



Tweets, Cites and Cities:
slow and fast information sources
and the shape of the *smart cities* conversation

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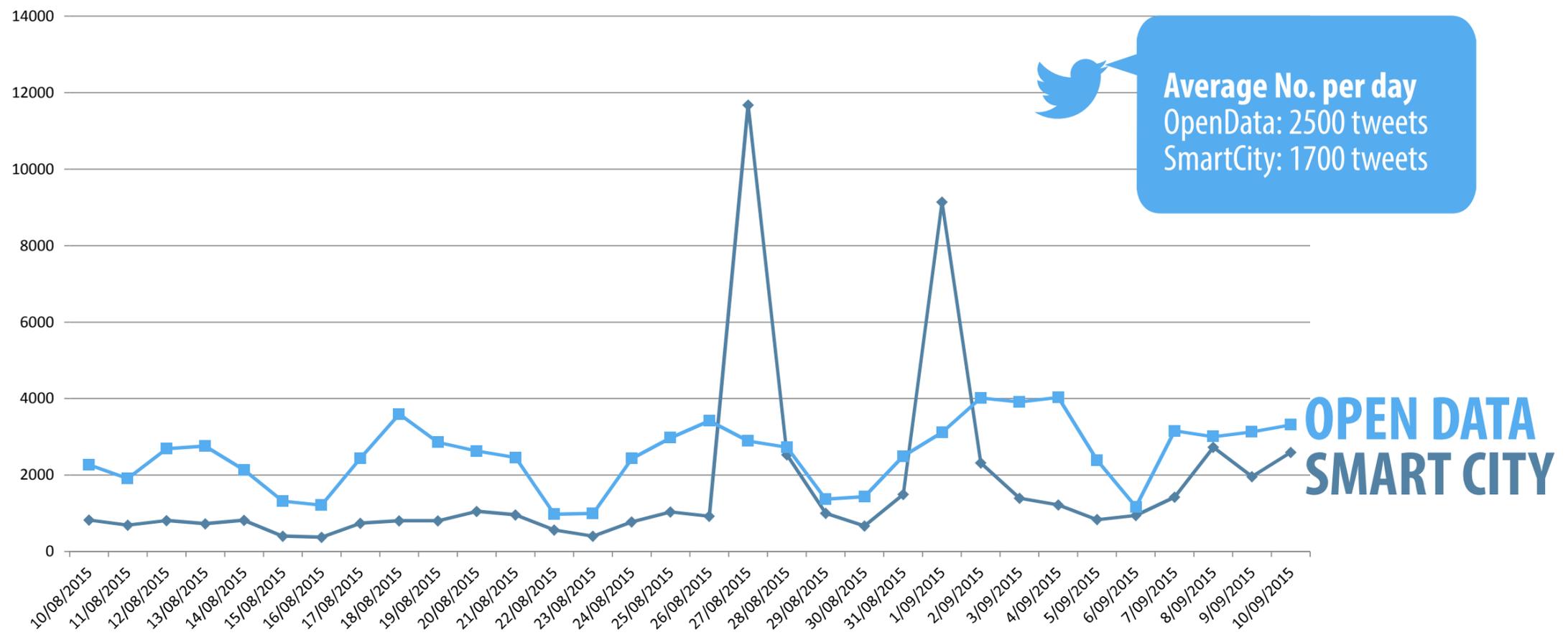


tracking twitter over
one month period



literature review
bibliometric network analysis

research area: **OpenData | SmartCity**



tracking trends on Twitter | frequency of tweets

 **MIB India** @MIB_India

Mission Statement of #SmartCity Mission: smartcities.gov.in/writereaddata/...

Smart Cities

Mission Statement & Guidelines

RETWEETS: 147 FAVORITES: 44

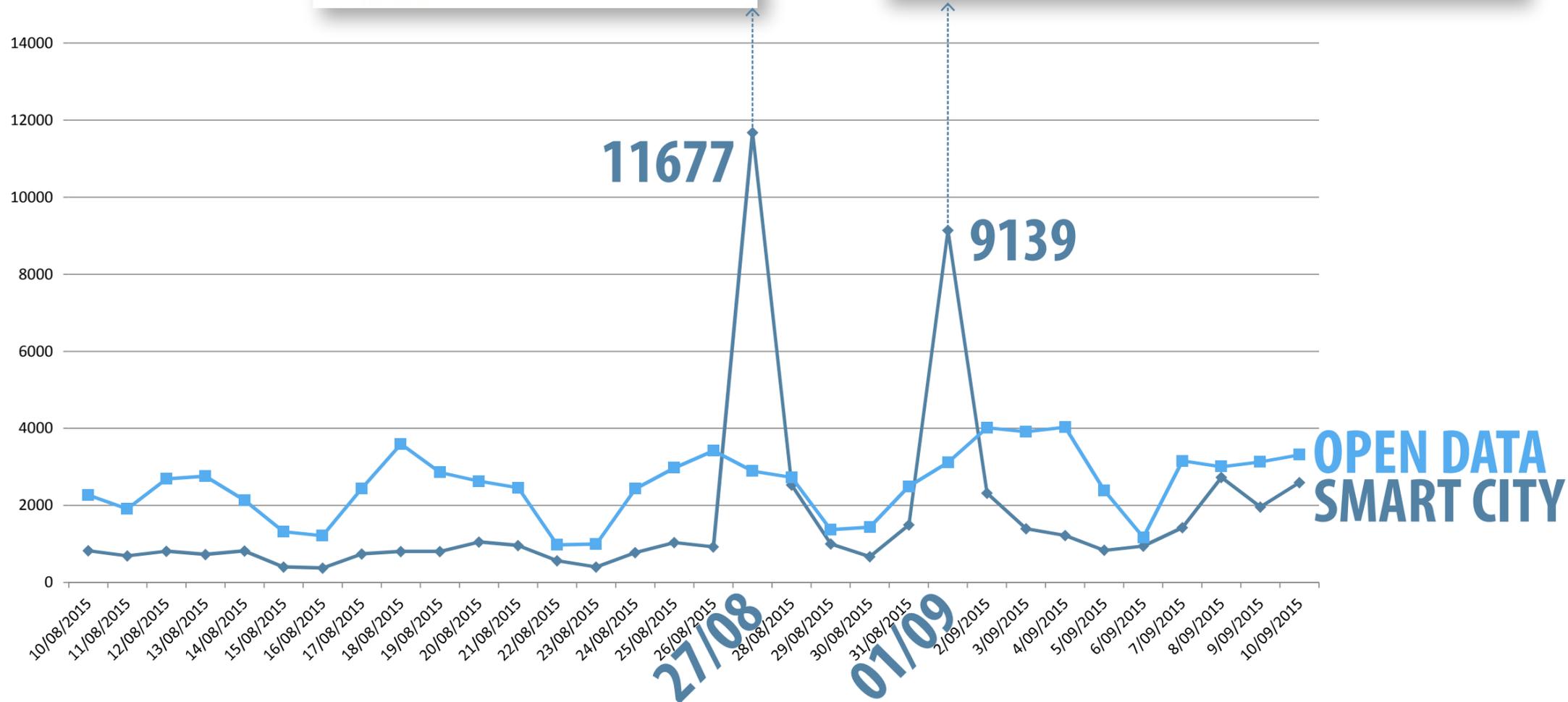
11:57 PM - 26 Aug 2015

 **Mohit Yadav, IFS** @mohitfreedom

#MakeWayForTheFuture What does it entail? #CleanIndia @makeinindia #DigitalIndia #SkillIndia #SmartCity - I hope for clean air and water

