

**Building the Legal Knowledge Graph
for Smart Compliance Services in Multilingual Europe**



Lynx

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Ontology Engineering Group - Universidad Politécnica de Madrid

EU Networking session
within Extended Semantic Web Conference (ESWC) 2018
Crete, Greece, June, 5th, 2018



<http://lynx-project.eu/>



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OBJECTIVE

To create an ecosystem of smart cloud **services** to better manage **compliance**, based on a **legal knowledge graph** which integrates and links heterogeneous compliance data sources including legislation, case law, standards and other private contracts.

FACTSHEET

- ICT14-2016-2017 / Innovation Action / Horizon 2020
- Grant Agreement number: 780602
- BDV-PPP: cross-sectorial and cross-lingual data integration and experimentation
- Duration: 36 months
- Starting date: December 1, 2017
- Project Cost: €3,638,065.00
- EU Contribution: €2,959,247.52
- Project Officer: Johan Bodenkamp





Deutsches
Forschungszentrum
für Künstliche
Intelligenz GmbH

TILDE



DNV-GL



CUATRECASAS

UAB

Universitat Autònoma
de Barcelona



POLITÉCNICA



Ontology
Engineering
Group

alpenite

openlaws



SEMANTIC
WEB COMPANY

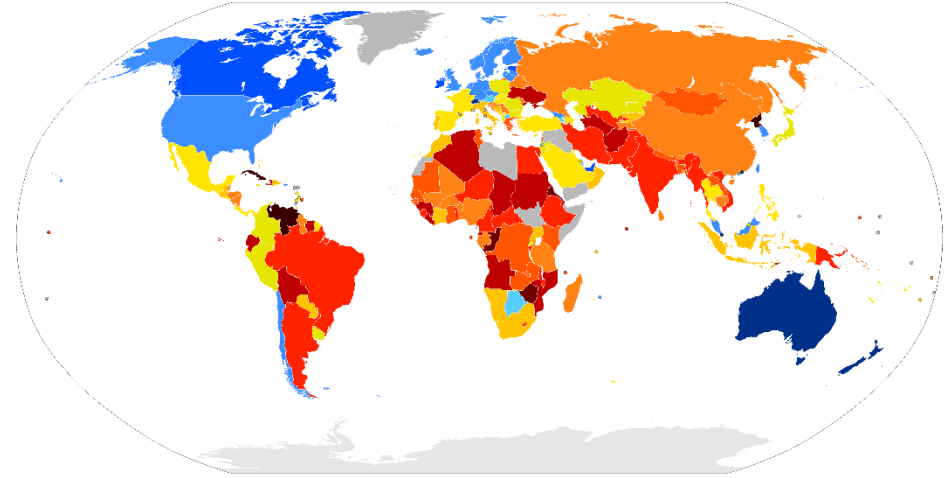


KDICTIONARIES

MOTIVATION

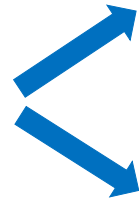
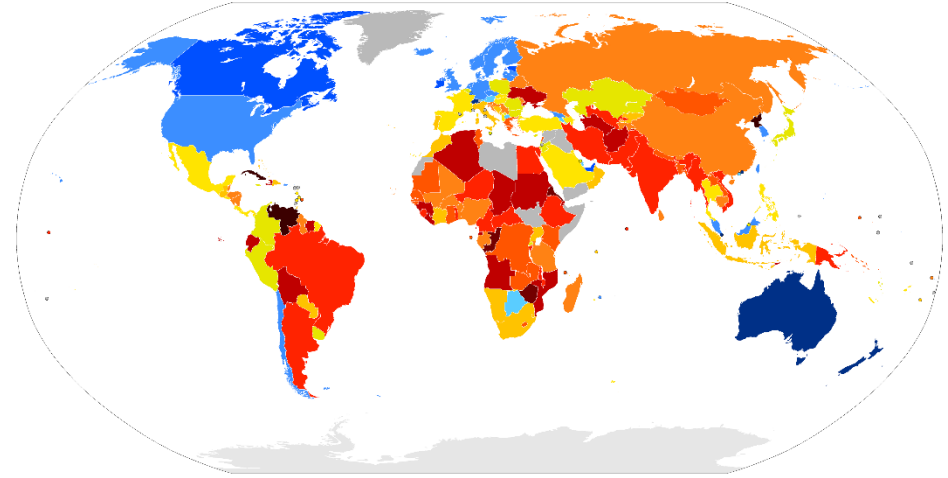


