

# Documenting, Maintaining, and Sharing Standard Variables with DDI Version 3.0: the ISCO example

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# Outline

- ISCO
  - Description
  - Revisions / Versions
- ISCO in DDI 3
  - Variable Description
  - Comparison of Variables
  - Standalone Resource Package
- DDI 3 as Metadata Repository

# Intention of presentation

- ISCO as an example to show reuse of metadata by the means of DDI 3.0
- Not a presentation on the content of the ISCO classification
- Focus on documenting standard variables in standalone resources
- Report on first experiences with DDI 3.0

# ISCO Description

- International Standard Classification of Occupations
- Maintained by the International Labour Organization (ILO)
- ISCO is a tool for organizing jobs into a clearly defined set of groups according to the tasks and duties undertaken in the job.
- ISCO organizes occupations in a hierarchical framework. At the lowest level is the unit of classification - a job - which is defined as a set of tasks or duties designed to be executed by one person.
- Jobs are grouped into occupations according to the degree of similarity in their constituent tasks and duties.
- ISCO is defined in four levels of aggregation, for example ISCO-88(COM) consists of:
  - 10 major groups
  - 28 sub-major groups (subdivisions of major groups)
  - 116 minor groups (subdivisions of sub-major groups)
  - 390 unit groups (subdivisions of minor groups)

# ISCO Example: Major Group 6

## Skilled agricultural and fishery workers

### 61 Skilled agricultural and fishery workers

#### 611 Market gardeners and crop growers

6111 Field crop and vegetable growers

6112 Gardeners, horticultural and nursery growers

#### 612 Animal producers and related workers

6121 Dairy and livestock producers

6122 Poultry producers

6129 Animal producers and related workers not  
elsewhere classified

#### 613 Crop and animal producers

6130 Crop and animal producers

# Revisions / Versions of ISCO

- 1958, 1968, 1988 (current revision), 2008 (draft)
- Versions with minor differences exist, for example:
  - ISCO-88(COM) for the European Union (Eurostat)
  - ISCO-88(CIS) for the Commonwealth of Independent States (CIS Statistical Committee)
  - ISCO-88(OCWM) Occupational Classification of Workers in Migration under ISCO-88 of ILO/UNDP Asian Regional Programme on International Labour Migration (ILO, Bangkok, 1992)
- Country-specific variants
- Country-specific classifications which can be converted into ISCO

# Examples for ISCO usage in major studies

- Direct usage
  - ESS - European Social Survey
  - ISSP - International Social Survey Programme
  - The Eurobarometer Survey Series
  - SOEP – German Socio-Economic Panel Study
- Conversion from other occupation classification
  - GSS (US General Social Survey) - ISCO-68, converted from 1970 U.S. Census Classification of Occupations and Industries
  - German Microcensus – ISCO-88(COM), converted from classification KldB92

# Standard Variables

- ISCO as a standard variable facilitates the usage of an occupation variable in multiple studies
- Comparison of studies is one of the major goals of standard variables
- By using standard variables within an organization or across a group of organizations central documentation and maintenance of these variables is improved
- Standard variables can be maintained in a variable repository
- The variable repository should be processable by applications for better exploitation
- DDI 3 provides the metadata structure for a machine-actionable variable repository



# DDI: Metadata Structure for Variable Repositories

- Different parts of a variable are documented in different schemes. This enables reuse of these parts.
- Central description of a variable in a variable scheme
  - Variable scheme  
ISCO-88(COM)  
... other variables
- Category codes are listed in a code scheme which can be referenced by a one or more variables
  - Example: Occupation of respondent, occupation of spouse of respondent

# DDI: ISCO Hierarchy of Codes

## Example: Major Group 6

### 61 Skilled agricultural and fishery workers

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6112 Gardeners, horticultural and nursery growers

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# DDI: ISCO Hierarchy of Codes

## Example: Major Group 6

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611

6111

6112

612

6121

6122

6129

613

6130

# DDI: Metadata Structure for Variable Repositories

- Different parts of a variable are documented in different schemes. This enables reuse of these parts.
- Central description of variable in a variable scheme
- Codes for categories are listed in a code scheme which can be referenced by a one or more variables
- Description of categories in a category scheme which can be referenced by one or more code schemes

# DDI: ISCO Hierarchy of Codes

## Example: Major Group 6

### 61 Skilled agricultural and fishery workers

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# DDI: ISCO Hierarchy of Codes

