

# INNOVATION PLATFORM IN AQUACULTURE THE CASE OF THE NUTRITIOUS POND SYSTEM PROJECT

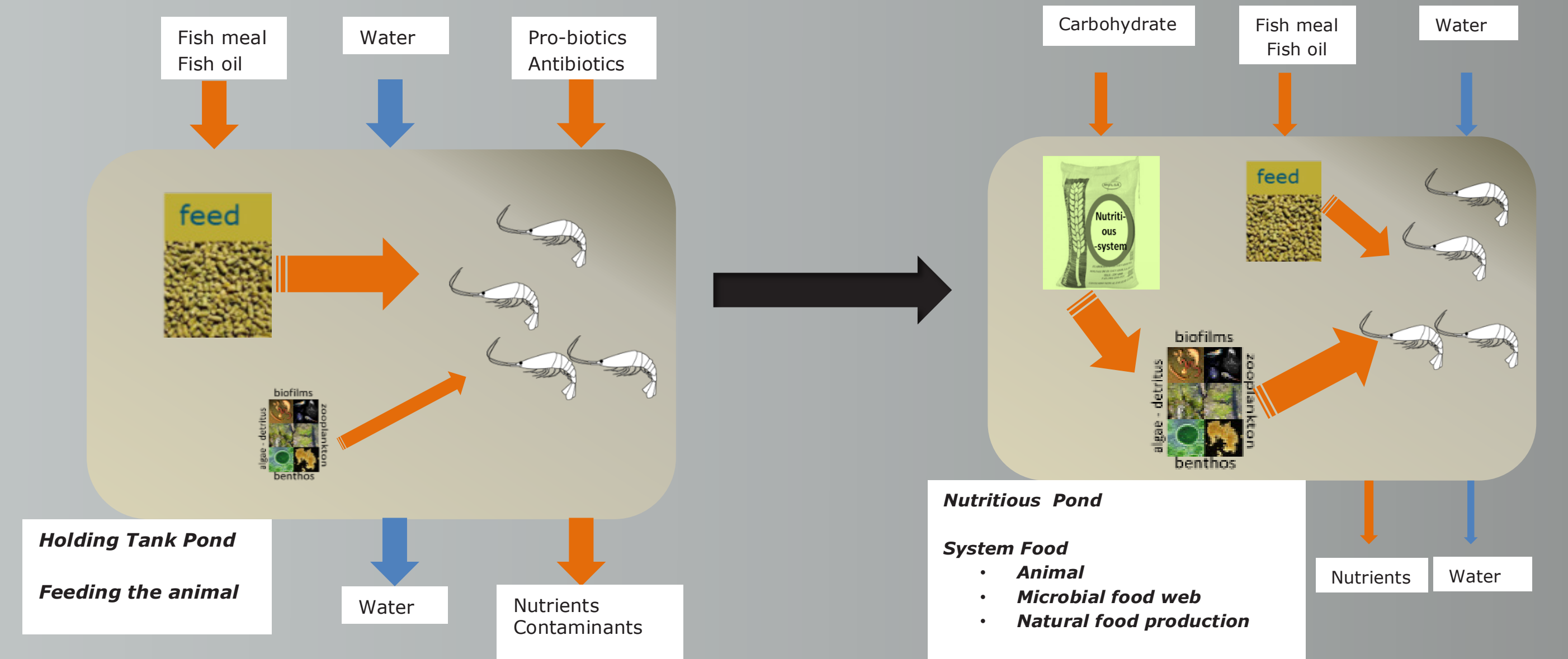
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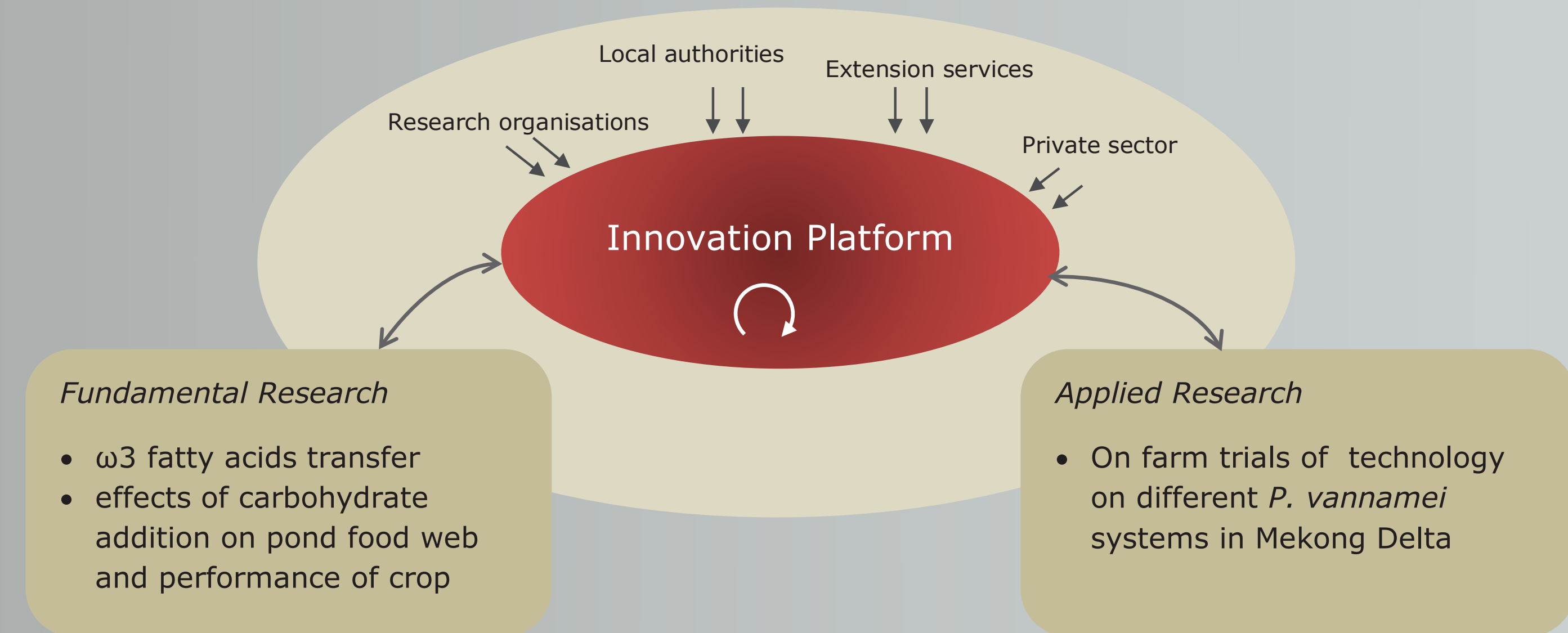
## The Nutritious Pond Concept

