

Charity Resource Matching

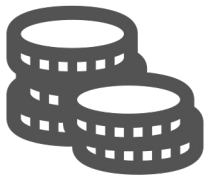
with Resource Flow Graph Analysis



Amy's dilemma

- single mother
- poor living condition
- limited educational experience

Need **help** to get education opportunity for her child



“

The Sustainable Development Goals are a universal call to action to end poverty, protect the planet and improve the lives and prospects of **everyone, everywhere.**



“

125M to 70M [1]

children out of primary school ,
2000 to 2020

**\$1.3 trillion
per year** [2]

SDG funding for health and education,
2019 to 2030

[1] New estimation confirms out-of-school population is growing in sub-Saharan Africa

[2] Gaspar, Vitor, et al. Fiscal policy and development: Human, social, and physical investments for the SDGs. International Monetary Fund, 2019.



Mismatch between resource and need



Charity
Resource
Matching
is in great need



“

166,000 charities in UK with annual turnover under £48 [1]

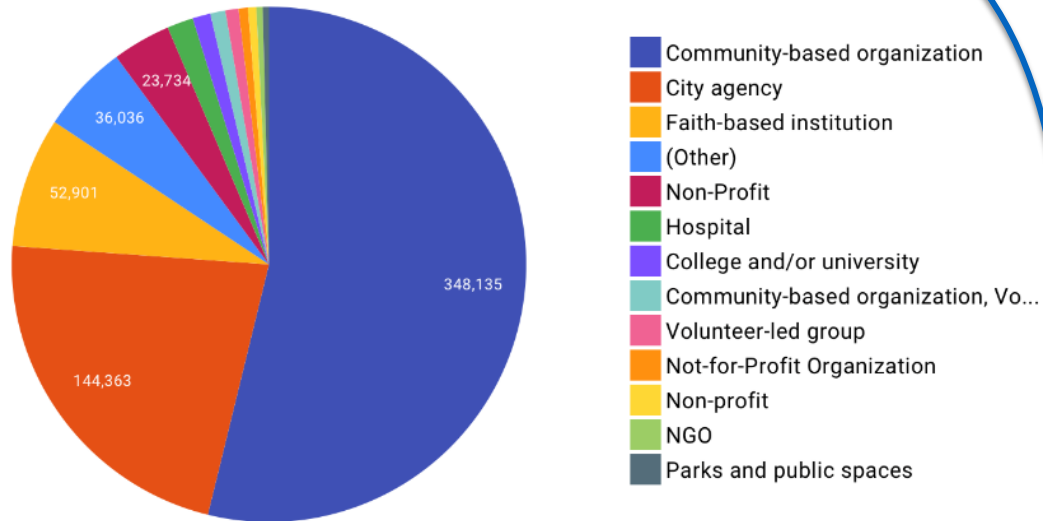
2018 to 2019

[1] UK CIVIL SOCIETY ALMANAC 2021

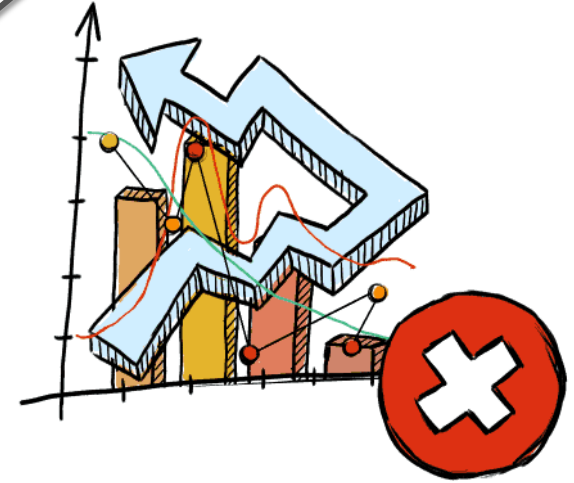


Main problem

poorly analyzed
and hard-to-access information



non-structured data
hard to get insights



“

the need for a strong statistical foundation ^[1]

2022

[1] The Sustainable Development Goals Report 2022, Thinking beyond crisis: using the pandemic to advance high-quality, timely and inclusive data



