

Mobility and Cooperation Challenges

Panel of COLLA/ICCGI

- **Moderator**

Elena Troubitsyna, Abo Akademi, Finland

- **Panelists**

Samia Ben Rajeb, Universite Libre de Bruxelles, Belgium

Alberto Turón, University of Zaragoza, Spain

Pierre Leclercq, University of Liege, Belgium

Ekaterina Kazimirova, Kaspersky Lab, Russia

Topics

- Collaboration 4.0: Strategic issues for Managing Resistance to Change
- An experience on collaborative decision making in the Knowledge Society
- Things Instead of People? Who or What Are We Going to Communicate with in the IoT Era?

Mobility and Cooperation Challenges



Collaborative multicriteria selection of a mobility strategy

ALBERTO TURÓN

MULTICRITERIA DECISION MAKING GROUP

ARAGON INSTITUTE OF ENGINEERING RESEARCH

UNIVERSITY OF ZARAGOZA (SPAIN)

Strategies for mobility decision making

Decision making process provision

- Information
- Decision making
- Security

Access to all features/resources from mobile devices

Additional challenges for the Knowledge Society

- Extraction and sharing of knowledge

Decision making

1. Problem establishment
2. Discussion
3. Problem resolution
4. Model exploitation
5. Knowledge extraction and democratisation

