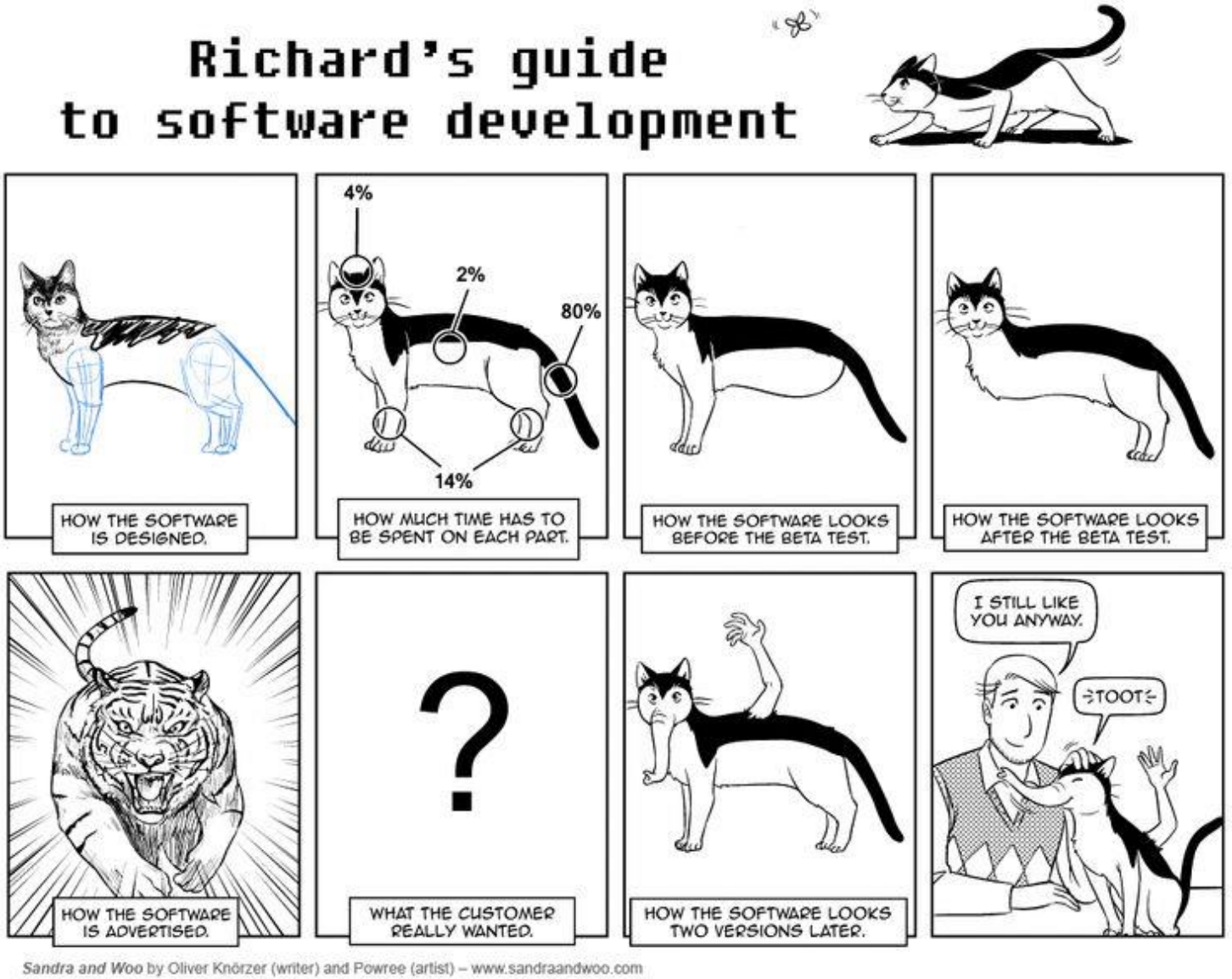
PP VERSUS2

Phase 7 – 2014/2015
Status Overview
and
Long Term Maintenance Plan

Angela Celozzi
IAF Operational Center for Meteorology (COMET)

