

MOTIVATION

Aquaculture:
the fastest growing food-producing sector

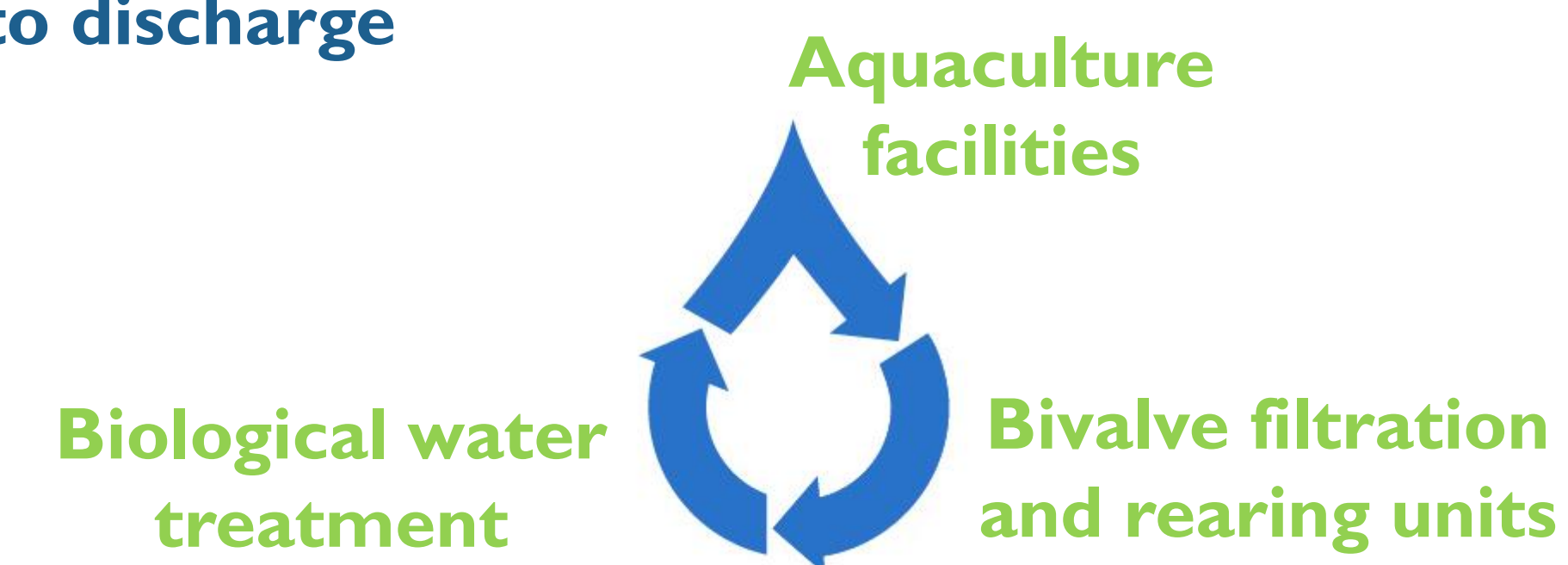


Environmental concerns

Need for optimization of water and wastewater management for economic viability

OBJECTIVE

Technological solutions, more compact and efficient, optimizing water use in aquaculture systems, promoting recycling of water and valorising its use prior to discharge



CONSORTIUM

• UCP

Univ Católica Portuguesa
Paula ML Castro

Expertise on granular sludge reactors and microalgae for wastewater treatment and reuse.



• USC

Univ Santiago de Compostela
Anuska Mosquera Corral

Expertise on the development of technologies based on anammox process



• DSV

University of Torino
Benedetto Sicuro

Expertise in fish nutrition and freshwater rearing, with facilities for fish farming and bivalve rearing.