Levels of participation

- Information
- Discussion
- Decision making

Securization of e-Participation

➤ **Authentication**

➤ **Democracy**

➤ **Anonymity**

➤ **No coercion**

➤ **Accuracy**

➤ **Reliability**

➤ **Veracity**

➤ **Verifiability**

➤ **Neutrality**

➤ **Linkability**

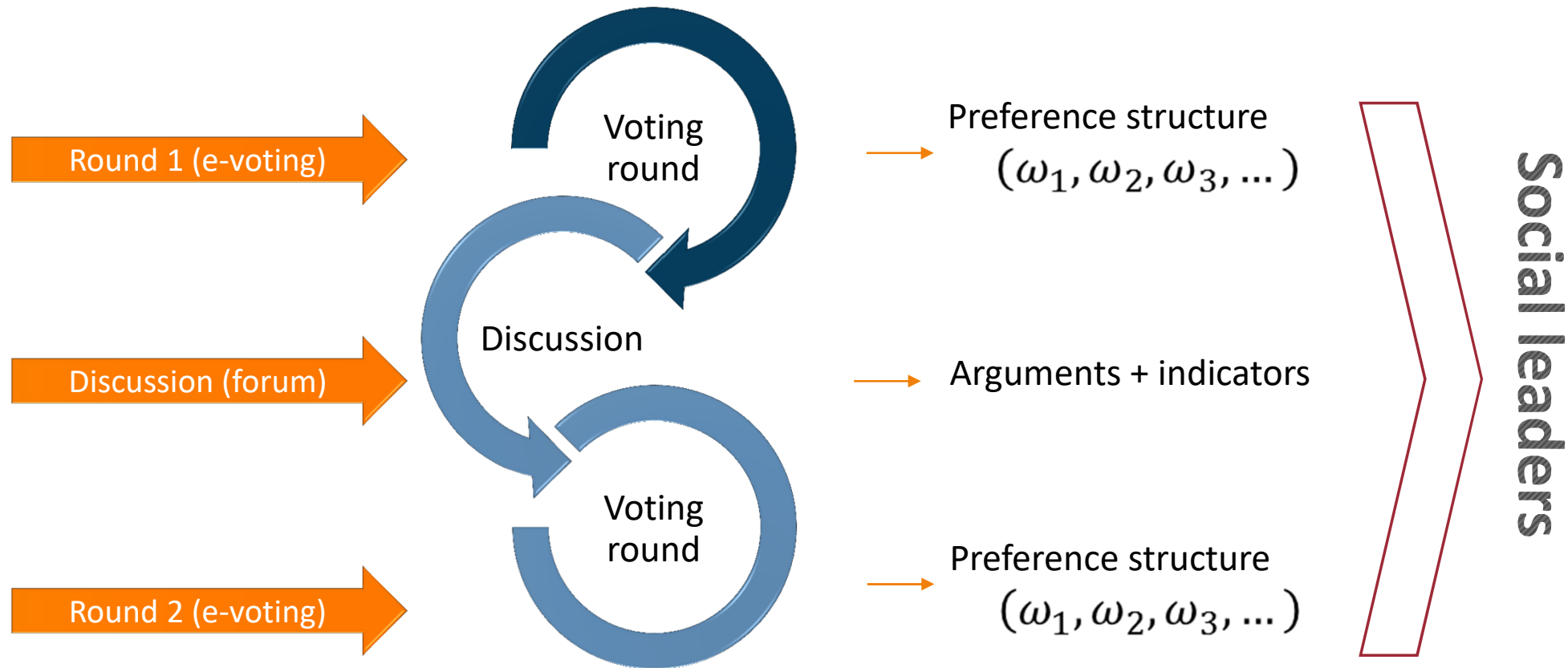
E-Cognocracy

Cognitive democracy oriented to the extraction and sharing of knowledge related with the scientific resolution of public decision making problems related with the governance of society.

This model of democracy takes advantage of the potential of the knowledge society by means of the incorporation of the knowledge and the preferences of the actors involved in the decision making process.

This is carried out by using different rounds to incorporate the preferences and a collaborative tool for the discussion stage.

E-Cognocracy



Social Cognocracy Network

Selección de la mejor alternativa de transporte para la ciudad de Zaragoza

Alternativas

Alternativa	Prioridad Parcial	Prioridad Total
Tranvía	0,43	
Tranbús	0,33	
Aratrén	0,15	
No hacer nada	0,09	

INV
Descripción: Coste de inversión
Prioridad Local: 0,49
Prioridad Global: 0,22

Votar **Ayuda**

Introducción de juicios

Selección de la mejor alternativa de transporte para la ciudad de Zaragoza

	ECO	SOC	AMB
ECO	1	1 / 5	3
SOC	5	1	3
AMB	1 / 3	1 / 3	1

Mensaje
Consistencia: 0,86
Aceptar

Extremo Muy fuerte Fuerte Ligero Igual Ligero Fuerte Muy fuerte Extremo

Aceptar **Cancelar**

Social Cognocracy Network

Kunena » 1 Beneficios (B) » 1.2 Sociales (BS)

Page: 1 2 3

REPLY TOPIC SUBSCRIBE FAVORITE

TOPIC: poblacion rustica mayor necesidad que urbana
Relevancia del Tema: 6 Importancia para Autor: 8 Importancia para Usuario: 3

▣ poblacion rustica mayor necesidad que urbana 1 month, 1 week ago #65

Paul Gascoigne
Reputación: 6
Autoconfianza: 8
Confianza: 8

debido a que las personas que viven en la provincia de Zaragoza tienen mayores costes de desplazamiento que las que viven en Zaragoza ciudad

Report to moderator
REPLY

Relevancia Comentario: 6 Importancia para Autor: 8 Importancia para Usuario: 8

▣ Re: poblacion rustica mayor necesidad que urbana 1 month, 1 week ago #83

gobernado electrónicamente

Hay que buscar soluciones para dar cobertura a toda la población que vive en pueblos cercanos o en ciudades dormitorio en Zaragoza. Es indignante que sólo dispongan, en su gran mayoría, de un autobús con muchas restricciones en cuanto franja horaria se refiere

