By Patrick, Tim, Tiberius Brastaviceanu, Dmitry Sokolov, add your name here

Inclusive Growth and Recovery Challenge

Not Granted
[Sept. 2020 | see Patrick and Tibi]

This is a co-creation document
If you contribute to this doc make sure you respect the Content rules

Need help with Google Docs?
Go to How to use Google Docs, very nice short video tutorials

VoiceChat here

You might want to chat with others that are already here.

Log contributions

You might want to record your contributions in the NRP

Forum

You might want to discuss more broadly about this initiative

This process uses Sensorica's Grant proposal methodology.

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Log your time HERE

STIGMERGY

Use this to coordinate with your peers, make it easy for them to understand what has been done, where we're going and what they can do now.

Development Timeline

Due to time restrictions, we're adapting the methodology below with some activities advancing in tandem rather than in sequence. Details provided below.

- Ongoing - Clarifications activities
- ~~7/15 (10 - 11:30 am) - Work meeting~~
    - ~~Check in / progress updates~~
    - ~~Review of flagged material for Sensorica content - questions/concerns~~
    - ~~Collaborative drafting of final proposal~~
- 7/9 - 7/15 - Defining partners and roles, finalizing by 7/15
- 7/15 - 7/17 - Collaborative drafting of final proposal
- 7/17 (10 am - 12 pm) - final work meeting
    - Pressing questions/clarifications/concerns
    - Final revisions to final proposal
- 7/17 - Submission deadline

What you can do now

You can talk live with others here

- Get acquainted with this particular call for proposals.
- Help with project scoping
    - Provide feedback on problem statement
    - Identify data sets to be used / copy links to source and provide descriptions
        - Flag data sources with purple highlight
- Information mining from related documents and proposals, See the Research section
- Look for this icon in the sections below for highest need areas for contribution 

What has been done

- Initial brainstorming session with Patrick, Tim, and Tiberius on 7/7/20
- Attended 3 DataKind webinars on preparing proposal (see links and resources section of this document)
- Initial drafting of preliminary sections below
- Round 2 brainstorming session with Patrick, Tim, and Tiberius on 7/10/20 (10 am - 12 pm EDT) open Zoom link
- 7/13 and 7/15 work meetings to develop proposal

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*See also related work on NOICE/LEVOICE and Open-Alliance projects.

Future activities

- Regular work meetings - contact patrickkcampbell0@gmail.com to receive notifications
    - Upcoming work meetings are scheduled for the 10-11:30 am time slot on 7/13, 7/15, and 7/17 (see timeline above)
- **Submission deadline - Fri., July 17, 2020**

IMPORTANT LINKS

- Grant writing methodology
- Webpage - will be created if granted.
- Project budget

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LIST OF PARTNERS

Please consider the combined table of participants, for visibility in comparison

INSTRUCTIONS
List all partners, their role, responsibilities and sought benefits.

Patrick Campbell

Resource contributions *What will this partner bring to the project?*	Project lead, knowledge of funding source
Proposed use of resources *how this partner uses the grant money*	To execute the work plan detailed in the proposal below
Role and responsibilities *what role(s) this partner plays in the project*	Project management, data analysis, research design
Sought benefits *what's in it for this partner*	Funding to execute work plan, proof of concept for future iterations of the project
Fulfilling funder's aim for the grant *how will this partner fulfill the grant's aim*	By tailoring the research proposal to the funder's guidelines, attending information webinars hosted by funder, etc.
Project sustainability *how will this partner support the project in the long run*	There will be a period of planning at the beginning of the project for hand-off of the final products, including data assets and infrastructure
Interaction with other partners *what relations this partner will have with all the other partners*	Will provide primary point of contact for all partners and collaborators
Possible governance issues *is there a possible governance problem that needs to be addressed*	Should discuss with Sensorica during project planning phase (see work plan below) ways to reconcile needs of project with organizational governance policies and protocols

Sensorica

Resource contributions *What will this partner bring to the project?*	Sensorica's collaborative infrastructure. Sensorica's commons (all past proposals, consultation documents, etc. can be remixed in this project). Some attention grab from the Sensorica community for project validation, feedback and support. Use of the Sensorica brand name and social reputation and social network.
Proposed use of resources *how this partner uses the grant money*	**Labor**: Pay Sensorica affiliates to execute tasks

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Role and responsibilities *what role(s) this partner plays in the project*	**Host**: Provide a digital space and method for formulating this funding proposal. **Outreach and recruiting**: Provide access to Sensorica's internal and external communication channels to drive talent to execute the project. **Project stewarding**: Provide the environment (space, tools, methods, governance) for collaborative work, during the execution of the project.
Sought benefits *what's in it for this partner*	**Further Sensorica's mission and vision** by applying concepts and principles of the OVN model. **Visibility**: Propagate the Sensorica brand in association with high impact projects. **Financial resources**: give Sensorica affiliates the opportunity to use some of the grant funds to contribute to paid tasks. Others?
Fulfilling funder's aim for the grant *how will this partner fulfill the grant's aim*	Contribute with new approaches to stimulate local economic growth and build resilience.
Project sustainability *how will this partner support the project in the long run*	This project in particular is finite, with some sort of recommendation or analysis results deliverable. Nevertheless, Sensorica affiliates the approach will inform other Sensorica initiatives and the content that will be generated here will be remixed. We also hope that this will be the first step in a series of research and analysis projects for stimulating local economies and building resilience, which will lead to consultancy services and the implementation of real local social/collaborative ventures.
Interaction with other partners *what relations this partner will have with all the other partners*	Sensorica and True Innovation are already collaborating on similar initiatives. We will join forces to help structure and execute the project. We will coordinate our roles to insure that the new talent that will enroll in this project will make best use of the collaborative work environment.
Possible governance issues *is there a possible governance problem that needs to be addressed*	**Openness**: Relates to how we integrate new talent into the project. Over the course of the project some contributors will drop out and others will join. That churn rate will depend on how *attractive* and *sticky* the project is, on the benefits it generates for contributors. At any given moment a very talented individual or a very resourceful organisation can show up. What are the mechanisms that we put in place to capture this opportunity, to include this individual and organisation into the project, without generating internal conflicts or conflicts of interest. **The tension between *meritocracy* and *tribalism* is very real in collaborative organisations.**

True Innovation and Lex AI

Resource contributions	Background literature, ecosystem mapping and analysis

Log your time HERE

What will this partner bring to the project?	concerning innovation systems and processes. Data-science and analysis including process-mining as relates to insights into patterns of activity embodied in datasets from Open Value Network instances- both operational as well as research prototypes.
Proposed use of resources *how this partner uses the grant money*	Pay for cloud computing resources consumed for the purpose of data storage, data analysis and presentation of results. Pay for staff time devoted to producing the required analysis and presentation of results.
Role and responsibilities *what role(s) this partner plays in the project*	Contribute to the identification and acquisition of relevant datasets Undertake the analysis, design, implementation and execution of data analysis tasks employing process mining techniques.
Sought benefits *what's in it for this partner*	Benefit from the collaboration with other researchers who are focused on addressing the same subject area Expanded base of data from sharing across organizations Opportunity to further develop and improve in respect of the application of process mining to Open Value Network health assessment and decision-support concerning possible improvement, growth and sustainability.
Fulfilling funder's aim for the grant *how will this partner fulfill the grant's aim*	Ensure that analysis of Open Value Network operation is informed by data to which relevant data-science techniques have been applied.
Project sustainability *how will this partner support the project in the long run*	? - field questions and support extension regarding the work completed?
Interaction with other partners *what relations this partner will have with all the other partners*	Work with them
Possible governance issues *is there a possible governance problem that needs to be addressed*	Lex AI, True Innovation, Sensorica - overlapping principal/agent (Tim...) - I propose that we could combine TI and Lex AI in one table ? idk if acceptable given purpose of table… lmk. Just may simplify because the nature of participation is similar i.e. bring some specific complementary data analysis - process mining and NLP respectively … but same either way

Memorandum of understanding

It is understood that:

- Patrick Campbell will submit this funding *proposal* to the Data.org Inclusive Growth and Recovery Challenge,

Log your time HERE

    - if funded, this will establish the *venture* .
- Patrick, CAKE, LexAI and True Innovation are partner organisations in the *venture*.
- The *venture* will remain open for collaboration with other organisations and individuals, based on needs and future opportunities, but the mechanism of inclusion is not clear yet and will be described in the future in the *venture*'s governance document (see below).
- The body of the proposal will define the role of partners in the *venture*.
- The budget outline will determine the financial resources allocated to partners for executing activities within the *venture* as outlined in the *proposal*.

Patrick Campbell must sign a Custodian Agreement, which must state that Patrick Campbell will manage the budget, including the portion of the budget that will be allocated to partners, to the best of his abilities. This Agreement must also outline the budget allocation mechanism and decision making procedures that relate to the budget allocation.

The *venture*'s governance has not been drafted yet, but at this moment we agree that our intention is to create a *venture* that is managed collaboratively by Patrick and partners, and that important decisions will not be made unilaterally by any party, but rather through some consensus building process, which remains to be defined.

