Submission for the Global Challenges Prize 2017:

A New Shape

Concept Architect: Paul Forest
Writer & Editor: Dean Kyte
Illustrations: Darren Pryce

Submitted on the 13th of September, 2017

IMPORTANT NOTE:
All ideas presented in this document are freely shared as they are a result of the collective efforts of millions of minds working throughout time to explore new ideas for how we can collectively improve human existence.
If you have an interest in supporting Cluster or you would like to use the ideas in this paper for your own project, please feel free to email Paul Forest at paul.forest@cluster.life to discuss the possibility of collaboration.
1. THE PROBLEM .......................................................................................................................... 3

2. CLUSTER - A POSSIBLE SOLUTION ................................................................................... 4
   2.1 THE GLOBAL RESOURCES POOL ................................................................................... 4
   2.2 THE GLOBAL SUPPLY CHAIN ...................................................................................... 5
   2.3 SYMBIOTIC GOVERNANCE ............................................................................................ 5
      2.3.1 Neural Democracy .................................................................................................. 5
      2.3.2 Giving as a Guiding Principle .............................................................................. 6
   2.4 DATA ............................................................................................................................. 6
      2.4.1 The Facebook for Do-Gooders ............................................................................. 7
      2.4.2 Neural Layering .................................................................................................... 7
      2.4.3 Voting .................................................................................................................... 8
      2.4.4 Schematic Organisation ....................................................................................... 8
      2.4.5 Neural Signatures .................................................................................................. 9
   2.5 INFLUENCE .................................................................................................................. 9
   2.6 INCOME ......................................................................................................................... 10
   2.7 PROFIT .......................................................................................................................... 11
   2.8 DECENTRALISATION ..................................................................................................... 11
   2.9 TRANSPARENCY ......................................................................................................... 12
   2.10 LOCALISATION ............................................................................................................ 13
   2.11 TECHNOLOGY ............................................................................................................. 14
      2.11.1 Fusing Google and Facebook .............................................................................. 14
      2.11.2 Removal of Advertising ..................................................................................... 15
      2.11.3 Content Posts ..................................................................................................... 15
      2.11.4 Clusters ............................................................................................................... 15
      2.11.5 Molecular Search ............................................................................................... 16
      2.11.6 Project Management ............................................................................................ 16
      2.11.7 Blockchain Integration ......................................................................................... 17
      2.11.8 Artificial Intelligence ........................................................................................... 17
      2.11.9 The Internet of Things .......................................................................................... 18

3. SOLUTION VIABILITY ........................................................................................................... 20
   3.1 CORE VALUES ............................................................................................................... 20
   3.2 DECISION-MAKING CAPACITY .................................................................................... 21
   3.3 EFFECTIVENESS .......................................................................................................... 22
   3.4 RESOURCES AND FINANCING .................................................................................... 23
   3.5 TRUST AND INSIGHT ................................................................................................... 24
   3.6 FLEXIBILITY ............................................................................................................... 25
   3.7 PROTECTION AGAINST THE ABUSE OF POWER ......................................................... 26
   3.8 ACCOUNTABILITY ......................................................................................................... 27

4. REFERENCES ........................................................................................................................ 29

5. ABOUT PAUL FOREST ......................................................................................................... 34
1. THE PROBLEM

The shape of human society has evolved to resemble a number of highly centralised, pyramidal social architectures, including governments and corporations, competing for resources. At the apex of these power structures, decision-making is centralised to a governing élite who are cognitively challenged by the complexity of making nuanced decisions on behalf of billions of people. Responsibility for implementing these broad decisions then trickles down through rigid bureaucratic hierarchies which are poorly adapted to take the kind of agile and intuitive action needed to address our global challenges effectively. While historically these pyramidal power structures were the most effective means of governing large populations of people when communications technology was slow and limited in reach, in an increasingly complex, interconnected world of rapid communications, these rigid, centralised structures are maladaptive.
2. CLUSTER - A POSSIBLE SOLUTION

FIGURE 1 – CLUSTER BLUEPRINT

2.1 THE GLOBAL RESOURCES POOL

The Earth is a closed system with finite resources. It is therefore vital for humanity to effectively monitor the health and wealth of the resources we depend on as a species (Global Challenges
Foundation, 2015, p. 82). Enhancing our collective intelligence will be crucial in this process: universally transparent access to and sharing of data related to the current state of available resources will support healthier decision-making, both individually and collectively (Akkermans, Bogerd, & van Doremalen, 2004, p. 448). Cluster will develop a universally transparent, fully decentralised global database to store real-time information about the health and availability of all resources connected to the network. This database will be referred to as the Global Resources Pool (GRP).

2.2 THE GLOBAL SUPPLY CHAIN

The Global Supply Chain (GSC) encompasses all the processes whereby resources in the GRP are converted into goods and services which are then supplied to Cluster users. In order to manage these resources more effectively, Cluster will gradually rebuild supply chain logic by initially rationalising provisionment within the global charity sector.

2.3 SYMBIOTIC GOVERNANCE

By establishing a cohesive link between the decisions and actions of autonomous individuals and the global dynamics of the collective, Cluster creates a mutual symbiosis between governance and all of its dependents. As in nature, this type of symbiosis is premised on a motive of mutual benefit (Espinosa & Guzman, 2015, p. 5): as Cluster’s model of Symbiotic Governance improves, autonomous, self-organising individuals will become more effective in how they contribute civically, which will in turn support more intelligent collective self-governance.

By providing a logistical infrastructure which integrates the consumptive decisions and actions of an individual with the macro decision-making and action-taking pathways chosen by billions, this dynamic, adaptive model of Symbiotic Governance equips humanity with the flexibility and agility required to meet significant global risks and challenges with confidence.

2.3.1 Neural Democracy

Cluster is therefore a governance model for sophisticated and intuitive decision-making and action-taking at both an individual and collective level. By gradually dissolving the rigid pyramid structure in which decision-making is centralised to an economic élite (Gilens & Page, 2014, pp. 575-7), Cluster proposes a new, decentralised shape for global governance: the ‘cluster’, a worldwide neural network which is fluid, dynamic and adaptive, in which every individual is a node in the decision-making and action-taking matrix. Based on the principles of a complex adaptive system (Mittal, 2013, p. 22), Cluster proposes to merge aspects of existing large-scale
Internet technologies such as Google, Facebook and the Blockchain to form a real-time ‘Neural Democracy’ — a co-operative neural architecture for generating solutions to our global challenges at both an individual and collective level by mimicking the logic of one of the most successful complex adaptive technologies of all: the human brain (Batten, 2011, pp. 313-4).

