AQUAculture infrastructures for EXCELLence in European Fish research

Aquaculture Europe 2011, Rhodes, Greece

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AQUAEXCEL – At a glance

- **TITLE**: Aquaculture Infrastructures for Excellence in European Fish Research
- **Funding**: FP7, Capacities; RI (11.8M€ budget)
- **Consortium:** 17 partners, 10 countries, 23 infrastructures
- **Duration:** March 2011 – February 2015 (4 years)

Main goal: to integrate the key aquaculture research infrastructures in Europe, covering all EU fish culture systems

What are ‘Research Infrastructures‘?

- Facilities, resources and related services that are used by the scientific community to conduct top-level research:
  - major scientific equipment or set of instruments
  - knowledge based-resources such as collections
  - archives or structured scientific information
  - computing, software and communication material
  - any other entity of a unique nature essential to achieve excellence in research

➡ **The « hardware » for conducting good research**

Back to basics: the philosophy of FP7 infrastructure projects

- Optimise the use and development of the best research infrastructures existing in Europe
- Ensure the access of research teams from across the EU to these infrastructures
- Improve the services provided to researchers
- Structure better, on a European scale, the way research infrastructures operate
- Foster their joint development in terms of capacity and performance

Types of activities to achieve these goals

- **Networking Activities (NA):** Co-ordinate partners infrastructures (resource and know-how sharing, communication) and give visibility
- **Transnational Access (TNA):** Give ‘free of charge’ access to the world-class infrastructures and resources of the consortium
- **Joint Research Activities (JRA):** Joint R&D to improve the services provided by the infrastructures

What an infrastructure project is NOT

- A project to build NEW infrastructure (no investment)
- A way to subsidise an under-used facility (20% rule)
- A project to conduct 'classical' research activities to solve biological or technological research questions
- A private club (benefits expected for EU researchers outside the consortium)

Our main goals

- Know our capacities and make them known externally
- Cover all types of aquaculture systems and expertises
- Harmonize our practices and share knowledge
- NOT generate a research agenda but USE existing ones (industry-based)
- Need for better measurements and standardized experimental animals ➔ 3Rs rule
- Enhance applicability of results at industrial scale
- Use technology to increase experimental capacities

Some deliberate choices

- Aquaculture of mollusks not included (too different in terms of infrastructure, already difficult to cover all types of finfish culture)
- Model fish species not included (focus on aquaculture, not fundamental fish biology)
- Fish pathology challenge testing infrastructures not included (overlap with NADIR infrastructure project)

