Streamlining a complex development environment using Dyalog

DYNA '25 – 09/29/2025 Mark I.Wolfson



Who is BIG?

- Who is BIG and why is it a perfect use-case for APL
- Technology stack where does APL/Dyalog fit in?
- New capabilities after migrating to Dyalog
- New frontier: Analytics and Al
- New frontier: Ul



Who is BIG?

Who is BIG and why is it a perfect use-case for APL

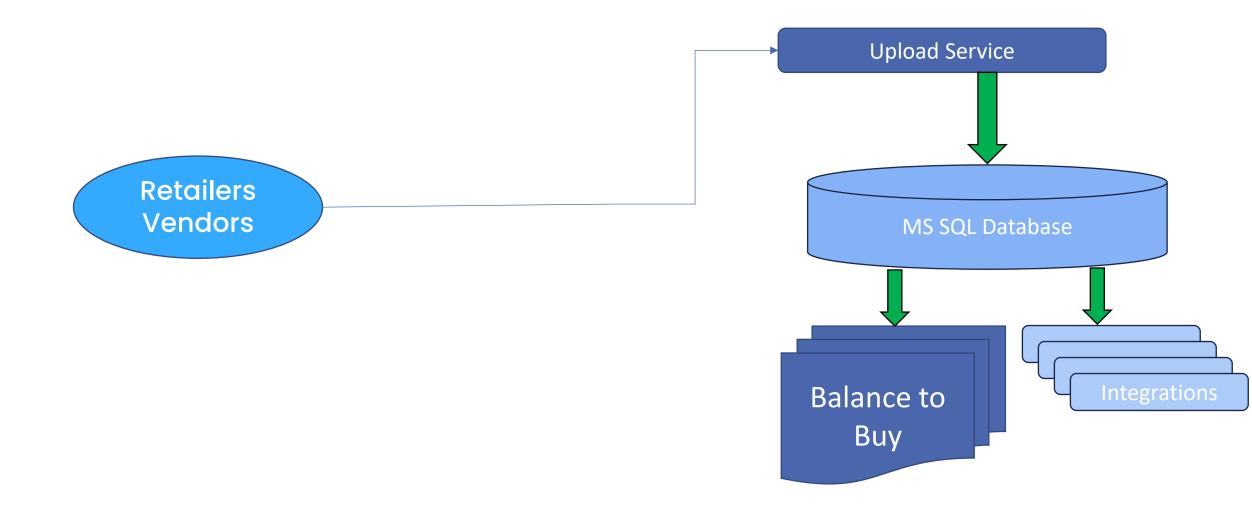
- Service consultancy in the jewelry industry
 - Customers:
 - Retail Jewelers
 - Jewelry Manufacturers (vendors)
 - Jewelry industry service companies
 - Services:
 - Inventory analysis & merchandising consulting
 - Jewelry sales/inventory data aggregation
 - We provide these services by collecting accurate, timely data from 1600 retail jewelry stores using 40 different software systems, and 120 vendors.



Big Business – Disrupting the Jewelry Industry

- Prior to BIG 2005
 - Independent Jewelers family-owned businesses
 - No POS/Inventory Management
 - Wrong inventory mix
 - Too much non-performing inventory
- Balance to Buy 2007
 - Improve performance by using data
 - Analyze prior consumer behavior
 - Strategies to reduce aged inventory
 - Budget/Plan/Buy/Manage







How to get data from retailers?

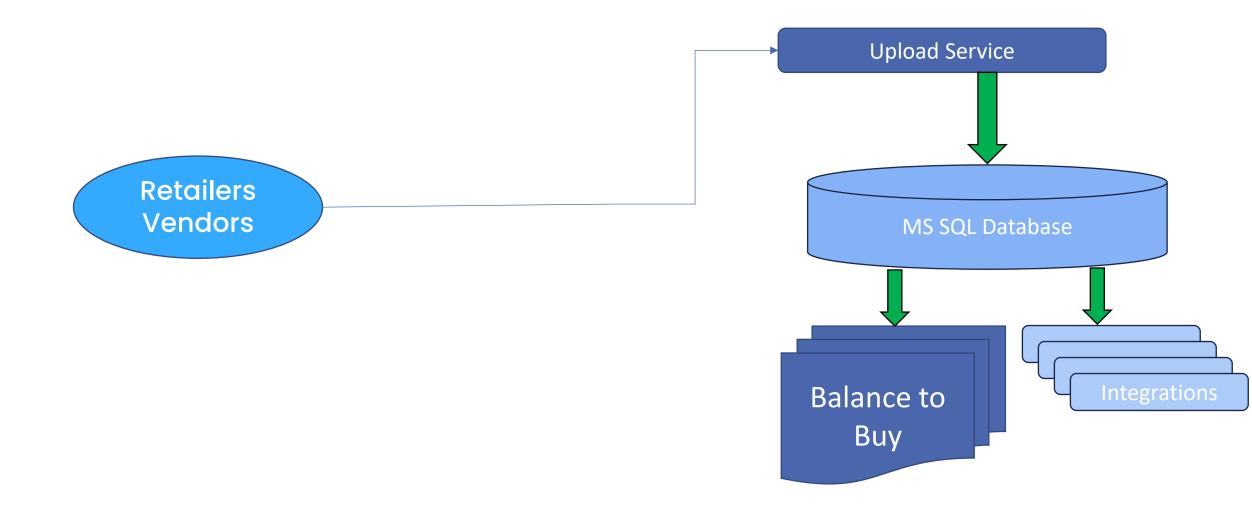
- Retailers with no technical capabilities
 - Direct user upload
 - Emailed reports
 - Monthly data
- Direct POS Integration
 - Daily transmissions
 - With and without cooperation from software companies
 - The Applet a big ask



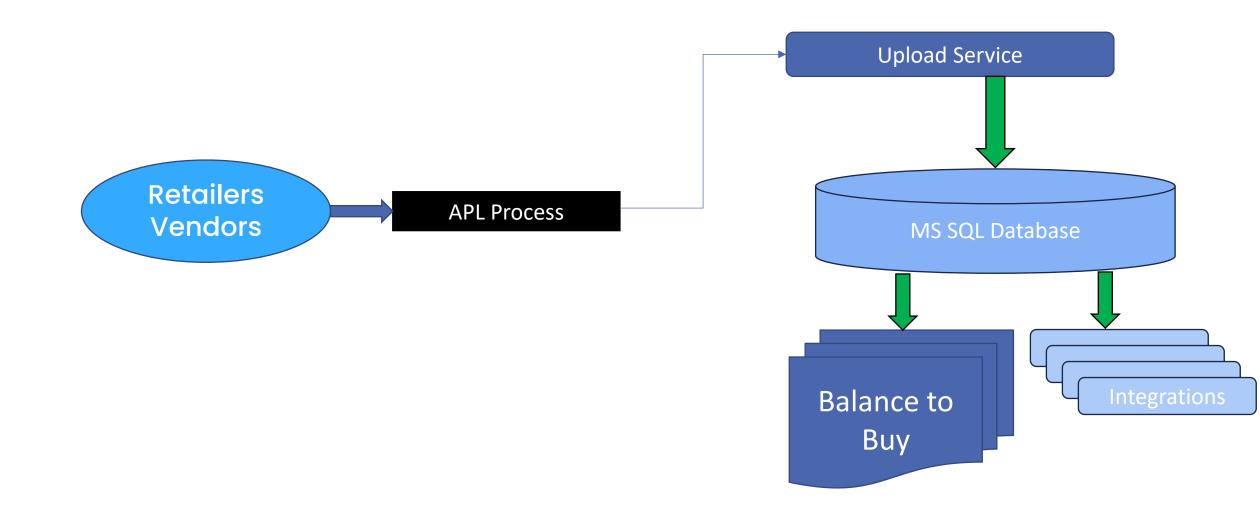
Retailer Data – A HOT MESS

- Integration with dozens of systems
 - Varying number of files even for the same system
 - Different formats
 - Flavors of CSV
 - Text files
 - Excel
 - XML
 - JSON
 - Different content
 - Variations in content between retailers using the same system
 - Variations within a retailer depending on who's entering the data
 - Changes over time

