Republika Hrvatska
Državna geodetska uprava

CROPOS

CROatian POsitioning System

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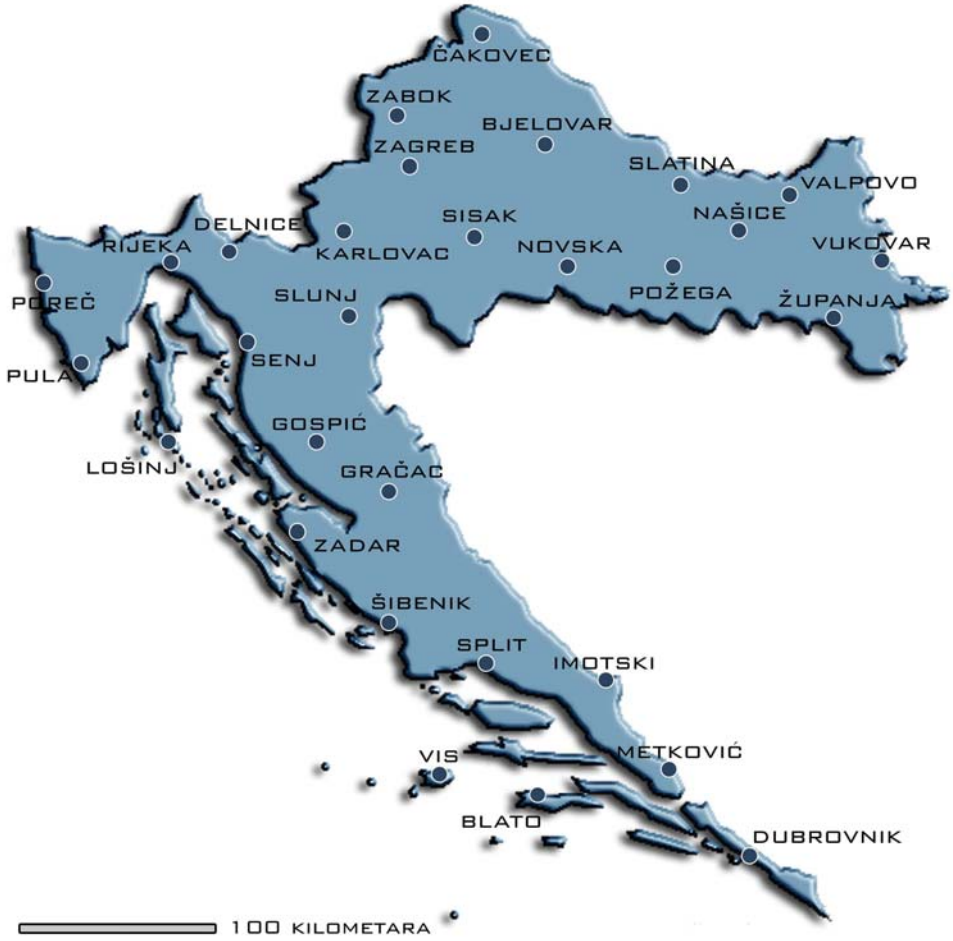
CROPOS®

- **CROPOS® is a State network of referential GNSS stations of the Republic of Croatia enabling its users to determine a position in the real time with the accuracy of more than 2 cm in the entire territory of the Republic of Croatia.**
- **launched on December 9, 2008**

CROPOS® Network

- collecting the data from the 30 reference stations
- reference station real-time GNSS data exchange with the neighbour countries
- networking and computing the real-time correction parameters
- distribution of real-time correction parameters to the users
- distribution of post-processing data
- 24/7 service availability



CROPOS® Project Budget

- PHARE-2005 Programme – R3 CROPOS System:
  - Contract value 1.396.000,00 €
    - 75% EU pre-accession funds
    - 25% Croatian State Budget funds
- Croatian State Budget funds
  - Contracts value 120.000,00 €
    - manufacturing and placement of antenna constructions
    - establishment of the required installations and telecommunications lines

CROPOS® Reference Frame

- Bernese GPS Software Ver. 5.0
- GPS Week 1503 (7 x 24 h)
  - 30 CROPOS GNSS Sites
  - 7 IGS Control Sites
  - 5 IGS Reference Sites
- ITRF2005, 2008.83 (1503)
- σ_φ = 1.2 mm, σ_λ = 0.8 mm, σ_h = 3.4 mm
- ETRF00 (R05)

CROPOS® Network

Reference GNSS Station

- Trimble NetR5 GNSS Receiver
- Trimble Zephyr 2 Geodetic GNSS Antenna

Control Centre (SGA)

- Hewlett Packard Servers (7)
- CISCO Communication Equipment
- CISCO Access Server
- Trimble GPSNet/RTKNet Software

