Some Assembly Required:

Team Recommender Systems and the Future of Work

Noshir Contractor

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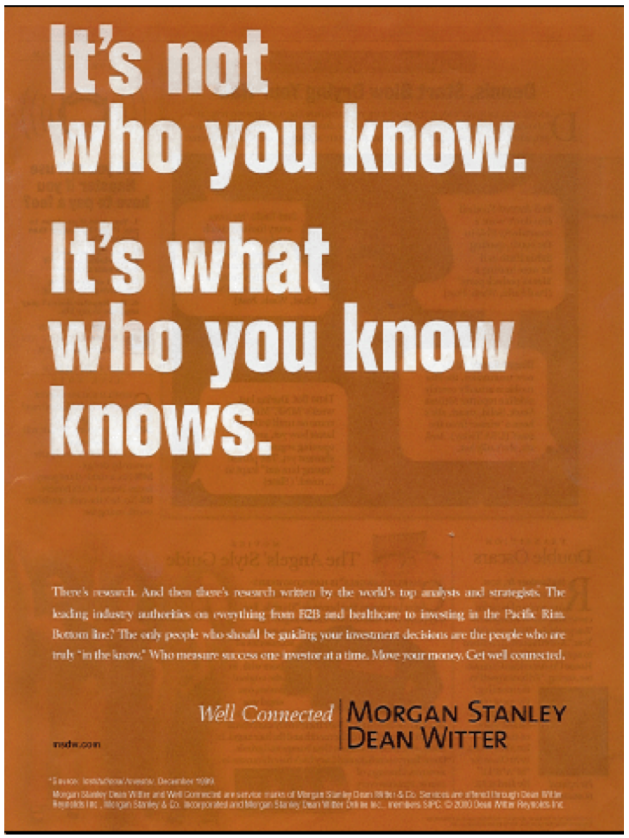
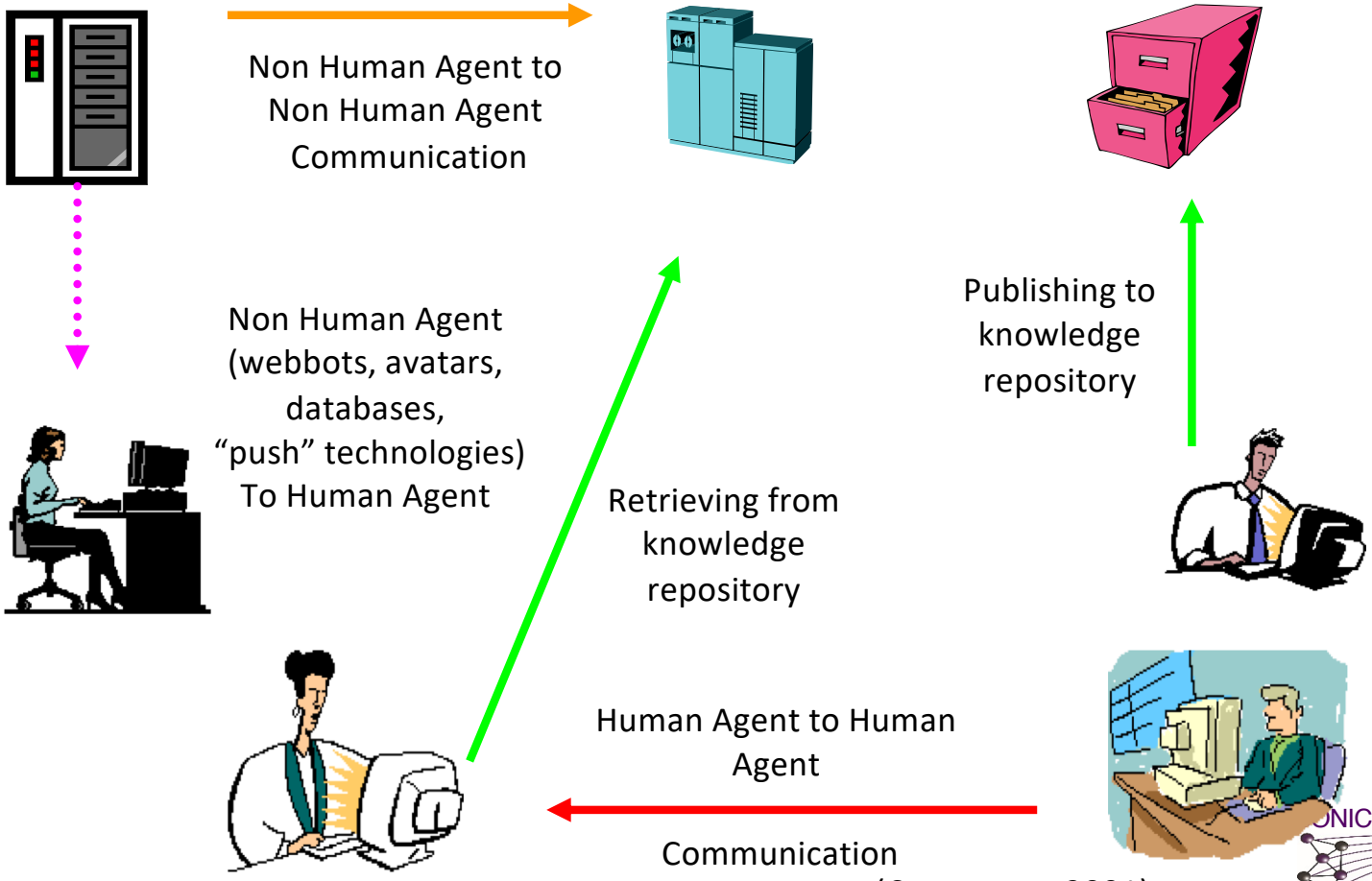
Aphorisms about Networks

- Social Networks:
  - Its not what you know, its ***who*** you know
- Cognitive Social Networks:
  - Its not who you know, its ***who others think*** you know
- Knowledge Networks:
  - Its not who you know, its ***what others think*** you know

Cognitive Knowledge Networks

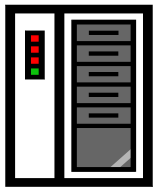


Interaction Networks

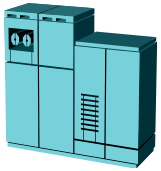


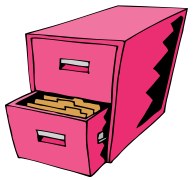
(Contractor, 2001)

Cognitive Knowledge Networks



Non Human Agent's Perception of Resources in a Non Human Agent





Non Human Agent's Perception of what a Human Agent knows*

Human Agent's Perception of Provision of Resources in a Non Human Agent

Human Agent's Perception of What Another Human Agent Knows

Why Netflix thinks I am gay and Amazon thinks I am pregnant …. (Contractor, 2001)

3D Strategy for Enhancing Knowledge Networks

- **Discovery**: Effectively and efficiently foster network links from people to other people, knowledge, and artifacts (data sets/streams, analytic tools, visualization tools, documents, etc.)
  - ***"If only* we knew *what* we *knew".***

- **Diagnosis**: Assess the "health" of internal and external networks - in terms of scanning, absorptive capacity, diffusion, robustness, and vulnerability to external environment

- **Design**: Model or re-wire networks using social and organizational incentives (based on social network research) and network referral systems to enhance evolving and naturally sustainable networks

“Discovery” Problems in Knowledge Networks

- IDC found Fortune 500 companies lose $31.5 billion annually due to rework and the inability to find information

- The Delphi Consulting Group found that:
  - Only 12 percent of a typical company's knowledge is explicitly published → remaining 88 percent is ‘distributed knowledge’, comprised of employees' personal knowledge
  - Up to 42 percent of knowledge professionals need to do their jobs comes from other people's brains - in the form of advice, opinions, judgment, or answers; not from the channels in an organizational chart

Discovery Challenges

1. Who knows *who*?
2. Who knows *what*?
3. Who know *who knows who*?
4. Who knows *who knows what*?

From whom do we seek information?

From whom do we seek information?

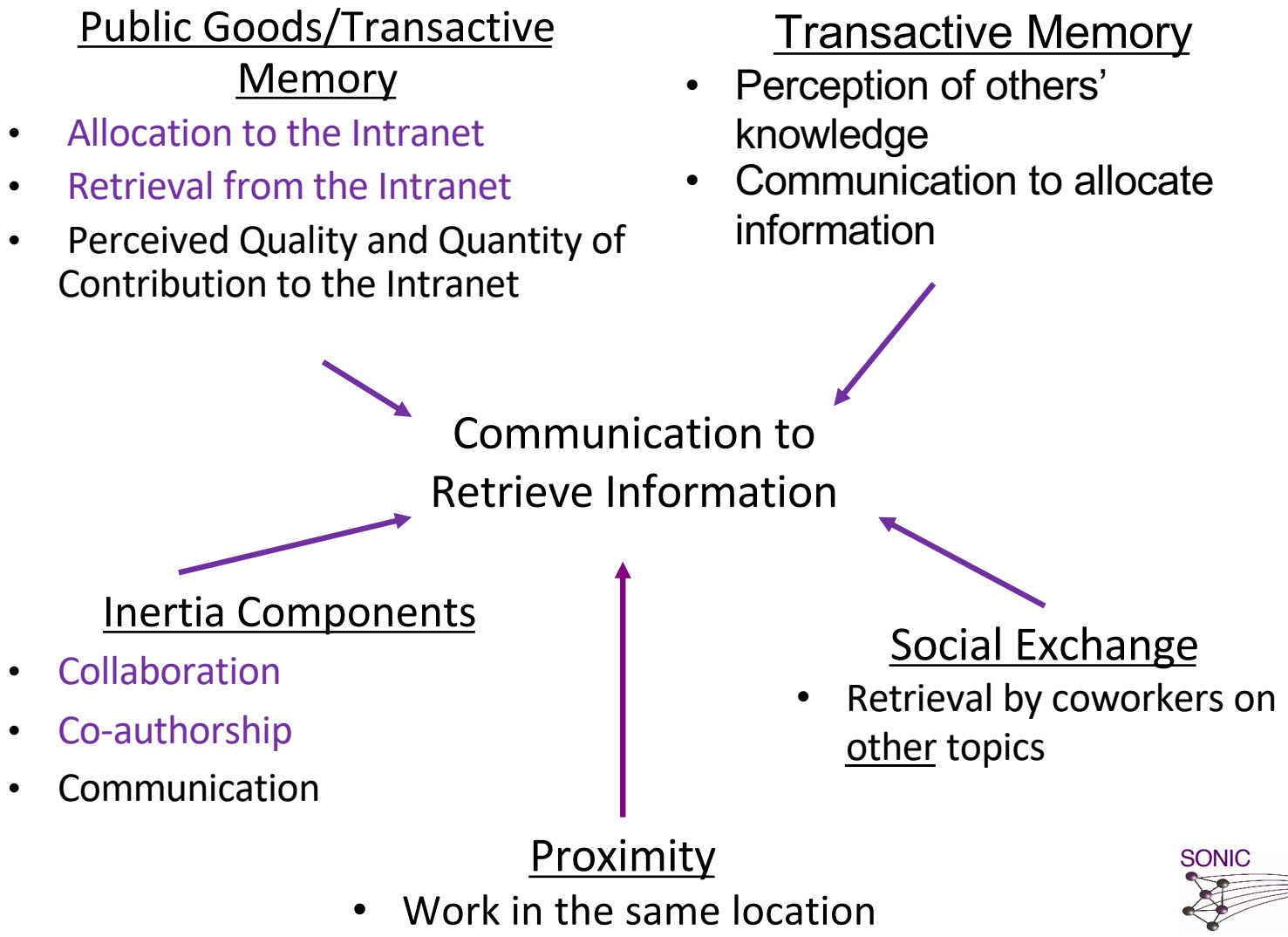
www.hbr.org

Competent Jerks, Lovable Fools, and the Formation of Social Networks

by Tiziana Casciaro and Miguel Sousa Lobo

Empirical Illustration Co-evolution of knowledge networks and 21st century organizational forms

- NSF KDI Initiative. PI: Noshir Contractor, University of Illinois.
- Co-P.I.s: Bar, Fulk, Hollingshead, Monge (USC), Kunz, Levitt (Stanford), Carley (CMU), Wasserman (Indiana).
- Three dozen industry partners (global, profit, non-profit):
  - Boeing, 3M, NASA, Fiat, U.S. Army, American Bar Association, European Union Project Team, Pew Internet Project, etc.

