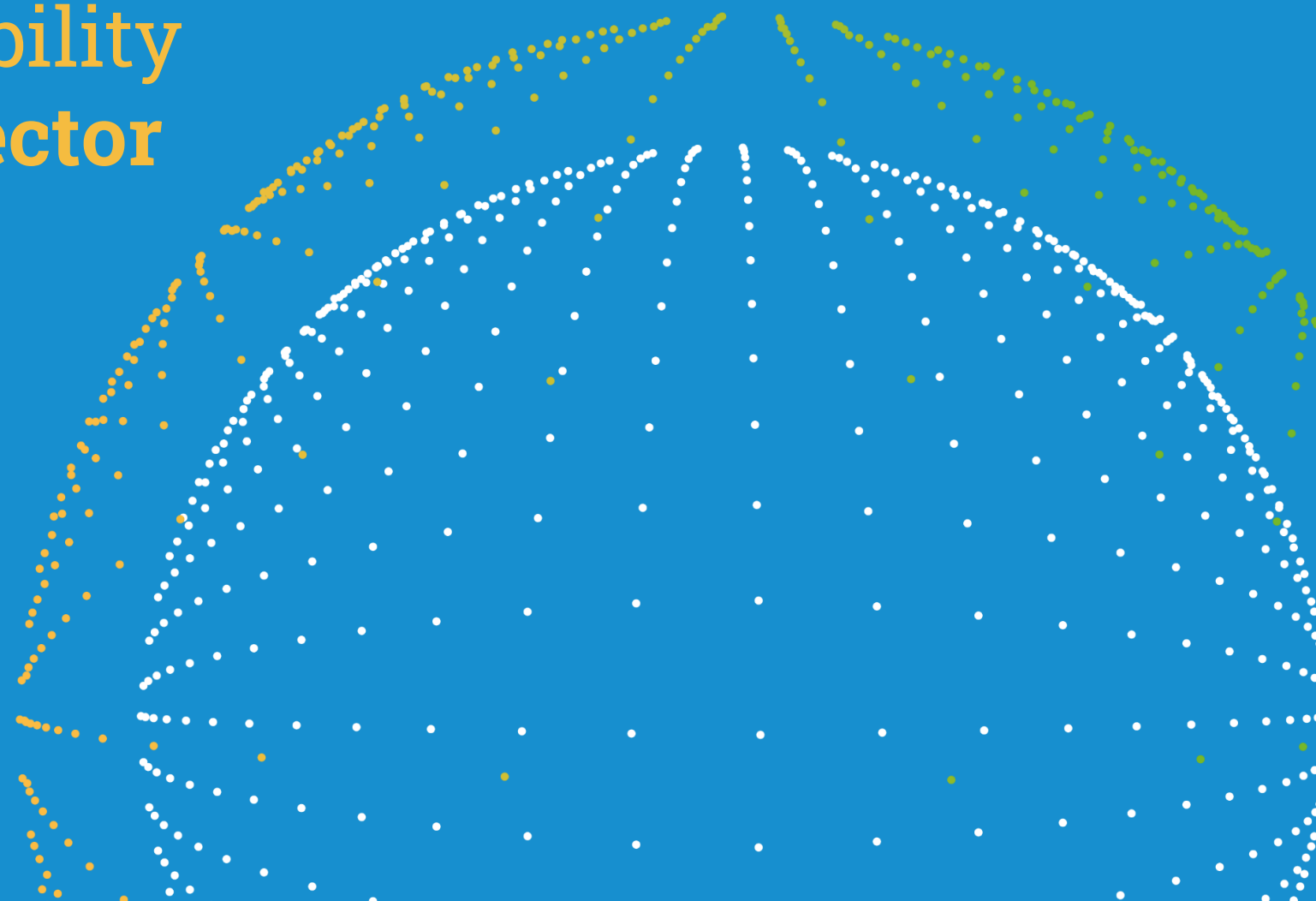


# Data Spaces Symposium

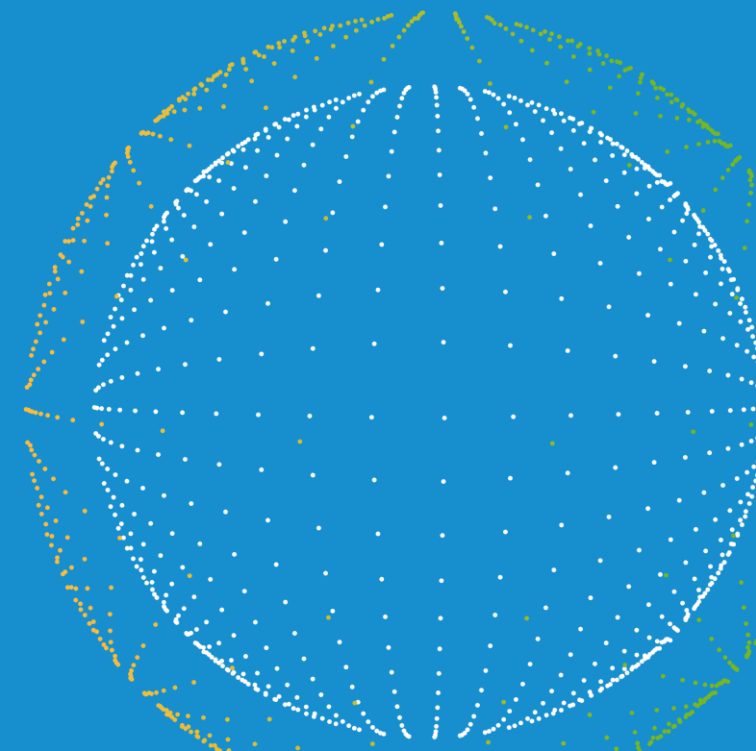
How the next generation of data space connectors  
supports interoperability  
**Tekniker IDS Connector**

