

## An eLearning approach for improving household water efficiency

**P. Kossieris, A. Panayiotakis, K. Tzouka, P. Gerakopoulou, E. Rozos and C. Makropoulos**

National Technical University of Athens  
School of Civil Engineering  
Department of Water Resources &  
Environmental Engineering

15/07/2014

# Developing the eLearning facilities

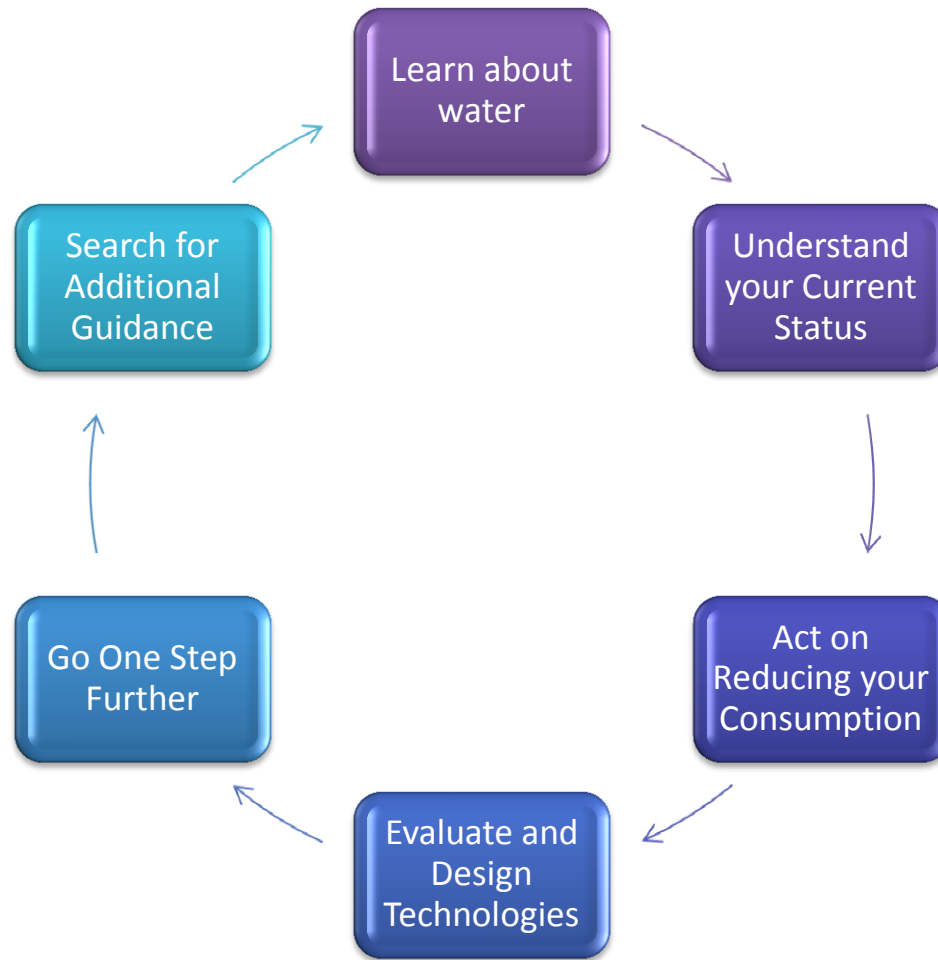
- The **eLearning facilities** aim to **support** and **motivate** end-users to improve their domestic water-efficiency, bringing new awareness on household level and bridging the gap between customers and new ICT services.
- The platform is mostly developed around **Moodle** online suite which was extended in order support additional add-on web applications and facilities.



## Towards an eLearning approach

- **Aspects of guided, but flexible, learning process**
  - Sense of control and self-direction
  - Specific goals to achieve
  - Practical knowledge and experience
  - Sense of group and social networking
- **The course structure and platform's front-end were further supported by a social research in Athens on consumers' cognition on the potential use of ICT services in water sector.**
  - **Dominant forms of information:** tips, interactive material (games, FAQ's, quizzes), narratively or visually water stories
  - **Dominant means of presentation:** graphics, comprehensive tables and figures, videos and animations, images and sketches of appliances, sort and easy messages
- **Adoptions of a flexible knowledge cycle that incorporates the above characteristics and implements the various applications**

# The eLearning knowledge cycle



# Learn about Water

- Information on **“water identity”** with special focus on domestic water, through a series of **questions & answers**.
- The user can opt the **level of detail** of the presented feedback and resources.

