Federal Agency for
Cartography and Geodesy

INSPIRE and CRS

Wolfgang Söhne

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- Definitions of coordinate reference systems
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- CRS-EU

INSPIRE

- INfrastructure for SPatial InfoRmation in Europe
  - directive 2007/2/EC of the European Union (Parliament and Council)
  - published on April, 25, 2007, official on May, 15, 2007
- Spatial data: is any data with a direct or indirect reference to a specific location or geographical area
- Infrastructure for spatial information: are special data sets and spatial data services; but covers much more, e.g. agreement on access and use etc.
- INSPIRE should assist policy-making in relation to policies and activities that may have direct or indirect impact on the environment

INSPIRE

- Annexes I to III: 34 spatial data themes needed for environmental applications, with „coordinate reference systems“ and „geographical grid systems“ in Annex I
- Drafting Teams
- Thematic Working Groups: are elaborating the descriptions of the themes in detail and generate draft Implementing Rules
- Implementing Rules (IR)
- Spatial Data Interest Community (SDIC): approx. 500 (EGU, EG, not: EUREF)
- Legally Mandated Organisation (LMO): more than 250 organisations registered

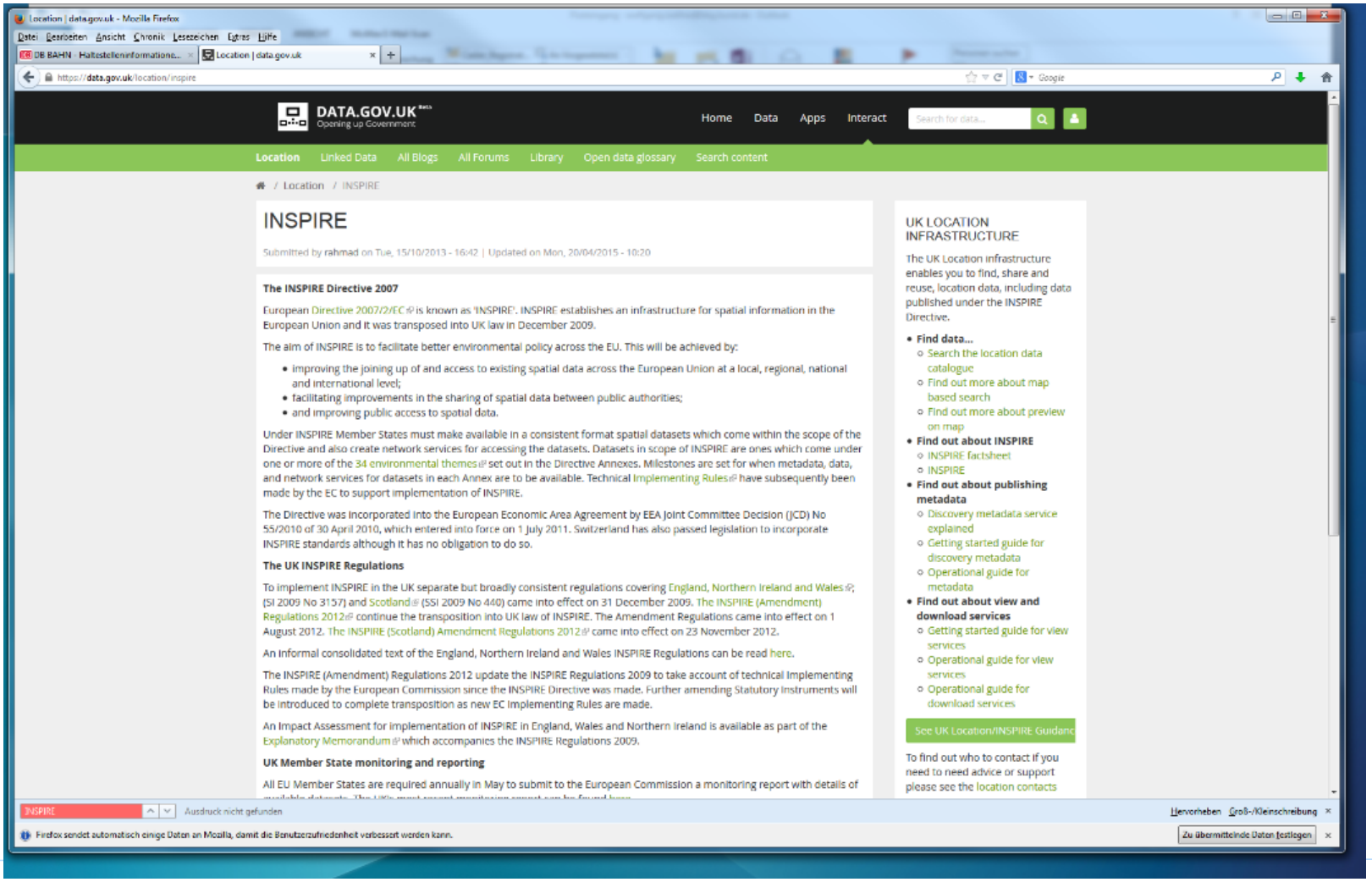
INSPIRE

- Technical Guidelines on „Data Specification“, deliverable D2.3
  - For the horizontal component, INSPIRE will mandate the use of the European Terrestrial Reference System (ETRS89)
  - For the vertical component, INSPIRE will mandate the use of the European Vertical Reference System (EVRS)
- See Torres, 2008, 2009 and 2010 for all the details of the contribution of EUREF to INSPIRE
- Latest version of the „Data Specification on Coordinate Reference Systems – Technical Guidelines“ is D2.8.I.1_v3.2 from 2014-04-17
  - Mainly section 5 „Coordinate Reference System“

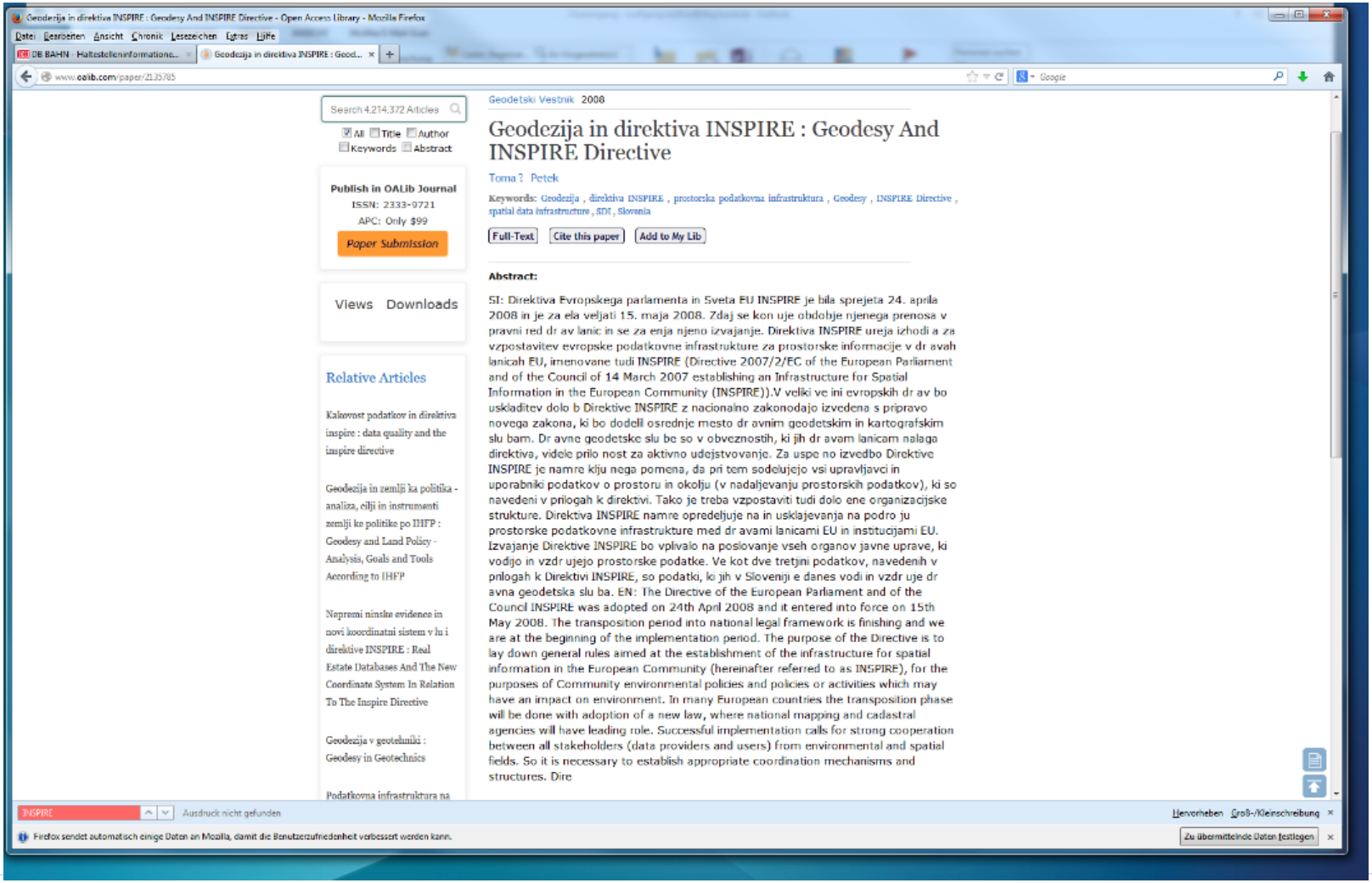
INSPIRE

- 2005 – 2006 Preparatory phase to elaborate draft Irs
- 2007 – 2008 Transposition phase to transpose INSPIRE into national legislation
- December 2009: Approval of the IR by INSPIRE Committee
- 2009 – 2013 Implementation phase
- 23.11.2010 Commission Regulation (EU) No 1089/2010 with four follow-up regulations during the years 2011-2014 about „interoperability of spatial data sets and services“

