THE FUTURE OF BROWNFIELDS

CRITICAL PATHS FOR REGIONAL REDEVELOPMENT

VOLUME 2

ACT CALUMET

August 2018

This hand-on was developed by graduate students and faculty from the IIT–Institute of Design in collaboration with the Calumet Collaborative and Chi By Design.

THE FUTURE OF BROWNFIELDS

CRITICAL PATHS FOR REGIONAL REDEVELOPMENT

OVERVIEW

This hand-on resulted from a 12-week collaboration between ID and the Calumet Collaborative, during the Summer of 2018. It was developed by graduate-level students and faculty from the IIT–Institute of Design (ID) to provide guidance for leaders in the Calumet region to intervene towards sustainable regional regeneration. It captures the processes and critical reflections around the prototyping experiences for new infrastructures that integrated the four strategies previously identified by the research team.

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IIT Institute of Design (ID) is a graduate design school with a history of innovation. ID pioneered the development and dissemination of modern design from its founding in 1937 as the New Bauhaus in Chicago. Experimentation, rigorous methods, systems design, and strategy support ID's current focus of preparing individuals and organizations to take on the world's complex, fast-changing, and unpredictable problems such as competitiveness, digital media and learning, health and wellbeing, social innovation and more.

Calumet COLLABORATIVE

The Calumet Collaborative is a bi-state nonprofit organization dedicated to achieving inclusive regional prosperity and improving quality of life in the Calumet region through sustainable development. The NGO catalyzes innovative partnerships between Illinois and Indiana stakeholders to advance a thriving Calumet region with a focus on (1) Livable Communities, (2) Economic Opportunity, (3) Environment, (4) Culture and heritage.

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WORK IN PROGRESS

Phase 01: Spring 2018

How might brownfields become a critical path for regional regeneration?

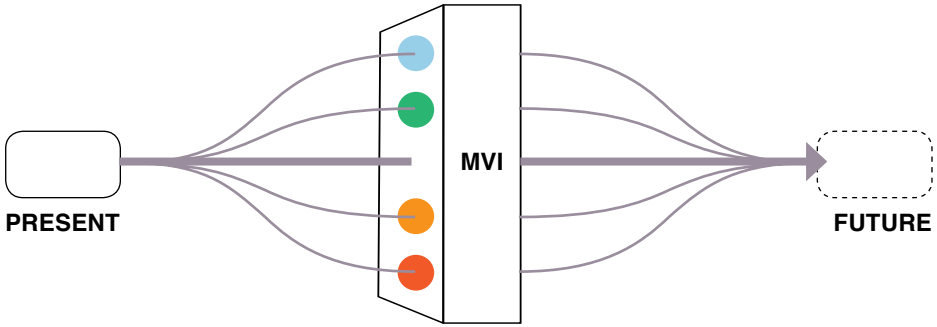
The “Future of Brownfields” is a partnership between IIT Institute of Design and the Calumet Collaborative. The collaboration examines how might Design contribute to sustainable (re) development of the Calumet region.

During the Spring of 2018, the project focused on multi-systems integration as a strategy for regional regeneration, and considered brownfield redevelopment as a critical path for restoring local economies. Through prototypes, participants uncovered common challenges in redeveloping former landfills, vacant residential buildings, abandoned industrial sites, and contaminated natural areas, and surfaced four strategies to inform regional redevelopment: involve residents, leverage assets, empower science, strengthen local economies.

During the summer of 2018, the team is advancing the findings through rigorous and more refined prototypes in collaboration with local community organizations, and local residents. Prototyping experiences are centered around **integrating these four strategies to inform the development of new infrastructures**.

Phase 02: Summer 2018

What does it take to mobilize action in the Calumet region?



This document is part of a series of standalone pieces created by the researchers during the Summer of 2018. The series intends to share prototyping experiences of the “The Future of Brownfields” research project. Each standalone carries information about (1) the **minimum valuable infrastructure** (MVI) necessary to create multiple types of values, and (2) the approach taken by the researchers and the partners involved for running the **prototyping experiences**.

Although each prototyping experience was related to a different issue of brownfield redevelopment, all of them focused on the development of new infrastructures in the Calumet region, and uncover some of the challenges behind mobilizing local actors in the Calumet region.

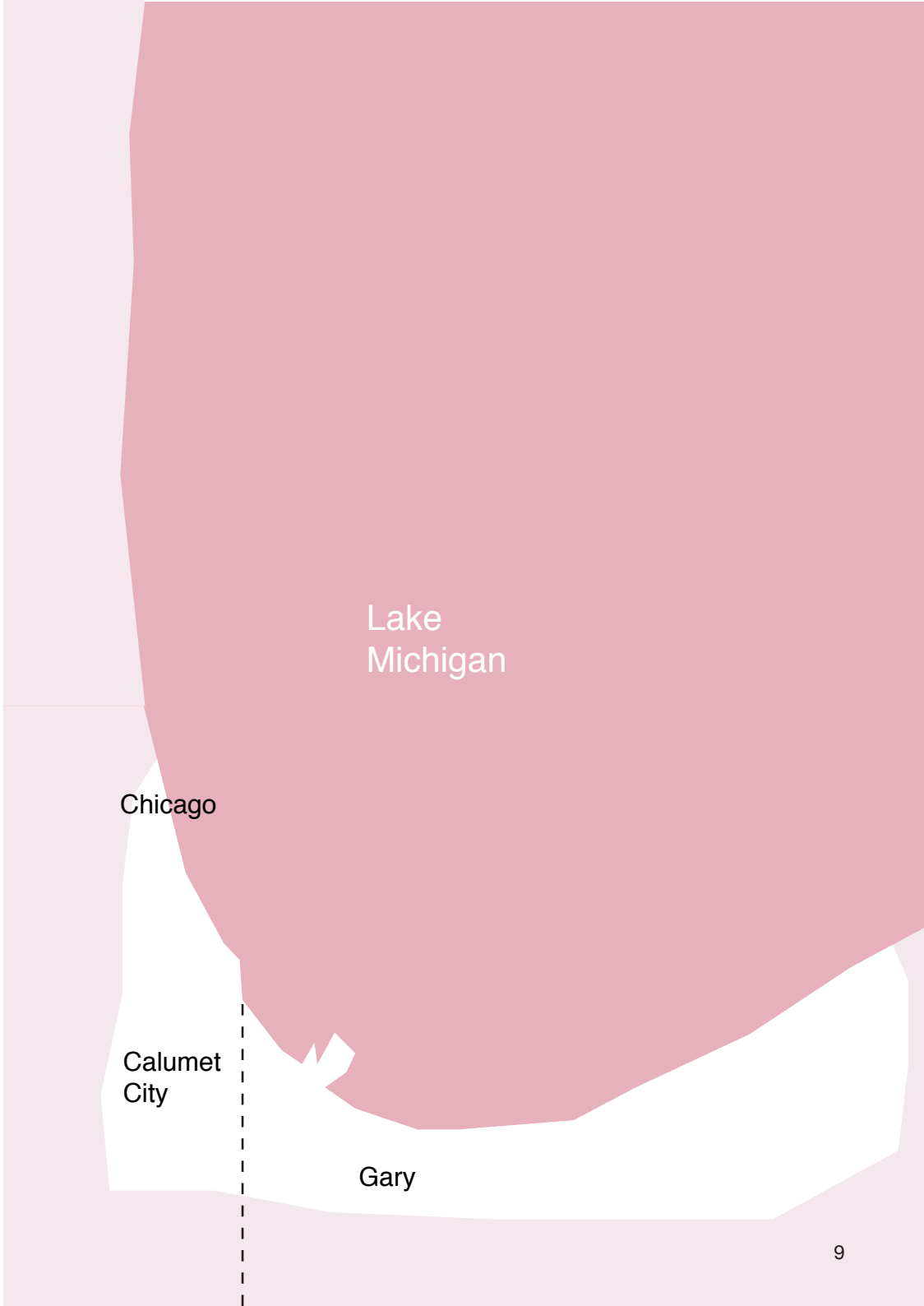
This document results from involving local youth residents in the prototyping experiences related to **abandoned residential buildings and vacant lots**, and is intended to provide guidance on how to replicate this experience to a broader audience.

THE CALUMET REGION

The Calumet region encompasses the Southeast side of Chicago, South Cook County and Northwestern Indiana in the United States. The bi-state area boasts proud and diverse communities, important natural ecosystems, and a powerful industrial heritage. However, when industrial production activities declined or moved away, they left behind large swathes of vacant and contaminated land that lack economic activities, business interest, and social capital.

After years of disinvestment, a patchwork of abandoned industrial, commercial and residential properties has been left behind, with inadequate solutions for re-injecting life into those properties. While some of these vacant spaces are clean parcels or former agricultural land (e.g.“greenfields”) being developed at higher paces within the last decade, many others contain multiple levels of contamination (e.g.“brownfields”) and can blight not only their immediate surroundings, but also negatively impact the future of the entire region.

