



Advanced  
Water Asset  
Rehabilitation  
in Portugal

AWAREP>>

# AWARE – P

## Advanced Water Asset Rehabilitation

June 2009

# Scope and objective



**Strategic asset  
management  
of urban water  
infrastructures  
in Portugal**

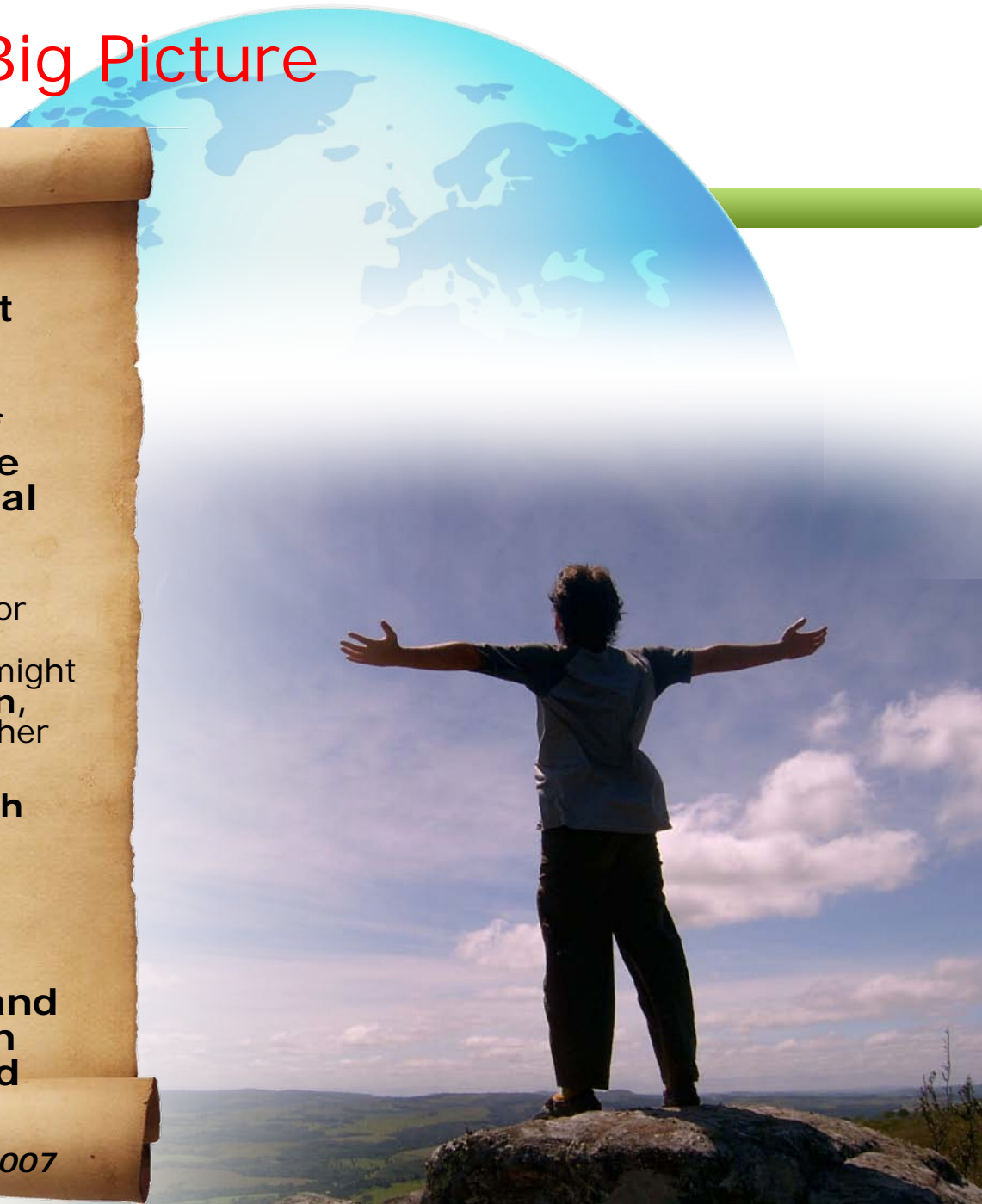
# Vision

- » Awareness
- » Change of culture
- » Provision of adequate and effective support tools