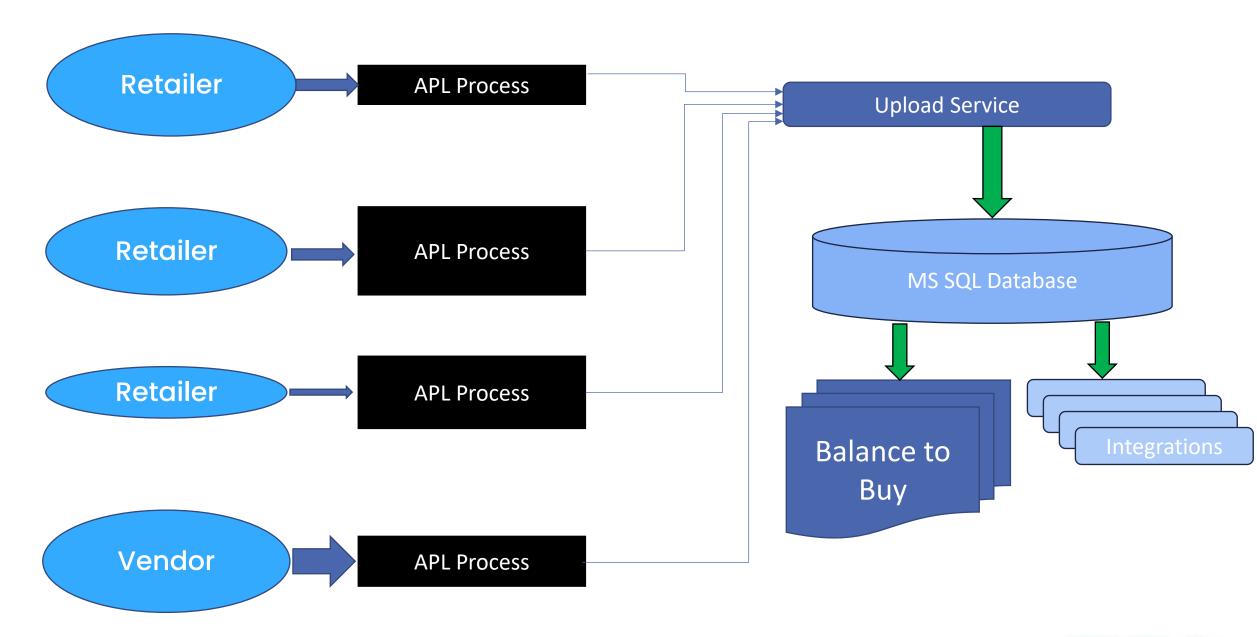




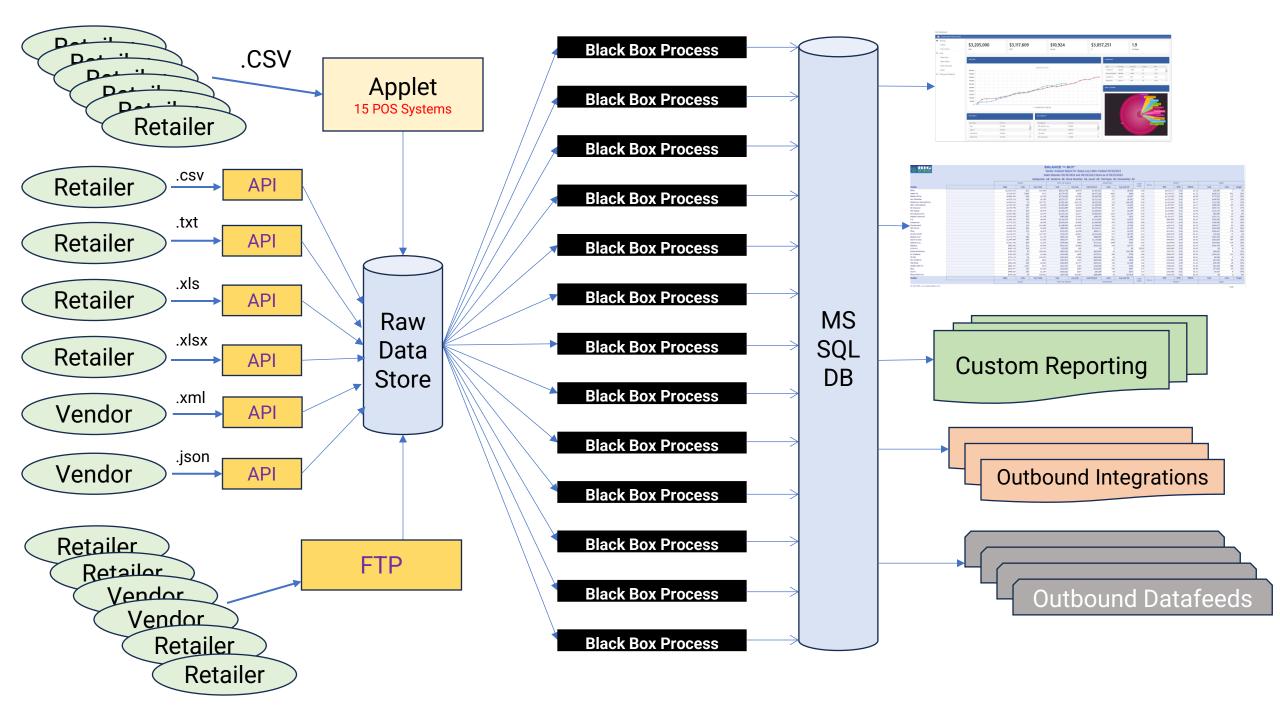












Big Business – Disrupting the Jewelry Industry

- Issues to fix
 - Wrong inventory mix (buying the old way)
 - Too much non-performing inventory
 - \$100B Industry, \$100B non-performing inventory
- Improve performance by using data
 - Use prior consumer behavior to
 - Plan inventory
 - Inform buying decisions
 - Partner with vendors
 - Strategies to reduce aged inventory



Using Math to Solve these issues

- New frontier: Math and AI and Machine Learning
 - 1. Training users to use data/reports to make decisions
 - 2. Figuring out the answers for them



Using Math to Solve these issues

- Examples of problems to solve:
 - 1. Weekly reorder list organized by vendor
 - Transfer list to move aged from non-performing stores to performing stores
 - 3. Determining more accurate values for aged/fast sellers
 - 4. Find holes in inventory mix (Inventory Planning)
 - 5. Use peer stores to recommend adding/removing vendors
 - 6. Model/ideal inventory for a brand
 - 7. Parse attributes out of technical descriptions



Example of the problem to solve



BALANCE TO BUY™

Store Analysis Report for Mighty Fine Jewelry Created 09/24/2025 Sales between 09/24/2024 and 09/23/2025.Stock as of 09/24/2025

Categories: All, Vendors: All, Store Number: All, Level: All, TranType: All, Ownership: All

		SALES		COST OF GOODS		INVENTORY			TURN	Show	PR	OFIT		AG	ED		
Store		Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	OVER	n	GP\$	GP%	GMROI	Cost	Units	%Aged
2		\$8,375,520	2,632	\$3,182	\$5,730,521	\$2,177	\$3,869,264	1,909	\$2,027	1.48		\$2,644,999	0.32	\$0.68	\$1,713,517	947	44%
1		\$4,096,511	2,258	\$1,814	\$2,400,880	\$1,063	\$2,918,179	2,529	\$1,154	0.82		\$1,695,631	0.41	\$0.58	\$1,595,631	1,464	55%
6		\$1,372,038	1,230	\$1,115	\$738,853	\$601	\$1,233,253	1,513	\$815	0.60		\$633,185	0.46	\$0.51	\$837,301	959	68%
Totals		\$13,512,302	6,240	\$2,165	\$9,161,656	\$1,468	\$7,634,245	5,793	\$1,318	1.11		\$5,446,454	0.62	\$0.62	\$3,916,877	3,276	51%
Store		Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	TURN	Show	GP\$	GP%	GMROI	Cost	Units	%Aged
			SALES		COST OF GOODS		INVENTORY			OVER	n	PR	OFIT		AG	ED	



Using Math to Solve these issues

- Creating a store-to-store transfer list
 - 1. Batch items in different ways using keytypes
 - 2. Concentrate on aged inventory could vary depending on keytype
 - 3. Using Kaplan-Meier curves survival analysis
 - 4. Why can't we just send the data off to ChatGPT?
 - 1. Special Orders
 - 2. Samples
 - 3. Programs
 - 4. Dynamically adjusting aged thresholds



Example of the problem to solve



BALANCE TO BUY™

Mighty Fine Jewelry Created 09/24/2025

Sales between 09/24/2024 and 09/23/2025. Stock as of 09/24/2025

Categories: All, Vendors: All, Store Number: All, Level: All, TranType: All, Ownership: All

		SALES		COST OF GOODS		INVENTORY			TURN	Chown	PROFIT			AGED			
Company	Transaction Type	Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	OVER	Shown	GP\$	GP%	GMROI	Cost	Units	%Aged
Mighty Fine Jewelry	Inventory	\$10,699,293	4,799	\$2,458	\$7,560,787	\$1,575	\$7,425,505	5,490	\$1,353	1.02		\$4,234,314	0.36	\$0.57	\$3,821,867	3,134	51%
	Special Order	\$2,813,009	1,441	\$1,952	\$1,600,869	\$1,111	\$208,740	303	\$689	7.67		\$1,212,140	0.43	\$5.81	\$95,011	142	46%
Totals		\$13,512,302	6,240	\$2,165	\$9,161,656	\$1,468	\$7,634,245	5,793	\$1,318	1.11		\$5,446,454	0.36	\$0.62	\$3,916,877	3,276	51%
Company	Transaction Type	Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	TURN	Chaum	GP\$	GP%	GMROI	Cost	Units	%Aged
			SALES		COST OF GO	OODS	IN	IVENTOR\	Y	OVER	Shown	PR	OFIT		AG	iED .	

