

CAR - Centre d'Alt Rendiment - Sant Cugat  
High Performance Sports Training Centre - Barcelona –  
CATALONIA - SPAIN



## INNOVATION AT CAR Sant Cugat

Dec 6<sup>th</sup> - Topic 9 – Sports Technology

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Host of the ASPC  
Association for Sports Performance Centres  
[www.sportperformancecentres.org](http://www.sportperformancecentres.org)

Josep Escoda  
Head of International Relations & Innovation  
General Secretary ASPC  
IOC - Olympic Solidarity Mentor

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# Mission

To provide coaches and athletes with all the human, technical, scientific and technological resources to reach the highest sports levels as role model

To supply integrated training in a multisport and multidisciplinary environment

# Background

Established in 1987, becomes a legacy of the Barcelona 92 Olympic Games

A Public Company of the Catalan Government with an agreement with the Spanish Sports Council

Strategic agreements with Education Dept. and Health Dept. of the Catalan Government

# Science – Health & Technology Service Providers:

Strength Training & Conditioning, Health Care and Prevention, Physiology, Nutrition, Biomechanics & Psychology support





# ESTIL DE VIDA



Compromís per assolir un nou repte!

16 anys | Secundària

21 anys | Universitat

25 anys | Màster On-line

30 anys | Món Laboral

Un altre dia sempre és un repte!

Referents que ens guien

Desconnecta compartint

La recuperació forma part de l'entrenament

Millor prevenir que...

Divertir-se és part del joc

Millor en equip!

Petit descans, gran recuperació

Anticipa les metes diàries

Bateries "a tope!"

La formació obre portes

L'esmorzar és la principal ingesta del dia

Aprèn! Tu decideixes

10 minuts és més que 0

Hidrata't: Abans, durant i després

# Applied Technology on High Performance Training Center in the New Multisport facility



# Training in High Performance demand a high quality personalized process

## Multi-Sport Venue Principles:

- Balance Health vs Performance - Performance in focus Health is the way
- Modularity - Grow on your needs with commitment
- Integration - Simplify complexity. Unify the process
- Non Invasive - Respect the freedom of sport
- Instant Feedback - Return the relevant info to help improvement
- Control - Where you are where you go
- Quality - Consistency bring back the good results
- Ecology - Environment is a common concern
- Communication - At any level for sport needs.