The screenshot displays the iWIDGET eLearning platform interface. At the top, a navigation bar includes links for Home, Project, Partners, News, eLearning (highlighted), Publications, and Contacts. Below this, a breadcrumb trail reads: HOME > BE SMART WITH WATER IN THE HOUSE > LEARN ABOUT WATER > FREQUENTLY ASKED QUESTIONS > VIEW LIST.

On the left, a 'Navigation' sidebar lists various menu items: Home, My home, Site pages, My profile, Current course, Be Smart with Water in the House (expanded), Participants, General, Learn about Water (expanded), Frequently Asked Questions (expanded), View list, View single, Search, Understand your Water Consumption Profile, Act on Reducing Consumption, Evaluate and Design, Go One Step Further, and Additional guidance and resources.

The main content area is titled 'Frequently Asked Questions'. It features a text box stating: 'Here is what you really want to know about water! Press "Learn More" tab for even further information and "Related Sites" tab for relevant sites and sources.' Below this text box are four buttons: View list, View single, Search, and Add entry.

The 'Question' section displays: 'Page: 1 2 (Next)' and 'Question: What is the **hydrologic cycle**?'. The 'Answer' section provides a detailed explanation: 'Earth's water is following a constant track known as the **natural water cycle**. The water cycle, also known as **hydrologic cycle**, describes the continuous and endless movement of water on, above and below the surface of our planet, according to the following three basic steps: 1) the **water precipitates from the atmosphere**; 2) **travels on the surface and through groundwater** to the oceans; and 3) **evaporates or transpires** back to the atmosphere from land or evaporates from the oceans.' A 'Learn More:' button is located at the bottom of the answer section.

# Test “Water Sense”

- Through a **multiple-choice quiz** the users can evaluate their behaviours related to domestic water consumption and test their knowledge on “water issues”.
- The platform highlights the correct answers and ranks the performance, offering the **sense of competition**.

The screenshot displays the 'Water Sense Quiz' interface. At the top, a navigation bar includes links for Home, Project, Partners, News, eLearning (active), Publications, and Contacts. Below this, a breadcrumb trail reads: HOME > BE SMART WITH WATER IN THE HOUSE > UNDERSTAND YOUR WATER CONSUMPTION PROFILE > WATER SENSE QUIZ.

**Quiz navigation:** A grid of 22 numbered buttons (1-22) is shown, with buttons 1-6 in green, 7-12 in red, 13-18 in blue, and 19-22 in purple. A 'Finish review' link is at the bottom.

**User Info:** Demo User

**Quiz Statistics:**

Started on	Sunday, 26 January 2014, 11:46 am
State	Finished
Completed on	Sunday, 26 January 2014, 11:48 am
Time taken	1 min 21 secs
Marks	3.00/22.00
Grade	1.36 out of a maximum of 10.00 (14%)

**Question 1:** Correct. Mark 1.00 out of 1.00. Flag question.

**Question 1:** In parts of Europe, water loss via leakages exceeds:

Select one:

- ☐ a. 10 % of total supplies
- ☒ b. 40 % of total supplies ✓
- ☐ c. 70% of total supplies

Your answer is correct.  
The correct answer is: 40 % of total supplies

**Question 2:** Correct. Mark 1.00 out of 1.00. Flag question.

**Question 2:** Which of the following practices is the most water efficient?

Select one:

- ☐ a. turning off the tap while cleaning drain stains of grease
- ☒ b. taking a five minute shower instead of bath ✓
- ☐ c. using a water-saving toilet

Your answer is correct.  
The correct answer is: taking a five minute shower instead of bath

**Question 3:** Correct.

**Question 3:** By washing full loads of clothes and dishes:

# Explore “ Water Profile”

HOME » BE SMART WITH WATER IN THE HOUSE » UNDERSTAND YOUR WATER CONSUMPTION PROFILE » WATER CALCULATOR

Navigation

- Home
  - My home
  - Site pages
  - My profile
  - Current course
    - Be Smart with Water in the House
      - Participants
      - General
      - Learn about Water
      - Understand your Water Consumption Profile
        - Water Sense Quiz
        - Water Calculator
      - Act on Reducing Consumption
      - Evaluate and Design
      - Go One Step Further
      - Additional guidance and resources
- My courses

Water Calculator

Discover the water consumption profile of your household!

