



# Building Geo-Spatial Data Portal for Optimal User Experience with CKAN Core-Bundle and OpenLayers Library

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*Speaker:* Ethelbert Obinna

*Location:* European Commission – Joint Research Center, Ispra, Italy

*Date:* Thursday, 04 July, 2019



# CISS® TDI GmbH

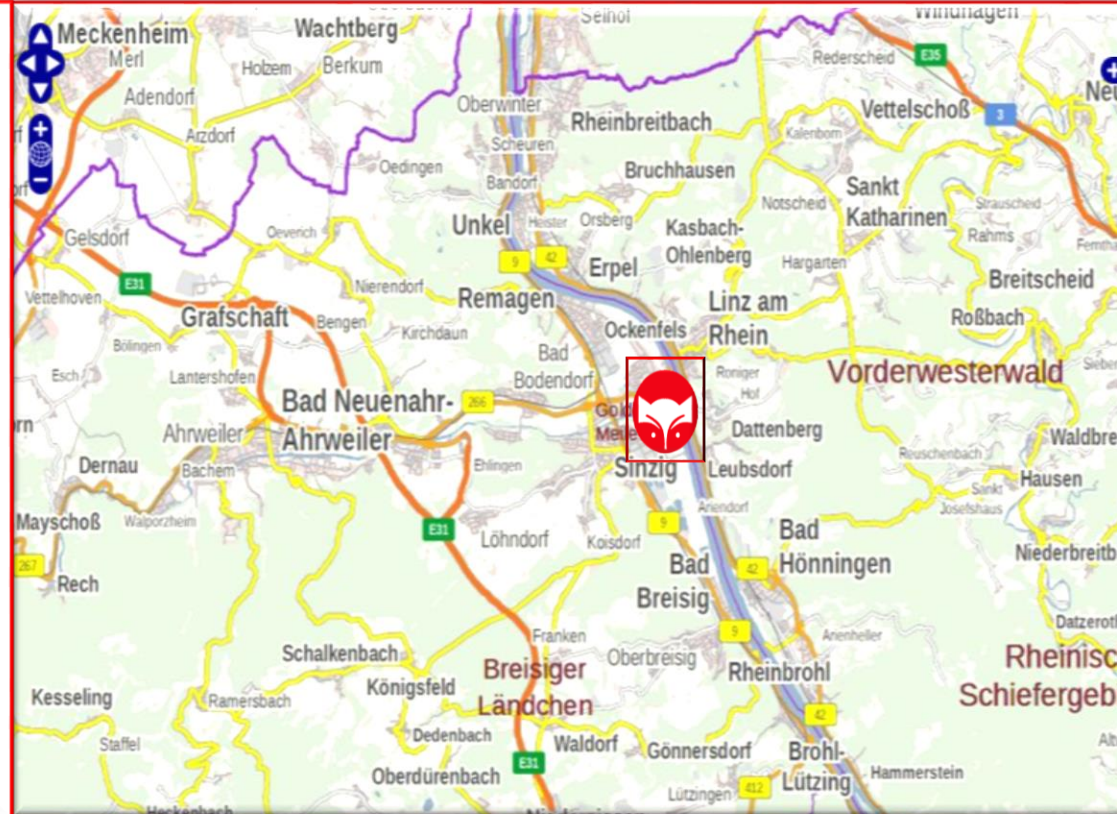
Founded: 1982  
HeadOffice: Sinzig(Rhein)

## Core Services & Solutions:

- ❖ Geodata Format Conversion
- ❖ Geodata Migration
- ❖ Geodata Warehouse
- ❖ Geodata Distribution
- ❖ Geodata Sales
- ❖ Geodata Quality Assurance

## Contact Us:

- ❖ <https://www.ciss.de/>
- ❖ +49 (0) 2642 9780 - 11
- ❖ [vertrieb@ciss.de](mailto:vertrieb@ciss.de)



Geometrieauswahl

Tipp Kartenauswahl

Kartenqualität

## Some reference sites with our deployed GeoSolutions

- ❖ <https://lvermgeo.rlp.de/de/startseite/>
- ❖ <https://www.sit.nrw/>
- ❖ <https://www.itk-rheinland.de/>
- ❖ <https://www.kreis-re.de/Inhalte/index.asp>



