



# METS

## Metadata Encoding and Transmission Standard

Markus Enders,  
SUB Göttingen

„...standard for encoding descriptive,  
administrative, and structural metadata...”

<http://www.loc.gov/mets/>



## METS - history

Ideas from „Making of America II“ project

Testbed participants: 5 libraries (Cornell, Penn State, Berkeley, Stanford, New York Public)

### Goals:

- common object format to (re-) use developed tools
- Interoperability of digital library materials for exchange between institutions



## METS - history

Common format for archiving (also for other projects):

Should fulfil roles of SIP, DIP and AIPs according to OAIS reference model

More flexibility needed for descriptive and administrative metadata

Support for other data formats as audio, video etc. necessary



# METS - history

Library of Congress as Maintenance Agency

Hosting of website, documentation

Listserv

Profile registry

<http://www.loc.gov/mets>



# METS - Basics

Description of complex objects:

Structure

Metadata (administrative; descriptive)

Content

References



# METS - Basics

Technical components:

Primary XML schema (mets.xsd)

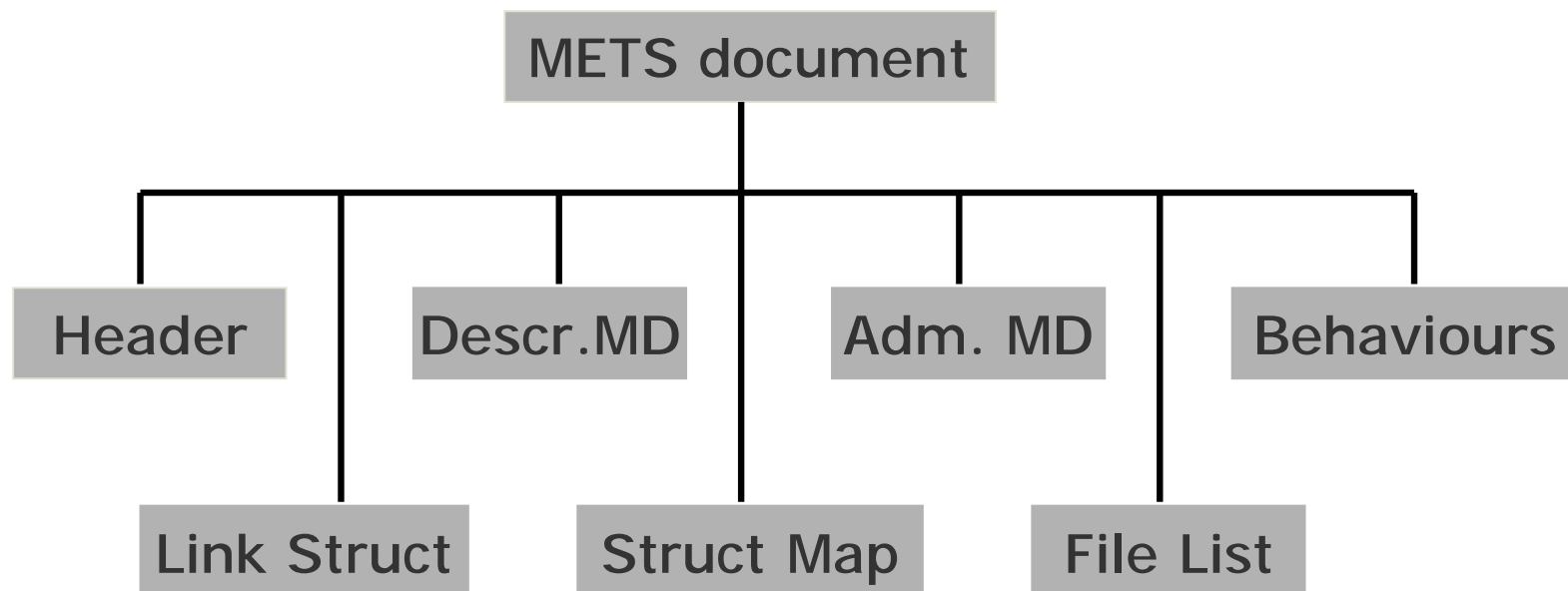
Extension schema (e.g. for metadata)

Controlled vocabulary



# METS - Basics

Technical components:





# METS - Basics

## StructMap

Object can be modeled as a tree

Every node in the tree can have  
(descriptive and/or administrative)  
metadata

Every node can have individual /  
multiple files (contentfiles)



