CYBERSOCIAL TERRITORIES

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Abstract
This paper is intended to give visibility to the Cybersocial Territories concept, as a model of sustainable and fair regional development that tends to benefit from the SCIENCE, generated by American Universities, and the TECHNOLOGY, generated by Asian Knowledge Industries, to locally develop and assembly INNOVATIVE PRODUCTS. The functional characteristics of a Cybersocial Territory are: 1) It empowers the "Triple helix": State, Academy and Industry; 2) It is sustained by an educational paradigm called Educatronic, and; 3) Uses as, means of interaction and interactivity, the Cybersocial environments.

The model is presented in this document in three sections:
***First**: Evolution of the concept of Cybersocial Territory*
***Second**: Phases for the implementation of Cybersocial Territory*
***Third**: Bases of the educational paradigm called Educatronic*

1. Evolution of the concept: Cybersocial Territories

LatinCampus Corporate University Organization is a Colombian organization that dedicates to scientific research on educational development integrated with TIC's, LatinCampus has dedicated the last few years to the assembly of infrastructure for Digital Territories and educatronic devices; the development of educative content for Globalized and Cibersocial environments and the promotion of the Educatronic and Neuro-educatronic as a model for virtual education. In the achievement of its purpose, LatinCampus has been creating a thinking model, conceived to generate sustainable and fair regional development alternatives, this model, called Cybersocial Territories is characterized by:

1) Benefit regions, cities or Latin-American communities.
2) Leverage on revolutionary SCIENCE generated by American Universities.
3) Leverage on innovative TECHNOLOGY generated by Asian Knowledge Industries.
4) Rely on EDUCATRONIC as means of knowledge generating.
5) Rely on CYBERSOCIAL as means of social interaction and interactivity.
6) Generate and to export local scientific and technological knowledge.

7) Design and assembly INNOVATIVE PRODUCTS.

1.1. Historical Review

Thirty-tree years ago, in 1980, the Time Magazine chose as "Person of the Year" the Personal Computer (PC). Years later, in the Academy it has been thought that this journalistic acknowledgement should be considered the starting point of the Digital Age, establishing a border with the Industrial Age. In the Academy it has also been considered that the Industrial Age was characterized by the atoms-and-molecules management and that the Digital Age is and will be characterized by the bits-and-bytes management.

Countries like Taiwan, Singapore, Finland, India and South Korea, went from being a traditional Agricultural Age country, to becoming potencies in the Digital Age. This leadership in the new age was managed without passing through the Industrial Age, an aspect that has had little divulgation by the economists has an immense economical connotation:

It is possible to become a global economy "skipping" an economic development stage.

Three years ago, in 2010, Time Magazine chose as "Person of the Year" to Mike Zuckerberg, founder of the social networking site Facebook. History repeats itself, but now we can anticipate and declare, without ambiguity that this journalistic acknowledgement will be considered by the academy as the starting point of Cybersociety, characterized as the social-networking management in virtual communities, and as the beginning of new cultural and economic architectures such as Cybersocial Territories.

Which will be the cultures and economies that will lead the Cybersociety?
Can a Society be a world leader in Cybersociety without having being a leader in the Digital Age?

Vastly prognosticated by global economists, the second and third decades of the XXI Century (2010-2029) will be the decades of Latin-America. In this political-economic context the LatinCampus Organization presents to the world's knowledge society the concept of Cybersocial Territories, as an alternative of sustainable and fair regional development that tends to produce innovative goods and services, empowering the citizen educatronic and cybersocially. Reiterating that in its first stages the scientific knowledge must come from American Universities, and that the Technological knowledge must come from the Asian Industries, until the Cybersocial Territory can generate its own local scientific and technological knowledge.

In this context, LatinCampus no longer ask the questions, but starts giving a concrete answer:

> Latin-American Regions, Cities or Communities can become Cybersocial leaders without being so in the Agricultural Age, or in the Industrial Age, or in the Digital Age. This leadership can be obtained through the implementation of Educatronc-based Cybersocial Territories.

