INDUSTRIAL VISUALIZATION

U of T, Info Vis

Oct 31, 2016

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From CBS News Show 60 Minutes: http://www.cbsnews.com/news/new-search-engine-exposes-the-dark-web/

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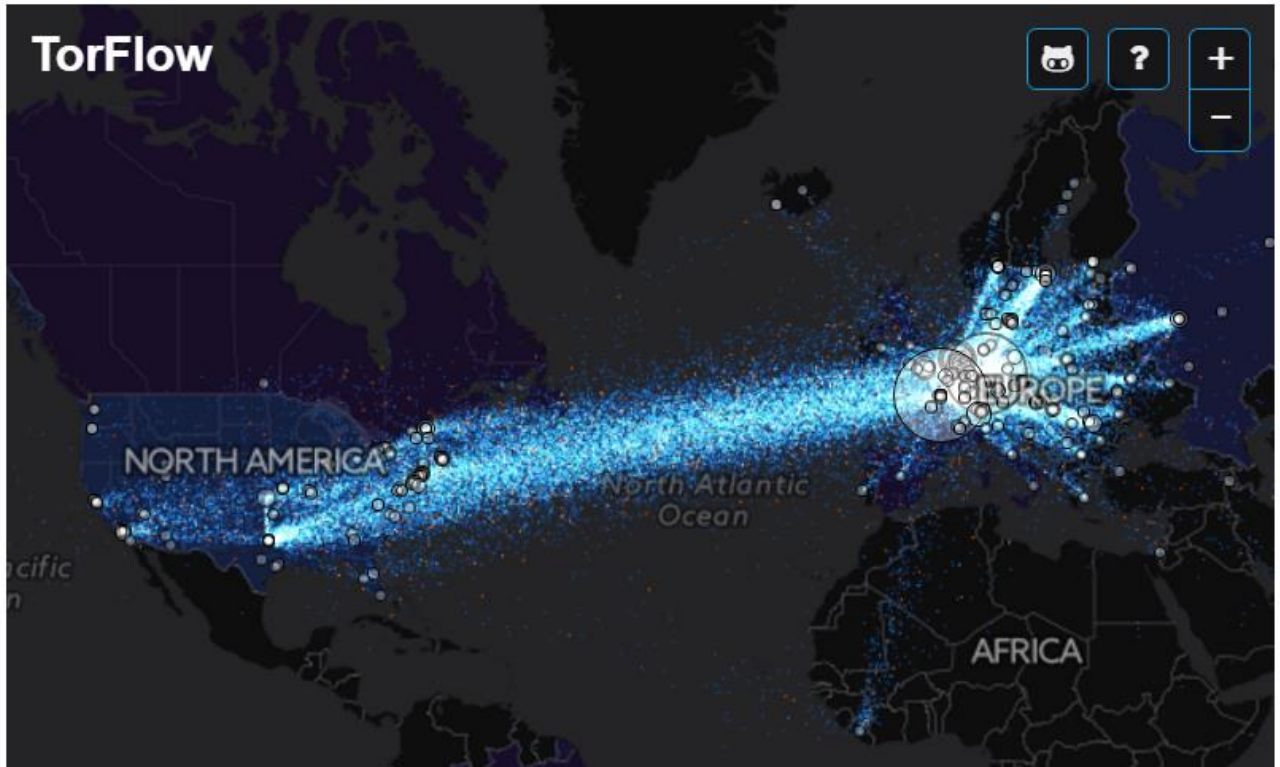
EMAIL

ANDY GREENBERG SECURITY 01.17.16 7:00 AM

HERE'S WHAT TOR'S DATA LOOKS LIKE AS IT FLOWS AROUND THE WORLD



From Wired.com
wired.com/?p=1961132

Baseball

Changing the game → answer scenarios visually based on past performance

Pitch Data

- MLB data for every pitch – pitch type, speed, result, where it went in the field, batter, pitcher, inning, count, video, etc. *More than 1Tb per season*

Pitches Analysis

- Every pitch over plate and where hit. Color-coded, shapes, filters, linking, workflow. E.g. see only fastballs that resulted in a hit.

Benefits

- Full pitching analysis workflow: *Explore* top level patterns; *Analyze* specific slices; *Review* in detail video.
- The two teams using this software the most are in the 2010 World Series. Two teams that didn't use it were eliminated in the league finals. Next year 75% of teams adopted the software.

More

Video from Strata conference: http://bit.ly/1rOwf7S
Slides from Strata conference: http://bit.ly/PoZcBv
Teaser video of pitch patterns: http://bit.ly/1QOlJS5
Poster with story: https://uncharted.software/assets/pdfs/BSportsPro_Poster_Uncharted_Finalc3.pdf
Paper at visualization conference: http://workshop.sportvis.com/papers/BSports-BigData-2013-v4a.pdf
Video of coach using system: https://www.youtube.com/watch?v=uUYY1kYrR8g

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IS DAVID FREESE A CLUTCH HITTER?

DAVID FREESE: 2011 WORLD SERIES MVP
A LOOK AT ALL FREESE'S SUCCESSFUL HITS IN 2011 ON A 3-2 COUNT

Bloomberg SPORTS

Experts debate whether clutch hitters exist statistically. Decide for yourself: Bloomberg Sports can show all the hits and video for any split. In 2011 Freese hit 25 pitches into play on a 3-2 count. 14 were out. Here are the other 11 and two other significant plays.

1. Apr 8. Tie game 0-0, 2nd inning. Freese doubles off a fastball from Jonathan Sanchez to right field.

2. Apr 28. Houston leads 4-1, 6th inning. Freese singles off a fastball from Nelson Figueroa to left field.
"Freese has been right on a couple of pitches tonight. He's looking pretty good at the plate in this series."

HBP. Hit by Pitch May 1. 6th inning vs. Atlanta. Freese hit in left wrist off a sinker from Scott Linebrink. Shakes it off, continues to play, but then misses next 61 games from fracture.
"Oooo. You could hear that one."

3. Aug 1. Milwaukee leads 5-2, 6th inning. Freese singles off a fastball from Zack Greinke to right field advancing Holliday to 3rd and Berkman to 2nd.
"And the bases are loaded. The Cardinals have bounced right back. Now they threaten in the 6th."

4. Aug 9. Tied 3-3 vs. Milwaukee, bottom of the 8th. Freese singles off a fastball from Francisco Rodriguez.
"It's a soft liner, might have broken his bat, doesn't matter, it's hit number two for David Freese!"

5. Aug 16. Pittsburgh leads 3-2, 6th inning, runner on first. Freese doubles off a slider from Jeff Karstens.
"The run producer produces again."

6. Aug 28. St. Louis leads 6-4, bottom of 7th,, runners on 1st and 2nd. Freese singles off Chris Resop fastball.
"Broken bat, base hit, Holliday will score and Freese wins the battle!"

7. Sep 2. Cincinatti leads 6-5 bottom 8th. Freese gets a solo home run off a splitter from Jose Arredondo.
"Freese opposite field home run! Home run number 9 this year and the game is 6-6!"

8. Sep 16. Tied Philadelphia 1-1, 3rd inning, runner on 1st. Freese singles off a fastball from Vance Worley. Pujols is tagged out running from 1st base to 3rd.

9. Oct 16. Game 6 NLCS.St. Louis leads 6-4 over Milwaukee in 3rd inning. Freese doubles on a line drive off a fastball from Chris Narveson.

TT. Tying Triple Oct 27. Game 6 of World Series. St. Louis down 3 games to 2. Texas leads 7-5 bottom 9th, 2 out, runners at 1st and 2nd. Count 1-2. Texas one strike away from winning World Series. Freese hits a two run triple off a fastball from Neftali Feliz.
"Freese has tied it 7-7. Unbelievable."

10. Oct 27. Winning run. Game 6 of World Series. Bottom of the 11th, tied at 9-9. Freese gets a walk-off homer off a fastball from Mark Lowe sending the Series to game 7.
"Freese hits it in the air to center... and we will see you tomorrow night."

11. Oct 28. Game 7 of World Series. Texas leads 2-0. Bottom of 1st, with runners at 1st and 2nd with 2 out. Freese doubles off a fastball from Matt Harrison.
"This is going to tie it! David Freese, what a roll."

Poster designed by Oculus
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BACKSTORY

(models I built to represent the world – architectural, CG, early dataviz)

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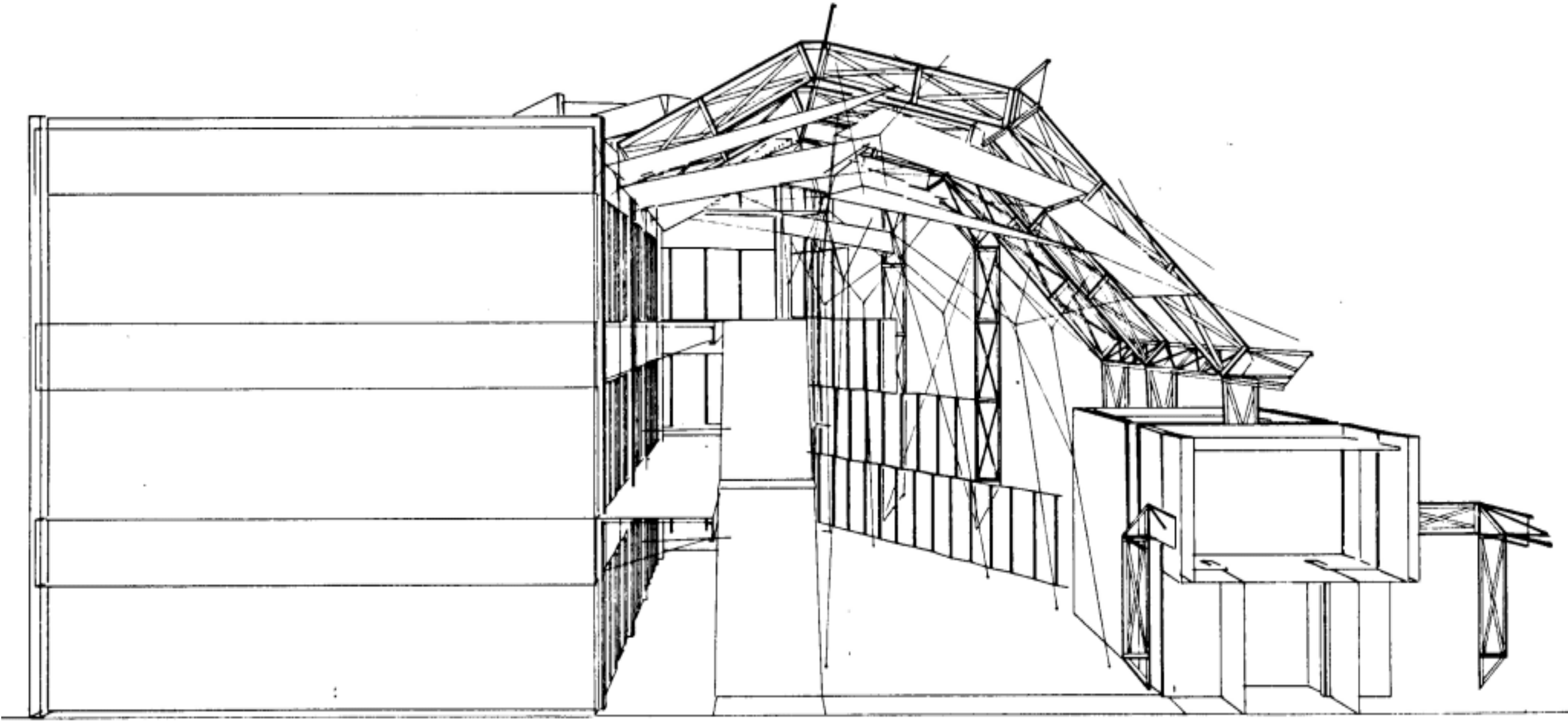