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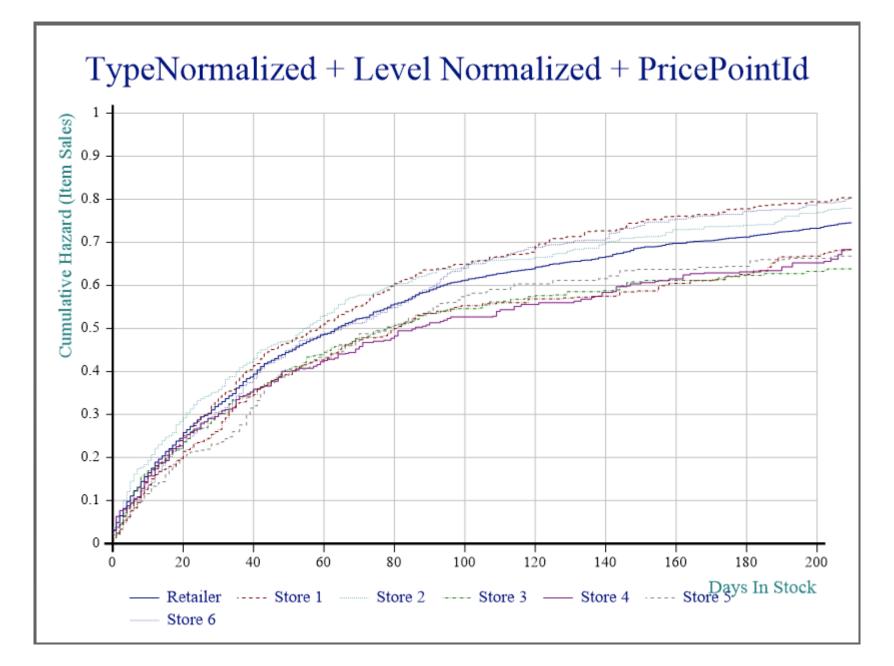