1.2. Conceptual Model

A Cybersocial Territory is a zone; historical, geographical, economic or political (combinable yet not exclusive contexts) that is supported in the generation of scientific and technological knowledge on educatronic environments, and in the interaction and

interactivity that is allowed in the cyberspace, to produce innovative goods and services that generate sustainable and fair regional development.

There are four (4) structural aspects that make successful the techno-economic model called Cybersocial Territories:

First: Pertinent idiosyncratic delimitation of the concept of TERRITORY

Second: Leverage on the creation of knowledge in the Cybersocial environments.

Third: Educatronic-based Scientific and Technological Formation.

Fourth: Innovative Products Creation.

A Cybersocial Territory is implemented with the participation and strategic integration of three actors known as the triple-helix: State, Academy and Industry. This model is not novel, High-level American Academy has potentiated the model with evident leadership in MIT and Stanford Universities, novelty is in consolidate its work through cybersocial environments. The actor's roles are:

State: Pertinently legislate to benefit the cybersocial platforms and beings that integrate the Cybersocial Territory.

Academy: Scientifically and technologically educates through the usage of educatronic platforms and environments in the Course of Action of the Cybersocial Territory.

Industry: Globally materialize and makes visible the Course of Action of the Cybersocial Territory, from the innovative products that are designed and produced in the Cybersocial Territory.

Two scenic platforms are required for the assembly of a Cybersocial Territory:

Educatronic: Is the teaching-learning medium for Cybersocial Environments.

Cybersociety: Is the interaction and visibility medium of the Cybersocial Territory.

On this context, a basic definition could be: A Cybersocial Territory is a PRODUCT born with the support of American Universities and Asian Knowledge Industries, operatively leveraged on the Triple Helix (State-Academy-Industry) through educatronic and cybersociety environments with the purpose of generating innovative sustainable and solidary regional development.

2. Phases for the implementation of a Cybersocial Territory

LatinCampus has been studying the implementation of Cybersocial Territories, however, due to the lack of digital infrastructure and regional awareness of the usage of TIC's on economic and educational growth, it has been necessary to start with a "Phase 0", on the implementation of the Cybersocial Territory, which is the construction and implementation of digital infrastructure that takes place simultaneously with Phases 1 and 2 of the Cybersocial Territory implementation (see below).

One of the most interesting examples of the implementation of this model is "Casanare: Cybersocial Territory". Casanare is a department of Colombia, the government of Casanare was interested on the implementation of a Cybersocial Territory. Despite the interest, Casanare is a relatively low developed region of Colombia, and during the evaluation process it was evident that the digital infrastructure was not enough. Casanare had not Internet connection on all the territory, the schools and colleges were not interconnected and there was not a digital culture among the people. Phase 0 was directed, then, to the correction and update of the Territory to a Digital Territory. This problem is generalized on

most Latin-American Countries, and therefore most of the following development of the model is purely intellectual and based on future implementation once Latin-America is digitally developed.

The assembly of a Cybersocial Territory – for a region that has already the infrastructure of a Digital Territory (Phase 0) – is implemented in seven phases:

Phase 1. Eligibility Study of the Course of Action.
Phase 2. Socialization and Cultural Awareness (*new paradigm*)
Phase 3. Strategic Alliances / Generation of Scientific Knowledge (technological competitivity)
Phase 4. Strategic Alliances / Generation of Technological Knowledge (technological productivity)
Phase 5. Patents and Intellectual Property (Knowledge Exportation)
Phase 6. Industrial Productivity (innovative products)
Phase 7. E-commerce and Global Positioning. (e-marketing)

Now, for an easier comprehension, we will address every phase starting with a question.

Phase 1. Eligibility Study of the Course of Action.

How to know what must the Cybersocial Territory specialize on?

