

TIMING THE MARKET WITH DMN

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Basic Principle of Investing

- Buy low... sell high

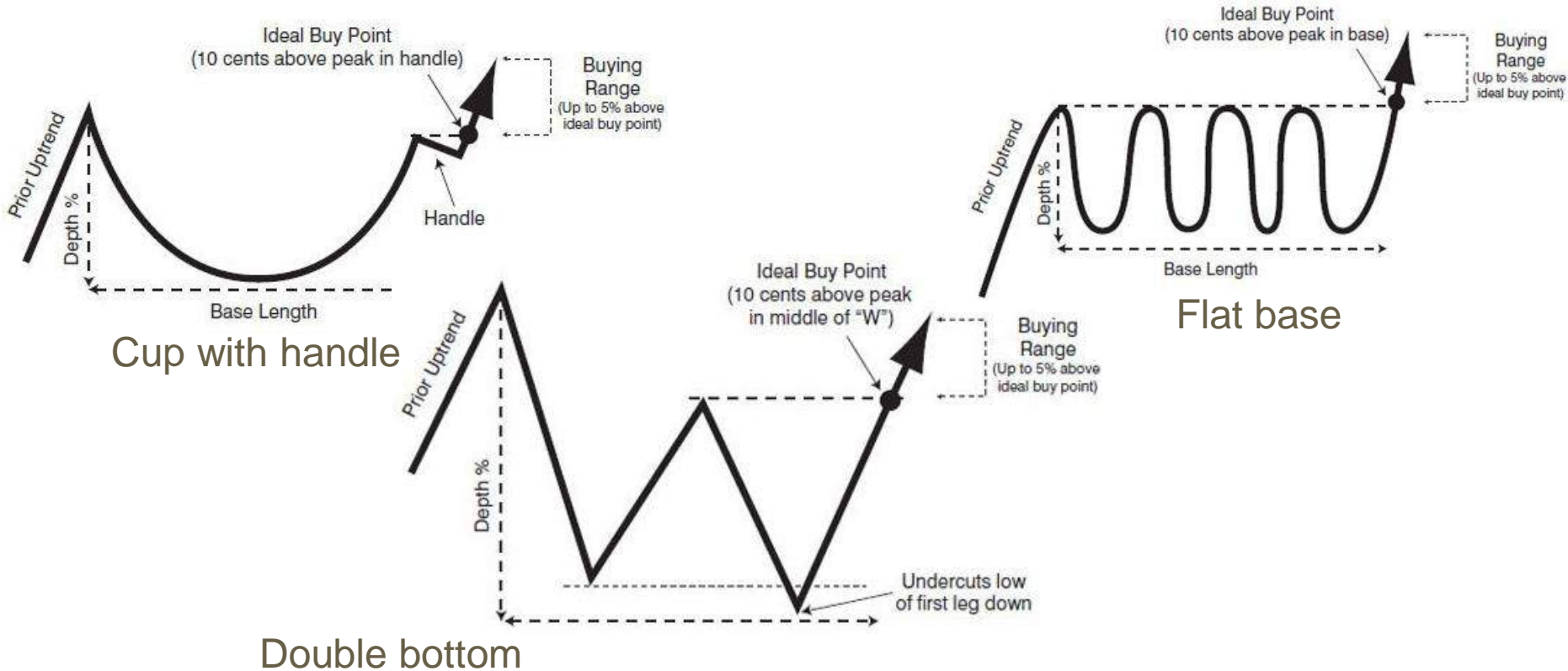


What/When to Buy

- IBD popular CANSLIM methodology for growth investors
 - IBD50: “leading stocks”
 - Chart patterns: when to buy

The image shows a screenshot of the Investor's Business Daily website and a book cover. The website header includes the title "INVESTOR'S BUSINESS DAILY" and the URL "WWW.INVESTORS.COM". Below the header, there are several news headlines such as "Schwarzenegger's Duty", "And The Moral Is...", "High Without Hires", "Retail", "Fund Funds In Focus", and "Just Hang Up". The main content area features "IBD'S TOP 10" with the headline "Jobbers Claim Hit 8-Month Lo" and "Stocks Settle For Decent Gain". The website navigation bar includes "Home", "Research", "News", "Editorials", "IBD University", "IBD TV", and "eIBD". The "IBD University" section is highlighted, showing "Selected Course: CAN SLIM®" with three lessons listed: "Lesson 1: The C & A in the CAN SLIM® System", "Lesson 2: The N in the CAN SLIM® System", and "Lesson 3: The N in the CAN SLIM® System". A sidebar on the right shows "My Routine" with "eIBD" and "Stocks On The Stock Checkup". The book cover on the right is titled "How to Make Money in Stocks" by William J. O'Neil, described as a "Complete Investing System". The book cover also features a price tag of "ONLY \$29.95".

