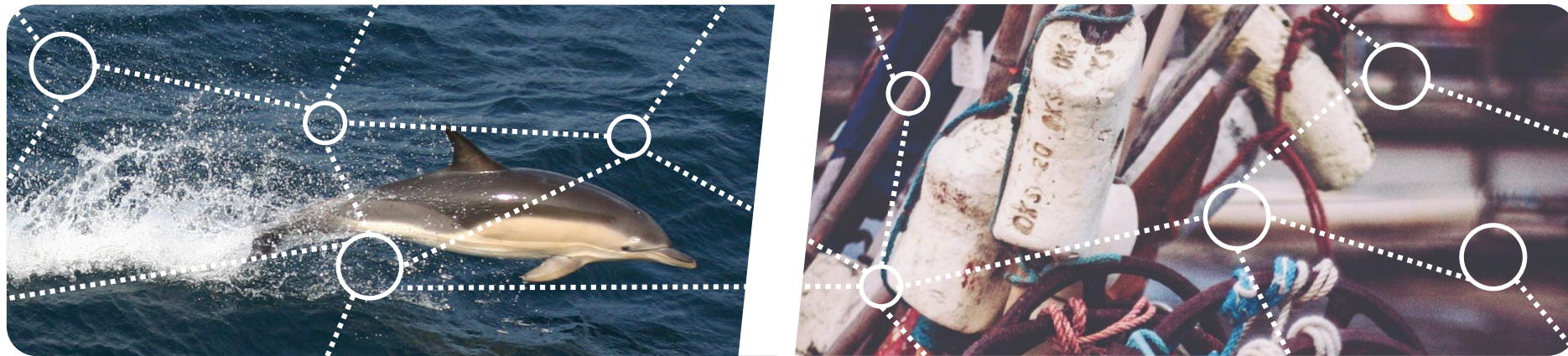


Co-constructing a shared vision of marine territories using serious games

ICES Annual Science Conference, Fort Lauderdale, September 18th - 21st 2017



Alice Lapijover¹, Nicolas Becu¹, Henri Deysson¹, Vincent Ridoux^{2,3}

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OBSERVING GAMES TO IMPROVE THE MODELLING OF SOCIO-ECOLOGICAL SYSTEMS

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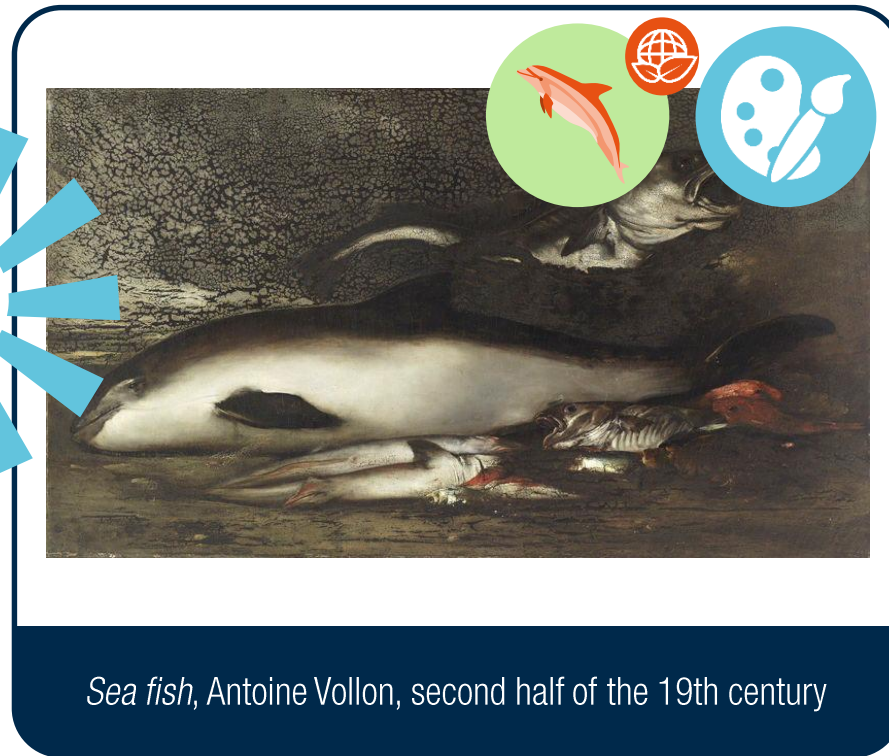


GAMES' AIM: DEPICTING STAKEHOLDERS' POINTS OF VIEW ON SPATIAL INTERACTIONS BETWEEN FISHERIES AND SMALL CETACEANS

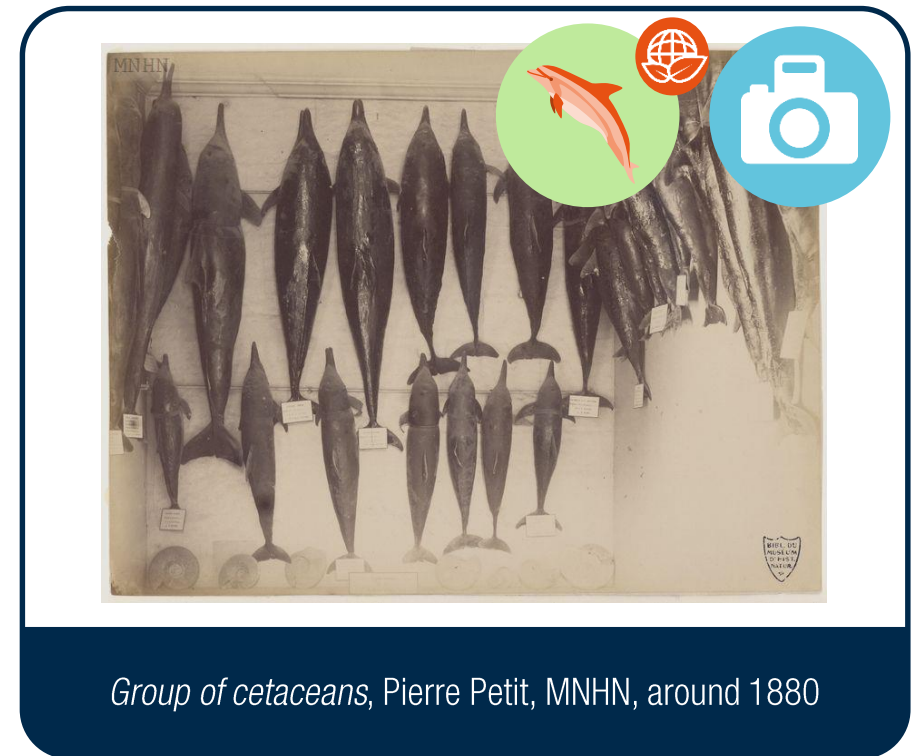
SMALL CETACEANS THROUGH STAKEHOLDERS' LENSE



Different points of view
on small cetacean

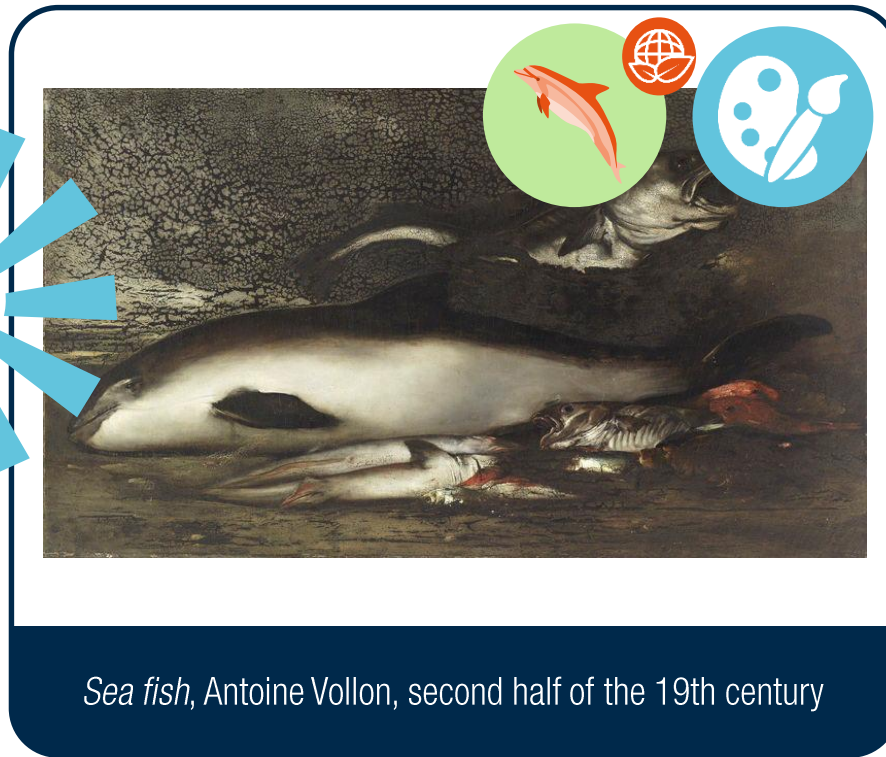


Sea fish, Antoine Vollon, second half of the 19th century



Group of cetaceans, Pierre Petit, MNHN, around 1880

SMALL CETACEANS THROUGH STAKEHOLDERS' LENSE

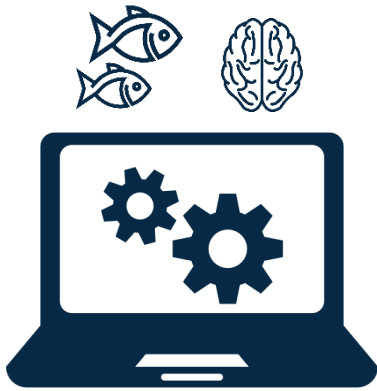


Small cetaceans can be subject to multiple uses and roles:

- Food
- Scientific studies
- Ecosystem
- Heritage value
- ...

DEPENDING ON STAKEHOLDERS' POINTS OF VIEW, THE REPRESENTATION OF SMALL CETACEANS MAY DIFFER.

FROM RESSOURCE TO BEHAVIOR MODELLING: REPRESENTING COMPLEX SYSTEMS

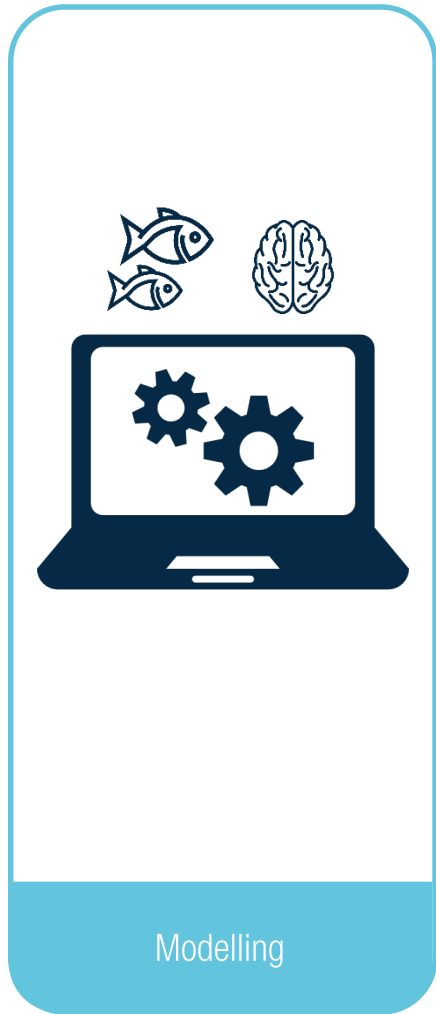


Modelling

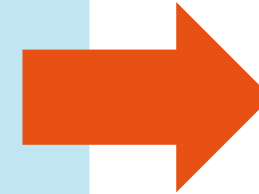


- Description or explanation of complex systems
- Predictive scenarios
- Facilitation of scientific interdisciplinarity
- Interface between science and management
- Support of decision making

FROM RESSOURCE TO BEHAVIOR MODELLING: REPRESENTING COMPLEX SYSTEMS



- Description or explanation of complex systems
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Challenge to overcome



How to integrate the **social dimension** into resource management models ?

