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Rogatus - Questionnaire and Metadata Management System

Bundesministerium
für Bildung
und Forschung

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Agenda

- Introduction
- The current tool situation in DDI-L
- The Generic longitudinal business process model (GLBPM)
- Deriving software tools from the current models
- Introduction to Rogatus QMMS
- Rogatus QMMS toolset
- Example workflow
- Upcoming activities
- Q&A

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Introduction

- DIPF is a public service research institute located in Frankfurt am Main and Berlin (Germany)
- In 2007 DIPF started a research cluster called „Technology Based Assessment“ (DIPF/TBA) to accommodate the needs of technical assessment for educational research
- Currently the DIPF/TBA team consists of about 25 IT-professionals and seven psychometricians
- In January 2012 a spin-off company called TBA21 Assessment Systeme GmbH was started to offer the same services for the professional market
- All programming work for TBA21 is currently handled by cooperation partner OPIT Consulting Kft. in Hungary
- Original mission statement of DIPF/TBA: to consult and support German research institutions and universities when they want to implement computer-based testing

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Current tool situation for DDI-L

- A lot of metadata editing tools exist:
  - Questasy (CentERdata)
  - Colectica (Algenta = Colectica)
  - DDIEditor (Danish Data Archive)
  - EDO - Easy DDI Organizer (University of Tokyo)
  - NEPS Metadataeditor (DIPF / University of Bamberg)
  - IAB Metadata Management System (TBA21/DIPF/OPIT/Colectica/Amin)
  - Qbee - Questionnaire Builder (DIPF/GESIS/TBA21/OPIT)
  - Metadata Tools by Metadata Technologies USA
  - DesignQuest (GESIS)
  - And a lot more (sorry if I forgot your particular tool)

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Current tool situation for DDI-L

- DDI Tools catalog lists additional tools for conversion of different formats to DDI-L (e.g. Blaise) or other small support tools
- No Nesstar-like dissemination tool for analysis
- Currently much more DDI-C users than DDI-L users due to existing tooling
- Question for DDI-L -> which tools does the user really need?

- Answer might be derived from well-known models regarding DDI-L
  - DDI Lifecycle Model itself
  - Generic Statistical Business Process Model (GSBPM)
  - Generic Longitudinal Business Process Model (GLBPM)
- **DDI-L might need a complete tool chain for future success**

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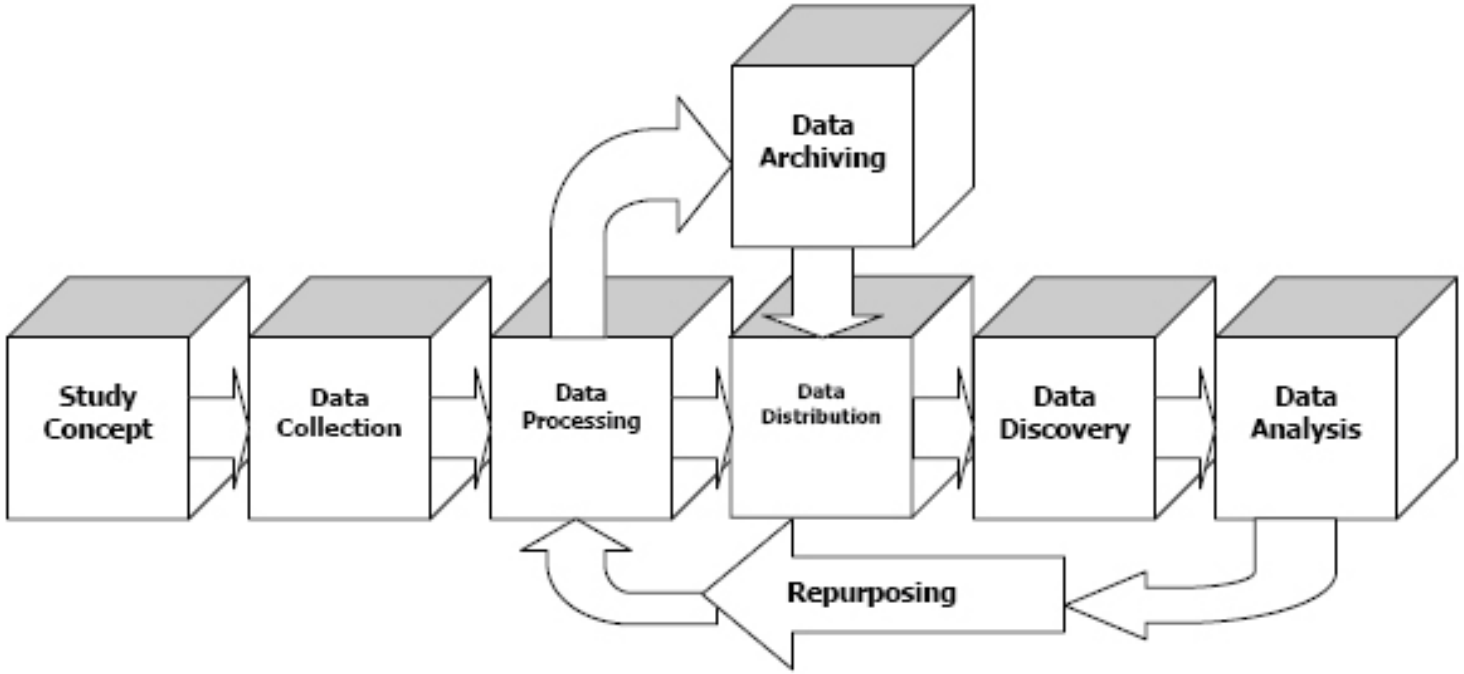
The DDI3 Combined Lifecycle Model (*DDI* 2009)



