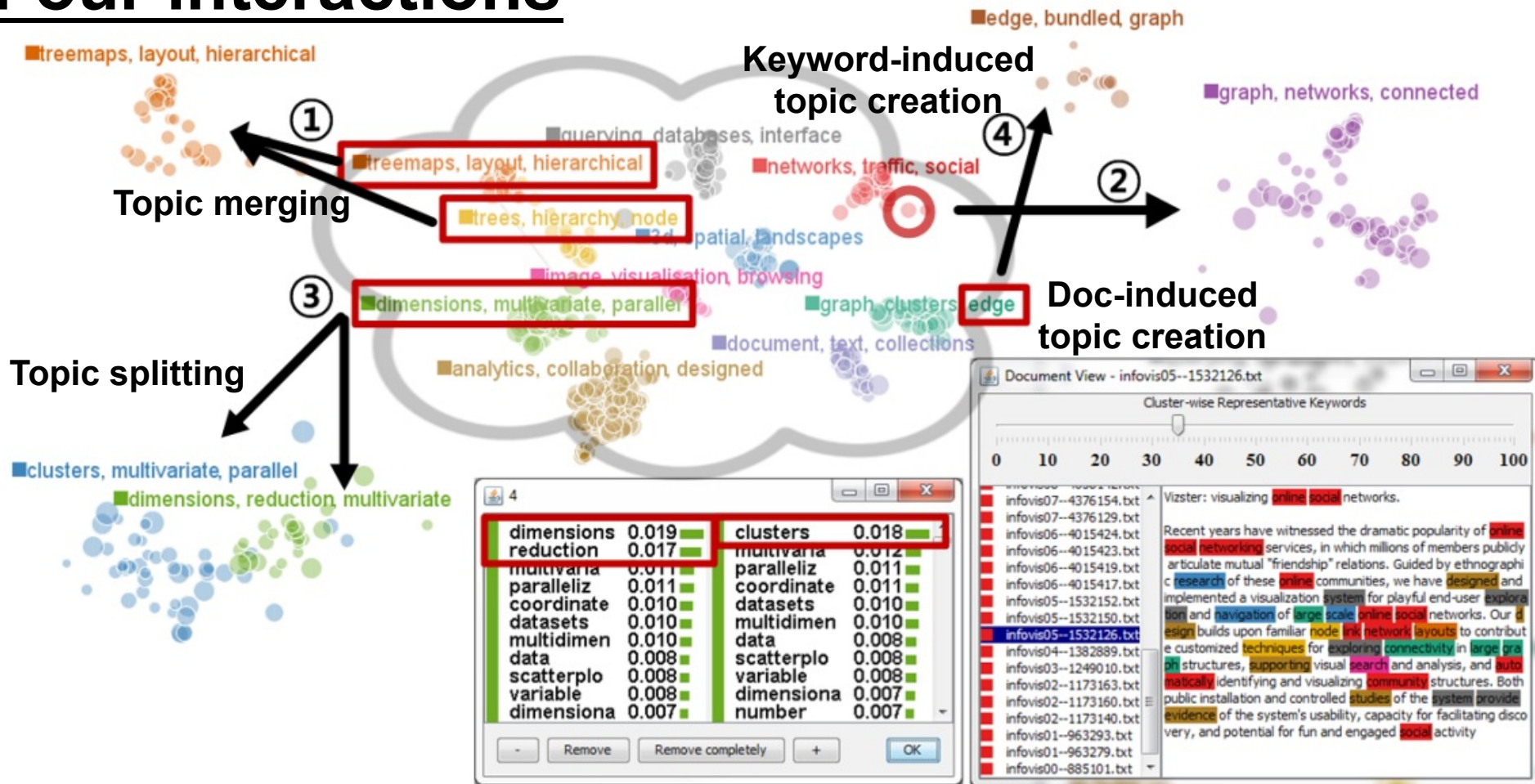


UTOPIAN: User-Driven Topic Modeling Based on Interactive NMF

