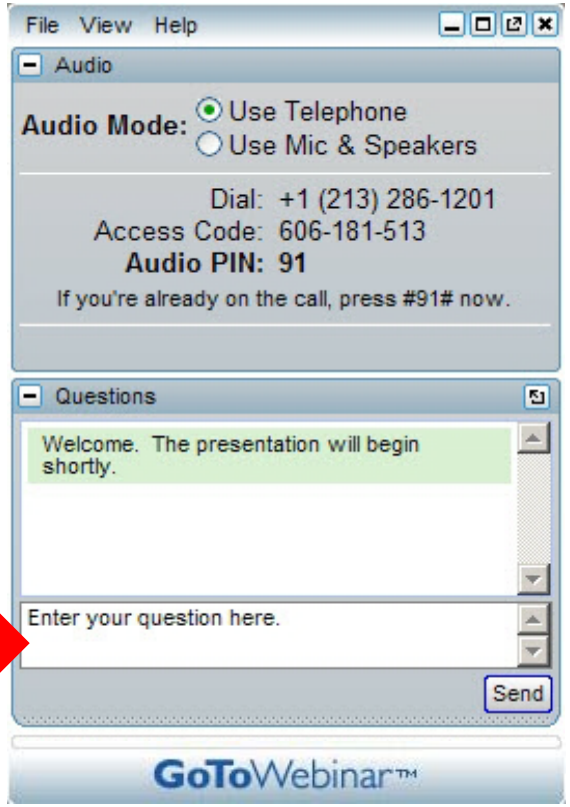

You can find today's webinar and responses to all questions at www.schneiderdowns.com/technology_advisors later today.