



**DIPF**

Bildungsforschung  
und Bildungsinformation

# 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 Metadata Editor
- Planned extensions and changes
- 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

**ADMINISTRATION AND CENTRAL COORDINATING  
DEPARTMENT OF THE NEPS**

AT THE INSTITUTE FOR EDUCATIONAL LONGITUDINAL RESEARCH BAMBERG (INBIL)

**PILLAR 1**

COMPETENCE  
DEVELOPMENT

**PILLAR 2**

LEARNING  
ENVIRONMENTS

**PILLAR 3**

EDUCATIONAL  
DECISIONS

**PILLAR 4**

MIGRATION  
BACKGROUND

**PILLAR 5**

RETURNS TO  
EDUCATION

**STAGE 8**

**ADULT EDUCATION AND LIFE-LONG LEARNING**

**STAGE 7**

**FROM HIGHER EDUCATION TO THE LABOR MARKET**

**STAGE 6**

**FROM THE VOCATIONAL TRAINING TO THE LABOR MARKET**

**STAGE 5**

**FROM UPPER SEC. SCHOOL TO HIGHER EDUCATION/VOC. TRAINING**

**STAGE 4**

**FROM LOWER TO UPPER SEC. SCHOOL/TRAINING/LABOR MARKET**

**STAGE 3**

**FROM ELEMENTARY SCHOOL TO LOWER SECONDARY SCHOOL**

**STAGE 2**

**FROM KINDERGARTEN TO ELEMENTARY SCHOOL**

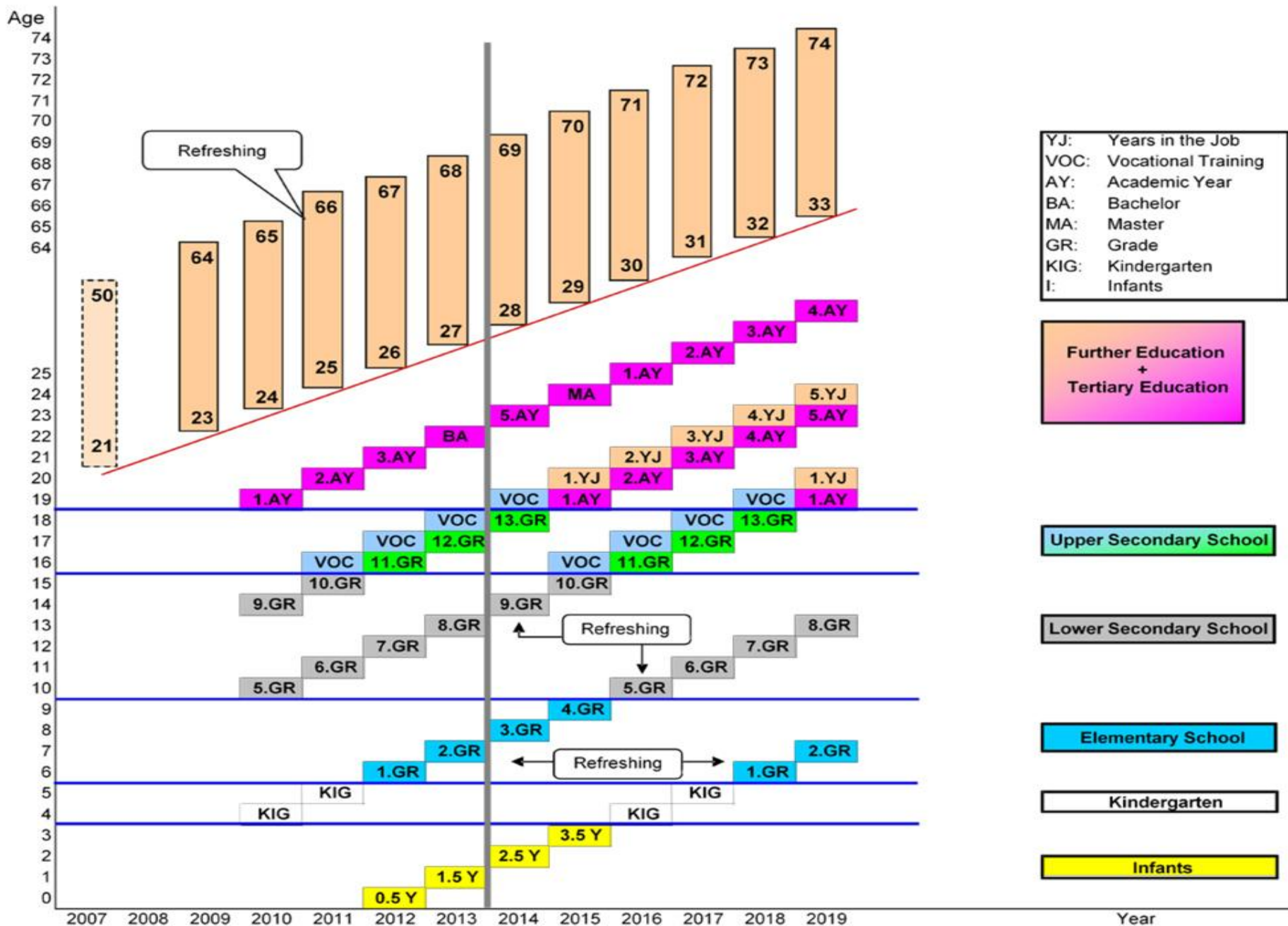
