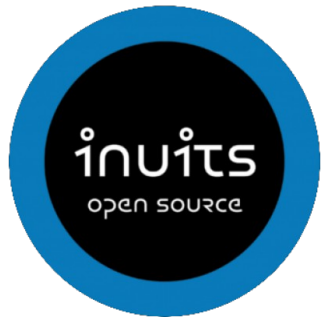




MediaMosa

The Drupal Digital Asset Management System



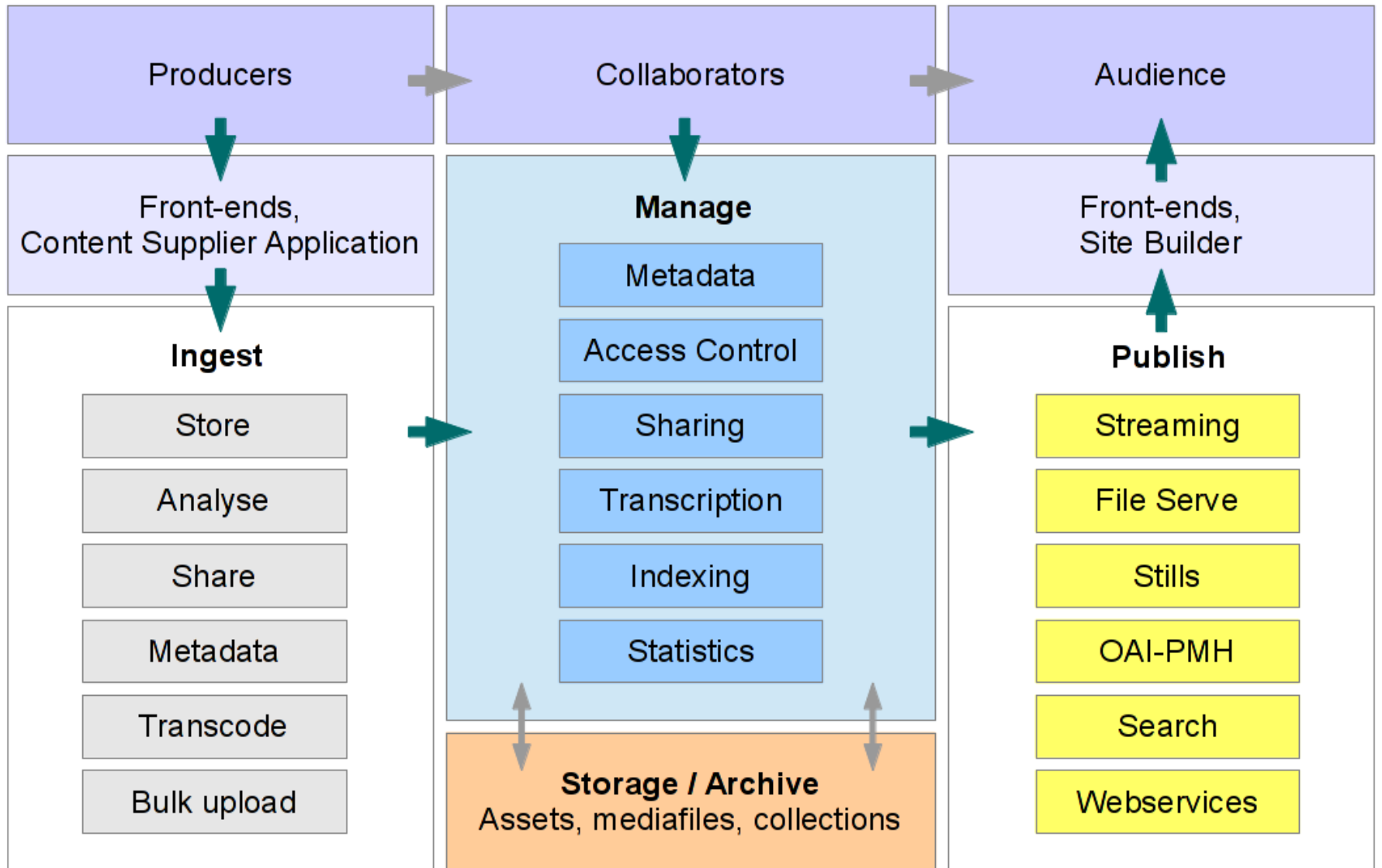
Michel van de Ven - uid 28913
Inuits / MediaMosa Foundation