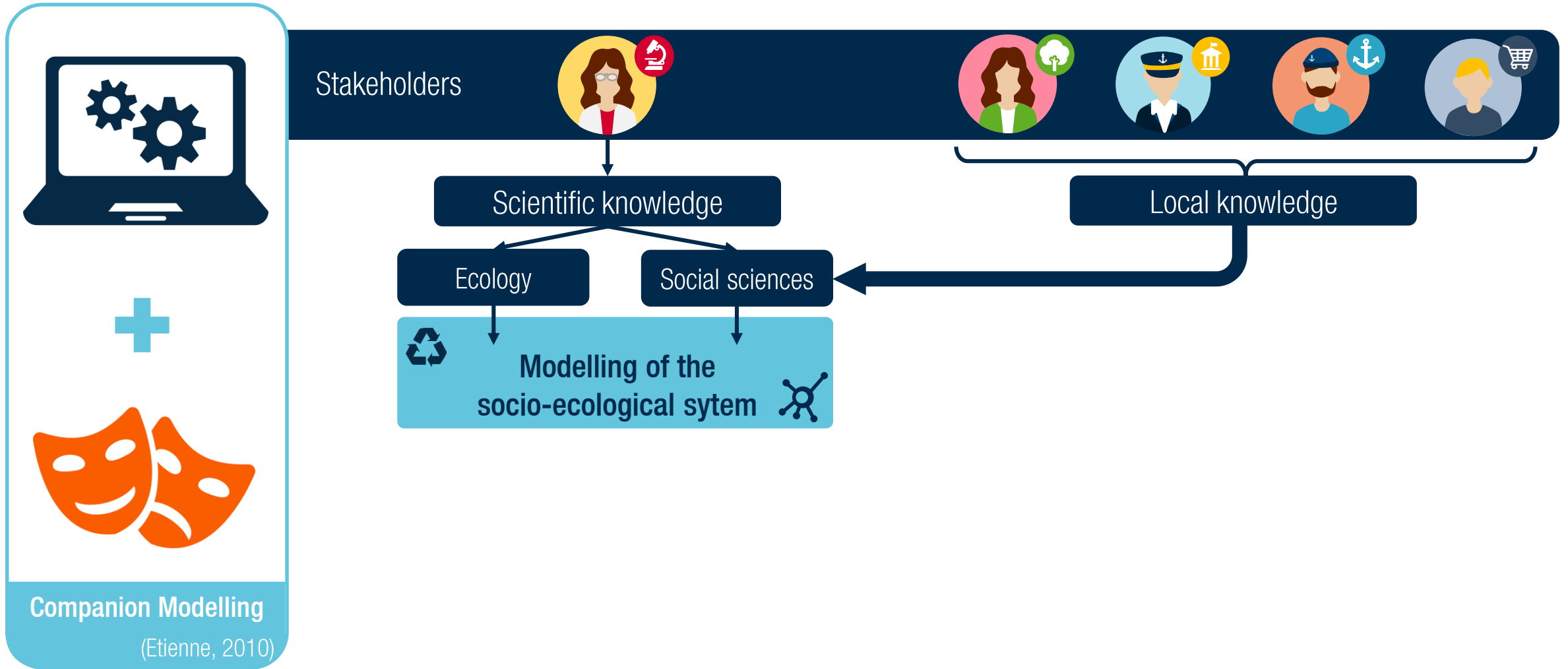
ASSOCIATING MODELS WITH ROLEPLAY HELPS INTEGRATING DIFFERENT POINTS OF VIEW



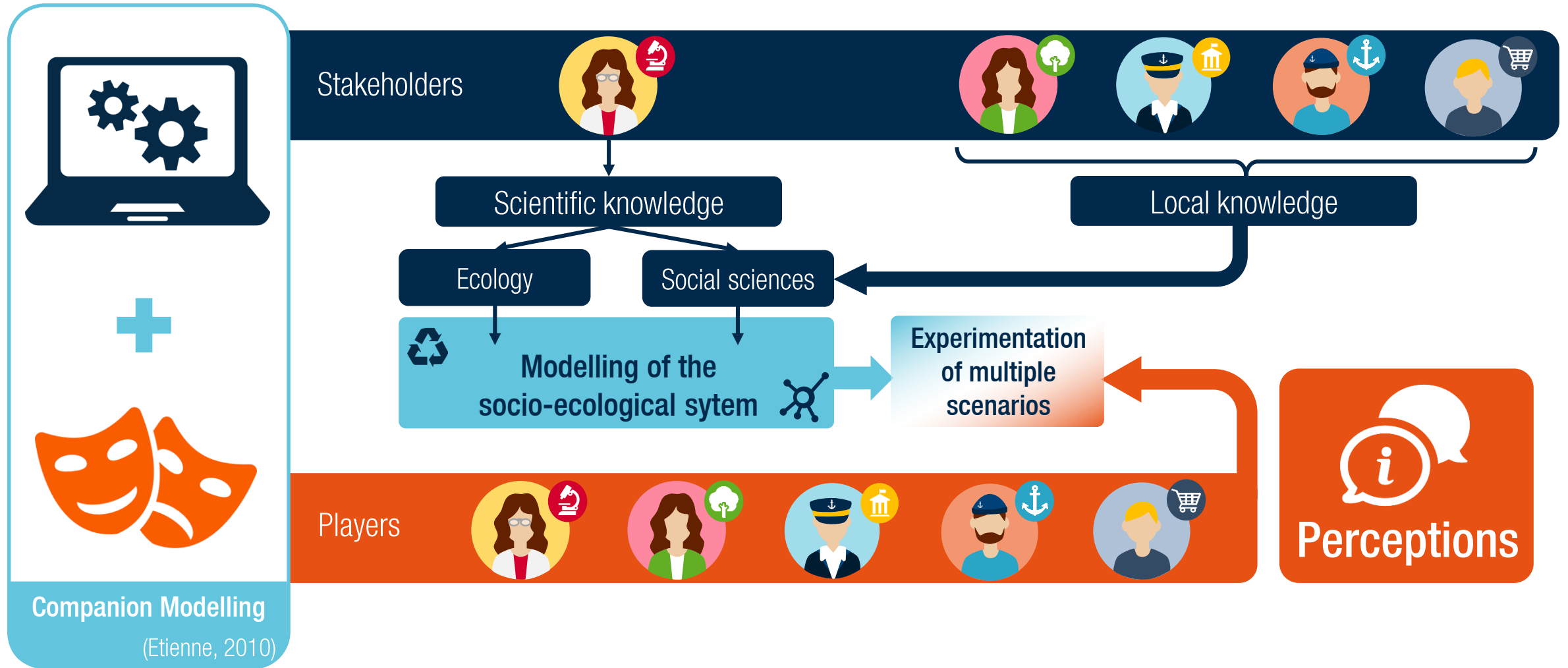
Companion Modelling

(Etienne, 2010)

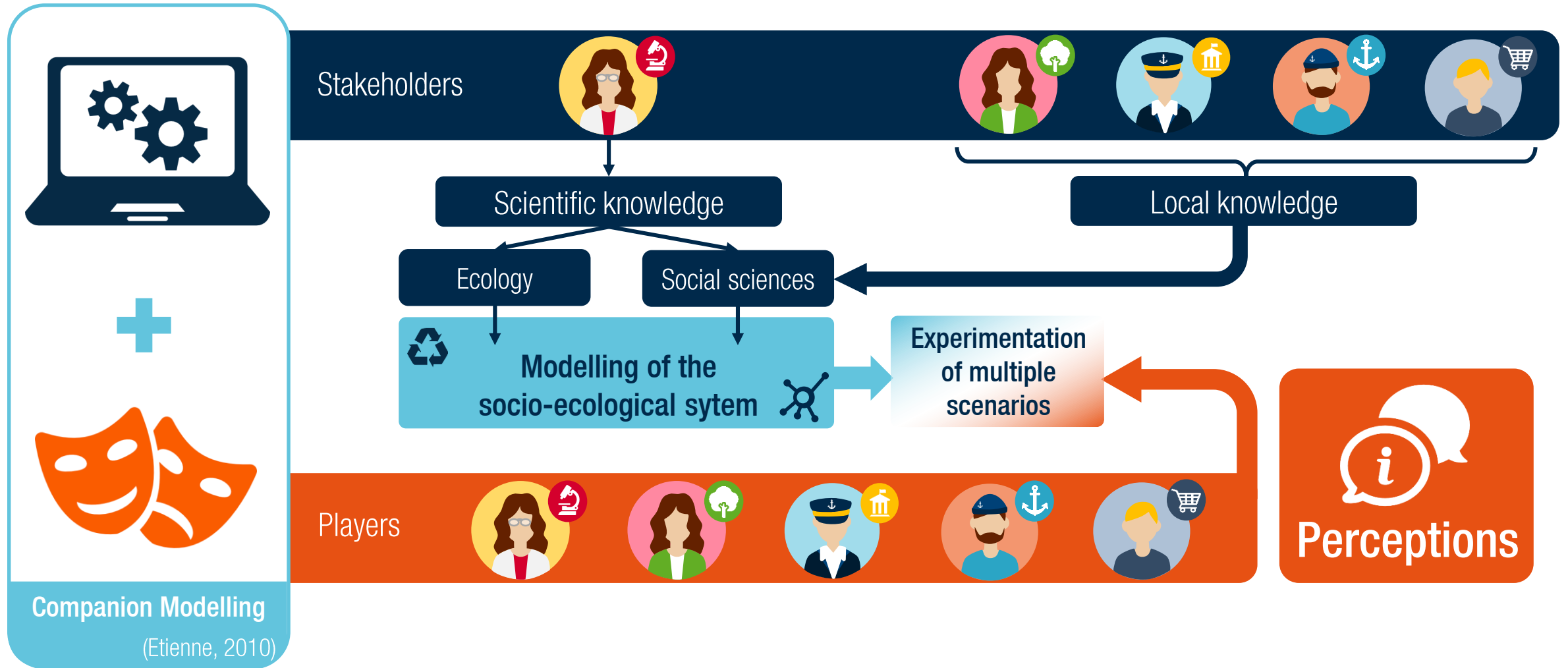
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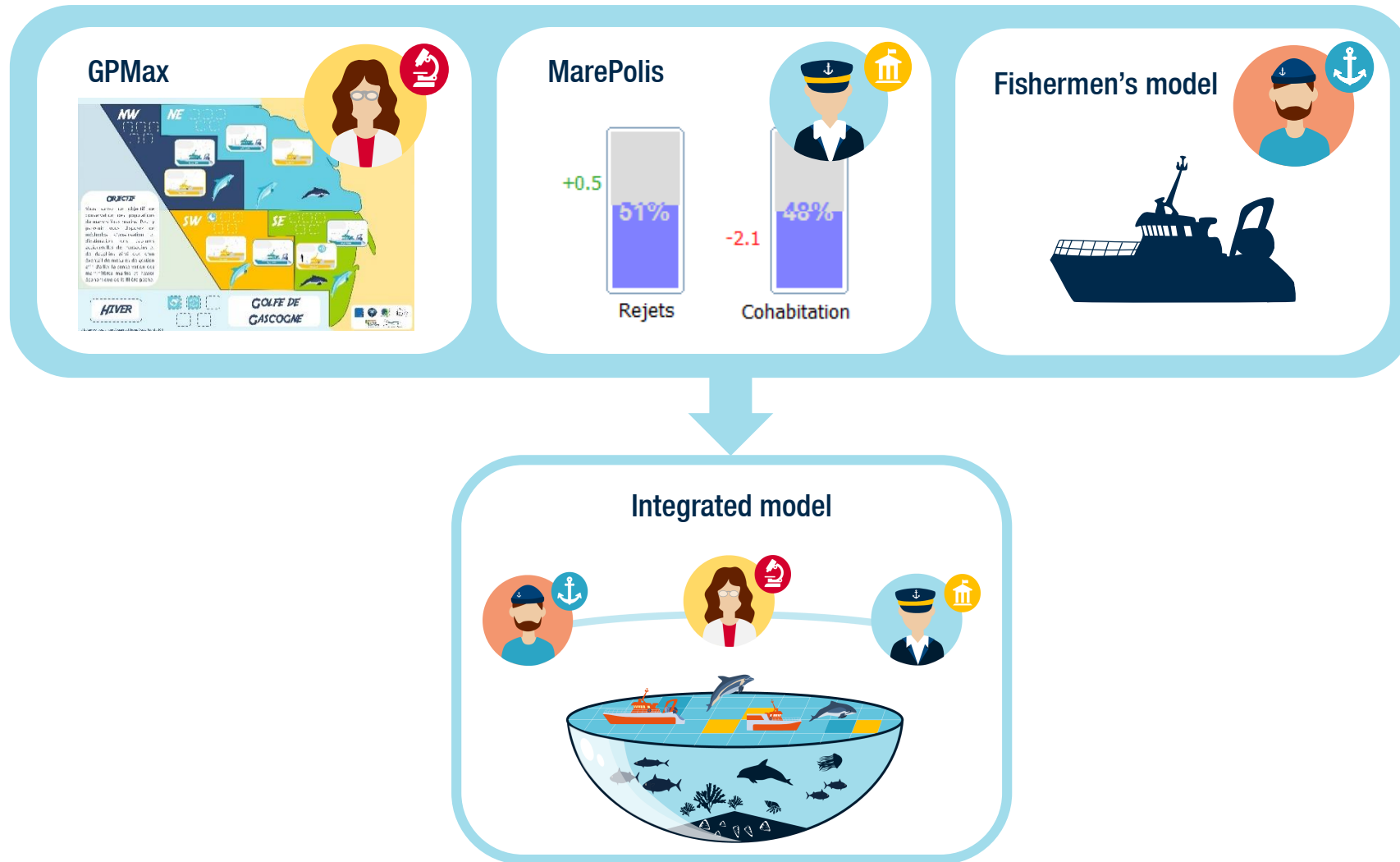


ASSOCIATING MODELS WITH ROLEPLAY HELPS INTEGRATING DIFFERENT POINTS OF VIEW



IN THIS CASE, THE MODEL RELYING ON MULTIPLE KNOWLEDGE SOURCES ACTS AS AN INTERFACE TO FACILITATE DISCUSSIONS AMONG STAKEHOLDERS AND TO GET ACCESS TO THEIR PERCEPTIONS.