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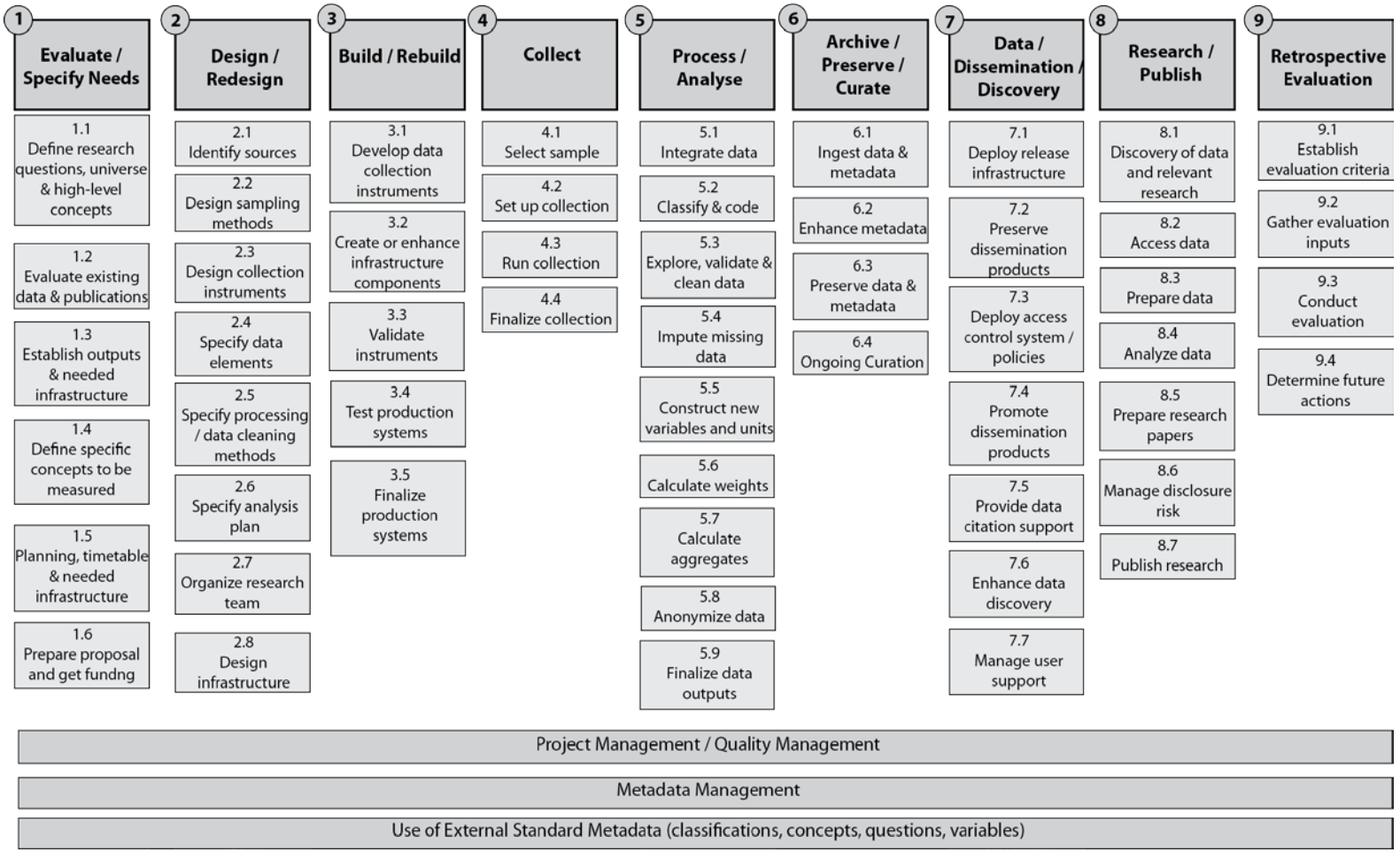
The Generic Longitudinal Business Process Model

