Domestic Service Corps™: A Creative Public Consultancy

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Abstract

The Domestic Service Corps™ (DSC) is an organization built upon a technology platform to link members together dynamically in order to brainstorm potential solutions to problems. These problems are posed by government employee clients (federal, state, local) of theoretical or applied significance. Principles shown to be successful at distributing problems solvable by individuals will be adopted, such as human intelligence tests with Mechanical Turk and protein conformations with fold.it. Successful strategies used in matchmaking algorithms such as eHarmony and the medical residents' match will be used to dynamically create compatible working groups among DSC members more diverse than is typically possible. Time spent by any member on the platform will be limited in order to retain high-quality engagement, extend interactions over longer periods to engage more creative processes, and protect members from overuse. Participation is expected to aid members as well as clients, engaging Americans not typically able to serve full-time or in-person and imbuing them with a sense of purpose expected to deliver advantages consistent with known mental benefits of service to others.

Introduction

It is well established that the constraints of various sorts can lead to sustained innovation (Acar et al., 2019; Sternberg & Kaufman, 2010; Stokes, 2005). The startup culture, for instance, thrives on uncertainty, small working groups, limited resources and prevailing skepticism to out-innovate established companies (Ries, 2011). Current circumstances in the Covid-19 era are notable mainly in that the imposed constraints are synchronized in time. Limitations on social interaction and freedom of movement occur regularly for different members of society, however, including but by no means limited to deployed troops, long-haul truckers, cancer

patients, nursing home residents, sequestered jurors, oil platform dwellers, mothers on bed rest, shift workers, individuals with disabilities, prisoners, etc. At any given time, such individuals represent underutilized creative reservoirs in society. Their externally imposed constraints limit their ability to engage in creative problem solving in service to others under the current paradigm.

The core thesis of this paper is that the latent creativity anticipated to emerge due to the society-wide isolation constraints imposed by Covid-19 is actually tappable in the population at large under normal circumstances. We sketch here the design of an organizational and technological platform designed to harness this creativity and direct it toward solving important problems of society. The entity imbued with this problem-solving ability is termed the Domestic Service Corps™ (DSC), signifying not only a focus on problems of the American citizenry within our borders, but also that key efforts to help resolve these problems can be undertaken by ordinary citizens in their homes.

The remainder of this document describes the vision for the DSC and how its first application will incorporate modern evidence-based inquiry to improve mental health outcomes in servicemen and -women.

What is the DSC?

The DSC is a voluntary membership organization managed completely online, open initially to Americans holding social security numbers. Problems of importance to federal, state and local governmental entities are formulated by Clients, packaged for the platform, submitted to a central authority for approval, and ultimately made available to members. Members are then matched to problems and contribute toward their resolution. One way to summarize the core function of the DSC is as a creative public consultancy.

Clients initially are public employees at any level of government in the United States. Later extensions may offer Client status to nonprofit employees, such as university professors or clergy, thereby expanding the classes of problems likely to be addressed. Member status may ultimately be extended to individuals without social security numbers, including foreign nationals, thereby further diversifying the pool of individuals dedicated to problem solving.

Clients express needs, and Members demonstrate willingness to serve. Both of these elements represent innovative contributions of the DSC, as the government currently uses rather limited means of soliciting input from the public, such as plebiscites and solicitations for comments on pending policies. Additionally, the public typically has limited means to contribute to government, such as by selecting a career in public service or serving part-time on the local school board. Many Americans are completely disenfranchised from even part-time local service options because of life circumstances of health, geography, means and education. The DSC can benefit these members by enhancing their cognitive function, social interaction and skills acquisition, in addition to providing them with the sense of purpose that public service provides.

Sidebar: Code For America

Code For America (CFA), a government service improving organization, helps provide better government services by enlisting people with information technology expertise for building open-source applications and promoting openness, participation, and efficiency in government (*What If All Government Services Were This Good?*, n.d.). The current model of government is relatively low efficiency, and citizens' needs are often not satisfied. The latest technology can play a role in improving government services. CFA improves government services on two levels. First, it recruits technical talents to build applications. Second, anyone in the community gets a chance to evaluate the service, thus helping refine each application from time to time.

