

A U T O N O M E P - S R Ü O D V T I N I P Z R E O N V I N C I A A U T O - A N L O T M O A A



A b t e i l u m f o r m a t i o n s e t h n d i k p a r a m l e f n o t r m T a e t d o h n n o l o g y
A m t - A m 6 t f ü r r a u m b e z o g e n e u n s t t f i s i t i e S c 9 h a e t i s n t n i f c o a r t n n d a o o t r i k m a t i c s

WG-Edit: a new gvSIG extension for the street cadastre management

**Fulvia Gambalunga
Flavio Pompermaier**

SINERGIS

What is WEGE?

Why changing the WgEdit Client?

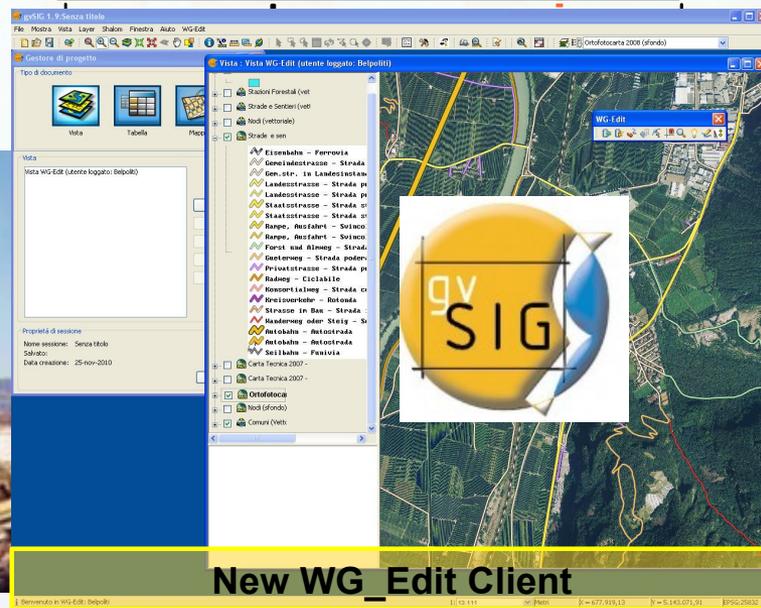
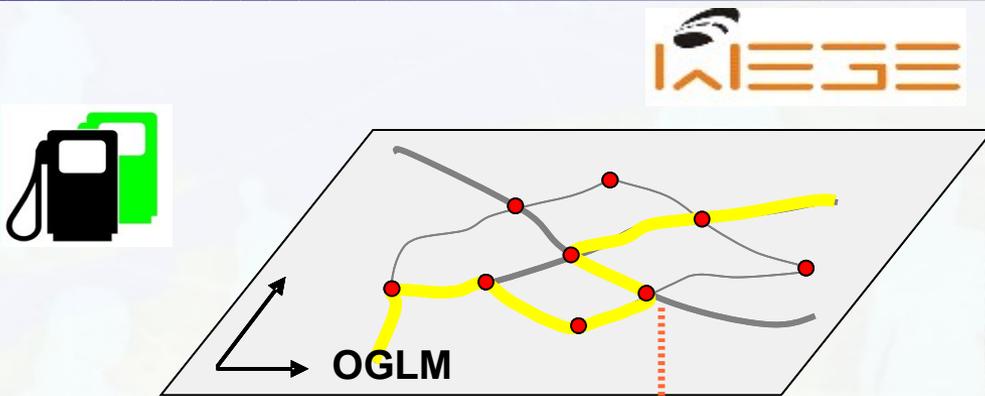
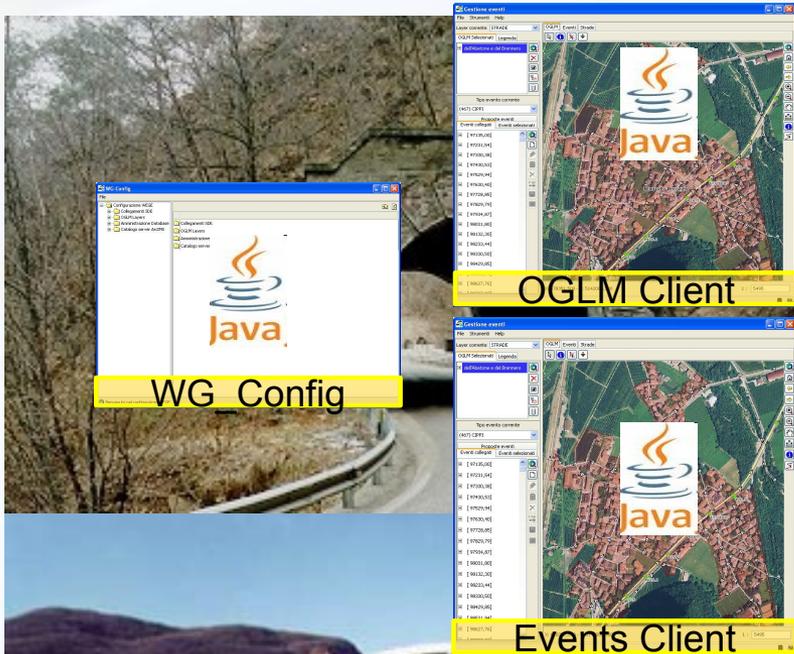
Goals

