GETTING SMARTER
AN ASL ERD ON VISION
SMART LEARNING ECOSYSTEMS
A BOTTOM-UP ASSOCIATION ASLERD
PRESENT MAP OF ASLERD MEMBERS

INSTITUTION

INDIVIDUAL

Victoria, Australia

Aveiro Uni

Poli To

Uni L’Aquila

ISIA Rome

ITD-CNR

Quasar

UTOV Rome

Uni Cassino

Poli Timisoara

Poli Bucharest

Craiova Uni

Poli To

FU Bozen

Know Center

Aalborg Uni

Aalborg Uni

Rostock Uni

NTNU

Uni Ghent

Troyes Uni

 Victoria, Australia

INSTITUTION

INDIVIDUAL
board elected
on
September 2015

Carlo Giovannella
University of Rome Tor Vergata
(President)

Alke Martens
University of Rostock

Gabriella Dodero
ASLERD Italian Chapter since 2017

Oscar Meahla
University of Aveiro since 2017

Matthias Rhem
Aalborg University
(Vice-President)
LEARNING ECO-SYSTEMS

SCHOOLS

WORKING PLACES

VIRTUAL ENVIRONMENTS

C. Giovannella - Keynote ICWL 2016
A “smart city” is a complex system of resource optimization, which involves energy, water, and materials. These resources are supported by time, fluxes, and people, goods, and data. The fuel for this system is intellectual and social capital, which acts as both a competitive and non-competitive factor of productivity.
ATTRACTION

PEOPLE
possibly to generate singularities like:

RINASCIMENTO in FLORENCE

BELLE EPOQUE in PARIS

BIG DEAL in UNITED STATES
FOCUSBING MORE on LEARNING ECO-SYSTEMS SCHOOLS
Technologies are influencing all components of the learning processes.
ONE POSSIBLE GOAL:
reduce gaps among educational agencies
DREAM of TECHNOLOGISTS: TAME COMPLEXITY
BUT:

TRULY COMPLEX SYSTEMS CANNOT BE TAMED BY PROBLEM MODULARIZATION
INTERACTION

UNPREDICTABLE DYNAMICS

RULE/LAW
INTER-ACTION

EMERGING NEW STRUCTURES & PROPERTIES
INTERNET TECHNOLOGIES have produced
HYPER SOCIALIZATION
& ISOLATION
INDUSTRIAL SOCIETY

MACHINES

OBJECT IN-FORMATION

WORLD MODIFICATION

PROLETARIAT
POST-INDUSTRIAL SOCIETY
(AUTOMATION)

APPARATUS
(program)

DATA PRODUCTION

MODIFICATION
OF THE MODEL OF THE WORLD

FUNCTIONARIAT

INTERFACE remains "CLEAR"
interior APPARATA becomes OPAQUE
ORGANIC SOCIETY
(DELOCALIZED and CONNECTED INFO-AUTOMATED PROCESS)

SYSTEM
(program)

DEVELOPMENT OF NETWORK

SUBSTITUTION
OF THE WORLD

PROSUMER

INTERFACE remains "CLEAR"
CONTENT becomes OPAQUE
RAPIDITY
SHARING
MULTI TASKING
NON-LINEAR THINKING
DENSE INTERACTION
OPEN CONTENT
“COLLABORATION”
N-GEN KEYWORDS
YESTERDAY

INPUT

linear brainframe

OUTPUT

TODAY

INPUT

hypermodal & hypersocial brainframe

?
TO UNDERSTAND
SWITCH TO MONITORING
“SMART”
what does it mean
TECHNOLOGY ENHANCED ENVIRONMENTS?
NEVER FORGET THAT BEHIND THE TECHNOLOGY
THERE ARE ALWAYS PERSONS
ASK TO PEOPLE
&
LOOK FOR EMERGING MEANINGS
PROVIDED THAT THE PERSONAL NEEDS ARE SATISFIED

