BSB Bayerische StaatsBibliothek
Information in erster Linie

Software-Development at the MDZ

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Software developed at the MDZ

- Webapps / Viewer
- Data-Processing / Workflows
- APIs / REST-Servers
- Reusable components / libraries


```
@context: "http://iiif.io/api/presentation/2/context.json",
@type: "sc:Manifest",
@id: "https://api.digitale-sammlungen.de/iiif/presentation/v2/bsb00032722/manifest",
label: "Ottheinrich-Bibel, Bd. 3: Lk 5,26 - Joh 5,18 - BSB Cgm 8010(3",
metadata: [
  - {
      - label: [
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            },
          - {
              @language: "zh",
              @value: "書名"
            },
          - {
              @language: "en",
              @value: "Title"
            }
        ],
        value: "Ottheinrich-Bibel, Bd. 3: Lk 5,26 - Joh 5,18 - BSB Cgm 8010(3"
    },
  - {
      - label: [
          - {
              @language: "de",
              @value: "Entstehung"
            },
          - {
              @language: "zh",
              @value: "生成"
            },
          - {
              @language: "en",
              @value: "Creation"
            }
        ],
        value: "[S.l.] Regensburger Raum, 15./16. Jh."
    },
  - {
      - label: [
          - {
```
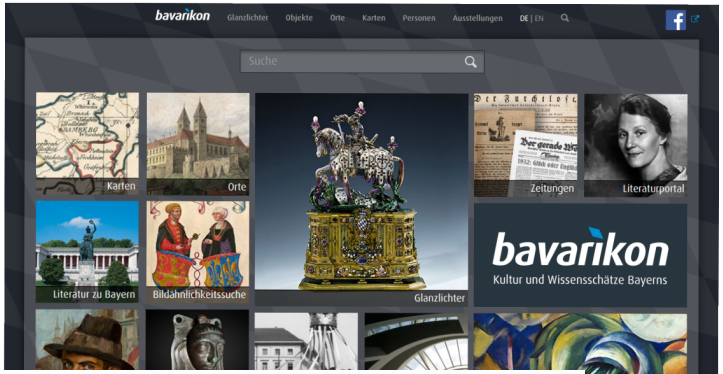


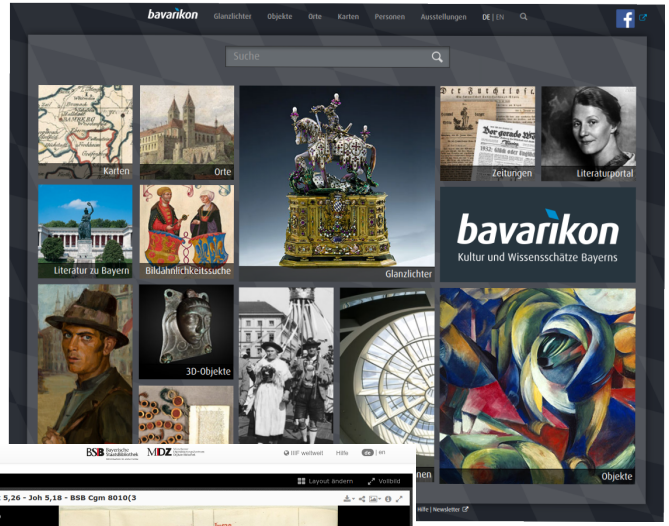


Webapps / Viewer

- Technologies:
  Java (Spring Boot), HTML/CSS/Bootstrap 4, JavaScript, React
  Nginx-LoadBalancer/-Caching,
  Debian-Linux-Server

- Viewer: Mirador (http://projectmirador.org/)

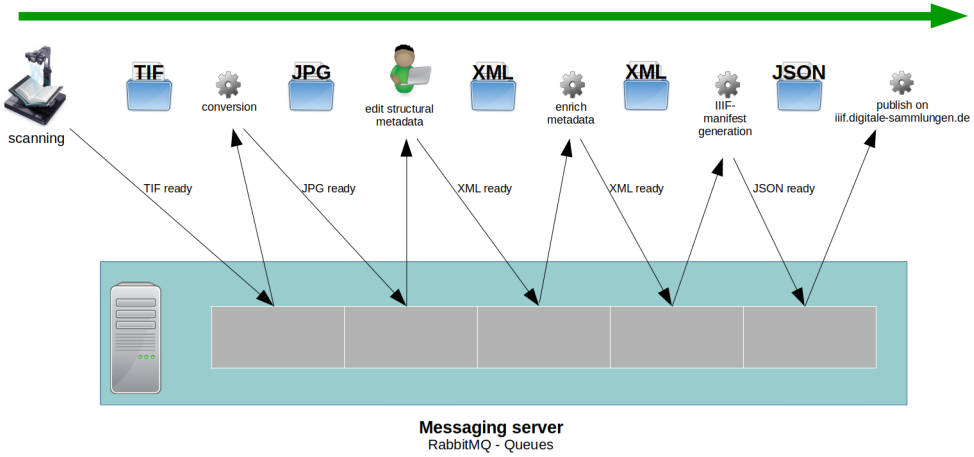
- cudami Object Management and CMS
  (OpenSource at https://github.com/dbmdz/cudami)