NADIR
The Network of Animal Disease Infectiology Research Facilities

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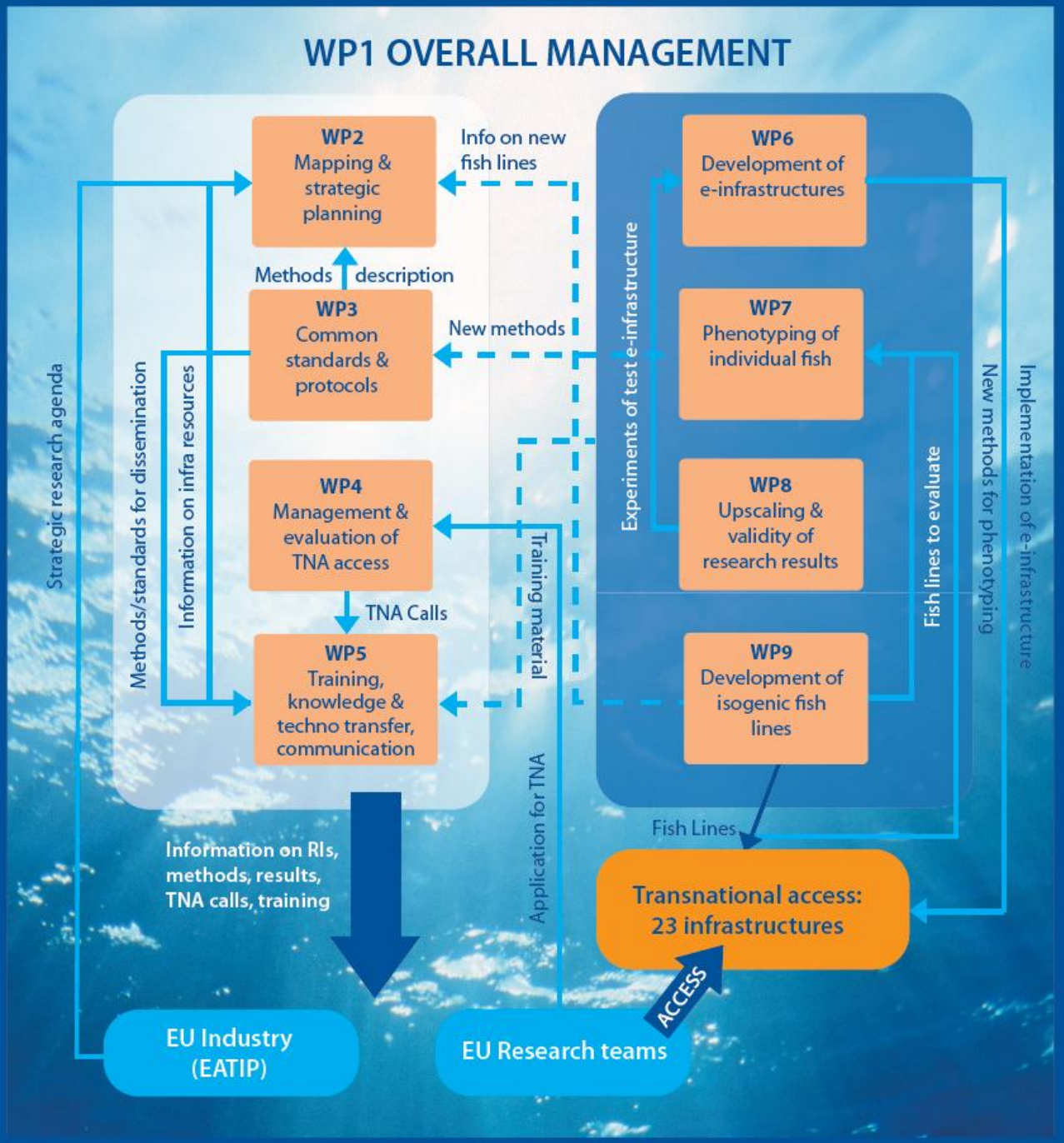
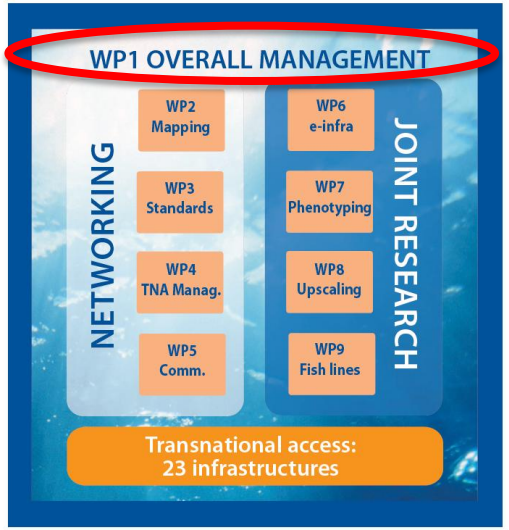
AQUAEXCEL partnership

	Systems						Environments				Expertises						
Infra	broodstock/lines	Hatchery	Flow-through tanks	RAS tanks	Cages	Ponds	Sea water	Freshwater	Cold water	Warm water	Nutrition	Genetics	Physiology	Behaviour/welfare	Pathology	Technology/systems	Main species
INRA	x		x					x	x		x	x	x				trout
IMR	x	x	x		x		x	x	x		x		x	x			salmon, cod
Stirling University	x	x	x	x			x	x	x	x	x	x	x		x		salmon, cod, tilapia
CSIC			x	x			x			x	x		x		x		sea bream, sea bass
HCMR	x				x		x			x	x			x		x	sparids, sea bass
HAKI	x			x		x		x		x		x			x	x	carp, pikeperch
IFREMER	x	x	x	x			x			x	x	x		x		x	sea bass
NOFIMA	x	x	x	x	x		x	x	x		x	x	x			x	salmon, cod
VURH	x	x		x		x		x		x		x	x				carp, sturgeon
NTNU			x				x		x		x					x	cod
SINTEF					x				x							x	salmon
ULPGC	x	x		x						x	x	x			x		sea bream
WU				x			x	x	x	x	x			x		x	not specific
UGhent		x					x		x	x	x				x		sea bass
IMARES				x												x	not specific
AquaTT																	N/A
n total	*9*	*7*	*7*	*9*	*4*	*2*	*9*	*7*	*8*	*9*	*11*	*7*	*6*	*4*	*5*	*8*	