MASLOW’S PYRAMID
AN ECOSYSTEM CAN BE CONSIDERED SMART WHEN PEOPLE THAT ANIMATE THE ON_GOING PROCESSES OWN A HIGH LEVEL OF SKILLS AND, AT THE SAME TIME, ARE ALSO STRONGLY MOTIVATED BY CONTINUOUS AND ADEQUATE CHALLENGES
ASLERD PYRAMID OF SMARTNESS
<table>
<thead>
<tr>
<th><strong>Levels of the Maslow’s pyramid (MP) and dimensions relevant for defining the flow state (FS)</strong></th>
<th><strong>Dimensions used in the bottom-up detection of learning ecosystems’ smartness</strong></th>
<th><strong>Quality of life indices defined by Eurostat to measure the level of well-being.</strong></th>
</tr>
</thead>
</table>
| MPI: Basic-Physiological needs | • Infrastructures/Resources  
• Food  
• Environment  
• Info/admin services  
+ Housing | • Material living conditions  
• Governance and basic rights (i.e. public services)  
• Natural and living environments |
| MPII: Safety needs | Safety (Physical) | • Economic and Physical Safety  
• Health |
| MPIII-IV: Psycho-Social needs (i.e. belongingness; estimation, prestige) | Social interaction | • Social interactions & leisure  
• Governance and basic rights (i.e. equal opportunities & active citizenship) |
| MPV: Self-actualization (achieving one’s full potential) | Self-actualization | Overall experience of life Education |
| FS: Satisfaction (also related to MPV) | Satisfaction (i.e. competences and process) | Productive or main activity |
| FS: Challenges | Challenges | |
PARTICIPATORY EVALUATION

identify indicators & indices

quantitative ones -> to produce a multilevel benchmarking

qualitative ones (text) -> to extract meanings
AN EXAMPLE
Principal Component Analysis

**before**

\[ \mu \neq \beta \neq 90^\circ \]

**after**

\[ a'x + b'y + c'z \approx 60\% \]

\[ a''x + b''y + c''z \approx 10\% \]

\[ a'x + b'y + c'z \approx 20\% \]

\[ ax + by + cz \approx 60\% \]

\[ \mu \neq \beta = 90^\circ \]
<table>
<thead>
<tr>
<th>Safety</th>
<th>nothing detected</th>
<th>night/dark (7) lack of guards (2) robbery (2: bikes); no security agents; camera in some areas; drug sellers</th>
<th>lack of security information/awareness (2); lighting at night (3), need security agents at night; fire alarm disabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support to social interactions</td>
<td>access sport facility</td>
<td>scarce support to internationalization and networking (4: enterprises) people scarce student integration(2), scarce cultural activities</td>
<td>scarce support to socialization and no action plan; lack of opportunities and dedicated spaces</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>wishes: more practical activities; better networking with productive realities (2); ability to listen</td>
<td>wishes: more practical activities (3); more useful didactic content also skill oriented (2); more internships (2); more Erasmus opportunities</td>
<td>wishes: less admin tasks (3); more transdisciplinary interaction (4); more international R&amp;D and educational initiatives; better networking (companies) recognition of efforts (2); reduced teaching load</td>
</tr>
<tr>
<td>Challenge</td>
<td>scarce support to exchanges (2) and tweaking with companies</td>
<td>scarce N. of internships/scholarships (3); scarce support to internationalization; scarce productiveness</td>
<td>scarce support to transdisciplinary internationalization; scarce support to exploit opportunities; lack of recognition</td>
</tr>
</tbody>
</table>
UTOV EXPECTATIONS

INFORMATION
changes in activity calendar
geolocalized notes

PERSONAL TIME
queues & mobility

BETTER EXPLOITATION OF CAMPUS' SPACES
sport & events

SOCIALIZATION

MOTIVATIONS
redesign of present activities (challenges)
opportunities
interactions/relations with the territory
SCHOOLS
PARTICIPATORY EVALUATION

SYSTEM CO-DESIGN

ACTION PLAN & SOCIAL REPORTING
ALTERNANCE SCHEMES
SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY EDUCATION
By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.
By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university. It is imperative to reduce barriers to skills development and technical and vocational education and training (TVET), starting from the secondary level, as well as to tertiary education, including university, and to provide lifelong learning opportunities for youth and adults.
By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
By 2030, ensure that **all learners acquire the knowledge and skills needed to promote sustainable development**, including, among others, **through education** for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.
CRITICAL ISSUES
**Students**

- Chaotic organization
  - Late information
  - Individual goodwill, no systematic approach
  - Lack of verification of prerequisites

- Timing concurrency
  - Experience limited in time
  - Time placement
  - Concurrency with curricular activities

- Unchecked prerequisites
  - Student side
    - Knowledge-Skills-Competences
  - Capacities of involved company and people

- Scarce usefulness
  - Scarce practical activities
  - Scarce relevance for the curriculum

**Companies**

- Lack of a structured governance
  - Beyond individual commitment and personal relationships

- Management of long stays
  - Limited human resources + internal acceptance
    - (Internal Marketing)
  - Limited social responsibility

- “Experience preparation”
  - Mutual understanding (school-company)
    - Cultural stereotypes
  - Technological skill gap
  - Undefined formative projects
  - Safety at work
  - Sensitive processes