RETWEETS: 4,304 FAVORITES: 1,469

3:03 AM - 1 Sep 2015

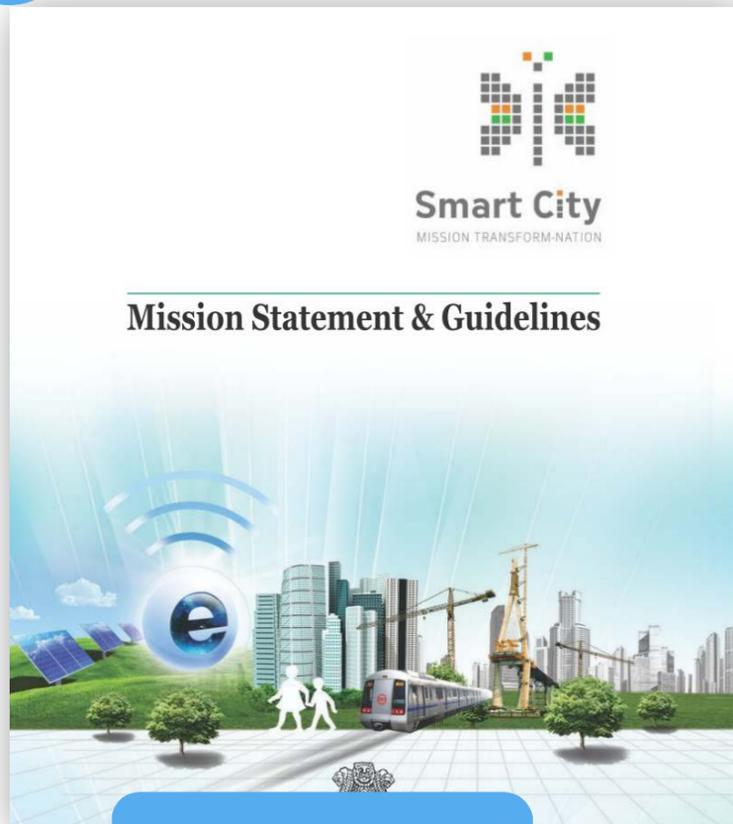


tracking trends on Twitter | frequency of tweets

top URLs in tweet



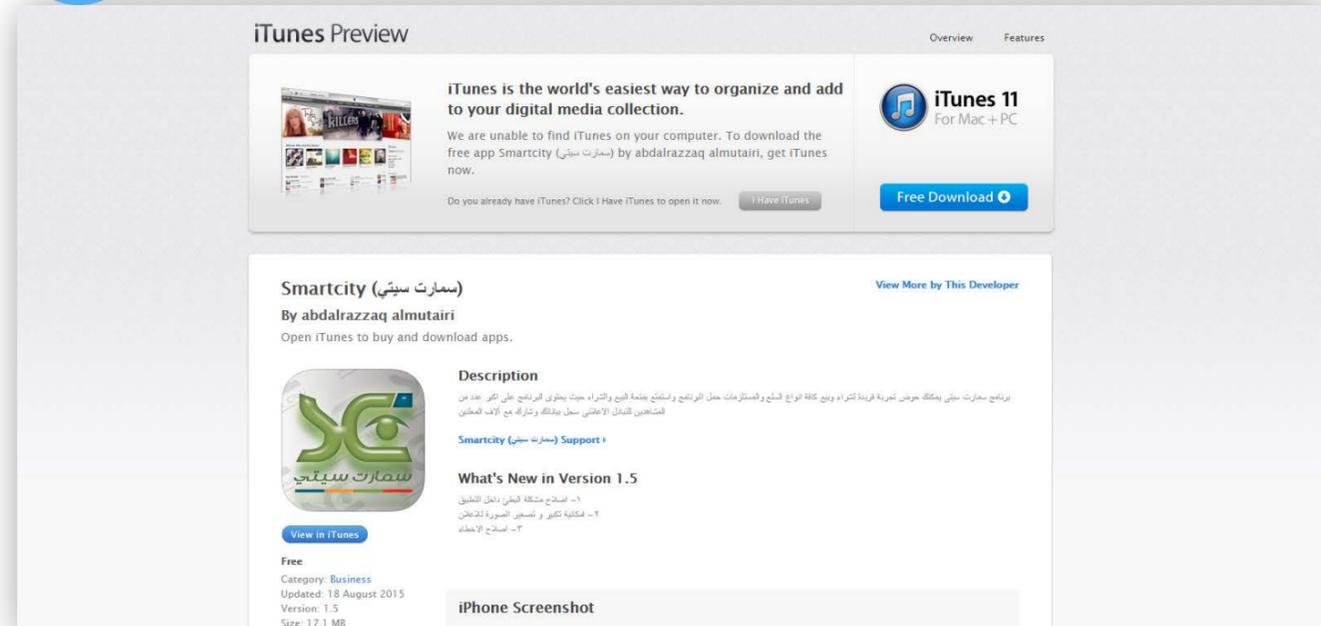
161 times mentioned



106 times mentioned



148 times mentioned



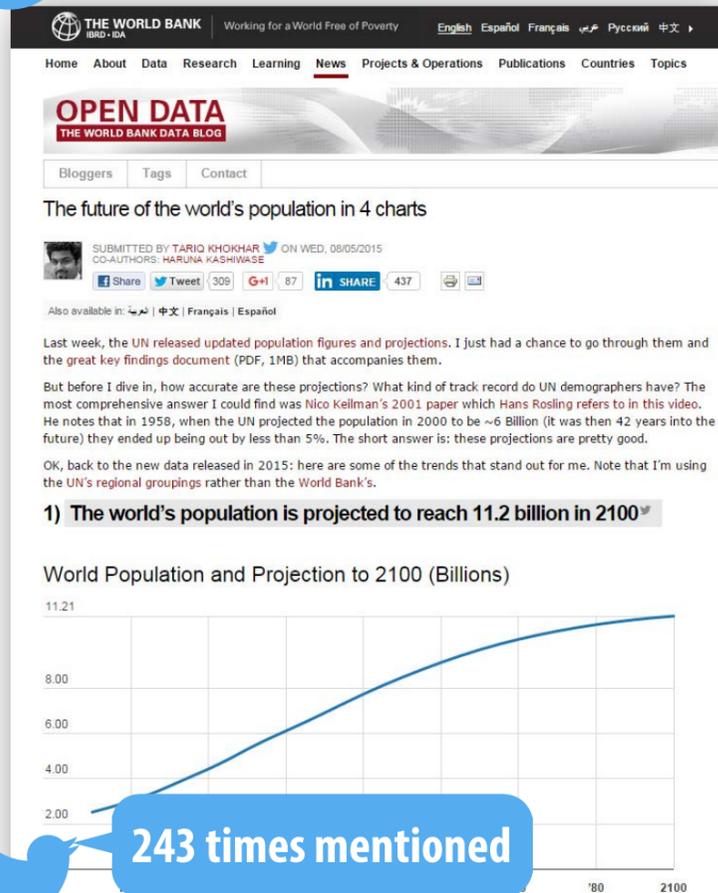
top hashtags in tweet

smartcity	34571
digitalindia	4131
skillindia	3999
cleanindia	3999
makewayforthefuture	3998
smartdestination	2294
sustainabletourism	2293
iot	2088
amfmakassar2015	1496
bcn	1235

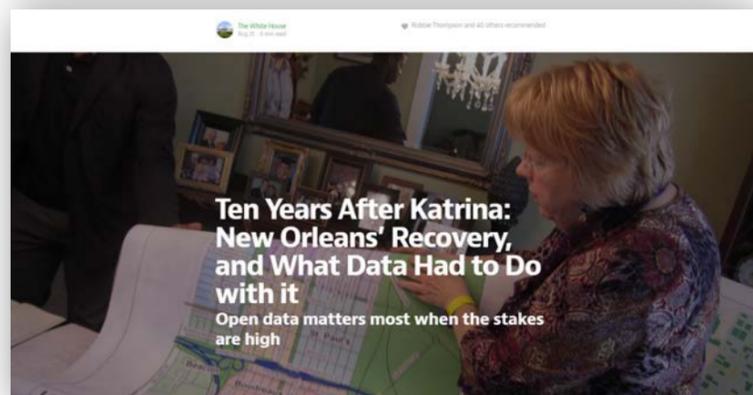
twitter content analysis top items | smart city

