



Arbeitsgemeinschaft der Vermessungsverwaltungen
der Länder der Bundesrepublik Deutschland



SAPOS®

WORKING GROUP "GEODETIC REFERENCE"

Working Committee of the Surveying
Authorities of the Laender of the
Federal Republic of Germany (AdV)

AMTLICHES DEUTSCHES VERMESSUNGSWESEN



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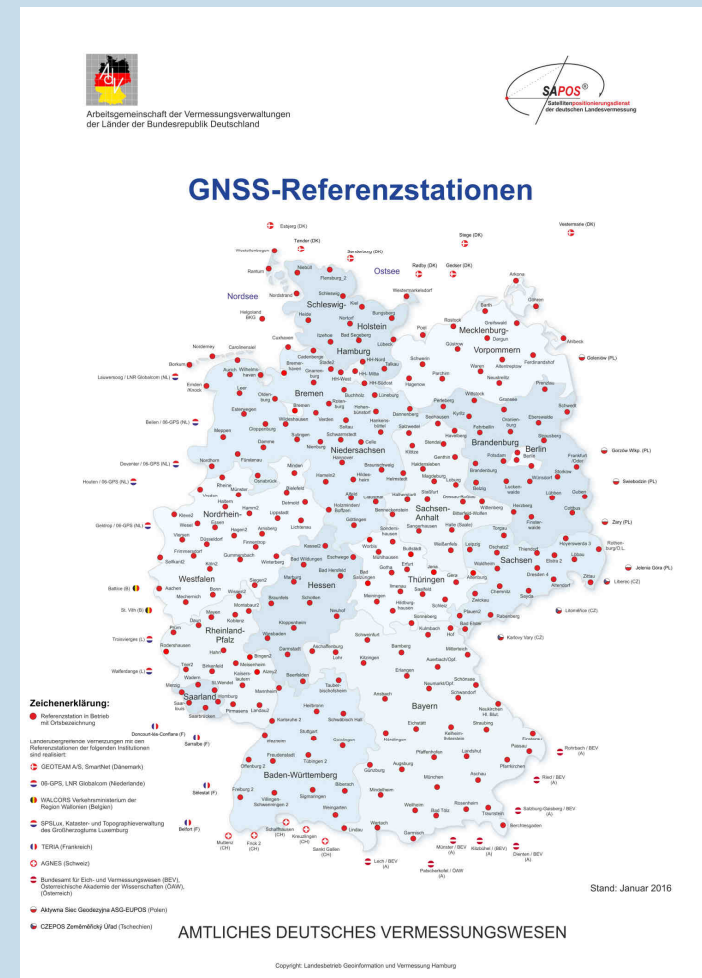
SAPOS® - services, interoperability and standards

SAPOS® is a service operated by the
Surveying Authorities of the States of
the Federal Republic of Germany

SAPOS® is organised as a joint project
of the AdV

SAPOS® provides the official spatial
reference

SAPOS® is considered as an
infrastructure basic provision and as
part of the legal task of the German state
survey