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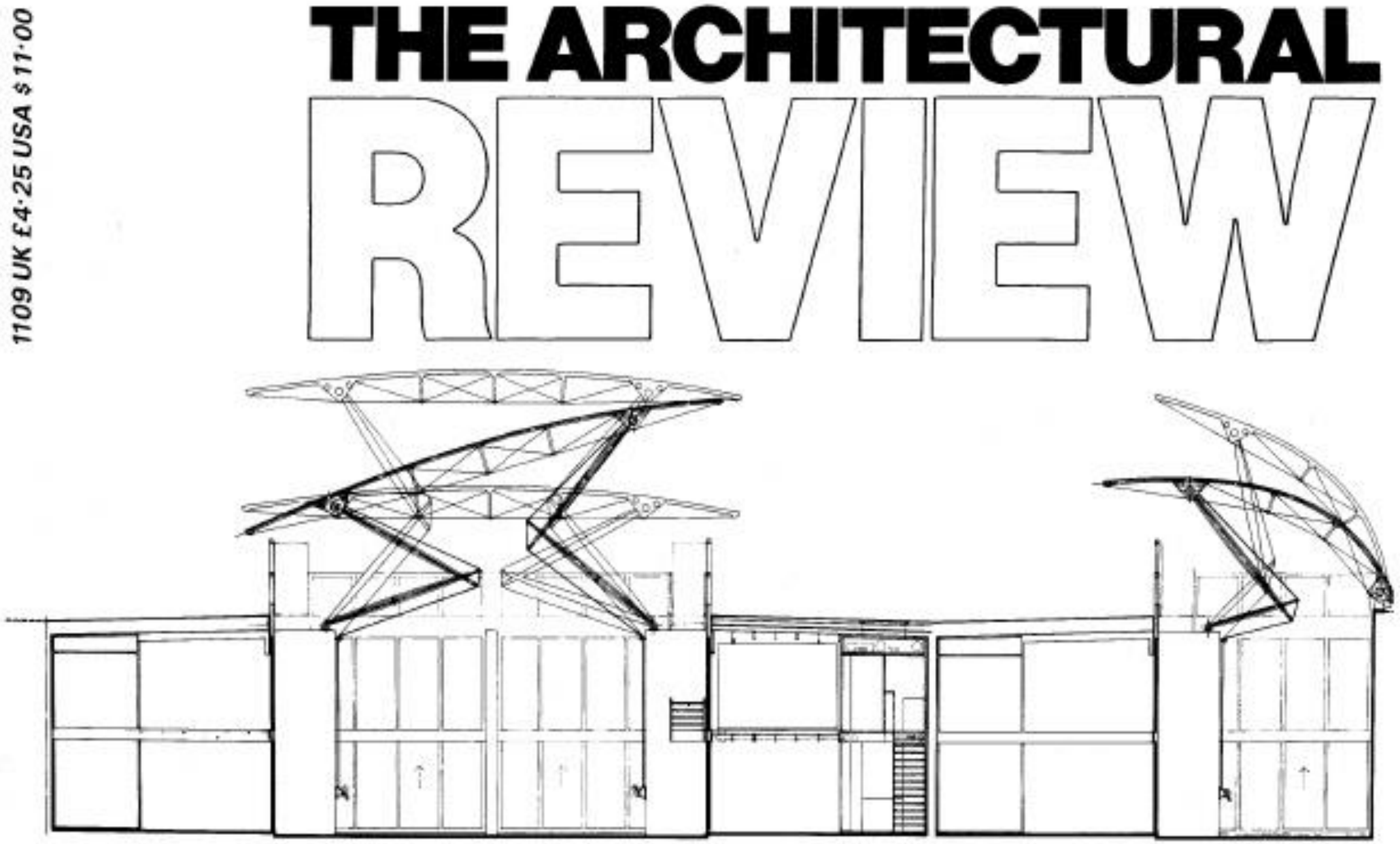

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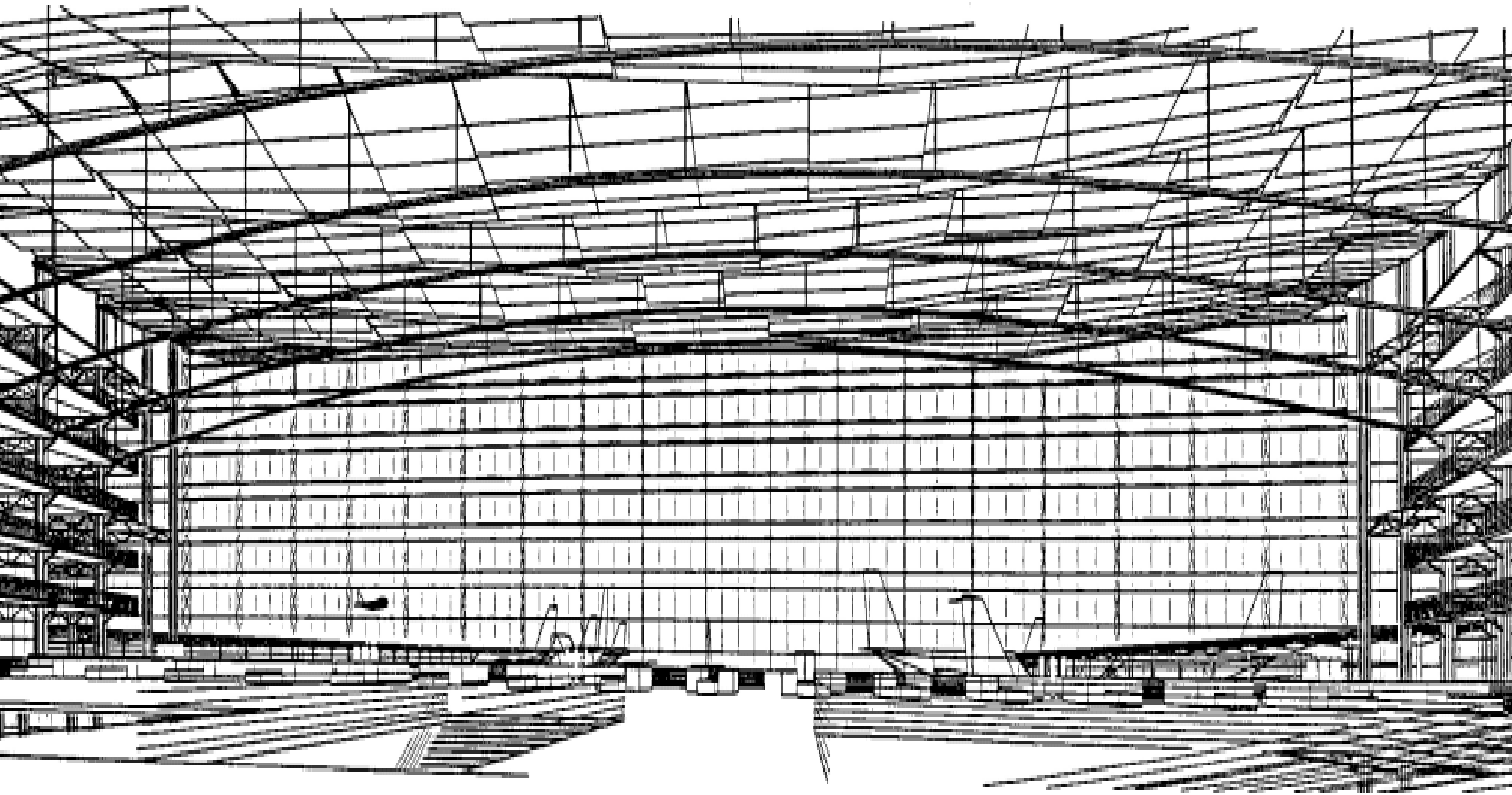

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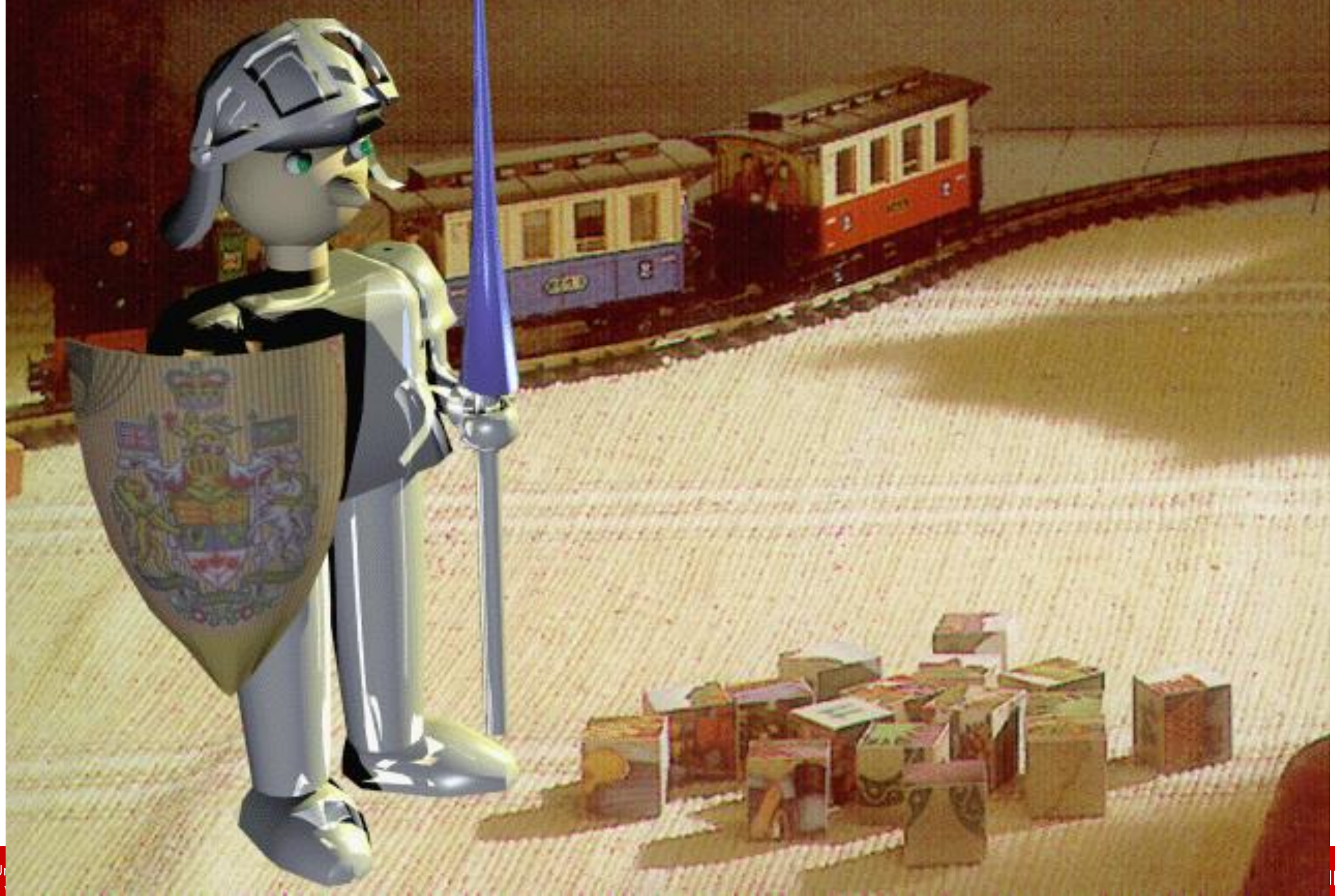