Report to moderator
REPLY

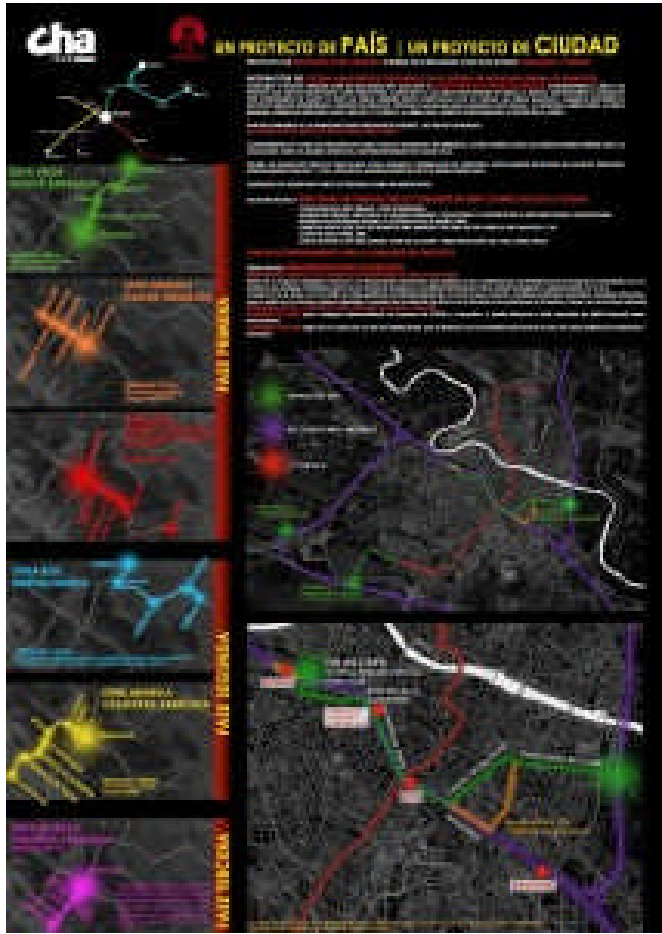
Relevancia Comentario: 4 Importancia para Autor: 0 Importancia para Usuario: 7

Topic region

Person region

Comment region

Selection of a mobility strategy for the city of Zaragoza





ECOLE
POLYTECHNIQUE
DE BRUXELLES

Panel COLLA & ICCGI Nice - July/2017

COLLABORATION 4.0

STRATEGIC ISSUES FOR MANAGING RESISTANCE TO CHANGE

Samia Ben Rajeb

COLLaeB - Collaborative Design in Architectural Engineering
University of Bruxelles _ AIA _ BATIR // // // // www.batir.ulb.ac.be