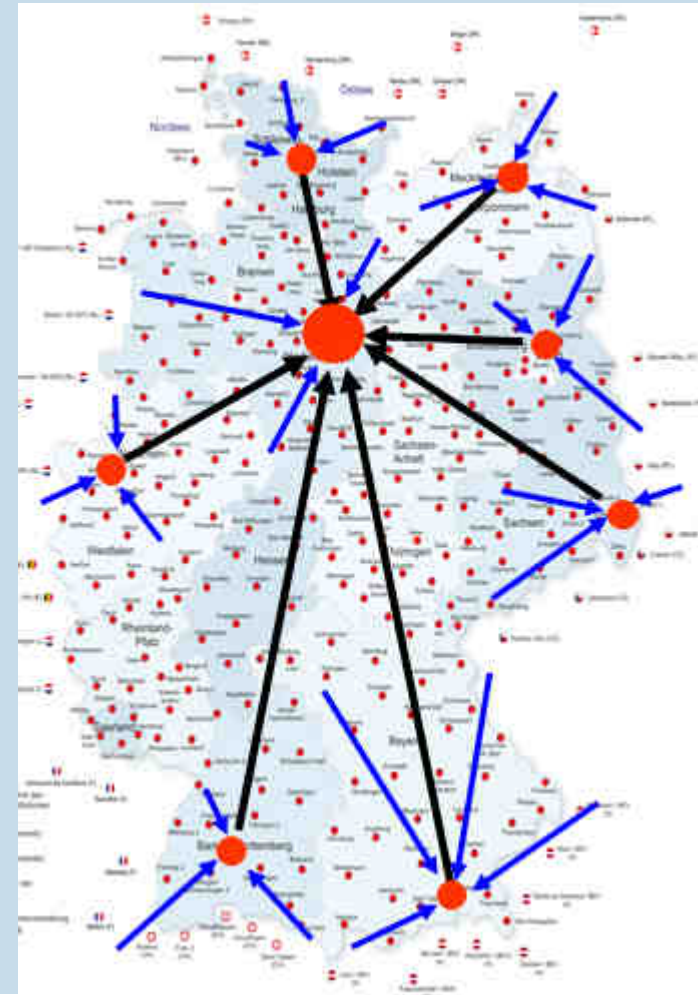


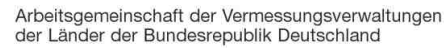
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SAPOS[®] - services, interoperability and standards

Central Bureau SAPOS[®] (ZSS)

- Nationwide provision and integration of SAPOS[®]- data
- Access point for Private Public Partnership collaboration
- Exchange of SAPOS[®]- data between the states
- Technical support for the cross-border networking
- Marketing of SAPOS[®]- data for nationwide users
- International collaboration (RTCM)



**SAP[®] POS[®]**

- **about 270 reference stations**
- **cross border networking with neighboring countries**
- **interoperability: use of international standards as part of the product definition (RTCM, RINEX, NMEA, NTRIP)**
- **standardized fees (AdV-free catalogue)**
- **standardized quality management**
- **GPS → GLONASS - -> Galileo - -> Beidou**





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SAPOS® - services, interoperability and standards

Real time

EPS

0,3-0,8 m

Provision by
mobile Internet

Data format RTCM

HEPS

1-2 cm

Provision by mobile
Internet and GSM

Data format RTCM

fees / open data

Post Processing

GPPS

< 1 cm

Provision by
Webserver

Data format RINEX

fees / open data

EPS: Real Time Positioning Service
HEPS: High Precision Real Time Positioning Service
GPPS: Geodetic Precision Positioning Service

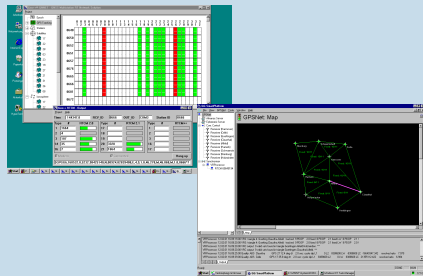


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SAPOS® - services, interoperability and standards

developing

1994-1998



network tests

installation

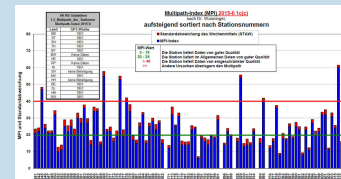
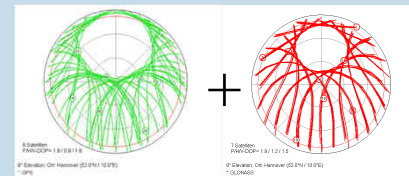
1999-2003



use for cadastral surveys
(legal spatial reference)

