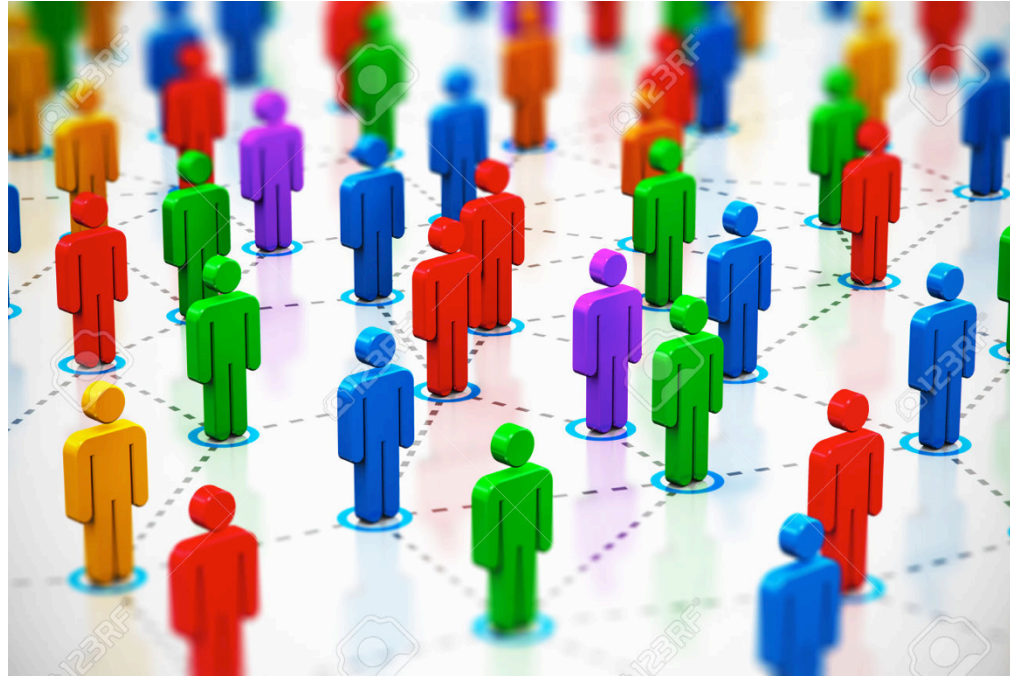


The Communication Network Within the Crowd



Ming Yin¹, Mary Gray², Sid Suri², Jenn Wortman Vaughan²

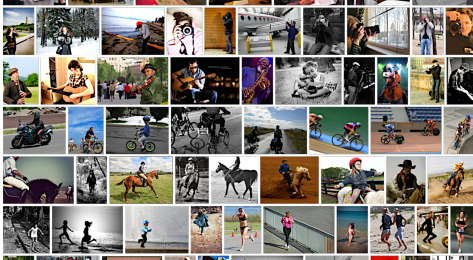
¹ Harvard University

² Microsoft Research

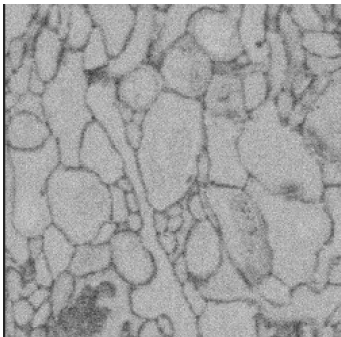
WWW'16, Montreal, Canada, April 11-15, 2016

A Classical View of Crowdsourcing

Before Crowdsourcing



謝謝你 *danke*
German
dziękuję **gracias**
obrigado 고맙습니다
cảm ơn bạn *grazie*
salamat Italian
merci
спасибо Russian
-ありがとうございました
Japanese



amazon mechanical turk™
Artificial Artificial Intelligence



Crowd

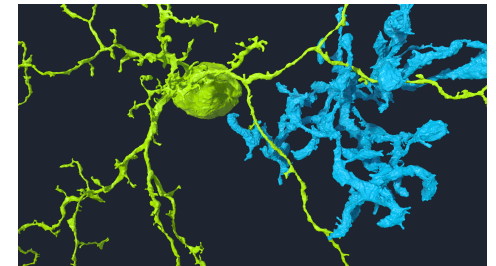


Microsoft's UHRS

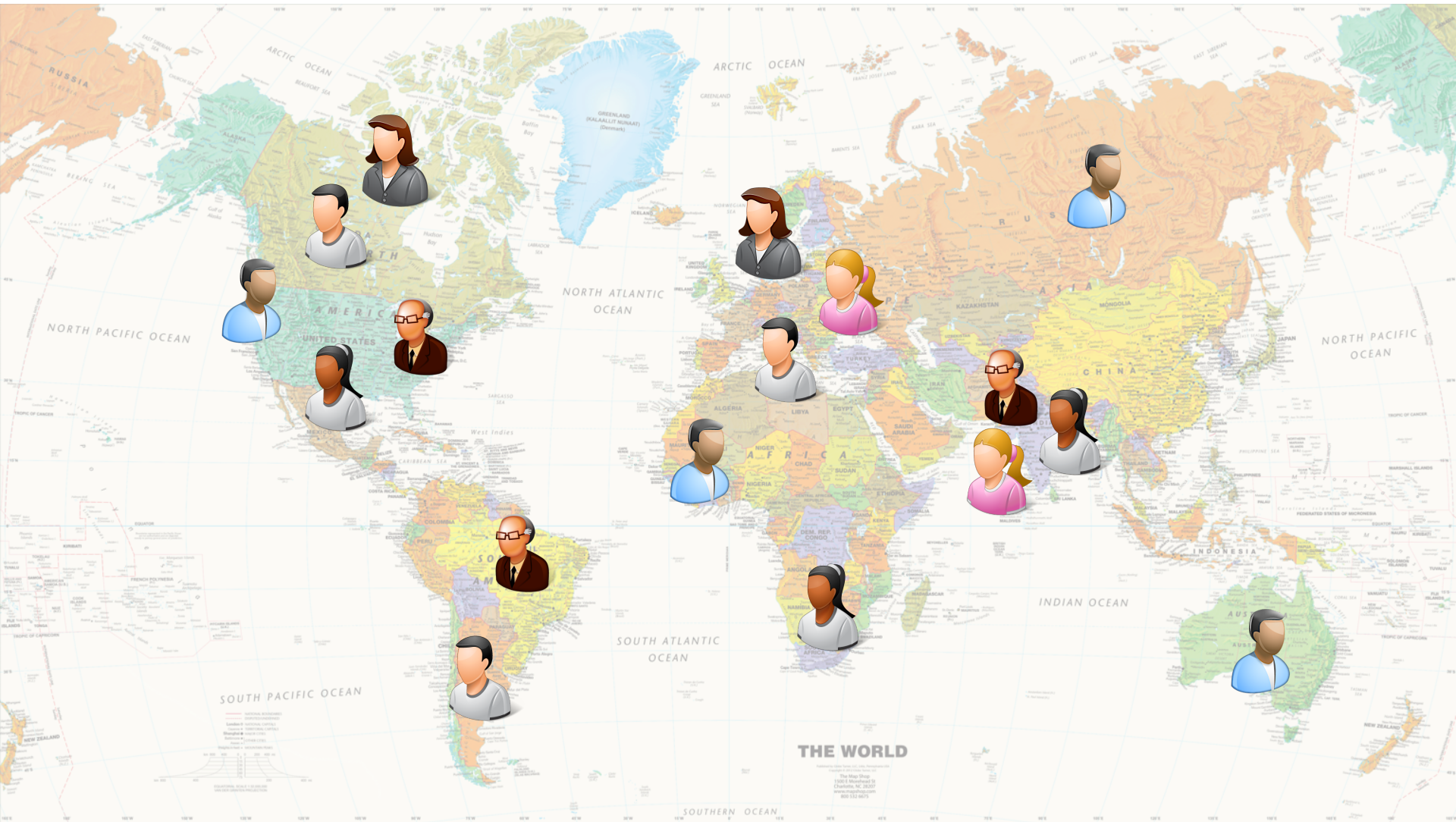
After Crowdsourcing



thank you



What exactly is this crowd?



