



**International Atomic Energy Agency**

**NDS Meetings relevant  
to EXFOR**

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**Nuclear Data Section**

**Department of Nuclear Sciences and Applications**

# Contents

- **TM on Long-term Needs for Nuclear Data Development**  
2-4 November 2011, Vienna
- **CM on Further Development of EXFOR**  
6–9 March 2012 , Vienna



# Long-term Needs Meeting

- Support for EXFOR work as ‘ the most important obligation of NDS’
- Maintain or reduce the time between publication and compilation into EXFOR
- Retain scope of data entry
- Completeness (charged particles) and accuracy
- User-friendly outputs
- User tools



# Further Developments Meeting

- **Important meeting**
  - **Change to language of Exchange Format?**
  - **Introduction of new features**
  - **Use of variety of output formats**
  - **Web tools for visualisation etc.**
  - **Editor isolates compiler from exchange format**



# Participants

## ● Nine consultants:

- M. Aikawa
- D. Brown
- E. Dupont
- S. Hlavac
- M. Kato
- A. Plompen
- V. Pronyaev
- O. Schwerer
- N. Soppera



# Presentations

- Total of 15 presentations
- <http://www-nds.iaea.org/exfor-future/>
- Considerable discussion about possible changes to the exchange format
- Main candidate for change is XML, based on the work on GND carried out at LLNL and proposed for modernising ENDF
- Final decision – no change yet



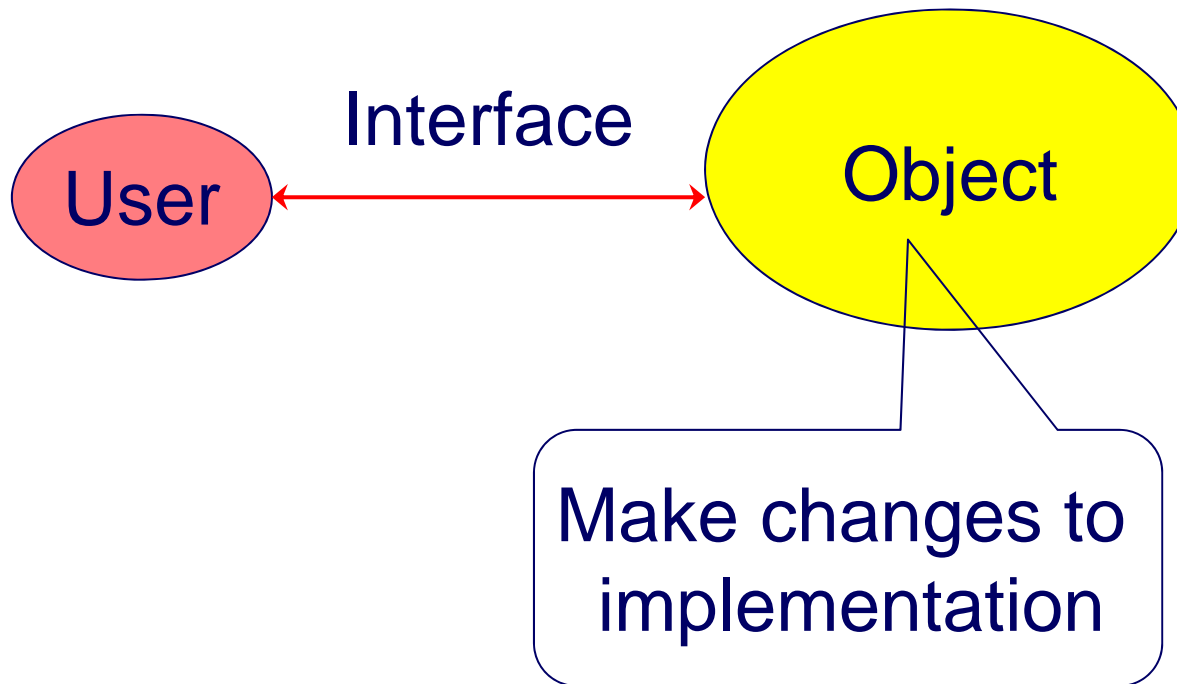
## **EXFOR extensions**

- **Incident source spectrum for average data**
- **Store sufficient experimental data to allow a meaningful re-evaluation e.g. transmission factors**
- **Collect experimental response and resolution functions**
- **Collect experimental covariance data in a standard format**
- **Expand EXFOR database with associated documents (letters, PDFs, code details)**