## Example: Major Group 6

Skilled agricultural and fishery workers  
Market gardeners and crop growers  
Field crop and vegetable growers  
Gardeners, horticultural and nursery growers  
Animal producers and related workers  
Dairy and livestock producers  
Poultry producers  
Animal producers and related workers not  
elsewhere classified  
Crop and animal producers  
Crop and animal producers

# DDI: Metadata Structure for Variable Repositories

- Different parts of a variable are documented in different schemes. This enables reuse of these parts.
- Central description of variable in a variable scheme
- Codes for categories are listed in a code scheme which can be referenced by a one or more variables
- Description of categories in a category scheme which can be referenced by one or more code schemes
- **Multiple languages can be used in the documentation, important for labels**

# DDI: Category Example

## Multiple Languages

```
<l:Category>  
  <r:Identification>  
    <r:ID>Level2Category61</r:ID>  
  </r:Identification>  
  <r:Label xml:lang="en">Skilled agricultural and  
    fishery workers</r:Label>  
  <r:Label xml:lang="de">Fachkräfte in der  
    Landwirtschaft und Fischerei</r:Label>  
  <r:Label xml:lang="fr">Agriculteurs et ouvriers  
    qualifiés de l'agriculture et de la pêche</r:Label>  
</l:Category>
```



# DDI: Concepts

- A variable represents a theoretical concept about the reality, for ISCO the concept is “**Work**”.
- Concepts are described in DDI 3 in a concept scheme. Similar variables can point to the same concept.
- Additionally the concepts can be organized in concept groups. The concept for ISCO is more precisely “**Paid work**”. “**Work**” is the more general concept which can comprehend other types of work.

# DDI: Minor changes of variables

## New revisions of variables

- Variables, code and category schemes undergo changes, i.e. error correction. This change can be documented in a new version of the same DDI scheme.
  - The responsible agency can be documented. Both version and maintaining agency are part of the **global unique identifier** of an item  
urn:ddi:3\_0:CodeScheme:**gesis.org**:lp:2\_0.**ISCO88:1\_0**
  - Additional documentation: version date, version responsibility, version rationale

# DDI: Minor changes of variables

## New revisions of variables

- Variables, code and category schemes undergo changes, i.e. error correction. This change can be documented in a new version of the same DDI scheme.
- For ISCO a new revision is published every 10 years. Different versions exist for example for ISCO-88. Most of these versions are still used.
- So they can be documented in DDI as separate variables, not as separate versions.

