

HOW A TWEET WENT VIRAL

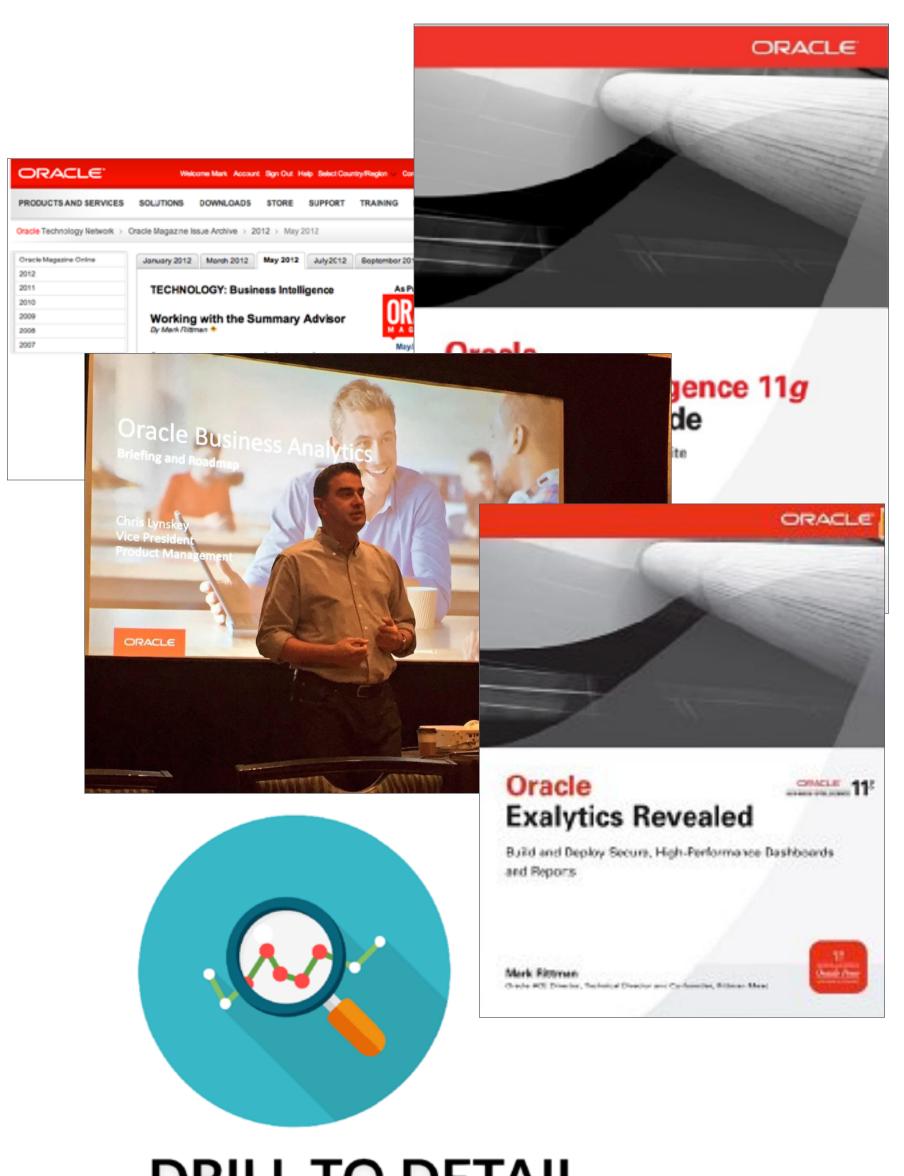
Mark Rittman, Oracle ACE Director & Independent Analyst MJR Analytics Itd (http://www.mjr-analytics.com)

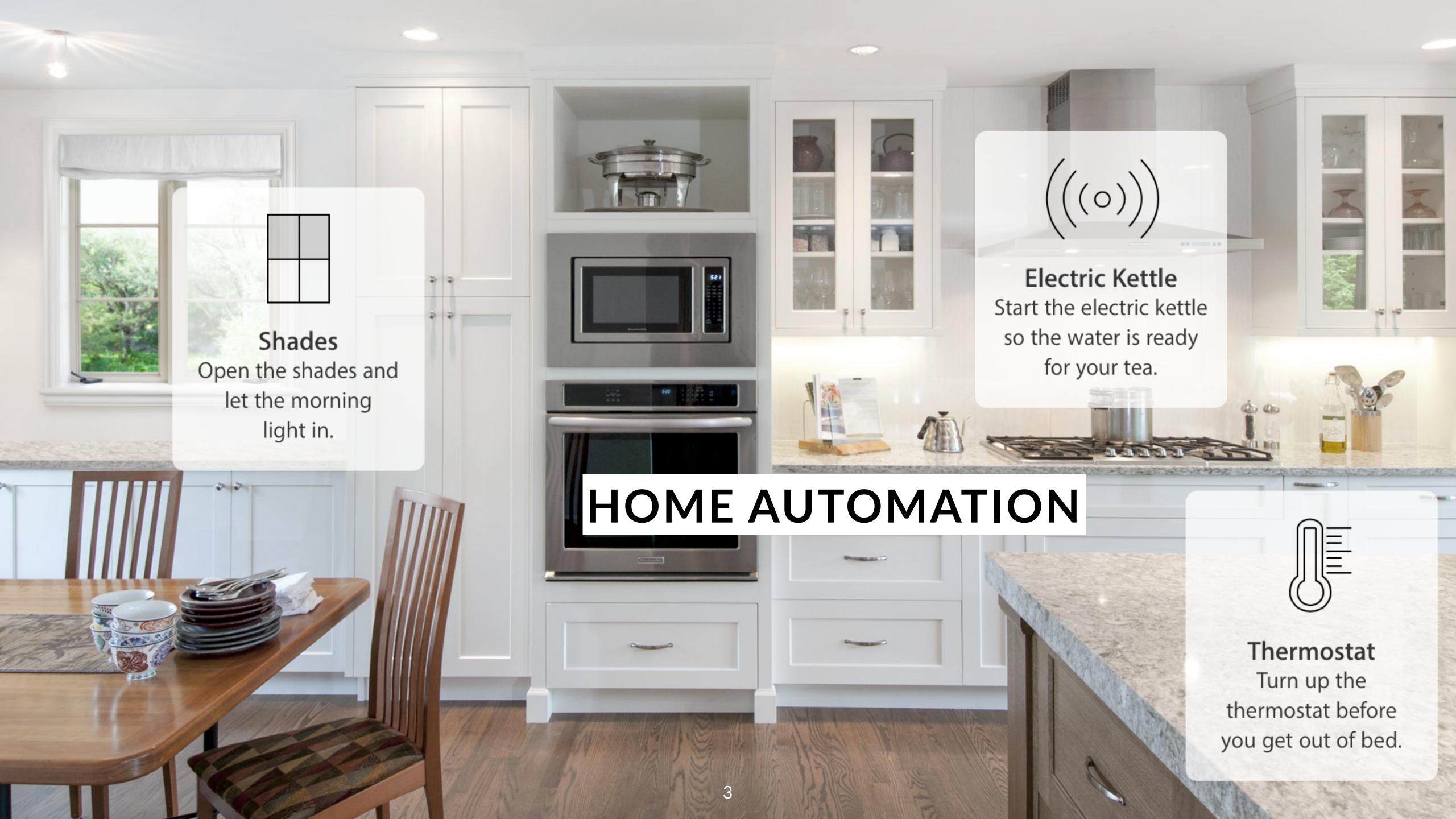
BIWA SUMMIT 2017, SAN FRANCISCO

T:@markrittman

About The Presenter

- Oracle ACE Director, Independent Analyst
- Past ODTUG Exec Board Member + Oracle Scene Editor
- Author of two books on Oracle BI
- Co-founder & CTO of Rittman Mead
- •15+ Years in Oracle BI, DW, ETL + now Big Data
- Host of the Drill to Detail Podcast (www.drilltodetail.com)
- •Based in Brighton & work in London, UK





Home Automation and Smart 'IoT' Devices

- One of my personal interests is Home Automation
- •Started with Nest thermostat and Philips Hue lights
- Extended the Nest system to include
 Nest Protect and Nest Cam
- •Used Apple HomeKit, Apple TV for Siri voice control
- Added Samsung Smart Things hub for Z-wave,
 Zigbee compatibility
- •Linked Smart Things to Homekit using open-source HomeBridge project to enable for Siri control
- •Added Logitech Harmony for TV, Console, Roku
- •Then Amazon Echo (x2) and Echo Dots (x4) to extend voice control + add Alexa skills
- •... and then Google Home + Chromecasts for hangouts, Google Assistant + Google Search



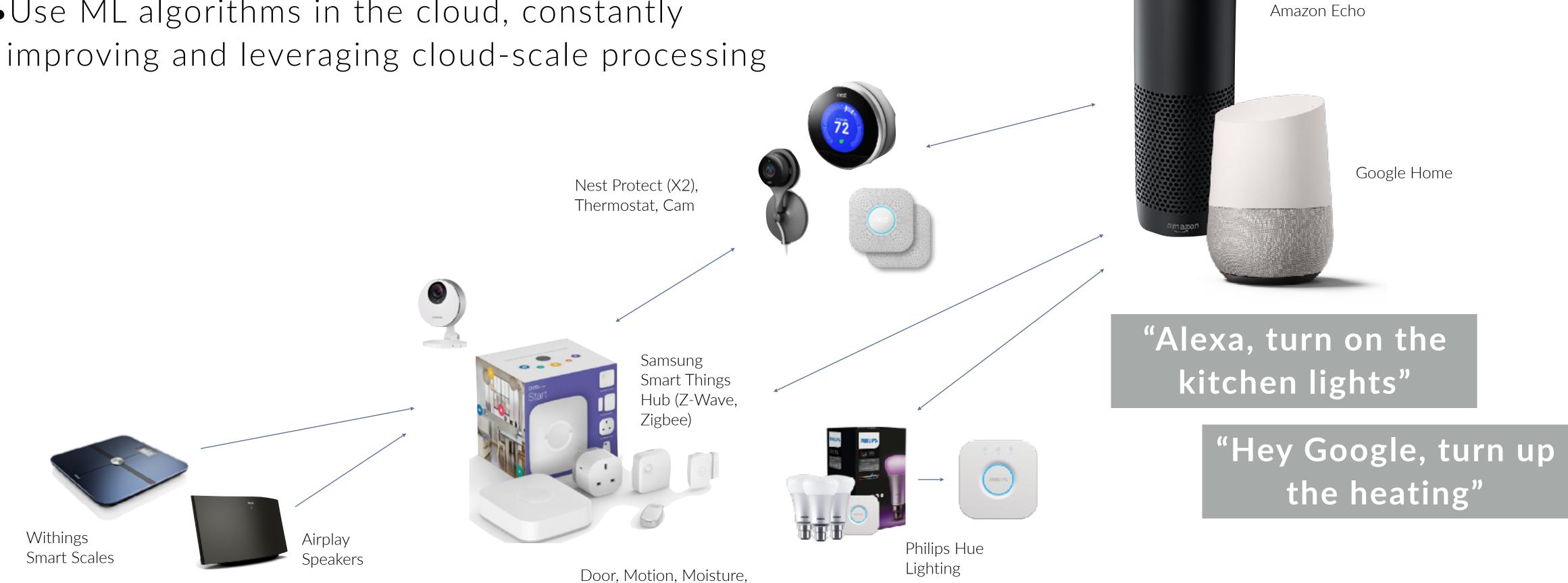
Door, Motion, Moisture, Presence Sensors

Voice Control - When Home Automation Gets Real

 Position multiple units around the house for ubiquitous voice control and music playback

•Integration with smart home devices

•Use ML algorithms in the cloud, constantly



Presence Sensors

ONE DAY BACK IN SEPTEMBER 2016 ...



3 hrs later and still no tea. Mandatory

recalibration caused wifi base-station

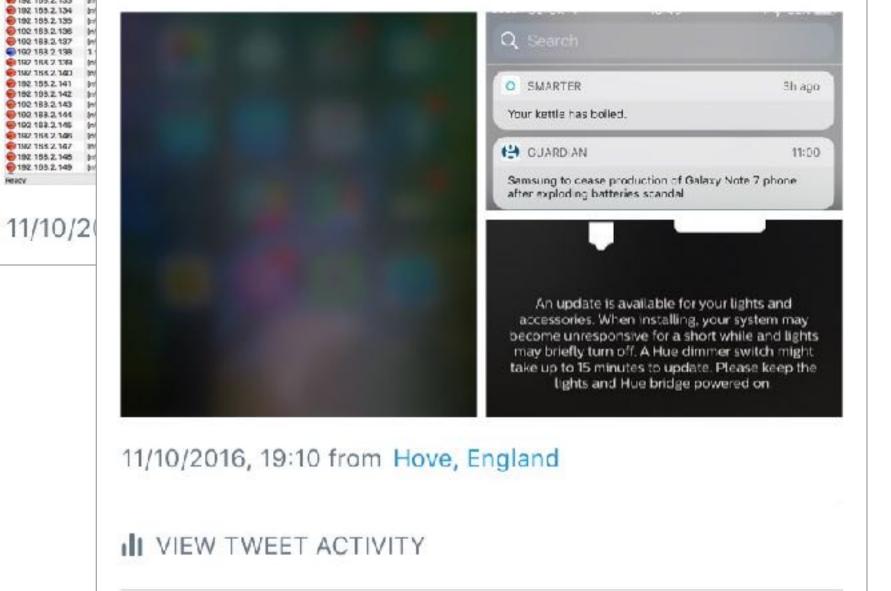
reset wher

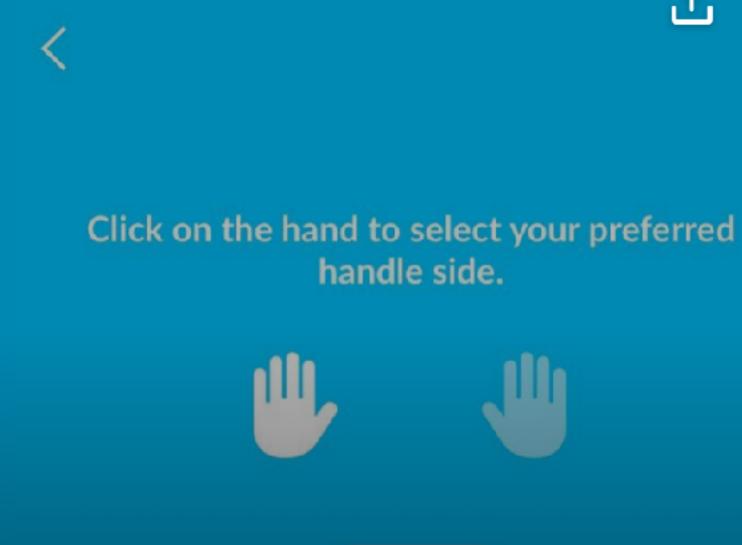
192 153.2 119 In 192 153.2 119 In 192 153.2 120 In 192 153.2 121 In 192 153.2 122 In 192 153.2 123 In 192 153.2 125 In 192 153.2 130 In 192 153.2 131 In 192 153.2 132 In 192 153.2 131 In 192 153.2 132 In 192 153.2 131 In 192 153.2 132 In 192 153.2 133 In 192 153.2 132 In 192 153.2 133 In 192 153.2 In 192 In 192

Mark Rittman @markrittman

973 RETWEETS 1,563 LIKES

Well the kettle is back online and responding to voice control, but now we're eating dinner in dark while lights download a firmware update