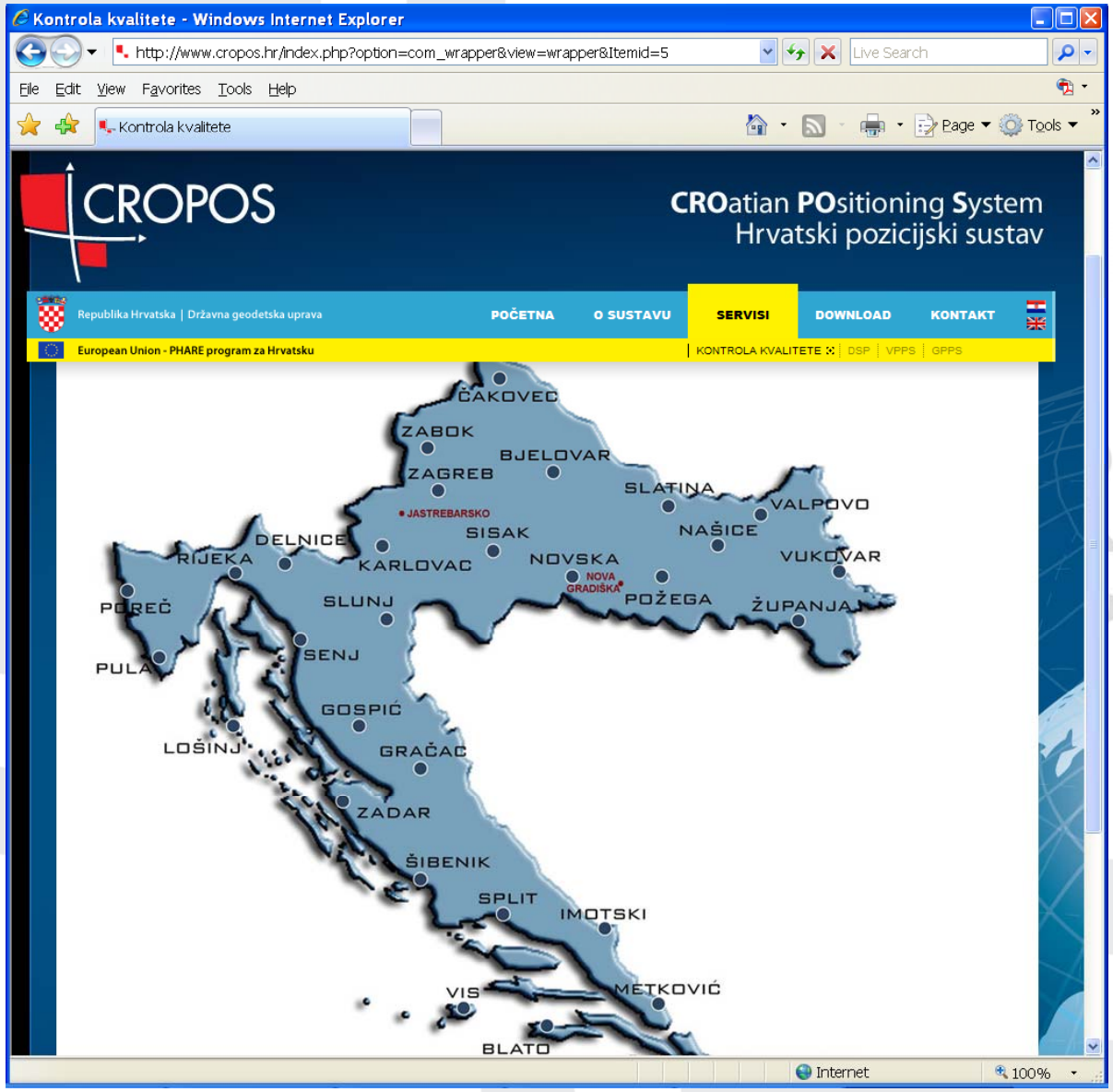
CROPOS® Services

CROPOS SERVICES	METHOD/ SOLUTION	DATA TRANSFER	ACCURACY	DATA FORMAT
DSP Differential positioning in real time	Network solution of code surveys in real time	Wireless Internet (GPRS, UMTS) NTRIP protocol	0.3 do 0.5 m	RTCM 2.3
VPPS High-precise positioning in real time	Network solution of phase surveys in real time	Wireless Internet (GPRS, UMTS) NTRIP protocol GSM	2 cm (2D) 4 cm (3D)	RTCM 2.3 RTCM 3.1
GPPS Geodetic precise positioning	*post-processing*	Internet (FTP, e-mail)	1 cm (2D, 3D)	RINEX RINEX VRS

CROPOS® Quality Managment (1)