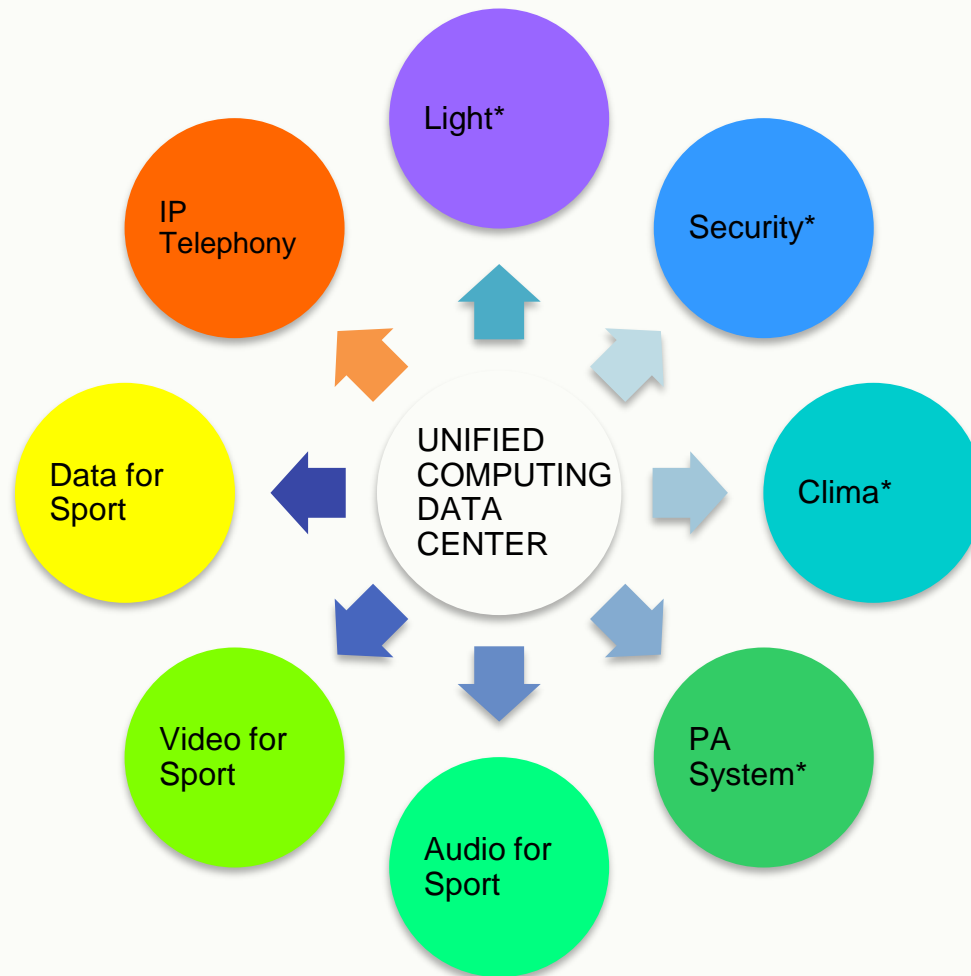


# Multi-Sport Venue Technology Requirements

- **TTU - Training Units**
  - Coach / Athlete / Sport Facility / Tech Equipment
  - Differs between specific events
- **TTU - Training Units Characterization**
  - Technologically adapted sport equipment
  - Information Systems based on IP
  - Continuous multidimensional recording
  - Permanent Biofeedback
  - Wireless based
  - ( Gathering / Display / Control )



# Integration under IP Standards

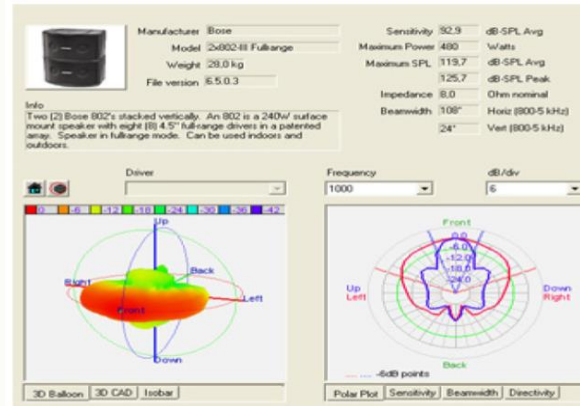
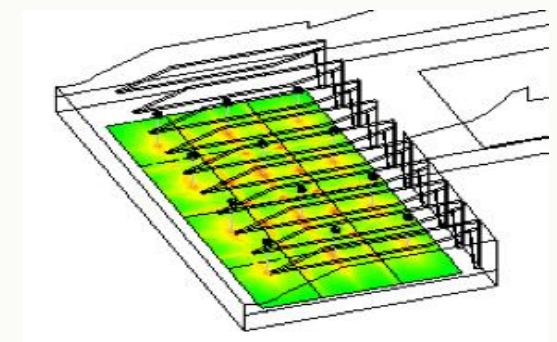
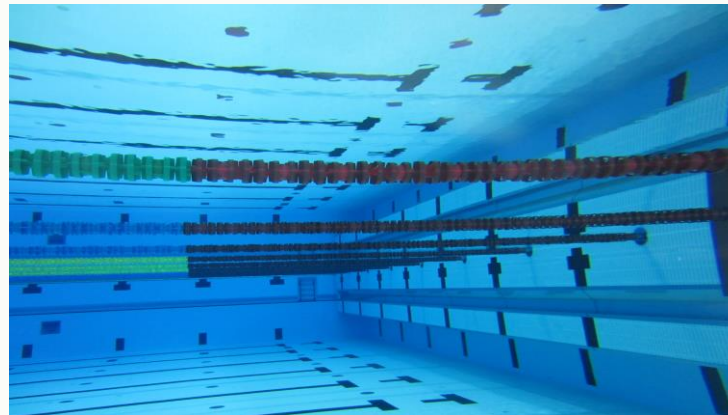