- Variability and meaningfulness outcomes
  - Strongly dependent on contests and people
  - Unclear advantages

C. Giovannella - Keynote HCICTE 2018
EXPECTATIONS
STUDENT SIDE

COMPETENCES ACQUISITION
LIFE SKILLS (Soft Skills)

PERSONALIZATION OF THE EXPERIENCE

EXCELLENCE CARE

FEEL "CHALLENGED"
UNDERCHALLENGED RESPECT TO PERCIEVED POTENTIALITIES

Alternanza Scuola-Lavoro: dalla fotografia dello stato dell’arte alla costruzione di un’ipotesi di futuro possibile

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COMPANY SIDE: UNINDUSTRIA SURVEY

STABLE AND STRUCTURED
“GOVERNANCE”

INVolVEMENT OF COMPANY REFERENTS IN
CO-DESIGN E CERTIFICATION
READING CAPABILITY OF AN ORGANIZATIONAL CONTEST
COMPETENCES, SPECIFIC TECHNICAL SKILLS

“KNOW HOW” TRANSFER
& EXPLOITATION OF “BEST PRACTICES”
SWA EXPERIENCE MODELLING
FORMATIVE CHAINS
USE OF TESTIMONIALS, PILOTS DEVELOPMENT

COMPETITIVE ADVANTAGES
PRE-RECRUITMENT
FISCAL DETAX
ADVANTAGES IN PUBLIC CALL COMPETITIONS

http://www.un-industria.it/Prj/Hom.asp?gsAppLanCur=IT&gsPagTyp=21&gsMnuNav=01M:100,01L:1,01C:1,02M:0,02L:0,02C:1,&flnfcod=37072&fPagTypOri=30
IN-SITU SIMULATION of an INNOVATION PROCESS
DESIGN PROCESSES

2005

3P “design based” education
problem - project - process

C. Giovannella - Keynote HCCTE 2018
reactivate the transformation process:
ORGANIC PROCESS

- web-quests
- questionnaires
- in-situ exploration
- trace recording
- diary
- persona
- storytelling
- tech benchmarking
- SWOT
- brainstorming
- UML
- prototyping
- storytelling
- questionnaires
- evaluation
- future vision
- pitch

C. Giovannella - Keynote HCICITE 2018
<table>
<thead>
<tr>
<th></th>
<th>Exploration Learning</th>
<th>Design</th>
<th>Communication Actuation</th>
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<tbody>
<tr>
<td>Problem setting</td>
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<tr>
<td>Problem solving</td>
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<tr>
<td>Communication</td>
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<td>Additional life skills</td>
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<td>“Gluing” &amp; Team working</td>
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<td>Leadership &amp; Gestione Team</td>
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<tr>
<td>Trustability</td>
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<tr>
<td>Process setting</td>
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<tr>
<td>Process Management</td>
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<td></td>
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<tr>
<td>Process Monitoring</td>
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</tbody>
</table>
lack of innovation is one of the causes

**START UP MORTALITY**

90% < than 3 years
ENTERPRISE

ENTERPRISE DESIGN

INNOVATION PROCESS
INNOVATION IS AN ENDOGENOUS AND NON COMPETITIVE FACTOR OF ECONOMY
CERTIFICATION
STANDARD SCHOOL CERTIFICATION

+

OPEN BADGE
WHICH BADGES?

INNOVATION PROCESS [ROLES]

INTERMEDIATE BADGE [COMPETENCES/SKILLS]

INNOVATION PROCESS TUTOR
WHICH BADGES?
WIN-WIN STUDENT SIDE

**WELL DEFINED PROCESS**
Timing - Modalities - Expected Outcomes

**COMPETENCES ACQUISITION**
Reusable in many working contexts
“Innovation based” Authentic Challenges and Tasks
Design Literacy
Preparation for future company internships

**PERSONALIZED PROCESS**
Groups and Roles - Care for Excellences

**CHALLENGING ACTIVITIES**
Innovation
Relevance for the Curriculo & Mapping on Companies’ Expectations
WIN-WIN COMPANY SIDE

LIMITED INVOLVEMENT OF RESOURCES
TESTIMONIALS - SUPPORT TO INNOVATION BY TOPIC SUGGESTION

INVOLVEMENT OF COMPANIES IN THE CERTIFICATION PROCESS
OPEN BADGE ENDORSEMENT - CHECK OF OUTCOMES (PITCH & PROTOTYPES)
RESOURCE SCREENING AND PRE RECRUITMENT

