

Digitization and Integration of Reference Sections for Tissue Samples

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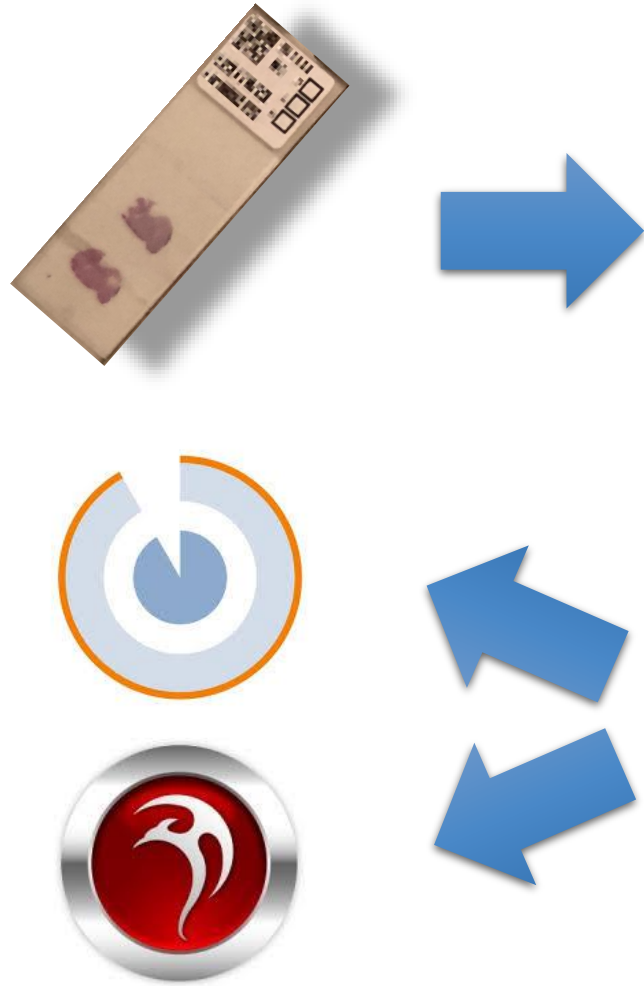
- ▶ Document tissue sample status
 - Systematic creation of reference sections
 - at sample reception
 - after each sample release
- ▶ Have digital representation of reference section
- ▶ Long-term archive image
- ▶ Integrate with sample administration (BBMS)
- ▶ Support workflow for reference section evaluation

