The AirMonTech database – an important step towards the harmonisation of AQ monitoring

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The AirMonTech database

AirMonTech aims at improving use of technologies, data quality and comparability of air pollution measurements

→ **Creation of database storing most important information on measurement technologies**

→ **Air pollutants, metrics, measurement techniques, technologies, SOPs, type approval reports, equivalence information**

AirMonTech: 3-tier architecture

Presentation

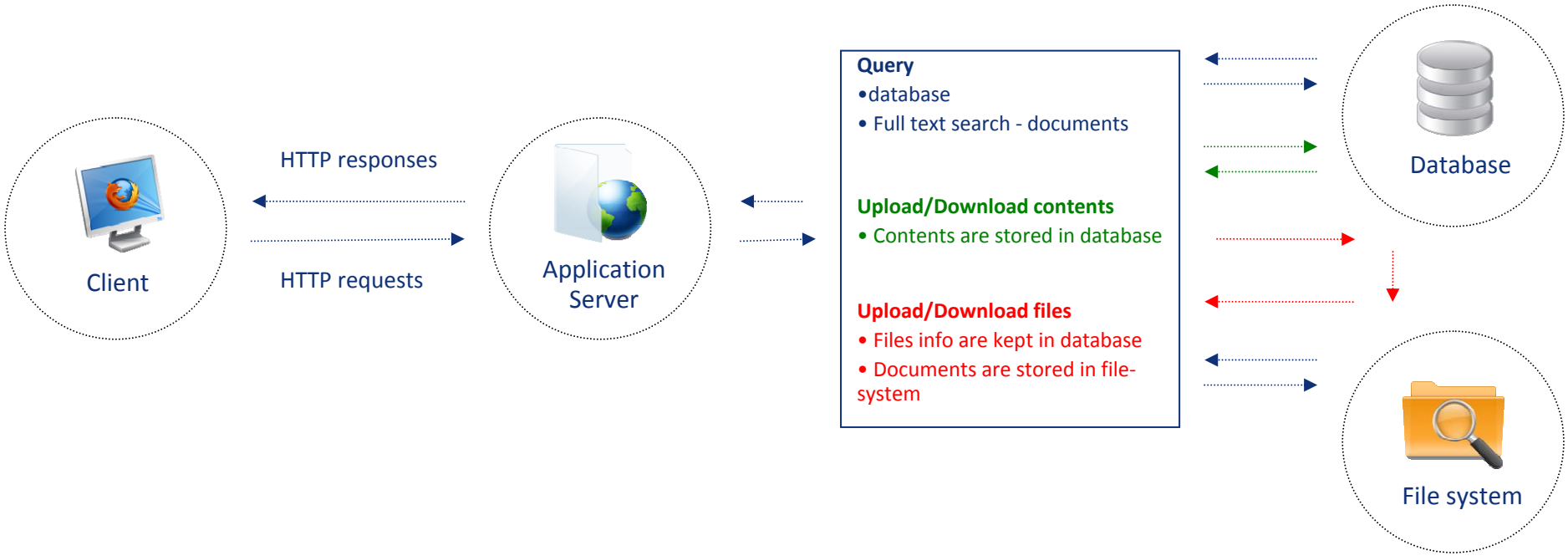
The top layer is the graphical user interface. Its main function is to translate tasks and results to something the user can understand

