

The Social Network Revolution

François Bar

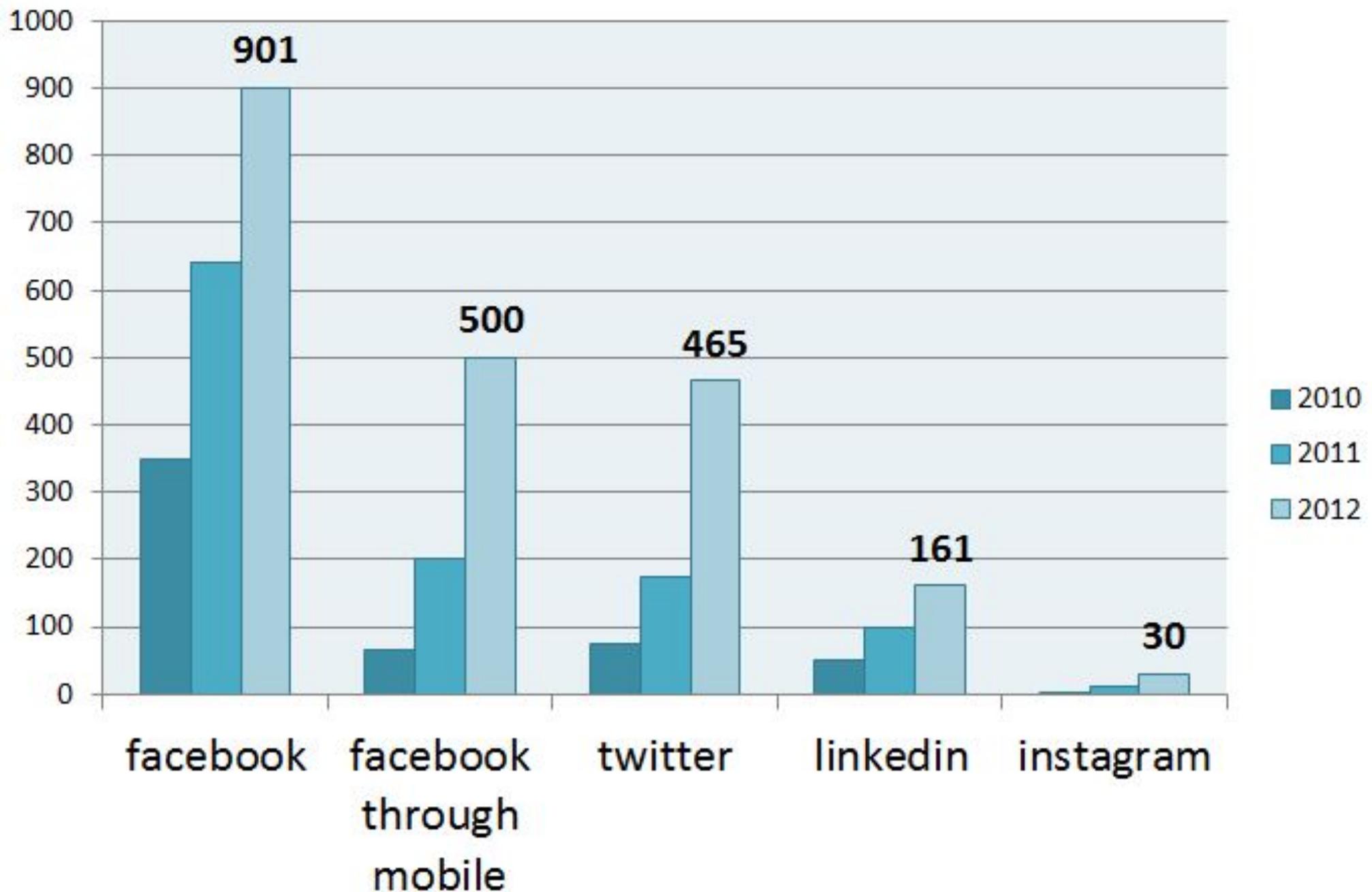
(with thanks to [Francis Pisani](#))

1. the emerging social web
2. social network and uprising
3. analysis and prediction