2.3.2 Giving as a Guiding Principle
The Cluster interface encourages individuals to focus their activities on giving to the Earth and to other people in need, supporting them to interrelate in a space of mutual compassion. Moving progressively from the fragmentation of competing individual interests to a holistic integration of interests, a new global order will spontaneously emerge from an initial state of disorder through the co-operative interactions of interdependent individuals and groups mutually motivated to compassionately share resources with one another (Chertow & Ehrenfeld, 2012, pp. 18, 21).

Focusing on giving is also financially strategic: over $US390 billion were donated to support charitable organisations in the U.S. alone in 2016 (Giving USA Foundation, 2017, p. 20). As a whole, groups within the charity sector are struggling with inefficient operational infrastructures and issues of distrust with the public arising from a lack of transparency (Gregory & Howard, 2009, pp. 49-51). By implementing a more efficient and universally transparent network to improve how we manage charitable donations, Cluster is able to source the foundational human and material resources required to implement a healthier social infrastructure for humanity which is transferable to other sectors. As a logical architecture to rationally manage the distribution of resources, Cluster therefore aims to transition humanity into a new phase of our collective existence where giving is no longer associated with charity but is instead recognised, through Symbiotic Governance, as the guiding principle for how we collectively live.

2.4 DATA

In order to govern our existence, both as individuals and as a collective, we are constantly receiving and processing data. Even at the collective level, this process is guided by a self-similar logic aligned with our individual neural functionality (Bettencourt, 2009, pp. 617-8) corresponding to the roles of specific neurons: Awareness (sensory neurons), Education (relay interneurons), Possibility (local interneurons) and Action (motor neurons) (Carlson, 2013, pp. 28-9). Within these four neural layers, information is constantly managed to support and guide the decision-making and action-taking process (Méndez, Pérez, Prado, & Merchant, 2014, pp. 1-2). To further enhance our ability to process information, we also categorise data into ‘schemas’, providing a mechanism for simplifying cognition at both an individual and collective level (Anderson, 1999, p. 221).
2.4.1 The Facebook for Do-Gooders

More than fifty per cent of the world’s Internet population\(^1\) has a Facebook account\(^2\), suggesting that the Facebook user experience is familiar to a majority of Internet users. To co-ordinate a universally transparent, decentralised decision-making and action-taking process where data is shared among billions of people, Cluster will mimic the look and feel of the Facebook interface, significantly reducing the training time for users to become proficient with Cluster. Data will therefore be shared on Cluster in the form of Facebook-like content posts which will be permanently stored in the GRP as either user-generated posts, or posts compiled by Cluster’s artificial intelligence network. While Cluster’s user experience will be similar to Facebook, Cluster is geared towards a very different purpose, which is to improve the operational efficiency of giving, thus supporting our global population of ‘do-gooders’ in their efforts to help humanity.

2.4.2 Neural Layering

When a post is created, it is assigned to one of four neural layers: Awareness, Education, Possibility, or Action. To demonstrate how managing content within the charity sector would occur through neural layering, here is an example that follows the activity of Cluster user Lynn Rahal, who arrives in Syria as part of a charity relief effort to help people in Aleppo who have been devastated by bombing.

Lynn’s first action is to create an Awareness post with a brief message describing the devastation caused by the bombing. Lynn’s post also includes image-content that allows Cluster users around the world to get a palpable sense of what is happening on the ground. By creating this Awareness post, Lynn is acting as a ‘sensory neuron’ (Carlson, 2013, p. 28-9), a nerve for the global charity sector sending other users in the network a signal that there is a problem which requires urgent attention.

On day two, Lynn uploads an Education post, a video featuring some instructions demonstrating how to safely remove people from rubble, in response to a need that she has identified on the ground. Due to the value of the information, this Education post goes viral, thus increasing the collective intelligence of rescuers as a group by freely disseminating data that helps them to save more lives more effectively. This form of viral information-sharing is similar to the way in which data is transmitted across our neural networks via relay interneurons (Carlson, 2013, p. 28-9).

On day three, Lynn encounters a problem. She discovers four girls trapped under a collapsed hospital building. The girls are alive but rescuing them safely will be difficult. The remaining structure of the building is about to collapse, putting the lives of rescuers at risk. While Lynn has

\(^1\) http://www.internetworldstats.com/stats.htm  
an idea for how to proceed, she decides to create a Possibility post so that other Cluster users with relevant expertise can get involved. These users read through her analysis and examine the images provided. An online discussion takes place, where different possibilities are explored and considered, eventually leading to a potential solution. Exploring possibilities in this fashion is similar to how data is processed within our networks of local interneurons (Carlson, 2013, pp. 28-9).

Once the plan for action feels solid, a project is created. An Action post is automatically generated when the project goes live, allowing Cluster users to follow and contribute to the Action as it is taking place. The Action post provides a brief for the project, which includes the budget, timeframe, team members involved, and a description of what the project aims to achieve. From the Action post, Cluster users are able to click through to a project view that provides them with specific details and updates on the project. Actions are therefore triggered in a similar fashion to the way in which motor neurons (Carlson, 2013, p. 28-9) trigger movement in our bodies.

Neural layering applies to all aspects of human existence. However, until the advent of the Internet, an effective technology of behaviour did not exist which enabled the unconscious automation and co-ordination of this process at a collective level (Skinner, 1971, pp. 5, 6-7). Potentially, Awareness posts could replace the function of global media, generating strategic reporting on issues of concern. Education posts could be compiled in a free global network for knowledge-building and skills-training. Possibility posts could stimulate and accelerate new ideas by connecting and co-ordinating innovators and visionaries across the globe. Action posts could link into a new type of global project management system, improving our capability to implement the decisions necessary to globally co-ordinate our shared existence.

2.4.3 Voting
By replacing the Facebook ‘Like’ function with a ‘Vote’ function, the Neural Democratic process is effectively enabled on Cluster. When a user clicks on the ‘Votes’ for any content post, a category selection panel appears, allowing the user to click on the schematic categories they would like to support with their votes. This is essentially an extension on Facebook’s function of allowing users to select an emotional category (happy, sad, etc.).

2.4.4 Schematic Organisation
Within each neural layer, content posts are further organised into categories which align with the schemas we use to process information (Anderson, 1999, p. 221). Users vote on the relevancy of content by nominating the schematic categories they believe are the most appropriate classification for the content. The number of votes assigned to each category
determines the relevancy and importance of the content post for each category. It also boosts the relative influence of the content creator in those categories, thus automatically and unconsciously identifying expertise in given fields.