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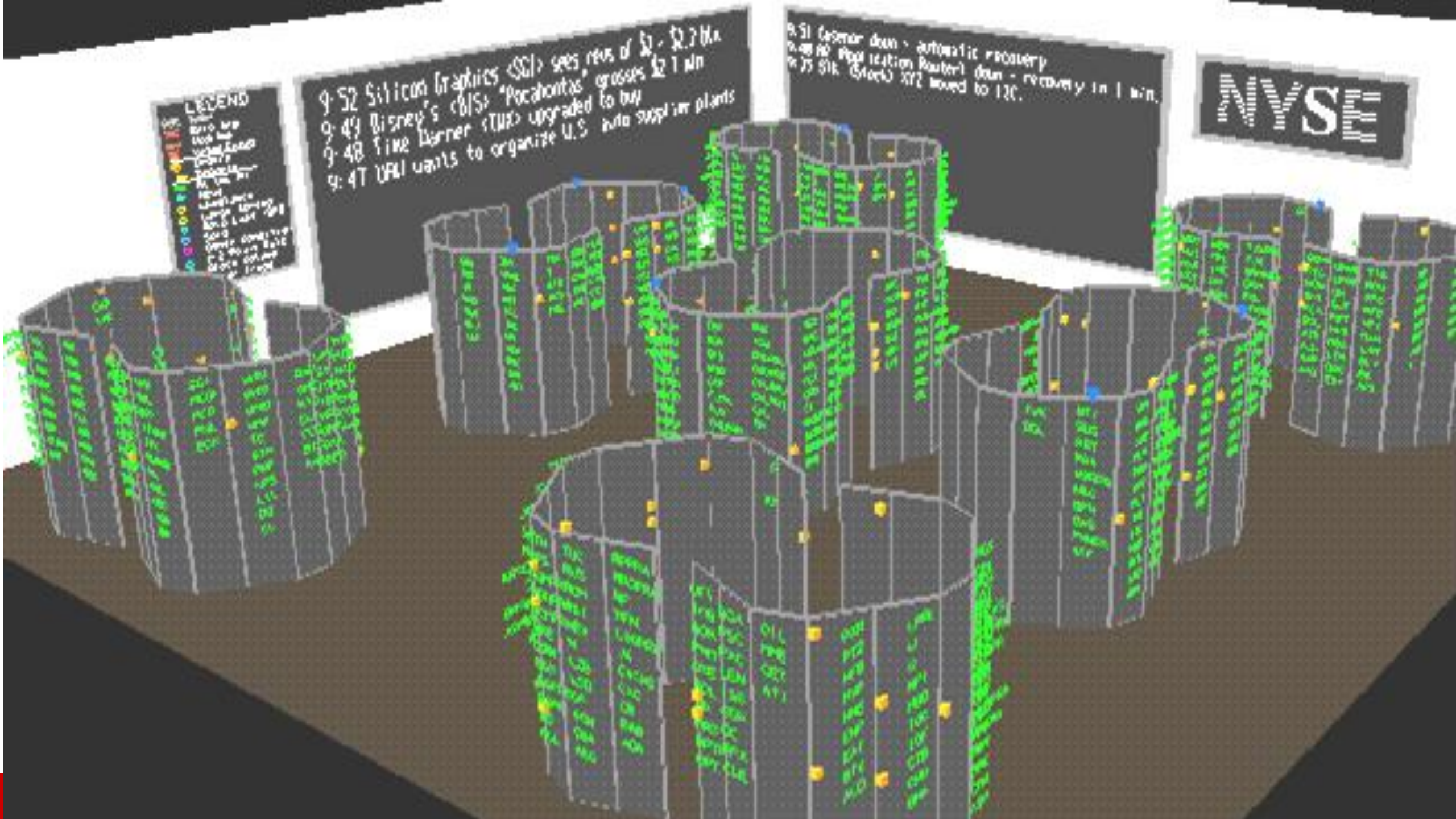
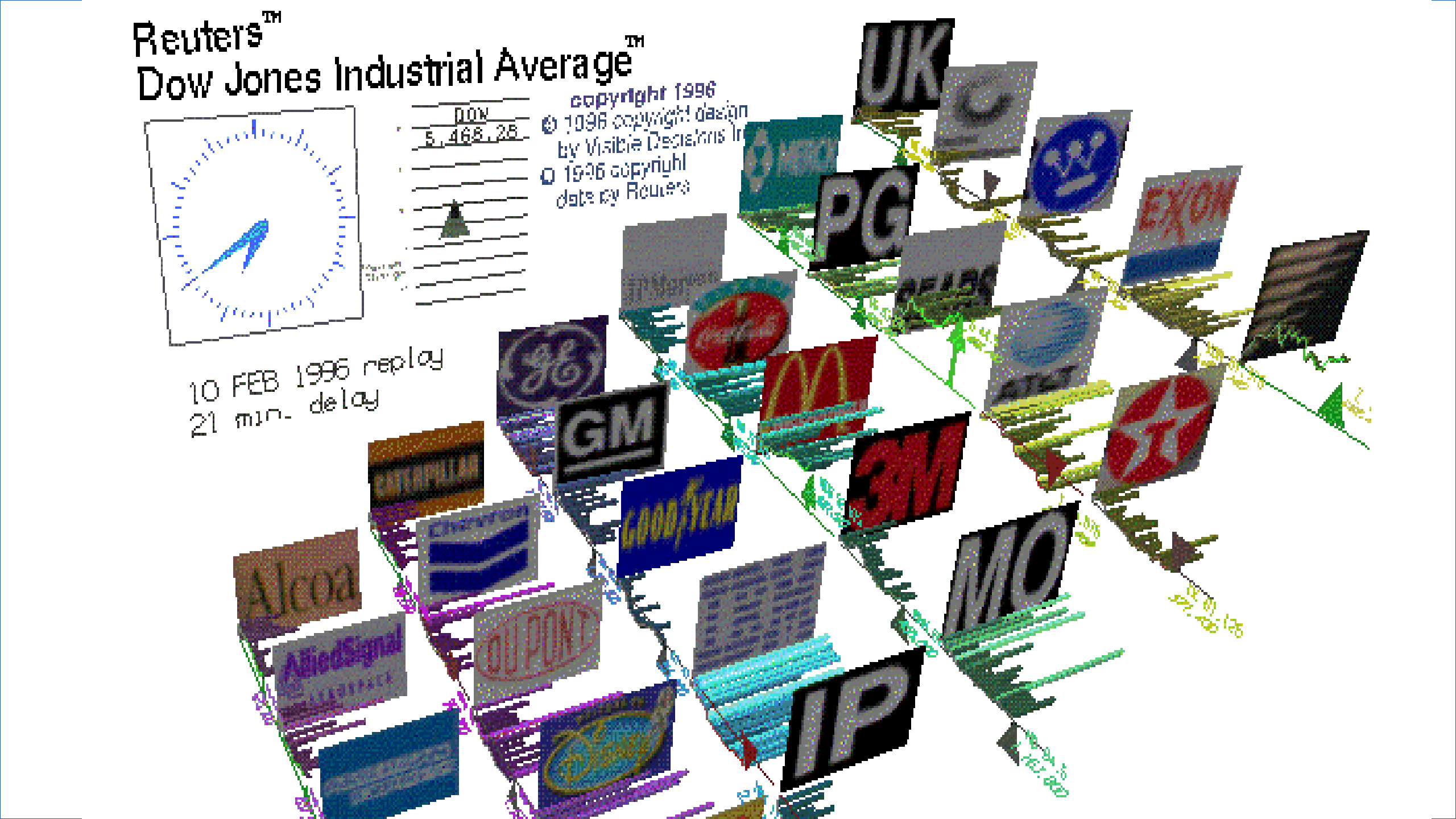

LEGEND
9:52 Silicon Graphics <SGI> sees rev of $2 - $2.3 bln
9:49 Disney's <DIS> "Pocahontas" grosses $2 1 bln
9:48 Time Warner <TWX> upgraded to buy
9:47 UAW wants to organize U.S. auto supplier plants
9:51 Gateway down - automatic recovery
NYSE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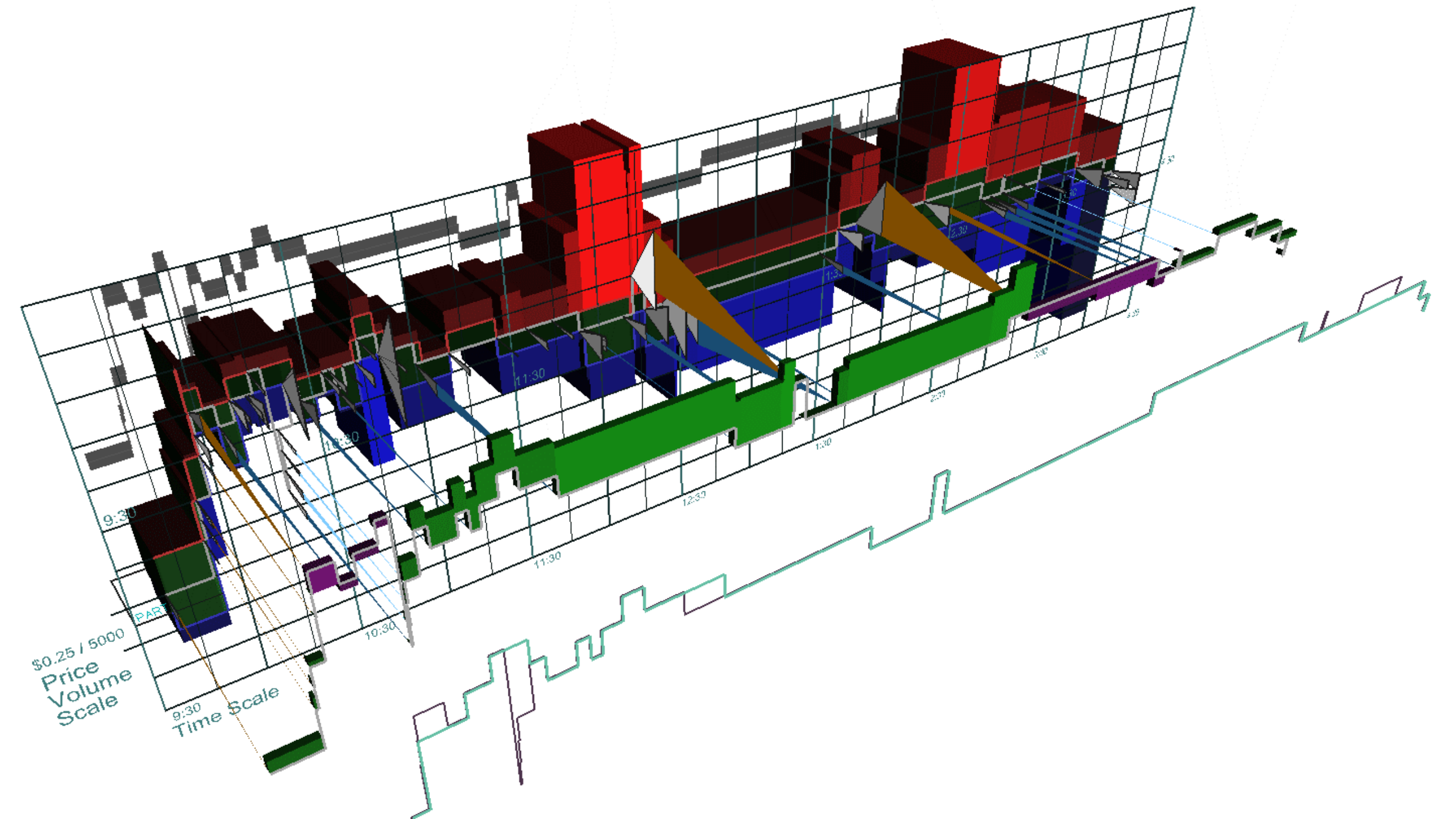
Disney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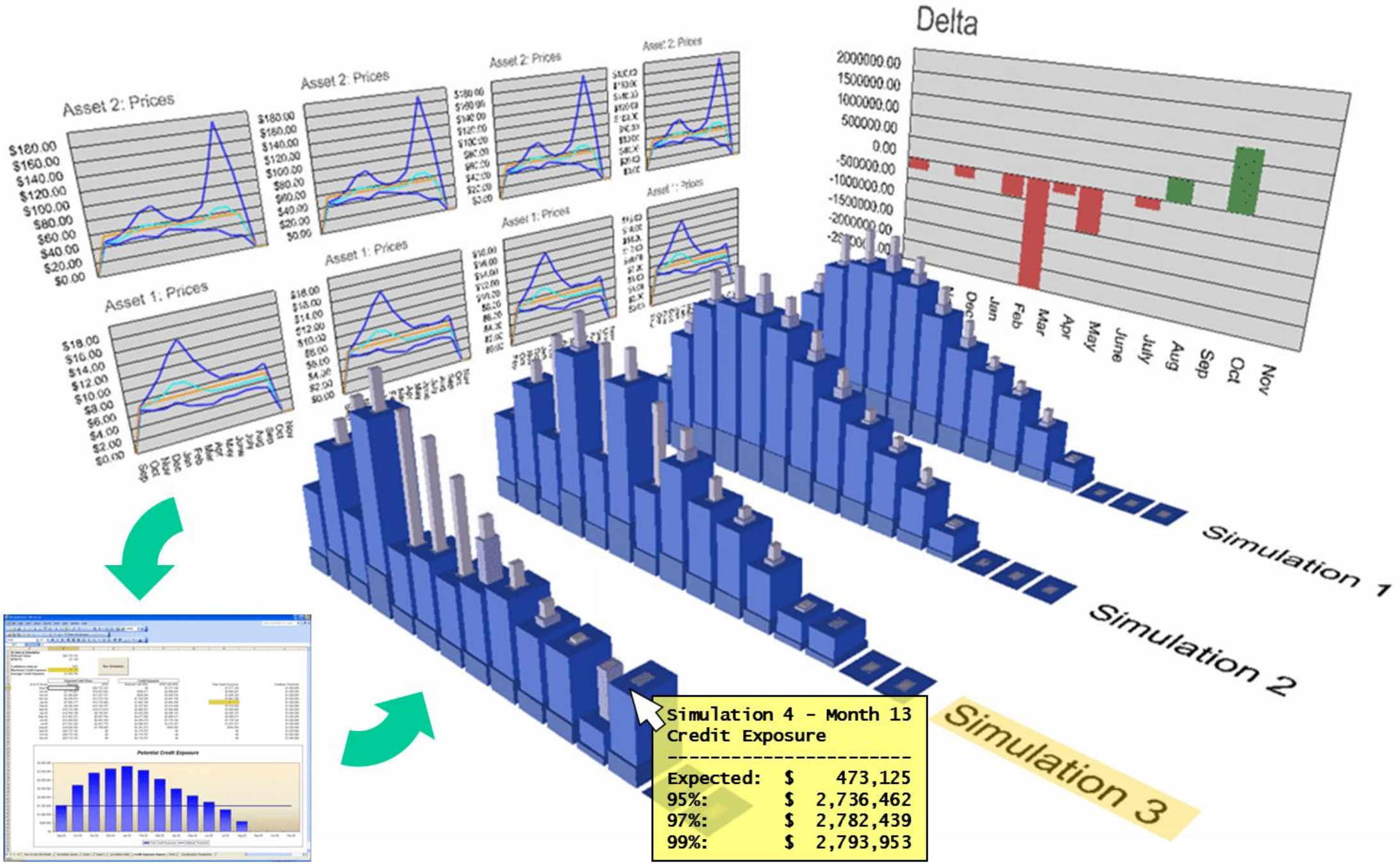
10:30
$0.25 / 5000
Price
Volume
Scale
9:30
Time Scale