Candidate Partners

- CMU Metro21, MetroLab Network - https://www.cmu.edu/metro21/
- Digital Civil Society Lab - consultation on data infrastructure for civil society
- LikeInMind is a working prototype of a long term organisational memory where particular data, information and knowledge can be structured into an ontology with modular hierarchical structure interconnected by the horizontal links between relevant topics from different related fields of knowledge and expertise. Dr. Dmitry Sokolov is a part of the extensive network of experts and professionals in the field of Systems Thinking, Artificial Intelligence, BlockChain Technology, Strategic Planning, Discourse Analysis and Sensemaking. Dr. Sokolov is studying team building, mechanisms and processes of collective intelligence, emergence and development of collective agency and social dynamics. "We Connect People by Connecting Their Knowledge"
- Marc Laporte

METHODOLOGY

This methodology allows a group of individuals to engage in *crowdthinking*. The first steps prepare the group to *think as a team*. In a co-creative content production process contributors write on top of each other, as opposed to working on different sections separately.

It must be noted that the process stiffens as we go towards writing the actual text, which is towards the end. The process is more flexible in the beginning, during the first stages when we build the structure, and by the same token it is more inclusive, allowing for wider participation/collaboration. As the structure settles down, the group moves to writing text

(*adding meat to the bones*), with a commitment to style, formatting, logic, narrative, etc. At the writing phase the process stiffens (it becomes harder and harder to bring in major changes) and it allows less participation. Only a few individuals should take care of writing the entire text, split asks between writing, proofreading, formating. The rest of the participants can be called in again for general feedback. Last thing, everyone should get involved in propagating/disseminating the artifact.

Other described methods: Comment produire un document à plusieurs centaines de personnes

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INSTRUCTION: *Please address every colored square below before you start writing text.*

BUILD SHARED UNDERSTANDING

This phase should take from 10% to 30% of the total time allocated for this work.
The main purpose is to prepare everyone for *crowdthinking*.

INSTRUCTION: *Use this box to explain what is the purpose of this doc, or the action that it supports. Illustrate and provide visual support using images, sketches, graphs. Put everyone on the same page, focus everyone's effort towards the same goal. Provide definitions, build context, ... Use patterns and pattern language to build the shared metalanguage on which to build shared understanding.*
If no common understanding is built at the beginning of the process people's input will be divergent, and you'll spend a lot of energy trying to pull everything together!

The purpose of this document is to develop the proposal for the Data.org Inclusive Growth and Recovery Challenge.

The development of this proposal was guided by the following prompt:

Looking for a "data scienceable" project that seeks to advance in some way the use of OVN or P2P-style networks in building community resilience, particularly in addressing future-of-work and other resilience-related concerns.

Based on initial brainstorming sessions held between Patrick, Tim, and Tiberius, the scope of the proposal was subsequently narrowed with these additional preferred parameters:

- Hyperlocal focus (findings/results scaleable at the city or community level)
- Broad resilience benefits (good for climate change as well as pandemics)
- Research rather than implementation focus
- Proposal presents an "idea-stage" project

Broad research question: *How can we use data to guide the investment and deployment of collaborative practices (including open and collaborative enterprises) in order to strengthen community resilience in the face of pandemics and other future crises?*

More precise research question: *How can we determine the highest-value uses of currently vacant, free, and underutilized buildings and infrastructure in US metro areas (intervention / action).*

- Asset mapping
- Ranking/scoring
- Decision making
- Facilitation of asset aggregation and use

Thread 1: **Mapping opportunity**

- Where are the areas of greatest opportunity for development distributed in geographic space?
- What development projects are best suited for different contexts / each pocket of opportunity?

Thread 2: **Strategic planning** for resilience and growth

- What composition of elements (collaborative enterprises, infrastructure, etc.) produce the most stable/healthy ecosystems and achieve the greatest impact to the surrounding community?
- What is the most effective way to scale solutions

Log your time HERE

Thread 3: Establishing the **resilience benefits**
- How do the opportunities and benefits map onto future-of-work and other resilience-related concerns?

Scope

Data-driven social and economic development analysis, planning and strategic investment to strengthen community resilience in specific areas, that can be extended to 4th sector approaches.

Focus on the US since relying largely on open data sets, most of which are provided by government agencies. Ideas for extending to Canada welcome.

Related research

Emergence and development of the NationalInnovation Systems concept / *Proposed relevance for fundamental assumptions and underpinning concepts associated with the kind of analysis and the subject of analysis considered here*
Small business resource center / *Example of an organization that specializes in the kind of research contemplated in this proposal - although it is important to appreciate that these and other examples reflect "traditional" concepts and distinctions and datasets - and that the proposal under development, here deals with new concepts, datasets, etc. - the relevance is to appreciate prior work/approached in similar/related fields*

Log your time HERE

CLARIFICATIONS

This is ongoing. Enter some information here as you anticipate misunderstandings, all collaborators add questions and everyone does his/her best to clarify. The main purpose is to prepare everyone for *crowdthinking*.

INSTRUCTION: *Use this box to store clarifications, as you get feedback from new participants. Listen to what they say about this initiative and try to identify misunderstandings. Others might fall into the same thought pattern, so you can surface some information here in order to guide everyone to the right idea. You can use Q&A to list most common questions and their answers.*

Inclusive Growth and Recovery Challenge

Preliminary preparation for this proposal (Build Shared Understanding, Research, and Structure sections) should be finalized by no later than Sun., 7/12. Beginning Monday, focus will shift to synthesis and drafting of the final proposal (see template below).

- Review information about challenge at https://www.data.org/challenge/
- Watch DataKind webinars
  - June 24th at 7am EST and 2pm EST – Art of the Possible: Showcasing Data Science Solutions in Inclusive Growth and Recovery - Webinar recording | Slides
  - July 1st at 7am & 2pm EST – Scoping 101: Identifying Your Data-Scienceable Problem - Webinar recording | Slides
  - July 8th 7am & 2pm EST – Data 101: Discussing Open Source Data, Overlooked Data, and the Ethics of Data - Webinar recording | Slides
  - July 9th 9 pm ET – Everything you need to know about the Inclusive Growth & Recovery Challenge - Webinar recording | Slides

Responsibility for the project

Patrick is the lead entity absorbing responsibility for this project.
Sensorica, LexAI and True Innovation are partner organisations.

Broad research question

How can we use data to guide the investment and deployment of collaborative practices (including open and collaborative enterprises) in order to strengthen community resilience in the face of pandemics and other future crises?

More precise research question

How can we determine the highest-value uses of currently vacant, free, and underutilized buildings and infrastructure in US metro areas (intervention / action).

Tailoring to our Audience (strategy)

What do we believe is the right balance between our goals in preparing this proposal and the priorities of the funding organization?

 What is the **4th Sector**

Log your time HERE

4th sector is what is activated when you have lots of OVNs flourishing.

An OVN is a network of people connected through some physical or online space that pools some resource or value (knowledge, care, or innovation) and is open and adaptive regarding the use of that resource or value.

An OVN has the following 3 essential features:

1. Network structure → quantitative measure = degree of networkedness (?)
2. Openness at the edges - high variety of participation
3. Inherently scalable (capacity)

OVN is defined here.
4th Sector is defined here.

Log your time HERE

RESEARCH

This phase should take from 10% to 30% of the total time allocated for this work.
The main purpose is to map the subject area, gather facts, etc.

INSTRUCTION: *Spend some time researching the topic and place the most important findings in this box for others to access. Additional tools - you can use Diigo for sharing links and annotating webpages.*

Some sources of information, language, text from Sensorica commons

- a new project proposal crafted for ESDC in collaboration with Destination Travail and La Fabrique. | very reduced version
- Tim coordinated a proposal for the Future Skills program, led by ESDC. Open proposal doc. Destination Travail was included in the proposal. See meeting with Destination travail below.
- Our last NOICE proposal and our consultation memo to ESDC.
- the last DEC proposal
- Innovation rescue, pitch, help to small manufacturers.

HARVEST HERE…

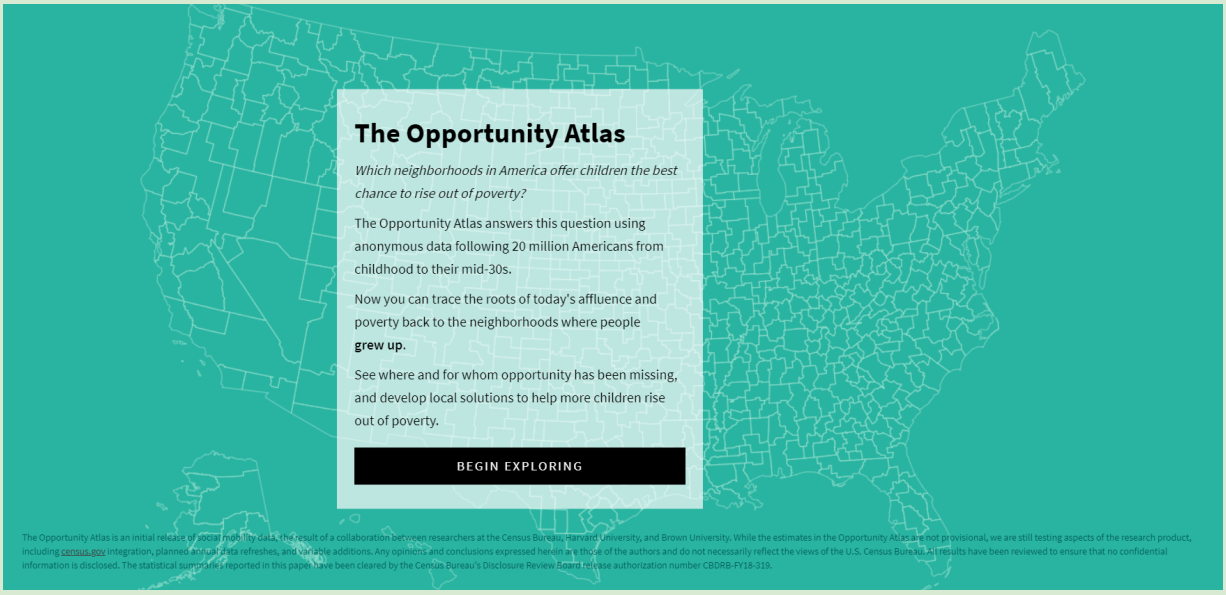
Inspiration

1. Onestar Foundation Mapping the Nonprofit Infrastructure Report
2. Opportunity Zoning

NOTE: We could probably use these as a proxy for multiple relevant indicators, or as a way to narrow the geographic scope of the study (further dividing opportunity zones into a sort of 4th sector opportunity typology).