AMPLEXOR



Digital Asset Management with MediaMosa

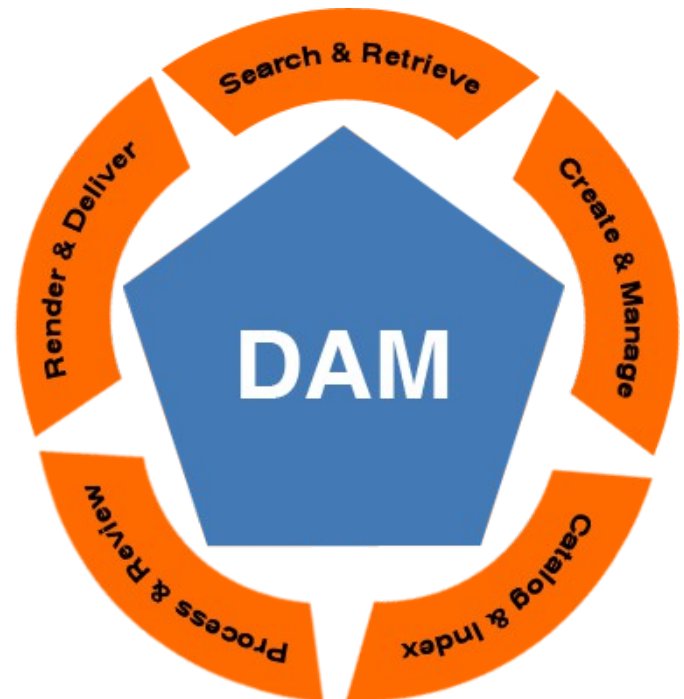


MediaMosa 101

- MediaMosa is built with Drupal (7.x)
- MediaMosa is a
 - Digital Asset Management System (DAM)
 - Media Asset Management System (MAM)
 - Video Distribution System
 - Document Management System
- Generic distributed database with metadata
- MediaMosa is a media services back-end, providing an API of 180+ webservice

