Pitfalls and Problems
Many ways to get visualization wrong.
Data Saturation: Our Data is Hard! (credit to Mr. Marty).
Graphics bring issues which command line tools avoid.

Tablets: Keytar of Security Visualization?
Huge push for tablets, from two directions:
Youth and Executives. Very potent combination.
Seems inevitable that we will be showing security imagery on a tablet, soon.

What about other senses? May we engage hearing or touch to better experience the data?
Visualization isn't about seeing, it's about understanding

Thank You.

@securitytim
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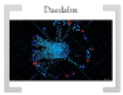

Credit To The Giants

Rafael Marty -- "Applied Security Visualization"
Book about the specifics of security visualization.
Ben Shneiderman -- Too many publications to easily mention, user interface pioneer since 1980s.
Eight Golden Rules of Interface Design (google them!)
Shneiderman's Mantra -- Overview, zoom and filter, details on demand.

Makers and Clancy -- "Whatever You Say, Say Nothing"
Best network security song ever.

Where are we going?
3D? Has to be a valid use case, but it could happen.
More automation and grouping w/o human intervention.

Heat Maps

Dashlets

Tim Ray

Amplify FCU

Department of Information Resources, State of Texas

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@SecurityTim

Origin Systems (EA)

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Why Visualize?

Dense Information -- Humans process visual information very fast and have discriminatory power hard to replicate in a machine.

Internal Marketing

- Must convince non-technical folks
- Security as elevator pitch

Art is Acquisition, Content is Retention

Overview, Zoom and Filter, Details on Demand

Lesson from Games:
Art is Acquisition,
Content is Retention

We did this backwards, IMO

It applies to everything, even netflow security.

Magazine or Broken iPad?

Overview, Zoom and Filter, Details on Demand

--Ben Shneiderman

The Way We Were
What did we do before?
Lots of spreadsheets and text files.

Not that there's anything wrong with that…

Why was that not enough?
Database search advantage.
Need to search for more than one thing at a time.
Closer to real time is better.
Note: It may be enough in your environment!