Logic

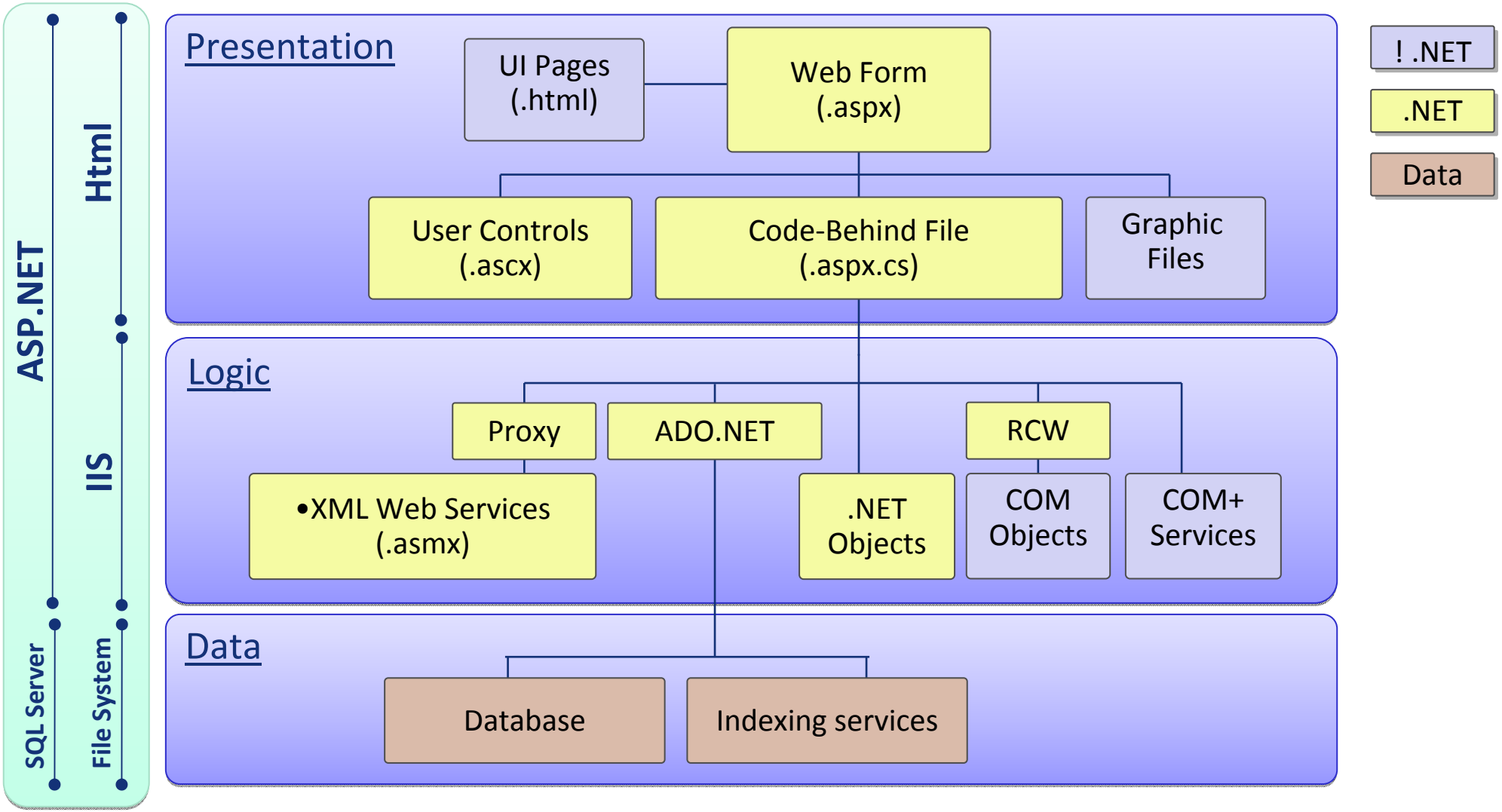
The middle tier coordinates the application, processes commands, makes logical decisions and evaluations, performs calculations. It also moves and processes data between the layers.

Data

In this layer information is stored and retrieved from the database or file system. The information is passed back to the logic tier which eventually send them back to the presentation tier.



Architecture in detail



Authentication

- New subscribers apply through a **subscription form** which requires a valid email address and a password.
- New subscriptions must be confirmed and require new users to undergo an **email verification process** before their account is activated.
- New approved subscribers are automatically associated to the **standard user** role.
- The authentication is based on the **email address and password** provided by the user during the subscription.
- A user is responsible for his/her own credentials. This is why there are **no particular rules when choosing a password** (restriction are applied only on the length of the chosen password)
- To avoid malicious attempt to log into the network, the system is able to **lock the account** which is under attack. The account is locked after 5 incorrect login attempts.
- **Locked accounts can be re-activated** by the system administrator (beta phase) or by the user through a validation procedure (production).