What changes in technology?

Critical points

Conclusions

What is WEGE?



23.000 km of roads:

- 13.000 km of forestal roads
- 1.400 km of state roads
- 1.300 km of provincial roads
- 1.900 km of municipal roads
-

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Why changing the WgEdit client?

- ▶ **ArcView 3 is no more supported by ESRI**
- ▶ **WgEDIT extension for ArcView3 is no longer supported**
- ▶ **Avenue is an old language → it is difficult to implement new customizations**
- ▶ **The basic road network and the attributes of the roads are currently managed by two different technologies**

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Goals

- ▶ **Topologically correct network**
- ▶ **One single software managing geometries and attributes**
- ▶ **Standard OGC webservice for data access**
- ▶ **Simplification of editing procedures**
- ▶ **Management by wizards**
- ▶ **Management of Z coordinate**
- ▶ **User notification system of data update**
- ▶ **Further customization possibilities**

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What changes in technology

USER INTERFACE



ArcView 3.2a Extension: WG_EDIT

B E F O R E

Application Server / Web Server

Webservices
WgEdit

GATE modul
authetication



Apache
Tomcat

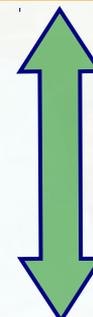


ORACLE



ArcSDE

DB - Server



What changes in technology

USER INTERFACE



gvSIG Extension: WG_EDIT

N O W !



Application Server / Web Server

Webservices
WgEdit

GATE modul
authetication



Map service
(WMS/WFS)