Generic Longitudinal Business Process Model: Overview



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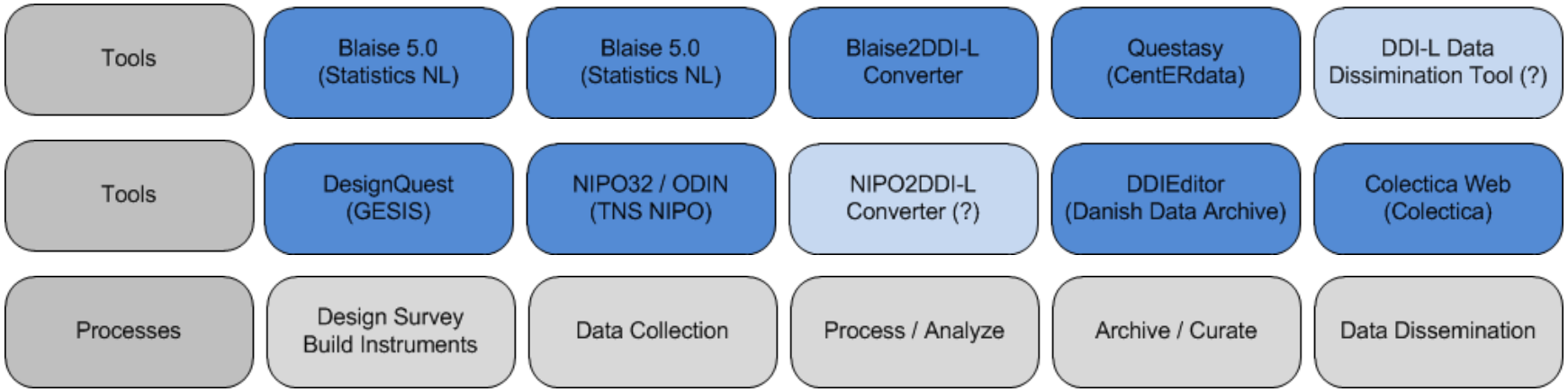
How could a DDI-L tool chain look like?



Problem: No tool chain currently complete and working seamlessly

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Definition

- Rogatus (Latin = to be asked) Questionnaire and Metadata Management System (QMMS)
- Design ideas:
  - Framework consisting of several tools for survey design (Qbee, Mbee, Tbee)
  - Support for metadata standards (DDI, SDMX)
  - Support for PAPI, CAPI, CATI and online tests
  - Bases on work on previous projects (NEPS, DaQS, QDDS, Austrian CMS)
  - Compatibility to existing DDI tools (e.g. Colectica, Questasy)
  - Whole toolset is split into two perspectives
    - Researcher creating a study (survey management)
    - Researcher working in data center (data management)

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Involved institutions

- DIPF – German Institute for International Educational Research (funding, consultancy)
- GESIS – Leibniz Institute for the social sciences (consultancy)
- OPIT Consulting Kft. (software development)
- TBA21 Assessment Systeme GmbH (project management)
- IAB – Institute for Employment Research (funding)
- Colectica (consultancy)
- Alerk Amin (consultancy)