IBD Base Patterns Determine *Buy Point*



Patterns Must Be Identified “By Eye”

- ...or purchased from IBD

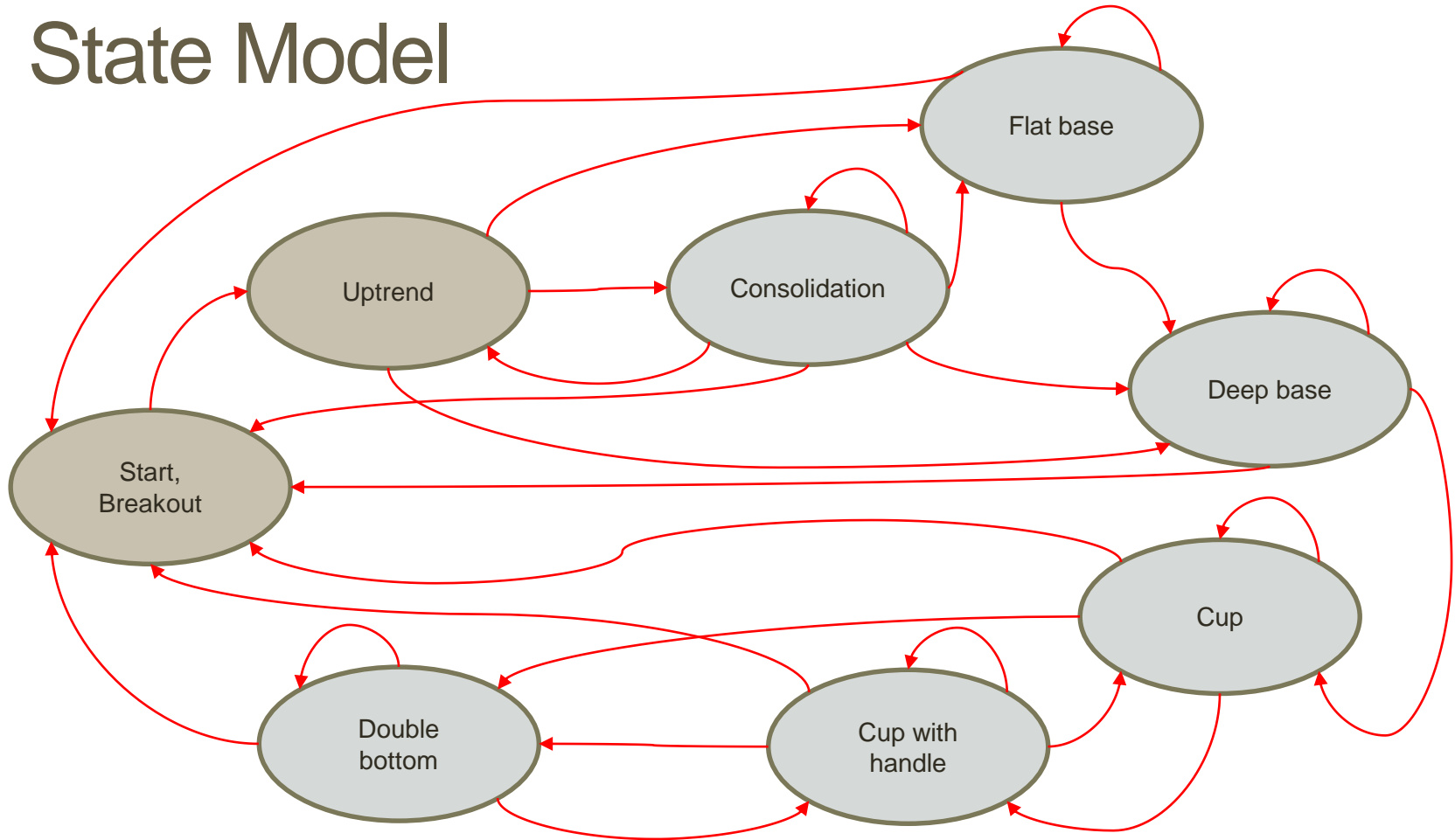


Patterns Must Be Identified “By Eye”