There are a myriad of governmental agencies, NGOs and for-profit organizations that are involved in clean up and redevelopment of sites, yet over the years, there has been only a slight change in the number of brownfields overall. While the current approach to brownfield remediation does provide incremental improvements, there is still an underlying opportunity to promote systemic transformational change.



ABOUT THIS ISSUE

This issue is around **centralization of power when intervening in areas affected by blight**. A commonality across the Calumet region is the issue of abandoned properties and land. Current ownership systems are based on property rights that protects the owner, and prevents local residents from intervening on these sites. However, if local residents could be empowered to reactivate these abandoned properties, then living conditions and their surroundings could be improved.

The overall goal of this prototype was to **explore if the introduction of new infrastructures aiming at decentralizing power could provide alternative avenues to empower local residents towards reactivating abandoned properties.** In this pursuit, the research team was curious to learn if new technologies and platforms could mobilize actions in the Calumet region, while providing new pathways for local residents to interact with property. And if so, how? How could new infrastructures alternative decentralize access to property? What technologies would empower residents to take action in the Region ? How should they be incorporated into daily choices? How could data empower, inform, engage, and impact livelihoods in the Calumet region?

The experience described in this document suggests that the integration of new technologies, including sensors, virtual and augmented reality, blockchain and artificial intelligence can enable new ways of interacting, and contribute to increase agency among local residents considering the following objectives:

1 Explore how new empowerment platforms would/ could function in the context of a neighborhood.

2 Build local capacity based on civic empowerment to overcome local challenges.

3 Provide local residents new references for decision-making based on access to data and the application of sensor technology.

4 Enable alternative futures facilitated by peer-to-peer dialogue and negotiation.

5 Utilize individuals knowledge regarding the local conditions to elevate the collective understanding of the current social, economic and ecological landscape.

6 Decentralize power in decision-making processes for intervening in abandoned properties.

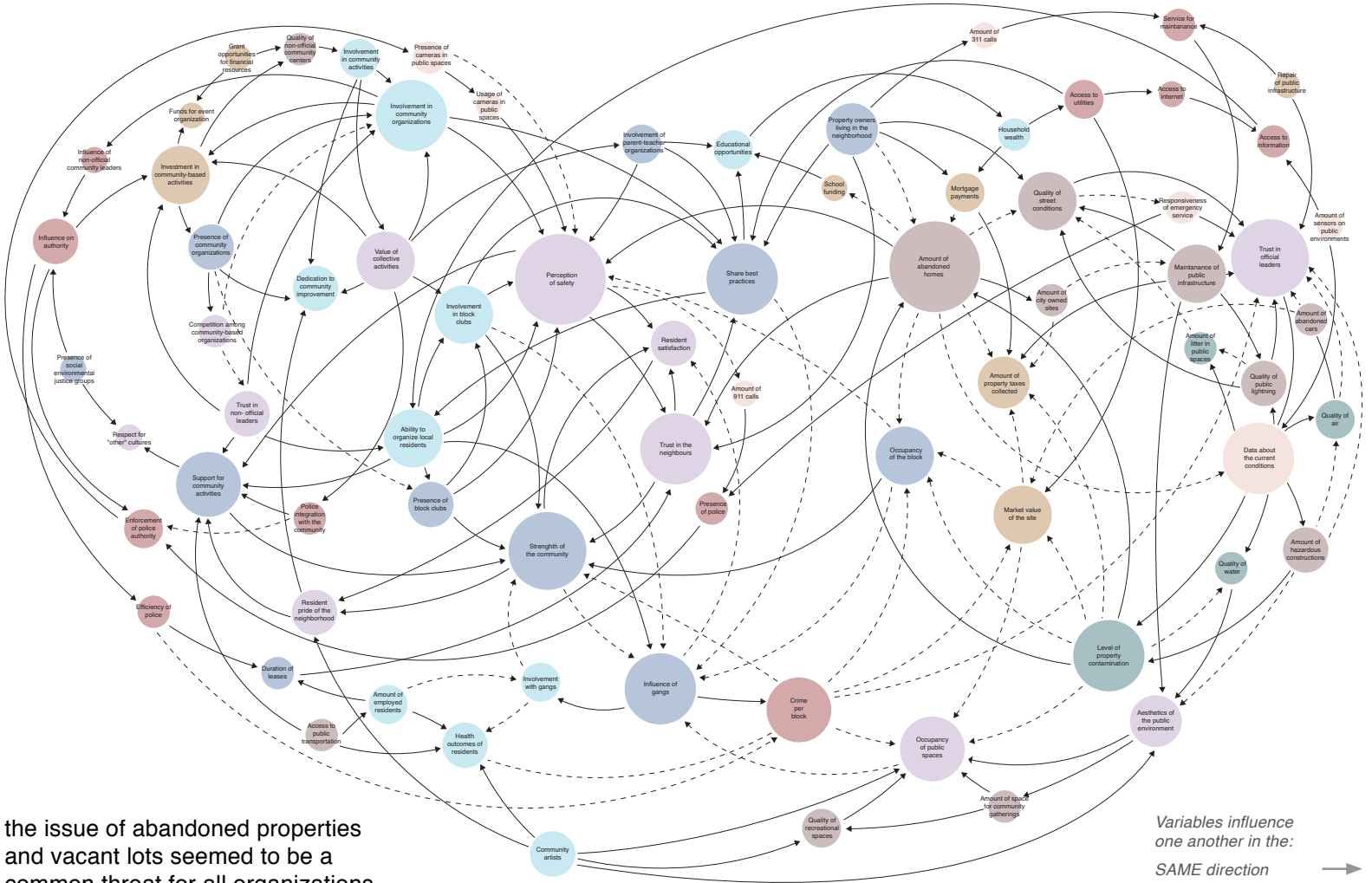
7 Empower individuals to take actions to improve the conditions of their surroundings.