MediaMosa is a DAM

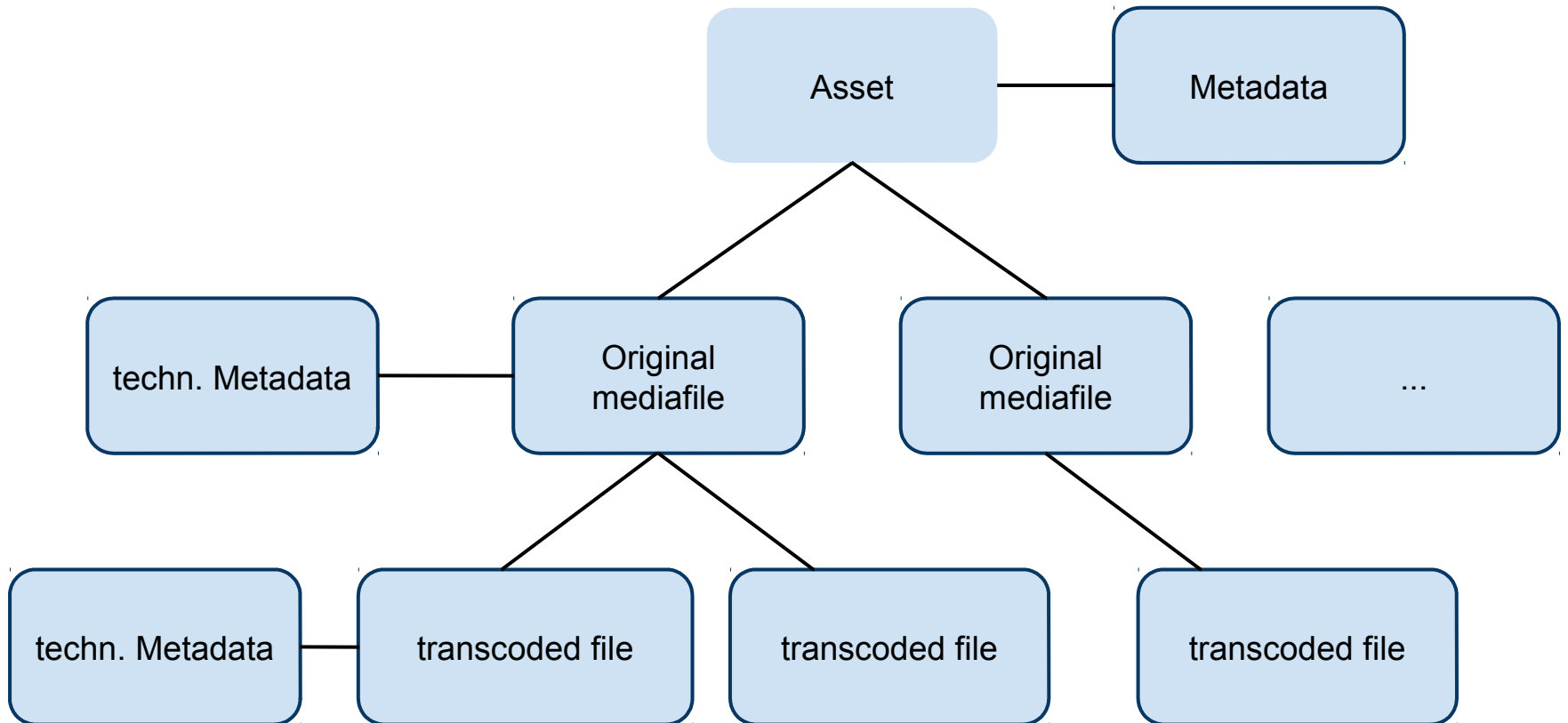
- Storage and retrieval of any digital asset
- Metadata functionality for any digital asset
- Native functionality for specific content types:
 - Video, audio: transcoding, transcription, players
 - images: conversions
 - PDF: pdf2txt for full-text indexing, viewer



Assets, Mediafiles and Collections

An **asset** in MediaMosa is an object with

- Standardised Metadata
- A collection of original mediafiles with technical metadata
- Transcoded / derived mediafiles with technical metadata