Independent “contractors” from all over the world?

Actually, Crowdworkers Talk and Collaborate!

Ethnographic field study results show that, crowdworkers...



Help each other with
administrative overhead



Share tasks and
reputable employers

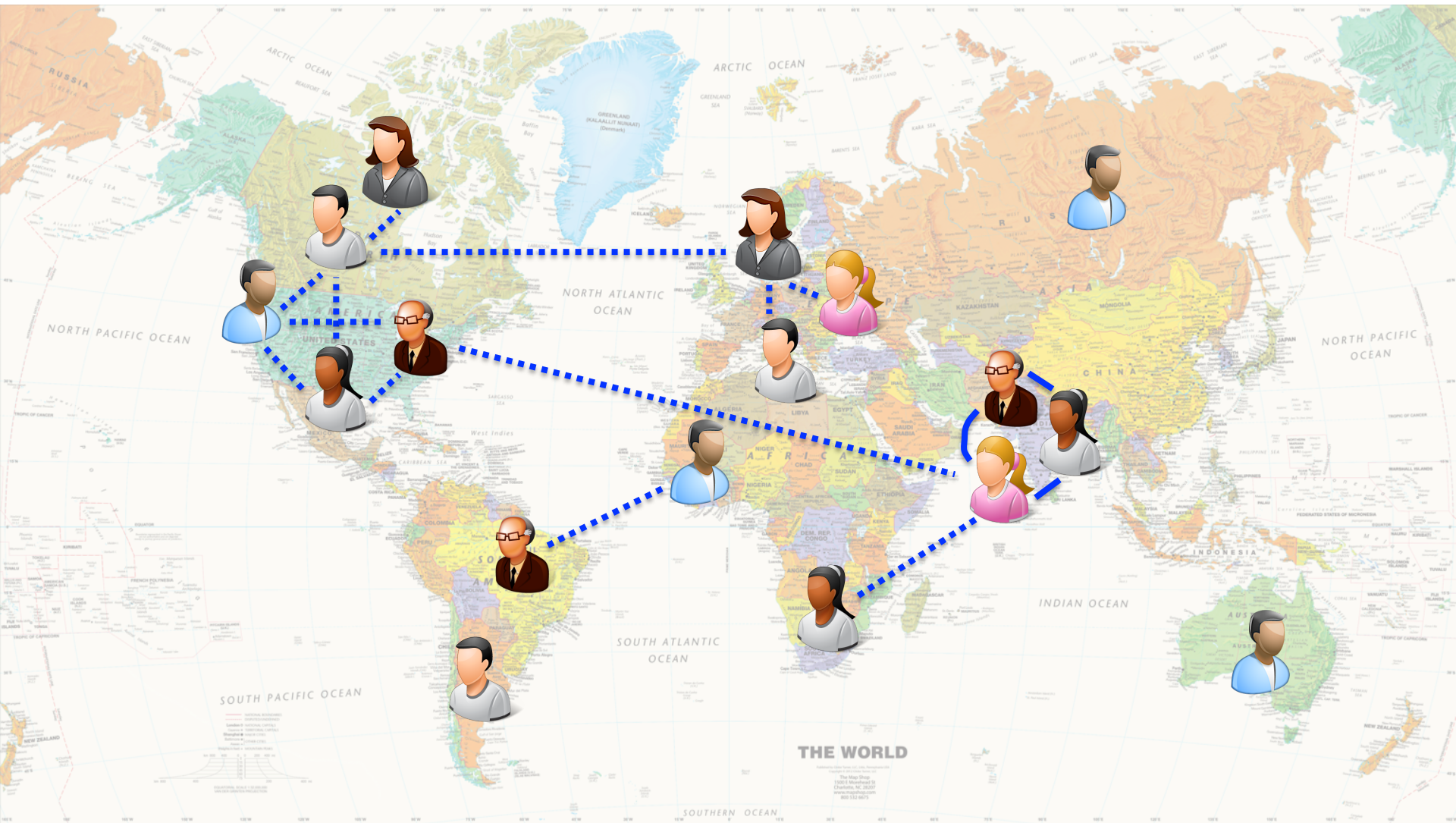


Recreate social
connections and support

M.L. Gray, S. Suri, S.S. Ali and D. Kulkarni. The Crowd is a Collaborative Network. *CSCW* 2016

N. Gupta, D. Martin, B.V. Hanrahan and J. O'Neil. Turk-life in India. *Group* 2014

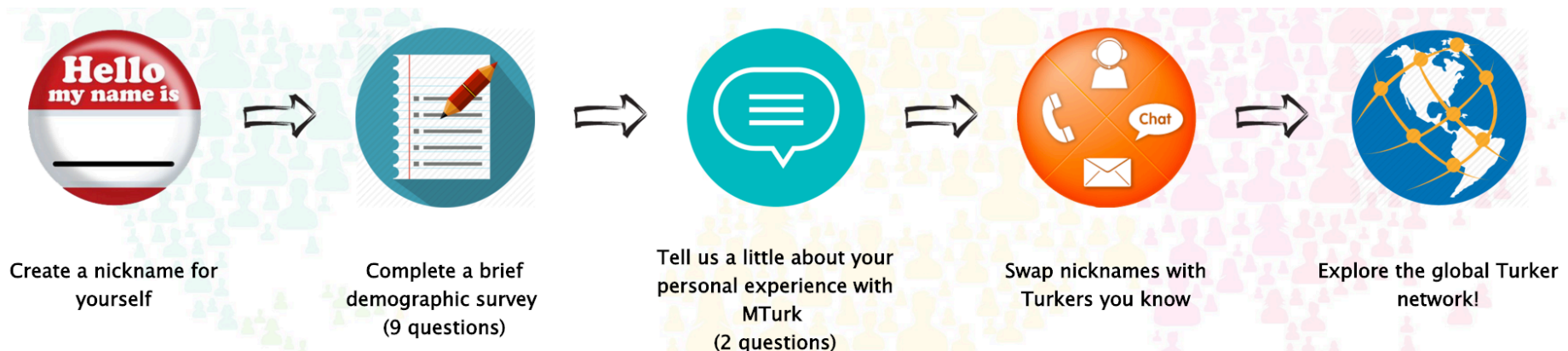
“Edges” Exist between Crowdworkers



Scale? Topological structure? How workers use the network?