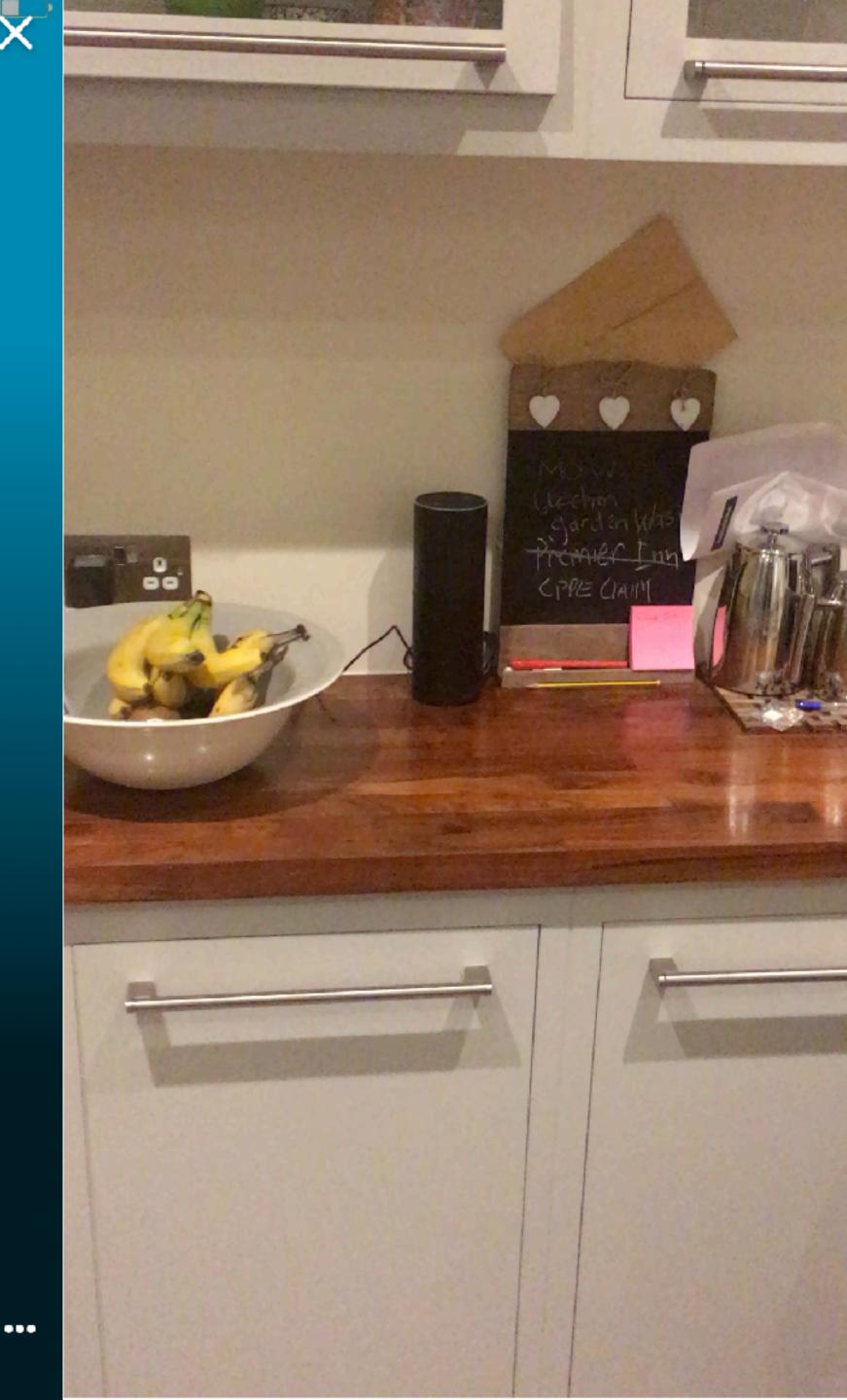
29 MINUTES AGO

This Man Has Been Trying to Make Tea for 11 Hours

Erin Burr, sir @erinscafe

@MarkRittman is trying to get his wifi-enabled tea kettle online. Someone get the man some caffeine. Photo via @markrittman

≺ SWIPE TO BEGIN



THE FOLLOWING MORNING...







world politics sport football opinion culture business

lifestyle fashion environment

tech travel

≡ browse all sections

home) tech

Smart homes

English man spends 11 hours trying to make cup of tea with Wi-Fi kettle

Data specialist Mark Rittman spent an entire day attempting to set up his new appliance so that it would boil on command

Bonnie Malkin

Wednesday 12 October 2016 02.29 BST

















po	pu	lar

across the guardian

in technology

- English man spends 11 hours trying to make cup of tea with Wi-Fi kettle
- 66 Honey G's X Fact funny. It's modern-c
- Former boyfriend of murdered British woman killed by Philippines police
- Will Young quits Str Dancing on persona
- Brexit adviser: leaving EU customs union will cost UK £25bn a year
- Is our world a simulation some scientists say in than not

Obama savages Trump over groping boast and urges party to abandon him

Sloppy England earr Slovenia thanks to J stunning saves

- Labour's Liam Byrne: I was at my lowest point after 'there's no money' note
- 1 66 If you see a killer run

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Tasty

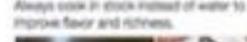
DIY

More v

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This Guy's 12-Hour Battle With His Wi-Fi Kettle For A Cup Of Tea Is The Most **British Struggle**

Though it might have helped if he wasn't using such a complex home network...

posted on Oct. 12, 2016, at 11:11 a.m.



Matthew Champion BuzzFeed News Reporter













BuzzFeedNEWS





Portraits That Capture The Difference Between The Morning You And Night You

by Laura Gallant



British man in 12-hour struggle to make single cup of tea with Wi-Fi kettle

TOM POWELL | Wednesday 12 October 2016 | 7 comments



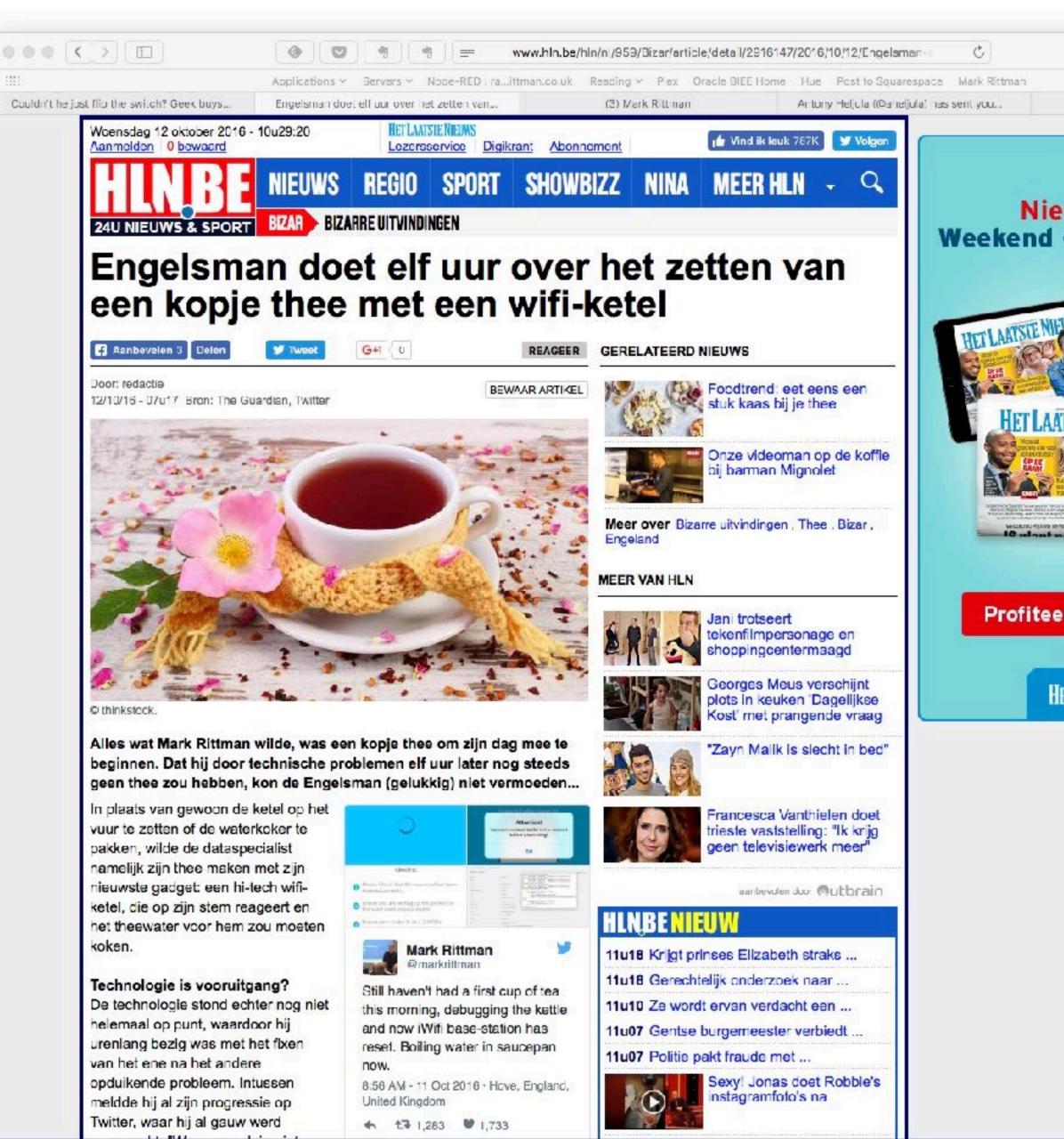






Struggle: Mr Rittman spent hours trying to make a tea





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VERDERGAAN

Profitee

By THOMAS BURROWS FOR MAILONLINE

PUBLISHED: 10:14, 12 October 2016 | UPDATED: 10:14, 12 October 2016



Salaburg Airport













TOWIE babe Jasmin

the first time since QUITTING Strictly as he reveals he is 'dandy' following spat with head judge Len Goodman



Due to the large number of comments, they are being shown 100 per page.



Camohan 12 Oct 2016 2:40

This is what hell looks like.

≪ Share



BUT WAIT...

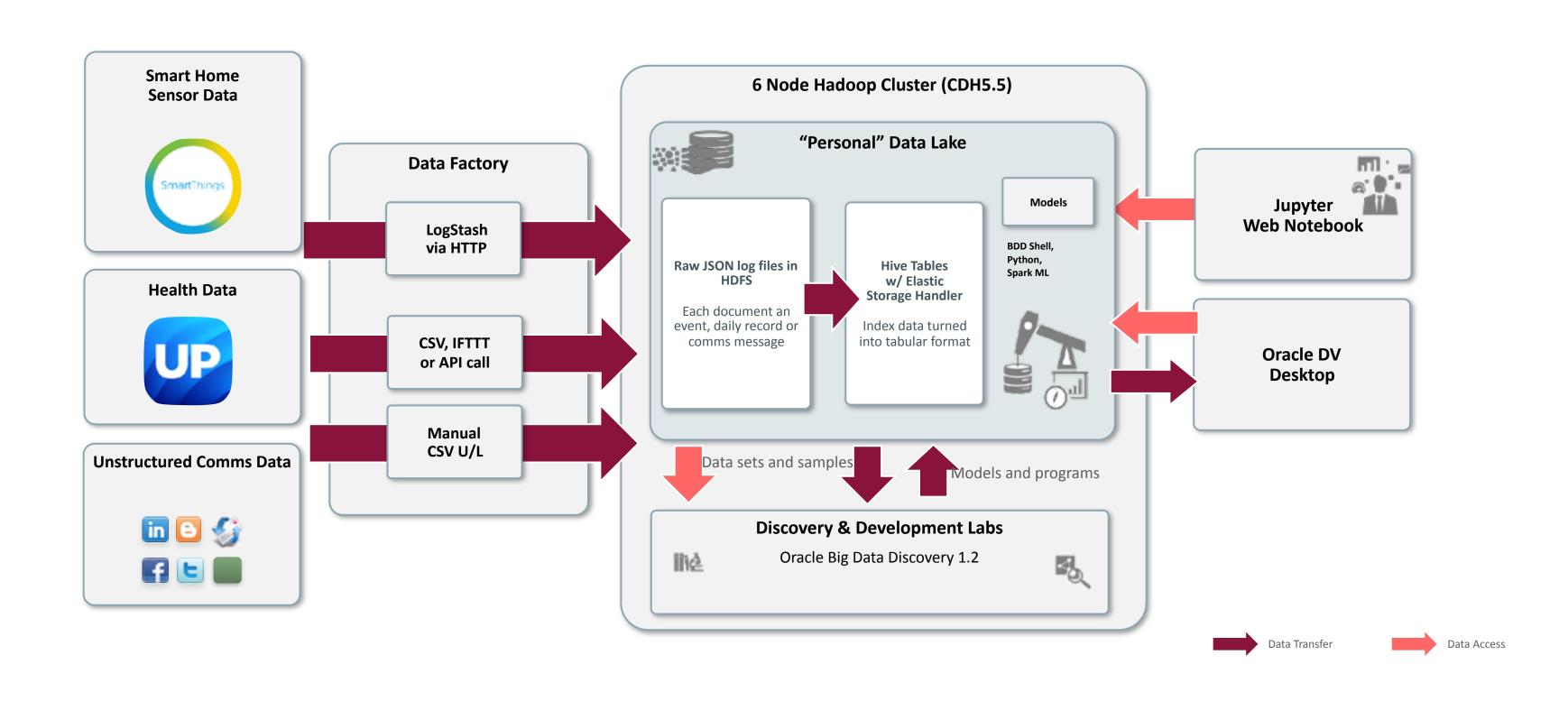
THIS COULD BE INTERESTING...

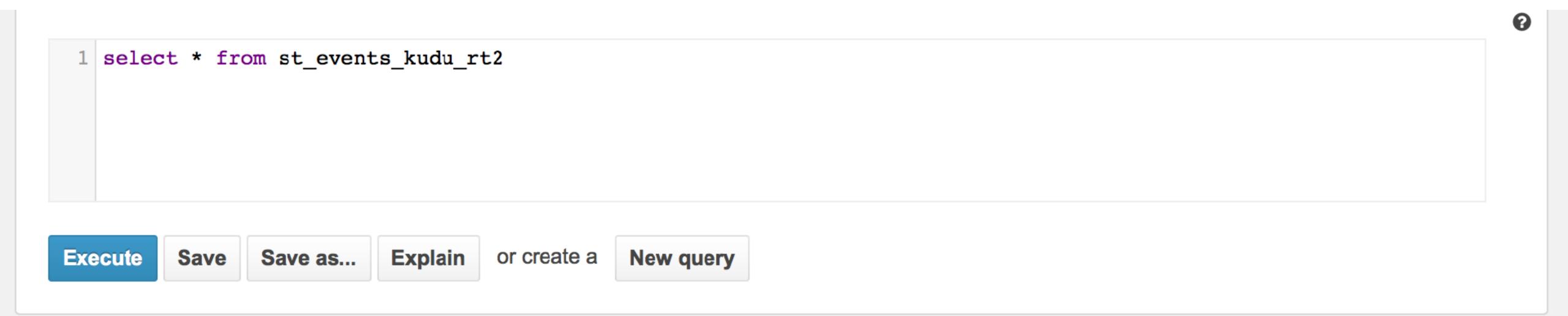
All Device Data at Home Logged to Hadoop Cluster



