

ASPIRES WEB PORTAL AS PART OF THE SYSTEM FOR EARLY DETECTION, MONITORING AND PREDICTION OF FOREST FIRES

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Abstract:

"Advanced systems for prevention & early detection of forest fires - (ASPIRES)" WEB Portal is built on most modern ICTs technologies and provides high availability, security and management for the projects for early detection, monitoring and prediction of forest fires. With the proposed WEB Portal the access to the resources in the process of project implementation and afterwards should be managed. The system supports different intelligent measuring points based on the most modern and industrial technologies available.

There is an approach called Multi System Appliance Approach (MSAA), which provides high efficiency in deploying and distributing the system.

Keywords: *forest fire; web portal; systems for identification, authentication and authorization; system for document management; information systems; intelligent measuring point.*

Introduction

The goal of the project "Advanced systems for prevention & early detection of forest fires - (ASPires)" is to develop advanced concepts for early detection systems of forest fires that integrates sensor networks and mobile (drone) technologies for data collection and acquisition of those data at existing Crisis Management Information Systems (CMIS).

National Cluster for Intelligent Transport and Energy Systems (NCITES) in Sofia/Bulgaria will develop and test part of the project work in Bulgaria including ASPires WEB Portal with 3 parts:

- ASPires Project IDS (a complete system for manageable and secure publishing of WEB content
- ASPires Project web site
- ASPires Document management portal

NCITES will develop and test a multi sensor solution for the existing fire towers, combining thermographic functions and detection of smoke, using specially elaborated cameras and specialized software, which grants good efficiency. The solution will provide detection of the fires at their initial stage with great efficiency in hilly, mountain and alpine terrains with non-stop scanning of the protected area and possibility of a real-time surveillance. The software can be multi-language and the solution will bring the possibility of adding a drone with sensors.

To be advanced the system requires the most modern ICTs technologies to provide high availability, security and management for the projects for early detection, monitoring and prediction of forest fires.

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Architecture of ASPIres WEB Portal

To complete the requirements of the ASPIres project and the future projects for early detection, monitoring and prediction of forest fire, the document and web portal system should be secure, easy manageable with easy administration, expandable and with high availability.

The architecture of ASPIres WEB Portal is given on Figure 1 where:

- ASPIres–IDS is the system for identification and authorization that acts as a uniform system within this project, through which the access to all WEB resources in the process of project implementation and afterwards should be managed.
- ASPIRES–WEB is the Project WEB Site portal, accessible via the Internet domain <https://www.aspires.eu>. This portal has two parts:
 - o PUBLIC access to the public part of the project ASPIRES – articles, electronic brochures, technical presentations, etc.
 - o PRIVATE access to the systems being developed during the project ASPIRES with the aim to realize a single point of access to the documents and functions for monitoring, management and control of individual systems within the project.
- ASPIRES – DMS is the system for the management of electronics files and documents which is secure, supports multiple European languages, provides the necessary comfort in the work of developer’s teams.
- ASPIRES-GEO performing technical management of “multi sensor solution for the existing fire towers, combining thermographic functions and detection of smoke, using specially elaborated cameras and specialized software”.
- ASPIRES-XXX represents other systems for technical management.

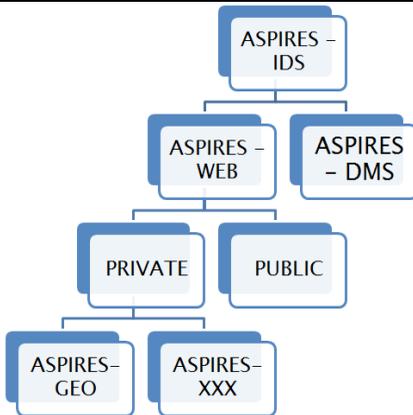


Figure 1. Advanced system for identification and authorization, management of electronics files and web portal

Realization of the ASPiRES WEB Portal

ASPiRES WEB Portal is realized as a cloud infrastructure and is located at the Technical University of Sofia.