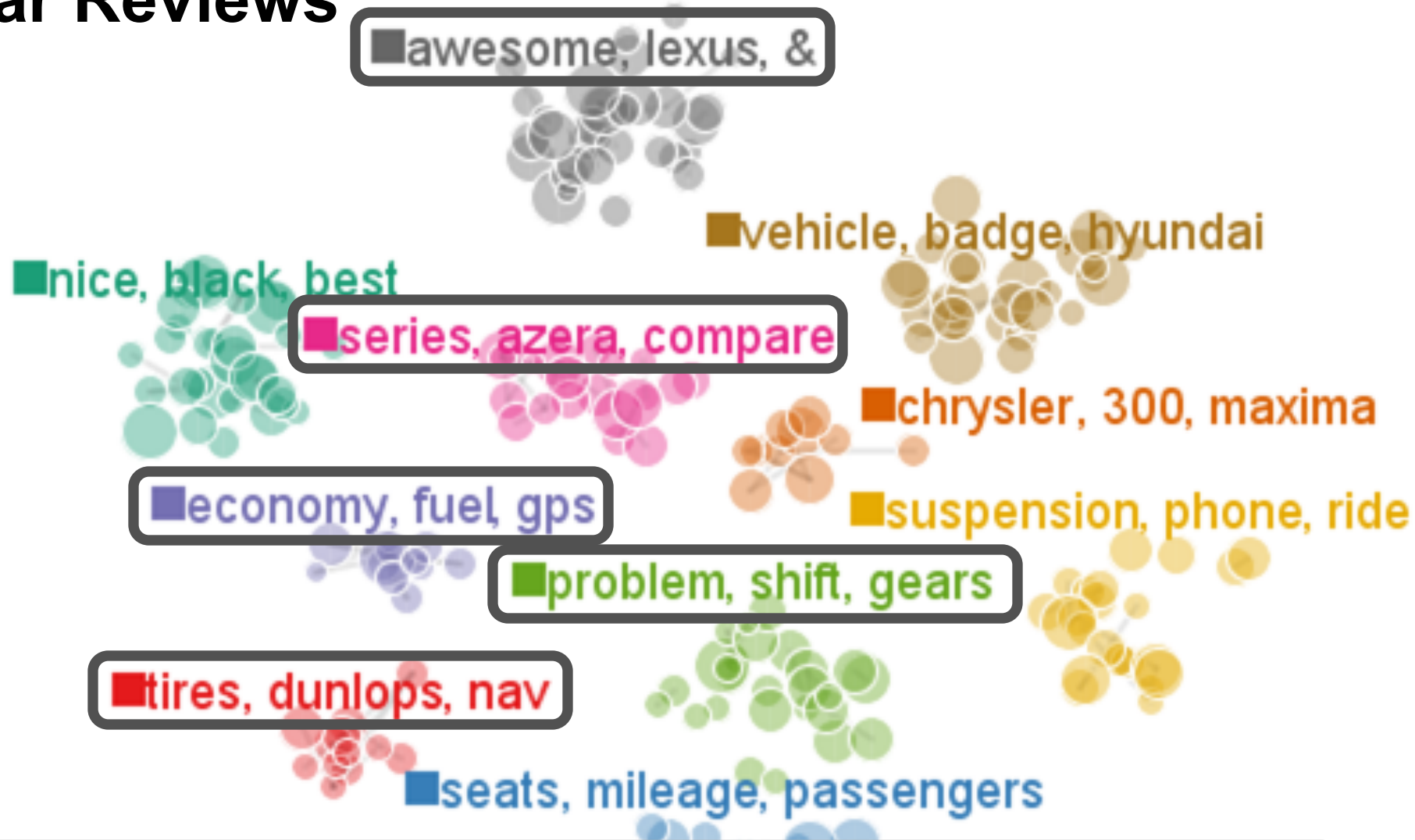
Georgia Institute of Technology and Georgia Tech Research Institute