New subscription

1. User requests to subscribe to Airmontech

New Request

2. The system sends back an email with a validation link

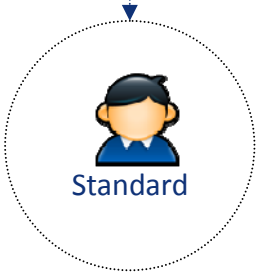
Request validation

3. User validates his/her data by clicking the validation link

<a> Validation

Create “Standard” user

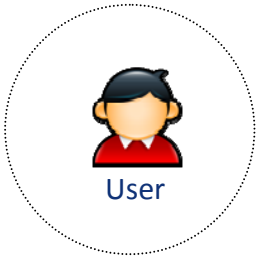
4. The system assigns standard role and activates new subscriber



Forgotten password

- A user can request his password by filling in the "**Forgotten password**" form.
- Passwords are **encrypted** in the database (hashed) and not recoverable for security reason
- A new password is generated by the system and **sent to the email address** provided by the user
- The **newly generated password can be changed** in the personal area of the logged user

Forgotten password



1. User requests for a new password

Request new password

2. System generates new password

Send password

3. User logs into Airmontech with the newly generated password

Log into Airmontech

4. User changes his password through his/her personal section of the website

Change password

Authorization

- The Airmontech system manages **different roles** which are authorized to perform different actions/activities and to access different areas of the website.
- Authorization is managed by the **system administrator** who is able to assign different roles to different users.
- A member can be associated to **more roles.**
- The profile "**standard user**" is automatically assigned when new users subscribe to the system and verify their account s through the email validation process.

Roles

JRC

Administrators manage users and roles. Furthermore, administrator manages all the technical details of the whole system. A system administrator can approve or block users.

Consortium

Editors can upload files into the system and publish them. An editor interacts with the content of the website by adding, modifying and deleting pages.

