## I. Core values

The core values of this model are interconnected (⟷), they generate each other, being shaped as a hexagonal structure, but also as two-sided interactions (mirror-symmetry like interactions).

1. **Respect for humans and the environment**
2. **Peace and non-violence**
3. **Participatory democracy**
4. **Cultural integrity**
5. **Increased human awareness**
6. **Global education**

1. **Respect for humans and the environment ⟷ Peace and non-violence**
   In order to maintain peace it becomes a requirement to respect both humans and nature.
   Thus, "unity in diversity" is the main principle that is applied both at the socio-cultural and ecosystem levels.
2. **Respect for humans and the environment ⟷ Participatory democracy**
   The respect for people's potentials and promoting individualized education will develop the necessary skills in order to integrate each person in a specific social niche. The acknowledgement of their usefulness, professionalism and responsibility will empower people and give them the ability to transfer their knowledge between sub-networks, up to governmental or global decisional levels. Participatory democracy can be achieved only if the frameworks of local and global cooperation are improved.
3. **Respect for humans and the environment ⟷ Cultural integrity**
   Respecting human rights as well as the environment in which they are integrated generates cultural integrity. If the social body is seen from an organic point of view, cultural integrity is a required characteristic in order to maintain a functional and healthy global system.
4. **Respect for humans and the environment ⟷ Increased human awareness**
   Increasing human awareness will allow people to have a better understanding of facts and events, and to make deliberate/informed decisions considering the impact of secondary or collateral consequences.
5. **Respect for humans and the environment ⟷ Global education**
   The educational process will be achieved with respect to people's individuality, preserving (their) cultural identity and using professional networks. Moreover, an education centered both on science and spirituality will harmonize the globalization and localization processes - frequently categorized as contradictory ones.

1. **Peace and non-violence ⟷ Participatory democracy**
   Participatory democracy puts great emphasis on maximizing citizens' participation in public decision making. Through proper education they will be empowered, have a voice and will organize themselves to articulate their interests and to contribute to the local/global decision-making process. Participatory democracy will use collective intelligence in order to maintain peace.
2. **Peace and non-violence ⟷ Cultural integrity**
   Only when cultural integrity is honored, will nations rise to truly support one another. Integrity and respect at national and international level will create the framework of global peace, where atomic/biological/chemical weapons are not used for destructive purposes.
3. **Peace and non-violence ⟷ Increased human awareness**
   Peace is maintained with the involvement of highly aware persons or by nations with an increased cultural background of non-violence. Due to the technological progress, increasing human awareness becomes a requirement in order to maintain global peace.
4. **Peace and non-violence ⟷ Global education**

In order to maintain peace, one of the most important steps that should be taken by humankind is to improve global access to education and to use tools of complex thinking via personalized educational plans

1. **Participatory democracy ↔ Cultural integrity**
   In a participatory democracy people take responsibility for their actions and they fight for their rights, including their cultural integrity.
2. **Participatory democracy ↔ Increased human awareness**
   Democracy starts with awareness, and awareness starts with proper education. On the other hand, when people get involved they get responsible and they become more aware of the society's problems.
3. **Participatory democracy ↔ Global education**
   Through the improvement of the educational process, people will develop the necessary skills required by the labor market, accordingly with the technological progress. At the same time, an educational system that trains people in the spirit of pro-activity will generate participatory democracy.

1. **Cultural integrity ↔ Increased human awareness**
   Cultural integrity and increased human awareness will generate cultural awareness. Showing consideration for the cultural norms of others will generate respect for cultural diversity. Also, sensitivity to individuals' social, family and cultural backgrounds plays an important role in organizational integrity.
2. **Cultural integrity ↔ Global education**
   Cultural integrity is strengthened through culture-based education. The educational needs are different across geographic areas with different levels of socio-economic development.

1. **Increased human awareness ↔ Global education**
   Education is one of the most important tools for increasing human awareness.
   At the same time, an increased awareness regarding the present and future crises leads to the understanding of the imperious necessity of global education.

## II. The decision making capacity

Global governance is a multilevel process, taking place at local, sub-national and international level. We believe that global governance is the output of non-hierarchical networks of international and transnational institutions: not only IGOs and international regimes, but also transnational regimes, gifted and open-minded persons are regulating the actors' behavior.

The professional networks will use collective intelligence in order to face the present interconnected challenges, and the global decision-making process can be characterised as follows:

1. The 5th network (cooperative) and 6th network (which puts things into practice) represent the initiatives of groups of people or local organisations with specific experience on a certain issue that will transfer their knowledge to the 4th level (proactive), where actions and solutions are being experimented. Experiences, good practices or projects that are worth supporting will gain visibility and will receive support from the three networks involved so far. Through the common nodes of the previous three levels and the 3rd level (reactive) the information enters into the processing mechanism of the 3rd network at the system's organizational and resource finding level.