Four interactions



Interactive Visualization

Car Reviews

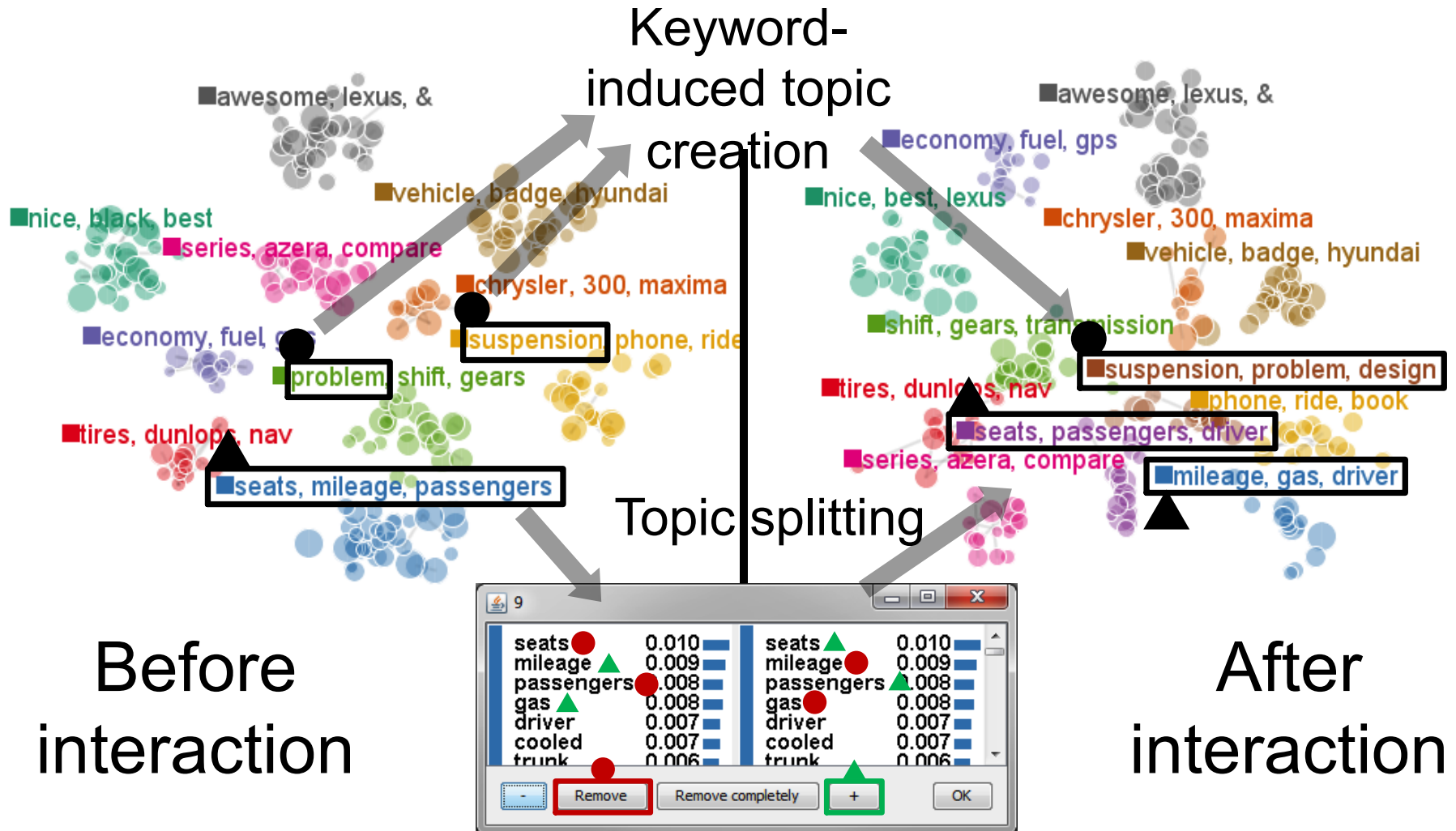


Topic summaries are **NOT** perfect.

➔ UTOPIAN allows **user interactions** for improving them.