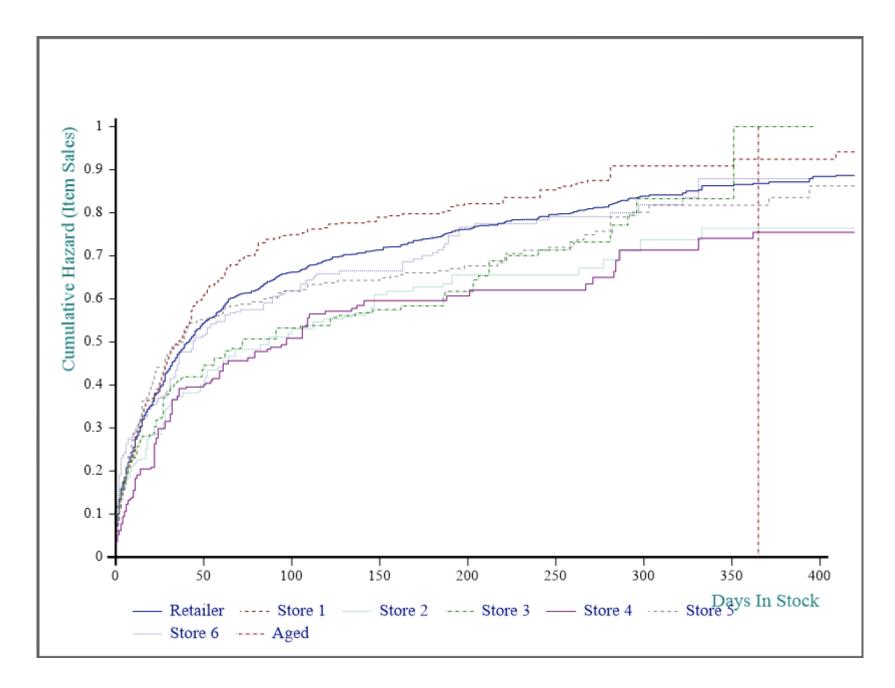




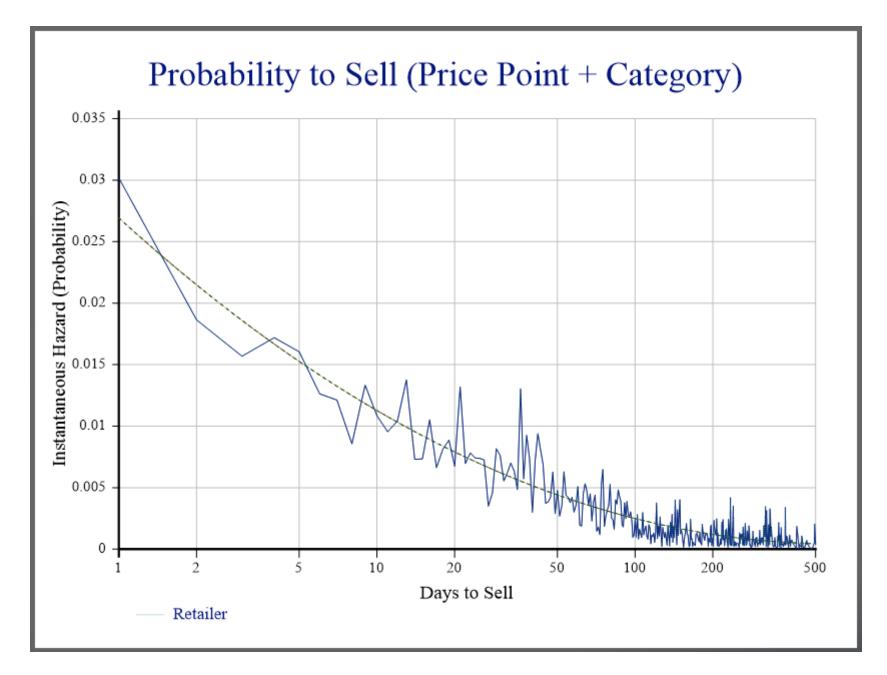




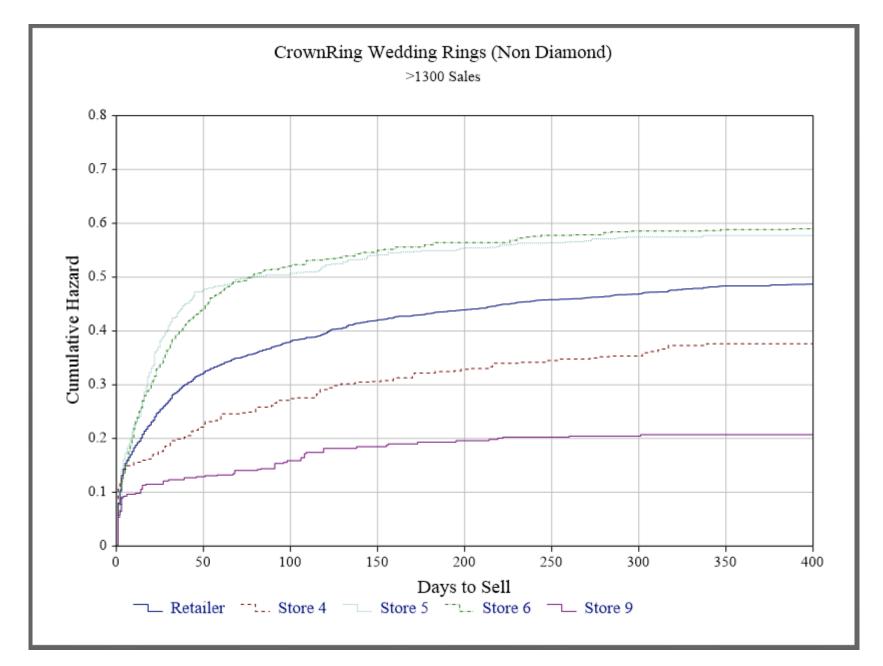




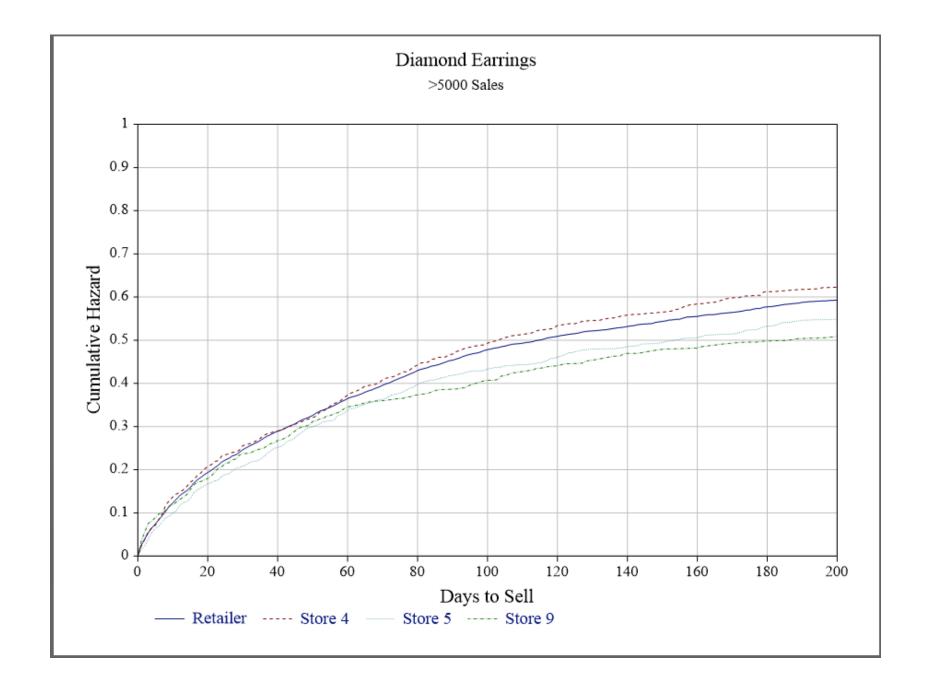




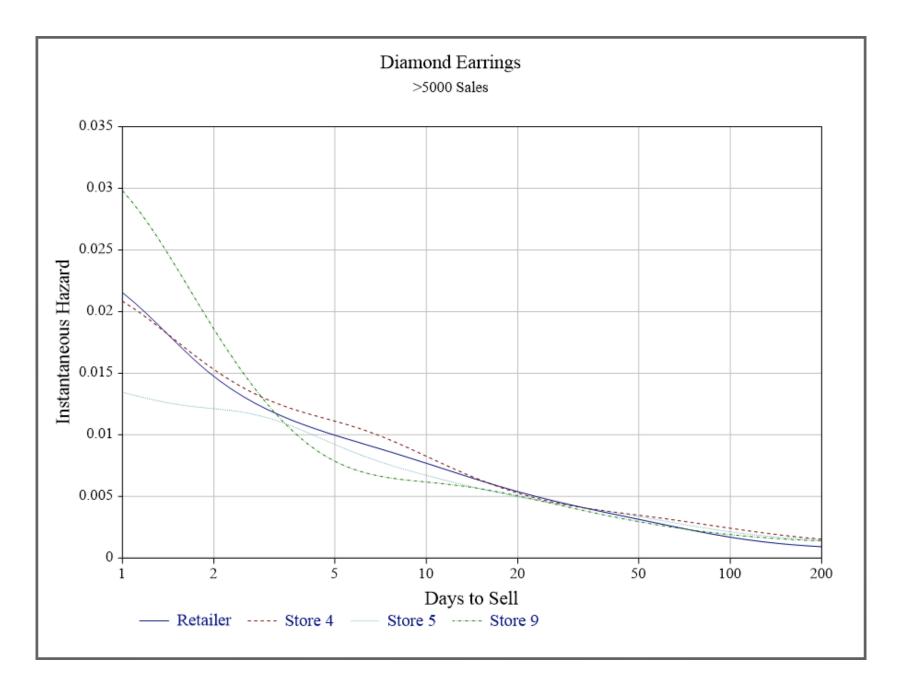




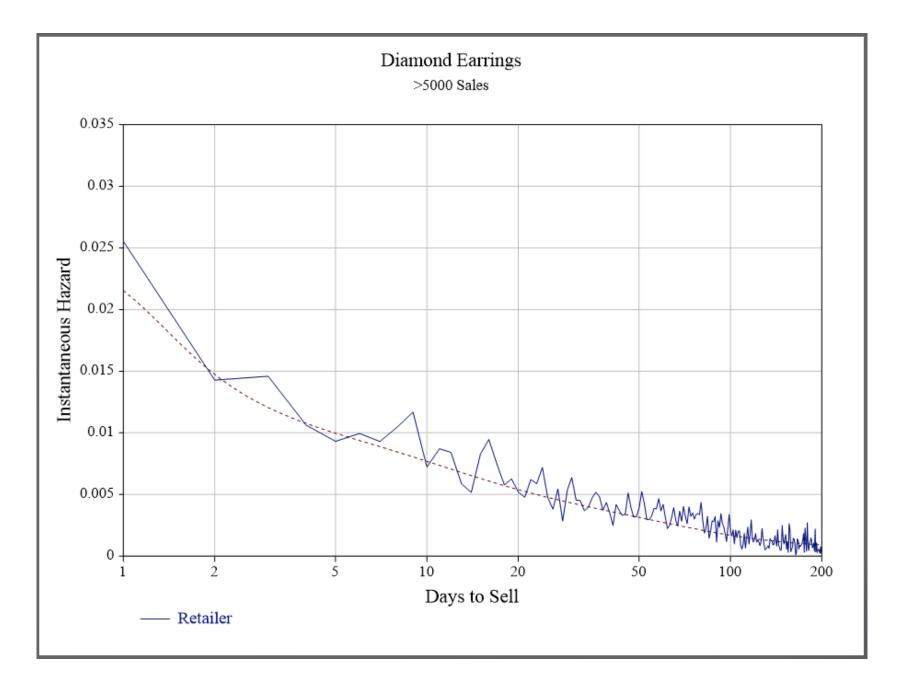














How to create great web pages fast!

- New frontier: UI
 - Using Javascript/KendoUl and C#
 - 2. Using Javascript/KendoUI and Jarvis
 - 3. Using EWC
 - 1. Standard EWC controls
 - 2. Integrating KendoUI

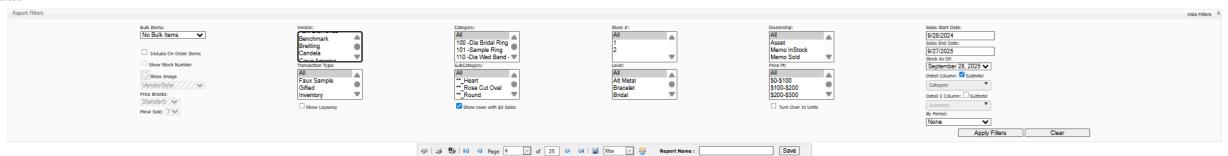


Creating web pages:

The OLD way: everything all together in one code block



Vendors



				BALA	NCE TO BUY"												
BIG NETWORK					Vendor Analysis I	Report for	Jewelers Created	09/28/2025									
					Sales between 09	9/28/2024 and 0	9/27/2025.Stock as of	09/28/2025									
				Cal	egories: All, Vendors: A				in• ΔII								
			SALES	Cui	COST OF GOODS		. All, Ecval All, Itality	INVENTORY	iipi Aii	TURN		PRO	OFIT		AG	SED	
Vendor	Category	Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	OVER	Shown	GP\$	GP%	GMROI	Cost	Units	%Aged
Breitling	Total	\$691,025	74	\$9,338	\$439,490	\$5,939	\$456,019	103	\$4,427	0.96		\$251,534	0.36	\$0.55	\$223,544	61	4
Candela	230 -Col/Pd	\$0	0	\$0	\$0	\$0	\$123	1	\$123	0.00		\$0	0.00	\$0.00	\$0	0	
Candela	310 -Pearl Ear	\$1,714	7	\$245	\$788	\$113	\$161	4	\$116	1.70		\$926	0.54	\$2.00	\$0	0	
Candela	320 -Pearl Pd	\$0	0	\$0	\$0	\$0	\$193	2	\$97	0.00		\$0	0.00	\$0.00	\$0	0	
Candela	425 -Gold Ear	\$9,624	50	\$192	\$4,423	\$88	\$11,607	118	\$98	0.38		\$5,201	0.54	\$0.45	\$3,009	43	26
Candela	435 -Gold Pd/Charms	\$259	1	\$259	\$109	\$109	\$2,066	15	\$138	0.05		\$150	0.58	\$0.07	\$0	0	
Candela	Total	\$11,597	58	\$200	\$5,320	\$92	\$14,453	140	\$103	0.37		\$6,276	0.54	\$0.43	\$3,009	43	21
Casio America	500 -Watches -Lds	\$1,880	14	\$134	\$1,225	\$88	\$430	7	\$61	2.85		\$655	0.35	\$1.52	\$430	7	100
Casio America	505 -Watches -Gents	\$12,409	70	\$177	\$7,505	\$107	\$4,275	47	\$91	1.76		\$4,904	0.40	\$1.15	\$2,905	32	68
Casio America	Total	\$14,288	84	\$170	\$8,730	\$104	\$4,705	54	\$87	1.86		\$5,558	0.39	\$1.18	\$3,335	39	719
Charles Krypell- Gold	130 - Dia Fash Ring - Lds	\$8,102	2	\$4,051	\$4,200	\$2,100	\$22,730	6	\$3,788	0.18		\$3,902	0.48	\$0.17	\$0	0	0
Charles Krypell- Gold	150 -Dia Ear	\$2,500	1	\$2,500	\$2,000	\$2,000	\$2,250	1	\$2,250	0.89		\$500	0.20	\$0.22	\$0	0	0
Charles Krypell- Gold	160 -Dia Pd	\$0	0	\$0	\$0	\$0	\$3,545	2	\$1,773	0.00		\$0	0.00	\$0.00	\$0	0	0
Charles Krypell- Gold	170 -Dia Brac	\$0	0	\$0	\$0	\$0	\$23,175	3	\$7,725	0.00		\$0	0.00	\$0.00	\$13,405	2	58
Charles Krypell- Gold	200 -Col/Ring -Lds	\$22,208	4	\$5,552	\$10,815	\$2,701	\$18,190	5	\$3,638	0.59		\$11,393	0.51	\$0.63	\$0	0	
Charles Krypell- Gold	210 -Col/Ear	\$7,000	1	\$7,000	\$3,828	\$3,828	\$4,960	2	\$2,480	0.77		\$3,173	0.45	\$0.61	\$0	0	
Charles Krypell- Gold	230 -Col/Pd	\$32,136	4	\$8,034	\$16,318	\$4,079	\$9,010	4	\$2,260	1.81		\$15,819	0.49	\$1.75	\$0	0	
Charles Krypell- Gold	235 -Col/Neck	\$0	0	\$0	\$0	\$0	\$3,000	1	\$3,000	0.00		\$0	0.00	\$0.00	\$0	0	
Charles Krypell- Gold	240 -Col/Brac	\$22,500	1	\$22,500	\$12,500	\$12,500	\$18,250	2	\$9,125	0.68		\$10,000	0.44	\$0.55	\$0	0	0
Charles Krypell- Gold	Total	\$94,445	13	\$7,265	\$49,660	\$3,820	\$105,140	26	\$4,044	0.47		\$44,785	0.47	\$0.43	\$13,405	2	13
Charles Krypell Inc- Sterling	620 -Silver Fash Ring	\$0	0	\$0	\$0	\$0	\$120	2	\$60	0.00		\$0	0.00	\$0.00	\$120	2	100
Charles Krypell Inc- Sterling	Total	\$0	0	\$0	\$0	\$0	\$120	2	\$60	0.00		\$0	0.00	\$0.00	\$120	2	100
Cherie Dori	100 -Dia Bridal Ring (Complete)	\$3,529	1	\$3,529	\$1,680	\$1,680	\$0	0	\$0	1.00		\$1,849	0.52	\$0.00	\$0	0	
Cherie Dori	110 -Dia Wed Band -Lds	\$0	0	\$0	\$0	\$0	\$325	1	\$325	0.00		\$0	0.00	\$0.00	\$325	1	100
Cherie Dori	130 -Dia Fash Ring -Lds	\$0	0	\$0	\$0	\$0	\$2,725	1	\$2,725	0.00		\$0	0.00	\$0.00	\$2,725	1	100
Cherie Dori	150 -Dia Ear	\$0	0	\$0	\$0	\$0	\$1,505	2	\$753	0.00		\$0	0.00	\$0.00	\$1,505	2	100
Cherie Dori	165 -Dia Neck	\$0	0	\$0	\$0	\$0	\$3,268	2	\$1,634	0.00		\$0	0.00	\$0.00	\$3,268	2	100
Cherie Dori	170 -Dia Brac	\$0	0	\$0	\$0	\$0	\$1,300	1	\$1,300	0.00		\$0	0.00	\$0.00	\$1,300	1	100
Vendor	Category	Sales	Units	Avg Ticket	Cost	Avg Cost	Cost Onhand	Units	Avg Cost OH	TURN		GP\$	GP%	GMROI	Cost	Units	%Aged
			SALES		COST OF GOODS			INVENTORY		OVER	Shown	PRI	OFIT		AG	SED	
© 2025 BIG waser balancetober com																	



Creating web pages better:

The NEW way: Javascript front end

C# backend endpoints



Partner Permissions										
User ld: 1629 Company Name: Sissy's Log Cabin	View Information									
Partner Permissions	Vendor:	Network Partner:	Status:	T	Activated at:	Last Updated Date:	Updated By:	Admin Status Control:	Admin Notes:	Admin Audit Trail:
♣ Notification Recipients	A. Jaffe	BIGNETWORK	Active (06/03/2021 14:56:47 PM	06/03/2021 14:56:47 PM	Sissy's Log Cabin	Set Status ▼	Show Notes	Show Audit Trail
	Ashi Diamonds	BIG HETWORK	Active		06/03/2021 14:56:53 PM	06/03/2021 14:56:53 PM	Sissy's Log Cabin	Set Status ▼	Show Notes	Show Audit Trail
	Bulova	BIG NETWORK						Set Status ▼	Show Notes	Show Audit Trail
	Citizen Watch America	BIG NETWORK						Set Status ▼	Show Notes	Show Audit Trail
	Classique Creations Llc	BIG HETWORK						Set Status ▼	Show Notes	Show Audit Trail
	Coast Diamonds	BIG HETWORK						Set Status ▼	Show Notes	Show Audit Trail
	DAVID WEISZ	BIG NETWORK						Set Status ▼	Show Notes	Show Audit Trail
	David Yurman	BIG HETWORK	Active (02/13/2020 07:01:48 AM	02/13/2020 07:01:48 AM	BTB Admin	Set Status ▼	Show Notes	Show Audit Trail
	Facets of Fire	SALESREP DIRECT	Active (02/29/2024 12:56:33 PM	02/29/2024 12:56:33 PM	BTB Admin	Manage ▼	Show Notes	Show Audit Trail
	Fana	BIG NETWORK	Active		11/05/2018 18:13:46 PM	11/05/2018 18:13:46 PM		Set Status ▼	Show Notes	Show Audit Trail
	Frederic Sage	SALESREP DIRECT						Manage ▼	Show Notes	Show Audit Trail
	Frederick Goldman Inc.	SALESREP DIRECT					BTB Admin	Manage ▼	Show Notes	Show Audit Trail
	G.N. Diamonds	BIG NETWORK	Active		05/31/2023 13:34:57 PM	05/31/2023 13:34:57 PM	BTB Admin	Set Status ▼	Show Notes	Show Audit Trail
	Gabriel & Co.	BIG NETWORK	Active		11/05/2018 18:13:46 PM	11/05/2018 18:13:46 PM		Set Status ▼	Show Notes	Show Audit Trail
	House of Baguettes	SALESREP DIRECT						Manage ▼	Show Notes	Show Audit Trail
i	(4) 1 2 3 (F	► Items per page								1 - 15 of 39 items

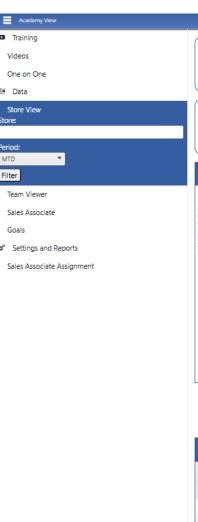


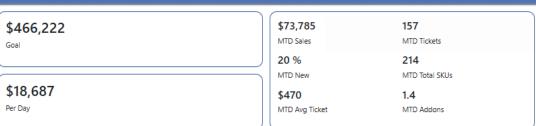
How to create great web pages fast!