8 Strengthen local economies in the Calumet region.

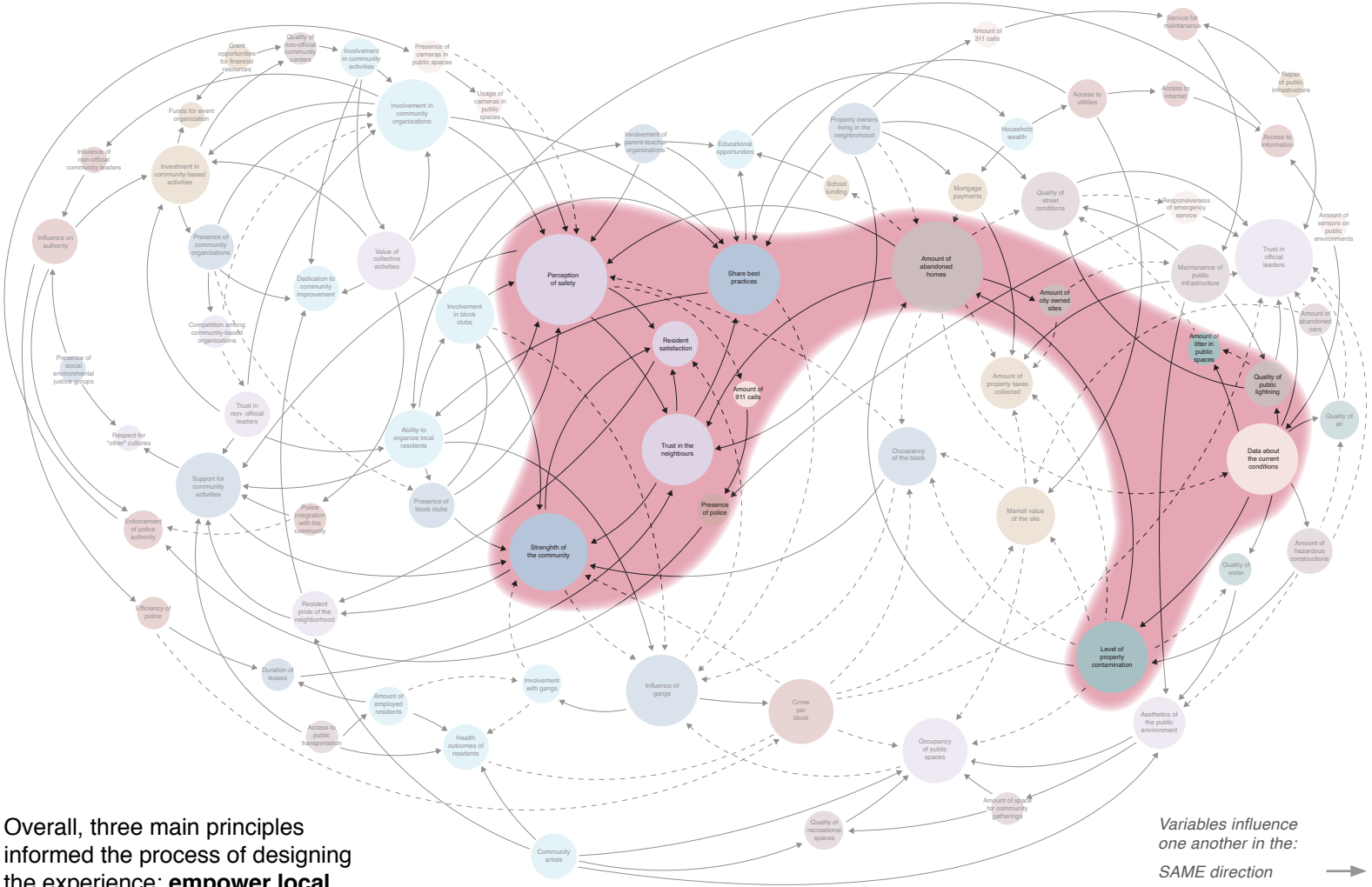
CONCEPTUAL CENTER

From previous design research around the issues of vacant lots and abandoned buildings in the Calumet region, the team considered the issue of block clubs as an entry point for empowering local residents to take action in their own neighborhood. Sooner rather than later, researchers learned that the entity of blockclubs is not as strong as it used to be, but the properties were still relevant. Researchers also learned about the role and credibility that community-based organizations have in taking actions within the local context. Yet, major concerns are related to competition for resources, collaboration, and alignment of interest. Moreover, the issue of abandoned properties and vacant lots seemed to be a common threat for all organizations interested in improving the livelihood of Calumet residents. As a result, researchers interacted with local residents and leaders in community-based organizations from the Calumet region.

The research team started by creating a visual representation of causal loop diagrams based on the multiple variables influencing the system dynamics.



CONCEPTUAL CENTER



Variables influence one another in the:

SAME direction →

OPPOSITE direction ⇢

This exercise led researchers to **key points to be leveraged, including: amount of abandoned properties, data from current conditions, perception of safety, trust in the neighbors, and strengthen of the community.** While there is no single approach, researchers found in co-creation workshops a proper response for integrating consideration of these leverage points. Yet, the experience was designed considering the multiple dynamics represented in the system.

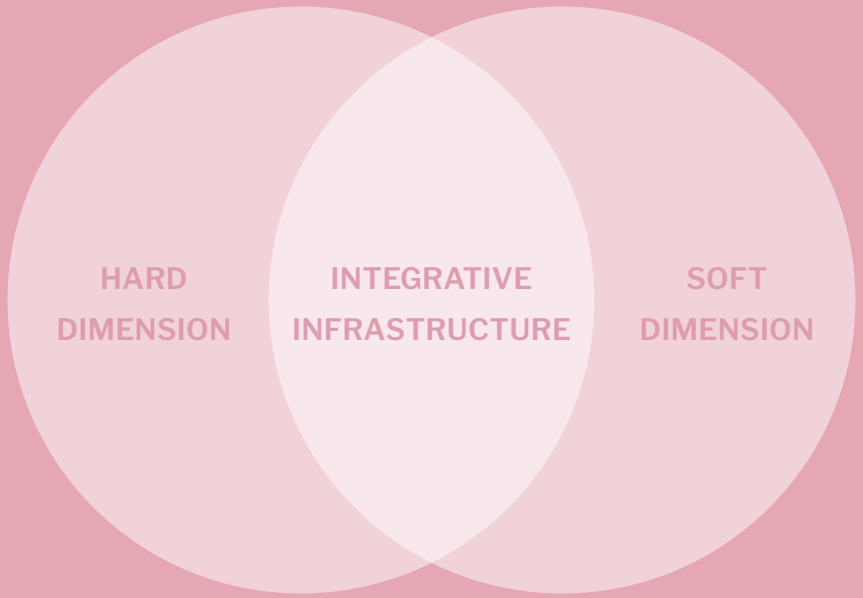
Overall, three main principles informed the process of designing the experience: **empower local residents to voice their concerns, provide new infrastructures to form novel social contracts, and explore potential consequence systems given local residents perspectives.** Combined, they contributed to the creation of physical models capable of representing as much as possible the current infrastructure, blight, and future dynamics represented in the system.

MINIMUM VALUABLE INFRASTRUCTURE

This document describes a prototyping experience focused on defining a minimum valuable infrastructure to empower local residents in the Calumet region towards improving their surroundings. For the purpose of this document, researchers defined the minimum valuable infrastructure as one capable of integrating the minimum amount of features to mobilize (local) actions towards sustainability and empowerment (in the Calumet region). We assumed that regional regeneration processes require the design of new infrastructures that integrate both the hard (physical and technical aspects) and the soft dimensions (human related aspects).

On the following pages, readers will find a description of the infrastructure that was prototyped, as well as the experience. The prototype was configured on its hard dimension: the Act Calumet digital Platform, the Calumet Coin Fund, and the sensors. On its soft dimension: the new social contracts. On the other hand, the experience was configured on its hard dimension: Our Hood, a physical model that represented an area in the region, and scenario describing new social contracts. On its soft dimension, a facilitated two-hours workshop for participants to interact with the prototypes, and build their own model considering the envisioned infrastructures.

The resulted work cannot be considered in isolation. Rather, it was part of a series of interventions aiming at unlocking alternative futures in the Calumet region.



MINIMUM VALUABLE INFRASTRUCTURE

PROTOTYPE

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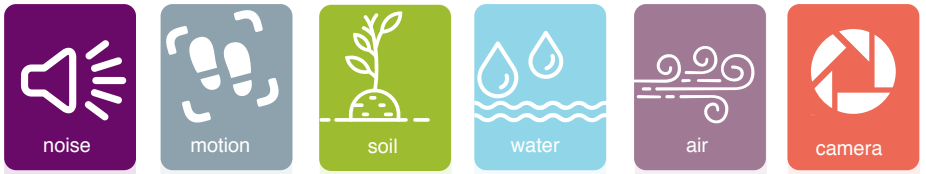
A digital platform through which local residents are empowered to take actions to improve their livelihood. This digital platform integrates the virtual and the real world based on technologies capable of mediating efforts to optimize local resources, and decentralize governance. The model on your right indicates how the proposed set of features allow local residents to take actions towards the targeted impacts, and achieve the overall goals.

CALUMET COIN FUND

A local currency that only circulates within the Calumet region. It has the same value as an American dollar. A Calumet Coin Fund will be structured based on a partnership between private and public organizations, and tax convergence. The sales taxes of Investments paid in American dollars would be converted to the Fund, as well as the taxes over the properties in the region. Similarly, when utilizing Calumet Coins within the region, transactions would have reduced sales taxes. This is a mechanism to strengthen and track local economy transactions, while retaining external investments.

SENSE CALUMET

Installation of sensors to monitor, suggest and validate actions in the neighborhoods of the Calumet region. The data collected through the sensors are available and accessible to local residents in the digital platform.



ANATOMY OF THE PLATFORM

ACT CALUMET

While the platform is designed considering a variety of features, three of them introduce new ways of interacting with property rights and ownership. The diagram on the right represents the platform as a system, and provides insights on how researchers interpreted the interconnectivity of its features, affordances, impacts, considering the desirable goals. When reading the diagram, please zoom in to better capture the information provided.

Smart Contract

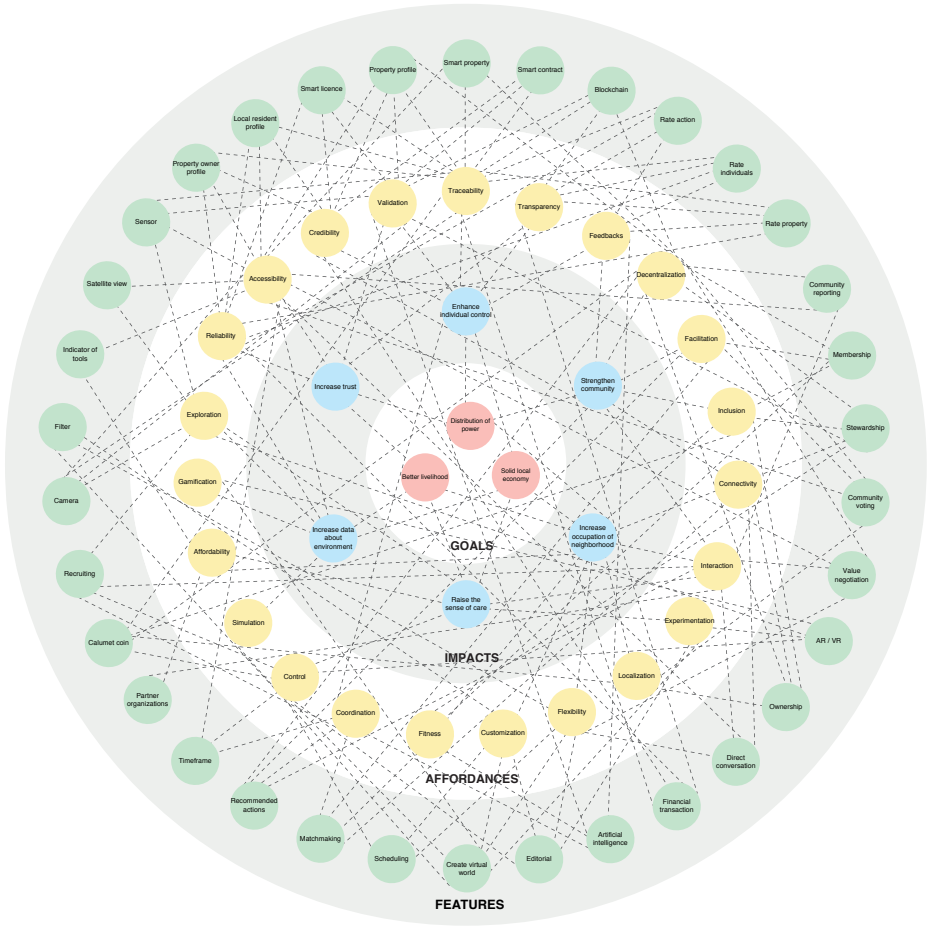
Computer protocols intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties. Parties involved in the process agree on terms and build a contract. Information about the participants and their references (including their source of funds) are registered in the contract. Once signed, the contract forms new connections between the parties, and activates the flow of resources according to the terms and time previously agreed. The contract becomes a tool for enforcement and traceability.