European SMEs



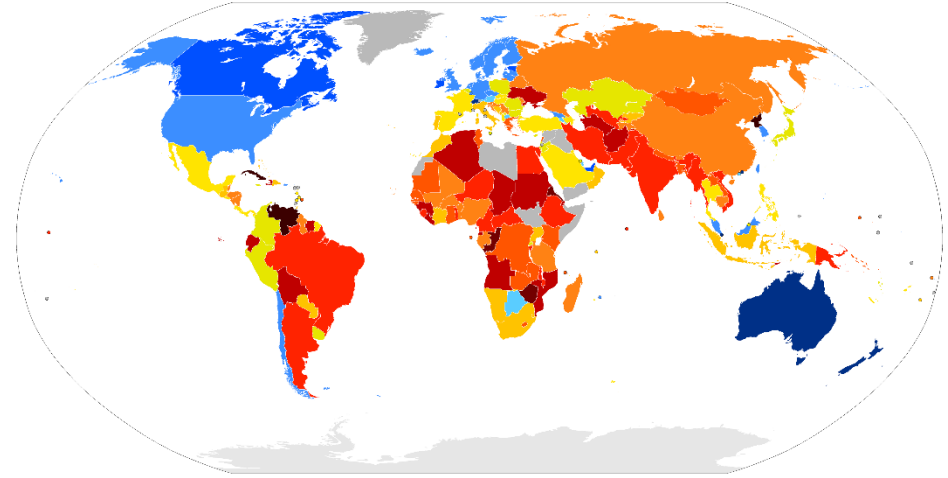


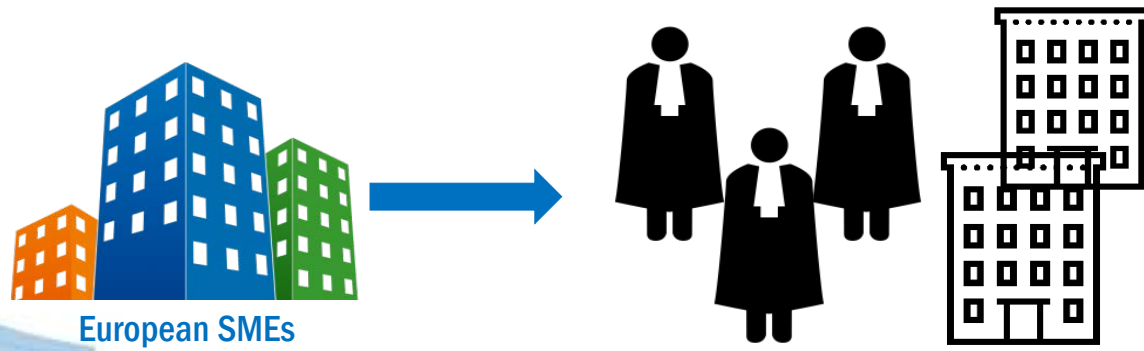