PHASE 7: COSMO year 2014-15



PHASE 7: COSMO year 2014-15

In the VERSUS PP phase7 the tasks are defined as following:

Task 0	Help Desk, Refinements VERSUS code
Task 1	Refinement of functionalities
Task 2	Final Implementation of Feedback Files in VERSUS
Task 3	Functionality to ingest GRIB2
Task 4	Station based forecasts verification activities
Task 5	Additional statistical techniques compatible

This year a great collaboration allowed to increase the technical knowledge of software

Help Desk, code refinement

Task 0

Task 1

Task 2

Task 3

Task 4

Task 5

Help Desk PL TEAM and RHM collaboration

Documentation updates

- Technical Manual (on line)
- User Manual collected from the HNMS

New VERSUS releases

- Two official versions: October 3.3 and July 4.2

VERSUS User Seminar

- Turin May 27-29th thanks to the ARPA- Piemonte

Further sub-tasks related with the optimization

Optimization

VERSUS has been used mainly for **deterministic models** on a limited number of stations. (at CNMCA ≅ 200 stations=**200 forecast**)

The verification for **probabilistic models and the intense use of system** have led to a substantial increase of these numbers. (≅ 2100 stations * 20 members=**42.000 forecast**)

As consequence the system is became **slow** and has required intervention for optimization in order to get acceptable times.

Interventions were made at all levels: DB, source code and adoption of parallelism running where possible.

Optimization

A meeting was organized with the WG7 coordinator

It was held on October 29th in Pratica di Mare and the document **VERSUS_CNMCA-ARPAER_29102014.docx** describes the activities that have been agreed.

Improvements have affected different areas:

Database, code optimization, execution of verification in background, multiuser, plots, score, score output etc

Refinement of functionalities

Task 0

Task 1

Task 2

Task 3

Task 4

Task 5

Confidence Interval Integration

code provided from RHM

Scripts able to facilitate functional capabilities

1. for stations update
2. to delete data from VERSUS DB by shell
3. to delete Suspect Observation directly from DB
4. to download a set of scores already executed into VERSUS

VERSUS Portability - VERSUS on FEDORA 15 and 20

Task performed by NMA

Final Implementation of FF

Task 0

Task 1

Task 2

Task 3

Task 4

Task 5

Integration of Feedback Files (FF) of TEMP/PILOT and AIREP in order to improve upper air verification

Versus 4.0 - first release December 2th 2014

- second release January 12th 2015

Now available in 4.2 VERSUS version

Thanks to the DWD Collaboration

GRIB2 Integration

Task 0

Task 1

Task 2

Task 3

Task 4

Task 5

The task provide the Implementation of VERSUS functionality to ingest/manage GRIB2

The upgrade of the Phoenix libraries - completed.
Code and GUI adjustment - in progress