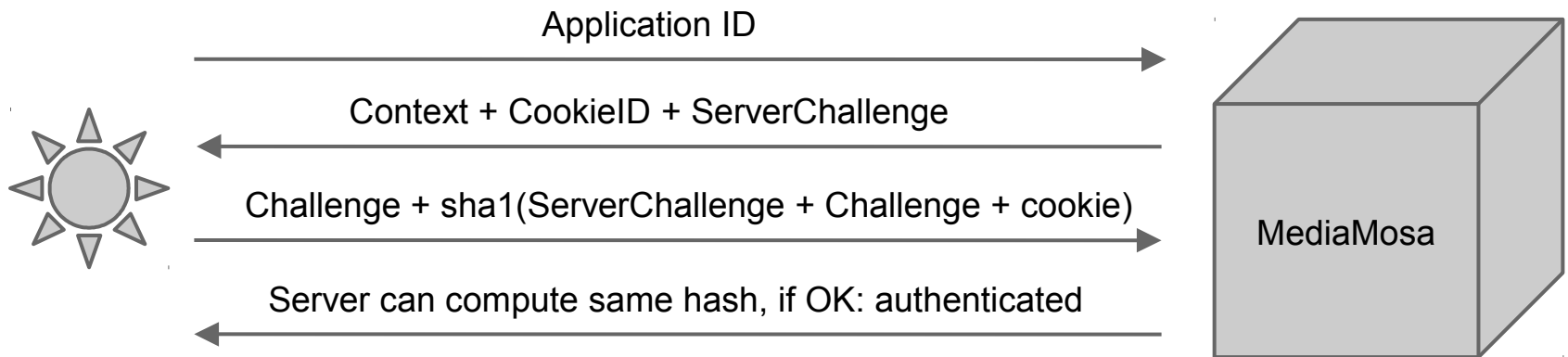
Metadata Formats



- Supported standards:
 - Dublin Core: video, images, web pages, and physical resources like books, artworks, manuscripts
 - Qualified Dublin Core: refined and expanded DC
 - IEEE LOM: Learning Object Metadata
 - MAWG: W3C Ontology for Media Resources 1.0
 - CZP: local Dutch standard (deprecated)
- Built-in metadata formats can be extended and modified
- New metadata formats can be added

Authentication

- MediaMosa authenticates applications, not users (!)
- DBUS handshake used to establish trust between front-end and back-end
- Challenge-Response with secure hashing, no encrypted link necessary
- Handshake yields cookie that allows API calls to be made

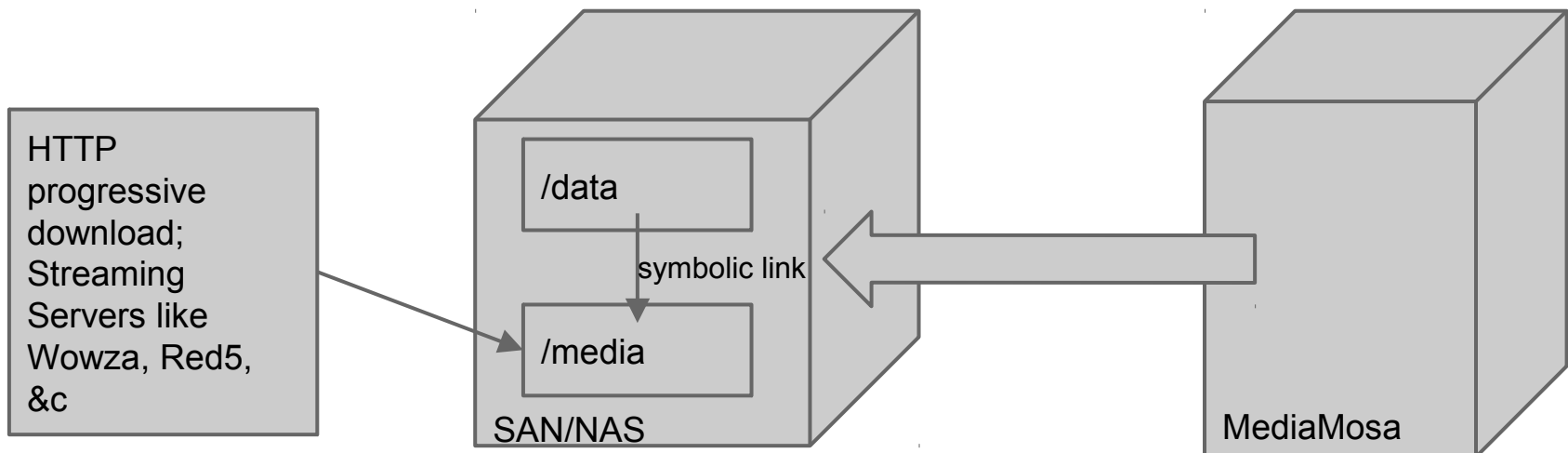


Authorisation

- Authentication & Authorisation
- Access Control Lists (ACLs)
 - Users: e.g. erik@naggum.no
 - Domains: e.g. @foundation.mediamosa.org
 - Realms: e.g. ASelect, OpenID, DigID, UiTiD, FB, G+ &c.
 - Groups of the above: Users, Domains & Realms
 - Restriction on start and end date/times
- Authorisation enforced on media play/download
- Front-end restricts access to metadata
- Pure access control, no read/write/... ACLs (yet)

Authorisation - tickets

- Ticket system with symlinks for playing
 - DRM / authorisation normally done by plugins in streaming server → Streaming server lock-in
 - MM does not need this → streaming server independent
 - Solution using expiring symbolic links



Authorisation - tickets

- Default expiry time of tickets: 20 minutes
- Tickets versus permanent public links
 - Ticket:
<http://mediamosa.org/media/ticket/<hash>>
 - Permanent public link:
<http://mediamosa.org/media/<mediafile-id>>

Search

- Contextual Query Language (CQL)

- A formal language for representing queries to information retrieval systems.