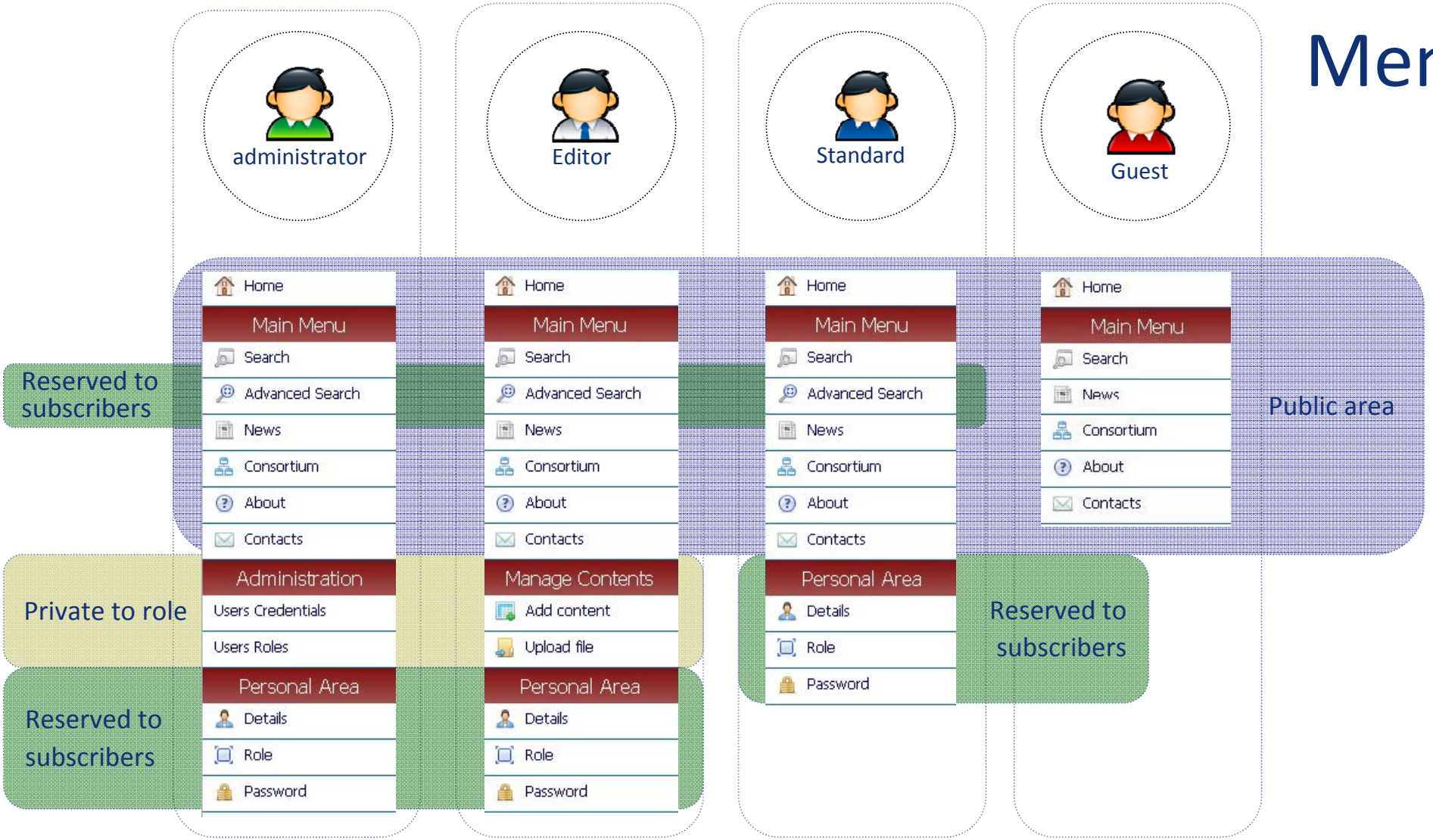
Subscribers

Standard users can search and download any content uploaded by an editor. This role has access to advanced search options which are not available to a guest profile.

Guest are users who are not logged into the system. They can surf the website but they cannot download any file. They are not allowed to perform any advanced search on the database although they can search the main contents and read an abstract of any available document.