The technology element of the DSC that enables even widely dispersed, sequestered Americans of limited means and poor health to serve is the most innovative element of the platform. Teams will be formed from a subset of Members by effective matching algorithms based on individual characteristics and past service activities. Problems will take the form of strategic or planning efforts that might typically be assisted by consultants. Members will indicate their strengths and passions directly by survey, by past service events, or both. Teams will be matched to Clients and problems using additional matching algorithms. Consulting activities will be structured by the Clients and assisted by additional algorithms, as needed. Because Clients may consist of different types of government offices, activities may differ for different task assignments.

Fundamentally, then, the DSC represents a marketplace to match needs with latent solutions in the form of dynamic teams. The platform is designed to scale with thousands of Clients and millions of Members. It is likely that evidence-based

practices will emerge immediately, as individuals from different professional fields will be aware of different best practices that could overlap the current problem. It is equally likely that new best practices such as team formulation strategies and work interval timing will emerge from team deliberations, as testable hypotheses are postulated and eventually evaluated in the appropriate contexts.

While this platform is obviously likely to benefit Clients, the original impetus to design the DSC came about to benefit ordinary Americans stuck at home or another location under quarantine or isolation. Engagement with others for a common good carries demonstrable benefits to the individual (Fowler & Kam, 2007). Multiple opportunities have existed for full-time national service (see

sidebars) or part-time local service. The goal of the DSC is to bring similar opportunities to Americans not capable of or prepared for serving in such full-time settings. It is not unreasonable to conceptualize the DSC as a gig-based remote service matchmaking platform (Manyika et al., 2016).

Sidebar: Peace Corps

The Peace Corps is a volunteer organization run by the US government that provides social and economic development abroad through technical assistance, while promoting mutual understanding between Americans and populations served (*Work for the World*, n.d.). In 1961, President Kennedy issued an Executive Order that established the Peace Corps as a new agency within the Department of State. He asked Congress for permanent funding for the agency, which would send trained American men and women to foreign nations to assist in development efforts. The Peace Corps captured the imagination of the U.S. public, and during the week after its creation thousands of letters poured into Washington from young Americans hoping to volunteer.

Sidebar: AmeriCorps

AmeriCorps is a voluntary civil society program where members commit to full or part-time positions offered by nonprofits or public agencies to address unmet needs in education, public safety, health care, and environmental protection. Tens of thousands of members participate annually, with members receiving minor financial compensation in the form of cost-of-living allowances, student loan deferment, Public Service Loan Forgiveness, and Education Awards. Less tangible benefits include professional skill development and work experience. Founded officially in 1994, AmeriCorps can trace its roots back to Kennedy era public works initiatives and is often seen as a domestic Peace Corps.

Sidebar: Works Progress Administration

The Works Progress Administration (WPA) was an American New Deal agency, employing millions of job-seekers to carry out public works projects, including the construction of public buildings and roads. Eligibility included American citizenship, age of 18 or older, being able-bodied, unemployed, and certified as in need by a local public relief agency approved by the WPA. Worker's placement to WPA projects was based on previous experience or training. The WPA was limited to manual labor: musicians, writers, actors and directors were employed in large arts, drama, media, and literacy projects. Following the Great Depression in the United States, The WPA was created to alleviate the unemployment crisis by giving the American citizenry the ability to receive income and build new, sustainable infrastructure.

What is the DSC not?

As established above, the DSC is a creative public consultancy with a platform that links Clients to Members and Members to each other for service projects. Many familiar entities share some core elements of the DSC yet are different in fundamental ways. Notably, the DSC is not a:

- ◇ Social media platform
- ◇ Telecommunications platform
- ◇ Entertainment platform
- ◇ Work-for-hire platform
- ◇ Profit-making enterprise
- ◇ Subscription service
- ◇ Intellectual property generating tool
- ◇ Partisan or trolling vehicle

Members cannot message each other if they are not in the same working group, which means that their interactions continue to evolve with new individuals throughout efforts on different problems. While identities are linked to a central server, it is optional whether members choose to be identified with their real identities to their coworking Members. This arrangement allows ideas to be

decoupled from their origins for less biased assessments and more opportunity for Members to interact with each other without concern for trolling or bullying. The DSC is not a profit-making exercise or a vehicle to preserve intellectual property for future profit-making exercises. The DSC is not a tool for entertainment or relaxation, instead representing a serious effort to solve real-world problems. The DSC is not a tool for division or strong opinions, but an empirical instrument for accomplishing important public goals. Members are volunteers and can exit a group/task at any time, so they cannot be compelled to contribute toward a goal they disagree with.