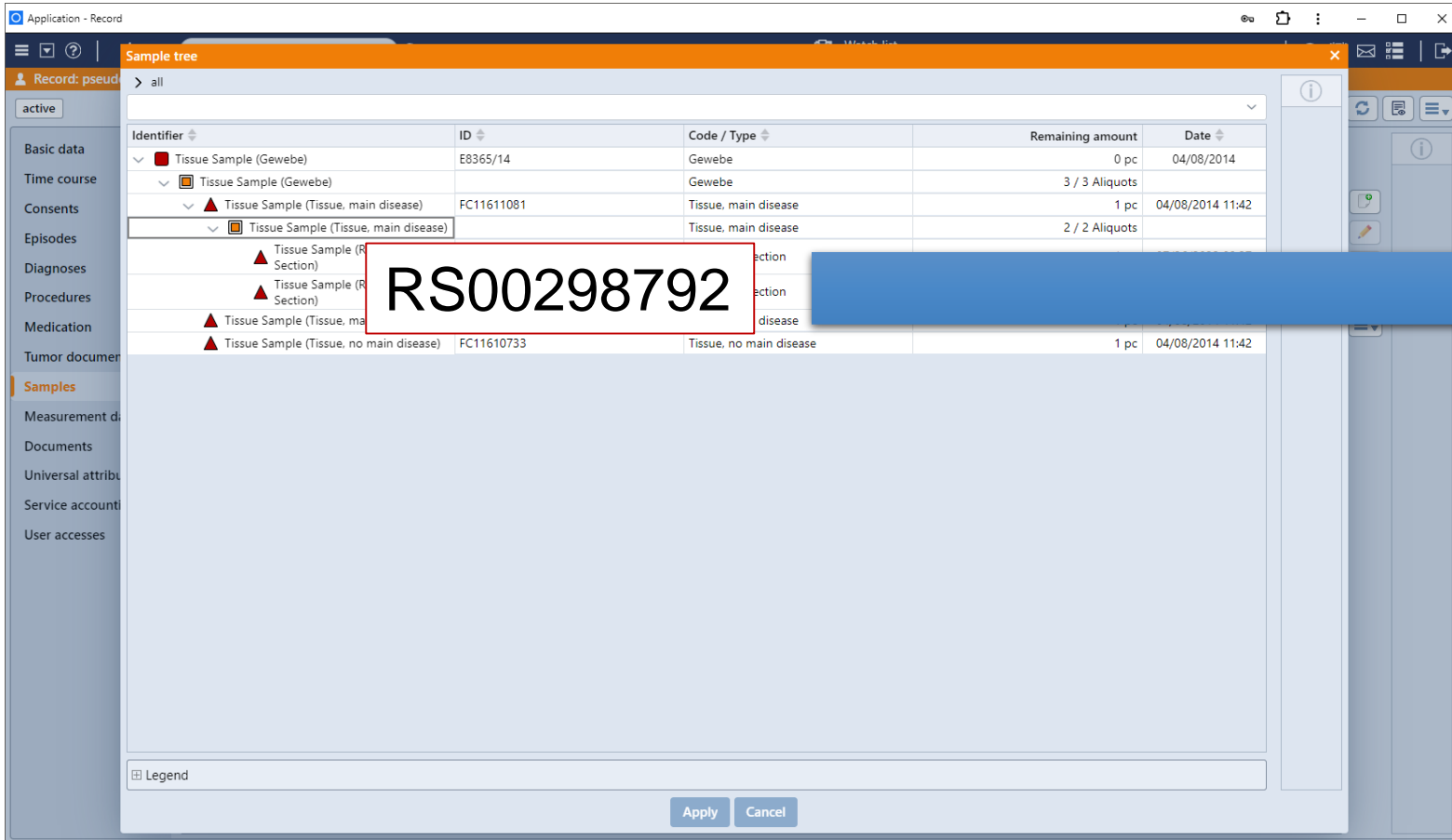


The Challenge



The Challenge





Application - Record

Record: pseud

active

Basic data

Time course

Consents

Episodes

Diagnoses

Procedures

Medication

Tumor document

Samples

Measurement data

Documents

Universal attributes

Service accounts

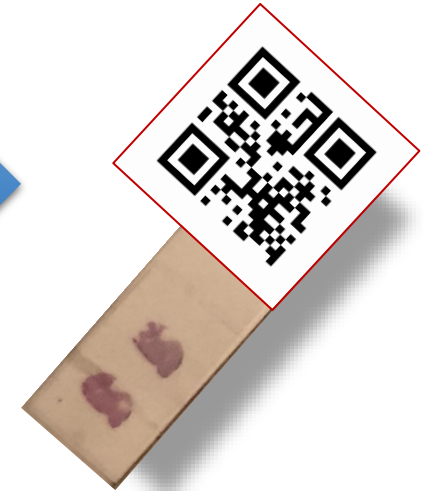
User accesses

Sample tree

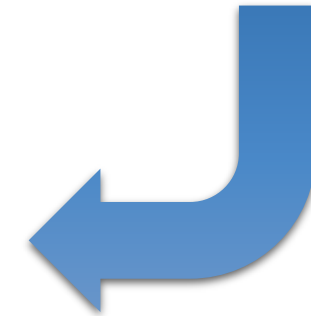
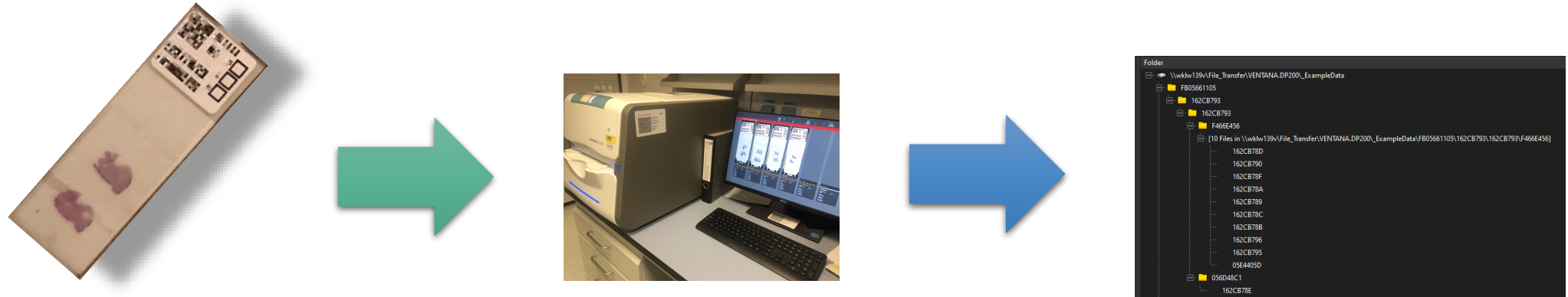
Identifier	ID	Code / Type	Remaining amount	Date
▼ Tissue Sample (Gewebe)	E8365/14	Gewebe	0 pc	04/08/2014
▼ Tissue Sample (Gewebe)		Gewebe	3 / 3 Aliquots	
▼ ▲ Tissue Sample (Tissue, main disease)	FC11611081	Tissue, main disease	1 pc	04/08/2014 11:42
▼ Tissue Sample (Tissue, main disease)		Tissue, main disease	2 / 2 Aliquots	
▲ Tissue Sample (R Section)		ection		
▲ Tissue Sample (R Section)		ection		
▲ Tissue Sample (Tissue, ma disease)		disease		
▲ Tissue Sample (Tissue, no main disease)	FC11610733	Tissue, no main disease	1 pc	04/08/2014 11:42