Objectives & Structure

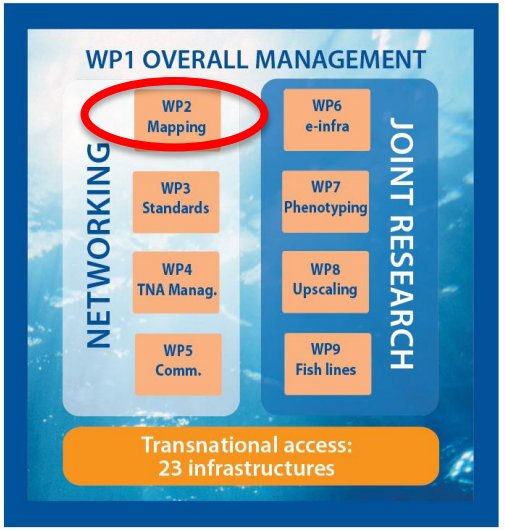


Management



- **WP1: Management**
  Bénédicte Ferreira, Inra Transfert
  - Project collaborative workspace
  - Organization of project meetings
  - Organization of administrative, financial and scientific reporting
  - Intellectual property management

Networking Activities



- **WP2: Mapping and Strategic Planning**

  Alexandra Neyts, NTNU

  - Inventory of infrastructures & resources
    - To avoid duplication
    - To unify external communication (website)
  - Cross with SRAs of other projects-platforms (e.g. EATIP, FABRE-TP, GAH, EFARO, Aquagenome, etc)
  - Evaluate need for evolution
  - How to achieve sustainable integration?

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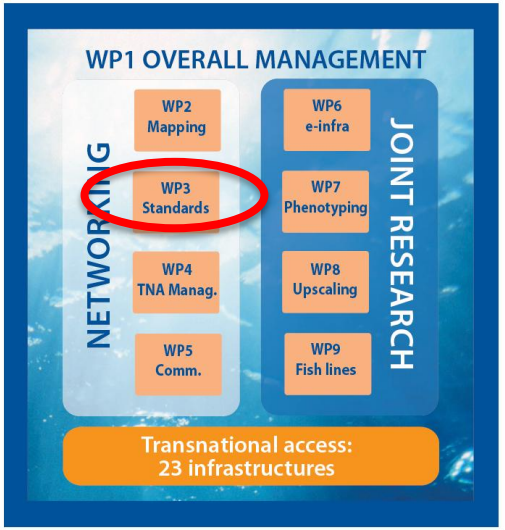
Networking Activities



- **WP3: Common Standards and Protocols**

  Juan Manuel Afonso Lopez, ULPGC

  - Standardized phenotype description (linked to ATO)
  - Standardized environment description (ontology)
  - Harmonization of experimental procedures (best practice)
  - Experimental data repository (avoid duplication, meta-analyses)
  - Sanitary aspects for transfer of fish

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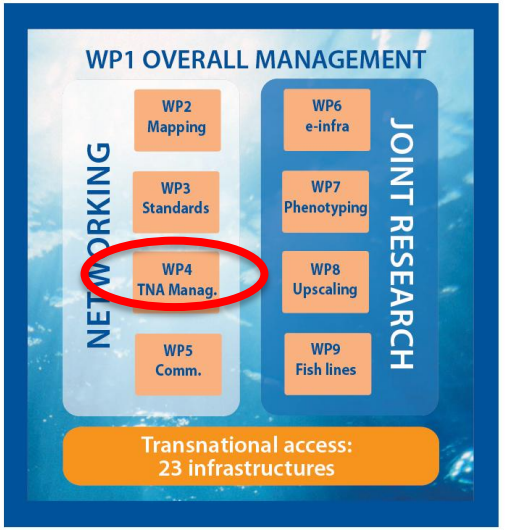
Networking Activities



- **WP4. Management and Evaluation of Transnational Access**
  John Bostock, UoS

  - Organisation and dissemination of TNA call
  - Procedures for selection of user groups responding to the call
  - Selection panel: selection of members, managing and organizing proposals review process
  - Evaluation of the access given

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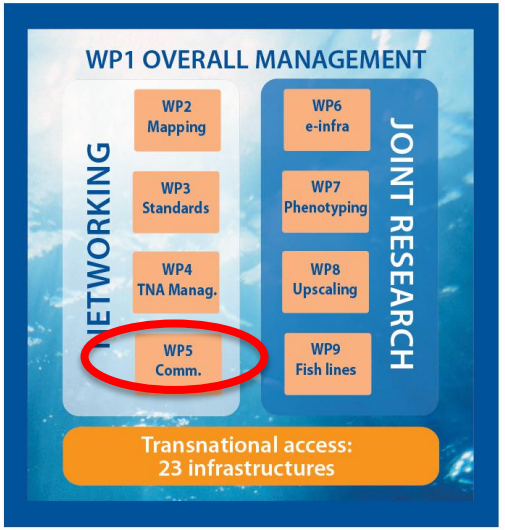
Networking Activities



- **WP5. Training, Knowledge and Technology Transfer, Communication**

  Marieke Reuver, AquaTT

  - Organization of training courses
  - Knowledge & Technology Transfer
  - Internal communication
  - External communication including:
    - Development and maintenance website
    - Promotional material, press releases,…
  - Linking AQUAEXCEL to other EU networks