- ...or purchased from IBD
- The challenge:
 - Do it with DMN

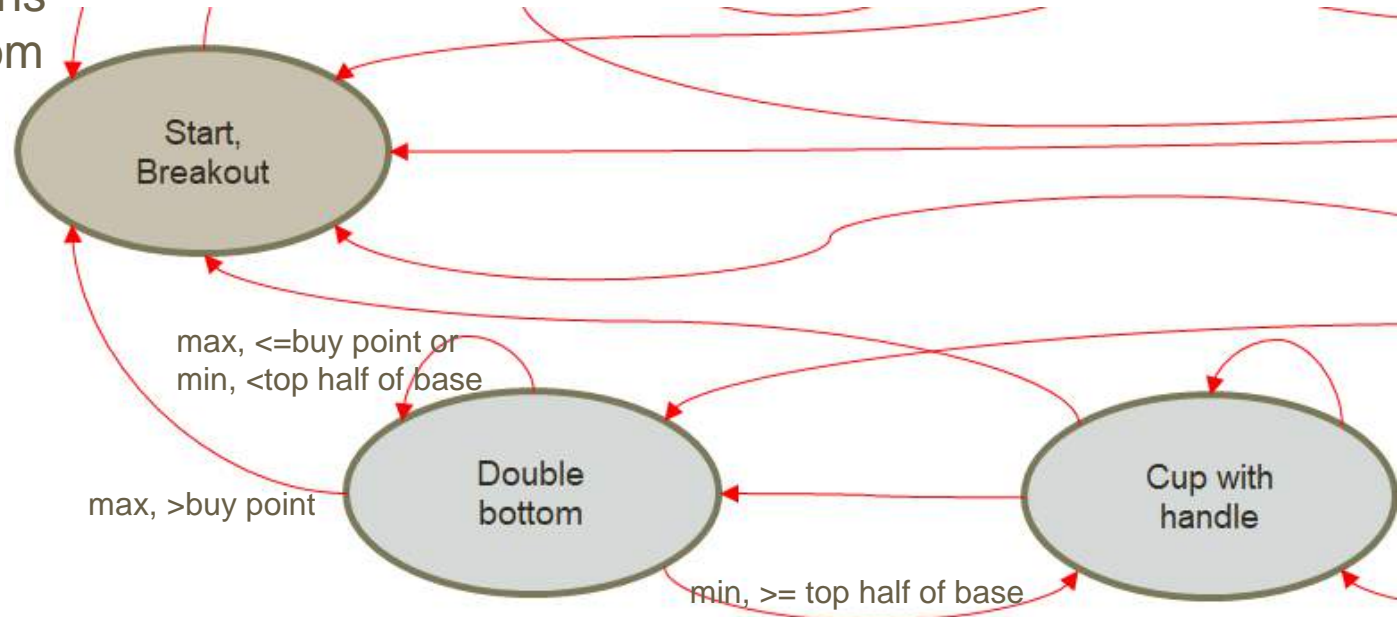


State Model



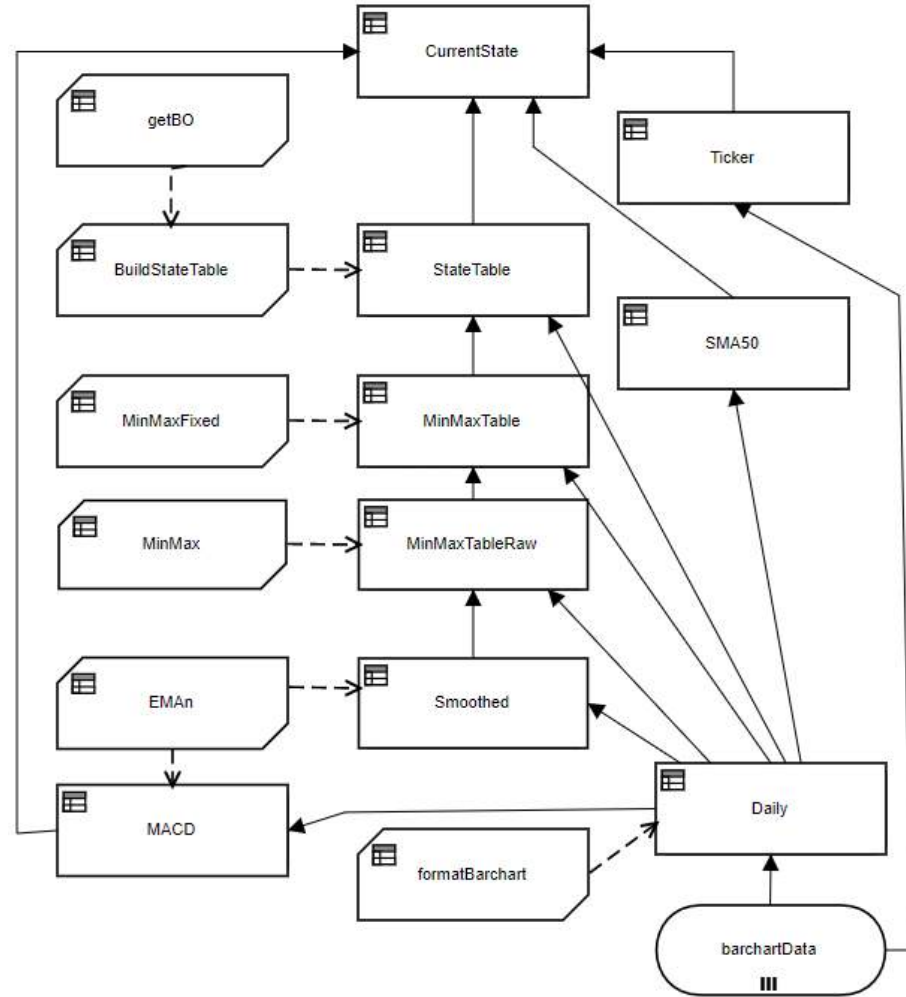
“Mining” State from Event Log

- Local max/min of daily prices serve as *business events*
- Current state + event data + rules \Rightarrow State transition
- 3 possible transitions out of Double bottom state



Identify IBD Base Patterns with DMN

- Bottom part smooths data and finds MinMax points
- *StateTable* implements the state chart
- *CurrentState* reports today's status



MinMaxTable

theDate	type	value
2017-01-18	Min	56.09266
2017-02-27	Max	88.40962
2017-03-22	Min	79.49747
2017-03-30	Max	89.89059
2017-04-13	Min	80.74664
2017-05-22	Max	118.1219
2017-05-31	Min	111.6762
2017-06-09	Max	130.5637
2017-07-11	Min	107.4566
2017-07-26	Max	127.7234

- Each MinMax entry transitions to a new “state” of the stock
- Certain states represent base patterns and breakouts



StateTable Rules

U	currentState.type	current.type	current.value	durationDays	depthPct	newState				Description
						type	start	buyPt	altBuyPt	
