Supporting innovation in the periphery: the role of support organizations in the maritime industry of Quebec's coastal region

Yannik MELANÇON
Ph. D. Candidate
UQAR

Thesis Director: David DOLOREUX, University of Ottawa
Co-director: Danielle LAFONTAINE, UQAR

Research goal and research questions

- This paper seeks to improve our understanding of the roles and contributions to regional learning and innovation of a specific regional innovation support system.

- Building on the case study of Quebec's coastal region maritime industry, it seeks to answer the following questions:

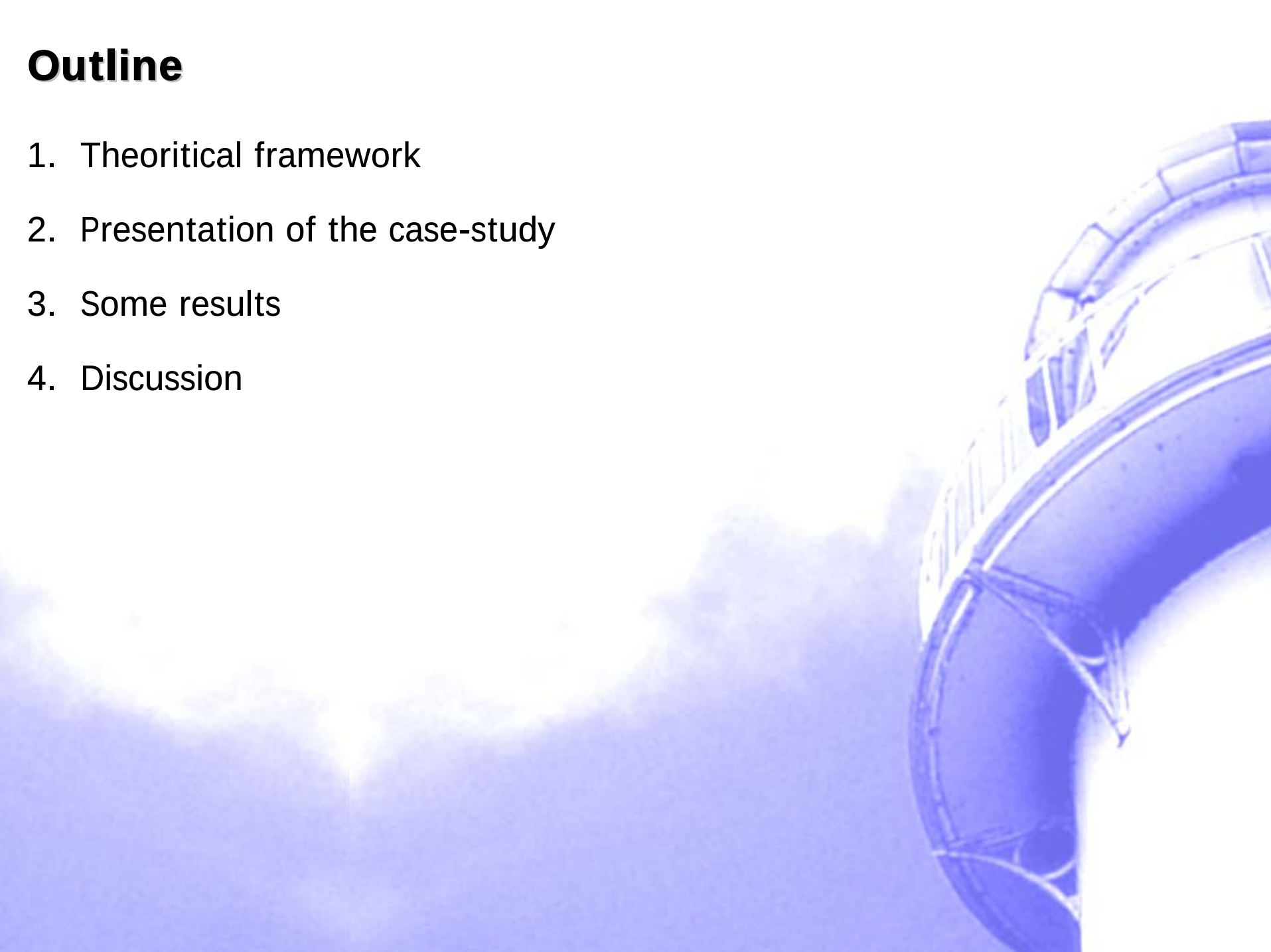
1. What characterizes the regional innovation support system in Quebec's coastal maritime industry?