top URLs in tweet

574 times mentioned



243 times mentioned



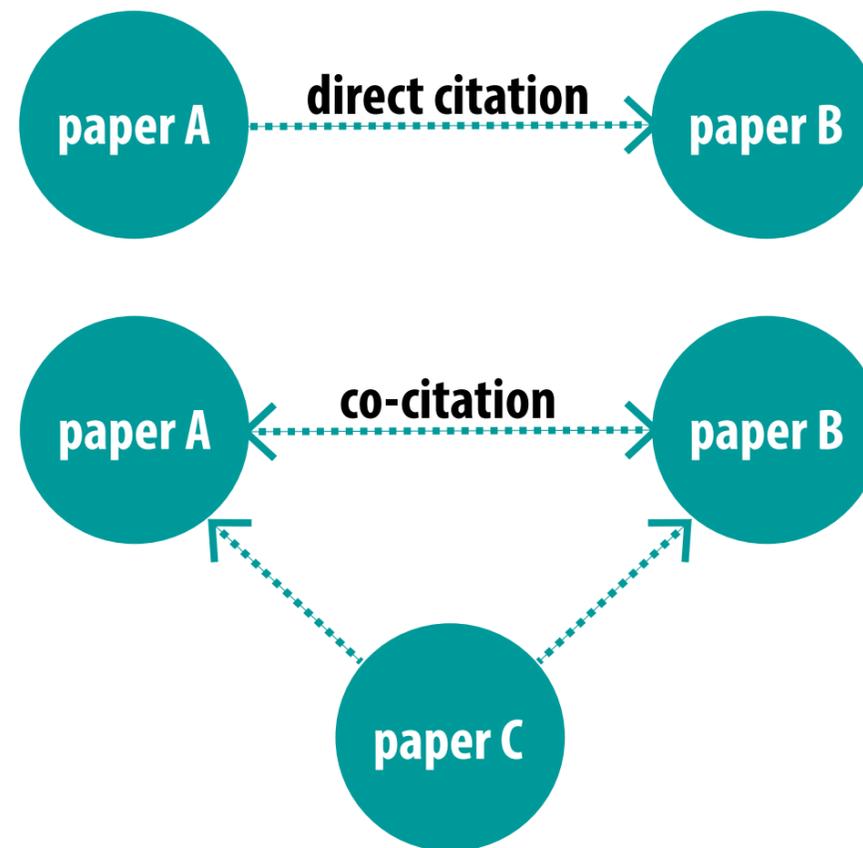
top hashtags in tweet

opendata	47773
africaopendata	2457
bigdata	2211
opengov	2152
data	1475
openscience	751
datascience	697
dataviz	685
SmartCities	582
(datosabiertos)	571

top mentioned users

Open Data Institute	1678
World Bank	1140
World Bank Data	1093
Open Knowledge	820
The Web Foundation	418
Digital Agenda	405
Socrata	372
FX-702P (Japanese)	360
Open Data Soft	348
Kirk Borne	336

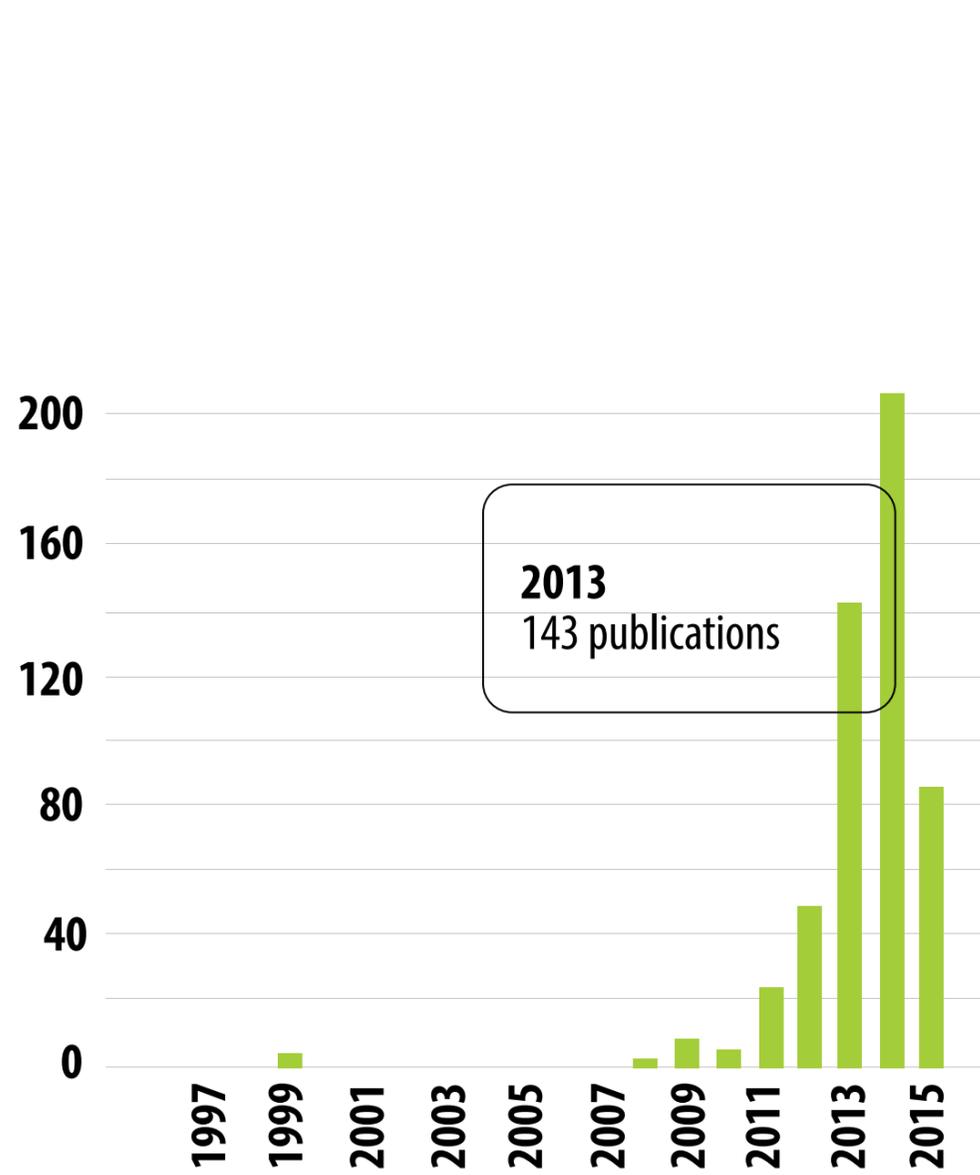
twitter content analysis top items | open data