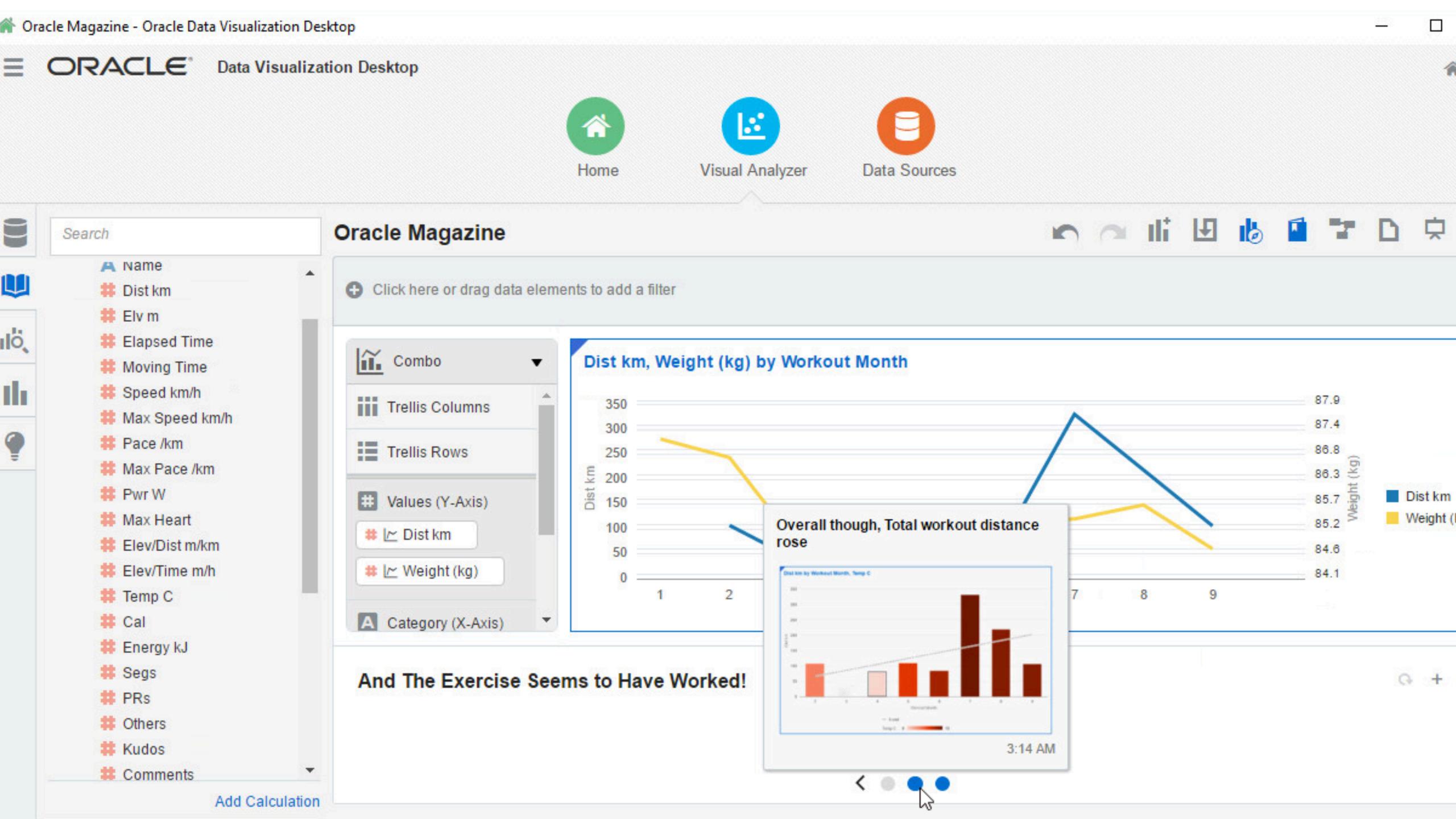
Other Personal Project: Home + Wearables Analytics

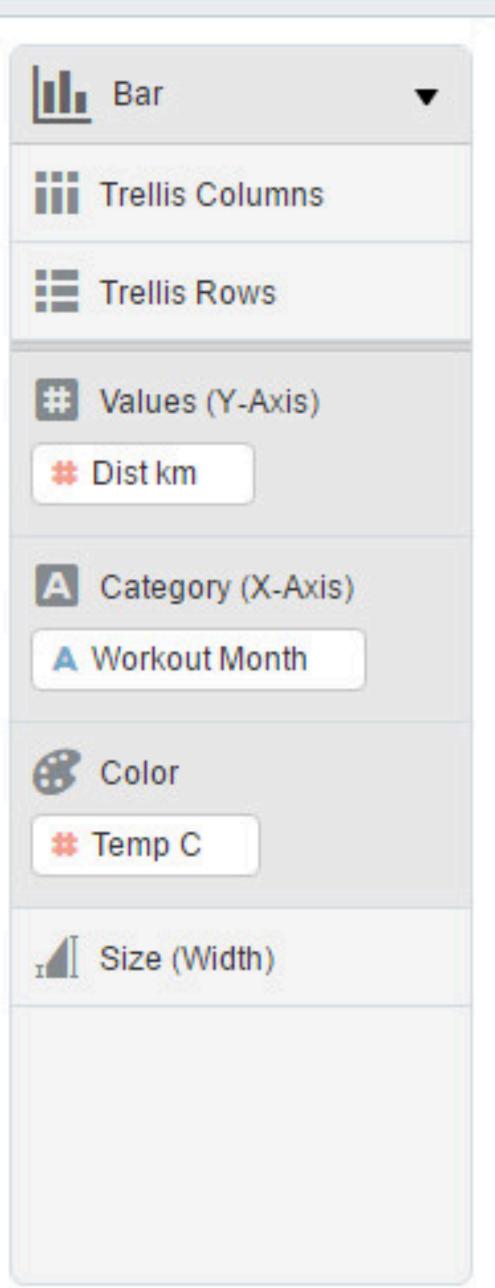
- Data extracted or transported to target platform using LogStash, CSV file batch loads
- •Landed into HDFS as JSON documents, then exposed as Hive tables using Storage Handler
- Cataloged, visualised and analysed using Oracle Big Data Discovery + Python ML

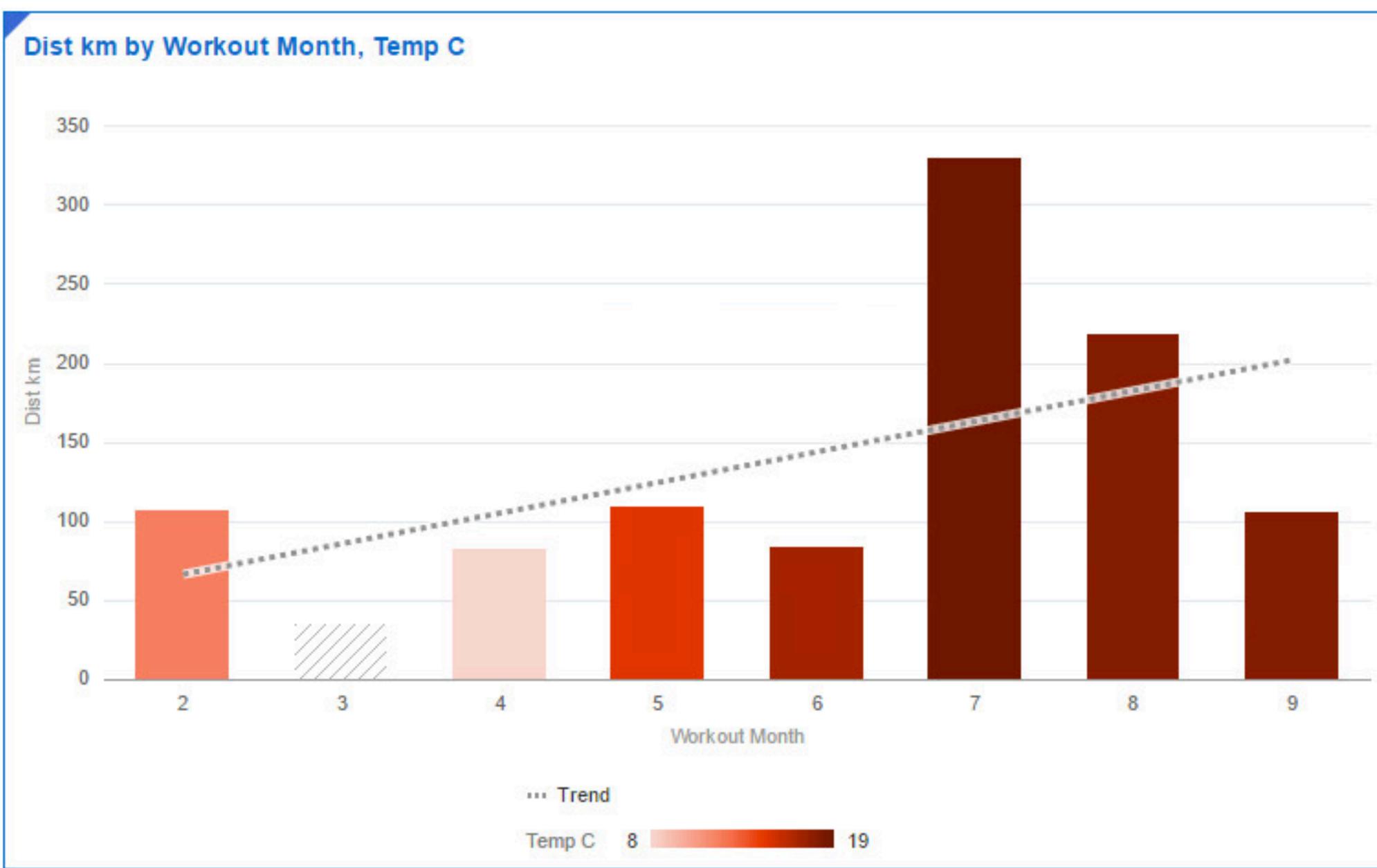




Recent queries Results Chart Query Columns Log value name description | unit | description iso_date display_name device C **Ambient Ten** Nest Thermostat - Entryway 22 temperature C 2016-09-09T17:38:03.443Z Nest Weather (Pws:ihove65) Nest Weather (Pws:ihove65) temperature **Ambient Ten** 2016-09-09T19:38:30.160Z Mark's Desk Lamp 0 null Mark's Desk Mark's Desk Lamp switch Nest Thermostat - Entryway C **Ambient Ten** 2016-09-09T19:35:02.797Z Nest Thermostat - Entryway temperature Mark's Desk 2016-09-09T19:38:31.127Z Mark's Desk Lamp Mark's Desk Lamp null 0 switch Mark's Desk Lamp Mark's Desk 5 2016-09-09T19:38:29.599Z Mark's Desk Lamp switch 0 null







THIS TIME LAST YEAR...

Michael Rainey @mRainey .@markrittman showing us an Ora Data Spatial & Graph Case Study @rittmanmead social networks #BIWASummit pic.twitter.com/ JaMHtRw5Sy Mark Rittman Detect communicated and part length hop: 2 Path length cost: 200 Path length cost: 200 Path length hop: 2 Mark Rittman Detect communicated audience base

just #hashtags

★ 1 1 3 3 4 5 6

Mark Rittman @markrittman 27/01/2016 Find out the fastest way to @rmoff to answer your OBIEE questions - Social Network Analysis, 2.20pm #BIWASummit



1 1

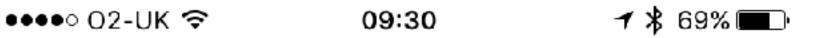
Oracle Big Data Spatial & Graph

- Graph, spatial and raster data processing for big data
 - Primarily documented + tested against Oracle BDA
 - •Installable on commodity cluster using CDH
- Data stored in Apache HBase or Oracle NoSQL DB
 - Complements Spatial & Graph in Oracle Database
 - Designed for trillions of nodes, edges etc
- Out-of-the-box spatial enrichment services
- Over 35 of most popular graph analysis functions
 - Graph traversal, recommendations
 - Finding communities and influencers,
 - Pattern matching



CAN WE USE GRAPH ANALYSIS AND ORACLE BIG DATA TO FIND OUT...

HOW THIS TWEET WENT VIRAL?



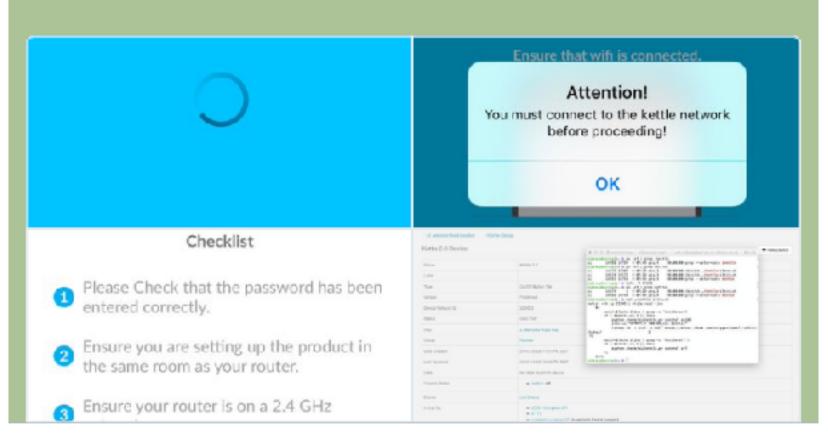
mobil.derstandard.at

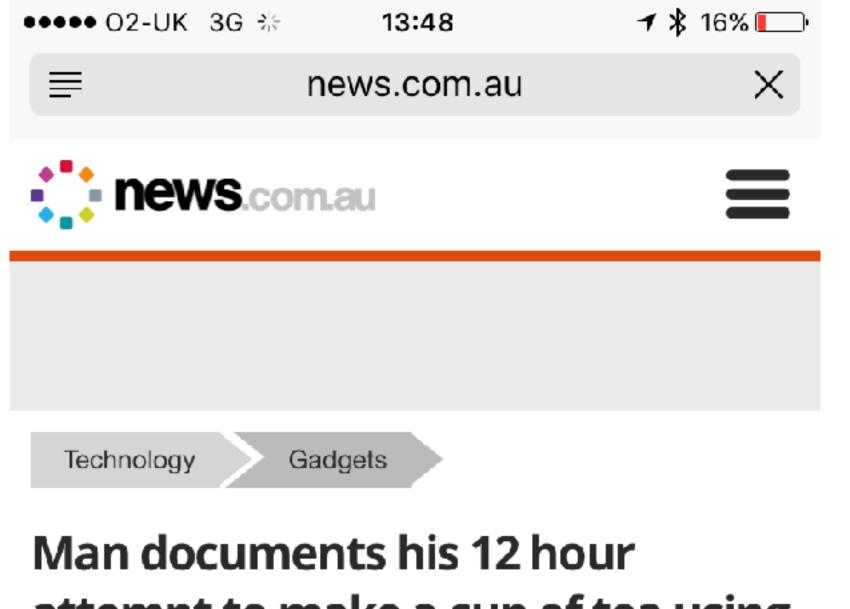


Die große Verwunderung

Und verwundert war Rittman in der Tat. "Hatte immer noch keine Tasse Tee an diesem Morgen, weil ich den Wasserkocher debugged habe", twitterte er um zehn Uhr morgens aus dem heimatlichen Hove am Ärmelkanal. "Jetzt hat sich die iWifi-Basisstation zurückgesetzt. Koche das Wasser nun in einer Kasserolle."

Drei Stunden später folgte der nächste Eintrag seiner Smart-Home-Odyssee. Die verpflichtende Neukalibrierung hatte einen Reset der Basisstation ausgelöst und war im Netzwerk nicht mehr auffindbar. Eine Stunde später war dieses Problem zwar gelöst, dafür verzögerte nun Twitter den weiteren Fortschritt.