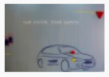

Public Goods/Transactive Memory
• Allocation to the Intranet
• Retrieval from the Intranet
• Perceived Quality and Quantity of Contribution to the Intranet
Transactive Memory
• Perception of others' knowledge
• Communication to allocate information
Communication to Retrieve Information
Inertia Components
• Collaboration
• Co-authorship
• Communication
Social Exchange
• Retrieval by coworkers on other topics
Proximity
• Work in the same location

Predictors of Communication to Retrieve Information

	Odds (0.5 = neutral)
1. Social Communication	0.144
2. Perception of Knowledge & Communication to Allocate	0.995
3. Perception of Knowledge & Provision	0.972
4. Perception of Knowledge, Social Exchange, & Social Communication	0.851
5. Perception of Knowledge, Proximity, & Social Communication	0.882

THE WALL STREET JOURNAL.


CBO Sees 14 Million More Uninsured Next Year


Intel Makes Big Bet on Self-Driving Tech in

Yahoo's Mayer to Get $23 Million Golden


Lincoln to Build Cars in China, in Pursuit of

One I 6,905 Leads Millic

BUSINESS | JOURNAL REPORTS: LEADERSHIP

In Search of a Perfect Team at Work

Who works best with whom? Companies are crunching lots of data about their employees to answer that question.

AI is supplementing intuition in personnel decisions at some companies. *ILLUSTRATION: MICHAEL WARASKA FOR THE WALL STREET JOURNAL*

By STU WOO

1 COMMENTS

Updated March 12, 2017 11:02 p.m. ET


Microsoft Teams


LinkedIn

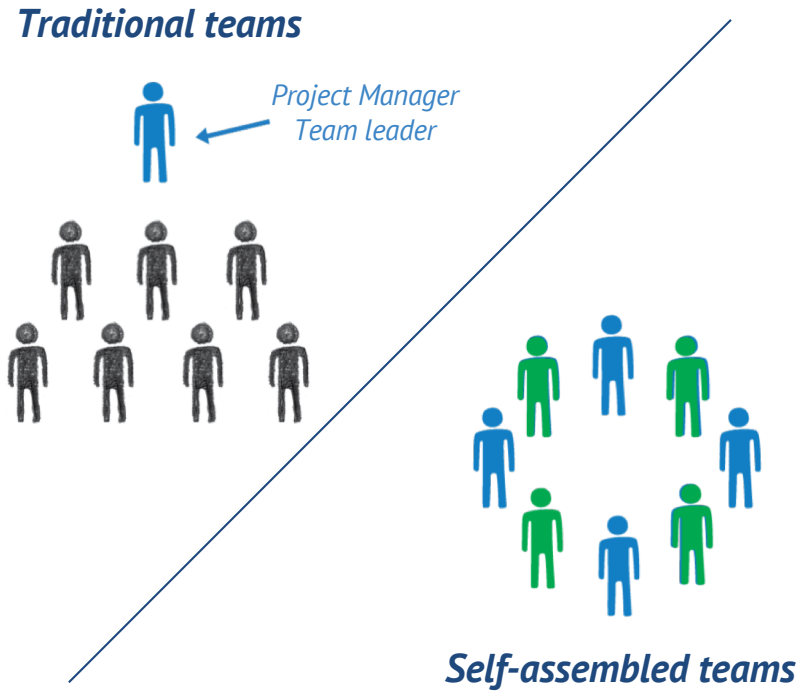

Workplace


jive

Self-assembled teams

Contemporary teams are self-assembling with increasing frequency. We see them in organizations, crowdsourcing, virtual teams, and research projects.

However, the majority of the teams literature up until this point has focused on randomly assigned or staffed teams.



Four ways to assemble teams

		Dimension 2: Structured Information	
		Absent	Present
Dimension 1: Personal Agency	Absent	*I. Ad-hoc team formation, e.g., random assignment to teams; team membership determined based on another factor or arbitrarily*	*III. Team staffing*
	Present	*II. Naturalistic team formation Teaming with acquaintances, Teaming with friends*	*IV. Informed agentic formation*

Four ways to assemble teams

		Dimension 2: Structured Information	
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	Present	*II. Naturalistic team formation Teaming with acquaintances, Teaming with friends*	*IV. Informed agentic formation*

Who Would You Like to Work With?

Use of Individual Characteristics and Social Networks in Team Formation Systems

Diego Gómez Zará[12], Matthew Paras[1], Marlon Twyman[1],
Jacqueline Ng[1], Leslie A. DeChurch[1], Noshir S. Contractor[1]

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Evanston, IL, USA

[2]Pontificia Universidad Católica de Chile
Santiago, Chile

Northwestern University

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What do people look for when they search teammates?

This team assembly strategy offers to individuals choosing and looking for other teammates freely.

However, relatively little is known about how individuals search for teammates and what characteristics they look for.

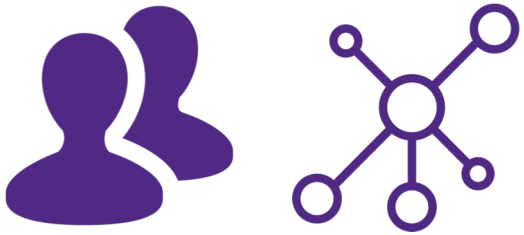
We explored the roles of **human capital** (i.e. abilities, competence, technical skills, soft skills like communication, and/or experiences of individuals) and **social capital** (i.e. quality of one's relationships with others and access to their resources) in team formation.

What social dimensions explain people's search preferences?

Human Capital

Competence  Warmth

Social Capital

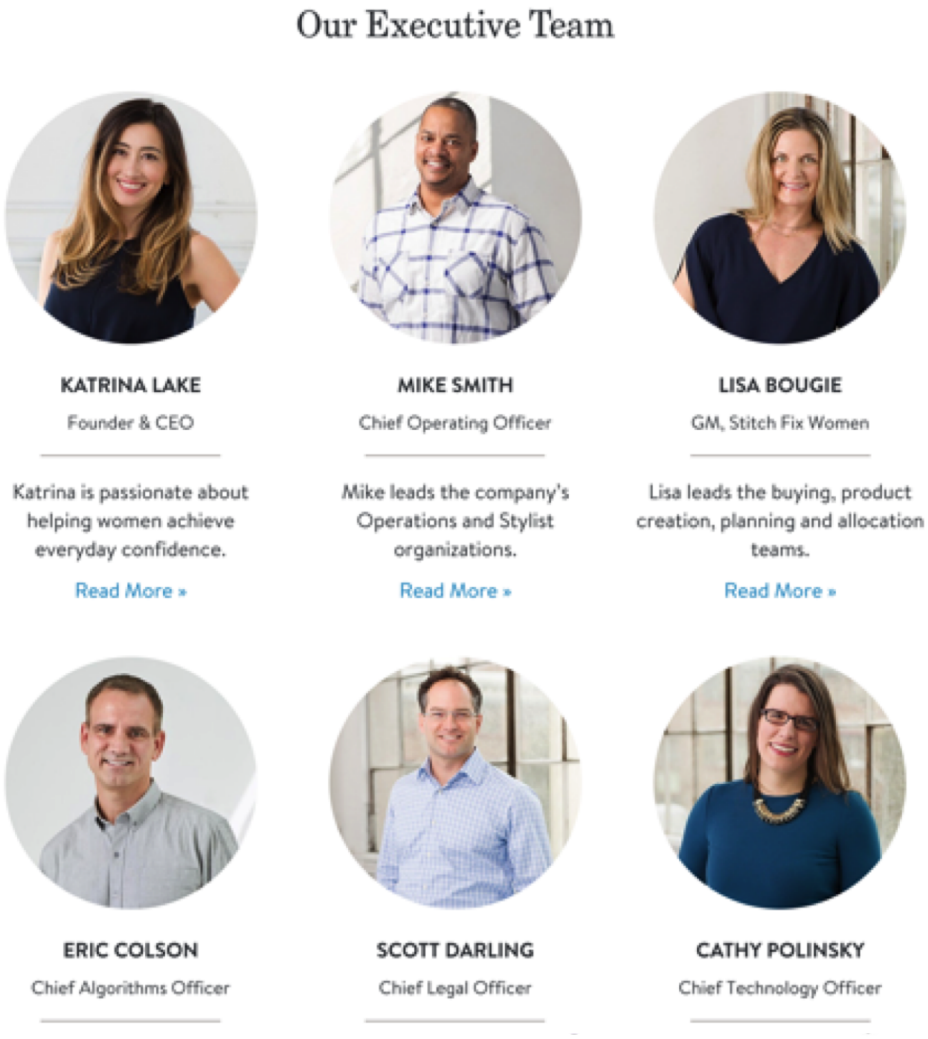
Bonding capital  Bridging capital

What do people look for when choosing teammates?

Competence

It reflects traits related to perceived ability, including intelligence, skill, creativity and efficacy (Fiske, Cuddy, & Glick, 2007).

Stitch Fix



Stitch Fix | Your Personal Stylist. (n.d.). Retrieved May 20, 2018, from https://www.stitchfix.com/about

What do people look for when choosing teammates?

Warmth

It captures traits that are related to perceived intent, including friendliness, helpfulness, sincerity, trustworthiness and morality (Fiske, Cuddy, & Glick, 2007)

Blue Apron

Our Story

In the summer of 2012, Matt Salzberg, Ilia Papas, and Matt Wadiak tested the first Blue Apron recipes in their tiny New York City apartments. Their goal was to make the experience of cooking with quality produce and specialty ingredients accessible to everyone, no matter where they live or how busy they are. The three hand-packed the first Blue Apron boxes themselves, delivered them to family and friends, and received immediate positive feedback.

Four years later, Blue Apron has expanded tremendously and as a team, we work every day to live and breathe our mission. We send over 8 million meals per month to our home chefs nationwide, and we have thousands of employees that work across four offices to ensure each customer gets the highest quality product every week.

Worn by apprentice chefs in France, the Blue Apron has become a symbol of lifelong learning in cooking. Since the beginning, the entire Blue Apron team has been awed by the dedication of our customers to their culinary education. We're thrilled to be welcomed into our customers homes and part of their weekly cooking routine.

Our mission is to make incredible home cooking accessible for everyone. (n.d.). Retrieved May 20, 2018, from https://www.blueapron.com/pages/our-team

ATLAS ADVANCING TEAMS, LEADERS, & SYSTEMS

SONIC advancing the science of networks in communities

What do people look for when choosing teammates?

Bonding capital

It characterizes the quality of a connection between two people, and work on strong and weak ties (Granovetter, 1977).

What do people look for when choosing teammates?

"So I started Warby Parker with three friends, Jeff Raider, Andy Hunt and Dave Gilboa. We happened to be talking about glasses. We were doing so in the computer lab in Huntsman Hall at Wharton. Dave was complaining that he just lost a $700 pair of glasses. He left it in the seat pocket of an airplane because he was traveling right before school started... Andy had a similar story, Jeff had a similar story. Andy posited the question, "Why isn't anybody selling glasses online?"... And I think we take that all for granted, but eight years ago, before we launched Warby Parker, nobody thought you could sell glasses online. But for us, the light bulbs started to go off."

What do people look for when choosing teammates?

Bridging capital

It characterizes the degree to which someone occupies an advantaged position in a social networks, the class case of which is brokerage (Burt, 2000).

Getaround

Meet our founders

Jessica Scorpio
VP Marketing
Our rainmaker. Born in Canada, raised in Florida. Former political aide and non-profit founder. Jessica is the visionary behind our marketing and business strategy.

Sam Zaid
CEO
Our North Star. Born in England, raised in Canada. 2 time startup founder, former engineer and active mentor. Sam inspires us all to be better and he's the driving force behind our product.

Elliot Kroo
VP Technology
Our local. Born and raised in Stanford, California. Former Googler and successful iPhone app developer. Elliot is the genius behind our technology.

Getaround. (n.d.). Retrieved March 20, 2018, from https://www.getaround.com/about

Research questions

In order to better understand how individuals look for teammates in self-assembled teams, we conducted a field experiment to explore two overarching questions:

RQ1: Do people seek out human capital or social capital in searching for collaborators?

RQ2: What individual traits can explain individuals' preferences for human capital or social capital?

Research design

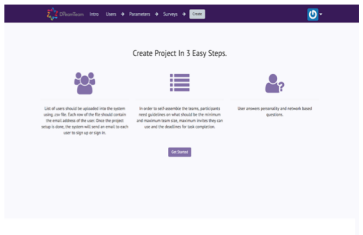
Procedure

We used a team search/recommender system called “My Dream Team Builder” to see the influence of participants’ traits and networks to their teammates searches.

This platform assists in forming new teams in higher education settings. We used a combination of survey and server data to explore our research question.

