Terra³:
a new smarter suite tool based on geospatial technologies

Giuseppe Conti
Trilogis CTO & EU Project Manager
giuseppe.conti@trilogis.it
Our experience...
Essentially a paper-based process
Analysis of main barriers
Planning Process
Paperless urban planning
Accounting for all the stakeholders (and their relations)
Using standards to support growth, competitiveness and innovation
A peculiar (autonomous) context

Our experience...
Who is the target user?

Support the activities of urban planning departments at the Autonomous Province of Bolzano and Trento.
Tailored to local urban laws
A quality system

Focus
Automatic process

- Definition of the urban plan through classes
- Tools for GIS support within desktop environments
- Geographical controls
- Topological controls
- Controls with GIS features
- Automatic re-classification view
Objectives and context

City

Produce
- Urban law compliant
- Tools to control and support operators

Control
- Workflows, and quality
- Procedures and automated processes

Archive
- Archival/Publishing
- Integration with tools used by planning offices

Planners

Citizens
Re-use, an interesting model
Who are responsible for the definition of strategic guidelines (in terms of planning), their drafting, their translation into digital maps as far as the citizens.

The actors are:

- Planners;
- Municipal administrations;
- Urban planning departments;
  - Administrators;
  - GIS Coordinator;
  - Drawers;
  - Planning committee;
- WebGIS users.
Complex suite of enterprise-level IT tools

• Complex suite of enterprise-level IT tools
• Integrated within the operational infrastructure of a public administration.
• This includes connection to:
  – existing GIS infrastructures,
  – document management systems.
Main Goal

Having a modern tool for improving efficiency in the procedures of delivery, treatment, testing, updating and visualization of data and cartographic bases concerning urban and landscaping planning, in its various components.
A system that, through the configuration environment, extends the application field to cartographic bases to other areas of territory planning\management.
Nationalization

Bilingual context: Italian/German
Configuration Tool

- Topological rules tool
- Class to ambit upgrading tool
- Run time editing project composition
- Manage the collision between changes made by different users on the same area;
- Align the spatial information included in the specified editing area with updated versions by other users in parallel editing sessions;
- Manage the historicizing feature and versioning of geometric spatial and alphanumeric information
In case of conflicts:
Historical tracking of the evolving features
Editing tool

- Editing tool automatically generated by a dedicated app;
- Interaction with the middleware side component to obtain the required information to its composition (lyr file, MXD template, ToC descriptor, GeoDB template);
- It composes a project and it loads to a GeoDB.
Editing tool
WorkArea tool

- Work area definition by user
- Choosing between blocking and not blocking areas
- Composing project and loads a GeoDB.
Front office tool

The front office solution supports - in an interactive way - local authorities during the delivery - through the web - of all the information collected from the planners.

Diagram:
- Upload
- Consistency check
- Outcome
Improve communication between professionals and the public administration
Shorten administrative time
Digitally model administrative procedures through a clear workflow
Dematerialisation

- Workflow to manage procedural processes
- Digital documentation
- Shapefiles (geometry + descriptions)
The workflow
The workflows
Back-office solution helps significantly shorten the time required for the assessment of the plans delivered by local authorities and the drafting of the relevant technical advices.
Back office allow to control the entire workflow such as deadlines, dates, ordinances, activities, etc..
The areas of the plans as classes or objects

- Articles of laws
- Symbols, labels
- Data models
- Topological mode

- Document metadata
- Alphanumeric values
- Metadata
- Calculated data (e.g. areas etc.)
One model many GIS views

- Less duplications
- Less incoerhences between plans
- Geographical Continuum
- Scale Continuum
- Bi-linguism and localisation
Cooperation between stakeholders
A cost-effective easy-to-customise web-based client that can be used to allow access to variety of different repositories of geographical data through interoperable standards from the Open Geospatial Consortium – OGC®
Terra responds to the original vocation of Trilogis: the Geographic Information System. With Terra different solutions, created over time in the context of urban and regional planning, are finely organized organically. Spatial planning is complex and varied exactly as the territories that we must manage are and, the demand that is constantly placed by the customer is to be able to adapt to databases, logic rules and laws that are always different and particular.

