MHH
**Medizinische Hochschule
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IT-Systems for Biobanking – A brief Overview

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Introduction

After a successful start the Hannover Unified Biobank (HUB) is expanding its infrastructure. Part of this process is the acquisition of new software components to support massive sample storage and data management. As a prequisite the requirements [1,2] were defined and an analysis of the German market for biobanking software [3] was done.

Methods

System analysis on the HUB requirements for a future proof biobank software has been done. Information on available software systems and the systems that are used by selected large European biobanks have been gathered using public accessible sources and market analysis.
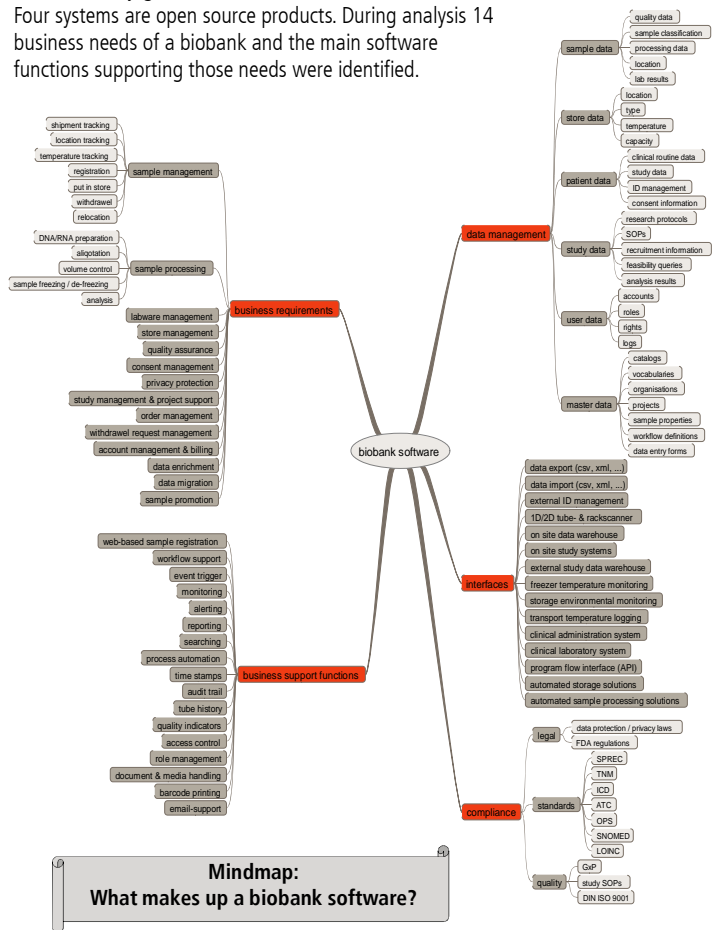
Findings:

38 software systems have been identified, which provide standard components for biobanking. Eight systems were available and jugded to be suited for the German market. Four systems are open source products. During analysis 14 business needs of a biobank and the main software functions supporting those needs were identified.

Which software are large european biobanks using?

Biobank	Country	Software
Biobank Suisse	Switzerland	CAISIS
BMBH: BioMaterialBank Heidelberg (cBMB)	Germany	Starlims
Hannover Unified Biobank (HUB)	Germany	MySamples / CentraXX
IBBL: Integrated BioBank of Luxembourg	Luxembourg	LABVANTAGE
IBDW: Interdisziplinäre Biomaterial- und Datenbank Würzburg (cBMB)	Germany	CentraXX
KI Biobank (Karolinska)	Sweden	SCARAB-LIMS + ELSA
Nationale Kohorte	Germany	CentraXX
P2N: PopGen 2.0 Netzwerk (cBMB)	Germany	CentraXX
RWTH: Aachen zentralisierte Biomaterialbank (cBMB)	Germany	Starlims
UK Biobank	UK	Nautilus
ZeBanC: Zentrale Biomaterialbank der Charité (cBMB)	Germany	CentraXX

What biobank software is available?