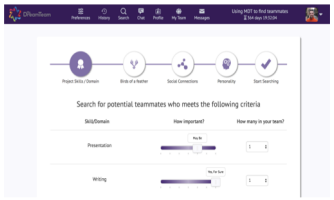
My DreamTeam

My Dream Team Platform

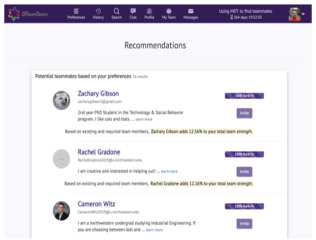


Create a project
(Administrator Setup)

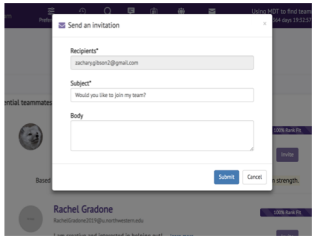
Initial survey



Search for Teammates

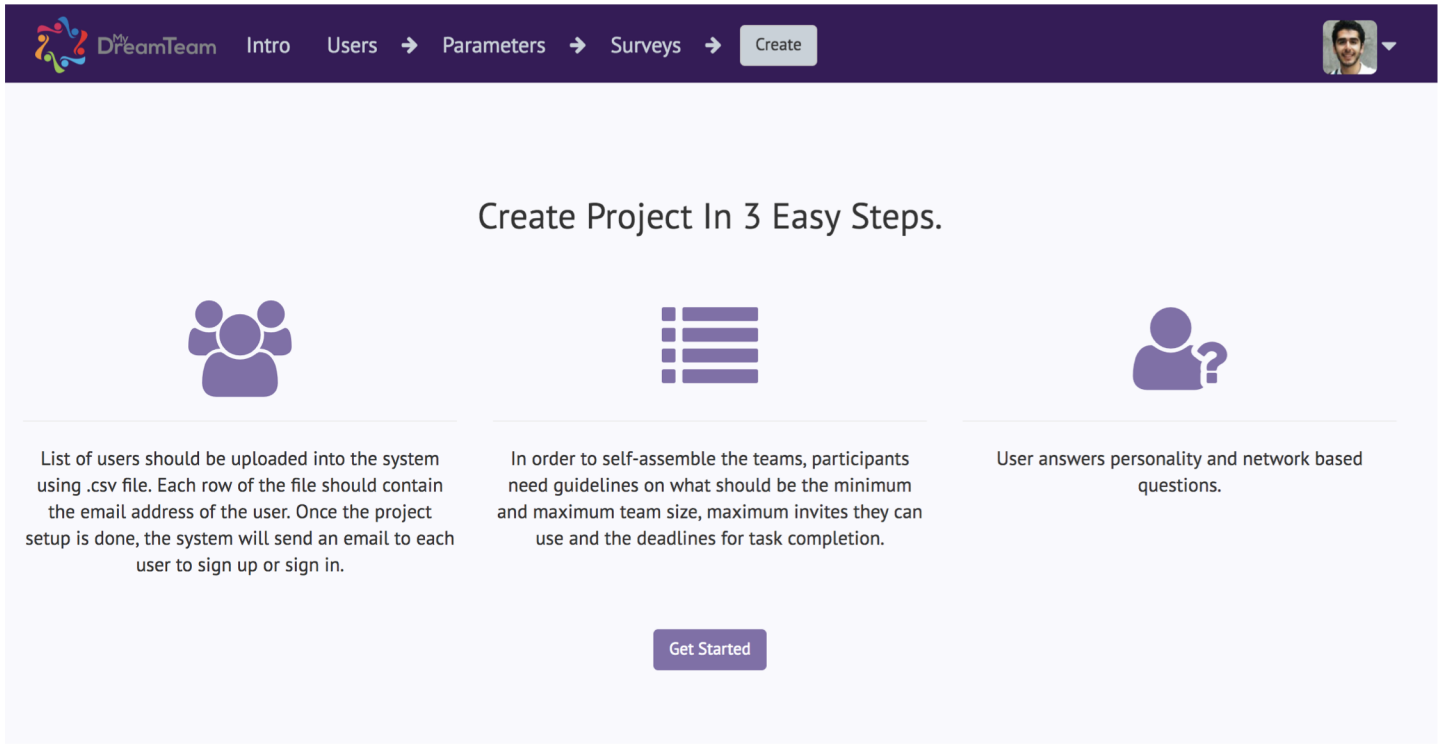


View Teammate Profiles

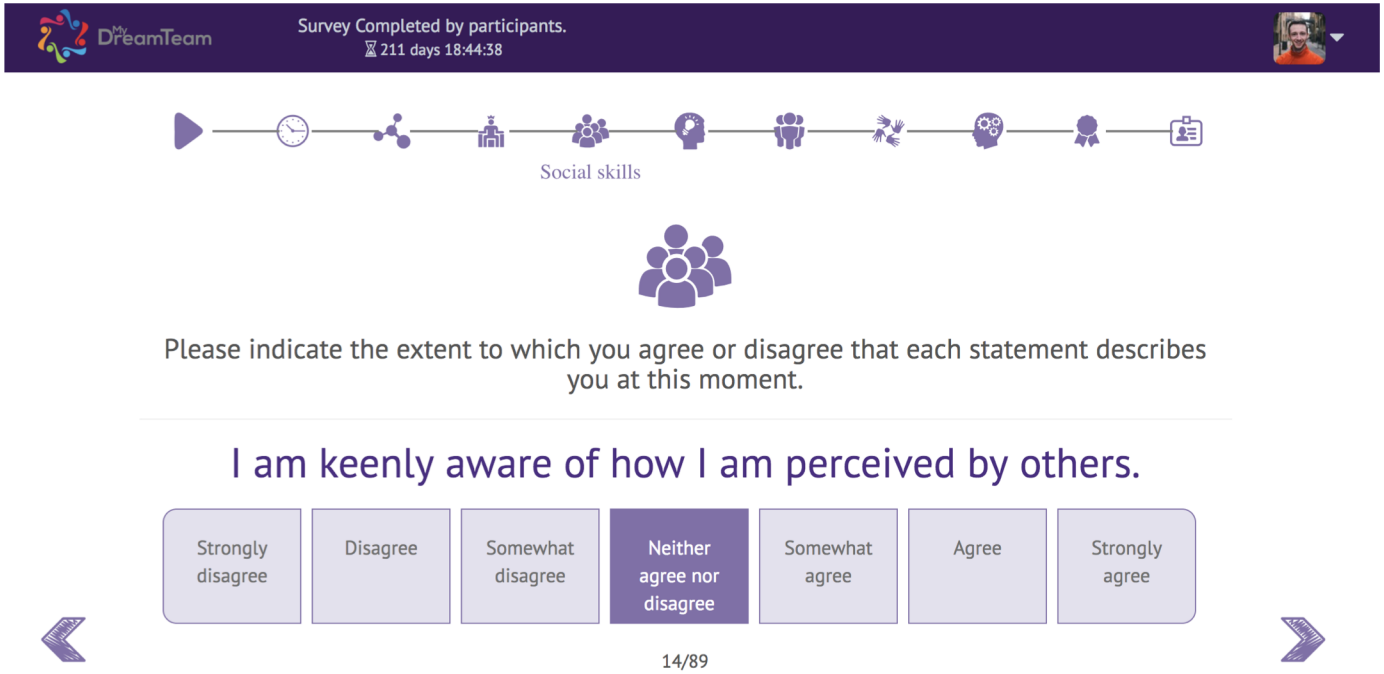


Form Teams

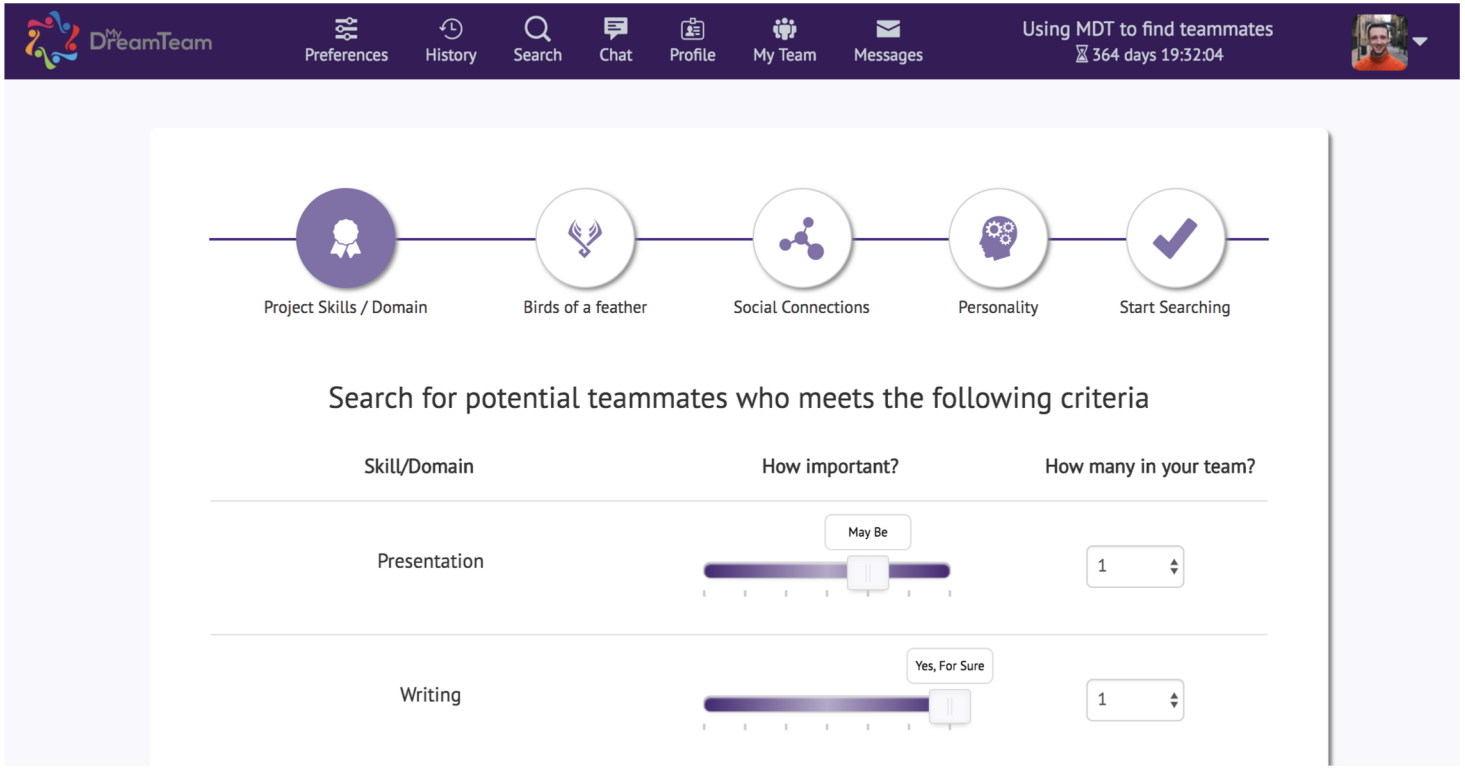
1. Create a project



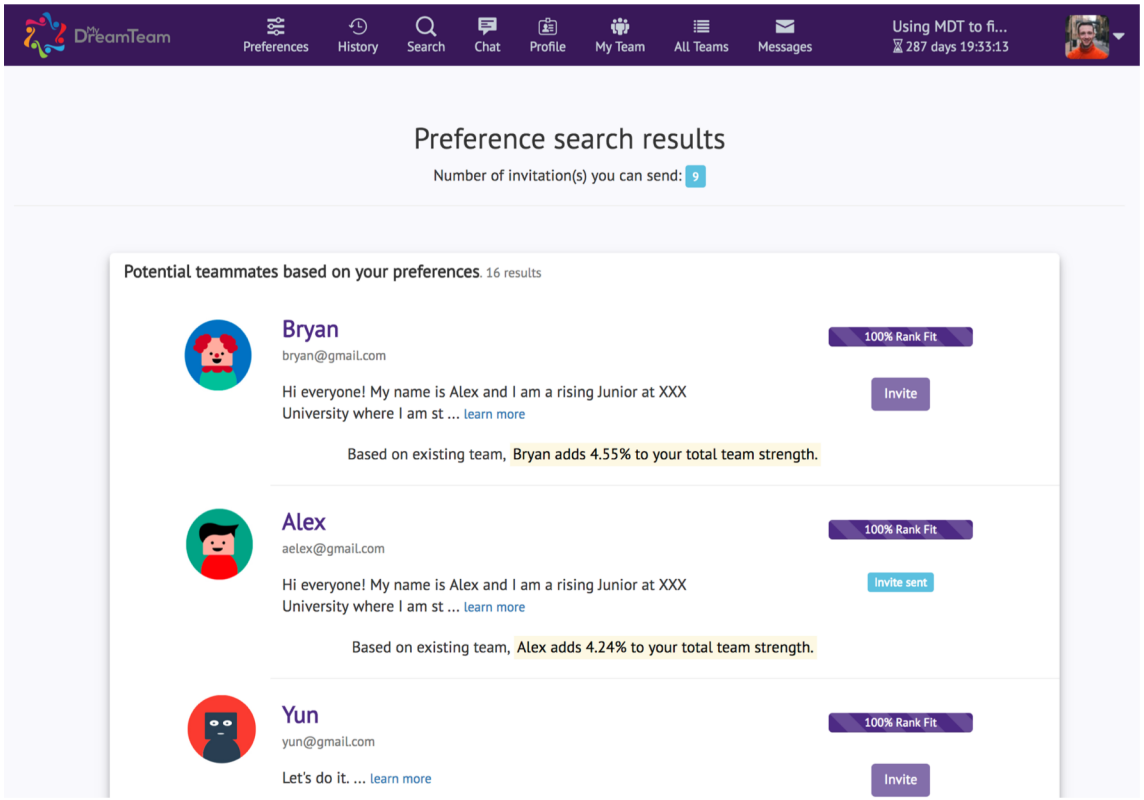
2. Initial survey



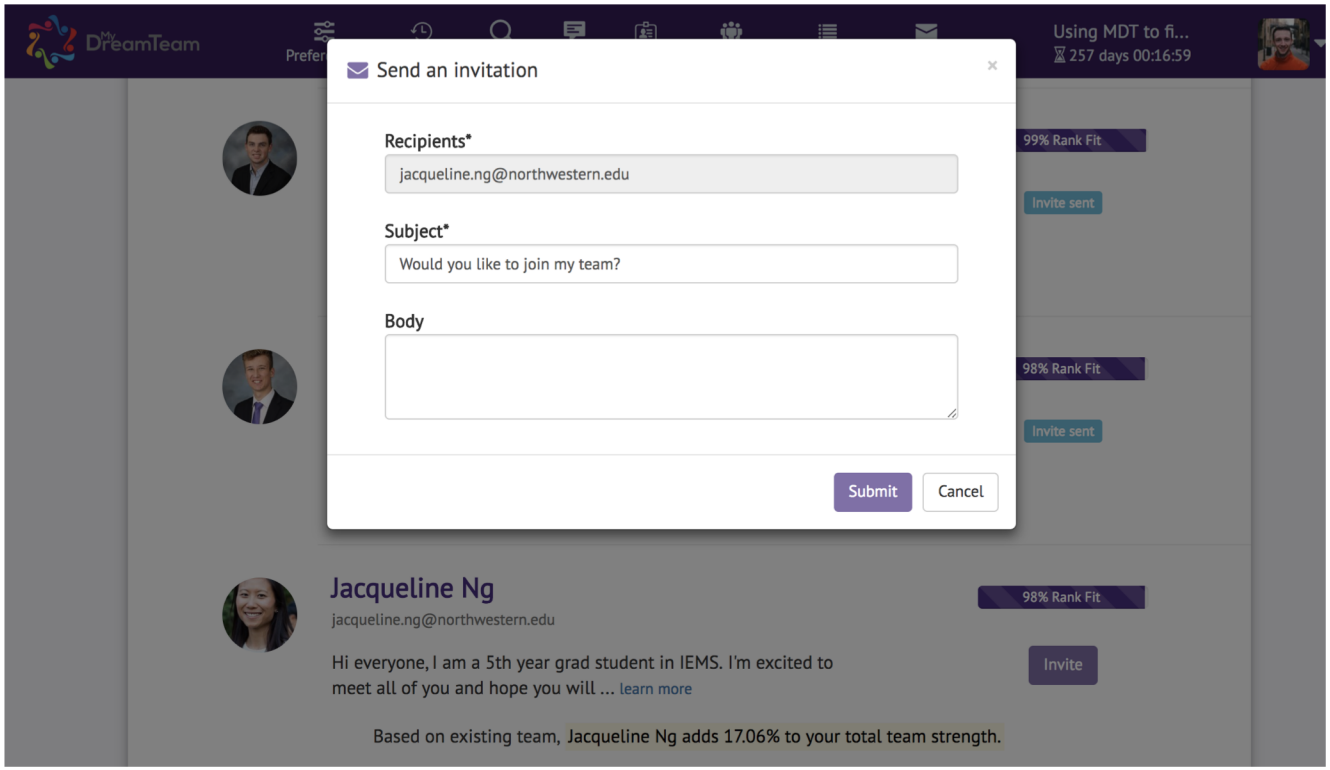
3. Search for teammates



4. View teammate profiles



5. Form teams


DreamTeam
Using MDT to fi...
257 days 00:16:59
Send an invitation
Recipients*
jacqueline.ng@northwestern.edu
Subject*
Would you like to join my team?
Body
Submit
Cancel
99% Rank Fit
Invite sent
98% Rank Fit
Invite sent
Jacqueline Ng
jacqueline.ng@northwestern.edu
98% Rank Fit
Hi everyone, I am a 5th year grad student in IEMS. I'm excited to meet all of you and hope you will ... learn more
Invite
Based on existing team, Jacqueline Ng adds 17.06% to your total team strength.

Field study

Setting		N	Females	Age Mean (SD)	Team Goal
1	Undergraduate course: Leadership	117	44%	20.21 (1.95)	Team leadership case analysis
2	Undergraduate course: SNA	74	39%	20.78 (1.19)	Consulting project
3	Undergraduate course: SNA	19	79%	19.68 (1.06)	Team leadership case analysis
4	Undergraduate course: SNA	57	41%	22.00 (1.67)	Consulting project
5	Executive education course: Networks	60	55%	30.42 (7.75)	Case analysis
6	Executive education course: Networks	61	62%	30.95 (9.01)	Case analysis
7	Graduate course: SNA	33	51%	26.03 (4.05)	Network analysis using Twitter data
8	Faculty Workshop	101	52%	46.25 (10.25)	Create a digital prototype to support students' learning

What did we measure?

	Interpersonal Constructs	Measured Variables
Human Capital	Competence	Respondents rated themselves on six project-related skills (5-item scale, α=.61)
	Warmth	Psychological collectivism (15-item scale[1],α=.90); Leadership propensity (8-item scale[2],α=.79); Social skills (7-item scale[3],α=.86); Creativity (3-item scale[4],α=.90); Personality (5 factors, 4-item scales[5],α=(O).78,(C).75,(E).80,(A).79,(N).64)
Social Capital	Bonding	Respondents completed a network survey: "Who on this list do you know?," "Who have you worked with on projects?," and "With whom on this list do you enjoy working?"
	Bridging	Network centrality measures computed from the network survey: popularity (indegree), brokers, and second-level contacts.

Note. *[1]Psychological collectivism measured using Jackson, Colquitt, Wesson, & Zapata-Phelan (2006); [2]Leadership propensity measuredd using Mumford, O'Connor, Clifton, Connelly, & Zaccaro (1993); [3]Social skills measured using Ferris, Witt, & Hochwarter (2001); [4]Creativity measured using Tierney, & Farmer, (2002); [5]Big five factors of personality measured using Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough (2006)*

Descriptive statistics

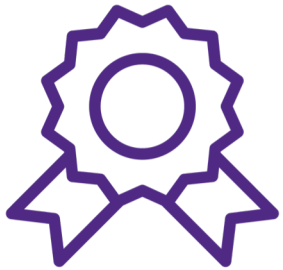
Study									
Variable	1	2	3	4	5	6	7	8	**Total**
Number of participants	117	74	19	57	60	61	33	101	**522**
Number of searches	410	55	104	41	190	49	87	219	**1,155**
Search queries per user; Mean (SD)	4.77 (12.28)	2.29 (2.31)	3.25 (3.5)	2.41 (1.66)	3.96 (3.94)	2.04 (1.81)	2.64 (2.42)	4.98 (7.34)	**3.75 (7.45)**
Max number of searches made by a user	113	11	16	7	15	9	13	39	**113**
Number of search preferences used per query	9.04 (4.48)	10.13 (4.05)	13.56 (3.94)	9.37 (3.1)	12.01 (5.09)	7.73 (4.84)	10.68 (4.24)	8.1 (4.25)	**9.89 (4.76)**

Results