Src IP	Dst IP	Appln	Src Port	Dst Port	Protocol	DSCP	TCP FLAGS	Flow Rate	Traffic	Packets	NextHop	FNF NbarApp
192.168.10.	192.168.13.1	compressnet	2	169	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	15.80.39.28	-
192.168.10.	192.168.13.1	compressnet	2	564	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	190.23.69.213	-
192.168.10.	192.168.13.1	compressnet	2	741	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	95.55.61.159	-
192.168.10.	192.168.13.1	compressnet	281	2	TCP	AF12	UAP SF	1.0 Kbps	1.0 KB	2	223.191.78.79	-
192.168.10.	192.168.13.1	compressnet	165	3	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	64.15.70.93	-
192.168.10.	192.168.13.1	compressnet	424	3	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	149.191.44.148	-
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192.168.10.	192.168.13.1	rje	800	5	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	74.157.168.220	-
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192.168.10.	192.168.13.1	msp	18	116	TCP	AF12	UAP SF	1.0 Kbps	1.0 KB	2	81.203.252.131	-
192.168.10.	192.168.13.1	msp	18	735	TCP	AF12	UAP SF	0 Kbps	1.0 KB	2	18.50.17.126	-
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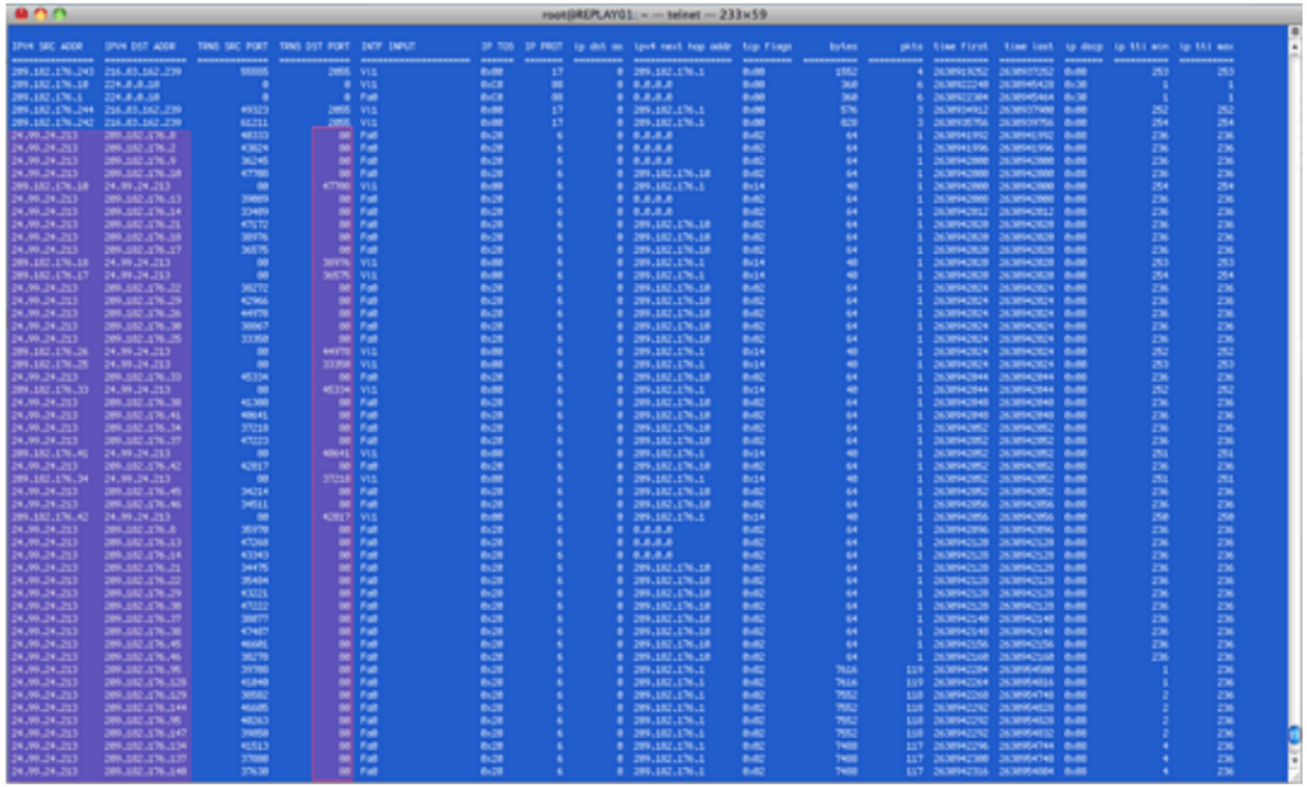