---

PhD Gonzalo Gil Inchaurrea  
Tekniker



# Data Source Heterogeneity

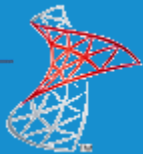


# Data Source Heterogeneity

Structured Databases

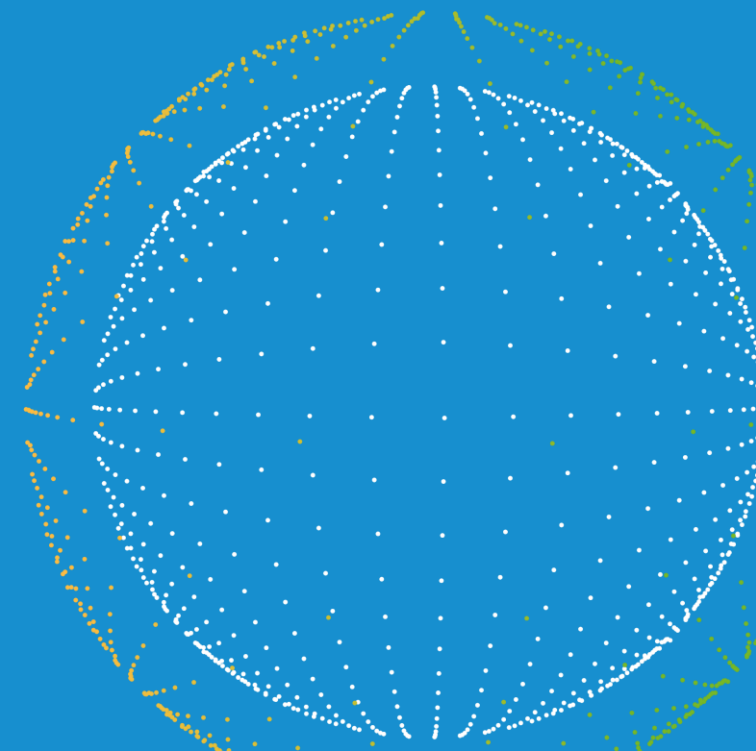


PostgreSQL



Microsoft®

SQL Server™

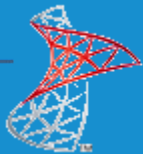


# Data Source Heterogeneity

Structured Databases



PostgreSQL



Microsoft

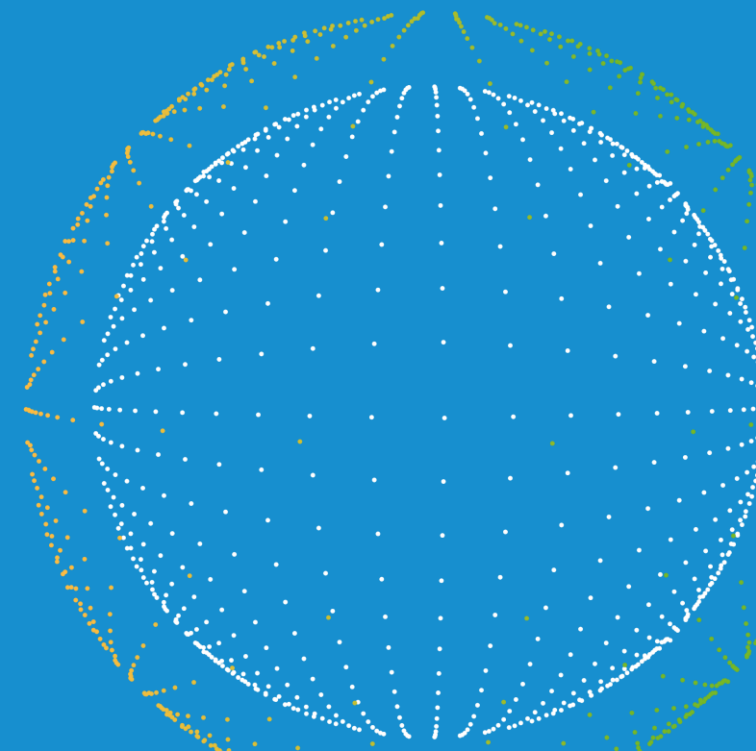
SQL Server



Unstructured Databases



mongoDB

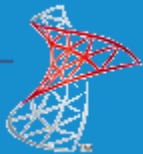


# Data Source Heterogeneity

Structured Databases



PostgreSQL



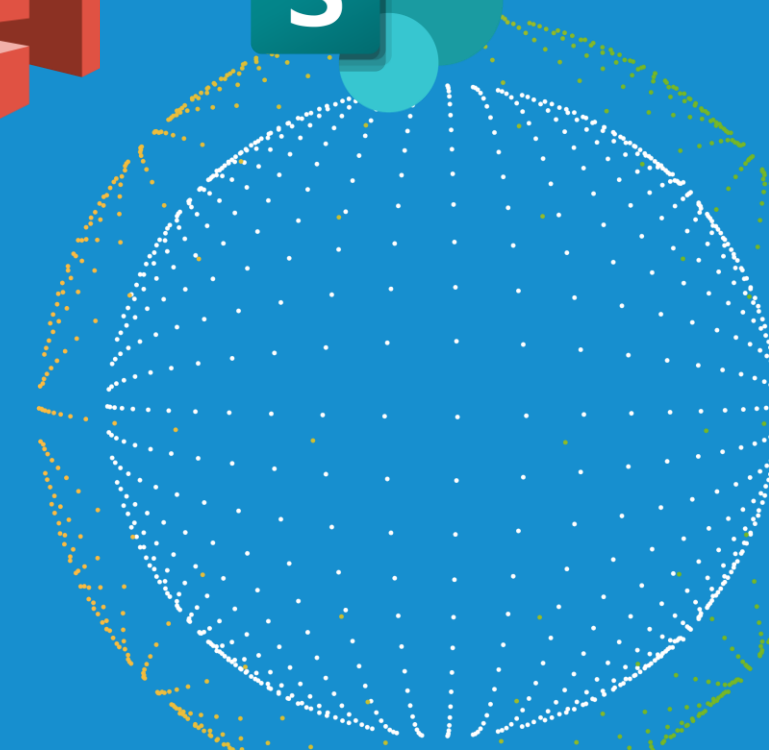
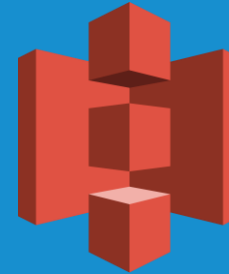
Microsoft  
SQL Server



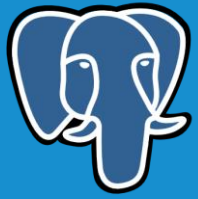
Unstructured Databases



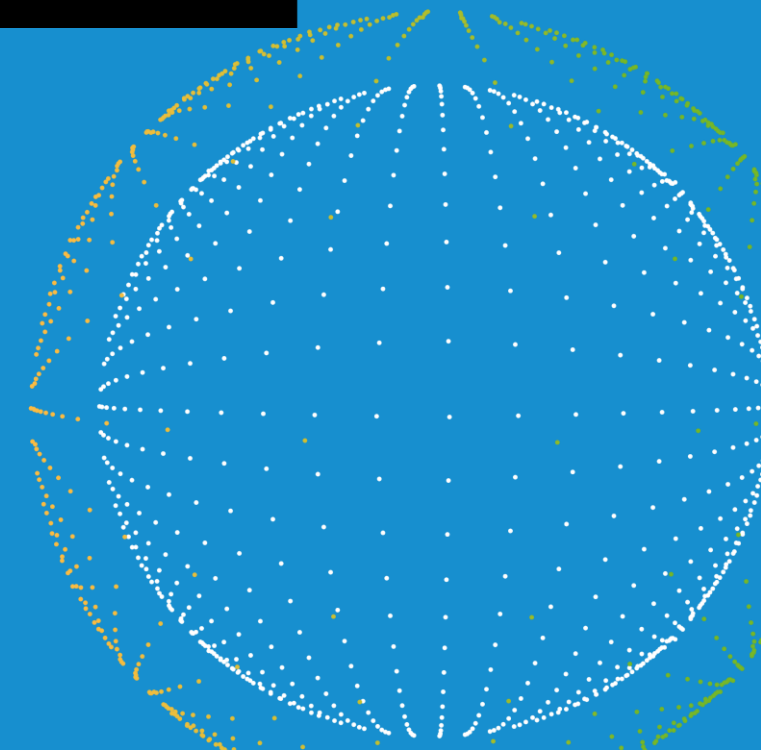
File Storage



# Data Source Heterogeneity



PostgreSQL



# Data Source Heterogeneity



PostgreSQL



Which Datasets are provided?