- dc.title any fish
- dc.title any fish or dc.creator any sanderson
- dc.title any fish sortBy dc.date/sort.ascending

- Search/Retrieve via URL (SRU/SRW)

- <http://www.loc.gov/standards/sru/specs/cql.html>

- Apache SOLR used for indexing / searching

- <http://lucene.apache.org/solr>



LIBRARY OF
CONGRESS



OAI-PMH



- Open Archives Initiative - Protocol for Metadata Harvesting
<http://www.openarchives.org>
- Provider is available, a harvester is on the roadmap (was built for NIBG Ed*it platform, not contributed yet)
- Exposes all asset metadata, but not the associated mediafiles.
 - But play URL can be part of that metadata

MediaMosa Features & Services

- Transcoding of almost any video/audio format using FFmpeg
 - Use of predefined transcoding profiles.
 - Support for literally hundreds of (open) formats.
- Distributed Job Processing Architecture
 - Master has knowledge of slaves and number of cores per slave
 - Master distributes jobs to slaves
 - Slave runs FFmpeg with profile for transcoding / stills
- Uploads: POST, PUT, (S)FTP



MediaMosa Features & Services

- Out-of-the box: HTTP progressive download, so it “just works” (YouTube)
 - This is by design: every institution has its own requirements for this, or even an existing solution.
 - Dedicated streaming solutions can be integrated with MediaMosa
- Notification infrastructure
- Logging capabilities
- Statistics gathering and reporting
- Unit Tests across the board

MediaMosa API

- Online docs: <http://mediamosa.org/api>
- Also available locally in MediaMosa:
`/admin/mediamosa/browse/restcall`
- RESTful API: URL in, XML out (JSON)

MediaMosa API

- Mediamosa 3.0
- Rest Calls
- Constants
- Files
- Functions
- Globals
- Topics

Search Mediamosa 3.0

Function, file, or topic: *

Search

Home ▶ About ▶ Api

Api

Mediamosa 1.7.5

Mediamosa 2.1

Mediamosa 2.2

Mediamosa 2.3

Mediamosa 3.0

REST call	Class	Type
acl/app	mediamosa_rest_call_acl_get_apps	GET
app/quota	mediamosa_rest_call_app_get_quota	GET
asset	mediamosa_rest_call_asset_search	GET
asset/\$asset_id	mediamosa_rest_call_asset_get	GET
asset/\$asset_id	mediamosa_rest_call_asset_update	POST
asset/\$asset_id/acl	mediamosa_rest_call_acl_asset_get_rights	GET
asset/\$asset_id/acl	mediamosa_rest_call_acl_asset_set_rights	POST
asset/\$asset_id/acl/delete	mediamosa_rest_call_acl_asset_delete_rights	POST
asset/\$asset_id/collection	mediamosa_rest_call_collection_search_asset	GET

MediaMosa Apps

- **MediaMosa Site Builder**
 - Drupal 7 front-end with Views and Media modules
 - Integration with MediaMosa REST API
 - Great starting point for building new front-ends
- **Content Supplier Application**
 - Drupal 6 front-end for bulk operations
 - Deprecated in MediaMosa 3.5: will become part of Site Builder
- **Administrative Back-end**
 - Administer & Configure the MediaMosa service in the Drupal admin interface

Operational



- Runs on standard LAMP stack: GNU/Linux, Apache, MariaDB, PHP.
- But also: FreeBSD, OpenBSD, Nginx, Lighttpd, MariaDB, Varnish, memcached, MongoDB, &c.
- Apply existing knowledge for scaling up and out; to achieve redundancy, availability &c.
- In production since 2008
- Scales up from a laptop with a USB memory stick, to anything.