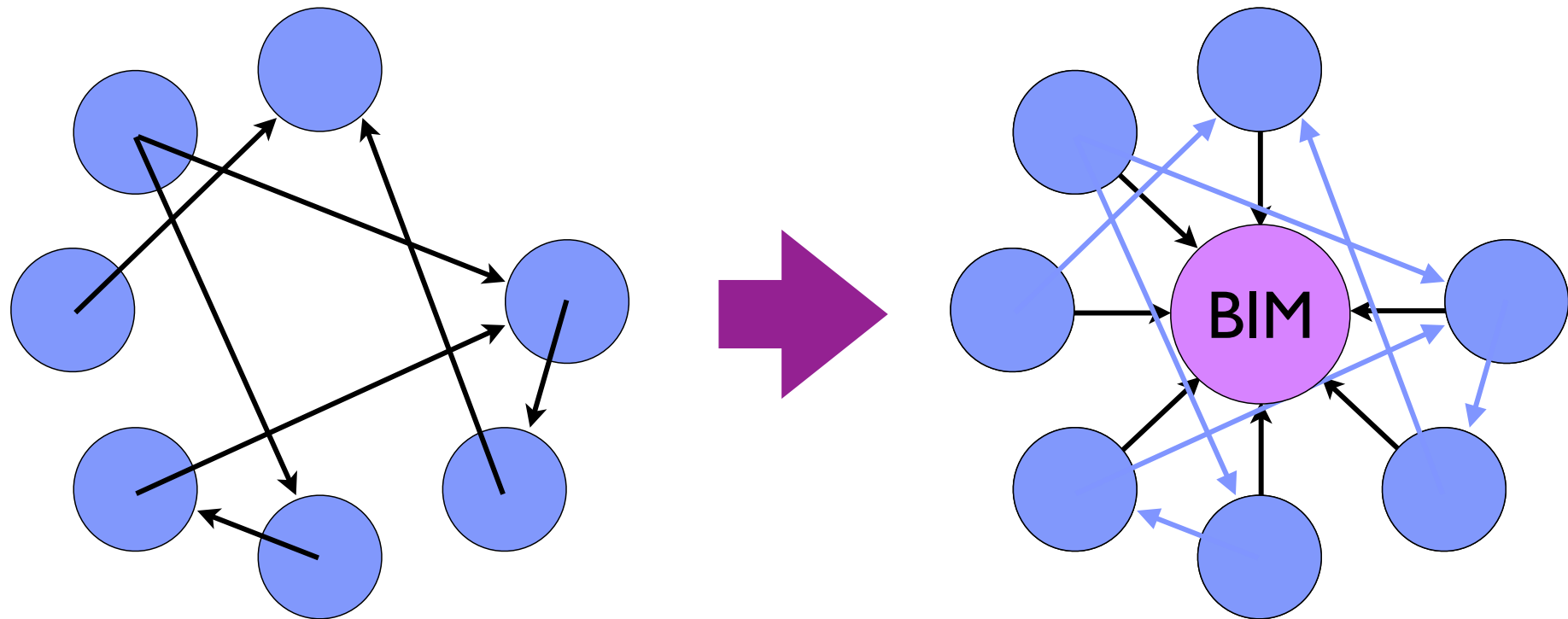


CONSTRUCTION 4.0 = BIM

BIM : Building Information M ? form Modeling to Management

Transformation of the work environment

- ▶ from a fragmented environment to ~~integrated~~ **overloaded** system



FROM MODELING TO MANAGEMENT

Work environment : disrupted and contradictory

Barriers to Change

- ▶ Inter-disciplinary gap
- ▶ Gap between the different realities according to the context : maturity of the actors, hierarchical levels, scope of the project, degree of involvement of the clients ...
- ▶ Gap in the maturity level of BIM
- ▶ Gap between the expectations and the perception of senior management and employees
- ▶ Gap according to the degree of involvement of the actors in the modeling

FROM MODELING TO MANAGEMENT

Work environment : disrupted and contradictory

Cooperation challenges > Exceed the current approach

► Today :

- exclusively technical and IT assistance
- towards a definition of a management plan to be applied by all for all
- with management of this new organization by consultants / commercial tool vendors, without reflexion about specificity of each company and its know-how

► And tomorrow ? ...

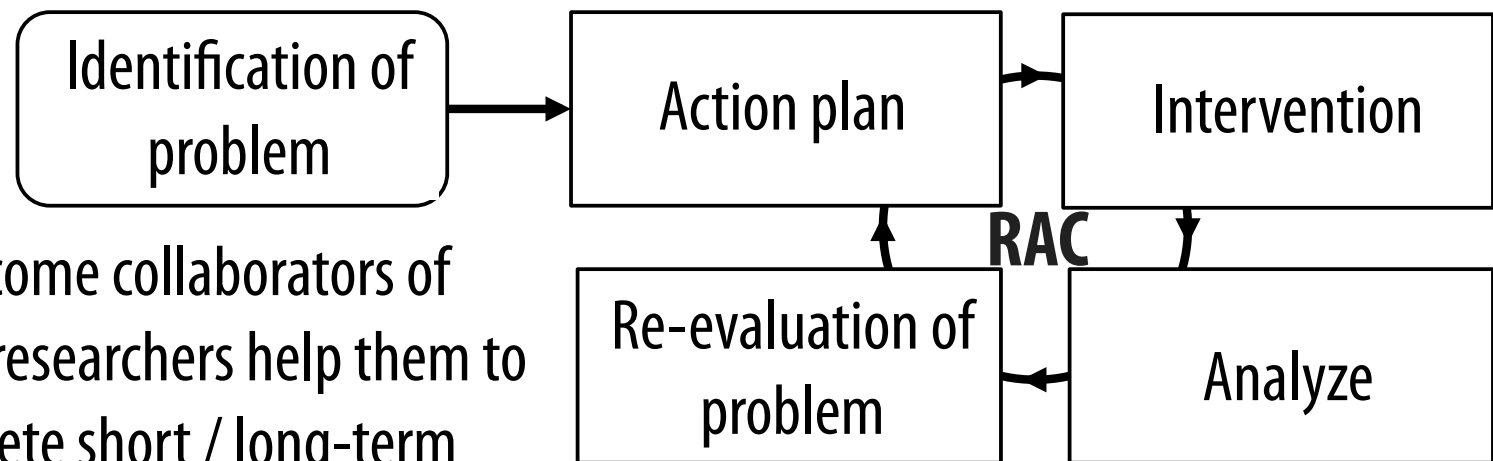
- Overcoming the trial / error approach
- Managing change with the need to specify a "governance plan" (Technology, Process, Organization)
- Involvement of the humanities and cognitive sciences (research)