Problem definition

help to match the best charity resources

650
Administration for
Children's Services

650
City Agency

1000
AHRCNYC

1200
Non-Profit
Organization

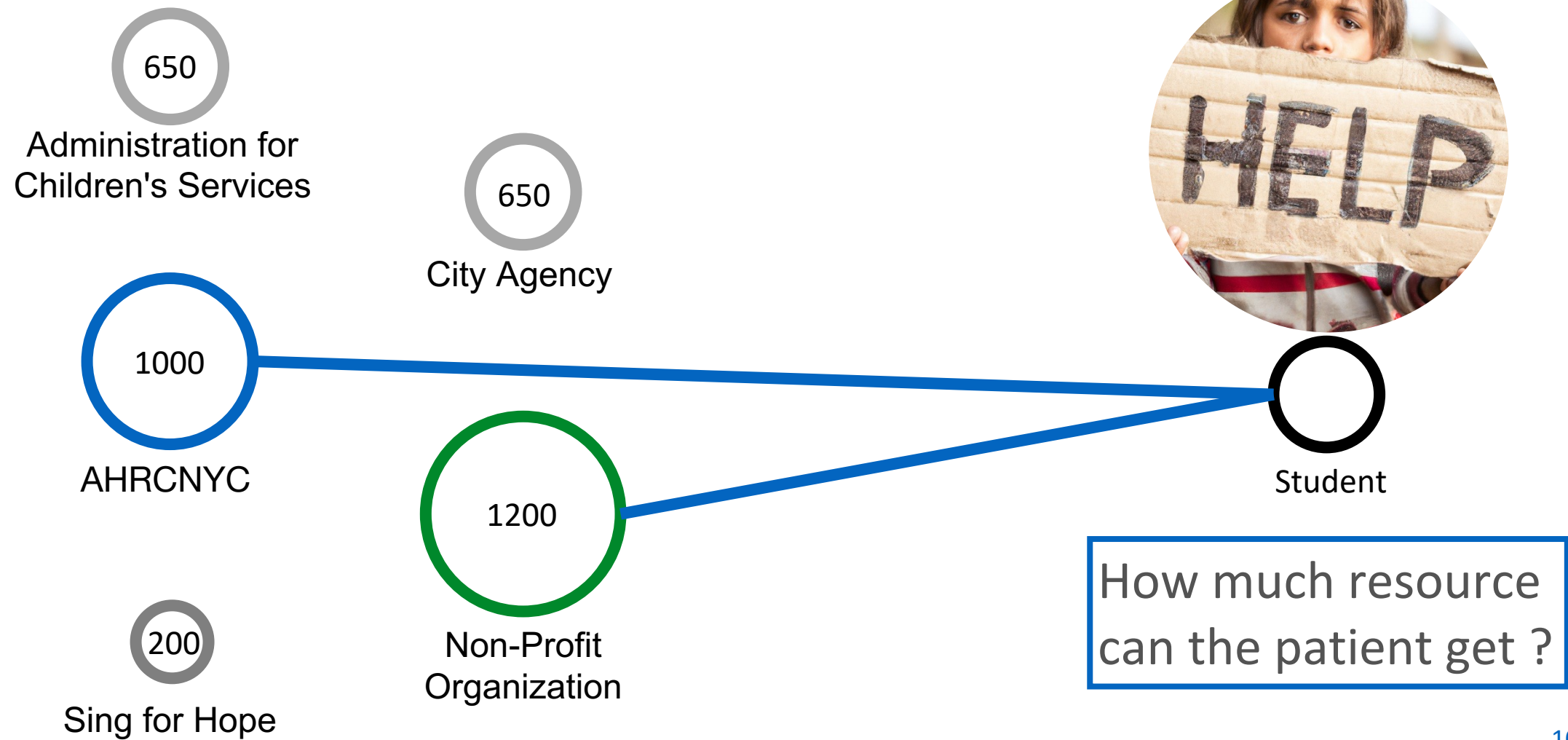
200
Sing for Hope



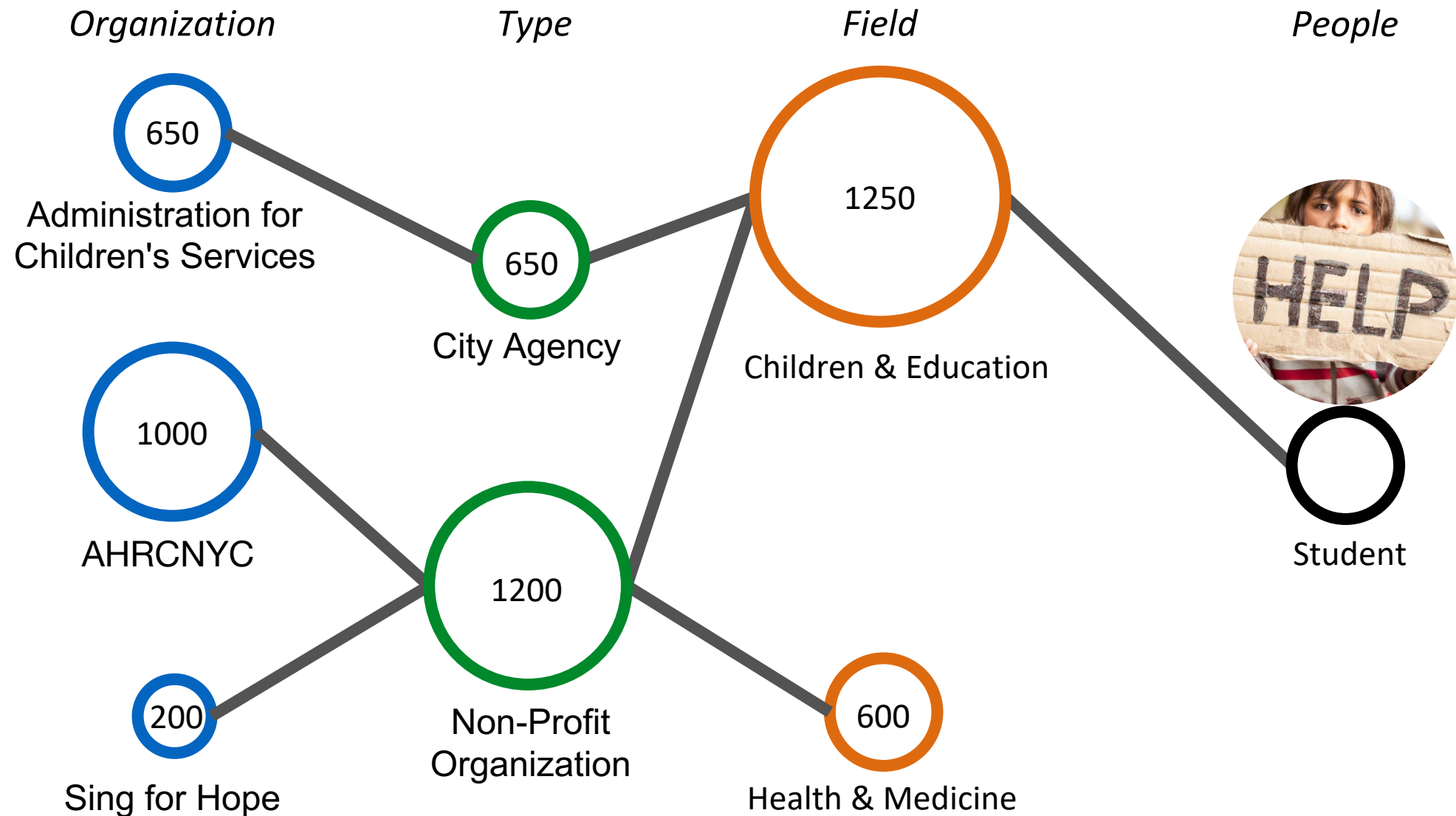
Student

Problem definition

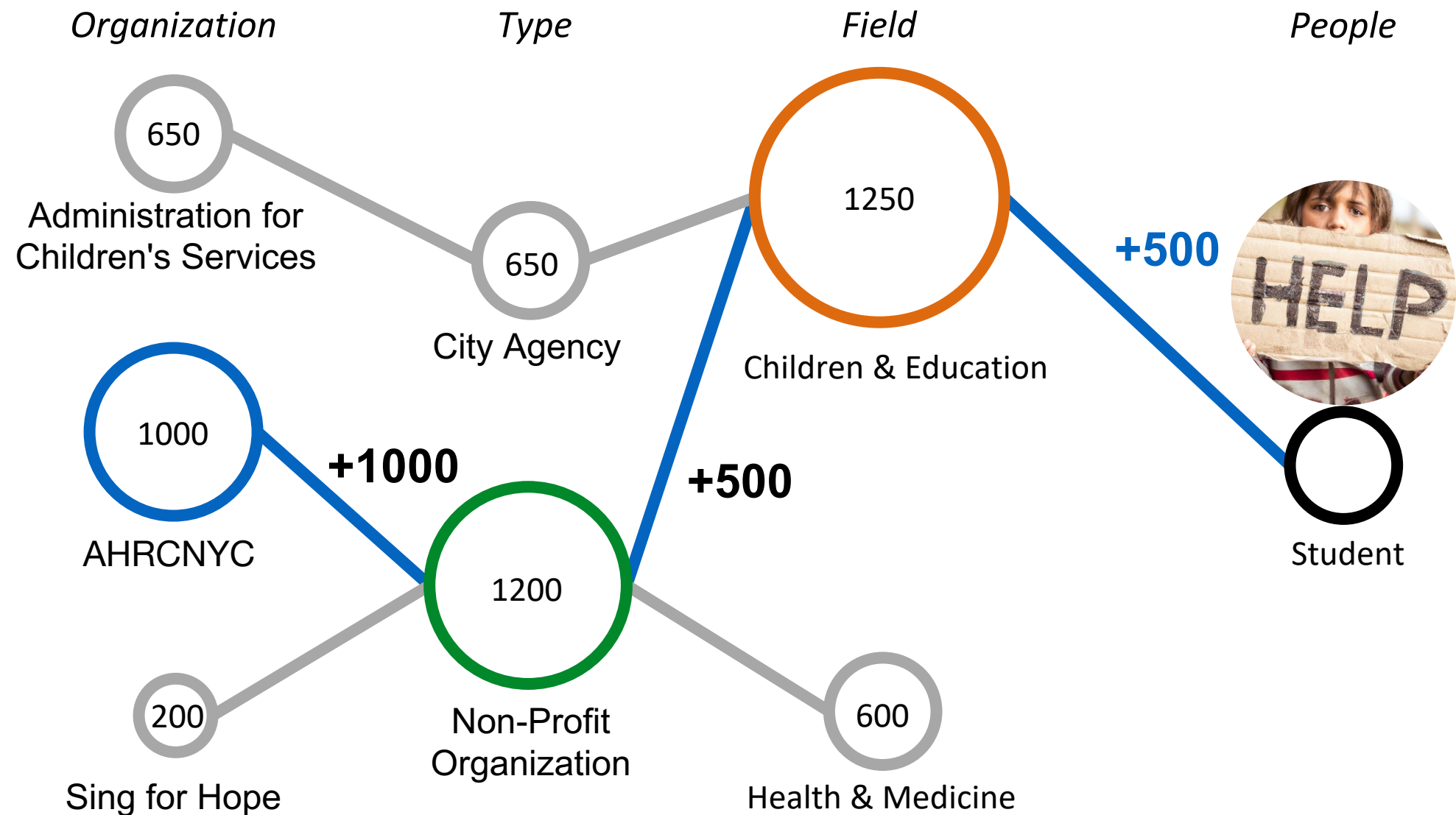
help to match the best charity resources



