STATUTES

Complex Systems Digital Campus (CS-DC)

CS-DC Preamble

The Complex Systems Digital Campus (CS-DC) is recognised as a UNESCO UniTwin through its Cooperation Programme signed with UNESCO. It is an international network of scientists working together to share resources in Complex Systems teaching and research. The members of the CS-DC include universities, other organisations, and individuals. This large-scale collaborative work will embody social intelligent strategies towards new scientific and educational practices, dealing with the difficult societal and environmental challenges of an increasingly interconnected world.

The new science of complex systems will be at the heart of the future of the Worldwide Knowledge Society. It is providing radical new ways of understanding the physical, biological, ecological, and techno-social universe. Complex Systems are open, value-laden multi-level multi-component reconfigurable systems of systems, situated in turbulent, unstable, and changing environments. They evolve, adapt and transform through internal and external dynamic interactions. They are the source of very difficult scientific challenges for observing, understanding, reconstructing and predicting their multi-scale dynamics. The challenges posed by the multi-scale modelling of both natural and artificial adaptive complex systems can only be met with radically new collective strategies for research and teaching.

Complex systems science bridges the gap between the individual and the collective: from genes to organisms to ecosystems, from atoms to materials to products, from digital media to the Internet, from citizens to society. It cuts across all disciplines. It enables new and shorter paths between scientists and integrates the flow of scientific knowledge. It reduces the gap between pure and applied science, establishing new foundations for the design, control and management of systems with unprecedented levels of complexity, which exceed the capacity of current approaches. It will benefit the environment and industry, the health and education sector and all public and social actors. Understanding complex systems will be the basis of *worldwide wealth and socio-economic well being* in the 21st century.

The *Complex Systems Digital Campus* federates research and education organisations worldwide to deal with the challenges of complex systems science. It coordinates an evolving social network to identify the scientific challenges through living complex systems roadmaps, and facilitate sharing research and educative resources to overcoming them. The Digital Campus is be structured through interdisciplinary education and research e-departments, each federating the e-laboratories of a roadmap chapter. Each interdisciplinary education and research e-laboratory federates the e-community addressing the challenge of each chapter. The Digital Campus will strongly contribute to an Open Science by involving citizens with their sensing, computing and thinking resources towards ubiquitous observing, learning and computing. The CS-DC will design the best possible integrated knowledge and integrated models that will be used by societal actors to ground their strategies for the best possible environmental and societal impact.

Environmental, societal, technical and economic benefits stem from complex systems engineering. These benefits come from predictive, adaptive and robust integrated models that allow us to live with and protect the complex systems within and around us. The most noteworthy results will be improved understanding of complex systems, increasingly personalized health and education, the prevention of, and resilience to epidemics and more generally, extreme events. Reducing uncertainty regarding the impact of our actions on complex systems will lead to a transformation in the relationship between science and society, engineering, economics, politics and ethics.

1. Legal Status of CS-DC

1.1. CS-DC is constituted as an International Association that is subject to French Law, non profit and of general interest.

1.2 The structure of the organisation will be determined by the Statutes.

1.3 The details of this legal organisation will be determined by the Bylaws.

1.4 The Statutes and Bylaws form the legal framework for the activities of CS-DC.

1.5 The Bylaws can be changed by a majority of the Council (defined in Section 4.1)

1.6 The Statutes can be changed by a two-thirds majority of the Council (defined in Section 4.1).

2. Relationship with UNESCO

2.1 The CS-DC has been recognized as a UNESCO UniTwin in August 2014 through the signature of a Cooperation Programme 2014-2020 between the Director of UNESCO and the Presidents of the two Universities representing this network.

2.2 The two *Council Coordinators of the UNESCO UniTwin* are initially the representatives of the Presidents of the two Universities representing this network. These two individuals may change according to the Bylaws.

2.3 The CS-DC long term objectives of its preamble are the same as the objectives of the UNESCO Cooperation programme (Article II, annexed to the Statutes).