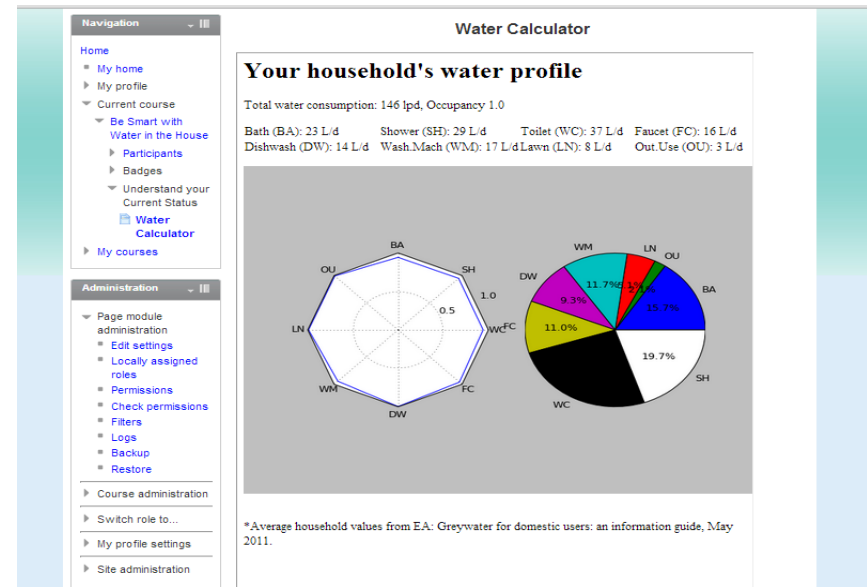
Learn how your total water consumption is allocated into the various domestic indoor and outdoor uses, by specifying your personal characteristic.

**Your household's water details**

Number of people in residence	1
<b>BATHROOM WATER USE</b>	
Weekly showers in the residence per person	4.2
Average shower time (min)	8
Weekly baths in residence per person	2.0
<b>TOILET WATER USE</b>	
Average number of flushes daily per person	4.12
Flush volume (L)	9
<b>FAUCET WATER USE</b>	
Average number of times each person uses faucet daily	4
Duration of faucet use (min)	1
<b>DISHWASHING WATER USE</b>	
How many times are dishes washed by hand weekly	2
How many dishwasher loads each week	1
Water usage per dishwasher load (L)	35

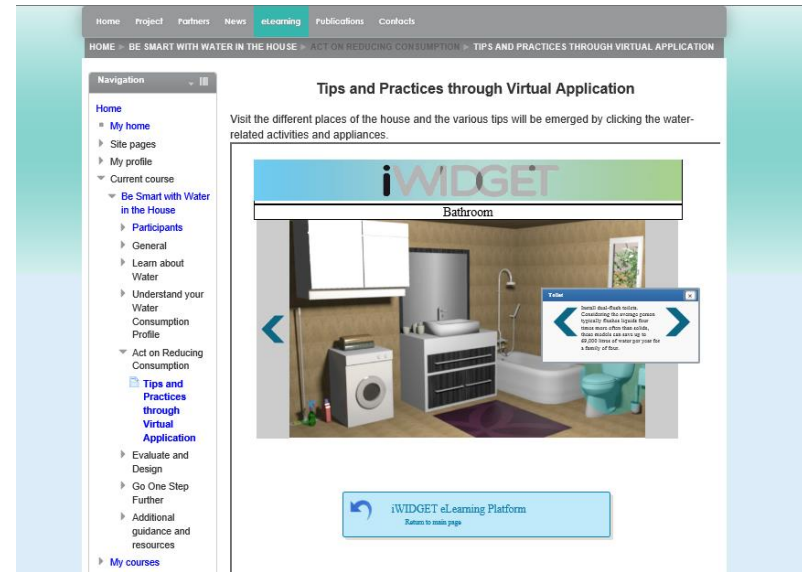
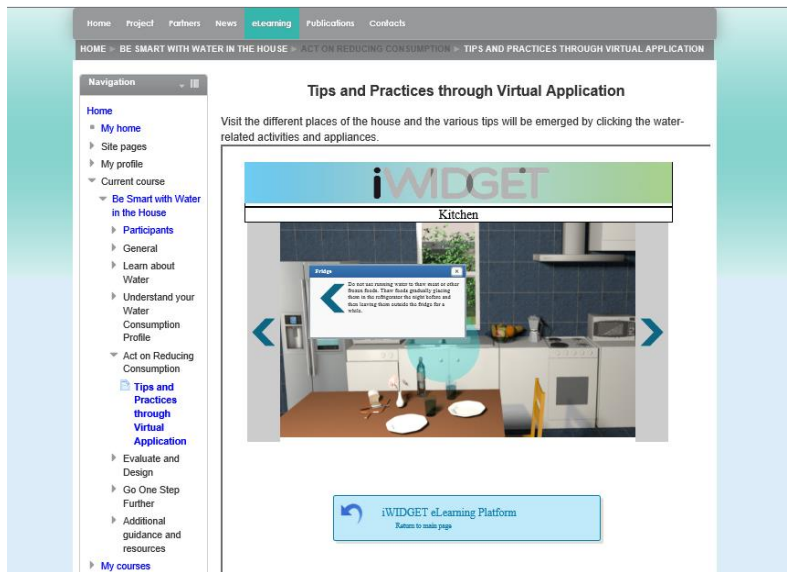
- The **on-line Water Calculator** provides detailed information on the water consumption profile of the household.
- As **input parameters**, the application takes information about **daily habits** and **property characteristics**.