**STAGE 1**

**FROM BIRTH TO KINDERGARTEN**

**METHODS DEPARTMENT**

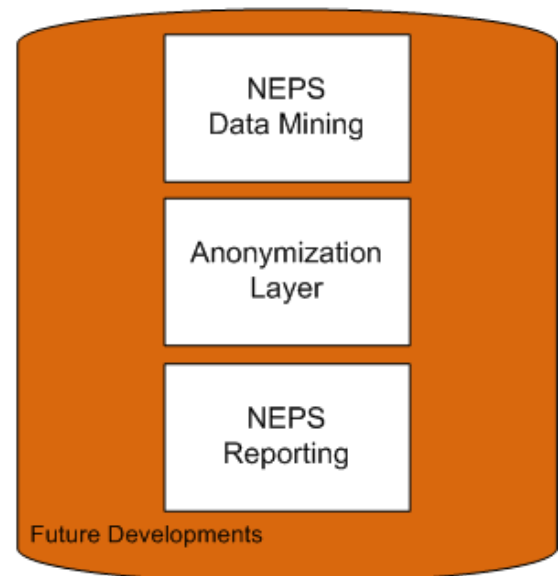
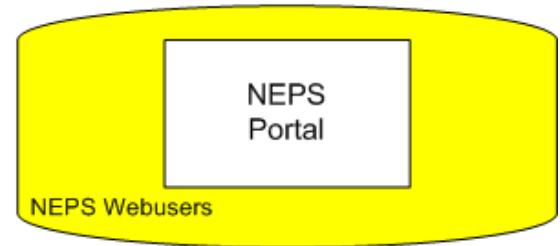
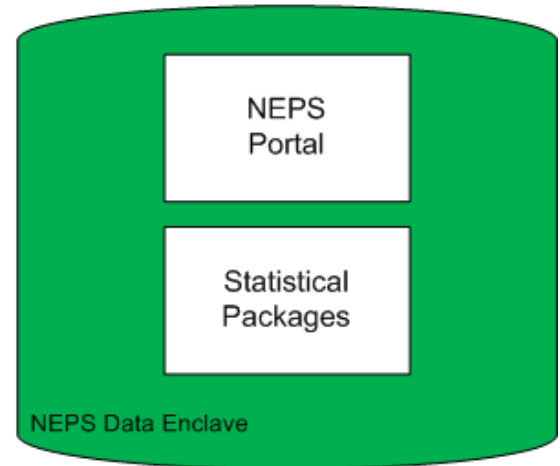
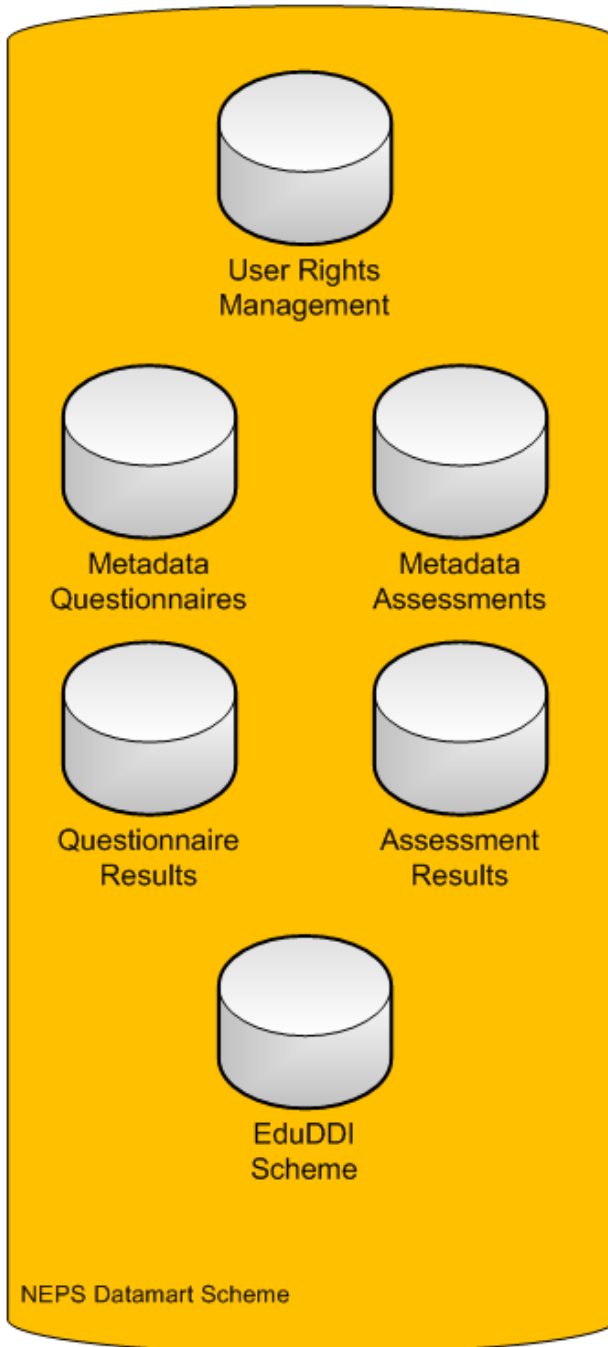
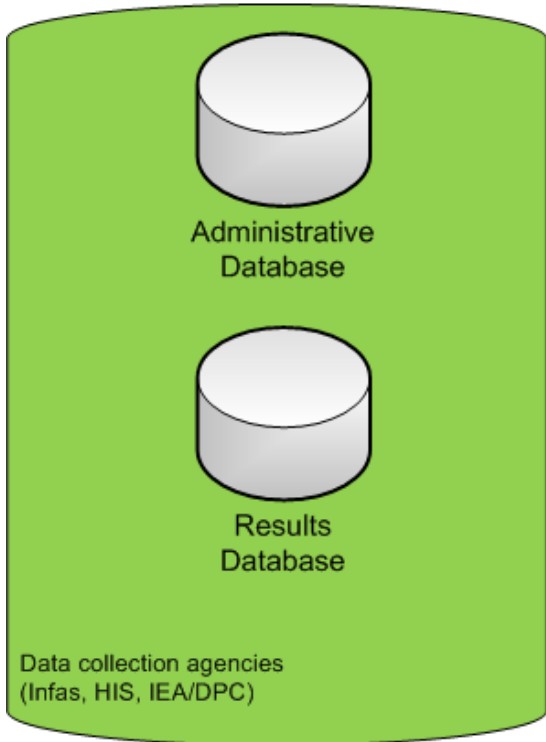
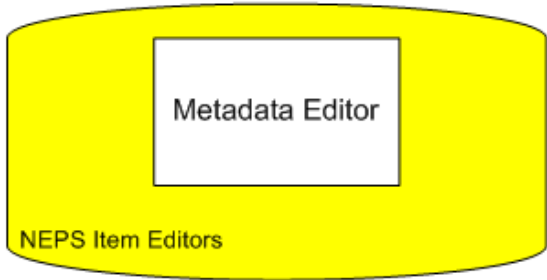
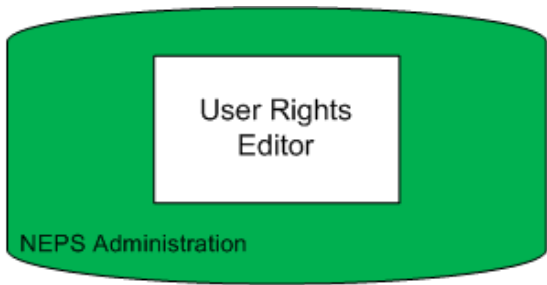
USER SERVICE, SURVEY MANAGEMENT, DATA WAREHOUSE

# MULTICOHORT SEQUENCE DESIGN



# 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 is currently running)
- 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
- In NEPS DDI3 or other im- and export functionality will mainly be database driven by additional web services
- 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: July 2010 (third internal iteration)
  - Release of official first version for item editors: September 2010
  - Further developments are planned till June 2012

# Planned Extensions and Changes

- Change of layout to Office 2010 style (ribbons)
- Translate all interfaces into English
- TAOQual / PIAAC BQ Engine connector for CAPI/CATI questionnaires
- DDI3 import and export connector
- Graphical questionnaire routing editor
- Change from a Windows application to a web-based tool
- Connection to SQL Server Analysis and Reporting Services

# The future - Generic Metadata Editor

- In autumn production of a more general tool will start as part of the preparations for forming a research data center
- The new editor will use a database scheme which will be fully DDI3-compliant (bases on the database schemes of Alerk Amin / CentERdata and Achim Wackerow / GESIS)
- User will have three choices when entering metadata
  - Store metadata in a local database (e.g. SQL Server Compact)
  - Store metadata in a remote database
  - Generate DDI3 XML
- Furthermore the Generic Metadata Editor will be compatible to the NEPS Metadata Editor and therefore can use all the software developments from this project

# Any Questions?

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