NEPS Metadata Editor

A database-driven tool to create items, variables and questionnaires

Agenda

• Introduction to the TBA Project
• Introduction to NEPS
• Software development for NEPS
• NEPS Technology Basis
• NEPS Data Warehouse
• NEPS Metadata Editor
• DDI3 Support in Metadata Editor
• Q&A
Introduction to the TBA Project

- In 2007 the German Institute for International Educational Research (DIPF) started the research cluster TBA to implement computer based testing in German studies
- The abbreviation TBA stands for „Technology Based Assessment“, which means not only computers should be the focus, but also other devices
- To satisfy the needs of the scientific community the team is divided between psychometricians and computer scientists
- Team consists at the moment of 25 researchers and programmers involved in various projects (e.g. PISA 2009/2012, PIAAC)
- Co-operations with CRP/UniLU, Softcon, IQB, GESIS, Uni Heidelberg, Uni Szeged
- In NEPS TBA contributes with two work packages – Data Warehouse Development and Mode Effects Study (Work packages WP 13b and WP 13c)

A short introduction to NEPS

- Longitudinal panel study with projected running time of more than 20 years
- Interdisciplinary excellence network of researchers from various disciplines headed by Prof. Dr. Blossfeld of the University of Bamberg
- Responsible for setting up and coordinating the project is the Institute for Longitudinal Educational Research in Bamberg (INBIL)
- Funded by the German Federal Ministry of Education and Research
- Challenges: high complexity, collaboration of different institutes, long running time
- Division in five pillars with eight stages
- Multicohort sequence design (six different starting cohorts, several special samples)
- To be shown in the next two graphical slides
Multicohort Sequence Design

- **10 Years in the U.S.**
- **VOC**: Vocational Training
- **A.Y.**: Academic Year
- **B.A.**: Bachelor
- **M.A.**: Master
- **G.R.**: Grade
- **K.G.**: Kindergarten
- **E. Infants**: Infants

- **Further Education**
- **Tertiary Education**

- **Upper Secondary School**
- **Lower Secondary School**
- **Elementary School**
- **Kindergarten**
- **E. Infants**

Software Development for NEPS

- NEPS – National Educational Panel Study means several challenges for software development (e.g. longitudinal study, long running time, data archival)
- The following components will be developed
  - Metadata Editor
  - User Rights Management
  - OLTP Database (further development to a Data Warehouse structure)
  - Reporting Services (e.g. for printing codebooks)
  - Analysis Services (for statistical analysis)
  - Integration Services (im- and export to various formats, e.g. SPSS / Stata)
  - Integration to TBA or CBA systems (e.g. connection to BQ Engine)
  - (Edu)DDI integration (im- and export, database structure)
  - Data Enclave (Terminal Server solution for confidentiality protection)

NEPS Technology basis

- Programming environment
  - .NET Framework 3.5 and upcoming releases
  - Programming language: C#  
  - Visual Studio 2008 and upcoming releases (migration to Visual Studio 2010 and Team Foundation Server will follow in spring)
- Database
  - SQL Server 2008 R2 and upcoming releases
- Web Server
  - IIS 7.0 and upcoming releases
- Though Microsoft products will be used as platform, the code will be fully open source
NEPS Metadata Editor

- Prototype version uses Windows Forms as presentation layer, background connectivity to the database is implemented as web service
- Later versions will use Web Forms or Silverlight as presentation layer
- DDI3 or other im- and export functionality will mainly be database driven by additional web services
- The editor will be present in two versions
  - One specific NEPS-only version for the item editors in this project
  - A more extensive general version will be published in the long run
- Metadata Editor enables the scientists in the different institutions connected to NEPS to generate their question items centrally with standard answer schemes
- Furthermore the tool is used to generate P&P questionnaires for NEPS
NEPS Metadata Editor

- Live presentation of the first iteration of the tool
- Demo version only writes an XML file and is not connected to the central database
- Security and confidentiality layer is not active

Release plan
- Next iteration: June 2010 (second iteration)
- Release of official first version for item editors: September 2010
- Further developments are planned till June 2012

DDI3 Support in Metadata Editor

- DDI3 is an XML-based metadata standard for social sciences developed by the DDI Alliance
- DDI3 is currently extended to match educational assessment items by the EduDDI group (members: IQB, DIPF, GESIS, TestDaF, IEA/DPC)
- The current database structure for metadata in NEPS is very similar to DDI3, but not fully compliant
- A workshop is planned in June to adjust the current NEPS database design and also the .NET object model to DDI3
- Though there are NEPS-specific tables which currently cannot be matched to DDI nomenklatur (e.g. pillar, stage)
Planned Extensions and Changes

- TAOQual / PIAAC BQ Engine connector for CAPI/CATI questionnaires
- DDI3 import and export connector
- Graphical questionnaire routing editor
- Development of a more universal tool
- Change from a Windows application to a web-based tool
- Connection to SQL Server Analysis and Reporting Services

Any Questions?

barkow@dipf.de
http://www.dipf.de