DB - Server

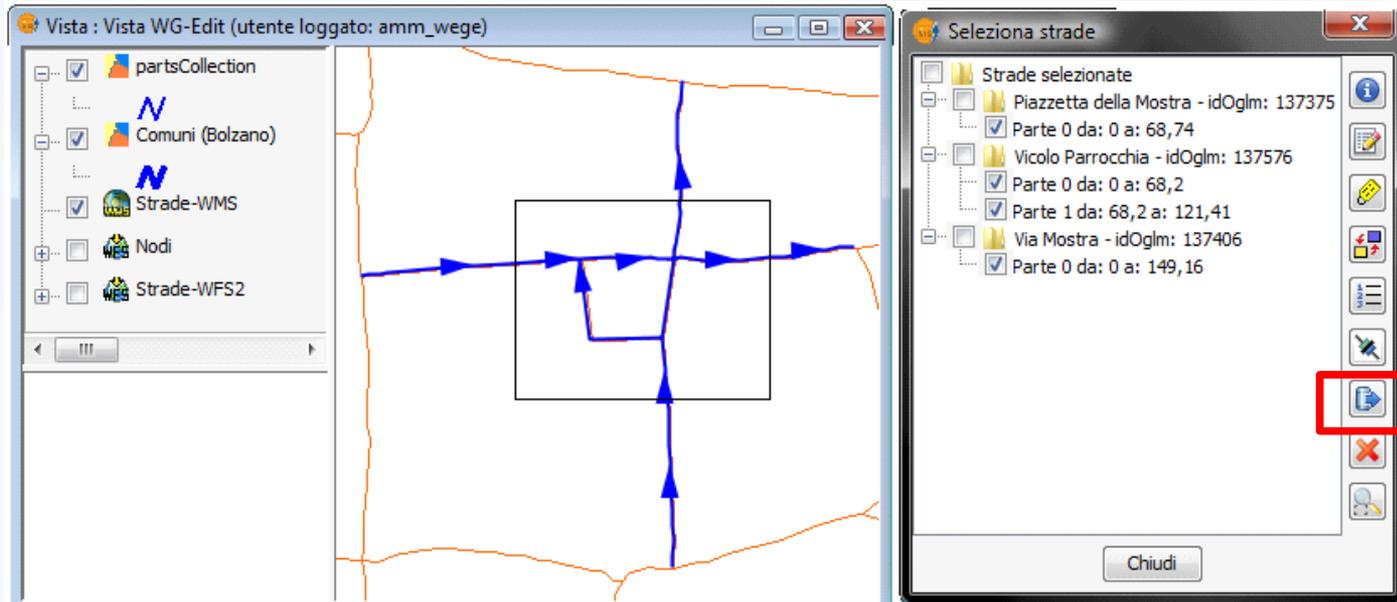


What changes in technology

- ▶ **Spatial data exposed via OGC services**
 - **Loose coupling between client and spatial engine**
- ▶ **EJB-based Web Services (JBoss)**
 - **EJB benefits (scalability, load balancing, transactions, resource pooling, security, caching, etc)**
- ▶ **Z coordinate**
 - **Coarse and fine grained management (DEM / plot / data)**
- ▶ **gvSIG as new client platform for Wege**
 - **Modularity, collaborative approach, Java**
- ▶ **GML as description format of geometries**
 - **Geometry exchange between server and client via WS**

What changes in technology

Concurrent modifications (locking mechanism)



- ▶ To lock a geometry it is necessary to perform a **check-out**
- ▶ Once the user has finished to work on the locked part/road it must perform a **check-in**

What changes in technology

Extent location (exploiting WFS services) and road researches

The screenshot shows the gvSIG interface with a map window titled 'Vista : Vista WG-Edit (utente loggato: amm_wege)'. The map displays a network of roads in orange and a blue extent boundary. A search dialog box titled 'Ricerca strade' is open on the right. The dialog has two tabs: 'Ricerca per codice' and 'Ricerca per nome'. The 'Ricerca per nome' tab is selected, showing options for 'Ricerca strade non battezzate' and 'Ricerca extent di tematismi'. Below the tabs are three dropdown menus: 'Categoria' (set to 'Comuni'), 'Attributo' (set to 'GEMI'), and 'Valore' (set to 'Bolzano'). A 'Zoom alla selezione' button is visible, and a red arrow points from it to the blue extent on the map. The 'Annulla' button is at the bottom.