• GTM

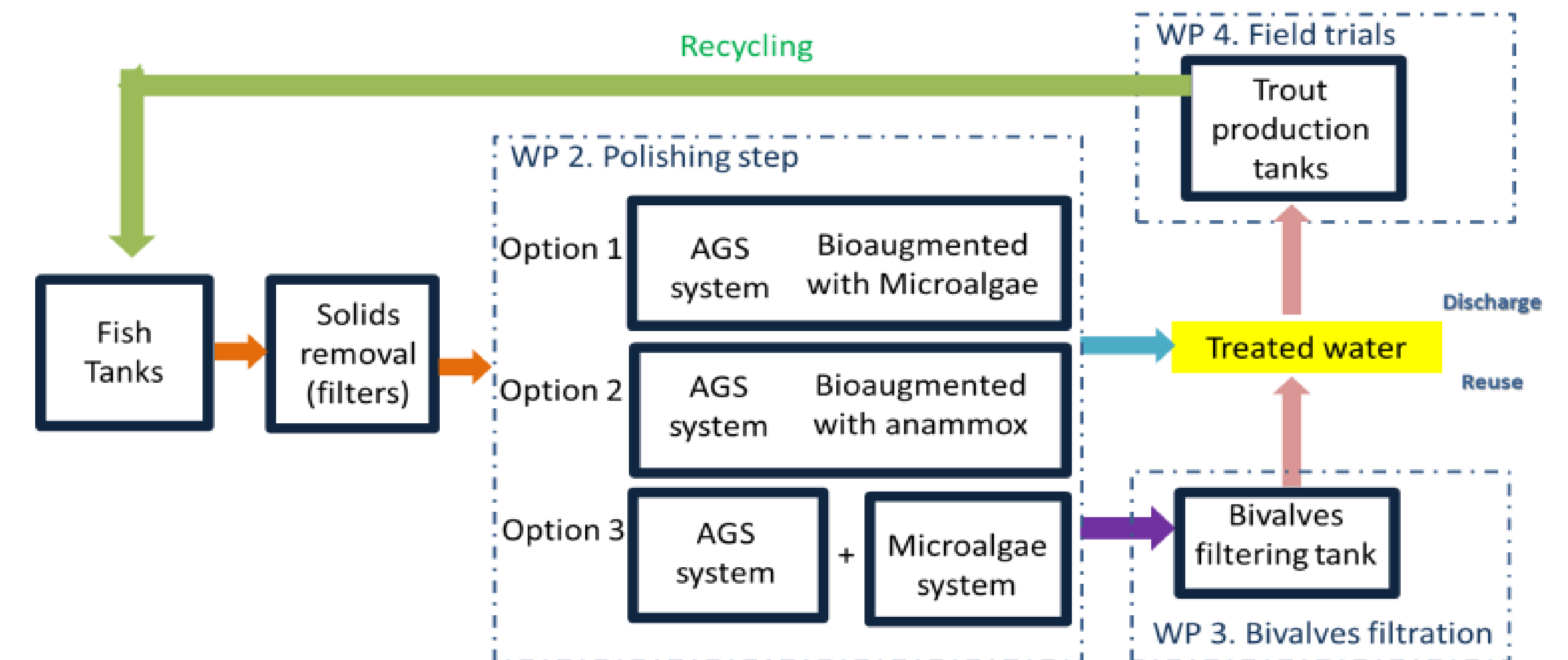
Grupo Tres Mares
Luz Arregui

Aquaculture facilities for the demonstrative pilot. On-site pathology, water and chemical analysis and hygiene assays.



PROJECT STRUCTURE

Multi-trophic systems (bacteria, algae and bivalves) to develop Model-Trout-Farms (MTF)