When a user decides to vote on content they will be presented with a selection of categories that are assembled by analysing their voting pattern as an individual as well as the voting pattern of the content they are viewing. Initially, categories will be quite broad (e.g. ‘Politically Motivated Violence’, ‘Climate Change’, ‘Poverty’, ‘Education’, etc.) but, as in our individual schemas, users will be able to vote content into increasingly more specific sub-categories (Maxfield & Zelinsky, 2012, pp. 1155-61). For example, within the broad category of ‘Politically Motivated Violence’, there may exist the sub-category of ‘War’, and within ‘War’, the more specific sub-category of ‘Bomb Damage’. This increasingly narrow-focused hierarchisation of nested content facilitates a more effective organisation of information and content contributors within each specific category (Maxfield & Zelinsky, 2012, pp. 1161-2). Moreover, by scaling up the individual neural process of schema-making to the collective level through a logic of self-similarity, schematic organisation of content is the most effective means of achieving broad consensus as to the meaning of complex issues and events, and thus facilitates concerted large-scale political action in addressing our global challenges (Anderson, 1999, p. 221).

2.4.5 Neural Signatures

By mapping the voting pattern of each user to the neural layers and schematic categories they have voted in, it will become possible to identify a neural signature that represents their unique pattern of behaviour. By assessing the voting patterns of user groups voting on the same content, it also becomes possible to identify a unique neural signature for each content post. While the neural signatures for users will be generated in real time, neural signatures for content posts will be stored in a global index within the GRP in the same way that Google indexes content by keywords in order to increase the speed of matching content to users.

2.5 INFLUENCE

As all content is assigned into a neural layer, by adding votes into schematic categories, users increase the influence of both the content and the content creator in the category the vote is placed in, as well as in the neural layer the content is assigned to. The influence accumulated by content creators identified as experts in their field via Neural Democracy can then be used to increase support for content that matches their field of expertise, and to generate an income by distributing donations within their field, thus incentivising the motive to vote and give.
By building influence through Neural Democracy, we allow expertise in all fields to guide the flow of content on Cluster, which in turn will ultimately guide a more effective democratic process for making decisions and implementing actions. This second-tier democratic process is therefore a more effective version of representative democracy: instead of electing non-experts to represent large constituencies on broad issues, expert users in specific fields will guide specific decisions.

However, to ensure all personal influence is current and is not permitted to accumulate to unhealthy levels (Warburton, 2013, pp. 231-2), influence generated through Neural Democracy will have a short life-cycle — maybe one lunar month. Likewise, to prevent influence accumulating in areas of the network, voting caps will be applied to every category in every neural layer. By creating a voting system which endorses individual expertise that is current and relevant to specific issues while preventing the accumulation of influence to unhealthy levels, we institute a radical new form of global governance: a dynamic fusion of direct, representative and participatory models based on the neural decision-making architecture of the human brain.

2.6 INCOME

Donors will be able to donate to specific causes, groups and projects, as well as to categories, neural layers or expert users. Donations are then distributed into universally transparent virtual funding accounts managed by users who have an expertise matching the donations in those accounts. Expert users then allocate funding into the projects they believe will be the most effective. The funding allocation decisions for donations are therefore guided by the most current expertise.

Once a project uses the funds allocated, a commission of 10% is returned to the expert user. As this form of personal income generation is connected to influence, it is capped in line with the mechanism Cluster uses to cyclically cap influence: that is, in order to continue generating income, expert users must continually prove their expertise by making effective content contributions to Cluster which are deemed valuable by the collective through Neural Democracy (Anderson, 1999, p. 221). By attaching income to the cyclical capping of influence, we allow for a more equitable distribution of financial support to be provided to expert users, while also keeping our funding allocators accountable by mitigating potential fraud arising from the accumulation of social influence on the network (Warburton, 2013, pp. 225, 228).

As Cluster proves itself as a more efficient and effective model for managing human and material resources within the global charity sector, it will be logical to apply this model to the corporate sector, rationalising the GSC as it applies to business. Employing the same logic of universal
transparency, decentralisation and localisation to economic entities, Cluster will eventually dissolve large corporations into transparent, decentralised local networks of interdependent sole traders.

Income for sole traders will be calculated using precise algorithms to ensure that they are receiving higher incomes than they would receive in equivalent corporate positions. With this drain of quality labour from the corporate sector in effect, the rationalisation of the GSC will undergo a further iteration through the division of labour, effectively making Cluster the world’s largest, fully decentralised labour market. Neural Democracy will then be applied to developing global solutions to guarantee base income stability and universal benefits such as health care, holiday leave, sick pay and insurance for workers.

As a network, Cluster will derive an operational income from the management of donations and the GSC that will be redistributed via Neural Democracy towards maintaining the network, developing new systems to improve operations, and towards promoting Cluster as a consumer solution on a global scale.

2.7 PROFIT

Precise algorithms will be applied to calculate the true costs, incorporating externalities (Global Challenges Foundation, 2015, p. 67), of supplying goods and services to consumers. Once true costs are calculated, a baseline profit will then be added as a donation to support projects in the global charity sector, to be redistributed through the GRP. Donations through the redistribution of network profit will prioritise local community projects, with a set amount being made instantly available for distribution to global projects through Neural Democracy.

2.8 DECENTRALISATION

As a behavioural technology for guiding peaceful change, the mechanism of Neural Democracy is premised on a logic of decentralisation. This underscores Cluster’s guiding principle of giving, for in peacefully sharing information, resources and decision-making among the collective, Cluster is able to implement a strategic program of decentralisation.

By decentralising information about the current state of available resources across the network, Cluster both rationalises the GRP and its attendant supply chains and minimises the possibility of corrupting or manipulating data in support of decisions which make an unhealthy use of the resources contained therein. The principle of freely disseminating information about the state of common resources directly to other parties facilitates the process of freely sharing those
resources with other groups, individuals and projects in need. Thus, by decentralising ownership of resources and encouraging groups and individuals to donate their resources to the GRP, Cluster effectively enables a strategic and dynamic redistribution of resources into localised ‘clusters’ which form a global network of small, linked stockpiles rather than large aggregations centralised to groups and individuals — a strategic weakness in our current highly centralised architecture (Gatignon, Van Wassenhove, & Charles, 2010, pp. 104-5).

With a decentralised network of resources and decentralised, real-time information about the state of those resources, Cluster’s Neural Democracy then allows for a decentralised decision-making process to take place regarding the most appropriate and strategic use and distribution of resources. As influence in the Neural Democratic process is both cyclical and capped, preponderant influence in decision-making is effectively prevented from accumulating and centralising to individuals and groups who might corrupt the decision-making process by favouring solutions which further the agendas of interested minorities at the cost of collective benefits (Gilens & Page, 2014, pp. 575-7).

The logic of decentralisation makes many of the social strategies used to justify the aggregation of large populations of people redundant by encouraging increasing movement towards localisation, and therefore depolarisation (Beer, 1981, pp. 316-20). Moreover, as the divisions between large social groups such as nation-states start to dissolve through the depolarising movement towards localisation, the potential for large-scale, totalising human conflict will de-escalate accordingly (Beer, 1981, pp. 320-2). The necessity for maintaining standing military forces and arms to defend national borders will gradually reduce, freeing up valuable resources which can then be redistributed through the GRP to address our collective challenges.