- Currently negatiations with other partners around the world

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History and previous projects

- NEPS – Development of a metadata system for survey questionnaires (editor, database, reports, portal) which is not compliant to other studies
  Technology: .NET Framework 4 with SQL Server 2008

- DaQS – Development of a metadata system for paper-based cognitive items for re-use (editor, database, portal) which does not adhere to standards like DDI or SDMX
  Technology: LAMP with Zend Framework

- PIAAC – Development of a translation system for questionnaires and cognitive items using the XLIFF standard
  Technology: JAVA (picking up abandoned OLT project from SUN)

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Some related projects from partners

- Colectica (Algenta Technologies)
- Questasy (CentERdata)
- Case Management System (CMS) and CAPI Infrastructure (Statistics Austria)
- Testing Assisstee par Ordinateur (TAO) (CRP / University of Luxembourg / DIPF)
- ZACAT / da_ra / QDDS (GESIS)
- CBA Itembuilder (DIPF / Softcon)

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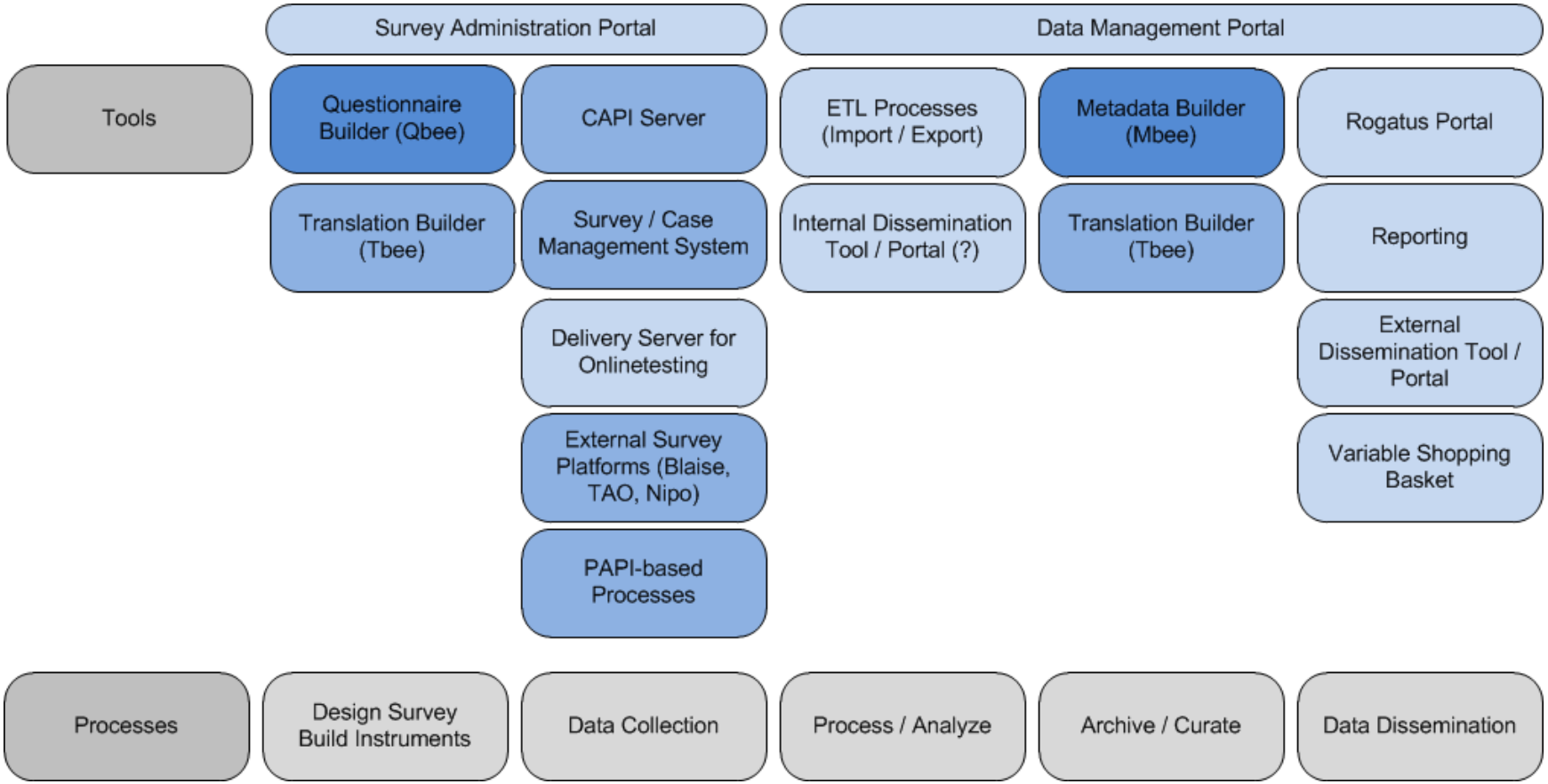
Rogatus tool overview