# Motivations: The Big Picture

- » Utilities and municipalities manage the world's largest portfolio of infrastructure assets
- » Improving management of infrastructure improves the allocation of scarce financial resources:
  - » Inefficient infrastructure investment can place a major burden on public finances, **diverting resources** that might otherwise go into **education, healthcare** and meeting other **social objectives**
  - » Enhances **economic growth**
  - » Improves **living standards**
  - » Improved **environmental sustainability**
- » The community is a major investor in infrastructure and therefore has an interest in ensuring it is well managed





# Urban water infrastructures are mostly buried (hidden to the public)





# Almost always...





## This means...

- » Urban water services are assumed as evident in the industrialised societies.
- » Because they are mostly buried:
  - » Are difficult to inspect and maintain
  - » Have low social visibility
  - » Do not "sell votes".

## Further more...

- » Are natural monopolies.
- » Behave as a system,
  - » Not as a sum of individual and independent assets.



# Poor rehabilitation implies...

- » Depreciation of the infrastructures = unsustainable services
- » Serious environmental impacts (e.g., spills of polluted water, water losses, discharge of untreated water to the water bodies)





# "Report card for America's infrastructure" (ASCE)

A = Excellent  
 B = Good  
 C = Poor  
 D = very poor  
 F = Service failure  
 I = Incomplete

Type	2001	2005	
Aviation	D	D+	↑
Bridges	C	C	↔
Dams	D	D	↔
Drinking water	D	D-	↓
Energy	D+	D	↓
Hazardous waste	D+	D	↓
Navigable waterways	D+	D-	↓

Type	2001	2005	
Rail			
Roads	D+	D	↓
Schools	D-	D	↑
Security	--	I	
Urban waste	C+	C+	↔
Transit	C	D+	↓
Wastewater	D	D-	↓

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«America faces a **shortfall of \$11 billion annually** to replace aging facilities and comply with safe drinking water regulations.»



# "Report card for America's infrastructure" (ASCE)

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Transportation	C	D	↓
Wastewater	D	D-	↓

...  
 «The EPA estimates that the nation must invest \$390 billion over the next 20 years to replace existing systems and build new ones to meet increasing demands.»  
 ...



In Portugal, the  
situation is not any  
better.

On the contrary...