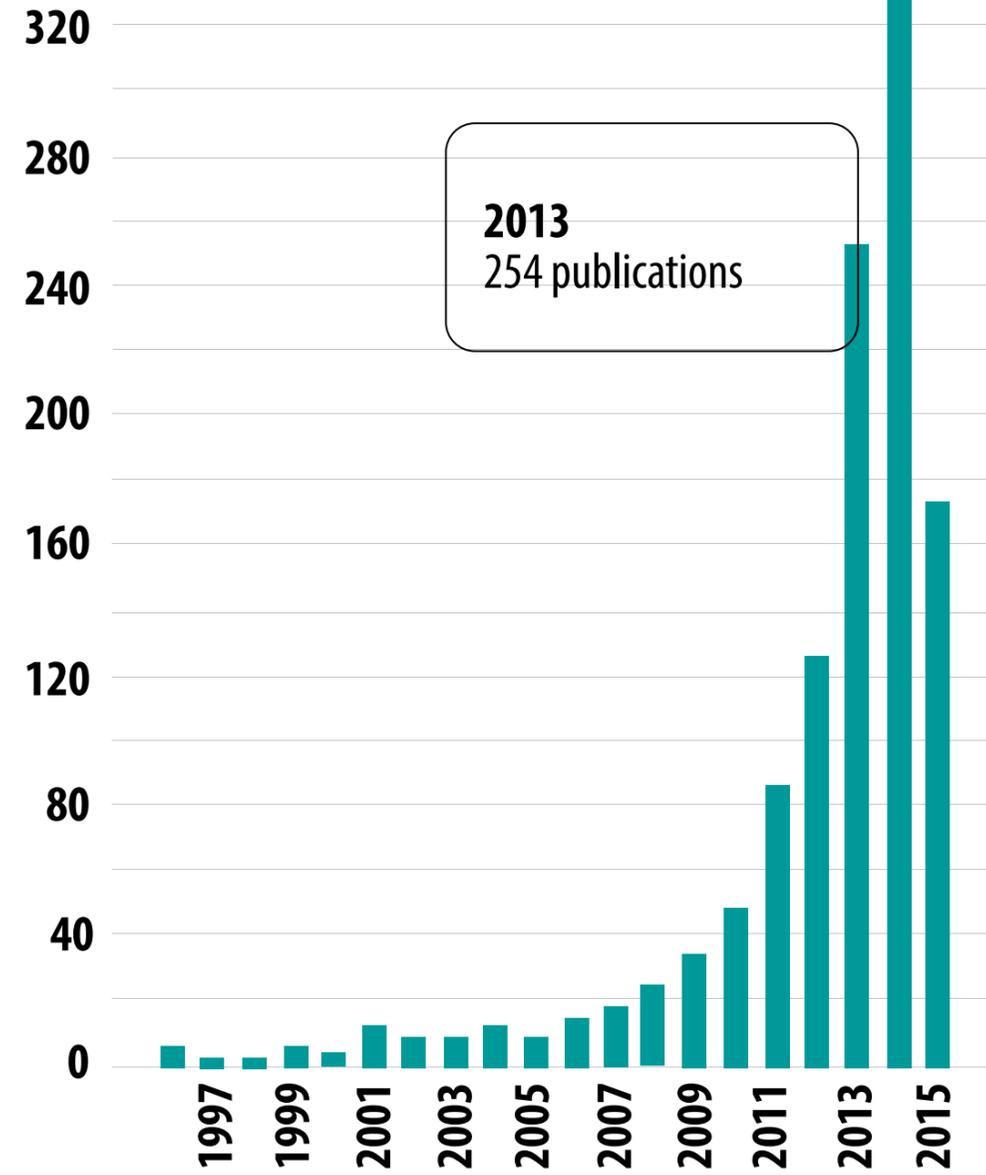
Co-citation

the frequency with which two documents are cited together by other documents

mapping literature | bibliometric analysis

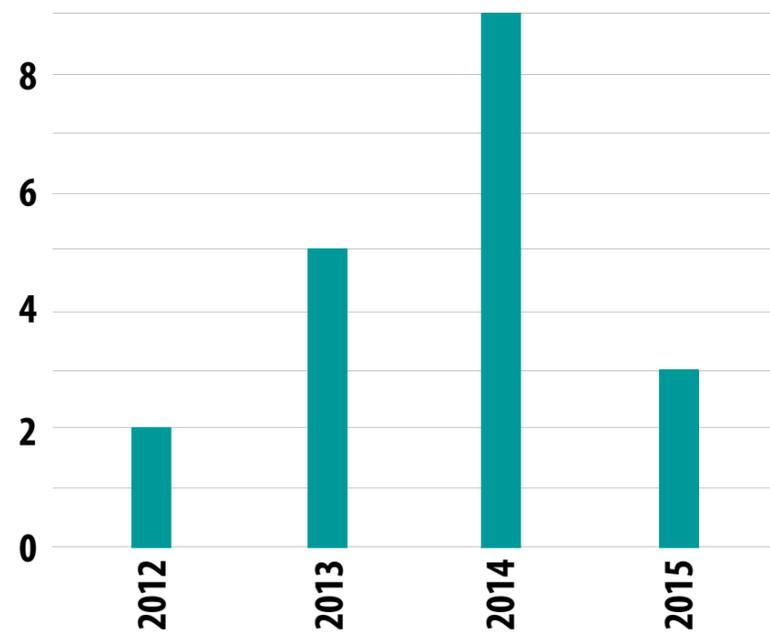


search term: **SMART CITY**
 results: **538**
 data source: *Web of Science*

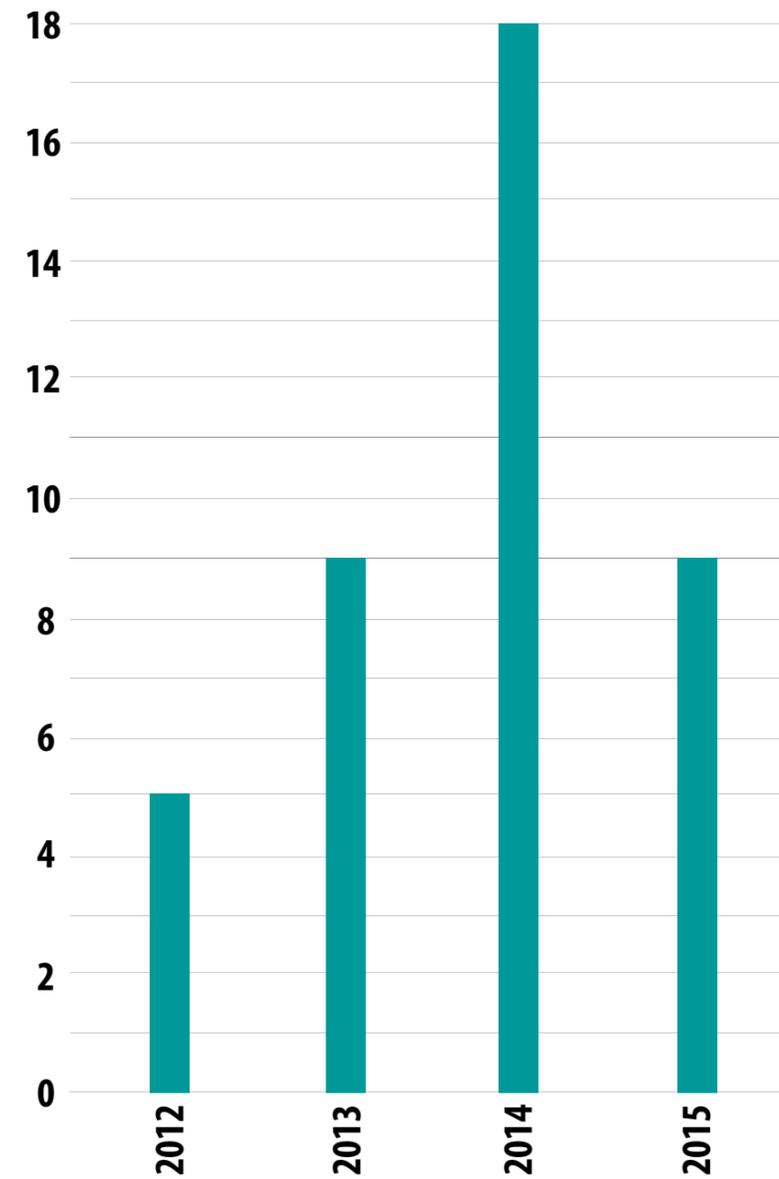


search term: **OPEN DATA**
 results: **1205**
 data source: *Web of Science*

scientific literature | the beginngin of the conversation in 2013



search term:
OPEN-DATA & SMART-CITY
 data source: *Web of Science*



search term:
OPEN-DATA & SMART-CITY
 data source: *Scopus*

scientific literature | an emerging nexus
 first record found was published in 2012



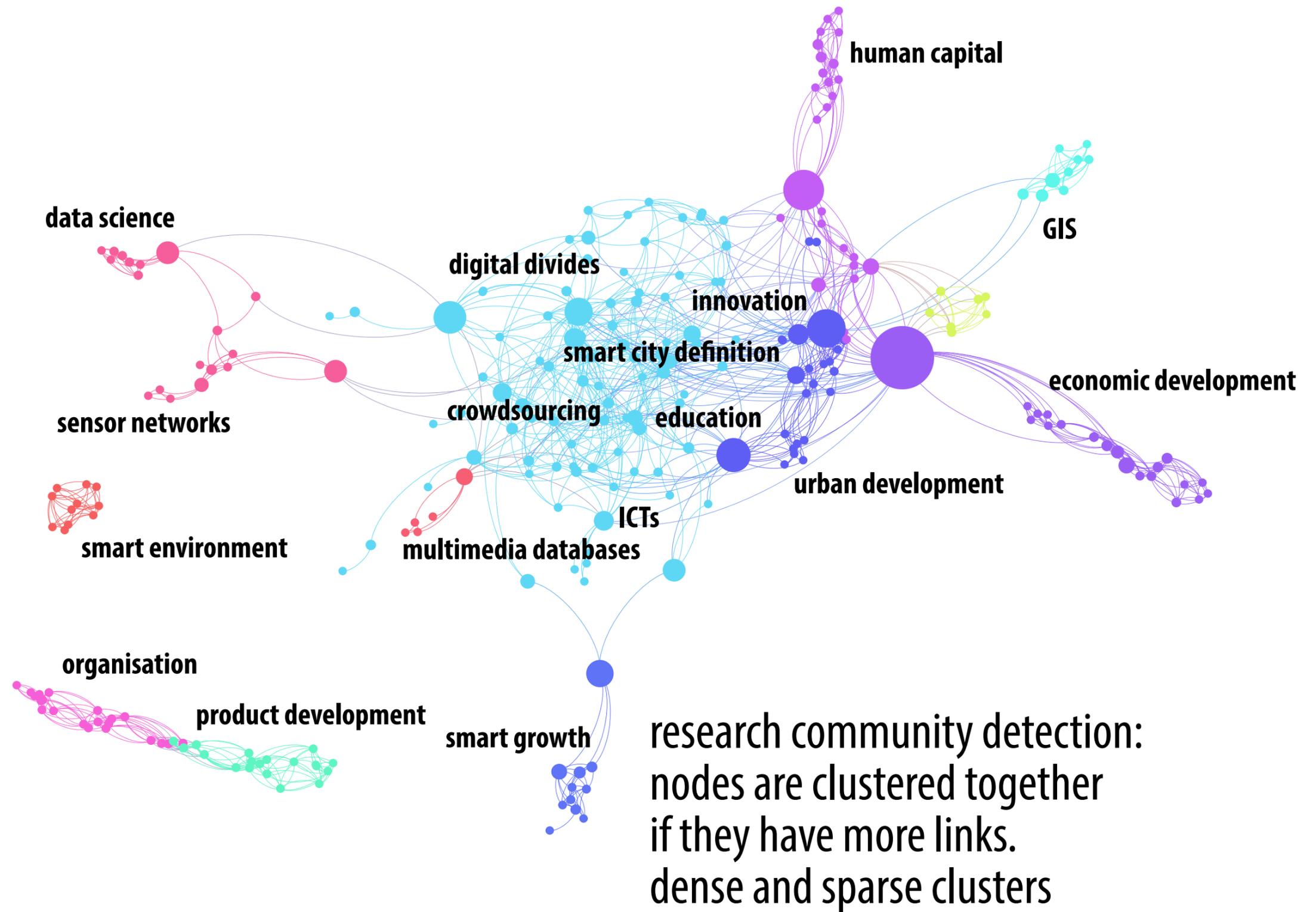
nodes represent references;
there is an edge between them
if they are co-cited