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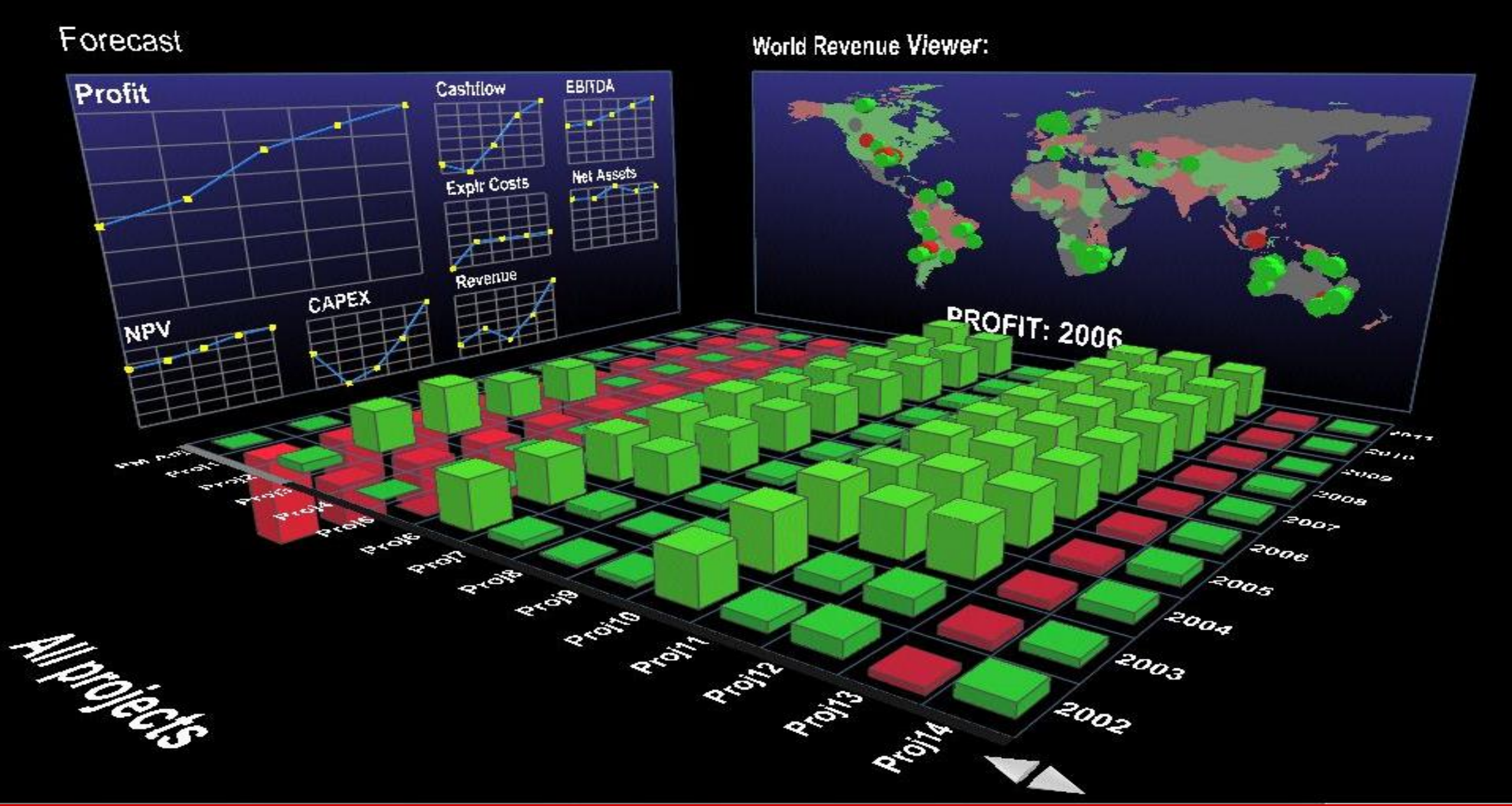

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Ford Motor Co. (F)

Add to watchlist

NYSE - NYSE Real Time Price.
Currency in USD

11.73 -0.01 (-0.04%)
As of 2:45 PM EDT. Market open.

Quote Lookup

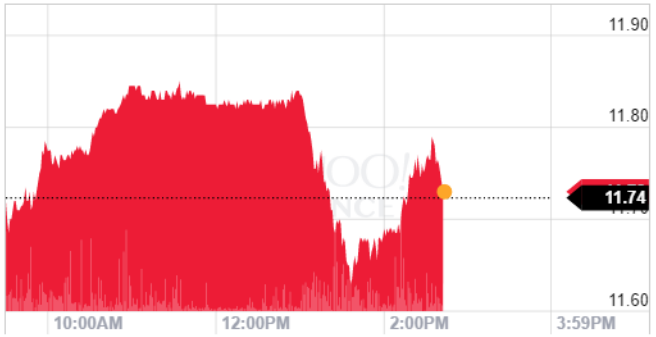
People also watch:
GM BAC C GE AAPL

Summary | Conversations | Statistics | Profile | Financials | Options | Holders | Historical Data | Analysts

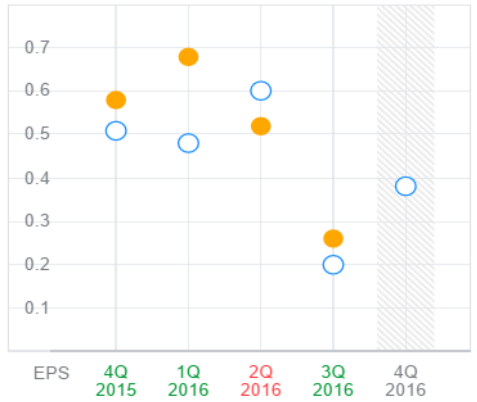
Open	11.74	Market Cap	47.46B
Prev Close	11.74	P/E Ratio (ttm)	5.53
Bid	11.74 x 45200	Beta	1.22
Ask	11.75 x 6100	Volume	22,874,198
Day's Range	11.62 - 11.85	Avg Vol (3m)	34,821,460
52wk Range	11.02 - 14.95	Dividend & Yield	0.60 (5.05%)
1y Target Est	12.83	Earnings Date	Jan 26, 2017 - Jan 30, 2017

Trade prices are not sourced from all markets

1D 5D 1M 6M YTD 1Y 2Y 5Y 10Y MAX Interactive chart

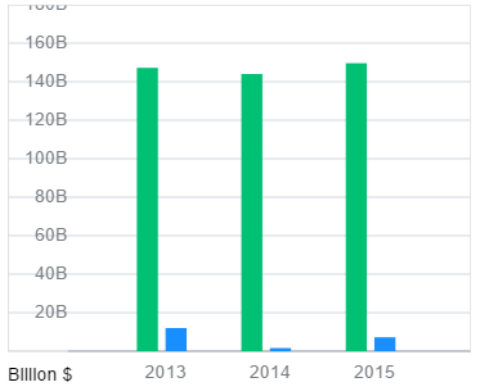


Earnings

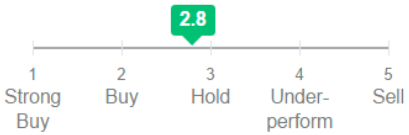


Financials

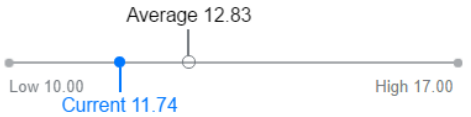
Annual | Quarterly



Recommendation Rating



Analyst Price Targets (18)



Upgrades & Downgrades

Downgrade	Buckingham Research: Buy to Neutral	9/20/2016
	Nomura: Buy	9/20/2016
	Seaport Global Securities: Buy	8/9/2016
	Jefferies: Underperform	8/9/2016
Downgrade	Goldman: Buy to Neutral	7/29/2016
	Piper Jaffray: Overweight	6/10/2016

All | News | Press Releases

Market Realist • 41 minutes ago

Inside Ford's Low 3Q16 Revenues

In 3Q16, Ford's (F) revenues stood at $35.9 billion, which is 5.9% lower than in 3Q15 but much higher than analysts' revenue estimate of $33.1 billion.

Sponsored FHA Rate Help

Jim Cramer:"Homeowners Must Claim This $4k Rebate"

If you own a home, this is your last chance to claim a $3,000, or even $4,000 a year "Mortgage Rebate." Program expires December 2016. (qualify here)

Forbes • 43 minutes ago

Amazon's Results Present More Evidence Of U.S. Consumer Slowdown

Sample Yahoo Finance Web Page: http://finance.yahoo.com/quote/F?p=F
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Ford Motor Company (NYSE:F)

Add to portfolio

More results

11.74 0.00 (0.00%)

Real-time: 2:49PM EDT
NYSE real-time data - Disclaimer
Currency in USD

Range	11.62 - 11.85	Div/yield	0.15/5.11
52 week	11.02 - 14.96	EPS	2.25
Open	11.74	Shares	3.90B
Vol / Avg.	22.31M/30.84M	Beta	1.28
Mkt cap	46.10B	Inst. own	64%
P/E	5.22		

G+1 638

Dow Jones	18,170.98	0.01%
S&P 500	2,126.44	-0.31%
Cyclical Co...		0.35%
F	11.74	0.00%

Compare: Enter ticker here Add ☐ Dow Jones ☐ S&P 500 ☐ TM ☐ GM ☐ RNSDF ☐ VLKAY ☐ DDAIF ☐ TSLA ☐ NSANY more »

Settings | Technicals | Link to this view

Volume delayed by 15 mins.
Prices are not from all markets.
Sources include SIX.