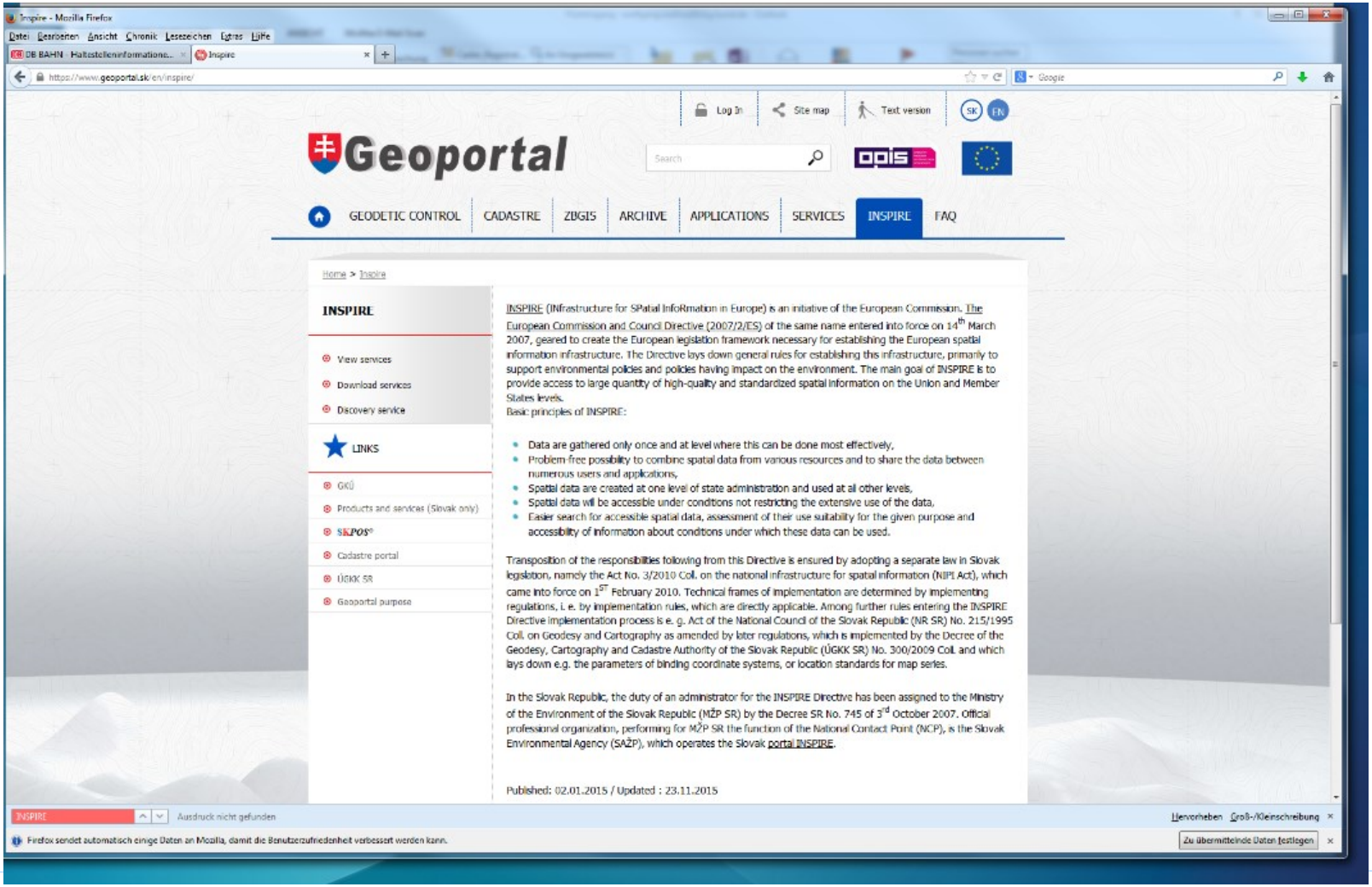
Legal Aspects



Legal Aspects



Legal Aspects



Legal Aspects

GIM INTERNATIONAL NEWS

INSPIRE Solution for Poland

The Head Office of Geodesy and Cartography in Poland (GUGiK) is implementing an Esri-based solution to support compliance with the European Unionâ€™s Infrastructure for Spatial Information in Europe (INSPIRE) Directive. The directive sets out a framework and timetable for implementing a pan-European spatial data infrastructure (SDI) to address multinational and multi-agency issues.

Esri's ArcGIS technology will be used to create GUGiK'sGeoPortal2, a project designed to improve access to government datasets andprovide mapping and survey services to other government agencies, citizens, andbusinesses.GUGiK is the central state administration unit responsible fornational policy related to geodesy and cartography.

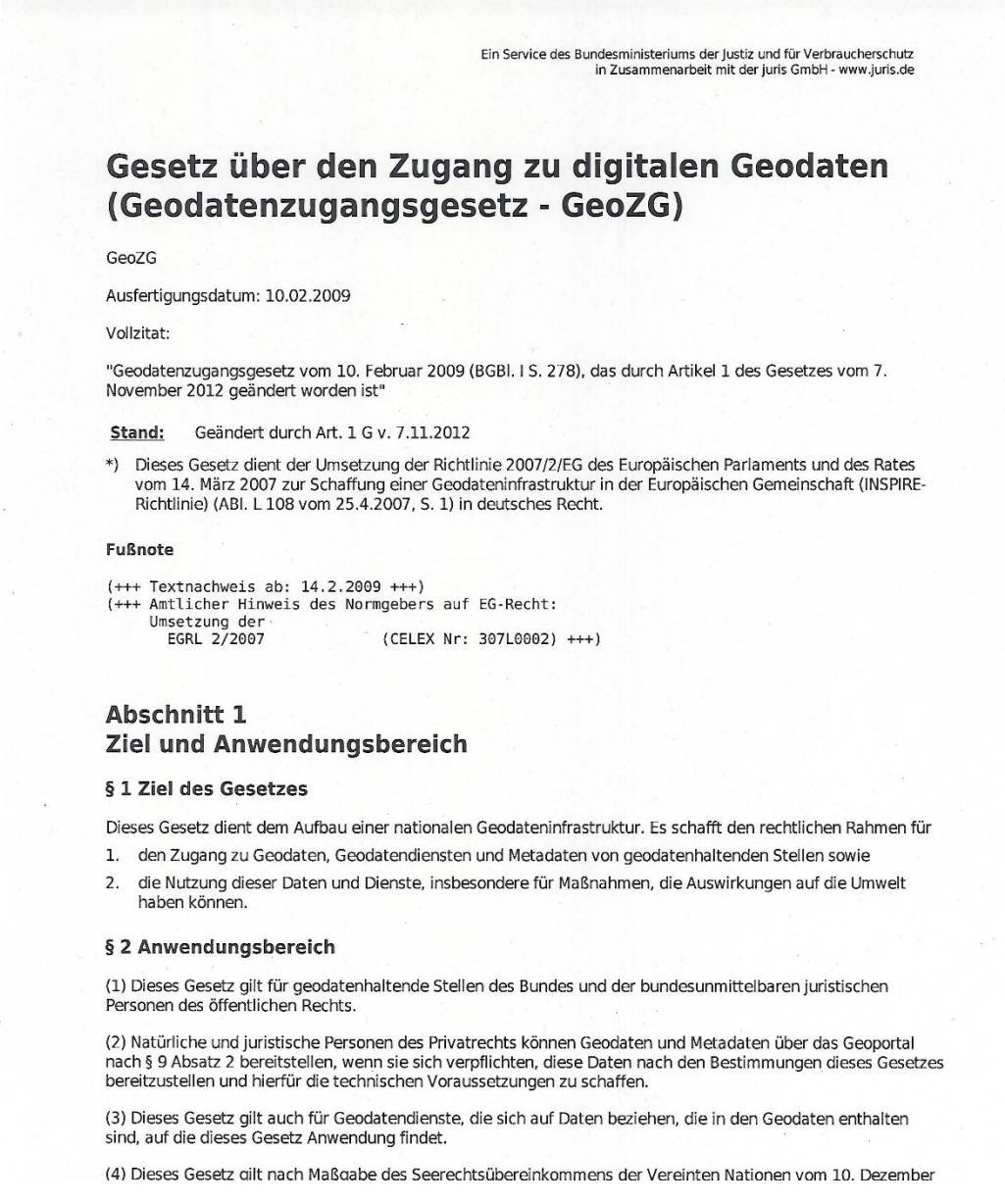
GeoPortal2 includes Esri's ArcGIS for INSPIRE product aswell as software from Esri business partner con terra GmbH. The project isbeing implemented by Esri distributor ESRI Polska sp. z o.o.; Esri partnerGISPartner; and the largest IT company in the country, Asseco Poland SA.

GeoPortal2 is scheduled to be completed in November 2012.

Passed by the member states of the European Union and theEuropean Parliament, INSPIRE's goal is to tie European geospatial informationproducers and users together into a single community to improve decision makingand operations for a productive and sustainable Europe.

http://www.gim-international.com/content/news/inspire-solution-for-poland

Legal Aspects



Ein Service des Bundesministeriums der Justiz und für Verbraucherschutz
in Zusammenarbeit mit der juris GmbH - www.juris.de

Gesetz über den Zugang zu digitalen Geodaten (Geodatenzugangsgesetz - GeoZG)

GeoZG

Ausfertigungsdatum: 10.02.2009

Vollzitat:

"Geodatenzugangsgesetz vom 10. Februar 2009 (BGBl. I S. 278), das durch Artikel 1 des Gesetzes vom 7. November 2012 geändert worden ist"

Stand: Geändert durch Art. 1 G v. 7.11.2012

*) Dieses Gesetz dient der Umsetzung der Richtlinie 2007/2/EG des Europäischen Parlaments und des Rates vom 14. März 2007 zur Schaffung einer Geodateninfrastruktur in der Europäischen Gemeinschaft (INSPIRE-Richtlinie) (ABl. L 108 vom 25.4.2007, S. 1) in deutsches Recht.

Fußnote

(+++ Textnachweis ab: 14.2.2009 +++)
(+++ Amtlicher Hinweis des Normgebers auf EG-Recht:
Umsetzung der
EGRL 2/2007 (CELEX Nr: 307L0002) +++)

Abschnitt 1
Ziel und Anwendungsbereich

§ 1 Ziel des Gesetzes

Dieses Gesetz dient dem Aufbau einer nationalen Geodateninfrastruktur. Es schafft den rechtlichen Rahmen für

1. den Zugang zu Geodaten, Geodatendiensten und Metadaten von geodatenhaltenden Stellen sowie
2. die Nutzung dieser Daten und Dienste, insbesondere für Maßnahmen, die Auswirkungen auf die Umwelt haben können.

§ 2 Anwendungsbereich

(1) Dieses Gesetz gilt für geodatenhaltende Stellen des Bundes und der bundesunmittelbaren juristischen Personen des öffentlichen Rechts.

(2) Natürliche und juristische Personen des Privatrechts können Geodaten und Metadaten über das Geoportal nach § 9 Absatz 2 bereitstellen, wenn sie sich verpflichten, diese Daten nach den Bestimmungen dieses Gesetzes bereitzustellen und hierfür die technischen Voraussetzungen zu schaffen.

(3) Dieses Gesetz gilt auch für Geodatendienste, die sich auf Daten beziehen, die in den Geodaten enthalten sind, auf die dieses Gesetz Anwendung findet.