FROM MODELING TO MANAGEMENT

Work environment : disrupted and contradictory

What is the role of the research today (the University)?

- ▶ Managing change to deal with contradictions and ensuring better cooperation > 1st action suggested : Collaborative Action Research
 - An approach inspired by the activity's theory & social sciences
 - Action at the center of the research process



- the actors become collaborators of research and researchers help them to think of concrete short / long-term strategies.

FROM MODELING TO MANAGEMENT

Work environment : disrupted and contradictory

For the construction of a cooperative strategy

- Implementation with 2 main aspects : between Organization & Production

Set up a collaborative strategies and methods to meet a production need



Develop a technical answers and protocols (with 2 scales : meta > unified or/and micro > dedicated) to implement a strategy

FROM MODELING TO MANAGEMENT

Central Issues

Questions related to the collaborative activity

- ▶ Flexibility vs. Rigor
 - Should the choice of tools used by the actors be free or imposed?
 - Do we have to homogenize everything: processes, nomenclatures, uses, tools, ...?
- ▶ Linear process vs Simultaneous process
 - Definition of actions and interoperability: who does what? when? in what format?
 - Definition of the territories of action of each one : who is responsible for what?
- ▶ Choices imposed by the designer vs Collective choices about a design
 - What is the action degree of designer ? What are the consequences in his way of working? What is the consensus to built with others?