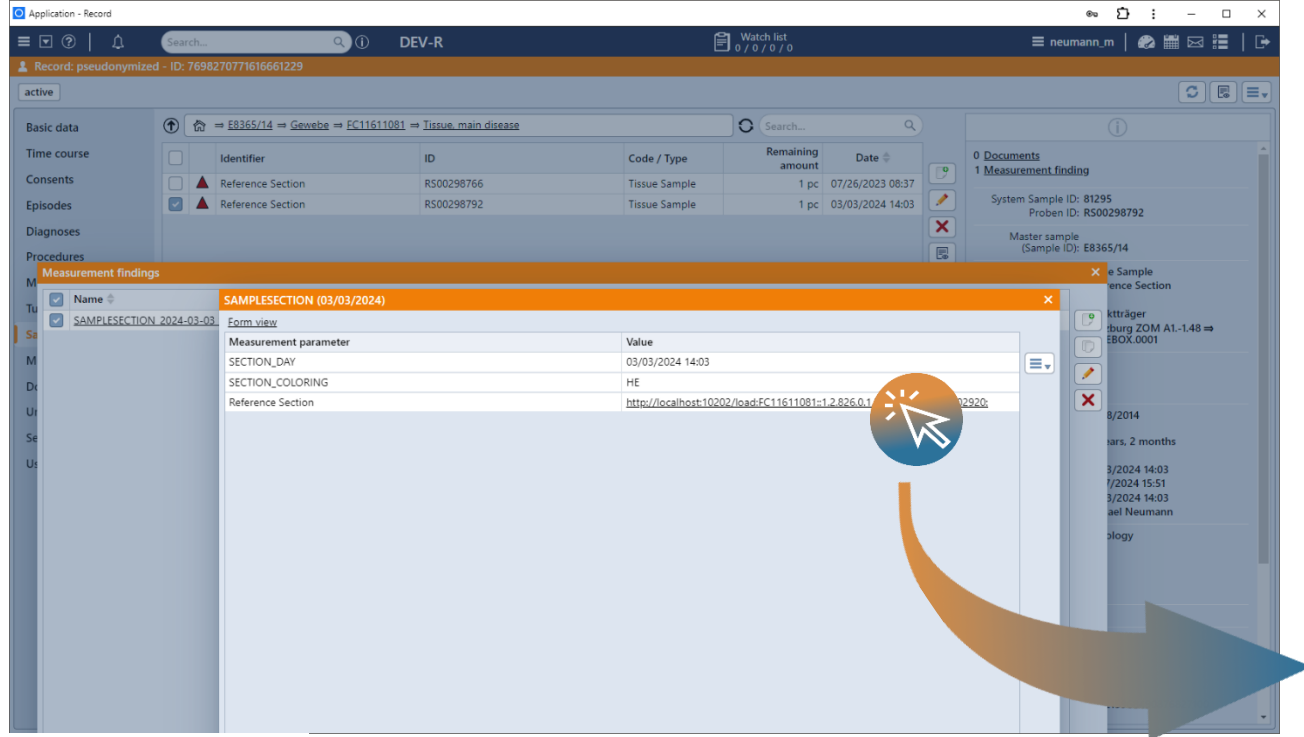
Legend

Apply Cancel



Automated Processing





Application - Record
DEV-R
Record: pseudonymized - ID: 7698270771616661229

Basic data
E8365/14 ⇒ Gewebe ⇒ FC11611081 ⇒ Tissue_main_disease

Identifier	ID	Code / Type	Remaining amount	Date
Reference Section	RS00298766	Tissue Sample	1 pc	07/26/2023 08:37
Reference Section	RS00298792	Tissue Sample	1 pc	03/03/2024 14:03