Clients

Clients are government employees at the federal, state, or local level tasked with solving a particular problem. These problems could be very fundamental, scientific, and abstract, such as which unusual geometries might be useful to contain plasma in fusion experiments by a Department of Energy employee. A DSC team might be charged with thinking outside the box to propose new possibilities that could then be evaluated by the employee. Anecdotes abound of key scientific discoveries made by lay individuals, such as a fifth-grader in Kansas City, Missouri, exploring a chemical modeling set who hypothesized the existence of a molecule that had not previously been described (Nosowitz, 2012), whose chemical properties were later confirmed by professional chemists (Zoellner et al., 2012). Elementary school children are not normally given the opportunity to push the boundaries of scientific disciplines, but the DSC provides just such an outlet.

Client problems may also be of a practical or applied nature, such as the need to propose new bike lanes on streets in a town moving toward more sustainable transportation options. A common approach in such cases may be to hire urban planning consultants to bring their expertise from other similar projects. That option may still be employed but convening one or more DSC teams could provide initial creative solution ideas that can be evaluated by Client and formal consultants alike. More out-of-the-box or from-the-trenches proposals might be evaluated in this way, particularly if the teams formed are not truly random but pull together Members from all walks of life who have important knowledge biking, traffic, daily routines in similar towns, etc. Often this kind of public input is relegated to focus groups or public commentary periods, which do not always result in one of the expert-derived options ultimately being implemented.

Problems presented by clients would also need to be curated to ensure that problems of highest interest and relevance are the most visible. A popular model for this is demonstrated on popular link aggregation sites such as reddit or digg. The overview of this model is that pages are sorted by topic, and then topics within the page can be either voted up or voted down. The topics that accumulate the highest positive score (voted up - voted down) are then placed at the top of the page. Users are able to follow topics that interest them, and quickly view the highest rated problem in that group. In a 2013 study the mechanism of this curation was defined and formulated, allowing for various thresholds of quality to be determined. These quality thresholds can be manipulated and set to ensure that the content on the first pages of any topic meets a certain standard (Askalidis & Stoddard, 2013). This allows for any users to submit and rate problems while maintaining that problems at the top of pages have high quality. Mechanisms to avoid abuse such as moderation and daily limits on problem posting and problem rating could be employed as needed.

Members

Identities

DSC members are expected to be residents of the United States of America. Some restrictions may be placed on membership based on age and other factors, but generally, the DSC is intended to be an organization that enables service from a very wide swath of society based on their ability to serve and their particular interests.

Engagement

The circumstances surrounding the work made available to DSC Members exploits experimentally determined properties of human behavior and modern findings from the mobile internet era. The precise combination of engagement factors is expected to evolve over time and possibly be individualized for each Member. This kind of targeted structure is intended in this case to protect members from overextending themselves on the platform while still allowing productive engagement to take place. In other words, additional constraints are placed on DSC effort both to protect Members and to induce more creativity where possible.

The ability to engage on the platform will be limited to a maximum of, for example, 1 hour per day, creating artificial scarcity. This arrangement focuses efforts and optimizes effort on tasks for the short window it is available (Latham & Locke, 1975). Limiting time spent on a problem also draws out the total time spent over multiple

days, thereby injecting sleep cycles into the problem-solving sequence. This arrangement brings subconscious resources to bear on the problem and could lead to more creative resolutions (Cartwright, 1974; Mazzarello, 2000). Furthermore, the actual time of day of Member engagement will not be under the complete control of the Member. Blackout times can be scheduled, but access to the platform will only be allowed during the open times at somewhat varying intervals, thereby implementing a variable reinforcement paradigm to improve engagement.

This arrangement promotes motivation and persistence in the face of slow progress. Some variation here can also be combined with outcomes to determine good times of day for general task performance across the Member population.

