The Zope/Plone Portal of the University of Ferrara

Abstract

With 200 sites and more than 800 people actually managing at least one page, the portal of the University of Ferrara is probably the biggest Zope/Plone installation in Italy. The University portal takes advantage of the integration ability of Zope/Plone to provide a common interface to many other IT infrastructure components of the University, both internally provided and outsourced.

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This case study is available on the Portal of the University of Ferrara:
http://www.unife.it/areainformatica/organizzazione/portale/plone-case-study.pdf

1. Description of the case

1.1. Introduction

With 200 sites and more than 800 people actually managing at least one page, the portal of the University of Ferrara is probably the biggest Zope/Plone installation in Italy. Together with its sheer size, there are many other aspects that may be of interest for other medium/large organizations. From the technical point of view, the University portal integrates with many other components of the University IT infrastructure, both internally provided and outsourced. Our installation retrieves data from several type of databases (Oracle, mysql, etc.) and exploits the Web Services Technology to interface with external IT providers. From the organisation point of view, the widespread adoption of the Zope/Plone CMS capabilities has required a profound restructuring of the University organisation.

1.2. The University of Ferrara

The University of Ferrara (founded in 1391) is composed of eight faculties and 19 departments located all over the city of Ferrara, one of the capitals of the Renaissance, whose historical centre is included in the UNESCO World Heritage list. The University of Ferrara is an actual "city-campus", which ensures its 17.000 students a lively and challenging learning and research environment for the development of humanities, science and technology.

1.3. The Unife portal in numbers

The Portal (www.unife.it) of the University of Ferrara is composed of about 200 sites and 9.000 pages, with a storage occupation of 10 Gbytes, with 51 plugins (eg. for LDAP authorisation, custom subsites, Web form etc.). The Portal has 2.200.000 page views per month and 300.000 visits per month. There is a network of 878 people (mostly not technicians) that constantly keep the information on the Portal up to date. The size of the University Portal makes it one of the biggest Plone installation in Italy.

2. The choice of the Zope/Plone Technology

The Portal is the main communication medium of any University, for interacting with students, visitors, faculty and staff. In addition, portals are also the preferred access to the IT services that Universities provide.

When the University of Ferrara decided, some years ago, to develop its new Portal (see Figure 1), the choice of Zope/Plone as implementation technology emerged as the best answer to our design requirements. The Unife portal design requirements:

1. the University of Ferrara is organised in several Departments and Faculties. This required the design of a solution able to spawn many independent Web sites but with a centralised technical management.
2. the adoption of a very easy to use Content Management System (CMS) suited for people with very different skills and IT abilities;
3. the ability to integrate with already deployed University services (LDAP for user authentication, several different databases, Web services integration, etc.)the design of a scalable solution able to cope with a huge number of sites and, even more important, an extensive network of users;
4. the design of an architecture with a centralised maintainance;
5. the provision of groupware and community based operations;
6. an easy integration of content syndication;
7. the support of an extensive workflow system;
8. the adoption of an Open Source CMS;