What did participants look for?

Distribution of the search parameters across all the users' queries (# queries = 1,155)

Competence
44.85%



Warmth
31.95%

Bonding capital
13.76%

Bridging capital
9.42%

What did participants look for?

Number of queries = 1,155

		Attribute	Number of search queries that include this attribute	Proportion of searches that include this attribute (%)
Human Capital	Competence	Project Skill #1	855	74.03%
		Project Skill #2	834	72.21%
		Project Skill #3	790	68.40%
		Project Skill #4	751	65.02%
		Project Skill #5	708	61.30%
		Project Skill #6	599	51.86%
	Warmth	Psychological collectivism	868	75.15%
		Creativity	855	74.03%
		Social skills	834	72.21%
		Leadership propensity	353	30.56%
		Similar personality	322	27.88%
Social Capital	Bonding Capital	Worked with in the past	541	46.84%
		Friendship	522	45.19%
		Shared collaborators	329	28.48%
	Bridging capital	Social network brokers	308	26.67%
		Popularity: prior collaborators	243	21.04%
		Popularity: known	203	17.58%
		Popularity: friendship	199	17.23%

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Competence were the most used search preferences (51-74%)

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Warmth search preferences were also used frequently: creativity, teamwork, and social skills.

What did participants look for?

Number of queries = 1,155

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Social Capital	Bonding Capital	Friendship	522	45.19%
		Shared collaborators	329	28.48%
		Social network brokers	308	26.67%

Prior collaborations and friendships were the most used social capital search preferences

What did participants look for?

Number of queries = 1,155

		Attribute	Number of search queries that include this attribute	Proportion of searches that include this attribute (%)
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		Project Skill #3	790	68.40%
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		Project Skill #5	708	61.30%
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		Friendship	522	45.19%
		Shared collaborators	329	28.48%
		Social network brokers	308	26.67%
	Bridging capital	Popularity: prior collaborators	243	21.04%
		Popularity: known	203	17.58%
		Popularity: friendship	199	17.23%

Lastly, users looked for social brokers and people who have been working with many others.

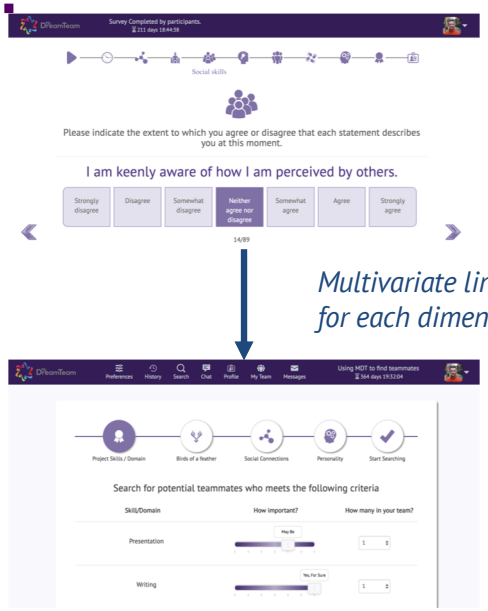
What users' attributes explain their search preferences?

We performed a multivariate linear regression to predict how people's traits, competence skills, and social networks influenced the number of search preferences for *competence*, *warmth*, *bonding capital*, and *bridging capital*.

The DVs are the number of times that they used search preferences in each query.

The IVs are users' responses in the initial survey.

IVs: Users' survey responses



DVs: Number of search preferences used in each query

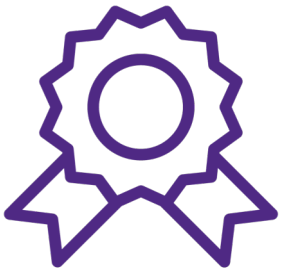
Competence

We create three additional measures for competence:

- Overall expertise:
  - Average user's self-reported score on the six project skills.
- Technical score:
  - Average user's self-reported scores in technical skills (e.g. web scraping, statistics)
- Soft score:
  - Average user's self-score in soft skills (e.g. presentation, communication, writing, etc.)
- Scarcity:
  - We defined it as the limited availability of a skill possessed by some participants in a group.
  - For each skill, we calculate the self-reported score of each user and see how many participants reported having an equal or better score than this participant.