Smart Property

Registered properties whose ownership is controlled via digital technology. It allows for single, shared, or multiple ownership because the property can be divided into parts. So, rather than having to buy or maintain 100% of the property, local residents can have a percentage of it. This feature reduces fraud, mediation fees and allows trades to take place that otherwise would never have happened.

Smart License

Digital system manages and validates historical records, issuances, certifications, inspections, renewals and administration of both formal and informal professional licenses across a determined area. While some licenses are validated through diplomas and certifications, others can be created based on individuals' skills developed based on experience.

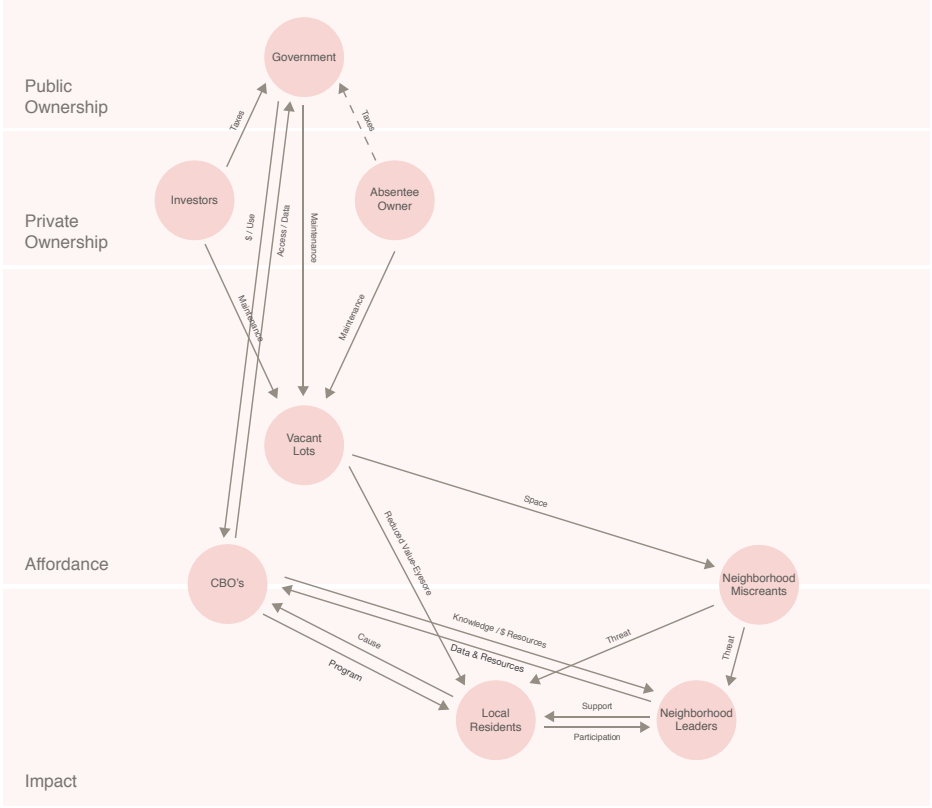


NEW SOCIAL CONTRACTS

CURRENT VALUE-SYSTEMS

Currently, the blight sites are spaces for discarded debris. They are more than just an eyesore because the increasing levels of blight are associated with increased risks of violence, threatening the physical and mental health of many living in the region.

The value web on the right shows where some values are flowing among several actors in the context of vacant lots and abandoned properties in the Calumet region.



Variables influence one another in the:

SAME direction →

OPPOSITE direction - →

NEW SOCIAL CONTRACTS

SPECULATIVE VALUE-SYSTEM

The features embedded in the new infrastructures previously described allow for residents of the Calumet region to explore alternative flows of values. Researchers were interested in explore how the significant number of vacant lots and abandoned properties could present new opportunities and even possibilities to establish new social contracts considering novel streams of values flowing of among those living in their surroundings.

The value web on the right shows a speculative future considering new flows of values being exchanged among key actors in the context of vacant lots and abandoned properties.

Researchers considered three forms of social contracts:

Stewardship

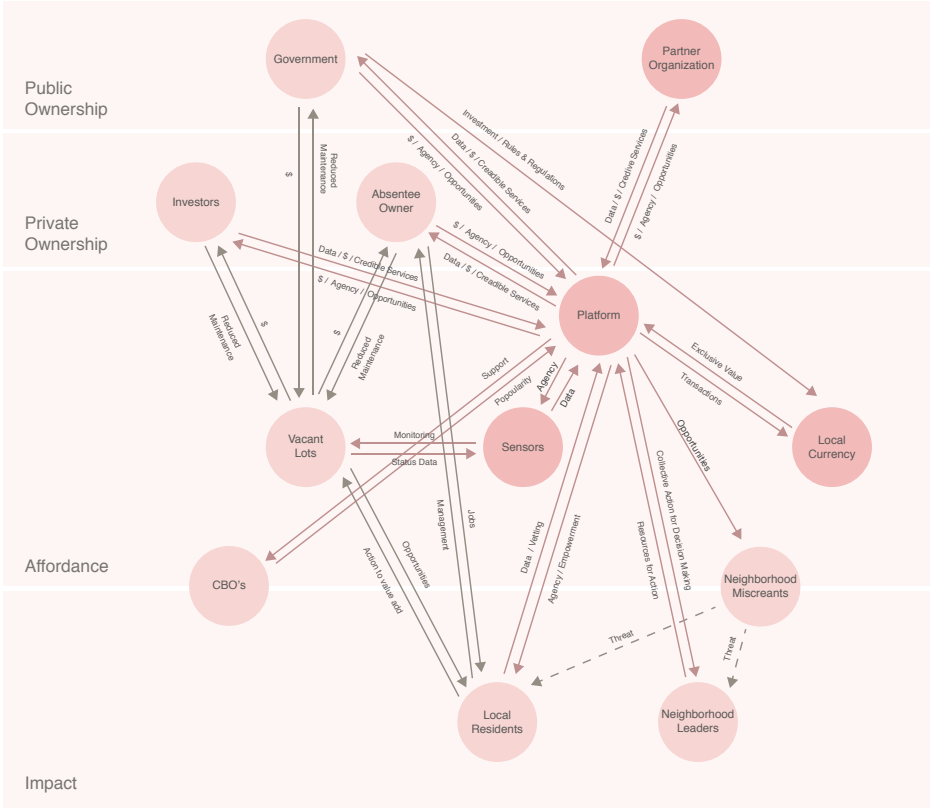
Totally responsible in temporary actions to improve the conditions of the public good.

Membership

Partially responsible for a property and its timely maintenance for the public good.

Ownership

Totally responsible for a property and its timely maintenance for the public good.