node size represents centrality
of the reference in the network

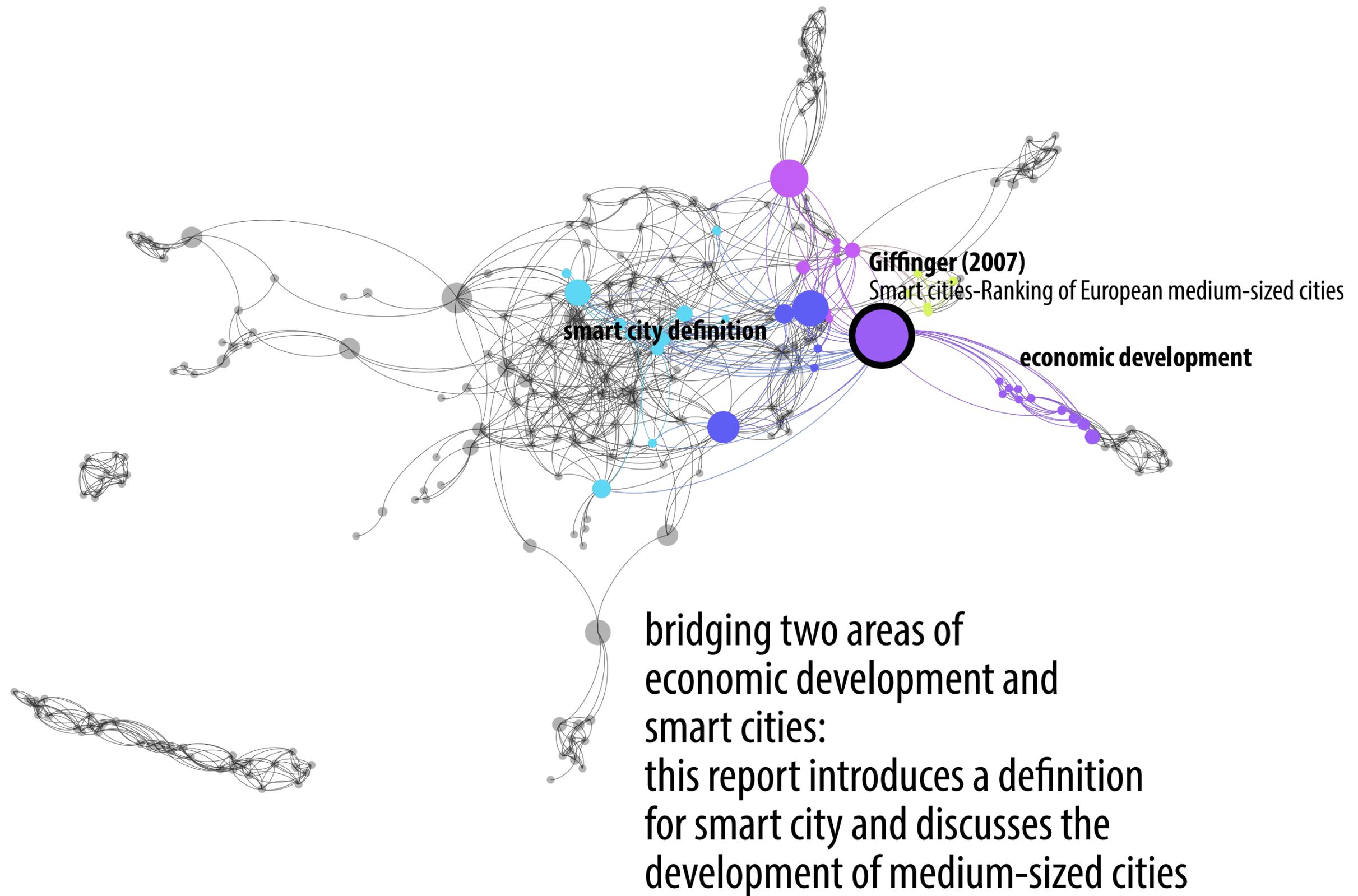
co-citation map | scientific literature on *smart city*

<i>Author, Date</i>	<i>Title</i>	<i>Centrality</i>
Giffinger, R., et al. (2007)	Smart cities-Ranking of European medium-sized cities	0.2120
Berry, C. R., et al. (2005)	The divergence of human capital levels across cities*	0.1241
Hollands, R. G. (2008)	Will the real smart city please stand up?	0.1160
Shapiro, J. M. (2006)	Smart cities: quality of life, productivity, and the growth effects of human capital	0.0993
Naphade, M., et al. (2011)	Smarter cities and their innovation challenges	0.0933
Harrison, C., et al. (2010)	Foundations for smarter cities	0.0764
Begg, I. (1999)	Cities and competitiveness	0.0728
Al-Hader, M., et al. (2009)	Smart city components architecture	0.0553
Hernández-Muñoz, J., et al. (2011)	Smart cities at the forefront of the future internet	0.0551
Komninos, N. (2002)	Intelligent cities: innovation, knowledge systems, and digital spaces	0.0475

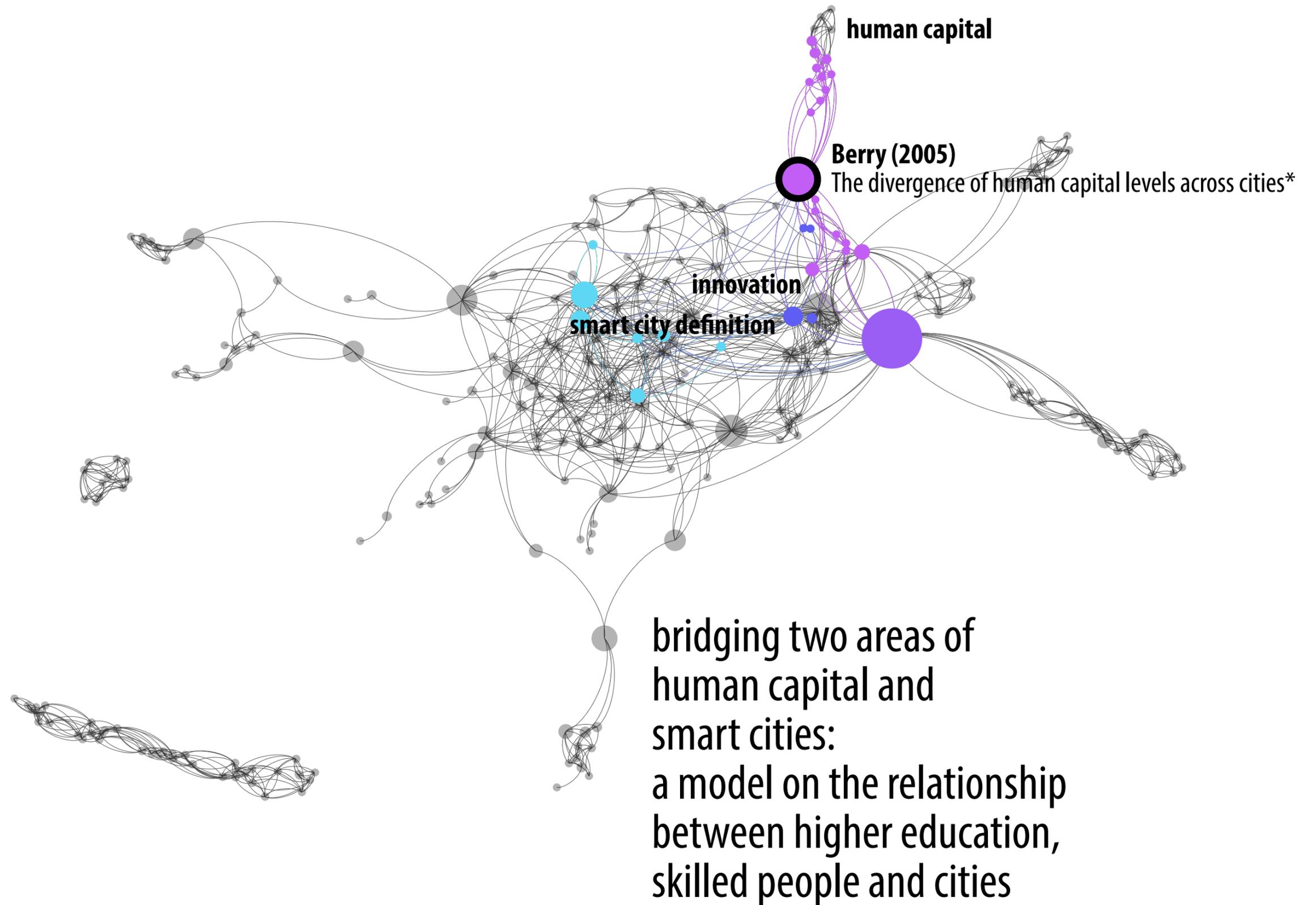
influential publications based on centrality | *smart city*