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Collaborative approach

- All tools use the same relational database structure for storing metadata
- DDI is used as an import and export format to exchange metadata with other tools, but it can also be used to exchange between different instances within Rogatus
- The toolset also includes several server components to exchange data via web services:
    - Team Server – a component for Qbee for sharing questionnaires between research groups
    - Repository – a read-only version of the Team Server for bigger organizations to share qualified items after quality control procedures

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Software platform

- The whole software is developed in C# using .NET Framework 4 using SOAP-based web services
- Local clients like Questionnaire Builder (Qbee) use SQL Server 4.0 Compact Edition for storing local data
- Repository and Team Server are based on SQL Server 2008 R2
- Synchronization and replication e.g. in the Case Management System or Case Builder (Cbee) are basing on Microsoft Message Queuing (MSMQ)
- All base components are or will be released under the Lesser GPL v2 open source license (LGPL v2)
- A very early demo release for Qbee (v 0.1) from August 2012 can be found here: http://www.opit.hu/index.php/en/downloads-en

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Example Workflow

- To demonstrate the possibilties of a complete survey design and delivery workflow here some screenshots from Rogatus Qbee plus some of the predecessing tools:
    - Creation of DDI-based questionnaire (Qbee – Questionnaire Builder)
    - Translation of Questionnaire (OLT, predecessor of Translation Builder)
    - Delivery of questionnaires/cases to interviewers (PIAAC CAPI System, predecessor of Case Builder Administrator)
    - Overview of paradata (PIAAC CAPI System, predecessor of Case Builder Administrator)
- Similar tools are currently in development also for the data management side (Metadata Builder, Rogatus Portal)