Related companies

Show: Most Recent Annual ▾ Add or remove columns

	Company name	Price	Change	Chg %	Valuation d | m | y	Mkt Cap
F	**Ford Motor Company**	11.74	0.00	0.00%		46.10B
TM	Toyota Motor Corp...	114.77	-0.08	-0.07%		190.64B
GM	General Motors Co...	31.49	+0.16	0.49%		47.61B
RNSDF	RENAULT SA EUR3.81	79.06	0.00	0.00%		23.38B
VLKAY	Volkswagen AG (ADR)	29.53	+0.23	0.79%		72.77B
DDAIF	Daimler AG	71.38	+0.23	0.32%		76.55B
TSLA	Tesla Motors Inc	201.54	-2.47	-1.21%		30.47B
NSANY	Nissan Motor Co L...	19.93	+0.14	0.73%		42.74B
HMC	Honda Motor Co Lt...	29.77	-0.19	-0.65%		53.58B
KIMTF	KIA MOTORS CORP K...	42.00	0.00	0.00%		17.03B
HYMLF	HYUNDAI MOTOR CO ...	120.00	0.00	0.00%		26.43B

News

Relevance | Date

A Ford Motor Company's Profit Dropped Over 50%: Time to Worry?
Motley Fool - 20 hours ago

B Ford Motor Company Earnings: 3 Things to Watch
Motley Fool - Oct 25, 2016

C Earnings Reaction History: Ford Motor Company, 55.6% Follow-Through Indicator...
Nasdaq - Oct 27, 2016

D Thursday's Vital Data: Ford Motor Company (F), Bank of America Corp (BAC)...
Investorplace.com - Oct 27, 2016

E Ford Motor Company Earnings: What to Watch For Next Week
Motley Fool - Oct 17, 2016

All news for Ford Motor Company » Subscribe

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Events

Add F to my calendars

Oct 27, 2016
Q3 2016 Ford Credit's Earnings Briefing -

Oct 27, 2016
Q3 2016 Ford Motor Co Earnings Call -

Oct 27, 2016
Q3 2016 Ford Motor Co Earnings Release

Oct 3, 2016
September 2016 Ford Motor Co Corporate Sales Call -

Oct 3, 2016
September 2016 Ford Motor Co Corporate Sales Release

Sep 14, 2016
Ford Motor Co Investor Day -

Sep 1, 2016
August 2016 Ford Motor Co Corporate Sales Call -

Sep 1, 2016
August 2016 Ford Motor Co Corporate Sales Release

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International Business Machines Corp
117.75
+.81
+.69%
Vol
8.64MLN
130
120
110
105.56
100
90
80
70
80
53.73
20
News
Corp Actions
Trades
U.S.
GDP
Production
Studies
Jun 30
Jul 31
Aug 29
Sep 30
Oct 31
Nov 28
Dec 31
2008
Jan 30
Feb 27
Mar 31
Apr 30
May 29
Sample Bloomberg Terminal Chart: www.bloomberg.com/professional/charts/

What

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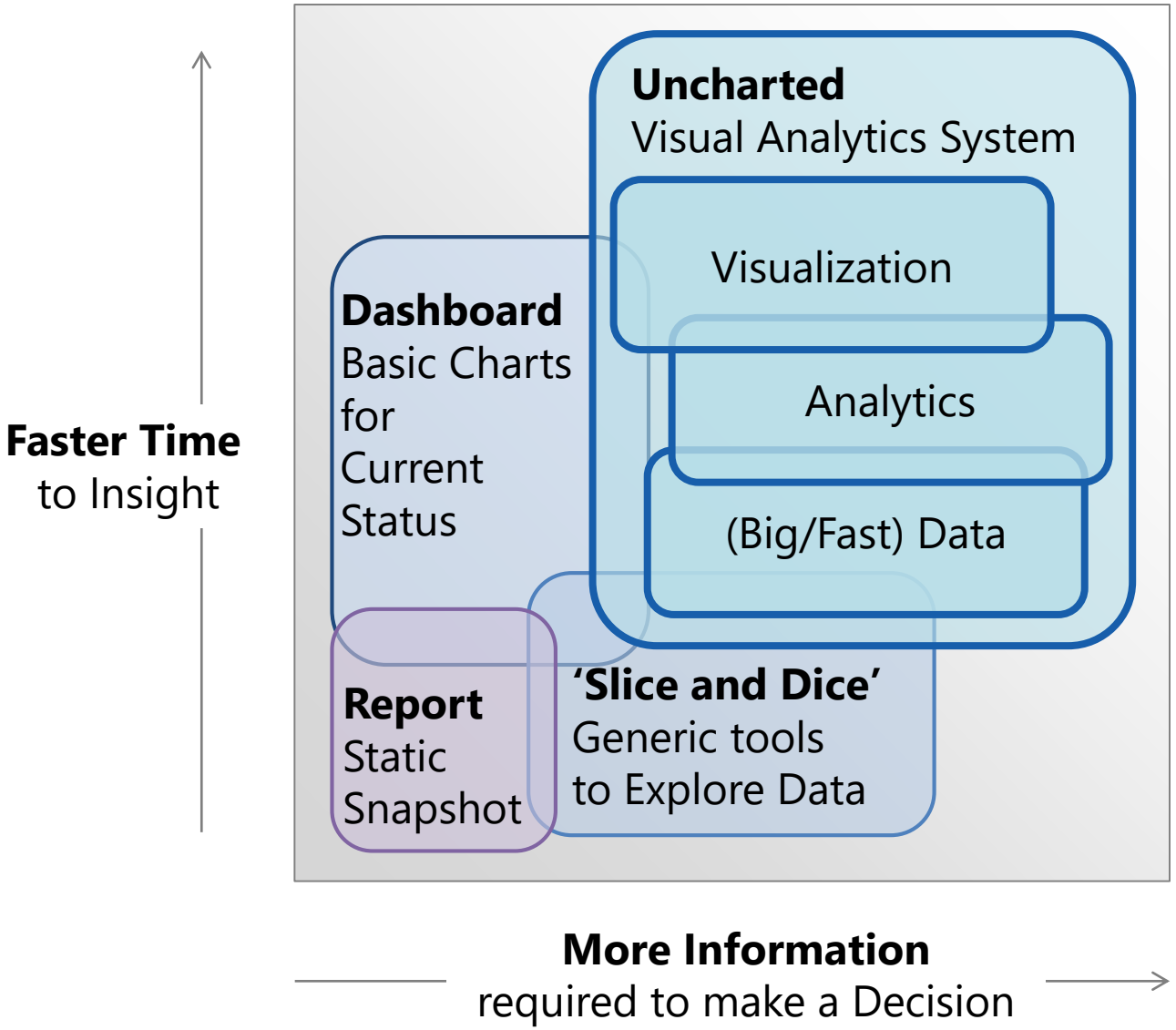
What we do

Solve challenging business tasks



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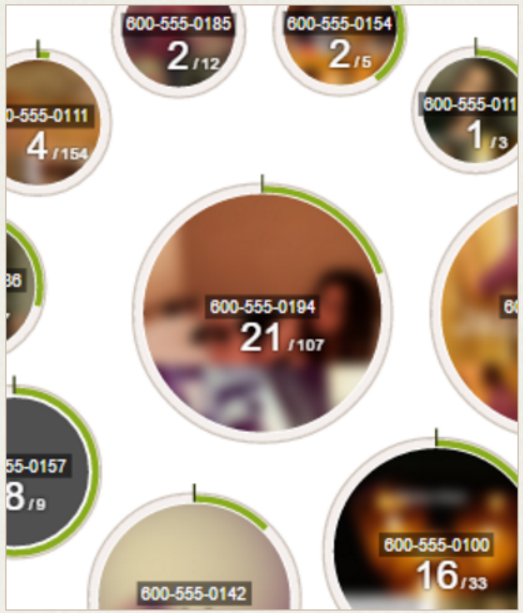

TellFinder automatically characterizes and organizes publicly available internet data

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TellFinder visual analytics to automatically characterize internet data

TellFinder™ provides efficient visual analytics to support domain experts by automatically characterizing and organizing publicly available Internet data. These techniques are applicable to various domains, and are currently being used with escort advertisements to combat human trafficking.

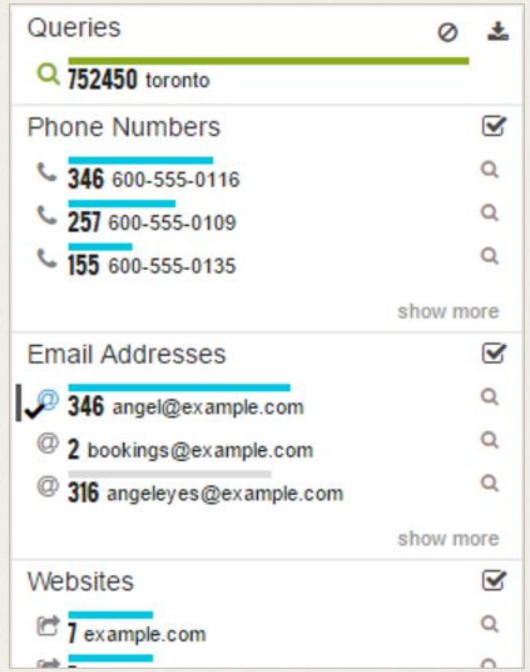
In analyzing potentially illicit web postings, intelligence and crime analysts, border agents, law enforcement agents and civil society organizations must invest significant resources in highly manual web searches. As such postings proliferate and just as quickly disappear from the Internet, these processes often fail to capture the scope and complete patterns of the entities and organizations behind them.

With TellFinder's web-based interface, users can access an archive of historical postings from which meaningful attributes are extracted and aggregated. TellFinder groups postings into succinct visual elements ("personas") to reveal activity of interest and summarize the behaviour of and relationships between the entities that post them.

Compared to standard web search engines, TellFinder enables people to research case-related data and tips in significantly less time. Reviewing TellFinder's automatically characterized personas also allows users to track activity patterns over time, discover previously unknown actors and infer organizational relationships.

Interested in Learning More?

- Tour: Take our tour to learn more about TellFinder.
- Contact: Contact Uncharted™ for more information on TellFinder.