production

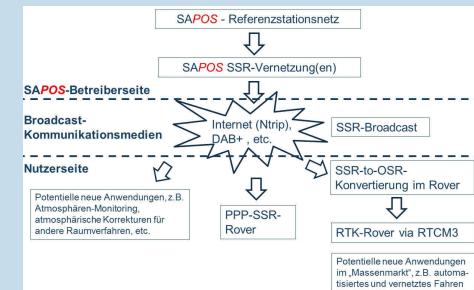
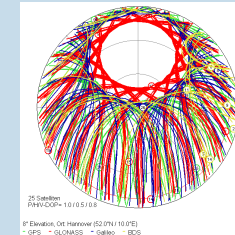
since 2003



quality management

expansion and
innovation

since 2015



Galileo, PPP,
applications



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SAPOS® - services, interoperability and standards



integrated spatial reference

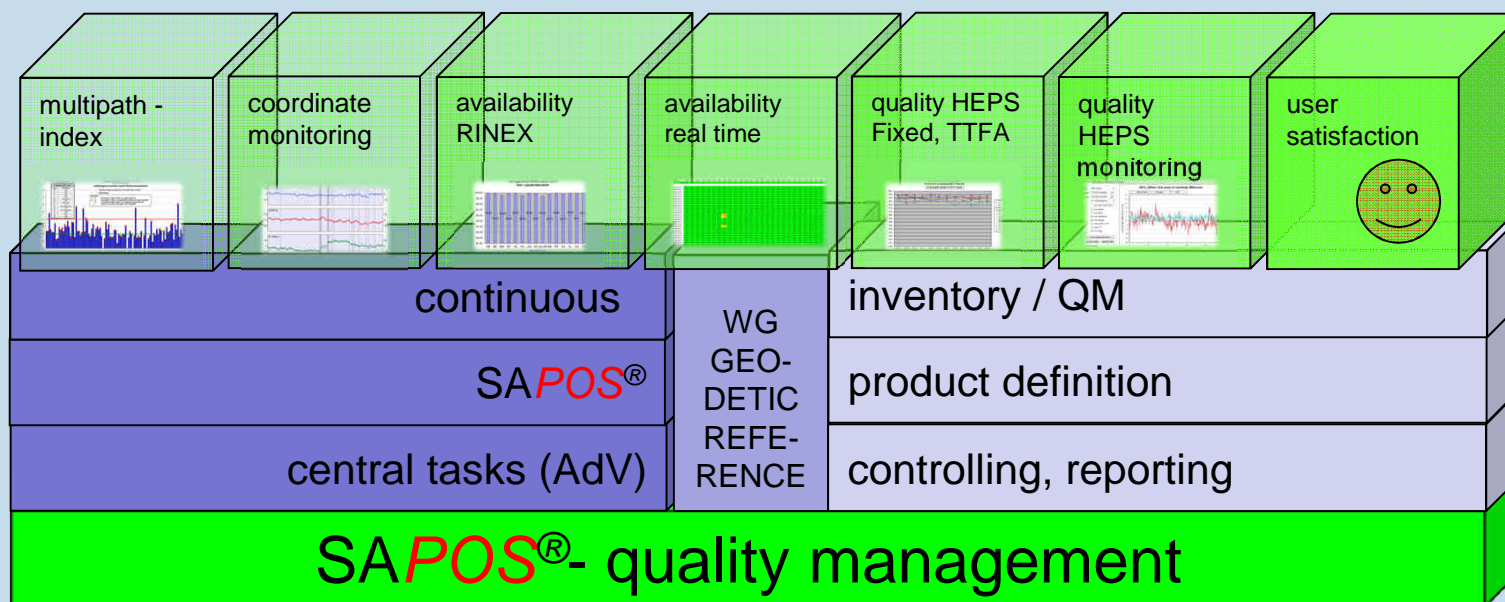
<http://www.adv-online.de/>





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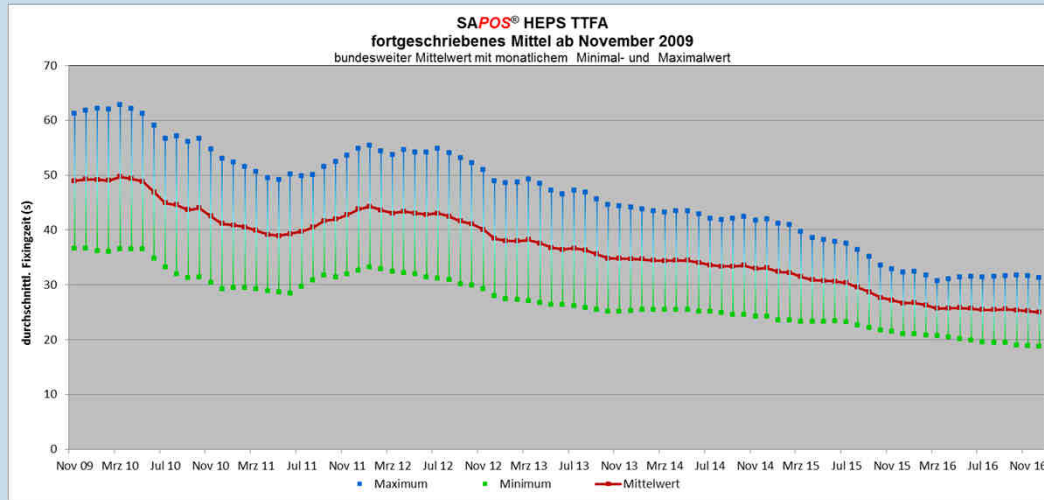
SAPOS[®] - the quality management system





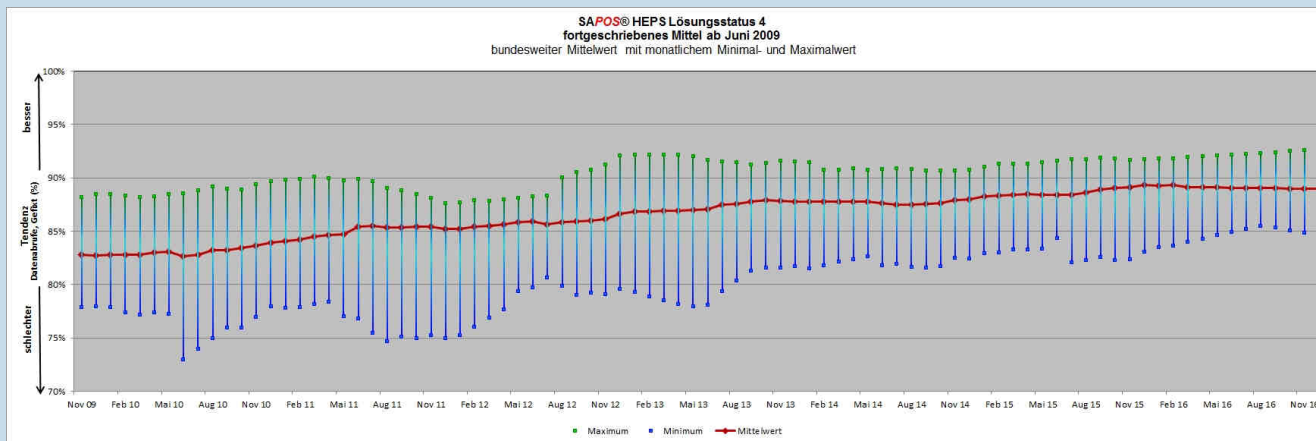
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SAPOS® - the quality management system



HEPS-service („fixed“)