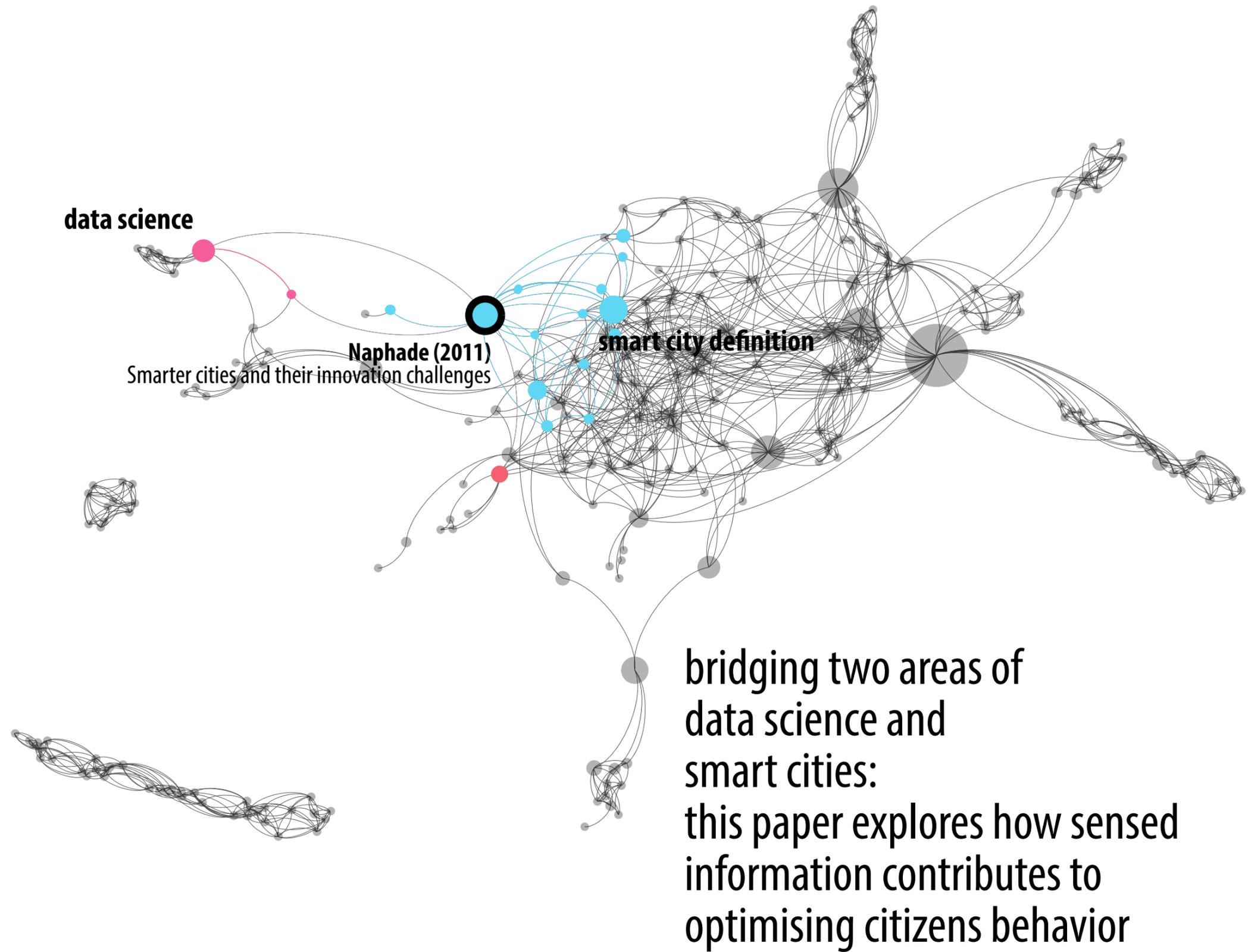
clustering co-citation map | literature on *smart city*



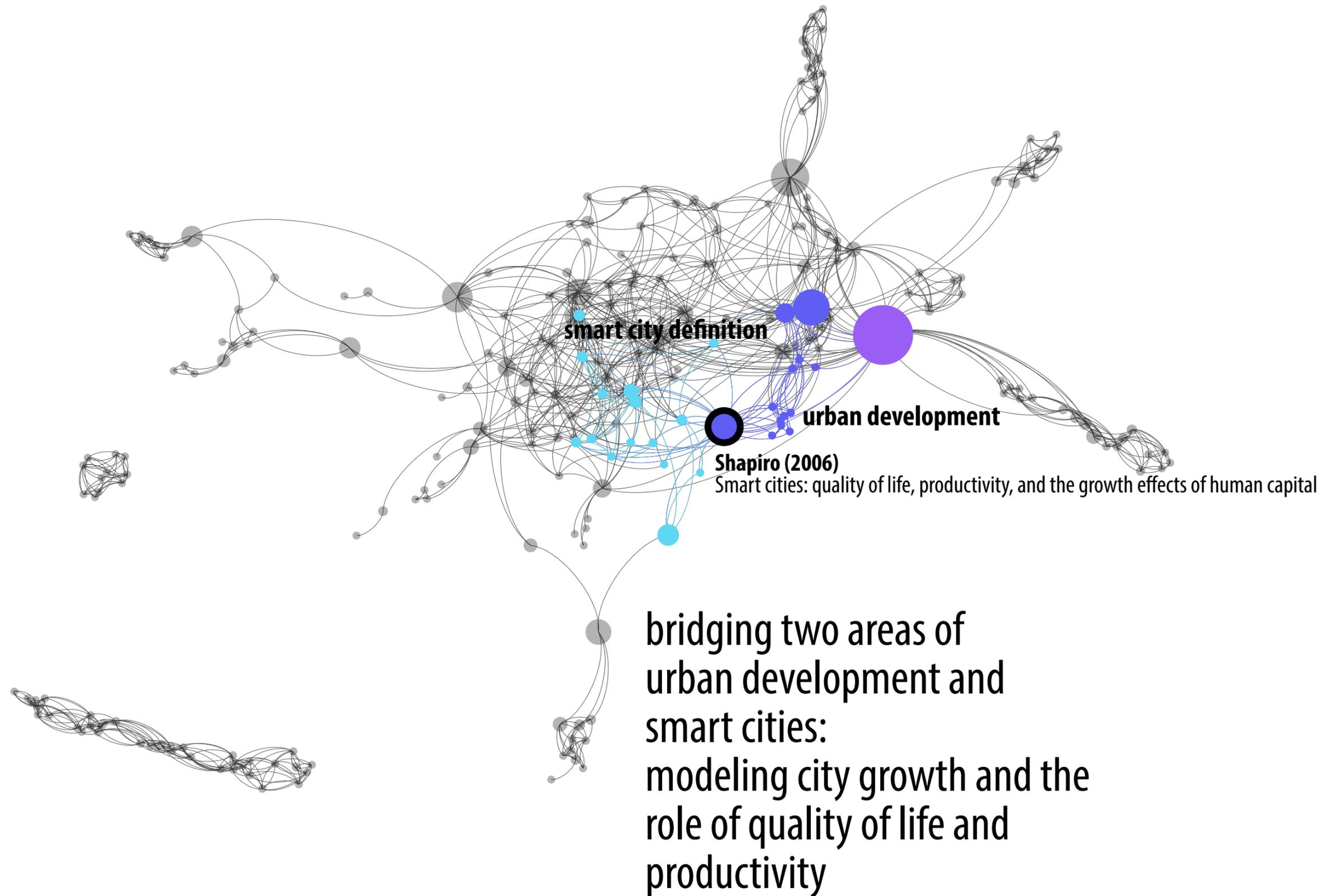
central publications | co-citation map of *smart city*