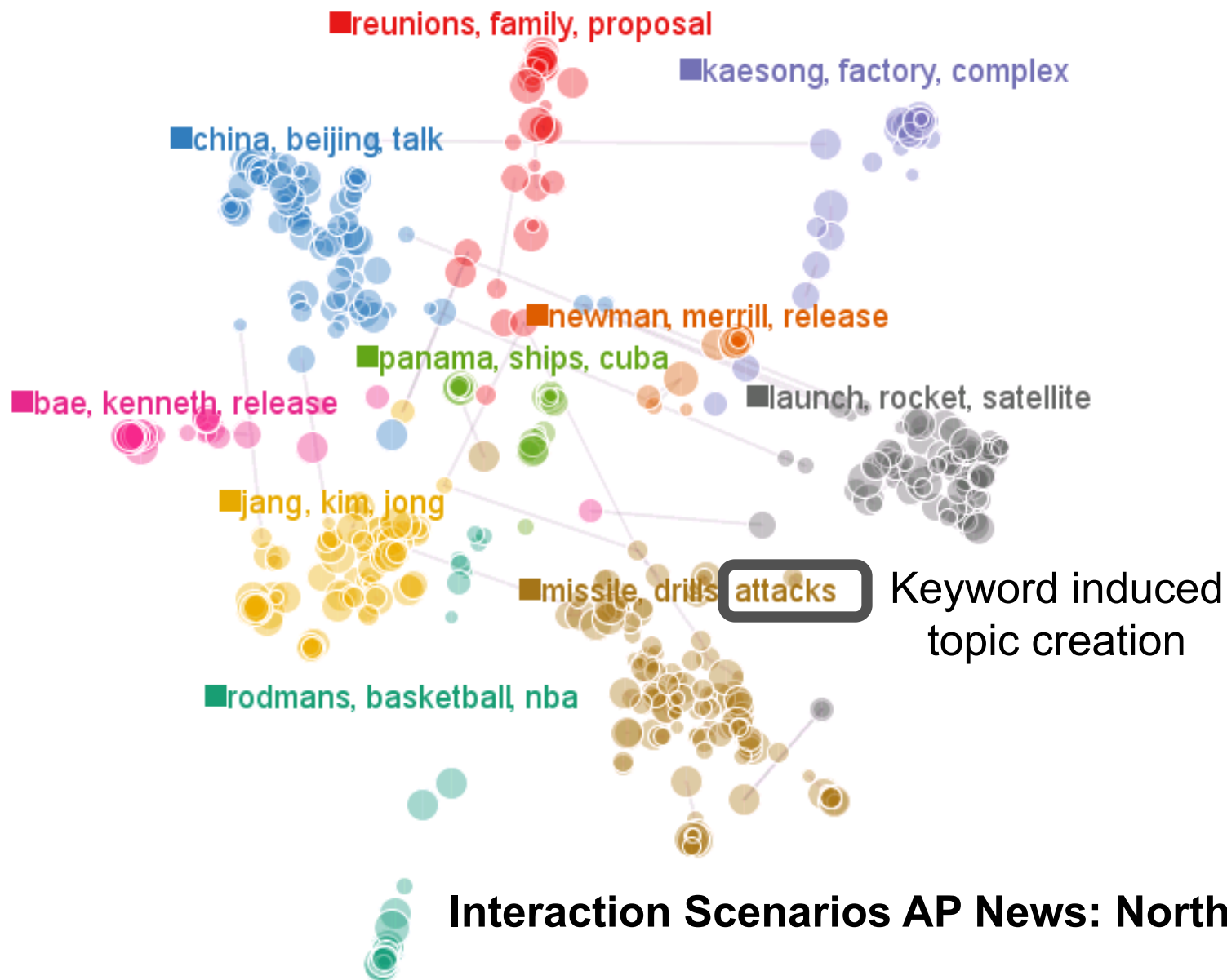
Interaction Scenarios

Car Reviews



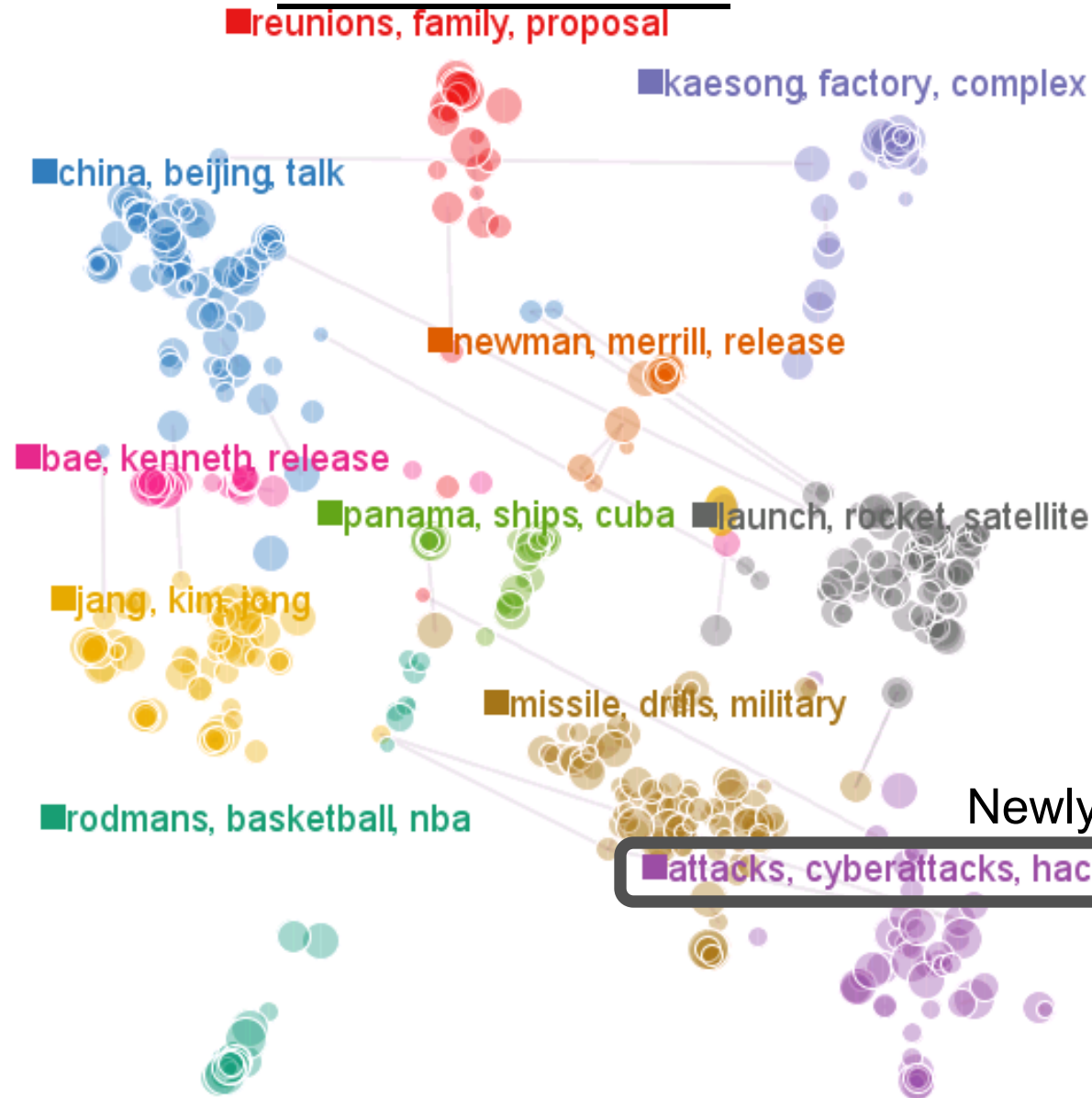
Interaction Scenarios

AP News about North Korea



Interaction Scenarios

AP News about North Korea



GISR Overview

What is GISR? Actors play out a scenario in which there is some event occurring

Meeting

Planning

Observing

Exchanging

Attacking

8 data sets containing

- Geospatial-temporal
 - Tracks
 - Detections
- Metadata
 - Calls/SMS data
- Radar data
- Information fusion

Associate device movement with classes of communication activity

Topic Modeling Results (NMF)

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9	Topic 10
like	picture	get	think	just	good	line	creative	text	video
really	took	did	know	want	answer	green	full	terrorist	took
better	ied	time	haha	say	sing	red	text	pic	sent
sounds	sending	back	getting	got	hey	jabal	little	call	snd
say	script	need	got	see	did	medina	data	sending	sim
music	site	call	better	guess	new	ghazi	collection	script	wait
feel	hole	see	car	send	morning	amber	did	back	package
sure	denver?	thanks	ready	wait	years	send	long	sent	checkpoint
done	taken	days	dont	day	name	vehicles	step	ied	sending
did	moving	able	need	life	music	phone	house	site	area
people	drop	contact	want	going	man	time	thing	please	convoy
gaga	frame	meeting	lol	make	tell	life	maybe	meet	send
haha	police	report	really	lot	songs	chapter	addicted	phone	mcc
paul	province	ready	days	time	hear	guess	gonna	day	king
does	end	sir	start	things	job	blue	sons	short	got

Topic 2, 9, 10:

The majority of the conversations were about planning, meeting, observing, and exchanging.

Topic 3:

Suspicious meetings mixed with civilian chatter

Topic 7:

Interesting. Could be code for organizing the simulation?

Other Topics:

Separate out civilian conversations

- Pictures taken for planning and observing IED bomb site and for the aftermath.

- Videos taken of checkpoints and convoy areas.
- Package exchange and drop off confirmations.