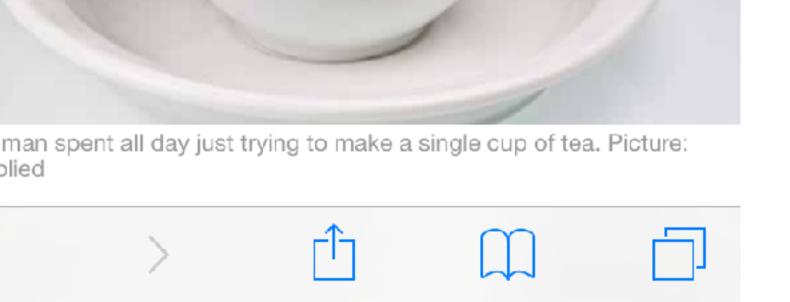


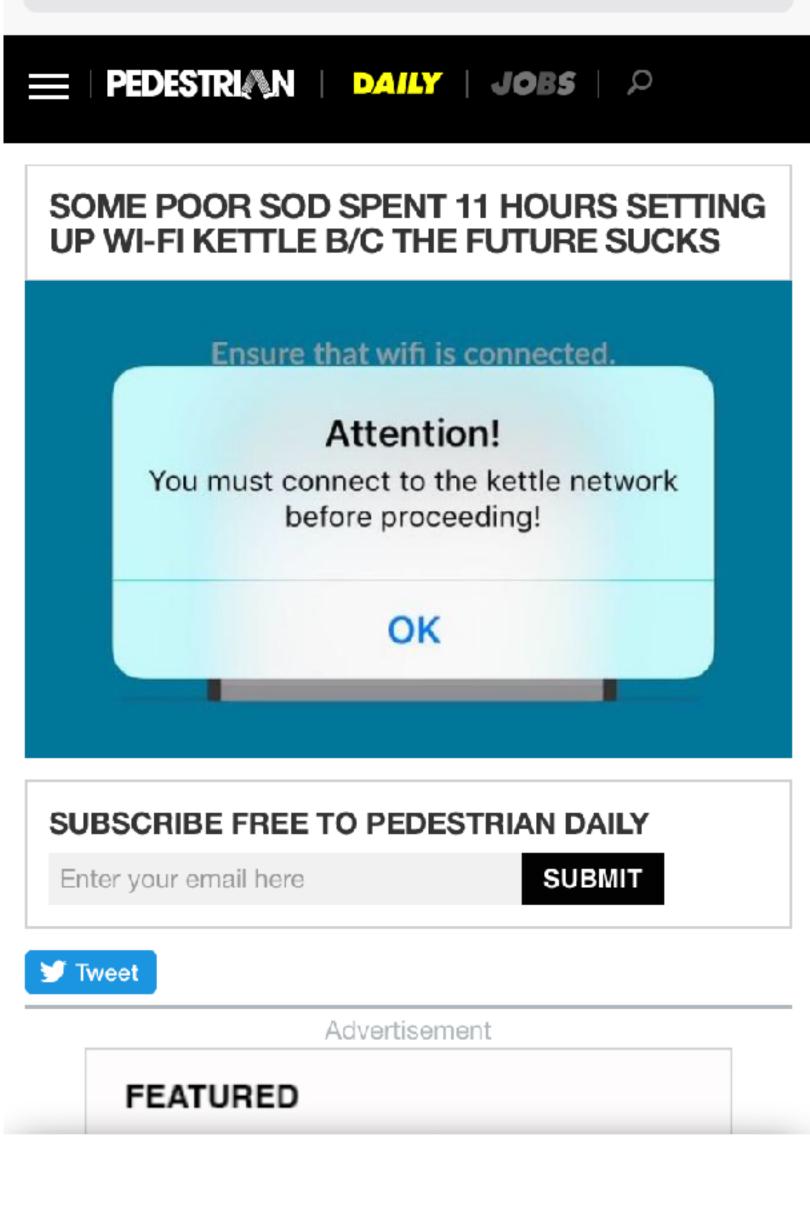
attempt to make a cup of tea using his Wi-Fi kettle

OCTOBER 13, 2016 9:57AM



One man spent all day just trying to make a single cup of tea. Picture: Supplied





13:49

pedestrian.tv

●●●● O2-UK 3G 🔆

1 ★ 13% □

AND AROUND THE WORLD IN 24 HOURS?

3454

Tweets, retweets and mentions over 48 hours

301

Twitters users commenting

Number of countries 'WiFi Kettle" became meme or news item



Loading Tweets (Edges) And Users (Vertices)

•Tweets in HDFS files processed and transformed into OBDGS file format for HBase load

Vertex File (.opv)

```
biwa_connections.opv ~
1, name, 1, markrittman,,
2, name, 1, gwenshap,,
3,name,1,rmoff,,
4, name, 1, Sunil_Nimbalkar,,
5, name, 1, OracleDbDev,,
6, name, 1, mRainey,,
7, name, 1, charlesglen,,
8, name, 1, Data88Geek,,
9,name,1,EricdeMarylebon,,
10, name, 1, jpiwowar,,
11, name, 1, retweet java,,
12, name, 1, Venkatram_T,,
13,name,1,NoSQLDigest,,
14, name, 1, Data88Smart,,
15, name, 1, i_m_dave,,
16, name, 1, BizADave,,
17, name, 1, Nephentur,,
18, name, 1, HeliFromFinland,,
19, name, 1, pulsebase,,
20, name, 1, OsamaOracle,,
```

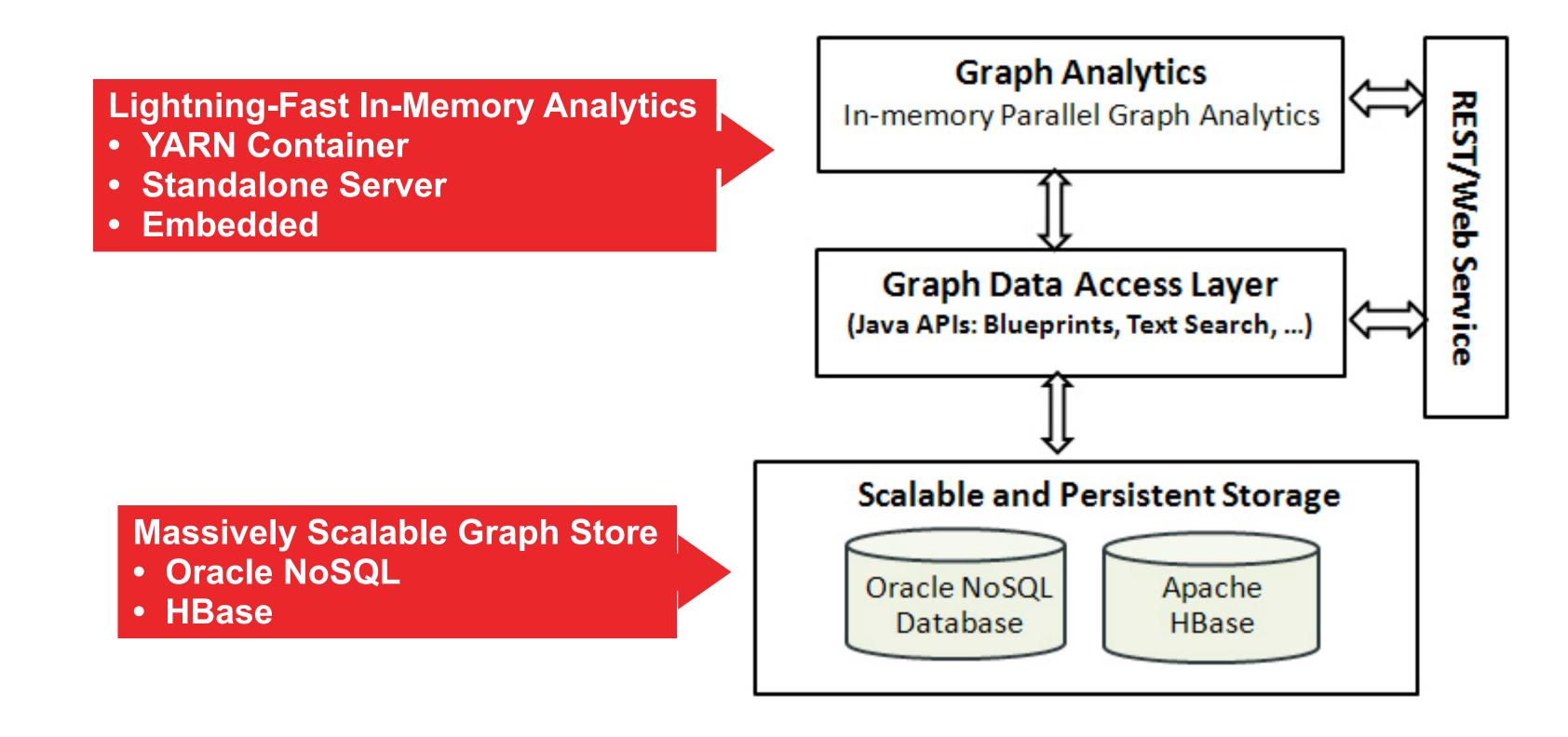
- Unique ID for the vertex
- Integer added via sequence in ODI
- Property name ("name", "followers")
- Vertex Property datatype and value
 - Unique ID for the edge
 - Leading edge vertex ID
 - Trailing edge vertex ID
 - Edge Type ("tweet")
 - Edge Property ("timestamp" or "location")
 - Edge Property datatype and value

Edge File (.ope)

```
kettle_edges.ope.txt ~
1,70,70,tweet,tweet_timestamp,5,,,2016-10-12T01:53:22.000-05:00
2,298,298,tweet,tweet_timestamp,5,,,2016-10-12T13:07:18.000-05:00
3,419,419,tweet,tweet_timestamp,5,,,2016-10-12T12:03:20.000-05:00
4,420,420,tweet,tweet_timestamp,5,,,2016-10-12T06:33:31.000-05:00
5,423,423,tweet,tweet_timestamp,5,,,2016-10-12T07:02:59.000-05:00
6,455,455,tweet,tweet_timestamp,5,,,2016-10-12T11:27:49.000-05:00
7,556,556,tweet,tweet_timestamp,5,,,2016-10-12T12:10:42.000-05:00
8,711,711,tweet,tweet_timestamp,5,,,2016-10-12T07:22:37.000-05:00
9,1025,1025,tweet,tweet_timestamp,5,,,2016-10-12T03:11:27.000-05:00
10,1025,1025,tweet,tweet_timestamp,5,,,2016-10-12T06:12:22.000-05:00
11,1026,1026,tweet,tweet_timestamp,5,,,2016-10-12T01:29:52.000-05:00
12,1027,1027,tweet,tweet_timestamp,5,,,2016-10-12T02:50:17.000-05:00
13,1028,1028,tweet,tweet_timestamp,5,,,2016-10-12T01:37:11.000-05:00
14,1028,1028,tweet,tweet_timestamp,5,,,2016-10-12T04:51:21.000-05:00
15,1047,1047,tweet,tweet_timestamp,5,,,2016-10-12T08:33:01.000-05:00
16,1078,2877,tweet,tweet_timestamp,5,,,2016-10-12T07:11:25.000-05:00
17,1190,1190,tweet,tweet_timestamp,5,,,2016-10-12T10:33:08.000-05:00
18,1381,1381,tweet,tweet_timestamp,5,,,2016-10-12T10:42:56.000-05:00
19,1601,1601,tweet,tweet_timestamp,5,,,2016-10-12T11:34:04.000-05:00
20,1843,1843,tweet,tweet_timestamp,5,,,2016-10-12T07:31:57.000-05:00
21,1906,1870,tweet,tweet_timestamp,5,,,2016-10-12T08:24:31.000-05:00
22,1992,1658,tweet,tweet_timestamp,5,,,2016-10-12T04:35:38.000-05:00
23,2095,2095,tweet,tweet_timestamp,5,,,2016-10-12T07:42:06.000-05:00
24,2124,2124,tweet,tweet_timestamp,5,,,2016-10-12T05:37:13.000-05:00
25,2316,2316,tweet,tweet_timestamp,5,,,2016-10-12T10:57:24.000-05:00
26,2441,1175,tweet,tweet_timestamp,5,,,2016-10-12T10:58:28.000-05:00
27,2476,2476,tweet,tweet_timestamp,5,,,2016-10-12T09:46:55.000-05:00
28,2665,2665,tweet,tweet_timestamp,5,,,2016-10-12T09:23:50.000-05:00
29,4096,4096,tweet,tweet_timestamp,5,,,2016-10-12T01:34:15.000-05:00
30,4097,4097,tweet,tweet_timestamp,5,,,2016-10-12T01:36:12.000-05:00
31,4098,4098,tweet,tweet_timestamp,5,,,2016-10-12T01:38:00.000-05:00
32,4099,4099,tweet,tweet_timestamp,5,,,2016-10-12T01:38:05.000-05:00
33.4100.4100.tweet.tweet timestamp.5...2016-10-12T01:38:34.000-05:00
```

Oracle Big Data Graph And Spatial Architecture

- Data loaded from files or through Java API into HBase
- •In-Memory Analytics layer runs common graph and spatial algorithms on data
- Visualised using Cytoscape, R or in this example, Tom Sawyer Perspectives



Loading Edges And Vertices Into Hbase

```
cfg = GraphConfigBuilder.forPropertyGraphHbase()
.setName("connectionsHBase")
.setZkQuorum("bigdatalite").setZkClientPort(2181)
.setZkSessionTimeout(120000).setInitialEdgeNumRegions(3)
.setInitialVertexNumRegions(3).setSplitsPerRegion(1)
.build();
opg = OraclePropertyGraph.getInstance(cfg);
opg.clearRepository();
vfile="../../data/kettle nodes.opv"
efile="../../data/kettle edges.ope"
opgdl=OraclePropertyGraphDataLoader.getInstance();
opgdl.loadData(opg, vfile, efile, 2);
// read through the vertices
opg.getVertices();
// read through the edges
opg.getEdges();
```

Uses "Gremlin" Shell for HBase

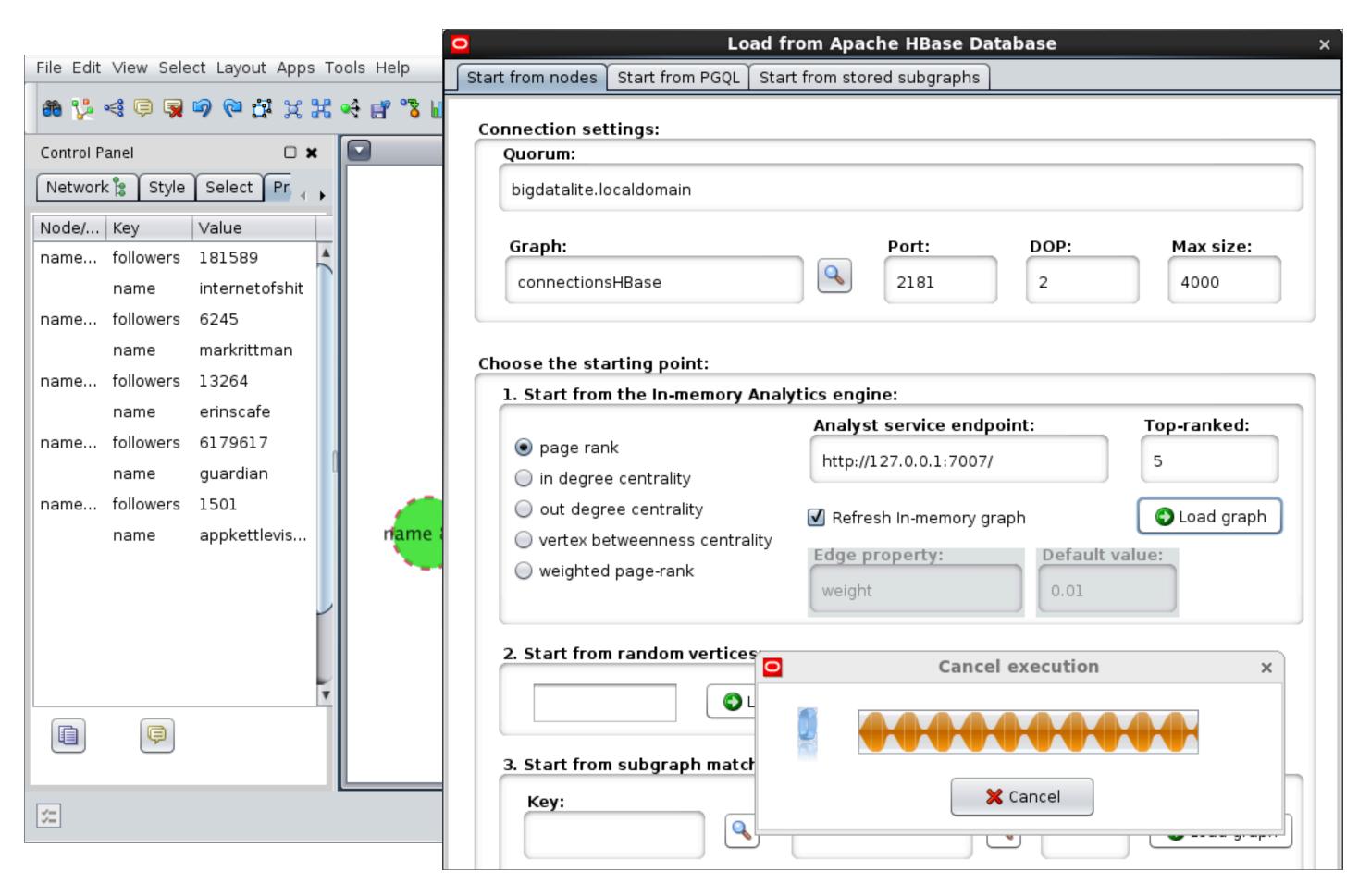
- Creates connection to HBase
- Sets initial configuration for database
- Builds the database ready for load