### 2.9 TRANSPARENCY

In addition to decentralisation, *universal transparency* is the second premise which drives the logic of Cluster’s Neural Democracy, and is likewise based on the generous impulse of giving. In a community of centralised power structures, competition dictates that information should be non-transparent, carefully compartmentalised, and not disclosed to other actors at the risk of jeopardising one’s competitive advantage (Durst & Mann, 2000, pp. 356-7). The logic of universal transparency, however, is premised upon collaboration rather than competition and argues that there is more to be cognitively gained by both individuals and the collective through the universally transparent sharing of information, resources and decision-making (Akkermans, Bogerd, & van Doremalen, 2004, p. 446).
As all content contributions on the network are universally transparent, Cluster users are able to trust the information being shared because they are able to verify the source of content (Heinzelman & Waters, 2010, pp. 11-2). Users are also able to view all the contributions made by any other user, thus allowing them to assess the relative expertise of other users making contributions in given fields. Knowing that the contributions an individual makes to the network are visible to all other users fosters individual accountability for the content contributed (Garrett, as cited in Meier, 2011, p. 54). Moreover, the information itself is potentially verifiable by the whole network of human editors and AI, thus guaranteeing the maximal veracity of information contributed on Cluster.

In addition, the decisions and actions of all users working within the GSC will also be universally transparent, thus ensuring the individual accountability of all actors and encouraging greater collaboration in the pursuit of optimising the efficiency and effectiveness of processes (Akkermans, Bogerd, & van Doremalen, 2004, p. 452).

Consumers are able to follow the transparent supply chain which has produced any good or service through Cluster. Where the external cost of goods and services is considered prohibitively high, consumers are able to raise Awareness posts to alert the collective of the issue; Education posts to inform on aspects of the process; Possibility posts to explore ideas for improving efficiency; and Action posts to create projects which ensure that the true environmental and social costs associated with their consumptive choices are minimised. Through this Symbiotic Governance model, Cluster enables consumers to become ‘self-regulating’ by providing dynamic, real-time feedback on how the GSC can be improved and refined.

All donations managed through Cluster will also be completely transparent, allowing donors to see how their donations have been spent. Donors will receive detailed progress reports outlining the effectiveness of their contributions, providing them with the transparency they require to make confident decisions with regards to the donations they make.

2.10 LOCALISATION

After proving its ability to successfully reform the charity and business sectors, the final stage of Cluster’s transition strategy towards a new, decentralised shape for global governance is localisation. The goal is to create autonomous, self-organising communities that are linked through Cluster’s global resource-sharing network, enabling communities to mutually aid one another while maintaining sovereignty, and thus allowing the collective to operate with maximal efficiency and effectiveness (Mehmood, 2016, pp. 413-4).
Within each community, logistical infrastructures, including co-operative, eco-friendly micro-manufacturing plants, will be established on a template model to provide the majority of goods and services required by the community, thus extending the logic of localisation to production and distribution. This initiative will also include the creation of local intranets allowing individual communities to unlink from the global cluster if necessary. The modular logic of localisation allows each community to develop its own sovereignty, thus strengthening its resilience to cope with global catastrophes which may isolate it from the global network, yet reciprocally share its resources with other nearby communities in a synergised global network of linked, localised clusters (Mehmood, 2016, p. 415).

During this global transition towards localised governance, communities will be supported by Tactical Community Bases (TCBs), temporary autonomous micro-communities globally linked through the Cluster network. TCBs will provide food, water, power, and tool-sharing solutions to the communities in which they are located. With up to 100 people living on each base, TCBs will be operated by expert Cluster users, thus providing a demonstrable example of a successful strategy for decentralised, localised, autonomous self-governance within the wider community.

As TCBs will be supported by Neural Democracy, which is rebuilding a more efficient and effective GSC, it is likely that Cluster will already be working with local governments by supporting them to access lower-cost and higher-quality goods and services. As such, it is foreseeable that local governments will be keen to extend their engagement by collaborating in a range of strategic partnerships with TCBs to support a peaceful transition to localised autonomy, evolving local solutions to global challenges through the Neural Democratic process.

2.11 TECHNOLOGY

For millennia, human beings have been developing technology which is designed to extend our faculties beyond their biological limitations. The greatest technology developed to extend our cognitive capacity is the Internet, which provides humanity with an external neural architecture (Anderson, 1999, pp. 225-6) enabling us to collectively realise a universally transparent, fully decentralised system of global governance that will enhance our collective intelligence to more effectively meet the complex needs of billions of people.

2.11.1 Fusing Google and Facebook

As the Internet has evolved, new technologies have emerged that provide us with the components necessary for building a new decentralised architecture. The strategy for building the Cluster technology is to fuse components of existing Internet technologies that have already proven their ability to successfully operate at a large scale. The two major technologies that
Cluster will adapt are Google\textsuperscript{3} and Facebook\textsuperscript{4}. By fusing components of the world’s leading search and social media platforms together, we create a viable framework for building Cluster as a tool to enhance the collective cognitive capacity of humanity.

\subsection*{2.11.2 Removal of Advertising}
As both Google and Facebook rely on advertising to generate centralised profit for their owners and advertisers, they have developed out of the same dysfunctional social logic which has rendered governments and corporations maladaptive. By favouring advertising in content results, the user experience is corrupted by impure data which impedes the ability of users — and therefore the global collective — to make healthy decisions and take healthy actions in regards to resources (Hoppner, 2013, pp. 16-7).

To avoid the corruption of data by moneyed interests, Cluster will not permit advertising on the network. By focusing on the user experience instead of on the needs of advertisers, Cluster will employ highly sophisticated content algorithms derived from both Google and Facebook to generate intelligent, uncorrupted and relevant content for each user.

\subsection*{2.11.3 Content Posts}
Information will be exchanged through Cluster in the form of content posts. Like Facebook, Cluster posts will allow data to be shared in multiple formats, including text, images, video and audio. Content will primarily be accessible through a content Feed screen which will resemble the look and feel of Facebook. A content Search screen will also be available to enable users to locate quality content through Cluster’s Molecular Search technology.

\subsection*{2.11.4 Clusters}
Content generation will be guided by user-defined filters called ‘clusters’. The filtering options within a cluster will include the ability to select any combination of schematic categories, geographic locations, time frames, and voting ranges, as well as being able to specify the average level of expertise for content contributors. Keyword filters can also be added to clusters to provide an additional layer of content refinement. By following these specific parameters, content is then matched using an adaptation of algorithmic techniques derived from a fusion of Facebook and Google.

