Europäisches Patentamt
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EPO plan for WIPO Standards dealing with XML

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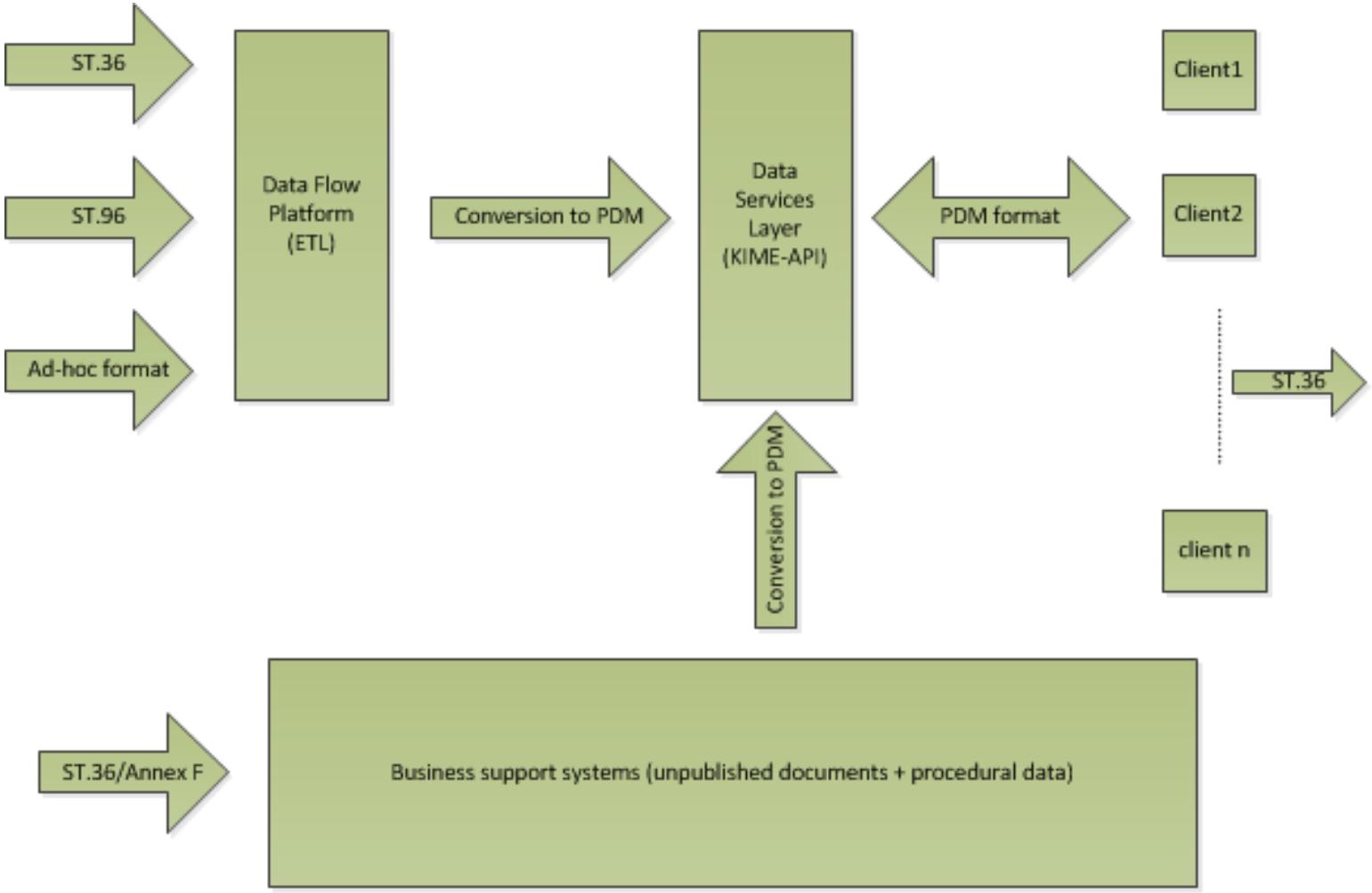
Future data flow



Patent Document Model: Drivers

- Improve Patent Data: standardization, integration, enrichment
- Strengthen Security: protect data from unauthorized access and corruption
- Improve IM agility to deliver IT services by providing simple and efficient access to reusable data services at enterprise level

Why PDM?