# Data Source Heterogeneity



PostgreSQL

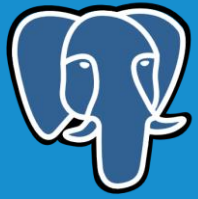


Which Datasets are provided?

Where is a Dataset stored?



# Data Source Heterogeneity



PostgreSQL



Which Datasets are provided?

Where is a Dataset stored?

How should I access the Dataset?

# Data Source Heterogeneity



PostgreSQL



Which Datasets are provided?

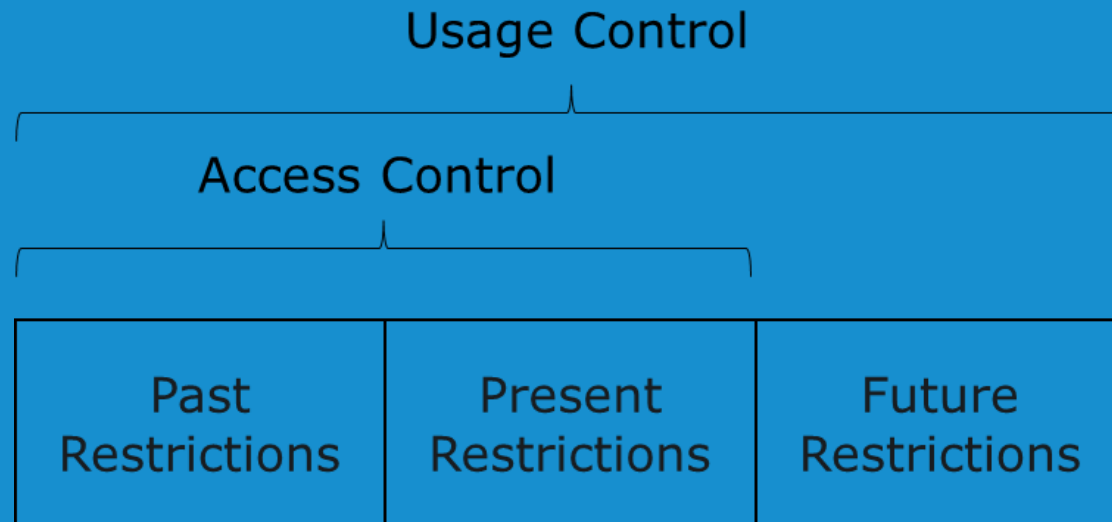
Where is a Dataset stored?

How should I access the Dataset?

Which data I expect to receive?

# Data Sovereignty

Data sovereignty: it refers to the self-determination of individuals and organizations with regard to the usage of their data



Usage Control: it is an extension of access control to control restrictions that governs the future usage of the data



# Dataspace protocol

- **Catalog Protocol:** it is a set of specifications that define the protocols and schemas to describe the datasets considering usage concerns following the widely accepted DCAT standard

## Which Datasets are provided?

```
{
  "@context": {
    "digex": "http://example-digichcks.com/",
    "void": "http://www.w3.org/TR/void/",
    "odrl": "http://www.w3.org/ns/odrl/2/",
    "dct": "https://purl.org/dc/terms/",
    "dSPACE": "https://w3id.org/dSPACE/v0.8/",
    "dcat": "https://www.w3.org/ns/dcat/"
  },
  "@id": "urn:uuid:4a1edeeb-2f47-4ad8-bf43-85df4fbb2878",
  "@type": "dcat:Catalog",
  "dct:title": "bim-catalog",
  "dct:description": "catalog with BIM data",
  "dct:publisher": "https://tekniker.es/en",
  "dcat:keyword": "BIM",
  "dcat:service": [
    {
      "@id": "urn:uuid:71f21e79-b2b2-4f30-8f9e-9a37b182d9d4",
      "@type": "dcat:DataService",
      "dcat:endpointDescription": "TEKNIKER IDS Connector",
      "dcat:endpointUrl": "http://localhost/api/v1/ids/data"
    }
  ],
  "dcat:dataset": [
    {
      "@id": "urn:uuid:69abe8ab-c1c6-4d23-b023-3f86e4b525ed",
      "@type": "dcat:Dataset",
      "dct:title": "buildingA-BIM",
      "dct:description": "buildingA complete BIM information",
      "dcat:keyword": "building",
      "odrl:hasPolicy": [
        {
          "@type": "odrl:Offer",
          "dSPACE:providerId": "https://tekniker.es/en",
          "odrl:prohibition": [
            {
              "odrl:action": "odrl:use",
              "odrl:constraint": []
            }
          ]
        }
      ]
    },
    {
      "dcat:theme": "ifc:IfcBuilding",
      "void:rootResource": "digex:buildingA",
      "dcat:distribution": {
        "@id": "urn:uuid:a4f37aef-77c2-464a-ba1d-59700b749cd6",
        "@type": "dcat:Distribution",
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        "dcat:accessService": "urn:uuid:71f21e79-b2b2-4f30-8f9e-9a37b182d9d4"
      }
    }
  ]
}
```

# Dataspace protocol

- **Catalog Protocol:** it is a set of specifications that define the protocols and schemas to describe the datasets considering usage concerns following the widely accepted DCAT standard