Firstly, Cluster will adopt Facebook’s logic of simplifying the content sorting process by containing information exchange to the common format of a content post, which will allow for a greater level of accuracy to be achieved when sorting complex data sets. The data within each

\begin{itemize}
\item \textsuperscript{3} http://www.google.com
\item \textsuperscript{4} http://www.facebook.com
\end{itemize}
post will then be analysed by adapting the core logic of Google, which currently matches content based on schemas that are primarily identified through keyword filtering. By encoding the neural signatures of content into a global index, Cluster expands on Google’s ability to sort complex content by providing a deeper level of insight into how specific content can be matched to the specific neural behaviour of each user. By enhancing the cognitive capacity of pre-existing content sorting algorithms that have already proven their effectiveness at a large-scale, Cluster allows for a more elegantly ordered search complexity that will stimulate the strategic content necessary to support a sophisticated intelligence for both individuals and the global collective to emerge (Chertow & Ehrenfeld, 2012, pp. 18, 21).

Once generated, users will be able to save their clusters, which will be accessible through a menu on both the Feed and Search screens. Content is then generated for each screen based upon the combination of clusters selected, which can be refined further by allowing users to select any combination of neural layers for the content they are viewing.

2.11.5 Molecular Search
A molecule is the simplest unit of a chemical substance, usually a group of two or more atoms. If we consider a post as an atom of information that is bonded to other atoms of information in a cluster, it is logical to regard clusters as being molecules of information. In the same way that neural signatures can be identified for an individual content post, it will also be possible to identify a neural signature for each cluster of posts. In the same way neural logic is analysed between pieces of content to generate clusters, the neural logic between clusters can also be analysed to form search molecules of diverse but similar content clusters. This non-linear expansion of search logic will increase network content synergy, further supporting the emergence of both individual and collective intelligent behaviour (Bettencourt, 2009, pp. 603-5).

2.11.6 Project Management
In addition to fusing leading search and social media technologies, Cluster will also optimise current project management technology with the aim of creating the most sophisticated network for project management in the world.

Initially, the strategy is to use Application Programming Interfaces to connect with third-party project management systems that are familiar to a majority of users, such as Basecamp5, Trello6 and Asana7. Using these systems as a benchmark, Cluster will eventually develop its own bespoke project management system, one that is optimally tailored to suit the needs of a global

---

5 http://www.basecamp.com  
6 http://www.trello.com  
7 http://www.asana.com
network focused on giving by adapting and integrating the best elements of these systems through the Neural Democratic process.

Projects managed through Cluster will be universally transparent, allowing users to monitor performance, provide feedback and participate in solutions (Trilog Group, 2012, p. 1). This transparency allows projects to be made freely available as templates which will be accessible via the GRP. When users initiate new projects, this database will be the first place to search: using a pre-existing template for a similar project that has proven successful will maximise efficiency and effectiveness and assist project managers to avoid potential pitfalls. Project managers will also be connected to an online community of support from other users who have used the same template.

Developing a project management interface which maximises the collective cognitive potential of humanity will dramatically improve the operating efficiency of the global charity sector, which is essentially a massive network of interconnected projects. This universally transparent, decentralised logic can then be applied to the rationalisation of other logistical infrastructures, such as corporations and governments, which are also networks of interconnected projects.

2.11.7 Blockchain Integration
As Blockchain is a technology to decentralise global information in a secure and trusted format (Alcazar, 2017, pp. 93-8), it will provide the perfect framework for realising the goals of Cluster. Being a new technology, however, Blockchain is still in an early developmental stage and therefore requires additional resources and support to reach its full potential (Alcazar, 2017, pp. 98-9), which Cluster will provide and accelerate through Neural Democracy. The development strategy is therefore to strategically integrate Blockchain with Cluster as the viability of the technology improves.

2.11.8 Artificial Intelligence
The amount of data that humanity requires to operate at maximal efficiency is incalculable by the human intellect. While transitioning to a decentralised, transparent global social architecture will assist both individuals and the collective to more efficiently manage data, to maximise efficiency, humanity will need to develop Artificial Intelligence (AI) that is specifically focused on data management at the most complex level (Tyagi, 2017, p. 43-4).

While concerns have been raised about the potential dangers of AI, these concerns are only applicable to the development of Artificial General Intelligence, which aims to achieve Human-Level Machine Intelligence (Tyagi, 2017, p. 45-6). Cluster will instead use a network of narrow-focused AI’s (Tyagi, 2017, p. 46) dedicated to specific tasks relating to data management.
Primarily it will be developed to collate and analyse large volumes of data which are impractical for even a collective of human intellects to calculate, in order to compile detailed reports which allow users to better understand the information they receive in their content feeds. By assigning analytics to a narrow-focused AI network, the human collective can focus on its cognitive strength, developing imaginative solutions to our global challenges from the insights into data provided by the Cluster AI network.

2.11.9 The Internet of Things

Additionally, the Cluster AI network will receive purified real-time data on the health and availability of our global resources by being linked to ‘Internet of Things’ (IoT)\(^8\) devices. Cluster’s long-term strategy is to harness IoT sensors as a means of tracking the Earth’s resources in real time, with all data being stored in the GRP. The Cluster AI will then be able to analyse this data and provide real-time reporting on the health and availability of resources. Such detailed reporting will enable humanity to accurately map the impact of both our individual and collective patterns of consumption, thus providing Cluster users with the information they need to make more intelligent decisions and take more effective actions with regards both local and global resources.

---

\(^8\) https://en.wikipedia.org/wiki/Internet_of_things
FIGURE 2 – CLUSTER INTERFACE CONCEPT
3. SOLUTION VIABILITY

3.1 CORE VALUES

*Decisions within the governance model must be guided by the good of all humankind and by respect for the equal value of all human beings.*

Cluster’s foundational principle of Symbiotic Governance reverses traditional, paternalistic notions of governance as external oversight and control by empowering individuals to govern themselves through a logic of giving, and by enshrining practical respect for the cognitive diversity of actors in its institutions.

By establishing a cohesive link between the decisions and actions of autonomous agents and the global dynamics of the collective, Cluster’s Symbiotic Governance optimises global regulation through self-governance. Cluster’s viability is founded on its recursive governance structure (Beer, as cited in Espinosa, 2015, pp. 956–7, 959–60): by establishing macro- and micro-cohesiveness between nested systems of actors who share the meta-systemic goal of giving (Espinosa, p. 957), Symbiotic Governance aligns the self-governance of actors at all levels (Espinosa, pp. 966–7). Allowing agents to self-organise by instituting autonomous local rules which are coherent with the global needs of the collective via Neural Democracy creates an effective mechanism for symbiotic self-regulation, individually and systemically (Espinosa & Guzman, 2015, pp. 4,5; Espinosa & Walker, 2013, p. 129; Espinosa, p. 959).