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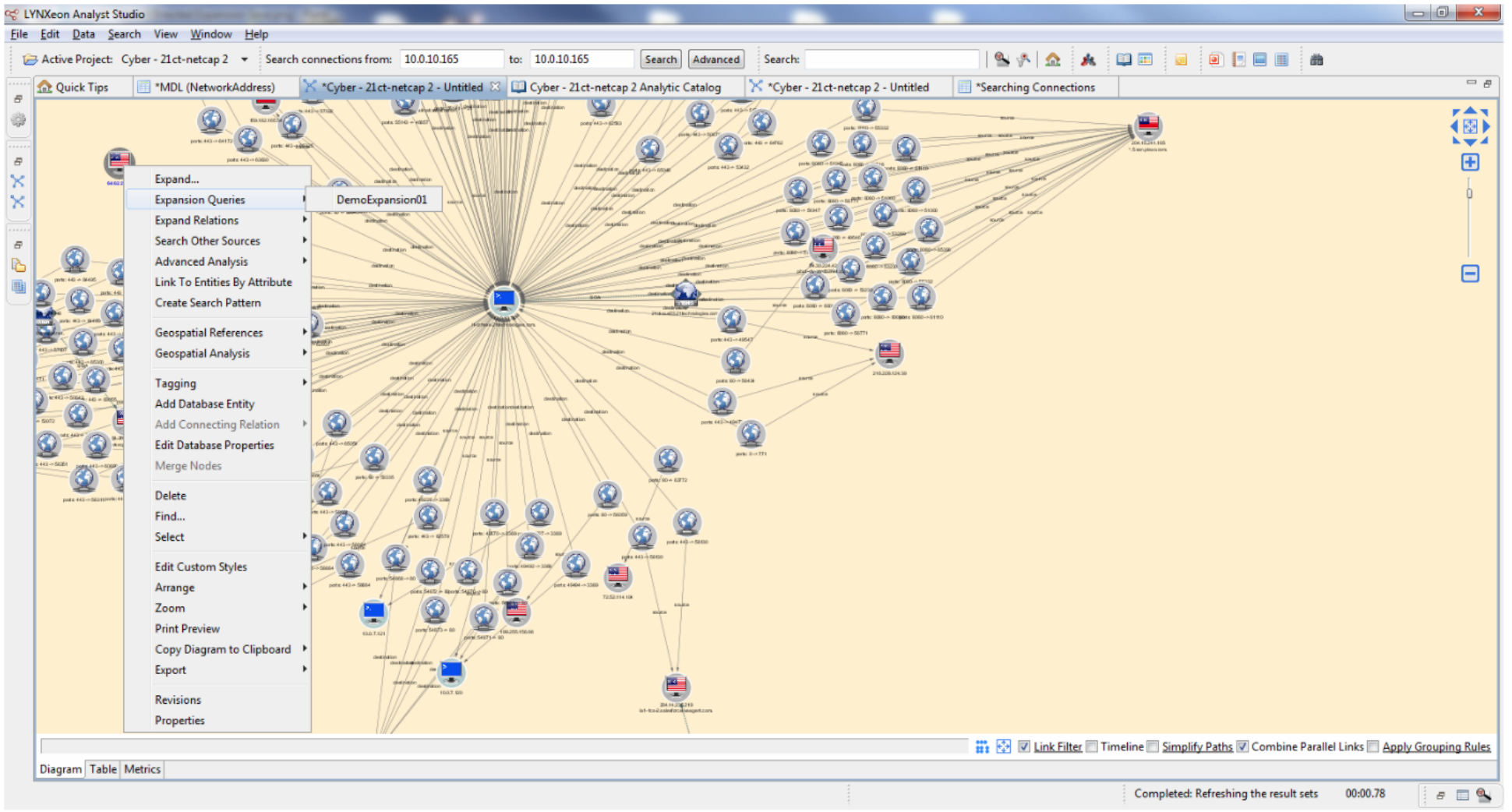
What are we Doing Now?