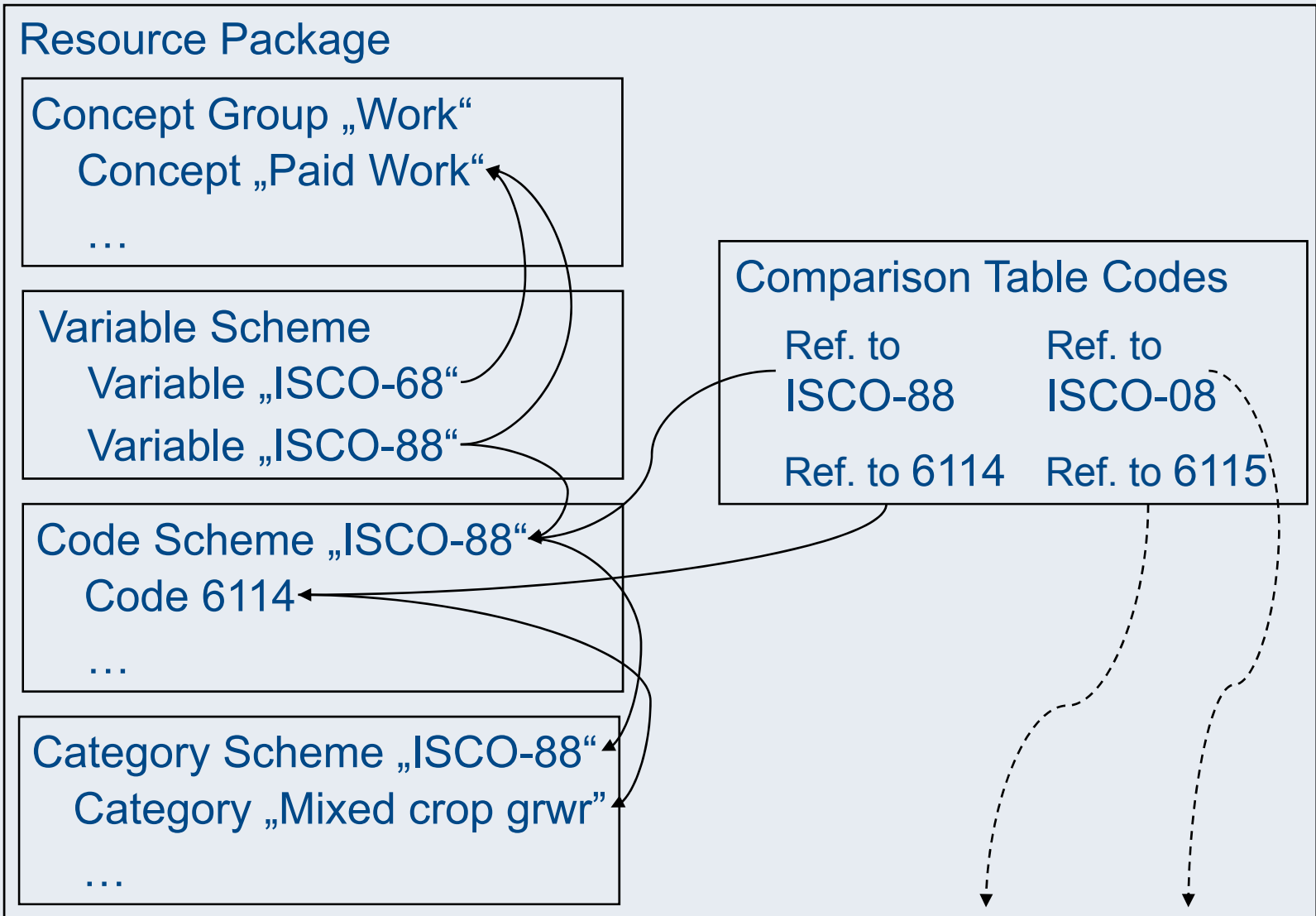
# DDI: Relationship between Similar Variables

- The relationship between these similar variables can be documented in comparison tables

<u>ISCO-88</u>	<u>ISCO-08</u>	Category
6112	6113	Tree and shrub crop growers
6114	6115	Mixed crop growers

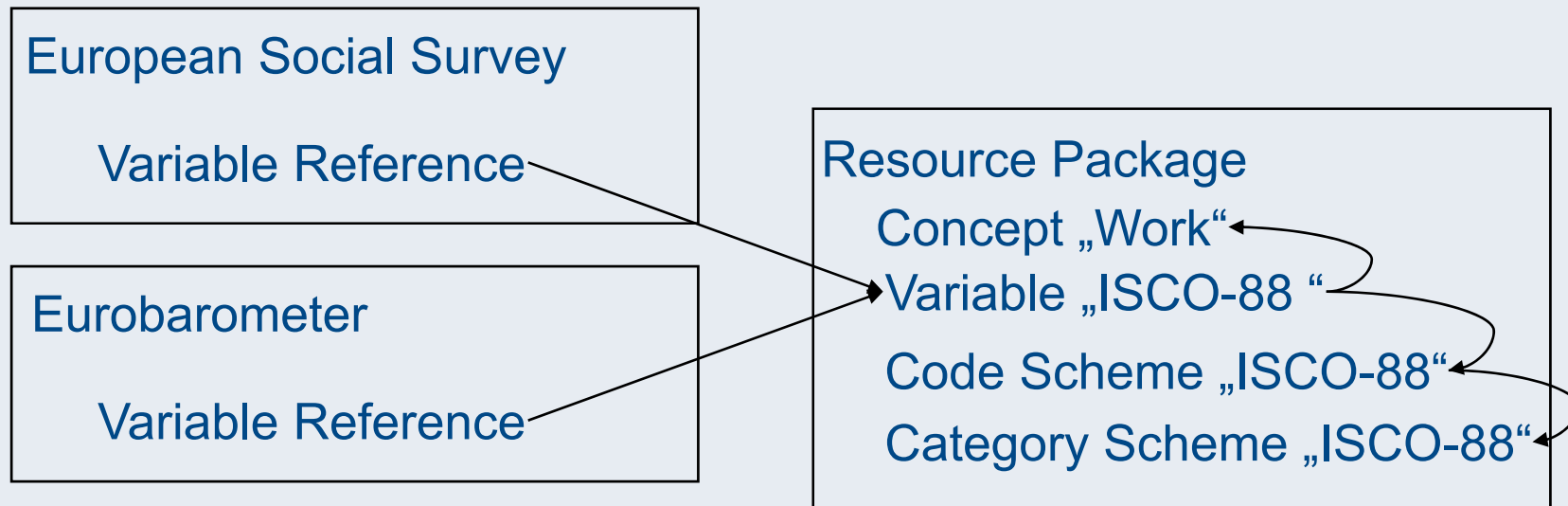
- Derived categories can be described in the category scheme
  - 6123 and 6124 (ISCO-88) to 6124 (ISCO-08) Apiarists and sericulturists
  - Human-readable description
  - Derivation command of the used program / package