# Analogy

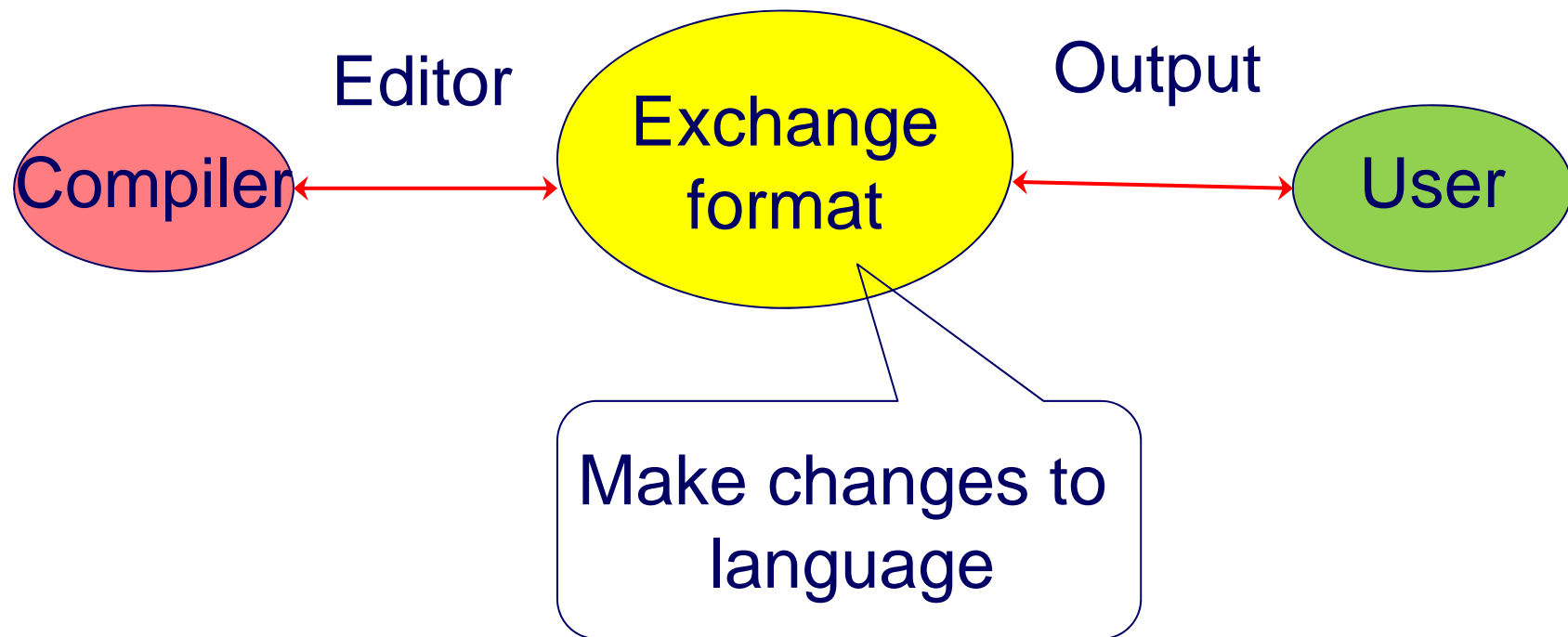
- **Object oriented Programming**





# Analogy

## ● EXFOR



## Reaction string

- **Restrains imposed by EXFOR  
REACTION string for complex reactions**
- **Difficult to describe:**
  - **Coincidence data**
  - **Intermediate states**
  - **Need for multiple reaction strings**
- **In extreme cases use MSC flag (EXFOR  
miscellaneous flag) or**
- **No compilation, only links to original  
information e.g. through NSR**



# Dictionarys

- **Dissatisfaction:**
  - **Too many dictionarys**
  - **Complex and interlinked**
  - **Cryptic**
  - **Some are obsolete**
  - **Hidden from users**



# Recommendations

- **Continue development of EXFOR/XML**
  - Use XML or HTML as a standard output
  - Improve it based on user feedback
  - Harmonise it with GND
- **Improve existing EXFOR codes**
  - Editor and checking codes for XML
- **Improve the user experience**
  - Changing the default output format (hide Exchange format)



## Recommendations (2)

- **Establish EXFOR knowledge base**
- **Integrate all documentation:**
  - **EXFOR Formats Manual**
  - **LEXFOR Manual**
  - **EXFOR Basics Manual**
  - **Dictionary Manual**
  - **Dictionaries**
  - **Protocol, Network documents**
  - **CP Memos**
- **Set up EXFOR wiki**



## Recommendations (3)

- **New kinds of data:**
  - **Hyper-nuclear reaction data**
  - **High energy p-Nucleus collision data**
  - **Muon-induced reaction data**
  - **Currently high energy data ( $E > 1 \text{ GeV/A}$ ) compilation is voluntary - add already compiled data to EXFOR**
  - **Use MSC code as necessary**



# Recommendations (4)

- **Governance**
  - **Strategy document**
- **User feedback**
  - **EXFOR user group**
  - **Meet at ND2013 ?**