# Synopsis

## ➤ The Alpha

- Intros, Goad, and Genesis
  - X-4.0
  - LIMBO

## ➤ The Architecture

- Core Module
- Dependencies

## ➤ The Blueprint

- Baseline modules
- Transformations and Indexing (*Serialize PHP → Unserialize PHP → GeoJSON → Spatial Search*)
- Metadata Quality Check - CISS® QAC API



➤ **The Alpha**

- Intros, Goad, and Genesis
  - X-4.0
  - LIMBO

➤ **The Architecture**

- Core Modules
- Dependencies

❖ X - 4.0

❖  $X-4.0 \left( \frac{\delta y}{\delta x} \right) [BMVI]^{[1.2]} = LIMBO^{[1.0][1.1]}$

❖  $\left( \frac{\delta y}{\delta x} \right) [LIMBO \text{ research works}] = mCLOUD^{[1.3]}$

❖ **CISS<sup>®</sup> Open-Data Portal** stems from the concept of mCLOUD, *plus*

- ❖ **Integration with the CISS<sup>®</sup> GeoShop - ecommerce perspective**
- ❖ **Metadata quality check on the datasets via the CISS<sup>®</sup> Quality Assurance Center (CISS<sup>®</sup> - QAC) API**

**References:**

- [1.0] <https://www.limbo-project.org/>
- [1.1] <https://www.ciss.de/forschung/limbo/>
- [1.2] <https://www.bmvi.de>
- [1.3] <https://www.mcloud.de/>



- **The Alpha**
  - Intros, Goad, and Genesis
    - X-4.0
    - LIMBO

- **The Architecture**
  - Core Modules
  - Dependencies

{ In the context of Spatial Data & Geographical Locations }

SHOP SYSTEMS	CKAN
<i>Customer_Data</i> $\propto$ <i>Lat-Lng position</i>	<i>Dataset</i> $\propto$ <i>User_Data</i> $\exists$ <i>Metadata</i> $\{\{ Dataset \}\}$
<i>Product_Data</i> $\propto$ <i>Lat-Lng position</i>	
...	...



## ➤ The Architecture

- Core Modules
- Dependencies

❖ Core Module → Contao-CMS<sup>[2.0]</sup>

❖ Extension – CISS<sup>®</sup> Geo-shop Module<sup>[2.1]</sup> → *GeoData conversion services*

❖ Real-Estate Cadastral Information Systems

❖ Topographic Map services

❖ Orthophotos/Aerial Maps

Serialized PHP

```
a:1:{s:3:"wkt";s:223:
"POLYGON&#40;&#40;373511.34681746
99 5567243.12439547,380841.08706572774
5567243.12439547,380841.08706572774
5573962.0529563725,373511.3468174699
5573962.0529563725,373511.3468174699
5567243.12439547&#41;&#41;";}
```