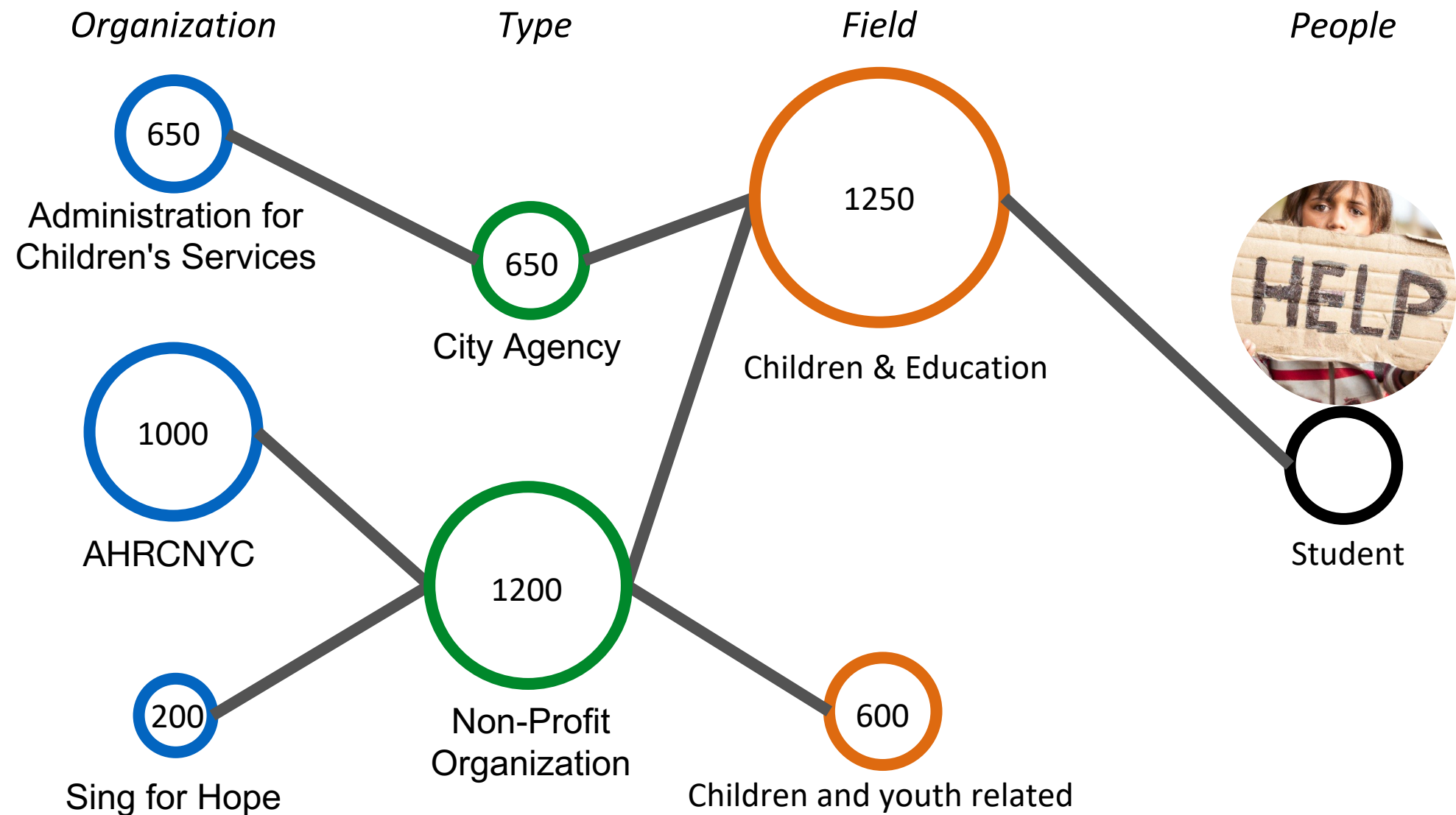
Resource flow graph



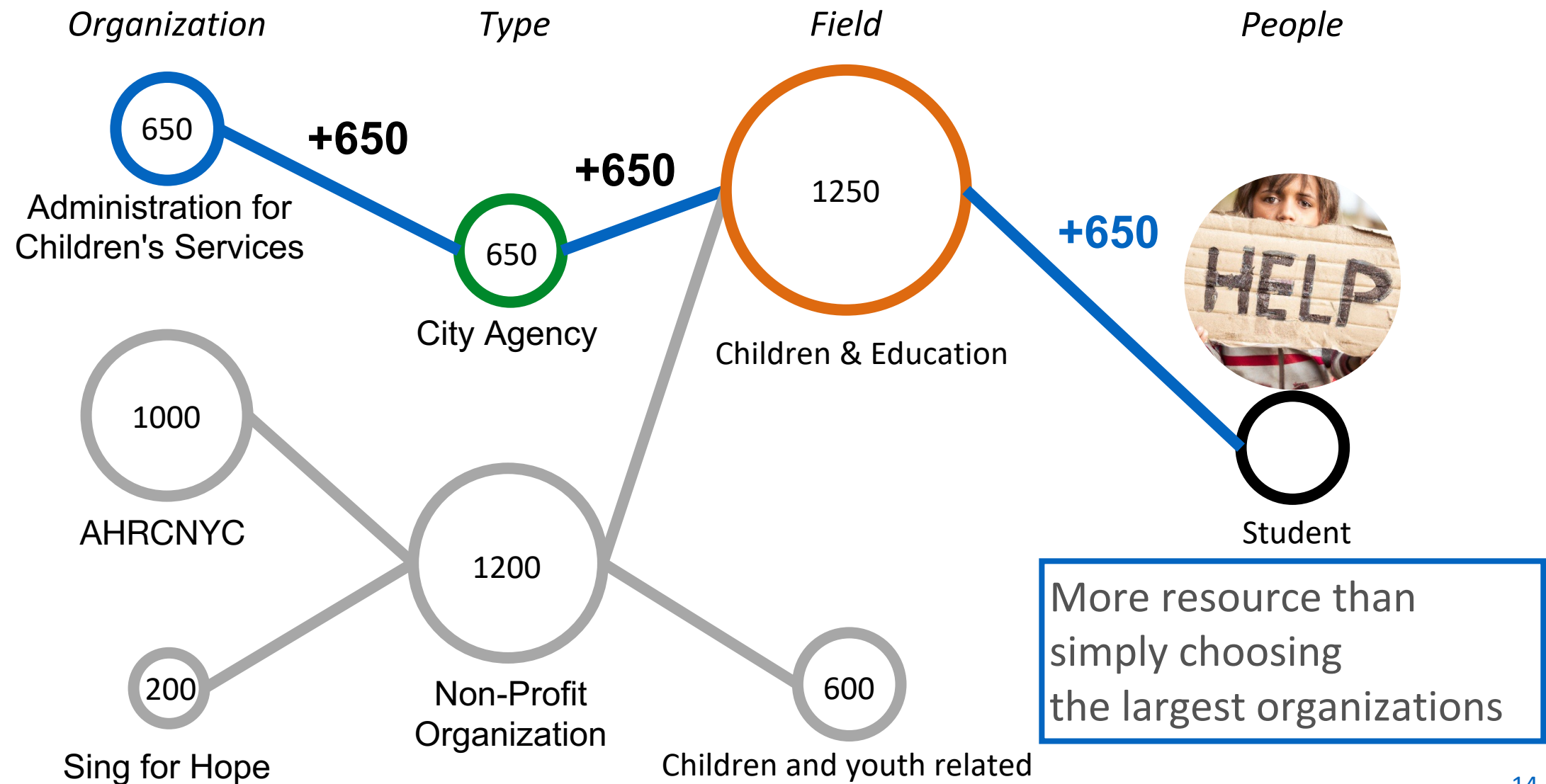
Resource flow graph



Resource flow graph

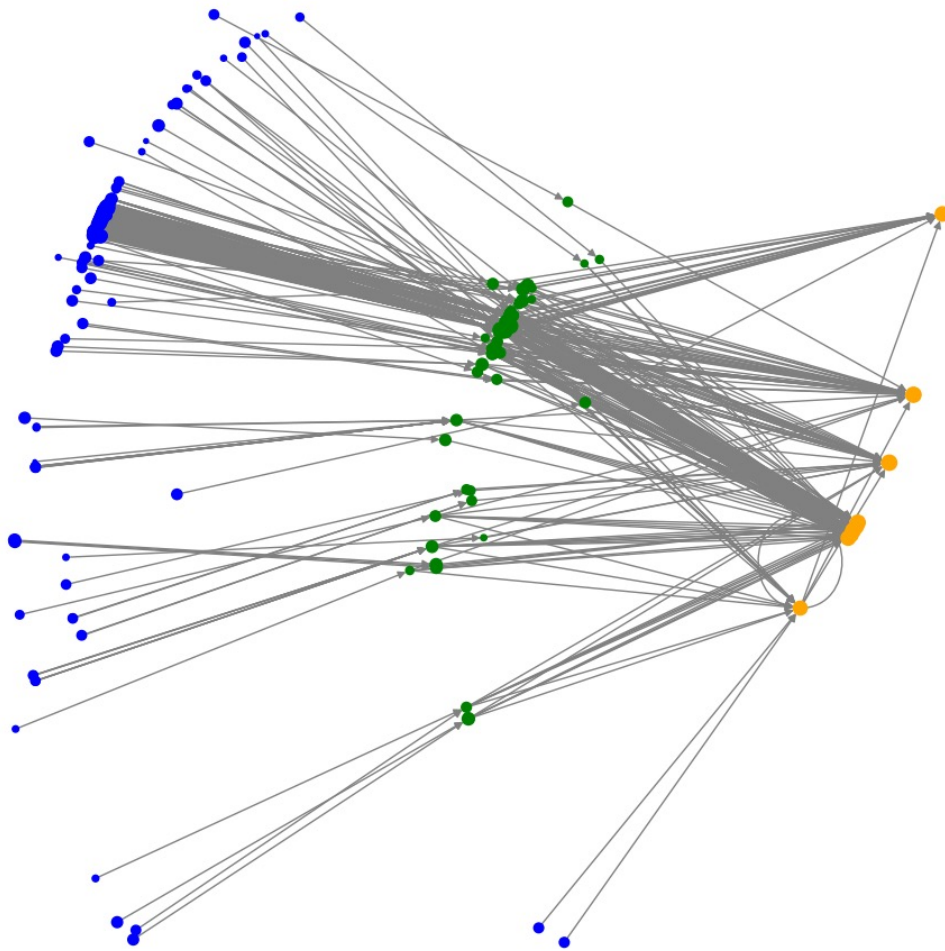


Resource flow graph



Resource flow graph

2019 Volunteers Count Report ^[1]



10 Fields