3. Opportunity Atlas

Log your time HERE



4. [Pittsburgh 2030 District]

5. [Mapping Resilience], [Re-Mapping Resilience]

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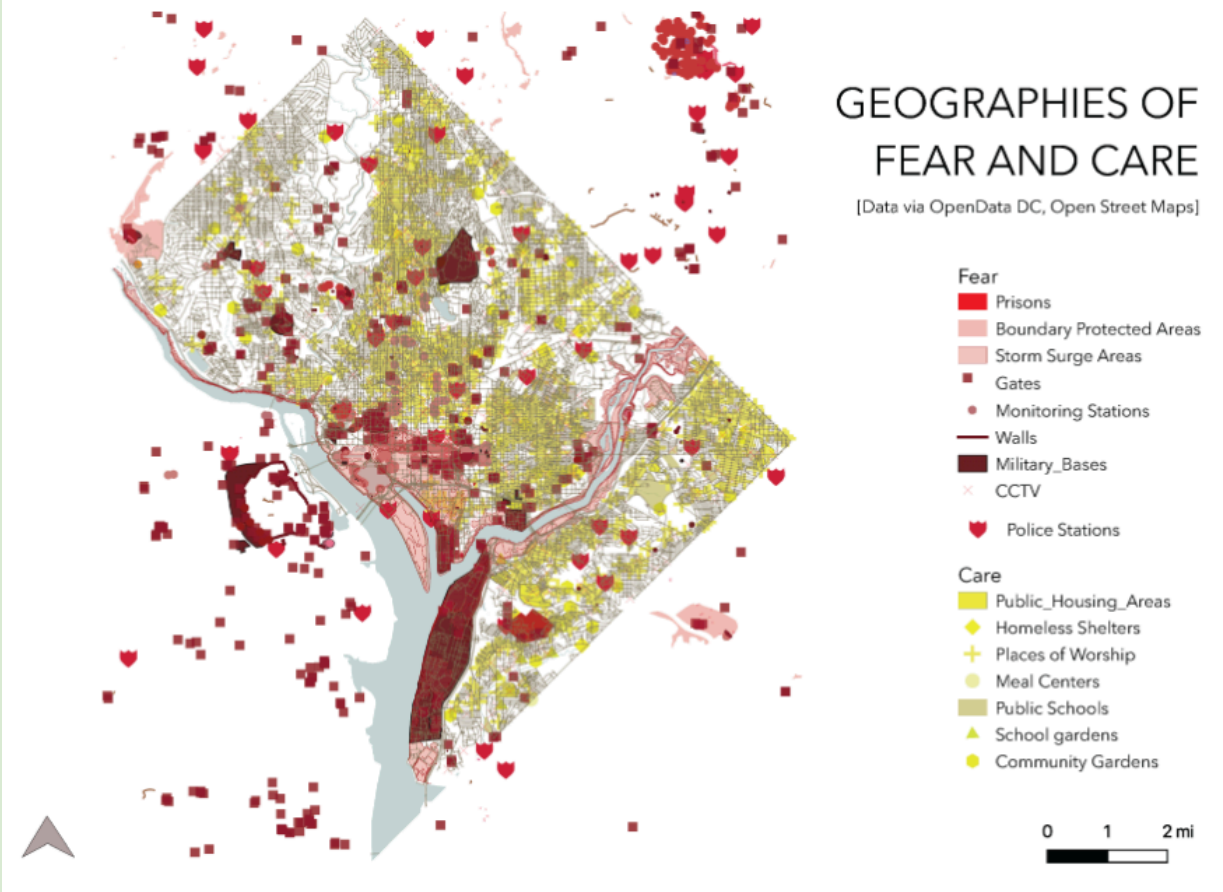

6. 3DPPGH - http://www.3dppgh.net/covid-19/

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7.

4th Sector

Sensorica's definition

P2P Models: a 4th sector infrastructure development project. "... a project which aims to support the existence and development of decentralized, democratic and collaborative economic communities that distribute value among their members. These three characteristics are fundamental to foster a cooperative economy platform based on the commons."[1]

Competing definitions.

> "[A] nascent fourth sector of the economy is emerging, one that combines market-based approaches of the private sector with the social and environmental aims of the public and non-profit sectors to address pressing problems. Endeavors in this sector, also known as for-benefit enterprises, come in a wide variety of models, from mission-driven businesses, social enterprises, and sustainable businesses, to cooperatives, benefit corporations, and faith-based enterprises, among many others."[2]
>
> "Over the past few decades, the boundaries between the public (government), private (business), and social (non-profit) sectors have been blurring as many pioneering organizations have been blending social and environmental aims with business approaches. There are many expressions of this trend, including corporate social responsibility, microfinance, venture philanthropy, sustainable businesses, social enterprise, privatization, community development and others. As this activity matures, it is becoming formalized as a 'fourth sector' of the economy."[3]

The emphasis of this project is really OVNs and collaborative enterprises. Is it fair or accurate to equate the collaborative economy with the 4th sector economy?

What is 4th sector development?

Borrowing Tiberius's metaphor, Lone Geniuses build startups but Social Beasts build networks. When planning for 4th sector development, it's important to clarify what exactly we're proposing to build. What is the basic unit of the 4th sector? Should we think of a single fablab as a stand-alone entity, or rather as a hub supporting a larger network of makers? What physical infrastructure is required to support this sort of enterprise?

Another metaphor I've found helpful in thinking about 4th sector development is the approach scientists have devised for bringing the woolly mammoth back from extinction. Since the time woolly mammoths have gone extinct, something else has also been lost - the Mammoth Steppe ecosystem in which they thrived. These scientists were practical enough to realize that you can't restore woolly mammoths to the wild without first restoring the ecosystem that provided the conditions for their survival. Our challenge is similar - a fablab is like a single woolly mammoth. You can't just drop it into any environment and hope for it to survive, grow, and reproduce. You also need the steppe. So what is the Fablab's Steppe, and how do we restore it?

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[1] https://p2pmodels.eu/the-six-principles-of-the-research-approach-in-p2p-models/
[2] https://www.fourthsector.org/what-is-the-fourth-sector.
[3] https://www.fourthsector.net/the-emerging-fourth-sector

Log your time HERE

Is there something different about how the 4th sector grows compared to how other sectors grow? Does the open, collaborative nature of the 4th sector make it more likely that new collaborative ventures will thrive where other collaborative ventures have already taken hold? Or do collaborative ventures still rely on a limited supply of resources to survive, such that having too many in one place makes it less likely than any one of them will succeed? What are the limiting factors that prevent perpetual 4th sector growth?

Limiting factors, in order of importance (according to Tibi)

1. **Imagination and understanding** - Commons-based peer production, open networks, the 4th sector, are things that don't exist for people, because they cannot imagine them, people don't have mental models about them. The system is in transition… This is a natural limiting factor for all disruptive changes. The rate of reeducation and developing new mental models about society, economy, is determining the rate of change.
2. **Work culture** - Share the unspoken, habits, integrated methods, procedures, familiarity with environments and tools. Most people are formed 8h/day, 5days / week within hierarchical environments. They have developed mechanisms for surviving and thriving in these types of hierarchical and competitive environments, which do not apply in an open and collaborative work environment. It is hard to lose these habits and develop new ones, especially for older generations, people 50 years and more. The rate of demographic exchange will determine the rate of change.
3. **Institutional Recognition and Legitimacy** - Be included in policy development, have access to development or stimulus programs, funding and others. This is about being identified, which depends on imagination and understanding, being valued and being recognized as an important thing. The legitimacy comes from the development of an unambiguous language that described the 4th Sector and the use of that language by important institutions.
4. **Regulations -** Related to trust. Need to develop a regulatory framework for the 4th Sector, in order to diminish the probability of wrongdoing.
5. **Standardization** - Related to interoperability or the ability of different agents to interact. The 4th Sector is very fragmented. (Our NOICE project addresses this problem).

Questions like these are what Thread 2 of the research project aims to explore.

Log your time HERE

Permaculture and Community Resilience

Others will find it more natural to think of this problem in the context of permaculture - "a set of design principles centered on whole systems thinking, simulating, or directly utilizing the patterns and resilient features observed in natural ecosystems. It uses these principles in a growing number of fields from regenerative agriculture, rewilding, and community resilience."[4]

→ Could the 3 foundational ethics or 12 design principles of permaculture provide metrics for our evaluation of community resilience? Have these principles been validated in this context? Are they maybe already baked into more standard resilience metrics?

Making the connection between 4th sector growth and resilience

- Evidence that 4th sector economic development isn't bound by the same limitations as the public and third sectors? Is 4th sector economic development a viable candidate for achieving 10x impact?