# METS - Basics

## StructMap

### Example:

```
<METS:structMap TYPE="LOGICAL">
  <METS:div TYPE="Monograph" ID="log0001" DMDID="dmdlog0001">
    <METS:div TYPE="TitlePage" ID="log0002"/>
    <METS:div TYPE="Dedication" ID="log0003"/>
    <METS:div TYPE="CurriculumVitae" ID="log0005"/>
  </METS:div>
</METS:structMap>
```



# METS - Basics

## Link Structure

Stores links between nodes in a structural map

Uses XLink / Xptr syntax

Can be used to store references between nodes in a structural map

Can link from one structural map to another (METS files can have several structural maps)



# METS - Basics

## Link Structure

### Example:

```
<METS:structLink>  
  <!--Monograph -->  
  <METS:smLink from="log0001" to="phys0001"/>  
  <!--Titelseite-->  
  <METS:smLink from="log0002" to="phys0002"/>  
  ...  
</METS:structLink>
```



# METS - Basics

## ContentFiles (Listing)

List of content files, which contain metadata:  
checksum, file size, creation date/time

Files can be arranged in (hierarchical) groups

Metadata can be attached to each file

Content itself can be included into METS-file  
(base64 encoded) or referenced using XLink

# METS - Basics

## ContentFiles (Listing)

### Example:

```
<METS:fileSec>
  <METS:fileGrp>
    <METS:file ID="bitonal0001" MIMETYPE="image/tiff">
      <METS:FLocat LOCTYPE="OTHER" xlink:href="file://./00000001.tif"/>
    </METS:file>
    <METS:file ID="bitonal0002" MIMETYPE="image/tiff">
      </METS:file>
    </METS:fileGrp>
  </METS:fileSec>
```

# METS

## Dateiinformatioren

Verknüpfung zwischen Dateiinformationen  
und Strukturen mittels XML-IDs:

```
<METS:div TYPE="page" ID="phys0002" DMDID="dmdphys0001">
```

```
<METS:fptr FILEID="bitonal0001"/>
```

```
</METS:div>
```

**File-Pointer**

```
<METS:file ID="bitonal0001" MIMETYPE="image/tiff">
```

```
<METS:FLocat LOCTYPE="OTHER" xlink:href="file://./00000001.tif"/>
```

```
</METS:file>
```



# METS - Basics

## Descriptive Metadata

### Example:

```
<METS:dmdSec ID="dmdlog0001">  
  <METS:mdRef MDTYPE="OTHER" LOCTYPE="URN">  
    http://opac.your.library.de/catalognr=xxx  
  </METS:mdRef>  
</METS:dmdSec>
```



# METS - Basics

## Descriptive Metadata

### Example:

```
<METS:dmdSec ID="dmdlog0001">  
  <METS:mdWrap MDTYPE="DC">  
    <METS:xmlData>  
      <dc:title>...</dc:title>  
      .....  
      .....  
    </METS:xmlData>  
  </METS:mdWrap>  
</METS:dmdSec>
```



# METS - Basics

## Descriptive Metadata

Associated with many METS components:

- Node in structural map

- ContentFiles

Metadata can be internal (as XML or binary) or external (Xlink for referencing)

Different Metadata schemas can be used (extensions schemas) as MODS, DublinCore etc...