Let's Map the Network of Turkers!

- Designed a network mapping HIT to visualize the communication network where Turkers **self-report** their connections
- We provided **value back** to the Turkers such that it's to their best interest to report as many true connections as possible



Create a Nickname

Great! We are excited that you decided to participate!

Now, please create a unique nickname for yourself. **To preserve your privacy, please don't use your real name.** Here is why you need a nickname:

- You will give your nickname to Turkers you know so they can add a link to you.
- You will get the nicknames of Turkers you know so you can add links to them.
- Your nickname will also be used for later logins if you want to explore the global Turker network as it grows.

It is very important to remember your nickname. Take a moment to write it down or take a screenshot.

Your nickname:

 Check if this nickname is available



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)



Swap nicknames with Turkers you know



Explore the global Turker network!

Q1: Which country do you currently live in?

--Select--

When we display the global Turker network, other Turkers will be able to see your country's flag if you agree to share this information.

- ☒ I'm comfortable sharing this information with **ALL** other Turkers who do this HIT.
- ☐ I'm comfortable sharing this information **ONLY** with Turkers who have my nickname.
- ☐ I'm **NOT** comfortable sharing this information with any other Turkers.



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)

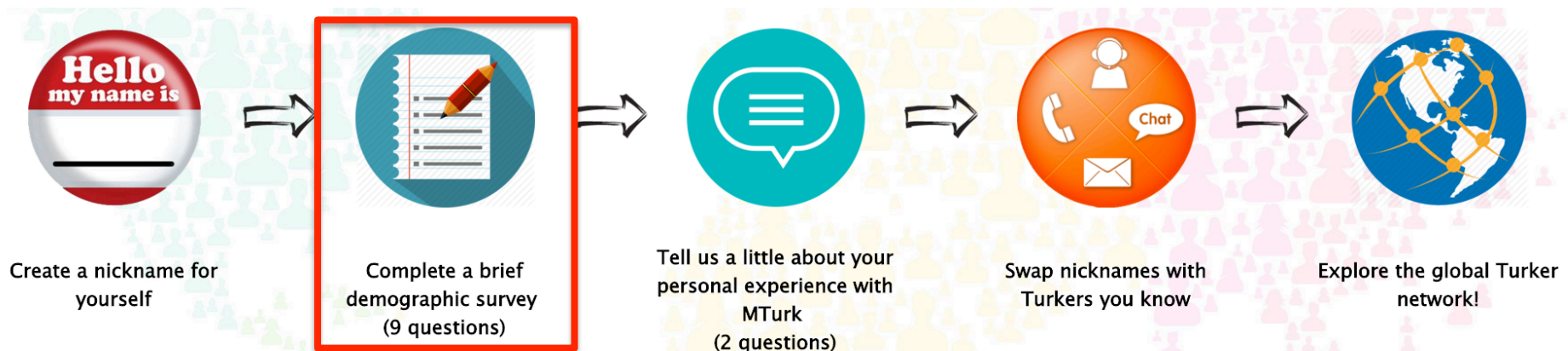


Swap nicknames with Turkers you know



Explore the global Turker network!

- **Q2 (Age):** What year were you born in?
- **Q3 (Gender):** What is your gender?
- **Q4 (Education):** What is the highest degree or level of school you have completed?
- **Q5 (Master):** Are you a Mechanical Turk Master?
- **Q6 (Approval Rate):** What's your approval rate on Mechanical Turk?
- **Q7 (Experience):** How long have you been Turking?
- **Q8 (Tasks):** What types of MTurk tasks do you typically do?



Q9: What online MTurk forums do you regularly use?



facebook.

- ☐ MTurkGrind
- ☐ TurkerNation
- ☐ MTurk Forum
- ☐ Reddit HITsWorthTurkingFor
- ☐ CloudMeBaby
- ☐ Facebook groups
- ☐ Other forums
- ☐ I don't use any MTurk forums.

Please select all that apply.

If you select "Other forums", please specify the names of the forums in the blank.

- ☐ I'm comfortable sharing this information with ALL other Turkers who do this HIT.
- ☐ I'm comfortable sharing this information ONLY with Turkers who have my nickname.
- ☐ I'm NOT comfortable sharing this information with any other Turkers.



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)



Swap nicknames with Turkers you know



Explore the global Turker network!

Q9: What online MTurk forums do you regularly use?



facebook.

- ☐ MTurkGrind
- ☐ TurkerNation
- ☐ MTurk Forum
- ☐ Reddit HITsWorthTurkingFor
- ☐ CloudMeBaby
- ☐ Facebook group
- ☐ Other forums
- ☐ I don't use any

Value Back: Who your fellow Turkers are?

Please select all that apply.
If you select "Other forums", please specify the names of the forums in the blank.

- ☐ I'm comfortable sharing this information with ALL other Turkers who do this HIT.
- ☐ I'm comfortable sharing this information ONLY with Turkers who have my nickname.
- ☐ I'm NOT comfortable sharing this information with any other Turkers.



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)



Swap nicknames with Turkers you know



Explore the global Turker network!

Why did you start Turking?

Do you remember what attracted you to Mechanical Turk? How did you first learn about Mechanical Turk and what made you start Turking? Share your story with your fellow Turkers.:)



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)



Swap nicknames with Turkers you know



Explore the global Turker network!

What motivates you to keep Turking?

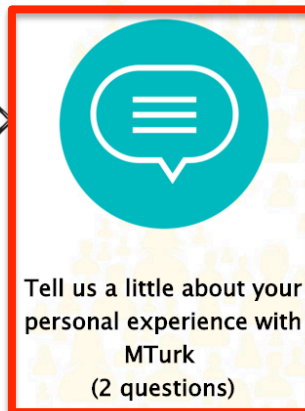
What keeps you motivated to do HIT after HIT? Do you have any "secret" motivation for Turking? How do you cheer yourself up when you get tired on Mechanical Turk? Share your story with your fellow Turkers.:)



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)



Swap nicknames with Turkers you know



Explore the global Turker network!

What motivates you to keep Turking?

What keeps you motivated to do HIT after HIT? Do you have any "secret" motivation for Turking? How do you stay motivated? Mechanical Turk? Share your story with your fellow Turkers.:)

Value Back: *Why your fellow Turkers Turk?*



Create a nickname for yourself



Complete a brief demographic survey (9 questions)



Tell us a little about your personal experience with MTurk (2 questions)