- Would also be useful to place 4th sector trends in context. Instead of saying "4th sector growth is on the rise," or "4th sector growth has increased x% over the past y years," use more popular/salient points of reference or comparison. Who would be surprised to discover are peers (in some relevant performance metric) of the 4th sector? Who would they be surprised to learn are being outcompeted by the 4th sector? Etc. What's the best way to put this trend on the radar of those who may otherwise have never heard of it? Rather than have to build a conception of the 4th economy from scratch, we could endow it immediate status and relevance by latching on to its better known peers.

Some catchy statistics / headlines include:

- "Study Shows Fair Use Industries Make Up One Sixth of the Economy"
- World Economic Forum, "Why Makerspaces Could be the Secret to Making Smart Cities Smart"
- The Atlantic, "How Makerspaces Help Local Economies"
- Report by JS&A Economic Development Consulting, "Innovation Space and Marketplace Report: Developing a Makerspace in the District"
- Virgin, "New research reveals the impact of makerspaces on society"

Papers on response of 4th sector to resilience challenges, especially COVID (fast action, crowdsourcing)

- "Social and economic recovery through fourth sector development" - https://www.covid.fourthsector.org/
- "When thousands of citizens innovate: how policy-makers can contribute" - https://www.sciencepolicy.ca/news/when-thousands-citizens-innovate-how-policy-makers-can-contribute
- 3D printing of PPE - https://www.post-gazette.com/news/corona2020/2020/03/28/3D-print-face-shields-N95-shortage-UPMC-DIY-homemade-mask-filter-hospital/stories/202003260127
- Peer-to-peer insurance - https://microinsurancenetwork.org/groups/peer-peer-insurance-and-response-covid-19

[4] https://en.wikipedia.org/wiki/Permaculture

Log your time HERE

- [Please add to this list - highly relevant, impactful] 

- A really nice way to pitch this would be to situate the 4th sector in the context of a resilience crisis, with COVID 19 being an obvious example. The argument is that the 4th sector provides an essential part of society's safety net in the face of such crises, and that it's role will become even more important with time as such crises become more frequent/severe (due to climate change, large scale automation of labor, etc.).

On this note, it's important to establish what's unique about the crises that face society today in order to explain why traditional solutions / institutions fail. Recent headlines are full of relevant examples and diagnoses, e.g.,

-https://www.vox.com/policy-and-politics/2020/3/16/21173766/coronavirus-covid-19-us-cases-health-care-system

-https://www.brookings.edu/research/the-federal-governments-coronavirus-actions-and-failures-timeline-and-themes/

- It's also important that we can point to the specific *mechanism* through which the 4th sector confers these benefits. What is it specifically about the makeup or functioning of the 4th sector that it leads to improved resilience outcomes for communities? This discussion relates to **question 4** in the proposal template below.

Aggregation of 4th Sector responses to the COVID crisis.

Questions toward pioneering the field of data-driven 4th sector economic R&D

1. What might serve as 4th sector economic indicators? What does opportunity mapping look like for 4th sector economic development?
2. What are the essential data sources for 4th sector economic development planning and analysis?
3. What other data infrastructure needs to exist in the 4th sector? (open data hubs, data use and privacy policies, supply chains, etc.)
4. ...

Community Resilience

Standard Economic Development Indicators and Data sets

 [Supplement]

Log your time HERE

Dimensions of Resilience & Resilience Indicators

[Supplement]

Data

1. FEMA (federal guideline) - https://www.fema.gov/community-resilience-indicators
2. NOAA (coastal communities) - https://coast.noaa.gov/data/digitalcoast/pdf/resilience-indicators.pdf
3. City Resilience Framework (Rockefeller Foundation) - https://www.rockefellerfoundation.org/wp-content/uploads/City-Resilience-Framework-2015.pdf
4. City Resilience Index - https://www.cityresilienceindex.org/#/

Future of work (organized by most important drivers)

Post-covid

- https://www.marketplace.org/2020/06/17/which-jobs-are-coming-back-first-which-may-never-return/

Data

1. Open North - https://www.opennorth.ca/2020/06/17/consultation-open-covid-19-data
2. NIH - https://datascience.nih.gov/covid-19-open-access-resources
3.

Automation

-

Lee Branstetter at Carnegie Mellon studies this and can help with the methodology.

Data

1. US Patent data - https://www.uspto.gov/ip-policy/economic-research/research-datasets
2. Survey data with employers (Sensorica data set)
3. US Bureau of Labor Statistics - https://www.bls.gov/data/

Climate change

1. World Economic Forum, "How Will Climate Change Affect Jobs?"
2. BBC, "How Climate Change Could Transform Business and the Workforce"
3.

Resilience in Crisis Scenarios

Log your time HERE

COVID-19

1. NIH Covid-19 open access resources
2. Aggregation of 4th Sector responses to the COVID crisis.

Climate Change

1.

Automation of labor

Local Production

"The strategy with sensitivity to place and scale in order to sustain local communities and provide new job opportunities while preserving the quality of the environment."[5]

Local production enables:

- The development of the indigenous food industry by supporting the local value chain to supply their produce for the manufacturing of our food products. This in turn, enhances additional farming skills;
- Knowledge and skills transfer on quality food manufacturing;
- Easier and quicker distribution of the food as consumers are closer to the producers;
- In many instances, better marketing of the products as they are made from locally available raw materials which have the preference of the population (i.e. taste is already known and accepted);
- A decrease in the unnecessary movements of food between continents. This, in turn, has a positive impact on our carbon footprint;
- Less storage time, therefore diminished warehousing costs and food losses;
- Direct economic benefits through greater incomes for local farmers and more financial contributions to local economies; and increased employment levels – both direct and indirect, a multiplier effect.[6]

Framing and Messaging

Moonshot Thinking: 10x impact vs. 10% improvement

"X is a diverse group of inventors and entrepreneurs who build and launch technologies that aim to improve the lives of millions, even billions, of people. Our goal: 10x impact on the world's most intractable problems, not just 10% improvement. Our projects have the riskiness and aspiration of research, and we approach them with the focus, speed, and ambition of a startup."[7]

"Here is the surprising truth: It's often easier to make something 10 times better than it is to make it 10 percent better.

Yes ... really.

[5] https://www.igi-global.com/dictionary/local-production/17360.
[6] https://www.validnutrition.org/local-production/.
[7] https://x.company/press/

Log your time HERE

Because when you're working to make things 10 percent better, you inevitably focus on the existing tools and assumptions, and on building on top of an existing solution that many people have already spent a lot of time thinking about. Such incremental progress is driven by extra effort, extra money, and extra resources. It's tempting to feel improving things this way means we're being good soldiers, with the grit and perseverance to continue where others may have failed – but most of the time we find ourselves stuck in the same old slog.

But when you aim for a 10x gain, you lean instead on bravery and creativity – the kind that, literally and metaphorically, can put a man on the moon. You've all heard the story before: Without a clear path to success when we started, we accomplished in less than a decade a dream several generations in the making. We chose to go to the moon, John F. Kennedy said, not because it was easy ... but because it was hard. Suddenly everyone from schoolchildren to the largest institutions were rallying behind the mission. Kennedy understood that the size of the challenge actually motivates people: that bigger challenges create passion.

And that, counter-intuitively, makes the hardest things much easier to accomplish than you might think." -Astro Teller, Captain of Moonshots, X Moonshot Factory[8]

[8] https://www.wired.com/2013/02/moonshots-matter-heres-how-to-make-them-happen/

Log your time HERE

BUDGET CONSIDERATIONS

INSTRUCTIONS: *Use this section to discuss high level considerations about the budget.*

Link to the actual budget (use THIS template)

Log your time HERE

STRUCTURE

This phase should take from 20% to 30% of the total time allocated for this work. Almost everyone can contribute to the structure.

INSTRUCTION: Work on the structure first!

Before you commit to any text, style, story, start by building a structure exposing the 3 following layers: **Thematic**, **Pragmatic** and **Logical/Emotional**. It is much easier to work collaboratively with your peers on a skeleton structure then co-editing a text that starts in a certain direction and adopts a certain style.

- A **thematic structure** is a bullet point form with items that respond to the question *what are we talking about here?*
- A **pragmatic structure** is a bullet point form with items that respond to the question *what do we want to achieve here?*
- A **logical/emotional structure** is a bullet point form with items that respond to the question *what do we demonstrate or prove here?* or *what emotions are we passing here?* So here you lay down your argumentation or emotional content.

Following questions from the proposal, therefore the first level thematic structure is imposed by the proposal form.