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	-0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

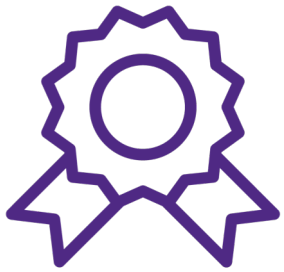


Competence

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	**0.62 (0.19)****	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***			0.09)***
Collective score	0.22 (0.09)*			(0.05)*
Social skills score	-0.28 (0.14)			(0.08)
Leadership score	-0.13 (0.13)			(0.08)
Personality				
Agreeableness score	0.24 (0.09)**			0.05)***
Conscientiousness score	-0.08 (0.09)			(0.05)
Extraversion score	-0.18 (0.09)*			(0.05)
Neuroticism score	0.01 (0.09)			(0.05)
Openness score	0.23 (0.19)			(0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Women used competence search preferences more frequently than men



Competence

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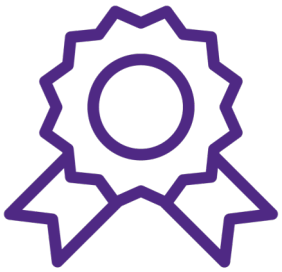
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	**0.63 (0.15)*** **			0.09)***
Collective score	**0.22 (0.09)***			(0.05)*
Social skills score	-0.28 (0.14)			(0.08)
Leadership score	-0.13 (0.13)			(0.08)
Personality				
Agreeableness score	0.24 (0.09)**			0.05)***
Conscientiousness score	-0.08 (0.09)			(0.05)
Extraversion score	-0.18 (0.09)*			(0.05)
Neuroticism score	0.01 (0.09)			(0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Creative people used more competence search preferences



Competence

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
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Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	-0.08 (0.05)	-0.12 (0.05)*	-0.02 (0.05)
Openness score	0.23 (0.19)			
Competence				
Overall expertise	**11.75 (3.92)****			
Technical score	-4.31 (1.49)**			
Soft score	-4.46 (1.62)**			
Scarcity score	-0.33 (0.08)***			
Contact network				
Indegree	0.84 (0.24)***			
Outdegree	-0.37 (0.16)*			
Betweenness	-0.28 (0.13)*			
Closeness	0.06 (0.2)	0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
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Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
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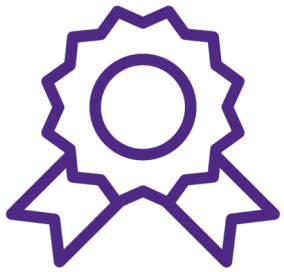
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

People with high overall competence were also looking for others with multiple expertise by selecting multiple search preferences.



Competence

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Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
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Personality				
Agreeableness score	0.24 (0.09)**	0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)			32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**			87 (2.29)*
Technical score	**-4.31 (1.49)****			15 (0.87)*
Soft score	**-4.46 (1.62)****			46 (0.95)**
Scarcity score	**-0.33 (0.08)*****			16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***			69 (0.14)***
Outdegree	-0.37 (0.16)*			0.19 (0.1)*
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Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

However, people with either higher technical or soft skills used fewer search preferences.

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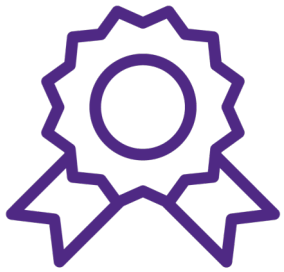

Competence

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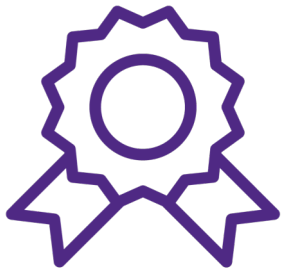
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)			
Competence				
Overall expertise	11.75 (3.92)**			
Technical score	-4.31 (1.49)**			
Soft score	-4.46 (1.62)**			
Scarcity score	-0.33 (0.08)***			
Contact network				
Indegree	**0.84 (0.24)*** **			
Outdegree	**-0.37 (0.16)***			
Betweenness	**-0.28 (0.13)***			
Closeness	0.06 (0.2)			
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

People mentioned as contacts by many used more competence search preferences.
Not the same for those who mentioned many as contacts



Competence

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.8	0.5	0.69
Outdegree	-0.37 (0.16)*			
Betweenness	-0.28 (0.13)*			
Closeness	0.06 (0.2)			
Clustering	-0.02 (0.11)			
Collaboration network				
Indegree	-0.28 (0.31)			
Outdegree	0.21 (0.19)			
Betweenness	0.08 (0.11)			
Closeness	0.23 (0.22)			
Clustering	0.47 (0.2)*			
Friendship network				
Indegree	**-0.46 (0.23)***	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	**-0.75 (0.22)*****	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Finally, people mentioned as friends by many and those who were located in friendship cliques, were less likely to use competence search preferences

Warmth

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.13 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.1	
Competence				
Overall expertise	11.75 (3.92)**	**7.91 (2.3)*** **		
Technical score	-4.31 (1.49)**	**-2.61 (0.88)****		
Soft score	-4.46 (1.62)**	**-2.97 (0.95)****		
Scarcity score	-0.33 (0.08)***	**-0.27 (0.05)*****	-0.1	
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55	
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.1	
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.1	
Closeness	0.06 (0.2)	-0.12 (0.12)	0.2	
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

The main drivers of warmth searches come from highly overall competent individuals.

Warmth

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	[illegible]	[illegible]
Clustering	-0.02 (0.11)	0.21 (0.06)**	[illegible]	[illegible]
Collaboration network				
Indegree	-0.28 (0.31)	**-0.43 (0.18)***	[illegible]	[illegible]
Outdegree	0.21 (0.19)	0.16 (0.11)	[illegible]	[illegible]
Betweenness	0.08 (0.11)	**0.19 (0.07)****	[illegible]	[illegible]
Closeness	0.23 (0.22)	0.01 (0.13)	[illegible]	[illegible]
Clustering	0.47 (0.2)*	0.22 (0.12)	[illegible]	[illegible]
Friendship network				
Indegree	-0.46 (0.23)*	-0.5 (0.14)***	[illegible]	[illegible]
Outdegree	-0.04 (0.18)	-0.25 (0.11)*	[illegible]	[illegible]
Betweenness	0.08 (0.11)	-0.08 (0.06)	[illegible]	[illegible]
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	-0.34 (0.13)**	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

In contrast, people who have been working with many did not use many warmth search preferences

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Warmth

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0	
Closeness	0.06 (0.2)	-0.12 (0.12)	0	
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0	
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0	
Outdegree	0.21 (0.19)	0.16 (0.11)	-0	
Betweenness	0.08 (0.11)	0.19 (0.07)**	0	
Closeness	0.23 (0.22)	0.01 (0.13)		
Clustering	0.47 (0.2)*	0.22 (0.12)		
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*** **	-0	
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0	
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

People who chose many friends, and were chosen as friends by many, were less likely to use warmth search preferences.

Bonding capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	**0.14 (0.06)***	
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	
Neuroticism score	0.01 (0.09)	0.08 (0.05)	**0.12 (0.05)***	
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*****	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Conscientious people and those with higher neuroticism used more bonding capital search preferences.

Bonding capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	**0.55 (0.15)*** **	
Outdegree	-0.57 (0.16)*	0.09 (0.1)	0.04 (0.1)	
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	
Closeness	0.06 (0.2)	-0.12 (0.12)	**0.24 (0.12)***	
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*****	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

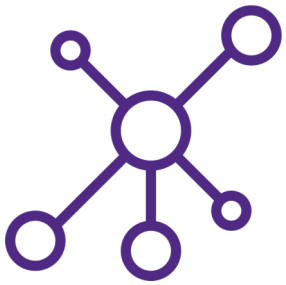
People mentioned by many as contacts, and those who were closer to others, used more bonding capital search preferences

Bonding capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.0			0 (0.01)
Gender (Female)	0.62 (0.1			-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.1			**0.33 (0.09)*** **
Collective score	0.22 (0.0			**0.14 (0.05)***
Social skills score	-0.28 (0.			0.13 (0.08)
Leadership score	-0.13 (0.			-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.0			0.24 (0.05)***
Conscientiousness score	-0.08 (0.			0.06 (0.05)
Extraversion score	-0.18 (0.			0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.57 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	-0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*****	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Creative people and those with team values used more bridging search preferences



Bridging capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.1			0.13 (0.08)
Leadership score	-0.13 (0.1			-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.1			**0.24 (0.05)*** **
Conscientiousness score	-0.08 (0.1			0.06 (0.05)
Extraversion score	-0.18 (0.1			0.07 (0.05)
Neuroticism score	0.01 (0.1			0.02 (0.05)
Openness score	0.23 (0.1			**0.32 (0.11)****
Competence				
Overall expertise	11.75 (5.1			5.87 (2.29)*
Technical score	-4.31 (1.4			-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.57 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.13)*	-0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	0.06 (0.2)	-0.12 (0.12)	0.24 (0.12)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)**	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	-0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*****	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

Participants who were agreeable and open searched for brokers and popular participants.

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Bridging capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.0	[illegible]	)*	0.02 (0.05)
Openness score	0.23 (0.1	[illegible]	2)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.9	[illegible]	[illegible]	**5.87 (2.29)***
Technical score	-4.31 (1.4	[illegible]	)	**-2.15 (0.87)***
Soft score	-4.46 (1.6	[illegible]	)	**-2.46 (0.95)****
Scarcity score	-0.33 (0.08	[illegible]	)*	**-0.16 (0.05)*****
Contact network				
Indegree	0.84 (0.24	[illegible]	***	0.69 (0.14)***
Outdegree	-0.37 (0.1	[illegible]	[illegible]	-0.19 (0.1)*
Betweenness	-0.28 (0.1	[illegible]	)	0.48 (0.08)***
Closeness	0.06 (0.2	[illegible]	)*	0.44 (0.12)***
Clustering	-0.02 (0.11)	0.21 (0.06)	-0.01 (0.06)	0.47 (0.06)***
Collaboration network				
Indegree	-0.28 (0.31)	-0.43 (0.18)*	-0.35 (0.18)	-0.87 (0.18)***
Outdegree	0.21 (0.19)	0.16 (0.11)	-0.01 (0.11)	0.25 (0.11)*
Betweenness	0.08 (0.11)	0.19 (0.07)**	0.06 (0.07)	-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	-0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*****	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)****	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*p < .05, **p < .01, ***p < .001

People with high overall competence used search preferences to find brokers and popular participants.

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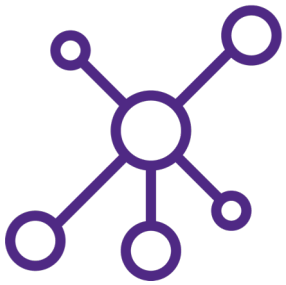
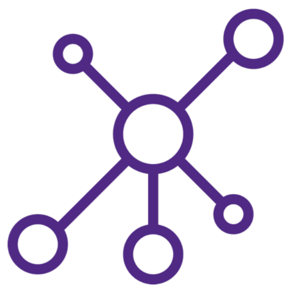


Bridging capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)			-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24			**0.69 (0.14)*** **
Outdegree	-0.37 (0.1			**-0.19 (0.1)***
Betweenness	0.28 (0.1			**0.48 (0.08)*** **
Closeness	0.06 (0			**0.44 (0.12)*** **
Clustering	-0.02 (0.1			**0.47 (0.06)*** **
Collaboration network				
Indegree	-0.28 (0.1			-0.87 (0.18)***
Outdegree	0.21 (0.1			0.25 (0.11)*
Betweenness	0.08 (0.1			-0.12 (0.07)
Closeness	0.23 (0.22)	0.01 (0.13)	-0.19 (0.13)	-0.18 (0.13)
Clustering	0.47 (0.2)*	0.22 (0.12)	0.07 (0.12)	0.11 (0.12)
Friendship network				
Indegree	-0.46 (0.23)*	**-0.5 (0.14)*** **	-0.24 (0.14)	0.1 (0.14)
Outdegree	-0.04 (0.18)	**-0.25 (0.11)***	0.15 (0.11)	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)*** **	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

People who were known by many, who were themselves brokers, and belonged to cliques looked for brokers and popular participants.