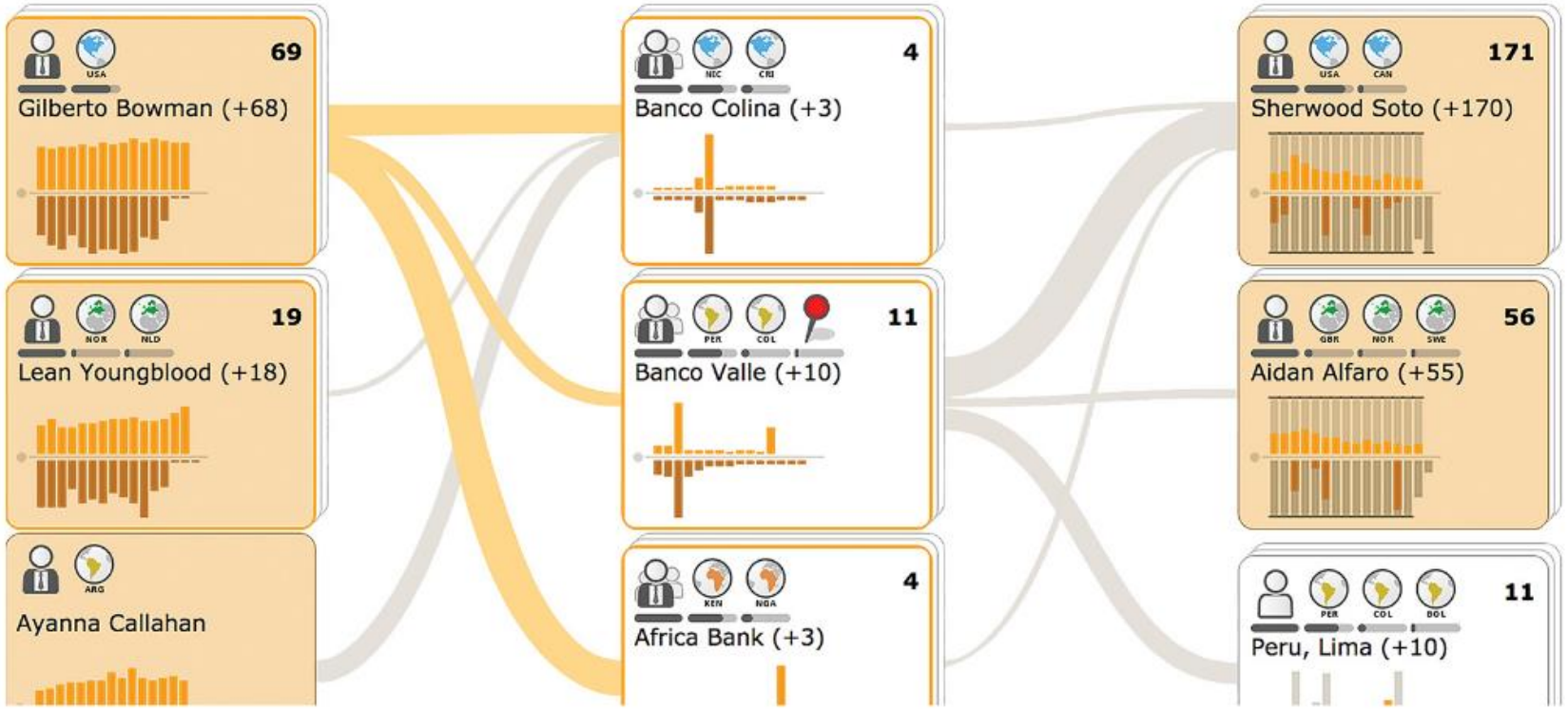


Extracted attributes allow quick filtering or augmenting of results

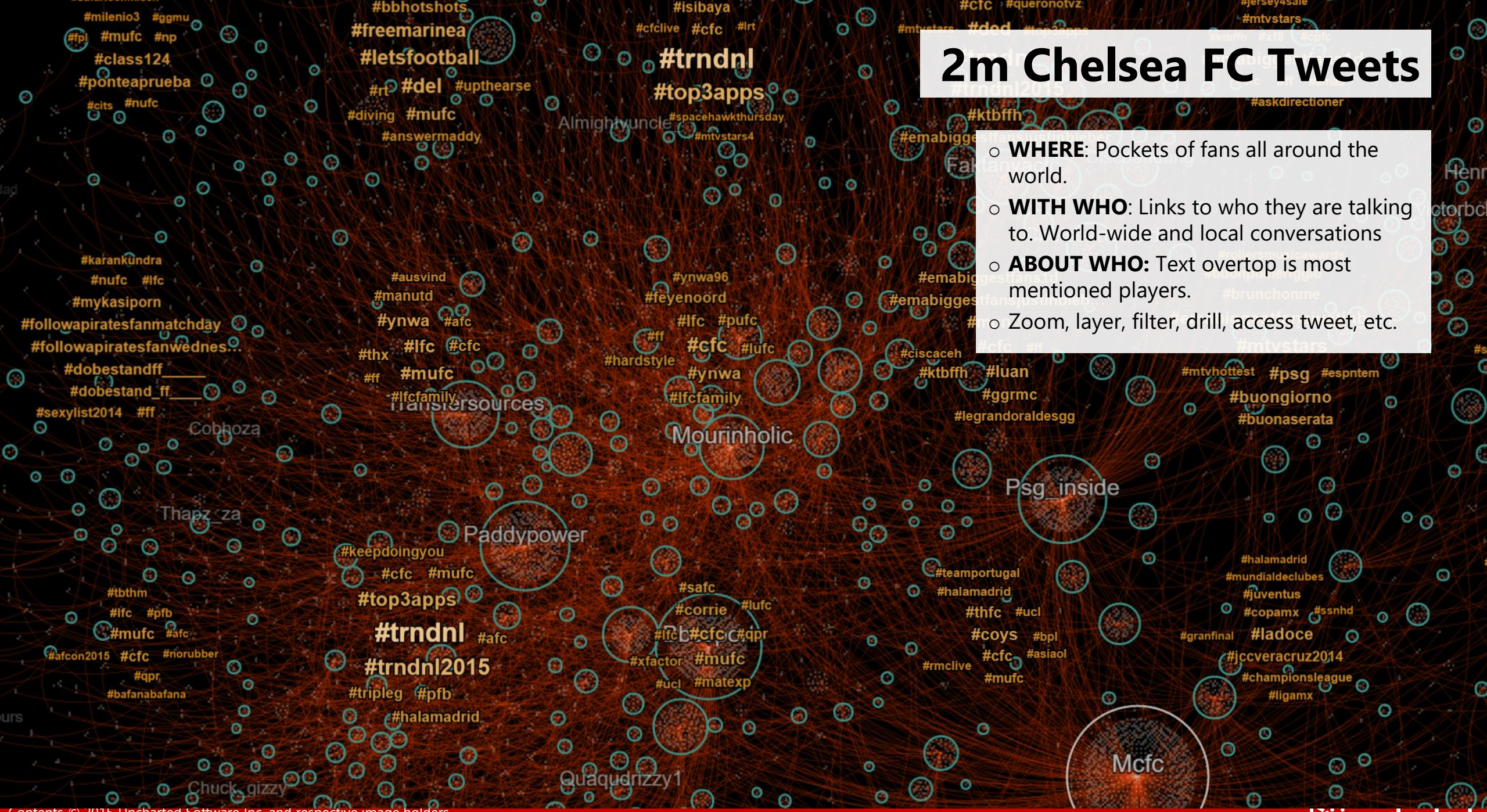
Uncharted Tellfinder:
https://tellfinder.com/

influent by uncharted™

Follow the Money



Uncharted Influent:
http://influent.io/



2m Chelsea FC Tweets

- **WHERE**: Pockets of fans all around the world.
- **WITH WHO**: Links to who they are talking to. World-wide and local conversations
- **ABOUT WHO:** Text overtop is most mentioned players.
- Zoom, layer, filter, drill, access tweet, etc.

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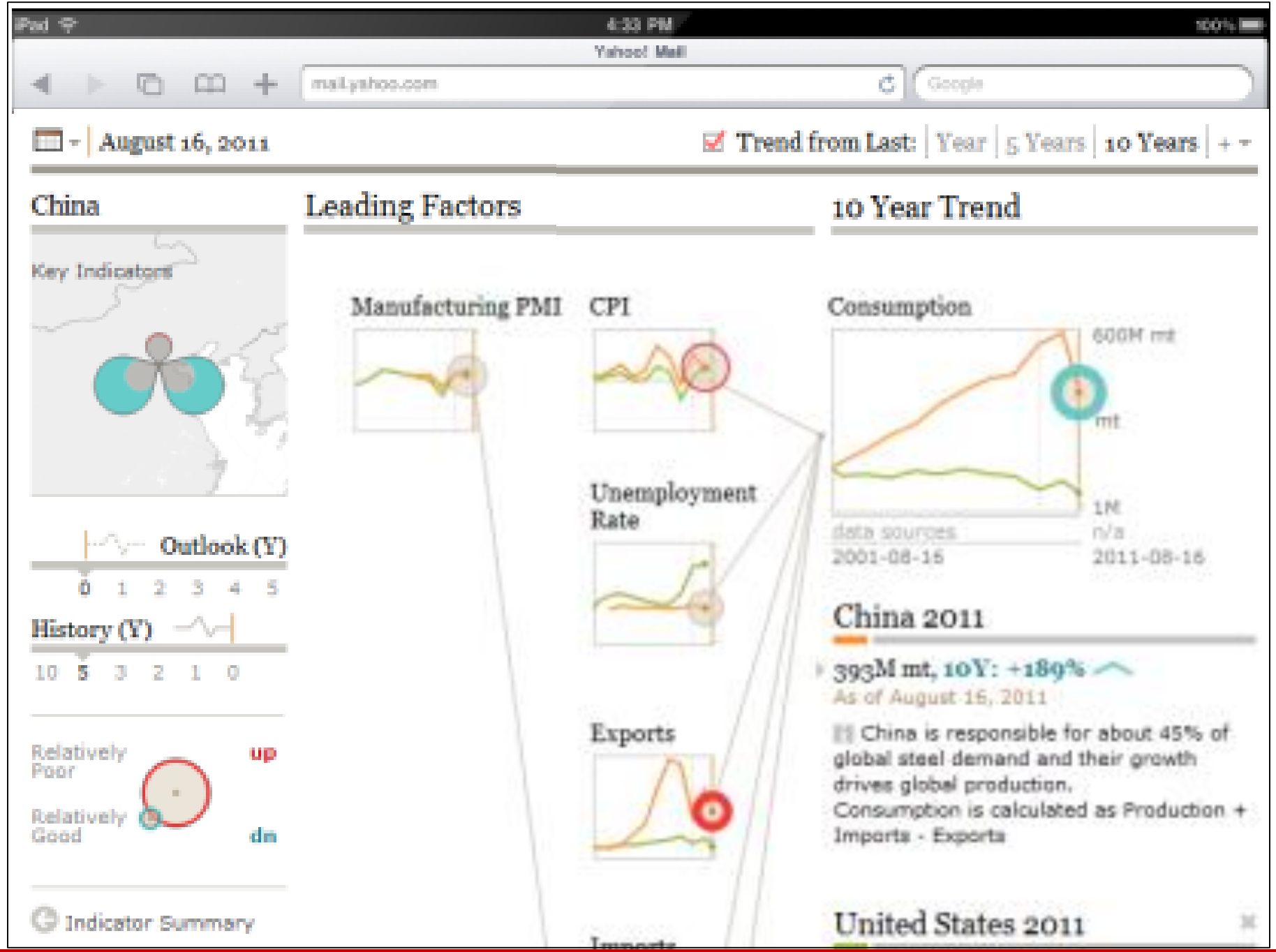

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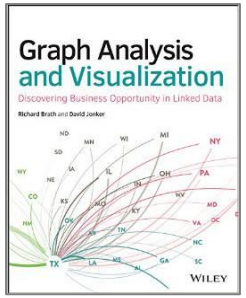
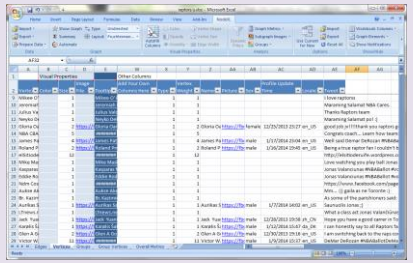


Graph Analysis and Visualization

Commercial book published by Wiley (2015)

- Richard Brath and David Jonker authors (Uncharted Partners)
- https://www.amazon.com/Graph-Analysis-Visualization-Discovering-Opportunity/dp/1118845846

Excel to collect data, model graph, advanced analytics then visualize **communities**



Facebook Data collection via Excel

```
=IF(AND(ISERROR(SEARCH(AL$2,Vertices[[#This
Row],[Tweet]],1)),ISERROR(SEARCH(AL$1,Vertice
s[[#This Row],[Tweet]],1))),0,1)
```