The AirMonTech database

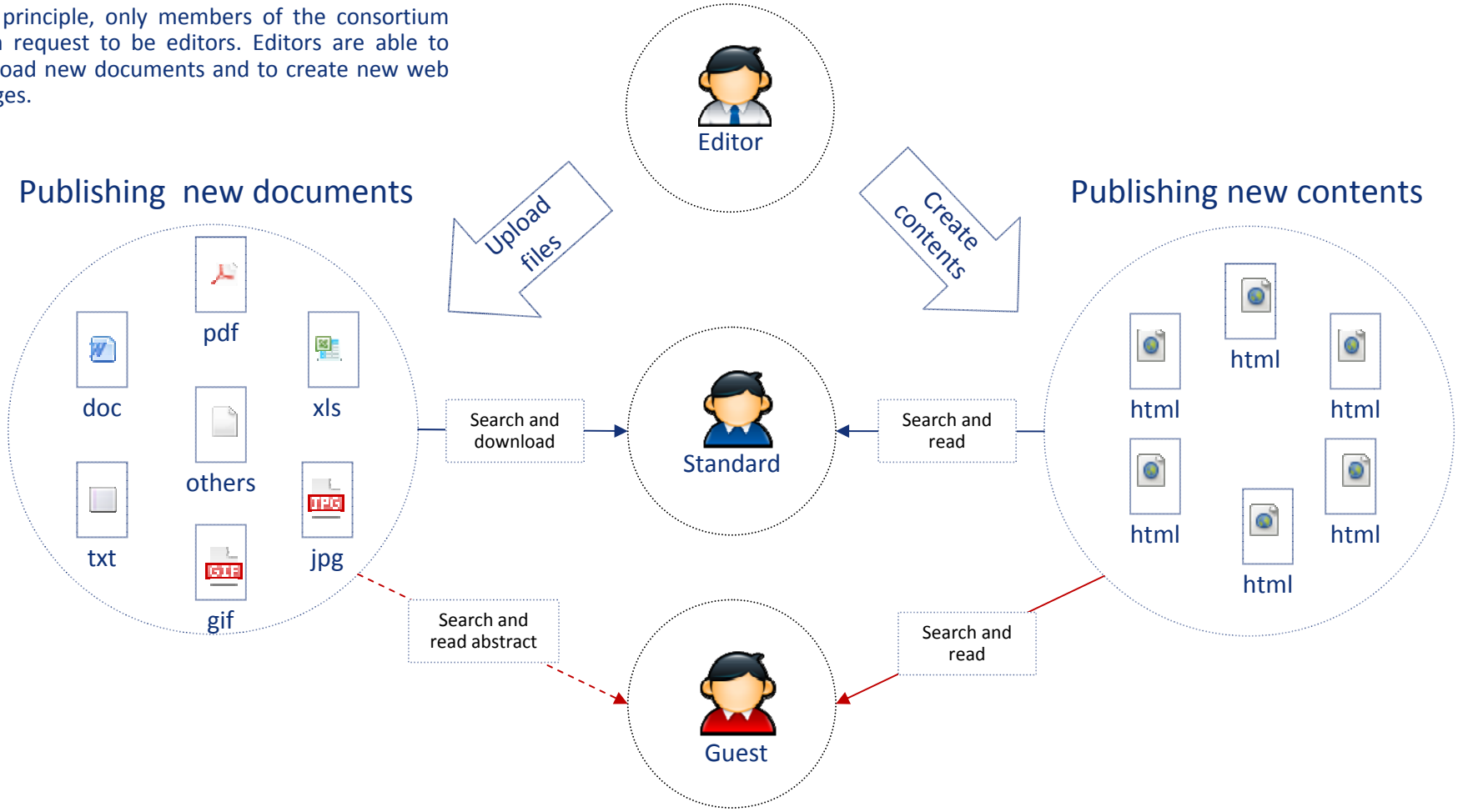
Menu



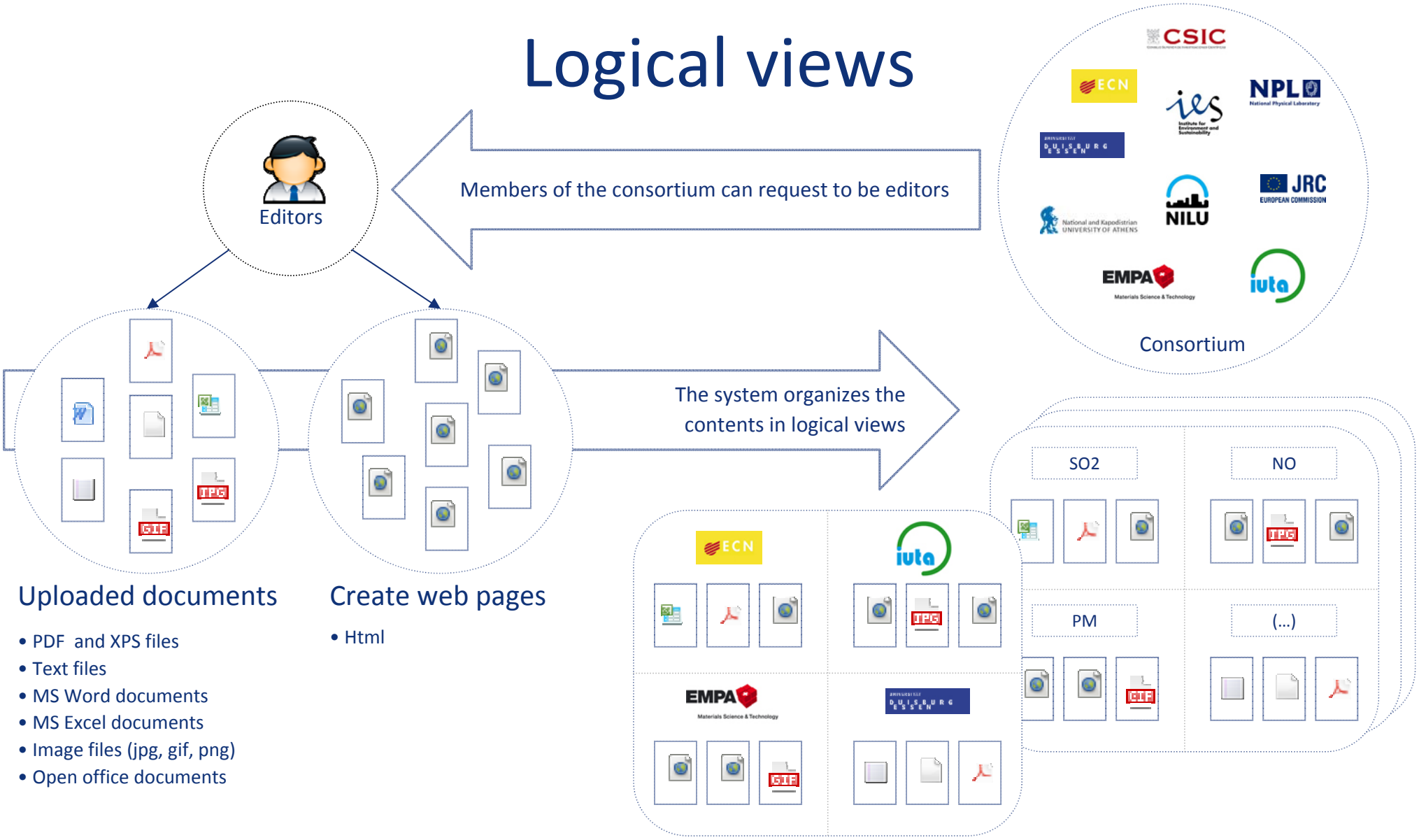
Roles interactions

Editor role

By principle, only members of the consortium can request to be editors. Editors are able to upload new documents and to create new web pages.