Visualizing our analysis results

Visualization of our analytics fused with GPS and communications data can “guide” a user to important “events” and “actors”

- Track messages of common topics occurring within a time window
- Find areas of interest when users within the same cluster often converge
- Flag users of interest by detecting messages that occur within a topic of interest

GT-Kitware Visualization of our results



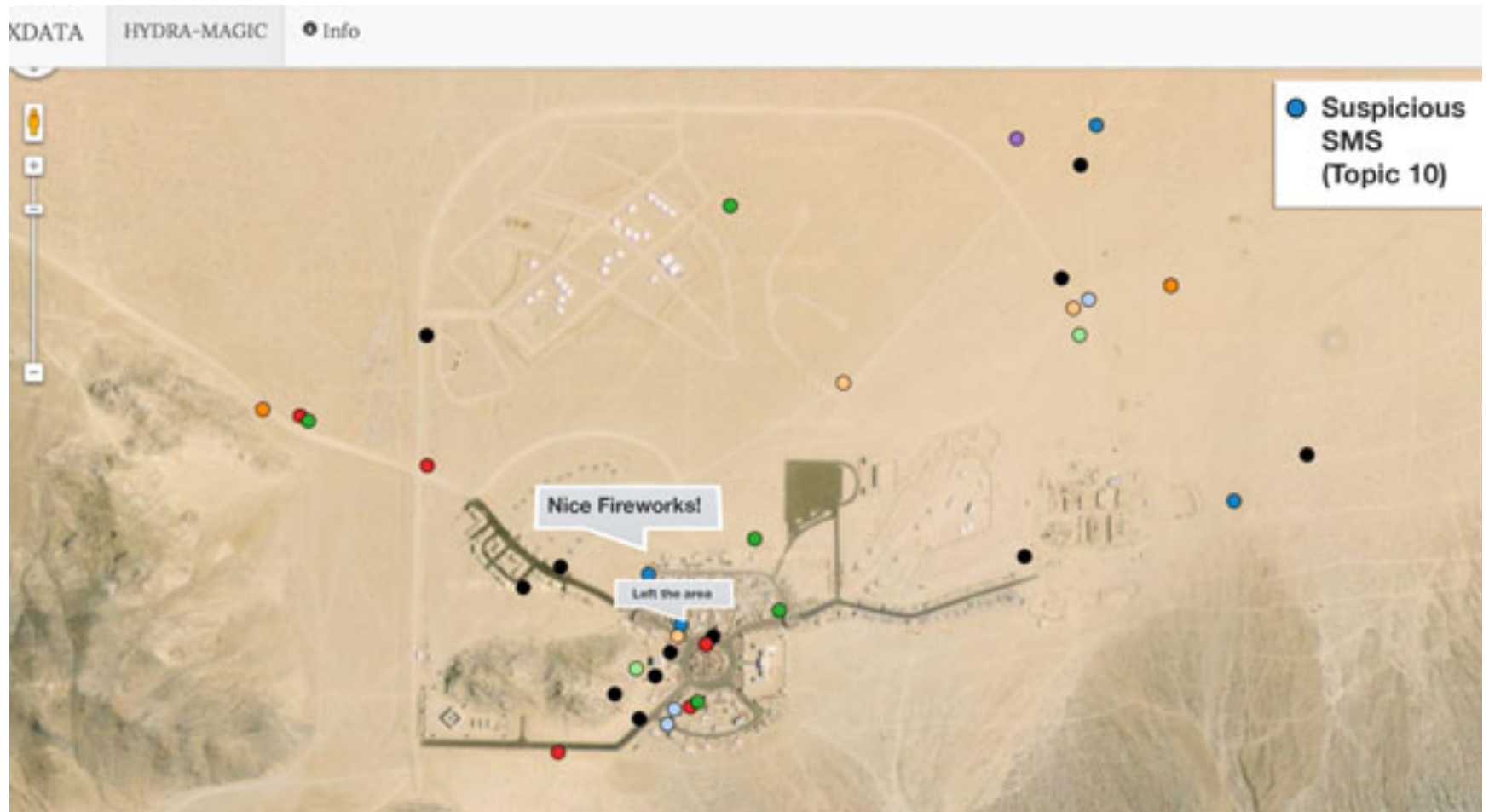
Scene 1 of 4



Scene 2 of 4



Scene 3 of 4



Scene 4 of 4