European SMEs

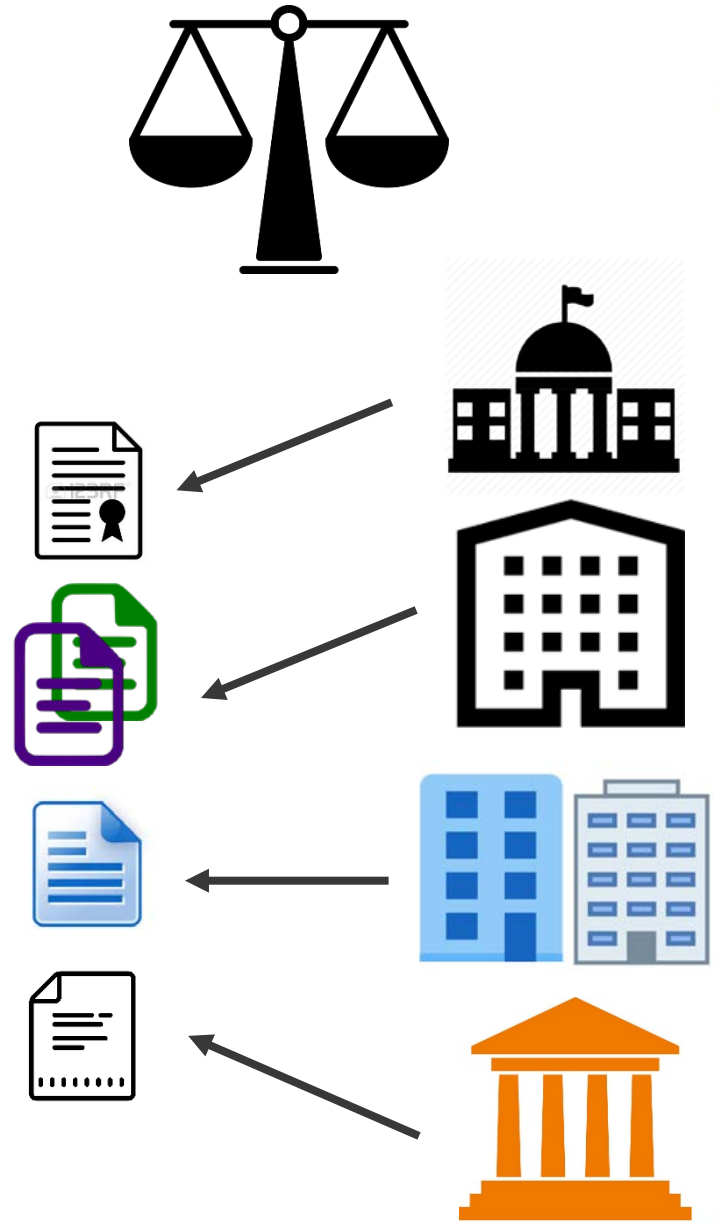
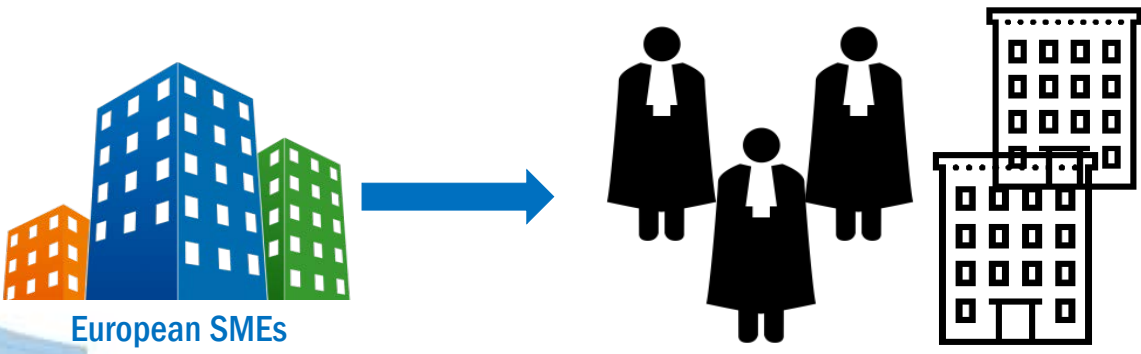