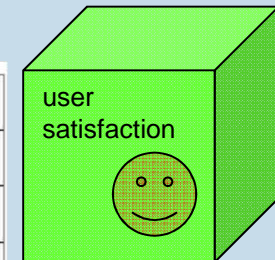
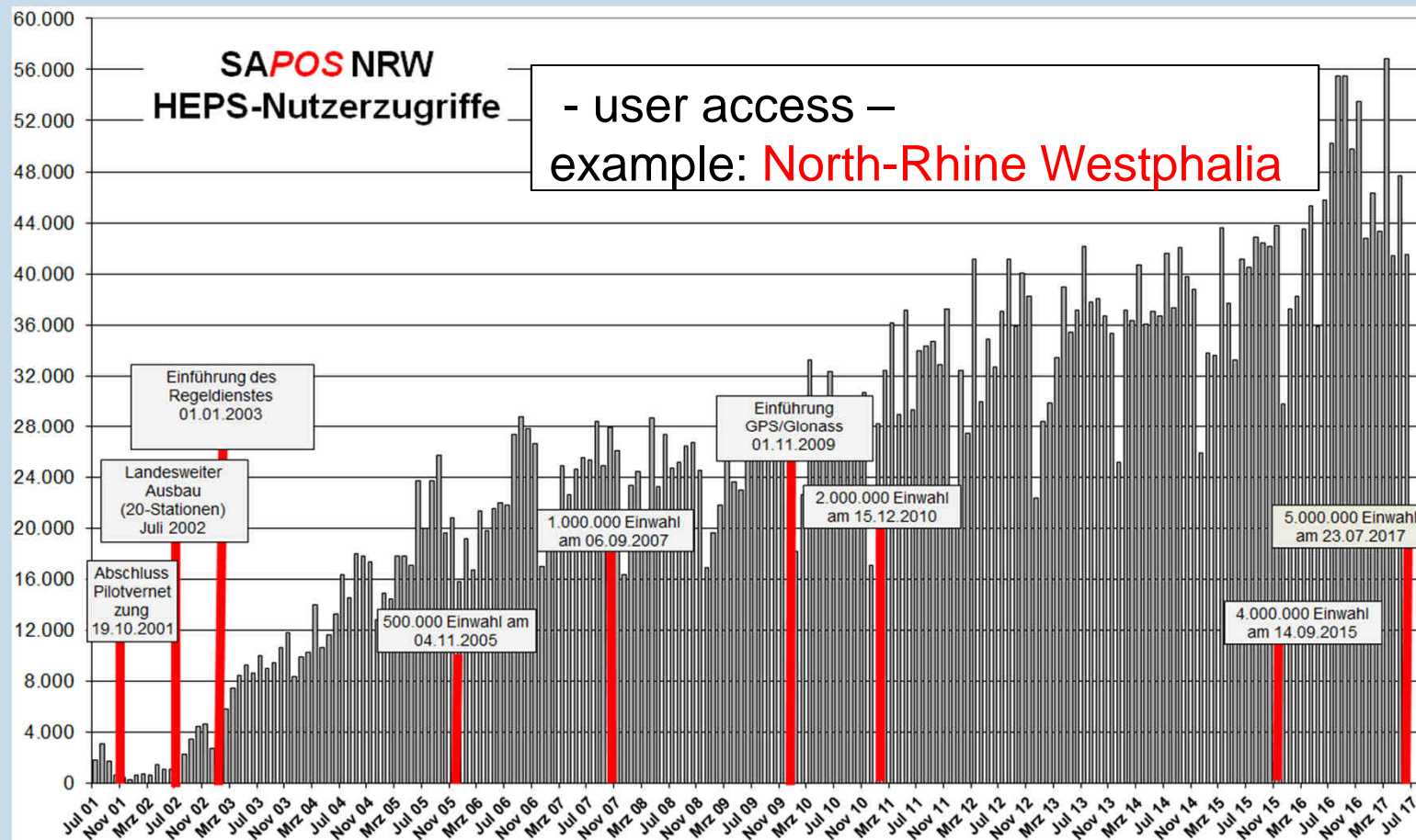
- reporting since 2009
- fixing faster than 1 minute
- „fixed“-solutions >90%





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SAPOS® - the quality management system





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SAPOS® - steps to Galileo

SAPOS®