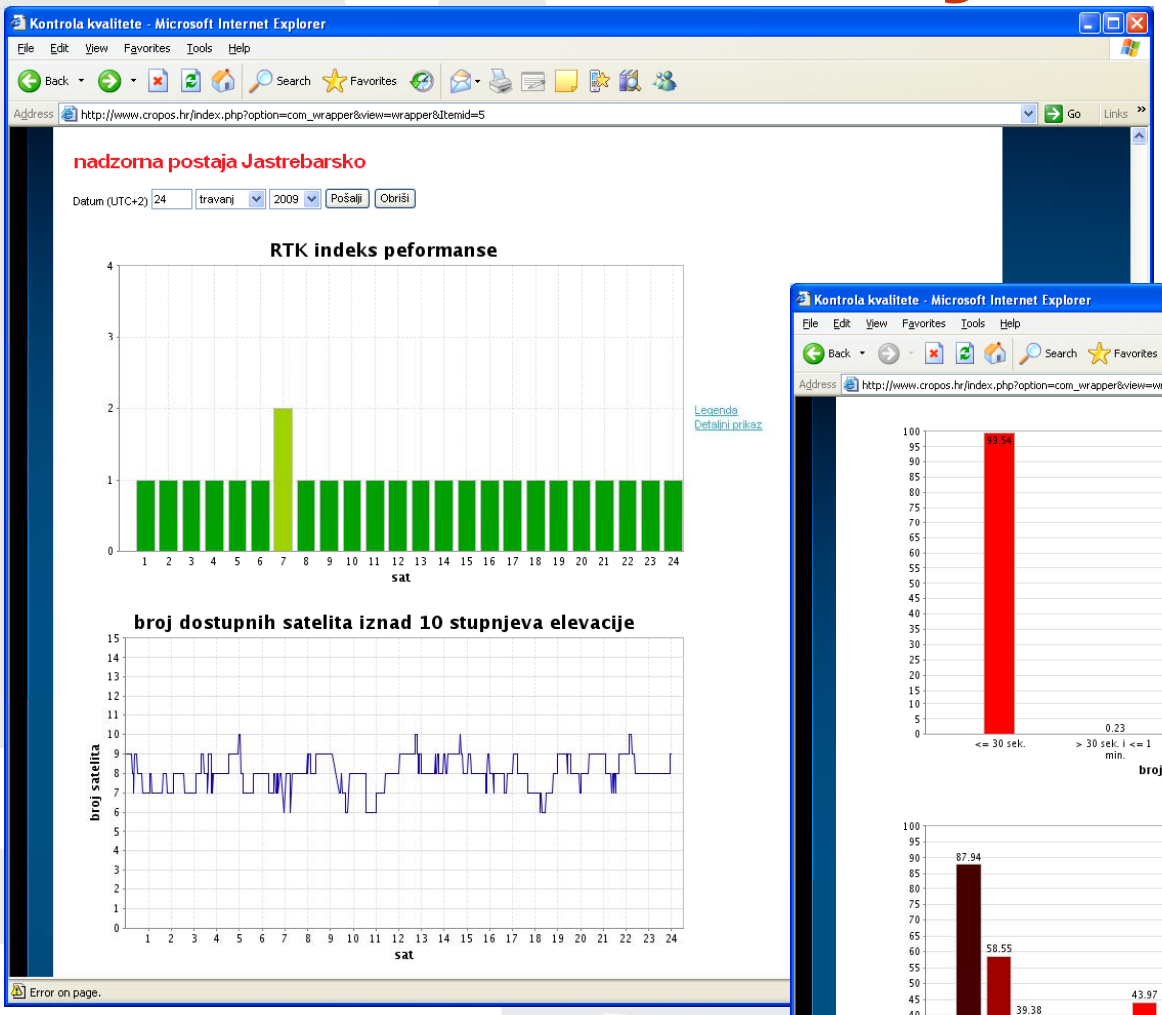
- The system operation is continuously supervised
- In order to obtain at any moment the information on the system operation quality in relation to the
  - initialization time
  - accuracy
  - availability of the system

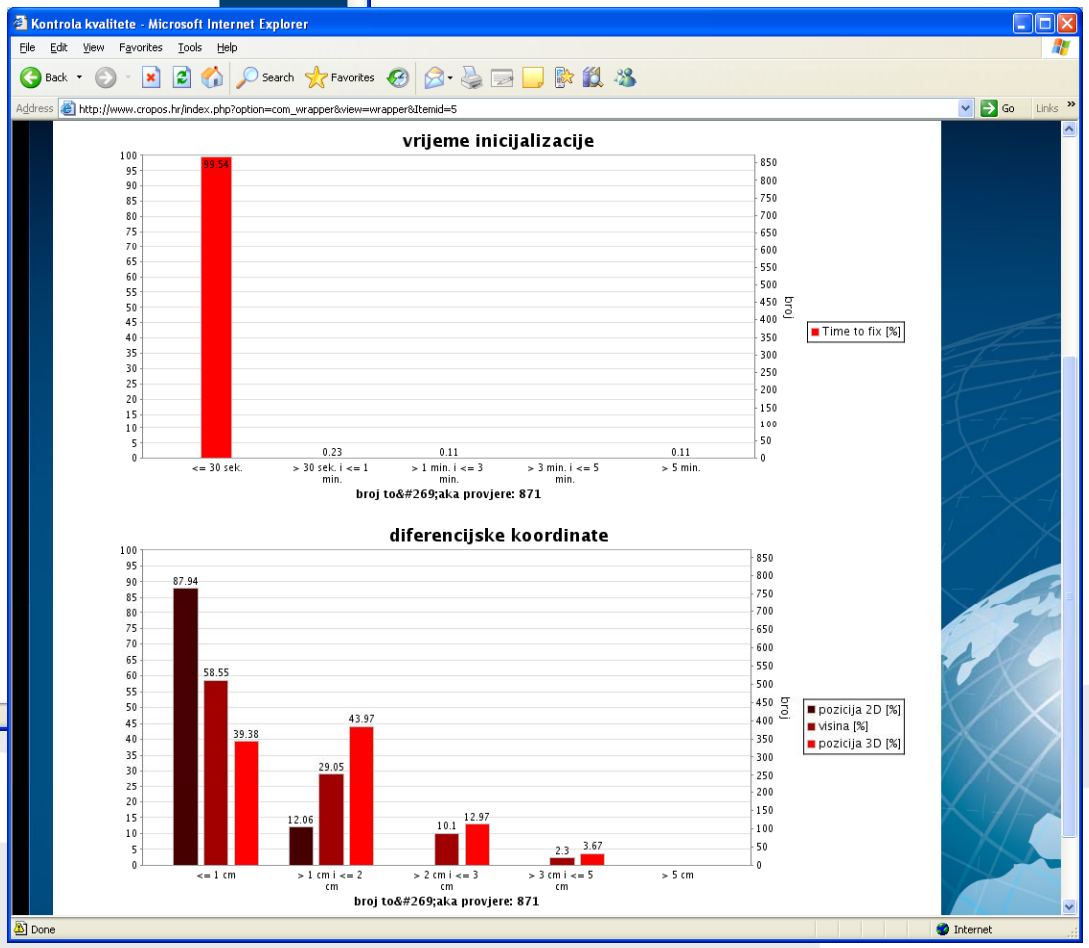
CROPOS® Quality Managment (2)