- What problem are you trying to address? Who is most impacted by this problem?
    - Problem statement / Define the core intention / clear, concise
        - What
        - How
        - Why
        - Who
- How will you solve the problem you described?
    - Mapping / describe the method / convince that the project strongly relies on data, and good methods
    - Placemaking / describe results / hint to impact
- What resources do you have available in-house to complete the project and what resources do you need to implement your proposed solution? / reduce perceived risk in the minds of funders
    - Describe organisational structure / secure funders about capacity to deliver by introducing them to collaborative practices, where resources are pulled in from various partners. / mitigate perceived risk
    - Describe partnership / mapping resorucs from current partners
        - What partners can bring
            - Sensorica / collaborative environment
            - LexAI
            - True Innovation
            -
            - Others / open to more resources that would be gathered and managed through the Sensorica collaborative environment / appease their perceived risk
- What is being done currently to address this problem? How and why is your solution better?
    - State of the art / Present the state of the art
        - Mapping, Inventory / describe, illustrate with best example
        - Matching and Marketplaces / describe, illustrate with best example

Log your time HERE

        - Others? / describe, illustrate with best example
    - What we do / Present what more we do
        - Purpose: attuned to inclusive resilience and recovery / describe, illustrate with best example
        - Process: use 4th Sector and OVN dynamics / describe, illustrate with best example **/ the waw factor**
- How would you define and assess the success of your proposed solution?
- Why are you/your team uniquely positioned to solve this problem/implement your proposed solution? / build confidence, reduce perception of risk
    - Core Partners and their resources, expertise and experience / describe
    - Open collaborative project / explain that we will bring more than what the core partners have
    - 10 year old collaborative environment / explain that we have 10 year experience of Sensorica, the advantage of a well structured collaborative space, the openness to an abundance of resources and ideas that can come through this open innovation network, it is plugging into the crowd. / make it a **waw factor**, move from scarcity of resources and ideas to abundance
    - 10 year experience with 4th Sector practices / explain that the angle on the 4th sector and OVN dynamics is covered by partners, who are actors in the 4th Sector
- What data science applications are you using or do you anticipate using in your proposed solution (e.g., predictive modeling, NLP techniques, time series, etc.)?
- How do you plan to ensure the technological/algorithmic accuracy of your proposed solution and how will you maintain ongoing accuracy of your proposed data science solution?
- Describe the data source(s) you have or need this project to succeed. If you do not currently have data, describe your process for obtaining data for your project and estimated timeline to procure.
- How do you approach the ethical collection, management and use of this data, including data security, privacy, integrity and transparency?
- What is your high-level process and timeline to design and implement your proposed solution? (*accepts proposals for projects lasting up to 2 years)
- Who else is critical to your project's success? How will you go about building those partnerships?

NOTE: the rest of the text in this box was moved HERE

Log your time HERE

PROPOSAL TEXT

Title:

Category: Cities and Towns, Jobs of Tomorrow, Access to Capital

❗ Instructions for contributing to this section

Use bullets with succinct phrasing to capture main points of each response. When the bulleted list is complete for a particular question, synthesize a final response in the box provided, using no more than 1500 characters.

Textboxes with no background color indicate that the content is still under development, and is in need of supplementation. When the textbox has been highlighted in green, that indicates that the content is ready for final review.

Finally, text highlighted in blue indicates a request for Sensorica content.

Other members of the project coalition (optional) [200 characters]

Patrick Campbell (applicant, project lead), CAKE, and LexAI are partner organisations in this project.

The project will remain open for collaboration with other organisations and individuals, based on needs and future opportunities.

1. What problem are you trying to address? Who is most impacted by this problem? [1500 car]

In metro areas across the US, COVID-19 is straining the capacity of cities to keep up with the daily-evolving needs of residents (Brookings Institution). This rigidity in the face of crisis is especially harmful to poor, black, and other minority communities where existing development is already woefully mismatched to residents' needs, and where numerous discriminatory policies and practices–including redlining, the devaluation of assets in black neighborhoods,

and discrimination in the small-business credit market–are actively suppressing the progress that might occur (Forbes).

Many of residents' most urgent needs could be met at extremely short notice by simply activating the many free and latent spaces distributed across their community. Empty warehouses provide vast spaces that can be retrofit to provide temporary emergency public housing. The church sanctuary that lies vacant five of seven days a week can be opened up for hosting book clubs and technical training workshops. The two-dozen empty garages and basements spread across the community can provide low-capacity meeting space where conference attendees can congregate in sizes compatible with CDC social distancing guidelines.

The opportunity cost of leaving these spaces inactive is significant. Latent real estate represents an opportunity to lower the barrier for grassroots entrepreneurs to unleash their productive potential, creating new streams of value for their communities and hastening economic recovery.

2. How will you solve the problem you described? [1500 char]

I propose to develop a searchable inventory of free and latent spaces within the hardest-hit US metro areas to assist residents in the discovery and conversion of these spaces to productive use.

To achieve this, I will use a combination of community survey data, municipal code, vacant property registries, community directories, and US Census data to determine the highest-value uses of currently vacant, free, and underutilized buildings and infrastructure in select US metro areas. This data will be used to create a classification system defining the suitable uses of each space, expressed in terms of the most prevalent and urgent needs within that community.

The products of the proposed research will be used to help facilitate the activation of these latent assets for urgent public uses and foster a transition toward a more resilient, responsive, and human-centered urban landscape.

We have chosen to focus on community assets rather than community needs for two reasons. First, needs-based approaches tend to divide communities into competing interest groups, encouraging a zero-sum mentality around the management and use of community resources. Second, solutions are more commonly sought outside of the community, leading to a greater dependence on external resources. Community asset mapping reverses these trends by contributing to local capacity building and empowerment and, as a process, has the potential to be inclusive of all community dimensions and interests (LearnQuebec).

Log your time HERE

3. What resources do you have available in-house to complete the project and what resources do you need to implement your proposed solution? [1500 char]

Patrick Campbell will serve as project lead in this project, leveraging his graduate education in data science and public policy and 8 years of professional experience in urban sustainability and resilience, research design, and project management. He also brings a rich network of sector experts developed during his recent graduate study at Carnegie Mellon University, able to provide as-needed assistance in all critical elements of the proposed project (elaborated in question 12).

CAKE will contribute particularly with extensive resource and operational data regarding the facilitation and adoption of 4th sector approaches, and will provision a digital environment designed for collaborative work. Crowdsourcing is a 4th sector modality for acquisition of resources and will be used as a multiplier of available financial capital invested in this project.

LexAI will make available expertise in Natural Language Processing, advanced data analytics and machine intelligence and provision cloud computing environments well-suited to the anticipated data-science collaboration, data and model management and analytic workload requirements.

Additional anticipated resource/budgeting needs include hosting fees, data access fees, purchases of licenses, ICT maintenance, and costs associated with communication and dissemination of results (publications, presentations, traveling, and conferences).

4. What is being done currently to address this problem? How and why is your solution better? [1500 car]

The national response to the COVID crises has mobilized great efforts from the public, private and the nonprofit sectors. This 3-sector framework of traditional social and economic actors often prefer predictable and linear advancement, hierarchical management, and top-down planning and innovation. The government mediates interests concerning profits, care and social support to maximize security and the public good.

This project augments the 3-sector framework by activating participatory communities and networks, which rely on open and collaborative methodologies and on the sharing of resources, as illustrated in the open source and makers movements. This “4th sector” addition has demonstrated its capability for delivering high impact through disruptive innovation and by making available massive unused capacity within the crowd. This is illustrated by Linux,

Wikipedia, Blockchain, consumers 3D printing and numerous other achievements that have originated and have been produced outside of the traditional institutional framework.

We propose a data-driven site-selection methodology that mixes traditional and 4th sector approaches, adding new capacity, augmenting the potential for impact through a more locally attuned, efficient, and adaptive variety of resilience and recovery interventions. This will accelerate and de-risks economic recovery and development efforts.

where assets are not owned by anyone but use access is guaranteed to everyone according to a given set of rules.

approach adds the *for benefit motive* to the mix, which balances between individual rewards and common good. It also extends the

Processes are usually top-down and innovation follows the 10% improvement paradigm, constrained by rigid institutional forms. The assets used are under three ownership models: public, private and shared property. The

5. How would you define and assess the success of your proposed solution? [1500 car]

In broad terms, we define success in terms of meeting the needs of the communities. Rather than prescribe what specific solutions best meet those needs, we aim to empower communities to lead their own response and recovery effort leveraging the free and latent resources already present within them, on top of the resources available through traditional channels. The project focused on physical spaces.

The ultimate proof of success is that more physical spaces, be it in the public domain, private domain or shared (using 4th sector-specific ownership regimes such as commons and nondominium), are being more productively utilized. Our theory of change and impact in this respect is that better site-selection for 4th sector interventions can deliver this impact and make a tremendous difference within the selected communities.

We will assess the success of our proposed solution using the following Key Performance Indicators (KPIs):

1. Number of building owners registering their underutilized spaces for public use
2. Number of spaces registered
3. Number of registered spaces successfully “activated” (converted to productive use)
4. Diversity of spaces registered (in features, use designations)
5. Proportion of registered spaces activated
6. Stock turnover rate

Log your time HERE

7. Network strength/connectivity between activated spaces (volume, efficiency of flow of value through network)
8. Geographic coverage / reach
9. Match between spaces committed and community's need profile

Use of searchable inventory tool (measured by number of unique users, frequency of use, facility of use)

6. Why are you/your team uniquely positioned to solve this problem/implement your proposed solution? [1500 car]

Patrick Campbell (MS Public Policy & Management, Carnegie Mellon University) brings expertise in the areas of GIS, data analytics, and project management. Mr. Campbell also has broad experience in the areas of urban sustainability and resilience, which he developed over his eight-year career. Today, Mr. Campbell's work focuses on the development of public interest technologies to improve the quality and accessibility of social services worldwide and increase society's resilience to global threats like climate change.

CAKE is a nonprofit organization that functions as a trust for open and participatory networks. Tiberius Brataviceanu is CAKE's principal administrator and has over 10 years of experience with open innovation, crowdsourcing and participatory processes. The extensive body of data, knowledge and experience acquired over this period, means that this project collaborator is uniquely qualified and prepared to advise on a variety of crucial aspects of our data selection, acquisition, analysis and efficacious application of the proposed site-selection tool so as to achieve significant and meaningful impact for participating communities.