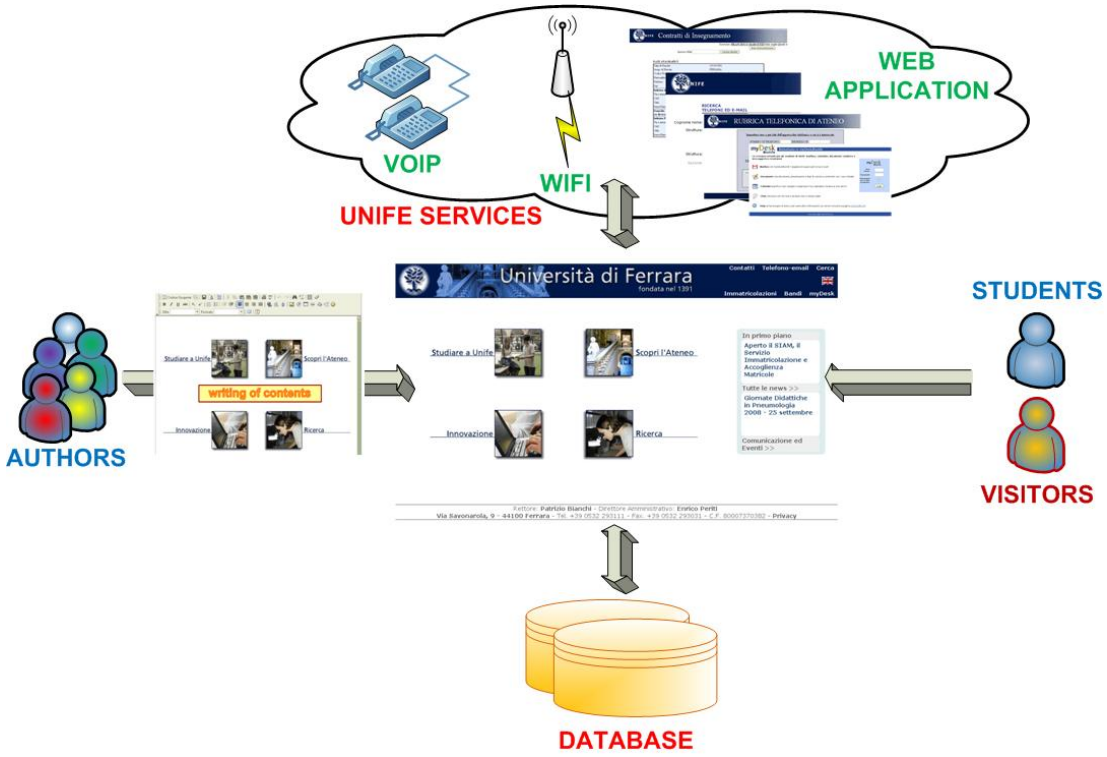

Figure 1. The Unife portal big picture

3. The Unife Portal as services aggregator

In our experience, Zope/Plone demonstrated to be an excellent technology, easy to use and scalable, with an active community supporting new users. However, the main reason for its adoption in the University of Ferrara has been its ability to interoperate and to integrate different technologies. This has made possibile to build a portal that is a point of access to all University services, such as VoIP, WiFi, e-mail, and all the administrative services. More in details, Figure 2 shows the portal architecture and its main components. In particular, let us notice the databases (both Oracle and mysql), the VoIP interface integrated with the Asterisk PBX, the CovaChilli/ChilliSpot captive portal, the XT radius authentication, the openLDAP user authentication, some of the Web application (mainly in RoR and python), and the external applications accessed via Web Services.

With regard to Asterisk integration, let us note that all the VoIP services are integrated in Plone by means of Web Services. In more detail, there is a Web Service that wraps Asterisk and provides several methods, for example:

- click2dial, for initiating a call by clicking on the numbers displayed on a Web page;
- conference call, a simple web form to initiate a conference call;
- voice mail, for receiving voice messages in the user mailbox.

With regard to application integration, the Plone/Zope architecture has permitted Unife to interoperate and to integrate with several applications, both internal developed and externally provided:

- we developed several applications in different languages (mainly Ruby, but also PHP and Python) that are visualized inside the Plone templating;
- we developed also some distributed applications that are accessed via Plone and mashup data from different sources via Web Services (both RPC/encoded and RPC/literal);
- we integrated with some Google Apps services, such as mail and calendar, in order to provide a Web Desktop mashup and several other services.

Let us notice that all Unife services are based on a single sign-on authentication service. When using Web Services, the portal supports different authentication technology, e.g., SOAPHeader, certificates, pubblic/private keys (cert_file, key_file), etc.

In addition, the Zope/Plone platform has several plugins that has permitted to activate multilingual support, to integrate with the University LDAP service, to exploit several communication tools (RSS, BLOG, FORUM, etc).

Internally, the Zope/Plone Object-Oriented Database provides the mechanisms to index and to catalogue data, which allow to transparently achieve several interesting results:

- to access to the data stored in several and heterogeneous databases. Data is imported as a framework object and can thus be presented in several ways;
- to present information with several customised layout (PageTemplate);
- some Unife PageTemplate export information by means of RSS feed and/or XML pages;
- to create catalogue query (searches on the Unife databases) in order to retrieve detailed information depending on user needs;
- to develop integration services to facilitate interoperability with third party technologies
- to develop applications that can retrieve data from external repository via Web Services. The data are managed by means of Native Plone Workflow.