Variables influence one another in the:

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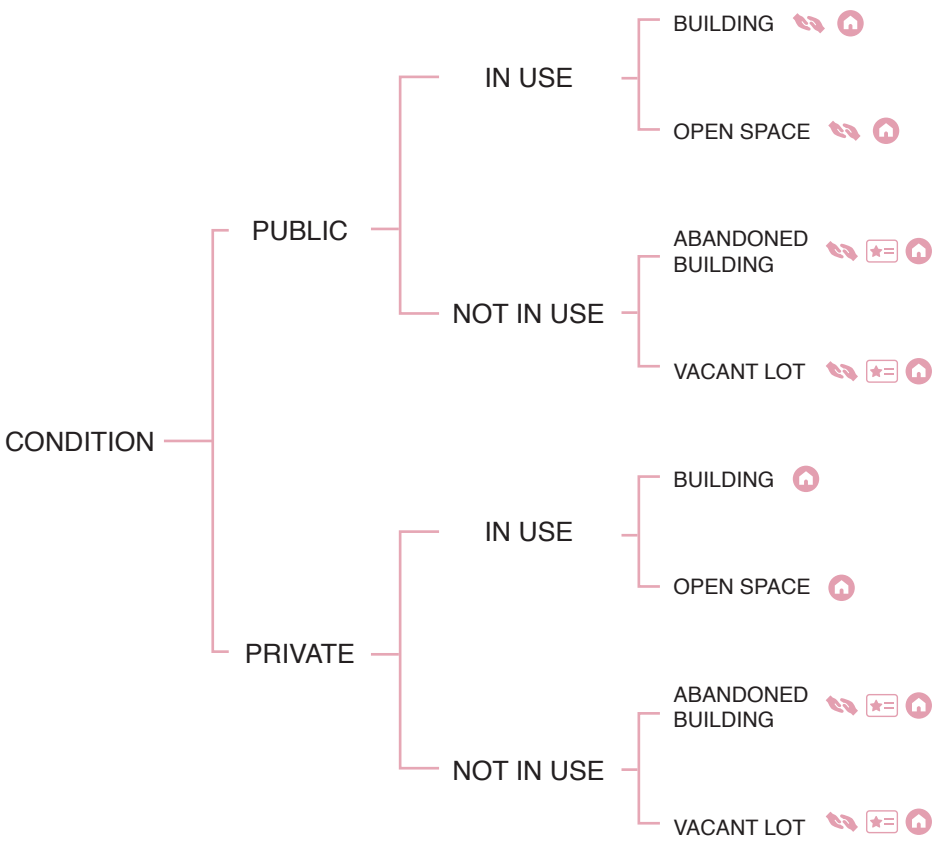
NEW MODES OF ENGAGEMENT

The visualization on the right relates the conditions of public and private properties in regards to the social contracts proposed.



Each interaction has different features:

STEWARDSHIP

- Take action with support from partner organizations
- Validate action, rate quality of work, and get reward
- Residents and sensors can suggest, offer, or request services
- Match residents with available action tasks and signs smart contract

MEMBERSHIP

- Members can form a consortium and purchase the property
- Value of the property can be raised based on member's use and resident rating
- Rent or lease a portion of an available smart property is given to people
- Resident can lease from 20% to 100%. Non-resident can only lease from 20% to 40%

OWNERSHIP

- New owners have up to 12 months to take and report action
- If property isn't productive for 12 months, it becomes available
- New owners have up to complete six months of stewardship work
- Sales tax from purchases in US dollars go to the Calumet coin fund

NEW MODES OF ENGAGEMENT

STEWARDSHIP

Totally responsible in temporary actions to improve the conditions of the public good.

Calumet residents are empowered to apply their abilities, and take actions to improve the conditions of both the public good as well as their neighbors. Residents and sensors can suggest, offer, or request services. Property owners that are not living in the neighborhood can also use the platform. An algorithm will indicate priority actions considering inputs from local residents, as well as the resident's need. Algorithms will also provide matching services between availability and demand, considering the profile of local residents, which include abilities and capabilities from the smart licenses necessary to accomplish the task at hand. Residents and sensors are able to validate the actions and rate the quality of the service. Rewards for the actions will be negotiated between both parties, and transactions will use the Calumet Coin. Rewards from priority actions should be greater from non-priorities. Once both parties agree on a value, a smart-contract will be signed between them. Calumet Coins will only be transferred once sensors and other members of the platform validate the action.

NEW MODES OF ENGAGEMENT

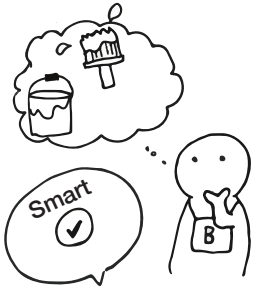
STEWARDSHIP - SCENARIO

Totally responsible in temporary actions to improve the conditions of the public good.

1 Property owner submits requests for steward actions indicating the rewards.

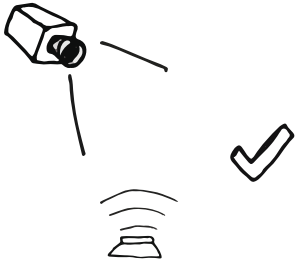
2 Each resident has a profile with validated e-licenses & capabilities rated by others.

3 Through augmented reality(AR), steward sees the opportunity to take actions.

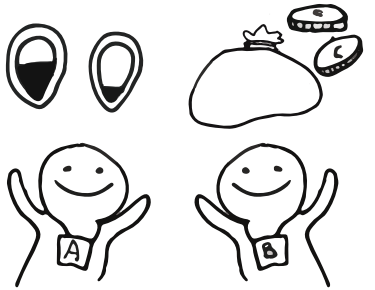


4 Steward chooses actions and negotiates rewards. A smart contract is signed.

5 Steward takes actions according to e-licenses and capabilities. Partner organizations provide materials and tools at a better rate.



6 Actions are validated by residents as well as sensors.



7 Steward receives the agreed reward, and property owner gets the requested services.

NEW MODES OF ENGAGEMENT

MEMBERSHIP

Partially responsible for a property and its timely maintenance for the public good.

Calumet residents don't have to buy an entire property anymore. They can use and be responsible for maintaining a fraction of an unproductive property, be a vacant lot or an abandoned building. They can lease or rent from 20% up to 100% of smart properties. Smart properties available for memberships are designated by property owners or by local residents. In the case of the former, property owners define the portion available and the value expected. In the case of the latter, two situations are available: one relates to private properties, and the other to public properties. In the first, the owner is notified and have three months to respond. In case of absence, the property becomes available at no charge. The owner can reclaim the use of the property after six months. In case of response with no interest, the owner has six months to take actions and occupy the land, otherwise it becomes available for membership. If there is interest, both parties agree on activities, time, and value. In all cases, a smart contract is signed.

In regards to public owned property, it can be a vacant lot, abandoned building, or a property of public character use. In the first two cases, a smart contract is signed by the public representative and the members at no cost but the necessary maintenance. If the property is a public park, school, or any other use of public character, then there has to be an approval of at least 50% of local residents. Once approved, voters, members and public representatives sign a smart contract.

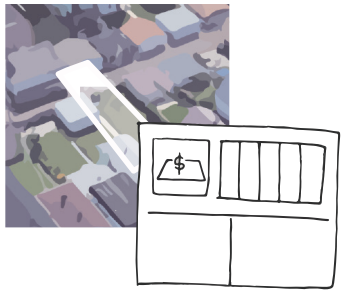
Non-Calumet residents can also become members of a property, both private or public. However, they can lease from 20% up to only 40% of a property, and there should be at least another local resident member sharing the property.

In all situations, private or on public owned property, be local or non-local residents, activities of public characters will have smaller rates than activities of private interest. All transactions should be done through Calumet Coin. Once the smart contract time is over, Calumet resident members can (1) renew the contract, (2) cancel the contract, (3) and/or purchase the property (individually or in consortium) paying off the residual value, also previously agreed. If the market value of the property is lower than the residual value, the buyer(s) should pay the residual amount related to the market value. Non Calumet residents can also purchase a property after a membership term, however only through consortium in which they can have up to 40% of ownership.

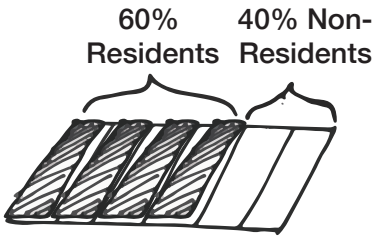
NEW MODES OF ENGAGEMENT

MEMBERSHIP - SCENARIO

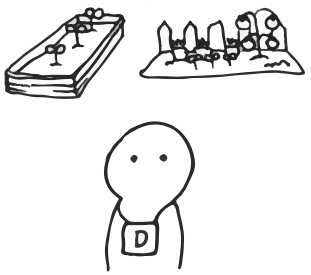
Partially responsible for a property and its timely maintenance for the public good.



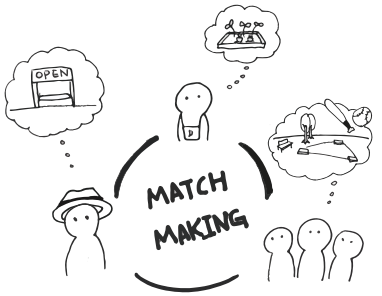
1 Property owner puts the property available for membership, or potential members submit requests.



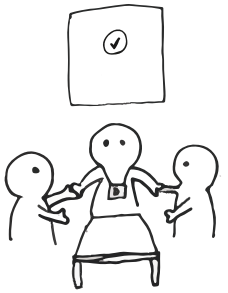
2 Calumet residents can have membership from 20% up to 100%. Non-Calumet residents, from 20% up to 40%.