# We cannot afford the *statu quo*!

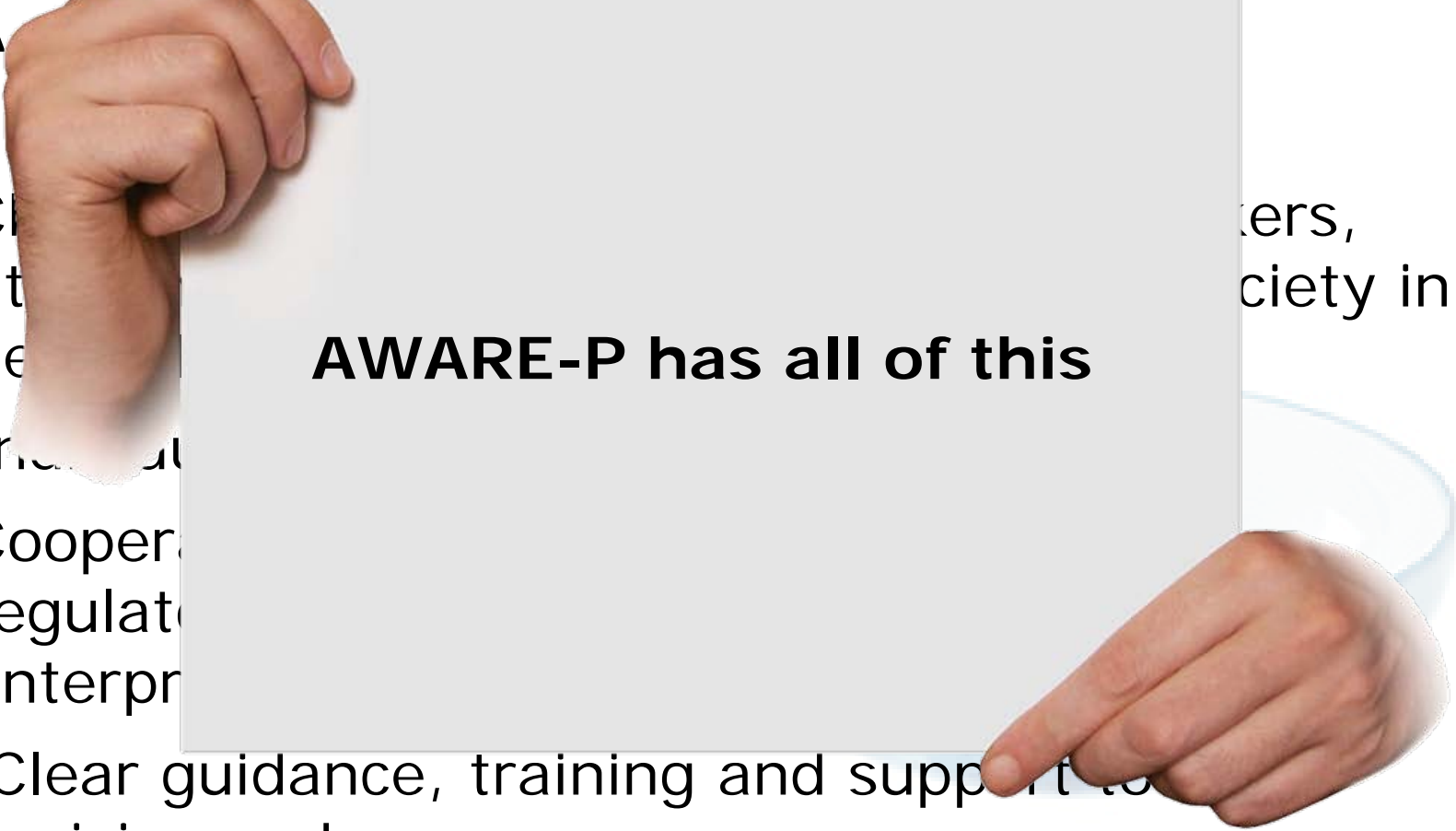


# What is needed

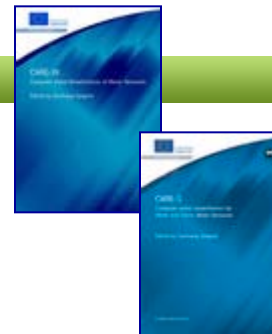
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- » A national perspective
  - » Change of culture of politicians, policy makers, utility managers, engineers, customers, society in general
  - » Individual initiatives are not effective
  - » Cooperation between research, academy, regulators, industry (manufacturers, consultants, enterprises) and utilities
  - » Clear guidance, training and support tools to decision makers



# What is needed

- 
- » A
  - » Clear guidance, training and support to decision makers, society in
  - » In
  - » Cooperate with regulatory enterprise
  - » Clear guidance, training and support to decision makers

# Antecedents



# CARE-W and CARE-S outcomes, strengths and weaknesses

## » Outcomes / strengths:

- » Integrated approaches to pipe and sewer rehabilitation
- » Software prototypes
- » Many scientific publications
- » European R&D&I network

## » Weaknesses

- » Lack of a system approach
- » Data hungry modules
- » Non-professional software (not user friendly, bugs, complex to use in many cases) (modules mainly developed by researchers)
- » Not directed to small and medium utilities, which are dominant in Portugal



# Developing partners

- » **LNEC** – National Laboratory of Civil Engineering
- » **SINTEF** (Norway)
- » **IST** – Technical University of Lisbon
- » **IRAR**- Institute for the regulation of water and waste
- » **Ydreams** – professional software house