- **Common data model** for patent related documentation supporting use of both patent and non patent literature in search, examination, translation and dissemination
- Encode **semantic annotations** and descriptions of the primary content (data enrichment)
- Ability to **manage changes** to the data in a consistent way and **evolve** the model over time to meet new requirements

The Patent Document Model

- The Patent Document Model (PDM) is a common model for patent related documentation based on Text Encoding Initiative (TEI)

- Principles:
  - Encode simple families with corresponding applications and publications
  - Encode annotations (manual and automatic)
  - Compatible with DocDB XML (based on ST.36)
  - Independent of the physical implementation

- Applied at EPO today:
  - KIME: reusable and high performance data service for provisioning of published patent documents in PDM format (45M families, 90M patents)
  - ANSERA: figure and non-boolean search application
  - TAPAS: benchmark platform for future search applications

Text Encoding Initiative - Background

- XML Standard for the representation of texts in digital form

- History:
  - 1960: GML by IBM
  - 1986: SGML becomes an ISO standard: ISO 8879:1986
  - 1987: TEI
  - 1992: TEI edition P3 (**Michael Sperberg-McQueen** and Lou Burnard, eds)
  - 1997/1998: XML 1.0 (Tim Bray, Jean Paoli and **Michael Sperberg-McQueen**, eds)

- Features:
  - A wide range of standardized, general purpose modelling elements for describing digital sources (meta-data), understanding and representing the content (text, tables, formulas, figures), enriching (annotations, links), versioning and disseminating
  - Customizable and extensible in a standard way
  - Open and supported by tools

- Users: from individual scholars to large digitisations

ST36 Documents

publication reference **EP1565318 B1**

family **32324726**
preceding publication date
classification

application reference **EP20030811688**
language-of-filing
invention-title
referenced-cited
applicants
inventors
abstract
....

publication reference **EP1565318 A4**

family **32324726**
...

application reference **EP20030811688**
....

publication reference **DE60335820 D1**

family **32324726**
...

application reference **DE2003635820**
....

PDM Document

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<teiCorpus>
  <teiHeader type="family">
    <idno type="family-id">32324726</idno>
  </teiHeader>
  <teiCorpus>
    <teiHeader type="application">
      <idno type="docNumber">EP20030811688</idno>
    </teiHeader>
    <TEI>
      <teiHeader type="publication">
        <orgName type="regional">EP</orgName>
        <idno type="docNumber">1565318</idno>
        <classCode scheme="kindCode">B1</classCode>
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      <text>...</text>
    </TEI>
    <TEI>
      <teiHeader type="publication">
        <orgName type="regional">EP</orgName>
        <idno type="docNumber">1565318</idno>
        <classCode scheme="kindCode">A4</classCode>
      </teiHeader>
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      <text>...</text>
    </TEI>
  </teiCorpus>
  <teiCorpus>
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    </teiHeader>
    <TEI>
      <teiHeader type="publication">
        <orgName type="regional">DE</orgName>
        <idno type="docNumber">60335820</idno>
        <classCode scheme="kindCode">D1</classCode>
      </teiHeader>
      <facsimile>...</facsimile>
      <text>...</text>
    </TEI>
</teiCorpus>
```

Simple Patent Family Layer
family-id
priority-claims
patent classifications (ECLA, ICO)

Patent Application Layer
application-reference
patent-classifications (ECNO)

Patent Publication Layer
publication-reference
invention-title
designation-of-states
dates-of-public-availability
parties (applicants and inventors)
previously-filed-application
patent-classifications
language-of-filing
priority-claims
preceding-publication-date
date-of-coming-into-force
language-of-publication
references-cited
text: abstract, description, claims

The PDM schema is built by reusing standard TEI elements and associating them with a well-defined meaning from the patent information domain

```
<TEI>
  <teiHeader>
    <listChange>
      <change xml:id="version1">...</change> (10)
      <change xml:id="versionI2">...</change>
    </listChange>
  </teiHeader>
  <facsimile> (2)
    <graphic xml:id="id_paglE302"  url="page1.png"/> (9)
    <graphic xml:id="id_pag2E302"  url="page2.png"/>
  </facsimile>
  <text> (1)
    <front>
      <div type="abstract" xml:lang="EN">...</div> (4)
      <div type="abstract" xml:lang="FR">...</div>
    </front>
    <group>
      <text change="version1"> (11)
        <body>
          <div xml:lang="en" type="claims">...</div> (5)
          <div xml:lang="en" type="description"> (6)
            <p facs= "#id_paglE302">The present invention ...</p> (7), (8)
          </div>
        </body>
      </text>
      <text change="version2">...</text>
      <figure> (3)
        <graphic url="figure1.png"/>
      </figure>
      <figure>
        <svg xmlns="http://www.w3.org/2000/svg"> (12)
          <rect id="d002uscom1" x="75" y="75" width="30" height="30"/>
        </svg>
      </figure>
    </group>
  </text>
</TEI>
```

Standard elements for encoding text, figures and facsimile

- Text (1), figure (2) and facsimile (3)
- Aligning text and facsimile (8), (9)
- Divisions: abstract (4), claims (5) and description (6)
- Headers, paragraphs (7), formulas, tables, lists and enumerations
- Versioning (10), (11)
- Including external schemas (12)

Encoding Text Annotations