Topic extraction via formulas

```
=WEBSERVICE("https://viralheat.com/api/sentim
ent/review.xml?text="&ENCODEURL(LEFT(Vertices
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Row],[Tweet]],360))&"&api_key=your_key_here")
```
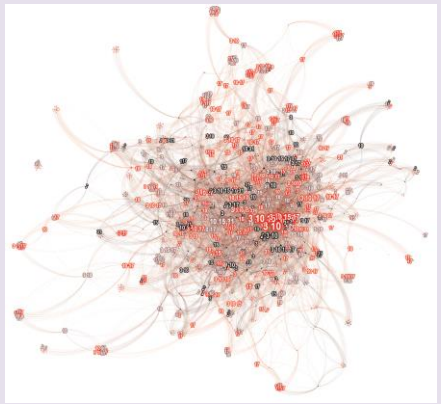
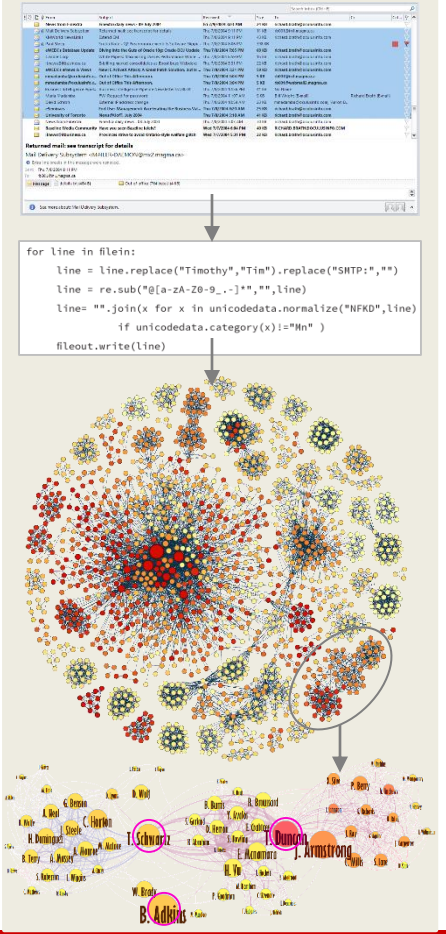
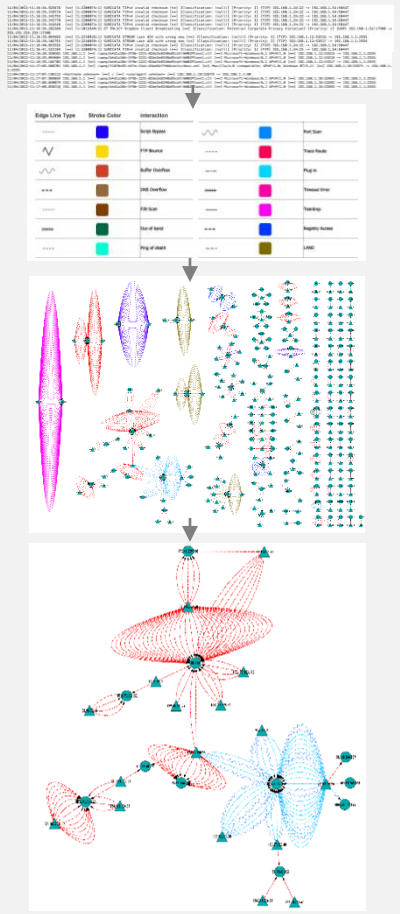

Sentiment extraction via web service



Email into graph via python script, layout, select, color, size to reveal key **connectors**

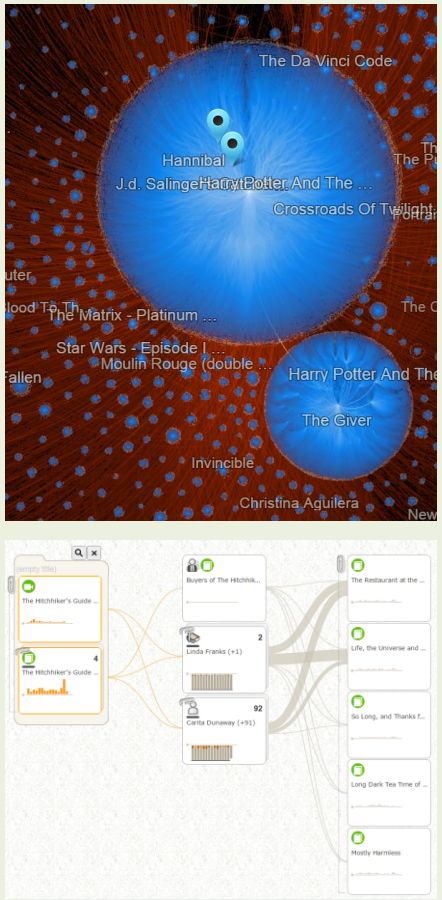


Log files into directed graph, line color & style to **characterize components**



Communities over time: fade, small multiples & separation, show **evolution**

Market basket analysis on 2M products and reviewers. Rich interaction.



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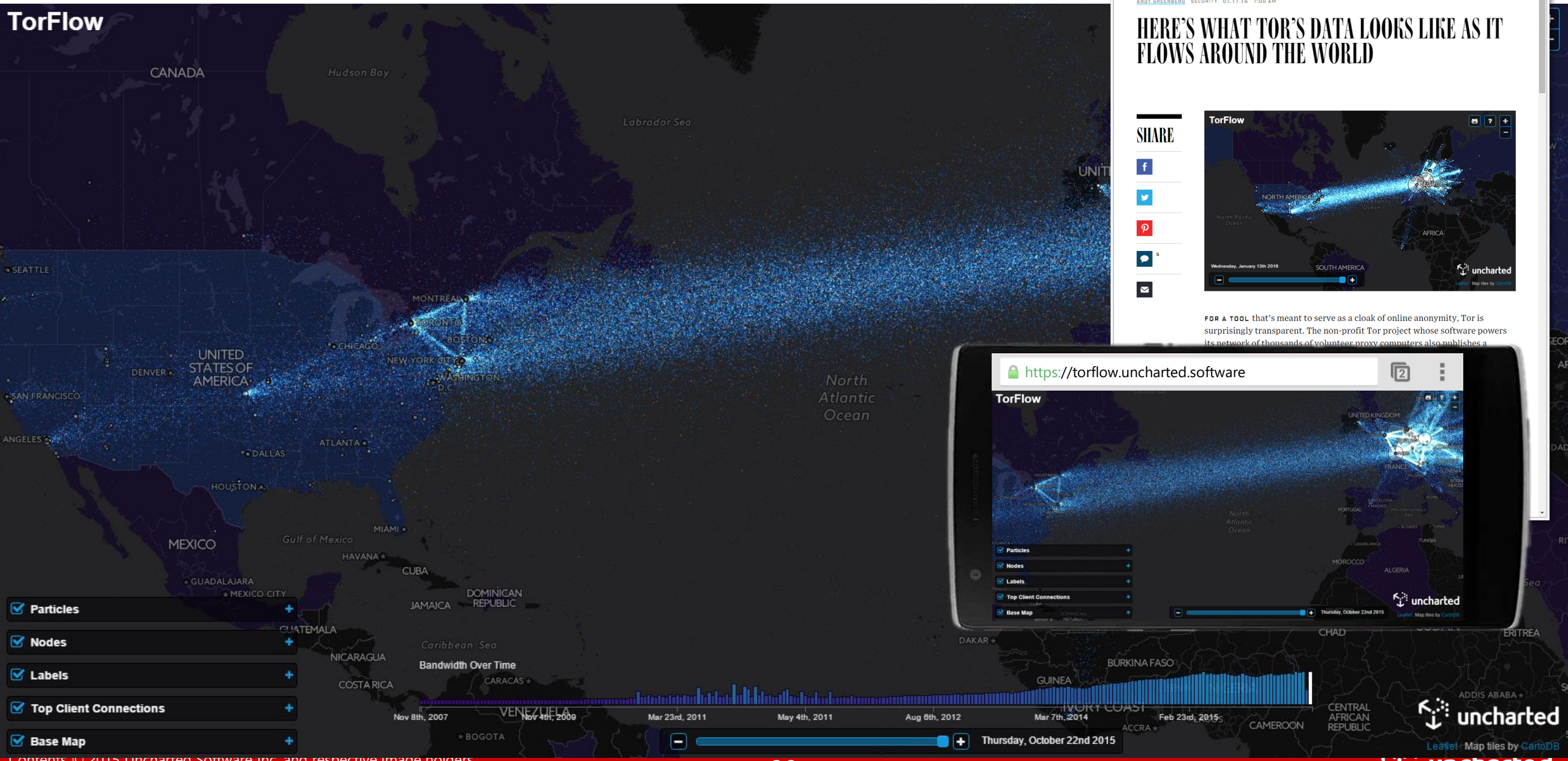
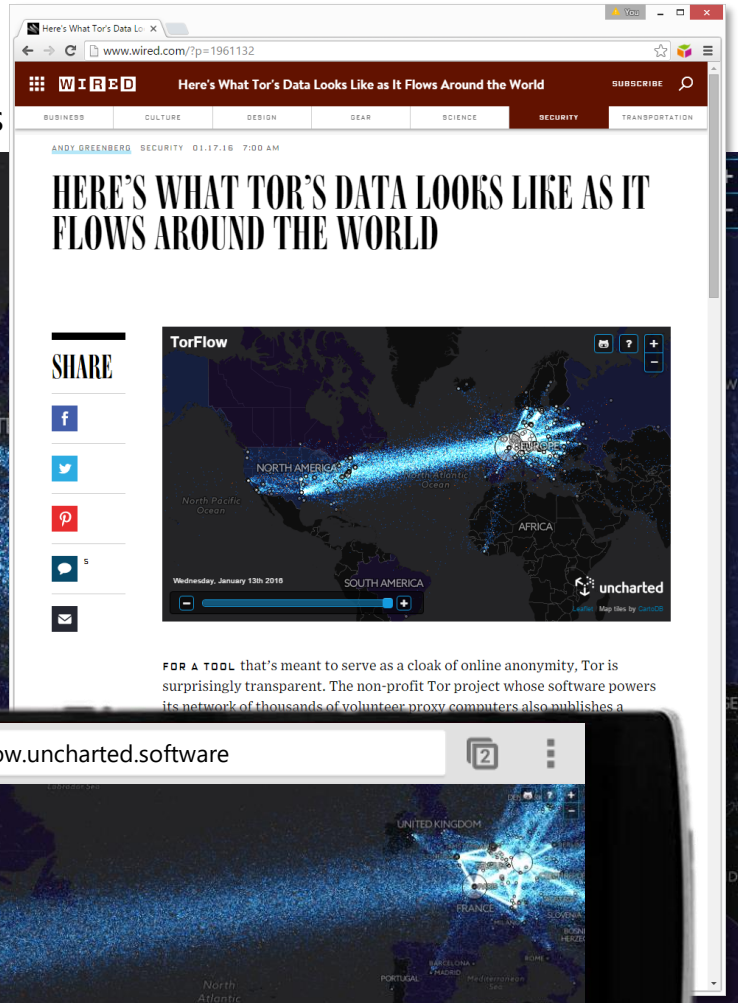
Flow on the TorNetwork

where are the nodes, how much traffic, what are the access points, how does that correlate with other events





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1,000,000's Superbowl Retweets

- **WHICH TWEETS**: Are getting re-tweeted the most?
- **WHICH BRANDS**: Are getting re-tweeted the most?
- **WHO:** If being talked about the most.
- **STAYING POWER:** Which tweets plateau, which keep growing.
- Zoom, layer, filter, drill, access tweet, etc.

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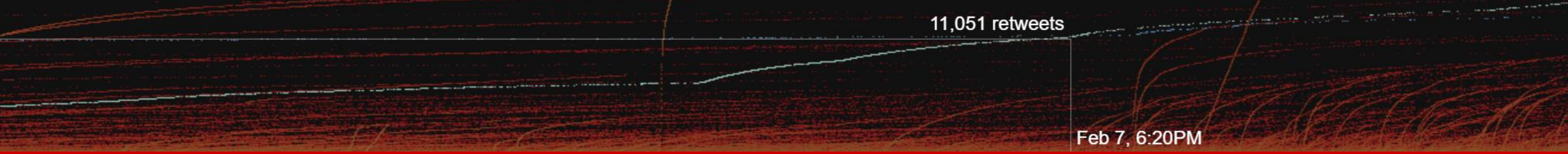
Baby Animals
@BabyAnimalPics

Follow

still the greatest Super Bowl commercial ever

1:17 PM - 7 Feb 2016

23,636 29,216



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Salt

Salt is an open source library for creating interactive visualizations of massive datasets.