It must show to the living forces of the region (government, academy, industry, commerce, students, community in general) the alternatives that can be found in scientifically and technologically based PRODUCTS that Latin-America is requiring, and whose knowledge is available in developed countries but has not yet been demanded by our society.

Example: Inmotic-Domotic Devices, Educatronic Devices, Nano-technological Products, Non-military Drones, Academic e-content, etc. It can be counted by milliards the scientific-technological products that could have a local demand and that still are considered prototypes in Universities and Knowledge Industries of developed countries; or that are just not exported by its creators.

Given our "in-situ" experience, LatinCampus' recommendations are: Leverage on US Science, and on Asian Technology, preferable Taiwan, Hong Kong, Seoul and Singapore.

To this date, LatinCampus has studied seven (7) pertinent Courses of Action to develop in Latin-America, and that have the potential to become models of self-sustainable regional development in the Cybersocial Territory context.

Educatronic: Generation of e-learning, e-training and trainer-devices.

Building Automation: Creation of inmotic and domotic products and services.

Bio-mining: Mining exploitation on bio-sustainable and bio-technological environments.

Alternative energy: Devices for the generation and usage of alternative energy sources (solar, wind, hydrogen-based)

Bio-mechatronics: Design and fabrication of bio-controlled artificial prosthesis.

Commercial Drones: Unmanned aerial vehicles for scientific, commercial and social purposes.

Phase 2. Socialization and Cultural Awareness (new paradigm)

How to promote the chosen Course of Action of the Cybersocial Territory?

As long as the society is not aware that a Cybersocial Territory is being implemented, and which is its Course of Action, the project will have a government-only outreach, and it will hardly become a state policy.

> An example to clarify the difference between state policy and government policy: Government is the President and the cabinet members; the State is the Presidency and the Secretaries. Government are people (transitory), State are institutions (permanent).

Through the usage of formative processes with pedagogic, methodological and didactic pertinence, on scientific, technological, technical, socio-cultural environments, it must tend to achieve Mental Involvement of the society in the Cybersocial Territory concept and in the Course of Action. Mental Involvement of all society, but mostly of academic communities trying that they can found in the Cybersocial Territory future development.

The Social Awareness of the economic paradigm of Cybersocial Territories and the internalization of the Course of Action as a development engine are of vital importance for the idiosyncratic sustainability. The formative process must start from secondary education institutions, from the teachers and the parents as well as the other students. The awareness must be present also on the chambers of commerce and the regional industrial gremial associations. The formative process must be taken by the local teachers, scientifically and technologically supported by international lecturers. If the formative process does not gives excellent results on a credibility level, the Cybersocial Territory will be destined to failure on medium or large term.

> South Korea and Taiwan are examples of ICT cultural involvement as a Course of Action, this processes took them no less than 30 years. Colombia, during Dr. Pastrana's administration (1998-2002) tried to become a global ICT potence. Regrettably, due to a lack of notorious results three years after the process started, the project was abandoned, leaving businessman and user-students without a solid policy.

Similar projects to the Cybersocial Territory concept, has been abandoned in almost EVERY COUNTRY in Latin-America. It can even be counted two abandoned projects for country. The main cause for abandonment is the lack of social awareness and mental involvement in the projects.

Phase 3. Strategic Alliances / Generation of Scientific Knowledge (technological competitivity)

How and with who to generate the scientific knowledge required by the Cybersocial Territory?

Latin-American countries don't have the scientific knowledge, or the academic programs that generate the scientific knowledge on the Course of Action that would require a Cybersocial Territory. Consequently, it is necessary to establish strategic alliances between Local Universities and American Universities, to offer academic programs of Master and Doctorate (both with research profiles) on the scientific areas of the Course of Action.

Due to the great costs of bring to Latin-America the scientists that are required to design and to develop the research programs that are required to create the post-graduate programs on the Course of Action, it becomes ineludible the usage of Eduatronic models.