2. The projects that respond to global needs or which are solutions to the general crises, are transferred through the 2$^{nd}$ network (communication) to all those that are interested, both at the macro or micro level.
3. The entire data from the previous networks - containing problems, attempts, local solutions, good practices, adherence to projects, number and specialty of the involved persons etc. - reach the 1$^{st}$ network (governmental), where the politico-administrative decisions are being implemented, under the direct supervision and involvement of professional networks
4. The information from the networks also goes to the Global Councils and Global Institututes which will offer the portfolio of possible scenarios, the means and resources in order to implement decisions.

The decisional process will consider the interconnected crises, for example one cannot successfully fight against terrorism without alleviating massive poverty and income inequality present at global scale.

In our multilayered network model, there are multiple data processing structures that lead to the main mechanisms of decision-making:

1. Local mechanisms - when key deciding factors ('decidents') that are connected can collaborate in order to make a final decision. Also, a problem can be solved even if the 'decident' is missing, using complementary paths given by the program.

2. Extended mechanisms - provided by the cooperative network (5$^{th}$) and/or the 6$^{th}$ network (which puts things into practice), both characterised by great dynamics and internal evolution of information.

3. Global mechanisms - through contact points between networks, where information is transferred to the other networks.

The mechanisms which could possibly delay the decision making process will be avoided after careful impact studies analysis.

## III. Effectiveness

Effective global governance implies collective and cooperative actions by states or non-state actors. Therefore, global governance can be seen as an interactive, dynamic, complex, and multi-level process focused on a common problem and on goal implementation.

### 1. *Multilevel process*
The model is structured on eight layers of functional networks, which have their own referential system, and communications nodes between them. This mechanism allows the characterization of a problem in multiple dimensions.

### 2. *Dynamic*
The professional network model is sensitive to both qualitative and correlative indicators, not just quantitative ones.

### 3. *Focusing on a common problem*
From the mathematical point of view, the focus on a common problem is achieved through: 1) hexagonal structures that characterise a problem from 6 points of view; 2) concentric cycles that show the priorities around a problem; 3) multiple dimensions of a problem given by the different types of networks.
Moreover, the information that comes from the networks goes to the Global Councils which will give the possible solutions according to their processing abilities.

### 4. *Complex*

In order to be functional, a global system needs to have/develop specific functionalities, similar to organic development. Today, a complete and fully coherent system of global governance does not exist. Some of its dimensions, in particular in the field of economic governance (its global stabilization, regulation, resource allocation and income distribution functions), are fairly well developed; whereas other areas - especially regarding health, environmental protection and human rights - barely exist or are entirely absent. This model presents both the functionalities needed and the mechanisms by which these can be generated in order to obtain a reliable global administration.

### 5. *Goal implementation*

Implementation of decisions will be made by global/local governmental structures (1$^{st}$ network) after consultations with Global Institutes that have issued public policies after careful consideration of possible obstacles encountered, and also the means and the resources needed to overcome the obstacles. This mechanism ensures a coherent administration both at global and local level, maintaining local complex characteristics.

### 6. *Collective and cooperative actions*

Collective and cooperative actions are ensured through specialised networks (5$^{th}$ network) or through the communication points between them. Moreover, the professional network will also allow the creation of a data base for changing the opinions and decisions of global institutions or governments, when these are against the general public's interests.

## IV. Resources and funding

This governance model is based on organic development; therefore it will develop as an organic process, depending on the human and material resources at its disposal, but also on the global necessities of the Gaia system.

At the moment, there are sufficient global resources (material and human) in order to solve the threatening crises, but the lack of global coordination and collaboration makes different attempts to be dissipated by different types of obstacles. From the mathematical point of view, the model has structures organised as cycles and "commutative diagrams", which ensure the framework of resource accumulation and directioning. In order to achieve a common goal, shared resources become of prime importance. For example, a model of focused interaction is CERN, Europe's particle-physics laboratory, which was established by collaborations among scientists and funding from government agencies in many countries.

Also, through the professional networks structure, multiple possibilities of communication and collaboration will be shaped. Therefore, the continuous interaction between specialised networks will train people in order to accomplish different tasks from their niche.

After the development of the full version of this computer based-model, the interested people will be trained on how to use it.

## V. Trust and intuition

In a governmental system trust is gained through transparency and good judgement of the decision-making structures. There are important key features that need to be accomplished in order to build a transparent and efficient governance model.

### 1. *Openness (transparency)*

Open governance is achieved through open access to the databases of public interest and to information that marks the progress of different governmental programs. Depending on the priorities, different networks for global information can be created, using this model.