Logical views



Uploaded documents

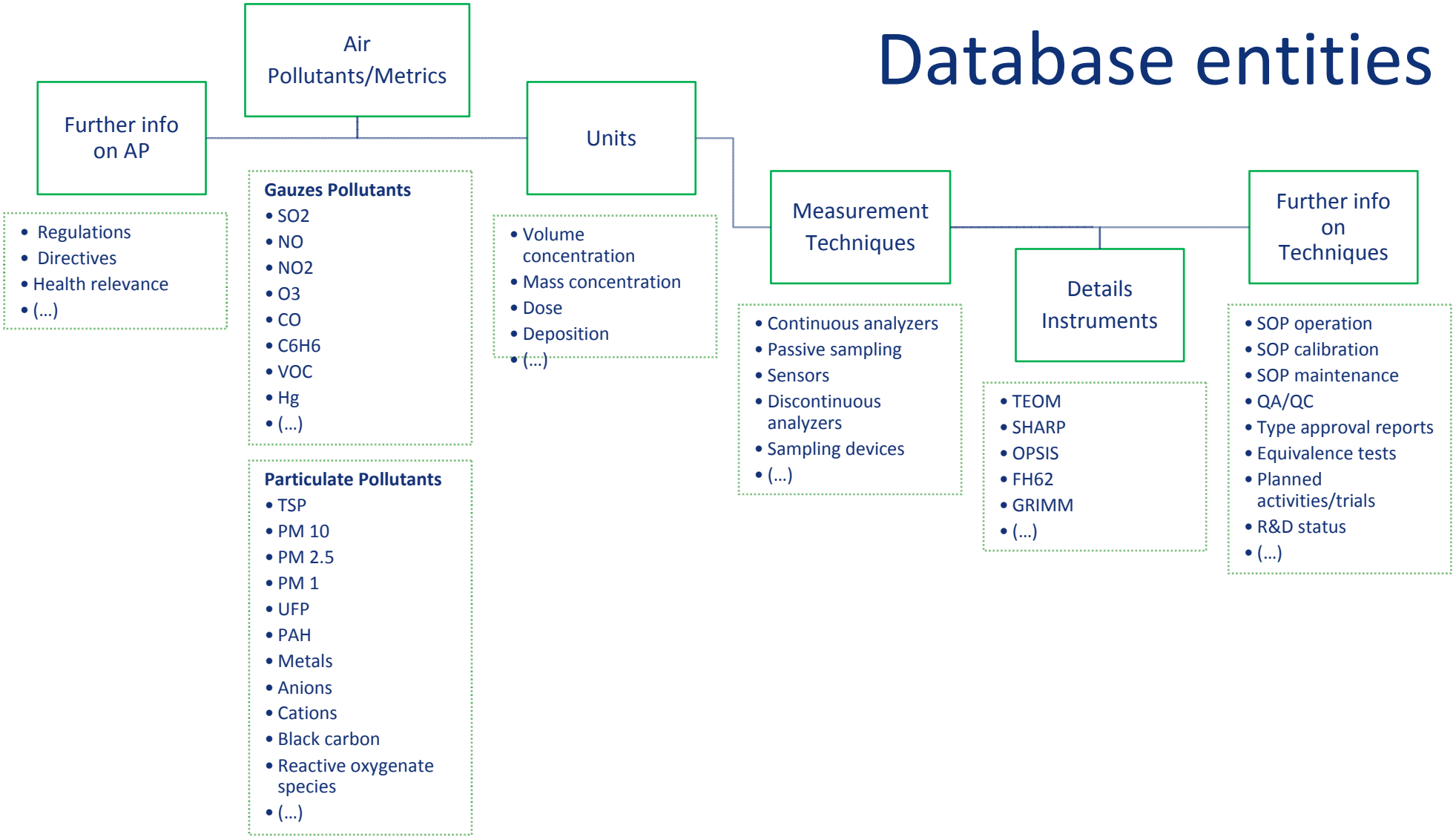
- PDF and XPS files
- Text files
- MS Word documents
- MS Excel documents
- Image files (jpg, gif, png)
- Open office documents