- 1 -

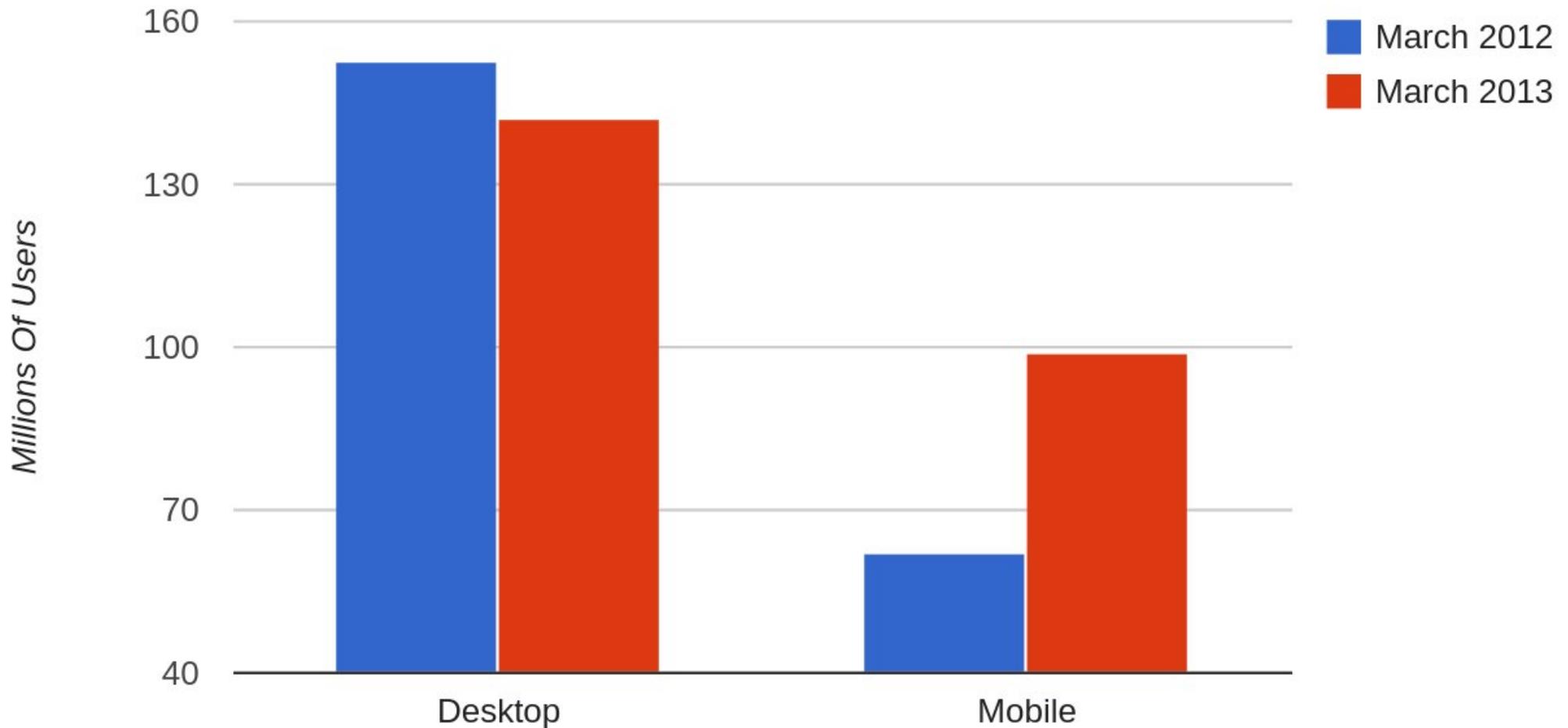
1. the social web is big and growing

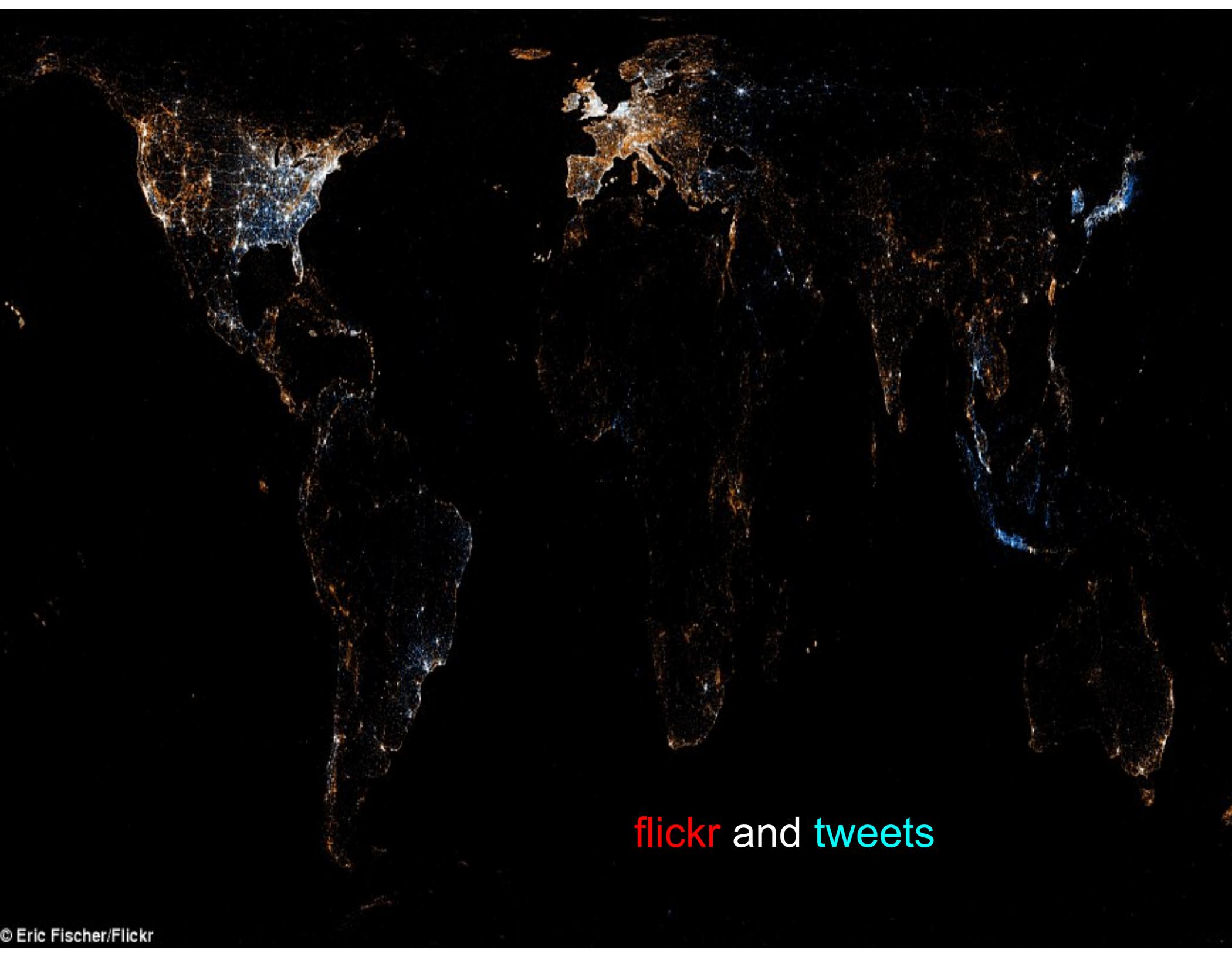
(million users worldwide)