Graphs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Active Project: Cyber - 21ct-netcap 2
Search connections from: 10.0.10.165
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Create Search Pattern
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Geospatial Analysis
Tagging
Add Database Entity
Add Connecting Relation
Edit Database Properties
Merge Nodes
Delete
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Select
Edit Custom Styles
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Print Preview
Copy Diagram to Clipboard
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Timeline
Simplify Paths
Combine Parallel Links
Apply Grouping Rules
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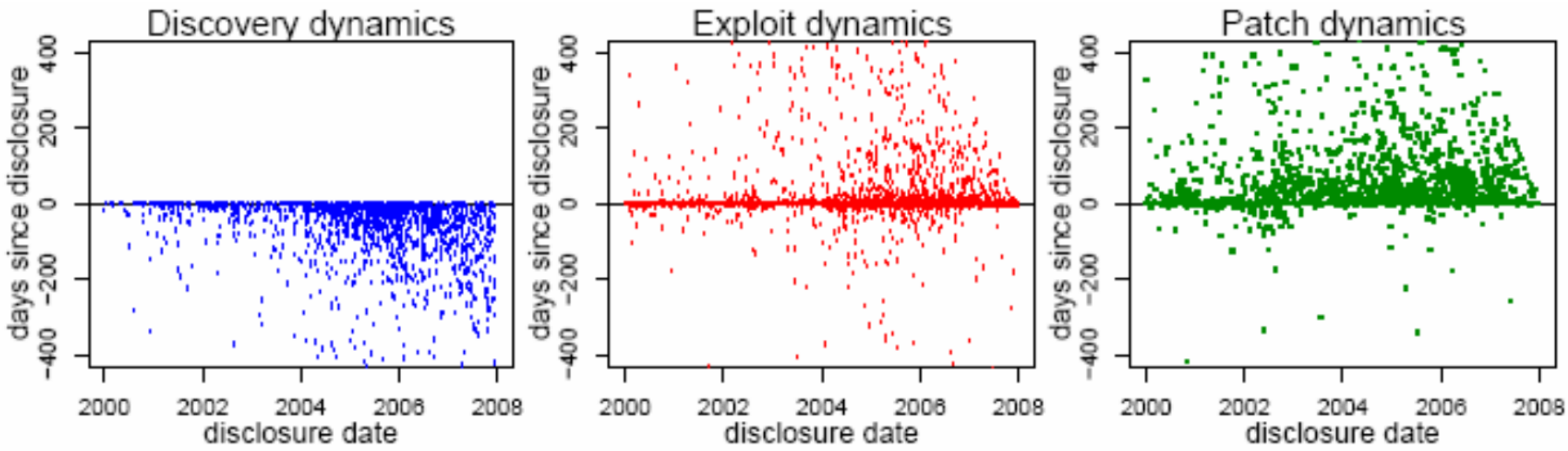
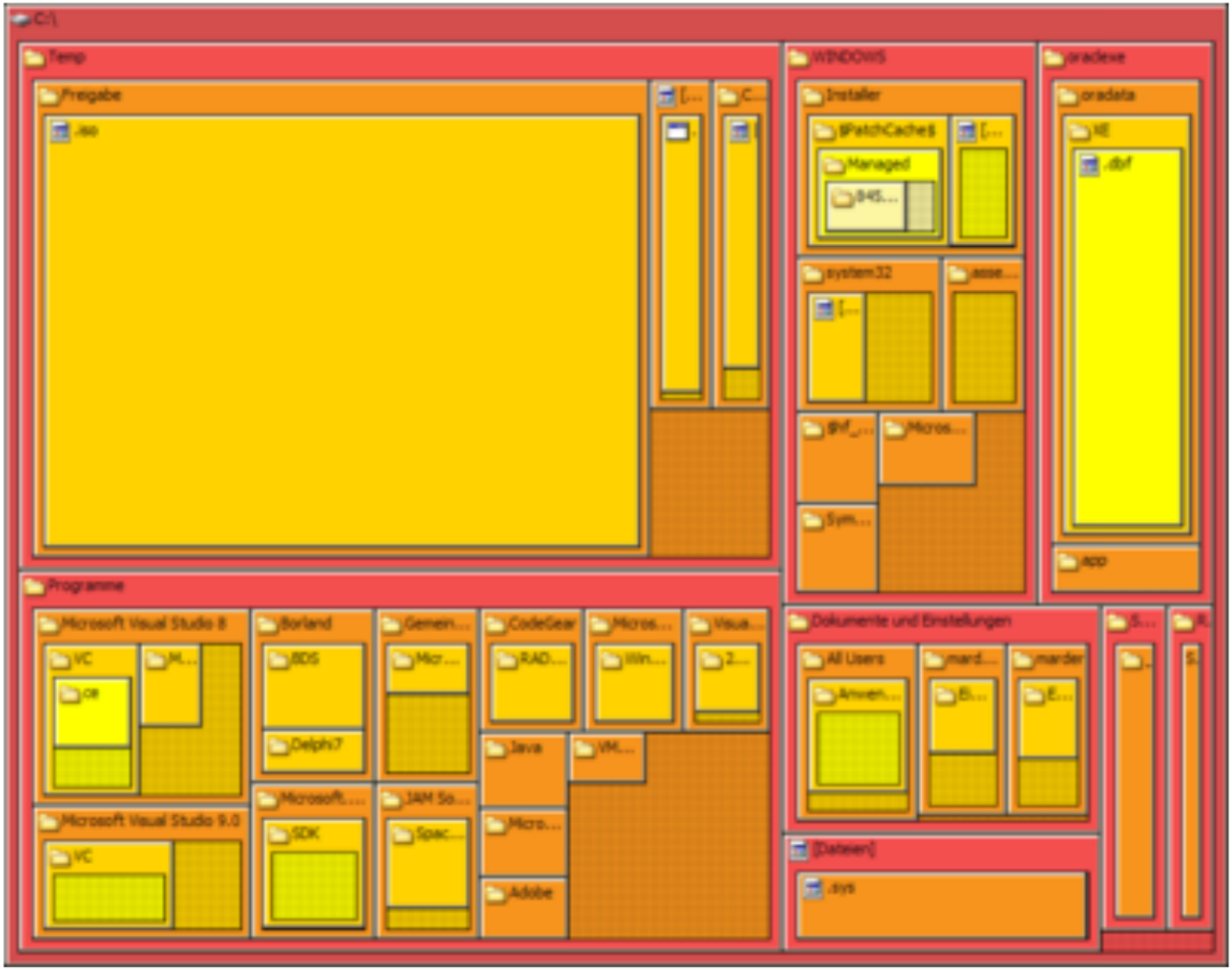
Scatter Plots