- Two independent permanent control stations
- Jastrebarsko and Nova Gradiška which simulate the work of users in the field
- Every 10 seconds, the control stations connect to the CROPOS system and use the VPPS service for determining the position

CROPOS® Quality Managment (3)



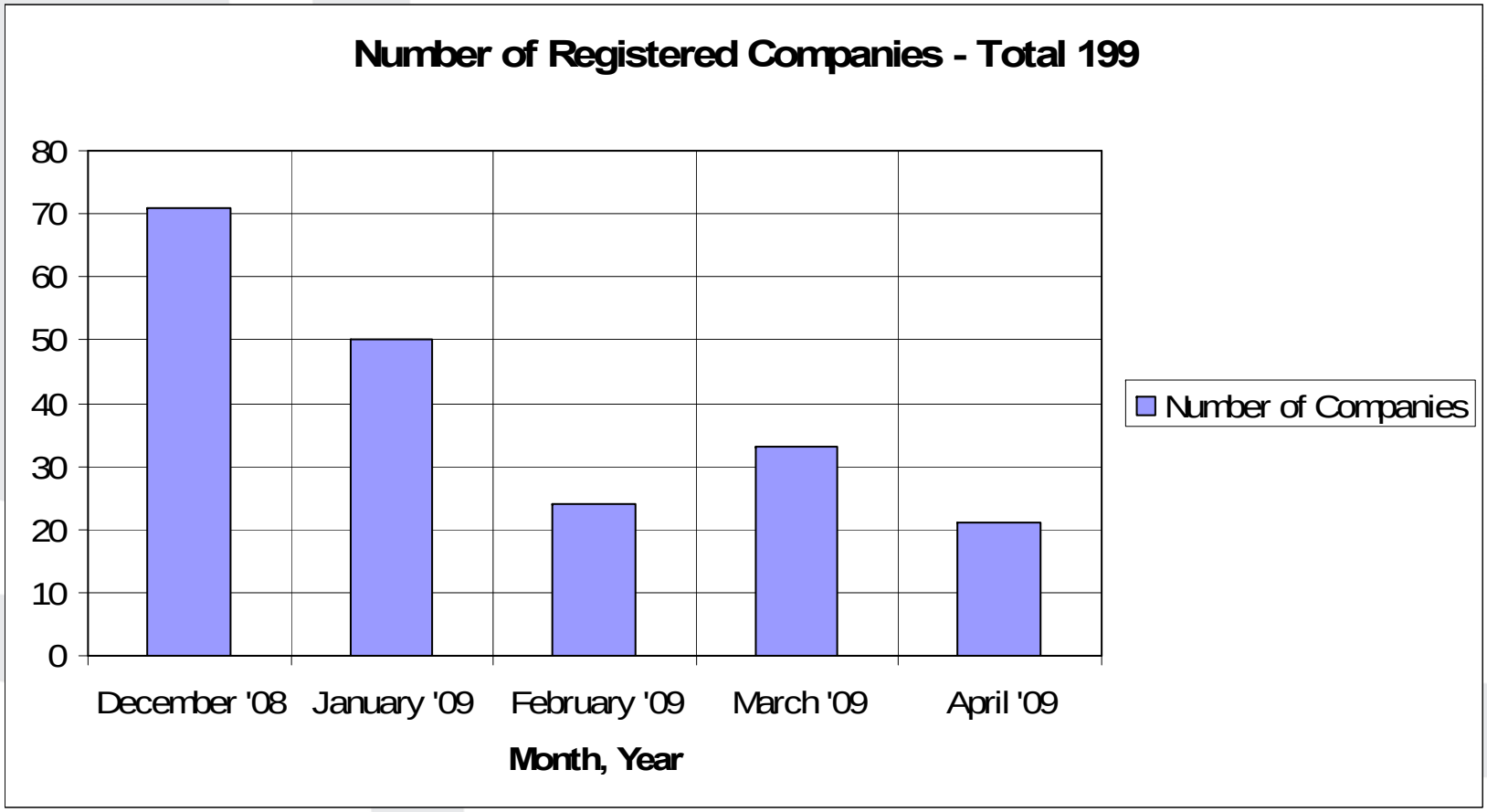


CROPOS® Services Pricelist

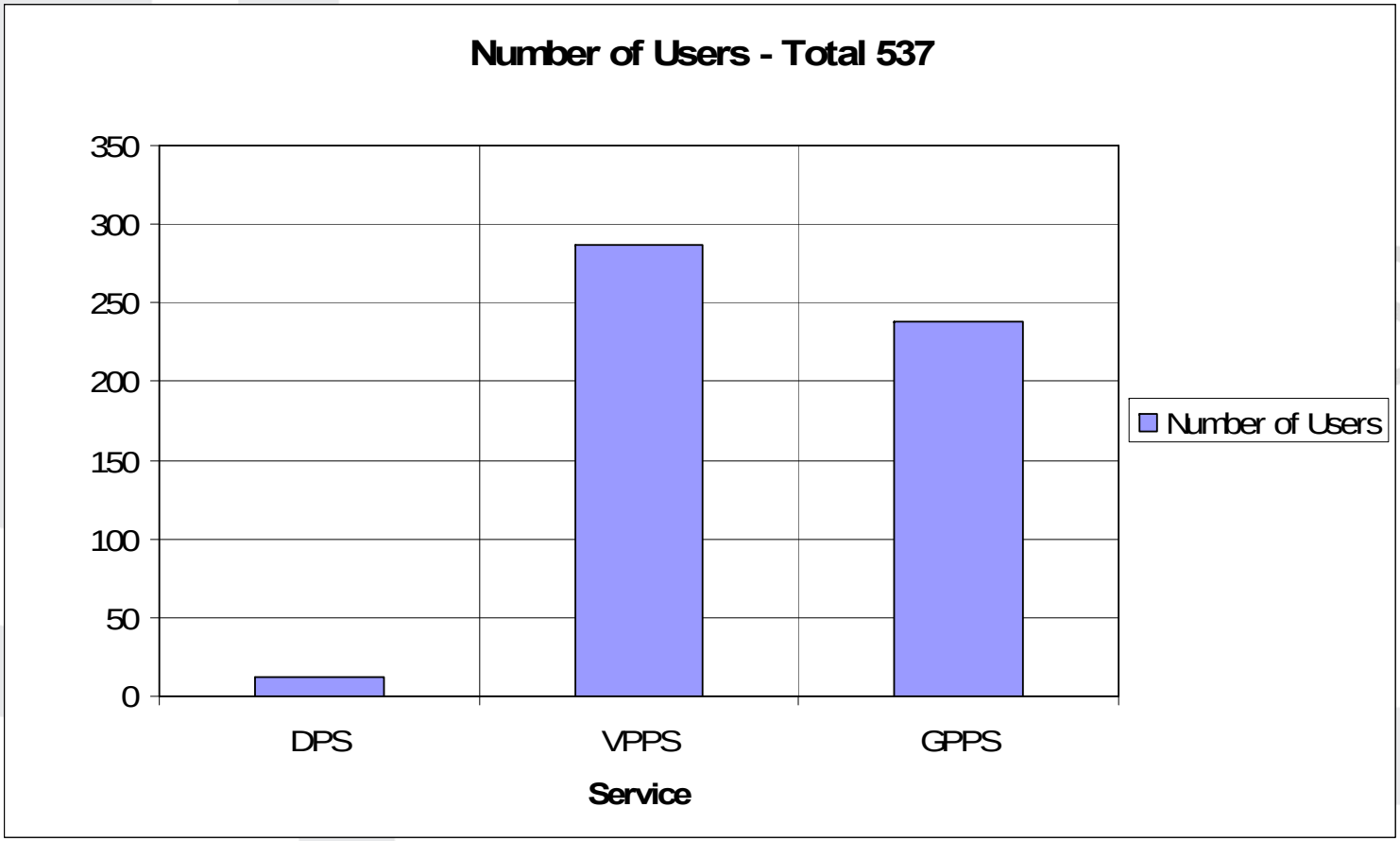
CROPOS SERVICE	DATA FORMAT	UNIT	PRICE
DPS Differential positioning in real time	RTCM 2.3	1 year	HRK 1.000,00 (~135 €)
VPPS High-precision positioning in real time	RTCM 2.3 RTCM 3.1	1 minute 1 year	HRK 0,35 (~0,05 €) HRK 5.000,00 (~675 €)
GPPS Geodetic precise positioning	RINEX RINEX VRS	1 minute	HRK 0,50 (~0.07 €)

Registration Costs - HRK 300,00 (~40 €)