Bridging capital

	DV = Number of Search Preferences Used			
	Competence	*Warmth*	*Bonding*	*Bridging*
(Intercept)	-39.03 (14.23)**	-26.55 (8.37)**	0.56 (8.44)	-20.32 (8.32)*
Control				
Age	-0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)	0 (0.01)
Gender (Female)	0.62 (0.19)**	0.07 (0.11)	0.16 (0.11)	-0.13 (0.11)
Individual traits				
Creativity score	0.63 (0.15)***	-0.01 (0.09)	0.09 (0.09)	0.33 (0.09)***
Collective score	0.22 (0.09)*	0.02 (0.06)	-0.01 (0.06)	0.14 (0.05)*
Social skills score	-0.28 (0.14)	0.33 (0.08)***	0.28 (0.09)**	0.13 (0.08)
Leadership score	-0.13 (0.13)	-0.04 (0.08)	-0.06 (0.08)	-0.14 (0.08)
Personality				
Agreeableness score	0.24 (0.09)**	-0.02 (0.05)	0.1 (0.05)	0.24 (0.05)***
Conscientiousness score	-0.08 (0.09)	0.13 (0.06)*	0.14 (0.06)*	0.06 (0.05)
Extraversion score	-0.18 (0.09)*	0.05 (0.05)	0 (0.05)	0.07 (0.05)
Neuroticism score	0.01 (0.09)	0.08 (0.05)	0.12 (0.05)*	0.02 (0.05)
Openness score	0.23 (0.19)	-0.19 (0.11)	-0.13 (0.12)	0.32 (0.11)**
Competence				
Overall expertise	11.75 (3.92)**	7.91 (2.3)***	0.26 (2.32)	5.87 (2.29)*
Technical score	-4.31 (1.49)**	-2.61 (0.88)**	-0.11 (0.88)	-2.15 (0.87)*
Soft score	-4.46 (1.62)**	-2.97 (0.95)**	0.06 (0.96)	-2.46 (0.95)**
Scarcity score	-0.33 (0.08)***	-0.27 (0.05)***	-0.11 (0.05)*	-0.16 (0.05)***
Contact network				
Indegree	0.84 (0.24)***	0.81 (0.14)***	0.55 (0.15)***	0.69 (0.14)***
Outdegree	-0.37 (0.16)*	0.09 (0.1)	0.04 (0.1)	-0.19 (0.1)*
Betweenness	-0.28 (0.17)*	0.01 (0.08)	0.12 (0.08)	0.48 (0.08)***
Closeness	[illegible]	[illegible]	[illegible]	0.44 (0.12)***
Clustering	[illegible]	[illegible]	[illegible]	0.47 (0.06)***
Collaboration network				
Indegree	[illegible]	[illegible]	[illegible]	**-0.87 (0.18)*** **
Outdegree	[illegible]	[illegible]	[illegible]	0.25 (0.11)*
Betweenness	[illegible]	[illegible]	[illegible]	-0.12 (0.07)
Closeness	[illegible]	[illegible]	[illegible]	-0.18 (0.13)
Clustering	[illegible]	[illegible]	[illegible]	0.11 (0.12)
Friendship network				
Indegree	[illegible]	[illegible]	[illegible]	0.1 (0.14)
Outdegree	[illegible]	[illegible]	[illegible]	0.08 (0.1)
Betweenness	0.08 (0.11)	-0.08 (0.06)	-0.11 (0.06)	-0.19 (0.06)**
Closeness	-0.29 (0.18)	0.09 (0.11)	-0.21 (0.11)	0.14 (0.11)
Clustering	-0.75 (0.22)***	**-0.34 (0.13)** **	-0.03 (0.13)	-0.05 (0.13)
R^2	0.23	0.32	0.16	0.36

*$p < .05$, **$p < .01$, ***$p < .001$

But, those who were mentioned as colleagues by many, did not use many search preferences to find brokers and popular users.

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Discussion

What are our main results?

- Users overwhelmingly preferred human capital over social capital when searching for potential teammates.
- Focusing on *human capital*, people used more search preferences related to competence over warmth.
- Turning to *social capital*, the results show that users valued bonding (past collaborators, friendship and shared collaborators) over bridging (people's brokerage, popularity) in their networks

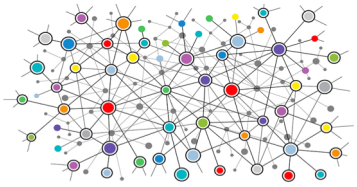
What are our main results?

- The combinations of search preferences were strongly related to users' profiles.
- Segregation patterns: competent people were looking for other competent participants.
  - Participants who possessed multiple skills looked for others who possess multiple skills.
  - Similarly, specialists in one area looked also for other specialists.
- People who possess multiple skills were more likely to use *warmth* search preferences than those who did not possess multiple skills.
- In contrast, people with lot of friends/co-workers used less *warmth* search preferences.

What are our main results?

- In terms of personality, people who used *bonding capital* search preferences were more neurotic and conscientious.
- People who used *bridging capital* search preferences (i) possessed multiple skills, (ii) were more agreeable and open and (iii) popular and brokers in the contact networks.

Study 2



Who invites whom?

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Marlon Twyman

Leslie DeChurch

Daniel Newman

Research Question:
Which factors determine who works together?

The Idea

Human Capital (Competence, Warmth)
Social Capital (Bonding, Bridging)

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Which factors determine who works together?

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Participants

410 **Students in Environmental Ecology & Social Psychology**

2 **Universities**

10 **Weeks**

2 **Semesters**

63 **Teams**

Research Question:
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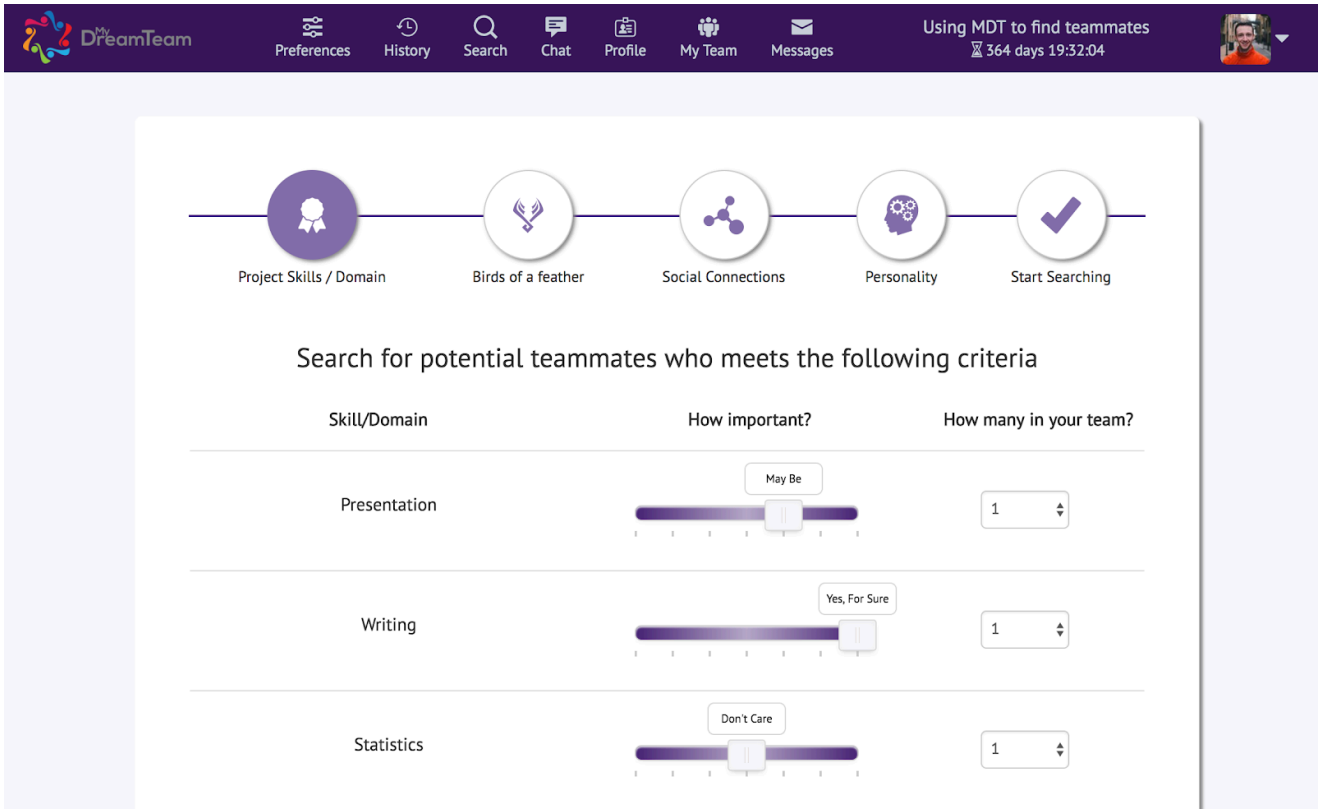
Platform

My DreamTeam

My Dream Team Query Search Tool
2 Weeks to Team Up



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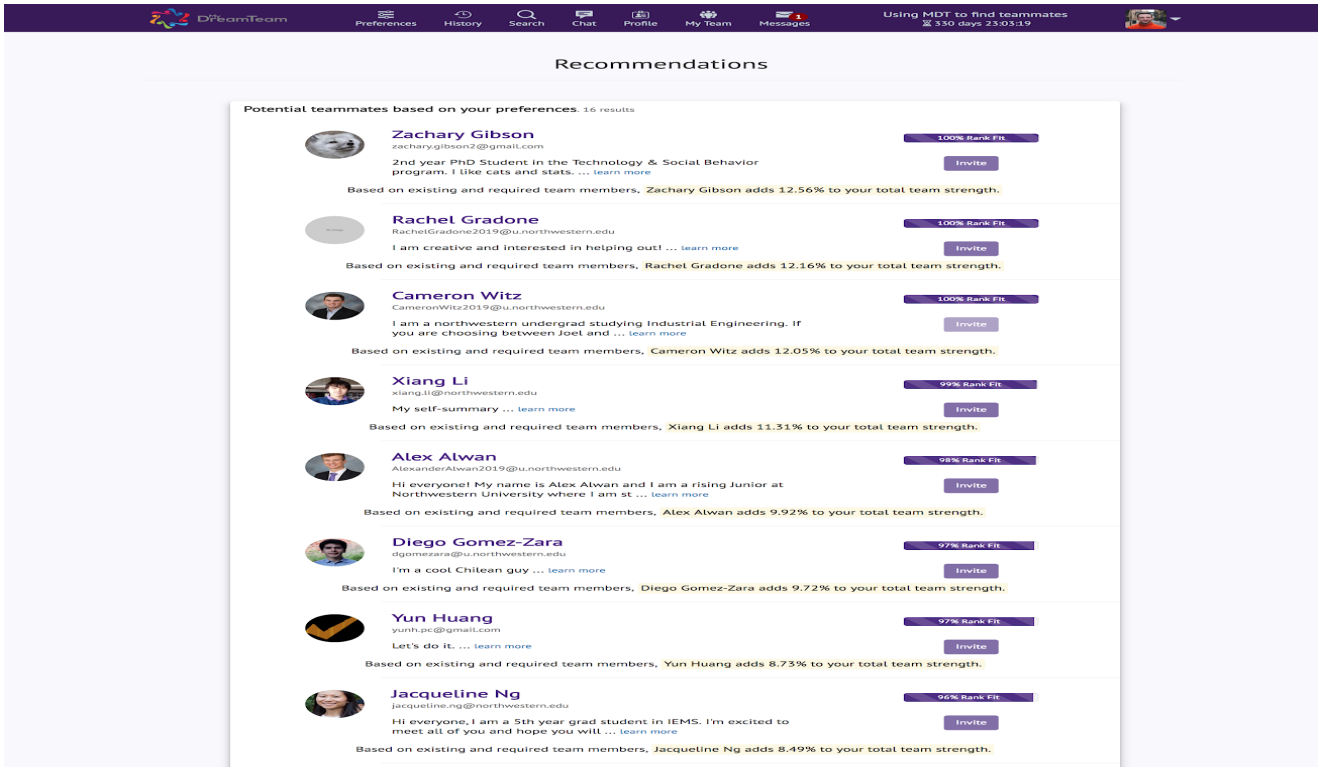

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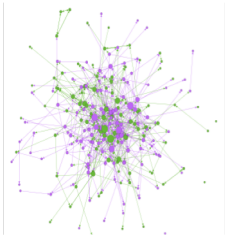
Measures