# New Tools in Digital Audio

Quality of Communication, Sound & Music  
Electroacoustic analysis of the facility by BOSE



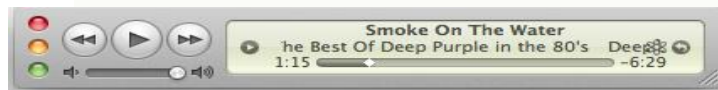
High quality Underwater sound



Multichannel audio  
Under IP

# Wifi Applications

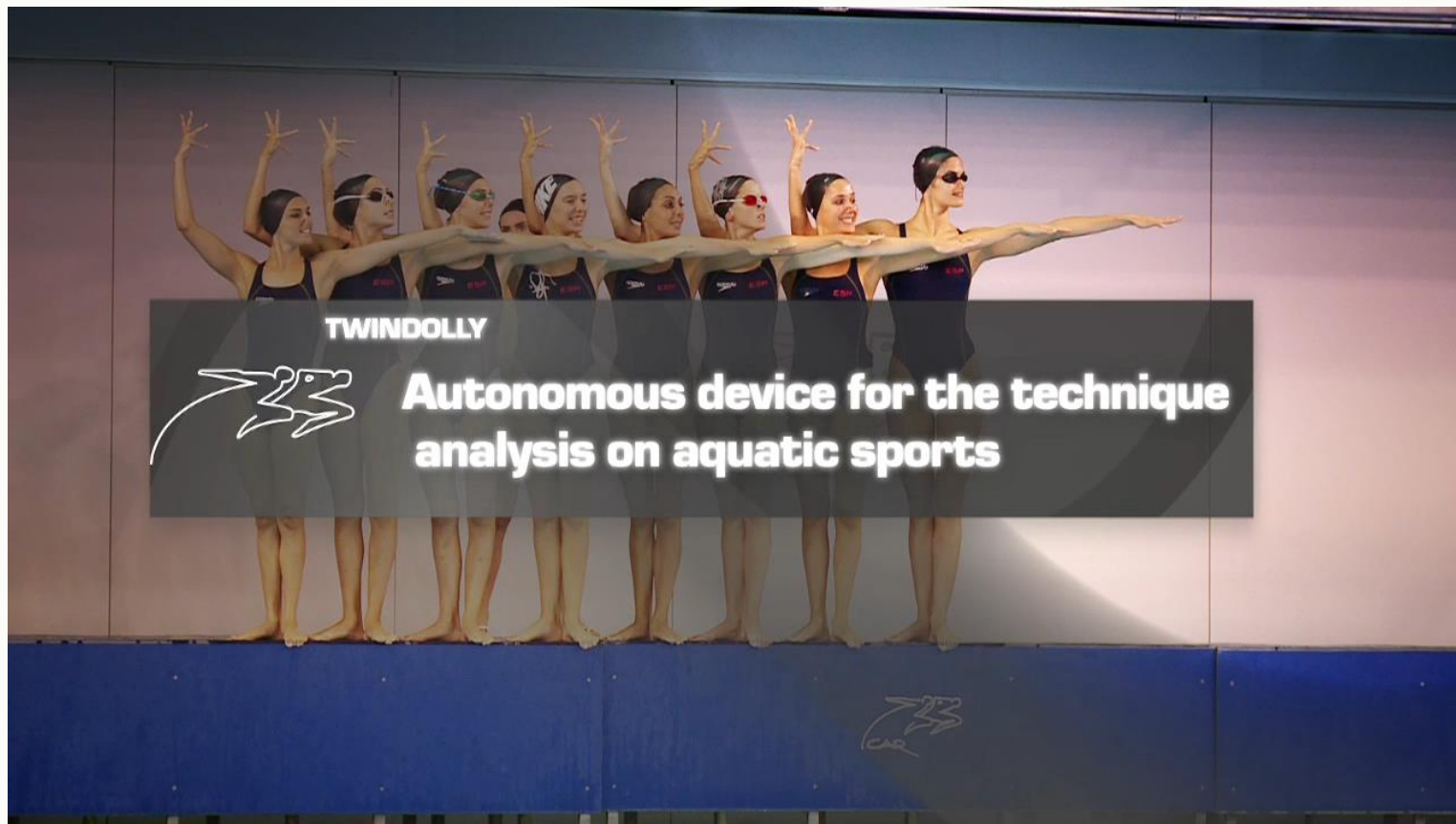