	<i>tStateType</i> "breakout", "uptrend", "consolidation", "flat base", "deep base", "cup", "cup with handle", "double bottom"	<i>tMinMaxType</i> "Min", "Max", "Skip", "ReplaceMax", "ReplaceMin", null	Number	Number	Number	<i>tStateType</i> "breakout", "uptrend", "consolidation", "flat base", "deep base", "cup", "cup with handle", "double bottom"	Date	Number	Number	
1	"breakout"	-	-	-	-	"uptrend"	currentState.start	0	0	
2	"uptrend"	"Min", "ReplaceMin"	>priorBuyL	<35	-	"consolidation"	if priorState.type="breakout" then origTable[n- 1].theDate else currentState.start	0	0	
3	"uptrend"	"Min", "ReplaceMin"	>priorBuyL	>=35	<=15	"flat base"	if priorState.type="breakout" then origTable[n- 1].theDate else currentState.start	high	0	
4	"uptrend"	"Min","ReplaceMin"	>priorBuyL	>=35	>15	"deep base"	highDate	high	0	
5	"uptrend"	"Min", "ReplaceMin"	<=priorBuyL	-	-	if priorState.type="breakout" then partial[-3].type else priorState.type	if priorState.type="breakout" then partial[-3].start else priorState.start	if priorState.type="breakout" then max(partial[-3].buyPt, high) else priorState.buyPt	0	revert to prior base if undercut buy point
6	"consolidation"	"Max", "ReplaceMax"	<high	<35	-	"consolidation"	currentState.start	0	0	