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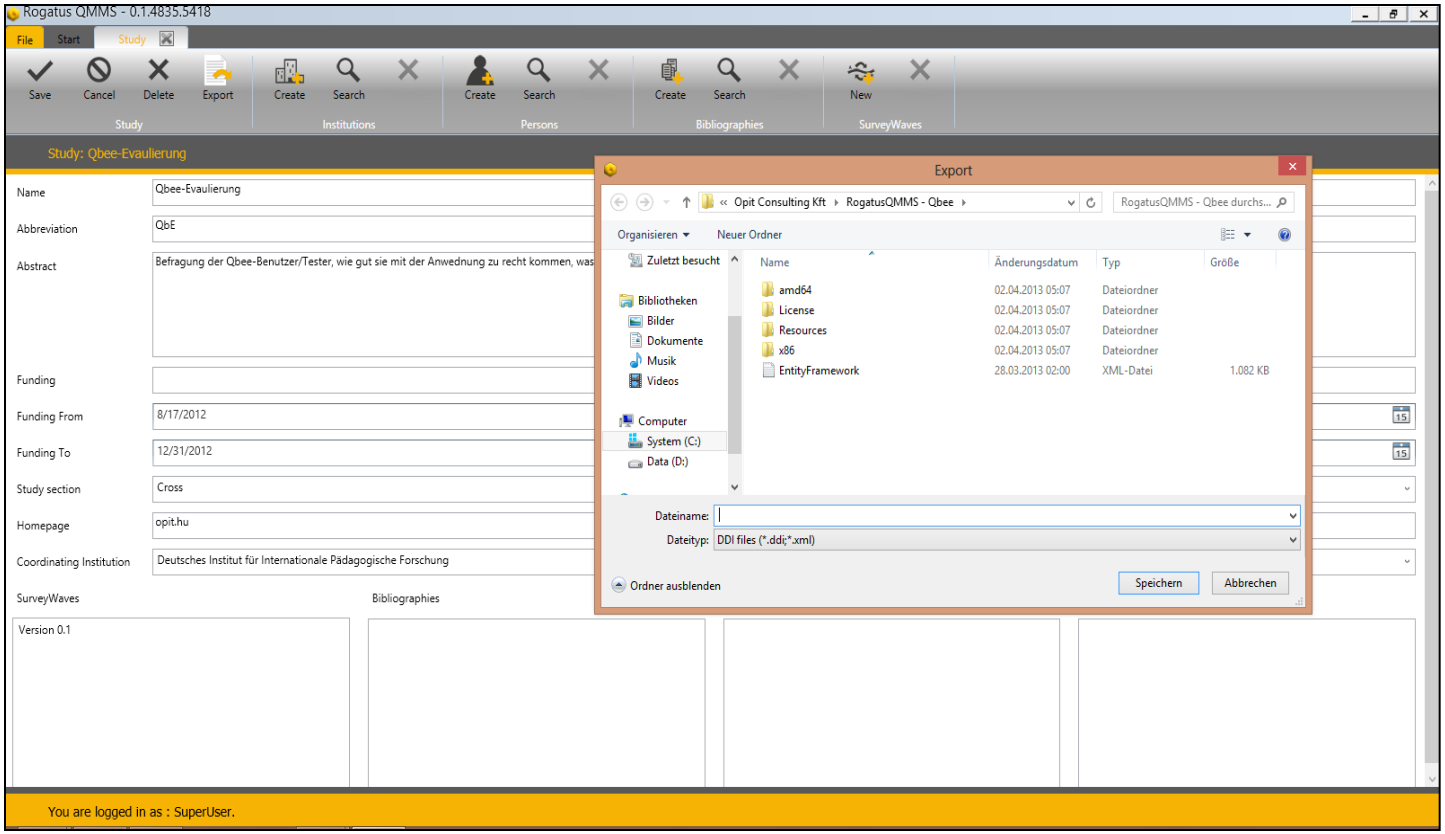
Example Workflow – Creation of DDI-based Questionnaire



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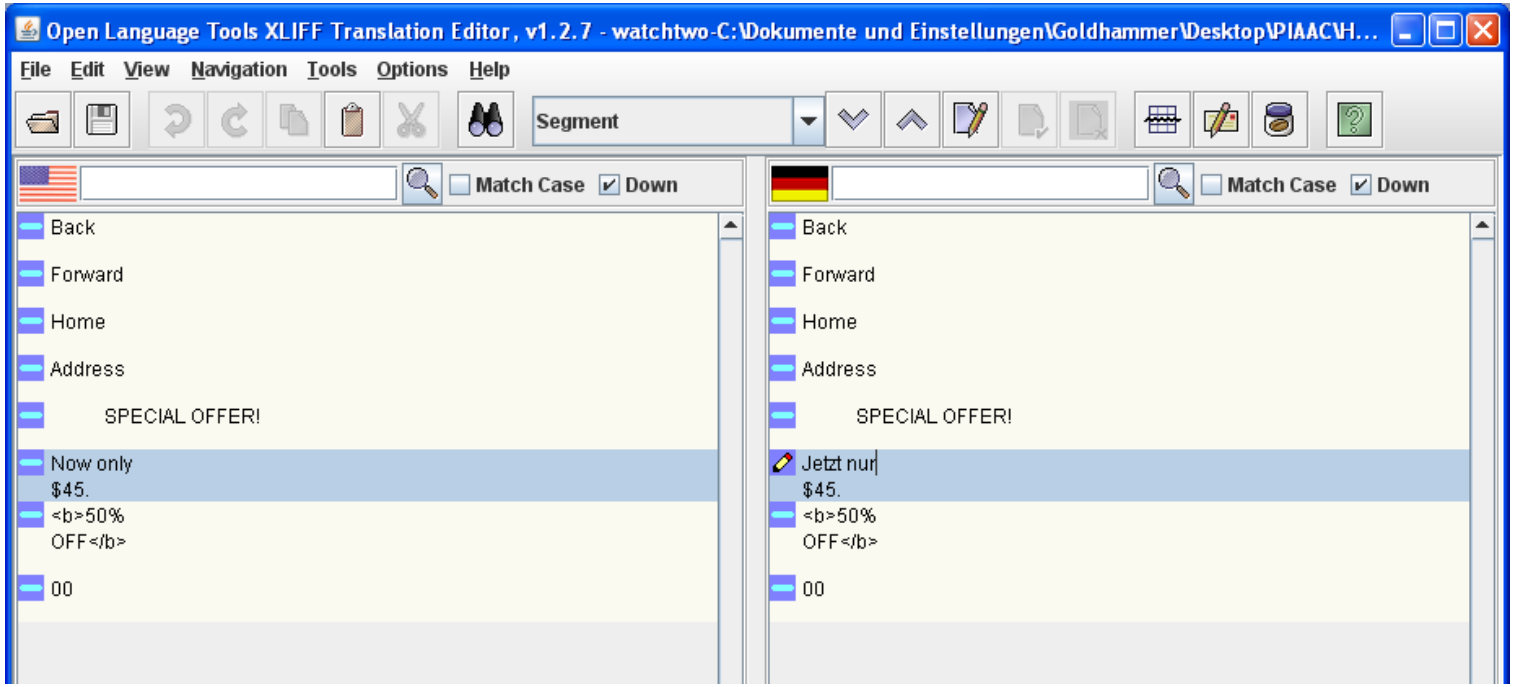
Example Workflow – Translation of DDI-based Questionnaire