The first step on the platform consists of selecting a problem to work on. This is a two-step process where Members are first shown a subset of currently available problems and then must choose the best of the subset. This arrangement allows some room for autonomy for Members, potentially improving their satisfaction with their choices, while using algorithms to optimize various conditions, such as exploiting known expertise or recruiting extremely diverse groups. To encourage user engagement and retention, an element of randomness will be incorporated into content delivery on the platform, as it is well established that unpredicted rewards trigger more vigorous dopamine release than those that can be predicted. Content may be unpredictable in character (what stimulus arrives next), unpredictable in time (when the stimulus arrives), unpredictable in amount (how much arrives), or some combination thereof (Hernandez et al., 2007; McClure et al., 2003).

It is now widely recognized that cognitive diversity is a recipe for creativity and an antidote to groupthink. Indeed like-minded people have been shown to make bad decisions without seriously examining them in order to maintain a friendly atmosphere within the group (Staw & Nemeth, 1989). Therefore, we will seek to compose groups of those with different experiences and training, and seek to incorporate diversity where possible.

Sidebar: Hackathons

A Hackathon is an event where people sharing similar interests gather under a common roof to build something from scratch in a limited time frame (usually 24-72 hours). Hackathons often have specific focuses in the technology or business space. The first hackathons were held in the summer of 1999 by the developers of OpenBSD and Sun Microsystems to get software developers together to solve an open challenge in computing. These events were community created and community-driven, just as they are today.

Gamification elements will also be available to encourage participation. Members' contributions to resolved problems will be summarized as continuously updating icons associated with their onscreen avatars. This shorthand will provide Members with a concrete representation of their contributions. A secondary benefit of the DSC will be a reduction in boredom of those in social isolation and an increased sense of satisfaction by being empowered to serve others in easier ways than would be possible without the DSC.

Inducements for Members

It is our belief that DSC activities must be inherently enticing to an individual and not require external inducements. Cash payments will never be an inducement, for example, unlike platforms such as Amazon Mechanical Turk (Kittur et al., 2008). The model for the DSC is that Americans are dedicating a portion of their time for service to their country.

To further drive member engagement and retention, principles of gamification, as mentioned above, will be incorporated into the design of the DSC. For instance, a system of reputation points and leaderboards similar to what many online communities such as StackOverflow use, can be used to recognize top-performing users, as well as motivate a majority of active users to perform better (Hansen et al., 2002). These gamification techniques have already seen use in both educational and corporate environments and have provided significant, measurable improvements, even amongst groups with differing goals and motivations (Hakulinen & Auvinen, 2014).

Benefits to Members

Because payment for work is not a model of the DSC, a reasonable question is what benefit might accrue to members. It would be important to avoid situations where members are or appear to be exploited for their talents and efforts. Limiting the time spent per day is one way to counter this issue. Careful vetting of projects is another so that others are not making a profit on members' efforts.

Most obviously, members receive entertainment benefits or active mind benefits. The DSC offers an outlet for people to express creativity and find meaning and purpose in the midst of loneliness and despair. They also will be provided opportunities to perform service work without prejudice on an equal level as all other members. Philanthropic actions have also been shown to have positive effects on individuals' self-esteem and mental health (Lum & Lightfoot, 2005).

Participation in team projects will also allow members to build the technical and interpersonal skills necessary for success in projects outside of the DSC. Progress on projects in the DSC and feedback from team members will allow members to build a virtual resume of their strengths that can be used for professional development. This is a particularly valuable opportunity for disenfranchised individuals (e.g. prisoners, homeless, etc...) to build up a portfolio without needing full-time employment *per se*.

Team Formation and Task Assignment

Matchmaking

The first step on the platform consists of selecting a problem to work on. This is a two-step process, where Members are shown a subset of currently available problems and then must choose the best of the subset. This differs from scenarios such as scrolling through resumes on monster.com or human intelligence tasks on Mechanical Turk. Instead, it is more similar to matchmaking procedures. The DSC will use matching principles also used by modern algorithms for rapidly identifying matches or working on a particular problem with other team members.

Sidebar: eHarmony

eHarmony is an online dating site based on the Compatibility Matching System™ characteristics between spouses that were consistently associated with the most successful relationships, based on 29 "areas of compatibility." The eHarmony database only matches individuals to people who matched at least 25/29 compatibility areas. The site questionnaire includes over 400 questions in order to ensure that only those "truly committed" to finding an appropriate match would complete the entire process.