The answer that Terra gives is a solid know-how, a deep understanding of the domain and a strong adaptability gained in many contexts in which we developed our technologies. That's why we do not just think about products but rather to solutions. The important thing is to consider that in this area there is no a definitive product that can be exhaustive but rather, sticking to the latest technology, it's fundamental underlining and using all the experience gained in years of work alongside customers, each one with a particular need.

Finally, it is important to emphasize that Terra is applicable to many aspects of territorial management: from the administrative and planning management, to forest planning or for the purpose of Civil Defense authorities. All aspects for which there are specific solutions.
TerView is a cost-effective, easy-to-customise, web-based client that can be used to allow access to a variety of different geographical repositories through interoperable standards from the Open Geospatial Consortium (OGC).

The Applications

- Modular structure
- Developed in HTML5, CSS3, Javascript
- Support of a variety of OGC standards
- Integrated 3D view based on java-based NASA World Wind
- Compatible with the most popular internet browsers
- Access to sensor data via web service as OGC standard SOS
  (Sensor Observation Service).

Main Functionalities

TerView users can, through a simple web-based client, access the following features:

- Synchronised 2D/3D visualisation of digital maps from remote servers (based on OGC standards)
- Simple interaction with the map (e.g. redlining, measurement)
- Access to sensor information, routing, option, catalogue services and to metadata/alphabetic information
- Generated customised maps ready to be printed (as PDF)

Authorised users can use the configurator to quickly deploy a web-GIS client by customising:

- The components available from the graphical user interface
- Graphical appearance of the interface
- The dataset accessible to the web-GIS

www.terra-3.eu
What

TerLead is an enterprise-level solution for public administrations to manage their urban plans. The system is composed of three components:

- A front-end designed for the professionals in charge to define urban plans;
- A back-end used to manage the administrative processes related to filing of documents by the professionals;
- A WebGIS used to access geographical information related to those plans.

How it works

The TerLead-client can be used to submit all the documents for urban plans. The back-end module has been designed to support the operators from the public administration across the various phases of the definition of the urban plan. In particular, besides checking the formal aspects, the back-end automatically checks topological consistency of the geographical data submitted by professionals, thus ensuring that submitted data are consistent and therefore significantly increasing quality control over the whole process.

Main functionalities

- Automatically checking methods against specific rules
- Quality control by using customizable rules configuration
- Presence of all the geographic data required
- Consistency and compliance with the most popular standards (for the geometric component)
- Topological correctness for: overlaps, gaps, complementary areas of the territory
- Signaling and support to the correction of errors thanks to the production of geometries of the areas to be corrected
- Recovery and harmonization of historical databases
- Hyperlink to the rules and planning restrictions and to historical or cultural buildings for their immediate consultation
- Spatial database: Oracle 10g Spatial (orphan/numeric, vector/master data in secure repository, unique and scalable)
- Manager of extents, tables, and legends for printing
- WebGIS based on ESRI ArcGIS Server 10
- Ability to compare different city plans
TerPlan is a modern tool for improving efficiency in the processes related to delivery, processing, testing, updating and visualization of data and cartographic data bases containing urban and landscaping planning information. The system, through a configuration environment, allows extending the range of use to cartographic data bases belonging to other areas of territory planning, management.

Main Functionalities

- **Anagraphics component of the instrument**: the management interface of all the tools of the layer, allows to define the working area with multiple territorial ambit simultaneously.

- **Configuration component**: allows to manage, add and remove territorial classes admitted and configure the topological rules that must be applied in the editing.

- **Editing component**: the TerPlan Editing Component is the tool where geometric modifications to the database with urbanistic planning can be carried out. The component is made of an app (TerPlan Apo) that, by dialoguing with the middleware component of the system, can require the resources necessary for its composition (ler file, MXD template, toC descriptor, template GeoDB), it then composes a new project (ArcGIS) and it populates a GeoDB.

- **Middleware component for the management of the geometric transactions/reconciliation**: it is the component that coordinates all the other components of the system. It manages access to the database, to the configuration management and to the user permissions.

- **Frontend component**: manages the upload and validation of the Urbanistic Plans that are in use for professionals outside the structure (Webgis for the territorial ambit visualization).