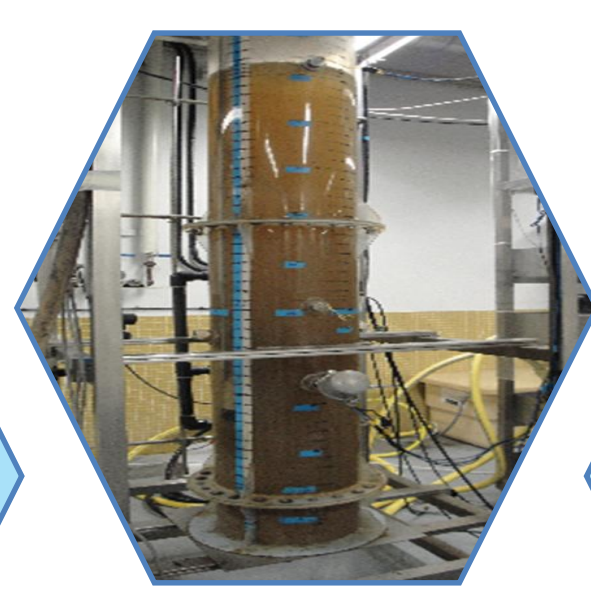


WORK PLAN

WPI – Project management

UCP, USC, DSV and GTM

Manage the activities of the project
Ensure achievement of outcomes and collaboration between teams
Organize production of deliverables, meetings, workshops, short missions



WP 3 - Bivalves filtration unit

DVS, GTM

Evaluate bivalves for treatment of effluents
Evaluate bivalves as trout feeding
Investigate the application for rear freshwater mussels



WP 5 - Integrated system evaluation

GTM, UCP, USC

Validate the integrated system implemented in the production process
Analysis of epidemiological and health risks impact



WP 2 - AGS reactors operation with bacteria and microalgae

UCP, USC, UGhent (collaboration)

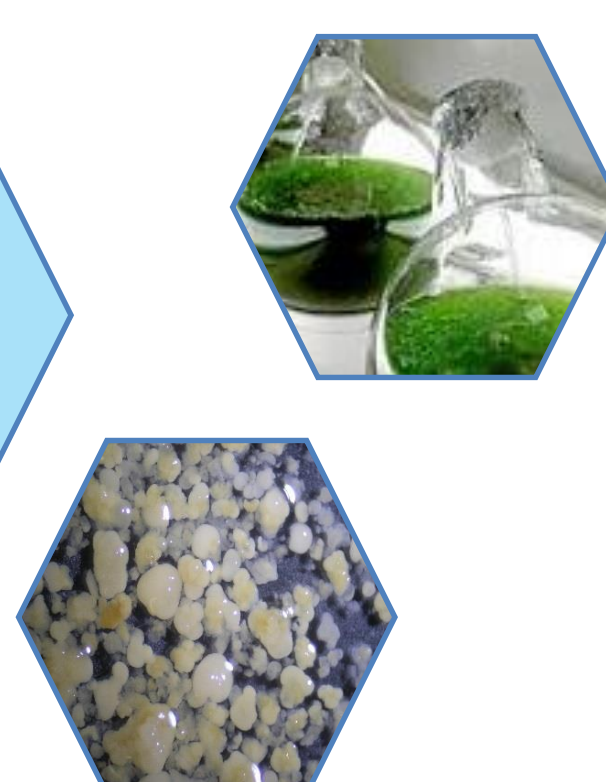
Evaluate the three alternatives to treat wastewater from freshwater aquaculture systems



WP 4 – Field Trials

USC, GTM, UCP, USC

Evaluate AGS reactors (bioaugmented with microalgae and anammox bacteria) in GTM facilities