Measurement findings

Name	Value
SECTION_DAY	03/03/2024 14:03
SECTION_COLORING	HE
Reference Section	http://localhost:10202/load:FC11611081:1.2.826.0.1.30001.2.9250.30001.1.1

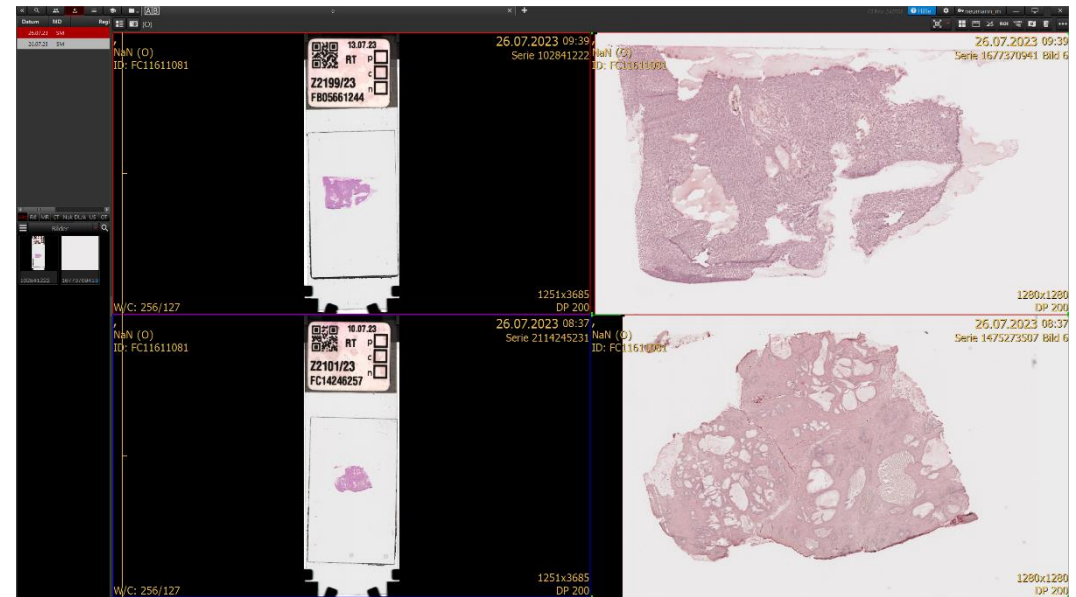


Image 1 (Left)	Image 2 (Right)
13.07.23 ZZ199/23 FB05661244	26.07.2023 09:39 Serie 1677370941
13.07.23 ZZ101/23 FC14246257	26.07.2023 08:37 Serie 2114245231



Next Step – CentraXX Workflow

Belegschnitt - Erstellung

Proben-ID | Belegschnitt-ID

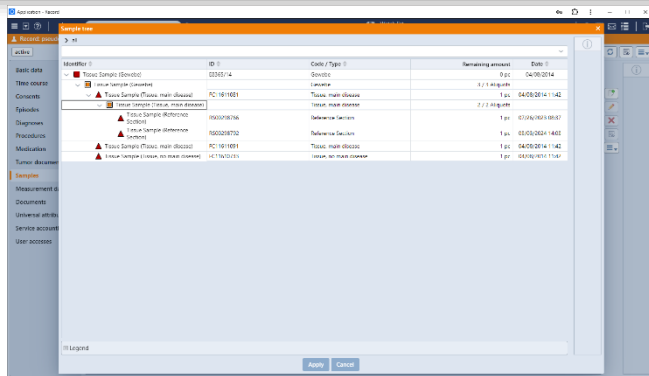
Aktivität abschließen Aktivität unterbrechen

FC78484874 FC76625252 FC74424552

Neuer Belegschnitt **E36465/19** Probe entfernen
WF00000060 – C5

Kein Belegschnitt: Begründung auswählen...