European SMEs

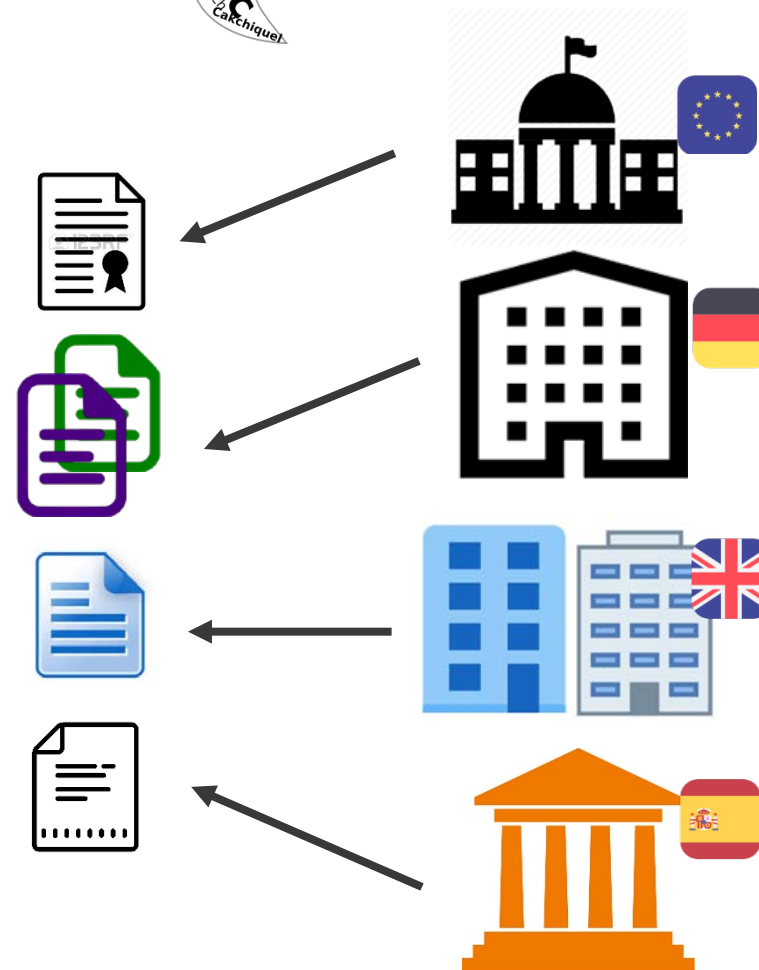
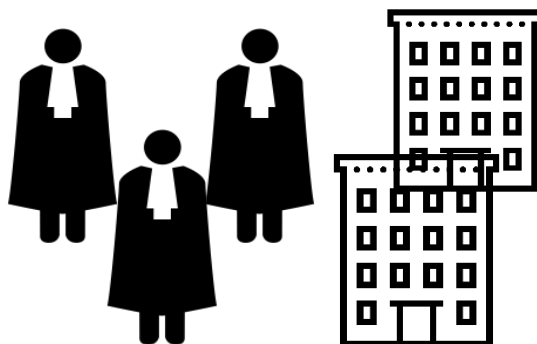


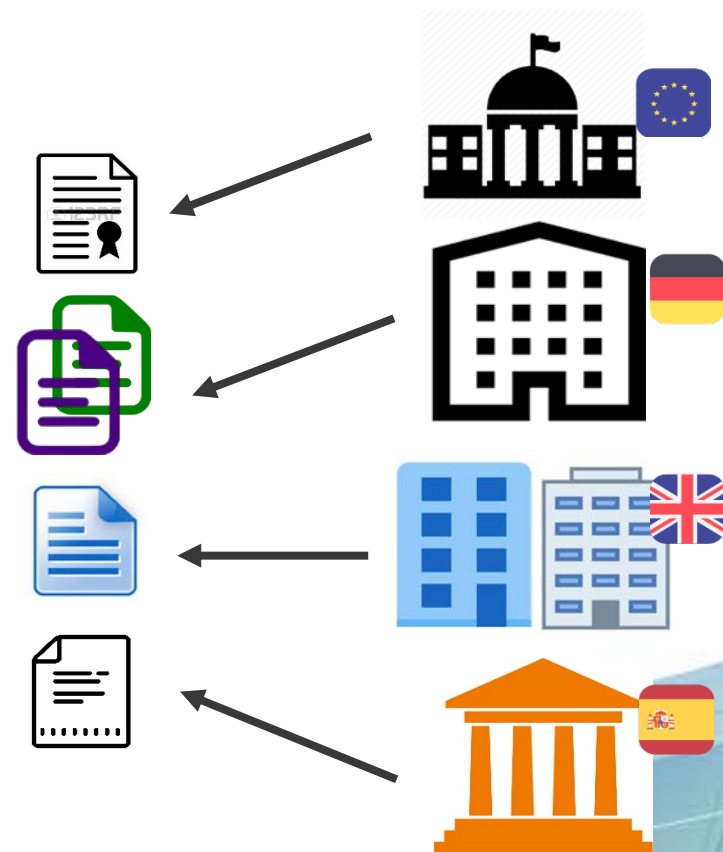
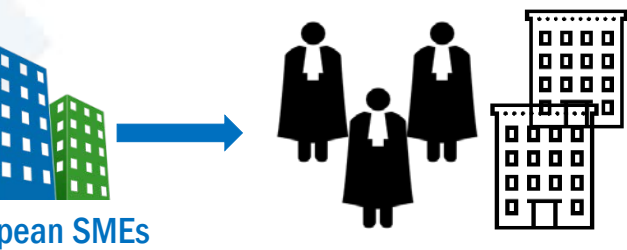