Quality of Communication, Sound & Music



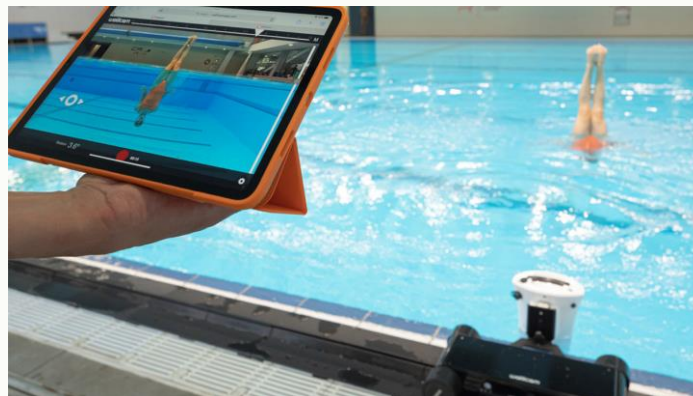
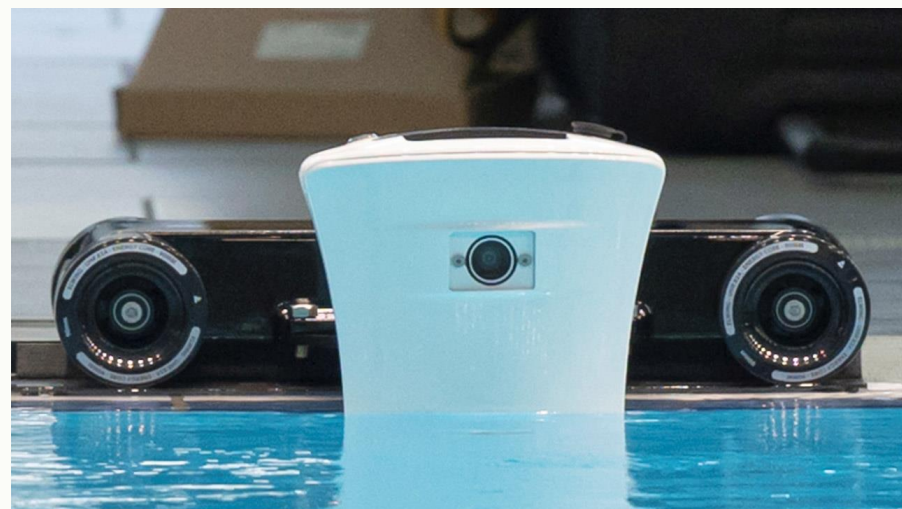
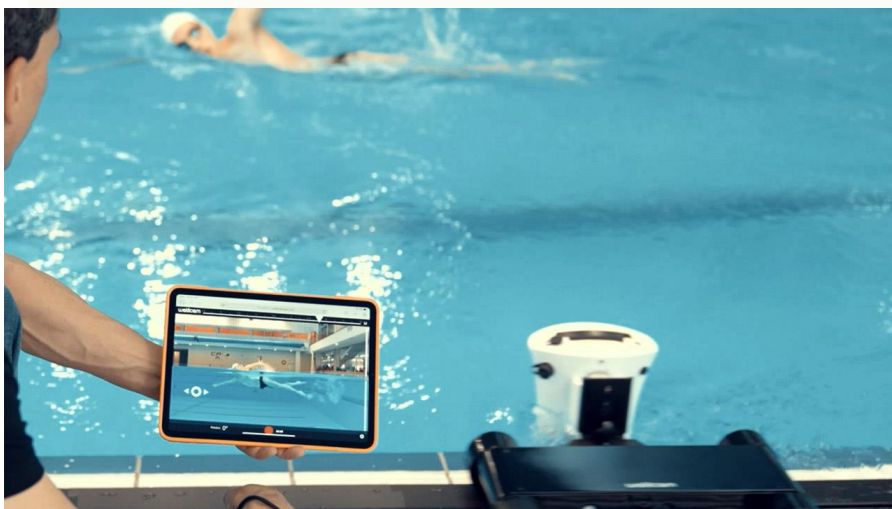
- 1.- Message quality between Coach & Athlete
- 2.- Stimulation strategies
- 3.- Relaxation strategies
- 4.- Competition immersive simulation