Unique visitors to facebook 2012-13

Use Of Facebook Over Time





flickr and tweets

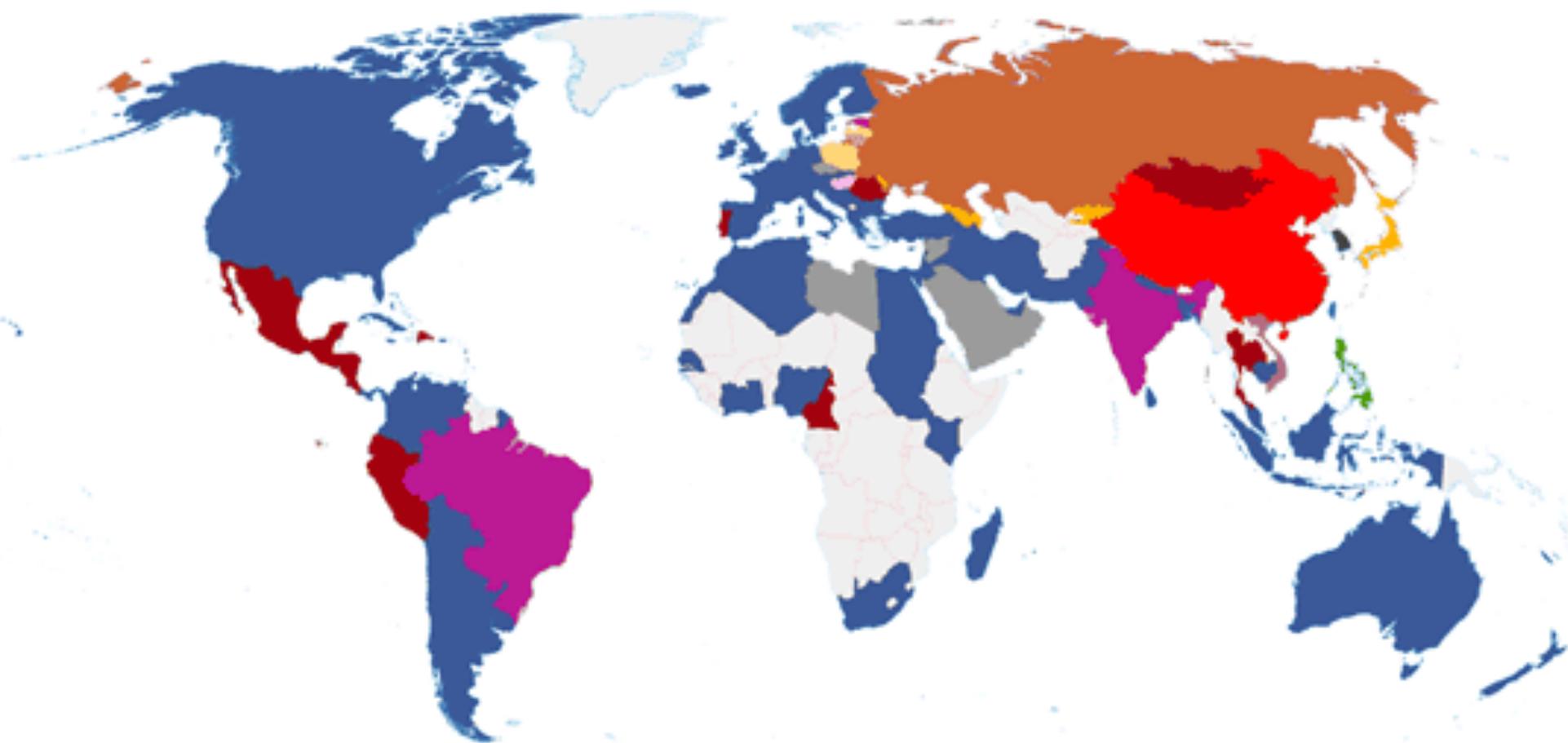
Facebook
dominates
almost
everywhere

June 2012			
Countries	SNS #1	SNS #2	SNS #3
Australia	Facebook	LinkedIn	Twitter
Austria	Facebook	Badoo	Twitter
Belgium	Facebook	Badoo	LinkedIn
Brazil	Facebook	Orkut	Badoo
Canada	Facebook	LinkedIn	Twitter
China	Qzone	Tencent Weibo	Sina Weibo
Denmark	Facebook	LinkedIn	Badoo
Finland	Facebook	LinkedIn	Twitter
France	Facebook	Badoo	Skyrock
Germany	Facebook	Wer-kennt-wen	Xing
India	Facebook	LinkedIn	Orkut
Italy	Facebook	Badoo	Twitter
Japan	Facebook	Twitter	Mixi
Netherlands	Facebook	Hyves	Twitter
Norway	Facebook	LinkedIn	Twitter
Portugal	Facebook	Badoo	Orkut
Sweden	Facebook	Twitter	LinkedIn
Russia	Odnoklassniki	V Kontakte	Facebook
Spain	Facebook	Tuenti	Badoo
United Kingdom	Facebook	Twitter	LinkedIn
United States	Facebook	Twitter	LinkedIn

source: SocialNetworkingWatch

WORLD MAP OF SOCIAL NETWORKS

June 2009



Facebook

V Kontakte

Odnoklassniki

Lidè

Hyves

Zing

HIS

Orkut

Nasza-Klasa

QQ Zone

Iwiw

Maktoob

One

Mxd

Friendster

Wretch

Cyworld

a new web: from content to connections

- from **content / search** to **users / social networks**
 - it's not just what you know, but whom you know
- from **influentials** to **collaborative filtering**
 - interpersonal relationships among ordinary users
 - society's readiness to adopt innovation
- from **fixed** to **mobile**
 - situated use, connections in context

- 2 -

social networks and the arab spring

sparks and powder kegs

1. new communication ecosystem

"The combination of Google, Twitter, Facebook and Al Jazeera in the hands of a new generation of youth armed with cell phones broke social shackles" (Antóni Gutiérrez-Rubí)

Feb 2011: 5 million Egyptians (out of 80m) have a facebook acct., 77% have a mobile, 21% internet penetration (fewer than 15,000 Egyptians tweeted)

2. **spark**: Mohamed Buazizi - broadcast by Al Jazeera, retransmitted by social nets

3. **the spirit of revolution**: microblogging has its own narrative capability to transmit emotions + collective awareness

limits and dangers

limited penetration: internet, mobiles, facebook not (yet) universal
BUT high penetration among urban youth + Al Jazeera audience

what is really new? there have been revolutions without ICTs...