(4) Dieses Gesetz gilt nach Maßgabe des Seerechtsübereinkommens der Vereinten Nationen vom 10. Dezember

Legal Aspects

- Maximum of 17 laws of that kind in Germany due to the federal structure
- In some German countries called „Geodateninfrastrukturgesetz“
- GeoZG (Bund) covers
  - German data only
  - Available in electronic form
  - Data must be in the responsibility of a data holding authority of German federal administraion

EuroGeographics – INSPIRE KEN

- EuroGeographics (EG)
  - More than 40 NMCAs
  - 60 organisations from 46 countries
- EG established several so-called Knowledge Exchange Networks (KEN), e.g.
  - BIKEN (Business Interoperability)
  - CLRKEN (Cadastre and Land Registry)
  - CoKEN (Copernicus)
  - POLKEN (Policy)
  - POSKEN (Positioning)
  - Q-KEN (Quality)
  - SBE KEN (State Boundaries of Europe)
  - INSPIRE KEN
  - …

EuroGeographics – INSPIRE KEN

- Main tasks
  - Establish a network of experts
  - Follow the development of the INSPIRE regulations
  - Supprt EG policy towards European data interoperability
  - Share knowledge amongst members
  - Promote experiences on implementation of the INSPIRE directive among members.
- Main activities
  - Public briefing: webinars, e.g. on thematic clusters (e.g. on Elevation, Orthoimagery, Reference systems, and Geographical grids), …
  - Public meetings: workshops on transformation of the different INSPIRE themes

ISO

- International Standardisation Organisation
- Many ISO standards with respect to CRS
  - EN ISO 19111:2007: about “Geographic information – Spatial referencing by coordinates”
  - EN ISO 19111-2:2012: about an accessible reference, e.g. extension for parametric values
  - ISO 19112: Spatial referencing by geographic identifiers
  - EN ISO 19115:2005: about “Geographic information – Metadata”
  - ISO/TS 19127:2005: about “Geographic information – Geodetic codes and parameters”
  - ISO 19128:2005: about “Geographic information – Web Map Server Interface”

ISO

- International Standardisation Organisation
- Many ISO standards with respect to CRS
  - ISO 19131 or ISO 19131:2007: about “Geographic information – Data product specifications”
  - EN ISO 19135:2007: about “Geographic information – Procedures for item registration”
  - ISO 19136: about GML as standard (as default encoding for INSPIRE)
  - ISO 19156: about “observations and measurement” guidelines, to be used within INSPIRE
  - ISO 6709:2008: about Standard representation of geographical point position by coordinates

ISO

- EN ISO 19111:2007
  - (long) list of terms, definitions and conventions
  - Coordinate system: set of mathematical rules for specifying how coordinates are to be assigned to points
  - Coordinate reference system: a coordinate system that is related to an object by a datum
  - Reference system
  - Packages and classes, e.g.
    - Coordinate Operation package with a
    - CC_Transformation class
- New elements in ISO 19111:2015
  - Coordinates change over time (‚dynamic datums“)
  - (artificial) concept of a CRS collection

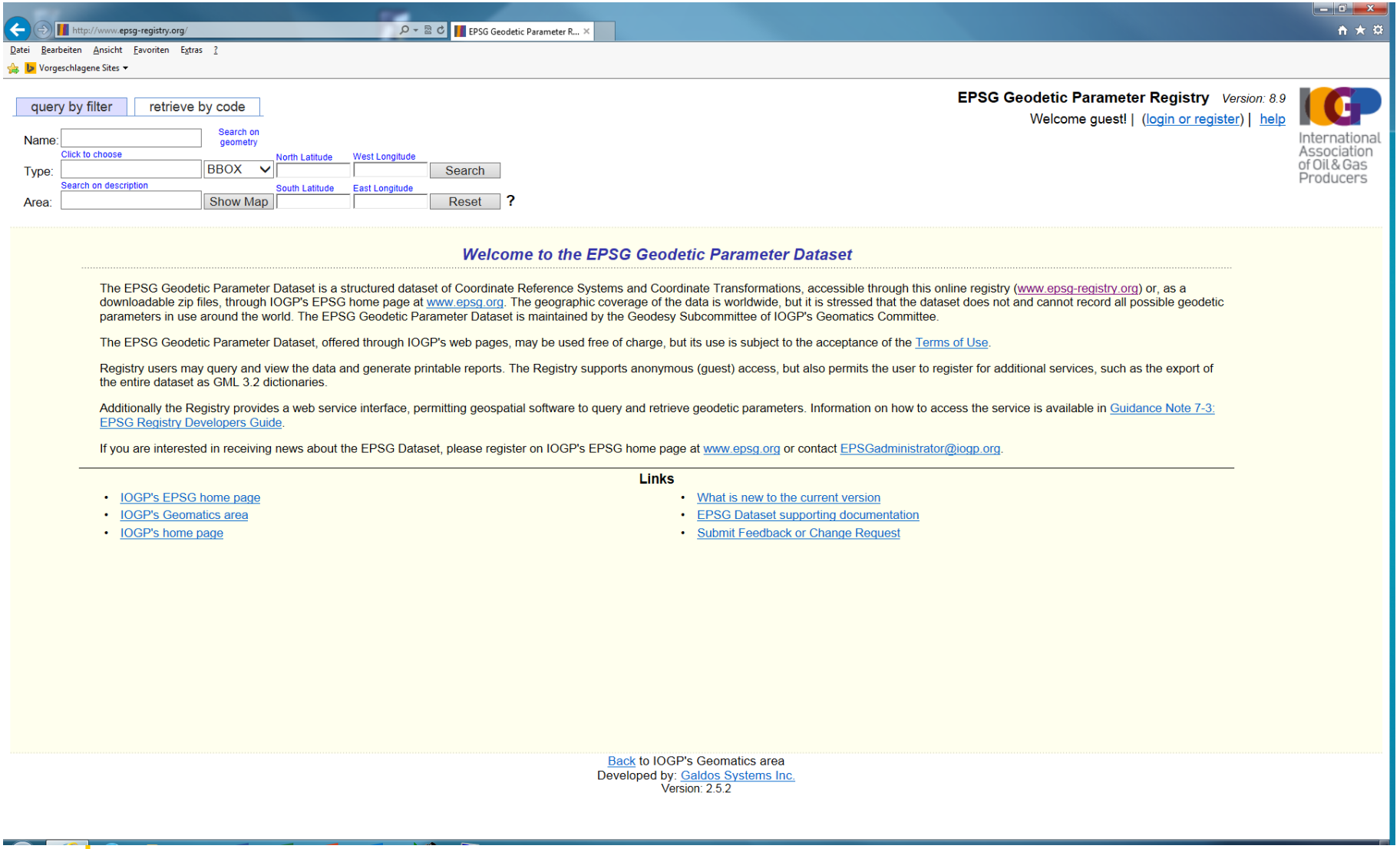
EPSG / IOGP

- EPSG: European Petroleum Survey Group Geodesy
  - Founded in 1986
  - Situated in London
- IOGP: International Association of Oil and Gas Producers
  - Since 2005 EPSG is the „Survey and Positioning Committee“
- Web pages related to EPSG/IOPG
  - www.epsg.org: main page
  - www.epsg-registry.org: interactive portal
  - spatialreference.org/ref/epsg: returns one page for each available code

EPSG / IOGP

- EPSG codes
  - Worldwide unique set of numbers of geodetic data sets
- Examples
  - EPSG code 4326 is „WGS84 and geographic 2D“
  - UTM zones 32N and 33N related to ETRS89 have the numbers 25832 and 25833
  - EPSG codes 2175-8 are ETRS89 / Poland CS2000 zone 5-8
- (Huisman, 2014) gave a nice overview of using EPSG codes in the Netherlands, with examples of other countries
  - National Transformation version 2 (NTv2)
    Datum 1 – NTv2 shift grid – Datum 2
  - „EPSG is the key to implement transformation procedure in GIS“