WP 6 - Dissemination and exploitation

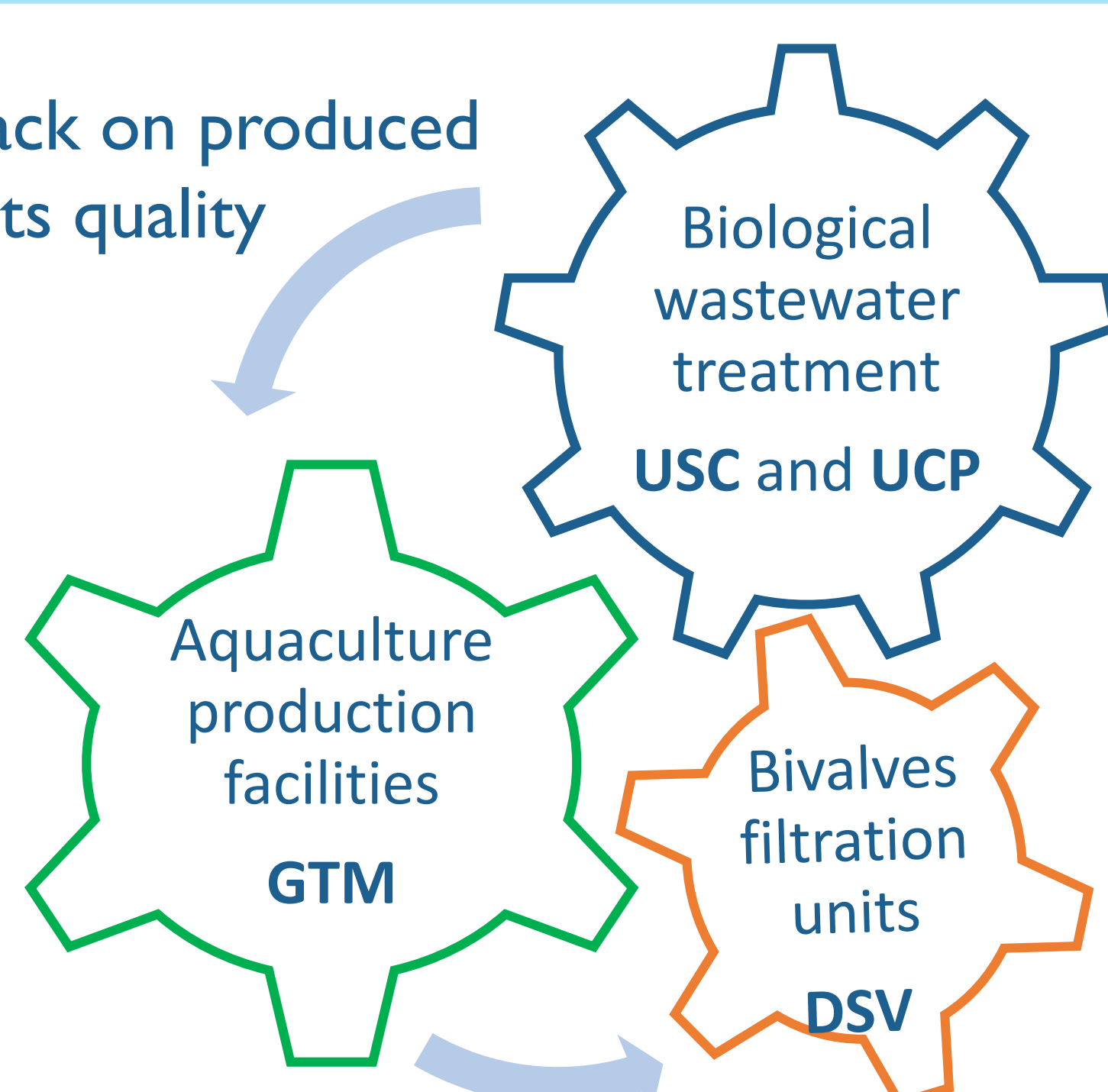
UCP, GTM, USC, DVS

Dissemination and exploitation of results



COLLABORATIVE RESEARCH

Feedback on produced effluents quality



Impact of reusing or recycling effluents

Effectiveness of mussel meal in rainbow trout nutrition

Stakeholders:

- Industries: Findfresh (PT), FCC Aqualia (SP),
- Sectorial associations: Portuguese, Spanish and Italian Associations for Aquaculture producers

EXPECTED IMPACT

Challenge- 1) Increasing the efficiency and resilience of water uses

- AGS reactors reduce N and other pollutants with no temperature increase thanks to anammox
- Use of bivalves as depuration units using wastewater as resource
- 30% of trout production increase by recovery of 80-90% of the used water
- Granular sludge and anammox based processes as more energy efficient

Challenge-2) Monitoring and reducing soil and water pollution

- Technology aiming at reducing nutrient loads in the effluents
- Use of bivalves rearing units for depuration, indirectly increasing biodiversity
- Decrease the risk of therapeutics diffusion from aquaculture facilities
- Bivalves can drastically reduce bacteria carrying antibiotic resistance

Acknowledgements

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