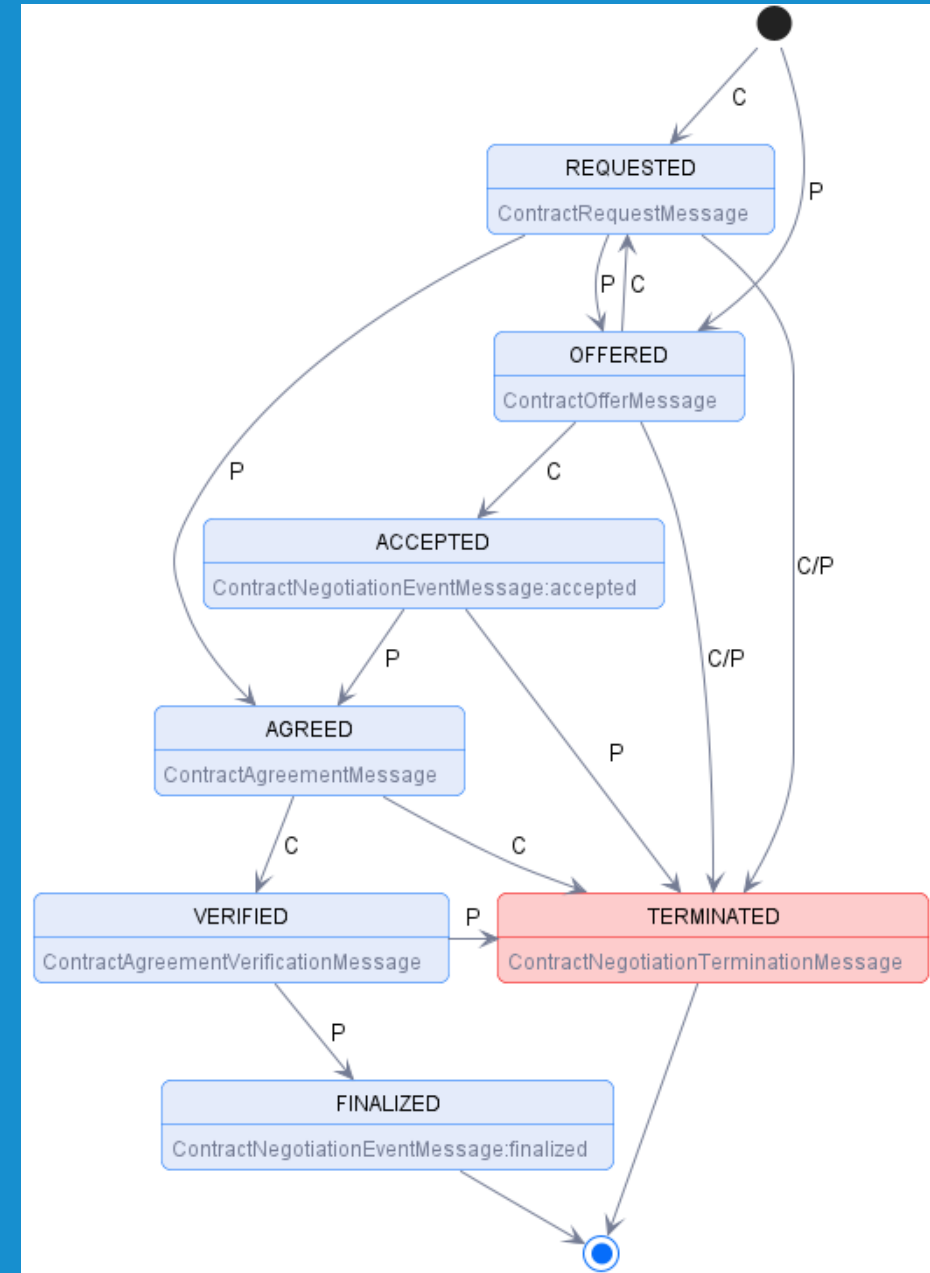
Which Datasets are provided?