```
<TEI>
  <teiHeader type="publication">
    ...
    <note type="standoff_annotation" subtype="word_info">
      <list>
        <item>
          <date when="2012-05-24"/>
          <author type="manual">JP50045</author>
          <term type="synonym">automobile</term>
          <ptr target="#string-range(d1e001, 5, 9)"/>
        </item>
        ...
      </list>
    </note>
    ...
  </teiHeader>
  <text>
    <body>
      <div xml:lang="en" type="description">
        <p xml:id="d1e001" xml:lang="en">The invention relates to a car.</p>
        ...
      </div>
    </text>
</TEI>
```

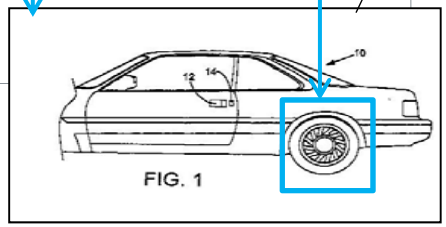
Encoding Figure Annotations

```
<TEI>
  <teiHeader type="publication">
    ...
    <note type="mask" subtype="examiner_annotations">
      <list>
        <item xml:id="mid333x5>
        <date when="2012-05-02"/>
        <author type="manual">CA00000</author>
        <ptr target="#doc1fig1"/>
        <figure>
          <svg xmlns="http://www.w3.org/2000/svg">
            <rect id="doc1mask1" x="75" y="75" width="40" height="30"/>
          </svg>
        </figure>
        </item>
      </list>
    </note>
    ...
    <note type="standoff_annotation" subtype="examiner_comments">
      <list>
        <item>
        <date when="2012-08-24"/>
        <author type="manual">EG50045</author>
        <ptr target="#doc1mask1"/>
        <label>this is the tyre of the car</label>
        </item>
        ...
      </list>
    </note>
    ...
  </teiHeader>
  <text>
    <body>
      <figure
        <graphic xml:id="doc1fig1" url="image-1.tif"/>
      </figure>
    </body>
  </text>
</TEI>
```

Mask

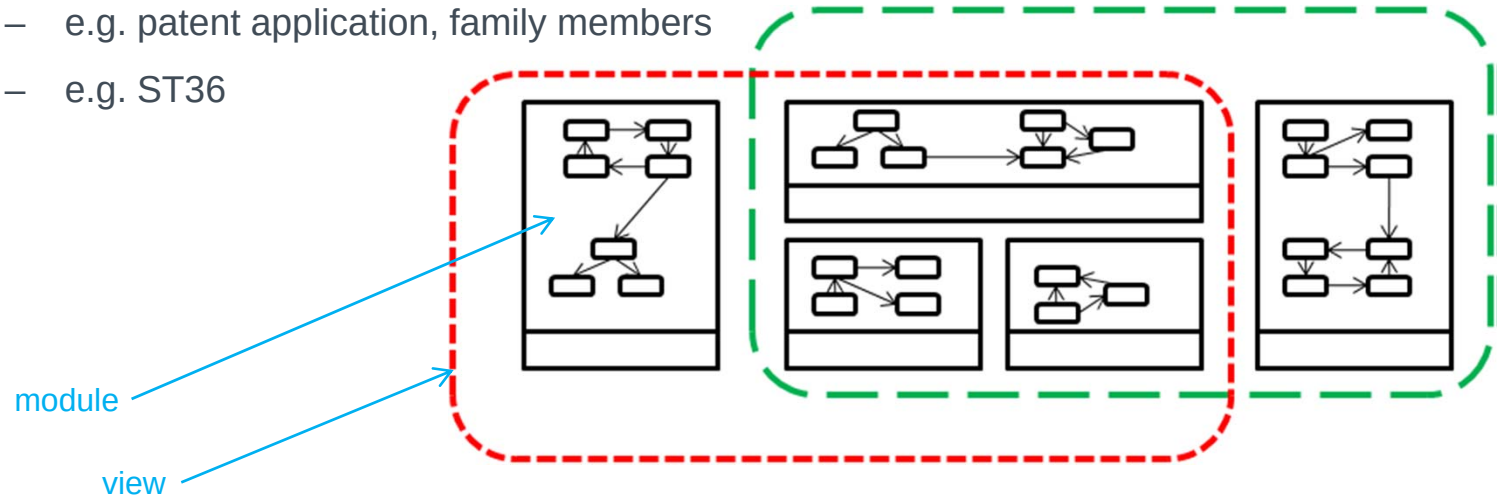
Annotation

Figure



Modular PDM

- *Logical layers* dividing the model into different modules
- *Views* providing visibility to part(s) of the model
- Modules:
  - ***core-PDM:*** all the patent-related universal information independently of specific intended uses or applications;
  - ***add-on modules:*** additional functional oriented data added to the core-PDM (e.g. OCR, versioning, annotations, legal status, confidential and public information, ST36 compatible information, etc.)
- Views / Filters:
  - e.g. patent application, family members
  - e.g. ST36



PDM roadmap

- Extend PDM modular design
- Support for public as well as confidential content
- Support for different types of annotations (manual or automatic)
- Support additional data:
  - legal status,
  - procedural state,
  - non-patent literature,
  - examiner communications
- Support for document- changes and versioning
- Support for translations

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Thank you for your attention

Questions?