Treemaps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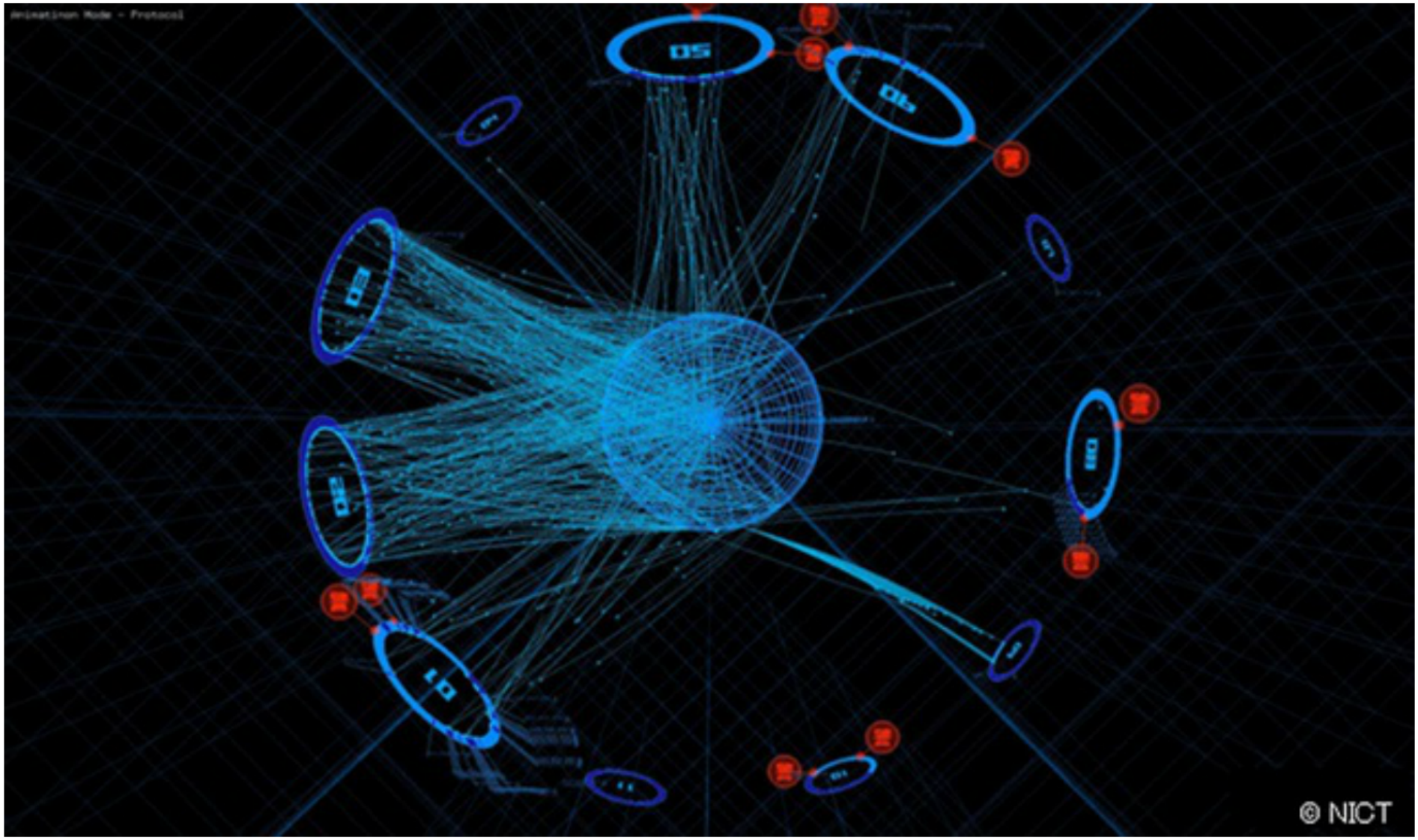
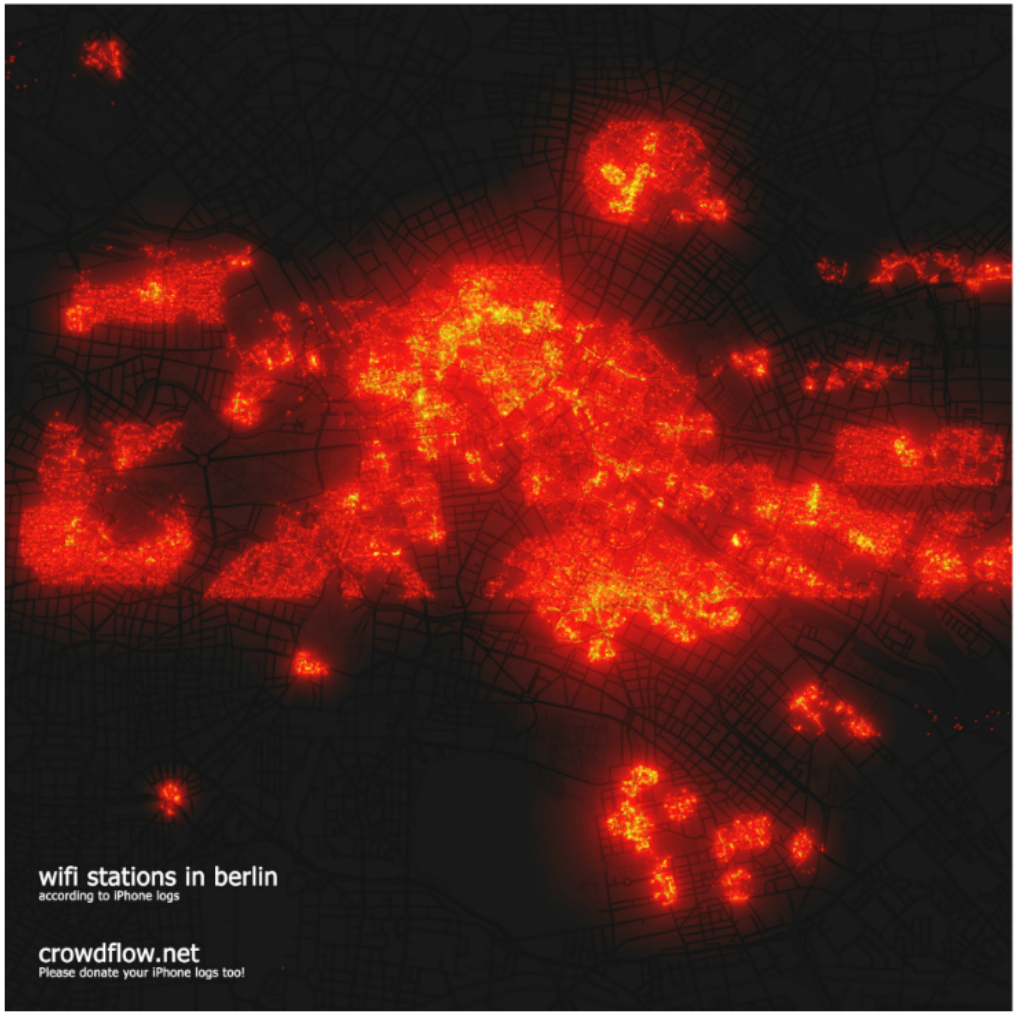
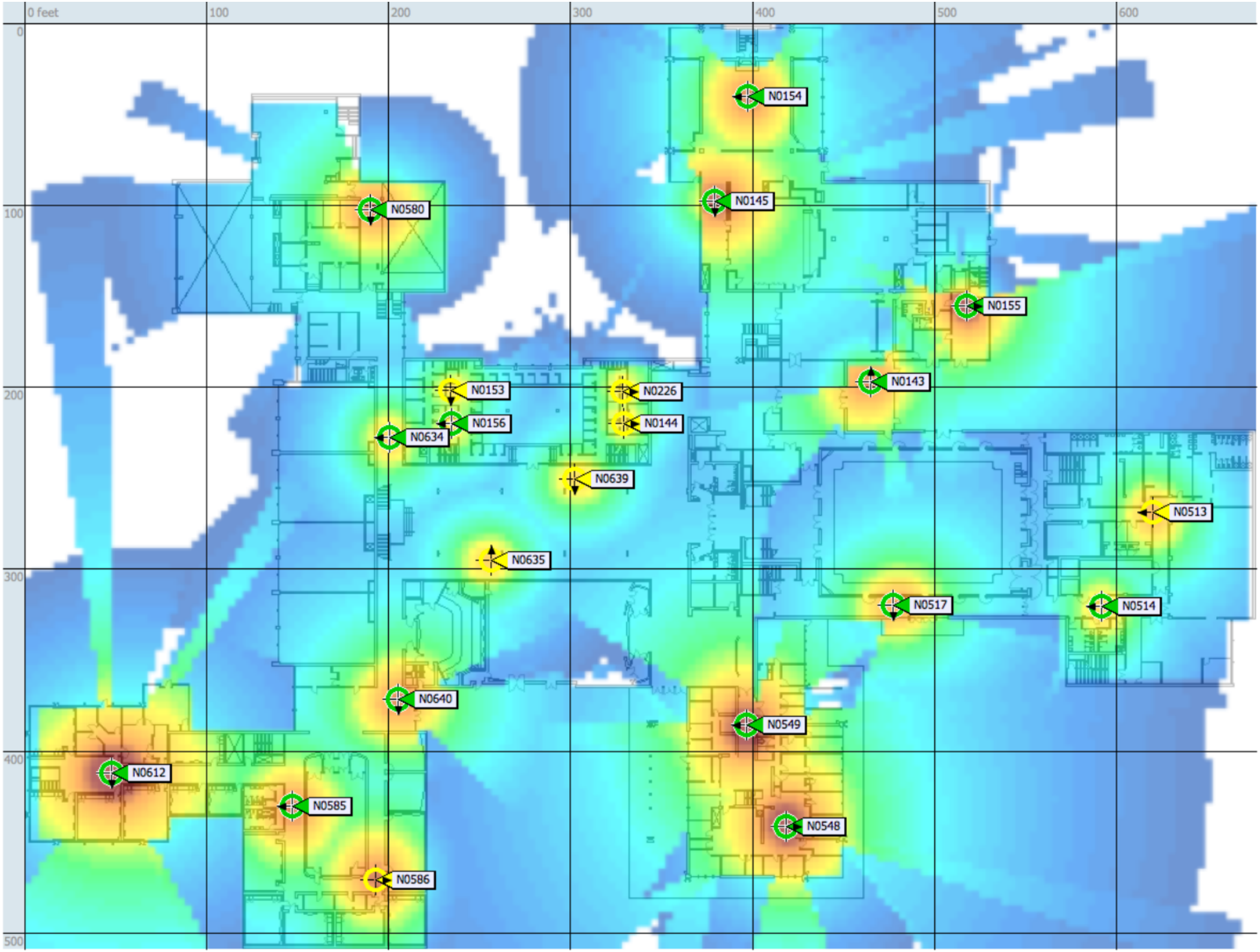


Heat Maps



Ok, little too hot...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AT&T 3G
3:30 PM
Wednesday
23
Messages
Calendar
Photos
Camera
YouTube
Stocks
Maps
Weather
Notes
Utilities
iTunes
App Store
Settings
Phone
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Safari
iPod
iPhone


TETRIS
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GUITAR HERO


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