# TWINDOLLY Biomechanical Analysis of Aquatic Sports



## WATLICAM Public Version



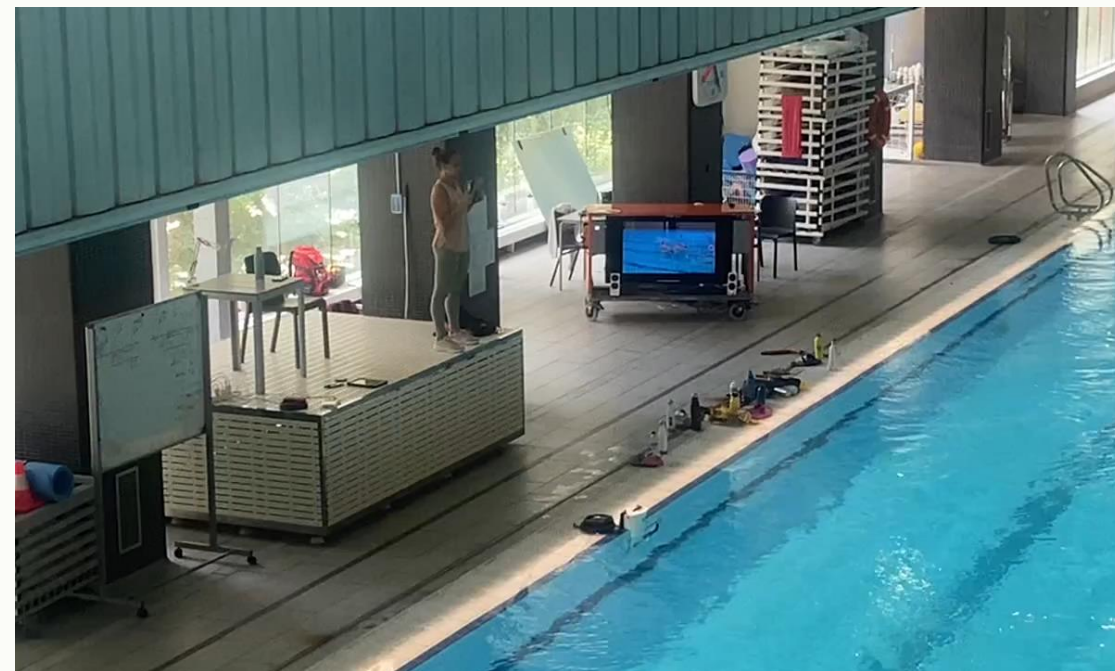