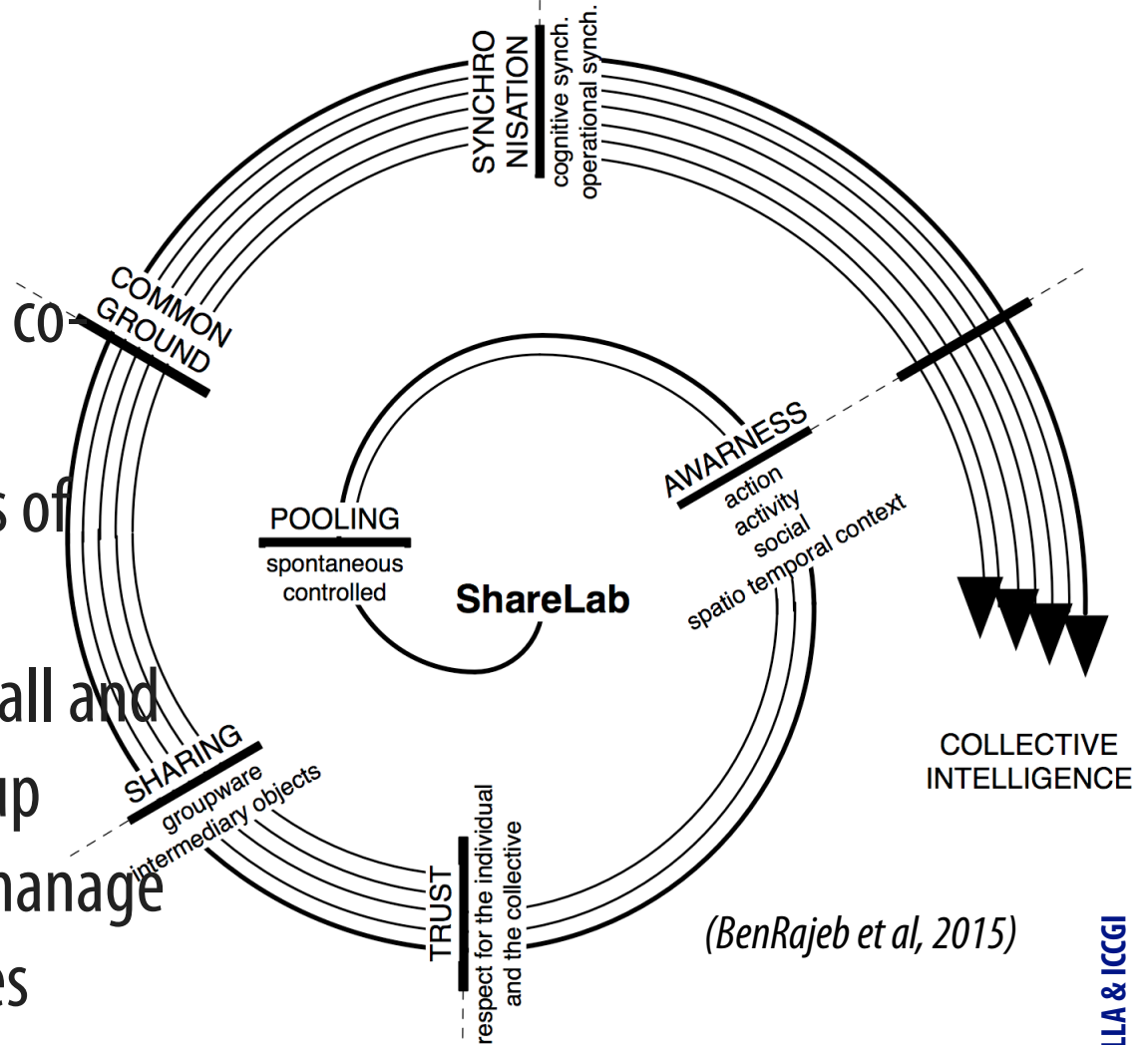
Questions related to the CAR : ethics, data, action, results

BUILDING OF COLLECTIVE INTELLIGENCE

Proposition : ShareLab Model

Principal aims

- ▶ to face the contradictions while co-building new meanings of the activity by the synergy of points of view
- ▶ to offer an exchanges space for all and to ensure a comprehensive group approach while helping them manage their specificities and differences
- ▶ to develop a shared understanding while encouraging reciprocal relationship of self/co-reflection, self/co-training, self/co-evolution with oneself & others



THANK YOU



Panel COLLA & ICCGI

27/07/2017

Samia Ben Rajeb

COLLaeB - Collaborative Design in Architectural Engineering

University of Bruxelles _ AIA _ BATIR // // // // www.batir.ulb.ac.be



PANEL "MOBILITY AND COOPERATION CHALLENGES"

COLLABORATION 4.0 : TECHNOLOGICAL CHALLENGES OR COLLECTIVE STRATEGIES ?

Prof. Samia Ben Rajeb COLLAEB-Batir University of Brussels Belgium
Prof. Pierre Leclercq LUCID University of Liège Belgium



INDUSTRY 4.0

Keynote Speaker of Monday morning

- Assist. Prof. Dr. Gil Goncalves
Instituto de Sistemas Robotica, University of Porto, Portugal
Enabling Personalised Production with Intelligent Manufacturing Environments



INDUSTRY 4.0 > CONSTRUCTION 4.0

Public policies since 2015 in Wallonia (Belgium)

- use of digital technologies to support the building sector
- including architects, engineers, contractors, urban authorities, building managers and users
- to improve design and construction processes inside companies and between partners : to efficiency **communicate** and to manage **cooperation** (BIM)



RESEARCH PROJECTS @ LUCID - ULG

Software prototypes for collaboration in architecture and construction

1) ACCEPT (Horizon 2020 project, European Union, 2015/2018)

- Assistant for quality Check during Construction Execution Processes for energy-efficient buildings



RESEARCH PROJECTS @ LUCID - ULG

Software prototypes for collaboration in architecture and construction

2) SpatioData (SPW WIST3 and SPW FSO, 2014/...)