2.4 the CS-DC middle term commitments are those of the UNESCO Cooperation programme (Article II, annexed to the Statutes).

3. Membership of the CS-DC

3.1 The *CS-DC Institutional Members* are organisations whose head or vice-head signed a commitment letter saying that the organisation satisfies the UNESCO criteria to belong to a UniTwin and will participate in the CS-DC activities and share resources with the CS-DC through its own *research and education programme* on complex systems.

3.2 The *CS-DC Institutional Associate Members* are organizations whose head or vice-head signed a commitment letter saying that the organisation will participate in the CS-DC activities and share resources with the CS-DC through its own *research and education programme* on complex systems.

3.3 The *CS-DC Institutional Partners* are organizations whose head or vice-head has signed an agreement with the CS-DC.

3.4 The *CS-DC Individual Members* are individuals who

- have expressed their desire to participate in the CS-DC activities and to share resources with the CS-DC through his/her own *research and education programme* on complex systems and

- belong to an Institutional Member or to an Institutional Associate Member or to the CS-DC scientific organization.

3.5 The *CS-DC Individual Associate Members* are other individuals who have expressed their desire to participate in the CS-DC activities and to share resources with the CS-DC through his/her own *research and education programme* on complex systems.

3.6 The criteria to be accepted as a member of the CS-DC are given in the Bylaws.

4. Governance of the CS-DC

4.1 The *CS-DC Council* is its sovereign body. It is composed of the representatives of the Institutional members. Each Institutional member may designate one representative. CS-DC Council is in charge of implementing its annual Council Programme with its budget, of the sharing schemes for Institutional members and of appointing Council Committees, subject to the Bylaws. The UNESCO UniTwin Coordinators are in charge of implementing the part of the annual Council Programme to make progress toward the commitments of the UNESCO Cooperation Program. They are also responsible for coordinating the UniTwin reports to UNESCO.

4.2. The *President* and the Deputy President are elected by the Council. *Vice-Presidents* of the CS-DC can be appointed according to the Bylaws. The President acts as the main representative of the Complex Systems Digital Campus, subject to the Bylaws. In particular, the President represents the CS-DC in justice affairs.

4.3. Meetings of the Council are called and chaired by the President or a Vice-President.

4.4 The CS-DC Council may form *Committees* to undertake specific tasks. Committees have a board composed council members volunteering to do this work. For some tasks, the Council can decide to hold elections for the members of its committees.

4.5 The *Board* of the CS-DC is composed of the Chairs of the CS-DC Committees of the Council, of the UNESCO UniTwin Coordinators, of the Vice-Presidents and the President. The President of the CS-DC is *ex-officio* Chair of the Board. Meetings of the Board are called and chaired by the President or delegated by the President to a Vice-President. The Board is the executive body of the CS-DC.

4.6 The *Scientific Advisory Board* is composed of world leading scientists in the field. Its members are invited by the President after approval by the Council. The Scientific Advisory Board is expected to give advice to the CS-DC on creating of new e-departments and on the main update of the Roadmap, subject to the Bylaws.

4.7. The *Societal Advisory Board* is composed of world leading personalities. Its members are invited by the President after approval by the Council. The Societal Advisory Board is expected to give societal advices on the CS-DC creating of new e-departments and on the main update of the Roadmap, subject to the Bylaws.

4.8.The President can designate *Worldwide Ambassadors*. They have specific tasks for specified durations.

4.9 The formation of *National Legal Entities* (NLE) can be approved by the Council. The Council is progressively establishing the rules for creating *National Legal Entities (NLE)* to undertake the activities of the CS-DC at national level. An NLE can be a practical means of accepting local and international sponsorship on behalf of CS-DC International (for example, an NLE may be able to benefit from national taxation reliefs). The Board will progressively monitor the applications of these rules in order to check and approve all activities undertaken by an NLE.