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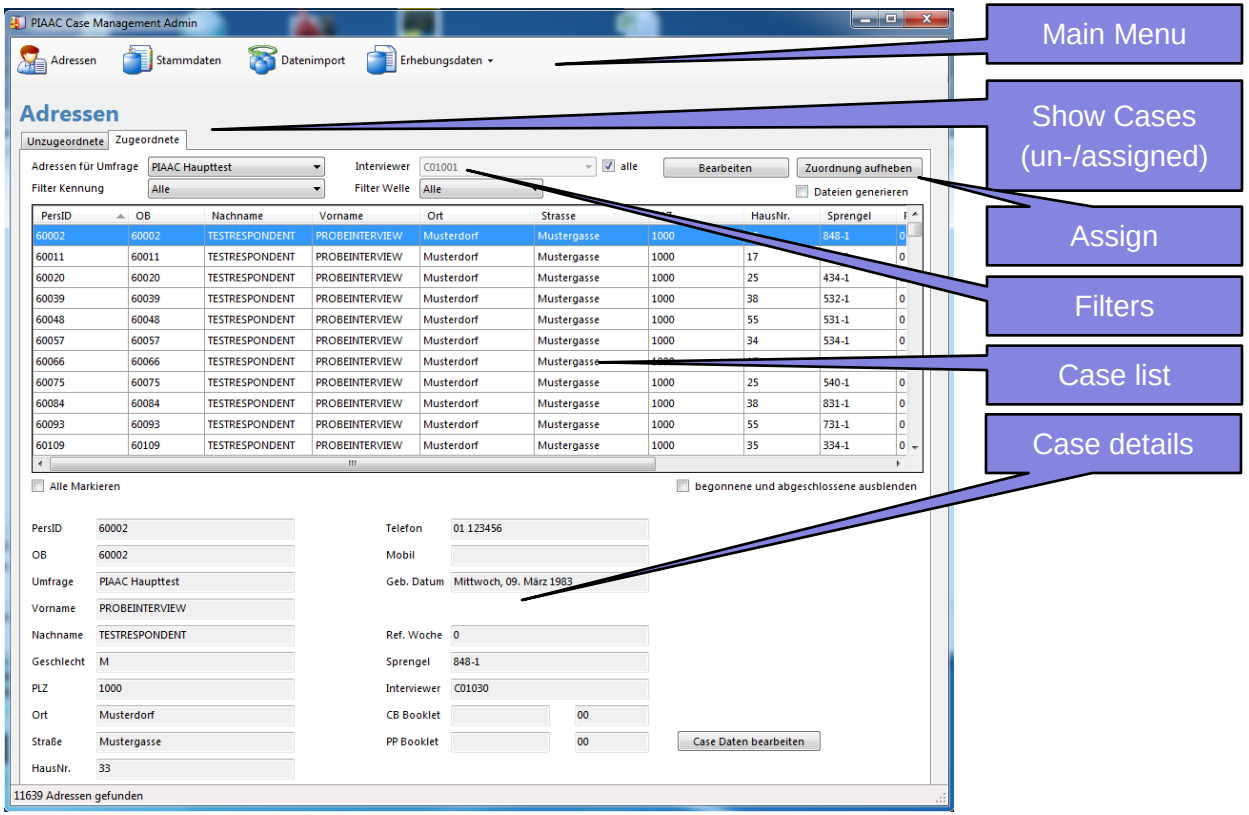
Example Workflow – Delivery of Questionnaires to Interviewers