Belegschnitt-ID	Datum Uhrzeit	Färbung		
<input checked="" type="checkbox"/> RS66252426	16.12.2021 09:13:24	MASSON-GOLDNER	-	Etikett
<input type="checkbox"/> RS66252427	16.12.2021 09:54:18	HE	-	Etikett




Belegschnitt - Beurteilung

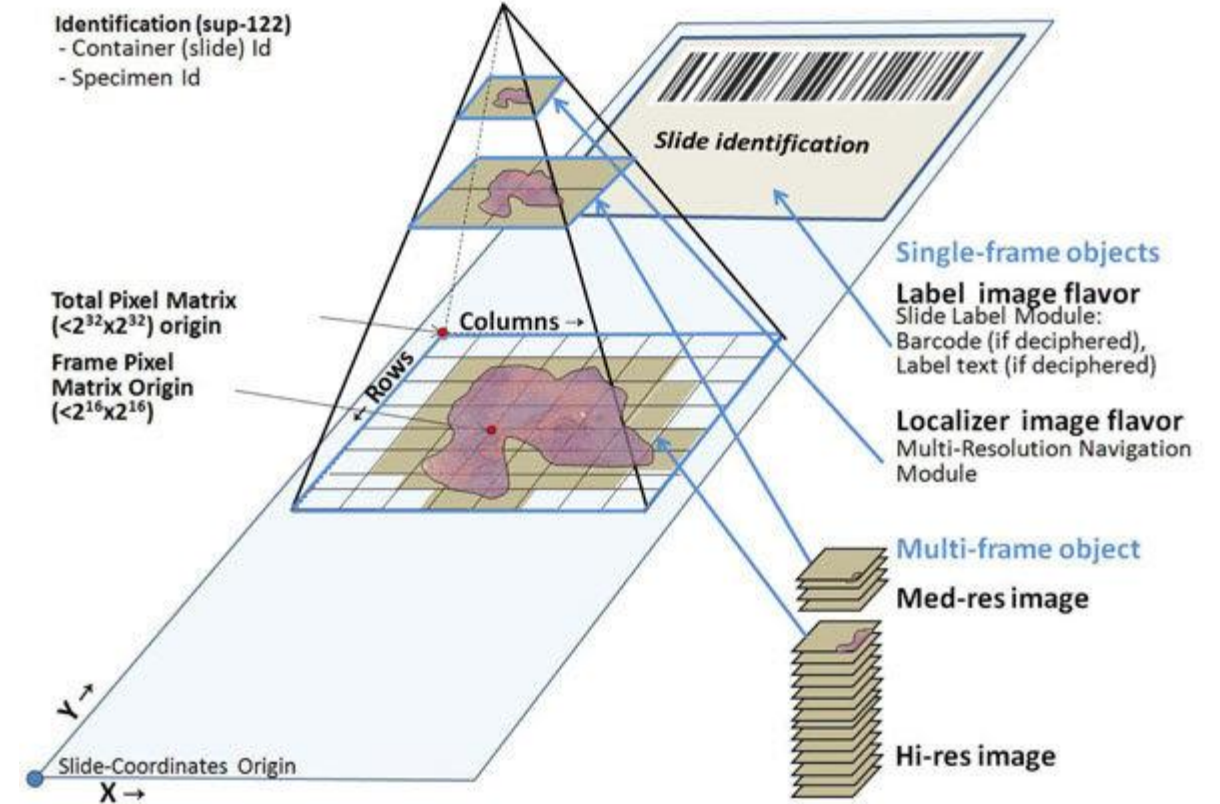
Eingang-Nr.	Probe	Belegschnitt	PACS	Box	Pos	Probenart	nicht beurteilbar Entsorgung neuer Auftrag	nicht verwendbar Entsorgung
E36465/19	FC76625252	RS66252427		Box 03-20	22	Auswahl...	<input type="checkbox"/>	<input type="checkbox"/>

Beurteilung speichern Abbruch

▶ Good to know...



- ▶ Pyramid of layers
 - resolution layers
 - zoom level
- ▶ Tiled Images at every layer
- ▶ 'Conventional' DICOM Viewer display tiled images sequentially
- ▶ 'WSI'-capable DICOM Viewer
QuPath 
<https://qupath.github.io/>



Daniel et al. (2011). Recent advances in standards for Collaborative Digital Anatomic Pathology. Diagnostic pathology. 6 Suppl 1. S17. 10.1186/1746-1596-6-S1-S17.

- ▶ Whole Slide Imaging
 - 6.500 Tissue Samples
 - ca. 500 MB per Reference Section Scan

=> 3,25 TB

- ▶ Radiology
 - 90.000 CT / MR Studies per year
 - ca. 700 MB (CT) / 200 MB (MR) per Study

=> 35 – 40 TB

- ▶ Robust, convenient, and safe way to
 - digitize, archive, and link reference sections to corresponding tissue samples
- ▶ Remaining risk
 - manual labelling of section slides
- ▶ Documented status of tissue samples
- ▶ Digitized reference sections
- ▶ Long term archival of digitized reference sections
- ▶ Support of (digitized) reference section evaluation

► Thank you for your attention