EXPERIMENTING POINTS OF VIEW WITH THE INTERACTIVE EXPERIMENTATION PLATFORM



HOW DO STAKEHOLDERS PERCEIVE AND DEPICT THE MARINE SOCIO-ECOLOGICAL SYSTEM?

ITERATIVE PROCESS OF THE INTERACTIVE EXPERIMENTATION PLATFORM

Interactive
Experimentation
Platform

Data



Interviews



Observations



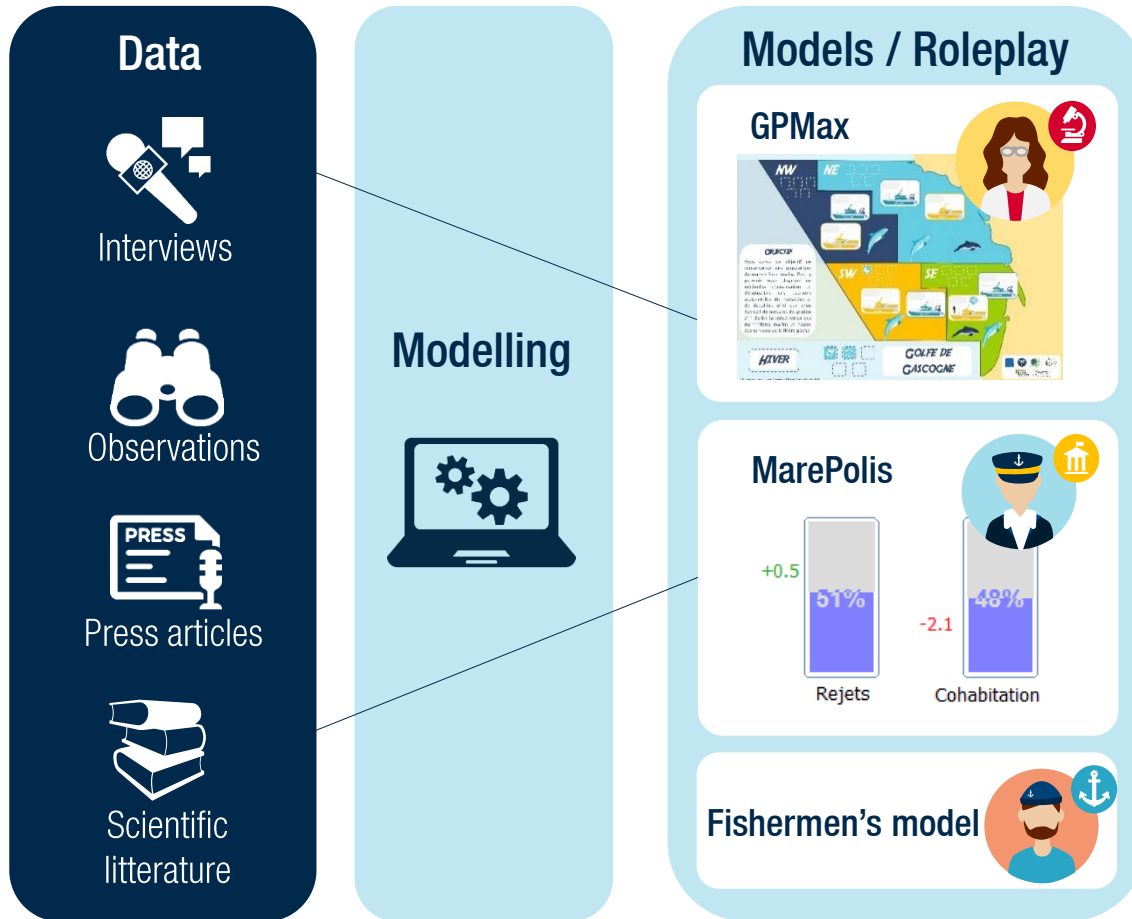
Press articles



Scientific
literature

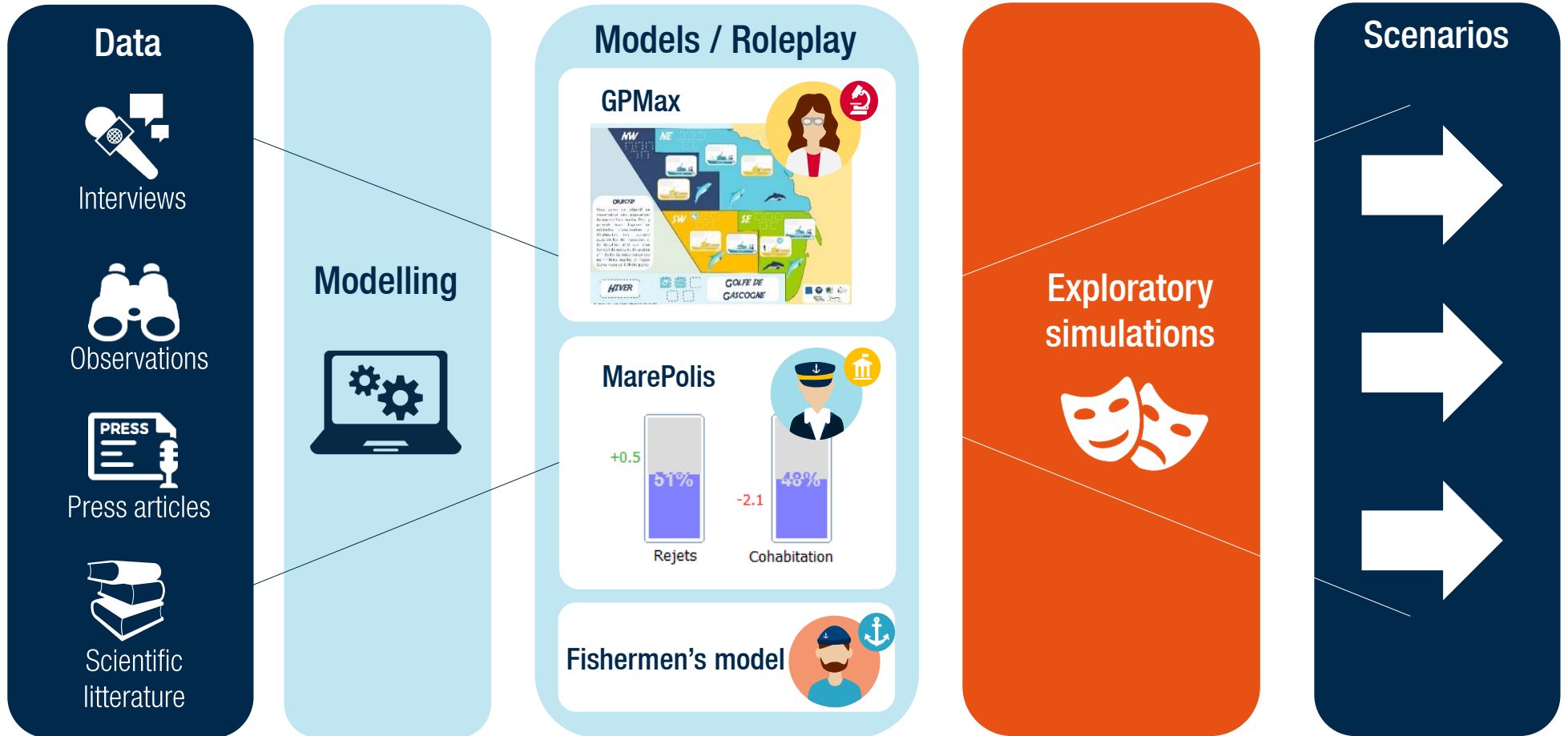
ITERATIVE PROCESS OF THE INTERACTIVE EXPERIMENTATION PLATFORM

Interactive Experimentation Platform



ITERATIVE PROCESS OF THE INTERACTIVE EXPERIMENTATION PLATFORM

Interactive Experimentation Platform



ITERATIVE PROCESS OF THE INTERACTIVE EXPERIMENTATION PLATFORM

Interactive Experimentation Platform

Modification of the initial context

Data



Interviews



Observations



Press articles



Scientific literature

Modelling



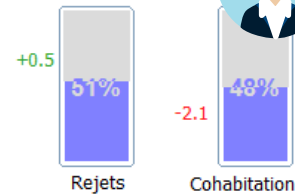
Improvement of modelling

Models / Roleplay

GPMax



MarePolis



Fishermen's model



Exploratory simulations



Scenarios



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Interactive Experimentation Platform

Modification of the initial context

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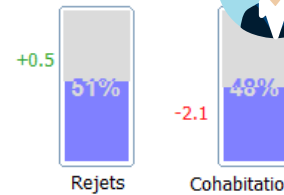
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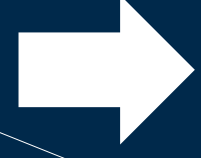
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Exploratory simulations