LexAI (www.lexai.ca) will make available expertise in Natural Language Processing and advanced data analytics and machine intelligence and provision cloud computing environments well-suited to the anticipated data-science collaborations, data and model management and analytic workload requirements.

7. What data science applications are you using or do you anticipate using in your proposed solution (e.g., predictive modeling, NLP techniques, time series, etc.)? [1500 car]

This project will make use of the following data science applications:

- Spatial analysis of real assets and infrastructure as well as human and social capital resources using ArcGIS and other Esri applications for mapping resilience and recovery capacities - in what we're calling 4th sector opportunity zones

Log your time HERE

- NLP applied to text corpora related to local discourse about community needs, assets and opportunities for highlighting key topics and sentiments (topic modeling and sentiment analysis) relevant to matching needs of resilience and recovery with local resources.
    - Local news sources, municipal meeting records, for assessing political climate and institutional preparedness for 4th sector development and support (laws and regulations/codes)
- Predictive modeling
    - Multiple linear regression for identifying most significant predictors of success or failure for collaborative enterprises

Additional analytical methods will be considered as more definition is brought to the project work plan. This planning and decision-making will be conducted through the Sensorica NRP (in order to ensure that all decisions are made transparently and democratically) and in consultation with the appropriate partners and sector experts discussed below (see question 12). See also response to question 8.

8. How do you plan to ensure the technological/algorithmic accuracy of your proposed solution and how will you maintain ongoing accuracy of your proposed data science solution?

Statistical validity and reliable decision-support accuracy will be achieved through a disciplined, iterative-learning approach to evaluating and improving our data gathering, selection and analysis methods. In support of this, we draw on iterative cycles of model evaluation and refinement as recommended by the Data Science for Social Good fellowship project lifecycle template (Dr. Rayid Ghani, BigData). This template synthesizes Dr. Ghani's extensive knowledge and experience instructing and advising university students in the effective use of Machine Learning, AI, and Data Science methods for solving high impact social good and public policy problems in a fair and equitable way and has been successfully applied to contexts ranging from criminal justice, education, healthcare, energy, transportation, economic development, workforce development and public safety (rayidghani.com).

Long-term maintenance of the technological and algorithmic accuracy of our solution is assured through our choice of experienced, reliable subject-matter expert partners. With deep understanding of the nature and dynamics of activating 4th sector capacity for inclusive resilience and recovery, our partners are well-prepared to inform model selection, algorithm design and reliability and performance evaluations supported by accepted good practices for

best subset and other variable selection methods, cross validation, testing of statistical assumptions, confusion matrices, AUC, and others.

9. Describe the data source(s) you have or need this project to succeed. If you do not currently have data, describe your process for obtaining data for your project and estimated timeline to procure.

This project will make use of the following public data sets:

1. US Census data
2. Municipal Vacant Land / Vacant Building Registries
3. Municipal Land Use and Zoning Codes
4. Vacant Building Codes and Standards
5. Municipal Property Appraiser Data
6. Building and other Municipal Asset shapefiles

The project will also make use of several in-house and newly created data sets, including:

7. Community survey data - To be collected during phase 2 of the project in collaboration with local partners. Data set will encompass a wide variety of community-specific variables aimed at discovering, relating and attributing detailed data about local assets and opportunities that can be valuable for inclusive resilience and recovery.
8. Data about open value network and 4th sector intervention dynamics - productive conditions and contexts - as well as, actual planning, operational and accounting data drawn from the Sensorica Open Value Network.

Finally, the project intends to make use of a number of yet-to-be-identified sources, including local news sources, municipal meeting records, and other unstructured data for assessing political climate and institutional preparedness for 4th sector development and support. These unidentified data sources will be more thoroughly explored and assessed for accessibility and applicability during the Phase 1 project development process (see question 11).

- Also, social purpose bonds and social-finance related groups and foundations looking for mission-driven investment opportunities will be engaged in ongoing valuation of the most immediately actionable properties/community assets.

Can we factor into the data-gathering pipeline the 4th sector related notions of crowdsourcing data and surveys - establish self-serve data cleaning and upload/intake processes and guidelines so that all are invited to identify and add valuable data to the asset

Log your time HERE

and potentials inventory? (Another way the proponent's specialized knowledge and appreciation of 4th sector OVN dynamics uniquely prepares them to profitably equip the analysis - as well as apply the analysis to the (secondary interest) of efficaciously localizing, planting, seeding and growing OVNs)

https://www.neighborhoodindicators.org/sites/default/files/publications/NNIP%20Data%20Inventory%20Tables%20Feb20_0.pdf

https://www.urban.org/

http://outreach.msu.edu/bpbriefs/issues/brief4.pdf

10. How do you approach the ethical collection, management and use of this data, including data security, privacy, integrity and transparency?

This project will be designed and implemented in accordance with the Stanford Digital Civil Society Lab's Data Protection Standards for Civil Society Organizations (CSOs) and supplemented as necessary by other data management best practices.

During the project development phase of the project, the project management team will work with a data privacy and security consultant to develop a more detailed strategy for applying these principles and guidelines to the specific tasks and activities involved. The resulting plan, and any derivatives of the plan (IRBs, MOUs, etc.), will be published for public access and review.

To ensure that ethical considerations and impacts remain in full view of stakeholders and open to ongoing dialog, learning, and treatment throughout the project lifecycle, we propose explicit designation of a subject-area of business analysis, namely "Ethical Considerations and Impacts." This subject area will be maintained in the analysis documentation and further developed and applied as and when indicated and agreed by project stakeholders and leadership.

The primary needs of users we anticipate include transparency in the evaluation of algorithm performance, the ongoing option of reviewing, by direct observation, all data and analysis results, and ongoing access to the configuration of analysis methods.

Principles and good practices of "privacy by design" will be applied throughout the data-definition, curation, cleaning, transformation, and analysis process.

11. What is your high-level process and timeline to design and implement your proposed solution? (*accepts proposals for projects lasting up to 2 years)

This project was designed to be completed within 18-24 months according to the following approximate process and timeline.

Phase 1: Project development & partnership building (4-6 months)

- Experimental design & logistical planning
- Evaluation of candidate research site(s)
- Definition of project tasks & timelines
- Purchase of materials
- Definition of roles & responsibilities
- Staffing of project
- Set-up of project and data management infrastructure & policies (including data privacy & security)

Phase 2: Data collection & processing (2-3 months)

- Onboard student interns & volunteers
- Conduct community surveys
- Compile & organize all identified datasets
- Clean & process data

Phase 3: Data analysis & synthesis of results (2-3 months)

Phase 4: Development & deployment of final products (3-6 months)

- Create classification scheme for free & latent assets
- Build prototype of asset discovery & matching tool
- Iterative review & revision of product with end-user
- Beta testing
- Full deployment

Phase 5: Hand-off of ongoing tasks & responsibilities (1-2 weeks/ongoing)

- Formalize custodial contracts & agreements
- Ongoing evaluation & maintenance of deployed products

In keeping with its emphasis on collaboration, flexibility, and continuous improvement, this project will be managed using the Agile methodology. All component phases and tasks defined

above will be reworked during the phase 1 development process to follow the six-artifact framework to track progress and create the final product (ZenKit).

Tim's suggestions for consideration:

An iterative, risk-driven data-science methodology which prioritizes risks and uncertainties, early experimentation and learning, and incremental build, informed by user experience in direct application.

As we iterate through data-science implementation, evaluation and feedback, we anticipate the following phases and major themes arising as the project advances. The following process outlines our approach for completing the project objectives to realize the desired benefits and impact:

Phase 1: Collaborative process configuration, and preliminary analysis and scoping, with partners and participants (4-6 mo.)

- Review of core capabilities, close resource gaps, partner roles & responsibilities.
- Stakeholder consultation, participatory analysis of the problem domain.
- Data acquisition, model analysis and design, refining problem statement and success criteria.

Phase 2: Data-Science Requirements Analysis and Design and Evaluation (6-8 m.)

- Data modeling for data completeness and quality (data curation and acquisition)
- Machine intelligence modeling and algorithm design and testing.
- Selection of research site(s).

Phase 3: Process, Model and Impact Validation (4-6 mo.)

- Elaborate design of validation models
- Evaluate analyses and tools developed in the project to the selected research site(s)
- Identify critical improvements for completing the solution.

Phase 4: Completion & deployment (4 mo.)

- Final asset discovery & matching tool available
- Review, reflection, reporting results

Log your time HERE

Words	197
Characters (no spaces)	1,301
Characters (with spaces)	1,495
Paragraphs	17
Lines	24

12. Who else is critical to your project's success? How will you go about building those partnerships?

The human resource needs for this project include:

- 2-3 full-time data scientists to manage analytical tasks provide higher-level technical support for student interns. Salaries to be paid with grant funds.
- 5-7 part-time student interns recruited from Carnegie Mellon University's Heinz College of Information Systems and Public Policy, to be supervised by Chris Goranson or other appropriate CMU faculty advisor. Possibility of financing with departmental and/or Federal Work Study funds.

We will also require the support of local partner organizations with intimate knowledge of the communities to mediate our interactions with residents and supervise our implementation of community surveys. We will vet prospective partners by their alignment with project goals and tasks, their history and record of success with the community, and their reputation among community leaders and peer organizations.