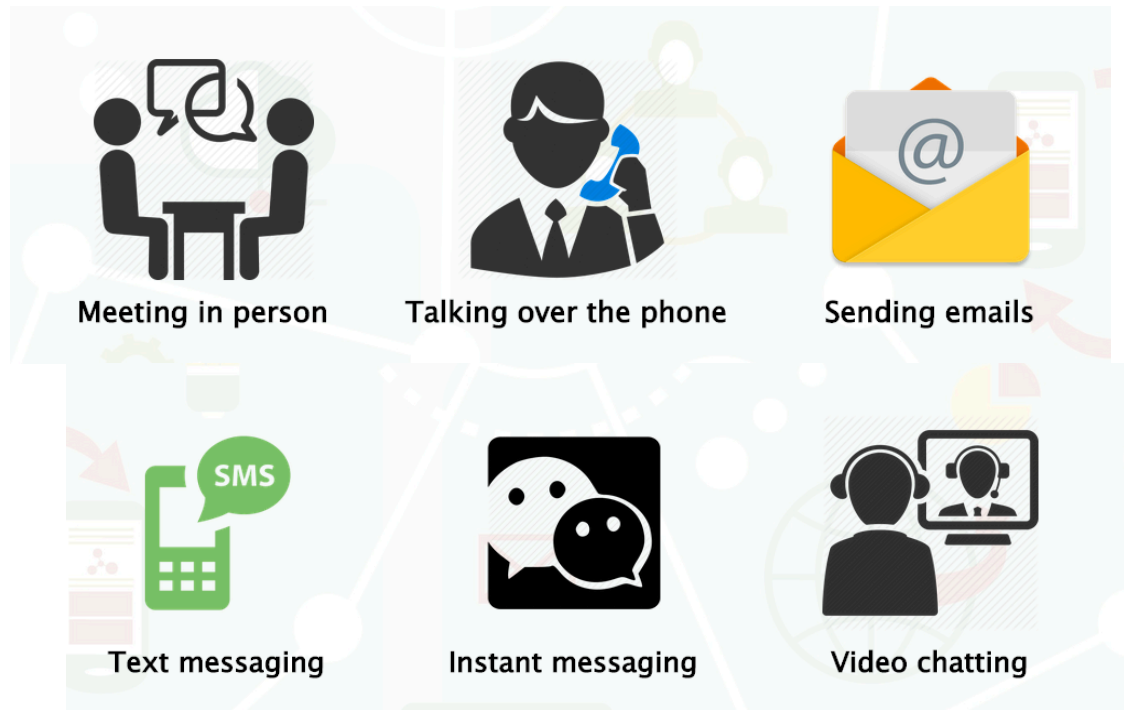


Swap nicknames with Turkers you know



Explore the global Turker network!

Swap Nicknames Any Way You Want!



Welcome to the Global Turker Network!

 Add link

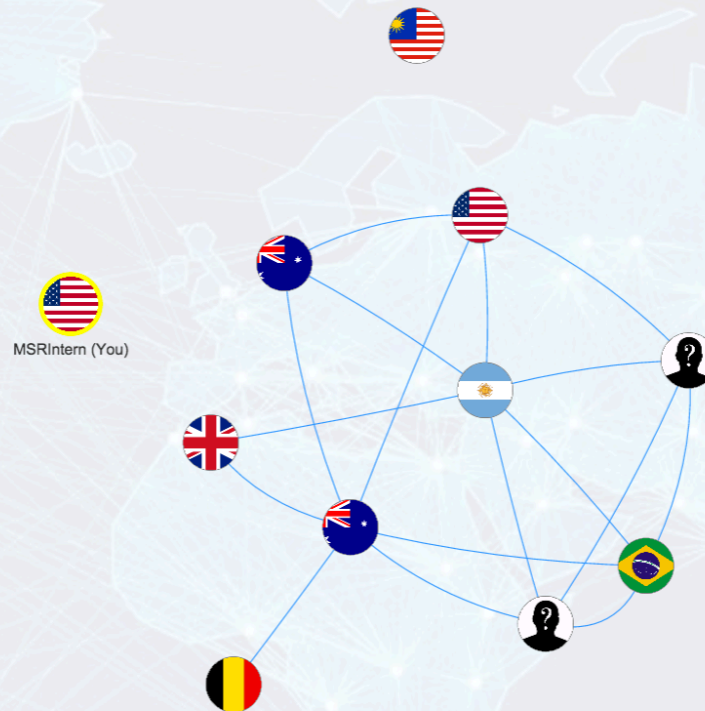
 Remove link

Your connections

You don't have connections yet!
Click the "Add link" button
above and start to connect to
other Turkers!

Also, feel free to invite Turkers you know to take this HIT and connect to them!

11 Turkers have participated in this HIT so far!



📍 Find myself

 Whole network

🔍 Zoom out

- Each circle represents a Turker. Your circle is outlined in yellow. Try the "Find myself" button!
- Click on a Turker to read his or her story!
- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Welcome to the Global Turker Network!

 Add link

11 Turkers have participated in this HIT so far!

Nickname: N/A

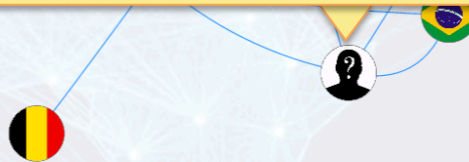
Add more links to find out if this Turker is someone you know

With an approval rate of 97.2% on MTurk.

Tasks mostly done on MTurk: Data entry; Survey

Why did you start Turking: My sister found out about it on reddit.com and told me about it. I like doing turks to build up my amazon gift card balance. I like how you can transfer the money you earn immediately to amazon whenever you want.

What motivates you to keep Turking: My motivation is money! I buy a lot of stuff off of amazon so I use the extra money to buy myself books and other stuff that I want.



- Each circle represents a Turker. Your circle is outlined in yellow. Try the "Find myself" button!
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- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Welcome to the Global Turker Network!

 Add link

 Remove link

Your connections

You don't have connections yet!
Click the "Add link" button
above and start to connect to
other Turkers!

Also, feel free to invite Turkers
you know to take this HIT and
connect to them!

11 Turkers have participated in this HIT so far!


MSRIntern (You)



 Find myself

 Whole network

 Zoom in

 Zoom out

- Each circle represents a Turker. Your circle is outlined in yellow. Try the "Find myself" button!
- Click on a Turker to read his or her story!
- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Welcome to the Global Turker Network!

 Add link

 Remove link

Your connections

You don't have connections yet!
Click the "Add link" button
above and start to connect to
other Turkers!

Also, feel free to invite Turkers
you know to take this HIT and
connect to them!

11 Turkers have participated in this HIT so far!

What's the nickname of this Turker?

Nickname:

How do you usually talk to this Turker?

Please check all that apply.

- ☒ On forums ☐ In person ☐ Phone ☐ Email ☐ Text messages
☐ IM/Online chatting ☐ Video chatting ☐ Other

What do you usually talk about with this Turker?

Please check all that apply.

- ☒ Share HITs ☒ Discuss requesters ☐ Share Turkling tools/scripts
☐ Chat about day-to-day life ☐ Other

**We will add a link from you to this Turker, and you'll find out
which circle represents this Turker!**

Submit

 Find myself

 Whole network

 Zoom in

 Zoom out

- Each circle represents a Turker
- Click on a Turker to read his or her profile
- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Welcome to the Global Turker Network!