2. What are the services provided and how do they relate to innovation?

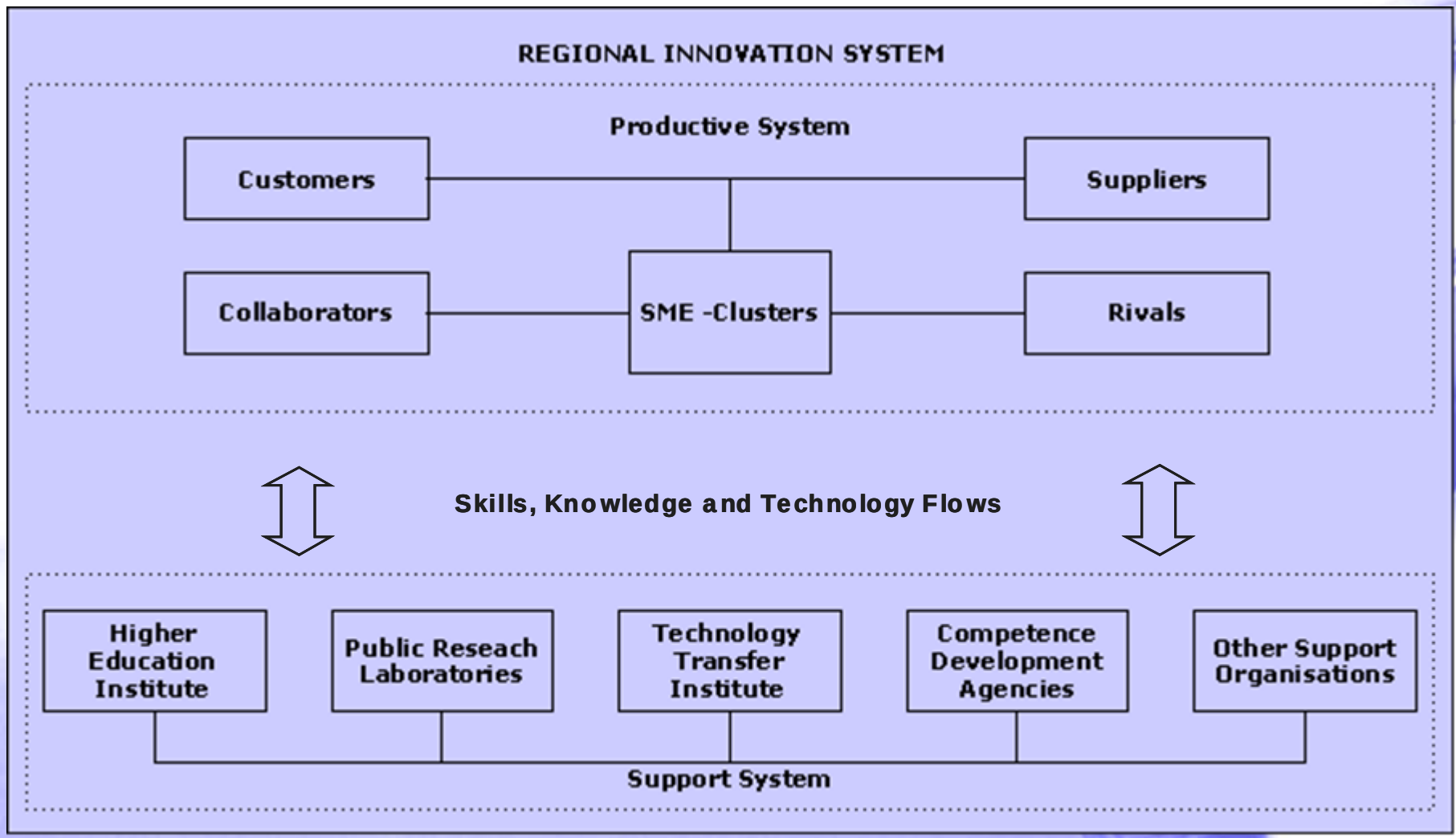
3. What are the roles of the support system within the regional innovation system? How can a support system contribute to innovation development in the periphery?