- Defines location of Vertex and Edge files
- Creates instance of OraclePropertyGraphDataLoader
- Loads data from files

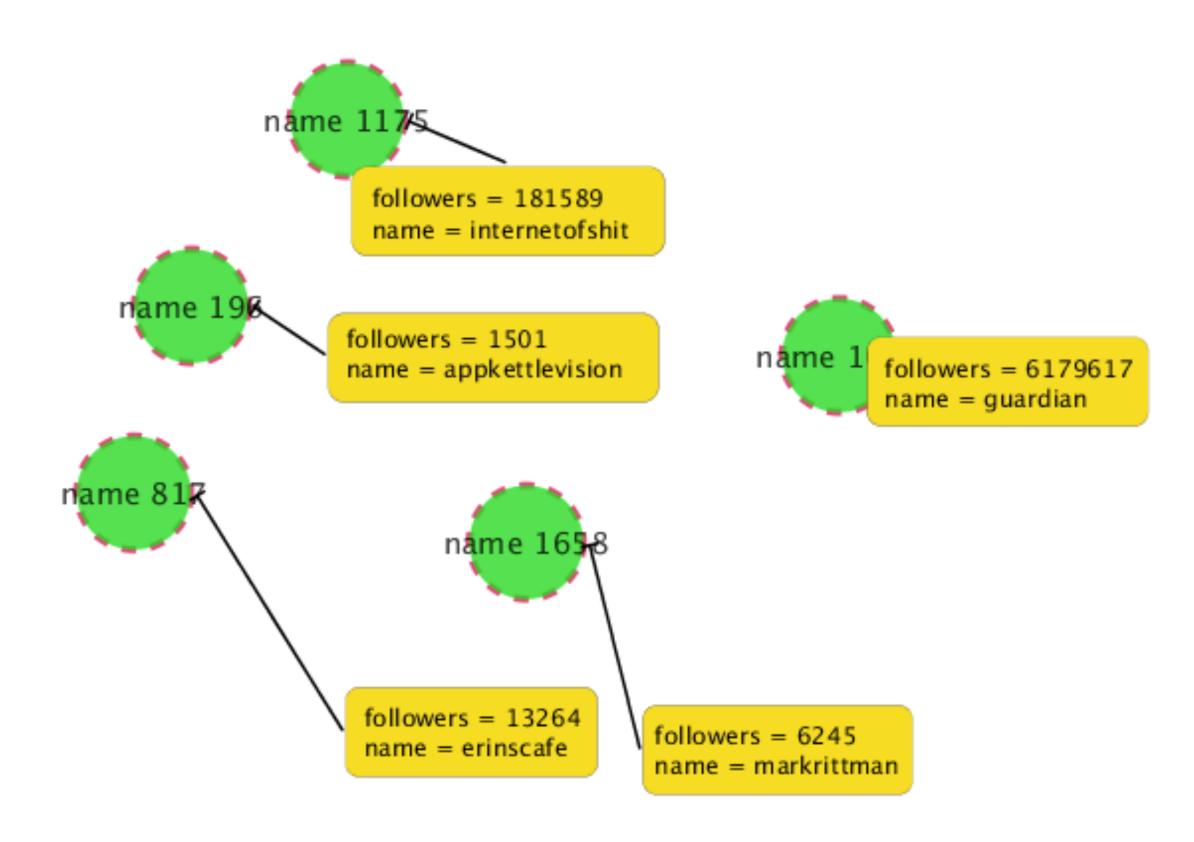
- Prepares the property graph for use
- Loads in Edges and Vertices
- Now ready for in-memory processing

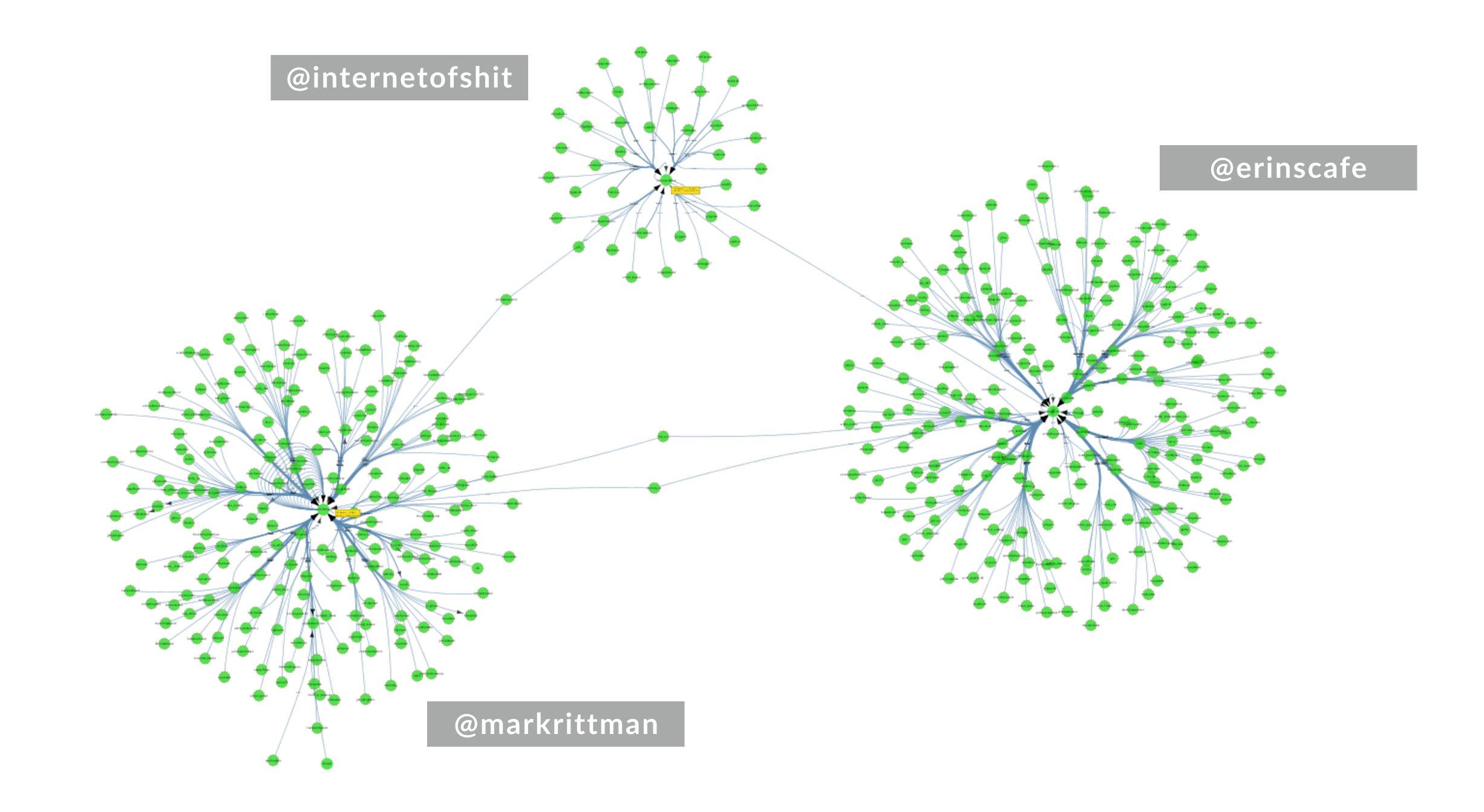
Visualize And Analyze Using Cytoscape Plugin

- Plugin created by Oracle to add to open-source Cytoscape analysis tool
- Connects to HBase or NoSQL property graph
- Connect to PGX analytics engine
- •Run Page Rank and other analyses
- Visualize property graph on-screen
- •Search for nodes and edges using Apache Solr search engine



Top 5 Influencers Based On Mentions, Retweets

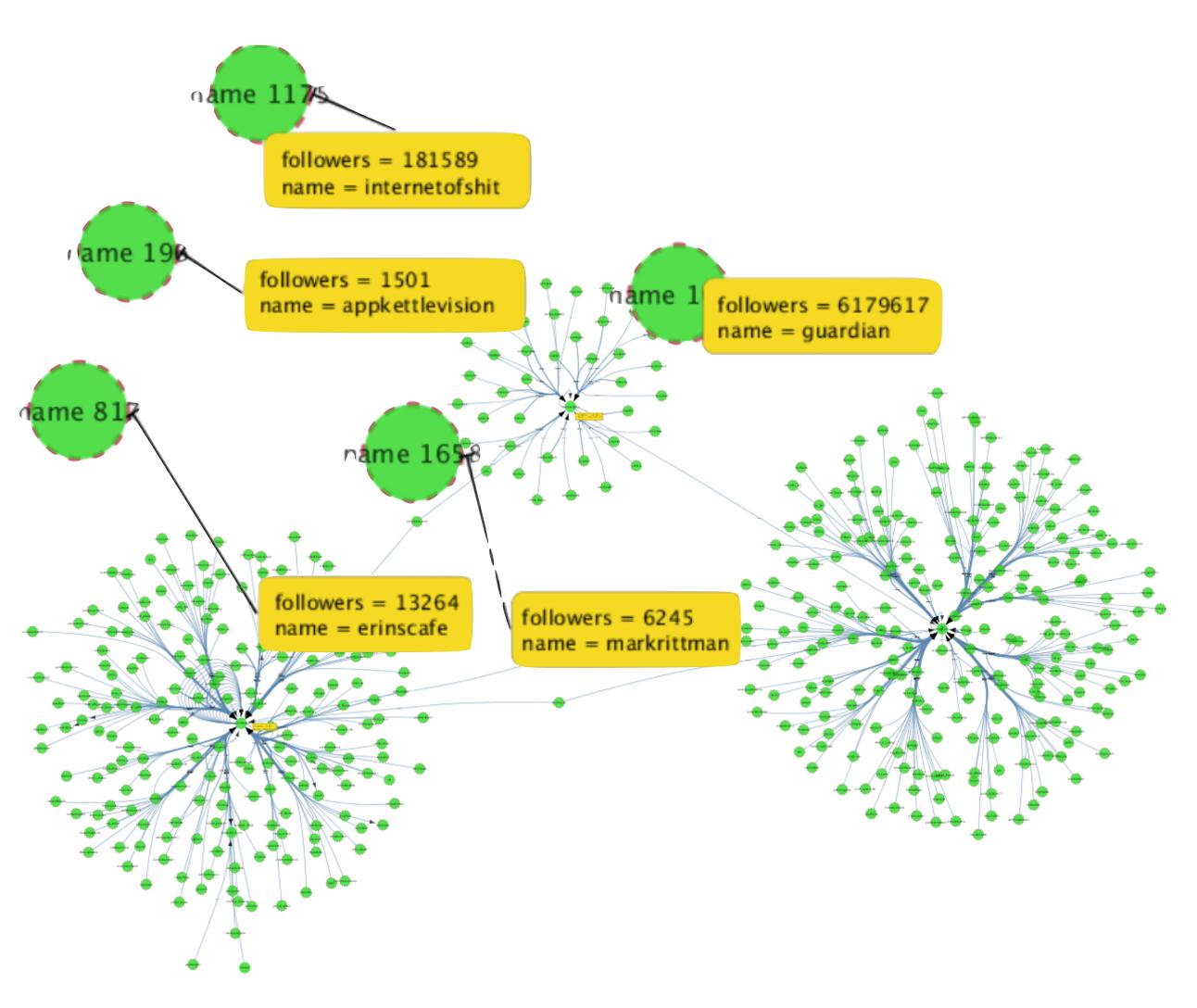




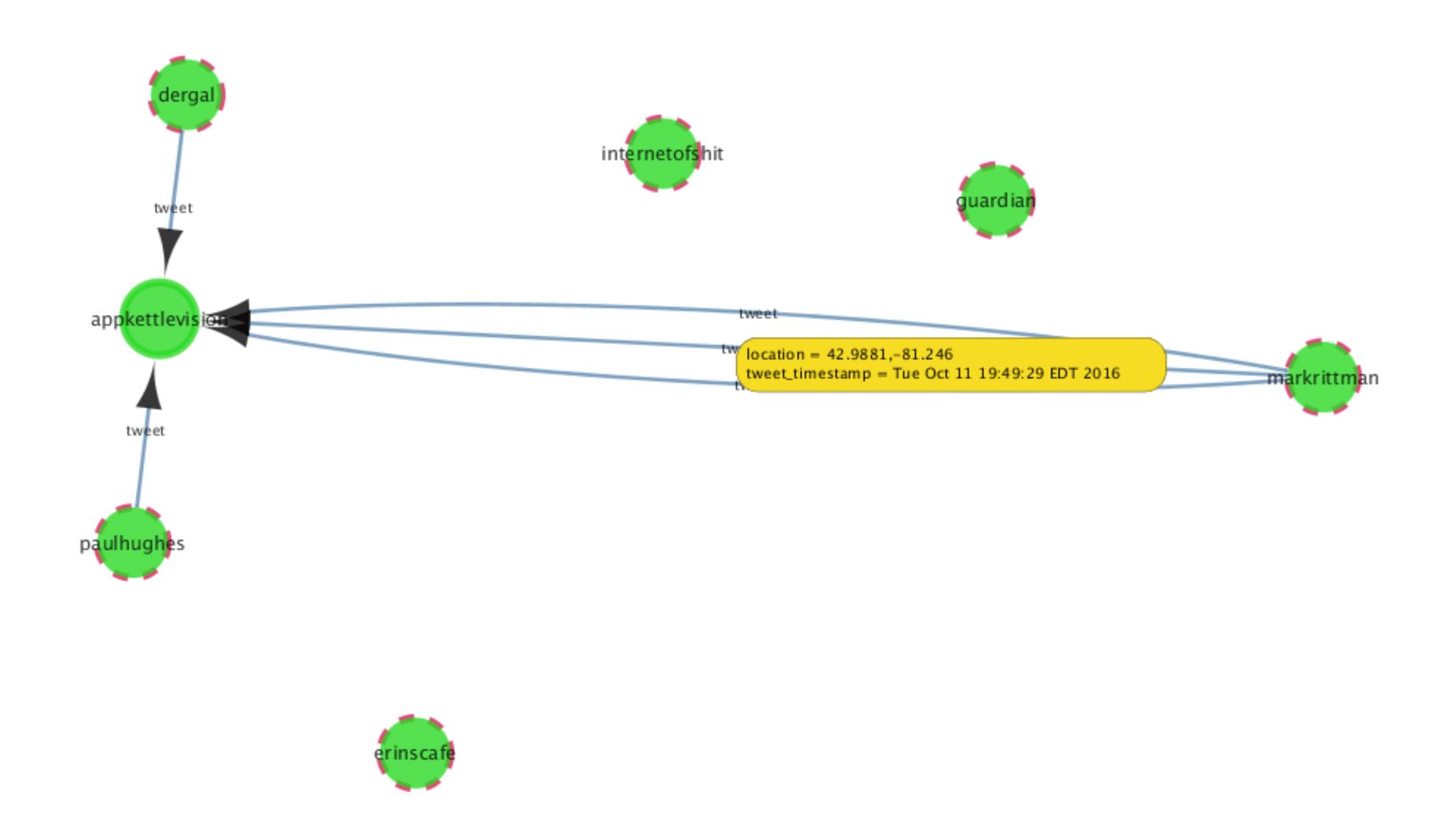
Role Of Network Influencers In Meme Propagation

- •The story was picked-up by several influential Twitter users and online news sites
- Erins Cafe, Boing Boing, Internet of Sh*t
- Featured as a "Twitter Moment" on Day 1 PM
- •Guardian Newspaper website Day 2 AM
- •Influencers identified in two ways
 - •By number of followers in Twitter profile
 - •By number of connecting edges in tweets Property Graph using Page Rank algorithm