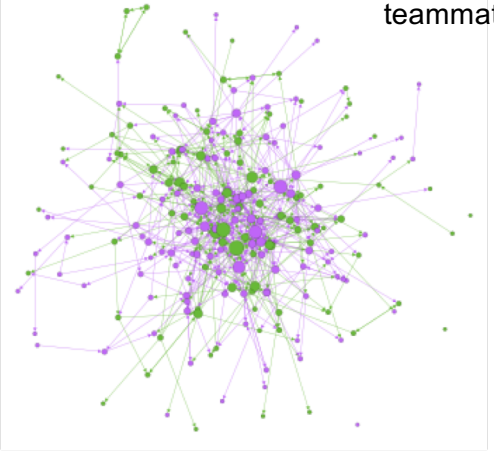
Relationship:
Invitation to Team Up

A Teammate Recommender System

1. People are **3-4x** as likely to team up with **prior collaborators**

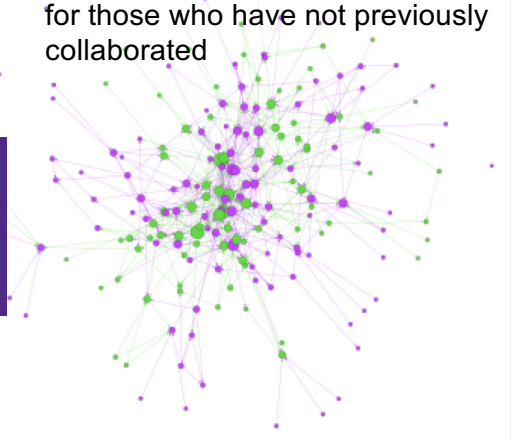
2. People are **1.5-2x** as likely to team up with an **algorithm "recommended"** teammate

3. Algorithmic teammate recommendations significantly improve the chances of teaming up for those who have not previously collaborated



577 invitations in Sample 1 colored by university (Purple = U1, Green = U2)

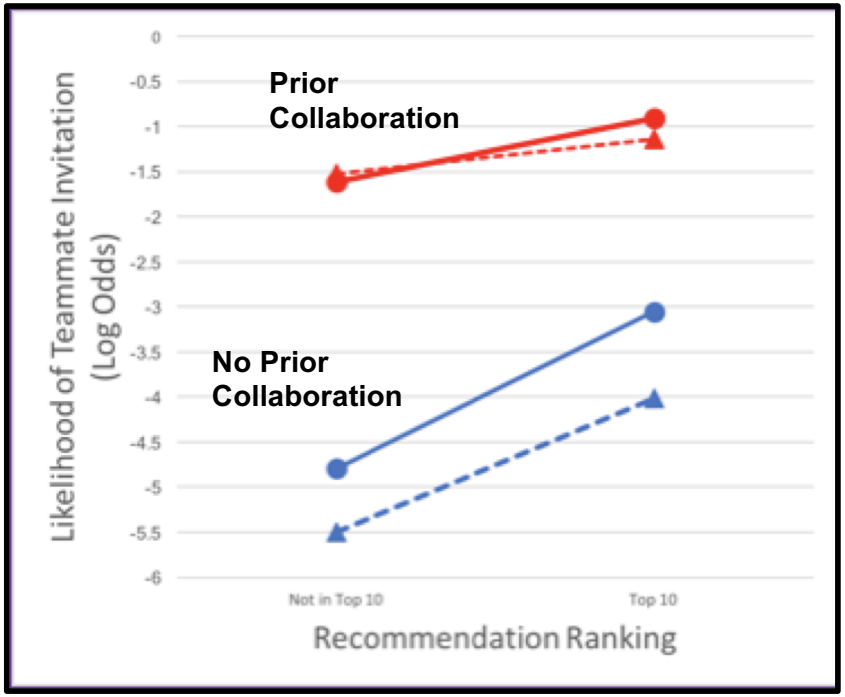
"Invite to collaborate" network



472 invitations in Sample 2 colored by university (Purple = U1, Green = U2)

Note. Exponential random graph models (ERGM) run on the teammate invitation networks of 2 samples; Endogenous controls: Activity, reciprocity, popularity, transitivity, closure; Exogenous controls: Individual's competence, gender homophily, disciplinary homophily

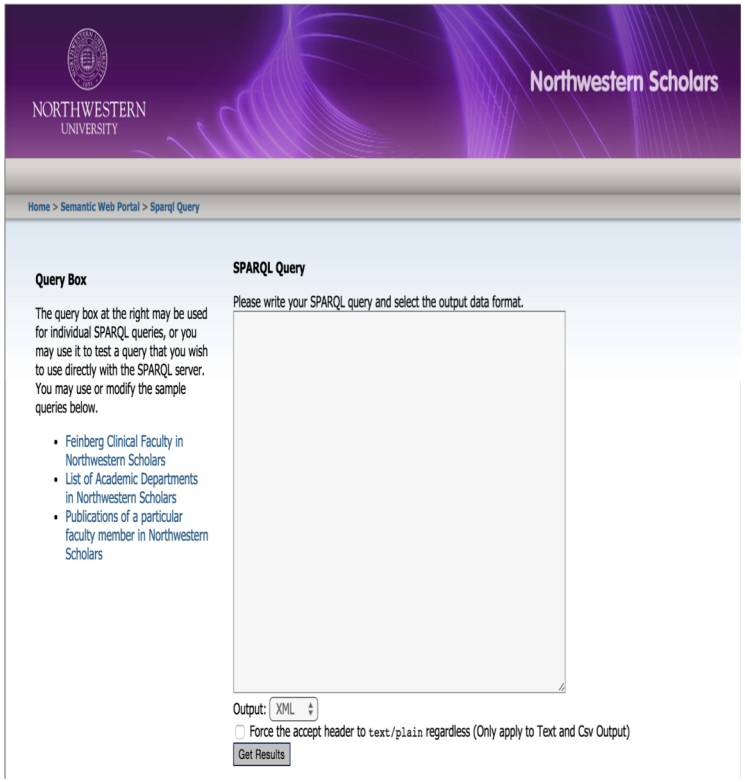
People Were More Likely to Team Up with "Recommended Strangers"



Note. Exponential random graph models (ERGM) run on the teammate invitation networks of 2 samples; Significant interaction represented by multiplicative term "prior collaborator x appeared in top 10 recommended teammates." Interaction term was statistically significant (p<.05) in both samples.

NU VIVO Endpoint

- NU Scholars has implemented a semantic service of its data.
- The data currently available through semantic endpoint is:
  - Researcher Information
  - Journal Articles
  - Awarded Grants
  - Curriculum vitae data



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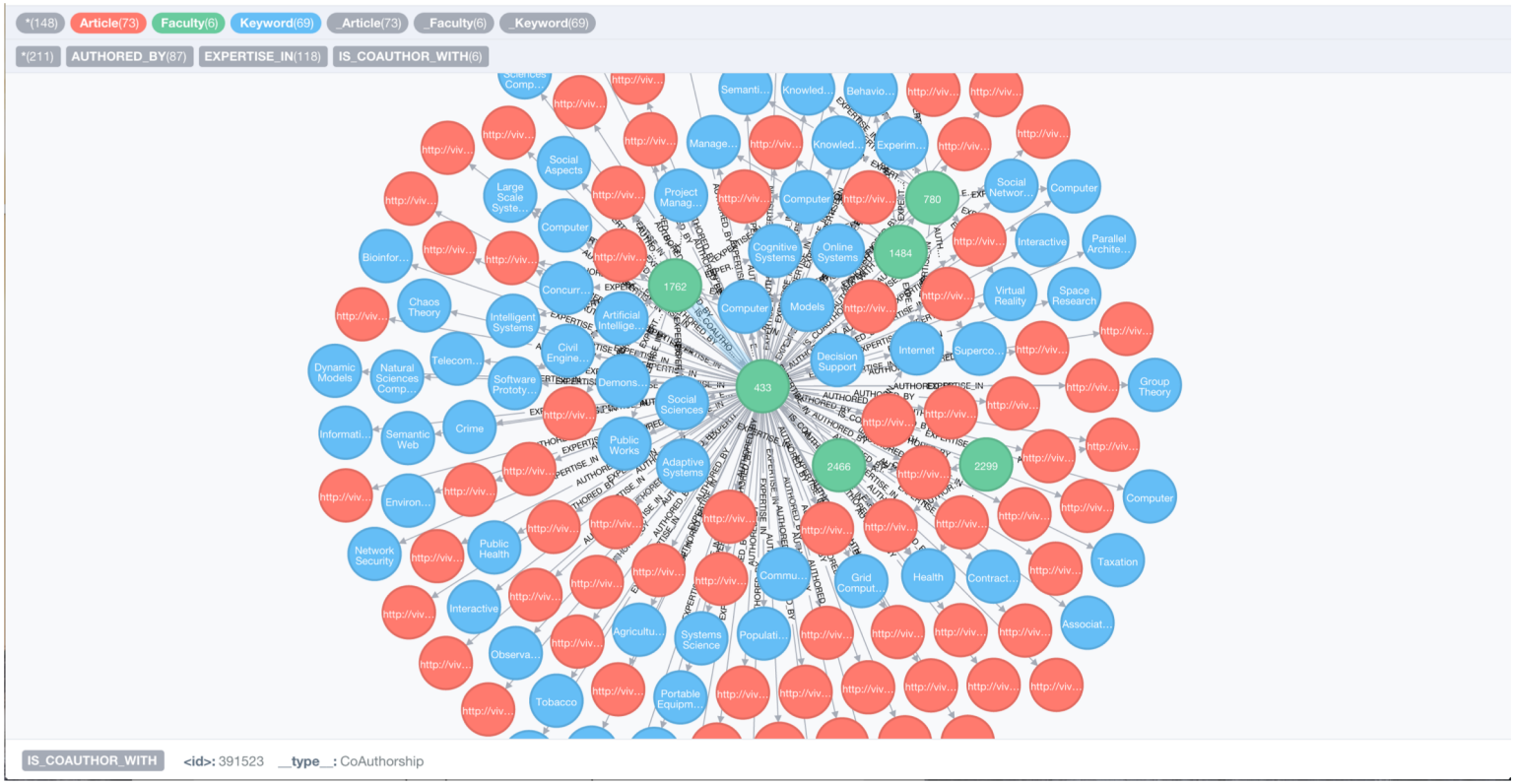
Faculty member (Green), Article (Red) and Keyword (Blue)



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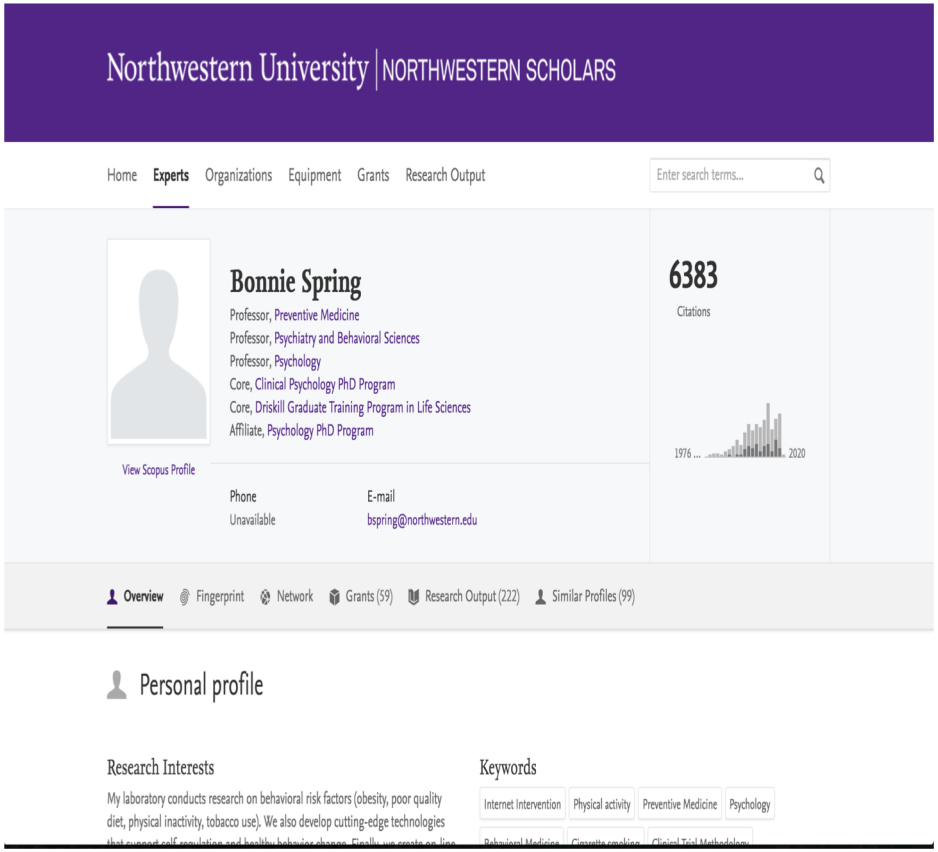
Multi-theoretical, Multi-level (MTML) Collaboration Recommendation Heuristics

I prefer people who…	Heuristic	Social theory	Relations	Metric
Work in my organization	Affiliation	Homophily	affiliation	neighbor
Have a high H-index	Most Qualified	Self-interest	authorship	h-index
Have worked with people I have worked with	Friend of a friend	Balance	co-authorship	count of geodesics
Have worked with many researchers	Follow the crowd	Contagion	co-authorship	in-degree centrality
Serve as brokers in my network	Mobilizing	Collective action	co-authorship	betweenness

Monge, P. R. and N. S. Contractor (2003) Theories of communication networks NY: Oxford University Press

NU Scholars

- Northwestern Scholars is a searchable database of expertise across all disciplines at Northwestern University.
- Shows research interests, publications, grants, productivity, trends and much more.
- Helps find expertise and mentors for students, postdoctoral fellows, and other researchers.