<https://watlicam.com>

# Wifi Aplicaciones

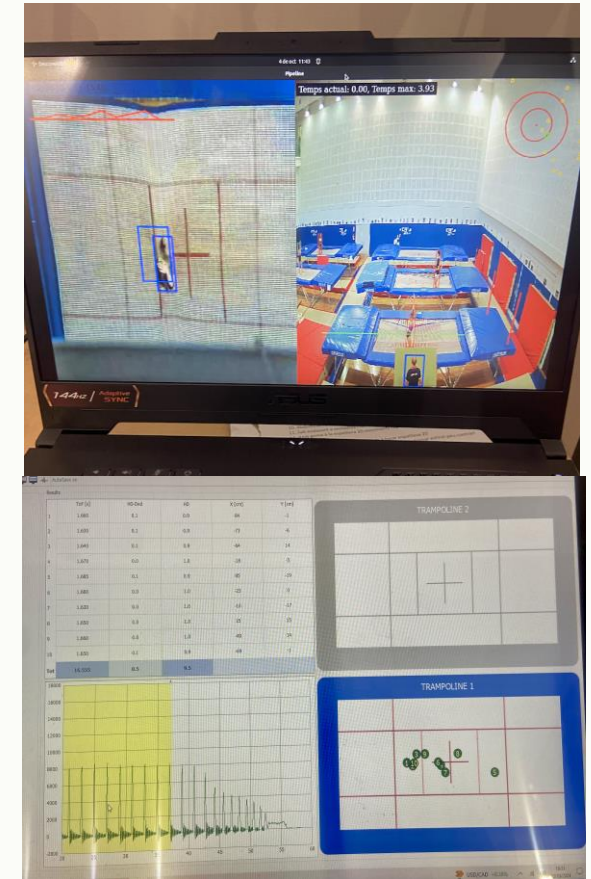
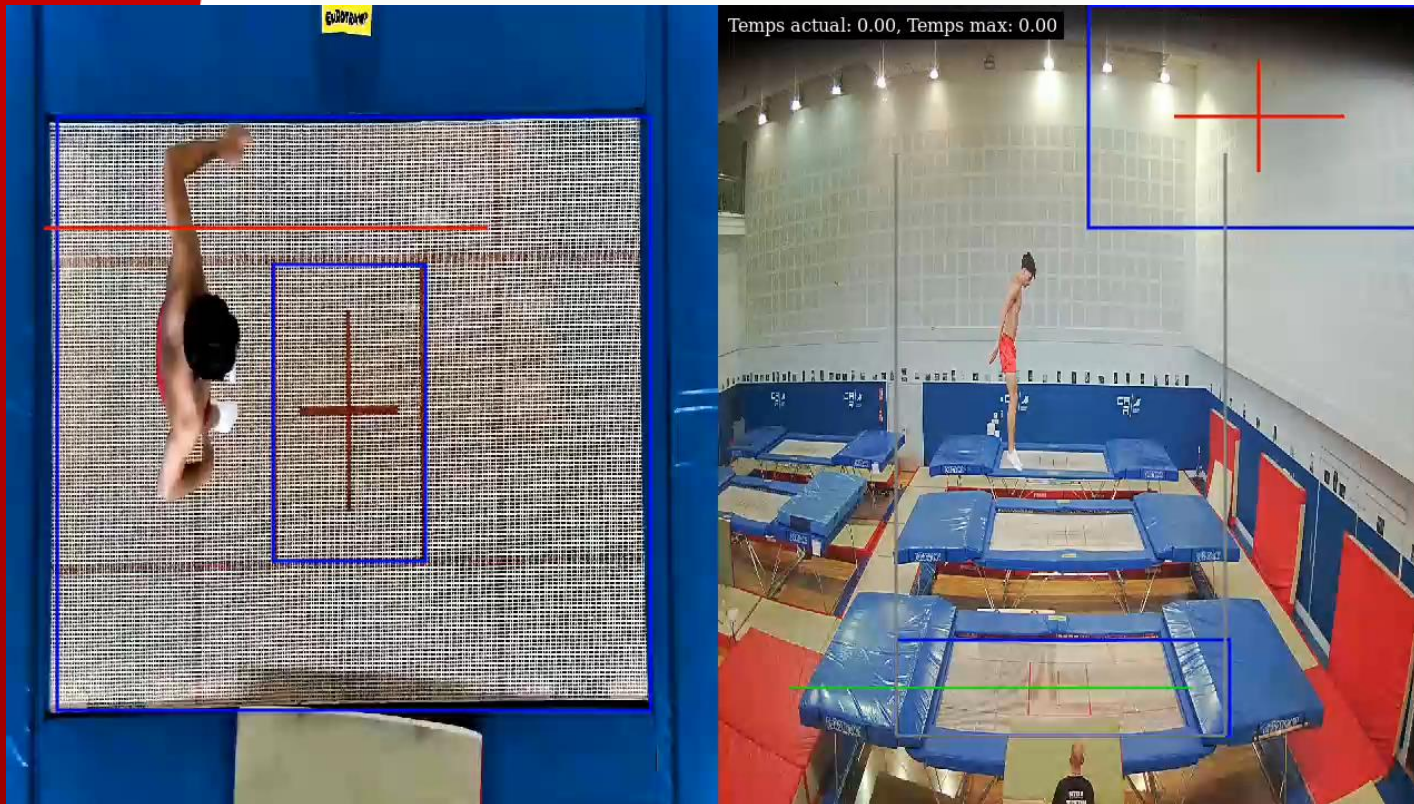