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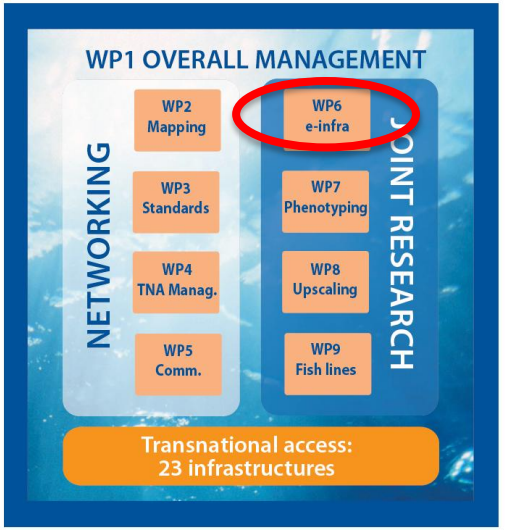
Joint Research Activities



- **WP6: Development of e-Infrastructures**

  Gunnar Senneset, SINTEF

  - Develop, implement and evaluate technical solutions for providing remote access to infrastructures
    - Technical and functional requirements
    - Information models for data management
    - Solutions for remote access and collaboration through real remote access experiments
    - Guide to standardize implementation of e-Infrastructure
    - Evaluation of the effects of the e-Infrastructure on experiments involving several partners

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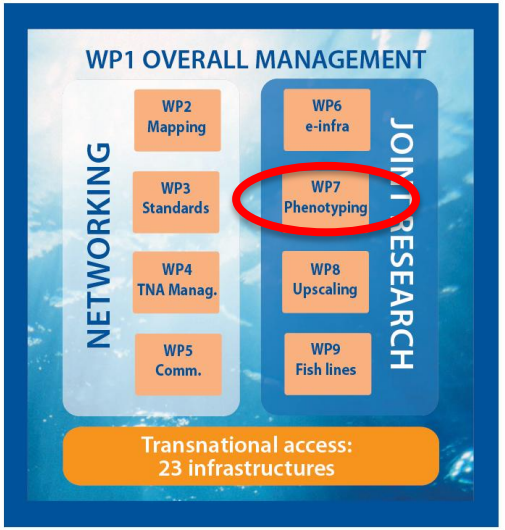

- **WP7: Phenotyping Individual Fish**

  Patrick Prunet, INRA

  - Phenotyping methods for traits related to health, welfare and performance in fish exposed to challenging situations
  - Characterize a non-lethal indicator of puberty
  - Standardization of a waterborne challenge with *Flavobacterium psychrophilum*
  - New methods for identification of individual fish in early life stages

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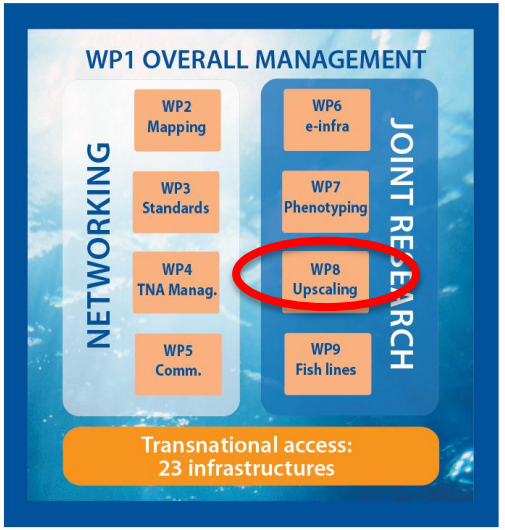
Joint Research Activities



- **WP8: Upscaling of Research Results**

  Bendik Fyhn Terjesen, Nofima

  - Creation of a simulation model of factors that change when experimental unit scale is varied, and how this can affect fish performance
  - Determination of the effect of experimental unit scale on fish performance (growth, survival) ➔ compare with model to refine it
  - Creation of a simulation model and determination of the effects of experimental unit scale on biofilter kinetics and efficiency