By rationalising the global charity sector, where actors are mutually motivated by giving to enhance collective benefits, Cluster reverses the traditional regulatory paradigm by supporting users to give more effectively. Through Symbiotic Governance, actors in the global charity sector are allocated the necessary resources to autonomously pursue projects which support collective benefits to the extent that they demonstrate rational accountability (Espinosa & Walker, 2013, p. 124). Collective recognition of the net benefits to be derived from fostering a mutually symbiotic relationship through a common logistical architecture which supports giving will facilitate the institutionalisation of Cluster by intentionally expanding its remit to rationalise corporate and political governance (Chertow & Ehrenfeld, 2012, p. 21).

As a practical mechanism for enshrining respect for the equal value of all actors, Cluster’s Neural Democracy is dependent upon the widest diversity of inputs for its optimisation. Current thinking about diversity from an equal opportunities perspective overlooks the potential benefits of harnessing individual cognitive diversity by focusing on ‘homogenous group differences’ (Jeffrey, 2015, p. 55). Neural Democracy, conversely, leverages individual cognitive diversity to evolve human communities towards higher order complexity (Maithili, Vasantha Kumari, & Rajamanickam, as cited in Jeffrey, p. 55). As a problem-solving architecture which enshrines
respect for cognitive diversity (Page, 2014, p. 272) in its mechanics, Cluster’s adaptive capacity is proportionate to the range of minds who offer diverse perspectives and heuristics to humanity’s challenges (Page, p. 276; Frank, as cited in Page, p. 276).

3.2 DECISION-MAKING CAPACITY

Decision-making within the governance model must generally be possible without crippling delays that prevent the challenges from being adequately addressed (e.g. due to parties exercising powers of veto).

By decentralising decision-making and influence, Cluster’s Neural Democracy avoids the ‘bureaucratic bloat’ which cripples rigid, pyramidal hierarchies and limits the degree to which actors in the network can exercise preponderant influence on global decisions.

Cluster’s principle of decentralising decision-making facilitates non-linear interactions between stakeholders, thus eliminating the cumbersome machinery of bureaucracy and allowing for greater agility in implementation. Hierarchical bureaucracies slow decision-making (Crawford, Hasan, Warne, & Linger, 2009, p. 4) by relying on linear systems to process outdated, incomplete, and overwhelming volumes of data (Crawford et al., p. 15). By contrast, Neural Democracy, as a network-centric decision-making architecture, establishes non-linear conditions for distributed decision-making by installing implicit ‘attractors and barriers’ which motivate self-organising agents to leverage their unique cognitive skills towards collective outcomes within defined limits of responsibility (Crawford et al., p. 4), thus facilitating agile, non-linear transfers of power depending upon the emergence of changing situational demands (Crawford et al., p. 15).

This improved agility in arriving at and carrying out decisions by a principle of decentralisation will represent an increase in the efficiency of the decision-making process and effectiveness in meeting challenges. Neural Democracy decentralises authority to the agents most immediately concerned with situations, who possess the most relevant data leading to effective solutions (Alexander, 2008, p. 32). By empowering autonomy at this level, Neural Democracy trains individuals to be proactive leaders capable of addressing global challenges (Chang & Lung, as cited in Alexander, p. 37), supporting the evolution of increasingly effective strategies by developing human assets who demonstrate greater resilience in the face of global risks (Thi Hong Phuong, Biesbroek, & Wals, 2017, pp. 5-6).

Moreover, decentralising influence and decision-making across Cluster effectively eliminates the mechanism of veto to block decisions or delay their implementation. Democratic bodies with installed veto players are less efficient in arriving at decisions, particularly when costs associated
with delay are low (Kagel, Sung, & Winter, 2010, p. 169). Veto centralises influence and access to resources, allowing veto players not merely to block or delay decisions, but to propose alternatives favourable to themselves (Kagel, Sung, & Winter, p. 169). On Cluster, cyclical voting caps which link the limited influence and income which users can accrue directly to their current decision-making performance ensure that no actor can gain or maintain sufficient power to exercise veto.

### 3.3 EFFECTIVENESS

*The governance model must be capable of handling the global challenges and risks and include means to ensure implementation of decisions.*

By adapting and fusing existing Internet technologies which have proven their effectiveness to operate at a global scale, Cluster demonstrates that the infrastructure already exists to coordinate data, human and material resources in charitable projects to meet global risks and challenges.

Adaptation and fusion of leading search and social media technologies enable Cluster users to locate information to advance charitable projects and connect with other users possessing demonstrable expertise in allied fields. Working within the cognitive limits of individuals (Dunbar, as cited in Bentley, O’Brien, & Brock, 2014, pp. 71-2; Gonçalves, Perra, & Vespignani, 2011, p.4) to form decentralised social networks to process information and solve problems (Whelan & Teigland, 2013, p. 180), as a fusion of search and social media technologies which extends the group mind (Sparrow, Liu, & Wegner, 2011, pp. 776, 778), Cluster enables users in the global charity sector to search for other users in whom data, resources and expertise related to common projects may be reposed (Trilog Group, 2012, pp. 4-5).

To ensure optimal implementation of decisions, by following the logic of adapting and fusing existing technologies, Neural Democracy will evolve a bespoke Cluster project management system as a global standard. Current open-source technology within the humanitarian sector demonstrates that by leveraging the collective cognitive potential of an informal project management community (Heinzelman & Waters, 2010, p. 8), such technology can be rapidly customised and adapted (Heinzelman & Waters, p. 6) to amass actionable data far superior to traditional centralised intelligence (Heinzelman & Waters, p. 2). Universal transparency exposes internal processes to this broader community, thus leveraging the cognitive potential of Cluster users to democratically participate in rationalising existing project management tools into a global standard (Trilog Group, 2012, pp. 6-8).
By leveraging individuals’ cognitive potential to synergistically solve problems via a decentralised, transparent neural architecture operating as a global standard, Cluster enables humanity’s current, exogenic, emerging, and global policy risks to be ameliorated. Cluster has the potential to co-ordinate organisations working on global challenges more efficiently and effectively (Global Challenges Foundation, 2015, pp. 52-3), and this cognitive synergy will facilitate the amelioration of multiple infinite impact risks. Moreover, as a model for global governance founded on transparency and decentralisation, Cluster’s Neural Democracy offers the first step towards such solutions by utilising, fusing and adapting collaborative tools (Global Challenges Foundation, p. 178).

3.4 RESOURCES AND FINANCING

The governance model must have sufficient human and material resources at its disposal, and these resources must be financed in an equitable manner.