### 2. *Optimal decisions*

The optimisation of the decision-making process is achieved through forecast analysis and through the multiple mechanisms explained in this section at point II.

3. ***Collaboration***

   In order to obtain a highly efficient system of decision-making, the collaboration mechanisms between Councils, Institutes and Departments needs to be highly functional. By using this model, an improvement of collaboration mechanisms at local and international level can be achieved (the mechanisms are described in section II).

4. ***Supervision***

   Decisions-making structures will be supervised through different mechanisms that belong to the functionality of the $7^{th}$ network.

5. ***Real time action***

   Through the optimal decision-making process and a reliable collaboration mechanism between sub-networks, networks, global institutions, and departments, real time action can be achieved avoiding the delays that generate crisis augmentation.

6. ***Lack of corruption***

   A survey across 181 countries released by the World Economic Forum has revealed that the youth feel that corruption in the system and a lack of transparency in the government are the biggest drivers of inequality in the world [30]. On the other hand, the main method of reducing corruption is by improving the mechanisms of representative democracy, both at national and international level. This target can be achieved using the model of professional networks.

   The features emphasised above are interconnected and shaped as a hexagonal structure. These create the context of trustworthy global governance, and can be achieved using the professional networks model.

## VI.  Flexibility.

This model reconciles the tensions between stability and flexibility in a governance system. The first 4 layers will ensure the system's stability, while the last four ensure the system's flexibility; the key features needed to achieve a flexible system are emphasized below.

1. ***Innovation*** is ensured especially by the $8^{th}$ type of network, but also by $5^{th}$, $6^{th}$ and $7^{th}$ networks, through the common points between them.
2. ***Contextually defined management***- Depending on the context, two nodes generate more than one node, with different contents, but belonging to the same semantic cone.
3. ***Communication*** –The mechanisms are achieved especially through the $2^{nd}$ type of network.
4. ***Negotiation*** - mechanisms that can be described horizontally inside every network and vertically inside different networks. The negotiation process takes place depending on the amplitude of the information contained on/by the vectors.
5. ***Collaboration –*** The mechanisms are achieved especially through the $5^{th}$ type of network.
6. ***Up-dating mechanism-*** The semantic contents of the last 4 layers allows the up-date of the contents of the lower networks. For example an improvement at the innovative level (through different technologies) will generate an up-date in the communication and governmental management structures.

## VII.  Protection against abuse and (abuse of) power

Due to the fact that the networks are structured in a fractal way (the structures from one level of complexity are found in superior levels within similar but not identical structures), rules/structures from lower levels are transferred to the upper levels, in similar but not identical structures. At the same time, new rules or

structures will emerge at superior levels, meaning that at a global level new functionalities should be covered by new institutions, organisations or by collaboration between them.

Therefore, protection against abuse and (abuse of) power is ensured through:

1. Global Councils, i.e. World Council of Data Analysis and Forecasts (which will verify the accuracy of information transmitted inside the network in order to avoid misinformation and manipulation and will also collect information from different networks-type 5 and 6 in order to make forecast analysis).
2. The $7^{th}$ network, which is specialised in supervising the decision-making process at local and international level (through Global Councils).
3. Global Institutes that elaborate global policies, i.e. The Global Institute for the protection of human rights and natural environment rights, Global Institute of natural, cultural, and social health.

In several countries, the global model of the competitive economy has had a number of consequences, including resources exploitation (human and material) and the decline in their financial independence. But another approach consists in the collaborative economic model, which is based on territorial and cultural integrity, creating economical trustworthiness and economical sustainability. Therefore, protection against abuses (which almost all the time are related to economic interests) is achieved through the development of professional networks which will sustain and develop collaborative economics.

## VIII. Responsibility

The current approach of global management, built after the two world wars, has a pyramid type of administration and decision-making. The first consequence of this approach is the inaccuracy in transmission of information (the "bottle-neck" pattern) because successive truncations of the transmitted information can hardly be avoided due the large amount of apparently uncorrelated information. Therefore, the lack of responsibility appears from the exceeded capacity of information processing of only few and under-specialised types of administration structures.

On the other hand, this model allows the sharing of responsibility using multiple networks and multiple steps, thus avoiding the phenomenon described above. Professional networks will collect information from any local structures at different levels of complexity, given the property of fractalisation (explained in section II). Through the $5^{th}$, 6th, $7^{th}$, and $8^{th}$ types of networks the problems are debated and transmitted to the Global Councils, and then to the Global Institutes.

Due to the fact that there are multiple interconnected crises that need to be solved, due to the exponential increase of data accumulation, and also the very increased speed in which events unfold at a global level, it is only through shared responsibility that different crises can be solved or avoided.