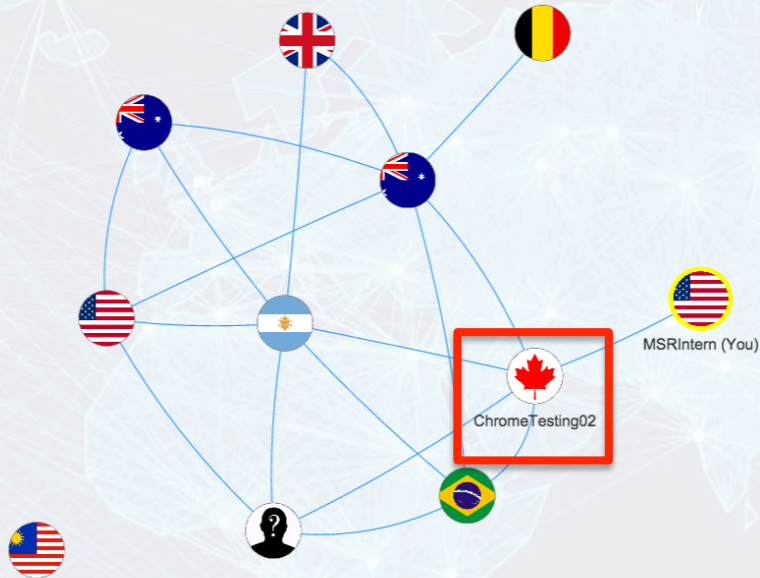
 Add link

 Remove link

 Your connections

ChromeTesting02

11 Turkers have participated in this HIT so far!



 Find myself

 Whole network

 Zoom in

 Zoom out

- Each circle represents a Turker. Your circle is outlined in yellow. Try the "Find myself" button!
- Click on a Turker to read his or her story!
- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Each Turker got a personalized URL to come back to the network!

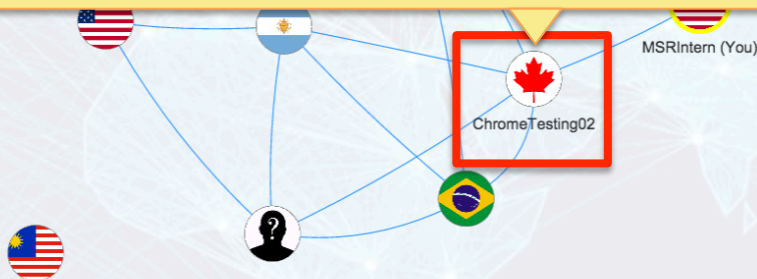
Nickname: ChromeTesting02

27 years old; female; living in Canada; with an approval rate of 97.2% on MTurk.

Tasks mostly done on MTurk: Data entry; Survey

Why did you start Turking: My sister found out about it on reddit.com and told me about it. I like doing turks to build up my amazon gift card balance. I like how you can transfer the money you earn immediately to amazon whenever you want.

What motivates you to keep Turking: My motivation is money! I buy a lot of stuff off of amazon so I use the extra money to buy myself books and other stuff that I want.



- Each circle represents a Turker. Your circle is outlined in yellow. Try the "Find myself" button!
- Click on a Turker to read his or her story!
- To explore different parts of the network, drag the background with the mouse.
- Get connected to Turkers you know by clicking on the "Add link" button and entering their names!

Each Turker got a personalized URL to come back to the network!

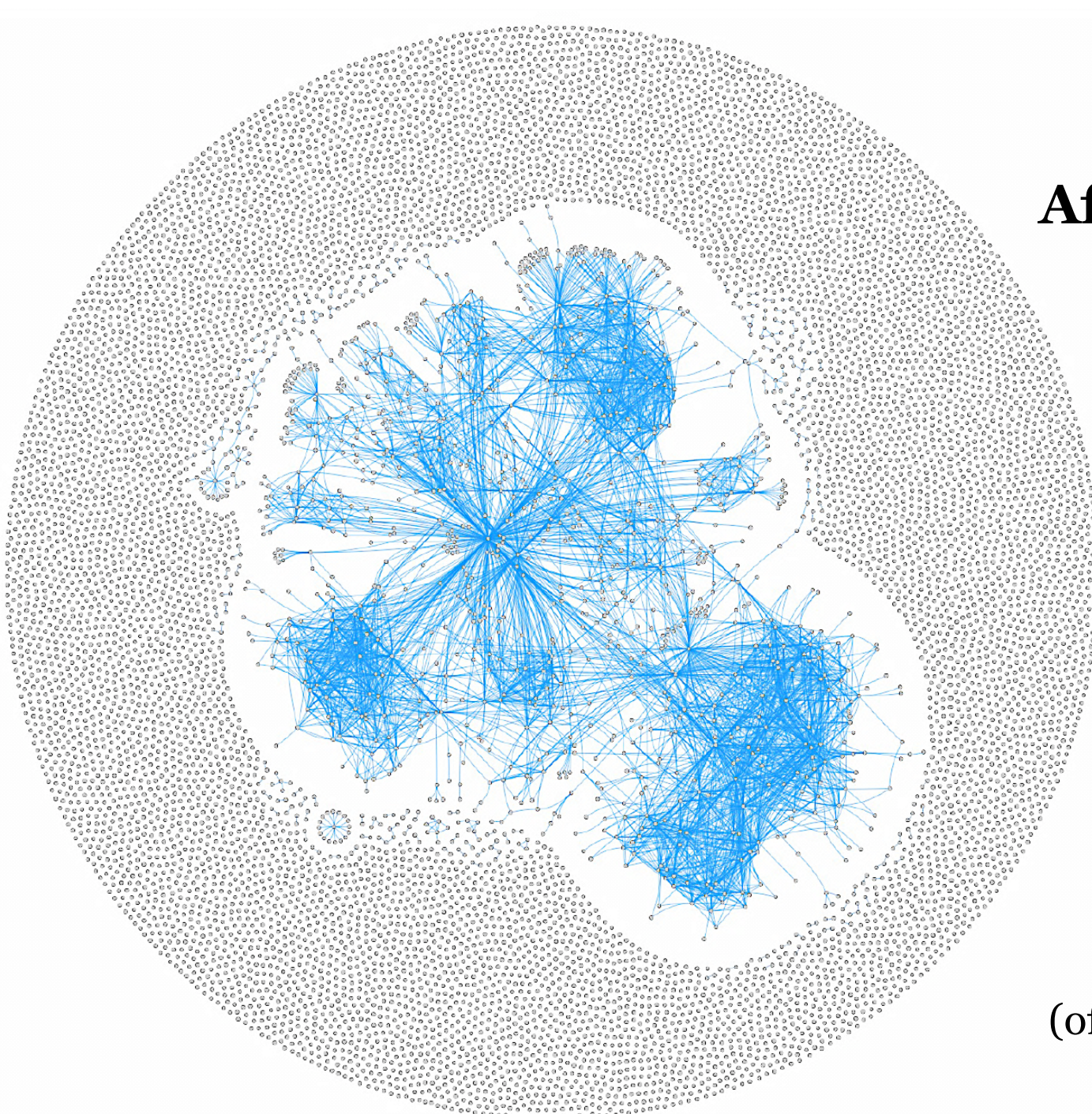
After 18 Days...