European SMEs





PROPOSED SOLUTION



Public access
Open documents, simple interface



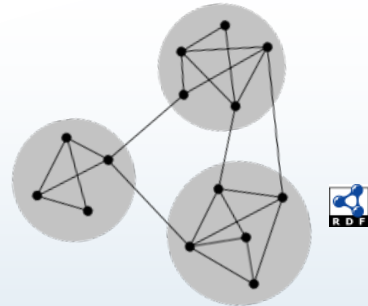
Developer access
Freemium HTTP Rest API



Professional access
Specific access and data integration

Smart Services for Compliance

search, linking, recommender, semantic annotation, extraction, translation, summarization, recommender



Vocabularies
Indexed documents

Legal Knowledge Graph



Legal resources



International
Standards



Language
resources

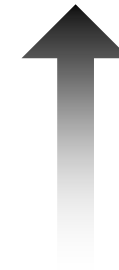


Open
Data



Private
documents

data source specific importers



Annotation
Linking
Translation

EUROPE IS ALREADY VERY SEMANTIC!



Every European Law has a URI (European Law Identifier)
Every European judgement has a URI (European Case Law Identifier)

EUROPA > EU Open Data Portal > Linked Data

Home Data Applications **Linked data** Visualisations – β Developers' corner About



SPARQL

You can search for the metadata stored in the EU Open Data Portal triple store by using the SPARQL endpoint query editor below.

Namespaces *

```
PREFIX dcat: <http://www.w3.org/ns/dcat#>
PREFIX odp: <http://data.europa.eu/euodp/ontologies/ec-odp#>
PREFIX dc: <http://purl.org/dc/terms/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
```

SPARQL query *

```
select distinct ?g ?o where { graph ?g { ?s dc:title ?o. filter regex(?o, 'Statistics', 'i') } } LIMIT 10
```

Sample queries

For the EU Open Data Portal metadata catalogue

Retrieve dataset with specific title (eg. 'Register of Commission documents')