reliability? government shutdowns

networks effective against **hierarchies** (Tunisia, Egypt). less
against tribes? (Libya, Yemen, Syria)

backlash: social networks can also be used against dissidents

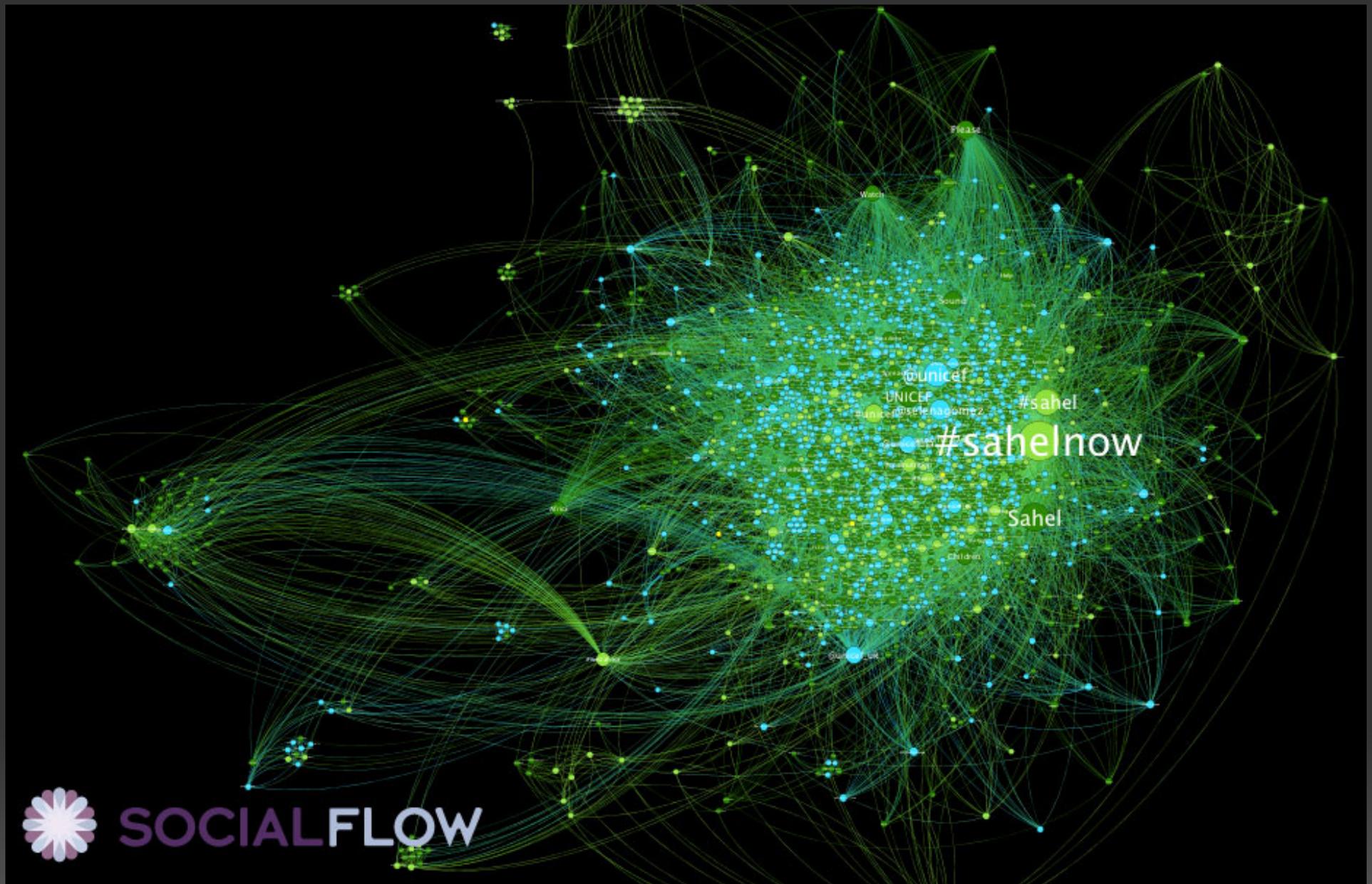
facebook intel

- 3 -

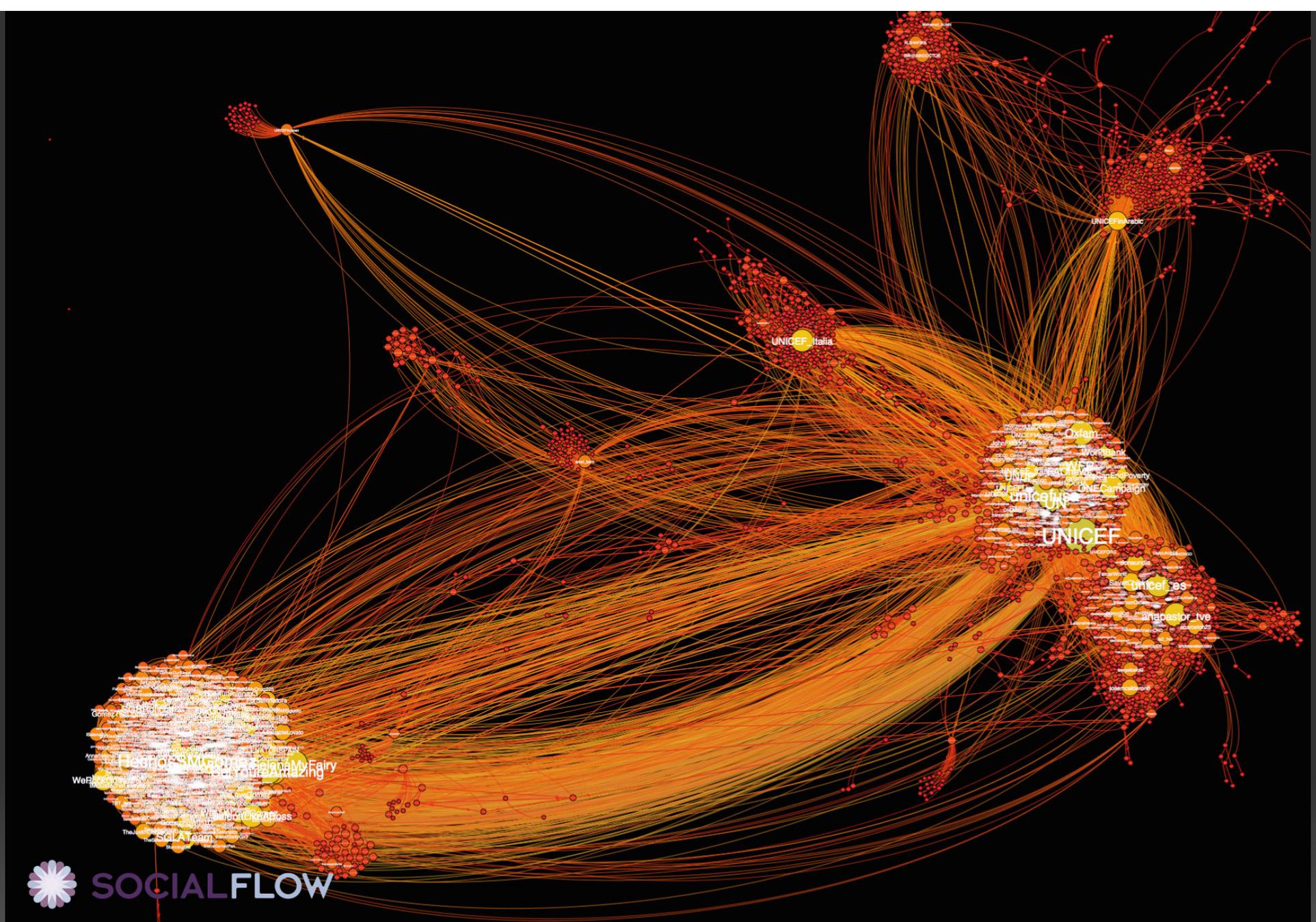