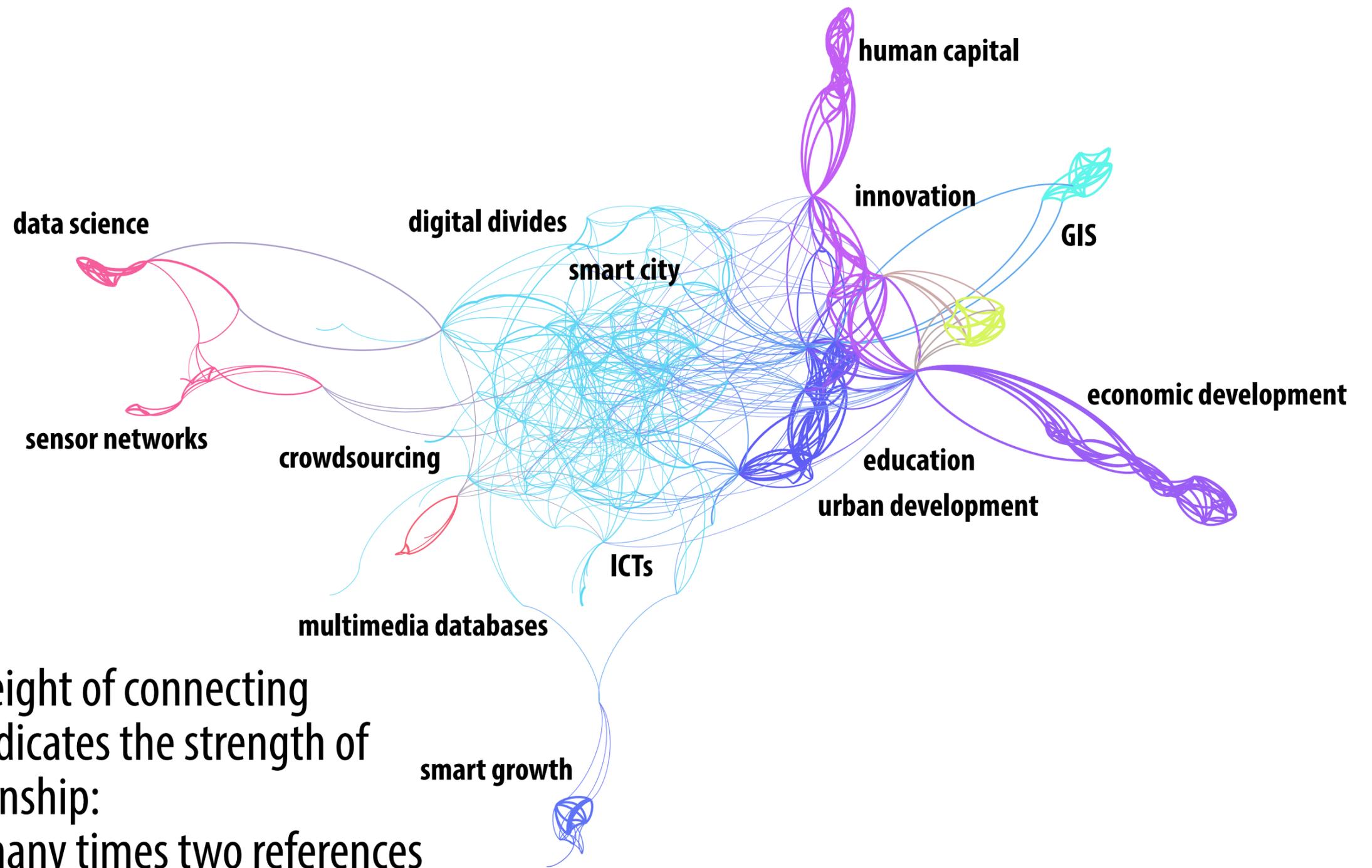
central publications | co-citation map of *smart city*



central publications | co-citation map of *smart city*

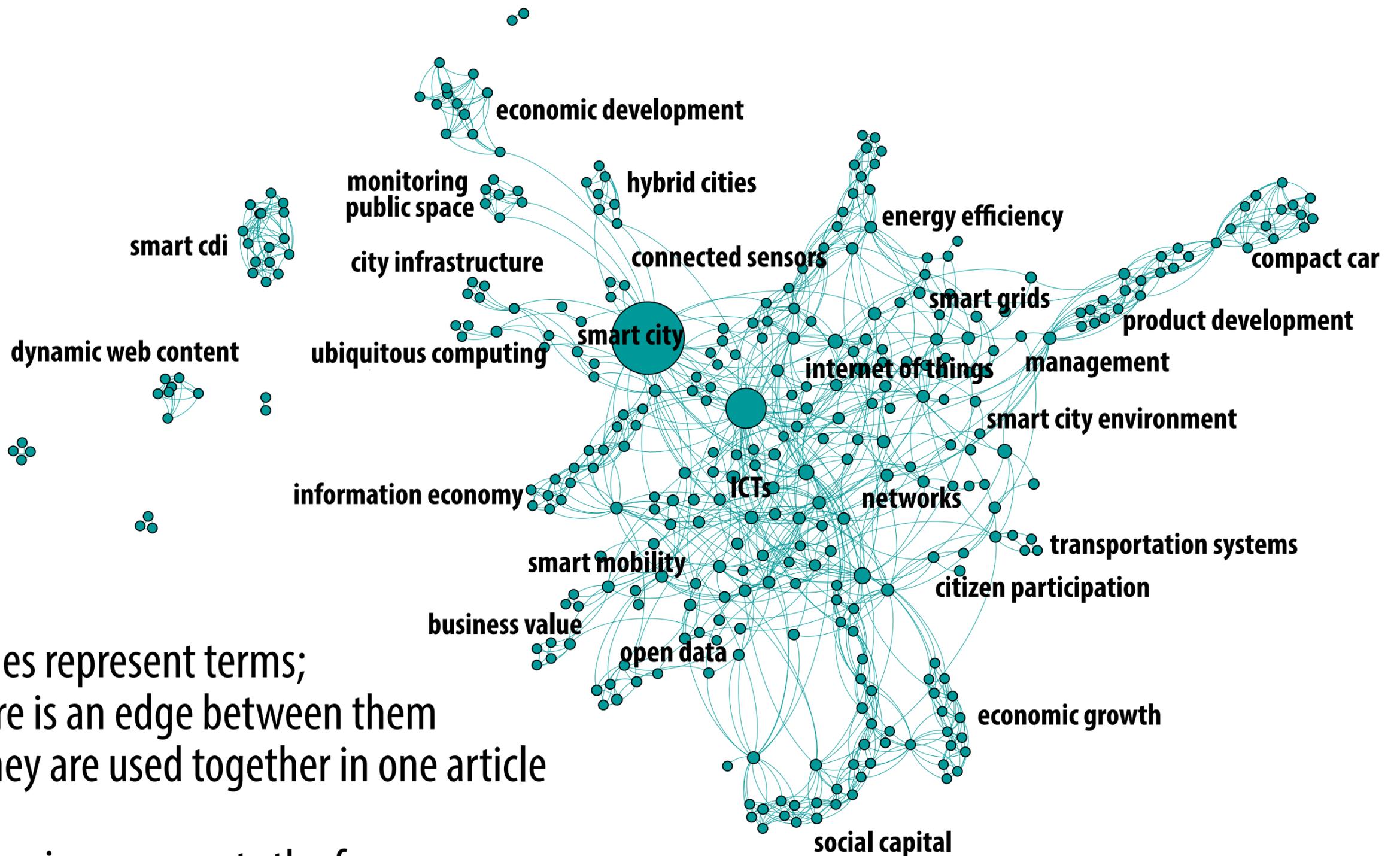


central publications | co-citation map of *smart city*



the weight of connecting
line indicates the strength of
relationship:
how many times two references
have been cited together in
publications in the data set

strength of co-citations | co-citation map of *smart city*



nodes represent terms;
 there is an edge between them
 if they are used together in one article