EPSG / IOGP


http://www.epsg-registry.org/
EPSG Geodetic Parameter R...
Datei Bearbeiten Ansicht Favoriten Extras ?
Vorgeschlagene Sites
query by filter
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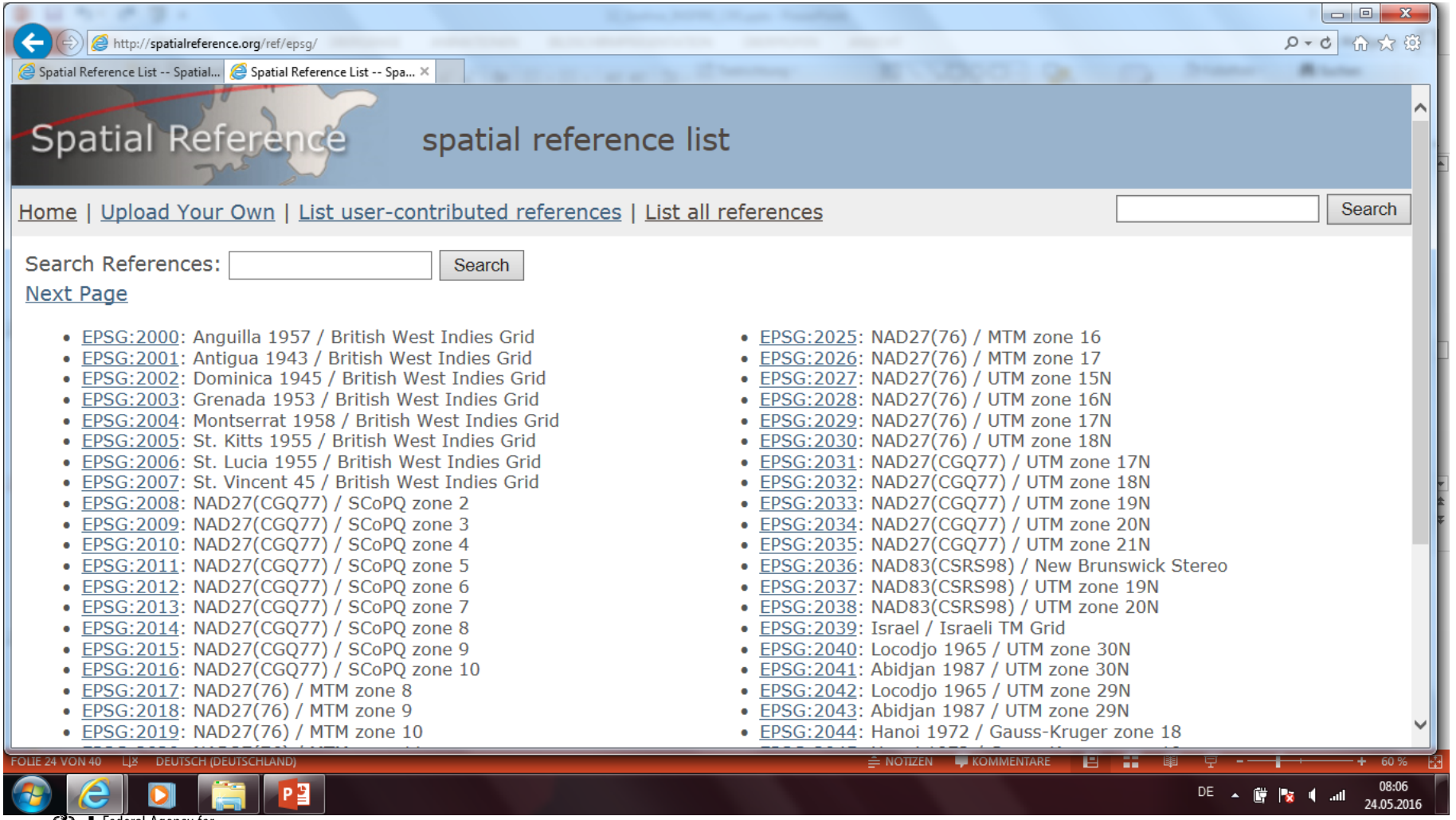
Name:
Search on geometry
Click to choose
Type:
BBOX
North Latitude
West Longitude
Search
Search on description
Area:
Show Map
South Latitude
East Longitude
Reset
?
EPSG Geodetic Parameter Registry Version: 8.9
Welcome guest! | (login or register) | help
International Association of Oil & Gas Producers
Welcome to the EPSG Geodetic Parameter Dataset
The EPSG Geodetic Parameter Dataset is a structured dataset of Coordinate Reference Systems and Coordinate Transformations, accessible through this online registry (www.epsg-registry.org) or, as a downloadable zip files, through IOGP's EPSG home page at www.epsg.org. The geographic coverage of the data is worldwide, but it is stressed that the dataset does not and cannot record all possible geodetic parameters in use around the world. The EPSG Geodetic Parameter Dataset is maintained by the Geodesy Subcommittee of IOGP's Geomatics Committee.
The EPSG Geodetic Parameter Dataset, offered through IOGP's web pages, may be used free of charge, but its use is subject to the acceptance of the Terms of Use.
Registry users may query and view the data and generate printable reports. The Registry supports anonymous (guest) access, but also permits the user to register for additional services, such as the export of the entire dataset as GML 3.2 dictionaries.
Additionally the Registry provides a web service interface, permitting geospatial software to query and retrieve geodetic parameters. Information on how to access the service is available in Guidance Note 7-3: EPSG Registry Developers Guide.
If you are interested in receiving news about the EPSG Dataset, please register on IOGP's EPSG home page at www.epsg.org or contact EPSGadministrator@iogp.org.
Links
IOGP's EPSG home page
IOGP's Geomatics area
IOGP's home page
What is new to the current version
EPSG Dataset supporting documentation
Submit Feedback or Change Request
Back to IOGP's Geomatics area
Developed by: Galdos Systems Inc.
Version: 2.5.2

EPSG / IOGP


http://spatialreference.org/ref/epsg/
Spatial Reference List -- Spatial...
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Spatial Reference
spatial reference list
Home | Upload Your Own | List user-contributed references | List all references
Search
Search References:
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Next Page
EPSG:2000: Anguilla 1957 / British West Indies Grid
EPSG:2001: Antigua 1943 / British West Indies Grid
EPSG:2002: Dominica 1945 / British West Indies Grid
EPSG:2003: Grenada 1953 / British West Indies Grid
EPSG:2004: Montserrat 1958 / British West Indies Grid
EPSG:2005: St. Kitts 1955 / British West Indies Grid
EPSG:2006: St. Lucia 1955 / British West Indies Grid
EPSG:2007: St. Vincent 45 / British West Indies Grid
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EPSG:2011: NAD27(CGQ77) / SCoPQ zone 5
EPSG:2012: NAD27(CGQ77) / SCoPQ zone 6
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EPSG:2014: NAD27(CGQ77) / SCoPQ zone 8
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EPSG:2016: NAD27(CGQ77) / SCoPQ zone 10
EPSG:2017: NAD27(76) / MTM zone 8
EPSG:2018: NAD27(76) / MTM zone 9
EPSG:2019: NAD27(76) / MTM zone 10
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EPSG:2027: NAD27(76) / UTM zone 15N
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EPSG:2033: NAD27(CGQ77) / UTM zone 19N
EPSG:2034: NAD27(CGQ77) / UTM zone 20N
EPSG:2035: NAD27(CGQ77) / UTM zone 21N
EPSG:2036: NAD83(CSRS98) / New Brunswick Stereo
EPSG:2037: NAD83(CSRS98) / UTM zone 19N
EPSG:2038: NAD83(CSRS98) / UTM zone 20N
EPSG:2039: Israel / Israeli TM Grid
EPSG:2040: Locodjo 1965 / UTM zone 30N
EPSG:2041: Abidjan 1987 / UTM zone 30N
EPSG:2042: Locodjo 1965 / UTM zone 29N
EPSG:2043: Abidjan 1987 / UTM zone 29N
EPSG:2044: Hanoi 1972 / Gauss-Kruger zone 18
FOLIE 24 VON 40
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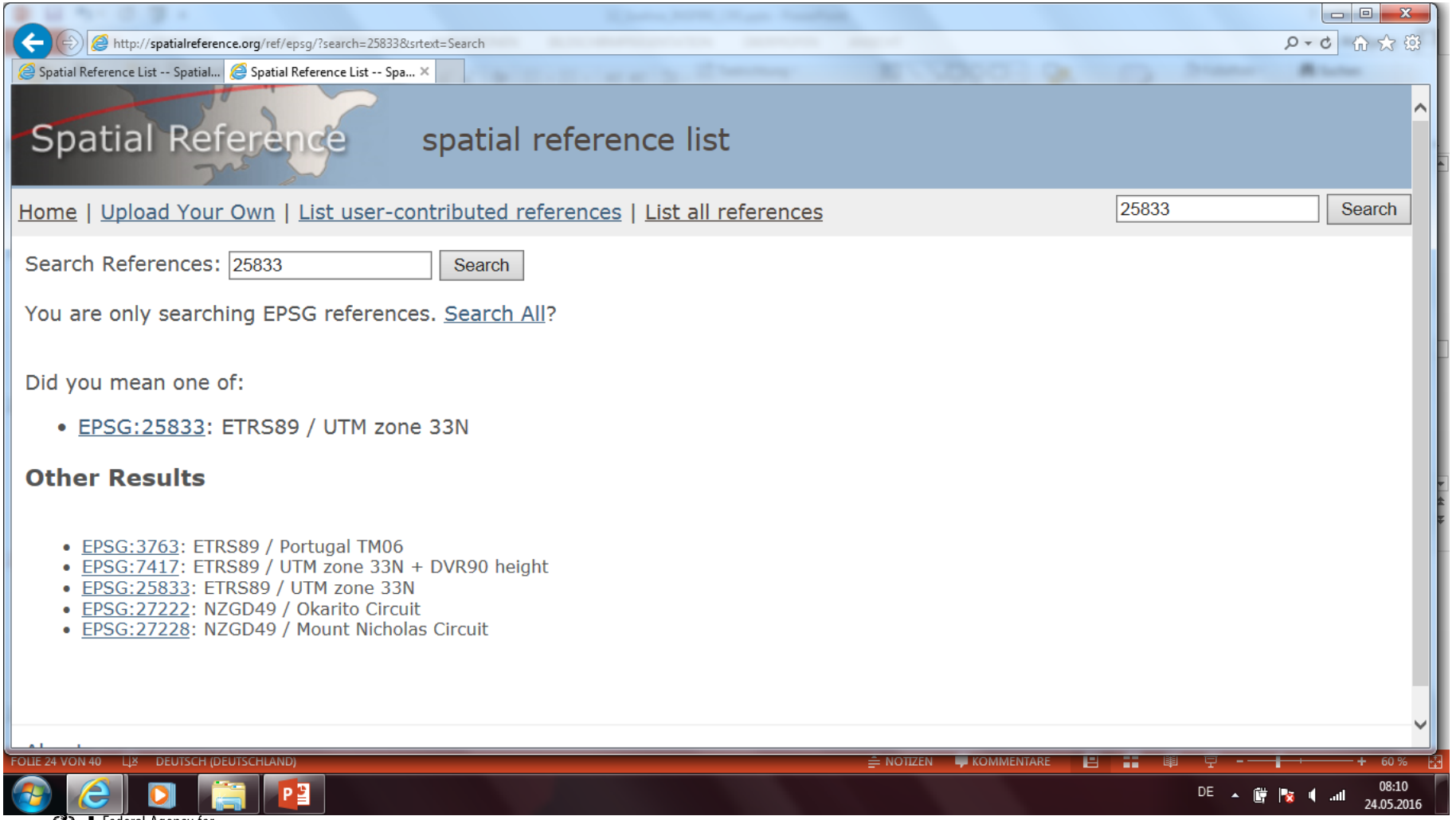
NOTIZEN
KOMMENTARE
60 %
DE
08:06
24.05.2016