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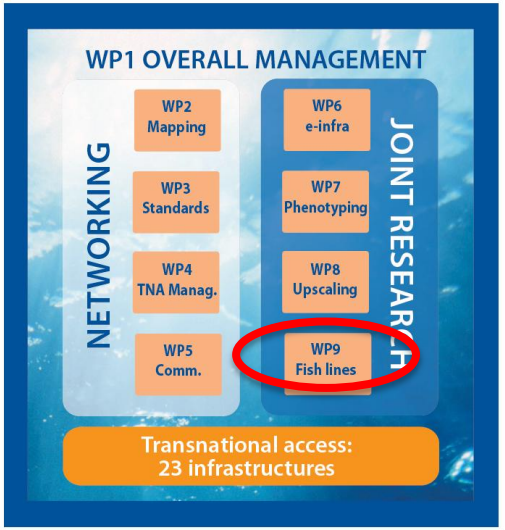
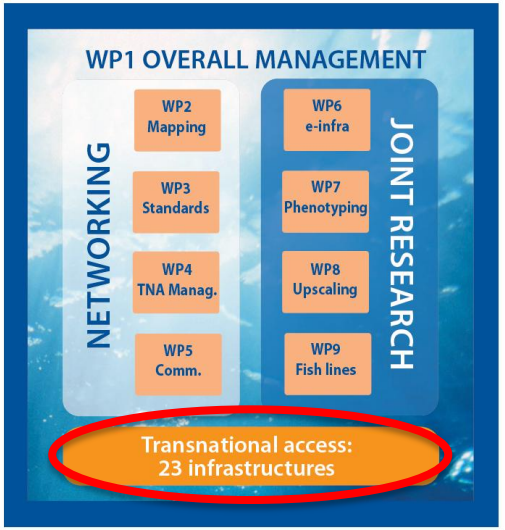
Joint Research Activities



- **WP9: Fish Lines**
  Brendan McAndrew, UoS
  - Reduce the number of fish used by refining the quality of the experimental animals
  - Produce and verify new isogenic lines in **salmon**, **seabass** and **carp**
  - Supply these lines or their DNA/RNA as a means to better understand levels of genetic variation associated with major commercial traits

Transnational access

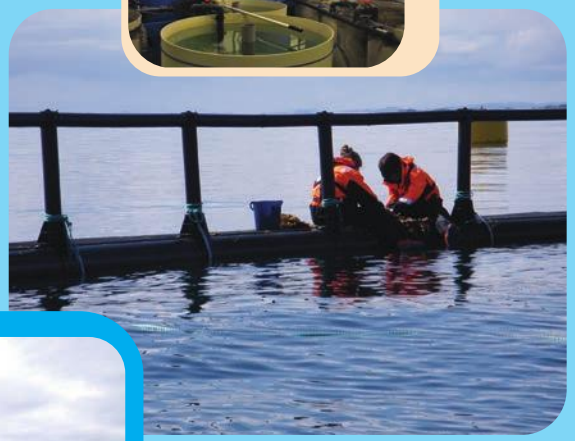


- 23 infrastructures, 27 installations
- Open to EU & Associates States[1] research teams
- Must be transnational
- PhD students working in the EU may apply
- For experiments up to 3 months
- Experiments, travel and subsistence: EU paid
- Extra analyses not covered
- Calls every 6 months (next: December 2011)
- See www.aquaexcel.eu for details

[1]Switzerland, Israel, Norway, Iceland, Liechtenstein, Turkey, Croatia, the Former Yugoslav Republic of Macedonia, Serbia, Albania and Montenegro