A Network

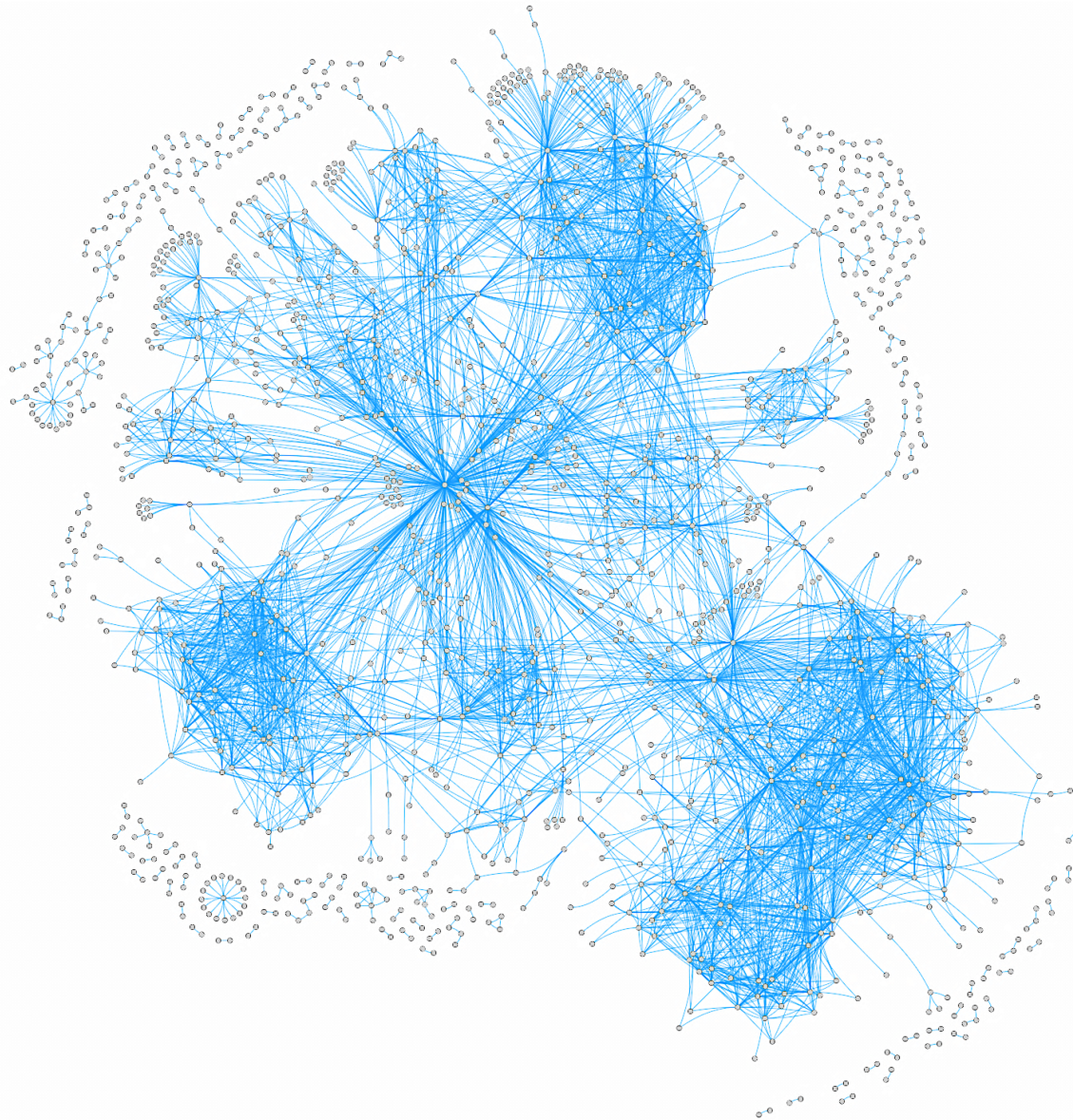
Within

the Crowd

(of **10,354** Turkers!)



A Network Enabled By Forums

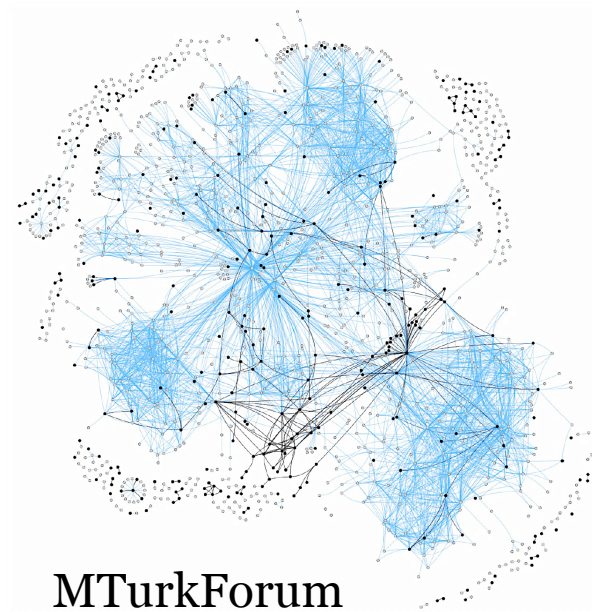
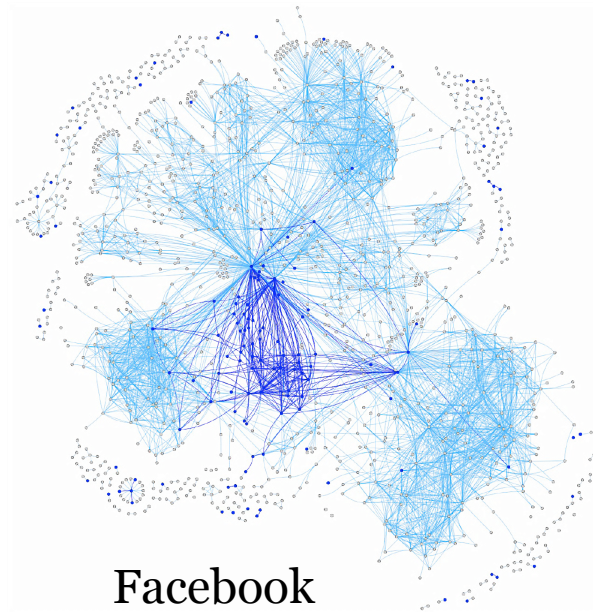
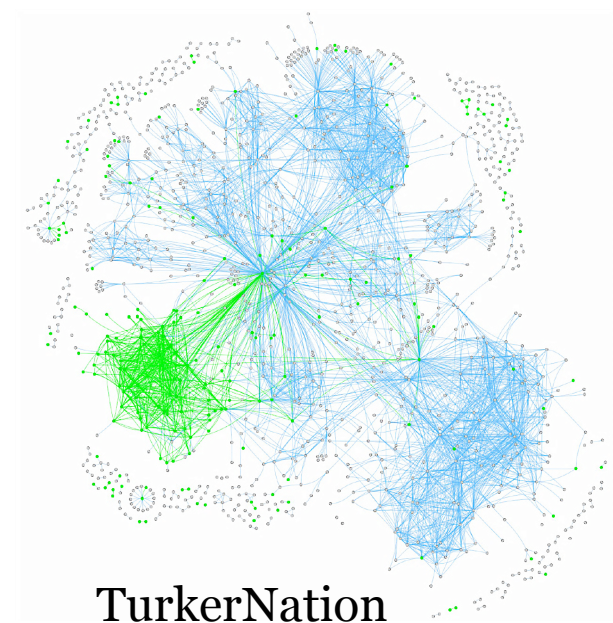
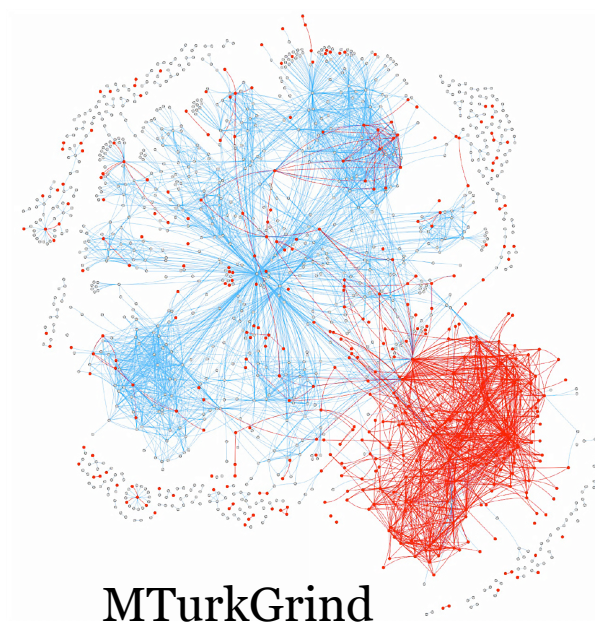
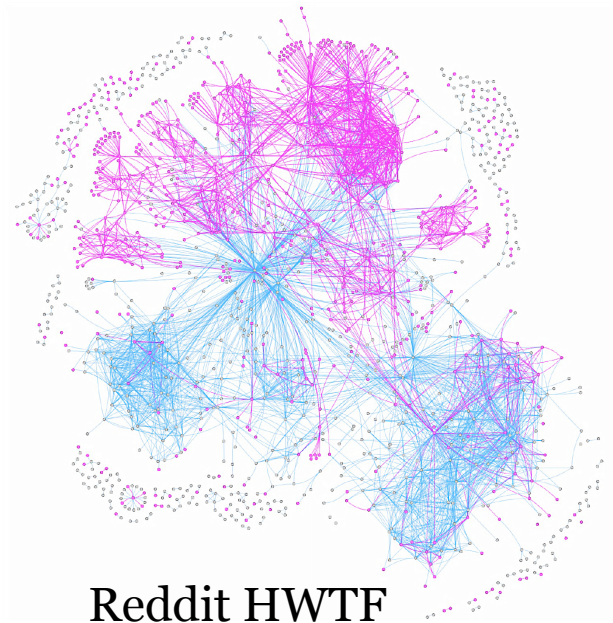