Even Better: Javascript front end

Jarvis APL backend endpoints







\$55,121	89
LMTD Sales	LMTD Tickets
21 %	110
LMTD New	LMTD Total SKUs
\$619	1.2
LMTD Avg Ticket	LMTD Addons

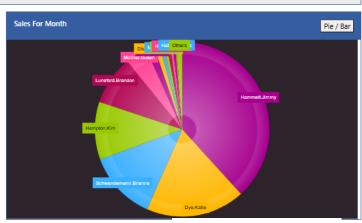
33.9	76.4
% Change Sales	% Change Tickets
-6.7	94.5
% Change New	% Change SKUs
-24.1	16.7
% Change Average	% Change Addons
	% Change Sales -6.7 % Change New -24.1



lame:	Total Sales:	Avg Ticket:	# Tickets:	Gp%:	% New:	
Hammett.Jimmy	\$28,651	\$779	39	45	23 %	4
ye.Katie	\$13,740	\$721	20	67	25 %	
chwendemann.Brianna	\$9,590	\$341	30	75	13 %	
lampton.Kim	\$8,009	\$471	18	83	17 %	
unsford.Brandon	\$6,803	\$379	18	54	11 %	
folinar.Susan	\$3,068	\$263	13	57	54 %	
lason.Abby	\$1,129	\$241	5	-237	0 %	
Discount.Employee	\$758	\$253	3	25	0 %	
Mares.Kindell	\$533	\$237	3	-1618	33 %	
Barton.Alex	\$458	\$106	5	58	20 %	١,

X Export to Excel		
Vendors:	\$ Amount:	
Repairs	\$13,214	
Nehoa Holdings Llc	\$11,700	
Malakan Dia Custom	\$8,525	
Imperial Deltah Inc	\$6,300	
Quality Gold	\$5,602	
Gabriel & Co.	\$5,170	
Gemsone Corporation	\$5,050	
Surreal Diamonds Llc	\$3,659	
Leslies	\$2,937	

	Top Categories			
	X Export to Excel			
	Categories:		\$ Amount:	
•	Repairs	v	\$12,664	•
	525 -Watches	v	\$11,700	
	430 -Gold Chains	V	\$7,752	
	330 -Pearl Brac	v	\$6,150	
	192 -Dia -Lab Created	V	\$5,159	
	291 -Lab Created Dia Lds Ring	V	\$3,450	
	205 -Col/Ring	V	\$3,270	
	140 -Dia Semi-Mt Ring	V	\$3,200	
	420 -Gold Setting	V	\$2,565	
•	120 -Dia Anniv/Wed Ring	v	\$2,550	•







Store View

Team Viewer
Store:

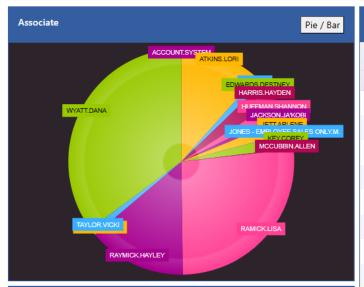
1
Period:
MTD
Filter

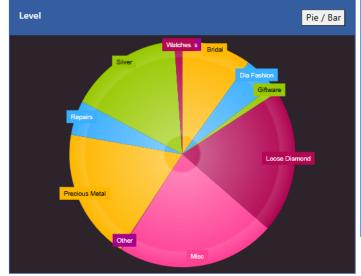
Sales Associate

Goals

♦ Settings and Reports

Sales Associate Assignment





Grid View									
Associate	Misc	LooseDiamond	PreciousMetal	Silver	Bridal	Repairs	DiaFashion	Watches	Giftware
WYATT.DANA	(\$200) ♦	\$9,778	\$0 +	\$1,625 🖊	\$4,717 🛧	\$771 🛧	\$0 —	\$0 🔸	\$0 -
RAMICK.LISA	\$0 —	\$ 0	\$8,595	\$2,099 🛧	\$0 —	\$928 🛧	\$455	\$540 🛧	\$0 —
RAYMICK.HAYLEY	\$4,472 🛧	\$ 0 —	\$0 —	\$1,750 🛧	\$0 —	\$0 —	\$0 —	\$0 —	\$458 🛧
ATKINS.LORI	\$5,501 🛧	\$ 0	\$0 —	\$0 —	\$0 —	\$0 —	\$ 0 —	\$0 —	\$0 —
HARRIS.HAYDEN	(\$50) ◆	\$0 —	\$0 —	\$900 🛧	\$0 —	\$190 🛧	\$455	\$0 —	\$0 —
KEY.COREY	\$85	\$0 —	\$229	\$0 —	\$0 —	\$261 🛧	\$455	\$0 —	\$0 —
JETT.ARLENE	(\$100) 🖶	\$ 0 ♦	\$0 +	\$475 \	\$0 🔸	\$183 🛖	\$455	\$0 ♦	\$0 🔸
HUFFMAN.SHANNON	\$876	\$ 0 ♦	\$0 –	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —
COX.KIM	\$577	\$ 0 ♦	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —
TAYLOR.VICKI	\$0 —	\$0 —	\$0 —	\$495	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —
JACKSON.JA'KOBI	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$455	\$0 —	\$0 —
MCCUBBIN.ALLEN	\$75	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —
ACCOUNT.SYSTEM	so –	\$0 –	\$0 –	\$0 —	so –	\$0 —	\$0 —	\$0 —	\$1
EDWARDS.DESTNEY	\$0 —	\$0 —	\$0 —	\$0 –	\$0 —	\$0 —	\$0 —	\$0 —	\$0 —
SUAREZ.MARK	so –	\$0 –	\$0 –	\$0 –	so –	\$0 —	\$0 —	\$0 —	\$0 —
JONES - EMPLOYEE SALES ONLY.M.	(\$455) 🔸	\$0 +	\$0 –	\$341 🔸	\$0 –	\$0 —	\$0 —	\$0 —	\$53
All items pe	er page							1-	16 of 16 items