- The results are presented in the form of a **report** and **pie charts** that depict the breakdown of total water consumption into main indoor and outdoor water uses.

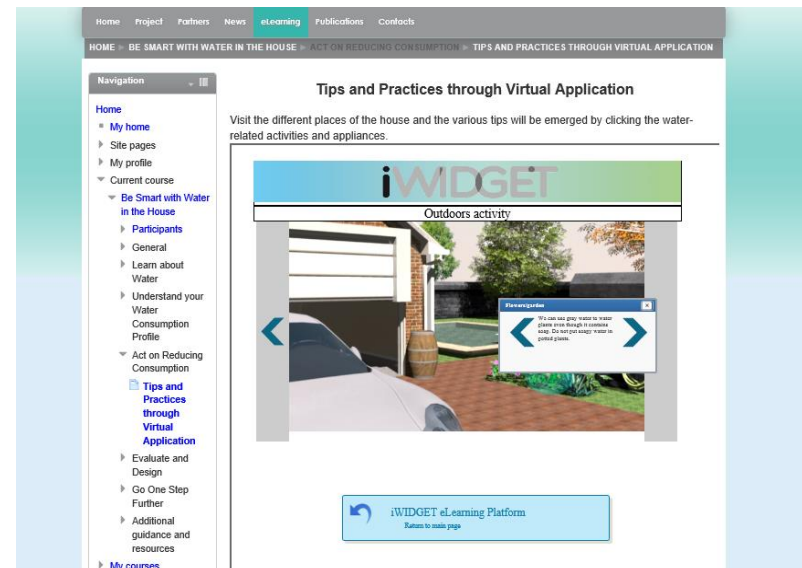




# Improve “Water Efficiency”

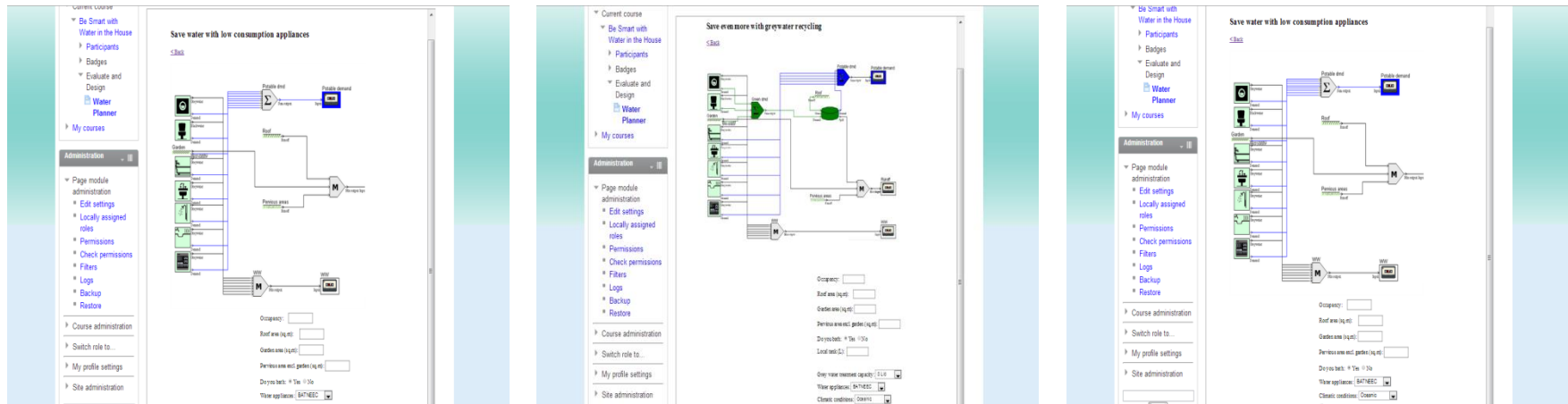


Through the **online application** the user can navigate at different places within **a virtual house**, and the various **tips and practices** will emerge by clicking on an activity or appliance.

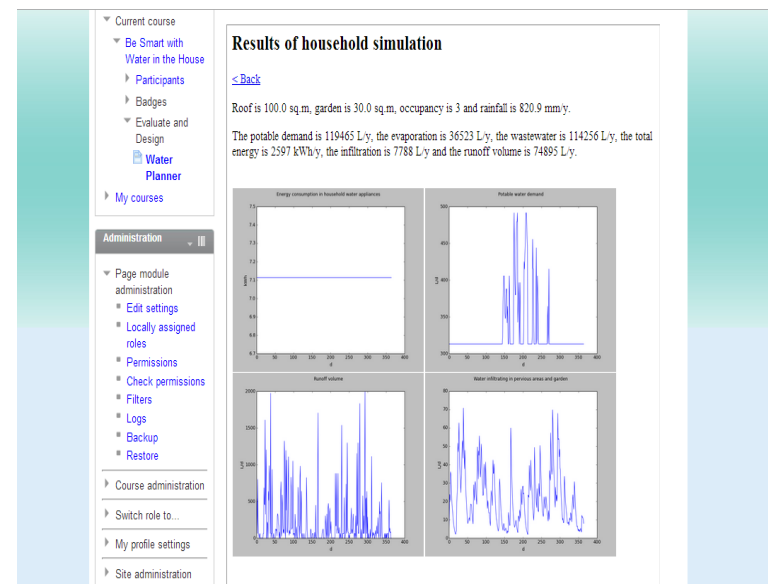




# Evaluate and Develop



- The “**Water Planner**” is a what-if modelling tool, based on **UWOT model**, that simulates the domestic water network with both **BAU** and/or **BATNEEC** appliances and advanced **WDM infrastructures**.
- The portal presents graphs of annually potable demand, wastewater, energy consumption etc.





## Giving a sense of group

The platform promotes the active participation of the user.

- **Discussion forum** about water efficiency. The user could share his personal experience and practices on water saving.
- **Pool of links** with resources and relevant sites or videos.
- **Online dictionary** with basic water-related terms.

# iWIDGET

Smart meters  
Smart water  
Smart societies

# Live demonstration



iWIDGET eLearning platform is available at:

<http://www.i-widget-elearning.eu/iWidget/>

For a demo experience use:

username: **demouser**, password: **demo**

A screenshot of the iWIDGET eLearning platform's login page. The page has a teal header with the iWIDGET logo and the text "Smart meters, Smart water, Smart societies". A navigation bar below the header contains links: Home, Project, Partners, News, eLearning (highlighted), Publications, and Contacts. Below the navigation bar, there's a section titled "Returning to this web site?" with a login form. The form includes fields for Username (pre-filled with "demouser") and Password, a "Remember username" checkbox, and a "Login" button. There's also a link for "Forgotten your username or password?". Below the login form, there's a link for "Login as a guest". To the right of the login form, there's a section titled "Is this your first time here?" with a list of 7 steps for creating a new account. At the bottom of this section is a link for "Create new account". The page also indicates "You are not logged in." in the top right corner.

For video demonstration visit:

<http://www.youtube.com/watch?v=s1zQ4KQI1SQ&feature=youtu.be>