StateTable Results

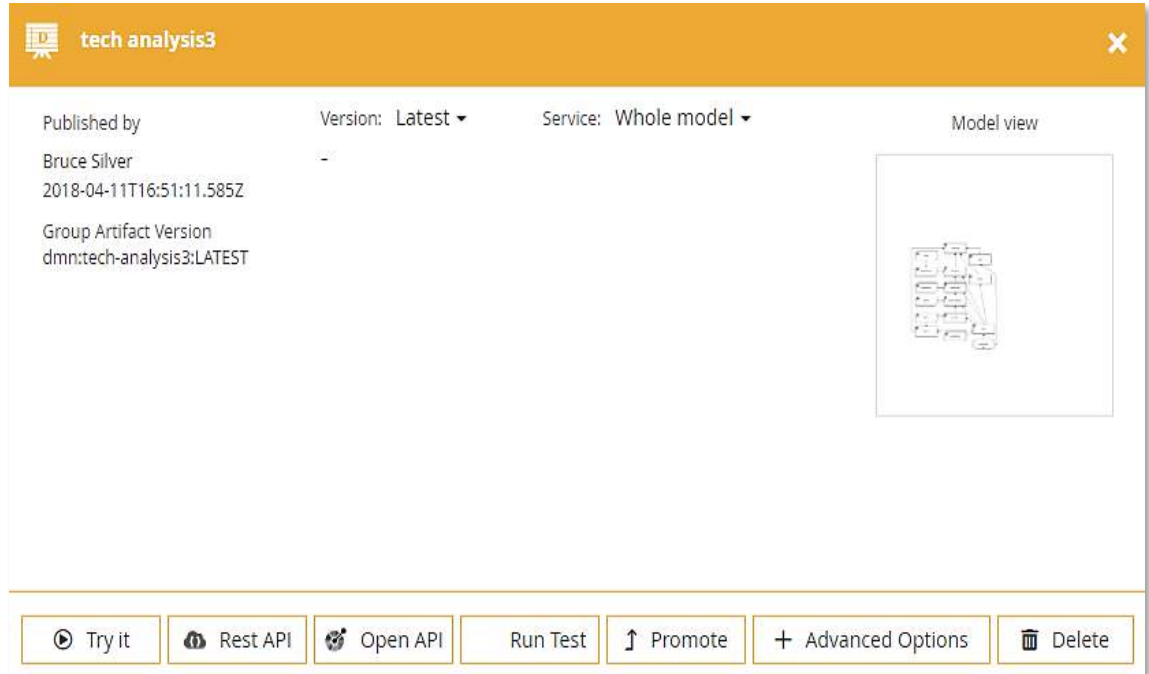
- Breakouts overlaid on the weekly chart

durationDays	buyPt	current			high	depthPct	low	start	type
		theDate	type	value					
0	0	2017-01-18	Min	56.09266	56.09266	0	56.09266	2017-01-18	breakout
40	0	2017-02-27	Max	88.40962	88.40962	36.55	56.09266	2017-01-18	uptrend
23	88.40962	2017-03-22	Min	79.49747	88.40962	10.08	79.49747	2017-02-27	flat base
31	88.40962	2017-03-30	Max	89.89059	89.89059	11.56	79.49747	2017-02-27	flat base
45	88.40962	2017-04-13	Min	80.74664	89.89059	11.56	79.49747	2017-02-27	flat base
58	88.40962	2017-04-26	Max	88.40962	88.40962	0	88.40962	2017-04-26	breakout
71	88.40962	2017-05-13	Min	118.1219	118.1219	25.97	87.44221	2017-04-26	uptrend
84	118.1219	2017-05-22	Max	111.6762	118.1219	5.46	111.6762	2017-05-22	flat base
97	118.1219	2017-06-05	Min	118.1219	118.1219	0	118.1219	2017-06-05	breakout
110	130.5637	2017-06-05	Max	130.5637	130.5637	11.29	115.8235	2017-06-05	uptrend
123	107.4566	2017-05-22	Min	107.4566	130.5637	14.47	111.6762	2017-05-22	flat base
136	127.7234	2017-05-22	Max	127.7234	130.5637	17.7	107.4566	2017-05-22	flat base