### References:

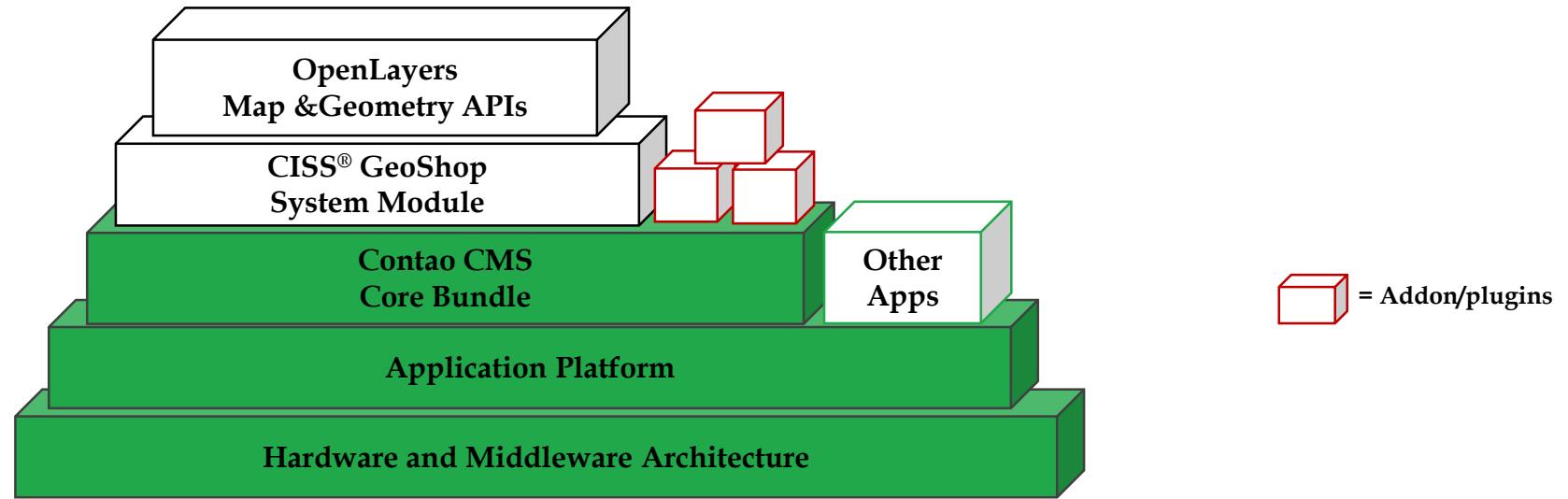
[2.0] <https://contao.org/en/>

[2.1] <https://shop.ciss.de/home.html>



## ➤ The Architecture

- Core Modules
- Dependencies



*CURRENT ARCHITECTURE*



## ➤ The Architecture

- Core Modules
- Dependencies

Sign out demo@ciiss.de

We make geodata suitable!

**CISS TDI**

ALKIS Topographic map Aerial Pictures - Orthophotos Service Legal

CISS Store + ALKIS, cadastral map, DOP, DTK, online conversion

New! Cadastral data from NRW as DXF, Shape file or XML file - perfectly prepared for QGIS!

example data

Your advantages in the CISS shop:

- ✓ Price display by area selection
- ✓ Immediate data download around the clock

CISS TDI Your specialist for geodata

Are you looking for data for your building application, for planning purposes, as a background map in your GIS? You can easily download the following data in the CISS shop:

Property data / ALKIS data

The CISS shop offers property data / ALKIS data from various federal states for download. You can select map extracts from the federal states of North Rhine-Westphalia, Rheinland-Pfalz, Lower Saxony, Brandenburg and Hamburg directly and independently and download them in the formats DXF and SHP or in the original format XML. The cost calculation is based on the respective fee schedule and will be displayed to you before sending the order. Cadastral data from Thuringia and Bavaria can be requested by form. Upon receipt of an inquiry, we will immediately send you an appropriate offer.

Current information / news  
2017-05-17 09:04

Wir machen Geodaten passend!

**CISS TDI**

ALKIS Topographische Karte Luftbilder - Orthophotos Service Rechtliches

CISS-Shop > Topographische Karte > D | DTK25 - Topographische Karte 1:25.000 > D | DTK25 - Topographische Karte Auswahl

Bitte wählen Sie in der Übersichtskarte das von Ihnen gewünschte Gebiet aus / erzeugen Sie ein Polygon des von Ihnen gewünschten Gebietes mit Hilfe der Geometrieauswahl (s. Werkzeuge der Geometrieauswahl rechts).

Geometrieauswahl

187.829 km<sup>2</sup> 5 P

Weiter

Tipps Kartenauswahl

Über können Sie zwischen verschiedenen Kartenauswahlschneidemaschinen wechseln.

Kartenqualität

Map showing a green polygon selection over a topographic map of the region around Remagen and Andernach. The polygon covers a large area including Remagen, Andernach, and surrounding municipalities.

Abmelden Bestellungen demo@ciiss.de

Wir machen Geodaten passend!

**CISS TDI**

ALKIS Topographische Karte Luftbilder - Orthophotos Service Rechtliches

CISS-Shop > Topographische Karte > D | DTK25 - Topographische Karte 1:25.000 > D | DTK25 - Bestelloptionen

Fläche der Auswahlgeometrie km <sup>2</sup> :	187.829414
MIN - Rechts-Hochwert der Geometrie:	367612.780
	5588988.255
MAX - Rechts-Hochwert der Geometrie:	386049.112
	5606406.406

Neue Auswahl

Auswahl bearbeiten

Koordinatenliste

Summary table showing area and bounding box information for the selected geometry. The area is 187.829414 km<sup>2</sup>. The bounding box coordinates are: MIN (367612.780, 5588988.255) and MAX (386049.112, 5606406.406). Buttons for 'Neue Auswahl', 'Auswahl bearbeiten', and 'Koordinatenliste' are visible.

