

Gefördert durch:



Bundesministerium  
für Wirtschaft  
und Technologie

aufgrund eines Beschlusses  
des Deutschen Bundestages

# Utilization of Document Test Libraries Supporting the Interoperability of Office Applications

## Lessons learned

Klaus-Peter Eckert | Fraunhofer FOKUS | ODF Plugfest| Berlin | July 15<sup>th</sup>, 2011



# Agenda

- The Big Picture
- Interoperability and Portability
- Document Libraries
- Interoperability Assistant
- Conclusion

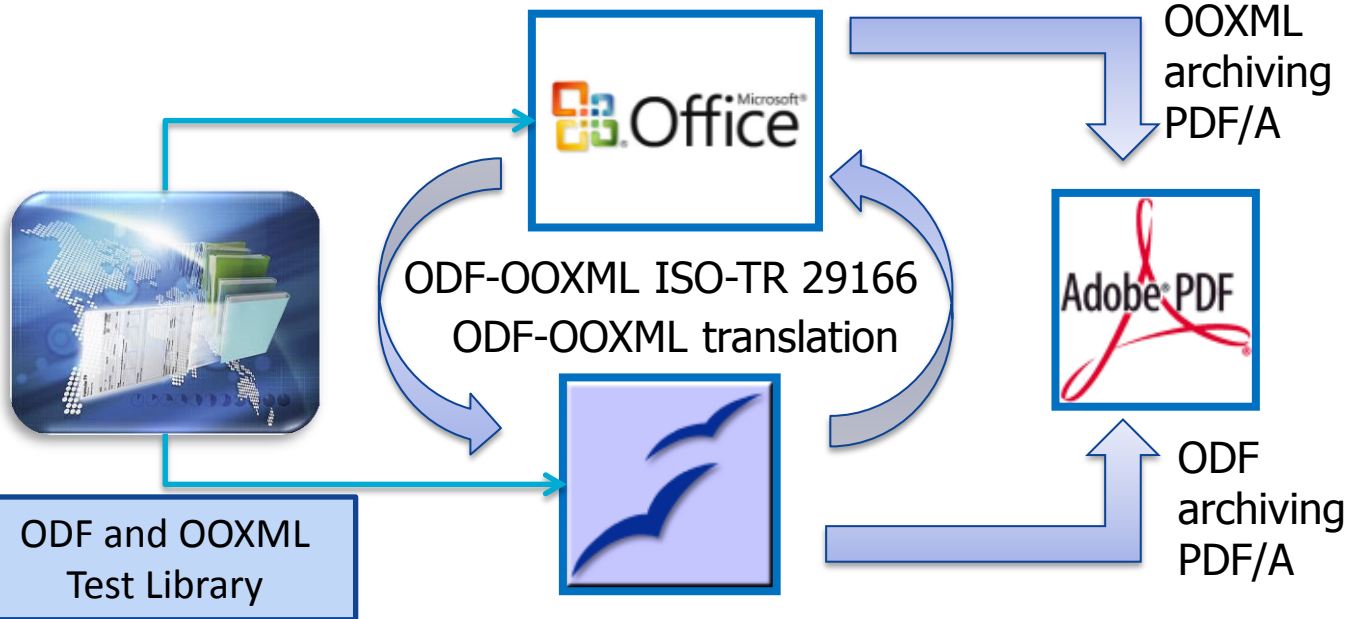


# The BIG Picture

## Center for Interoperability – Document Interoperability

OOXML semantic validation and profiling

OOXML portability and interoperability



Portal: <http://www.interoperability-center.com/en/dokumenteninterop-lab>

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## Interoperability and Portability

### BMW: Interoperability Project

Maßnahmen zur Förderung der Interoperabilität in der IKT | Procedures to improve interoperability in ICT



# Conformity and Interoperability

## Terminology within ISO SC34 WG1 / WG 4 / WG5

- Conformant
  - Obeys the provisions of a **specification/standard**
  - Conformance tests enable a better correspondence between what the standard says and what exists in reality
  