Deploy Decision Service to Trisotech Cloud

- Choice of either form to enter input data or REST API
- One-click deployment



The screenshot shows a web interface for a decision service. At the top, there is a header bar with the service name "tech analysis3" and a close button. Below the header, the interface is divided into several sections. On the left, there is a "Published by" section with the name "Bruce Silver" and a timestamp "2018-04-11T16:51:11.585Z". Below this is the "Group Artifact Version" section with the value "dmn:tech-analysis3:LATEST". In the center, there are two dropdown menus: "Version: Latest" and "Service: Whole model". On the right, there is a "Model view" section containing a diagram of a decision model. At the bottom of the interface, there is a row of action buttons: "Try it", "Rest API", "Open API", "Run Test", "Promote", "Advanced Options", and "Delete".

tech analysis3

Published by
Bruce Silver
2018-04-11T16:51:11.585Z

Group Artifact Version
dmn:tech-analysis3:LATEST

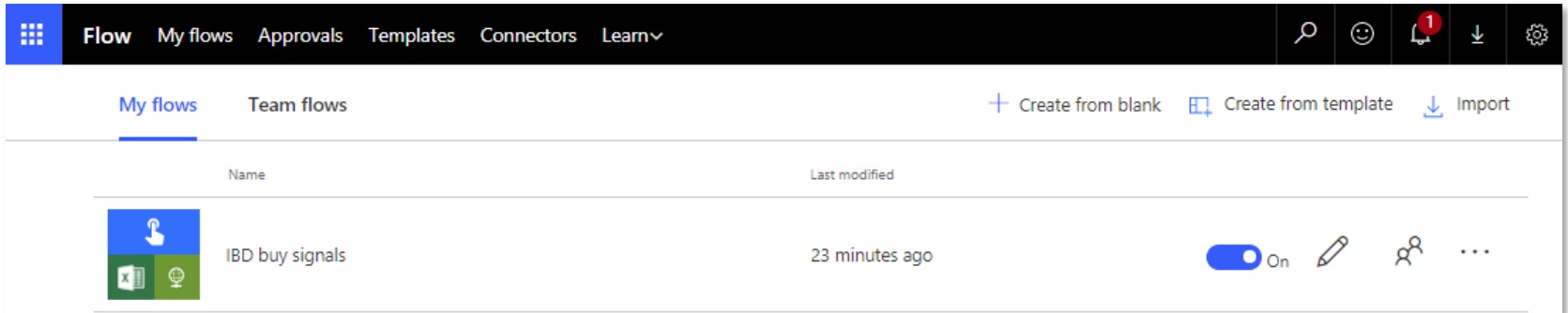
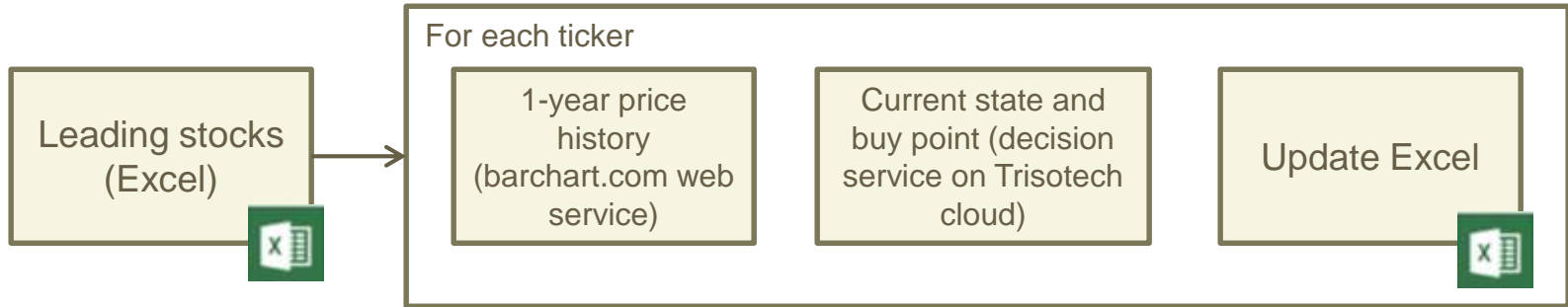
Version: Latest