COMPARTECIPAZIONE A SVILUPPO "BEST PRACTICES"
STANDARDIZATION: PROCESS - OUTCOMES QUALITY - GOVERNANCE

STUDENTI PRE-TRAINING BEFORE COMPANY INTERNSHIPS

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WIN-WIN SCHOOL SIDE

COMPETENCE TRANSFER
CERTIFICATION OF INTERNAL TUTOR
PROGRESSIVE COMPETENCES DEVELOPMENT
HIGHER TEACHER MOTIVATION

IDEAS CAPITALIZATION
PORTFOLIO OF IDEAS (activation of relationships with companies)
-> SIMULATION OF ENTERPRISE (a formative one)

INTEGRABILITY WITH CURRICULAR ACTIVITIES

STANDARDIZED PROCESS

SCHOOL ACTIVITY
RIATTIVAZIONE CATENA (CONOSCENZE-ABILITA’-COMPETENZE SIGNIFICATIVE)
DROP OUT DECREASE
BETTER EXTERNAL COMMUNICATION
NETWORKING AND SOCIAL CAPITAL INCREASE
INTERMEDIATE OUTCOMES

SMART GARBAGE CONTAINERS + APP

PARKING COMMUNITY

ELDERLY CAR SHARING & SERVICES

MANAGEMENT INTERNAL BAR

ALTERNANCE SCHEME on APP
EVALUATION OUTCOMES

4,78 - 4,30 -> 5,71

[lower threshold -> + 1 in case of anticipated meeting with companies’ representatives]
WORK ORIENTED PROCESS

PROJECTS PERCEIVED AS USEFUL CAPABLE TO GENERATE COMMITMENT

METHODOLOGICAL ENRICHMENT (PROBLEM SETTING, BRAINSTORMING, COLLABORATIVE TEAM WORK, ETC.)

ROLES AND COMPETENCES CERTIFICATION
BEYOND ... rather BEFORE Alternance Scheme
IC CASTELNUOVO

EXCELLENCE CARE PROGRAMME
in K12 SCHOOL

SATISFACTION : 8.71/10
WHAT'S ABOUT TECHNOLOGIES?
MOBILE PHONE NERD & ADDICTED
BUT COMPUTER ILLITERATE
CLEVER VIDEOGAMERS
BUT DO NOT UNDERSTAND GAMIFICATION

Periodic Table of Gamification Elements

Random Rewards
On-boarding
Time Pressure
Challenges
Customisation
Virtual Economy

Signposting
Loss Aversion
Scarcity
Certificates
Altruistic Purpose

Loss Investment
Flow
Quests
Care Taking

Progress / Feedback
Theme
Narrative
Curiosity

Social Network
Social Status
Social Discovery
Social Pressure

Gamified UK

Gamification Elements

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SOCIAL & LEARNING INTERACTION

SOCIAL INTERACTION < 2005

LEARNING INTERACTION 2005 < 

FORCED LEARNING INTERACTION 2010 < 

TODAY

C. Giovannella - Keynote HCI CTE 2018
WHAT DO WE NEED?
EASY TO USE
AND INTEGRATED
SUPPORTS TO DESIGN METHODS
INTEGRATED COLLABORATIVE WORK ENVIRONMENT
INTEGRATED SOCIAL & LEARNING ENVIRONMENTS
TO MONITOR ALL LEVELS OF THE LEARNING EXPERIENCE
Simplicity & Tech Interoperability -> no barriers
NO PEDAGOGY & ANALYTICS
but
process organizer
access to contents
co-working sharing

C. Giovannella - Keynote HCITC 2018
VISION ON SMART LEARNING ECOSYSTEMS

TIMISOARA DECLARATION
BETTER LEARNING IN A BETTER WORLD

- SLERD AND SOCIAL INNOVATION
- NEW LITERACIES, NEW COMPETENCES AND VIRTUE OF DESIGN
- THE SOCIAL DIMENSION OF ALTERNATING SCHOOL AND WORK
- OPENING UP EDUCATION
- AN INTEROPERABLE TECH-SPHERE AND THE SMARTNESS OF MACHINES
- SMART DATA INSTEAD OF BIG DATA
BARRIERS

AGGREGATE AROUND A CULTURAL PROJECT AND NOT AROUND INTERESTS

SCALING UP DUE TO RESISTENCE TO CHANGE (SCHOOLS, ACADEMIES, POLICIES)
Project and design literacy as cornerstones of smart education
STUDENT DESIGN CONTEST