Leveraging Social Network for analysis and prediction

SocialFlow: UNICEF #SahelNOW campaign analysis

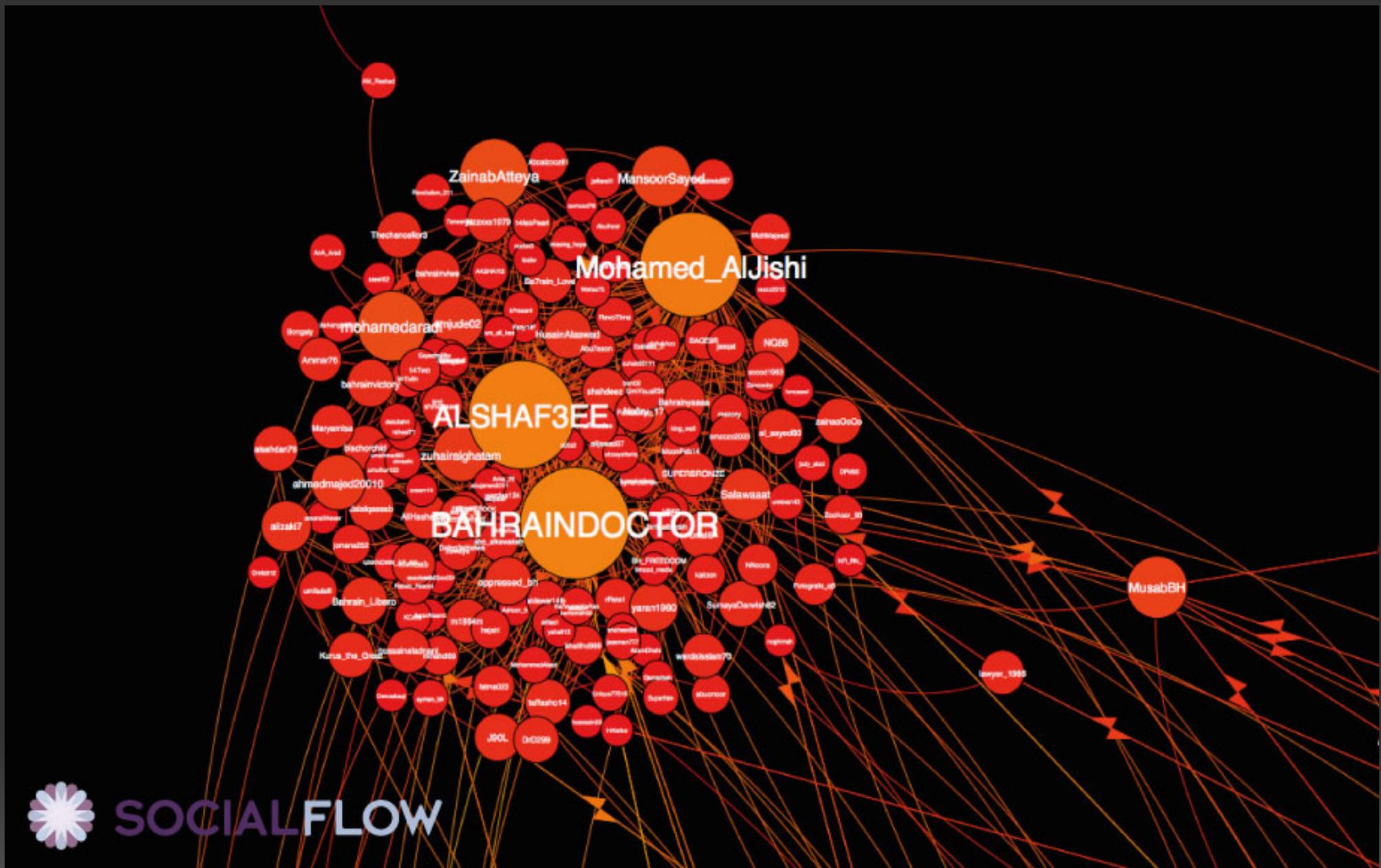




Whole network graph of concepts related to #SahelNow
(user mentions, **hashtags**, phrases)



connections between users who posted to the hashtag.
clusters highlight different regional and topical communities