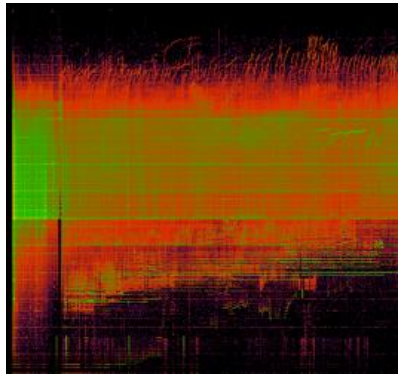
Visualizing big data is hard. Usually this means creating highly aggregated visualizations that can conceal localized patterns behind sums and averages. **Salt** helps you *scalably transform* your data, so that it can be explored interactively at increasing levels of detail.

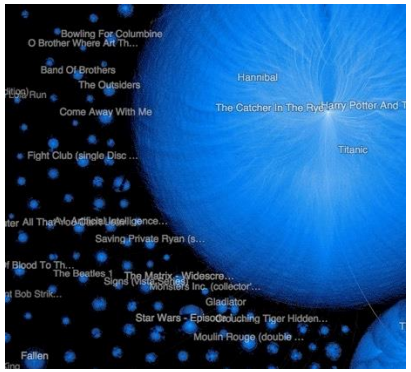
Salt generates scalable representations of billions of data points, enabling visualizations including geographic heatmaps, cross-plots or time series, and the layering of multiple data sources and dimensions for contextual overlay.

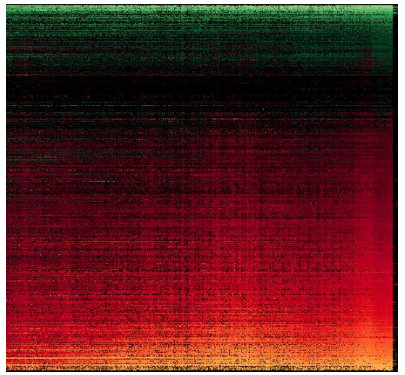
Scalable: Create interactive visualizations of datasets in the billions of records

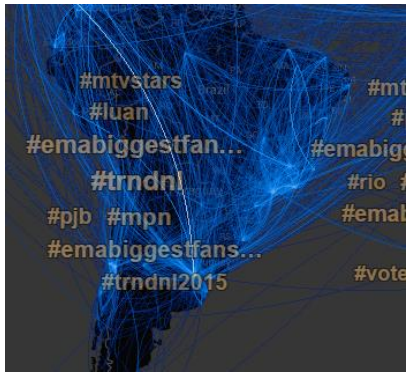
Analytic Layers: Layer custom analytics and aggregations from multiple datasets

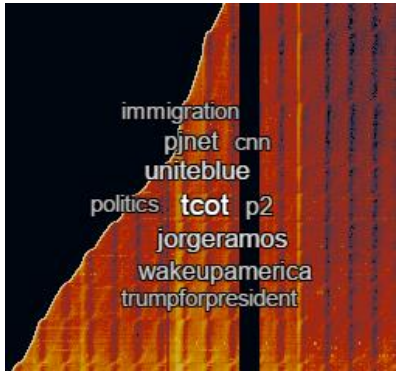
Tiles: Efficient, generalized data representations for more than just maps

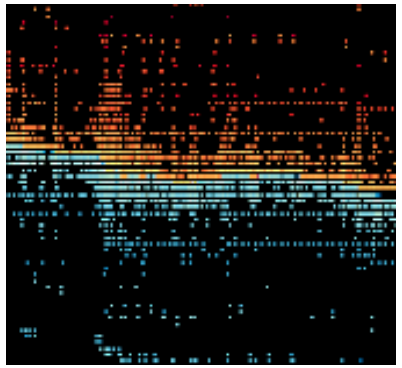












Uncharted Open Source software:
http://unchartedsoftware.github.io/salt-core/

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Besides Research and Development (aka coding)

- Sales, marketing, pre-sales, HR, …
- Strategic analysis, data analysis, data science, design,…
- Working with end-users…

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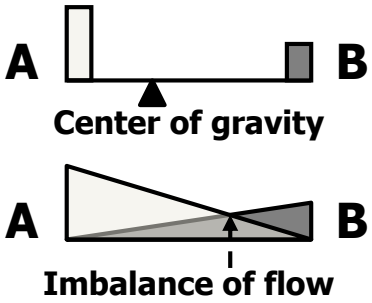
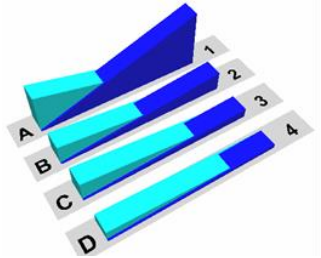
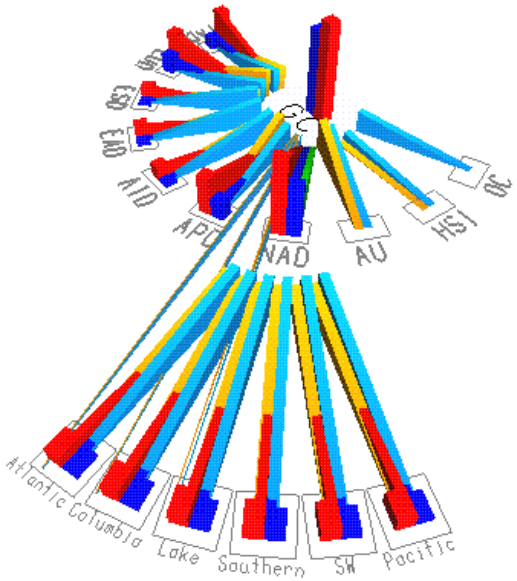
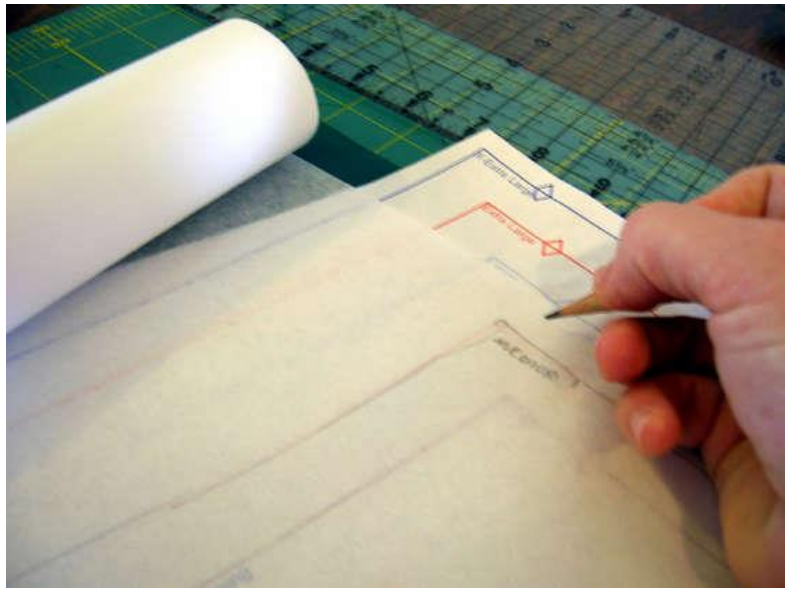
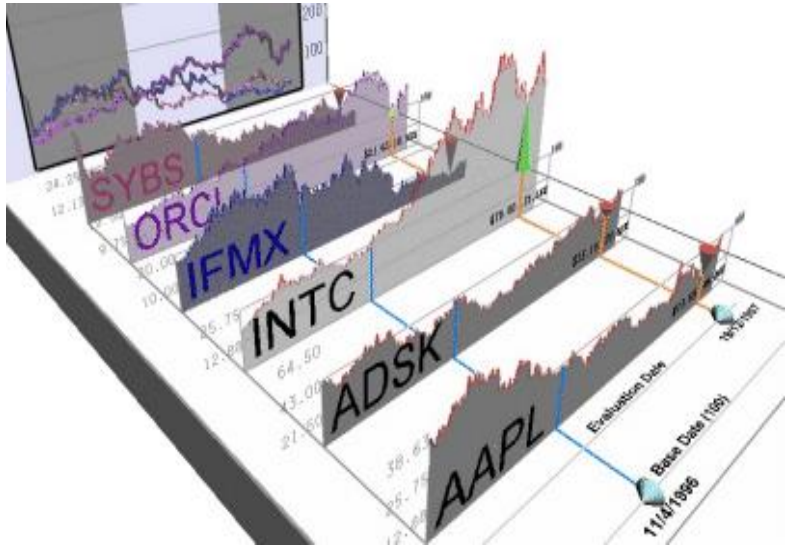
Ideation

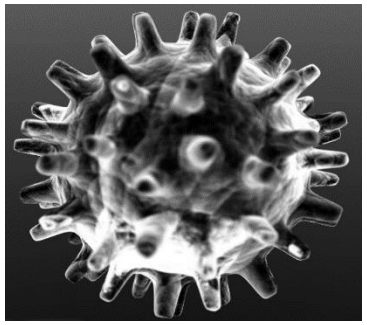


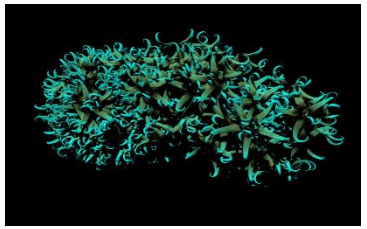


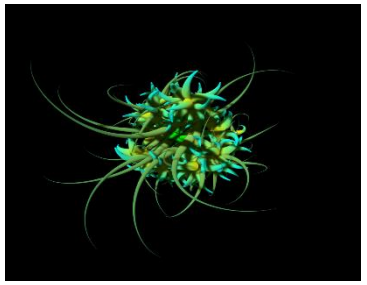


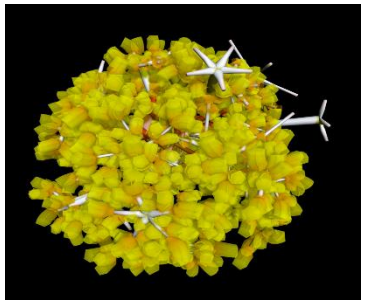


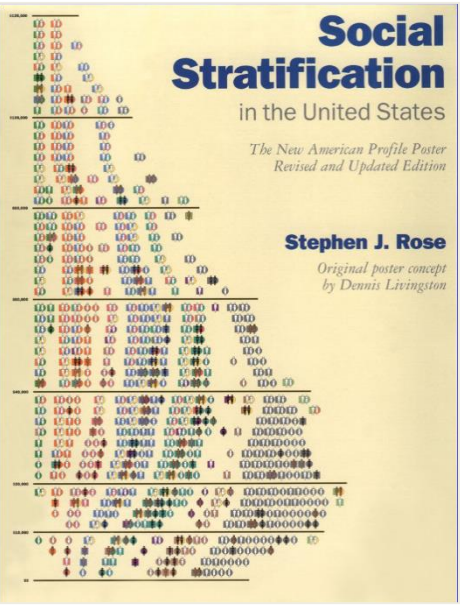


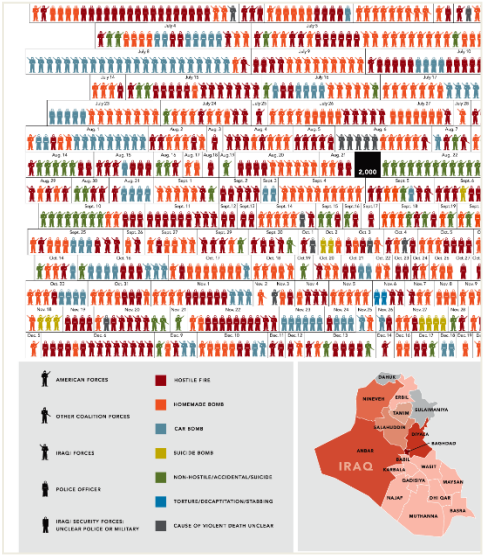












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Key Takeaways (so far)

- Dashboards: plug and play visualization
- Custom visual analytics:
  → big, complex, data, analytics, design, systems
- Business Value really important
- Design is really important…

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