Delay - scheduled at the end of October

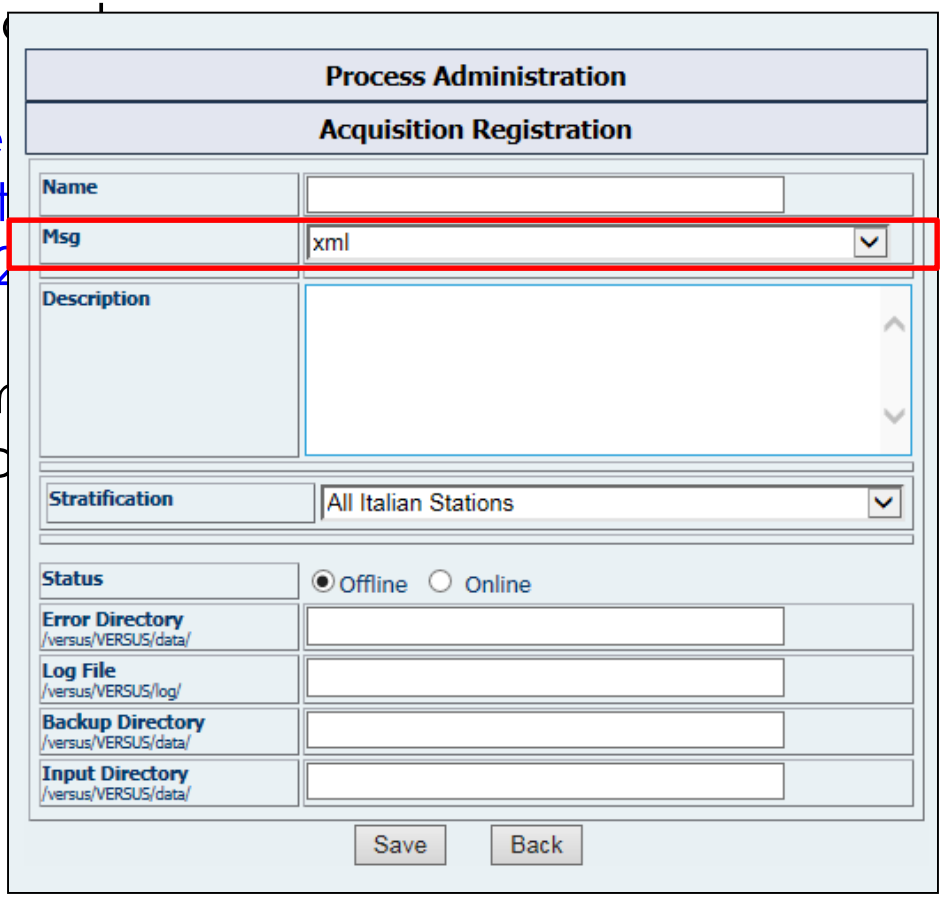
XML Ingestion

- Task 0
- Task 1
- Task 2
- Task 3
- **Task 4**
- Task 5

Ingestion of a standard XML file format (provided by Fieldextra) for post-processed station based fore

The new phps file
IMS and the int
available in the 4.2

This implies the im
and related verific
of XML files.



Additional statistical techniques

Task 0

Task 1

Task 2

Task 3

Task 4

Task 5

To coordinate the execution of the COSMO Project VAST.

On January 14th to 16th a meeting has been held in Pratica di Mare between PL Team and Naima Vela, VAST developer in order to finalize the software

The software is available in the ftp.meteoam.it as a test dataset and related documentation

The test phase was carried out by NMA and HNMS

The project ended in May 2015

VERSUS today…

Now, in conclusion, what is VERSUS able to do?

Summarizing the capabilities of the tool ….

Loading Data

VERSUS GUI provides FE for data loading

The system has currently capability to ingest different format:

- GRIB1/XML for fcs data
- BUFR/TXT for obs data
- NETCDF for Feedbackfile

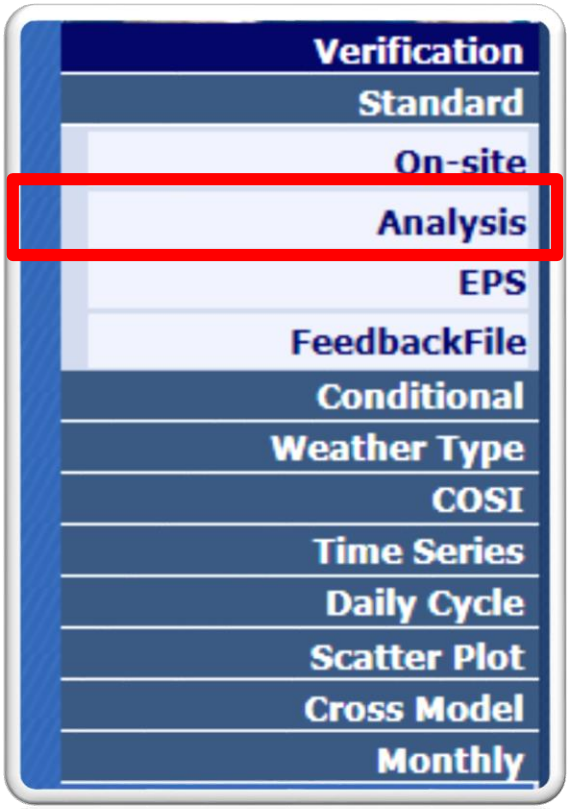
Soon also GRIB2 format

Standard Verification

VERSUS performs verification of deterministic model vs observations:

- for date and periodical intervals such as monthly, seasonal, yearly
- with period based on observations or forecasts
- computing *continous and dichotomic* scores
- Performing and plotting geographically distributed scores
- for **surface and upper** air levels

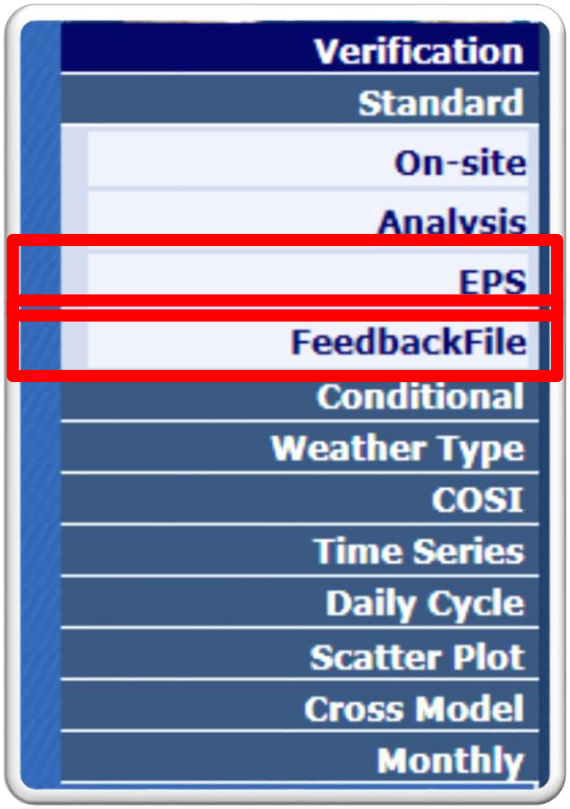
Standard Verification



VERSUS performs verification of analysis vs a reference model for surface and upper levels computing countinuos scores (ME, MAE, MSE, RMSE or a subset)

Standard Verification

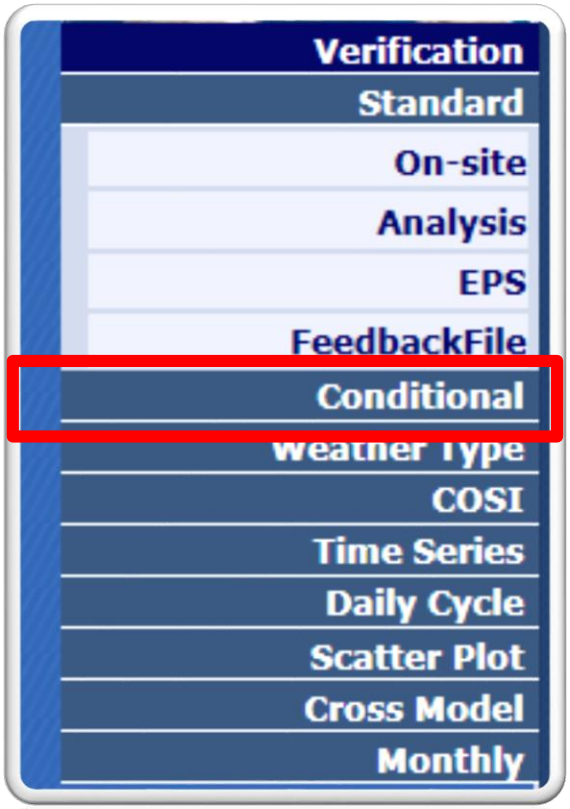
Ensemble Prediction System vs observation at surface level computing the following scores and diagrams:



	BRIER.reliability,BRIER.reliability.CI.high,BRIER.reliability.CI.low, BRIER.resolution, BRIER.resolution.CI.high , BRIER.resolution.CI.low, BRIER.SKILL, BRIER.SKILL.CI.high , BRIER.SKILL.CI.low, BRIER.uncertain, BRIER.uncertain.CI.high, BRIER.uncertain.CI.low, CRPS, CRPS-CI.high, CRPS-CI.low, CRPSS, ROC area, RPS,RPS-CI.high, RPS-CI.low, RPSS, RPSS-CI.high, RPSS-CI.low, RPS.clim, RPS.clim-CI.high, RPS.clim-CI.low, ERROR, SPREAD, OUTLIERS
Diagrams	ROC, Reliability, Cost-Loss, Rank

loaded in the system

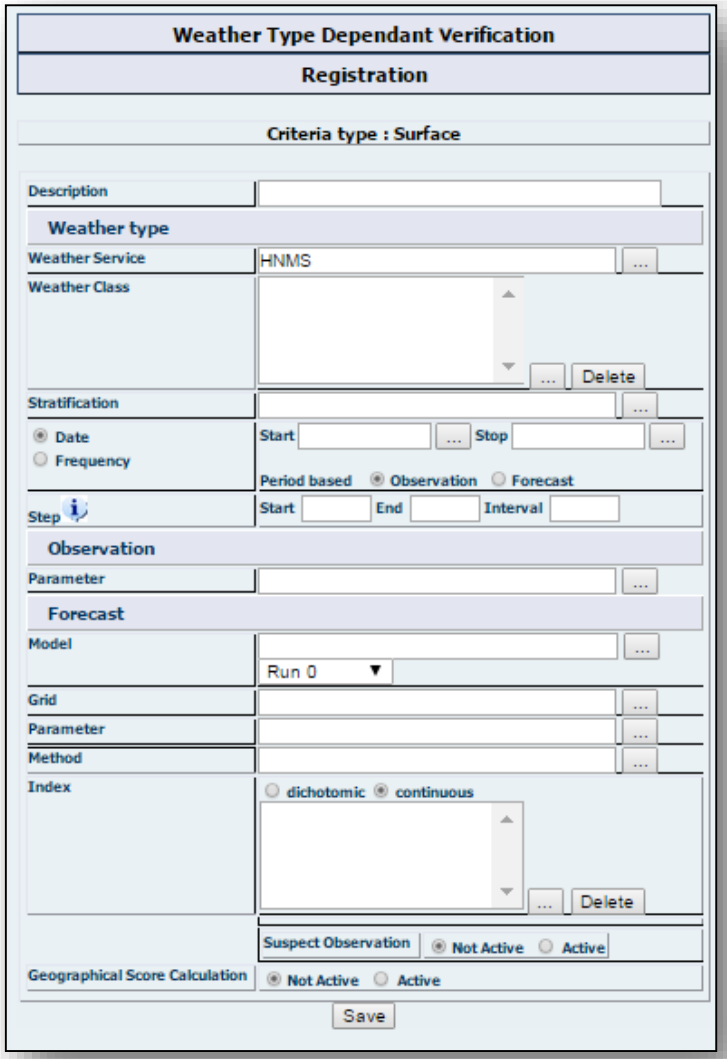
Conditional Verification



Verification on deterministic model vs observations (as for standard) of a parameter conditioned to the value assumed of an other one.

