

Centrum voor geo_informatie

Integrated Solution Support System I3S

Team Systems



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Aquastress project overview 1-3

- AquaStress is an EU funded integrated project
- In Aquastress we try to deliver interdisciplinary methodologies
 - enabling actors at different levels of involvement
 - at different stages of the planning processto mitigate water stress problems

Aquastress project overview 2-3

Some goals of the project

- assessment of the effectiveness of water stress management measures and development of new tailored options
- development of supporting methods and tools to evaluate different mitigation options and their potential interactions
- development and dissemination of guidelines, protocols, and policies;
- development of a participatory process to implement solutions tailored to environmental, cultural, economic and institutional settings
- continuous involvement of citizens and institutions within a social learning process that promotes new forms of water culture and nurtures long-term change and social adaptivity.

Aquastress project overview 3-3

Aquastress adopts a Case Study - stakeholder driven approach and is organized in three phases:

1. characterization of selected reference sites and relative water stress problems
2. collaborative identification of preferred solution options
3. testing of solutions according to stakeholder interests and expectations.

I3S – Integrated Solution Support System

- The I3S is not merely about model integration
- Emphasis is on sharing of knowledge and experience

I3S – Integrated Solution Support System

- One of the cornerstones of the approach taken in AquaStress is that organizing available knowledge provides sufficient information:
 - to improve the possibility to make a water stress mitigation process truly end-user driven
 - meaning that dedicated local information is only collected after specific need is expressed by the stakeholders in the process

I3S – Integrated Solution Support System

- The novelty of the I3S lies in the combination of such knowledge stored in knowledge-bases, with adaptable workflow management facilities and with specific task-oriented tools – all originating from different sources.

I3S – Integrated Solution Support System

- We are aiming at developing a system which supports the entire participatory process, by providing a suite of integrated software tools and a knowledge system that allows having both experience and scientific information at the fingertips.

The I3S web portal

The screenshot shows a Mozilla Firefox browser window displaying the AquaStress I3S web portal. The browser's address bar shows the URL `http://test.wisl.nl/aquastress/index.html`. The page features a navigation menu on the left with categories: GENERAL (Process Definition, Facisheets), QUERY (Water Stress Options, Water Stress Indicators, Example Sites), EDIT (Knowledgebase Editor, Database Editor), TOOLS (Available Tools), and ABOUT (Glossary). The main content area includes the AquaStress logo, a European Union flag, and navigation links for Home, Newsletter, and Contact Us. The main heading reads "Welcome to the AquaStress Integrated Solution Support System (i3S)". Below this, it states "i3S helps you to:" followed by a list of bullet points: "understand water stress from an integrated multi-sectoral perspective" and "combine the wide variety of existing and new analysis, and mitigation options to deliver optimal and adaptable solutions to water stress." Further down, it says "This web application allows you to:" followed by a list of bullet points: "Define the process you should follow to solve water management problems", "Share data, information, knowledge and experiences", "Get access to water management tools", and "Learn more about terminology (glossary) and the AquaStress project". At the bottom, it says "Getting started:" followed by a list of bullet points: "Use the wizard or" and "Browse and play using the navigation bar!". The browser's taskbar at the bottom shows the application name "Integrated Solution Support Syst..." and the status "Klaar".

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- This set of tools should effectively support the participatory development of a water stress mitigation plan.

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- The core of the system is the Knowledge base

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- The Knowledge base makes it possible to store information on:
 - Options
 - Indicators
 - Test sites
 - Available models
 - Definitions (e-Glossary)

I3S – Integrated Solution Support System

- The Knowledge base also stores process descriptions used in the Aquastress test sites
- These process descriptions can be used and adapted for other sites in other projects

I3S – Integrated Solution Support System

- That's where another important tool comes in: PRoST – The Process management Support Tool
- It consists of scientific and technical guidance specifying managed process steps on how to carry out various tasks to achieve reliable and reproducible results.
- Process descriptions stored in the KB can be exported to be used in PRoST

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- A database is developed, allowing storage of all different types of data (spatial data, time-series, different domains such as hydrology, economy, ecology etc) in a transparent way
- Different tools can easily link to it to retrieve numerical data, but also to store numerical results

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- These tools, KBs and DBs are all more or less strongly coupled.
- What more do we offer?