AQUA EXCEL

A synthetic view of TNA infrastructures



AquaTT

CSIC

ULPGC

HCMR

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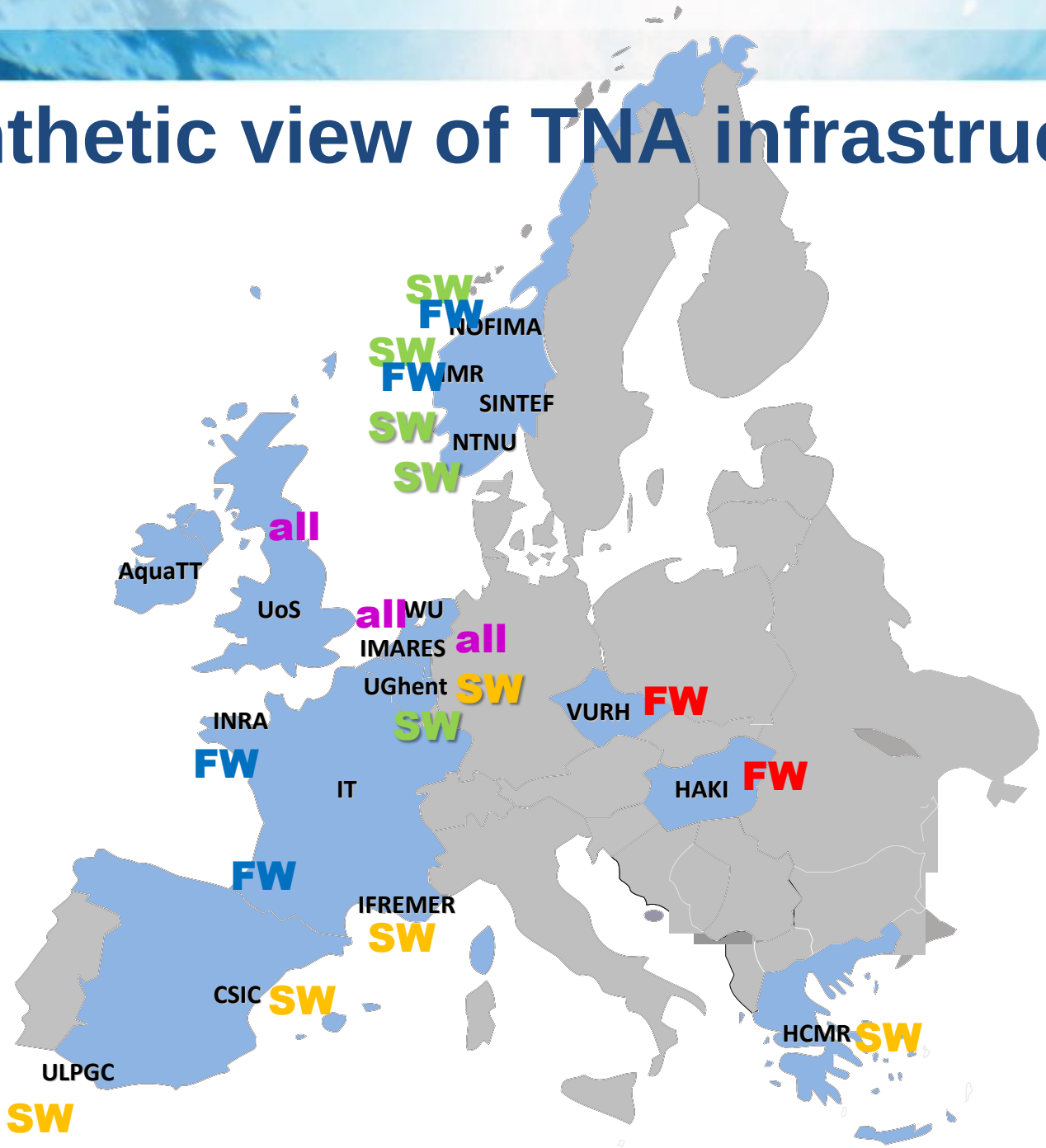

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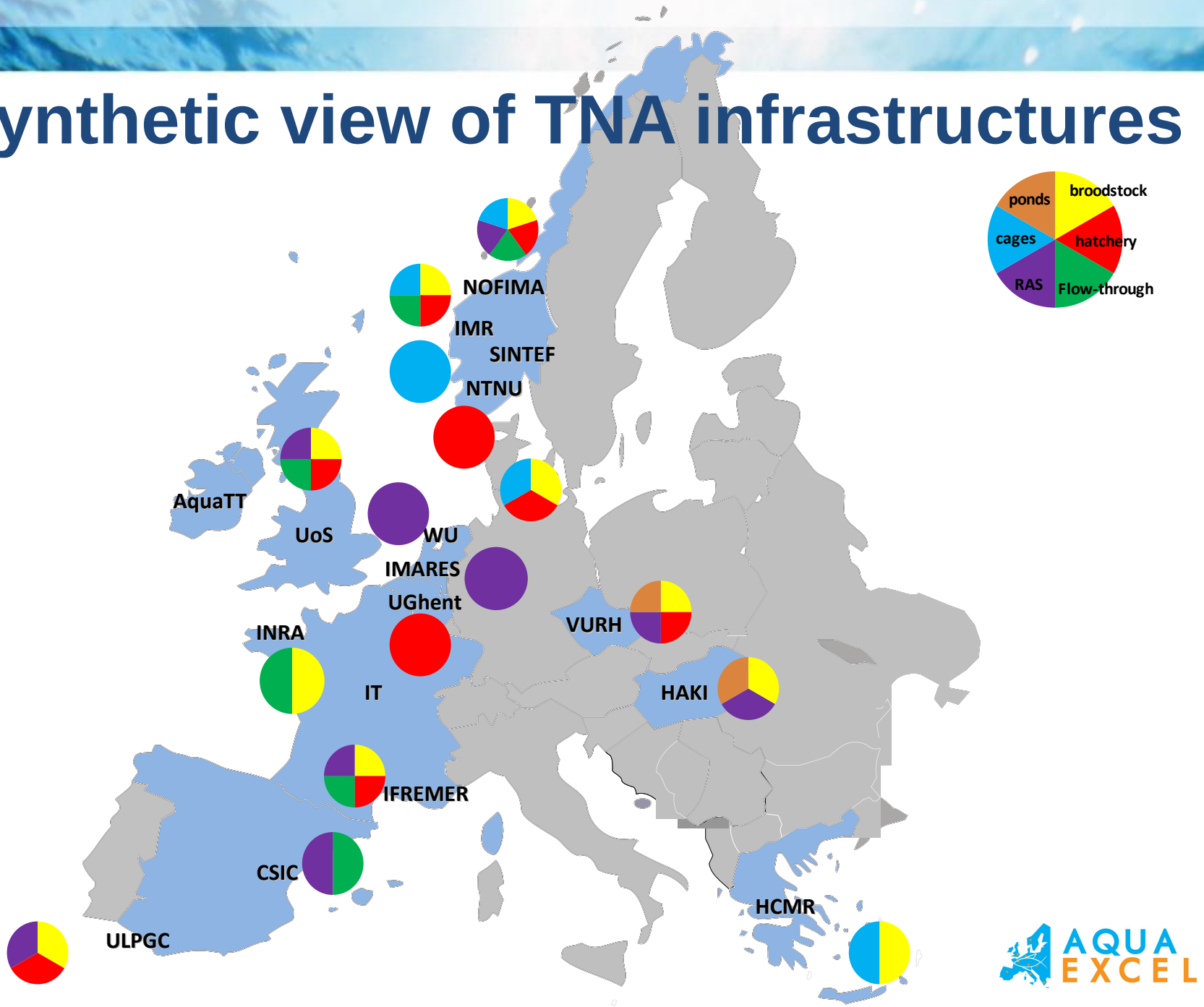