# DDI: Resource Package



# DDI: Resource Package as Reusable Set of Metadata

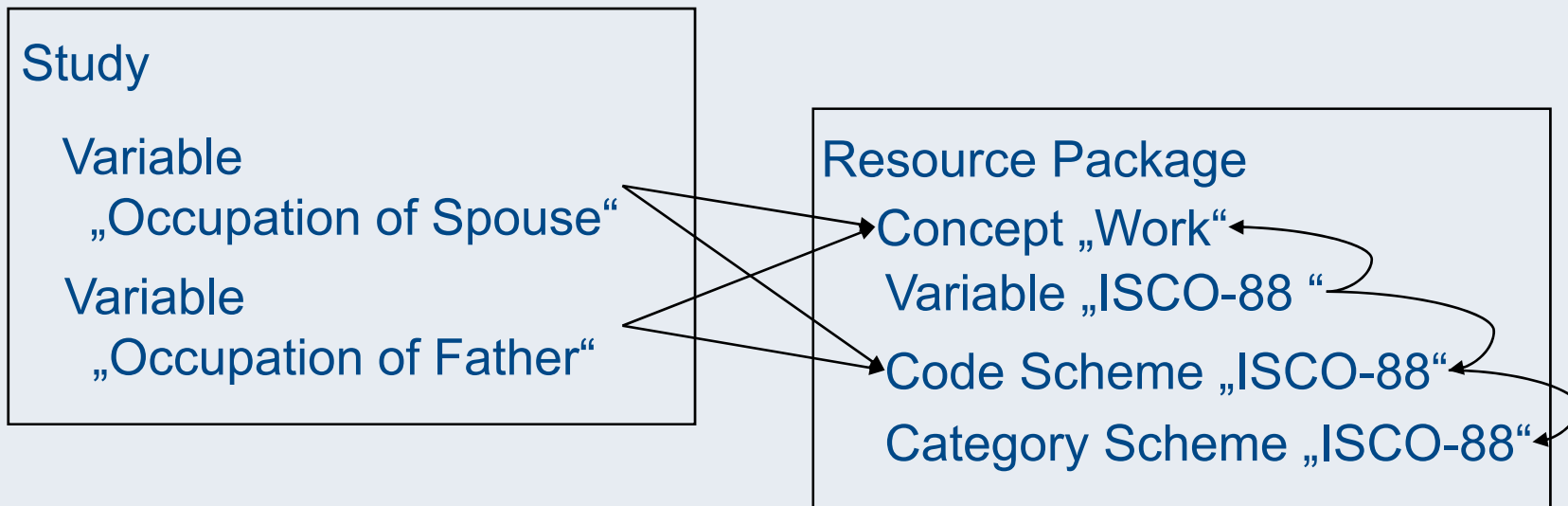
- Resource packages can be used by multiple studies documented in DDI.



- The same metadata is reused and this implies potential comparability

# DDI: Resource Package as Reusable Set of Metadata

- Schemes in resource packages can be used in multiple ways.