The Strategic Alliance must design dual degree academic programs that aim at generate innovative scientific knowledge, and has as a target, the professionals that will become future local scientists. The only purpose is to turn the city or region in a zone that provides

Scientific Knowledge in the Course of Action. This is the solid base the Cybersocial Territory must be built upon.

Over the first years the local professionals will be beneficiaries of American Science, with time and through formative processes of productive and competitive innovation, those local professionals will be generators of Local Science.

If the local scientist are not generators of their own science – and this must be understood as creators and generators of their own scientific knowledge – the Cybersocial Territory it's condemned to become a Cybercolony.

> It is important to emphasize that the only economically viable and sustainable way to link American Universities with local science formation processes is through high quality educatronic environments. If in the educatronic formation persists the poor quality of local on-site education, and the even worst quality of local virtual education, then the project is ineludibly condemned to failure.

Another important issue is that in times of Information Societies, countries – as a whole – are no longer subject to colonization processes, regions are subject to private industrial cybercolonization.

Phase 4. Strategic Alliances / Generation of Technological Knowledge (technological productivity)

How and with who to generate the technological knowledge required by the Cybersocial Territory?

Just as with scientific knowledge, Latin-American countries do not have technological knowledge or the academic programs on the Course of Action that would require a Cybersocial Territory. Consequently, there is also necessary to establish strategic alliances between Schools and Colleges and the Asian Knowledge Industries to offer technical and technological programs on the construction, implementation and operative maintenance areas of the innovative products of the Course of Action.

The Asian Knowledge Industries that will be more culturally compatible with Latin-American countries would be –among others – Taiwan, Hong Kong, Seoul and Singapore.

The technical and technological programs with double degrees must be offered through educatronic environments. It has as a purpose the generation of qualified labor, and as a target population it has the bachelors and undergraduates of the Cybersocial Territory. The purpose is to turn the region or city into a Specific Technological Knowledge Territory.

Over the first years the bachelors and undergraduates will be beneficiaries of the Asian Technology, with time and through formative processes of productive and competitive innovation, those local bachelors and undergraduates will be generators of Local Technology.

Just as with American Science, the only economically viable and sustainable way to link Asian knowledge Industries with local science formation processes is through high quality educatronic environments. Unlike local Universities a good amount of High School Institutions in Latin-America could be considered qualified by Asian Industries as centers of technological formation.

> An interest thought: North America has the best universities in the world, but a not so high basic and secondary education levels, on some points even below the Latin-American average. On the other side, Latin-America has a relatively high level of

secondary education, but a very low performance on High Education. This must be used as an advantage on the construction of a Cybersocial Territory.

Phase 5. Patents and Intellectual Property (Knowledge Exportation)

Which should be the first exportation product of the Cybersocial Territory?

In the middle-term, the generation of scientific and technological knowledge must conclude with the application form of intellectual and patrimonial property and in the application of patents.

Author Rights and Patents are goods that will allow the establishment of Strategic Alliances with Universities and Knowledge Industries, to offer services of generation of human resources with high socio-economic impact.

> This is a good way of transcend in the knowledge society, in which Latin-American societies are not contributors but consumers, partially because of the lack of knowledge of the economic wealth that goes with the information that we possess but don't know how to exploit, certainly we ignore that patents and intellectual property are a great source of wealth and the raw materials of the knowledge society.

On the assembly process of Cybersocial Territories, the first exportation product is the knowledge acquired in the industrial production of the Course of Action. This exportation becomes the exchange of knowledge that potentiates all the actors linked with the development of the scientific and technological knowledge.

Phase 6. Industrial Productivity (innovative products)

When are the levels of employment elevated on the Cybersocial Territory?

The scientific knowledge potentiated by American Universities, and the technological knowledge potentiated by Asian Knowledge Industries must necessarily conclude in the design and generation of Innovative Products.