### References:

[2.0] <https://contao.org/en/>

[2.1] <https://shop.ciiss.de/home.html>

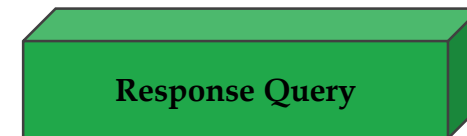
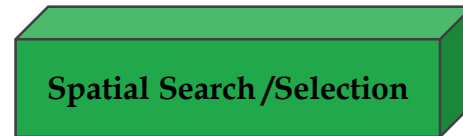




- **The Blueprint**
  - Baseline modules
  - Transformations and *Indexing* (*Serialize PHP* → *Unserialize PHP* → *GeoJSON* → *Spatial Search*)
  - Metadata Quality Check - CISS® QAC API

## Blueprint Design Methodology

❖ Use what > 80% of current users already know - Our Shop

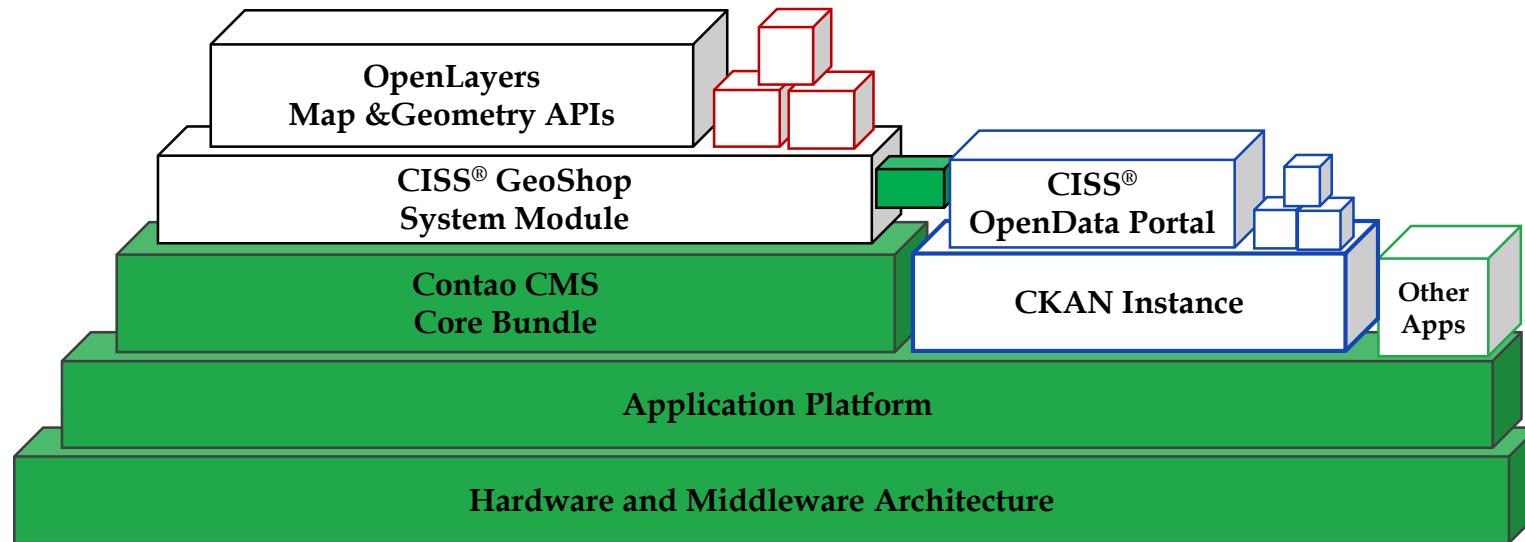


**Building Blocks**



## ➤ The Blueprint

- Baseline modules
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- Metadata Quality Check - CISS® QAC API



*ARCHITECTURE (Work-in-progress)*



## The Blueprint

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Abmelden Bestellungen demo@ciiss.de

Wir machen Geodaten passend! **CISS TDI**

ALKIS Topographische Karte Luftbilder - Orthophotos Service Rechtliches Suchen...