Retrieve number of datasets per publisher

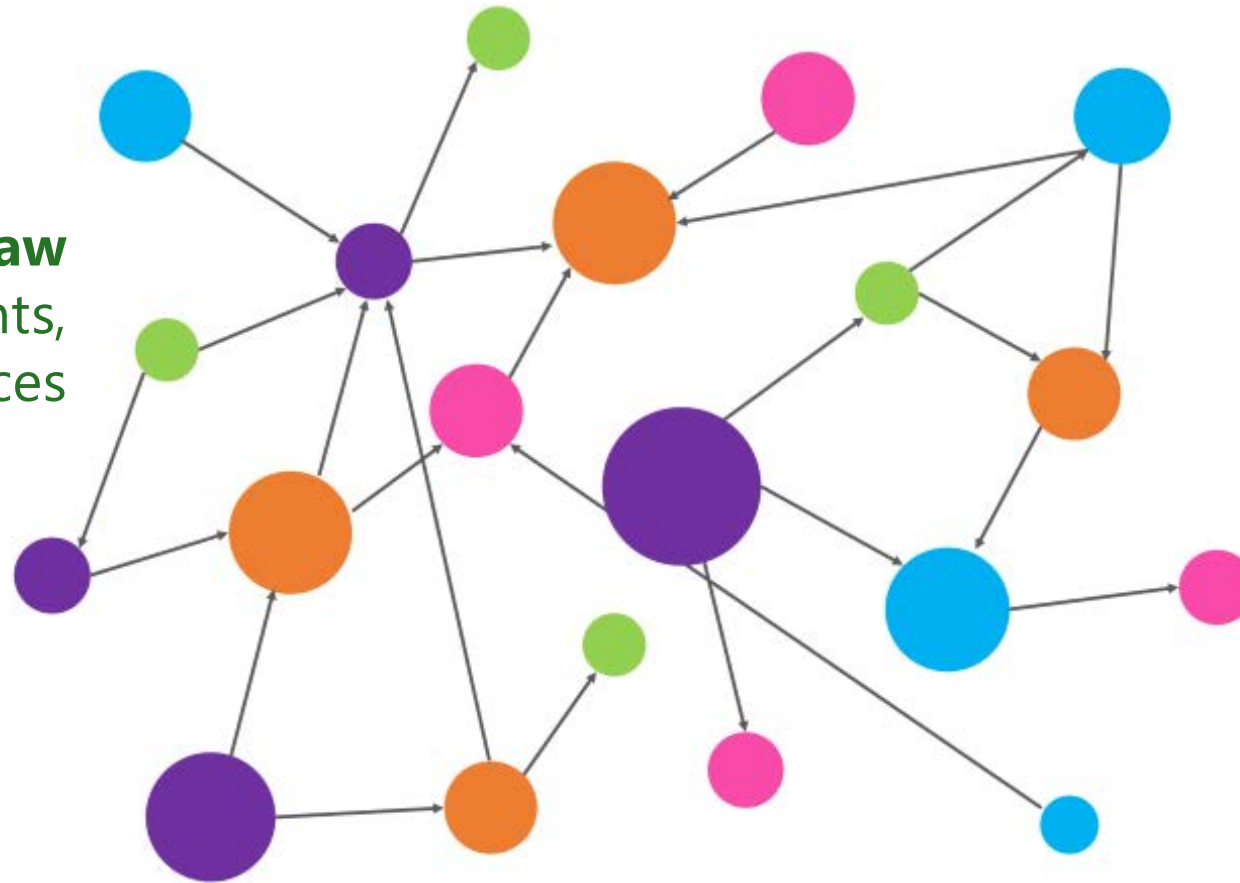
Retrieve all publishers

Retrieve all datasets that have been modified after a certain date

Retrieve all the resources from a dataset with a title that contains specific words (eg. 'Register of Commission documents')