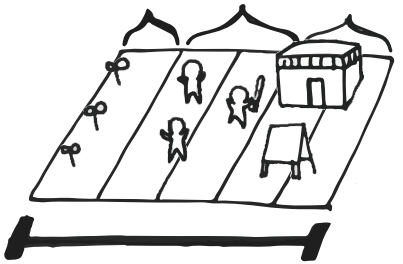
3 Potential members can submit the intended use to the platform.



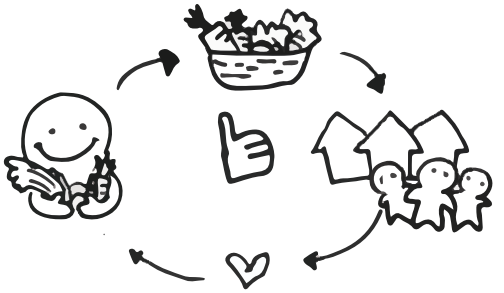
4 A matching algorithm suggests potential member partnership based on interests.



5 Potential members and property owner agree, and sign a smart contract.



6 Members can form a consortium and buy the property depending on the terms of the contract.



7 Local residents rate the activities. Activities of public character use will have better membership rates.

NEW MODES OF ENGAGEMENT

OWNERSHIP

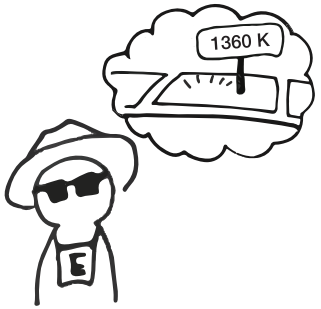
Totally responsible for a property and its timely maintenance for the public good.

Calumet and non-Calumet residents can buy properties using US dollars. Only Calumet residents can use Calumet Coins. If purchased with US dollars, the total amount of sales tax (approximately 11%) will be converted to the Calumet Coins Fund. If purchased with Calumet Coins, no sales tax will be applied. Non-Calumet residents will also have to be stewards for the first six months after their purchase, and the rewards will be also directed to the Calumet Coins Fund. Current and recent owners of unproductive or blighted properties will have up to one year to take actions towards transforming them into productive land, otherwise they will become available for stewardship and membership.

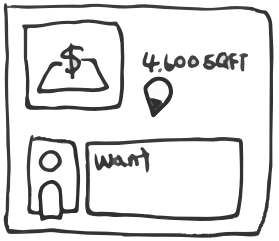
NEW MODES OF ENGAGEMENT

OWNERSHIP - SCENARIO

Totally responsible for a property and its timely maintenance for the public good.

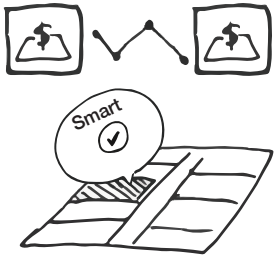


1 Potential buyers see opportunity for purchasing a property. The total value of the property is defined by the market.

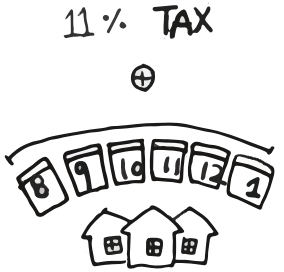


2 Potential buyers access the property profile and upload the intended future use that can be rated by Calumet residents.

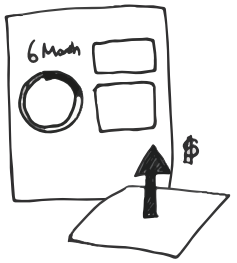
3 Potential buyers access the data dashboards with the history of the property, as well as the desirable uses indicated by Calumet residents.



4 Property owners and potential buyers negotiate the final value and sign the smart contract.



5 All new owners complete 6 months of stewardship. Rewards and ~11% of sales tax of non-Calumet residents purchases are directed to the Calumet Coin fund.



6 After stewardship work, new owners have 6 months to take and report actions towards activating the property.

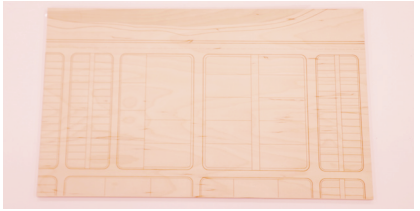
7 In case new owners do not complete stewardship nor take actions, the property becomes available.

ANATOMY OF THE EXPERIENCE

The experience was setup so that participants could reflect, build, and visualize the area selected from a collective and abstract perspective, different from their day to day interactions. From this elevated point of view participants defined the placement of blight sites, and the location and application of sensors, given the possibilities of new data flows.

Within a set of two-hours activities, participants learned about the project and the new infrastructures being proposed before they had to collectively identify which area in the Calumet region they would like to represent. Optimally they choose one neighborhood, as they were provided with:

a board with a general representation of an urban grid

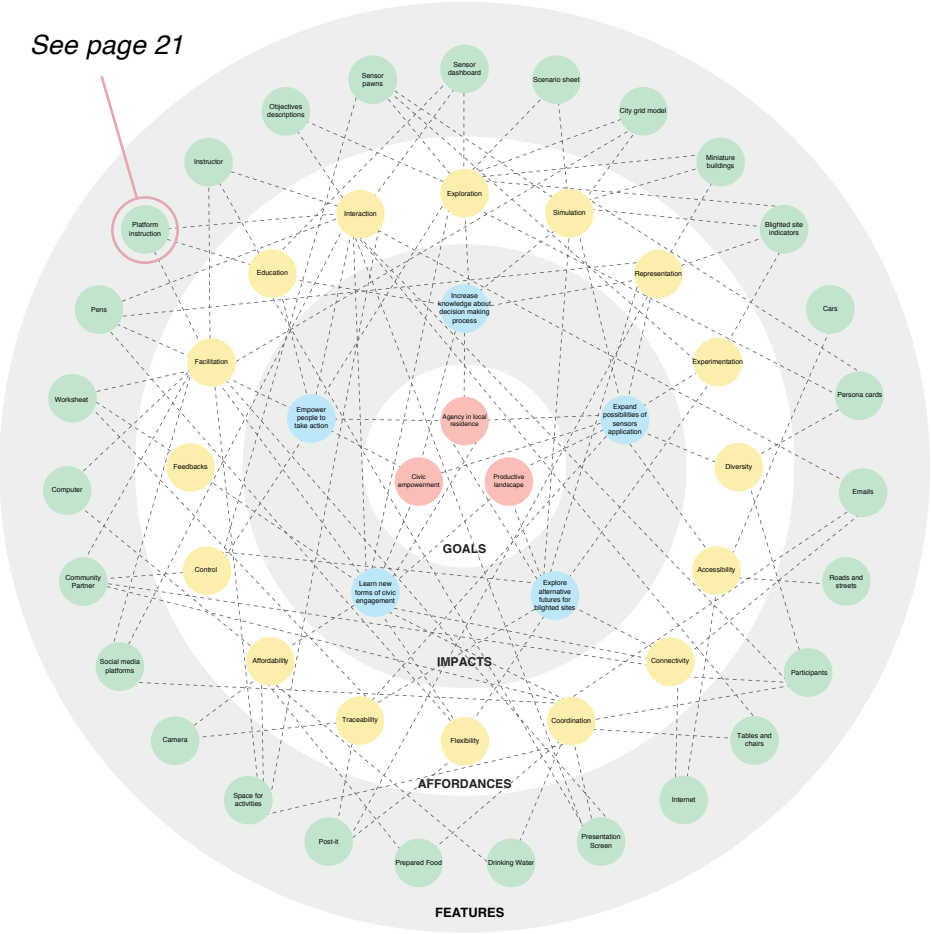


several building pieces of different sizes that could represent homes, small businesses, and large scale industry, and services

fifteen pieces to indicate blight sites

twenty four pieces of indicate the position of six different types of sensors

See page 21



ANATOMY OF THE EXPERIENCE

SCENARIO SHEET

After the briefing about the context of vacant lots and abandoned buildings in the Calumet region, participants learned about the new infrastructures (the sensors, the features of the Act Calumet Platform, and the Calumet Coin Fund), and received three scenario sheets with a framework in each one of them to discuss new ways of intervening in vacant lots and abandoned properties. For each scenario, participants were encouraged to reflect on social, economic and environmental dimensions, considering contemporary issues being addressed, new possibilities being unlocked by the infrastructures, as well as potential unintended and unaddressable consequences. Participants started with the stewardship scenario, moved to membership, and finalized with ownership.

OUR HOOD

Researchers developed a general model to represent an urban context in the Calumet region. The urban grid was designed based on a satellite image of random areas within the region. Researchers used laser cutting technology to replicate blocks, streets, different plots sizes, open spaces, and a body of water onto a wood surface. In addition to the board, there were four different sizes of wooden pieces to represent the occupancy of the area. Participants also received fifteen pieces made of acrylic to indicate blight sites, and twenty four pieces made of foam board, wood sticks, with paper visuals of indicate the position of six different types of sensors (cameras, air, water, soil, noise, and motion).