Create web pages

- Html

The AirMonTech database

Database entities



Search and options

- **Anybody** can search documents and page contents.
- Although users profiled as guest can search the system, advanced searching options are available to **registered users** only.
- **Guests** can perform a full text search and read a short abstract of the document
- **Full text search** is available for documents and page contents
- **Advanced searching options** may consist of:
  - Retrieving documents uploaded in a certain date range (e.g.: last week, last month, exact date, etc)
  - Retrieving documents with a particular extention (e.g.: only .pdf)
  - Retrieving documents uploaded by a particular editor (e.g. all documents uploaded by Annette Borowiak) or by a particular member of the consortium (e.g.: all documents uploaded by JRC-IES)
  - Searching documents with regards to a particular property (e.g.: “file name” or “created date”)
  - Others (to be decided by the consortium)…

Website layout

(1) **Header**

The main header of the website is where the banner and the legal notices reside.

(2) **Consortium navigation**

This is a visual menu which is linked to each consortium members website.

(3) **Login / Logout**

This is the section where the user can check the login status and her/his profile.

(4) **Main menu**

This is the main menu of the website. Specific items may be related to users roles and reserved areas of the website.

(5) **Contents**

All contents of the website are dynamically displayed here.

(6) **Resources**

In this area there are useful links to external resources and other related websites.

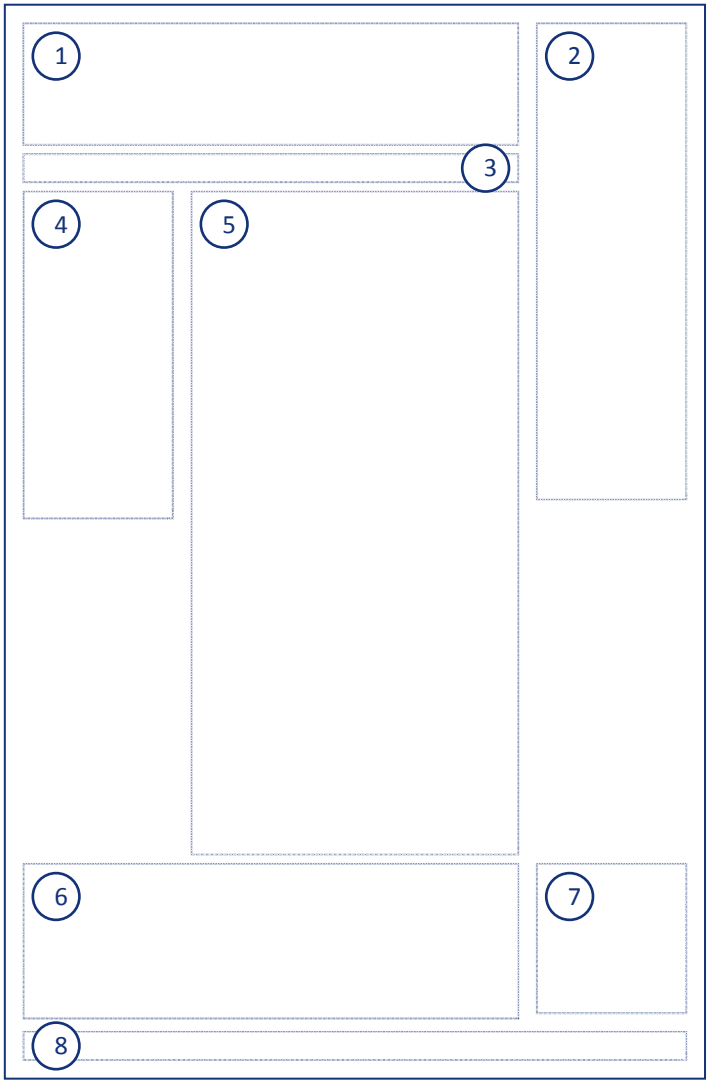
(7) **About**

Contains short descriptive sentences which represent the goal of the Airmontech project.

(8) **Footer**

Footer with legal notice, copyrights, sitemap, links to index and contact form.

view index



What's next?

- Define which data of **registered users** (personal details) must be stored in the database.
- Define a **navigation pattern** which allows to easily drill down the data.
- Define all the possible **logical views** of the database.
- Define **filters** for the advanced search.

New ideas and potentialities

- Build a real network where:
  - Members can rate contents
  - Members can comment contents
  - Members can tag contents
  - Members can interact with each others with custom messages
- Allow members to publish their own contents and researches under the supervision of editors
- Release a newsletter reserved to members
- Host external contents and researches with a principle of partnership