For my remaining human resource needs, I will draw from my personal network of Carnegie Mellon University faculty and Sensorica's extensive network of affiliates. Both of these networks provide rich resources of relevant sector knowledge and technical expertise that can be activated at a moment's notice with very little stage-setting required, making it ideally-suited for occasional and shorter-term tasks, as well any unanticipated needs that may arise.

13. (Optional) Upload additional images, graphics, or other visual material to provide additional context. 1 image per upload. PNG, JPG

Log your time HERE

Appendix 1. Instructions and Guidelines

https://www.data.org/challenge/

JOBS OF TOMORROW. Leave no worker behind. - Low wage workers are among the most vulnerable in today's economy. In times of economic stress, current trends toward automation and job displacement could accelerate. How can we use data science to help workers remain secure in precarious times? Can data insights predict trends in the labor market and connect and prepare workers for the jobs of tomorrow?

ACCESS TO CAPITAL. Leave no entrepreneur behind - **Unleashing the spirit of grassroots entrepreneurs can help communities rebound by creating much-needed jobs and growing local economies. Yet, in times of recession, the flow of credit to micro and small businesses tends to slow down. How can data science enable microentrepreneurs to gain access to capital? How can data science help us identify micro and small businesses with the potential to grow? How can data insights rethink creditworthiness and unlock capital for high potential business owners**?

CITIES & TOWNS. Leave no place behind - An economic recession will hit some places harder than others. As public and private sector investments flow into cities and towns to stimulate the economy, **how can leaders use data-driven insights to make the right decisions to ensure economic security in underserved communities? How can data and analytics help connect neighborhoods to the resources and networks they need to access opportunity, including quality education, affordable housing and childcare, decent jobs, and transportation?** We are seeking applications of data science that can fuel economic growth and empower communities to thrive without further exacerbating inequality.

JUDGING CRITERIA

All entries will be evaluated based on the following:

- Impactful - Addressing an important inclusive growth challenge.
- Replicable - Presenting a proposal that can be adapted to different cases.
- Scalable - Creating a project that can be expanded on a larger scale.
- Practical - Meeting reasonable resource and execution req's with manageable risks.
- Breakthrough - Designing an insightful and new application of data science.

Material from Data Science for Social Good Fellowship

Several things are required for a project to achieve success. The following list outlines the requirements for a successful project. These alone do not guarantee success, but success is nearly

impossible without them. We have found some requirements easier to satisfy; we have ordered them from easiest to most difficult:

- **A solvable problem.** Some problems are too big or too difficult to solve in a summer. If an organization were to ask us to solve world poverty, we would have to decline because it's far too complex a problem for a summer fellowship. Few potential partners have pitched unsolvable problems, but when they do, we can usually get around it by focusing on one aspect of the problem. DSSG cannot solve poverty in three months, but we can help alleviate it by reducing unemployment, homelessness, maternal mortality, lead poisoning, and school dropout rates and increasing smart urban investments, home-visitation rates, insurance rates, and social services interactions, among other things.
- **A challenging problem.** We look for projects that will challenge three or four data science fellows for the duration of the fellowship. Anything less squanders the fellows' time and denies the them an opportunity to learn. Challenging problems encourage teamwork, spawn creative solutions, and play a key role in DSSG's ability to "produce data scientists with strong skills in solving real-world problems and an understanding, excitement, and passion for solving problems with social impact." For example, our World Bank team worked with another fellow who has search-engine expertise to find links between corrupt applicants online, and our Chicago Public Schools team worked with fellows who had strong D3 experience to build an interactive map showing where kids go to school. We once tried to give several smaller projects instead of one big project to a team of fellows but found that it did not work as well.
- **An important problem with social impact.** We make a substantial investment in each project, not only financially (typically over $100,000) but also opportunistically (when we choose to do a project, we choose not to do another project). We'd like to dedicate our limited resources to substantial problems. **Each project must meet an operational need for the partner organization and must have a tangible connection to "social good."** We'd decline a hedge fund if it asked us to help get bigger returns or an NGO that asked us to purely analyze historical data that have little relevance or actionable impact today. All else being equal, **we value projects that help more people over fewer people and that solve chronic problems over temporary problems.** Past projects have been in areas such as public health, education, economic development, disaster response, and the environment, but other projects qualify.
- **A motivated, capable, and committed partner.** No project can succeed without a fully invested project partner. Project partners understand the problem, they have subject-matter expertise, and they ultimately decide how our work is used. Being practitioners, our partners often look at the problem differently than we do, which is important for solving tough problems. We need them to provide insight into the problem and to guide us as we develop a solution. This demands a lot from partners. It often requires partners stretching themselves and asking themselves hard questions. It also requires time. We look for partners who will help scope the project before the fellowship, give a presentation about their work in the second week of the fellowship, chat at least once a week with the team throughout the fellowship, and use our work after the fellowship. In our experience, this level of engagement usually requires an individual

within the partner organization to dedicate about 20% of her time over the summer to supporting the team — not a small ask, especially for non-profits and governments with resource constraints or small staffs.

- **Appropriate, relevant data.** Getting the data we need is almost always the biggest challenge. Important things go unmeasured or unrecorded or, more commonly, cannot be shared. Many of our projects involve medical, educational, and other sensitive information. Getting lawyers to agree on data and code sharing can take months. We try to be flexible — partners have anonymized data (while keeping it useful at an individual level), conducted background checks, hired our fellows as (unpaid) interns, and required us to do our analyses on their internal computer systems (remotely) — while maintaining a spirit of openness. We expect our partners to provide us with all the relevant data they have so we can build a solution that's appropriate, effective, and easily deployed. (http://www.dssgfellowship.org//2015/11/04/what-makes-a-good-dssg-project/)

Appendix 2. Time Log

Contributors to this project can log time here. To do so, copy the table and place your name at the top.

Recommend making backup copy for personal accounting. Project will be added to NRP if funded.

Contributor: Patrick C.

Date	Hours logged	Activity
7/1/20	1	DataKind Webinar #1: project scoping
7/3/20	2.5	Project scoping - problem statement, review related Sensorica proposals
7/3/20	.5	Scoping meeting with Tim - OVNs, review related Sensorica proposals
7/6/20	4	Meeting with Tim, project scoping, research ToMesh and NYCMesh
7/7/20	4	Project scoping, research community mesh projects
7/8/20	6	Project scoping, research
7/8/20	1	DataKind webinar #2
7/9/20	5	Project scoping, migrate project to Sensorica platform and format
7/10/20	2	Work meeting - brainstorming, progress updates, project scoping
7/10/20	3.5	Project scoping, research
7/10/20	1	Meeting with Lauren, review of problem statement and research threads
7/11/20	5.5	Complete MAP template for all research threads, scheduling of week's activities
7/12/20	7	Complete MAP template for all research threads, scheduling of week's activities
7/13/20	1.5	Work meeting - project scoping, strategic review of final proposal
7/13/20	1	Meeting with Dena, project merging
7/13/20	6	Project scoping, drafting proposal, MAP framework
7/14/20	8	Project scoping, drafting proposal, MAP framework, revise problem statement
7/15/20	1.5	Work meeting - drafting proposal
7/15/20	1	DataKind webinar #3
7/15/20	4	Drafting proposal

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7/16/20	.5	Meeting with Chris Goranson (CMU)
7/16/20	8	Drafting proposal
7/17/20	4	Work meetings - collaborative drafting of proposal with Tim and Tiberius
7/17/20	6	Drafting proposal

Contributor: Tim

Date	**Hours logged**	**Activity**

Contributor: Tiberius

Date	**Hours logged**	**Activity**
	5	Review, reading, internet searches, team meetings, discussion, deliberation, ideation and minor authoring.
15 july	1	Worked with Tim on the topic, concept, also cleaned the text, proposed new ideas
16 july	1	Comments, proposed some new orientations (pppp is one example)
	1.5	First meeting with Tim and Patrick, put in place Sensorica's methodology, communicated the initiative
	1	Concept development, provided links to resources in Sensorica, helped in clarifications, definitions, restructured the document to allow participation.

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Contributor: Dmitry

Date	**Hours logged**	**Activity**
16Jul20	2.3	Working on Grant proposal, development of relevant content on LiM
17Jul20	5.3	Working on Grant proposal, development of relevant content on LiM

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{*Signalization tools*}

{*symbol for process/status updates - use this to signal important milestones in the process*}

{*symbol for notes - use this to post reminders or short messages for self or to collaborators*}

{*symbol for important information - use this to attract collaborators' attention*}

{*symbol for ToDos - use this to signal to your collaborators about what they can do*}

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Old text parked

In developing this section, use the following structure:

1. What decision is being improved?
2. Who is deciding?
3. What is the value of an improved decision?
4. What data sets will be used to answer the question?
5. What is the deliverable? What is the recommended deployment?

Project components, work plan, and Deliverables

This section is for itemizing the actions to be taken relative to each goal, the client whose problem they address, and the deliverable and recommended deployment by the client.

How can we use data to guide the investment and deployment of collaborative practices (including open and collaborative enterprises) in order to strengthen community resilience in the face of pandemics and other future crises?

(1) What decision is being improved?
(2) Who is deciding?
(3) What is the value of an improved decision?
(4) What data sets will be used to answer the question?
(5) What is the deliverable? What is the recommended deployment?

Thread 1: Mapping opportunity for 4th sector investment and development
- Where are the areas of greatest opportunity for 4th sector development distributed in geographic space?
- What development projects [PC5] are best suited for different contexts / each pocket of opportunity?