Overall, the experiences sparked new ways to think about local residents rights in relation to vacant lots and abandoned properties. It also sparked new ways for local residents to take action in their neighborhood. It focused on presenting a critical perspective on today's degenerative state of post-industrial urban environments through a mock up scenario that mirrored some of the existing conditions in the Calumet region.

INSTRUCTIONS

In this part, researchers present a suggestion about how to utilize the Our Hood model to explore how new infrastructures can empower local residents, and get useful feedbacks. Since context and purpose of simulations might vary according to the proponent's goal and the target audience, the information should be contextualized and customized accordingly.

Composition of participants:

Individual experience

Instructors should be focused on providing personalized support to each one of the participants as their experience will mirror their own values and beliefs.

Group activities (4-5)

It is not recommended to have more than five participants per board, and decision-making processes should be articulated out loud to one another so the dynamic between players become more tangible for instructors.

Either way, the amount of challenges, and time proposed for accomplishing each one of them might also vary.

Debrief considerations:

Is the place representative of the target audience? Why?

Is the activity culturally appropriate, including language barriers?

Is the time-frame proposed by the activity respecting participants agenda?

How should participants be selected? Why?

Who will be involved? Why?

Regardless of the simulation, all instructors should carefully consider sufficient debriefing time with the participants to make sure that learning objectives are achieved.

Timetable and agenda:

2 hours

Setting the stage		Running the experience		Debriefing & reflecting	
15min	20min	15min	40min	20min	10min
Introduction to the project	Introduction to new infrastructures	Examining future scenarios	Building the model	Debriefing	Reflection

INSTRUCTIONS

SETTING THE STAGE

15min

Introduction to the project

20min

Introduction to new infrastructures

Instructors should begin by introducing the project and asking participants about their relationship with the challenges to be overcome. In this case, participants were asked about their perception of, experience with, and/or connection to vacant lots or abandoned residential properties. Then, instructors should explain existing conditions in the real world, and the relevance for the audience in the room. If the activities are part of an existing community-based program, then instructors should use this initial moment to present the rationale behind the proposed experience in relation to the overall goals of the program. Once the connection is clear to participants, instructors should introduce the new infrastructures being proposed and their overall objectives in transforming reality. In this case, instructors explained about the Calumet Coin Fund, the features of the Act Calumet Platform, and the sensors technology.

Instructors should always leave room and time for questions and clarifications as information is being shared. When listening to the participants, instructors should keep track of each individuals experiences, and rely on this data to recall relevant information and support participants in their own processes. Lastly, instructors should provide a proper summary about what has been said among the participants, and structure the groups given the experiences in the audience. The more diverse the groups, the higher the chances for peer-to-peer learnings.

INSTRUCTIONS

RUNNING THE EXPERIENCE

15min

Examining future scenarios

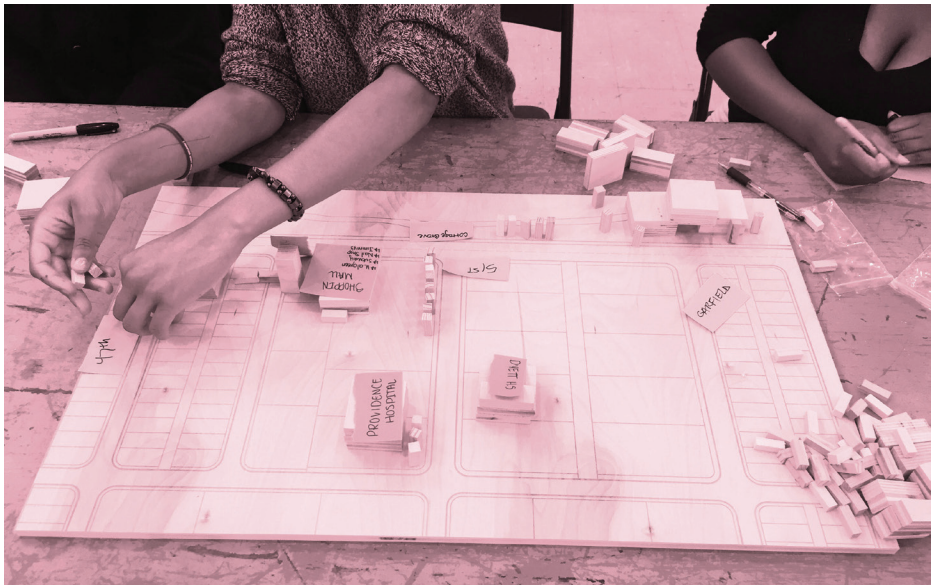
40min

Building the model

Given the abstract nature of the model, the platform, and the challenge at hand, activities should be structured so that players could gradually engage in their contexts. This adaptive process allows participants to acclimate themselves and their group to the context over time, and crowd source their knowledge through engagement. It also supports participants to continuously reflect on their actions, and revise the way the engage with the new infrastructures.

First, participants had fifteen minutes to engage with the new social contracts of Stewardship, Membership, and Ownership. Instructors provided scenarios to exemplify how the three concepts could be situated within the Calumet region. Participants used worksheets to articulate their thoughts about each scenario, focusing on what issue it addressed, what didn't the scenario address, new possibilities, and unintended consequences. After each scenario participants shared some of their thoughts and asked questions. Given the audience and the place in which the activities took place, instructors found useful to adapt some of the scenarios previously designed to reflect the environment in which the experience was being held.

Second, during fifteen minutes participants were encouraged to agree upon an area to represent in the model considering the board, the different types of buildings, and their familiarity with the place. Since participants were organized in groups, instructors encouraged collective participation and knowledge sharing. During this activity, instructors should pay attention to group dynamics, including the interactions between introverts and extroverts, and make sure there is safe room for all participants to engage in the activity. By doing so, they increased cross-pollination of ideas and experiences among those involved. Instructors should pay attention to group dynamics as dominant personalities might dictate what neighborhood the group should build, making it difficult for those who didn't have intimate knowledge about that particular location. If researchers detect such conditions, they might intervene to make sure the place being modeled was representative of all participants experiences.



INSTRUCTIONS

RUNNING THE EXPERIENCE

15min

Examining future scenarios

40min

Building the model

Third, participants had ten minutes to indicate where blight sites were located in their neighborhood. Because blight sites are not usually a point of attention of people's daily lives, researchers had to ask direct questions related to participants own experiences. For example, researchers asked them about large scale industrial sites in their neighborhood, abandoned buildings, or lots where dumping occurs. Participants immediately reacted to the questions by positioning the elements on the board, while telling stories of their own experiences.

Lastly, participants had fifteen minutes to reflect and position the sensors in their models. Instructors should facilitate this part of the activity by providing examples of sensors application, and unleashing the creativity of participants considering alternative situations in which sensors could be useful. Instructors should also prompt participants with critical reflections by raising potential conflicts. One way of doing this is by providing paradoxes. For example, while cameras can provide relevant information during a break-in, it can also reduce the privacy of local residents by increasing their exposure. By providing participants with paradoxical conditions, instructors can accelerate their reflection processes, and create an atmosphere of productive debates around individual's preferences within activities of public character.

INSTRUCTIONS

DEBRIEFING

20min

Debriefing

BOARDS

Once the experience time is over, instructors might ask each group to share the contents of their own experience. Participants from each group were asked to share: (1) which neighborhood they chose, (2) what infrastructure currently existed, (3) where and why do they see blight, and (4)where did they place sensors and why? Instructors should encourage the non-presenting groups to huddle around the presenting groups board so they can learn about different perspectives and approaches towards the same issue. Lastly, each group explained its own decision-making processes that led to the final composition. The overall goal should be to encourage participants to reflect on their own experiences, while learning from others. Answers should account for:

What were the main challenges in their neighborhood? Why?

What were the priorities? Why?

Where would sensors be useful? Why?

What data would be useful for their neighborhood? Why?

What would they do if they had access to the data? Why?

Once participants share their perspectives, the groups move to another board, and the sharing process repeats until all participants had reflected on their own process. As instructors perceive differences between groups, in depth questions about specific, relevant topics can be raised. For example, those related to the positioning of sensors in the landscape, and the association of the players with their own reality.

Once each group debriefed about their experience in isolation, instructors might promote a collective discussion for consolidating key objectives. Instructors should prompt questions to increase the recognition of diversity and multiplicity of choices as facts, not as issues. Questions were related to:

Privacy:

What / Who would the camera be surveilling?

Relationships:

How would the community decide on land usage?

Agency:

If you knew that the soil at your local park was contaminated, what would you do?

Sustainability:

What are the long term impacts of the interventions being discussed?

INSTRUCTIONS

REFLECTIONS

10min

Reflection

Lastly, instructors should facilitate a round of final thoughts grounding the experience with the overall objectives. Instructors should make direct correlations between the reality and the scenario created in the experience. While the experience reflected futuristic thinking, the conversations should quickly move towards what is possible. In order to do so, instructors should also challenge participants by asking if interventions made during the experience were to become reality, what would it take for the participants to mobilize themselves in such directions? Participants may expand their reflections to incorporate other issues that the platform did not take into consideration. For example, participants raised issues related to integration and gentrification, as well as financial limitations.