The Chambers of Commerce and the Gremial Association of Industries, greatly supported by the State and the Academy must promote the creation of Industrial Parks and Digital Micro-cities to develop Innovative Products created from the local scientific and technological knowledge.

Also, the Industrial Parks and Digital Micro-cities will be the leverage of Local Involvement of the innovative products and the Awareness of concepts such as information society, cybersociety, and other socio-cultural tendencies that will potenciate the Involvement on the new idiosyncratic component.

Is in the Industrial Parks and Digital Micro-cities where it will be gestated the true sustainable and solidary regional development that is formed not by a governmental policy, but by a State policy, and that is only potentiated through the strategic alliances with University and Knowledge Industries of high-level digital countries. This development country must be based on Educatronic and Cybersociety.

Phase 7. E-commerce and Global Positioning. (e-marketing)

How to ensure the global positioning of the Cybersocial Territory?

It will be the commercial sector, with the support of the Industrial Park, who, through marketing technologies and product positioning on Cybersocial environments, will take care of globally show the innovative products generated on the Course of Action on the Cybersocial Territory.

It will be also the commercial sector, with the support of the Industrial Park and the State who will generate local events of global transcendence to generate awareness of the existence of Innovative products in fairs, business conferences, and participation of Cybersocial Territory on Science, Technology and Innovation global events.

3. Development of the educational paradigm called EDUCATRONIC

Educatronic is an educational paradigm (paradigm or revolutionary science in the sence of Thomas Kuhn) characterized for implement pedagogical, methodological, didactic and technological solutions and exclusive for Virtual Education environments.

Educatronic deviates from the Virtual Education of the First decade of the XXI Century, as it considers that it is no longer academically sustainable to see virtual education as "ICT-supported traditional-education" or as "Distance education updated with on-line materials". The science and the technology required to implement true virtual solutions it's so specific that it is necessary to contextualize it in global and cibersocial cultural models: Digital Age, Digital Being, Writing-Reading, hypertexts, hypermedia, iconography, dynamic ideography.

The traditional model of virtual education that some universities implemented - more motivated by commercial ends than to empower citizens - has left several bad precedents. To enumerate some of them:

It is a second-class education
It is only for mental learning, there is no instrumental learning.
It has higher chances of fraud by identity theft
It does not form or educate, only inform the student
It has no pertinent evaluation process, only plain questionnaires
It has no pertinent tutors, only e-mail messengers
It is de-humanized, and impersonal.

Besides the government inexperience, the main reason of the initial failure of virtual education was the lack of regulation and accreditation policies of virtual education by the authorities.

However, the model is not bad it has been unfortunately bad implemented in Latin-America, but the model is excellent for natives and digital migrants. To reclaim the model, institutional policies of quality assessment must be implemented, and have to be accompanied by the technological strategies that transcend virtual education to models of revolutionary or paradigm science. In this context, LatinCampus has developed a model of educatronic formation that has paradigmatic components that protect it against deficient educational materials and environments, and against teachers, tutors and monitors decontextualized of the cybersocial model.

3.1 Educatronic Equation

The formation in educatronic environments it can be represented with a simple equation with three components:

Educatronic = *e-learning* + *e-training* + *training-devices*

This equation can be summed up in the following diagram that we will be gradually explaining.

Now, we will make a brief review of each component:

First Component: e-learning

The first component of LatinCampus' Equation is e-learning, whose function is to transmit the theory or educable component of an on-line formation system. It is accomplished through the Pedagogic Mediators, which along with the e-training generate mental or cognitive competences.

The Pedagogic Mediators is a virtual educational material which, pertinently developed, replaces the "teaching class" role of the teacher, this is to transmit information that the student can convert in knowledge. The Pedagogic Mediator allows the teacher to focus on more relevant roles – than "teaching class" – such as being a facilitator of the learning. To pertinently develop a Pedagogic Mediator implies to include pedagogic models, didactic strategies, methodologies and technologies specific for the Digital being and the cybersociety.