Nowadays, intensive aquaculture ponds are **'holding tanks'**, consuming water and high quantities of fishmeal and fish oil and causing pollution. Feed is produced outside the system and metabolic wastes are discharged to the environment. The contribution of the pond itself to these processes is marginalized

This **'Nutritious pond system'** concept aims at optimising nutrient transfers through the pond's food web. The 'Nutritious pond system' concept stimulates microbial mediated mineralization of wastes in the pond and production of high quality natural foods.



Shifting from Holding Tank Pond to Nutritious Pond System



The Nutritious Pond Innovation Platform Concept

## Aquaculture Innovation Platform

The different stakeholders involved in this research and representatives of the shrimp aquaculture sector are organized around an **'innovation platform'** to pilot technology development and foster dialogue towards innovation.

The platform involves partners linked to the project: research organisations (Worldfish, Wageningen University, Can Tho University), local extension services (DARD), private sector (Vemedim, Skretting Vietnam, Nutreco, Viet Uc), and a farmers' organization.

Additional stakeholders from the shrimp sector (NGOs, farmers and certification body) are also invited to join the platform.

## Reflexive Interactive Design

The innovation platform support the design process by facilitating the engagement of farmers and other actors of the value chain. Knowledge from fundamental research is discussed and integrated in the design of field trails and the different stakeholders share their requirements and point of view about the new technology.