Arts and culture
Children
Emergencies
Employment
Environment
Food
Health
Human rights
Legal services
Vulnerable group

2274 Edges

495 Organizations

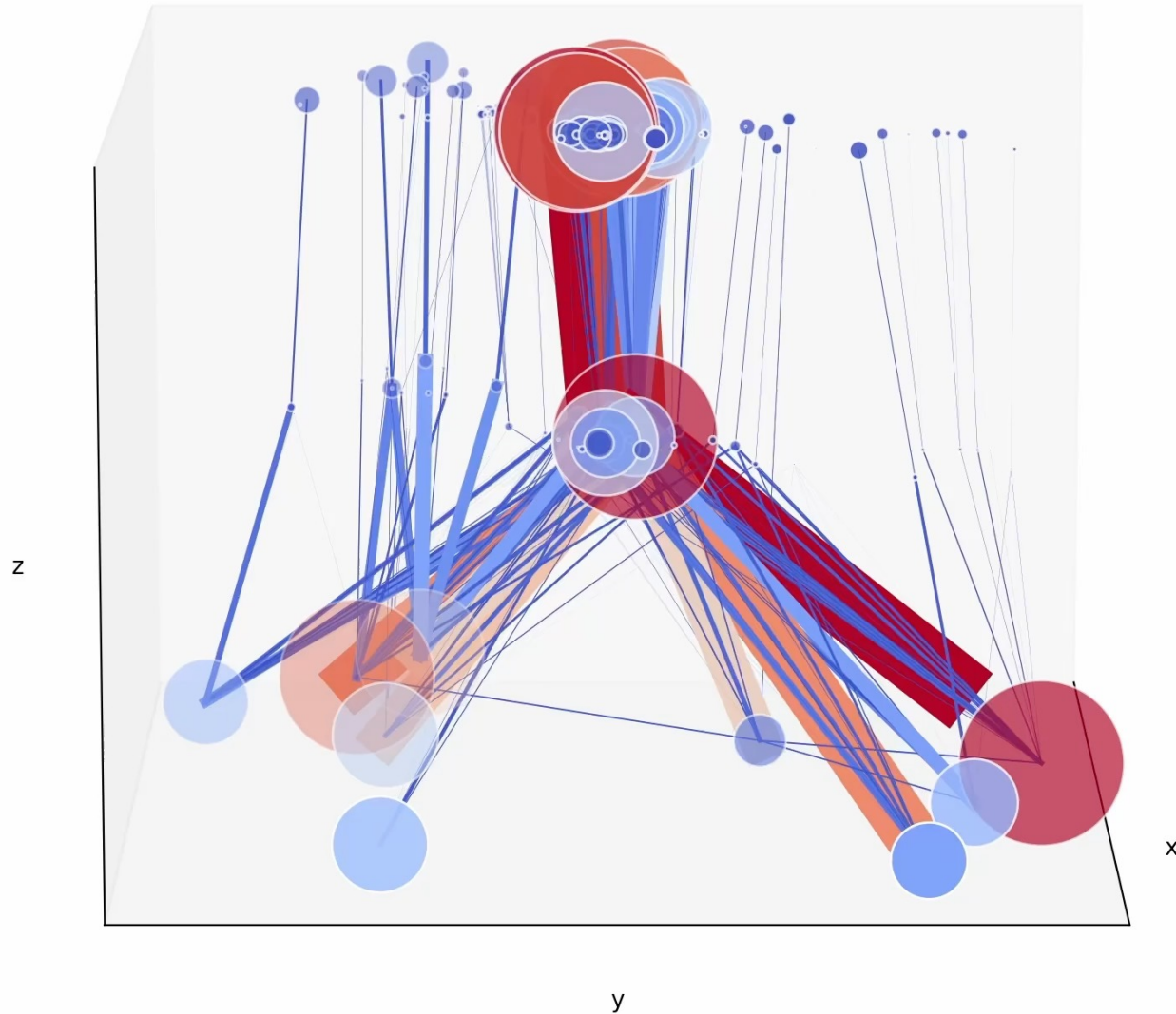
ANYC Parks
Citymeals on Wheels
New York Cares
Fire Department
Food Bank For New York City
and more