EPSG / IOGP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Spatial Reference List -- Spatial...
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spatial reference list
Home | Upload Your Own | List user-contributed references | List all references
25833
Search
Search References: 25833
Search
You are only searching EPSG references. Search All?
Did you mean one of:
EPSG:25833: ETRS89 / UTM zone 33N
Other Results
EPSG:3763: ETRS89 / Portugal TM06
EPSG:7417: ETRS89 / UTM zone 33N + DVR90 height
EPSG:25833: ETRS89 / UTM zone 33N
EPSG:27222: NZGD49 / Okarito Circuit
EPSG:27228: NZGD49 / Mount Nicholas Circuit
FOLIE 24 VON 40
DEUTSCH (DEUTSCHLAND)
NOTIZEN
KOMMENTARE
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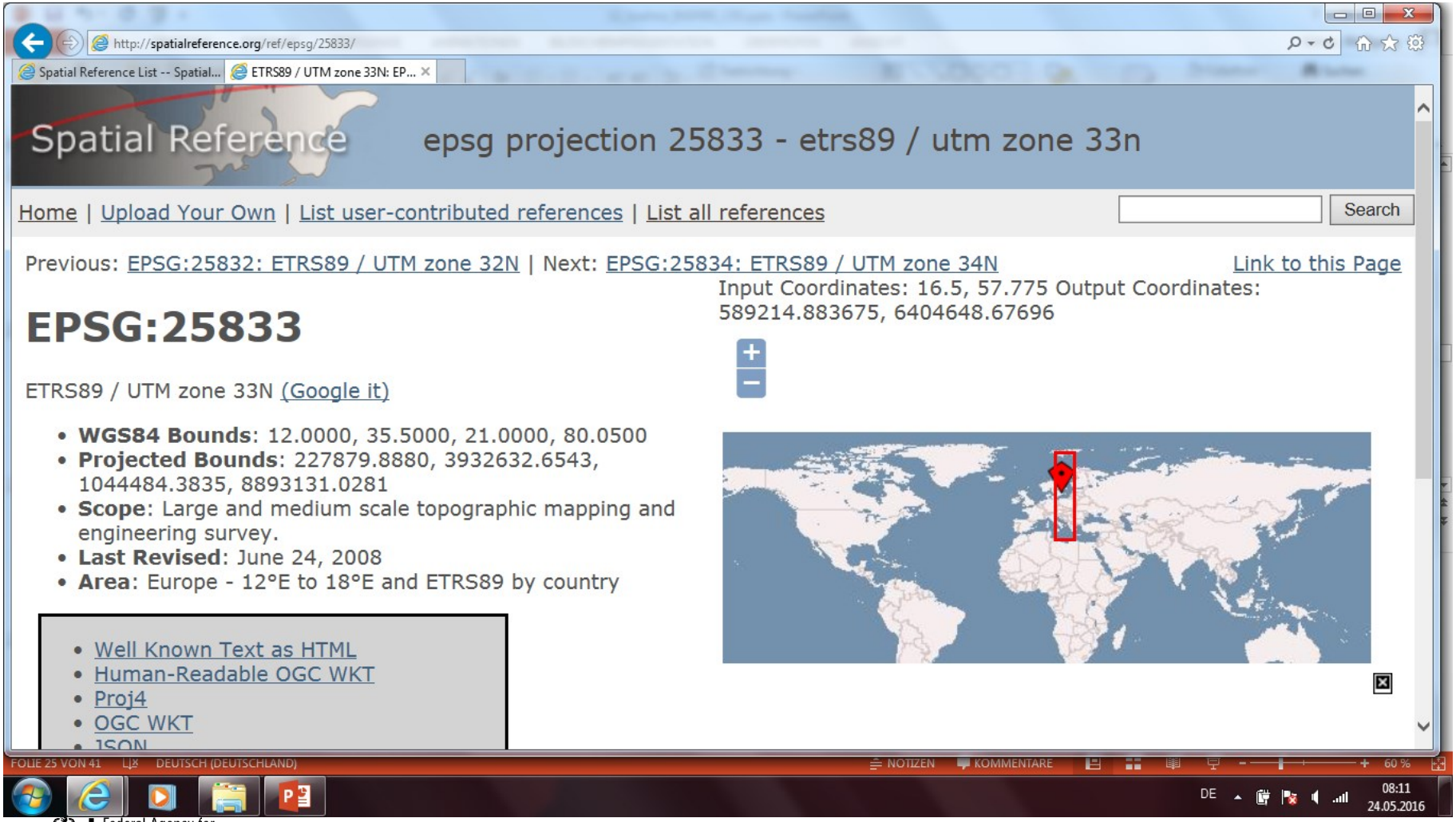
EPSG / IOGP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Spatial Reference List -- Spatial...
ETRS89 / UTM zone 33N: EP...
Spatial Reference
epsg projection 25833 - etrs89 / utm zone 33n
Home | Upload Your Own | List user-contributed references | List all references
Search
Previous: EPSG:25832: ETRS89 / UTM zone 32N | Next: EPSG:25834: ETRS89 / UTM zone 34N
Link to this Page
EPSG:25833
ETRS89 / UTM zone 33N (Google it)
WGS84 Bounds: 12.0000, 35.5000, 21.0000, 80.0500
Projected Bounds: 227879.8880, 3932632.6543, 1044484.3835, 8893131.0281
Scope: Large and medium scale topographic mapping and engineering survey.
Last Revised: June 24, 2008
Area: Europe - 12°E to 18°E and ETRS89 by country
Input Coordinates: 16.5, 57.775 Output Coordinates: 589214.883675, 6404648.67696
Well Known Text as HTML
Human-Readable OGC WKT
Proj4
OGC WKT
FOLIE 25 VON 41
DEUTSCH (DEUTSCHLAND)
NOTIZEN
KOMMENTARE
60 %
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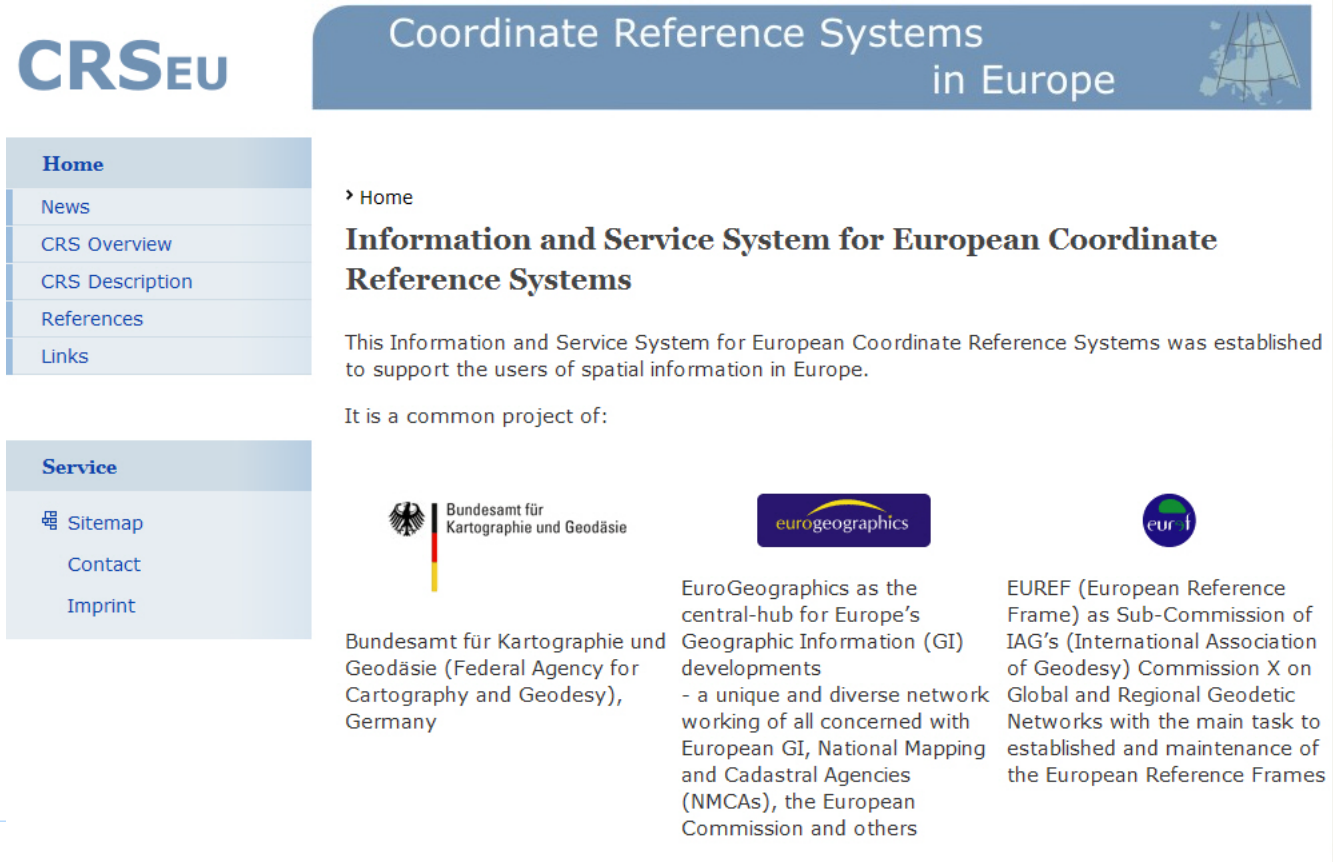
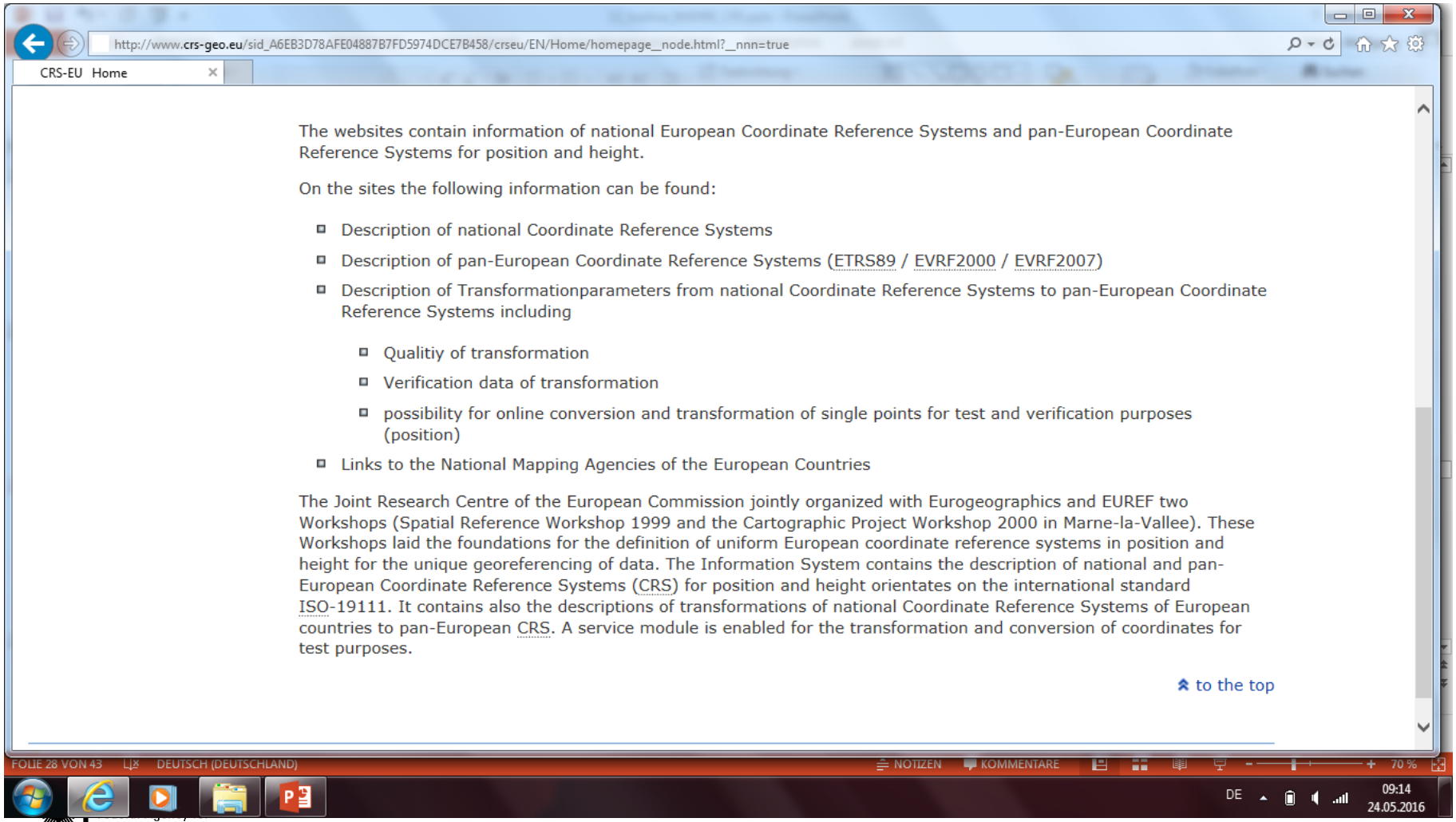
CRS-EU

