INTERORGANIZATIONAL SYSTEMS (IOS):

Transcend organizational boundaries

Require a high level of collaboration
Effective IOS Collaboration is not self-evident,

- Significant changes in business processes
- Groups emphasize their own objectives
A wealth of research on IOS collaboration

Few research has adopted an identity perspective in the examination of IOS
Identity is a powerful means to explain a range of social and organizational phenomena. A set of meanings that define who one is.
AT THE COLLECTIVE LEVEL

The set of meanings that define a group, an organization, or multiple groups interacting together

POWERFUL LENS TO UNDERSTAND INTERGROUP COLLABORATION

(Ibarra et al. 2014; Pittinsky 2010)
effective collaborative is bounded to the ability of groups to develop a collective identity
In the context of interorganizational system usage, how does the development of a collective identity unfolds?
RESEARCH METHOD
Architecture, Engineering and Construction (AEC) industry
BIM Technologies
Building information Modelling
BIM is a modeling technology and a set of associated processes that allow architects, designers, engineers, and builders to visually create, analyze, and share building models (Azhar 2011).
BIM REQUIRES TIGHT **COLLABORATION**
BETWEEN PROJECT PARTICIPANTS
THE FIELD

Quebec

Finland
DATA COLLECTION

the first round (March 2015 – October 2015),

UNDERSTAND THE CONTEXT

second round (September 2016 – December 2016),

HOW THE COLLECTIVE IDENTITY UNFOLDS?
DATA COLLECTION

Interviews recorded and transcribed verbatim,
Qualitative data analysis software
semi-structured interview
Open-ended questions

Québec 18

Finland 26

CIO ARCHITECTS
OWNERS PROJECT MANAGERS
CONTRACTORS BIM MANAGERS
<table>
<thead>
<tr>
<th>Round</th>
<th>Respondents</th>
<th>Finland</th>
<th>Canada</th>
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<tr>
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<td><strong>Owner</strong></td>
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<tr>
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<td><strong>Research and development professional</strong></td>
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<tr>
<td><strong>Sub-total</strong></td>
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**Total**  24  18

**Total interviews**  42
GROUNDDED THEORY

01.

2.

3.

SELECTIVE CODING

AXIAL CODING

OPEN CODING

01.
Research question in the context of IOS usage. How does the development of a collective identity unfolds?

Initial objective
Understand what comes into play within intergroup AEC projects

1st round interviews
Open coding
Constant comparison

2nd round interviews
Open coding and axial coding
Concept refinement and relationships

Selective coding
Abstract categories
Contextualize in the literature
FINDINGS
<table>
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<tr>
<th>Codes</th>
<th>Concepts</th>
<th>Categories</th>
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<td>Cooperation, common fate, shared goal, ambivalence, finger pointing, disassociation</td>
<td>Intergroup relational identity, Intergroup ambivalent identity</td>
<td>Collective identity</td>
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<tr>
<td>Goal orientation, shared information, collaboration, transparency, error reducing, communication, visualization, efficiency, realistic view</td>
<td>Visualizing, sharing, collaborating</td>
<td>IT affordances</td>
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<tr>
<td>Management support, vision leadership, innovation, risk, work change, motivation</td>
<td>Management practices, innovativeness, incentives, process change, risk sharing</td>
<td>Organizational infrastructure</td>
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<tr>
<td>BIM coordinator tasks, coordination, alliance, partnership, DB and DBB models, BIM interoperability</td>
<td>IT boundary object, boundary spanners, boundary practices, contractual structure</td>
<td>Interorganizational infrastructure</td>
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</tbody>
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ORGANIZATIONAL INFRASTRUCTURE
1. MANAGEMENT PRACTICES
2. INNOVATIVENESS
3. RISK SHARING
4. INCENTIVES
5. PROCESS CHANGE
“It is not only a question of technologies, it is also a question of work processes, team building and integration, the buy-in and so on. Here, upper management has to..., it is even crucial, necessary, and a prerequisite, they have to buy these concepts, know and understand them, and make sure everyone else in the chain adopts, implements and uses them”.