60 Types

Charity
City agency
College
Community-based organization
Volunteer-led group
Hospital
Non-Profit Organization
and more

[1] <https://data.cityofnewyork.us/Social-Services/2019-Volunteers-Count-Report-Neighborhoods/72r6-mtgs>

Graph-based resource analysis



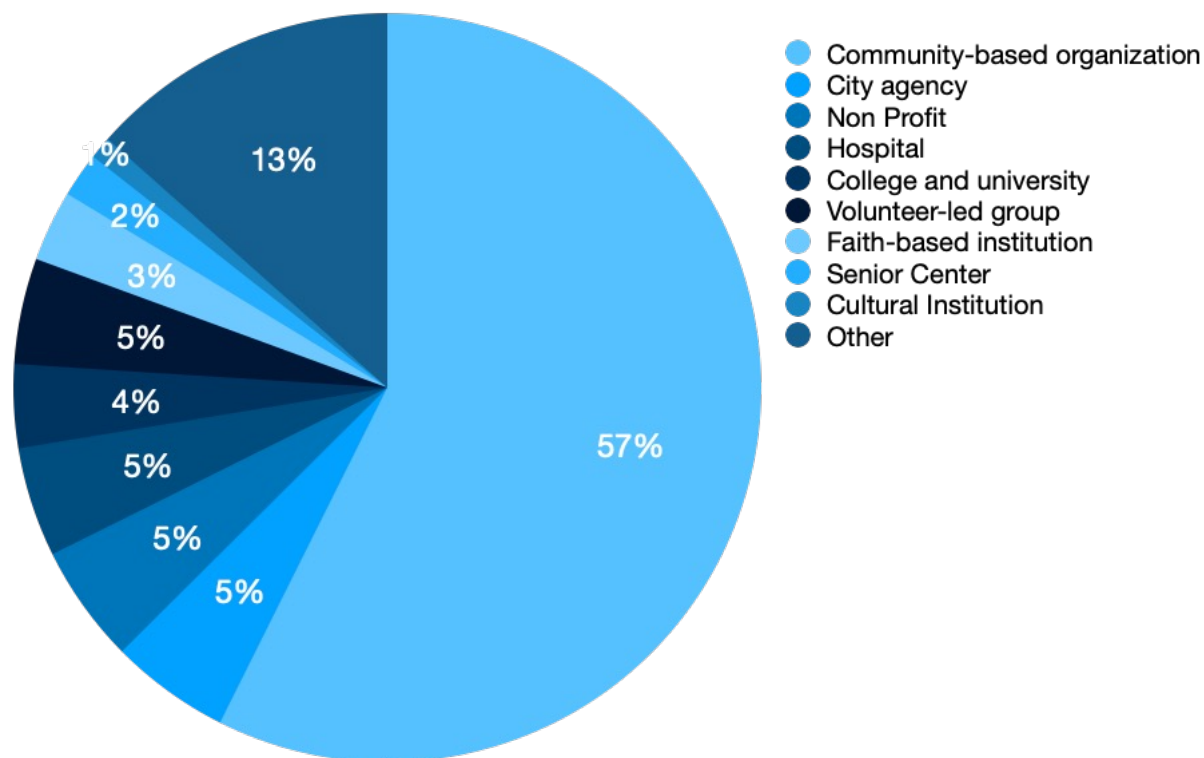
495 Organizations

60 Types

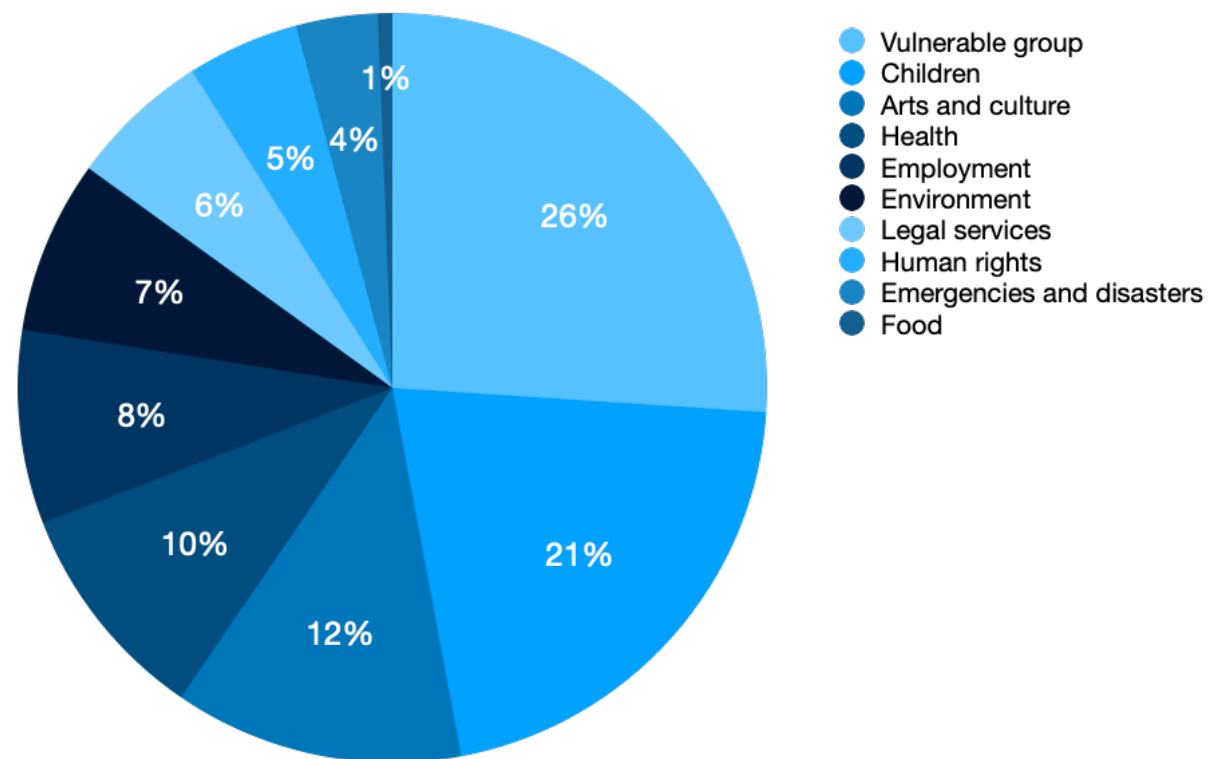
10 Fields

Basic resource analysis

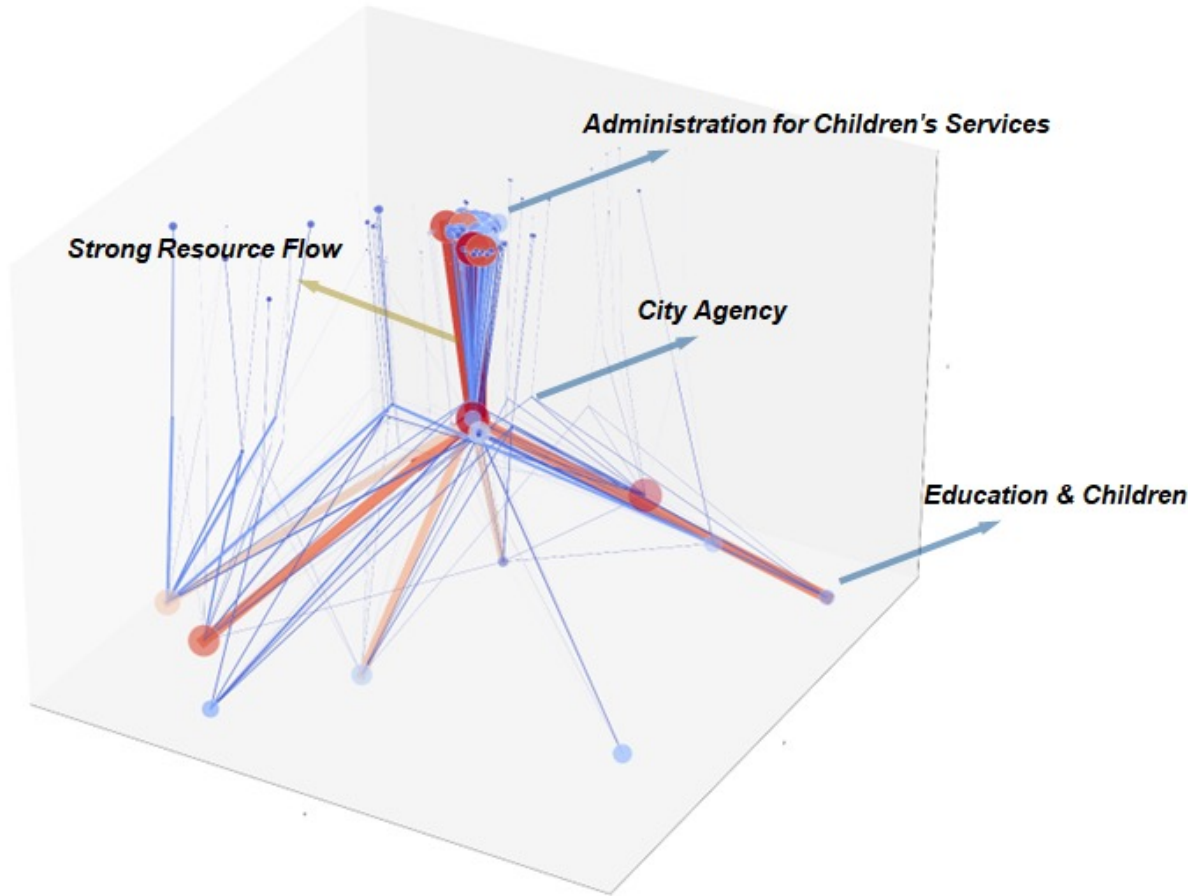
Type



Fields



Graph-based resource analysis