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{
  "@context": {
    "digex": "http://example-digichcks.com/",
    "void": "http://www.w3.org/TR/void/",
    "odrl": "http://www.w3.org/ns/odrl/2/",
    "dct": "https://purl.org/dc/terms/",
    "dSPACE": "https://w3id.org/dSPACE/v0.8/",
    "dcat": "https://www.w3.org/ns/dcat/"
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    {
      "@id": "urn:uuid:71f21e79-b2b2-4f30-8f9e-9a37b182d9d4",
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      "dcat:endpointDescription": "TEKNIKER IDS Connector",
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    }
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  "dcat:dataset": [
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      "odrl:hasPolicy": [
        {
          "@type": "odrl:Offer",
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          "dcat:theme": "ifc:IfcBuilding",
          "void:rootResource": "digex:buildingA",
          "dcat:distribution": {
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            "dcat:mediaType": "application/json",
            "dcat:accessService": "urn:uuid:71f21e79-b2b2-4f30-8f9e-9a37b182d9d4"
          }
        }
      ]
    }
  ]
}
```

Which data I expect to receive?

# Dataspace protocol

- **Contract Negotiation Protocol:** it is a set of specifications that define the protocols and schemas to negotiate usage agreements for specific datasets

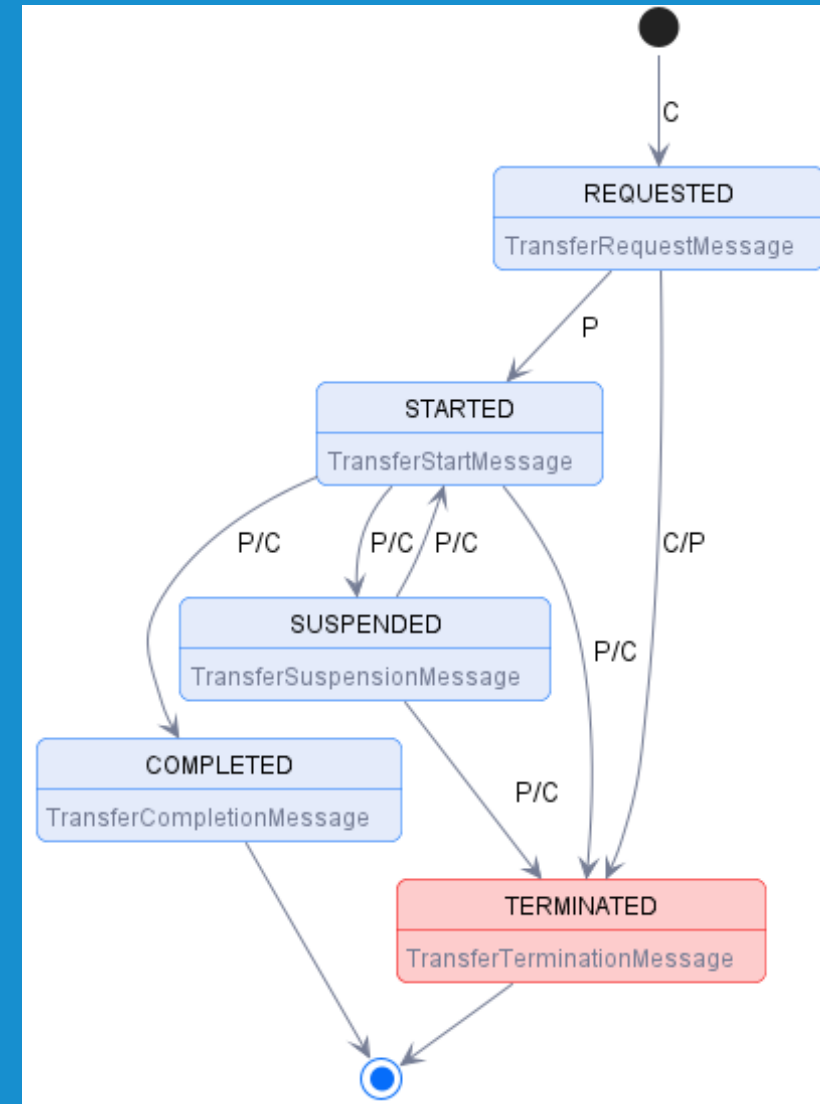


# Dataspace protocol

- **Transfer Process Protocol:** it is a set of specifications that define the protocols and schemas to access negotiated datasets considering usage agreements