(1) What decision is being improved?
   - *4th sector producers*: Where should I attempt to launch my collaborative enterprise in order to maximize its chances of success and benefits to the community?
   - *4th sector producers*: What features should I build into my collaborative enterprise in order to maximize its chances of success and benefits to the community?
   - *4th sector consumers*: What actions should we take to promote 4th sector development in our community?
   - *Local governments*: Where should we direct investment to best empower citizens to solve their own problems, especially in relation to major crises and institutional failure?
   - *Local governments*: What policy changes might be needed to better support 4th sector operations and growth?

(2) Who is deciding?
   - 4th sector producers and consumers
   - Local governments

(3) What is the value of an improved decision?
   - More strategic, targeted deployment of 4th sector assets, leading to…
     - Greater success rates among collaborative enterprises and networks
     - Stronger 4th sector, more resilient communities
       - § Stronger = more stable, stronger growth
       - § More resilient = Increased local production capacity/self-sufficiency, stronger partnerships with local government (responsiveness, investment, etc.)

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    - Reduced harm to vulnerable populations during crisis events
    - Better baseline health for coping with everyday institutional deficiencies and failures
- Increased synergy / complementarity between frontline institutions (defined by the traditional 3-sectors) and 4th sector (civil society)

(4) Data sets
- Indices / Proxies
    -
    - Opportunity Zones
- Feasibility[PC13] (building on unique strengths/capacity of organization)
    - Adequate supply of / access to labor and capital
        - § Investment in 4th sector development (in $)
        - § Metabolism (consult with Tim)
    - Buy-in from citizens
        - § Culture of grassroots activity (density/magnitude of interest / will in population) – Number / proportion of residents currently or previously engaged in 4th sector activity (or reasonable proxy) relative to critical mass benchmark
    - Current state of 4th sector development
        - § Size of 4th sector economy in $ / revenues
        - § Number and density of collaborative enterprises
        - § Condition of 4th sector infrastructure
        - §
    - Political climate / local policy
        - § NLP of city codes and ordinances –new data set
        - § Number of previous projects funded or supported / amount invested ($) -
    -
- Viability (profitable solution, sustainable business model)
    -
- Desirability (offering a solution your customer really needs)
    - Provides jobs/opportunity
        - § Standard economic development indicators and data sets
    - Provides education, technical skills, professional development opportunity
        - §
    - Building local production capacity (multi-dimensional)
        - § COVID response / designations
            - Health Care/ Public Health / Human Services
            - Law Enforcement, Public Safety, First Responders
            - Food and Agriculture
            - Energy
            - Water and Wastewater
            - Transportation and Logistics
            - Public Works & Infrastructure Support Services
            - Communications and Information Technology
            - Other Community-, Education-, Or Government-Based Operations And Essential Functions
            - Critical Manufacturing
        - § Department of Homeland Security
            - Medical and healthcare
            - Telecommunications
            - Information technology systems
            - Defense
            - Food and agriculture
            - Transportation and logistics
            - Energy

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- Water and wastewater
- Law enforcement
- Public works

§ Social Safety Net
§

○

(5) What is the deliverable? What is the recommended deployment?

- 4th Sector Development Opportunity Map - An overlay on the existing US Opportunity Zones that subclassifies zones by factors correlating with 4th sector-specific feasibility and need.
    - ○ This should be deployed as an interactive map and dashboard specifying tax codes/benefits and other decision-support information. Should be useful for city planners for zoning purposes, policy makers for laying the legal and political groundwork, grant-makers to prioritize regional investment, NGOs for providing complementary services and partnerships, etc.
    - ○ Provides stock evidence for justifying projects proposals, stronger business case for attracting investment, lobbying government support, partnerships

Thread 2: Strategic planning for 4th sector stability and growth

- What composition of elements (collaborative enterprises, infrastructure, etc.) produce the most stable/healthy OVN ecosystems given various environmental conditions and achieve the greatest impact to the surrounding community?
- What is the most effective way to scale OVNs to preserve or grow their synergistic potential?

(1) What decision is being improved?

- *4th sector producers*: Who should I partner with to increase my chances of success and impact?
- *4th sector producers*: What factors should I consider
- *Local government*:

(2) Who is deciding?

- 4th sector producers and consumers
- Local government

(3) What is the value of an improved decision?

- Increased synergy between collaborative enterprises at every scale
- Smoother path to 4th sector growth, higher likelihood of success at every critical stage of development
- Better models for projecting 4th sector growth, stronger business case for attracting investment
-

(4) Data sets

- Standard economic development indicators and data sets
-

(5) What is the deliverable? What is the recommended deployment?

- A developer's journey map mapping stages of growth, specifying KPIs, etc.
    - ○

Thread 3: Establishing the resilience benefits of OVNs

- How do the opportunities and benefits that 4th sector growth provides map onto future-of-work and other resilience-related concerns?

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(1) What decision is being improved?
-

(2) Who is deciding?
- 4th sector producers and consumers

(3) What is the value of an improved decision?
-
-

(4) Data sets
- Standard resilience indicators and data sets
    - FEMA -
    - NOAA -
    -
-

(5) What is the deliverable? What is the recommended deployment?
- A rudimentary 4th sector data infrastructure to be administered and maintained by Sensorica, including:
    - Curated collection of 4th sector data sets (database and server)
    - Data manager(s)
    - Digital rolodex of technical capacity within Sensorica
- A set of policy recommendations
    -

Logical/emotional Structure (include items that respond to the question *what do we demonstrate or prove here?* or *what emotions are we passing here?* So here you lay down your argumentation or emotional content.)
- We want to demonstrate the following:
    - 4th sector development is **feasible** across a wide range of geographic contexts
        - The factors that correlate with the success of various collaborative enterprises are numerous and widespread
    - Scaling of OVNs follows a regular, predictable pattern and can be effectively guided through strategic planning and execution (validate growth models and projections, etc.)
        - There is a *4th sector ecology* (composition and organization of elements) that can be modeled and leveraged to improve the outcomes of specific collaborative ventures
        -
    - 4th sector development is **impactful** across a wide range of geographic contexts (i.e., the benefits of OVNs / 4th economy development map onto the resilience needs of communities). Dimensions of resilience include:
        - Labor/future of work
            - The skills that OVN participants develop through their work **match the current and anticipated needs and demand of employers**
            - The **benefits of OVNs flow especially to underserved and vulnerable populations**, including immigrants, low-education workers, minorities, etc.
            - OVNs provide **more equitable access to a employment opportunities** across a wider range of industries
            - OVNs provide **increased access to labor and capital**, especially for information-based goods and services
            - Participation in OVNs is **fulfilling**, improving worker health and satisfaction

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        - Climate change
            - OVNs **build local production capacity**, making communities more self sufficient and resilient to larger system disruptions and breakdowns
            -
        - Pandemics
            - Collaborative enterprises are **more resilient to unexpected economic downturns** than traditional (private) enterprises
            - Increase local production capacity, **reducing the risk of exposure** by decreasing the need to travel to dense, urban centers where risk of infection/transmission is greatest
        -
    -
-

Introduction

-

Development

-

Conclusion

-

 **Synthesis: The Case for 4th Sector Development**

Modern threats like the COVID-19 pandemic and climate change are exposing the weaknesses of the frontline systems and institutions that make up our social safety net. This is especially evident in the failures of our health system and federal-state coordination.

Meanwhile, regular citizens are increasingly stepping up to fill the gaps, relying on local production capacity supplied by a growing global network of coops, fablabs, and other collaborative enterprises.

[insert data / graphics to support here]

The resilience challenges of tomorrow require more than a 10% improvement upon our existing solutions; they require the 10x impact that can only be achieved through radically new thinking and innovation.

Our approach is to look beyond the models and resources of the public and third sectors, toward the solutions of the emerging 4th sector.

Secondary benefits: healthy communities

A strong 4th sector is also essential to the everyday healthy functioning of communities.

[Summarize secondary benefits]

Design Challenge / Problem Statement

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What: I want to determine the highest-value uses of currently vacant, free, and underutilized buildings and infrastructure in US metro areas (intervention / action) …

- Ranking/scoring ecosystems (define the deliverable - e.g., zoning/classification system) for fertility
- Asset mapping - data source → already this asset mapping wave, what is the second wave? → possibly, matching (zoning), also context of use (relational framework: non-profit, coop, crowd), see "new glasses" below.

How: ...using a combination of community survey data (for identifying community needs), municipal code (especially surrounding land use, zoning, and vacant lands), vacant property registries, community directories, and US Census data (data) …

- Cultural factors (art districts, energy in the system, etc.), surplus of relevant value (knowledge, care, innovation) → data set?

Why: ...in order to facilitate the liberation of these assets to the public domain (target outcome / behavior change) …

- Specifics: activation of these assets for public uses to promote/allow bottom-up resilience and recovery

...in order to **activate** the latent potential of these assets to fulfill the unmet needs of communities and foster a transition toward a more human-centered and resilient urban landscape (target impact).

- New glasses: inspire communities to look at the resources within the community through a new lens, for resilience and recovery

- ...so as to improve the Site selection (place making) for OVN deployments - considered both regionally, spatially (urban and human geographically speaking) and in terms of relevant resource and production factors in the context of achieving improvement in community resilience and sustainability. Also, apply available data to analyze and improve the conditions, preparation, and internal operational mechanisms employed in the seeding and expansion of the open network collaboration - such that given selection of a promising site and socioeconomic context, the viability and impact of the network is increased.