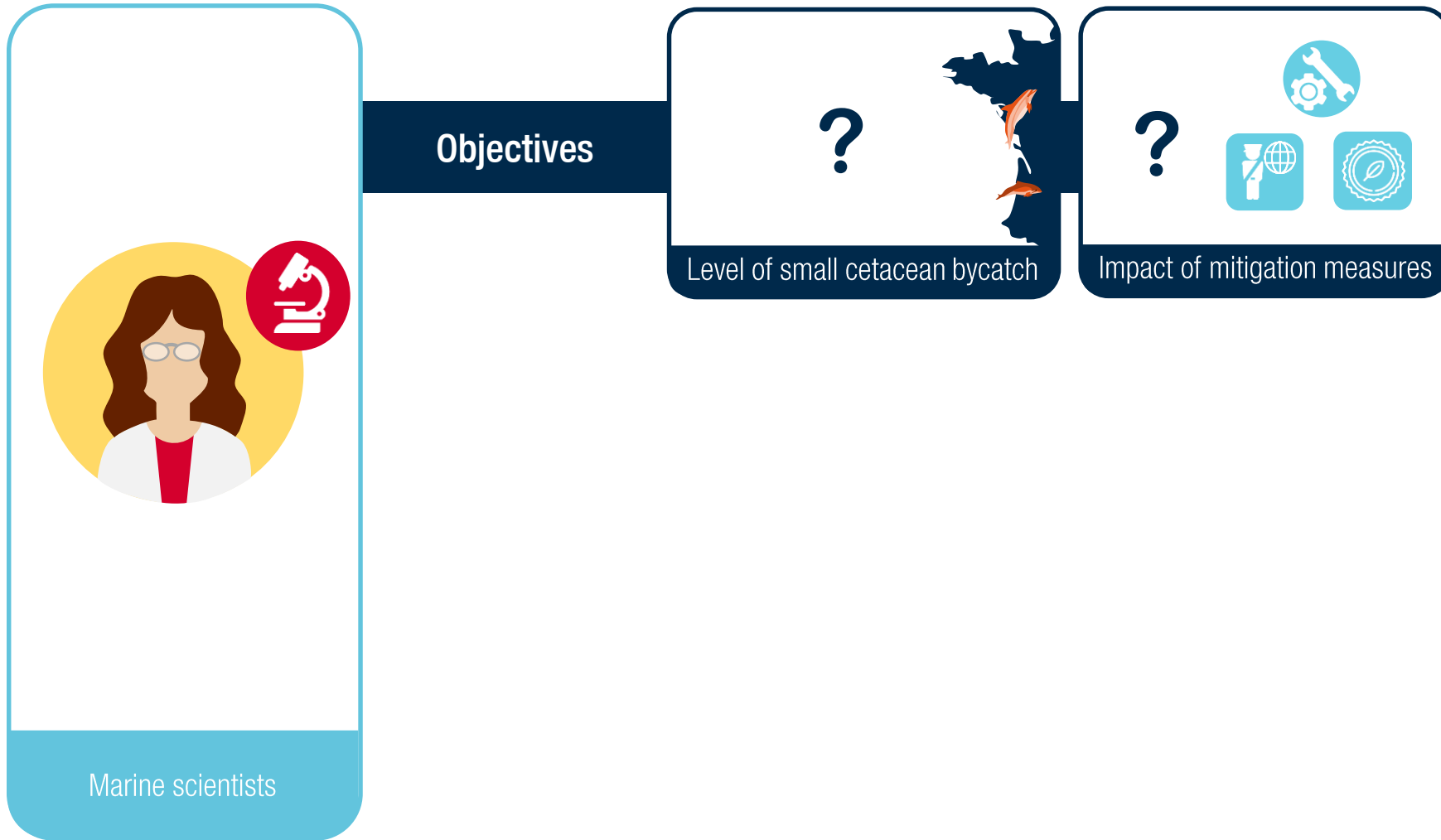


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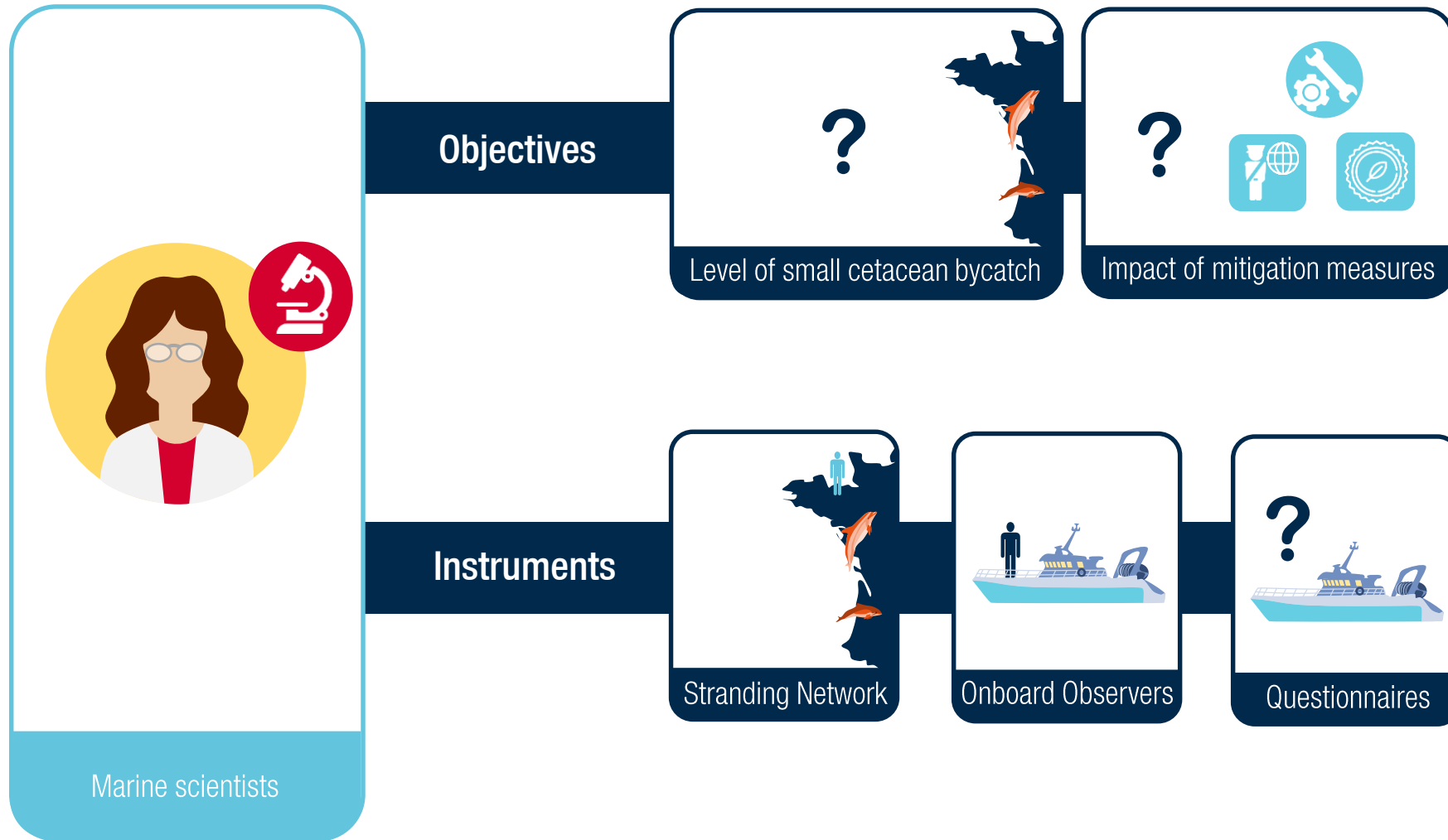


THE AIM OF THE INTERACTIVE EXPERIMENTATION PLATFORM TO SUPPORT STAKEHOLDERS IN CO-CONSTRUCTING A SHARED VISION OF MARINE TERRITORIES BY CLARIFYING THEIR REPRESENTATIONS.

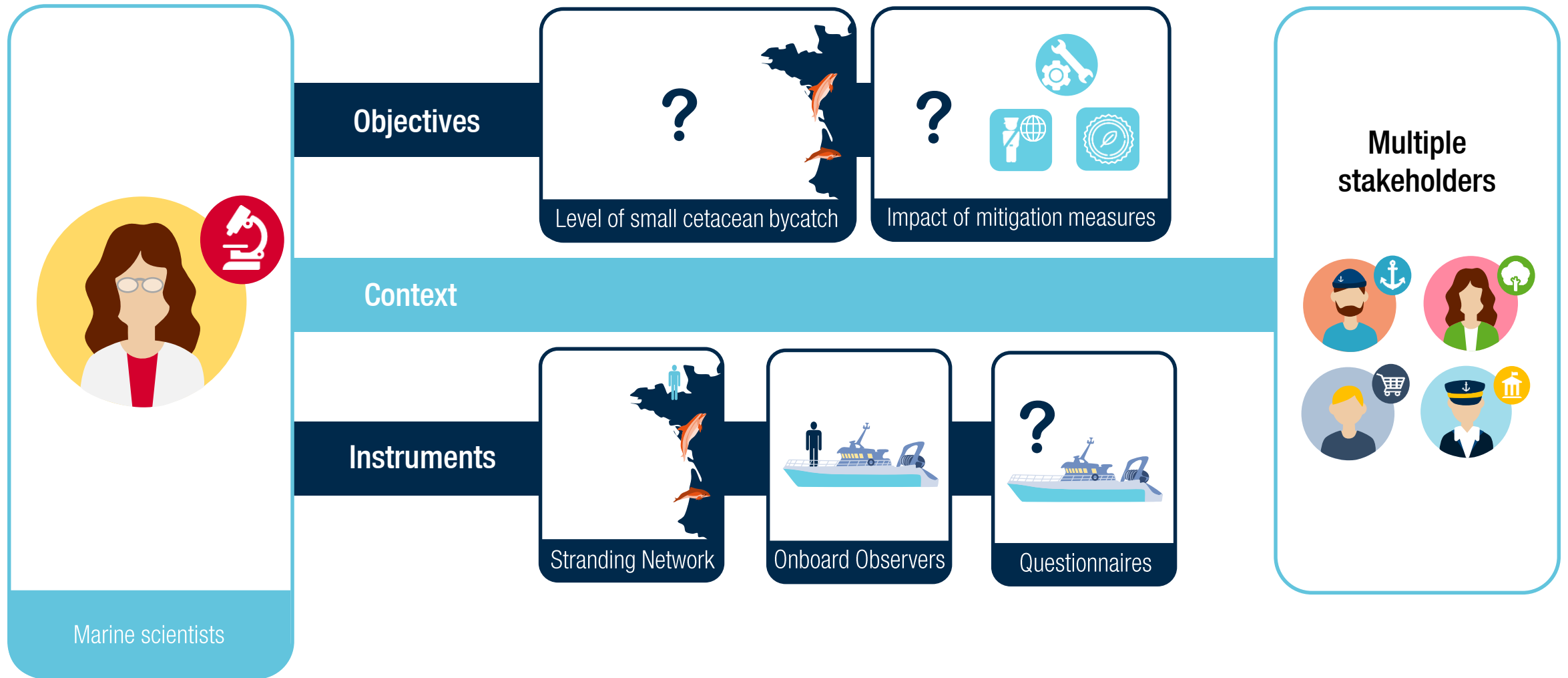
HOW DO SCIENTISTS PERCEIVE AND DEPICT THE MARINE SOCIO-ECOLOGICAL SYSTEM?



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MARINE SCIENTISTS' REPRESENTATION IS LINKED TO THEIR OBJECTIVES, THE INSTRUMENTS THEY USE AND THE CONTEXT IN WHICH THEIR RESEARCH ACTIVITIES ARE TAKING PLACE.

REPRESENTING SCIENTIST'S POINT OF VIEW ON SMALL CETACEAN BYCATCH

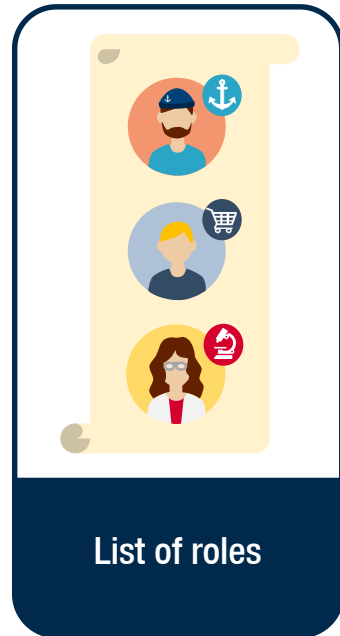


REPRESENTING SCIENTIST'S POINT OF VIEW ON SMALL CETACEAN BYCATCH



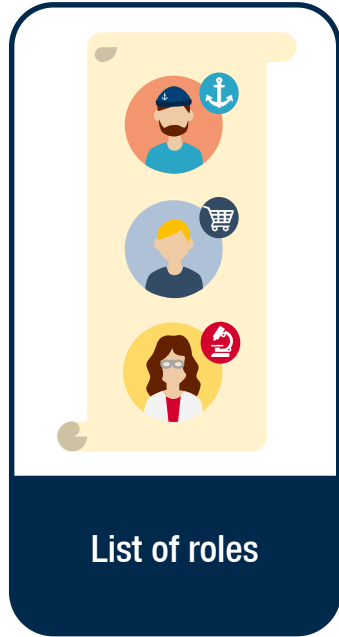
ASSOCIATING MODELS WITH ROLEPLAY PROVIDES A BASIS FOR DISCUSSION TO STAKEHOLDERS TAKING PART IN EXPLORATORY SIMULATIONS.