Data-Processing / Workflows

- Technologies:
  Java, Python
  Rabbit MQ (Message Queue)
  Debian-Linux-Server

- Flusswerk-Workflow-Engine (OpenSource at GitHub: https://github.com/dbmdz/flusswerk)



APIs / REST-Servers

- Technologies:
  Java (Spring Boot)
  neo4j (Graph database), Solr (Search Server), PostgreSql (Relational database)
  Debian-Linux-Server

- Hymir IIIF-Server (OpenSource at GitHub: https://github.com/dbmdz/iiif-server-hymir)
- Euphoria Streaming Server (OpenSource at https://github.com/dbmdz/streaming-server-euphoria)
- DZP (Data Access Platform) (Inhouse)

You can access the IIIF API endpoints of the Bavarian State Library at the following endpoints:

- Presentation API: https://api.digitale-sammlungen.de/iiif/presentation/v2/{object_id}/manifest
- Image API: https://api.digitale-sammlungen.de/iiif/image/v2/{image_id}

Reusable components / libraries

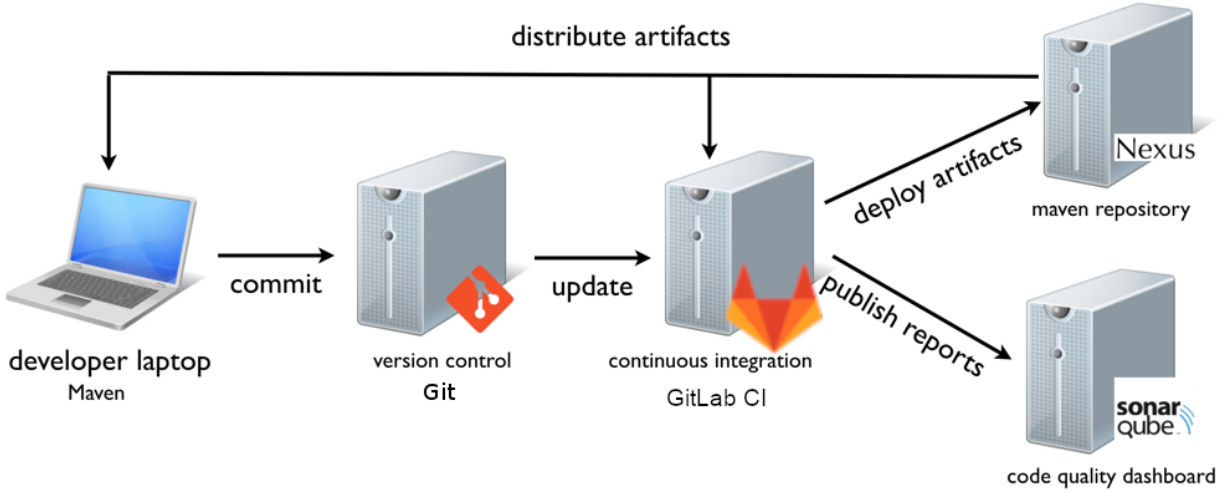
- Technologies:
  Java, C, Python

- OpenSource at GitHub: https://github.com/dbmdz

- Examples
  - efficient OCR-Storage Solr-Plugin
  - JPEG2000, TurboJPEG image processing
  - File access libraries
  - IIIF-presentation and -image libraries