- the Building Story Book



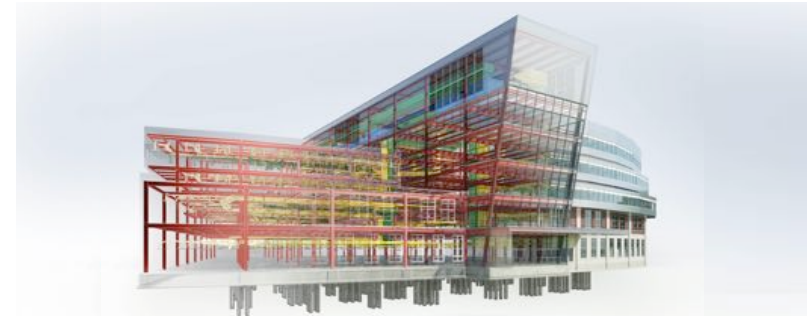
5

RESEARCH PROJECTS @ LUCID - ULG

Software prototypes for collaboration in architecture and construction

3) IsoM@nia & BIM applications (ULg - LUCID, 2010/...)

- BIM uses numerical models to represent the data related to the building and its performance objectives. This information is managed and coordinated by a collaborative process whose integration is yet to be concocted.



6

RESEARCH PROJECTS @ LUCID - ULG

Software prototypes for collaboration in architecture and construction

4) P@trimonia (WBI International, Government of Tunisian Republic, 2016/2017)

- Web-based management platform for geo-localized information valorizing architectural and immaterial heritages to a public audience on site.



7

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to discussion

1) Communication and network access conditions ?

- underground or dense built context (eg. : medina in P@trimonia)



8

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to discussion

2) Managing huge volume of data ?

- ▶ need of data visualization tools (from IoT to smartphones in SpatioData)



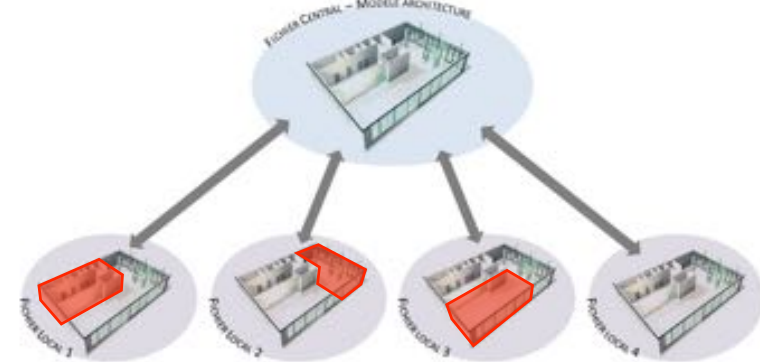
9

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to discussion

3) A/synchronous sharing of artifacts ?

- ▶ interoperability of data between skills (complementary building models in BIM)



10

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to discussion

4) Modeling real reality ?

- ▶ example of 3D scan of a site



11

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to discussion

5) Human aspects of CHI ?

- ▶ ergonomics and safety (smart glasses in ACCEPT project)



12

COLLABORATION 4.0 : TECHNICAL ISSUES

Research questions submitted to the discussion

1) Communication and network access conditions ?

- underground or dense built context

2) Managing huge volume of data ?

- need of data visualization tools (IoT and smartphones)

3) A/synchronous sharing of artifacts ?

- interoperability of data between skills (complementary building models in BIM)

4) Modeling real reality ?

- 3D scan of of a site

5) Human aspects of CHI ?

- ergonomomy and safety



13

THANK YOU - MERCI !

pierre.leclercq@ulg.ac.be

www.lucid.ulg.ac.be