REPRESENTING SCIENTIST'S POINT OF VIEW ON SMALL CETACEAN BYCATCH



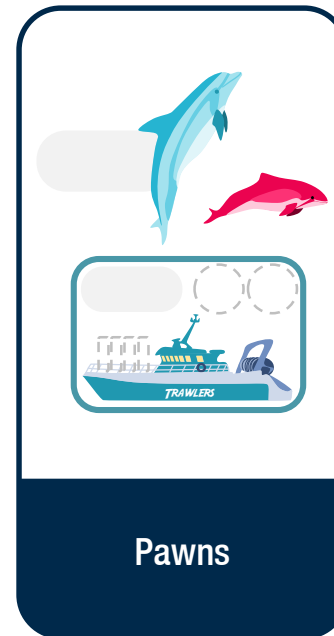
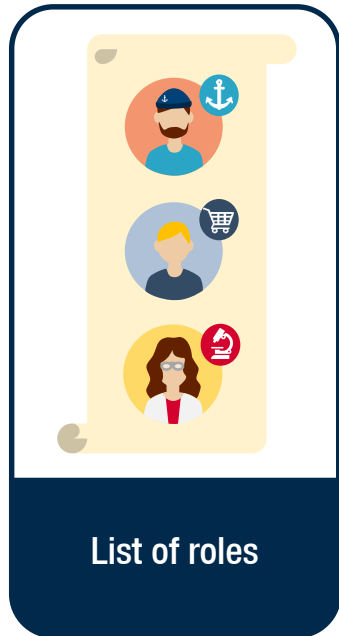
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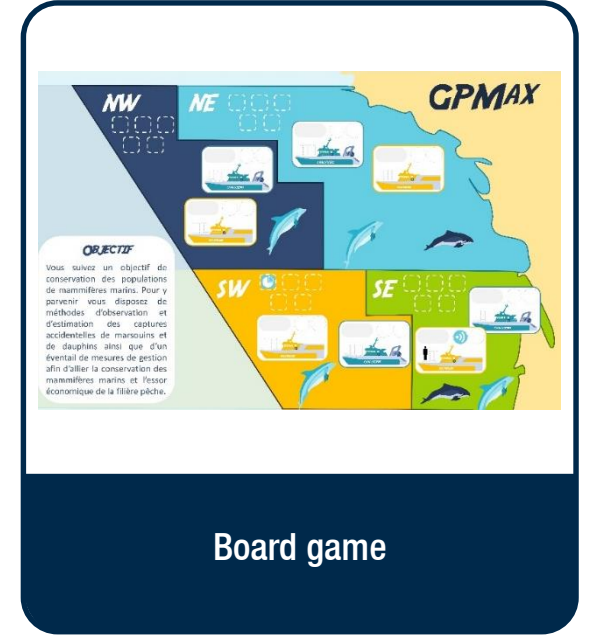
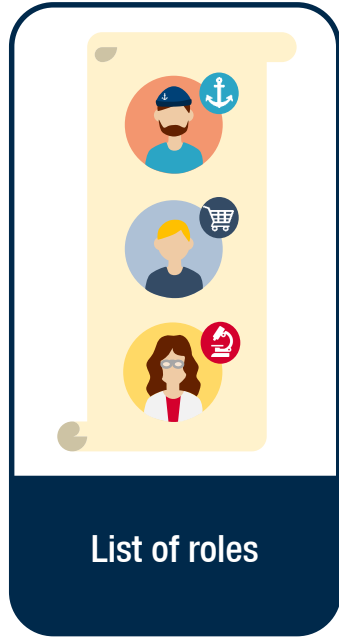
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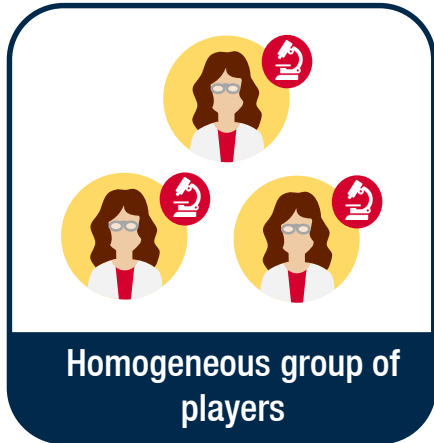
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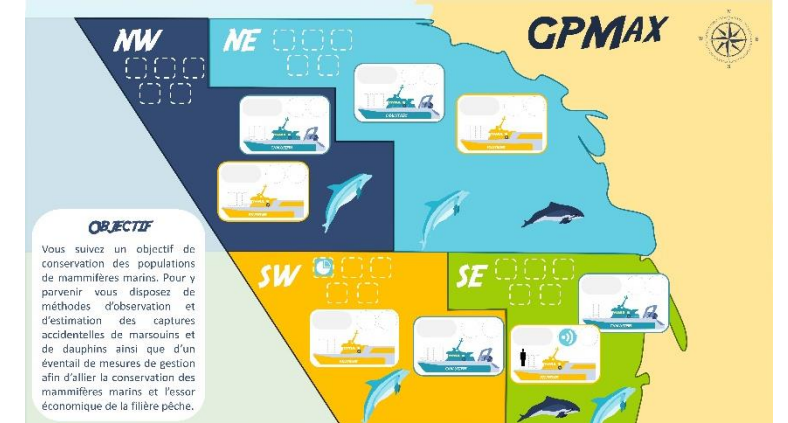


ASSOCIATING MODELS WITH ROLEPLAY PROVIDES A BASIS FOR DISCUSSION TO STAKEHOLDERS TAKING PART IN EXPLORATORY SIMULATIONS.

EXPERIMENTING SCIENTISTS' POINT OF VIEW ON CETACEAN CONSERVATION

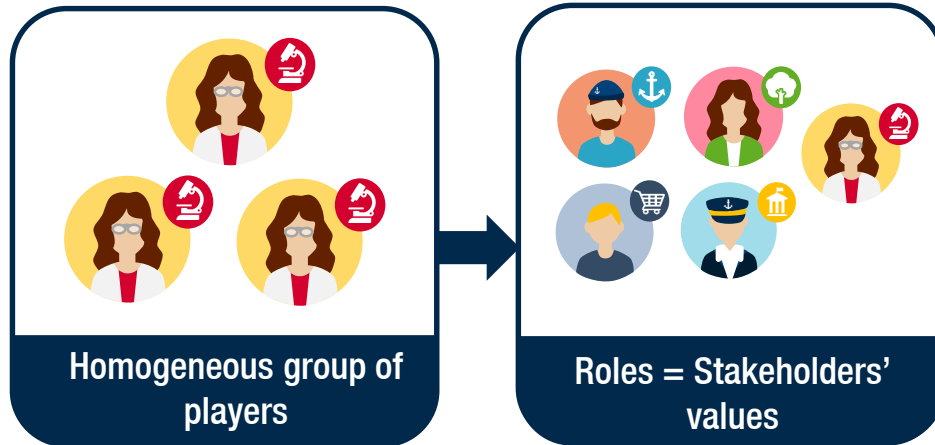


Simple model of spatial interactions between fishing activities and small cetaceans

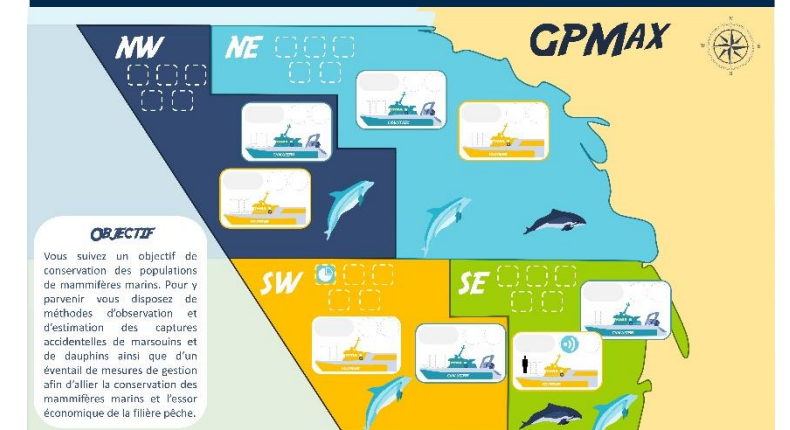


Players objective: Combining the conservation of marine mammals with the development of the fishery sector.