4.10. The procedures for composition, appointing, electing, and conducting the activities of all the above bodies are given in the Bylaws.

5. The Scientific Organization of the CS-DC

5.1. The CS-DC network of scientists is organized as an *international e-campus* hierarchically built by international *e-structures* with the form

· *e-departments*
· *e-laboratories*
· *e-teams*.

The *International e-campus Committee* is made up of the chairs of all the e-departments and, *ex-officio*, the President and Vice-president. The President is *ex-officio* chair of the *International e-campus Committee*.

5.2 Each e-structure must have a *challenge* on some time horizon.

5.3 Each CS-DC *international* e-structure has a board composed with the representatives of its e-substructures. It has a representative/chair and a co-representative/chair elected by the board.

5.4. At any time, each e-structure must have a *Living Roadmap* stating the challenges addressed and the resources available to each of its e-substructures.

5.5 Each CS-DC e-structure will develop its *international research and education strategies* according to its living roadmap using the shared resources of the CS-DC. The criteria and procedures to be recognised as an international e-structure are defined in the Bylaws.

5.6 The *CS-DC Living Roadmap* is the living roadmap of its e-campus in the context of the objectives and commitments of its preamble. It is a Living Roadmap transformed continuously in a bottom-up and top-down way, as the scientific research on societal challenges develops.

5.7 Using the CS-DC Living Roadmaps, the *CS-DC Multi-level Roadm*ap is edited in the context of the aims and commitments of the Cooperation Programme with UNESCO.

5.8 The composition of the different e-structures is continuously developing and changing. The initial e-structure composition and the rules for creating new e-structures are given in the Bylaws.

5.9 Each CS-DC e-structure can nominate a scientific committee and a societal committee.

5.10 At the top CS-DC level, there is an Advisory Scientific Committee and an Advisory Societal Committee.

5.11 The procedures for the composition, appointment, election, operation and execution of the bodies in this section are given in the Bylaws.

Paul Bourgine	Cyrille Bertelle	Pierre Collet
CS-DC President	CS-DC co-Representative for UNESCO	CS-DC co-Representative for UNESCO

Annex to the Statutes

Article II of the Cooperation Programme 2014-2020 between UNESCO and CS-DC

Article II   <u>**Main objectives**</u>

The main objectives of this Cooperation Programme are to:
· promote an integrated system of research, education and training, information and documentation in the domain of the science and engineering of complex systems,
· contribute to the aims of global development by taking into account its social, economic and cultural dimensions and to this end, make the science and engineering of complex systems accessible to all, in order to get the relations between science, engineering, politics and ethics to evolve towards a sustainable development,
· contribute to a research and education of the highest quality in the domain of the science of complex systems,
· promote the development of integrated knowledge and integrated models of complex systems in order to bridge the gap between science and engineering,
· promote a lifelong personalised education for all in the science of complex systems as well as in integrative and predictive sciences — including the integrative and predictive science of personalised education for all — at all levels,
· contribute to an education and training in citizen cyber-science, open to all, independently of previously achieved academic levels, respectful of the diversity of social and cultural environments, genders, religions or ways of life.

In order to achieve these objectives, the object of the current agreement is to:
· launch a Complex Systems Digital Campus as a social intelligence ICT system in order to federate all resources and efforts on education, research and the applications of the science of complex systems,
· launch the CS-DC roadmap at all scales in order to identify the scientific, educational and societal challenges of CS-DC with its cloud-based computational ecosystem and educational ecosystem,
· launch the scientific cloud-based computational ecosystem of the CS-DC in order to construct complex systems of societal impact, by sharing partial multi-level models as well as software platforms and e-infrastructures of all kinds,
· launch the educational ecosystem of the CS-DC in order to construct a map of integrated knowledge, with the aim of creating and adapting educational contents as well as to develop a lifelong personalised education on complex systems.

[1] Quoted from the article II of the Cooperation programme is annexed to this document
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