Zoom-in view of the Bahraini group – a dense cluster of mostly Bahraini users sharing the #SahelNow hashtag

Leveraging Social Network for analysis and prediction

Twitter Sentiment Analysis
Annenberg Innovation Lab

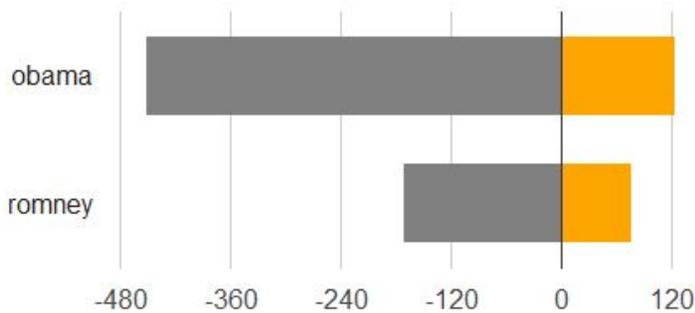
LIVE DEMO!



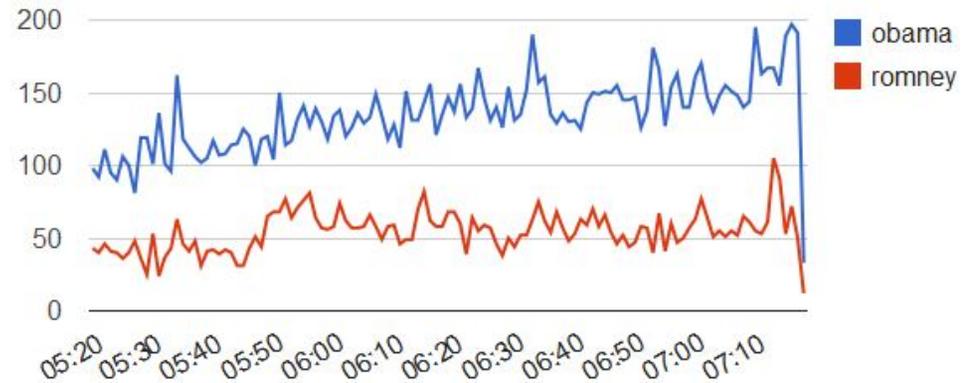
Our unique sentiment model and real-time processing infrastructure allow us to gauge live public sentiments toward the 2012 United States presidential candidates as expressed through Twitter. This live demo is work-in-progress as we continue to refine our sentiment model. [More information.](#)

Like 5 Tweet 17 +1 13 Share 44

Sentiment



Tweet Volumes



Statistics

Total # tweets processed 2153014
 System seconds elapsed 695115
 Data rate (tweets/minute) 186

Trending words

07:14	07:15	07:16	07:17	07:18
master	global	master	imperative	imperative
mentioning	ejes	topics	Agriculture	fait
topics	encuentro	Experts	Global	moral
Experts	moral	mentioning	Conference	bullying
certain	fight	certain	Looks	obligation

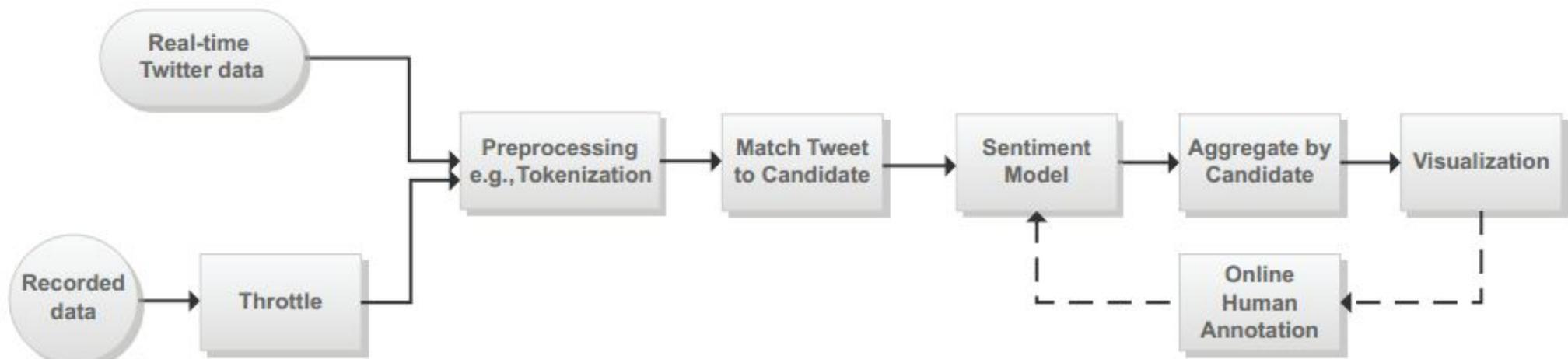


Figure 1. The system architecture for real-time processing Twitter data

Tweet	WAAAAAH!!! RT @politico: Romney: Santorum's 'dirty tricks' could steal Michigan: http://t.co/qEnslPmi #MIprimary #tcot #teaparty #GOP
Tokens	WAAAAAH !!! RT @politico : Romney : Santorum's ' dirty tricks ' could steal Michigan : http://politi.co/wYUz7m #MIprimary #tcot #teaparty #GOP

Figure 2. The output tokens of a sample tweet from our tokenizer

Table 1: F-Scores and Accuracy for unigrams.