EXPERIMENTING SCIENTISTS' POINT OF VIEW ON CETACEAN CONSERVATION

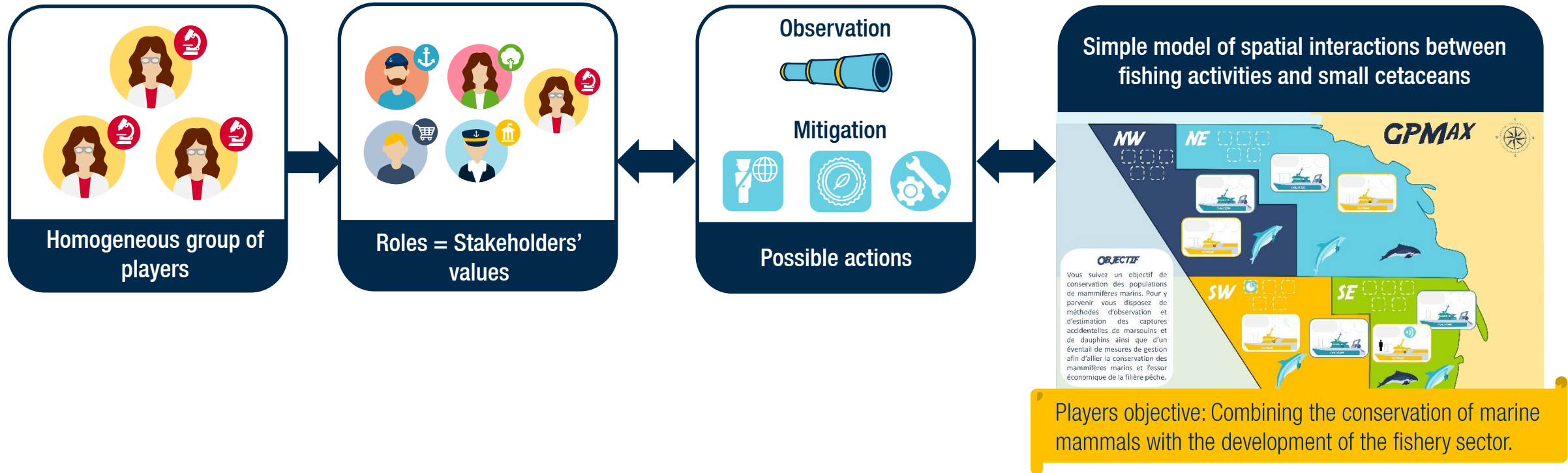


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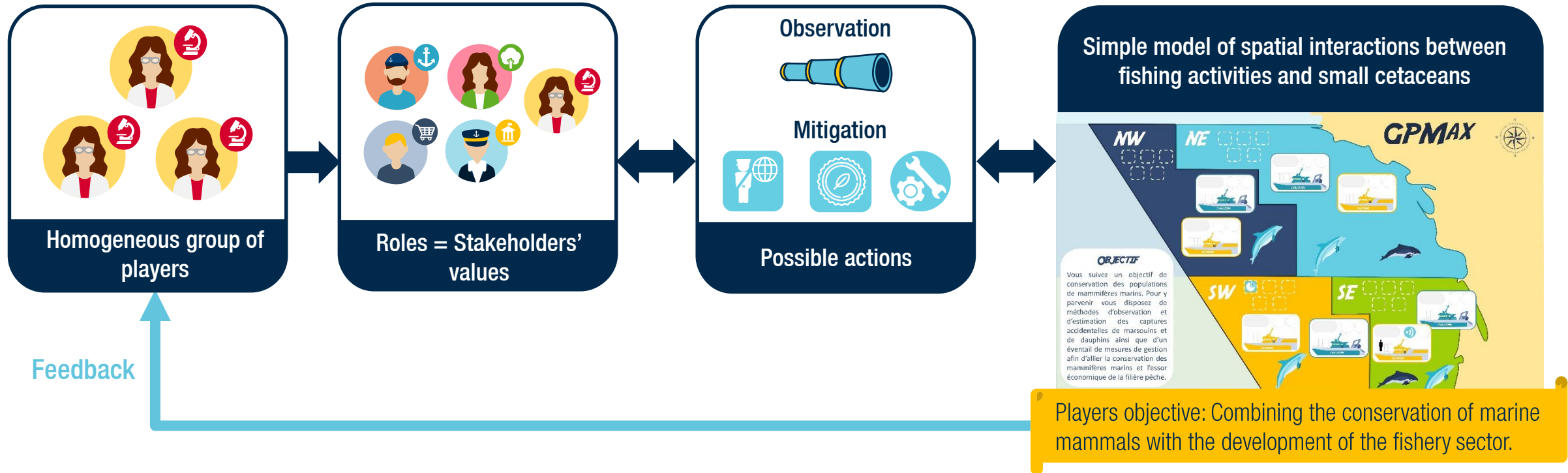
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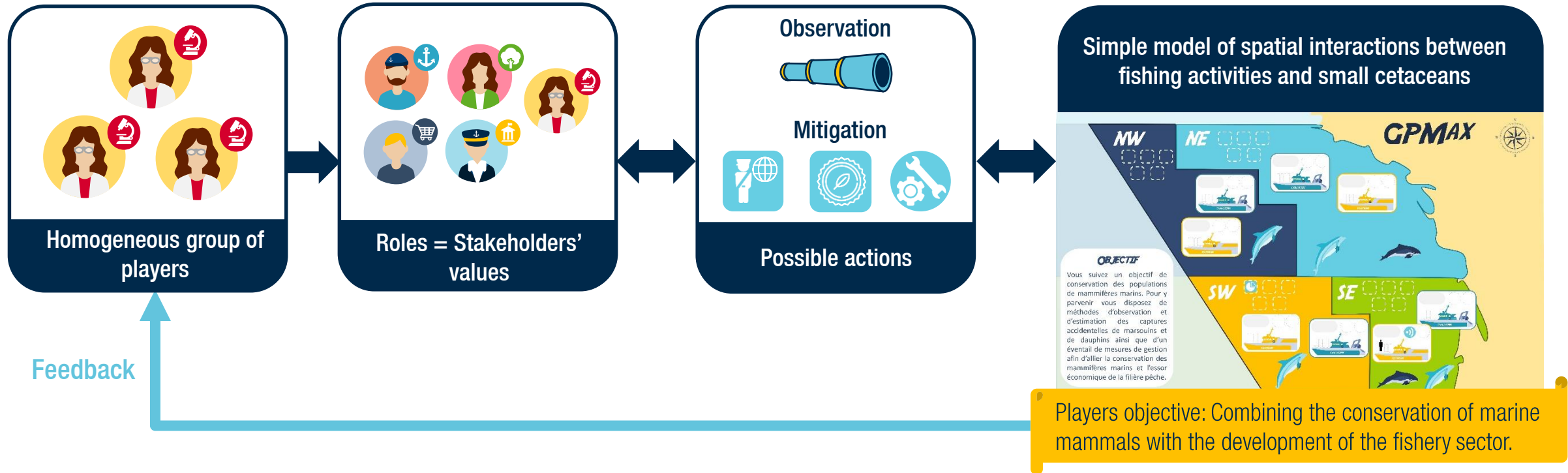
DEPENDING ON THEIR ROLES, PLAYERS CHOOSE OBSERVATION AND MITIGATION INSTRUMENTS THEY WISH TO IMPLEMENT ON THE GAME BOARD. THEY THEN GET FEEDBACK FROM THE MODEL ON THEIR ACTIONS.

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EXPERIMENTING SCIENTISTS' POINT OF VIEW ON CETACEAN CONSERVATION



	<i>during the gaming session</i>	<i>after the gaming session</i>
	<ul style="list-style-type: none"> 📍 observation of players' interactions and strategies 	<ul style="list-style-type: none"> → collective debriefing → Individual questionnaire

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FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (FRAMEWORK)



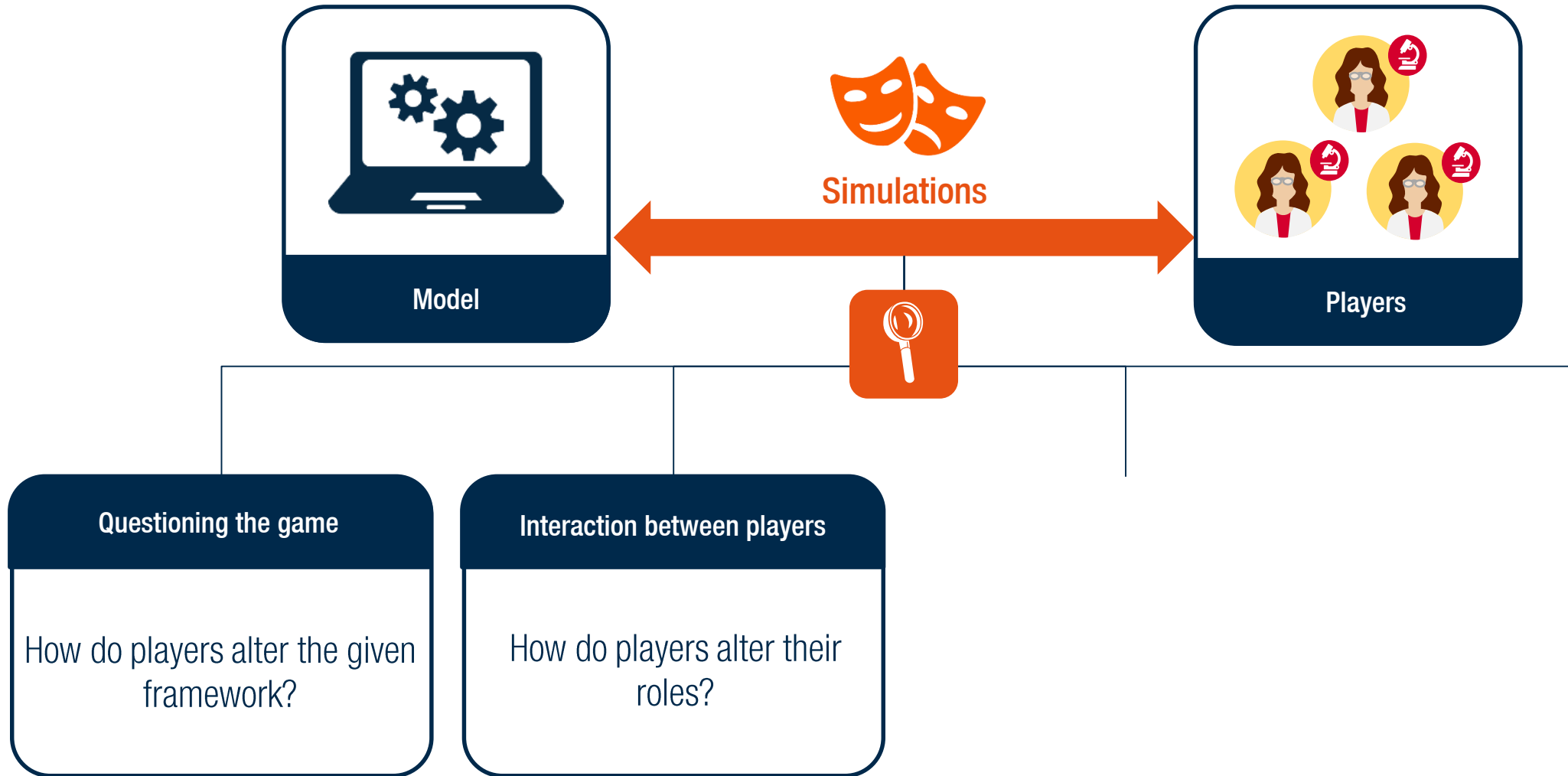
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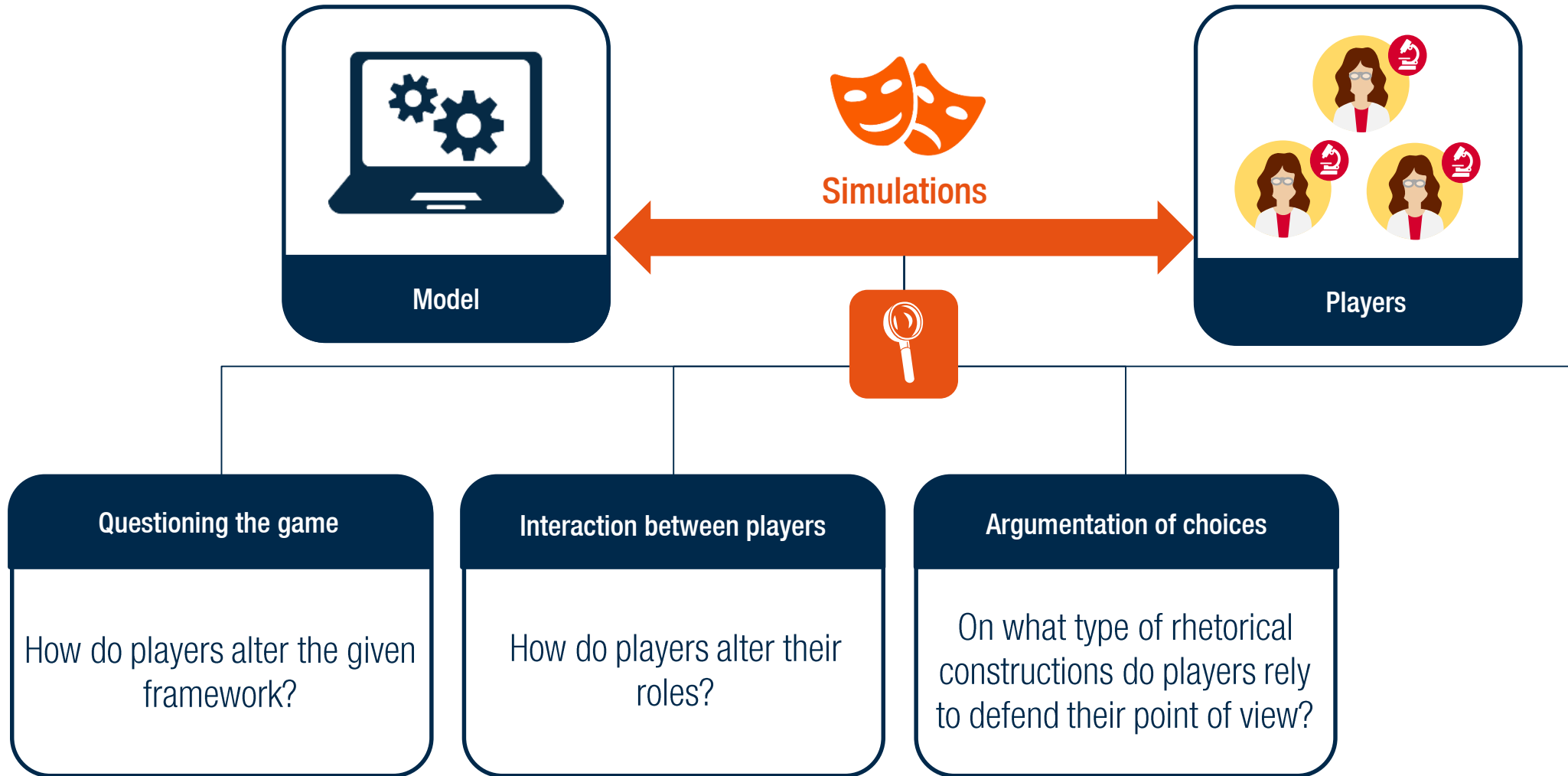
Questioning the game

How do players alter the given framework?