- Information system for European Coordinate Reference Systems



CRS-EU

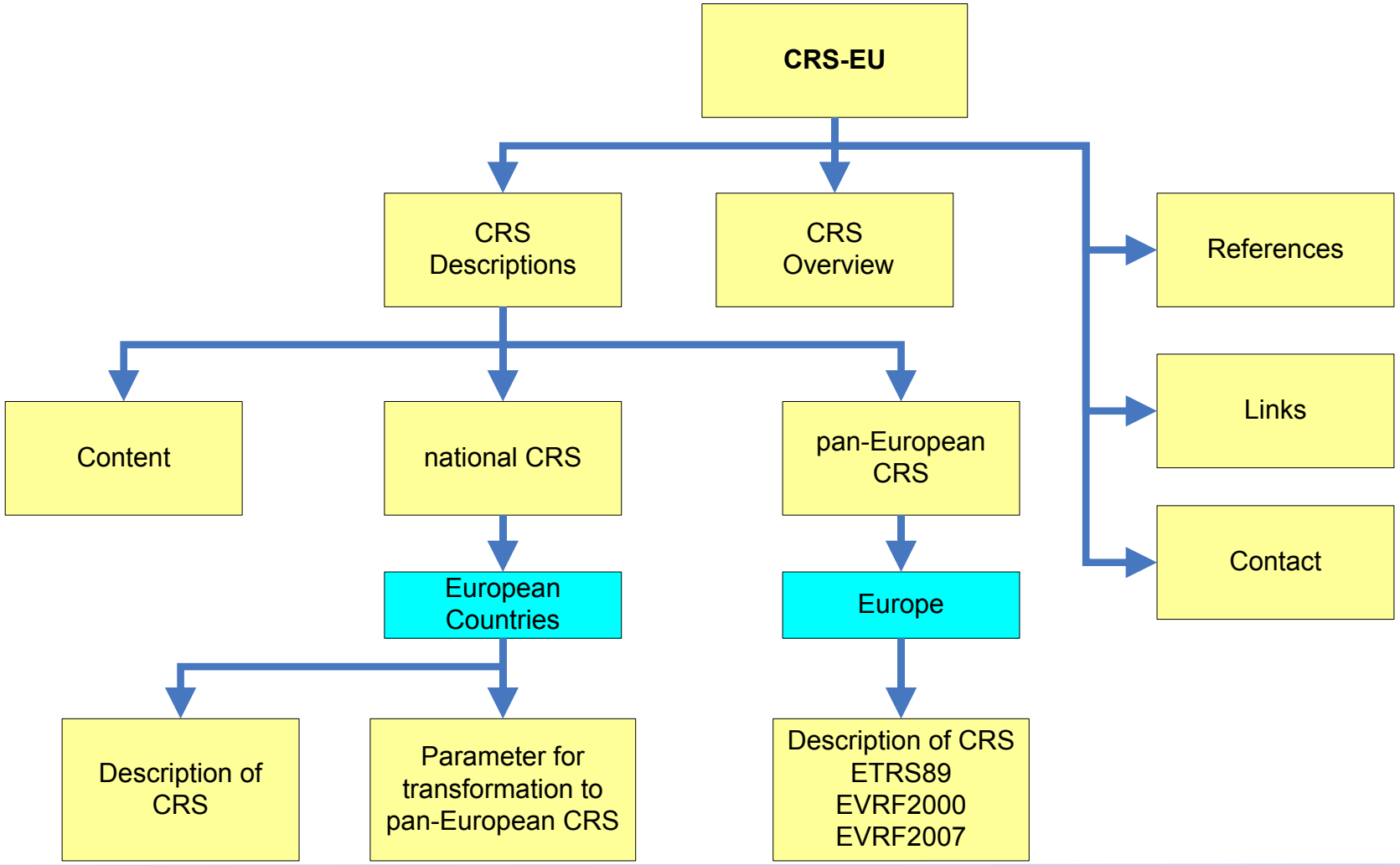


Cartography and Geodesy

CRS-EU

- Common project of EUREF / EuroGeographics / BKG
- In 2005, DIN (Germany) nominated BKG for the registry CRS-EU
- Since 2009, the web portal is www.crs-geo.eu (formerly crd.bkg.bund.de/crs-eu)
- Information
  - Provided by the National Mapping Agencies (NMAs)
  - Or prepared / compiled by BKG and agreed with the NMAs
  - Always unified and prepared regarding ISO standard 19111

CRS-EU – structure



CRS-EU

CRSEU

Coordinate Reference Systems in Europe

national CRS

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  - pan-European CRS
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- Links

Service

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- Contact
- Imprint

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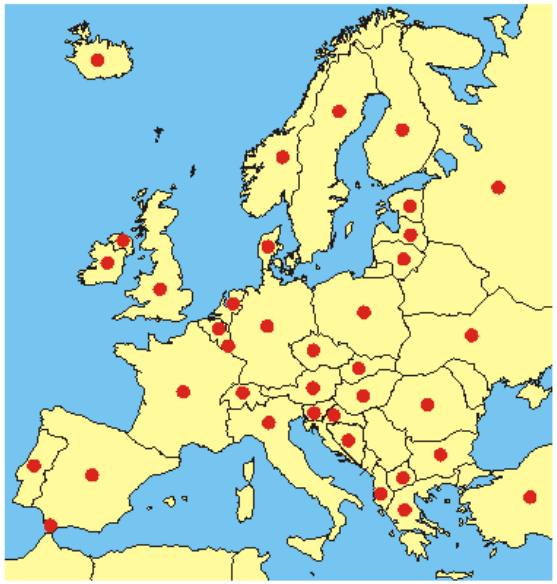
Description of national Coordinate Reference Systems (CRS) of European Countries

Contains

- descriptions of Coordinate Reference Systems
- transformation parameters to pan-European CRS ETRS89, EVRF2000 and EVRF2007
- verification data for transformation
- online-transformation of single points for position and height from national CRS of a country to pan-European CRS ETRS89, EVRF2000 and EVRF2007 for test and verification purposes

To get the information select a country in the list or click on the corresponding red dot in the map

Albania
Austria
Belgium
Bosnia / Herceg.
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Gibraltar
Great Britain
Greece
Hungary
Iceland
Ireland
Italy



Latvia
Lithuania
Luxembourg
Macedonia
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Netherlands
Northern Ireland
Norway
Poland
Portugal
Romania
Russia
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine

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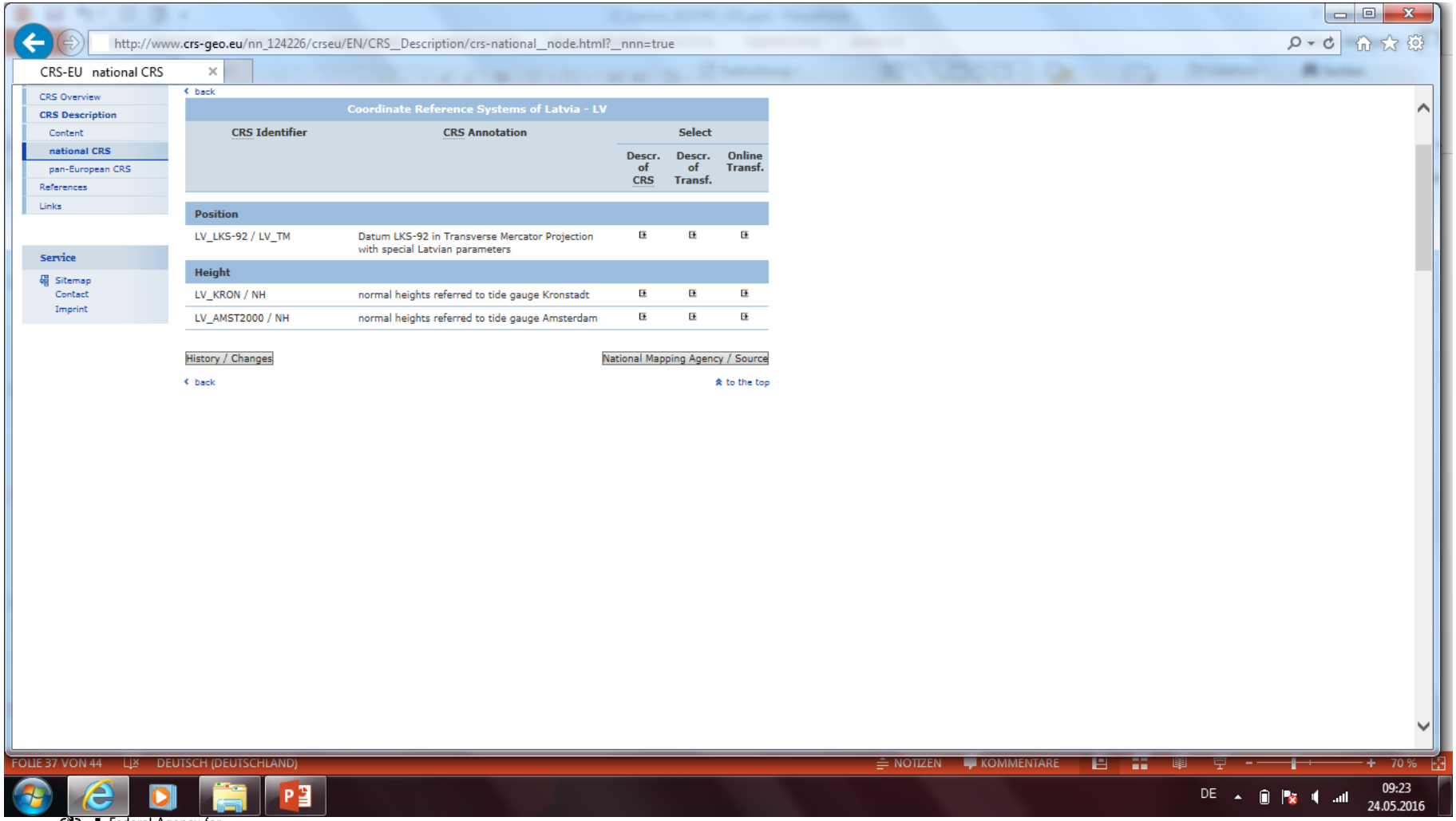
Federal Cartogr...