Sidebar: Tinder

Tinder is a dating app where users are given a limited number of images and words to present themselves. Images of potential matches appear, and users can like (swipe right) or dislike (swipe left) potential matches. If both users swipe right, a match is made, and users can communicate with one another. If a profile is discarded, another card-like image appears. This gesture makes profile skimming easy and quick. Tinder's algorithm limits the number of "likes" a user can make in a 12-hour period. However, a premium option enables unlimited liking ability.

Sidebar: Medical Residency Match

The single, centralized process by which recent medical school graduates are matched into graduate medical training programs at teaching hospitals in the US graduate medical education ("residency") programs became hyper-competitive by the mid-twentieth century, leading to aggressive recruitment strategies by teaching hospitals. Centralized decision making was then proposed and adopted for most American medical schools graduating students and teaching hospitals hiring residents. Modern matching algorithms seek to balance the desires of programs and residents while accommodating particular constraints, such as couples wishing to

Six Degrees of Separation

Any particular problem may not be appropriate or desirable for any particular Member. Members will, however, be allowed to suggest with open text other individuals who may find a particular problem more suitable. If a natural language process algorithm is able to match the suggested individual with another Member, the selected problem will rise in the probability of being delivered to that Member. Even if that individual is not the right person, these serial suggestions have a surprising ability to identify target individuals across vast geographical and conceptual distances (Milgram, 1967).

Teamsourcing

The concept of crowdsourcing was originally formalized to provide commodity-level effort for digital image curation (Howe, 2006). This concept was combined with automated human intelligence tests to digitize large numbers of books photographed by Google, resulting in the first large-scale digitized book repository (Von Ahn et al., 2008). By design, the tasks for crowdsourcing are replicable across many individuals operating independently. In other words, the "crowd" is a random assortment of people lacking interaction with or knowledge about each other. Citizen science has made use of

crowdsourcing for the greater good, from dedicating computer clock cycles to the

Sidebar: Juries

One long standing team sourced task in countries with strong legal traditions is the jury. Juries are selected randomly from "peer" citizens and are asked to self-organize, draw conclusions, and reach decisions about guilt, innocence, and punishment without extensive instruction or guidance. This represents one of the most important tasks in modern societies, and it is effectively carried out with relatively little structure. Each jury exists for a single purpose and is disbanded afterward, though individual jurors may serve in other juries at other times.

search for extraterrestrial life (Anderson et al., 2002) to using one's spatial processing abilities to discern putative protein conformations (Cooper et al., 2010). Once again, these applications do not require any of the participants to work together.

Team sourcing, on the other hand, rapidly deploys cohesive groups of trained individuals for microtasks, leading to more efficient use of labor talent and effort (Zirn, 2016). These teams are carefully crafted to be cohesive and trained to be able to handle regular redeployment for different applications. Diversity of teams is a well-known predictor of improved creativity over more homogenous teams (Staw & Nemeth, 1989). Cohesiveness and diversity may be challenging joint principles to uphold for the DSC, but given that the consulting tasks are intended to be relatively short duration and experience occasional turnover in team membership even during that short time, other methods will be used to balance the expected diversity of the teams to keep teams on task.

Technology

Hardware

The multitouch tablet, including modern smartphones, can be considered a culminating technology of the decades-old computer revolution. The DSC will utilize the portability, power and constant attachment to these devices to build the foundation of the user interaction platform.

Most tasks on DSC will be compatible with any sort of modern computing device, such as a laptop, desktop, smartphone, or tablet with or without a touchscreen. Tasks are also not necessarily performed on the DSC directly, external software models are allowed to link to the DSC via the software API. While DSC does provide some initial simple tasks such as brain teasers and puzzles, which only need very basic operations and input/output, more complex tasks may require more.

People can access the DSC web version in a browser or install the App on a mobile device. External equipment (e.g. Apple pencil) is not required either, if not required by the tasks. The possibility exists for cross-platform generalization.

Software

The key activities of the DSC will be to draw small groups of individuals together for brief periods of time to work on targeted tasks. This process will make use of scheduling routines to engage each user on their smartphone or tablet for a limited amount of time per day at predetermined time blocks.