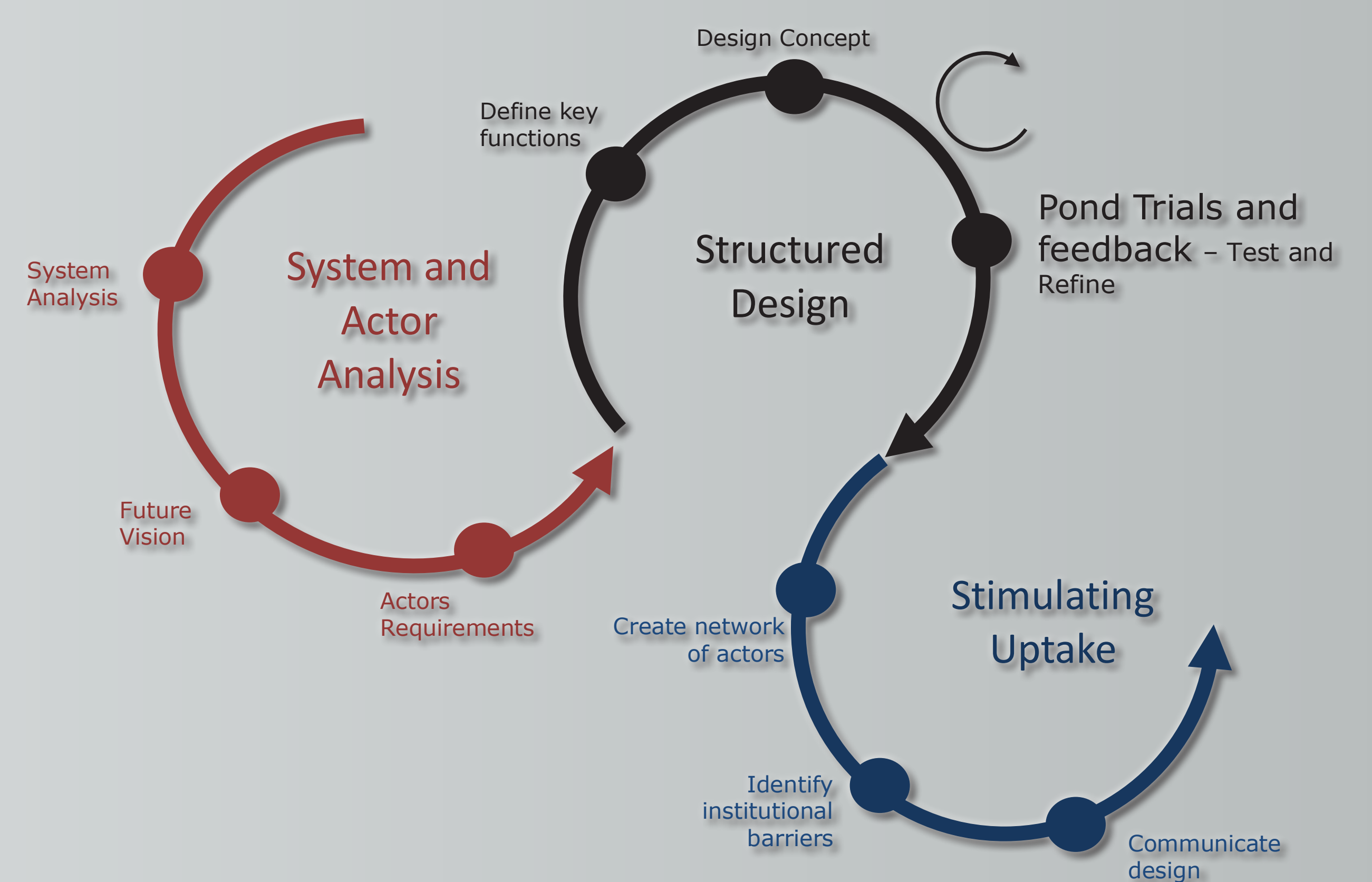
The reflexive interactive design of the nutritious pond includes a 3 cycles approach :

- *System and actor analysis* to understand the barriers and opportunity to innovate
- *Structured design*, where new design is tested during iterative pond trials
- *Stimulating uptake* when the new product is finalized and communicated to users

The structured design is based on the *function(s)* of the new technology.

The stakeholders identify the function the Nutritious pond system should deliver.

The different functions and requirements are later translated into quantitative and qualitative indicators that are used to assess the trials.



Reflexive Interactive Design Cycles

## Structured Design & On-Farm Trials

The tested design is based on the addition of *carbohydrate powder* provided daily to the pond in complement of feed pellets. The farmers applied both conventional pelleted feed provided by Skretting and carbohydrate powder composed of rice bran and cassava.

The on-farm pond trials included :

- 2 extensive ponds stocked with 9 PL/m<sup>2</sup> (2016)
- 3 intensive shrimp ponds stocked at 30 PL/m<sup>2</sup> (2016)
- 4 super intensive ponds stocked at 200 PL/m<sup>2</sup> and 400 PL/m<sup>2</sup>, will be operated by Viet Uc Company in 2017

Preliminary results in intensive ponds (30 PL/m<sup>2</sup>) recorded a productivity between 2.2 and 3 tons/ha after 8 weeks of culture. The pond system was more resilient to disease outbreak compare to the control ponds, allowing a longer growth period, higher yield and greater financial benefits.

Using this nutritious pond system enhanced algae and microbial activity. Farmers reduced by 25% the amount of pellet compared to conventional practice, the mineralization of waste was stimulated thus limiting the use of expensive manufactured pro-biotics, resulting in a reduced cost and lower environmental impact.