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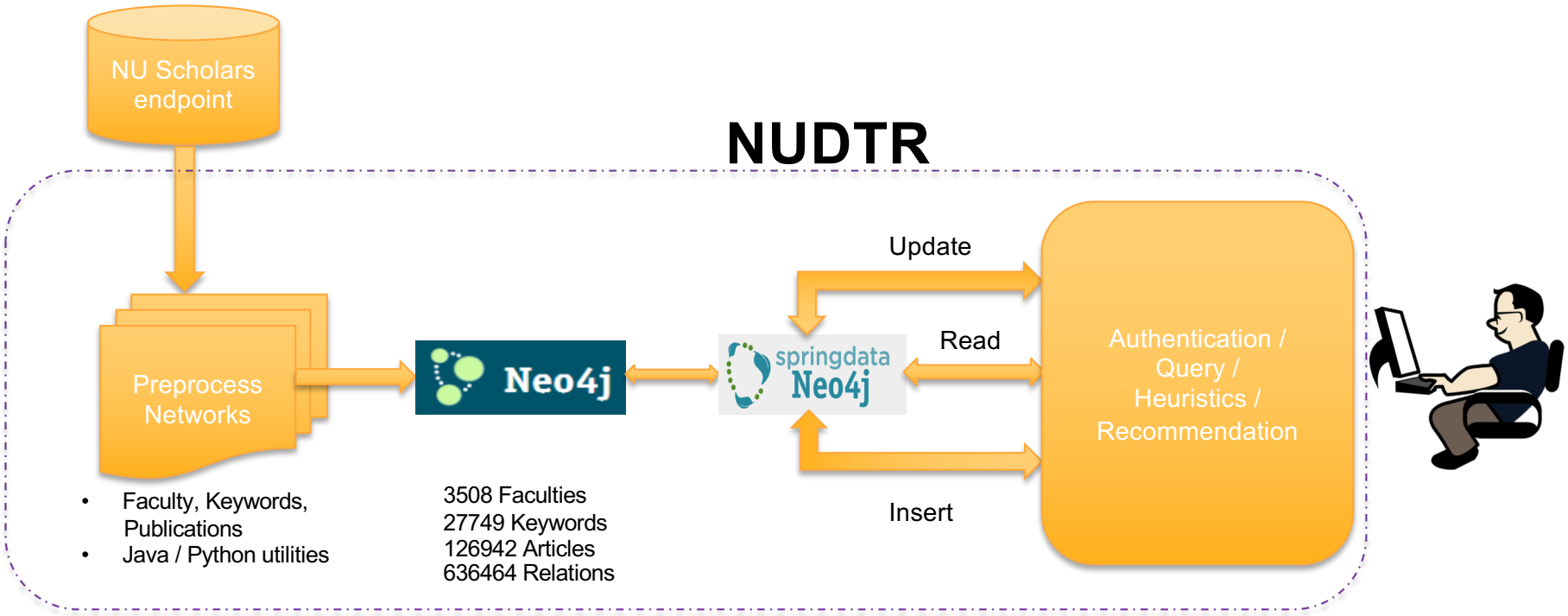
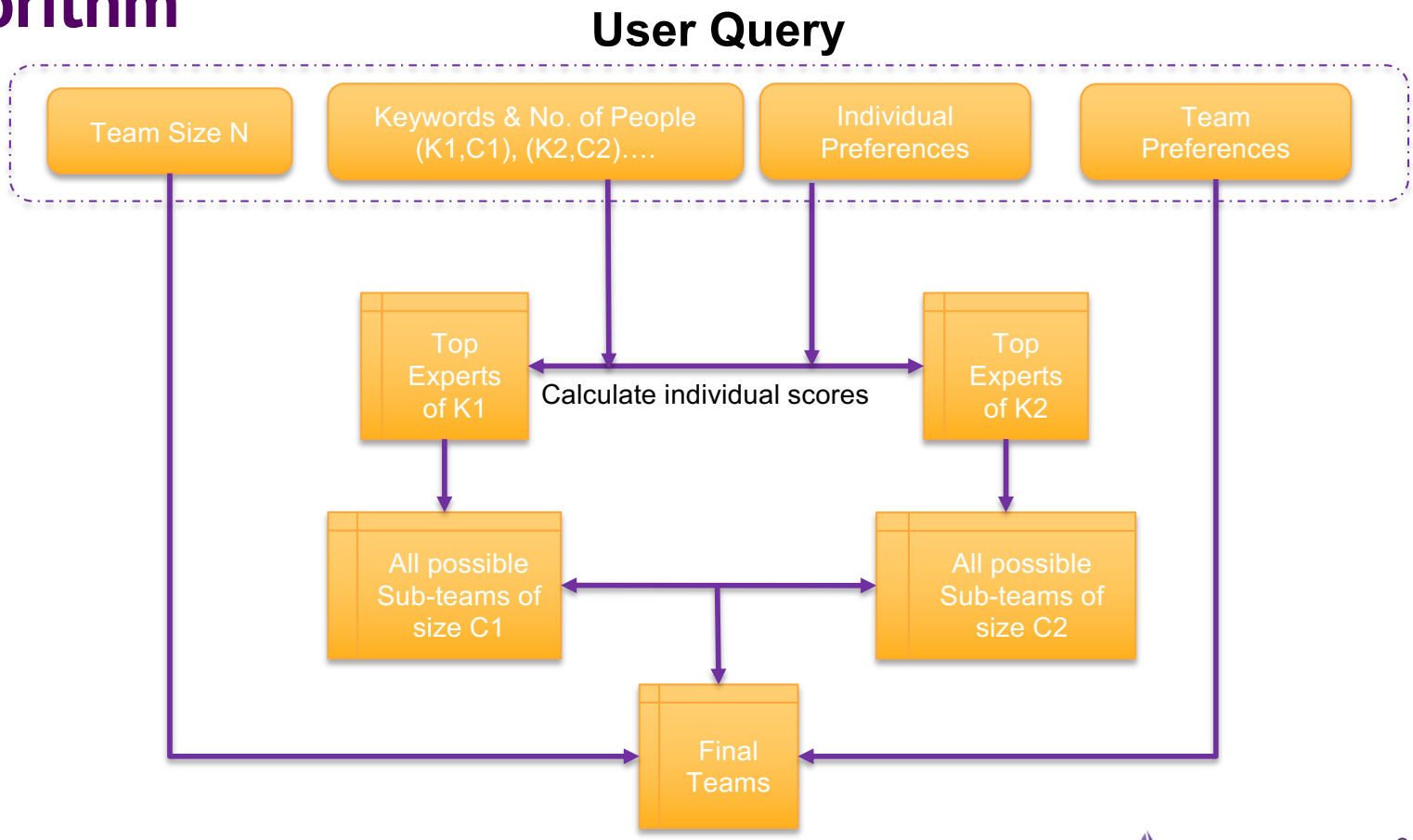
Application Design



Algorithm


User Query
Team Size N
Keywords & No. of People (K1,C1), (K2,C2)….
Individual Preferences
Team Preferences
Top Experts of K1
Calculate individual scores
Top Experts of K2
All possible Sub-teams of size C1
All possible Sub-teams of size C2
Final Teams

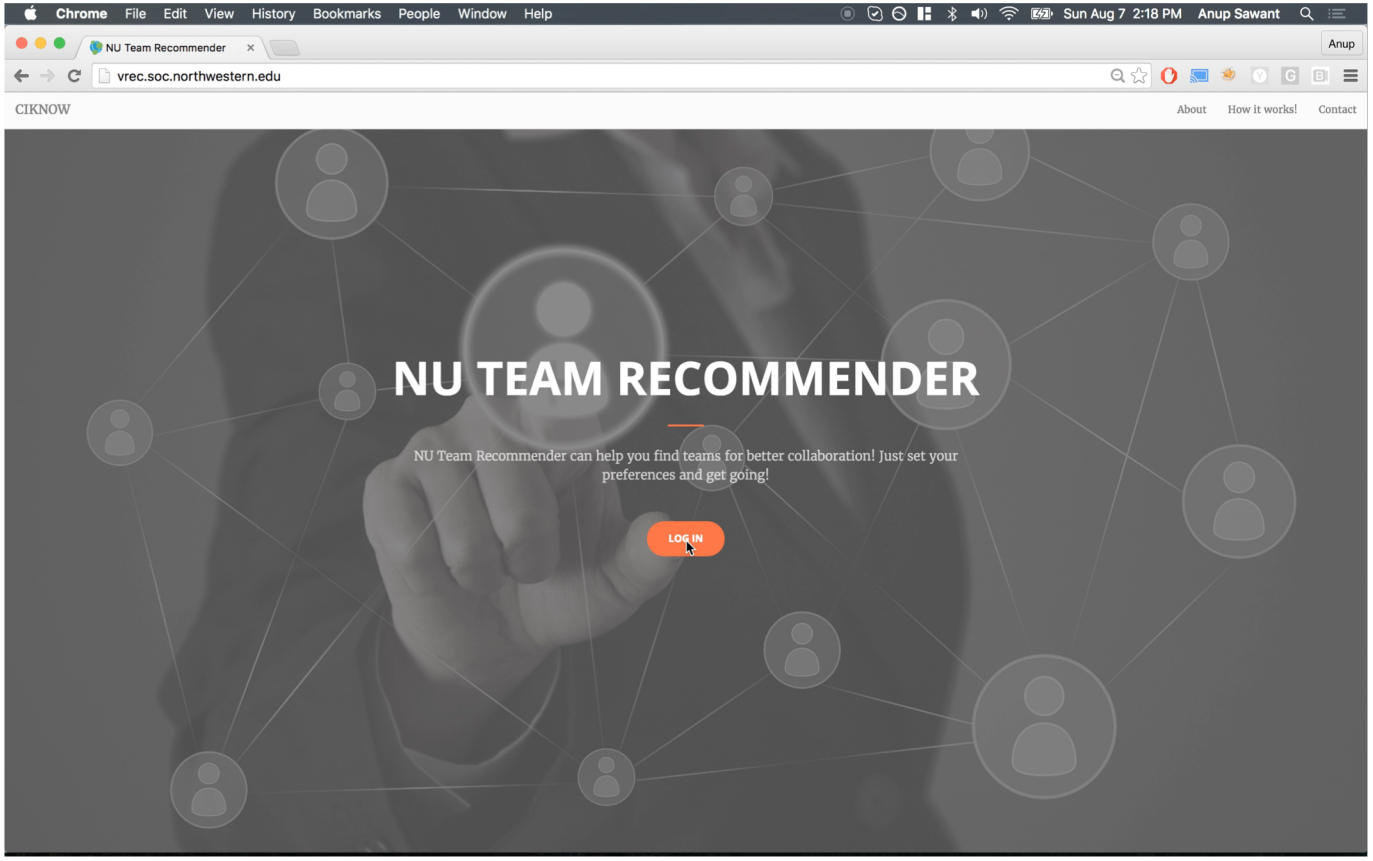
Demo Case

- Consider a situation where, in response to a call for research proposals from NIH, Noshir Contractor wants to put together a team of experts.
- Following are his initial preferences:
  - Team size up to 5
  - Domain / Keywords : Smoking, Evidence-based practice and Depression

Demo Case

- In response to additional questions from the NUDTR, Noshir prefers people who:
  - Work in his organization.
  - Have high H-Index.
  - Have worked with him before.
  - Have worked with many other researchers.
  - Have worked in a Principle Investigator role.

Demo



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Thank you!

Questions?