[In our company] we innovate, we always look for the world best practices...
I do not want to take your risk; I do not want to play with your stuff. I do not want you to play with my stuff."

“…you turn around, and you say to the project management team and the consultants, the architects and engineers: “there is a problem with the model, it is your job to solve it. I am not saying it is your fault, I am saying there is a problem.”
you have to change the way you work, it

“I look at best projects, for example what [this company] has been doing; I think it is a perfect model showing how to motivate people [business partners] to change because there is a clear financial incentive for people to collaborate, and then they start doing it”.

PROCESS CHANGE

INCENTIVES
INTER-ORGANIZATIONAL INFRASTRUCTURE
1. Contractual Structure,
2. IT Boundary Object,
3. Boundary Spanners,
4. Boundary Practices
“To make [BIM] works, you need to collaborate between the various parties, and as long as the contract will say ‘Don’t cross that line because it’s at your own risk’, it’s not going to happen”.

“The lowest bidder model kills BIM, literally [...]. It is anti-quality, anti-BIM. We all know how the projects that use lowest bidder model end. Regulation has to change”.

**CONTRACTUAL STRUCTURE, (DB – DBB)**
“The tool that the architect uses to make his models, the tool that the mechanical engineer or the structural engineer uses are in different platforms. we are not all at the same version. And, that’s difficult.”

THEY created national BIM guidance for the all parties so we have some kind of general or common guidelines.
BOUNDARY SPANNERS — BOUNDARY PRACTICES

“The BIM coordinator is the person who has the lead on BIM, his role is to make sure that everyone has the same understanding of the project, its objectives, the use, the requirements and that the strategies in place are good [...] He’s like a conductor of orchestra, his role is to identify and overcome problems of communication and coordination.”

1. Externals: Association, Government agencies
2. Internal: BIM COORDINATOR
3. Position in the team

[Levina and Vaast 2005; Star and Griesemer 1989]
AFFORDANCES
“In design, [the tool] allows us to create reference models, 3D models...it incorporates aspects of different disciplines within one model...

We’re building some extensions to the metro line, so several companies are involved, and different companies are building different stations. So, [through BIM], you are sharing data, you are sharing plans, there is lots going on.”

The players are on the ice at the same time, working together as a team.”
COLLECTIVE IDENTITY
COLLECTIVE IDENTITY

Intergroup relational identity

Intergroup ambivalent identity
Intergroup relational identity

Define a group in terms of its relationship with other groups.

Collaboration as a key component
This [university project] is a kind of a heart transplant operation; it requires a circulation of blood outside the body for some time. So the campus is the heart, and this blood that is circulating is the same for everybody: the architects the engineers and so on. This is what unites us”.

“There are always some groups that don’t want go for it. The problem with this, is that you have a wheel that does not turn, or one that turns ‘square’: it blocks all the others.”
CONCLUSION
Theoretical implication

Identifies affordances that are particularly beneficial to the development of an IRI

Integrative model on the relationship between IT, identity, and intergroup Collaboration.
AT THE INSTITUTIONAL LEVEL,

• Project a clear vision about integrating BIM for state projects
• BIM use is mandatory
• Create a nationwide roadmap
• Develop guidelines
• Stimulate innovation
• Adapt the incentives
• Fund rallying projects.
AT THE INDUSTRY LEVEL,

- Developing a boundary-spanning leadership coalition
- Ignite the process of transforming organizations’ self-interests into a collective interest
AT THE INTERORGANIZATIONAL LEVEL,

- Interoperability issues
- Leveraging the role of boundary spanners, such as the BIM manager
- Contractual structure: DDB > DB
AT THE ORGANIZATIONAL LEVEL,

Innovativeness, management practices, the need for process changes, and incentives
Thanks