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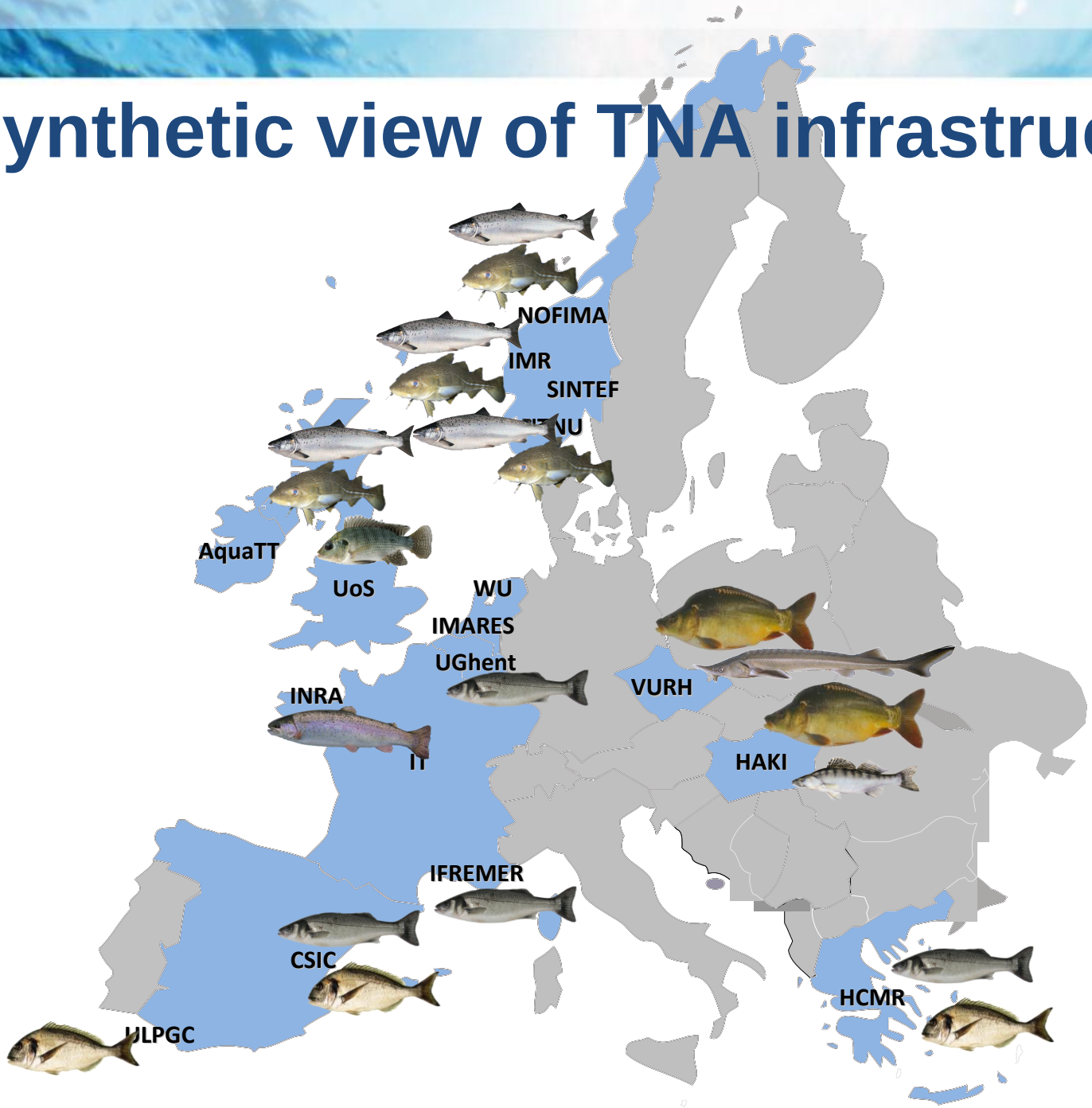