Outline

1. Theoritical framework
2. Presentation of the case-study
3. Some results
4. Discussion



1. Theoretical framework: *Regional innovation system*



Adapted from Trippl and Tödtling (2006), Cooke et al. (2000) and Autio (1998)

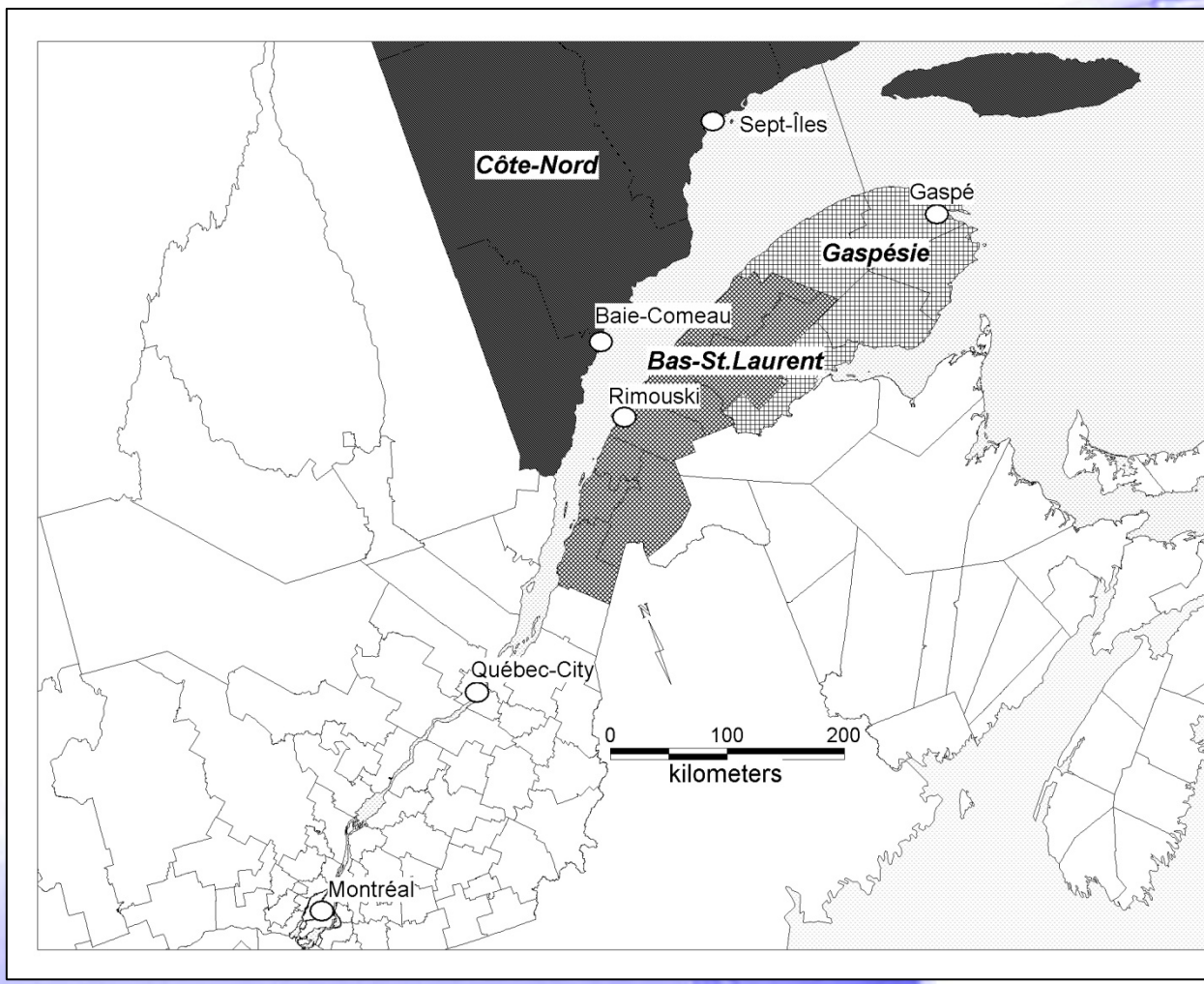
1. Theoretical framework: *Support in the periphery*