Where is a Dataset stored?

How should I access the Dataset?

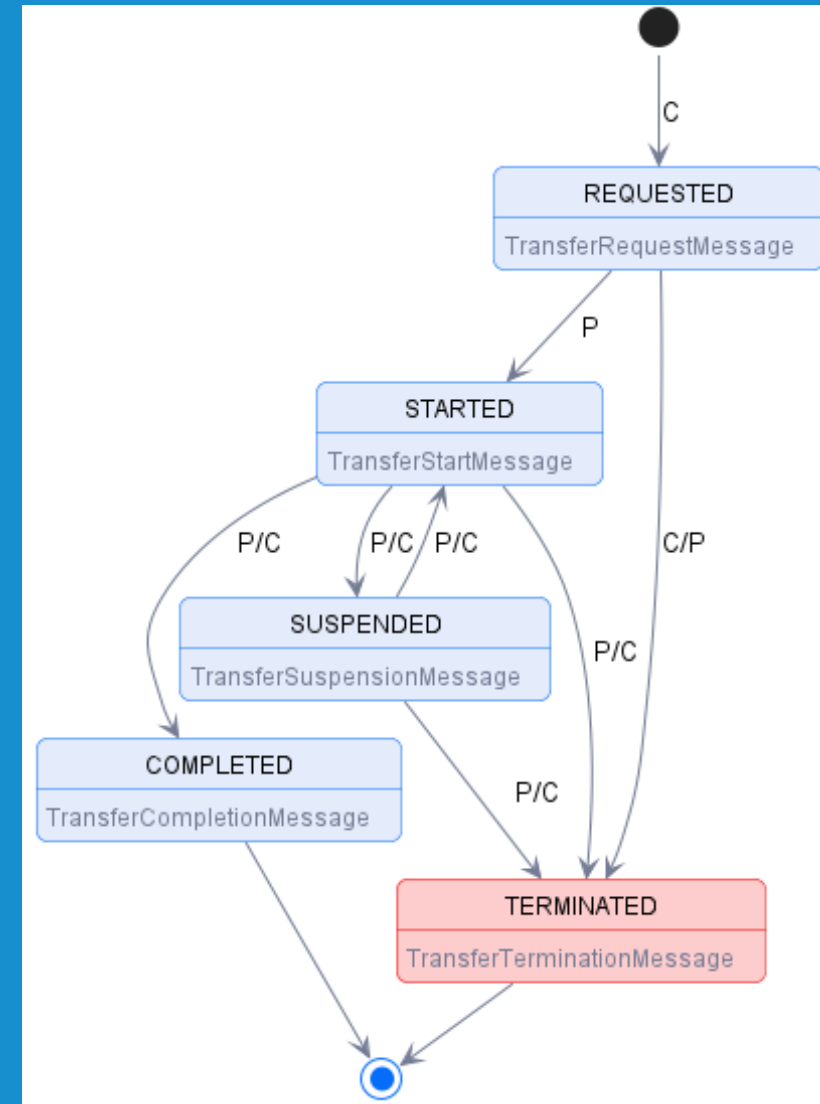


# Dataspace protocol

- **Transfer Process Protocol:** it is a set of specifications that define the protocols and schemas to access negotiated datasets considering usage agreements
- Data Sharing is delegated to the Data Plane
  - Flexibility
  - Scalability

Where is a Dataset stored?

How should I access the Dataset?



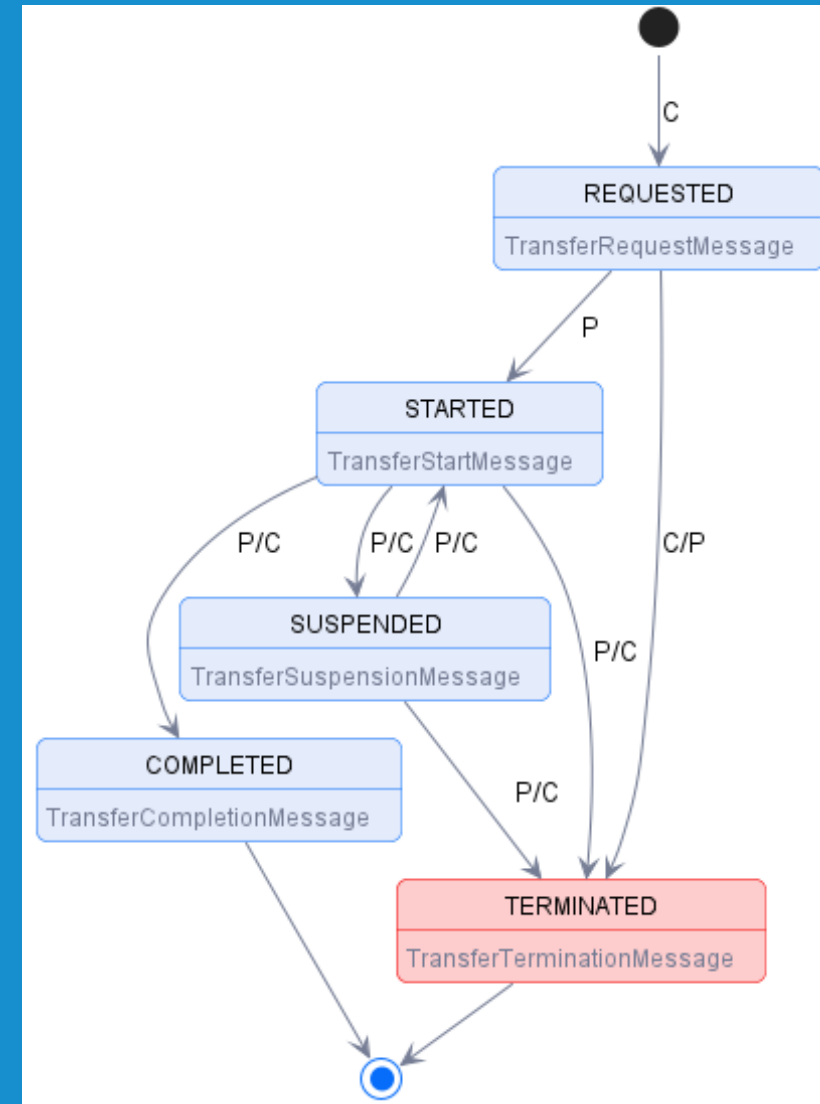


# Dataspace protocol

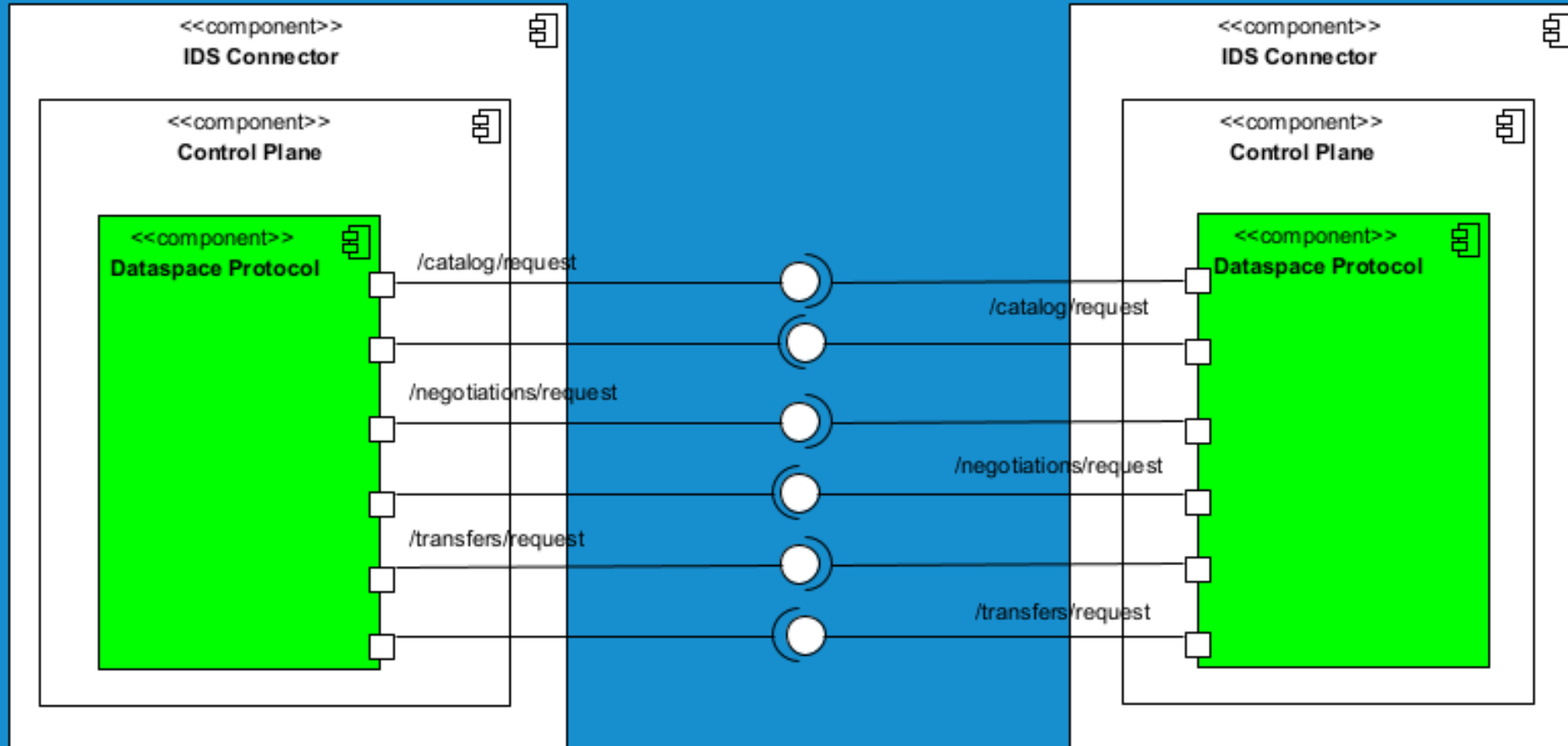
- **Transfer Process Protocol**: it is a set of specifications that define the protocols and schemas to access negotiated datasets considering usage agreements
- Data Sharing is delegated to the Data Plane