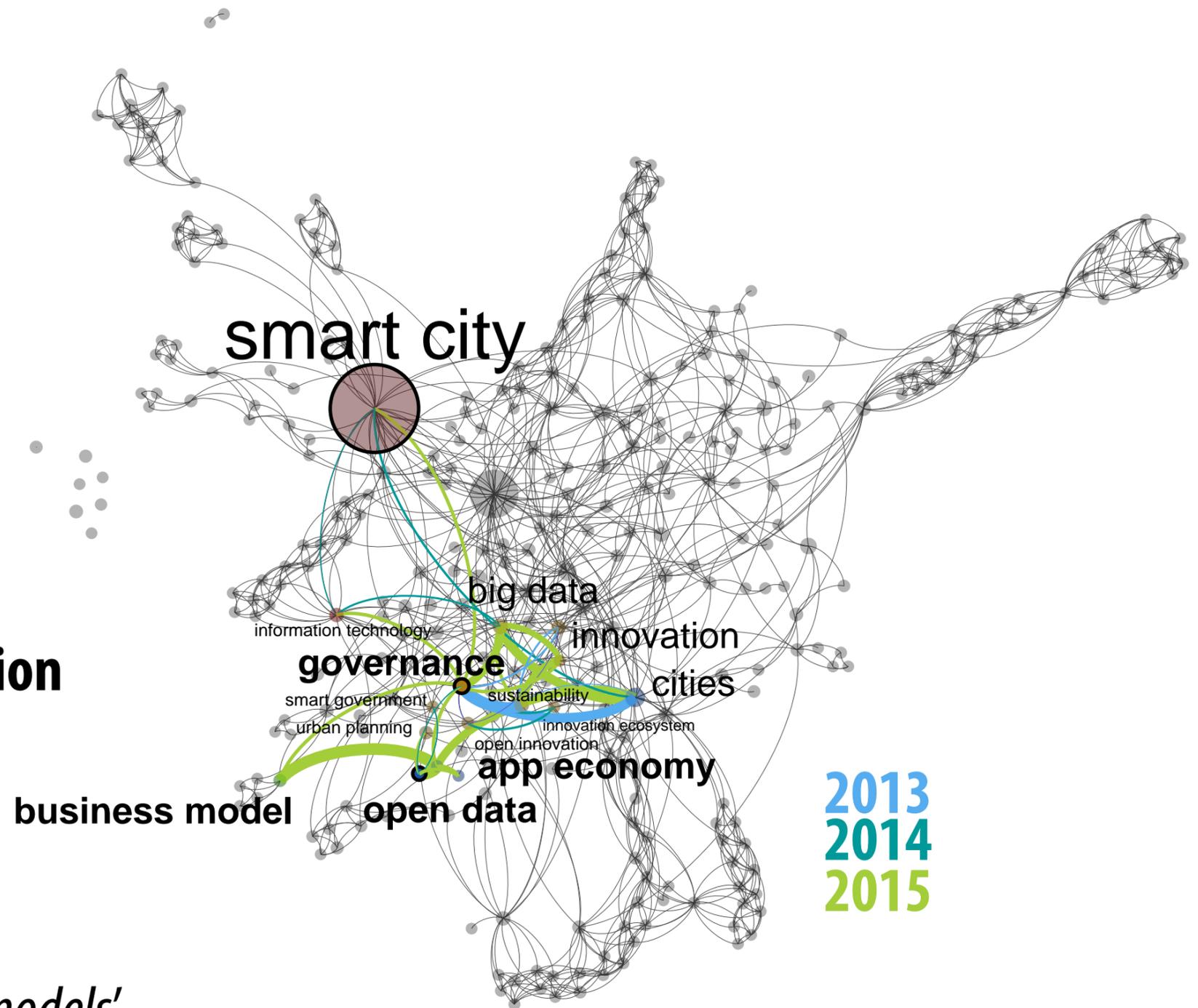
node size represents the frequency
 of the terms

thematic map of literature | *smart city*

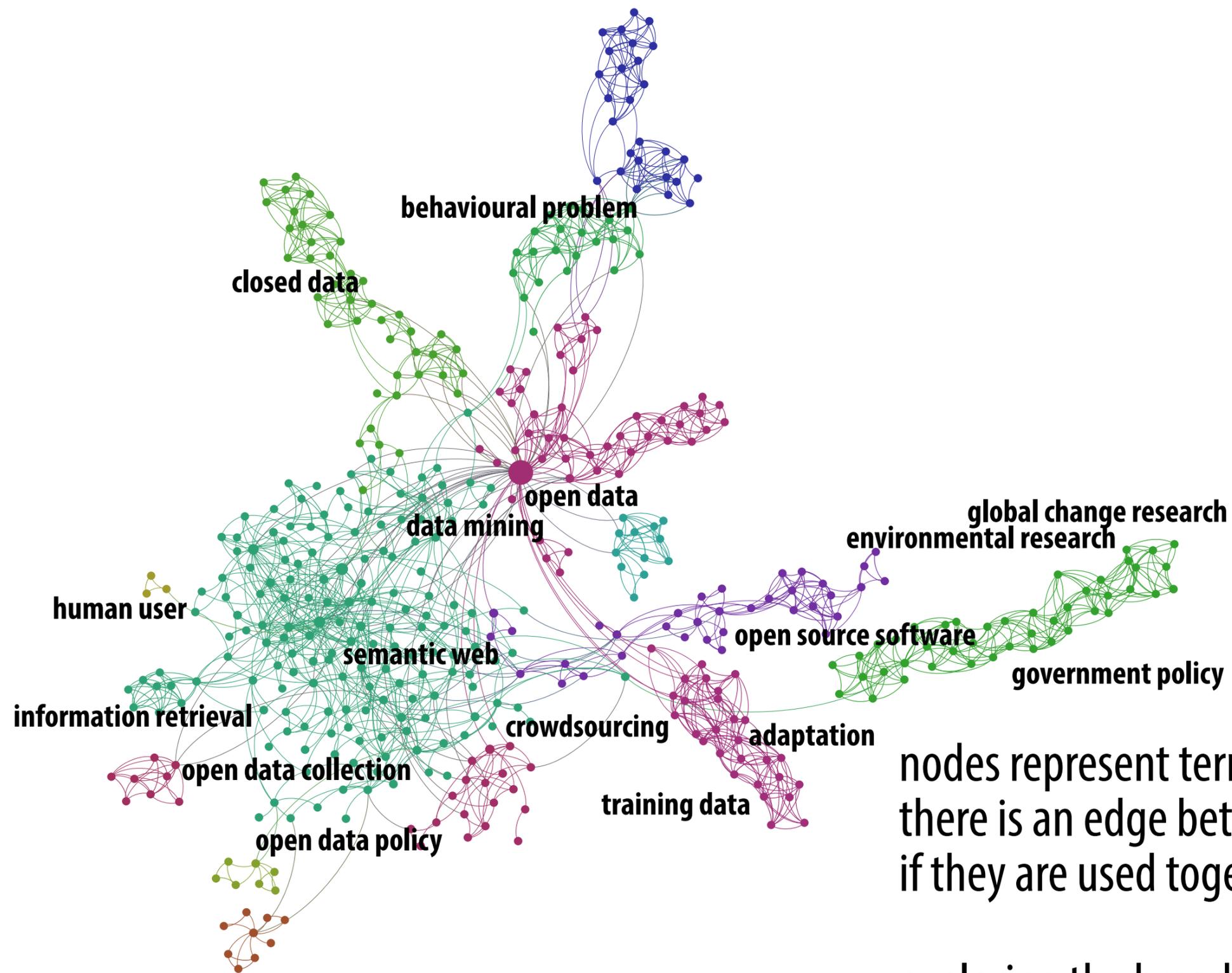
new trend of *open data* in the context of *smart cities* literature

time-oriented visualisation
colors represent years

'open data' primarily used in 2014 with *'governance'* and in 2015 with *'business models'* and *'app economy'*



thematic map of literature | *smart city*



nodes represent terms;
 there is an edge between them
 if they are used together in one article

exploring the broad concept of
open data: new perspectives

thematic map of literature | *open data*

- In Twitter conversations on *open data*, the *smart cities* hashtag is frequently found: 9th top hashtag with more than 500 times used in tweets
- In the smart cities conversation, the following topics dominate:
smart mobility, Internet of Things, economic development, citizen participation, smart city environment
- In the open data conversation, the following topics dominate:
open data collection , semantic web, training data, adaptation, human user, government policy, global change research
- The concepts of **open data** and **smart city** are linked through **governance** in 2014, the emerging trends are business models and app economy
- Through a nexus of ideas, there are more opportunities to study the field of *smart city* from the new perspective of *open data*

discussion and conclusions