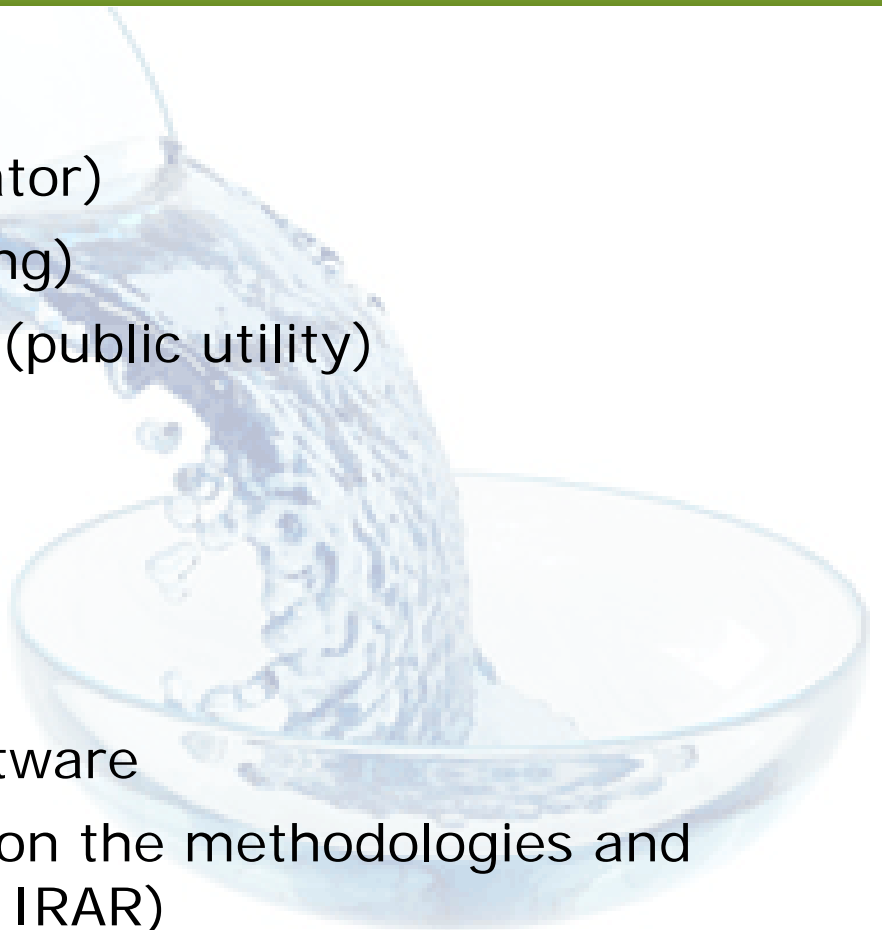


# End-user partners

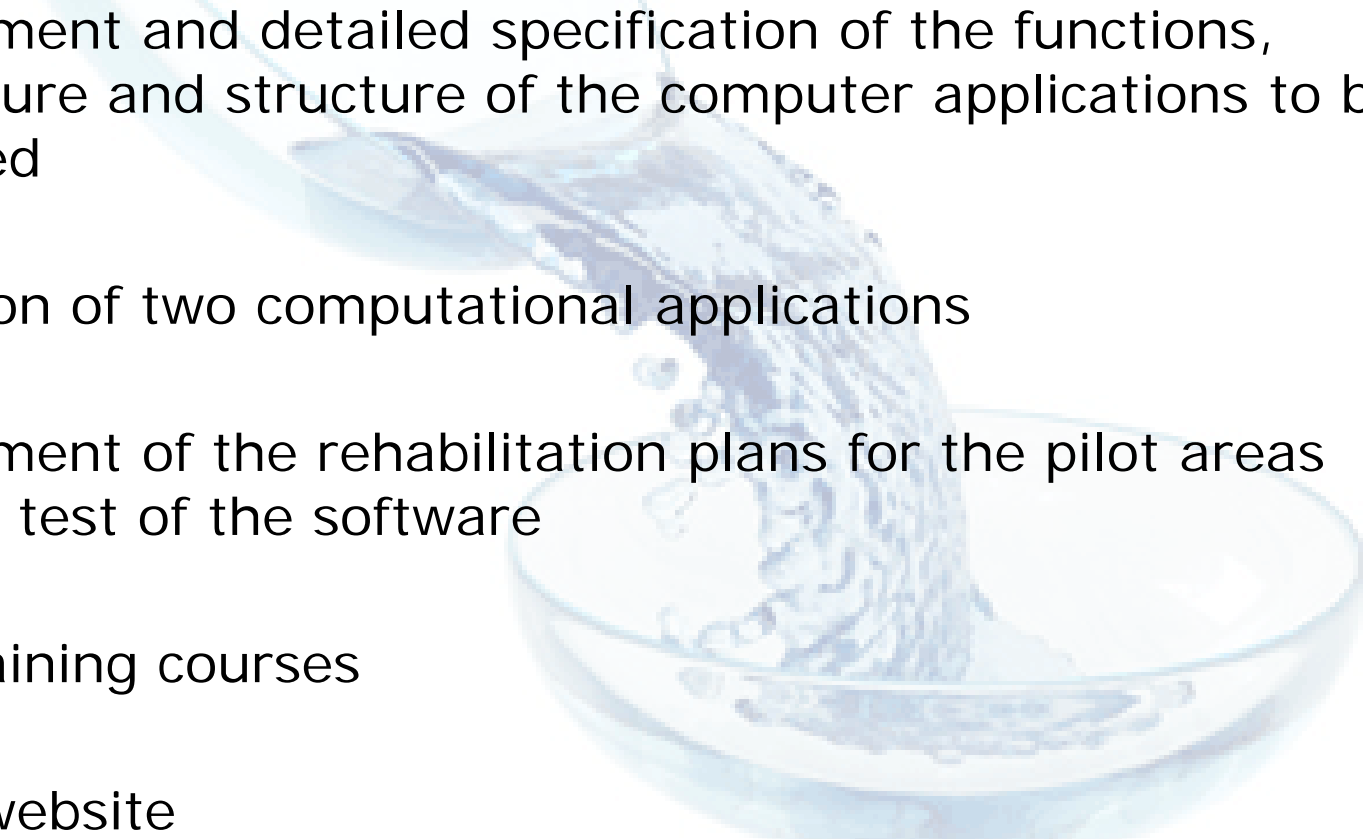
- » **IRAR** (regulator)
- » **Veolia Agua** (private operator)
- » **AdP Serviços** (public holding)
- » **SMAS Oeiras & Amadora** (public utility)
- » **AGS** (private holding)

End-users' role:

- » Advisory board
- » Test methodologies and software
- » Develop rehab plans based on the methodologies and software developed (except IRAR)
- » Co-sponsor the project



# Project activities

- 
1. Development and detailed specification of the functions, architecture and structure of the computer applications to be developed
  2. Production of two computational applications
  3. Development of the rehabilitation plans for the pilot areas and field test of the software
  4. Short training courses
  5. Project website

# Project outputs

- » Enhanced versions of two **rehab manuals**
- » **Computer decision support applications**
- » **User manuals** of the software
- » **Pilot studies / demonstration cases**
- » **Training courses** (direct teaching)
- » Materials for **e-learning** courses
- » Dissemination platform (web-based)
- » Technical and scientific papers



# Expected benefits

- » Better trained staff
- » Adequate strategic, tactical and operational planning of urban water infrastructures
- » Better trained staff
- » Implementation of rational asset management solutions

**More rational investments  
=  
Higher levels of service  
+  
More sustainable urban water services**

# Who will benefit from AWARE-P?

» All the stakeholders of the urban water services, because:

## In Portugal:

- » Portuguese utilities will receive training and will have free access to all products of the project by 2011
- » The National regulator will encourage their use

## Internationally:

- » The software and its user manuals will be developed in Portuguese and in English and made publicly available.

## Contacts

For more information about this project visit:

**[www.aware-p.org](http://www.aware-p.org)**

or send a message to:

**[aware-p@lnec.pt](mailto:aware-p@lnec.pt)**