OTHER ROAD RESEARCHES

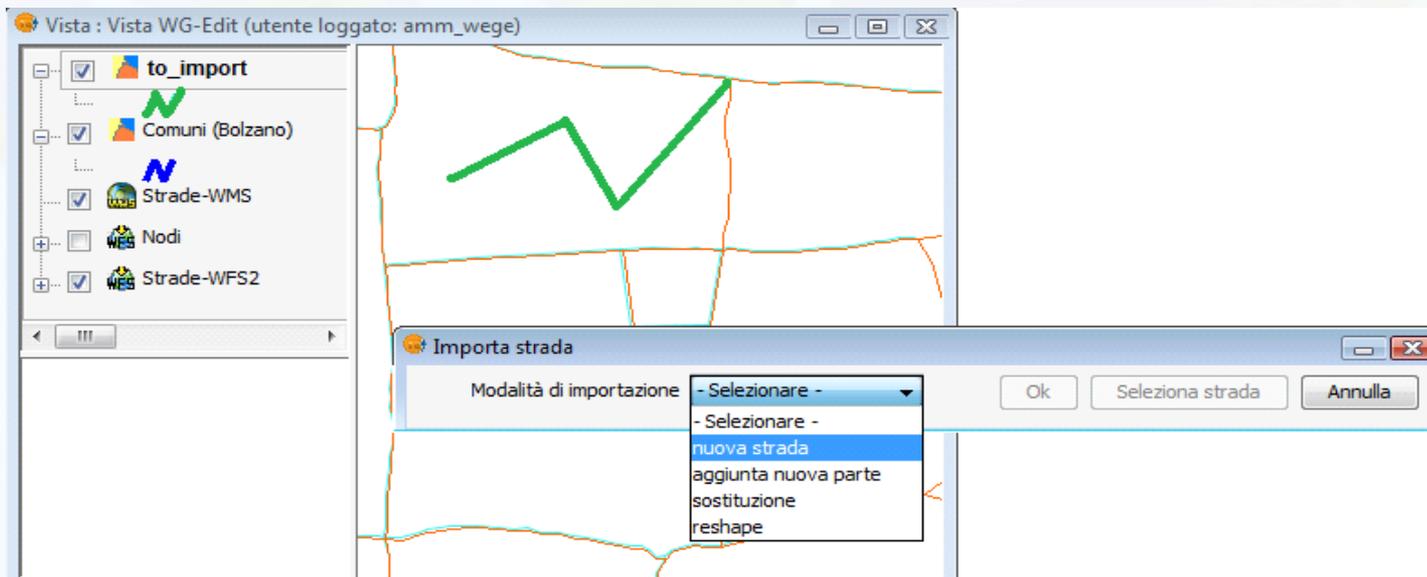
WFS LAYER

VALUES

GEOMETRY

What changes in technology

Road import (with optional Z valorization)



► Different import mode:

- Create new road
- Add to / replace / reshape an existing one

What changes in technology

Road attributes management, depending on user credential

Vista : Vista WG-Edit (utente loggato: amm_wege)

Modifica attributi

Tipologia strada	Strada comunale
FW_IDENTNR	90
Comune	BOLZANO
Frazione	001-Bolzano
Numero strada	444
Nome Strada DE	Musterplatz
Nome Strada IT	Piazzetta della Mostra
WEGEKODEX	500800444
Lunghezza	0.069
DATAATTIVAZIONE	20/05/2010

Salva Chiudi

LOGGED USER NOT ALLOWED TO EDIT

LOGGED USER ALLOWED TO EDIT

What changes in technology

Connection test: display all snappable points of roads nearby the selected one

gvSIG 1.9: Senza titolo

File Mostra Shalom Finestra Aiuto Vista WG-Edit

Vista : Vista WG-Edit (utente loggato: amm_wege)

Selected road

Snappable points of selected road

IDOGLM	X	Y	Z	M
-1	678128.49423...	5151626.9038...	7.9412777879...	0.0

raggio (m): 24,84

Cerca Zoom alla selezione Chiudi

SELEZIONA.
#Inserisci secondo punto > .
#Insterisci punto di selezione
#Seleziona handlers > .