  - Flexibility
  - Scalability
- Usage policy enforcement is performed at
  - Data Access
  - Data Sharing

Where is a Dataset stored?

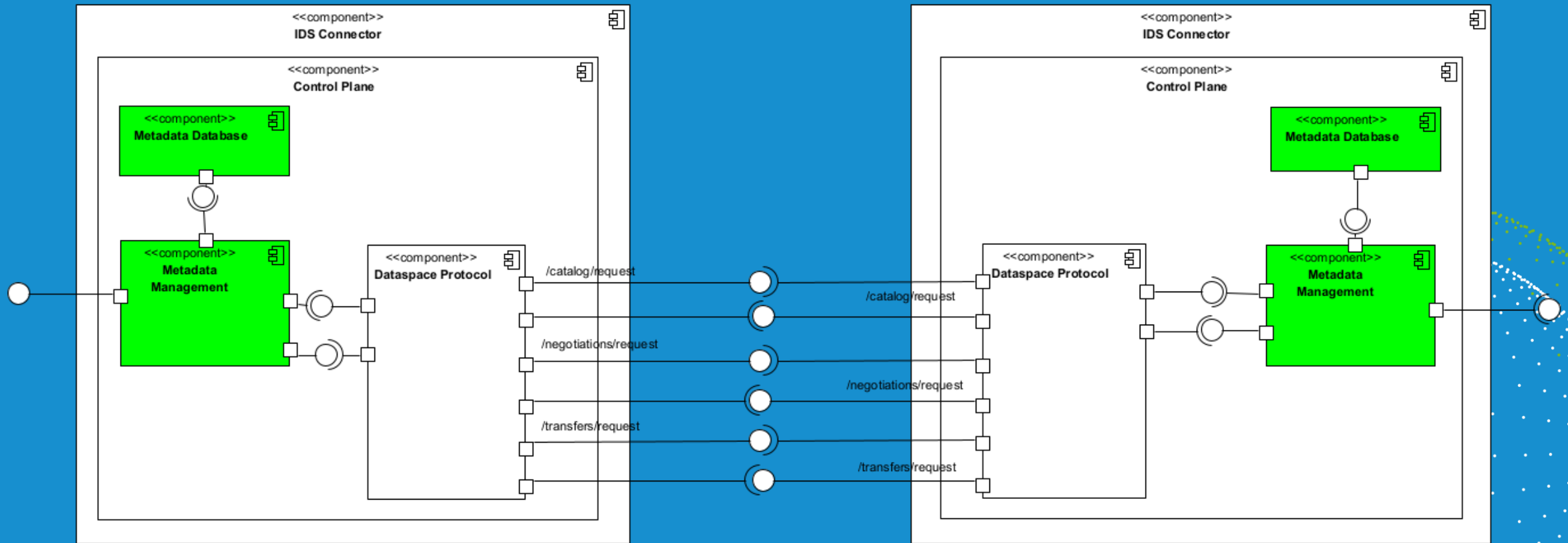
How should I access the Dataset?



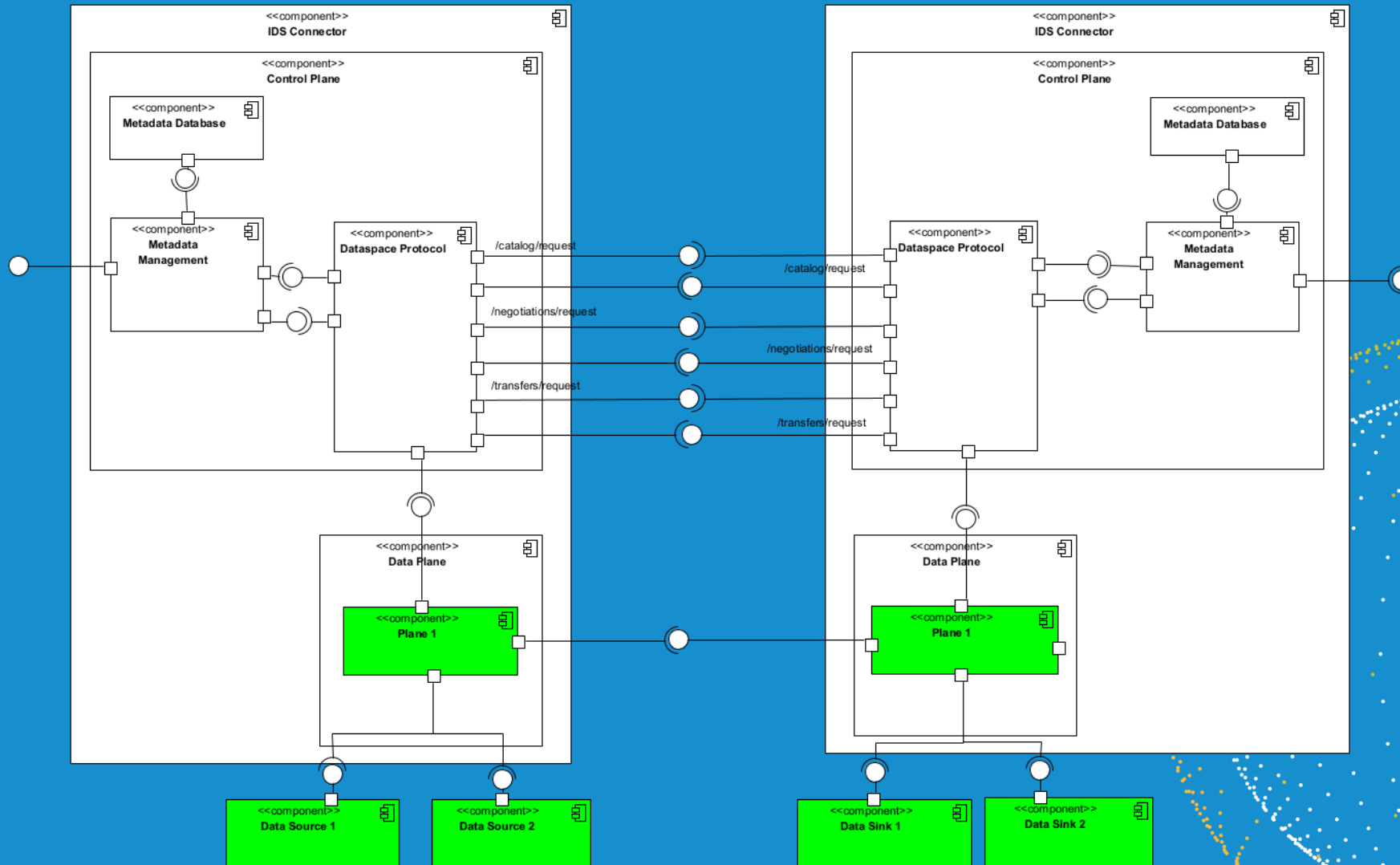
# Dataspace protocol – Tekniker IDS Connector



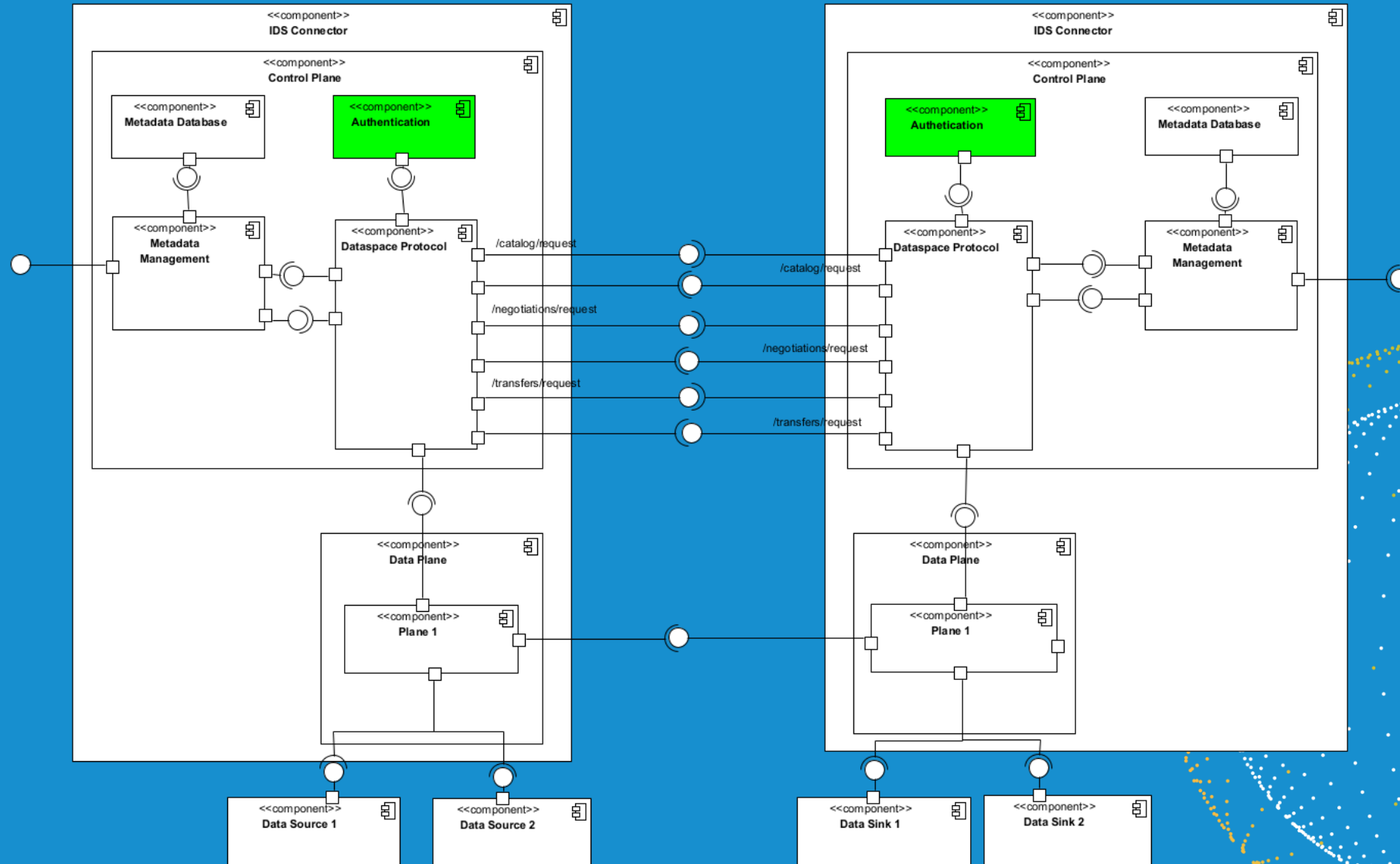
# Metadata Management – Tekniker IDS Connector



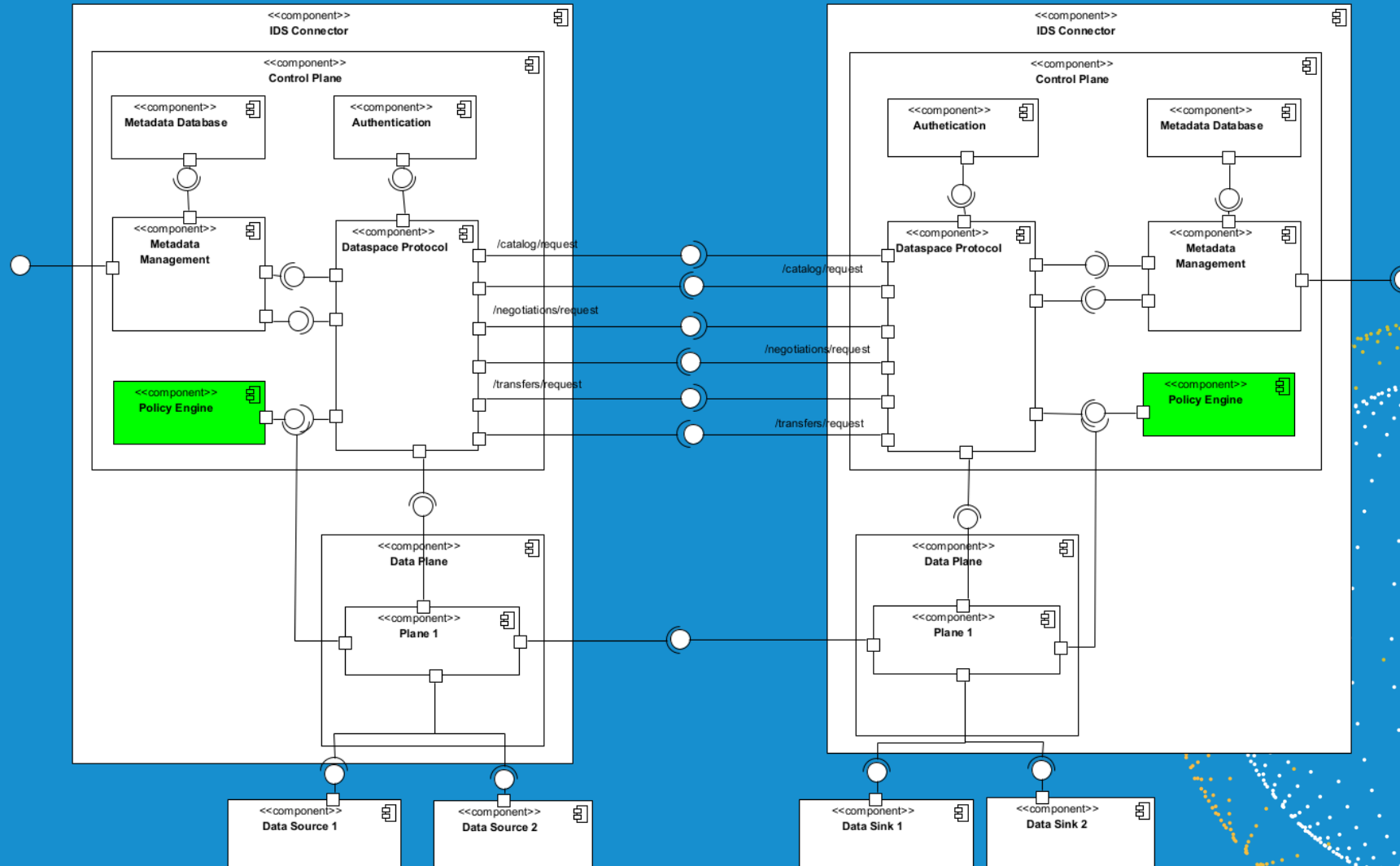
# Data Planes – Tekniker IDS Connector

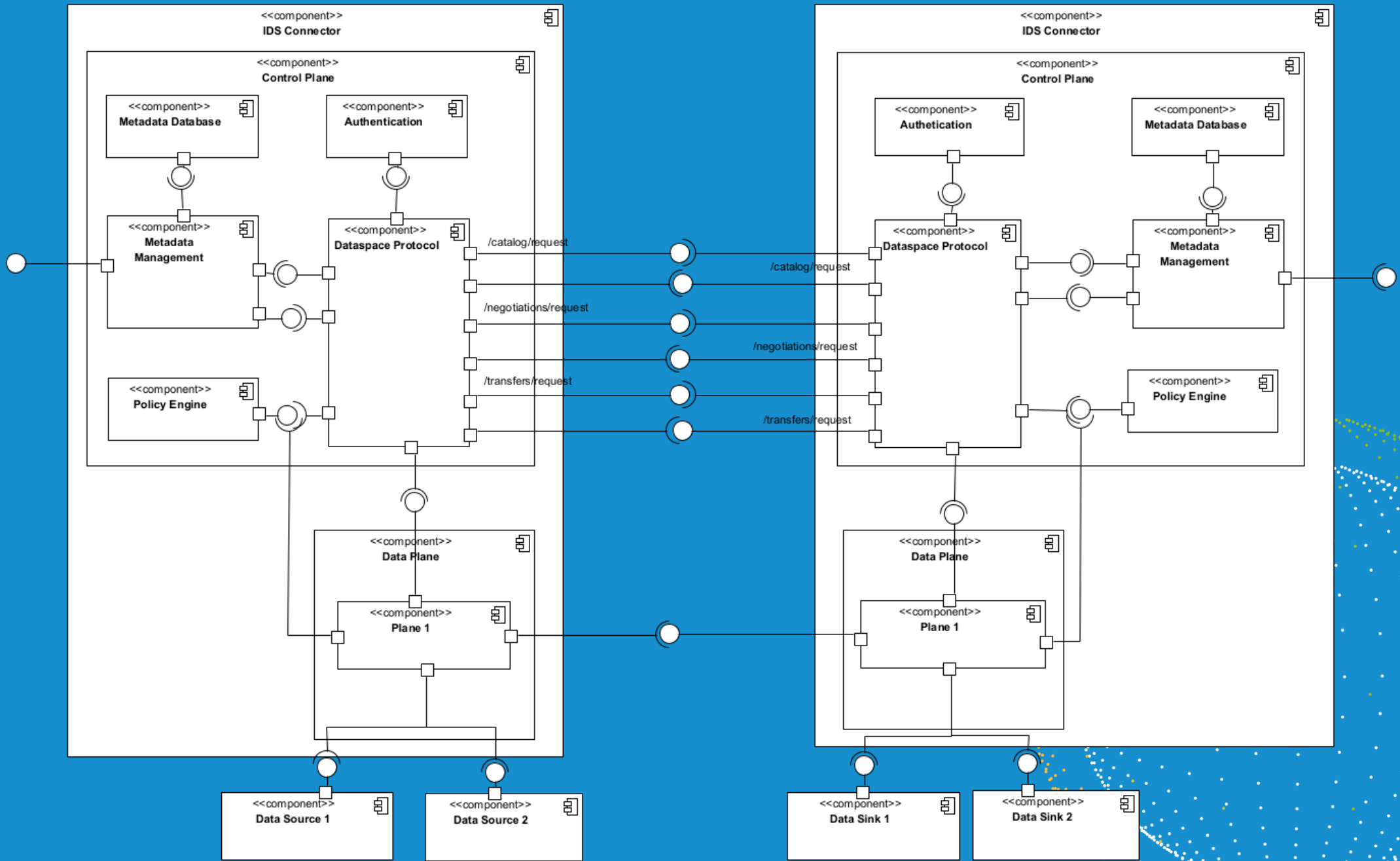


# Trust – Tekniker IDS Connector



# Data Sovereignty – Tekniker IDS Connector





# Data Spaces Symposium

How the next generation of data space connectors  
supports interoperability  
**Tekniker IDS Connector**

**Thank you!**

---

PhD Gonzalo Gil Inchaurrea  
Tekniker