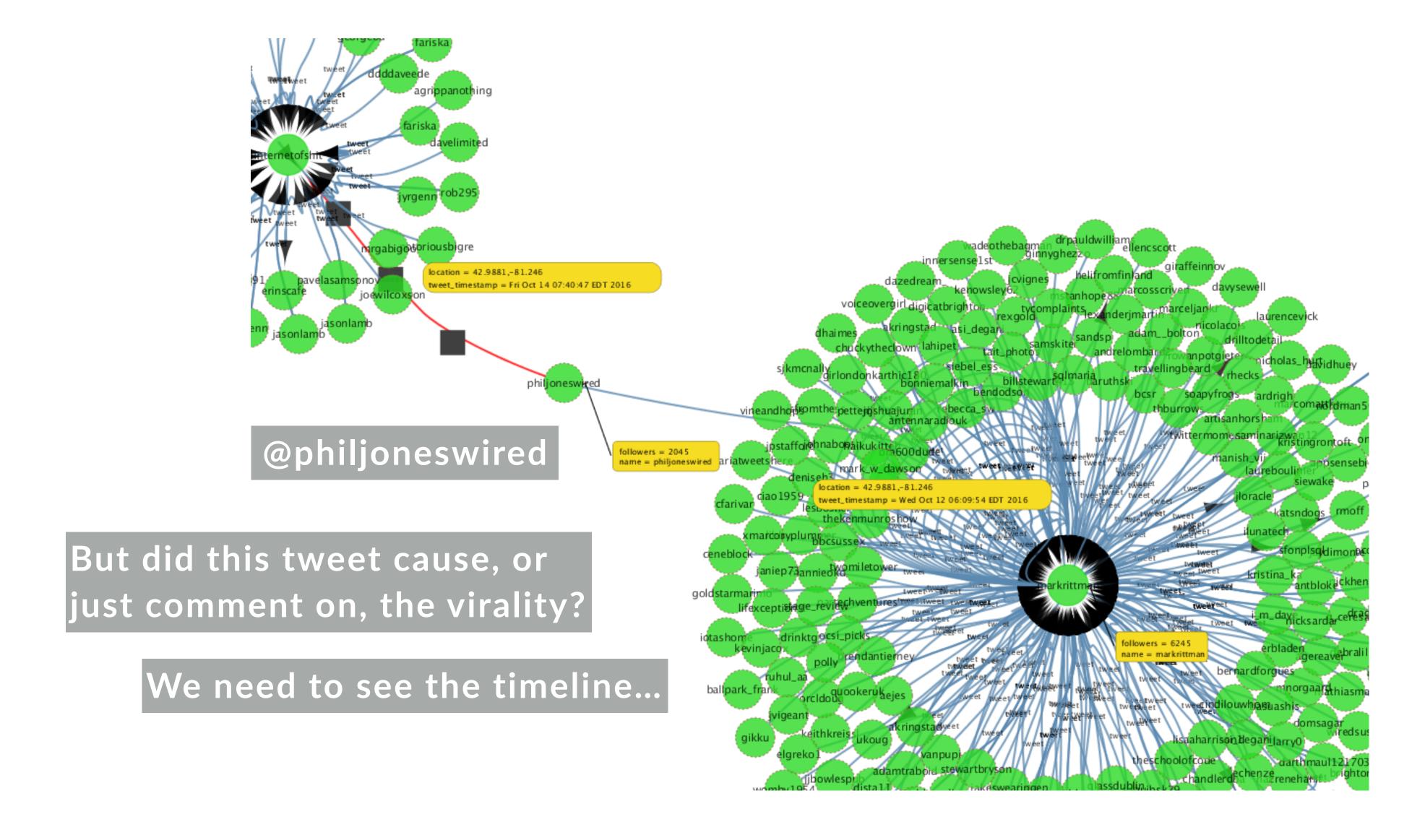
•But ... how did they hear about the story?



Understanding How A User Joined Conversation

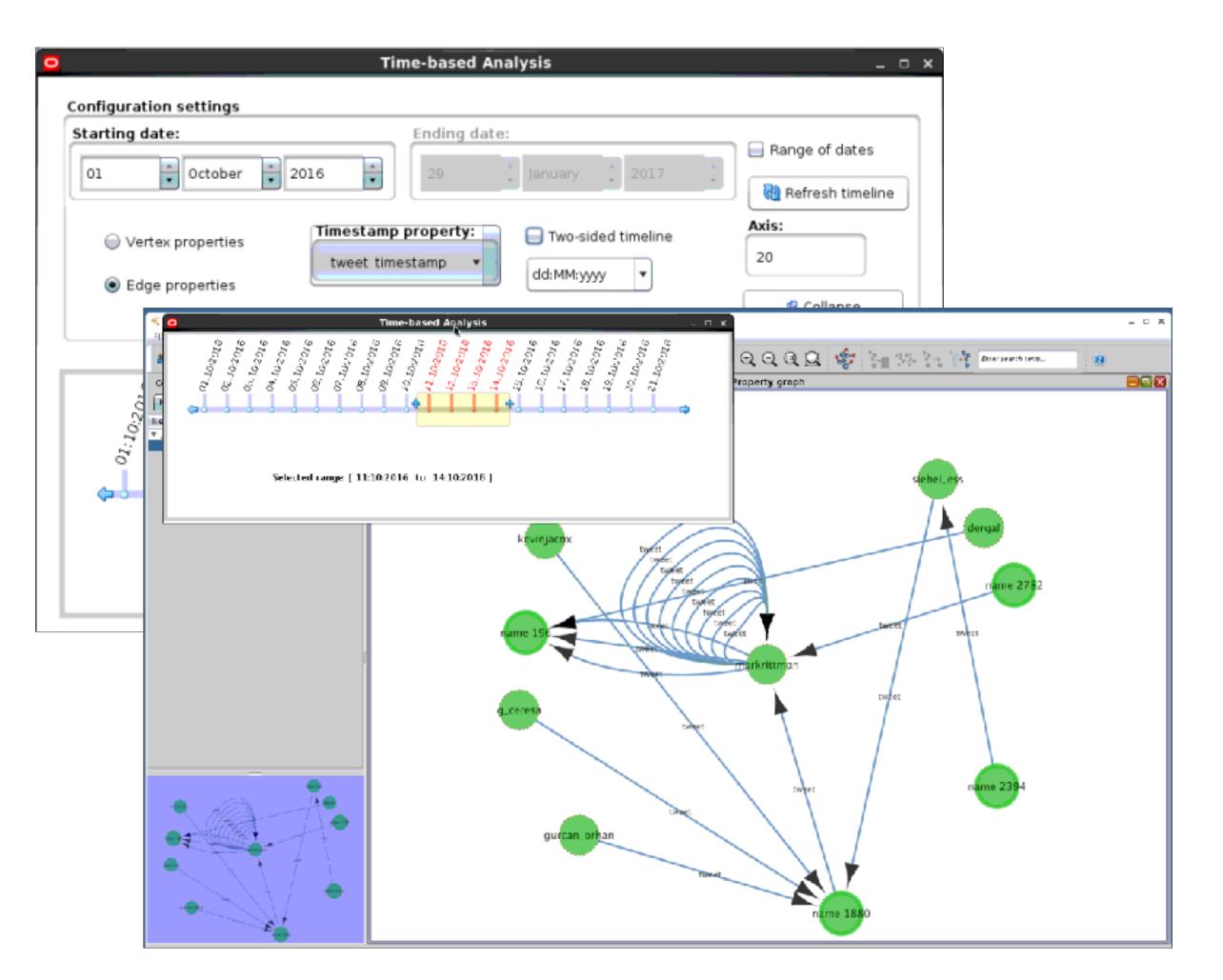


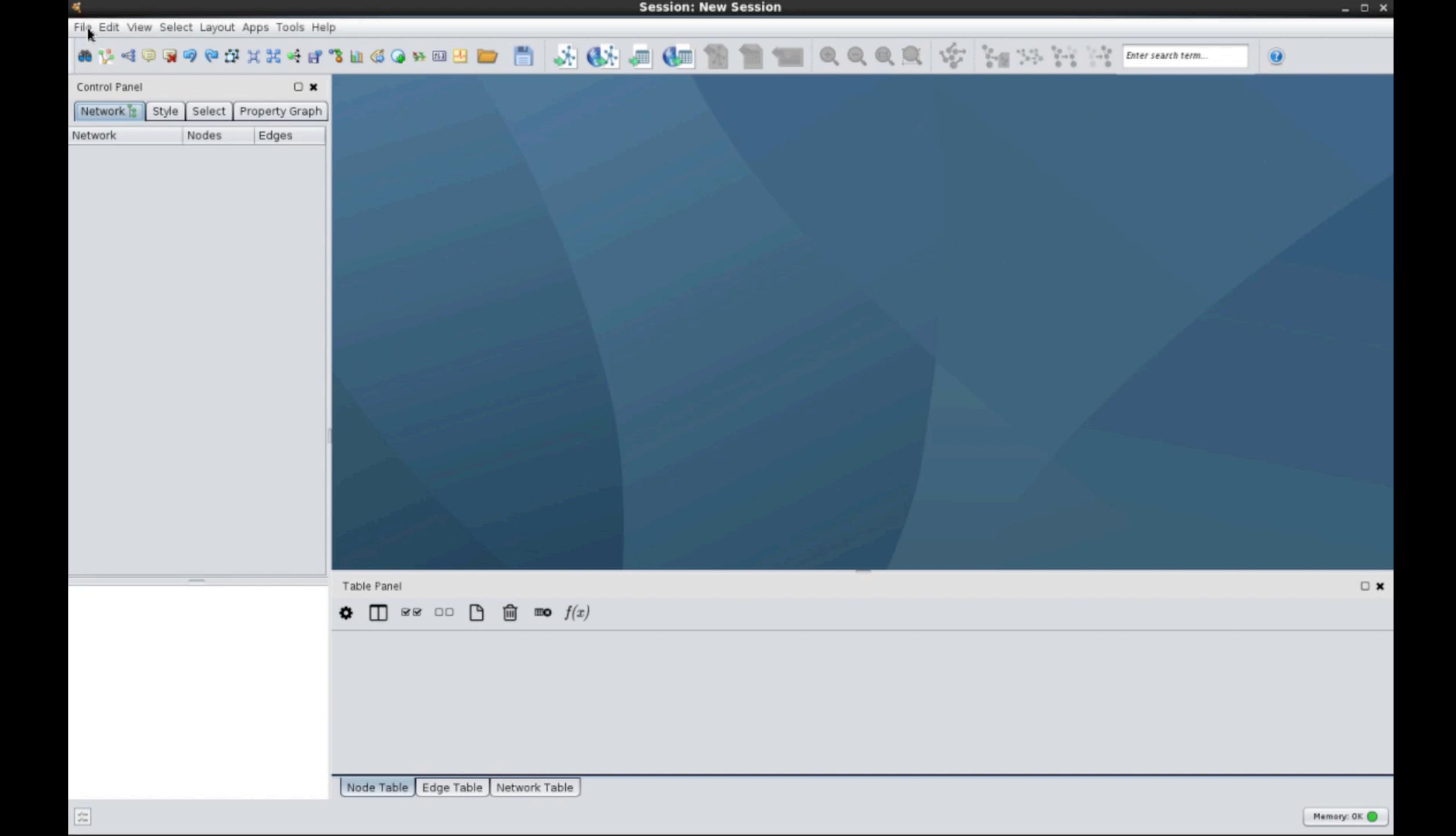
Visualising Potential Story Paths To Influencer Nodes



New Cytoscape Plugin Feature - Timeline Analysis

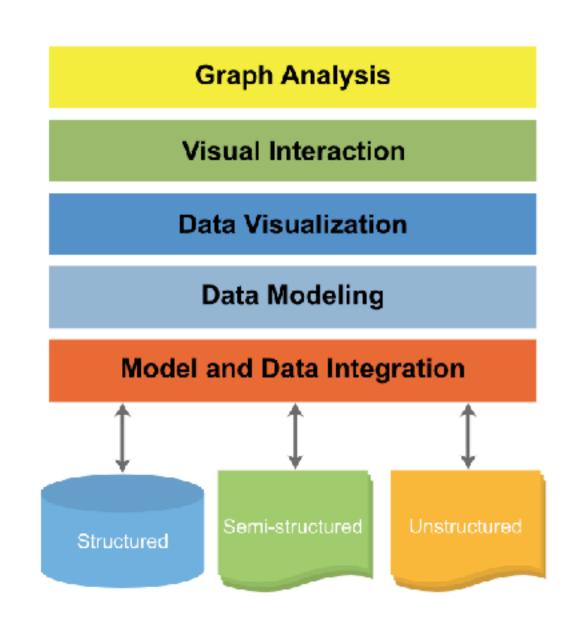
- •Filters PGX analysis on timestamp edge or vertex property when present in property graph
- •Select start date, optional end date for filter
- •Supports two-sided timeline in directed graphs
- View property graph as it develops over time