1,389 (13.4%) connected workers!

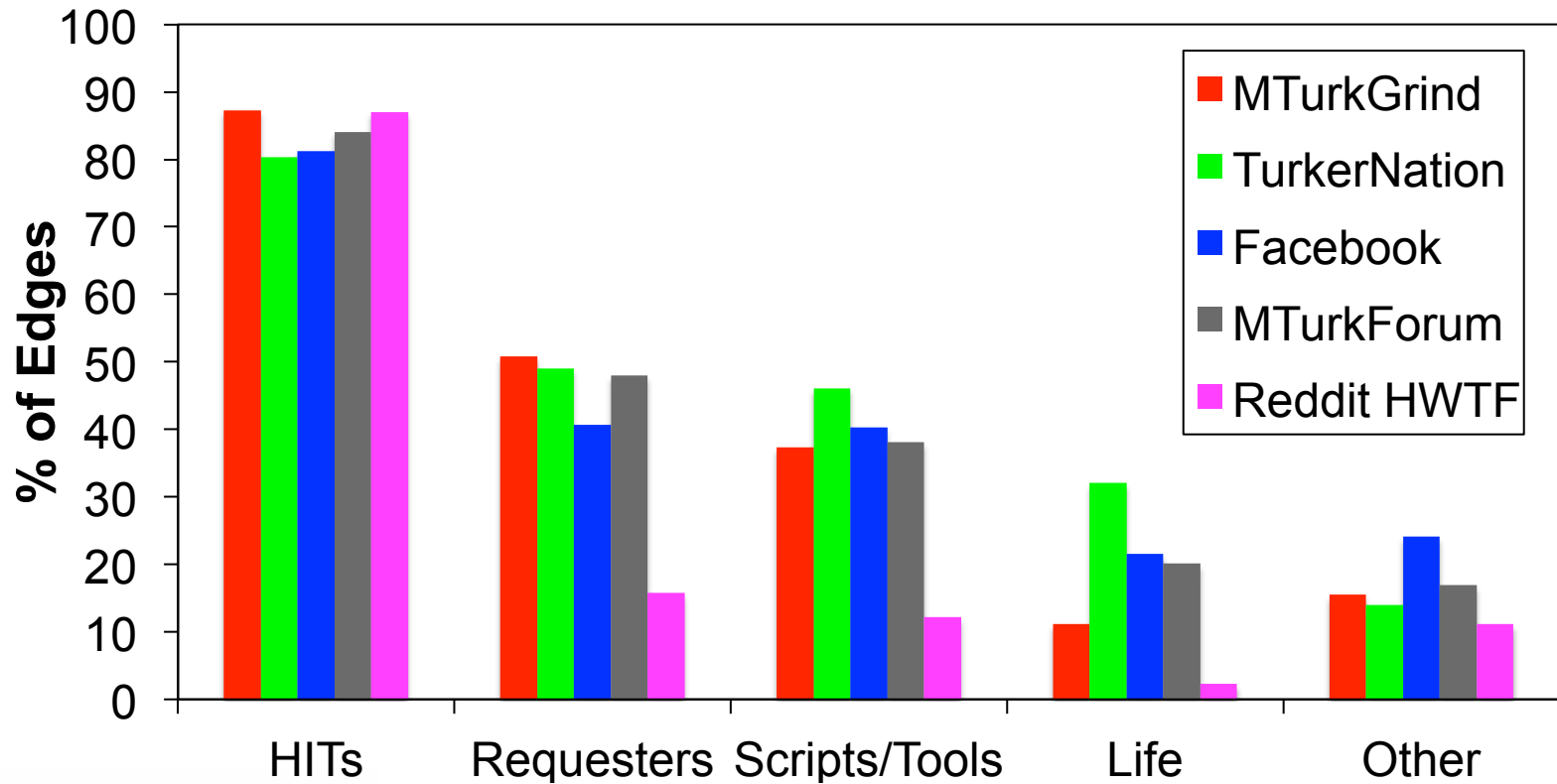
89.9% of all edges are between workers who communicate via forums!

86.2% of all edges are between pairs communicate *exclusively* through forums!

Forums Create Subcommunities



Discussion Topics Vary in Subcommunities!



Reddit HWTF

vs.