Architectural Principles



- Open Source (GPLv2)
- Open Standards
- Open Protocols
- Drupal used as Web Application Framework
- Drupal used to build front-ends
- But any front-end technology is possible:
Java, .NET, Blackboard, Ruby on Rails,
node.js, Lisp, Android, iOS, &c
as long as it can do REST.

Architectural Principles

- Service Oriented Architecture (SOA)
- Representational State Transfer (REST)
- UNIX Design Principles
<http://www.faqs.org/docs/artu/ch01s06.html>
- Worse is better (Less is more, KISS)
<http://www.jwz.org/doc/worse-is-better.html>
- Modifiable & Self Documenting: "Use the Source, Luke."



Open Source

- MediaMosa Foundation est. 2013
 - Current Board: SURFnet, Kennisnet, Inuits.
 - Goals: promote software, bind community, gather funding, safeguard continuity and development, world domination
 - Currently establishing Member Council
 - Organise international MediaMosa event
- Currently using a Cathedral model, will transfer to Bazaar model as community matures

Users, builders & thinkers

- Acquia: DAM offering and video services:
Acquia Media Drive, NBC Sports, Hollyscoop
- Archipel, Boekentoren UGent, Digipolis
Antwerpen / Gent: central DAM
- Surfnet (NL): original development, for
surfmedia.nl & research platform
- Uni Twente, Uni Amsterdam, Uni Groningen,
Avans HS, Uni Leuven, Uni Gent, Uni Oslo
- NIBG: Ed*it platform, ed-it.nu
- Kennisnet: teleblik.nl, leraar24.nl, e-tv.nl, s-tv.nl

Users, builders & thinkers

- Cineca: linking 51 Italian universities with lecture recording system (Matteo Bertazzo)
<http://mediamosa.org/node/208665>
- University of Berkely chose not to use MediaMosa for Opencast / Matterhorn, but still uses it as an architectural reference (and MediaMosa can be used as a DAM back-end for the ingester anyway)
- accessibility.nl / webrichtlijnen.nl / Bartimeus: looking for European funding to make MediaMosa WCAG2 compliant

Roadmap

- MediaMosa 3.5 (2013Q3)
 - Focus: flexible workflows, speech-to-text, PostgreSQL support, Amazon S3 Storage support.
- MediaMosa 3.6 (2013Q4)
 - Focus: Improve Job Scheduling subsystem.
- MediaMosa 4.0 (2014)
 - Focus: Drupal 8, Document Oriented storage support.

MediaMosa 4.0 & Drupal 8

- Conversion D7 naar D8 API; major task
- Connect to REST layer in Symfony to gain D8 features; must-have for upgrade; major task
- Adopt Configuration Management Initiative (CMI); must-have, medium complexity
- Convert MediaMosa assets to D8 entities to improve integration with other modules; should-have, major complexity
- Possibly connect to standard Views in D8 from the MediaMosa Contruction Kit; would require Entity support
- Create a proper Drupal Distribution for MediaMosa; together with Acquia
- We're looking for hackers!