▼ IRC-Names: person and organisation

LEGAL KNOWLEDGE GRAPH



European Directives

General legal goals for every European Member State

Industry standards

Technical documents in occasions necessary to achieve certification

National Legislation

Every Member State has different national and regional legislation in force

Case law

Judgements, sentences

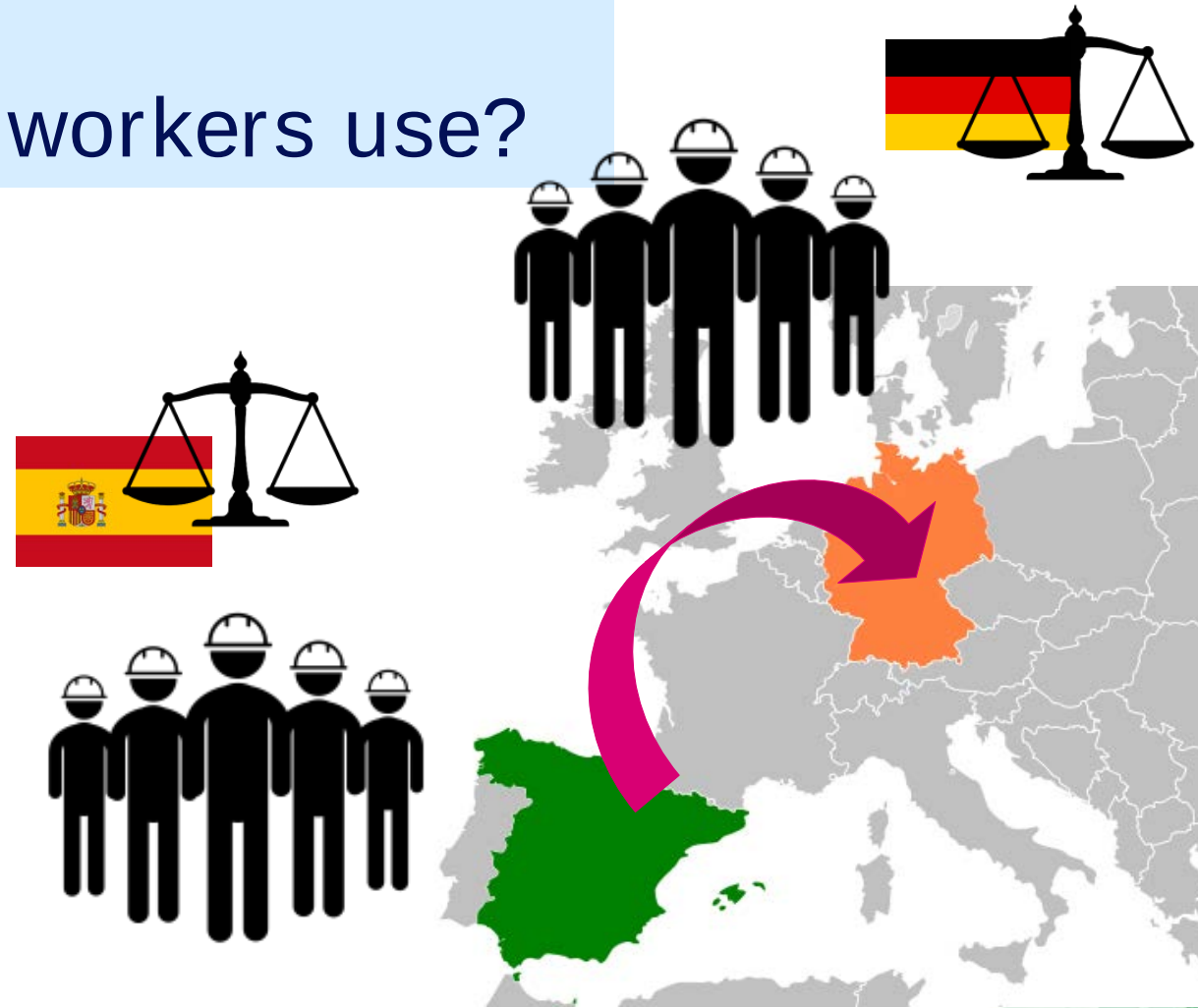
European Regulations

Legislative act binding in every European Member State

Unit 2: Labour law

Labour law is different in every country in Europe.

A British company opens new factory in Germany.
What are the equivalent norms there?
Which kind of protections should my workers use?