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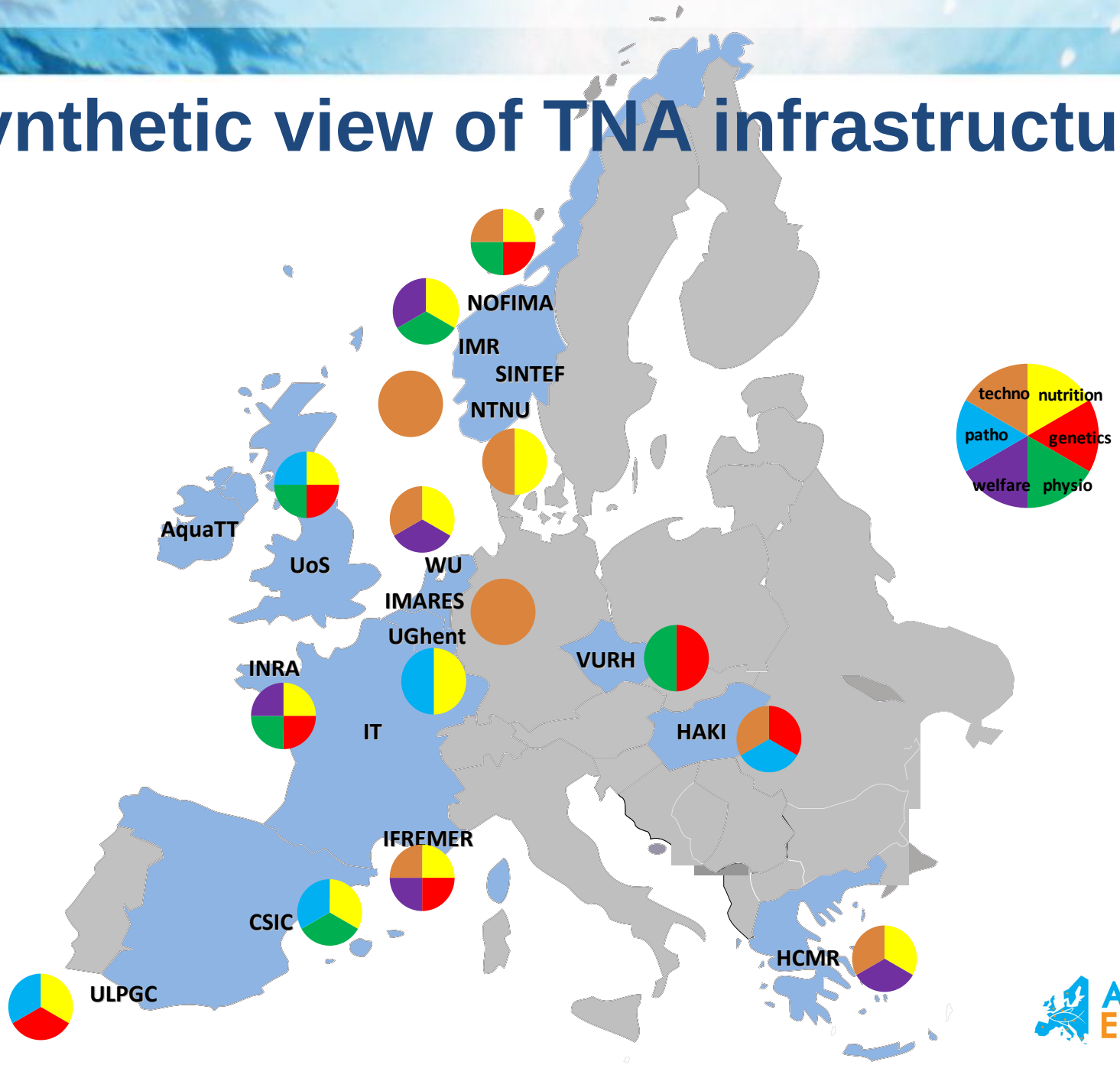

Conclusions

- By coordinating the « hardware », we aim at a **better integration of EU aquaculture research**

- Consult www.aquaexcel.eu to follow project progress
- Register your infrastructure on www.aquaexcel.eu
- Apply for Transnational Access: a unique opportunity to set up new collaborations. Next Call for Access opens in December 2011.

Contact us

Thank you for your attention

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Website: www.aquaexcel.eu

DISCLAIMER

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