Service: Whole model

Model view

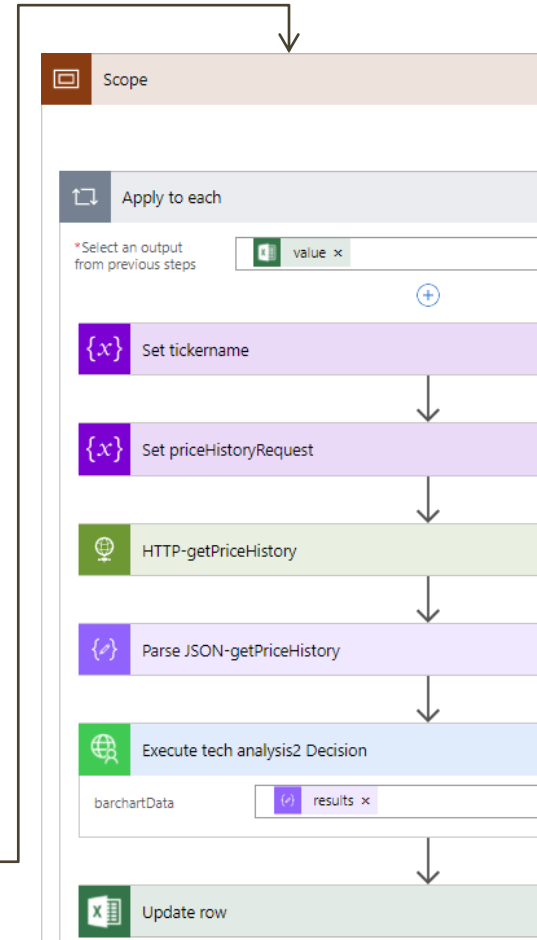
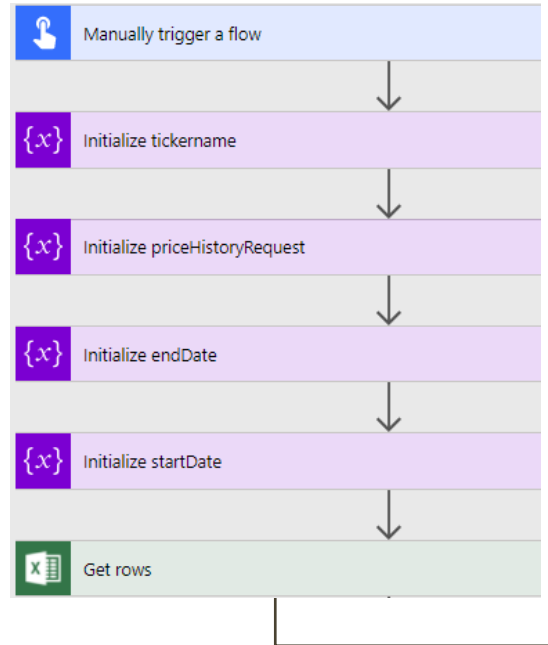
Try it Rest API Open API Run Test Promote Advanced Options Delete