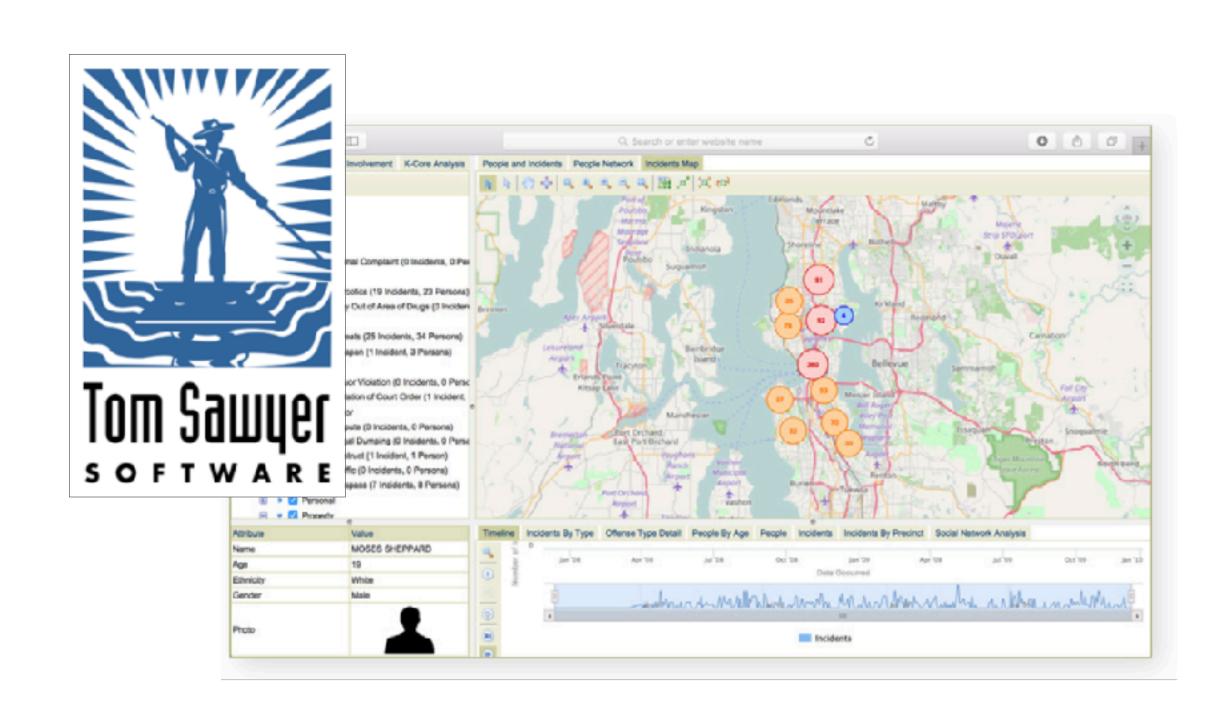


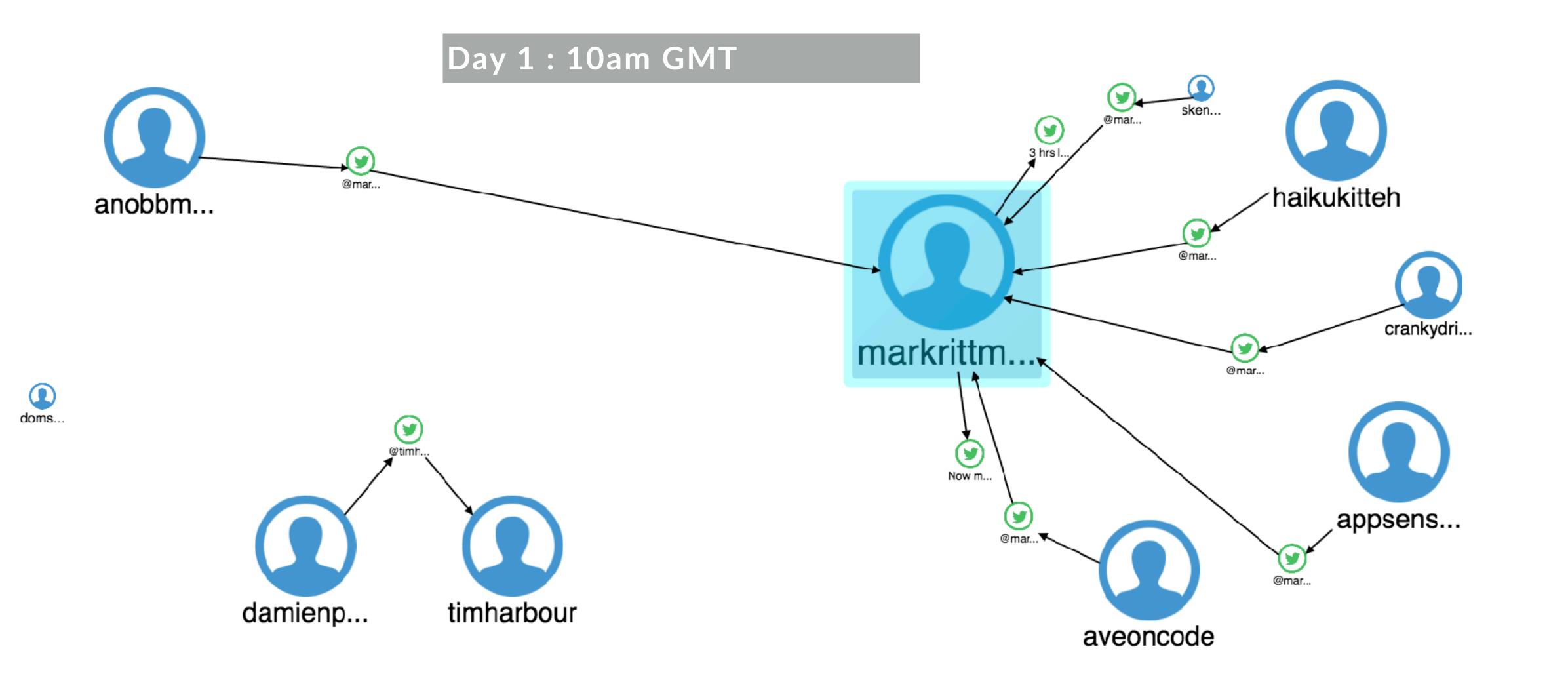


Tom Sawyer Perspectives For Social Network Analysis

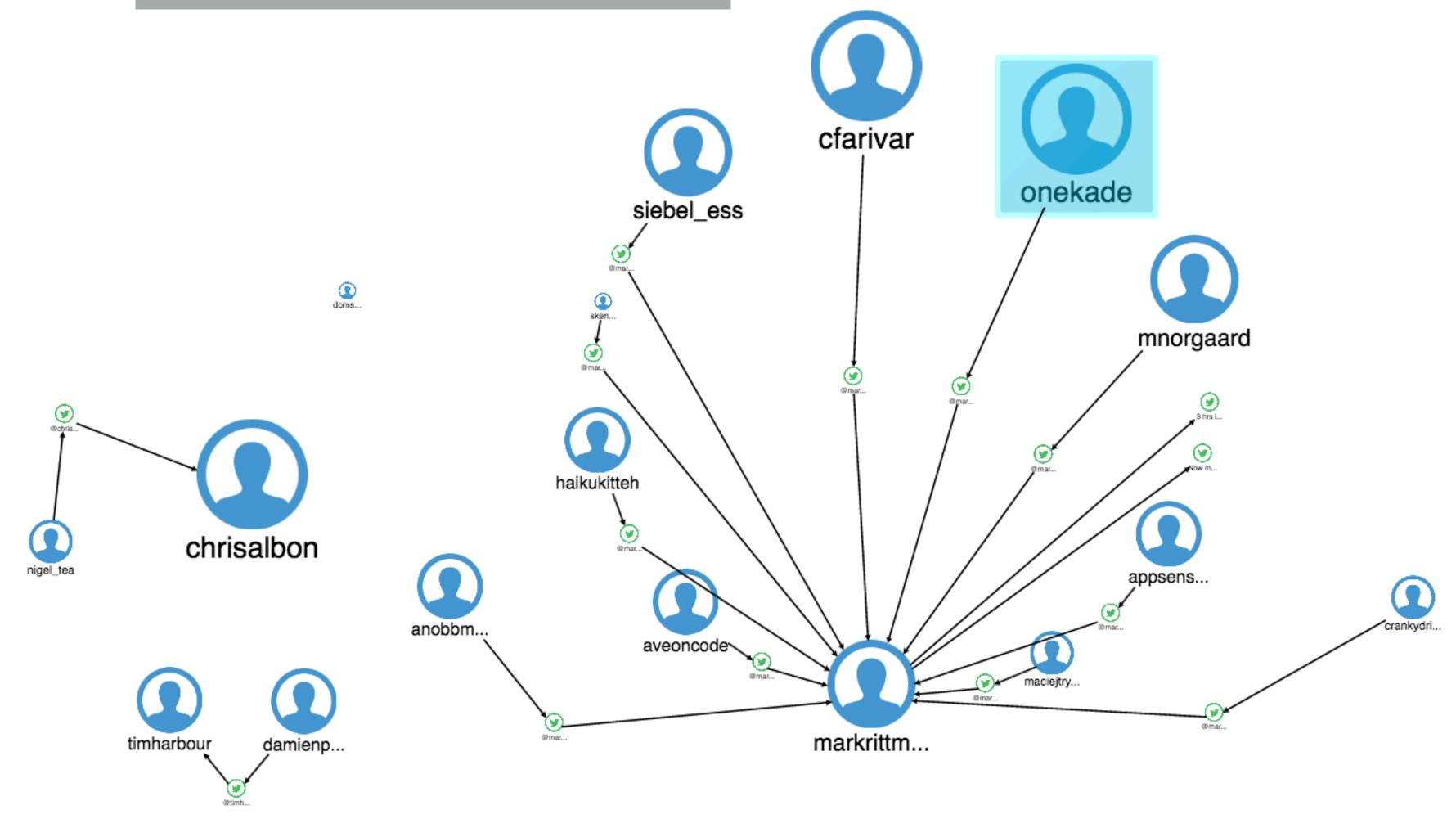
- •The Timeline Analysis plugin for Cytoscape is useful and helps us filter by date range
- Another option for visualising property graphs is Tom Sawyer Perspectives
 - •Timeline analysis down to the hour 3hr periods are perfect for this analysis
 - Map visualization, network visualization
- •Prototype using subsets of tweets in CSV files, or connect to full HBase/NoSQL dataset