CRS-EU


http://www.crs-geo.eu/nn_124226/crseu/EN/CRS_Description/crs-national_node.html?_nnn=true
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Coordinate Reference Systems of Latvia - LV
CRS Identifier
CRS Annotation
Select
Descr. of CRS
Descr. of Transf.
Online Transf.
Position
LV_LKS-92 / LV_TM
Datum LKS-92 in Transverse Mercator Projection with special Latvian parameters
Height
LV_KRON / NH
normal heights referred to tide gauge Kronstadt
LV_AMST2000 / NH
normal heights referred to tide gauge Amsterdam
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National Mapping Agency / Source
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FOLIE 37 VON 44
DEUTSCH (DEUTSCHLAND)
NOTIZEN
KOMMENTARE
70 %
DE
09:23
24.05.2016

CRS-EU


http://www.crs-geo.eu/nn_124226/crseu/EN/CRS_Description/crs-national_node.html?_nnn=true
CRS-EU national CRS
CRSEU
Coordinate Reference Systems in Europe
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pan-European CRS
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Online transformation
LV_LKS-92 to ETRS89
at present input only for ellipsoidal coordinates possible
Source
national Datum LV_LKS-92 in:
LV_TM [m]
X / northing
Y / easting
ellip. height
ellipsoidal coordinates [DMS / m]
Latitude dd mm ss.ssss
Longitude dd mm ss.ssss
ellip. height hhhh.hhh
Longitude wrt Greenwich and positive to East
cartesian coordinates [m]
X
Y
Z
Target
pan-European Datum ETRS89 in:
ETRS-TM xx [m]
North
East
ellip. height
ellipsoidal coordinates [DMS / m]
Latitude
Longitude
ellip. height
Longitude wrt Greenwich and positive to East
cartesian coordinates [m]
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Y
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Compute
Although we strive for the highest quality of data and data products, we can not make any warranty for the correctness and for damage from the application of this service. Any liabilities is excluded by the operator of the websites.
back
to the top
FOLIE 37 VON 44
DEUTSCH (DEUTSCHLAND)
NOTIZEN
KOMMENTARE
68 %
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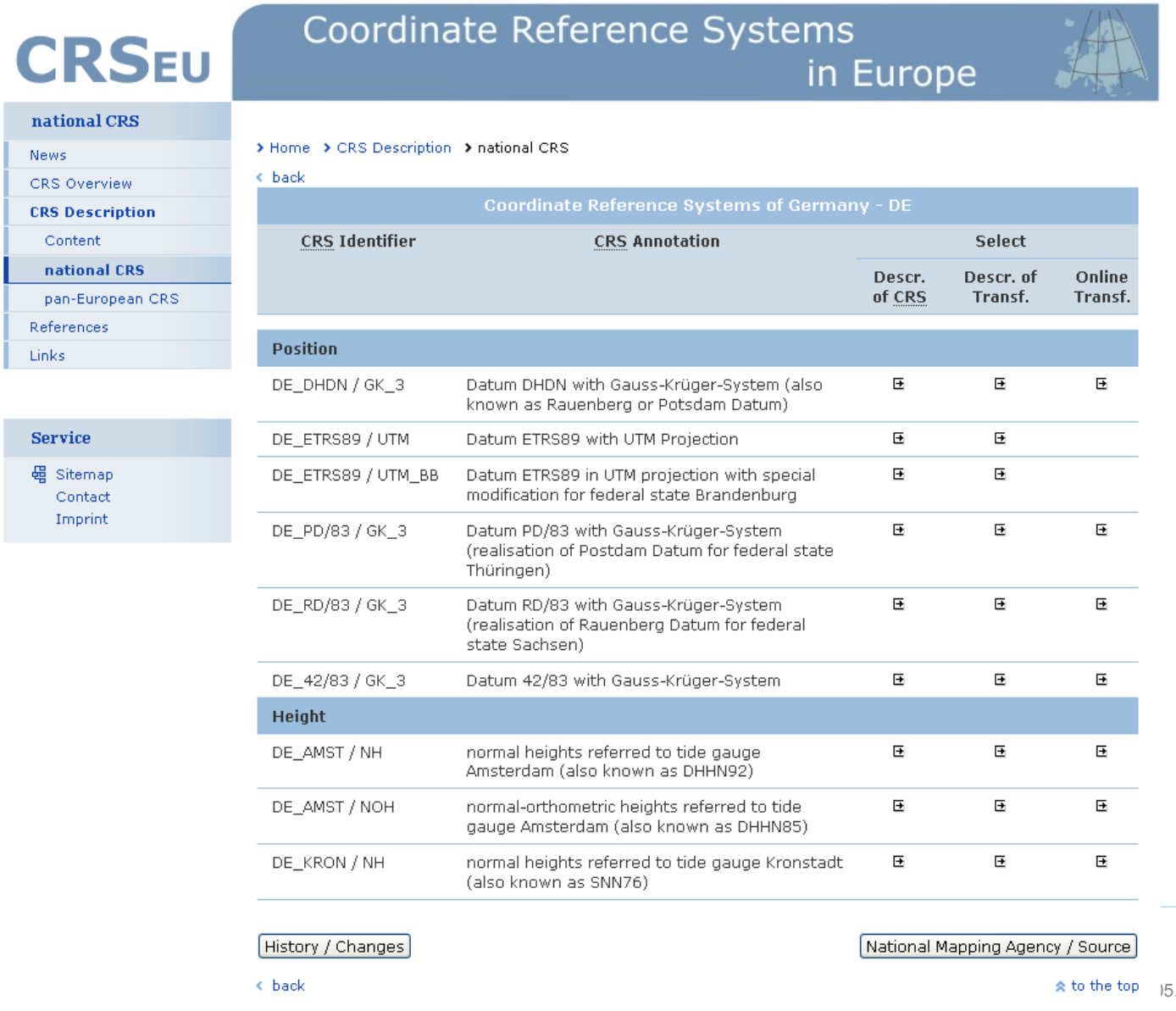
24.05.2016

CRS-EU


CRSEU
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Position
DE_DHDN / GK_3
Datum DHDN with Gauss-Krüger-System (also known as Rauenberg or Potsdam Datum)
DE_ETRS89 / UTM
Datum ETRS89 with UTM Projection
DE_ETRS89 / UTM_BB
Datum ETRS89 in UTM projection with special modification for federal state Brandenburg
DE_PD/83 / GK_3
Datum PD/83 with Gauss-Krüger-System (realisation of Postdam Datum for federal state Thüringen)
DE_RD/83 / GK_3
Datum RD/83 with Gauss-Krüger-System (realisation of Rauenberg Datum for federal state Sachsen)
DE_42/83 / GK_3
Datum 42/83 with Gauss-Krüger-System
Height
DE_AMST / NH
normal heights referred to tide gauge Amsterdam (also known as DHHN92)
DE_AMST / NOH
normal-orthometric heights referred to tide gauge Amsterdam (also known as DHHN85)
DE_KRON / NH
normal heights referred to tide gauge Kronstadt (also known as SNN76)
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Description of CRS - ETRS89-LatLonh
Attribute
Entry
Country
pan-European CRS
Country identifier
EU
CRS identifier
ETRS89-LatLonh
CRS alias
ETRS89 Ellipsoidal CRS
in INSPIRE: ETRS89-GRS80h
EPSG code: 4937
CRS valid area
Europe
CRS scope
Geodesy, Cartography, Geoinformation Systems, Mapping
CRS remarks
primary coordinate system (CS), basis for all projected CS of ETRS89
Datum identifier
ETRS89
Datum alias
European Terrestrial Reference System 1989
Datum type
geodetic
Datum anchor point
Datum realization epoch
Datum valid area
Europe
Datum scope
European datum consistent with ITRS at the epoch 1989.0 and fixed to the stable part of the Eurasian continental plate for georeferencing of GIS and geokinematic tasks
Datum remarks
see
Boucher, C., Altamimi, Z. (1992): The EUREF Terrestrial Reference System and its First Realisations.
Veröffentlichungen der Bayerischen Kommission für die Internationale Erdmessung, Heft 52, München 1992, pages 205-213
- or -
http://etrs89.ensg.ign.fr/