The public site is reachable via <https://www.aspires.eu>.

The logical architecture of the portal is presented on the Figure 2.

Special designed authentication, based on VASCO mobile token technology supports a strong secure level over Internet network with very sensible administration parts of the system. It uses:

- User management (ASPiRES EDIR Administration)
- Login management (ASPiRES IDKEY)
- Access management and authorization (ASPiRES NAM)
- User self-management (ASPiRES mobile token installing and activation)

ASPiRES WEB Portal is in full compliance with security requirements about storing of personal data and access to it.

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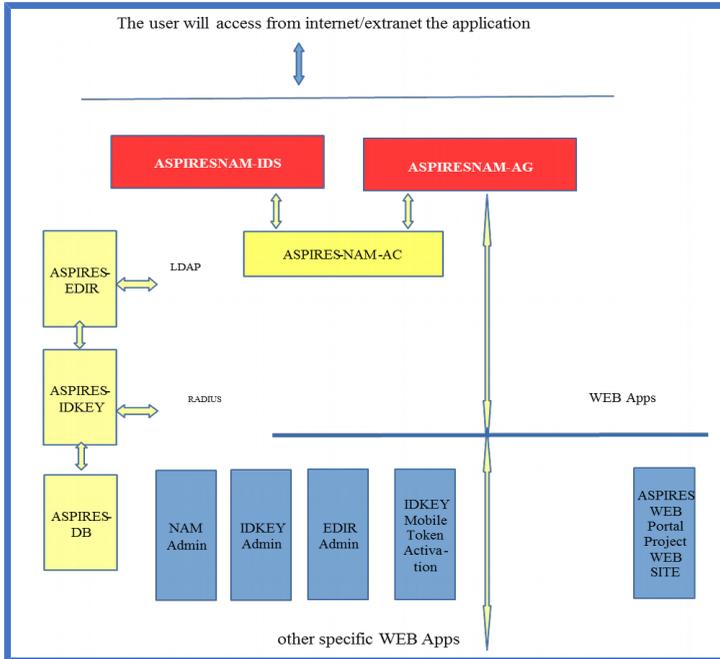


Figure 2. ASPIRES WEB Portal IDS/ Server's interaction

Used Technologies and Property Rights

The applied technologies and property rights while building the Web portal allow the infrastructure to control the user access to the different functions (applications) which are integrated in the portal. This part also shows possibility for integration with other (EU based) identity systems via implementing of standard federation protocols.

The following technologies are used for an implementation of a system:

- Micro Focus eDirectory. This is LDAP based technology according to the X509. The used version is 9, dated 2017. The technology is used with property license of Micro Focus, payed for the user [1].
- Micro Focus Access Manager. The technology is used with property license of Micro Focus, payed for the user with restricted access.
- VASCO IDKEY Server. The technology is used with property license of VASCO DATA SECURITY, payed for device (token) used by authentication [2].
- SUSE Linux Enterprise Server (SLES). The technology is used with property license of SUSE (part of Micro Focus). In ASPIRES Project license for unlimited number of virtual machines on single server is used. The SLES is used as a basic operating system for ASPIRES WEB Portal.
- POSTGRESQL. The technology is used for building a centralized data base environment. The license is under GPL [3].

Conclusion

The ASPires WEB Portal is realized as a cloud infrastructure and uses one of the most secure technologies available on the market. The Web portal includes:

- Universal technology for publishing of the WEB resources
- Public and private WEB portals, needed for the ASPires project

ASPIRES WEB Portal is realized as a complete system with a respect of the property rights of used software technologies. There is a possibility to duplicate the system or the appliance using a Multi System Appliance package. This Multi System Appliance Approach (MSAA) provides high efficiency in deploying and distributing the system.

ASPires WEB Portal is realized as a MSAA and is located and managed by the Technical University of Sofia, Laboratory “Systems for Identification, Authentication and Authorization”.

The Technical University of Sofia is a member of NCITES.

Acknowledgement

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