Commercial	Vendor/Provider	Country	Internet
BIGR Solutions Suite	GulfStream Bioinformatics	USA	www.gulfstreambio.com
BioTracer	CloudLIMS	USA	https://cloudlims.com/lims/overview.html
BSI	Information Management Services	USA	http://www.bsisystems.com/
CentraXX	Kairos	Germany	http://www.kairos-med.de/systemloesungen/centraxx-biobank-software/
C-line® control	ASKION GmbH	Germany	http://www.askion.com/
Cresalys	ALPHELYS, Alphametrix	France	http://www.alphelys.com
Easy Track 2D	TWIN HELIX S.R.L	Italy	http://www.twinhelix.eu/?act=products&sub=prodotto&prodotto_id=2415
eBioControl	Gefat-IT	Germany	http://www.ebiocontrol.de/ebc_gb.html
eurocryoDB	Fraunhofer IBMT (Custom Code)	Germany	http://www.eurocryo.de/
FreezerPro®	RuRo, Inc.	USA	http://ruro.com/software/freezerpro/overview
Freezerworks	Dataworks Development, Inc.	USA	http://www.freezerworks.com/
Investigate™	RemedyMD	USA	http://remedyinformatics.com/
ItemTracker	Itemtracker	UK	http://www.itemtracker.com/
Lab OS	soventec	Germany	http://www.soventec.de/company/index.php/de/lab-os.html
Labmatrix	BioFortis	USA	http://www.biofortis.com/next-generation-biobanking-platform/
LabVantage	Labvantage Solutions, Inc.	USA	http://www.labvantage.com/lims/biobanking
LabWare LIMS	LabWare, Inc.	USA	http://www.labware.com
Modul-Bio	Modul-Bio	France	http://modul-bio.com/
mysamples	myData	Germany	http://www.mysamples.de/
Nautilus	UpToData / Thermo Fischer Sceintific	Germany	http://www.uptodata.com/lims-en/products-en.html
noraybanks	noraybio	Spain	http://www.noraybio.com/en/products/noraybanks-en
ordoSYSTEM	Avalas	Germany	http://www.avalas.de/ordoSYSTEM-BioBanking.22.0.html
PathXL Biobank	PathXL	Ireland	http://www.pathxl.com/pathxl-research/pathxl-biobank
Pro-curo	Pro-curo Software Ltd	UK	http://www.pro-curo.com/
QualIS LIMS	Agaram Technologies	India	http://www.agaramtech.com/product/qualis-lims/overview.html
SampleNavigator	itemscope	Netherlands	http://www.samplenavigator.com/
Samples	Ziath inc.	UK	http://www.ziath.com/index.php/products/sample-management-software/
SampleWare	Biomatrica	USA	http://www.biomatrica.com/sampleware.php
SCARAB-LIMS	Karolinska Institute Stockholm	Sweden	http://ki.se/forskning/scarab-lims
SmartBiobank	AstridBio	Cananda	http://www.smartbiobank.com/
STARLIMS	Starlims Corporation (Abbott)	Germany	http://www.starlims.com/de-de/home/
Swisslab	Roche	Germany	http://www.swisslab.de/
TD Biobank	Technidata	France	http://www.biobank-network.com/en-us
Track-IT	Micronic	USA	http://micronic.com/product/track-it-sample-management-software
Open Source	**Vendor/Provider**	**Country**	**Internet**
ATiM	Canadian Tumor Repository Network	Canada	http://www.ctrnet.ca/atim
CAISIS	caisis.org	USA	http://www.caisis.org/
OBiBa BIMS	Obiba Consortium	Canada	http://www.obiba.org/
OpenSpecimen	Krishagni Solutions	India	http://www.catissueplus.org/

**Mindmap:
What makes up a biobank software?**

Summary & Discussion

Biobank software may address many different requirements. Our work does not claim to be exhaustive but gives a brief overview which functions are available and what can be necessary when choosing a software system for a biobank. It seems to be important from which corner of the triangle "storage, laboratory, data" you are moving towards biobanking, as the business needs that have been identified in our work may have different priorities in different biobanks. In a future work the available systems and biobanks could be analyzed further to detect and compare those individual key aspects.

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References
1 Tukacs, E. et al. (2012). Model requirements for Biobank Software Systems. Bioinformation 8(6): S. 290-2; http://www.ncbi.nlm.nih.gov/pubmed/22493540, Letzter Zugang: 2014-09-25
2 Prokosch, H. et al. (2010). Erstellung eines Anforderungskatalogs zur IT-Unterstützung von Biomaterialbanken und Analyse der derzeit in Deutschland verfügbaren IT-Werkzeuge zur Unterstützung des
   Managements von Biomaterialbanken - Teilprojekt 3 des TMF-Projekts V054-01 IT-Strategie - Abschlussbericht V2.7
3 European, Middle Eastern & African Society für Biopreservation & Biobanking (ESBB), Biobanking Software. http://www.esbb.org/market_fold/software.html Letzter Zugang: 2014-09-25.