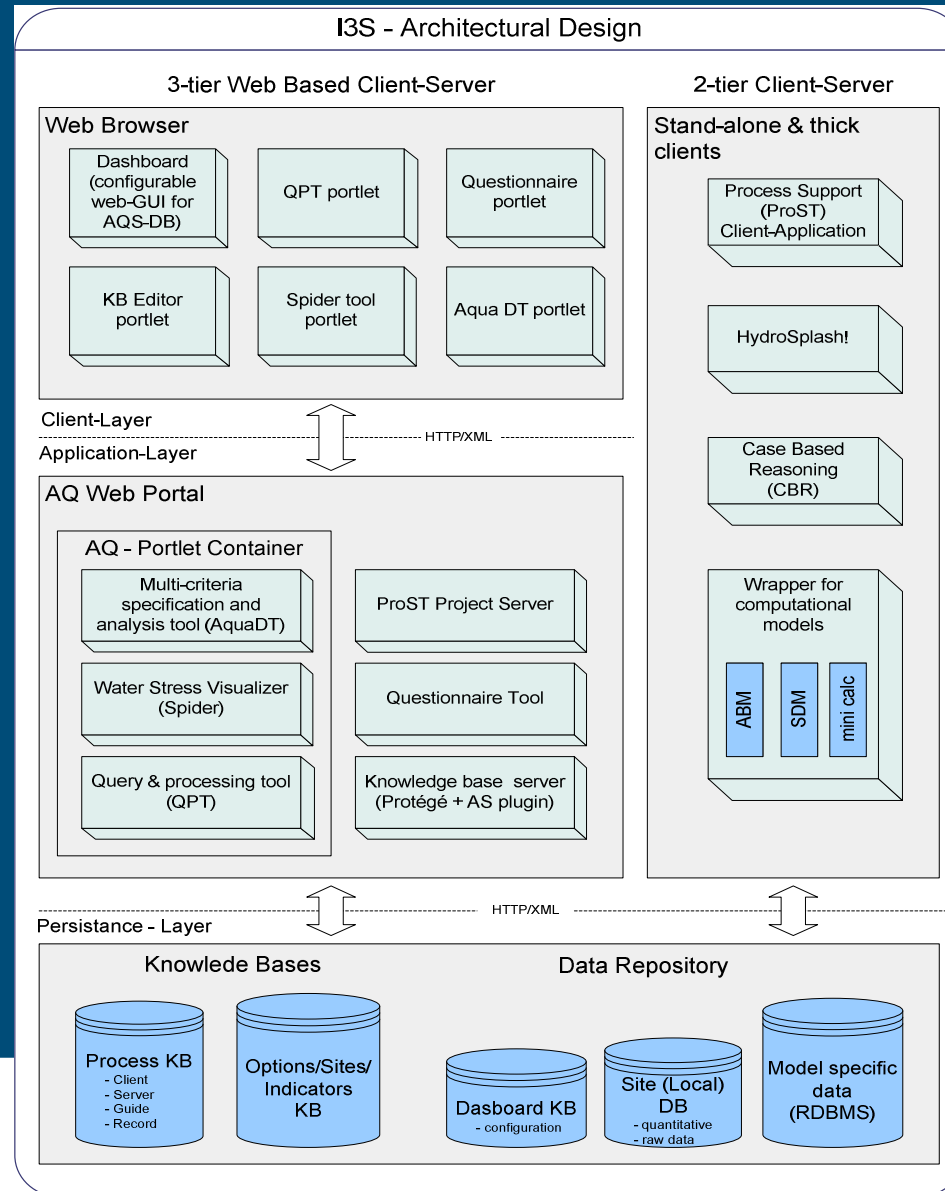
I3S – Integrated Solution Support System

- On the I3S we also store links to or make directly available, a number of helpful tools, applications and fact sheets

I3S – Integrated Solution Support System

- These are provided as is or are loosely coupled to the rest of the I3S
- How does this look in practice (software architecture)?

I3S – Integrated Solution Support System



I3S – Integrated Solution Support System

- The development of the I3S is a challenging activity.
- This novel approach of integrating a diverse suite of software tools for diverse user profiles requires, among others, a high degree of knowledge on software engineering and an organisational capacity to get tool developers to participate in finding a solution to integration that has acceptable properties for ‘their’ tools

I3S – Integrated Solution Support System

- Based on the use cases, the list of tools, tool developers and technical experts, we determined
 1. dependency among the tools in terms of data and knowledge items,
 2. potential end users for each tool,
 3. how and when users will need the tools, and
 4. which new tools are required for integration.

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- Based on the accomplished work we conclude that developing such a system to support complex, participatory processes is feasible. Especially from the technical point of view there are no major barriers.

I3S – Integrated Solution Support System

- But there are challenges.

I3S – Integrated Solution Support System

- If the vision is not shared that process support is required for the process at hand and/or on the longer term (future participatory processes), the willingness to adapt existing tools will be low.

I3S – Integrated Solution Support System

- In the project we learned that there is a bigger gap than expected between end-users (stakeholders and project managers) knowledge about potential IT support and what we intended to develop.
- In the minds of the people involved, there seems to be a focus on individual, sectoral tools, models, and maybe on Decision Support Systems, but there is less awareness on the potential of knowledge bases and workflow management support.

I3S – Integrated Solution Support System

- One key added value of I3S are the knowledge bases.
- Technology-wise, these knowledge bases were fairly easy to develop .
- However, structuring knowledge and populating the system has posed a major challenge.

I3S – Integrated Solution Support System

- This is due to
 - the lack of knowledge about the usefulness of populating the systems and
 - possibly due to the fear of information being taken out-of context, fear of ‘plagiarism’ and lack of ‘credits’, compared to writing a report.
- There are few true drivers to share information .

I3S – Integrated Solution Support System

- A particular challenge in developing the I3S was the involvement of end-users.
- In our vision much generic expert knowledge and some tools required early in the process, would be available at the start.

I3S – Integrated Solution Support System

- In the case of AquaStress these needed to be developed (and populated), while the participatory processes started immediately.
- Hence the I3S was not yet available at the beginning of local site studies.
- We advice that in end-user driven projects serious thought must be given whether or not available information needs to be organized prior to starting the participatory process.

I3S – Integrated Solution Support System

- As final conclusion we can say that the AquaStress project we managed to develop a suite of linked tools in such a way that we believe they can help making participatory processes truly end-user driven.

Technology-wise there remain issues to be tackled, but this will not be the main barrier for further development, acceptance and use of such a system.

Acceptance and use of the system will much more rely on the willingness and capability of people to use such integrated systems, the willingness and resources to populate knowledge bases and most importantly on the willingness of water authorities to invest in transparent participatory approaches in which some control on the process will shift to stakeholders