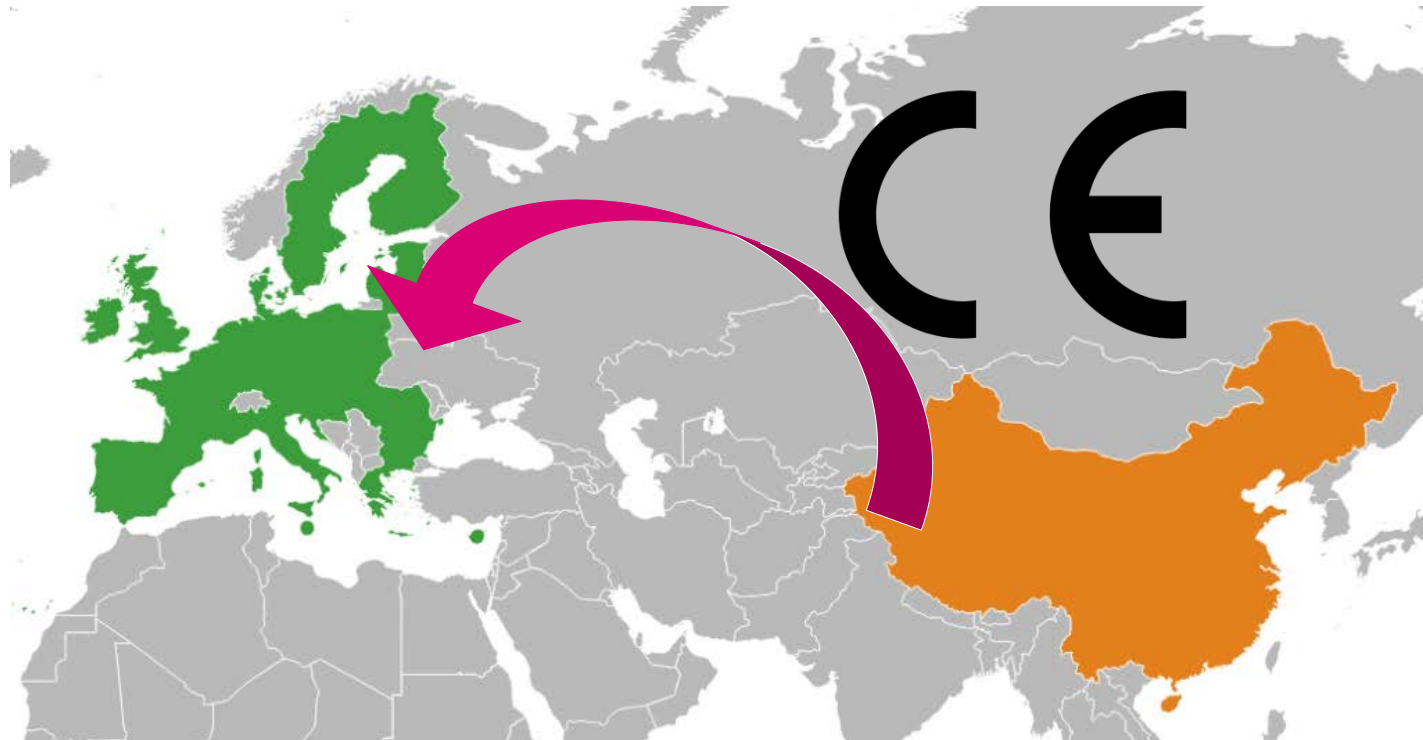


Unit 3a: CE Marking



The CE mark is a symbol that indicates a product complies with the relevant EU legislation. It certifies conformity with health, safety and environmental protection.

Given a certain product, a certain jurisdiction and a certain usage...
Which European Directives and Technical Standards could I comply with?



CONTRACT

Agreement made this _____ day of _____, 20____,

between _____

(hereinafter called "First Party"), residing at: _____

and _____

(hereinafter called "Second Party"), residing at: _____

WITNESSETH THAT,

WHEREAS, both parties wish the integrity and clarity of the First Party's ideas and statement in the Work to be maintained:

1. DESCRIPTION OF WORK. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Mauris ut erat vitae nunc elementum pretium. Aenean nec enim ullamcorper libero semper accumsan sit amet at eros. Praesent rhoncus diam libero sed feugiat nisi adipiscing a. Quisque cursus porttitor metus vitae tincidunt. Vivamus dignissim nunc id faucibus hendrerit.

2. PRICE AND PAYMENT SCHEDULE. Integer blandit massa elit, ac viverra nibh iaculis sed. Etiam cursus nisl vel ultricies. Donec tristique semper magna, vitae luctus ante adipiscing nec. Fusce vitae gravida est, luctus quis varius ligula. Quisque tristique, nisi vel mattis volutpat, ante nisl molestie erat, sit amet placerat. Cras tempus tempus nunc eget venenatis. Praesent scelerisque.

REQUESTED INPUT/OUTPUT

- Data resources in the legal domain, preferably RDF and Linked Data. Software resources to store, serve and implement the Legal Knowledge Graph.
- Application cases, in the areas of data protection, labour law and standards compliance.
- Know-how from previous efforts.

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