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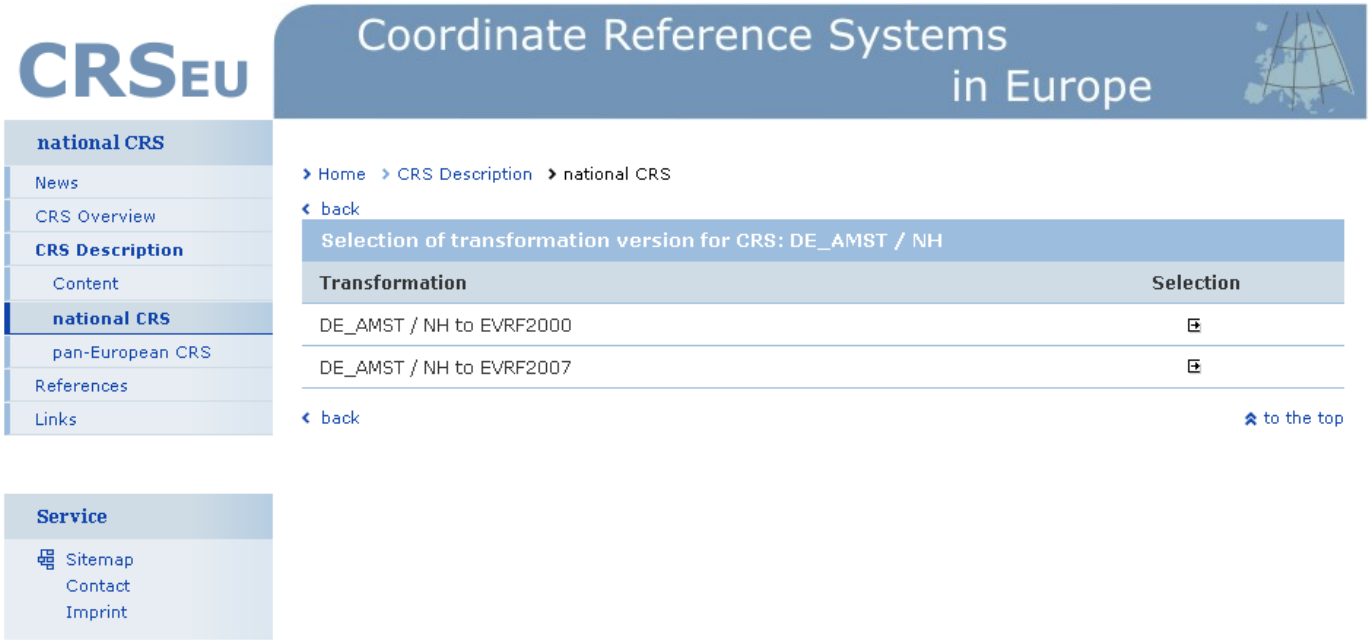
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Selection of transformation version for CRS: DE_AMST / NH
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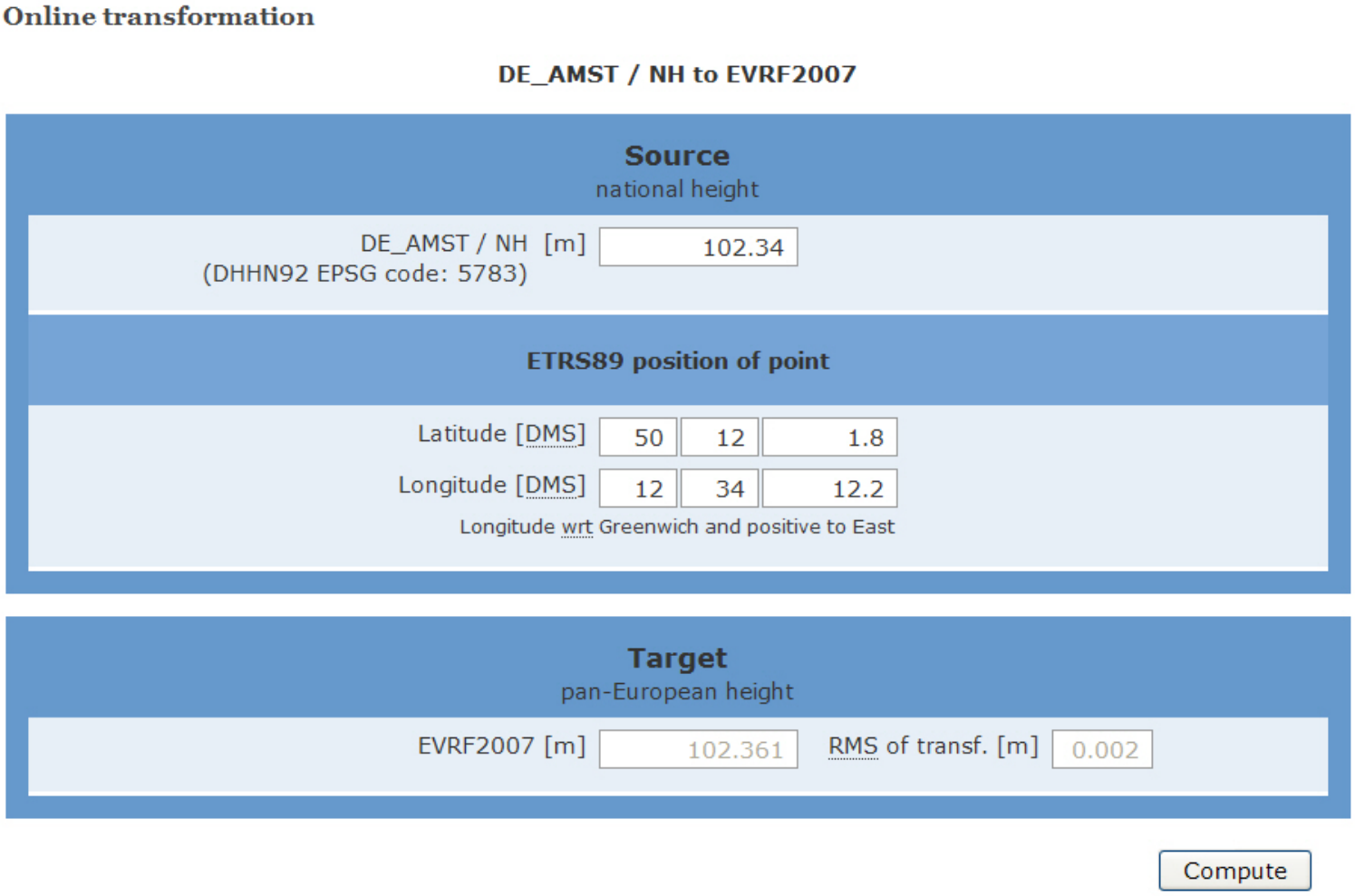
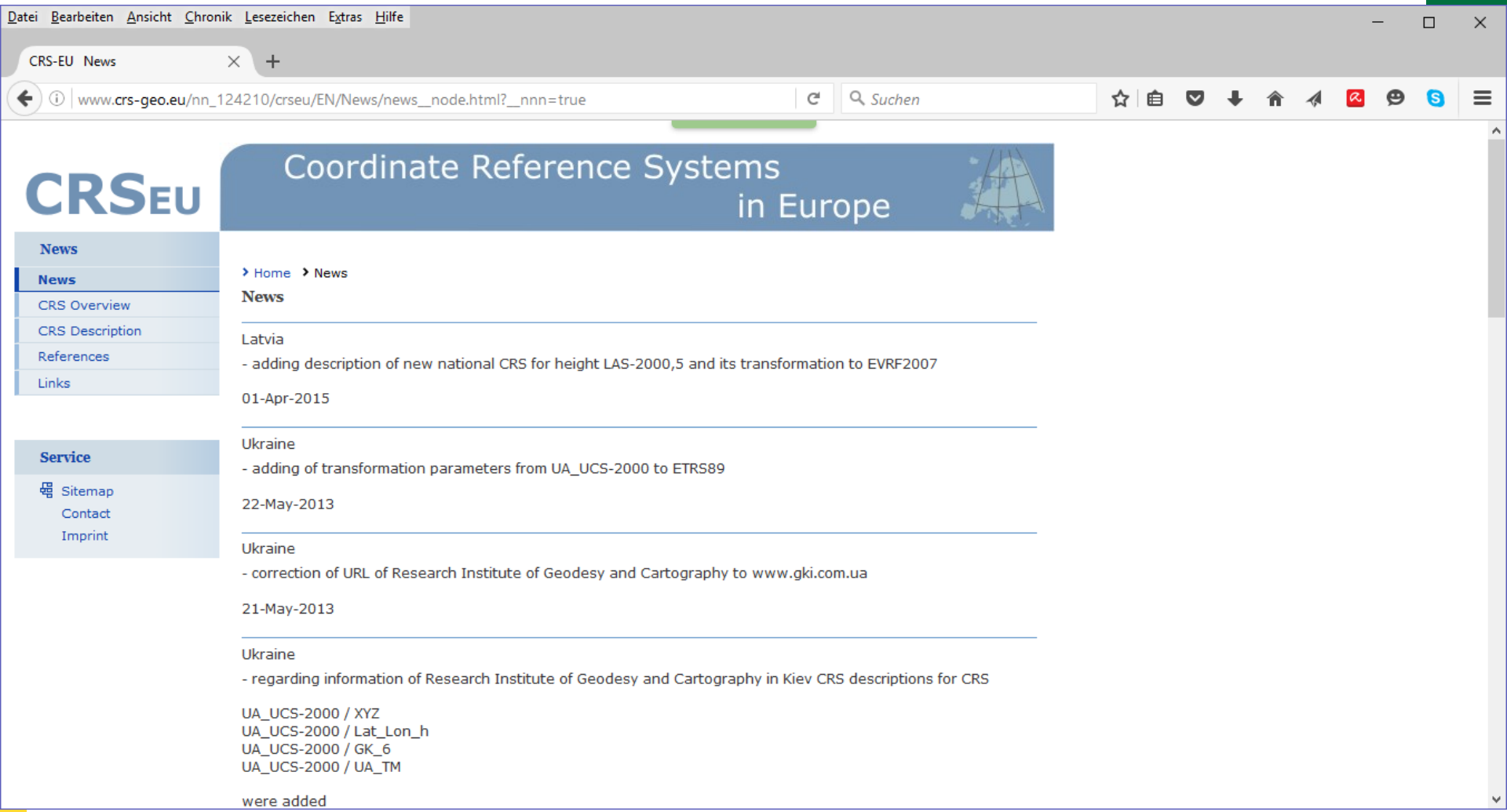
CRS-EU – Onlinetransformation Heights



CRS-EU – Status of the information (height, 2011)

Country	CRS-Description	CRS-Description (new)	Transformation to EVRF2000	Transformation to EVRF2007
Austria	released		released	existing
Belgium	released		released	released
Bosnia / Hercegovina	existing		existing	existing
Bulgaria	released		released	released
Switzerland	released		released	released
Czech Republic	released		released	released
Germany	released		released	released
Denmark	released		released	existing
Estonia	released		released	released
Spain	released		released	existing
Finland	released	existing	released	existing
France	released		released	existing
Great Britain	released		released	existing
Croatia	released	released	released	released
Hungary	released		released	existing
Italy	released		released	released
Lithuania	released		released	released
Latvia	released		released	released
Netherlands	released	existing	released	existing
Norway	released	existing	released	existing
Poland	existing	existing	existing	existing
Portugal	released		released	existing
Romania	released		released	released
Russia	existing		*EVRF2000 not available*	*EVRFxx will be available future*
Sweden	released	released	released	released
Slovenia			released	existing
Slovak Republic	released	released	released	released
Turkey	released		*EVRF2000 not available*	*EVRFxx will be available future*
Ukraine	existing		*EVRF2000 not available*	*EVRFxx will be available future*

CRS-EU – News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- adding description of new national CRS for height LAS-2000,5 and its transformation to EVRF2007
01-Apr-2015
Ukraine
- adding of transformation parameters from UA_UCS-2000 to ETRS89
22-May-2013
Ukraine
- correction of URL of Research Institute of Geodesy and Cartography to www.gki.com.ua
21-May-2013
Ukraine
- regarding information of Research Institute of Geodesy and Cartography in Kiev CRS descriptions for CRS
UA_UCS-2000 / XYZ
UA_UCS-2000 / Lat_Lon_h
UA_UCS-2000 / GK_6
UA_UCS-2000 / UA_TM
were added

Thank you for your kind attention!

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