Administration for Children's Services is a *City agency*, which focuses on the field of *education*. It best suits Amy's need and provides the most resources.

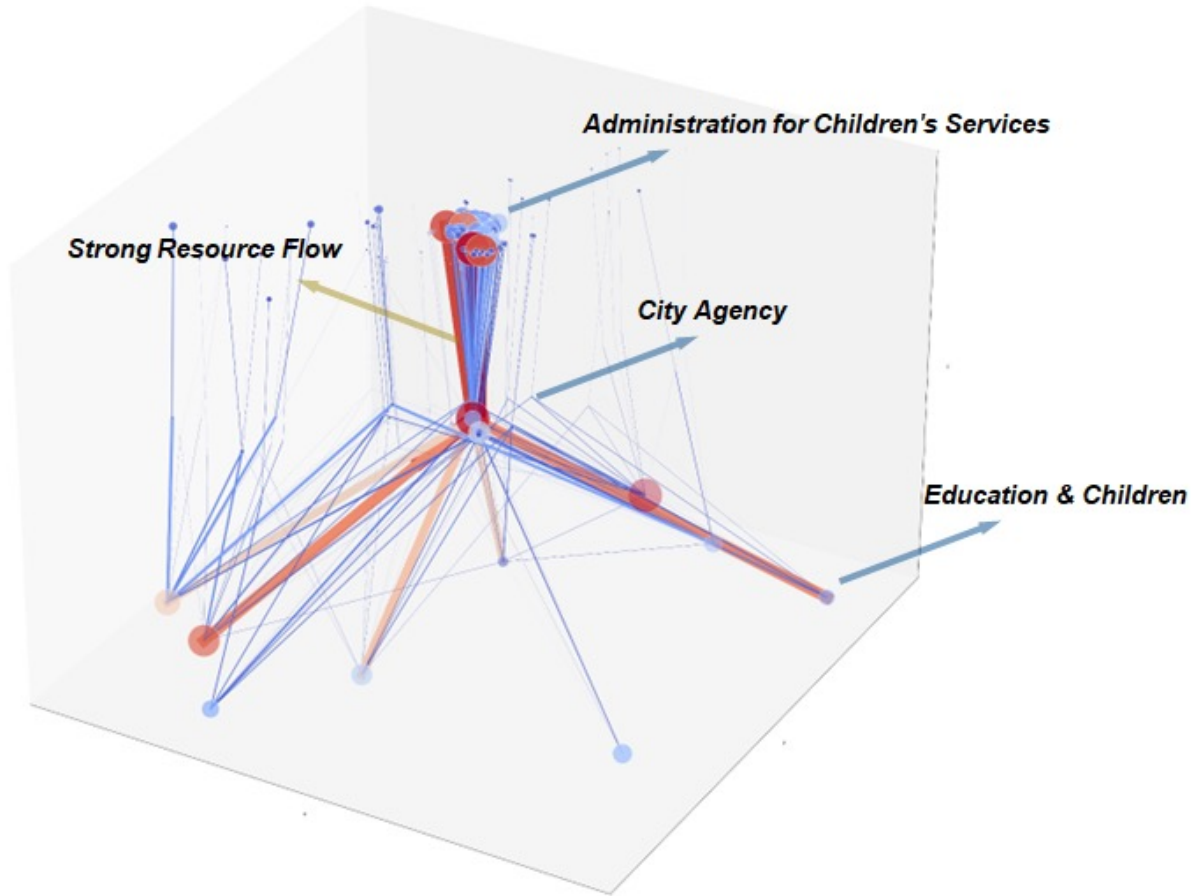
Without this system:

Amy's request might be assigned to an unprofessional organizations in a traditional scenario.

With this system:

The resource flow is tracked to better match the charity resources

Graph-based resource analysis



The system is beneficial for everyone:

- For the people need, they get the most help
- For charity organizations, they better realizes the social benefits of charitable services