Automating the Process



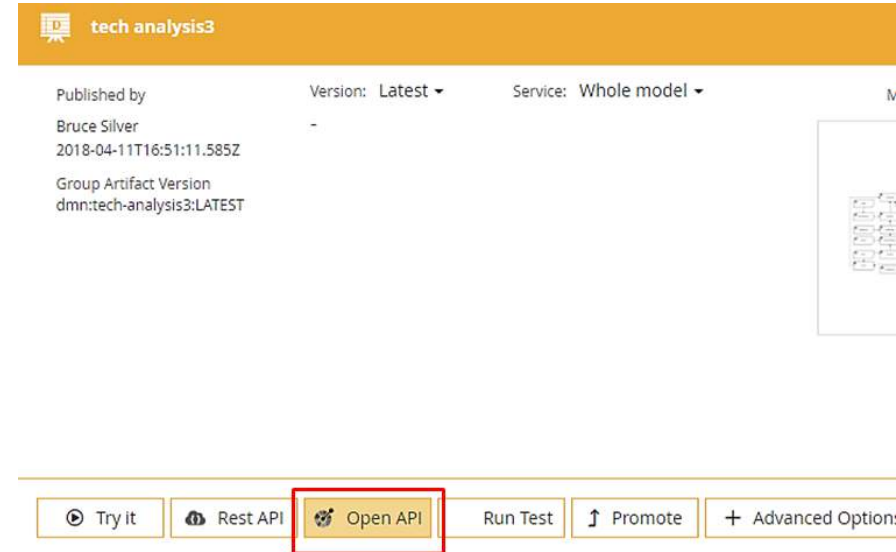
Microsoft Flow Process Model

- For each row in Excel table of stocks...
 - Get the ticker name
 - Invoke the price history service
 - Invoke the decision service with price history, using custom connector
 - Map the return back to Excel



Create a Custom Connector in Flow

1. Trisotech downloads OpenAPI configuration file automatically
2. Import in Flow to create the connector



Populate Excel with Current IBD50...

- ...and Go!

1	Ticker	Rank	PowerAppsid	CurrentPrice	State	PrevBreakout	BuyPoint
2	SEDG	1					
3	ABMD	2					
4	DQ	3					
5	NFLX	4					
6	ANET	5					
7	PAYC	6					
8	GRUB	7					
9	BZUN	8					
10	LGIH	9					
11	PANW	10					
12	WB	11					
13	NOW	12					
14	ALGN	13					
15	FND	14					
16	ADBE	15					
17	CASA	16					
18	MKSI	17					
19	VNOM	18					

Results for Each Stock in Excel

	A	B	C	D	E	F	G
1	Ticker	Rank	PowerAppslid	CurrentPrice	State	PrevBreakout	BuyPoint
2	SEDG	1	xqiXrFltuZQ	\$55 (2018-04-11), +37.84% from previous buy point, +14.53% from 50 dma.	flat base starting 2018-03-21 (\$57.6), MACD -0.41 (falling).	2018-02-15 at \$39.9 from cup starting 2017-11-24	59.2 (7.64% above current price)
3	ABMD	2	uIn2kO_7fx8	\$296.4 (2018-04-11), +16.04% from previous buy point, +9.23% from 50 dma.	flat base starting 2018-02-14 (\$255.42), MACD -0.48 (rising).	2018-02-14 at \$255.42 from flat base starting 2018-02-02	304.28 (2.66% above current price)
4	DQ	3	PoXCDcp2heg	\$59.26 (2018-04-11), -9.53% from previous buy point, +15.33% from 50 dma.	cup starting 2017-12-01 (\$58.49), MACD 1.47 (falling).	2018-01-12 at \$65.5 from cup starting 2017-12-01	72.5 (22.34% above current price)
5	NFLX	4	DSTbVvQsy0w	\$303.67 (2018-04-11), +5.88% from previous buy point, +4.20% from 50 dma.	uptrend from 286.81 breakout on 2018-04-04	2018-04-04 at \$286.81 from consolidation starting 2018-02-26	None
6	ANET	5	BgBCfzTJkqE	\$266.58 (2018-04-11), +8.52% from previous buy point, -2.15% from 50 dma.	uptrend from 245.65 breakout on 2018-03-29	2018-03-29 at \$245.65 from deep base starting 2017-11-21	None

Get Ready for “Real” DMN

- One-click cloud deployment
- Microservice orchestration
- Low code tools
- Open source runtime
- Standards-based
- OpenAPI integration
- Enabling real solutions from “citizen developers”
(and actual developers too!)

All Secrets Revealed

- DMN Cookbook
 - New book with Edson Tirelli
 - Written for technical practitioners
- Anything you want to do with DMN
 - FEEL “cookbook”
 - Smart Contracts
 - Handling Variations
 - Data Validation
 - Service Deployment and Orchestration
 - All models executable
- methodandstyle.com/dmn-cookbook
- <https://www.amazon.com/dp/0982368186>