Videos

One on One

Data Data

Store View

Team Viewer

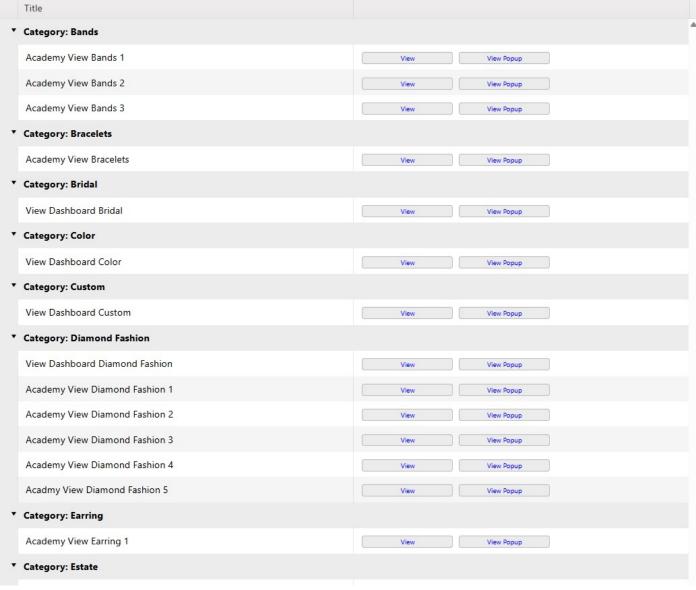
Sales Associate

Goals

Settings and Reports

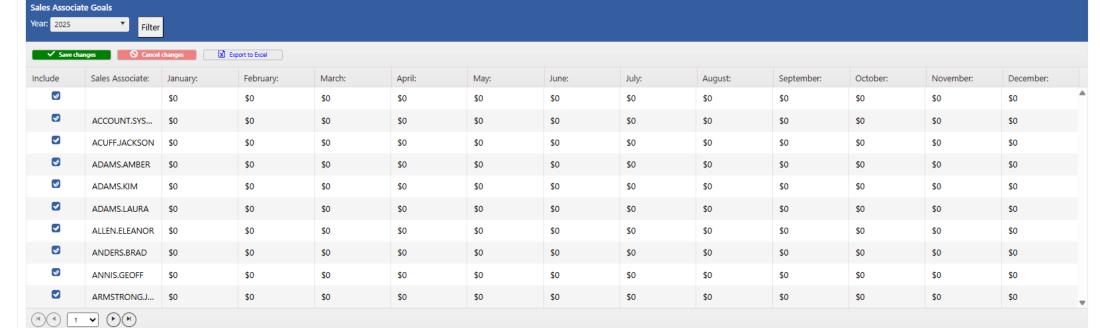
Sales Associate Assignment



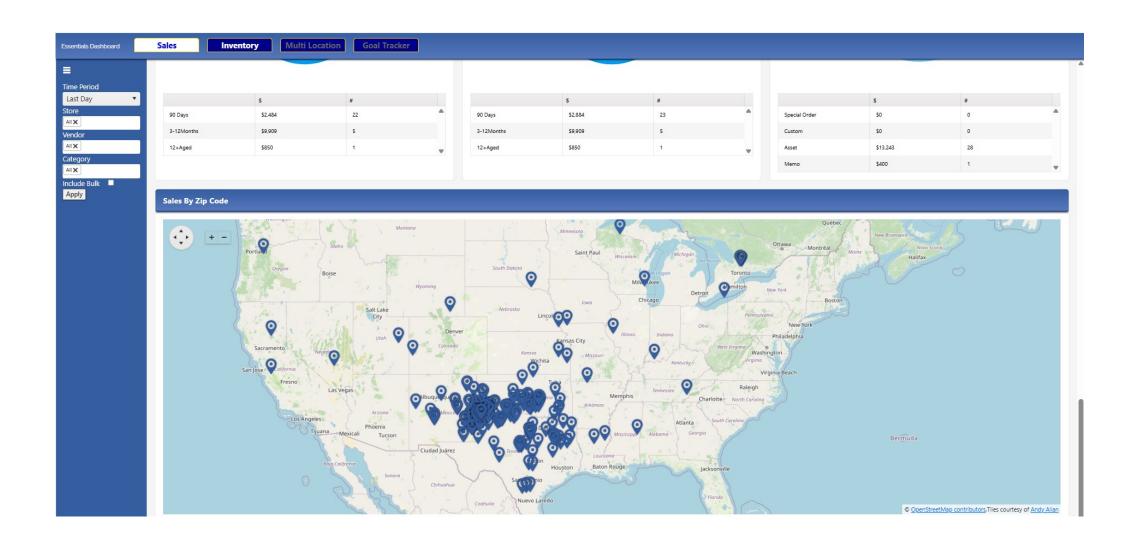




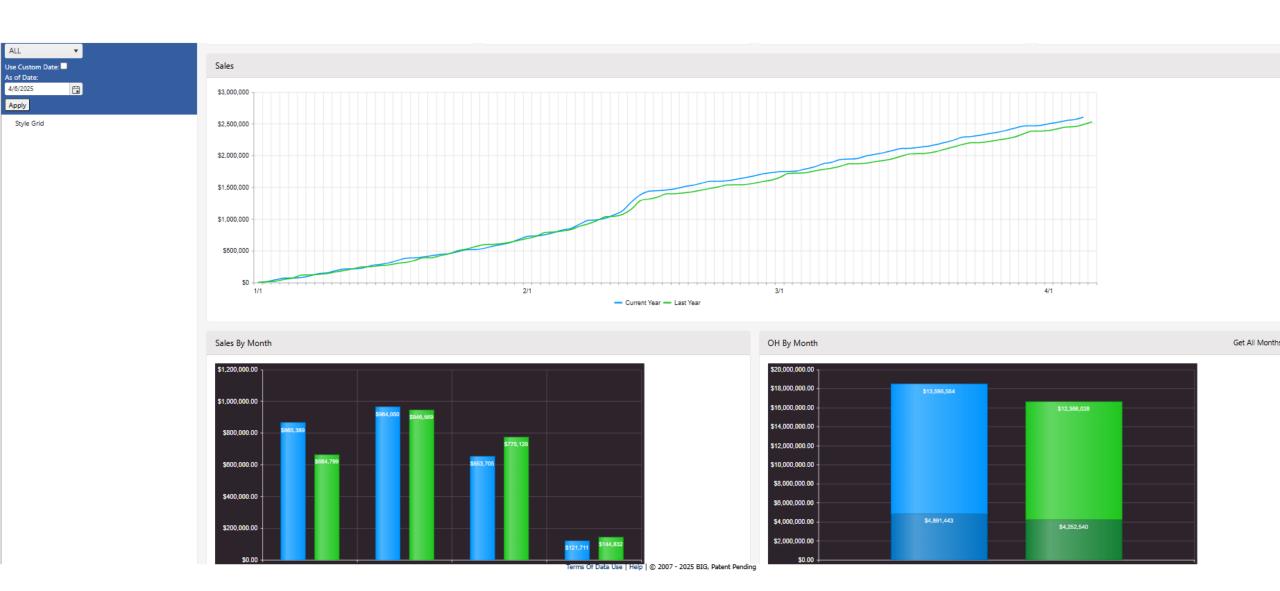




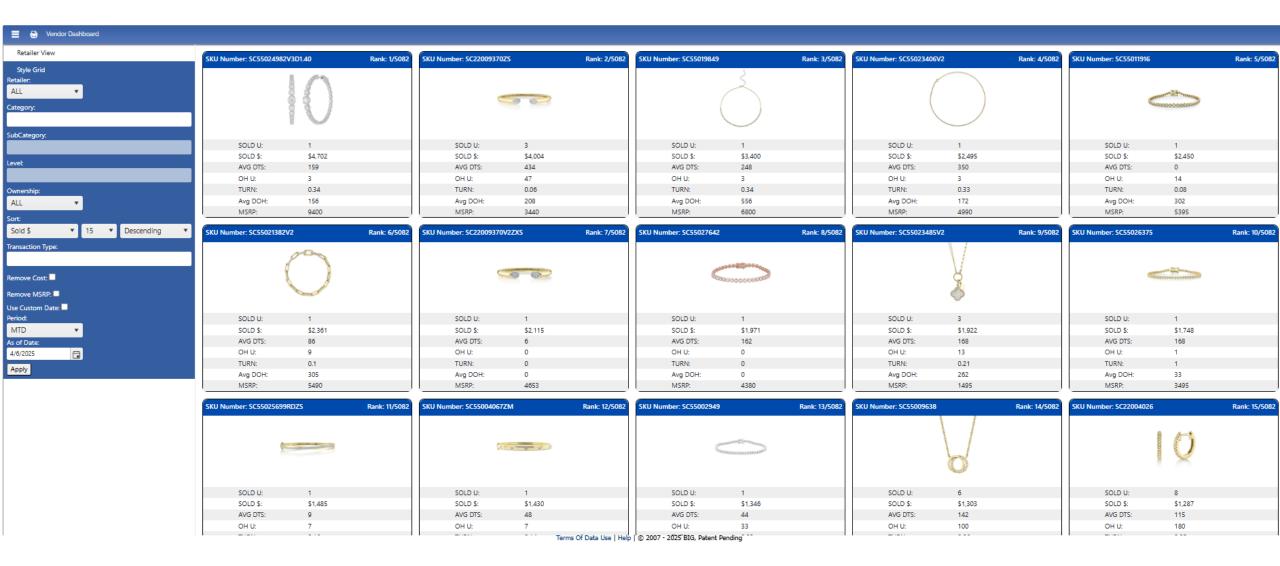




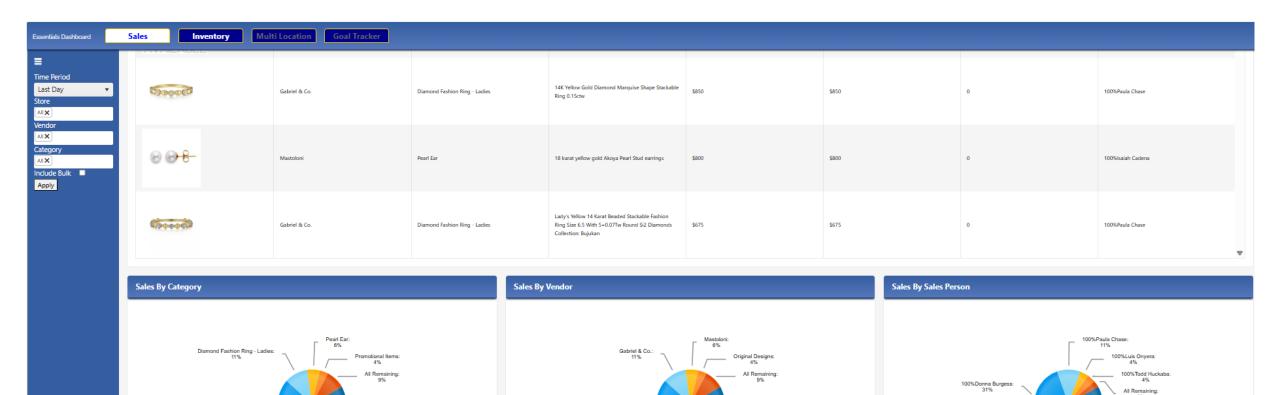












% Sales: Terms Of Data Use | Help | © 2007 - 2025 BIG, Patent Pending

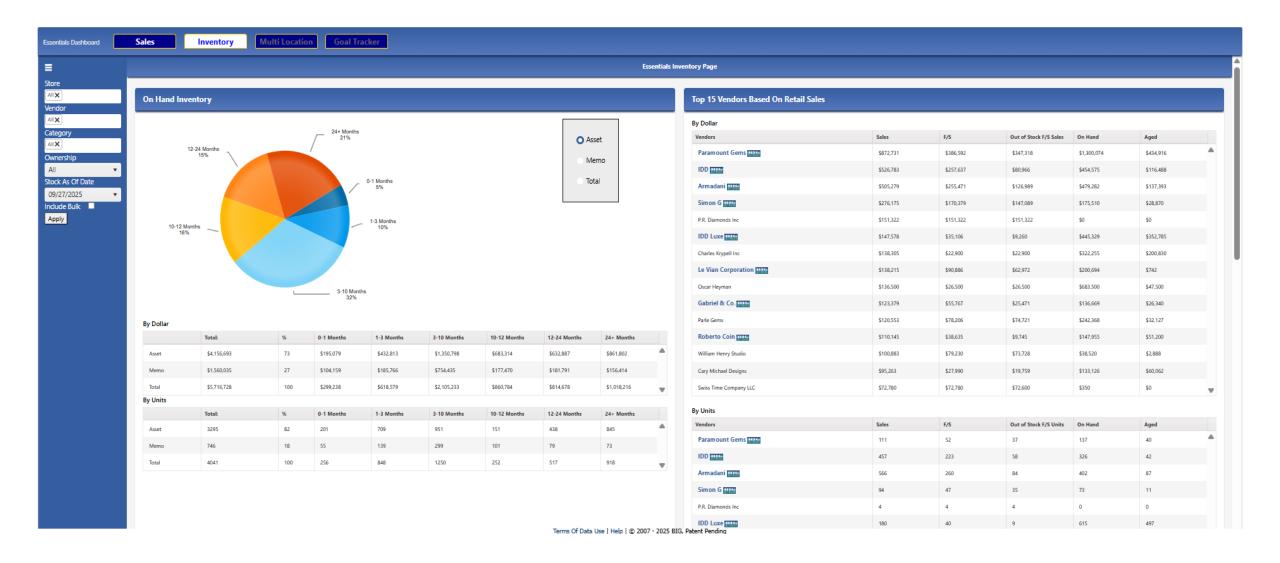
Total Sales:

Category:



100%Isaiah Cadena: 47%

Total Sales:



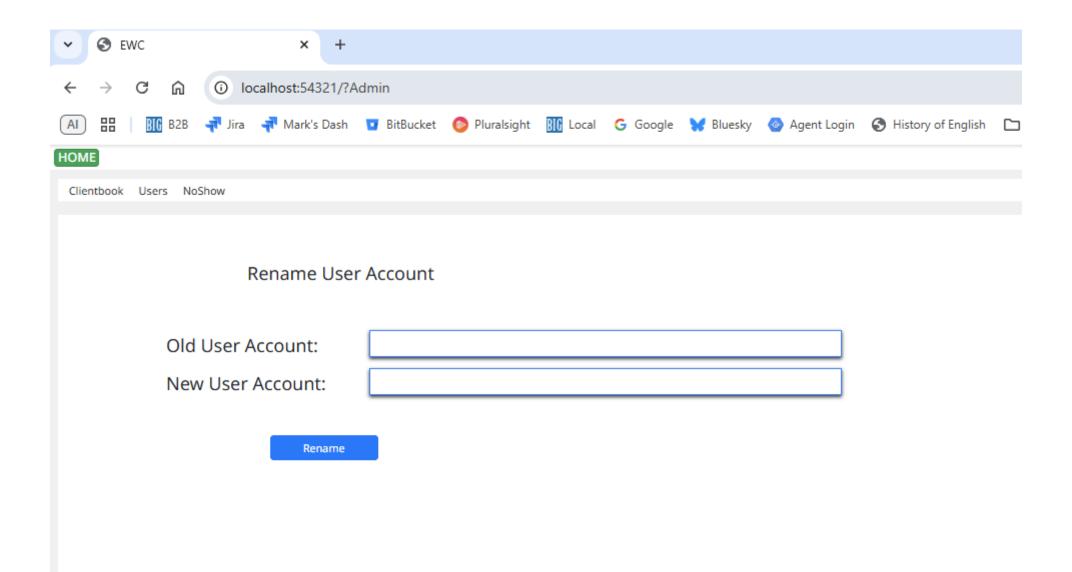




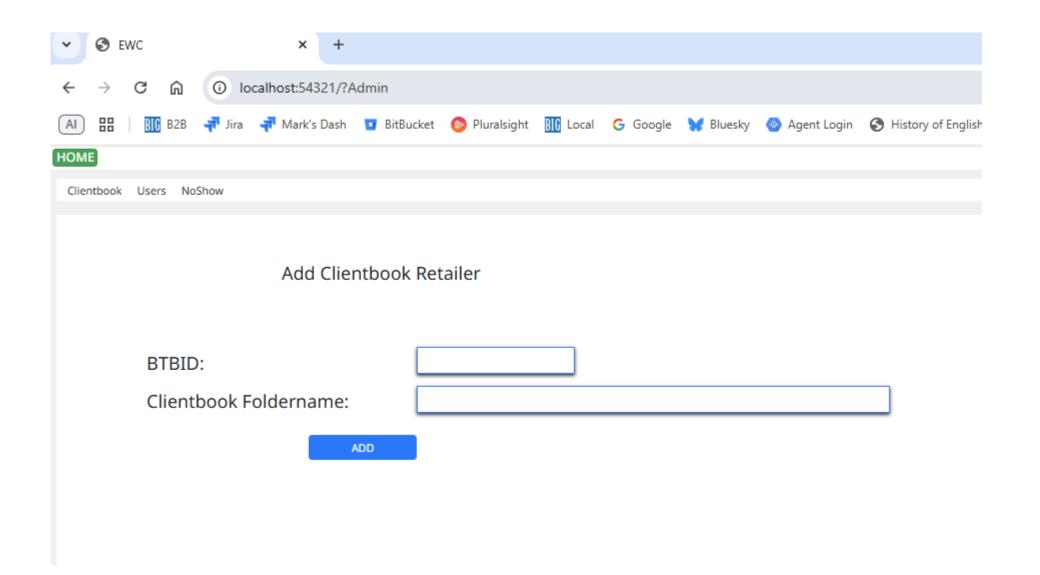
How to create great web pages fast!

Another new way: EWC

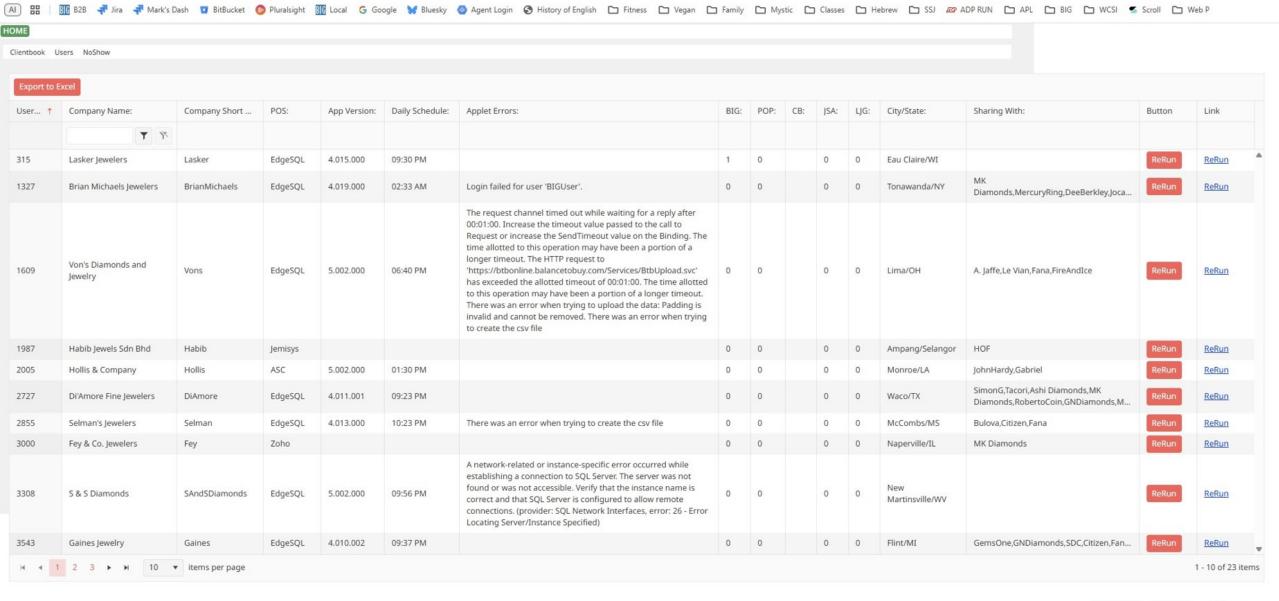












⊙ EWC

(i) localhost:54321/?Admin



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New Production Environment

- Windows Service
- Code in text files
- Full Source Control
- Global file handling
- Global error handling



Thank you!

DYNA '25 – 09/29/2025 Mark I.Wolfson