Yet, the debate showed significant discrepancy between participants answers. When this is the case, instructors should ask ‘why’ after each participant’s answers, and focus on the differences that are most relevant to the objectives.

One of the main focus of the activities is the reflection on participant’s experiences, and how empowered they might feel to take action regarding issues that affect their daily lives. As such, instructors might end with information focusing on clarifying the intentions for the implementation, engagement, and enforcement of the new infrastructures in the Calumet region.

OUTPUTS

FOUR MODELS, FOUR FUTURES

Participants created four models that represented a neighborhood that they were familiar with. While the initial urban grid was useful for them to think about streets and public and private places, it did not serve as a boundary for participants to co-create the areas that they want to represent. When building their model, participants ignored the urban grid previously designed in the board, including both the distribution of the lots and the spatial representation of public infrastructures, such as streets, blocks and bodies of water. They started by including references of specific buildings, such as industrial sites, schools, large grocery stores, churches, etc., and then moved to residential areas. There were also elements that were more symbolic than actually representative of the reality. For example, in one of the boards, participants represented an area of the South East side of Chicago. The Commercial Avenue business district that intersects with 103rd street, was represented in parallel. That is because participants felt that it was important to represent the dynamics of the area in their scenario, regardless of the spatial limitations of the board. In some cases the “body of water” became a street or a park or land.

OUTCOMES

As expected, the prototyping experience provided significant insights about how to integrate new infrastructures into existing initiatives in order to empower local residents in the Calumet region. Overall, there were several paradoxes that surfaced as a result of critical reflections and intensive interactions. Below, researchers present five of them.

SENSOR APPLICATION

SAFETY PUNISHMENT

After participants identified blight sites in their model, they were asked to place sensors in areas that could be useful for their own interest. Adult and youth participants both felt the need to use sensors to punish perceived perpetrators of undesirable actions. While adult participants focused on negative impacts caused by large industrial activities, placing two noise sensors and one camera next to a factory, youth participants were concerned about individual actions, positioning cameras were crime activities occurred. If the notion of privacy in public spaces did not inhibit the youth participants from monitoring people in their neighborhood, adults were skeptical of putting cameras near locations where residents would typically populate. Because both concerns are valid, and represent different perspectives of local residents, researchers have to develop proper mechanisms capable of recognizing these paradoxical positions.

GOVERNANCE SYSTEMS

ENFORCEMENT EMPOWERMENT

The transition towards individual empowerment within public real raises fundamental and philosophical questions about democracy. Debates of such complex nature can only be structured considering a diverse representation of points of view, and experiences. Researchers were able to frame these issues considering the wide, yet little explored territory of integrated infrastructure, meaning those combining hard and soft dimensions in the intersection between real and virtual worlds. Again, the difference came as a generational difference. While youth participants were intrigued by how the social contracts agreed upon in the virtual world be enforced in the real world, adult leadership saw the decentralization of power as a mechanism to increase their impact within the local context. Both perspectives were not previously considered by the instructors, but now poses a new challenge to be considered moving forward. How might new infrastructures enforce digital social contracts in the real world? How might leadership benefit from decentralized systems in order to gather collective concerns?

OUTCOMES

FREEDOM OF CHOICE

All participants tend to view the natural world as a given, and as a support system for humans. Thus, activities showed that for local residents, satisfying human needs is a priority over the restoration of ecological systems. In fact, environmental concerns were only considered when related to the possibilities of having different social interactions or when expanding the possibilities for people to thrive. Moreover, environmental concerns were mostly raised when identifying blight sites or locating sensors. On one hand, adult participants envisioned sensors as a form of punishing industry for environmental degradation. On the other hand, youth participants had to be prompted with questions by instructors where to best use sensors related to the environment in their neighborhood. After reflecting, youth participants positioned sensors to collect data about air and soil around parks and schools because they were focused on creating healthier environments. Both youth and senior leadership placed sensors within community gardens as a way to control and inform the quality of their food.

A surprising attitude was the incorporation of sensors as infrastructures in the public space. Youth participants used water sensors as water fountains in areas where homeless were congregating. The symbolic act represents their intention to provide clean drinking water to the local population before the implementation of sensors technology to monitor the quality of the environment. When moving forward, researchers should understand how the platform will support participants to understand their role and impact on ecological systems.

ATTRACTION OF INVESTMENT

American history has shown that when new infrastructures are built in low income neighborhoods, gentrification processes occur. This is a common threat experienced in minority neighborhoods on the South Side of Chicago and in Northwest Indiana, and the prototypes showed no different concerned. Participants welcomed investments and the design of new infrastructures as mechanisms to improve their livelihoods. Although perceived with excitement, activities also uncovered fear of displacement. More specifically, when discussing the involvement of external investments, or even the implementation of new infrastructures as a mechanism to attract attention to the neighborhoods. While sharing desires for better public environments, including parks, stores, housing, among others, participants felt that these components could not be created for them because they lack access and proper resources to do so. They found the infrastructures proposed useful for providing alternative paths, however the concerned still remained. As the project advances, new mechanisms should be incorporated to guarantee such concerned is represented in the development of new infrastructures in a more direct, clear and pragmatic way. As such, the formation of partnerships should always account for the involvement of local residents, and their representatives.

OUTCOMES

TECHNOLOGY DEPENDENCY

INCLUSION ISOLATION

While digital technologies have been used as mechanisms to solve complex problems related to democracy and participation, they have also been used to reinforce siloed initiatives that challenges aspects of inclusion and diversity. The difference between their usage and application usually relies on the underlying principles and their development processes, which should provide proper paths for those principles to be manifested into features and affordances. The Calumet Coin Fund was welcomed as a digital infrastructure. Participants were interested in tracking the circulation of the coin within the region to better understand financial impacts over time. The fund was also understood as a mechanism to attract new businesses and investment to the region, while retaining their benefits to the local population. What the researchers did not anticipated was that participants also explored the digital infrastructure as a way to exclude actors that local residents felt would do harm to the region. The exclusion was also raised as a concerned because it could create an isolated economy, in which the interdependency with other markets was not recognized. When moving forward, researchers should explore alternative in depth the features and the trade-off of creating local currencies, and what would it take for local agents, including the multiple governments in the region, to incorporate such infrastructure.

RECOMMENDATIONS

From prototyping experiences, researchers suggest the following recommendations as next steps:

Platform

Advance on refining the platform and its features (including smart licenses, smart properties, and smart contracts) given the technological barriers of integrating multiple types of technology (block chain, artificial intelligence, sensor technology, virtual reality, augmented reality).

Engagement

Continue on co-designing algorithms with residents from the region.

Incorporate and make explicit the relationships between decisions being made by users and their interconnectivity with environmental impact.

Advance on concepts and prototype calumet coin with local residents, government bodies, industry leaders, and local business in the region.

Implementation

Explore real-world possibilities to integrate contemporary law and enforcements into the social contracts being proposed.

Understand and explore potential consequence systems, including the social contradictions and paradoxes within the socio-technical-ecological realm.

Partnership

Identify and develop partnerships with local organizations capable of supporting the development of the infrastructures.

CONCLUSIONS

Overall, the experience introduced participants to three new infrastructures capable of promoting new engagements with their neighbors, abandoned properties, and the government. The infrastructures presented were presented: (1) Calumet Coin Fund, (2) Sense Calumet, and (3) Act Calumet. These new infrastructures were organized around three new features: (1) smart contracts, (2) smart properties, and (3) smart licenses to support the new social contracts: (1) Stewardship, (2) Membership, and (3) Ownership.

During the prototyping experience, participants had to simultaneously (1) collectively identify an area that they would represent in the model, (2) define the relevant infrastructures based on their own experience in the area, (3) identify blight sites, and (4) agree upon the placement and usefulness of sensors technology. Participants were empowered by their experience because they found new ways in which their experiences and voices could be incorporated into the future prosperity (health, safety, inclusion, access to opportunity, etc.) of their surroundings. Participants were able to envision increased employment, healthier food options, and increased connectivity within each of their communities. Next steps are to advance and refine the prototypes to create a micro pilot, explore challenges related to governance, and technological apparatus for scalability.

NEXT STEPS

Researchers and partners involved in all prototyping experiences are interested in advancing The Future of Brownfields Research Project.

The team currently seeks seed funding to structure and implement three micro-pilots initiatives during the Fall of 2018 and Spring of 2019, capable of informing sustainable, long-term design-led interventions.

We welcome feedback and suggestions that can contribute to move this initiative forward. Please contact Carlos Teixeira (carlos@id.iit.edu) or Andre Nogueira (anogueira@id.iit.edu).

THE FUTURE OF BROWNFIELDS

CRITICAL PATHS FOR REGIONAL REDEVELOPMENT

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