The DSC will connect users through a free application available for download over the Apple App Store for iOS devices and Google Play Store for Android devices. The application will have three distinct functions: team matching, project management, and single-user engagement. It will serve as both a hub for connecting users into teams and a workspace for sharing relevant project information with team members. The application will also serve to monitor adherence to set time constraints for daily project collaboration, after which single-user activities will be made available for continued user engagement.

The team-matching feature of the application will resemble that of commonly used match-making applications. The familiar "swiping" interface will allow users to easily begin the process of finding a project immediately after downloading the application.

Once matched into teams, users will be given access to the complete workspace feature of the application. This workspace may have subsections and individually editable pages, much like that of currently available applications Slack, Discord, and Notion. Integration of third-party applications will be possible here, to allow for streamlined workflow between a variety of users, however, the application will have its own built-in text editor and IDE for creating documents and product development. These more advanced features may be toggled through deactivating the "simplified layout" switch in favor of the full-power advanced development space.

Finally, once users have exceeded their allotted time for working on a given project, they will be locked out of the workspace until the following day. During this time, the application will provide engagement activities such as puzzles and brain teasers to stimulate creativity in the problem-solving process.

Machine Learning

Assignment of tasks at any given time will be under the control of active learning algorithms continuously optimizing the material presented to users. To this end, a multi-pronged approach consisting of cutting-edge natural language processing (NLP) tools like BERT and GPT2 along with state-of-the-art recommendation systems built on the tried and trusted user interaction model deployed in numerous products ranging from Amazon to Netflix. These approaches have created proven results and value across the broader technology industry with Netflix claiming that recommender systems save an estimated 1 billion a year (Gomez-Uribe & Hunt, 2016), and with amazon showing that 35% of purchases are derived from product recommendations (*How Retailers Can Keep up with Consumers / McKinsey*, n.d.). These tools coupled with cross-verification paradigms established from CAPTCHA and similar distributed crowdsourced verification algorithms will work to ensure that both submitted tasks

are consistent across various user submissions as well as limit the interaction of bots (Von Ahn et al., 2008).

Machine learning can also be leveraged to optimize the generation of groups as well as matching groups to a task. This can be done through numerous methods, however, a user interaction model that builds a profile of an individual's personality which feeds into a matching algorithm is a probable approach. Using personality profiling will act as a metric for group compatibility as well as task matching. However, task matching will draw on both the clients specification for teams (diverse, large, small, algorithm decided, etc.) as well. As team generation and task matching is the bread and butter of the DSC, these algorithms aim to be highly advanced, and will improve over time as optimizations and additional data is collected.

Cybersecurity

DSC membership will be tied to real-world identities, and for this reason, security is paramount. Members will be able to select how they present themselves to others in order to offset inherent biases. Databases used in day-to-day communication will not be linked to real-world identities, but that information is important to retain. An obvious identity option would be to link members to their social security numbers, using similar security that is used for such cases. Standard procedures will include salting and hashing of all personally identifiable information using cutting edge Secure Hash Algorithms such as SHA3, as well as using AES256 to encrypt all user data.

It is expected that nation-state adversaries or criminals will try to hack this system. However, fraud is expected to be reduced because of the difficulty in spoofing real people as well as the time limiting and lockout features of the DSC. Similarly, user biometric authentication, similar to Touch ID and Face ID from Apple, could be used as an additional authentication factor for users. A logical extension of this is the use of embedded chip technology present in Real ID compliant identification such as driver's licenses and passports.

Inspiration can also be drawn from the experience of online gaming developers and platforms, as these groups have extensive experience policing communities full of individuals attempting to cheat and undermine the community. Riot Games, for example, has an extensive track record of innovative enforcement activities designed to keep a level playing field for players (Bassi et al., 2018). Techniques drawn from these groups could include a Ring 0, kernel level, anti-cheat driver (Parizi et al., 2019), or algorithmic responses to user behaviour that is trained to detect anomalous behavior (Bamberger & Shaffner, 2012).

Furthermore the DSC is not intended for, or designed to be used with secret, personal or any way non public data. This keeps the risk of high level idea leaks to a minimum from the DSC, as all tasks on the platform are intended to be eventually for the public use or knowledge.