- Two obstacles are more frequently encountered in peripheral regions (Tödtling & Trippl, 2005; Isaksen, 2001)
  - **Organizational and institutional thinness,** which relates to a setting in which the low development of clusters and a weak innovation support system bring fewer possibilities of interactive learning.
  - **Technological and institutional lock-in**, which relates to the presence of mature and low tech industries evolving in context where technological transfer organizations, if they exist, are seldom used.
- Different propositions are put forward in the RIS literature to explain how the support system can help overcome these obstacles:
  - Increased regional engagement of the support organization (Benneworth and Dawley, 2005);
  - Addition of components to the support system (Tödtling and Trippl, 2005);
  - Emphasis on the development of extra-regional networks (Lagendijk and Lorenzen, 2007).

2. Case study: *Quebec's coastal region (QCR)*

Quebec's Coastal Region

- 450 000 km^2
- 3600 km of coastline
- 400 000 inhabitants
- 5% of Quebec's population
- No city of more than 43 000 inhabitants.



2. Case study: *QCR maritime industry*

- Since 1998, actions strategies have been put forward to foster the emergence of a cluster grouping enterprises of six sectors forming the maritime industry.

INDUSTRY	FIRMS	EMPLOYEES
Fish and seafood product preparation	46	3800
Fishing	112	3500
Shipbuilding	20	650
Aquaculture	23	150
Marine Science and technology	18	140
Marine biotechnology	5	90
TOTAL	***241***	***8500***

- While there are big firms in fishing, fish and seafood product preparation and shipbuilding, there are no no big, international, anchor corporation and the majority of firms are SMEs.

- Overall, the maritime industry is weakly innovative and mainly serves local markets (Doloreux, 2008).

2. Case study: *Composition of the support system*

Higher Education Institutes			
UQAR	1969	700	Comprehensive university offering training in fields relating to the maritime industry such as logistics, biology, …
IMQ	1944	175	College level training and continuous education in navigation, shipbuilding, diving, logistics and transportation
ÉPAQ	1948	60	College and high school technical training in aquaculture, fishing, marine mechanics and sea product processing
Public Research Institutes			
ISMER	1979	100	University research & graduate training devoted to the advancement of knowledge of coastal environments
IML	1987	400	Federal research institute in ocean, fisheries, environmental science, fish habitat management and hydrography
Technology transfer organizations			
CRBM	2004	36	Applied research center in biotechnology seeking novel ways to exploit cold water marine resources
MI	2001	30	TTO operating in marine safety, port management, underwater interventions and navigation/ Spin-off from IMQ
Halieutec	1983	22	TTO with expertise in marine resource harvesting, sea product processing and aquaculture/ Spin-off from EPAQ
CAM	1992	20	Provincial research station with expertise in mollusk biology
STMIM	1980	15	Provincial research station with expertise in mollusk biology and aquaculture
CTPA	1969	14	Provincial research station with expertise in under-exploited marine species and marine byproducts
CIDCO	2002	8	TTO operating in marine geospatial data acquisition, management and representation
CATE	2003	6	TTO with expertise in mechanical engineering for the fishing industry
CACN	2005	4	Applied research center dedicated to the development of Aquaculture within the North-Coast Region
Competence development agencies			
CSMOPM	1997	7	Parity committee offering competence development activities for the fishing /fish and product preparation industry
Other organizations			
SODIM	1997	7	Public regional venture capital fund serving the aquaculture industry
TMQ	1999	3	Business network seeking to create a stimulating environment for the maritime cluster
RMQ	1999	1	Mollusks breeders association

2. Case study: *Research methodology*

- In this research our key informants have been the CEO or the senior manager of the organizations forming the core of the support system.
- Out of the 18 organizations forming the regional innovation support system, 14 completed each part of the research.
- The first part involved a quantitative questionnaire used to obtain basic organizational data as well as to identify key support activities supplied.
- The second part involved semi-structured interviews in which the role of the organization within the support system was addressed.