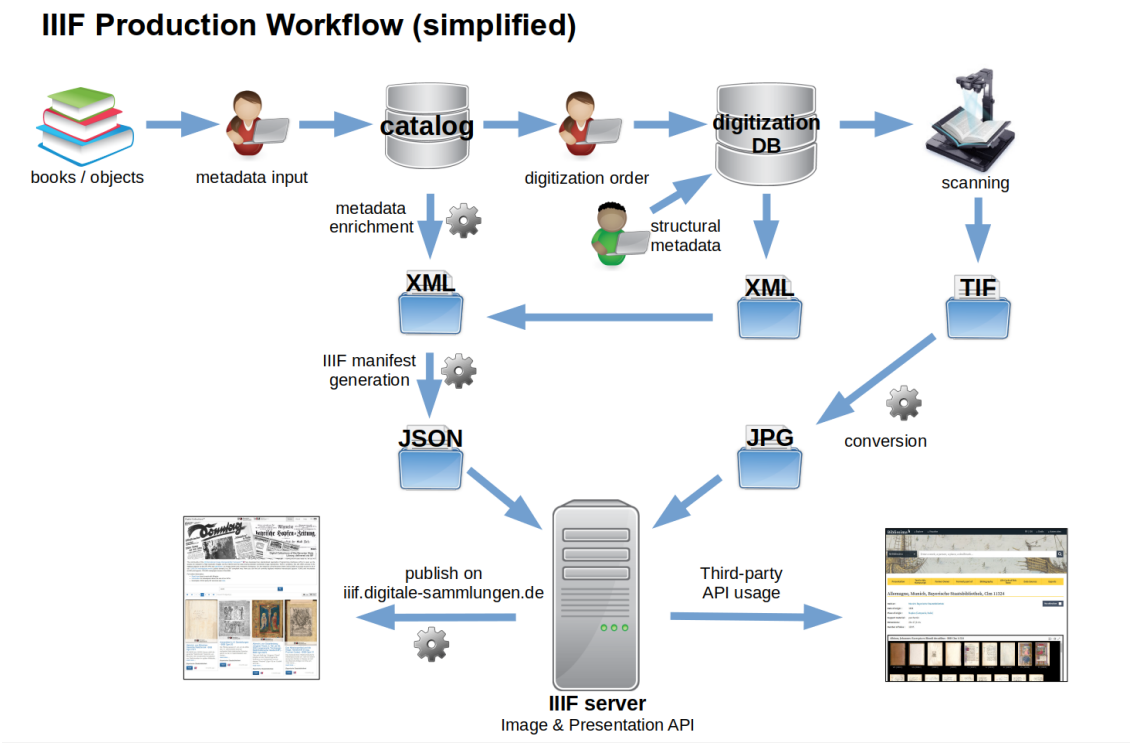
Software Development Process

- Continuous Integration:
  - Local Java development with OpenJDK 11, Apache Maven Buildtool and IntelliJ/Netbeans IDEs
  - Code in Git (GitLab/GitHub)
  - CI-Builds: GitLab CI
  - Quality-checks with Maven plugins (e.g. checkstyle, spotbugs) and Quality tools: dependabot, SonarQube
  - Built software-artifacts in Nexus Repository



IIIF Production Process

- Images from scanning to Web



Lessons Learned

- **Legacy** architecture dictates a lot of design decisions:
  Store everything on the NAS, JPEG as the source format

- Performance bottleneck is often not the image transformations, but the transfer from network storage → **Caching** is important at every layer, not just the frontend

- Generating new formats for hundreds of thousands of objects can lead to some nasty surprises: **Corrupted/Invalid/Duplicate legacy data**…

- A common, **standardized API for serving digitized objects** is a game changer → “IIIFify all the things”, reduced maintenance costs, better monitoring, easier sharing, collaboration with the community

IIIF Roadmap

- Provide IIIF access to all copyright-free objects (around 2 Mio.)
- Define and add machine-readable IIIF core metadata
  to make filtering (e.g. in Bookshelf webapp) and discovery easier
- Expose IIIF Content Search API endpoints for all OCRed objects
- Introduce collections to group all manifests semantically
- Offer support for annotating content, both privately and publicly
- Improve and maintain OpenSource products: Hymir IIIF Server,
  Java IIIF Image and Presentation APIs, IIIF Bookshelf
- Continue with participation in development of Mirador

Links

Web Services

- BSB IIIF Portal: https://iiif.digitale-sammlungen.de
- IIIF Presentation API endpoint: https://api.digitale-sammlungen.de/iiif/presentation/v2/{object_id}/manifest
- IIIF Image API endpoint: https://api.digitale-sammlungen.de/iiif/image/v2/{image_id}

BSB Open Source Products

- Java-Library IIIF Image API: https://github.com/dbmdz/iiif-image-api
- Java-Library IIIF Presentation API: https://github.com/dbmdz/iiif-presentation-api
- IIIF Server Demo: https://github.com/dbmdz/iiif-server-demo
- IIIF Server “Hymir”: https://github.com/dbmdz/iiif-server-hymir
- IIIF Bookshelf Webapp: https://github.com/dbmdz/iiif-bookshelf-webapp
- BSB Mirador-Plugins: https://github.com/dbmdz/mirador-plugins