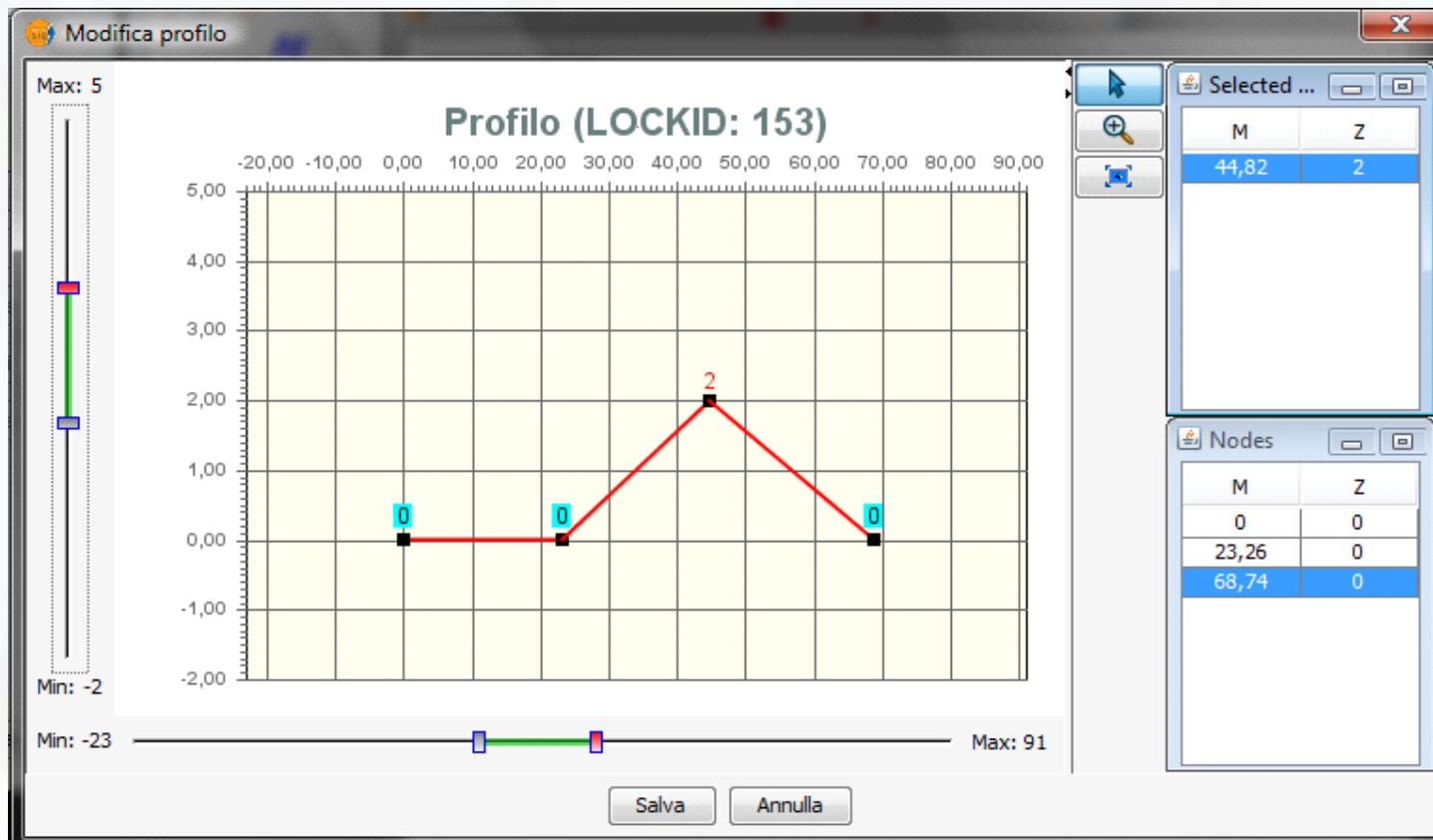
What changes in technology

Z management: available solutions

- ▶ Valorization from data
 - import/checkin of 3D or 4D (Z + M) geometries
- ▶ Client-side computation
 - Sextante profile algorithm using WCS images
- ▶ Server side computation
 - SDE java SDK
 - **WPS** (quite new and not yet available in gvSIG)
- ▶ Manual editing
 - Ad Hoc editor

What changes in technology

Z management: manual editing



What changes in technology

Other important functionality/characteristics of WG-Edit

- ▶ **Custom editing tools:** split, join, revert digitalization order, add vertex (with automatic Z computation), reshape and manual Z management
- ▶ Automatic refresh of OGC layers after modification of the road network
- ▶ **Historical support:** every modification to denomination or geometry of road is traced. Users can display road/events status at a specific date
- ▶ **Bilingualism:** roads must have both Italian and German denomination
- ▶ **Respect of topological model constraints:**
 - minimum distance between vertices
 - geometry overlapping check
 - node/junction creation

What changes in technology

Solved problems

- ▶ GML encoding/decoding of 4D geometries (Geotools customization)
- ▶ Reading of 4D shapefiles in gvSIG (patch included into gvSIG 1.10)
- ▶ Some gvSIG editing tools damage Z coordinate (explode, split, join or edit vertex). Some of them have been hidden exploiting the Decorator Extension mechanism of gvSIG, while edit vertex has been modified in order to manage 4D (Z+M) geometries correctly

Open issues

- ▶ Reading of big oracle tables is quite unstable
 - **ticket 14397**: Oracle tables creation fails with Java 1.6
 - **ticket 14396**: Big Oracle tables hangs
- ▶ Reading of WFS attributes
 - **ticket 14395**: WFS underscored attributes reading

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Critical points

⊘ Switching from ArcView to gvSIG

⊘ Management of Z and M coordinates in gvSIG

Analysis of the most
often used functions

Specific training
(manuals, courses)

⊘ Integration in the WEGE system

Workaround

Extra
functionalities

Creation of a test
environment

Analysis of critical
cases

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In order to make gvSIG fit to our needs, we had to enhance and adapt it investing a lot



Thank you!

New release



We hope that the gvSIG association will take over the other extensions too and incorporate them in future versions of gvSIG!!