3. Results: *Support activities offered*

Component	Type	Main (++) and secondary (+) type of support activities offered				
		Diffusion of information	Technological advices and RD support	Competence development	Financing support	Business advices
IMQ	HEI	+	+	++		
ISMER	PRI		+	+		
CACN	TTO	+	++	+	+	
CAM	TTO	+	++	+		
CATE	TTO		++		+	
CIDCO	TTO		++	+		
CRBM	TTO	+	++			
CTPA	TTO	+	++			
Halieutec	TTO	++	++	+	+	
STMIM	TTO	+	++			
CSMOPM	CD	++		++		
SODIM	Other	++	+		++	++
RMQ	Other	++				+
TMQ	Other	++			+	+

3. Results: *Roles of support organizations within the RIS*

1. Sustain the development of existing maritime sectors.
   - In mature and traditional sectors, support organizations help firms overcome the structural challenges they are facing (diminishing stock of deep sea fishes, increased international competition).
   - To do so, support organizations:
     - offer applied services seeking to improve the firms' operational performance by reducing their production costs;
     - promote growth opportunities existing in the maritime sector, and offer the supervision firms need to benefit from these opportunities.

3. Results: *Roles of support organizations within the RIS*

2. Foster the development of new maritime activities
   - During the last decade, to renew the maritime industry, public authorities have decided to stimulate the development of the marine science and technology sector.
   - Given that there was no manufacturing tradition in this sector but a rich institutional tradition, the policy makers' strategy was to focus on creating support organizations (mainly TTO) to establish new links within the regional innovation system.
   - Those TTO mainly offers R-D support and technical advices aim at helping enterprises develop new and highly innovative products.

3. Results: *Roles of support organizations within the RIS*

3. Improve regional knowledge-based assets
   - The support system plays a fundamental role in defining the innovation system's capacity to generate new knowledge and regional innovations.
   - The support offered aims at favoring the emergence of conditions necessary for industrial development (qualified labor, risk capital, fundamental research); and at supporting industrial development, and entrepreneurship.

3. Results: *How are those role fulfilled?*

- There is a demand problem
  - Despite their dynamism, support organizations serving Quebec coastal region maritime industry experience difficulties in encouraging enterprises of mature and traditional sectors to fully benefit from the services available at the regional level.
  - The regional demand for services geared towards the development of technology oriented sectors is almost absent and support organization have to to seek clients outside the region, which creates a delocalized impact of RD activities.

- On the supply side, it's nearly impossible for all the required expertise to be regionally available
  - The maritime industry is very diverse, and the support organizations are specialized in a few knowledge domains, as such, they rarely have all the required resources to fulfill firms' demands.
  - To compensate, innovation support organizations have to act as 'bridges' that facilitate external complementary knowledge sources to be reached by both private and public organizations.

4. Discussion: *Regarding organizational thinness…*

- Organizational thinness is not a key feature of the maritime innovation support system, while it could be considered a feature of the productive system, at least in certain maritime sectors.
- Considering the number of maritime enterprises, it is difficult to portray a support system that counts 18 organizations employing 1500 people as organizationally thin.
- We can claim that, in order to be validated, the criteria linked to the idea of a critical mass, or to a density of actors and linkages, must be appreciated according to the size of a given area and not, in an implicit manner, by using the yardstick of urban or metropolitan standards.

4. Discussion: *Regarding regional engagement*

- We have not observed an increased regional engagement of the support organizations in the maritime industry of Quebec's coastal region.
- These support organizations are mostly active in their respective domains of expertise. To be sure, we can observe that some support organizations go beyond their respective mandates, but they are few. Examples of these are mostly limited to networking and information diffusion.
- In this regard, our results are similar to those of Tödtling et Trippl (2005) et Lagendijk et Lorenzen (2007), who suggest that to compensate for the inherent limits of regional knowledge, support organizations in peripheral regions must help regional enterprises access knowledge, skills, and technology needed for their innovation activities. ... But, the same applies for all dynamic RIS, regardless of their knowledge base (Asheim et al., 2007), of their industrial specialization (Doloreux 2004), or of the type of region or cluster to which they belong (Wolfe and Gertler, 2004).

Thank you!