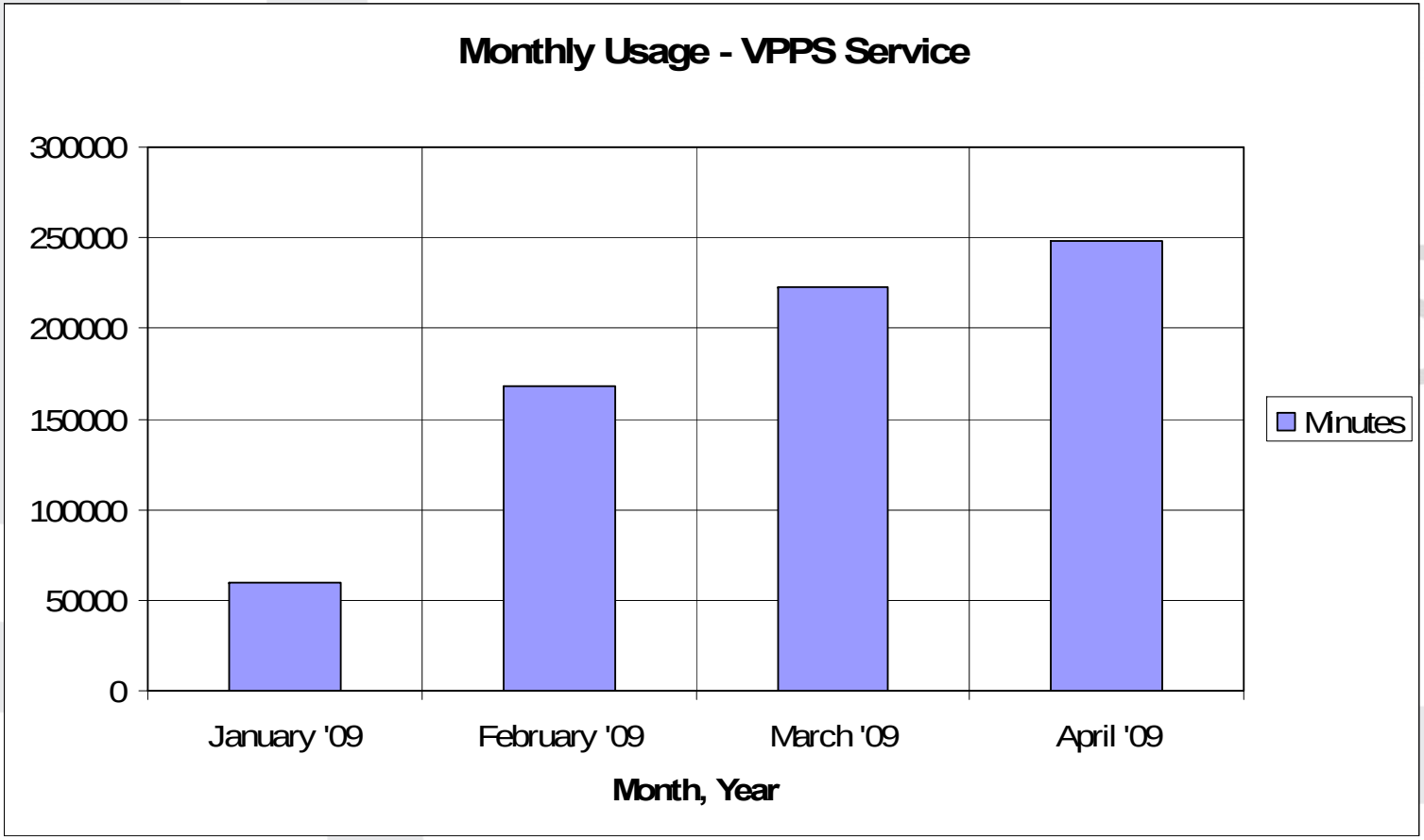
CROPOS® Registration



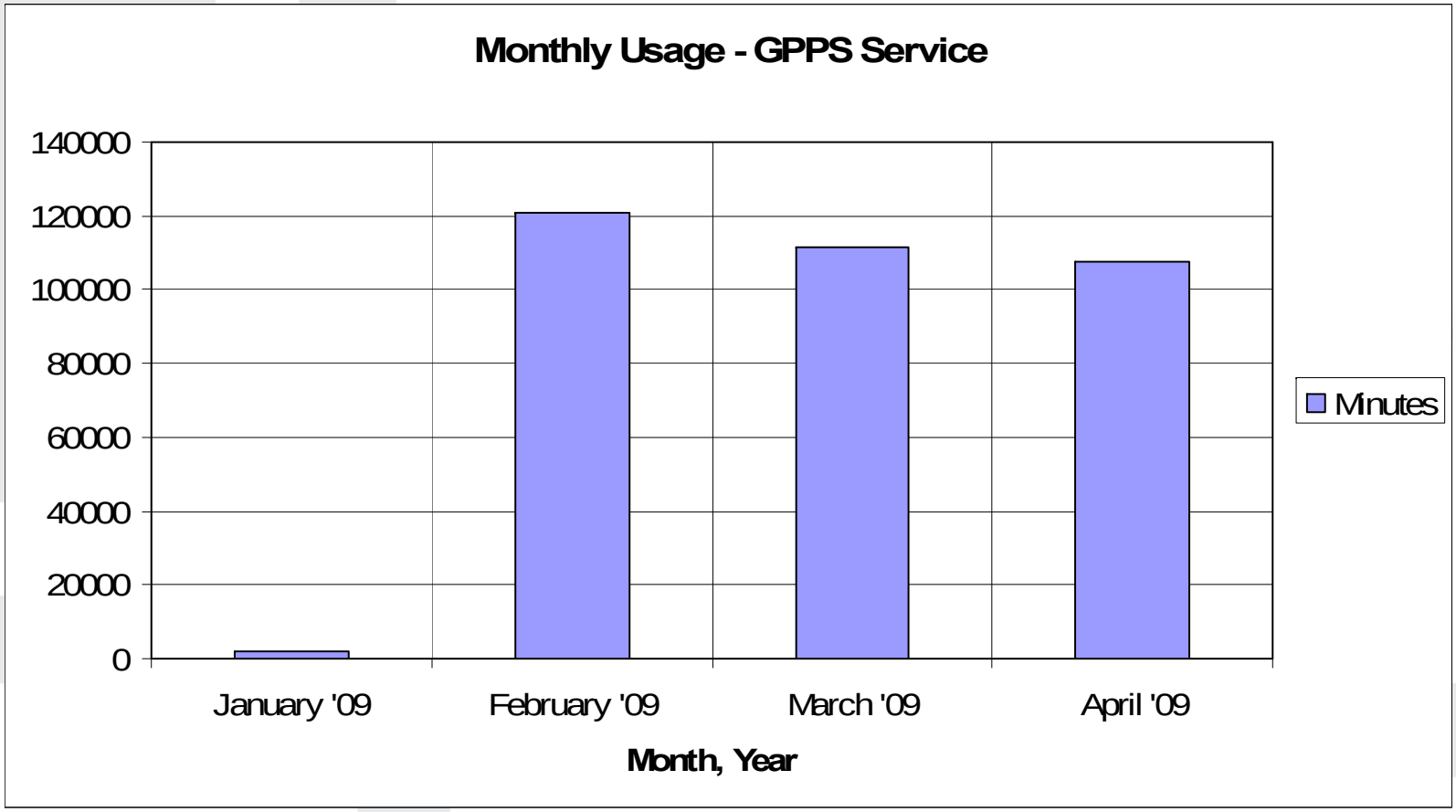
CROPOS® Users



CROPOS® Monthly Usage VPPS



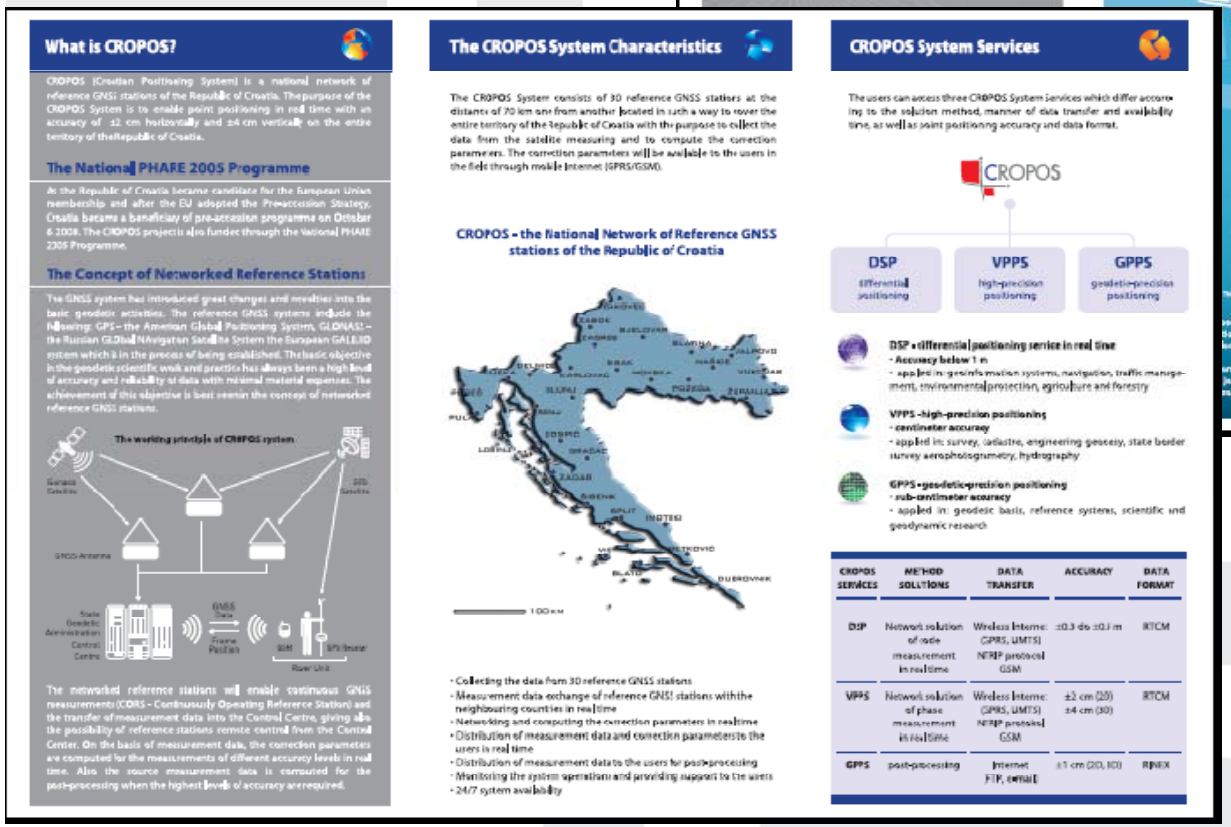
CROPOS® Monthly Usage GPPS



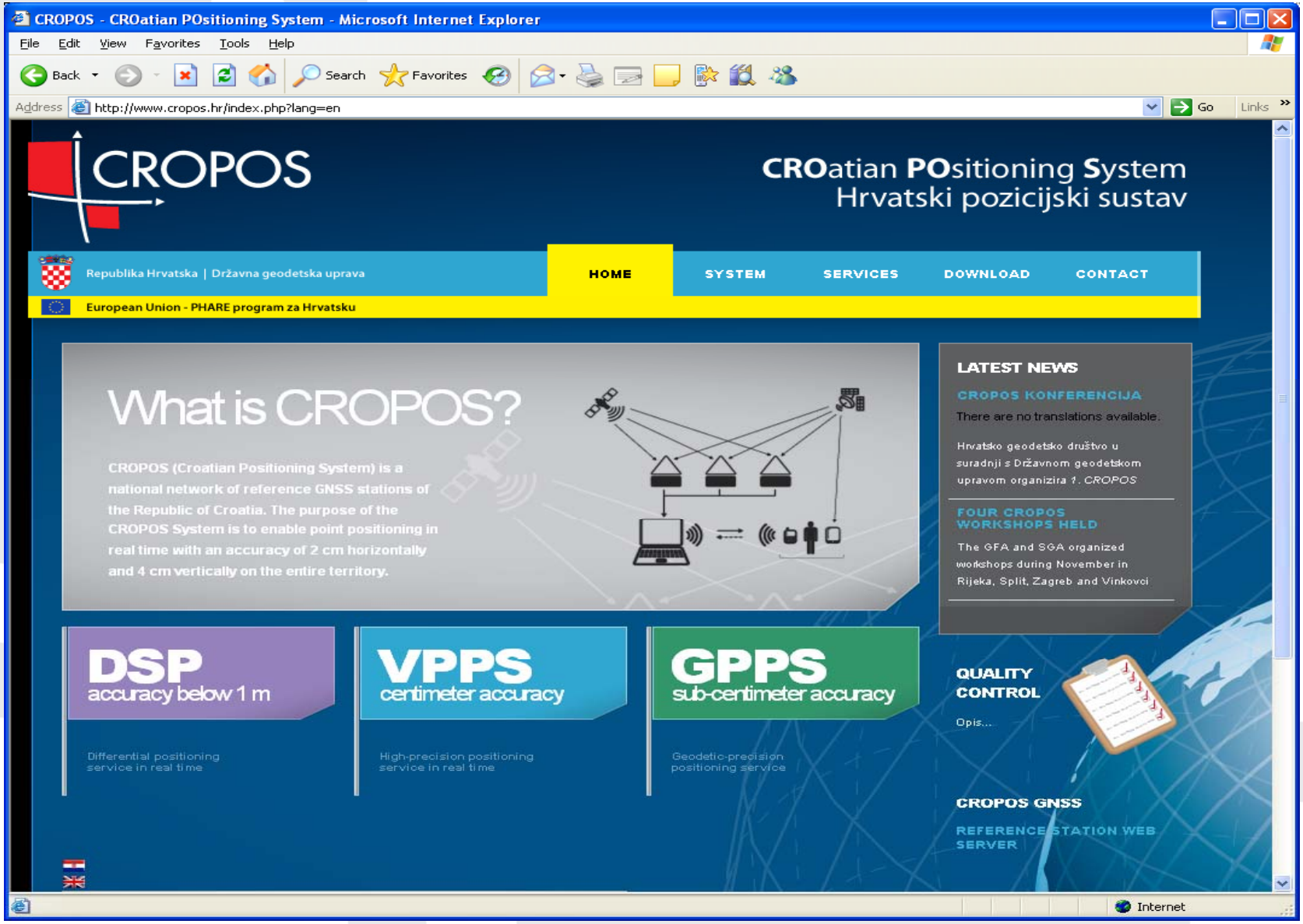
CROPOS® User Information

- PHARE-2005 Programme – R1: Integrated Land Administration System in Croatia (ILAS)
  - CROPOS Flayer
  - CROPOS Brochure
  - www.cropos.hr, www.cropos.eu
  - Training-Information Workshops (Rijeka, Split, Zagreb, Vinkovci) > 800 participants
  - CROPOS – User Manual (Print + DVD)
  - CROPOS Video

CROPOS® Flayer



CROPOS® Web Site



CROPOS® User Manual

CROPOS® Future Activities

- 1. CROPOS Conference – June 8.-9., 2009, Zagreb (CGS, SGA)

- T7D – Transformation Utility Program – Grid Datum Transformation
  - GNSS Measurements of Trigonometric Points (~2500 to ~7000)
  - New Geoid Model (1st HRG2000)
  - Trimble Transformation Generator > CROPOS