# METS - Basics

## Administrative Metadata

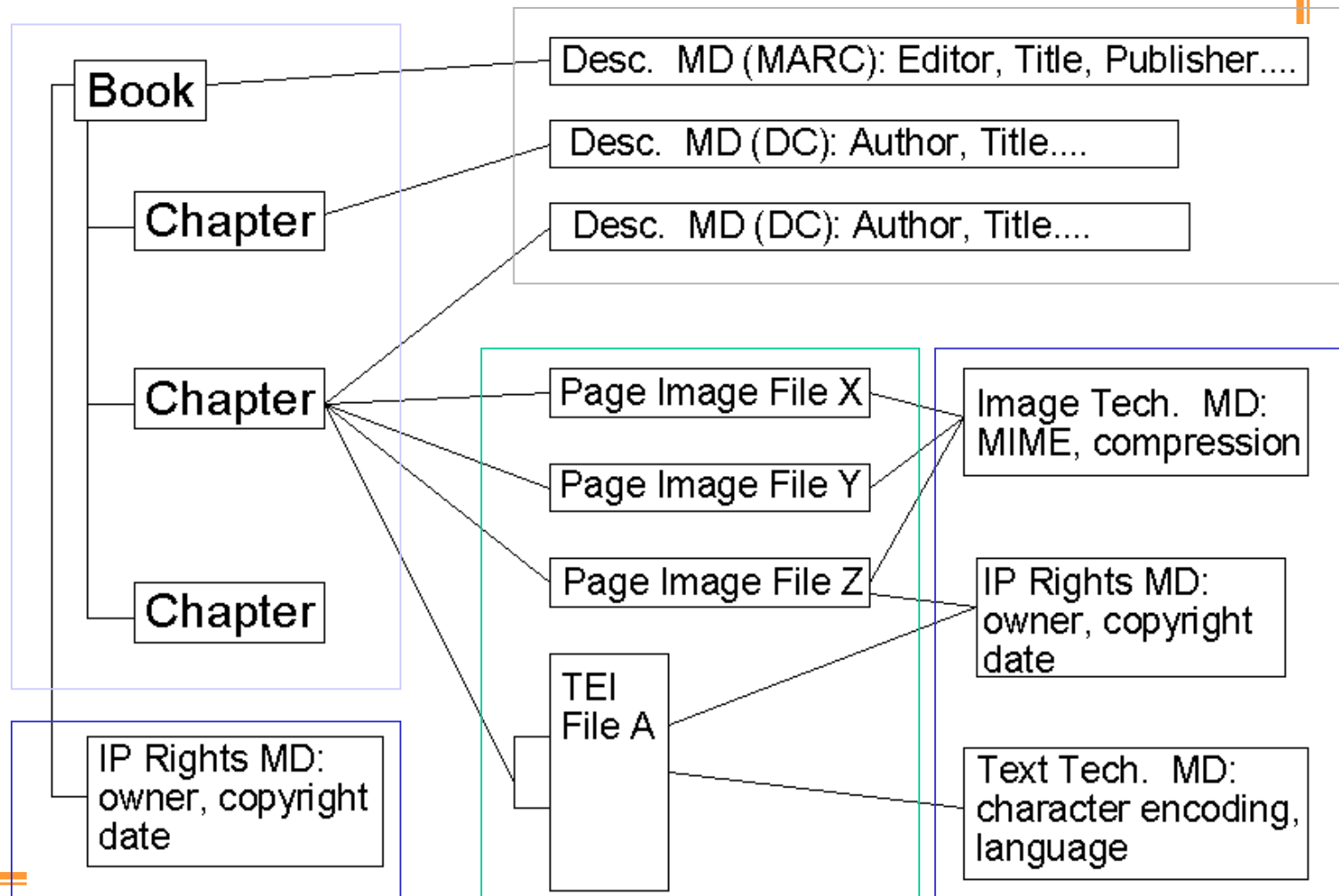
As descriptive metadata but:

4 types of administrative metadata:

- Technical
- Rights
- Source
- Digital Provenance



# METS - Basics





# METS – Extension Schemas

## Descriptive Metadata

DublinCore

MARC

MODS

## Administrative Metadata

Technical: image, text, audio, video

IP Rights: XrML, ODRL, MPEG 21



# METS – Controlled Vocabularies

Metadata Types

Files Address Types: xptr , time-codes etc.

METS-profiles



## METS – Profiles

“METS Profiles are intended to describe a class of METS documents in sufficient detail to provide both document authors and programmers the guidance they require to create and process METS documents conforming with a particular profile.”

A profile is expressed as an XML document. There is a schema for this purpose.



## METS – Profiles

Not machine readable.

Standardized form for documentation

Profiles are freely downloadable from METS-website (e.g. for re-use)

Profiles contain at least one example document



# METS – Profiles

13 components:

1. Unique URI
2. Short Title
3. Abstract
4. Date and time of creation
5. Contact Information
6. Related profiles



## METS – Profiles

13 components:

7. Extension schemas used
8. Rules of description
9. Controlled vocabularies used
10. Structural requirements
11. Technical requirements
12. Tools and applications
13. Sample document



## METS – Profiles

13 components:

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# METS – Profiles

Currently 6 profiles registered

[http://www.loc.gov/standards/mets/  
mets-profiles.html](http://www.loc.gov/standards/mets/mets-profiles.html)



## METS – Usage at GDZ

METS for retrodigitization

Allows flexible structure:

- Logical structure (monograph, chapters....)

- Physical structure (pages, columns)

- Both structures are linked to each other



## METS – Usage at GDZ

METS for retrodigitization

Multiple files for individual pages:

File Groups can be used to group files for single pages (e.g. high and low resolution versions)



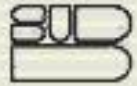
## METS – Usage at GDZ

METS for retrodigitization

Flexible metadata support

Using MODS for descriptive Metadata

Using MIX for technical metadata (images)



# The end

<http://www.loc.gov/standards/mets>