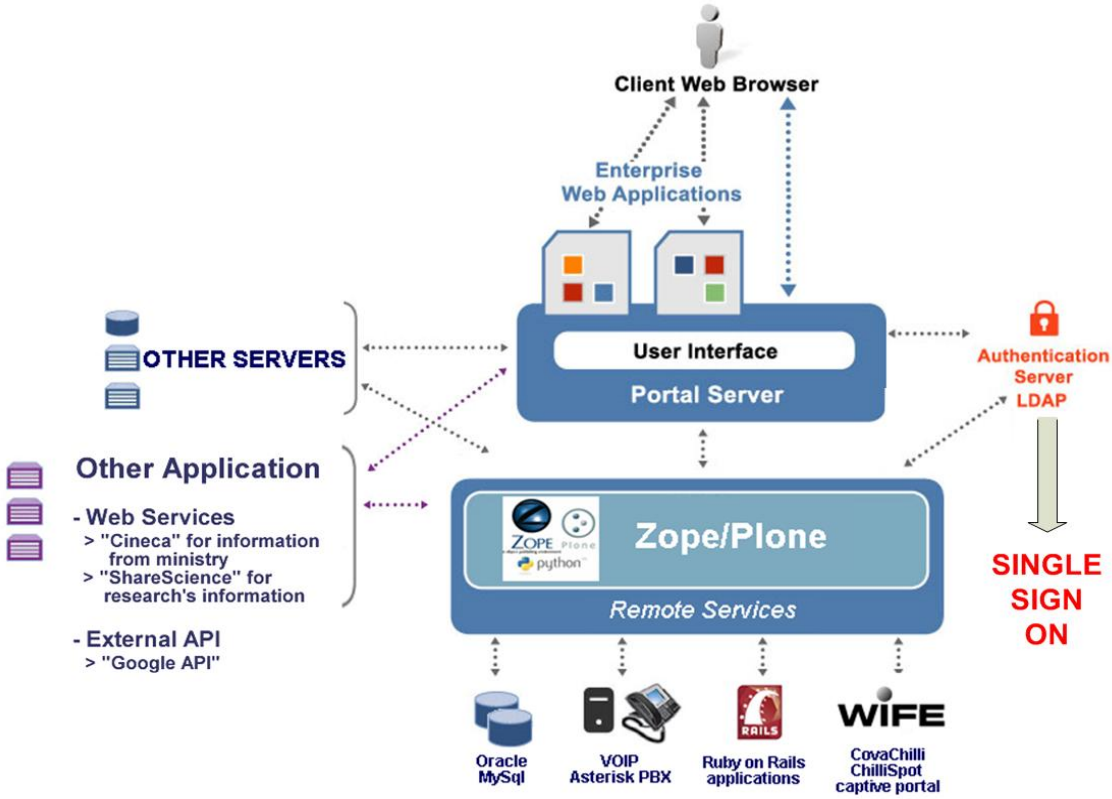

Figure 2. The Architecture of the Unife Portal

4. Impact, innovation and results

4.1. The impact of Zope/Plone on the Unife organization

The Zope/Plone technology had a profound impact on the organisation of the administrative offices of the University, by changing the way data and information are produced and exchanged.

Plone offers a very easy to use Content Management System (CMS) that is suited for people with very different skills and IT abilities. This has made possible to provide any Unife user with a simple mean to upload information in the Unife portal, completely by-passing the IT staff, that can now concentrate on IT technical issues. However, in order to achieve this ambitious goal, the University of Ferrara had to design a new hierarchical organization of IT/administrative people in charge of guiding and coordinating the Portal evolution. Otherwise, giving full autonomy to the 878 Unife users of Plone would have easily led to anarchy and to a heterogenous communication solution. In particular, the Unife groups that collaborate for producing the Unife portal, as depicted in Figure 3, are:

- the "portal design group" is the small group (8 people) that has defined the initial guidelines of portal development and periodically discusses/upgrades new guidelines;
- the "portal control group" is in charge of controlling the Portal development, to ensure its compliance with the general guidelines. It monitors day-by-day activities, interacts with Plone users, adds/remove Plone users, etc.
- the "portal office" of the IT department Plone that designed, and installed Zope/Plone and is in charge of its support and upgrade;
- several networks of editors. Unife has many different kinds of Portal sites, the teaching ones (one for each Laurea degree it offers), the research ones (the departments), the academic ones (many professors and researchers are embracing the Plone CMS) the administrative ones (providing services to students). Each category of site is managed by an homogeneous network of Plone editors that follows common guidelines. We have currently 4 networks of editors: Teaching, Department, Academics and Administrative, totaling 848 people. Each network, in particular the Administrative and the Teaching one, is specifically trained, with short courses and seminars, in order to provide common web writing and technical background.

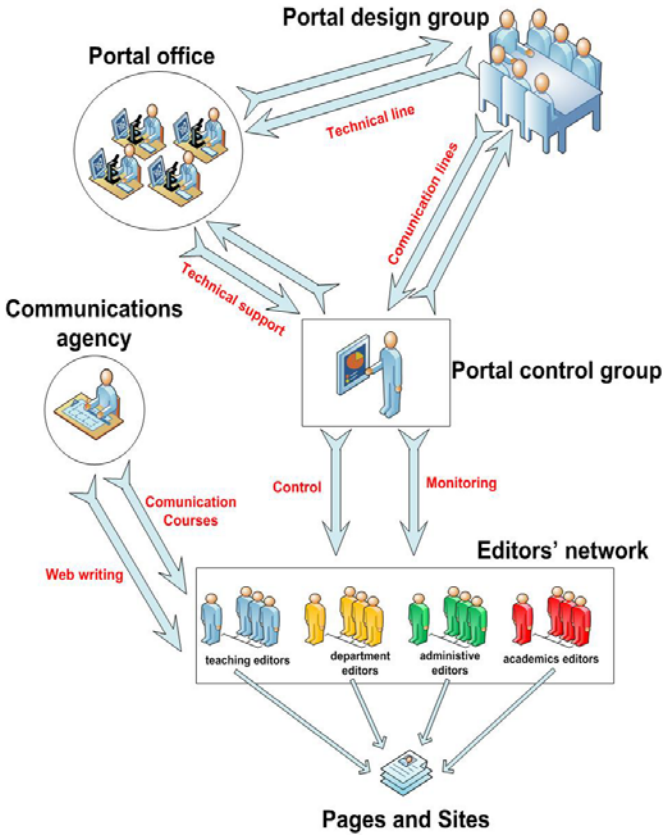

Figure 3. The Plone impact on the Unife organization

As a general consideration, Plone has demonstrated to be a really easy to use CMS, that made really possible to delegate the management of Portal information to offices and in general to anybody producing the information.

4.2. Innovation and results

The adoption of the Zope/Plone technology introduced in the University several important innovations. First of all, the shift from a proprietary CMS solution to a Open Source one has permitted to our IT personnels to get involved in a lively and collaborative international community of open source developers. There is already a huge

documentation available to all the members of the community and we had the occasion to collaborate with other users in the development of Web Services and when adopting the FileSystemStorage mechanism (that permits to save files directly in the Server by passing the Data.fs).

In addition, the widespread diffusion of the Plone CMS in the University has completely changed the way information is produced and made available. In particular we noticed that the new technology got a very warm reception with all our personnel that has to provide information or to interact with students, thus clearly improving the quality of the services provided.

Since the adoption of Zope/Plone, the number of the visits to our portal has rapidly increased, in the order of 35% - 40% yearly. This clearly demonstrates the successful widespread adoption of the Plone/Zope technology.

Conclusions

The adoption of Zope/Plone at the University of Ferrara has definitely improved the process of information publishing on the Web. The possibility to share information with a very active and collaborative Plone community has added value to the software choice and the University of Ferrara is planning to further contribute to this community, by sharing its experience with other italian universities and users.

References

This case study is available at:
http://www.unife.it/areainformatica/organizzazione/portale/plone-case-study.pdf

Other links:
http://plone.org/ (the official Plone site)
http://plone.net/ (directory of Plone services, case studies and news)
http://plone.tv/ (plone screencast)

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