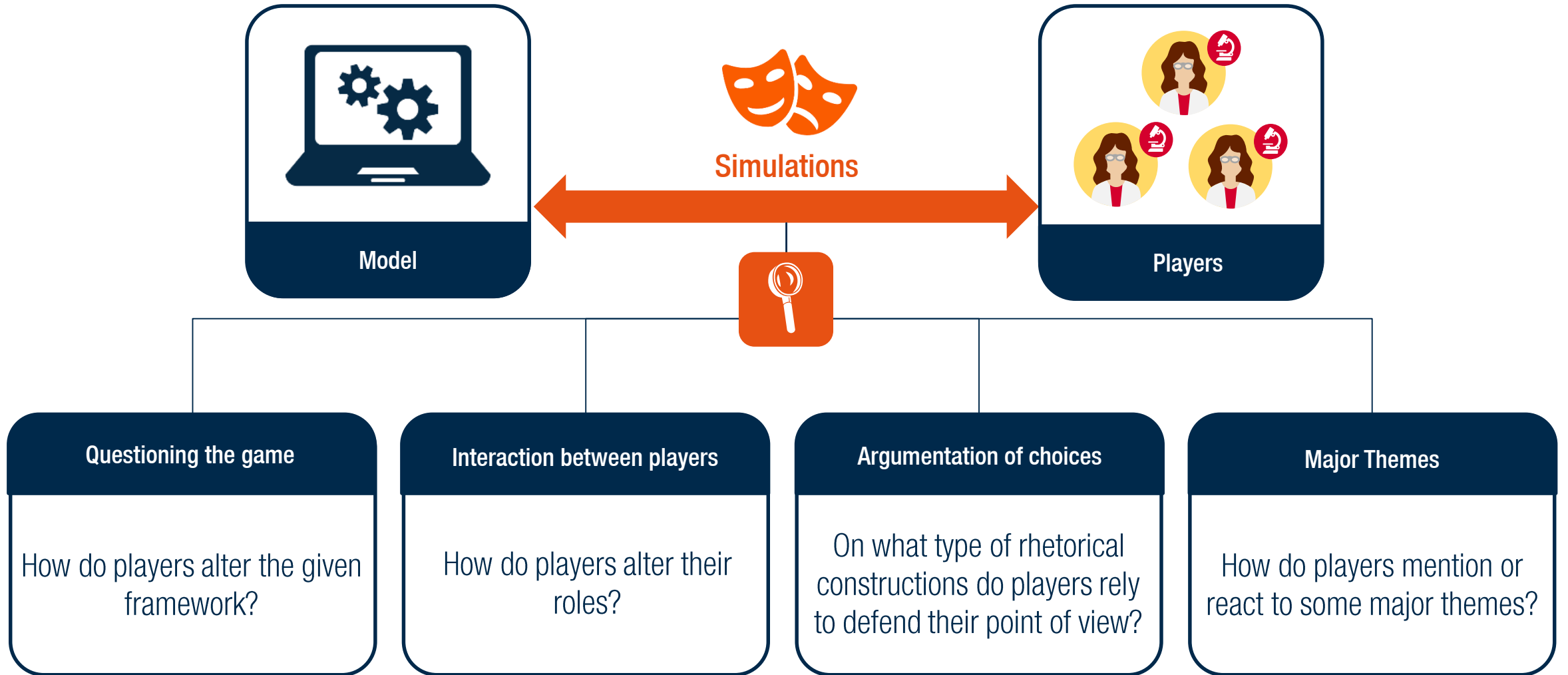
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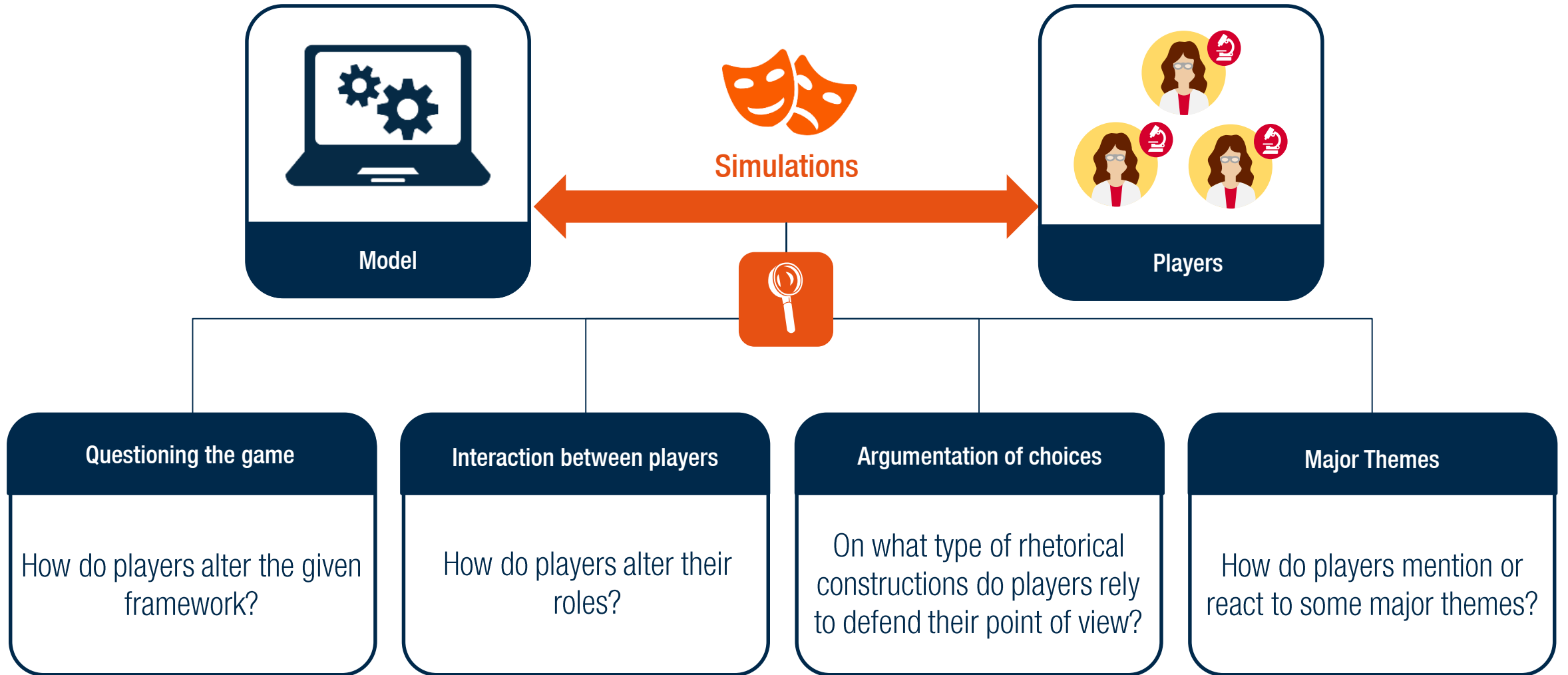
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FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (FRAMEWORK)



PLAYERS' PARTICIPATION TO THE SIMULATION CREATES DISTORTIONS THAT CAN BE OBSERVED AND DISCUSSED TO ENRICH COLLECTIVE THINKING ON THE TOPIC.

FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (APPLICATION)

THE ANALYSIS OF A 3 HOURS WORKSHOP WITH A GROUP OF MARINE BIOLOGISTS SHOWED THE RELEVANCE OF THE OBSERVATION DEVICE.

FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (APPLICATION)

Questioning the game

How do players alter the given framework?

Players altered the composition of the group of participants

They wished that NGOs, civil society and the press had been better represented in the roleplay.



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Interaction between players

How do players alter their roles?

Players joined forces to defend a common point of view

Two players agreed that decision making should be considered on a long term basis to facilitate concertation.



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Argumentation of choices

On what type of rhetorical constructions do players rely to defend their point of view?

Players relied on prior knowledge

One player suggested the use of onboard cameras that are not modelized in GPMax.



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Major Themes

How do players mention or react to some major themes?

Observation instruments

Players expressed their doubts about the relevance of onboard observers to estimate bycatch.



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FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (INTERPRETATION)

**Modelling of
the
socio-
ecological
system**

What values should be
represented ?

What observation instruments
should be represented ?

Who should take part in
the workshop ?

FROM THE GAME TO REALITY: OBSERVING PLAYERS' STRATEGIES (INTERPRETATION)

Modelling of the socio-ecological system

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Who should take part in the workshop ?

Insights for bycatch management

Who should be included in decision making ?

How should decisions be taken ?

How should bycatch be observed ?

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Modelling of the socio-ecological system

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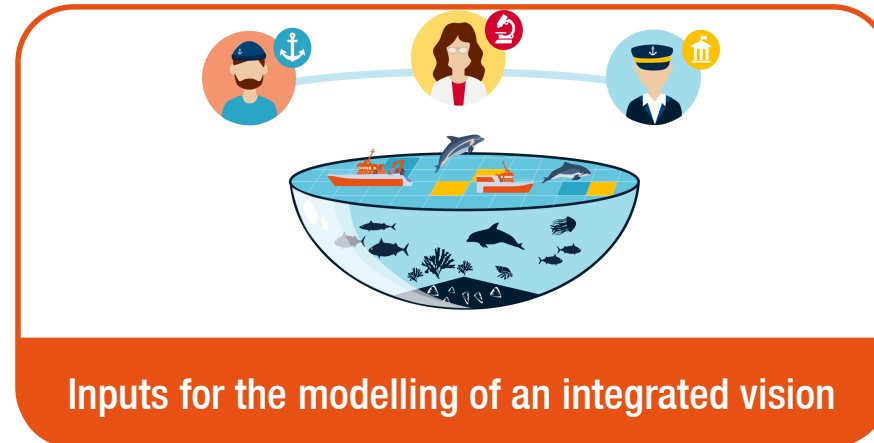
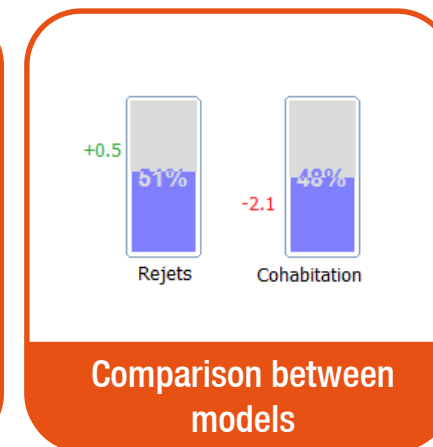
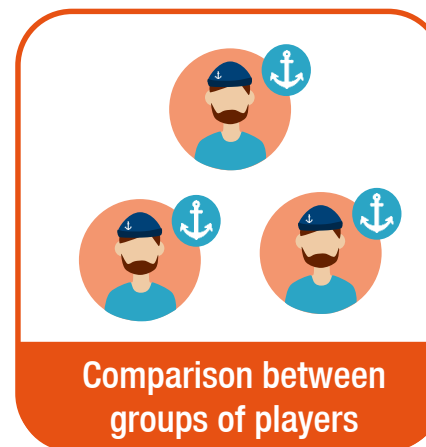
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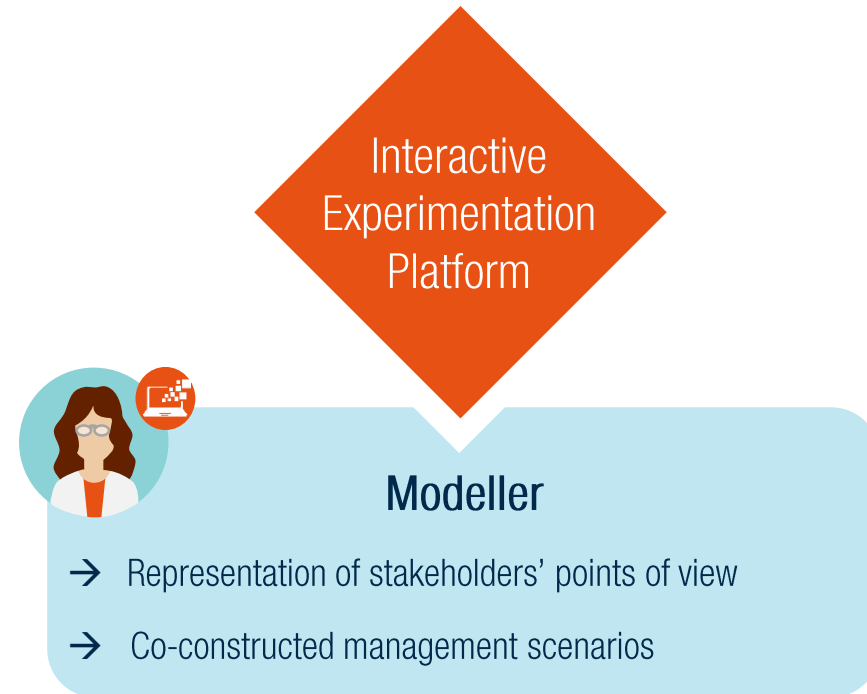
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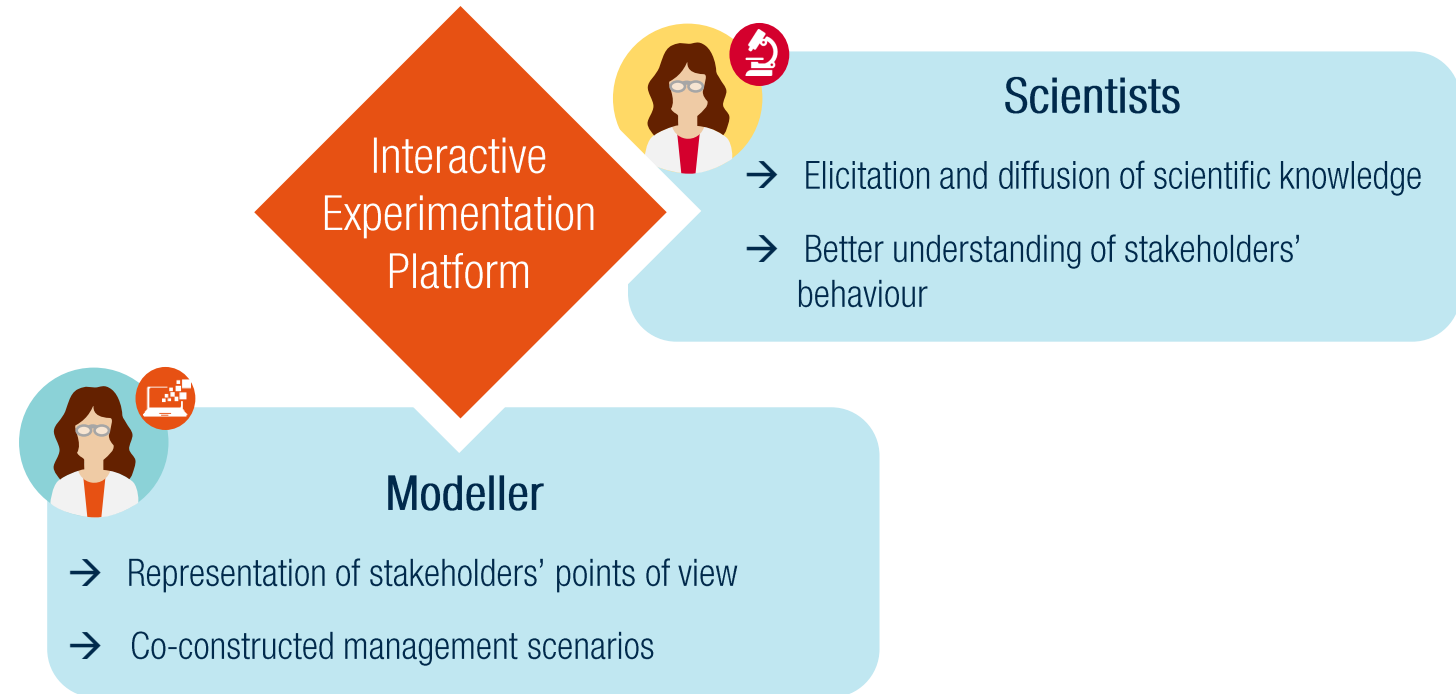
PARTICIPATORY SIMULATIONS PROVIDE FEEDBACK ON MODELS AS WELL AS INSIGHTS FOR BYCATCH MANAGEMENT THAT COULD IMPROVE MEASURES IMPLEMENTATION IN THE FIELD.