The condition can be set on observation, on forecast or both (two in all cases).
The condition can be «by value» or «by function»

Weather Type



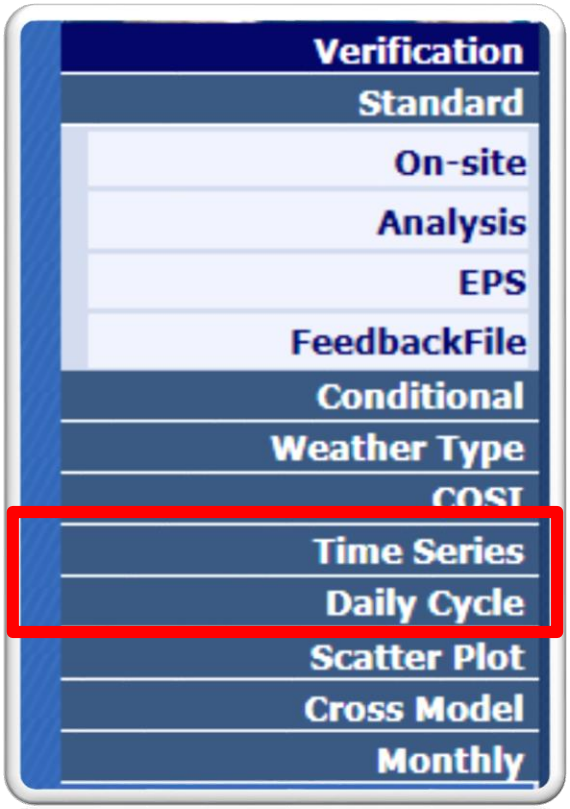
Weather Type verifications - on Site and Analysis
The system lets to create verification on days where a specific weather Class is assigned

COSI

VERSUS performs COSI index by the composition of prefixed parameter verifications:

- 2m Temperature
- Wind Vector
- Total Cloud Covered
- Precipitation

Time Series and Daily Cycle

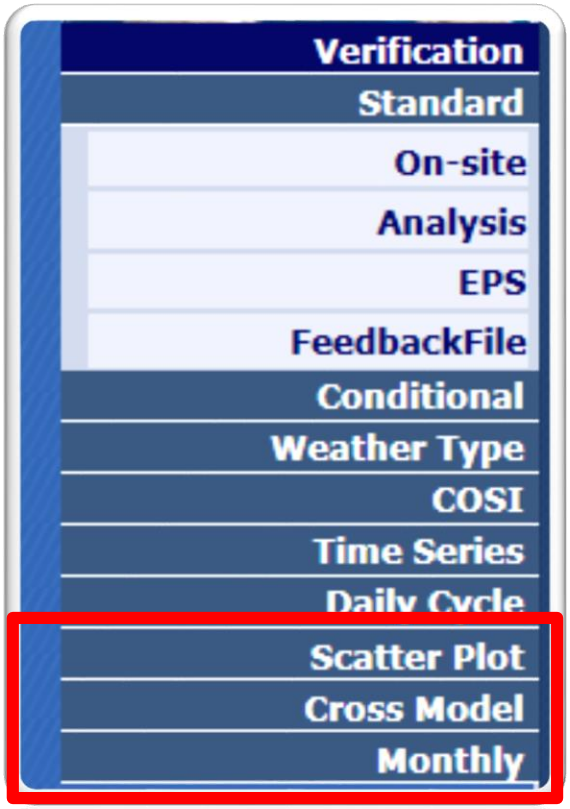


VERSUS performs Time Series and Daily Cycle observation vs forecast for one or more models simoultaneously.