PEOPLE CENTERED
SMART LEARNING ECOSYSTEMS

C. Giovannella - Keynote HCICTE 2018
THANKS for YOUR TIME
ESSENTIAL REFERENCES
ESSENTIAL REFERENCES RELATED TO THE TALK
SMART CITIES & TERRITORIES

C. Giovannella (invited keynote)
“Territorial Smartness and Emergent Behaviors”

C. Giovannella, M. Dascalu, F. Scaccia
“Smart City Analytics: state of the art and future perspectives”
IxD&A Journal, N. 20, 2014, pp. 72-87, e-ISSN: 2283-2998 ISSN: 1826-9745

SMART LEARNING ECOSYSTEMS
(model and analytics)

C. Giovannella
“Territorial smartness and the relevance of the learning ecosystems”
ICS2 2015, IEEE publisher, pp. 1-5

Carlo Giovannella, Diana Andone, Mihai Dascalu, Elvira Popescu, Matthias Rehm, Giuseppe Roccasalva
“Smartness of Learning Ecosystems and its bottom-up emergence in six European Campuses”
IxD&A Journal, N. 27, 2015, pp. 79-92, e-ISSN: 2283-2998 ISSN: 1826-9745
Carlo Giovannella, Diana Andone, Mihai Dascalu, Elvira Popescu, Matthias Rehm, Giuseppe Roccasalva  
“Smartness of Learning Ecosystems and its bottom-up emergence in six European Campuses”  
IxD&A Journal, N. 27, 2015, pp. 79-92, e-ISSN: 2283-2998 ISSN: 1826-9745

Carlo Giovannella, Diana Andone, Mihai Dascalu, Elvira Popescu, Matthias Rehm, Oscar Mealha  
“Evaluating the Resilience of the Bottom-up Method used to Detect and Benchmark the Smartness of University Campuses”  

C. Giovannella (invited paper)  
Smart Learning Eco-systems: "fashion" or "beef"?  
Journal of E-Learning and Knowledge Society 01/2014; 10(3):13-21

C. Giovannella  
Where's the smartness of learning in smart territories?  
D. Galego, C. Giovannella, O. Mealha
“Determination of the Smartness of a University Campus: the case study of Aveiro”
in Proceedings of “New Metropolitan Perspectives”,
Procedia Social and Behavioral Science, Elsevier, Volume 223, 2016, pp. 147–152
ISSN: 1877-0428

D. Galego, C. Giovannella, O. Mealha
“An investigation of actors’ differences in the perception of learning ecosystems’ smartness: the case of the Aveiro University”

C. Giovannella
“Participatory bottom-up self-evaluation of schools’ smartness: an Italian case study”
IxD&A Journal, N. 31, 2016, pp. 9-18, e-ISSN: 2283-2998 ISSN: 1826-9745

C. Giovannella, D. Andone, M. Dascalu, E. Popescu, M. Rehm, O. Mealha
C. Giovannella, ”Participatory evaluation as starting point to design for smarter learning ecosystems: the UTOV case history”, in “Citizen, Territory and Technologies: Smart Learning Contexts and Practices”, Springer publisher, 2017, pp. 64-74
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DOI 10.1007/978-3-319-61322-2

ISSN: 1947-3494 e 1947-3508
DOI: 10.4018/IJDLDC.2017070104

C. Giovannella, I. Crea, G. Brandinelli, B. Ielpo, C. Solenghi “Improving Massive Alternance Scheme: the paradigmatic case history of the incubator of projectuality at the Ferrari school of Rome” in “The Interplay of Data Technology, Place and People for Smart Learning”, Springer publisher, 2018, pp. 3-14
ISSN 2190-3018 ISSN 2190-3026 (electronic)
DOI 10.1007/978-3-319-92022-1

C. Giovannella
"An Organic Process for the Organic Era of the Interaction"
in "HCI Educators 2007: creativity3: Experiencing to educate and design",
C. Giovannella
"An Organic Process for the Organic Era of the Interaction"
in "HCI Educators 2007: creativity3: Experiencing to educate and design",

C. Giovannella, A. Camusi
"Challenging technologies: the Virtual Show&Tell in Design Inspired Learning Process"
ICALT 2009, IEEE publisher, p. 203-207

C. Giovannella
ISSN: 1947-3494 e 1947-3508

C. Giovannella, C. Spadavecchia, A. Camusi
“Educational complexity: centrality of design and monitoring of the experience”

C. Giovannella, S. Carcone, A. Camusi,
“What and how to monitor complex educative experiences. Toward the definition of a general framework”, IxD&A Journal, N. 11-12, 2011, pp. 7-23, ISSN: 1826-9745