Experiment	Neg.	Pos.	Neu.	Uns.	Acc.
$M_{ME}F_1T_0$	0.74	0.33	0.14	0.10	0.58
$M_{ME}F_1T_0 - \{H\}$	0.72	0.34	0.19	0.12	0.57
$M_{ME}F_1T_0 - \{S\}$	0.67	0.36	0.25	0.15	0.51
$M_{ME}F_1T_0 - \{S, H\}$	0.66	0.37	0.24	0.14	0.49
$M_{ME}F_1T_1$	0.74	0.35	0.17	0.11	0.59
$M_{ME}F_1T_1 - \{H\}$	0.73	0.37	0.23	0.13	0.58
$M_{ME}F_1T_1 - \{S\}$	0.67	0.38	0.28	0.13	0.51
$M_{ME}F_1T_1 - \{S, H\}$	0.65	0.37	0.28	0.16	0.49
$M_{NB}F_1T_0$	0.64	0.39	0.25	0.16	0.48
$M_{NB}F_1T_0 - \{H\}$	0.65	0.39	0.24	0.15	0.49
$M_{NB}F_1T_0 - \{S\}$	0.64	0.39	0.26	0.16	0.49
$M_{NB}F_1T_0 - \{S, H\}$	0.65	0.39	0.25	0.15	0.49
$M_{NB}F_1T_1$	0.67	0.40	0.23	0.16	0.51
$M_{NB}F_1T_1 - \{H\}$	0.68	0.40	0.24	0.15	0.52
$M_{NB}F_1T_1 - \{S\}$	0.67	0.41	0.26	0.16	0.51
$M_{NB}F_1T_1 - \{S, H\}$	0.68	0.40	0.26	0.16	0.52

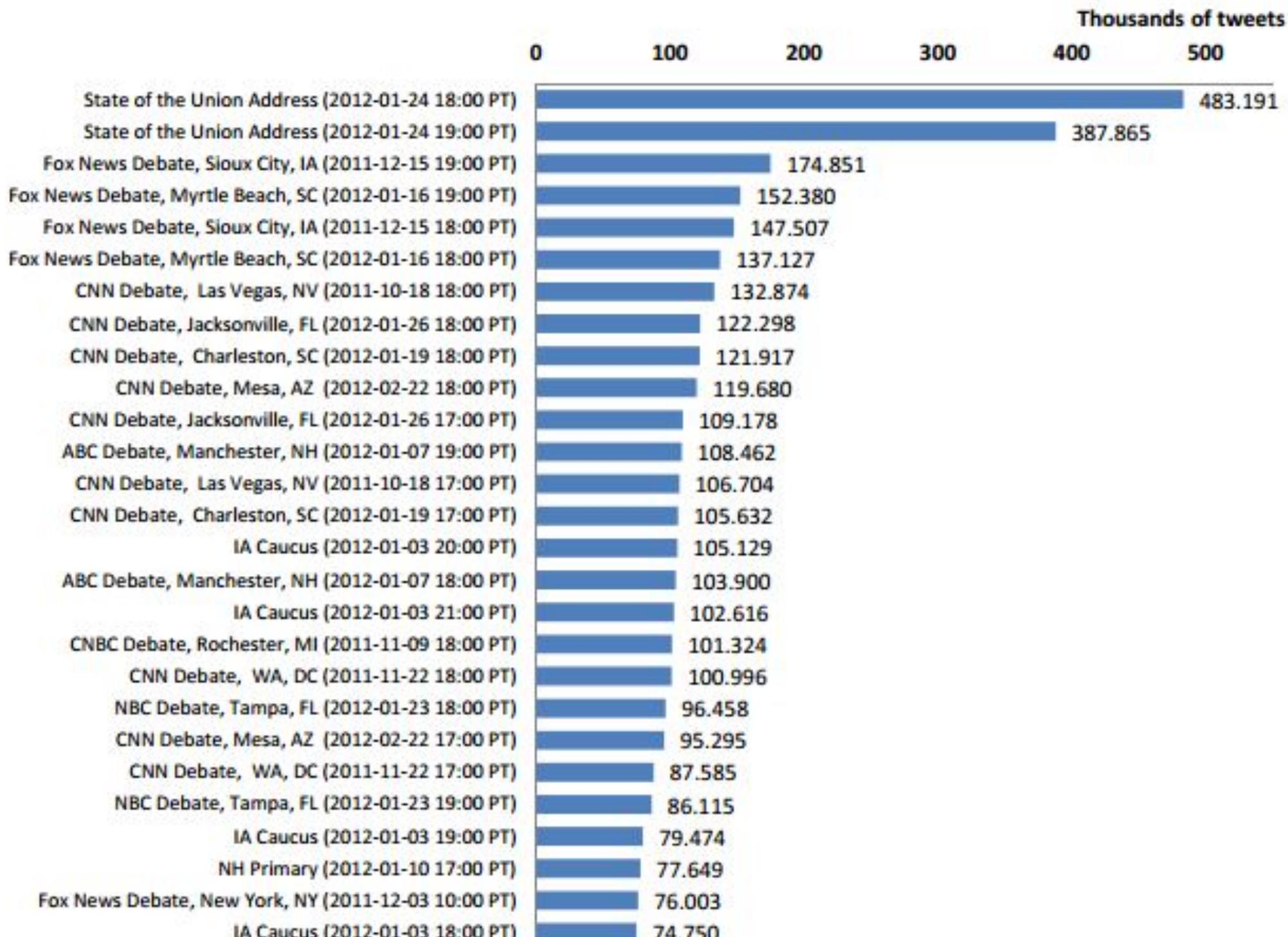
Table 2: F-Scores and Accuracy for bigrams.