It graphics parameters and scores (continous or dichotomic) separately

Time Series can be performed on the first, the second or the third day saving the data on a txt file

Graphical representation



Scatter Plot observation vs forecast for one model for date and periodical intervals such as monthly, seasonal, yearly

Cross Plots of verifications previously computed and saved in the DB.
The verifications that can be selected are: standard, conditional, weather type, EPS for surface and upper air with a representation of a maximum of 10 models

Trend of ***monthly*** scores (continous or dichotomic) for a model

Long term Maintenance

The Long-Term Maintenance services are planned to be assured by C.O.Met (the new Operational Meteorological Center of the Italian Air Force) for 2015/2017 (2) COSMO years

The Source Code Administrator for VERSUS is appointed from C.O.Met staff as a focal point

(Antonio Vocino)

The SCA reserves the right to define time/way of the support activity

Long term Maintenance

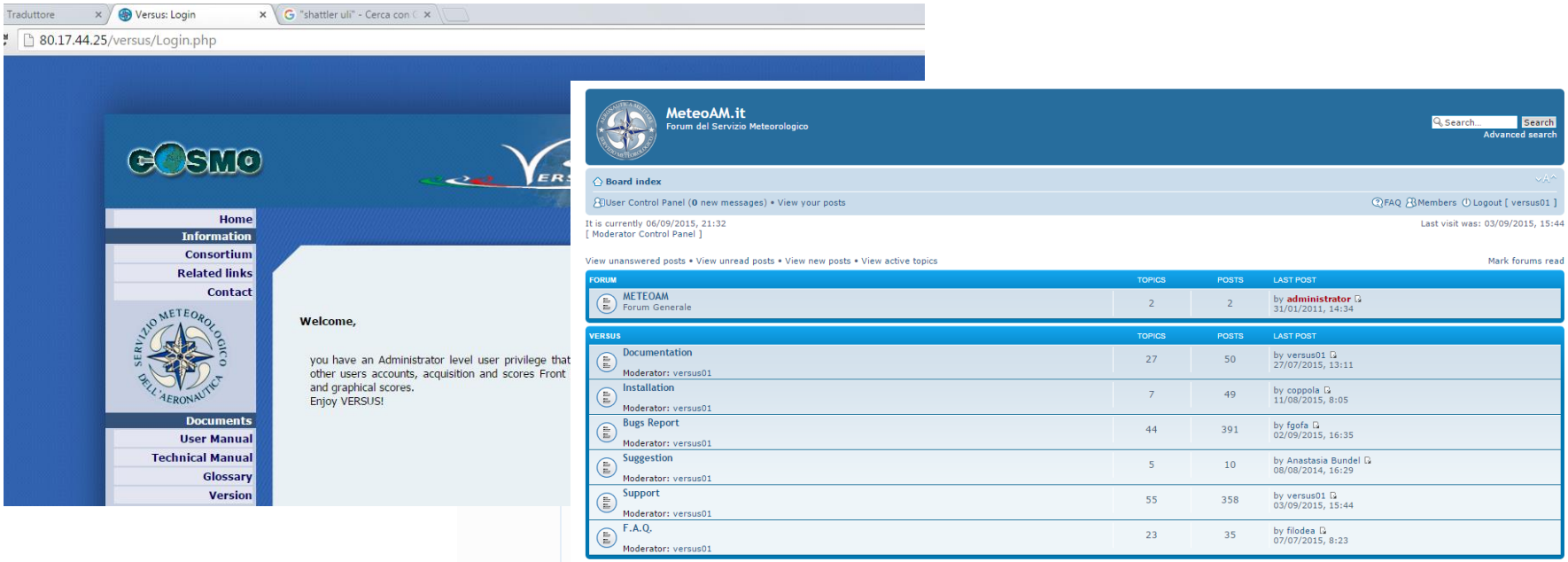
For the concept of "Maintenance Service" it is to be intended:

1. Bug fixing and related patch release;
2. Adaptation of the software to future versions of prerequisite libraries and operating system;
3. Code optimization and minor adjustments of the software (under SCA responsibility);
4. User support by web Forum tool and software for bugs tracking (Bugzilla, …)
5. Any further maintenance activity according to SCA

Long term Maintenance

VERSUS forum is offered to facilitate communication for user support .

VERSUS ftp AREA and Test Machine will be guaranteed.



Thanks for your attention!