Sample Tasks

The DSC is ideal to solve local one-off problems that require creative, non-conventional approaches. As described in the client section, the DSC can be employed by governments down to the local level, opening up the possibility of solving a new class of problems for groups that may not have the resources or technical ability to solve pressing problems in their communities.

The situations below are not necessarily challenging per se, however, they are yet to be solved by conventional means. This is precisely a situation where the DSC can provide novel and innovative solutions. Relying on the distributed and diverse teams built by the DSC expertise and ideas from numerous fields and walks of life can be put together to solve complex tasks that don't necessarily play well with institutionalized or top down approaches to solutions.

Mental Health Improvement

A primary proposed application for the DSC will be to identify individualized approaches to overcome the negative mental health effects of social isolation. Not only for the general quarantined public due to the COVID-19 pandemic at the time of writing, but also for members of the armed forces, like the National Guard.

Intrinsically the DSC can improve mental health through two aspects of the implementation of the platform. The first aspect comes from the creative aspect of the projects. Creative projects have shown quantifiable benefits on mental health. The British Medical Association has shown that creative projects were able to induce positive psychological and physiological changes in clinical outcomes, and improved mental healthcare as a whole. The second aspect comes from the team-based nature of the DSC. The NIH reports that positive social relations are consistently associated with biomarkers of health, and conversely, that loneliness is a unique risk factor for depression, morbidity, and mortality. (*Research Suggests a Positive Correlation between Social Interaction and Health*, n.d.).

Food Logistics

Even at the best of times, and estimated 40 million Americans are food insecure, while at the same time over 60 million tons of produce is discarded by farms not due to the quality of the food but by the non-ideal appearance of the food (Coleman-

Jensen et al., 2019). This situation (at the time of writing) is exacerbated by the COVID-19 pandemic, with farmers dumping tens of thousands of gallons of milk, hundreds of thousands of eggs, and millions of pounds of produce weekly (Stone, 2020). Situations like these are unlikely to have broad national solutions due to the centralization of food production in the Midwest, however, solutions tailored to local communities that match farmers and consumers can succeed where larger efforts have failed.

Traffic Management

As mentioned in the Clients section as an example, local traffic management is another task that can be an excellent fit for the DSC. Cities building plans for bike lanes, public transportation, and new developments can augment traditional planning and generate novel ideas with DSC generated solutions. Utilizing the diverse individual expertise of the individual members in a DSC generated group, municipalities can receive specialized advice, ideas and plans from numerous domain experts, leading to better outcomes.

Data Generation

Team generation is just one part of the DSC's model. Additional tasks such as the brain teasers and puzzles as mentioned in the software section can be used by researchers and institutions to generate data for their research. By choosing what sort of tasks and puzzles are seen by users of the DSC, and aggregating analytics such as time taken to solve, percent correct, etc., for the tasks completed, valuable research data can be generated. Likewise, traditional analytics tasks such as labeling for data science applications can also be farmed out through the DSC.

Conservation Efforts

As the DSC is not a 'boots on the ground' organization, conventional conservation solutions such as planting trees is not what the DSC sets out to do. However, conservation logistics and creative conservation solutions are tasks for the DSC to tackle.

Contact Tracing

In the light of the COVID-19 pandemic that is currently upon us at the time of writing (spring 2020), a major task that has no real solution thus far is contact tracing. As initial proposals for solutions have lost traction with the public, idea generation platforms such as the DSC can be instrumental in generating novel solutions to pressing issues like these.

Improving K-12 Virtual Education Quality and Engagement

As countless school districts moved to virtual education due to the COVID-19 pandemic, many districts are reporting record numbers of absent students. This disproportionately impacts young, low-income, and at-risk students leading to a widening of the education gap. Using the DSC platform, individuals from all walks of life can use their collective experience to build solutions to tackle these issues.

Matching Eligible Persons with Aid

A classic case of this is children that qualify for free school lunches when education has gone virtual. Oftentimes, these school lunches are the only solid meal that these children receive, and keeping these students fed and learning is critical to their future. There are countless other examples of instances like this, where the distributed and broad knowledge of DSC members can generate better solutions to match existing aid programs with those who need it.

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