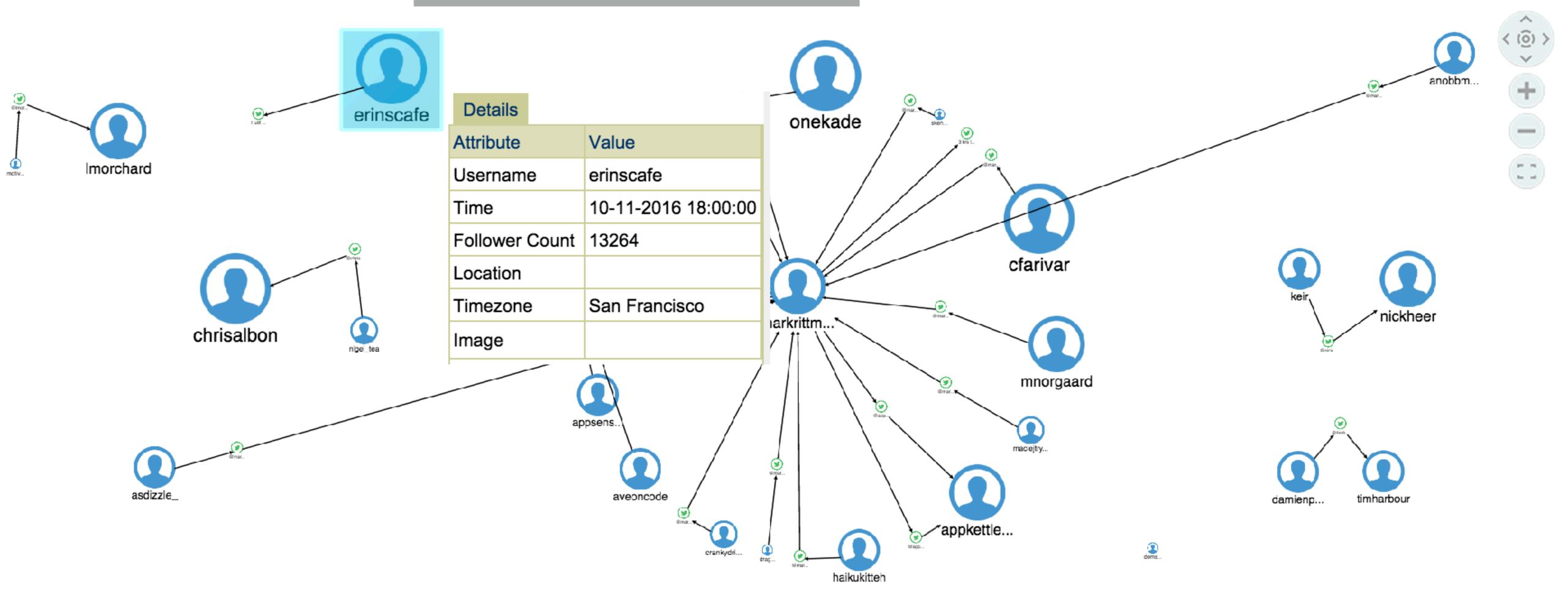




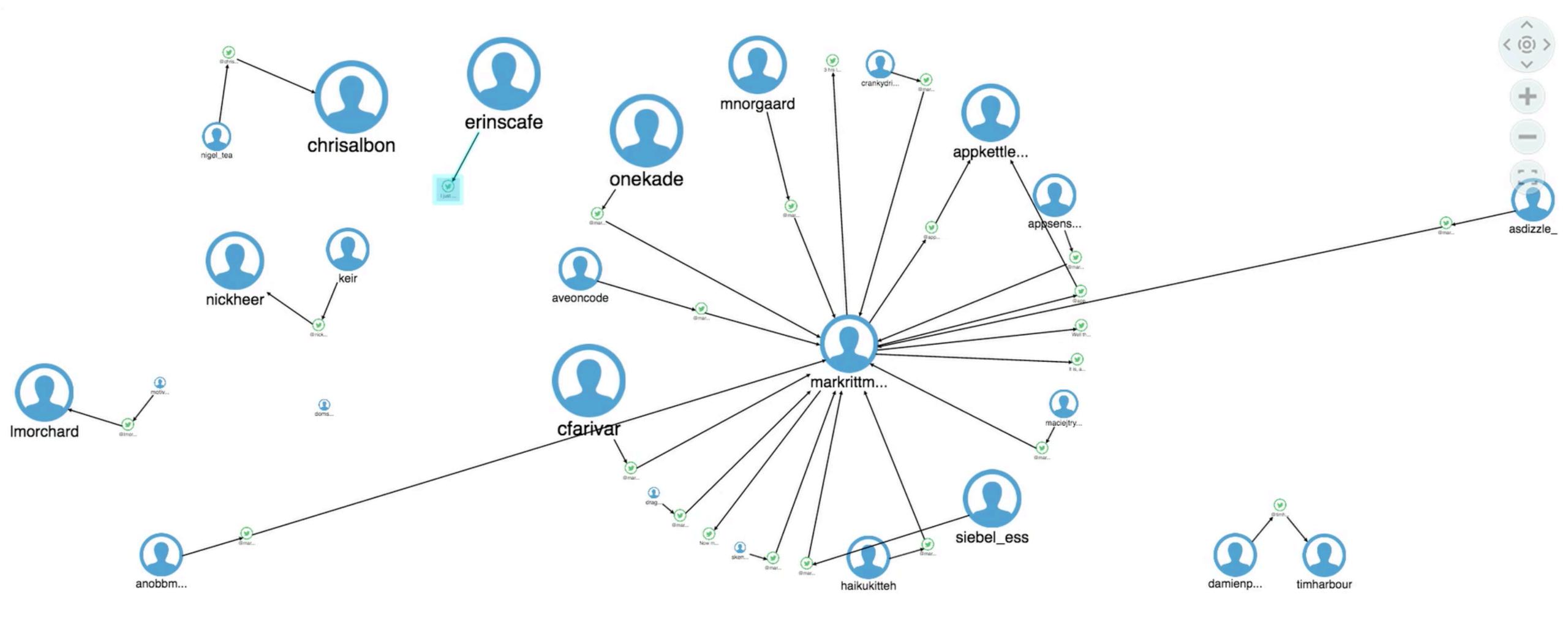
Day 1: 3pm GMT

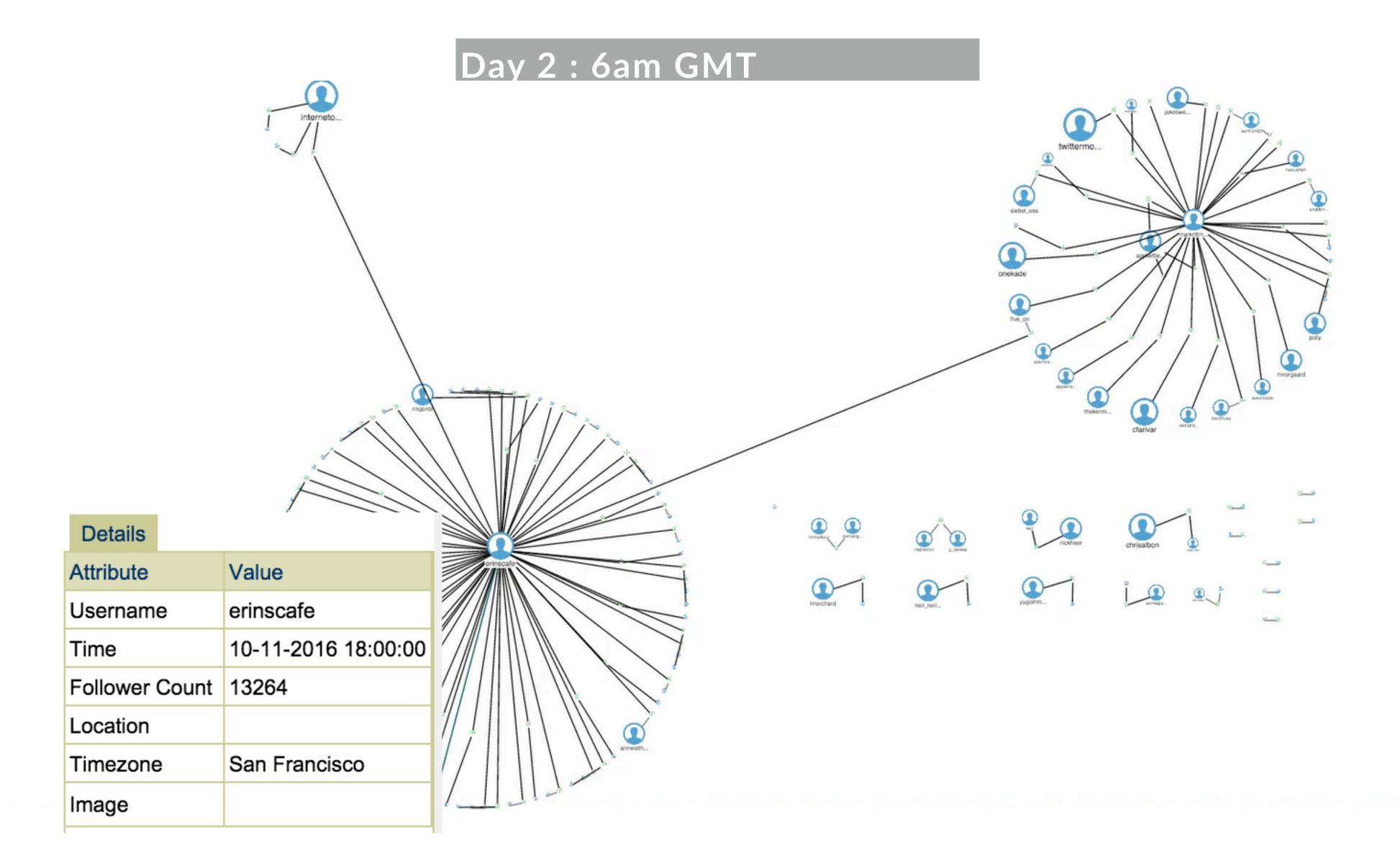


Day 1: 6pm GMT



Day 1:8pm GMT













IT WAS @ERINSCAFE

IT WAS @ERINSCAFE



TWEETS FOLLOWING FOL

3,434

142K

FOLLOWERS

LISTS

MOMENTS

13.9K

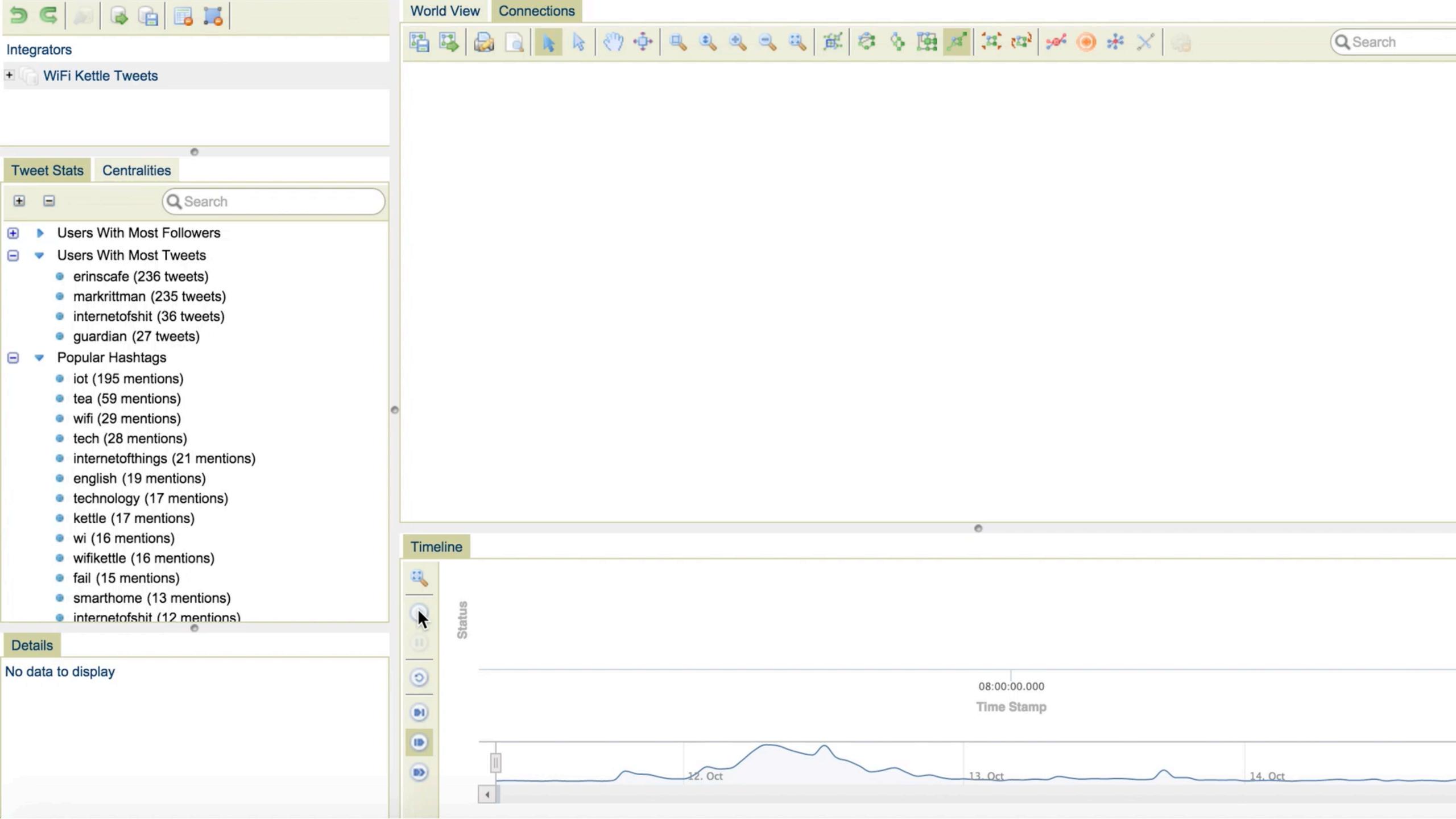
113K

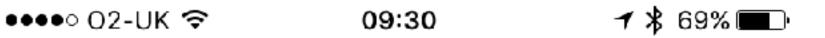
LIKES

1

Director of #ffthefilm on Amazon.

- Hollywoodland
- Ø unintentionallyhilarious.tumblr.com
- iii Joined January 2009





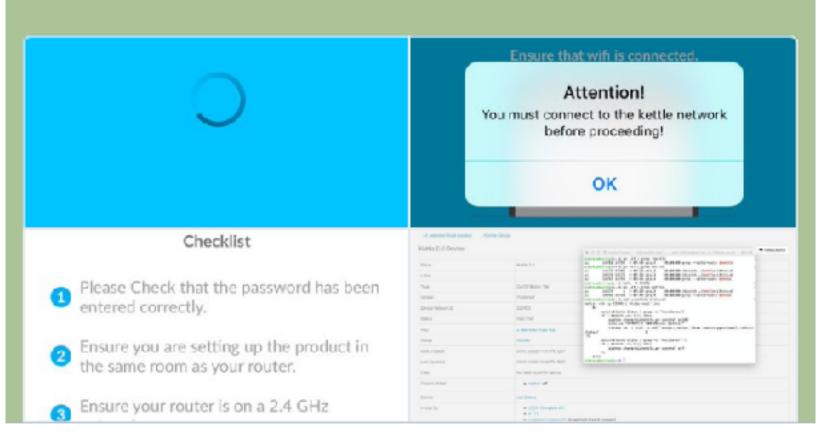
mobil.derstandard.at

×

Die große Verwunderung

Und verwundert war Rittman in der Tat. "Hatte immer noch keine Tasse Tee an diesem Morgen, weil ich den Wasserkocher debugged habe", twitterte er um zehn Uhr morgens aus dem heimatlichen Hove am Ärmelkanal. "Jetzt hat sich die iWifi-Basisstation zurückgesetzt. Koche das Wasser nun in einer Kasserolle."

Drei Stunden später folgte der nächste Eintrag seiner Smart-Home-Odyssee. Die verpflichtende Neukalibrierung hatte einen Reset der Basisstation ausgelöst und war im Netzwerk nicht mehr auffindbar. Eine Stunde später war dieses Problem zwar gelöst, dafür verzögerte nun Twitter den weiteren Fortschritt.



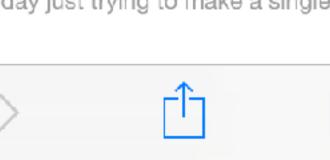


Man documents his 12 hour attempt to make a cup of tea using his Wi-Fi kettle

OCTOBER 13, 2016 9:57AM

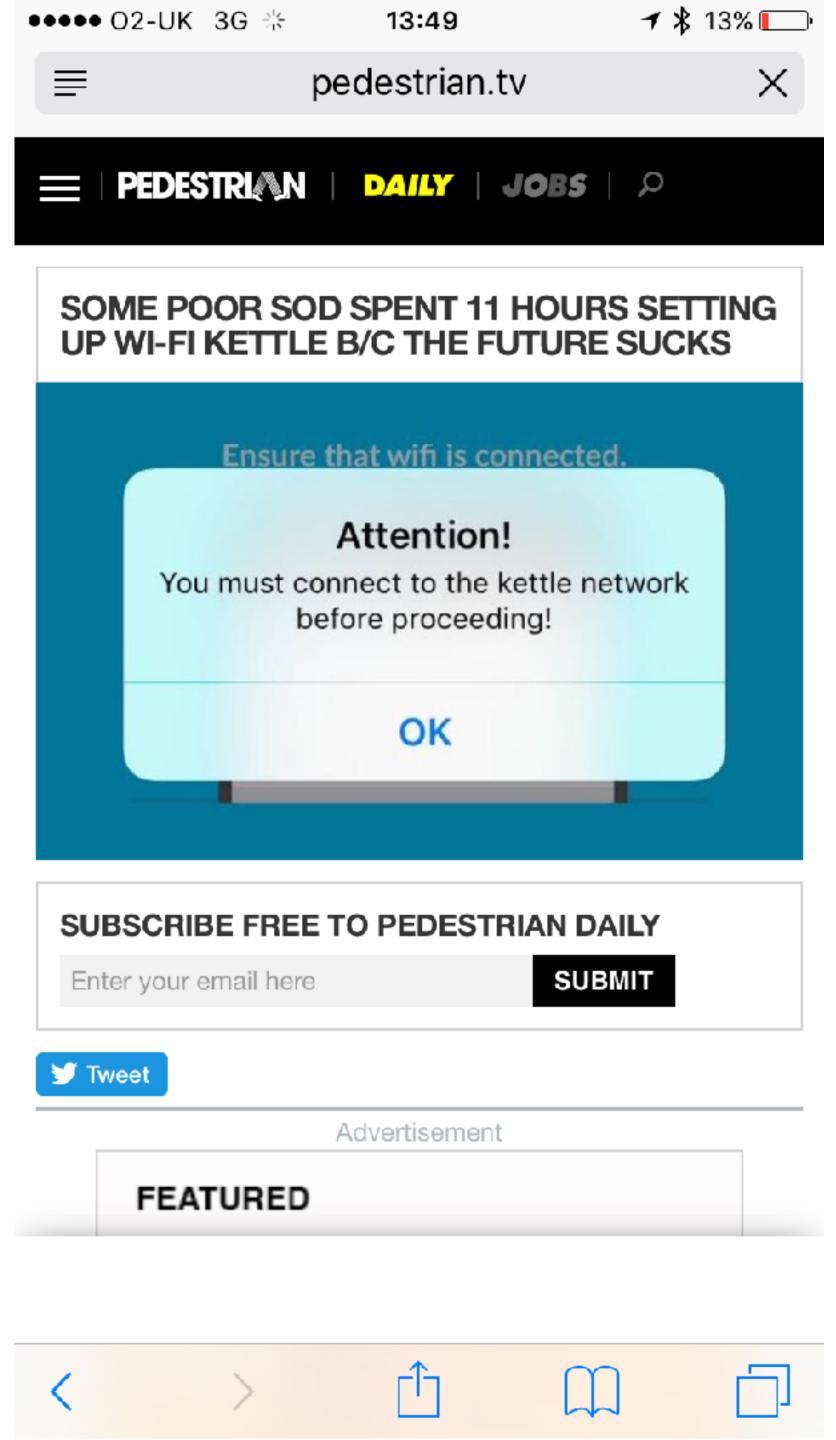


One man spent all day just trying to make a single cup of tea. Picture: Supplied

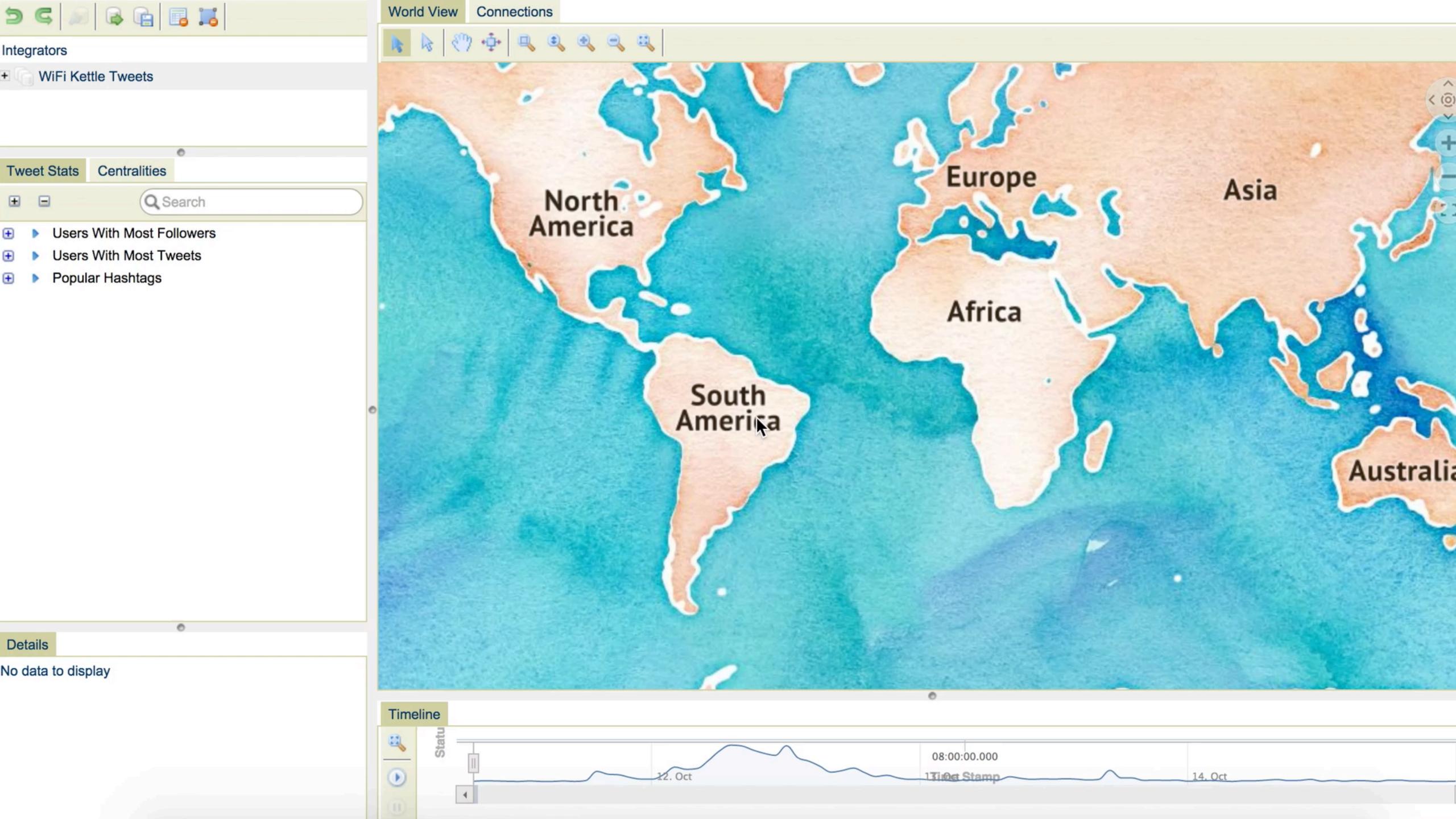








AND USING SPATIAL CO-ORDINATES IN THE TWEET METADATA...



Conclusions

- •Tweet went viral because it was picked-up on by a very well-connected Twitter user
- •And why did that happen? Probably because the story "had legs"...
- •Some mentions in the Twitter-verse before this but main viral explosion due to @erinscafe
- •All subsequent activity including mentions by @guardian, @internetofsh*t followed that
- You can analyse Twitter and other meme breakouts using Oracle Big Data Spatial & Graph
- New Timeline Analysis feature in Cytoscape Plugin useful for time-slice analysis of data
- •Tom Sawyer Perspectives provides even more visualisation incl. mapping analysis capabilities
- •Thank you to Alan Wu, Juan Francisco & Hans Viehmann from Oracle, and Kevin Madden & Austris Krastiņš from Tom Sawyer for their help with the demos



HOW A TWEET WENT VIRAL

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