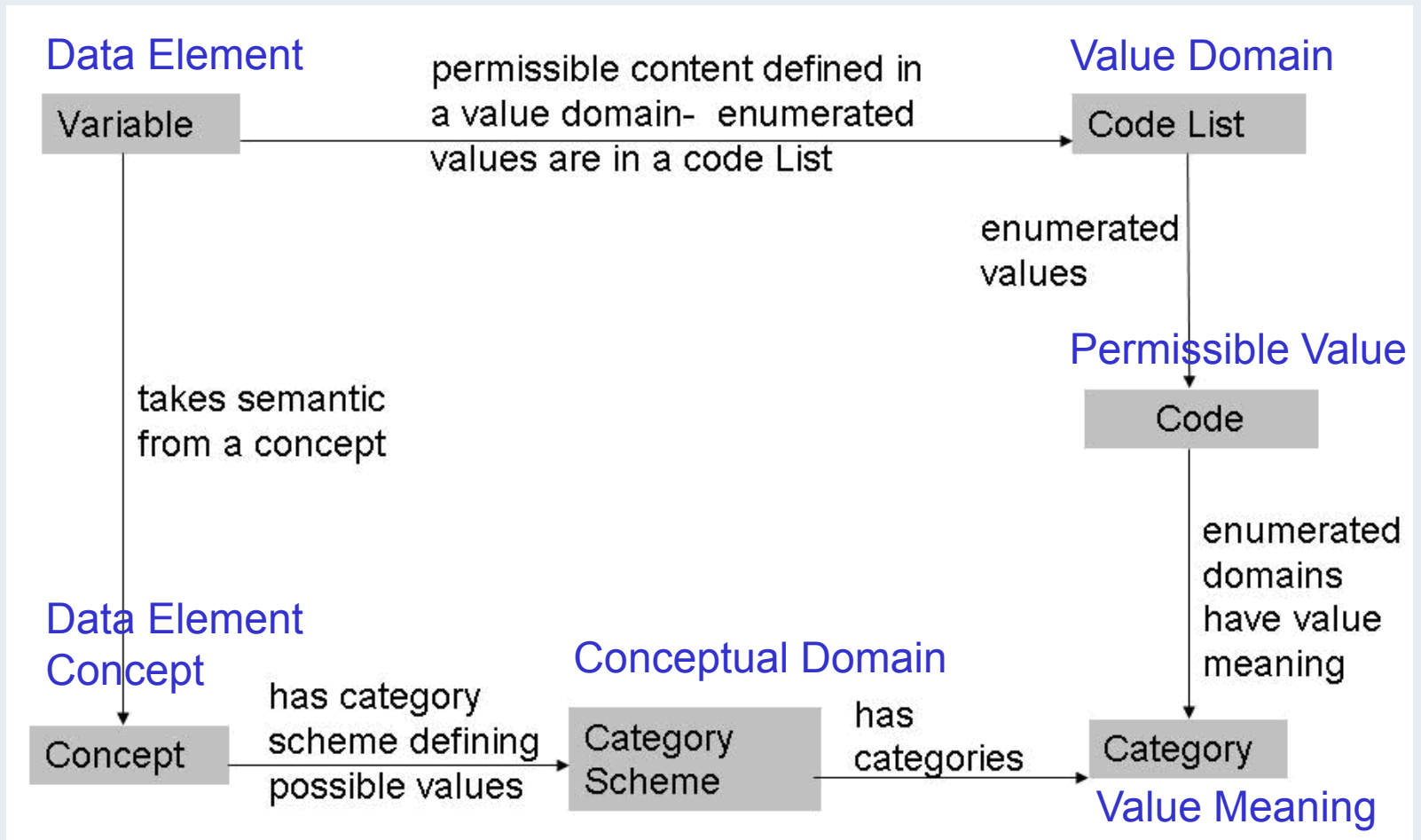
# DDI: Resource Package

## Metadata Repository

- Concepts, variables, code schemes, and category schemes as a whole create a metadata registry
- DDI 3 borrowed ideas from the standard ISO/IEC 11179 (description of the structure for metadata registries on an abstract level)
- A metadata registry (for offline or online usage) requires an application in addition to the metadata structure
- Full advantage of a metadata registry by a search front end and by web services for programs



# DDI and ISO/IEC 11179



# Conclusion

## Advantages in usage of DDI metadata repositories

- Easy exchange of the documentation of standard variables
- Enabling metadata mining for finding potential comparable studies
- Support for survey designers, when questionnaires are included
- Can support the process of establishing a standard variable
- Basis of metadata registry application

## Requirements / Limitations

- Requires often a well established standard variable like ISCO
- Acting in a controlled environment is required, quality assurance
- Trusted relationship to maintaining organization is necessary, especially when using automated access like a web service
- Large variety of “standard variables” for one concept can cause problems

Using DDI 3 resource packages is one step into the direction of “**Building global knowledge communities with open metadata**”

Thank you for your attention

Basic DDI example on ISCO-88(COM)  
available at DDI 3.0 page:  
<http://www.ddialliance.org/ddi3/>

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African Scops Owl