Experiment	Neg.	Pos.	Neu.	Uns.	Acc.
$M_{ME}F_2T_0$	0.73	0.33	0.18	0.11	0.58
$M_{ME}F_2T_0 - \{H\}$	0.72	0.35	0.19	0.14	0.56
$M_{ME}F_2T_0 - \{S\}$	0.68	0.36	0.25	0.12	0.52
$M_{ME}F_2T_0 - \{S, H\}$	0.67	0.36	0.25	0.14	0.50
$M_{ME}F_2T_1$	0.73	0.35	0.22	0.11	0.58
$M_{ME}F_2T_1 - \{H\}$	0.72	0.36	0.23	0.15	0.56
$M_{ME}F_2T_1 - \{S\}$	0.69	0.38	0.28	0.14	0.53
$M_{ME}F_2T_1 - \{S, H\}$	0.67	0.38	0.28	0.15	0.51
$M_{NB}F_2T_0$	0.47	0.38	0.24	0.16	0.36
$M_{NB}F_2T_0 - \{H\}$	0.52	0.38	0.24	0.17	0.39
$M_{NB}F_2T_0 - \{S\}$	0.55	0.38	0.25	0.16	0.41
$M_{NB}F_2T_0 - \{S, H\}$	0.58	0.38	0.25	0.17	0.43
$M_{NB}F_2T_1$	0.48	0.38	0.25	0.17	0.37
$M_{NB}F_2T_1 - \{H\}$	0.54	0.39	0.26	0.17	0.40
$M_{NB}F_2T_1 - \{S\}$	0.56	0.40	0.26	0.17	0.41
$M_{NB}F_2T_1 - \{S, H\}$	0.59	0.40	0.27	0.18	0.44

$$F = 2 \cdot \frac{\text{precision} \cdot \text{recall}}{\text{precision} + \text{recall}}$$

50 top hourly intervals by tweet volume

(10/12/2011 to 2/29/2012)



Retweeted Users during 17:00-to -20:00 on Nov12

Retweetd ID	retweets	Category1	Category2	Nb of Followers
ggreenwald	1073	media	Salon	61651
donnabrazile	806	pundit		145177
RonPaul	805	campaign	republican candidate	29
LOLGOP	551	satire		19609
JedediahBila	521	pundit		17470
DavidCornDC	431	media	Mother Jones	41959
TPM	415	media	Talking Points Memo	53011
ConanOBrien	411	satire		429
anamariecox	370	blogger		1374984
thinkprogress	367	media	Think Progress	76196
TheDemocrats	366	campaign	democratic party	56156
TheDailyEdge	257	media	Daily Edge	4447
davidfrum	254	media	Daily Beast	22008
MelissaTweets	242	blogger		24612
HuffingtonPost	229	media	Huffington Post	1363506
CharlesMBlow	228	media	New York Times	25042
JoyVBehar	227	satire		537060
michaelianblack	225	blogger		1677111
keder	220	blogger		11553
MonicaCrowley	220	media	Fox News	14657

Distribution of the top 100 retweeted accounts during 3 presidential debates

	count	total retweets	% of tweets by top 100 accts	% of total 3 debate retweets	% of total 3 debate tweets
humor	33	1,032,807	30.11%	5.88%	2.93%
news/pundit	39	998,788	29.12%	5.68%	2.83%
campaign/party	14	721,206	21.03%	4.10%	2.05%
non-existent or discontinued acct	3	483,740	14.10%	2.75%	1.37%
celebrity	6	107,115	3.12%	0.61%	0.30%
don't know	5	85,936	2.51%	0.49%	0.24%
	100	3,157,162	100.00%	19.51%	9.73%

ggreenwald retweet distribution

tweet	time sent	# of retweets	sentiment	tweet text
1	17:05	220	positive	Herman Cain wants to overthrow the government of Iran - that worked out really well for the US the first time it did that.
2	17:16	18	unsure	Rick Santorum urges us not to have the smoking gun be a mushroom cloud over Tehran - copies Condi Rice & makes no sense
3	17:19	1	negative	Crazies! RT @sunny_hundal "Jon Huntsman joins Ron Paul in calling to pull out of Afghanistan"
4	17:39	16	negative	Yes, Rick Santorum, I think it's a pretty safe bet the US has played some role in those dead Iranian nuclear scientists & computer viruses
5	17:42	74	negative	BREAKING: Michele Bachman - The ACLU is running the CIA!!!!
6	17:45	29	neutral	Here's where all the GOP candidates (except Paul & Huntsman) cheer for Obama's assassination of Awlaki - Romney just went first
7	17:47	42	negative	Gingrich endorses Obama's Awlaki assassination - because "a panel found him guilty" - meaning a secret WH panel
8	17:48	30	negative	Loudest cheers from the GOP "small government" crowd is over Obama's Awlaki assassination and support for it from Gingrich & Romney
9	18:00	54	negative	Paley to Gingrich: "But Awlaki was never found guilty" - Gingrich: "he was"- Paley: "not by a court" - Gingrich: by a WH panel! #AMERICA
10	18:07	7	negative	Everyone knows he's crazy: RT @AliAbunimah Ron Paul disqualifies himself as serious candidate by saying US shouldn't prop up dictatorships.
11	18:11	188	negative	Crazy Ron Paul points out the GOP's rather glaring contradiction between not trusting the govt & wanting it to kill citizens w/o due process
12	18:14	28	neutral	Michele Bachman the latest GOP candidate tonight to join @ThinkProgress in declaring Obama's Awlaki assassination a grand & noble success
13	18:16	2	positive	Koch-traitor! RT @JamesFallows I am ready to join the Ron Paul support team, for his no-BS anti-torture and pro rule-of-law talk
14	18:18	278	negative	Ron Paul to the GOP: So to sum up: you people don't trust the govt to run health care, but want the President to kill whomever he wants
15	18:23	0	negative	That's why he's the front-runner RT @AntDeRosa Cain's foreign policy plan seems to be "I don't know"
16	18:25	22	negative	The supreme summary of this GOP debate, excluding Ron Paul * Jon Huntsman: http://t.co/fET4jo5P
17	18:42	24	negative	Adam Serwer examines Michele Bachmann's claim that "the ACLU is running the CIA": http://t.co/VWiLvNas
18	18:45	14	negative	This was acutally an unusually brave thing for Rick Perry to say, even though he quickly diluted it afterward: http://t.co/RkSb30N8
19	18:48	28	negative	So much for Rick Perry's unusually brave answer - he quickly realized such heresy on Israel is strictly forbidden: http://t.co/K2C6M57G



synthesizing, measuring, etc.

Some examples:

- facebook analytics: insights,etc...
- twitter tools: grader, followerwonk, retweetrank, wildfire, etc...
- flickr and twitter maps: major cities
- crowd-mapping: Ushahidi's Libya crisis map
- crowd-slicing: many eyes on egypt