MediaSalsa

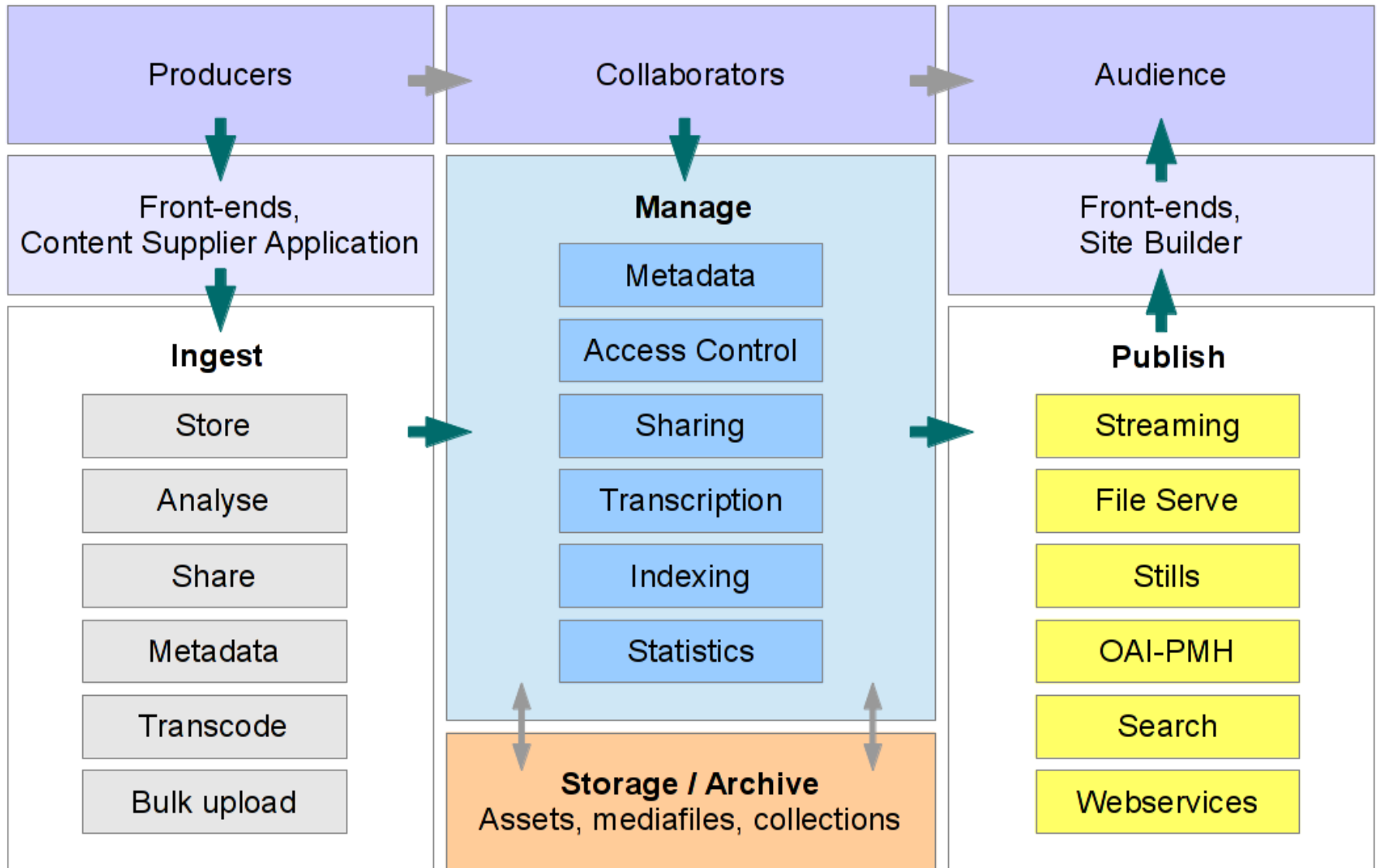


- MediaMosa as-a-service: Serviced by Inuits
- We take care of:
 - System and application management
 - Software upgrades and security patches
 - Scaling processing power, storage and network bandwidth, as needed
 - Monitoring and tuning of the entire software stack
 - Capacity planning
 - Making regular backups and restoring data when needed
- You get:
 - A well-priced, predictable, highly available Digital Asset Management service

References

- <https://github.com/mediamosa>
Canonical source code repository
- <http://mediamosa.org/api>
Online version of the RESTful API reference guide
- <http://mediamosa.org/trac>
MediaMosa ticket system and quick guides
- **MediaMosa SDK**
The MediaMosa Software Development Kit: Connector, testbed, debug
- **MediaMosa CK**
The MediaMosa Construction Kit: Drupal 6 & 7 modules (Media 2.x, Views 3.x)
- **MediaMosa Site Builder**
Our showcase and starting kit for front-end websites
- **MediaMosa Google+ Community**

Digital Asset Management with MediaMosa



Q&A



Inuits
MediaMosa Foundation
Michel van de Ven
<fzappa@inuits.eu>