Mismatch between resource and demand

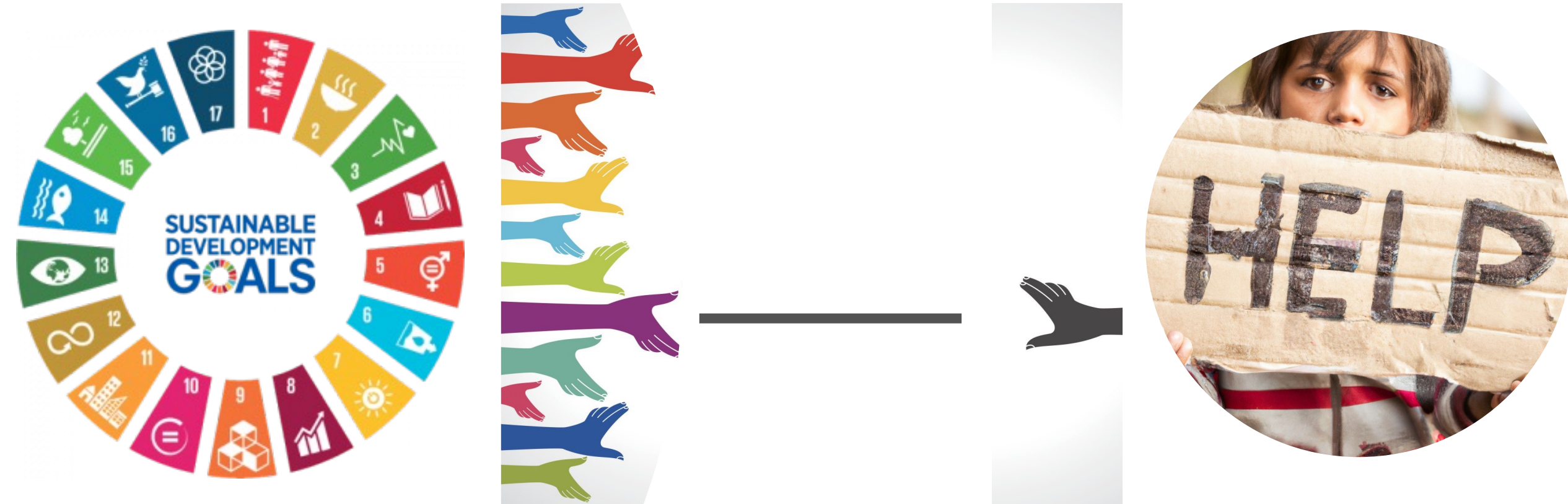


Charity
Resource
Matching
is in great need



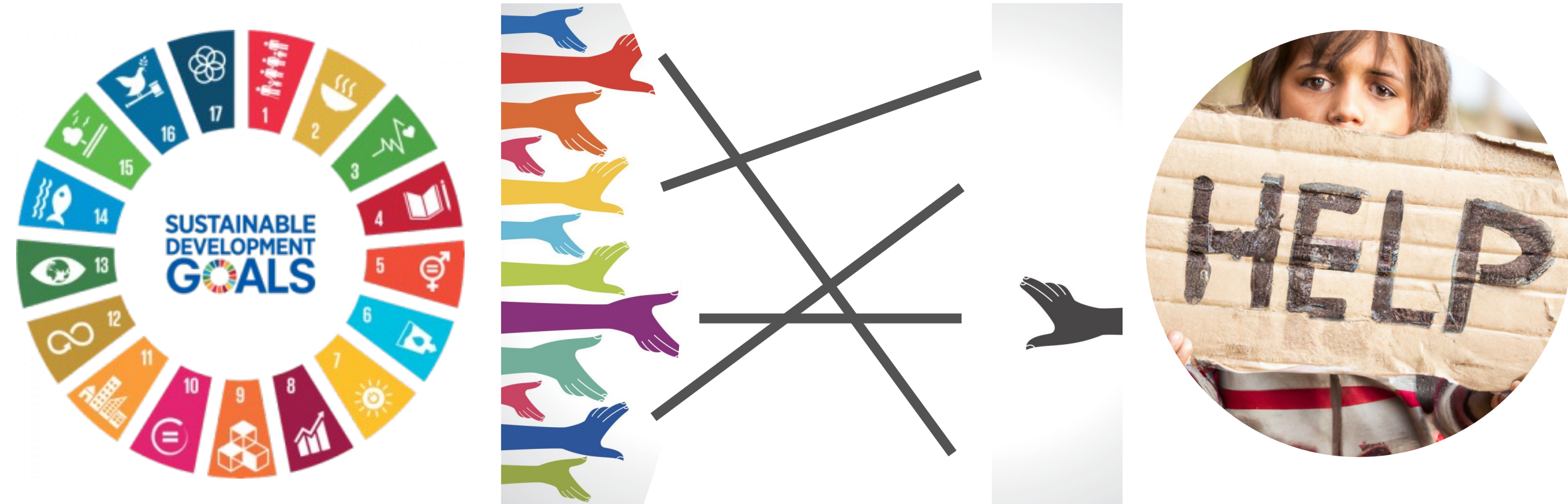
Match between resource and demand

expert knowledge



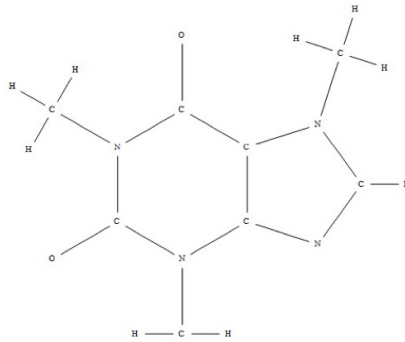
Match between resource and demand

expert knowledge for all

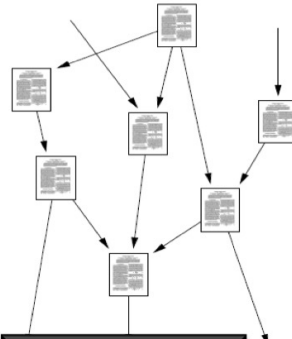


Graph neural network

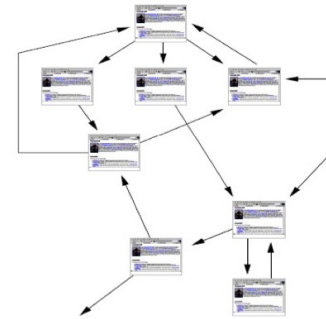
the tool behind the vision



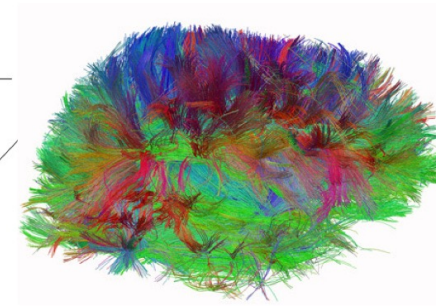
Molecules



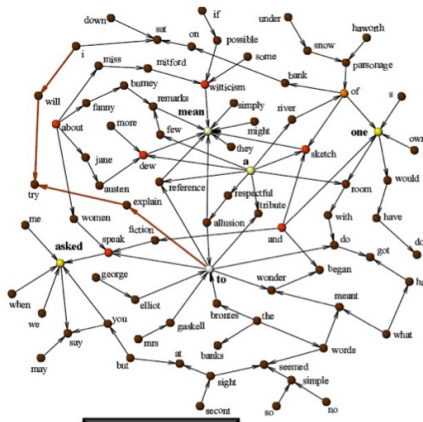
Knowledge



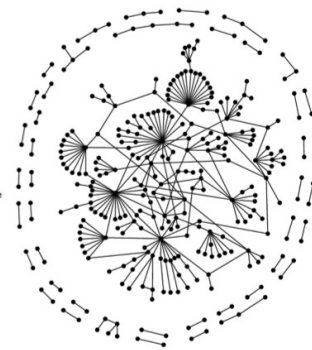
Information



Brain/neurons



Genes



Communication

```
def encode(obj):  
    """  
    Encode a (possibly nested)  
    dictionary containing complex values  
    into a form that can be serialized  
    using JSON.  
    """  
    e = {}  
    for key, value in obj.items():  
        if isinstance(value, dict):  
            e[key] = encode(value)  
        elif isinstance(value, complex):  
            e[key] = {'type': 'complex',  
                    'r': value.real,  
                    'i': value.imag}  
    return e  
  
import ast  
tree = ast.parse(" ")
```