There are several didactic characteristics of a Pedagogic Mediator: Hypertextuality, Iconography, Collective Intelligence and Interactivity. Unfortunately these characteristics are obviated due to academic easiness and the need to make virtual education "productive", thus, generating not a formative process (that is valid for on-line environments) but merely informative (intensive web-reading courses).

Second Component: e-training

The second component of the LatinCampus' Educatronic Equation is e-training or digital practice, whose function is to allow the digital practice of the subjects that will be developed with the trainer-devices. The digital practice also generates material or cognitive competences –as the e-learning – but, unlike e-learning, it does so through the Digital Trainer or Expert Systems, that is the software that allows acquiring experience to go to safe real practice.

The e-training is the teachable component of an on-line formation system that generate instrumental competences. Consider that even though is digital, it is not educability but teachability, to understand the difference you must go to interpret the Pedagogic Mediation Concept in the LatinCampus Environment.

The Digital Trainers must be designed in constructivist and construccionist pedagogical, methodological and didactic strategies for it to have value as a formative device and not just informative.

One of the greatest difficulties of educatronic formation is that each of the Trainer Devices requires its own Digital Trainer, making the implementation of educatronic solutions complex and expensive.

The e-training systems have as a purpose to prepare the student to physically approach the Trainer Device reducing the probability to make mistakes that can damage the student or the device, and making the student-device contact highly productive and competitive.

Third component: Trainer-devices.

The third component of the LatinCampus' Educatronic Equation is the Trainer-Device or real-live laboratory, whose function is to allow real practice of the previously digitally-practiced subject. It is accomplished through Educatronic Devices (Didactic Trainers of Artificial-Connected Intelligence).

Trainer-devices are also a teachable component that generates instrumental competences.

On-line Education in most institution is deficient or lacks of practice, which has debilitated the credibility of the education model, and it's the reason why some Universities limit to bring "theory-only" programs to on-line environments.

The Educatronic Devices must "go to the student", just like they do in the e-learning and the e-training, hence the only choice for educatrónica are the mobile or portable laboratories that can "go to the student" wherever he is and whenever he needs it.

A device for training cannot be mistaken for a trainer-device. The first is usually a commercial device that has been acquired for practice guided usually by a teacher or a laboratory auxiliary; Trainer-devices must have the ability to analyze, with Robotic Agents and Artificial Intelligence Agents duly controlled by sensors, how does the student interacts with the device and give positive or negative feedback regarding student/trainer interaction and interactivity.

As an example: driving lessons usually have commercial vehicles that have been lightly modified and a tutor, however, the vehicle is not able to give the student information about how he is driving. An educatronic vehicle should be able, for instance, to take control of the vehicle, regardless the actions of the student, if this is driving too fast or taking a curve to openly, and after correcting the errors, to inform the students of the mistakes made and how to correct them.

3.2 Other environments that benefit the development of Educatronic

Educatronic, as a knowledge society and cybersociety based educational paradigm, needs of special environments that allow the student and the teacher to easily develop the learning/teaching process.

Usual education environments such as Universities, Classrooms, Campuses, etc. do not hold the same importance in Educatronic given that Educatronic is based on de-synchronization and work on multiple spaces.

Added to the costs of implementing Educatronic, has made that many universities and colleges, had opted for a virtual education that becomes more a reading course than real digital education.

To solve this problem LatinCampus has presented several and very diverse Educatronic Solution that has been designed for High Education Institutions, Military Forces and Investigation Centers in Latin-America. In this paper we will not present the most scientific or technological educatronic solutions, but the ones with the highest impact in institutional (and regional) development: The Virtual Campus Node, and the Mobile University.

The information on the approach to these solutions can be found on the LatinCampus Website and most likely will be the subject of future papers presented on these and other academic scenarios.

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