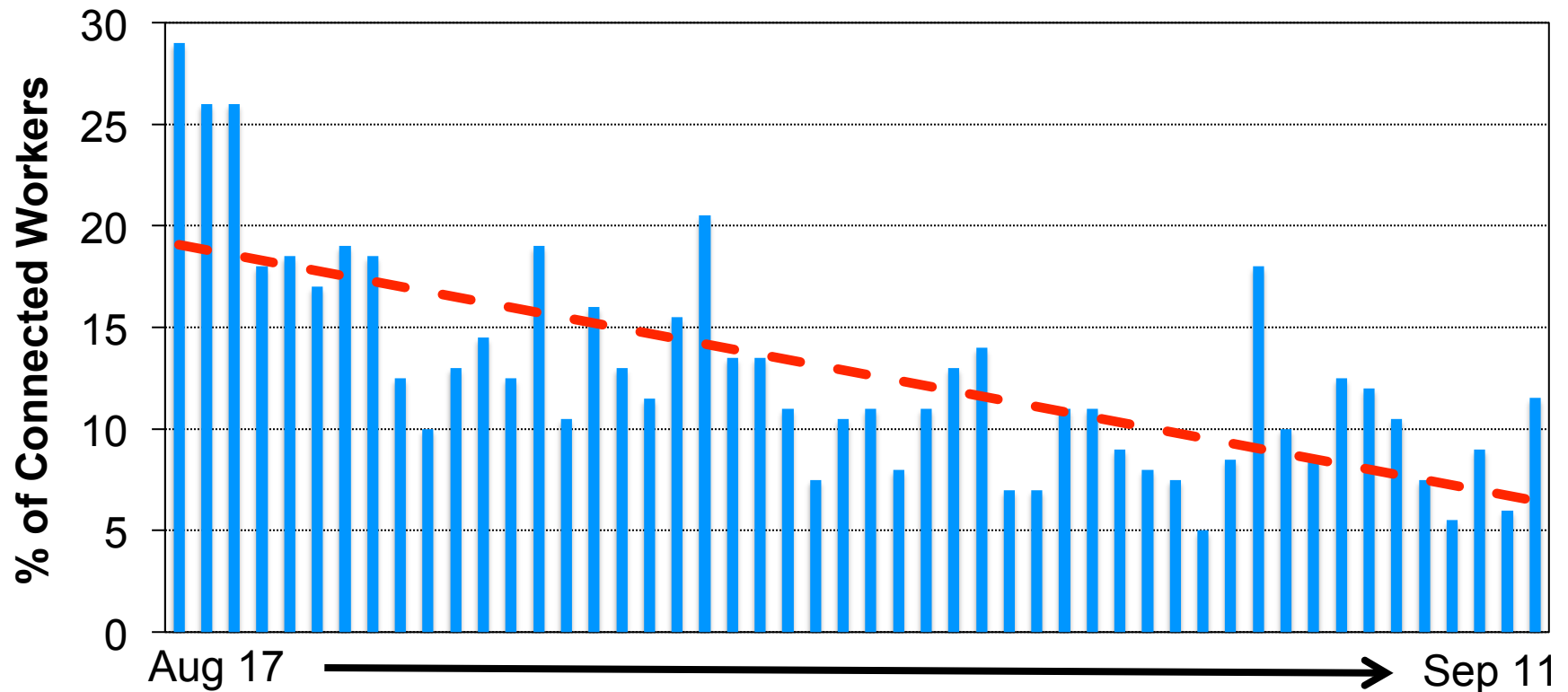
TurkerNation
Facebook



**HITs Broadcasting
Platform**

**Social-oriented
Community**

Network Position and Finding HITs



Connected workers also seem to be workers who can find out good HITs earlier!

Concluding Remarks

- The crowd is **not** a collection of independent workers.
- **It is a network.**



Requesters

Approach a subnetwork of workers bounded with communication ties



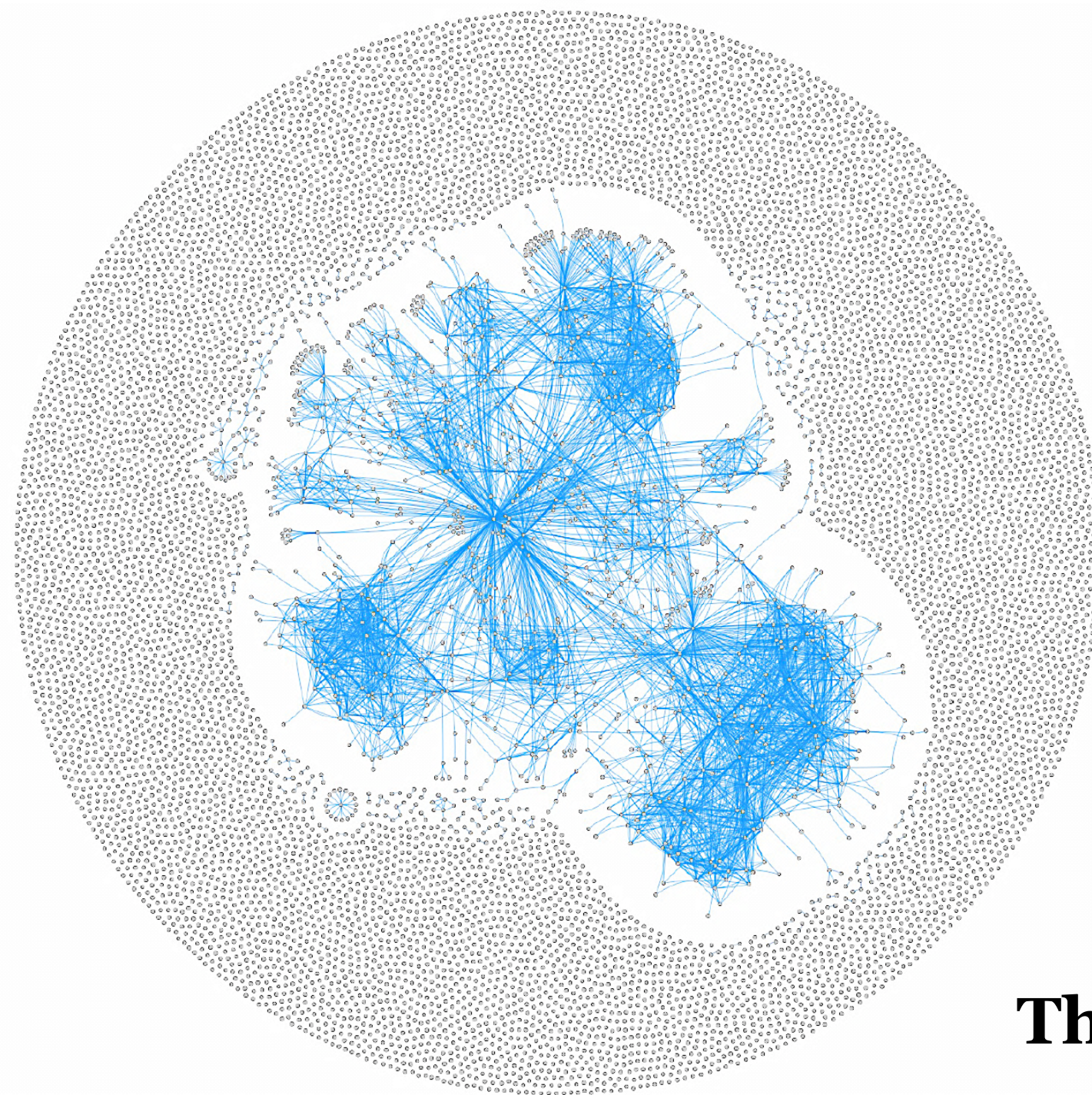
Workers

Potential informational advantages of being connected



Platforms

Perhaps provide more social interactions that workers clearly value



Thank you!