Realtime Collaborative Multicoach Video Recording & Feedback

EU Next Generation CSD - RFEN



# AI Applications in Trampoline with the Support of CTTI from Catalonia



Phase 1: Realtime image processing thru a Yolo v8 convolutional neural network

Phase 2: Virtual Jury assesment & evaluation



# AI Applications in Nutrition Monitoring & Analytics - Support of CTTI from Catalonia

The screenshot shows the nuclia web interface. The left sidebar contains navigation options: Home, Upload data, Resources list, Synchronize, Search, Widgets, and Advanced. The main content area displays search results for 'protein'. The top result is '10. A white plate topped with a fish covered in vegetables - Fish provides protein.' Below this, there is explanatory text: 'These examples highlight dishes where the primary protein sources are meat, chicken, or fish. If you need more specific information or additional examples, please let me know!' and buttons for 'Ask more' and 'Download log'. Under the 'Sources' section, two items are listed: 'Rosaada Horno.JPG' with a thumbnail image of a plate of fish and vegetables, and 'Trucha a la navarra.JPG' with a thumbnail image of a plate of trout.

The screenshot shows the nuclia web interface. The left sidebar contains navigation options: Home, Upload data, Resources list, Synchronize, Search, Widgets, and Advanced. The main content area displays search results for 'vegetables'. The top result is '1. Risotto de verduras'. Other results include '2. Arroz de verduras', '3. Lentejas con verduras', '4. Lasaña de verduras', '5. Crep de verduras', '6. Menestra de verduras', '7. Puding de verduras', '8. Buding de verduras', '9. Menestra de verduras con habas salteada', and '10. Menestra de verduras salteada'. Below the list, there is explanatory text: 'These dishes are all variations that incorporate vegetables as a primary ingredient. If you are looking for more specific information or recipes for these dishes, additional context or data would be needed.' and buttons for 'Ask more' and 'Download log'. Under the 'Sources' section, one item is listed: 'Menestra de verduras con habas saltead...' with a thumbnail image of a plate of vegetable soup.

Phase 1: Uploading content to an internal LLM AI Generative neural network for Q&A

Phase 2: Processing dishes from images to provide analytics

# Instant Hydration Monitoring thru Kamleon from Catalonia

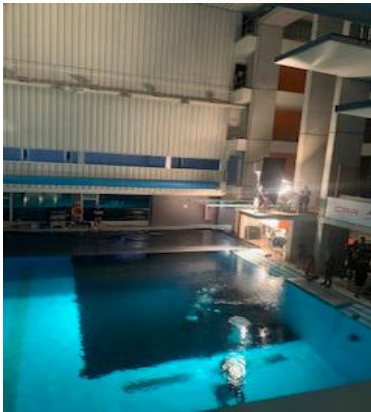


## Supporting Americas Cup Teams & FIS Worldcup



# BUSSINESS OPPORTUNITIES

## AV PRODUCTIONS AND COMMERCIALS



NETFLIX



# Thank you for your time

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