CISS-Shop > Topographische Karte > D | DTK25 - Topographische Karte 1:25.000 > D | DTK25 - Bestelloptionen

Fläche der Auswahlgeometrie kmz: 187,829414

MIN - Rechts-Hochwert der Geometrie: 387612,780 558898,235

MAX - Rechts-Hochwert der Geometrie: 386048,112 5606406,406

### Serialized PHP

```
a:1:{s:3:"wkt";s:223:
"POLYGON&#40;&#40;373511.3468174699
5567243.12439547,380841.08706572774
5567243.12439547,380841.08706572774
5573962.0529563725,373511.3468174699
5573962.0529563725,373511.3468174699
5567243.12439547&#41;&#41;";}
```

### Unserialized PHP (an Array)

```
POLYGON ((373511.3468174699
5567243.12439547,380841.08706572774
5567243.12439547,380841.08706572774
5573962.0529563725,373511.3468174699
5573962.0529563725,373511.3468174699
5567243.12439547))
```

### GeoJSON

```
geoJSON = {
  "type": "POLYGON",
  "coordinates": [[ [373511.3468174699
5567243.12439547,380841.08706572774
5567243.12439547,380841.08706572774
5573962.0529563725,373511.3468174699
5573962.0529563725,373511.3468174699
5567243.12439547]]
}
```

↑ unserialize(string \$Str)  
htmlentities(string \$str)

↑ geoJSON = {}

#### Crawl CKAN Instance

http://localhost:5000/api/3/action/package\_search?q=geoJSON

#### Harvest Dataset from external sources

```
harvester gather_consumer
harvester fetch_consumer
Harvester purge_consumer
```

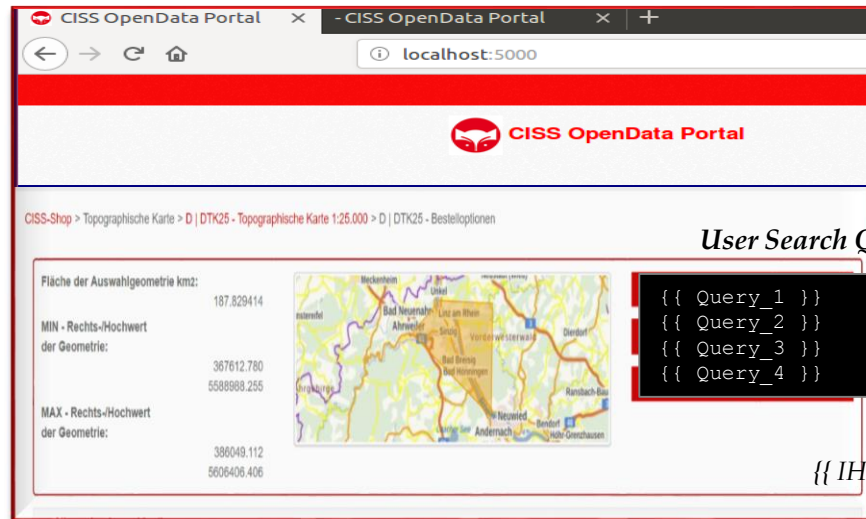
#### Add a new index into CKAN based on the crawled dataset

```
(venv).../src/ckan$ paster Paster search-index geoJSONcrawled_dataset_{{geo_name}}
```



## ➤ The Blueprint

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User Search Query

```
{{ Query_1 }}  
{{ Query_2 }}  
{{ Query_3 }}  
{{ Query_4 }}
```

Crawl, harvest & Display [QAC Options]

```
{{ Query_response 1 }}  
{{ Query_response 2 }}  
{{ Query_response 3 }}  
{{ Query_response 4 }}
```

QAC

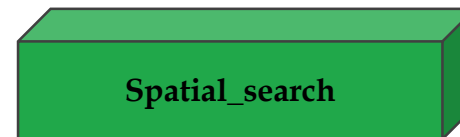
```
{{ Dataset_Metrics }}  
{{ Dataset_QAC Value }}  
...
```

{{ IHarvester, spatial\_query, spatial\_metadata }}

QAC API



IHarvester



Spatial\_search



QAC API

Implementation Blocks



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## ➤ **Summary & Conclusion**

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### ❖ **The Alphas**

- LIMBO → mCLOUD → CISS® OpenData Portal

### ❖ **The Architecture**

- CISS® GeoShop → Architecture, Core Modules, Dependencies

### ❖ **The Blueprint**

- CISS® Open-Data Portal → Architecture, Transformation, Indexing & CISS® Quality Assurance Center API



... Dankeschön | Je vous remercie | **GRAZIE** | Thank You | Kiitos | Gracias | Obrigado | Gratias ago tibi | Shukraan jazilaan | Xièxiè ...



# Fragen?