By establishing itself as a logistical infrastructure to more rationally manage the global supply chain as it applies to charity, Cluster’s strategy to source the human and material resources required from charities working towards positive change ensures that it is equitably financed.

In 2016, $US390 billion were donated to charity in the U.S. alone (Giving USA Foundation, 2017, p. 29). U.S. charities are currently recommended to spend no more than 35% of donations received on administration expenses, with at least 65% recommended to directly fund projects. As a more efficient infrastructure for managing donations, Cluster will operate at a reduced administration cost of 15-20%, allowing 80-85% of donations to be allocated directly to charitable projects, thus increasing the impact of donations made.

As advertising is not permitted on Cluster, the necessity of financing through advertising is eliminated by taking 5% of donations managed as an administrative income to fund development, operations and promotion of Cluster. Initially, however, Cluster will be developed through the support of investors. To engage investors, fixed Return on Investment (ROI) loans will be negotiated and then repaid by raising Cluster’s administrative income by a further 5%, ensuring loan repayments are aligned with network growth. Fixed ROI loans will probably be phased out by Neural Democratic consensus after network donations pass a tipping point, reducing Cluster’s administrative income back to 5%.

In 2015, 62.6 million American adults volunteered time to charity (Giving USA Foundation, 2017, p. 64), indicating that a considerable workforce willing to participate in change is available to Cluster. To incentivise user participation, Cluster will disburse 10% of donations managed as

---

9 http://www.give.org/for-charities/How-We-Accredit-Charities/
administrative income to users who demonstrate an expertise within the charity sector. By equitably remunerating expert users for guiding decisions which benefit the collective, Cluster recognises the valuable contributions made by this workforce.

As Cluster expands into both corporate and government sectors, additional human and material resources will become available which will be managed through Neural Democracy to ensure that they are equitably financed.

3.5 TRUST AND INSIGHT

The trust enjoyed by a successful governance model and its institutions relies on transparency and considerable insight into power structures and decision-making.

Cluster enables its users to repose an unprecedented level of trust in the network because its core principle of universal transparency allows users an unprecedented level of insight into the Neural Democratic process.

The fact that all content contributions, voting, donations and project management on Cluster occur in a universally transparent space mitigates against attempts on the part of individuals or groups to corrupt the network. As an open-source, Creative Commons platform, Cluster expands upon Linus’ Law (Raymond, 1999, p. 30) by crowdsourcing responsibility for detecting corruption or inefficiency to users themselves, assuming that ‘given enough eyeballs, corruption and waste are ... shallow problems’ (Brito, as cited in Bertot, Jaeger, & Grimes, 2012, pp. 85-6). Cluster is therefore an ‘accountability technology’ (Diamond, as cited in Meier, 2011, p. 53), providing users with unprecedented insight into decision-making and action-taking by means of endogenous ‘sousveillance’ and ‘dataveillance’ through personal digital technologies (Meier, pp. 12-3).

Making the interests of all parties involved in decisions transparent enables Cluster users to make properly informed decisions when voting on the content contributions of interested actors through Neural Democracy. While revelation of bias under conditions of universal transparency does not necessarily lead expert users to volunteer more information (Bourjade & Jullien, 2011, p. 577), where content contributions are clearly attributable, employing diverse experts whose biases are known increases those individuals’ reputational incentives to provide good counsel (Bourjade & Jullien, pp. 590, 592). To the degree that users’ content contributions on Cluster are transparent and attributable, the amount of relevant information they volunteer increases due to the perceived reputational gain (Bourjade & Jullien, pp. 592-3).

The universal transparency of expert users’ decision-making with regards to charitable resources through Neural Democracy encourages mutual trust among supply chain partners. The earnest
travail associated with making data-sharing transparent among mutually interested actors in supply chains creates conditions for ‘virtuous’ trust cycles — self-reinforcing feedback loops which inspire further trust and transparency (Akkermans, Bogerd, & van Doremalen, 2004, p. 448). Moreover, a common architecture for supporting collective decision-making across a multi-organisational supply chain, one which makes data and decisions universally transparent to all entities involved, will facilitate trust among partners (Akkermans, Bogerd, & van Doremalen, p. 452-3).

3.6 FLEXIBILITY

In order to be able to fulfil its objectives effectively, a successful governance model must contain mechanisms that allow for revisions and improvements to be made to its structure and components.

More than simply being a technology of behaviour or a model for global governance, Cluster is a core logic for a healthy, functional human collective, and key to Cluster’s logic is an open-ended flexibility and adaptability applicable even to the logic itself.

As a complex adaptive system designed to maximise humanity’s collective cognitive potential, Cluster is designed to be in a constant state of revision and improvement, its processes refined by the diverse input of users. Social learning is essential to Cluster’s adaptive capacity (Thi Hong Phuong, Biesbroek, & Wals, 2017, p. 5), and is an emergent property of its social network function, synthesising communal understandings from the dialectical interactions of actors (Thi Hong Phuong, Biesbroek, & Wals, p. 4). By embracing input from diverse thinkers through a process of social learning (Alexander, 2008, p. 144), Cluster incorporates double- and triple-loop learning as a systemic practice, thus optimising its adaptive capacity (Ramanathan, as cited in Alexander, p. 144) by improving the cognitive capacity of its human assets (Rogers, as cited in Alexander, p. 54; Alexander, pp. 54, 152).

The neuroplastic nature of Neural Democracy permits the peaceful creation of new pathways along lines of least resistance, dynamically shaping and reshaping Cluster to the collective’s needs (Batten, 2011, p. 314-5). Fluidity is a fundamental characteristic of Cluster (Faraj, Jarvepaa, & Majchrzak, 2011, p. 1225), which, as a complex adaptive system, represents a ‘dynamic space’ capable of iterative adaptation ‘as the attention, actions, and interests of the collective ... change over time’ (Faraj, Jarvepaa, & Majchrzak, p. 1226). The ability of users to add and ‘shape’ knowledge in this space via Neural Democracy will have a positive effect on users’ perceptions of how their content contributions are being reused to dynamically improve Cluster’s operational efficiency (Majchrzak, Wagner, & Yates, 2013, pp. 462-3).
Cluster’s structure evolves from building upon modular components which enable users to utilise, adapt, fuse and share evolving solutions via the Global Resources Pool. Biological research demonstrates that the brain’s modular construction is fundamental to its efficiency and intelligence (Azam, as cited in Qiao, Zhang, & Bo, 2014, p. 7). As modularity is ‘an essential property and defining feature’ of complex networks such as the Internet or brain (Mittal, 2013, pp. 24-6), as an external neural network, Cluster mimics this biological modularity, enabling solutions to be tested in compartmentalised settings before being horizontally scaled across the network via the Global Resources Pool.