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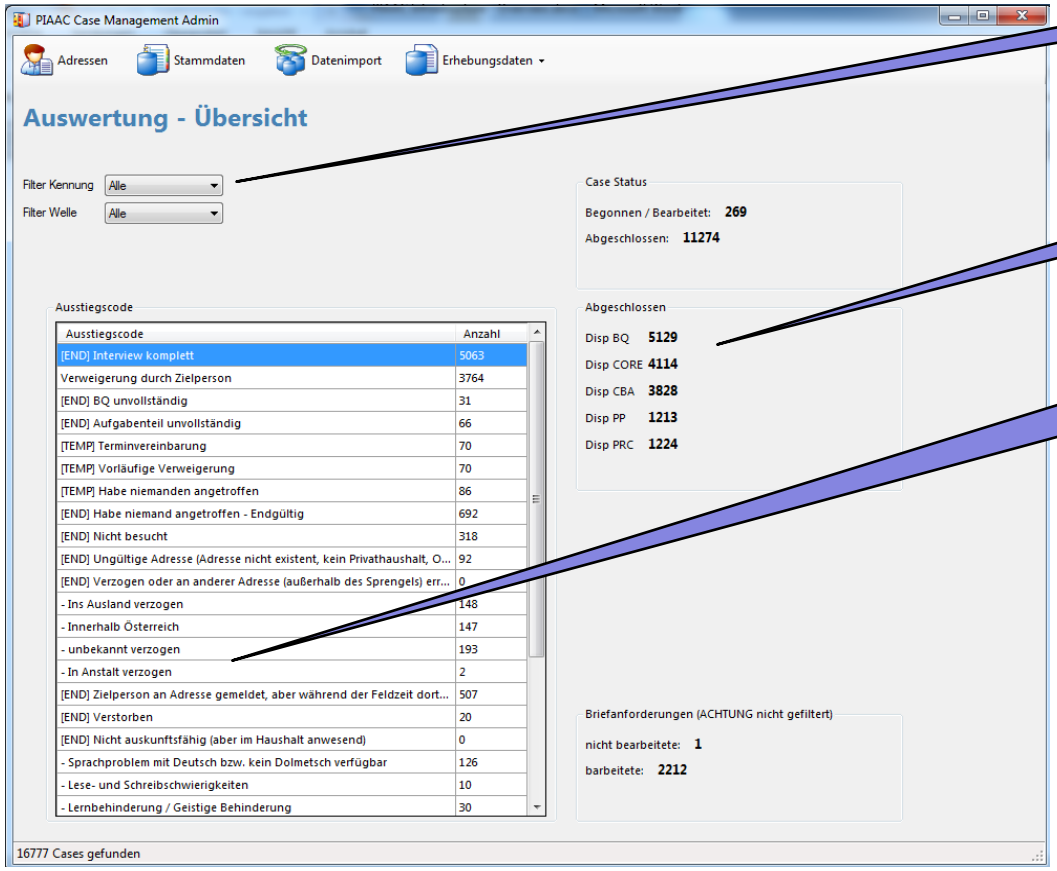
Example Workflow – Overview of paradata during survey



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Future activities

- Based on the existing tools we are re-engineering all our survey and data management software which was just shown to fit the Rogatus model
- Nevertheless this process is very time-consuming and resource-intensive
- Ideas for collaboration, e.g. applying for research funding for components are very welcome
- We also search for testers, experts and other contributors to broaden the spectrum of the software
- We currently are working with GESIS on two research proposals in Germany to get additional funding
    - Qbee / Repository – German Research Foundation (DFG)
    - Cbee / Delivery Server – German Ministry for Economy (ZIM)

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Any Questions?

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