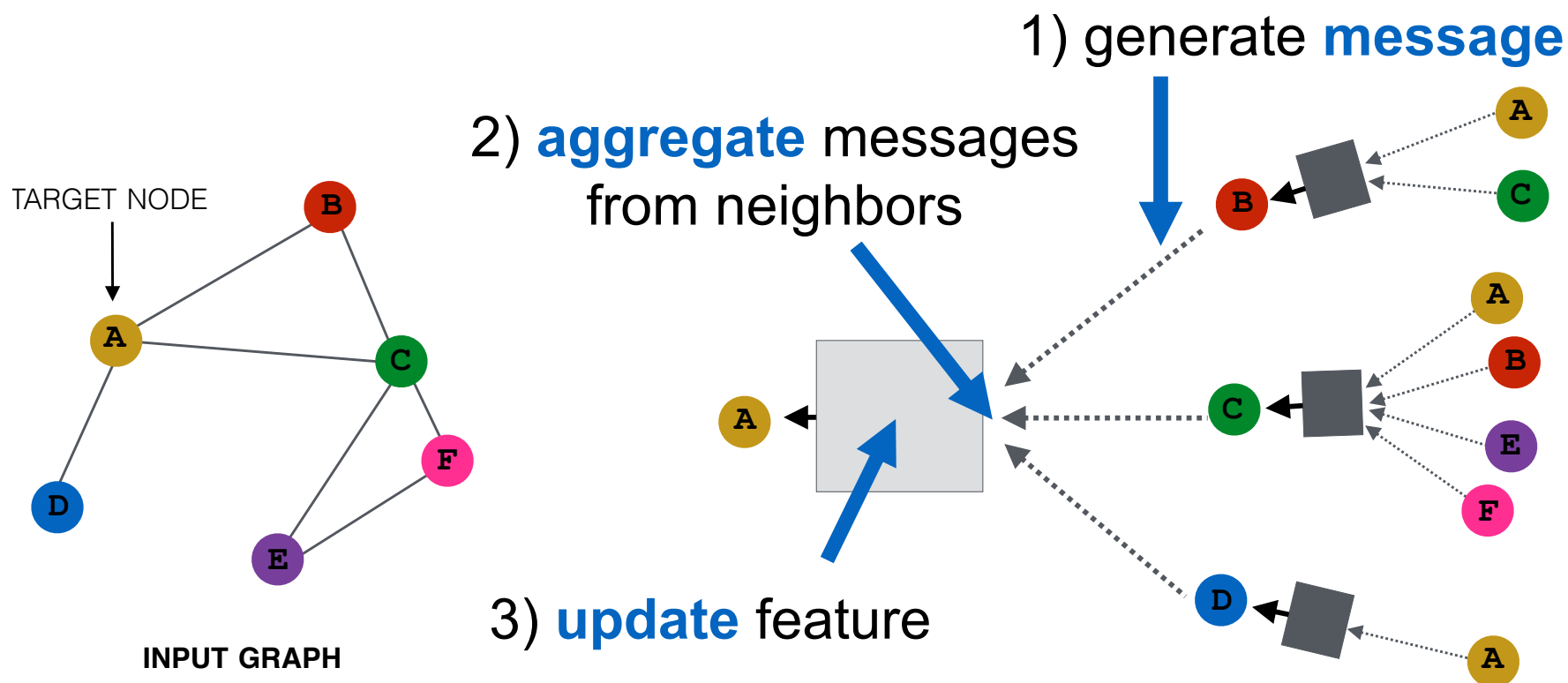
Software



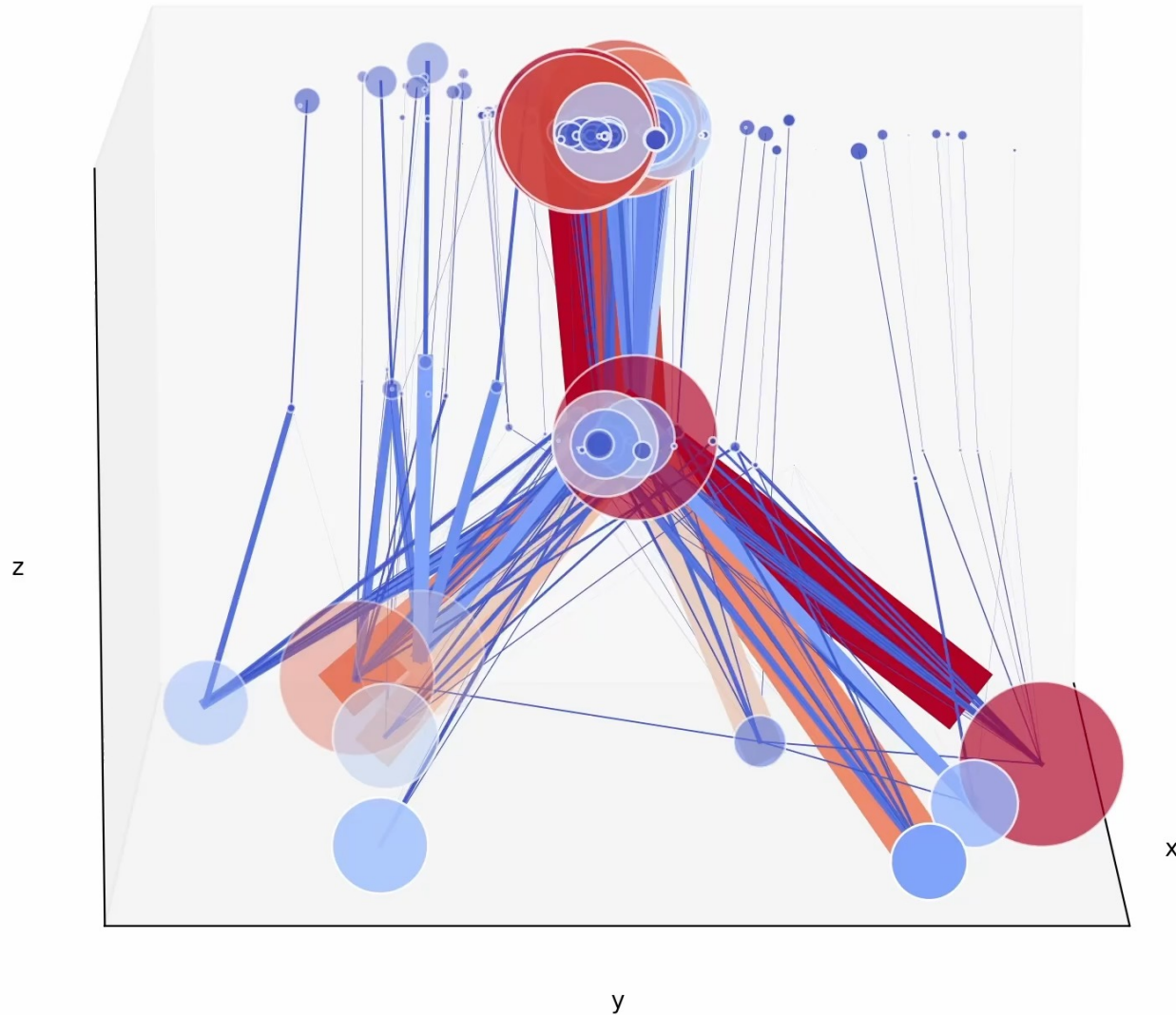
Social

Graph neural network

the tool behind the vision



Automatic resource matching



THE Organization

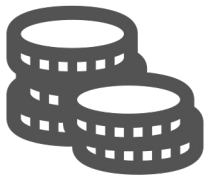
THE Type

THE Field

Amy's Dilemma

- single mother
- poor living condition
- limited educational experience

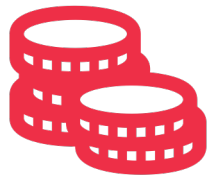
Need **help** to get education opportunity for her child



Amy's Solution

- single mother
- poor living condition
- limited educational experience

Get the **help** of education opportunity
for her child



12,450,000\$

potential market size

8,798,000 users

potential user

The social broker business model

- support by the government
- Bridge information gaps in the social structure



Thanks for Listening



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