3.7 PROTECTION AGAINST THE ABUSE OF POWER
A control system must be in place to take action if the organization should overstep its mandate, e.g. by unduly interfering with the internal affairs of nation-states or favouring the special interests of individuals, groups, organizations, states or groups of states.

As a technology of behaviour, checks against the abuse of power are implicit in Cluster’s design. The logical principles of universal transparency and decentralisation significantly mitigate the threat of power abuse, while limitations on the accumulation and duration of influence ensure redress if users should overstep their decision-making mandates.

Cluster’s principle of universal transparency reduces the temptation to favour special interests because it enables counteractive strategies to be mobilised against power abuses in real time. The spontaneous emergence of ‘smart mobs’ (Wikipedia, as cited in Meier, 2008, p. 48) to protest individual or governmental malfeasance (Shirkey, as cited in Meier, p. 58) suggests that, if power abuse is detected on Cluster, dynamic collective movement to oppose and redistribute resources and influence away from offenders will occur through the more peaceful mechanism of Neural Democracy.

Cluster’s principle of decentralising and limiting influence prevents the power of individuals and groups from accumulating to levels that enable interference in the sovereign affairs of other actors. Economic élites and corporate interest groups exert preponderant influence over policy-making (Gilens & Page, 2014, p. 572), extending even to foreign policy decisions (Jacobs & Page, 2005, pp. 114-6), demonstrating real capacity to interfere in the sovereign affairs of others. By decentralising influence and limiting its relationship with capital through cyclical voting caps, Cluster prevents actors’ accumulation of organisational power from reaching a critical mass which would enable them to corrupt the network and exercise undue influence in the affairs of others (Warburton, 2013, pp. 231-2).
By imposing cyclical voting caps of short duration which attach expert users’ influence to income, Cluster ensures that if individuals or groups overstep their decision-making mandates, Neural Democracy provides means for redress. Even in a non-binding majority voting system such as Neural Democracy, the threat of punishment for malfeasance by redistributing income away from offenders, along with the negative reputational effect associated with depreciation of influence, provides sufficient deterrent to discourage expert users from abusing their decision-making mandates (Kroll, Cherry, & Shogren, 2007, pp. 565-6). Endogenous financial sanctions attached to endogenous social censure thus safeguard the institutional robustness of Neural Democracy (Ostrom, as cited in Kroll, Cherry, & Shogren, p. 558).

3.8 ACCOUNTABILITY

*It is a fundamental requirement of a successful governance model that it performs the tasks it has been charged with, and the governance model must include the power to hold the decision-makers accountable for their actions.*

In decentralising accountability by distributing it endogenously through the network, making every user a potential monitor of every other user, Cluster’s universal transparency obliges users to be personally accountable for the efficacy of their decisions and actions, which in turn fosters collective accountability.

The universal transparency of all content contributions, voting, donations and project management on Cluster ensures that actors are held personally accountable for the efficacy of their decisions and actions, encouraging cumulative collective accountability. Crowdsourcing sousveillance and dataveillance to the collective trains Cluster users to report accurate and actionable data in a universally transparent space where they are algorithmically ‘ranked’, through Neural Democracy, according to collective perceptions of the utility and veracity of their contributions (Heinzelman & Waters, 2010, pp. 11-2). This endogenous monitoring combined with the graduated sanction of redistributing influence away from actors who misappropriate resources is a sufficient internal measure to ensure collective compliance (Ostrom, Walker, & Gardner, 1992, p. 405).

By decentralising the responsibility for oversight to users themselves, Cluster eliminates the necessity for an inefficient centralised bureaucracy to manage the accountability of actors. Working within the limits of individuals’ cognitive capacity to form mutually trustworthy operational relationship networks (Dunbar, as cited in Bentley, O’Brien, & Brock, 2014, pp. 71-2; Gonçalves, Perra, & Vespignani, 2011, p.4), expert users will receive the data informing their decision-making from sympathetic colleagues whose interests and projects converge with their own (Chalmers, 2011, pp. 134-6). They are therefore more likely to receive transparent data
which will support mutual projects, rather than false or opaque data which undermine collective concerns, thus eliminating the necessity of exogenous monitoring (Chalmers, pp. 137-9).

By dynamically redistributing influence away from ineffective users, Neural Democracy institutes a more effective ‘carrot-and-stick’ mechanism to encourage personal efficacy of decision-making and action-taking. Positive reputational effects such as increased influence and income are insufficient incentives to ensure that Cluster users voluntarily behave accountably (Ostrom, 1990, pp. 93-4). But despite the apparent contingency of Neural Democracy, it actually installs conditions for stable, long-term co-operation among actors because the negative reinforcement associated with endogenous censure and sanction discourages inefficiency and corruption while simultaneously reassuring users who do voluntarily comply with non-binding, collective norms that other users will also be held accountable (Levi, as cited in Ostrom, 1990, pp. 94-5).
4. REFERENCES


5. ABOUT PAUL FOREST

In 2002, Paul solved the Google algorithm to become one of the most successful Google marketing professionals in the world. Over the following five years he established Australia’s largest search marketing company, which connected him to leading thinkers and innovators across the world who were eager to learn more about the mechanics of Google. They in turn shared valuable insights into their areas of expertise, providing Paul with a deeper understanding of the business engine driving human existence.

In 2004, Paul hired a software genius, Jonathan Donnelly, with whom he worked closely until 2009, designing cutting-edge software solutions for Google search marketing. Out of interest, Jonathan rebuilt the Google search engine by himself, upgrading the algorithms to provide a more accurate result for local searches. It was this experience that opened Paul’s mind to the possibilities of well-engineered software, and which marked the point that he started developing the initial ideas for Cluster.

In 2009, Paul started building his own narrow-focused Artificial Intelligence called “Mantrix”, which he now uses to build and manage large and complex Google advertising campaigns for multi-billion-dollar corporations.

In 2014, the ideas for Cluster that Paul had been working on for ten years suddenly came together to form a core logic upon which a new direction for humanity could be built. Not having the resources to personally construct the foundational technology, he decided that the idea needed to be shared with people who could. When Paul started to write papers and do talks, he realised that he had been immersed in such a deep space of logic that when he tried to communicate what he had discovered, it didn’t make sense to many people, although Paul’s excitement about the idea gave people hope that a practicable solution to our global challenges had been found.

To assemble his submission for the New Shape Prize, Paul commissioned the talents of both Dean Kyte and Darren Pryce, who have worked closely with Paul to translate his ideas into both a written and visual format. Dean Kyte is a published author with a meticulous mind for detail whom Paul credits with being the first person to truly understand the deep mechanics of his ideas with Cluster. Darren Pryce rose to fame as an artist when he became Australia’s most awarded illustrator at the age of 25. He went on to work at the top of the corporate world as a creative director, and as such has brought a wealth of knowledge and experience to the team.