WHAT CAN BE EXPECTED FROM THE INTERACTIVE EXPERIMENTATION PLATFORM ?

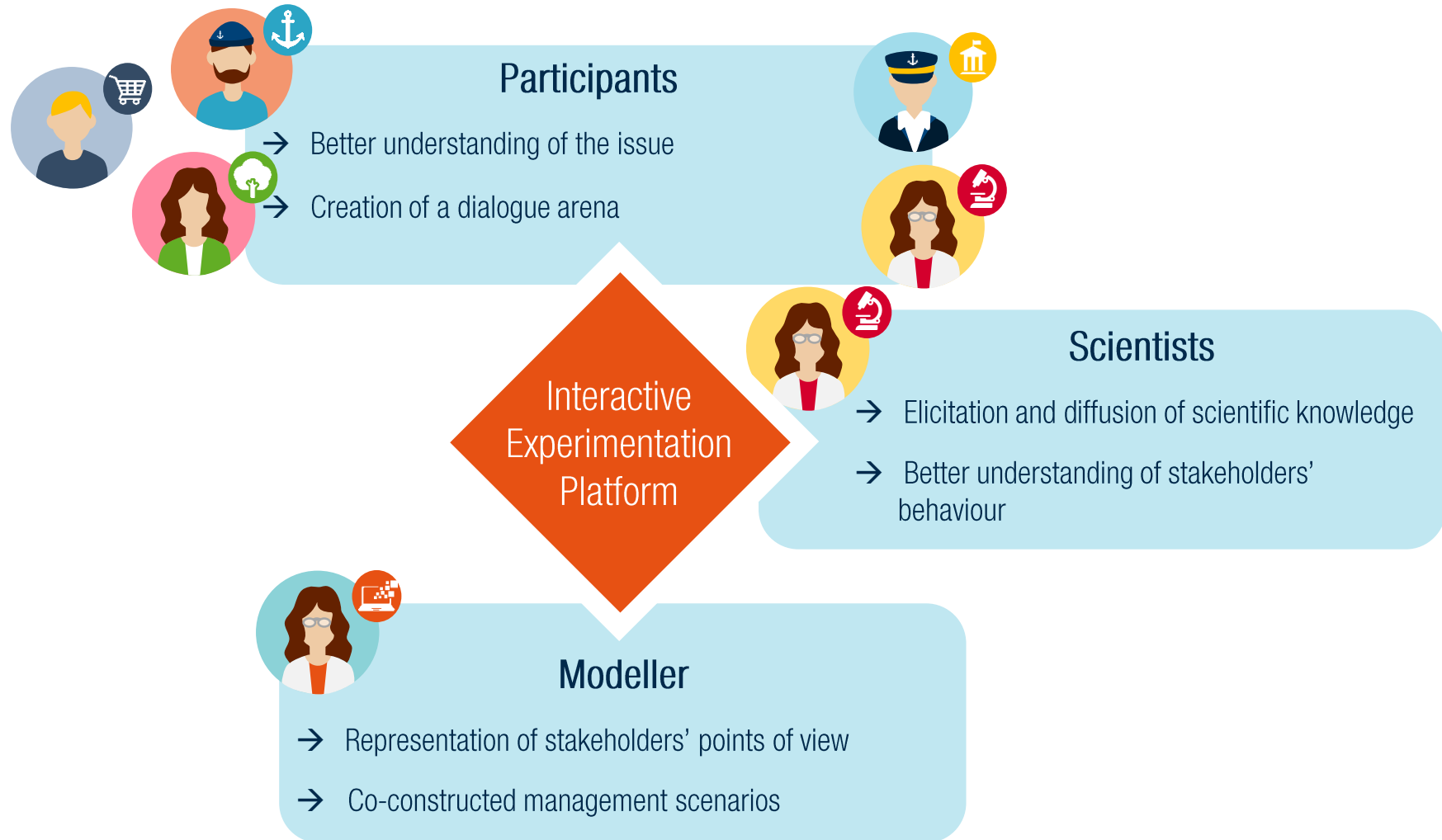
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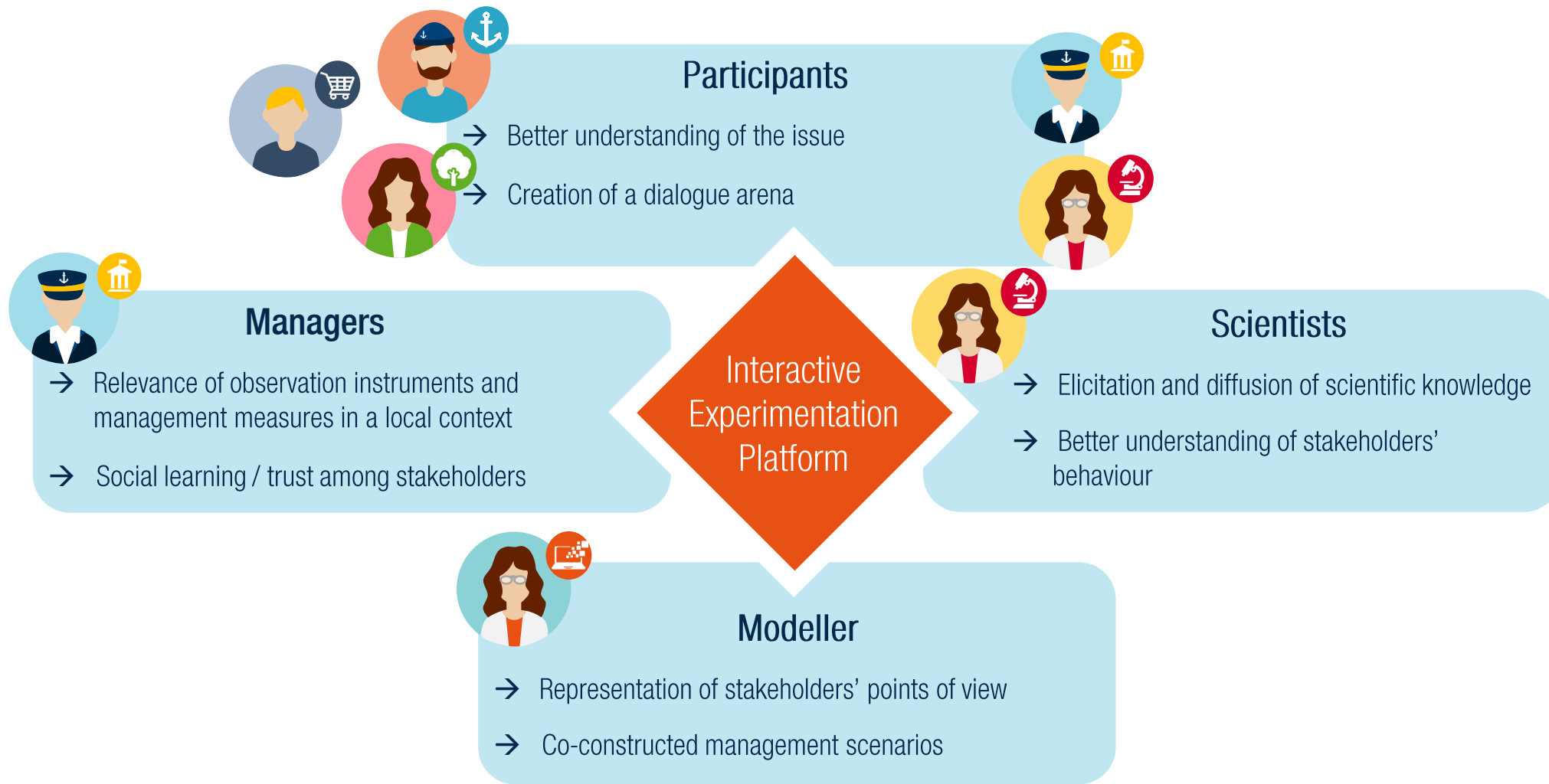
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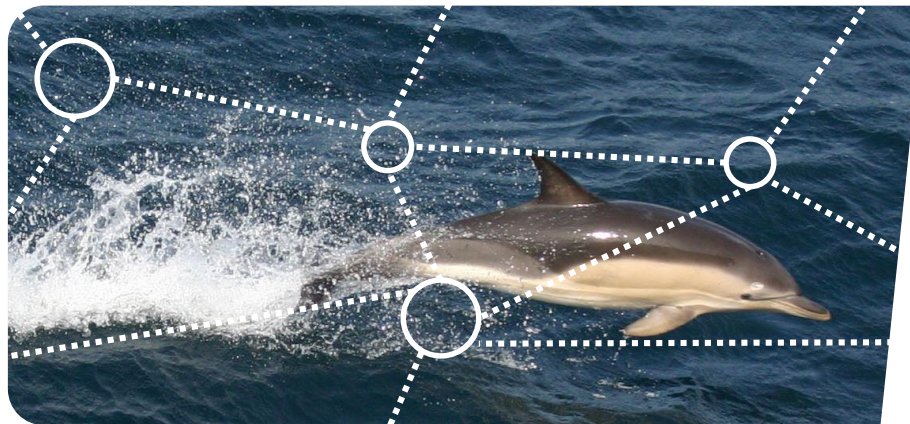
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THE INTEGRATION OF MULTIPLE POINTS OF VIEW TO CO-CONSTRUCT A SHARED VISION A SOCIO-ECOLOGICAL SYSTEM.

Thank you for your attention!

ICES Annual Science Conference, Fort Lauderdale, September 18th - 21st 2017



Co-constructing a shared vision of marine territories using serious games

alice.lapijover@univ-lr.fr