- Valid
  - Of an **XML document**, that it obeys a **schema**
  
- Interoperable
  - A property of **systems/applications** that interoperate
  
- Portable
  - A property of **data/documents** that may be used interoperable



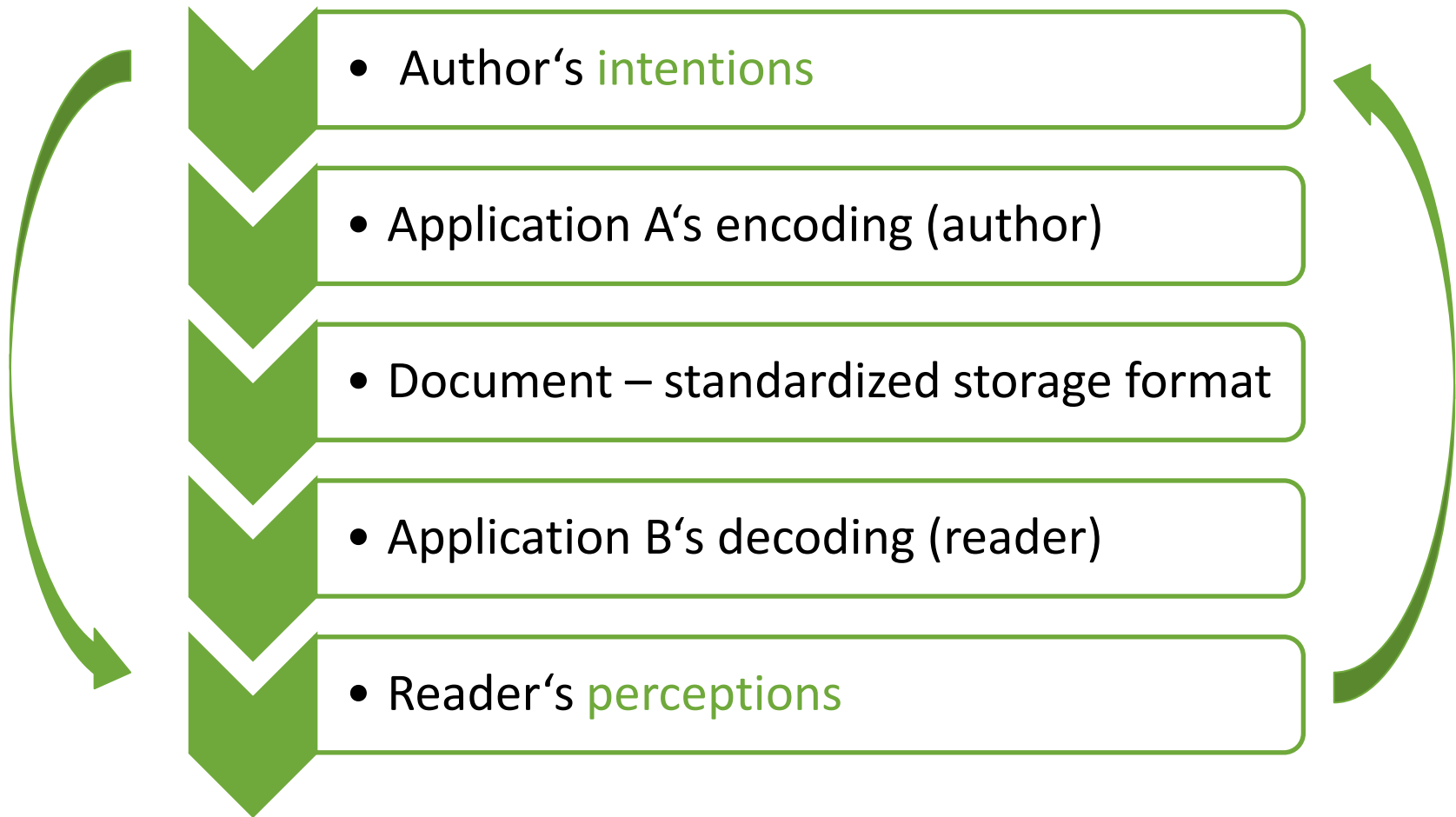
# OOXML and ODF Interoperability and Conformance

## Definitions within the Standards

- **Document conformance**
  - Introduction of document conformance classes XML (t/s) in OOXML
  - Introduction of additional conformance classes for charts, images, formulas, and database front ends in ODF
  - ODF introduces extended conformance, OOXML introduces MCE conformance
- Introduction of **application conformance** for
  - Document producers
  - Document consumers
  - „At least one semantics“ with respect to conformance classes/types
- OOXML introduces „Interoperability Guidelines“
- ODF refers to the „Interoperability Profile“ and a „State of the Art“ report
  - Documentation of implementation dependent / defined design decisions



# ODF Interoperability Interoperability Model



# ODF Interoperability

## Excerpt from “State of ODF Interoperability”

- Since the capabilities of ODF applications extend beyond the common desktop editors, and include other product categories such as web-based editors, mobile device editors, document converters, content repositories, search engines, and other document-aware applications, interoperability will mean different things to users of these different applications. However, to one degree or another, interoperability consists of meeting user expectations regarding one or more of the following **qualities** when transferring documents:
  1. The **visual appearance** of the document at various levels, e.g. glyph, run, line, block, page
  2. The **structure** of the document as revealed when the user attempts to edit the document, e.g., headers, paragraphs, lists, tables.
  3. The behaviors and capabilities of internal and external **links** and references.
  4. The behaviors and capabilities of **embedded** images, media and other objects.
  5. The preservation of document **metadata**.
  6. The preservation of document **extensions**.
  7. The integrity of **digital signatures** and other protection mechanisms.
  8. The runtime **behaviors** manifest from scripts, macros and other forms of executable logic.





# Project approach

## Interoperability Framework for Office Applications

- Define **document properties**
  - Use document properties from TR29166 as a starting point
  - Consideration of ODF document qualities
- Define **document categories**
  - Analyse typical documents from the German public sector such as letters, applications, notifications, minutes, CVs, presentations, orders
  - Use typical document categories from a Microsoft analysis in the US
- Define **interoperability test scenarios**, based on the IEEE 829 test framework and associated templates, e.g.
  - Joint processing of minutes in a heterogeneous environment
  - Preservation of visual appearance
  - Preservation of document structure
- Provide a **document test library** with associated documents in OOXML and ODF
- Provide interoperability **assistance tool**
- Provide ETSI based **test environment** for interoperability tests

## Project approach (cont.)

### Document Interoperability Lab

- Constitution of a **Document Interoperability Lab** consisting of
  - External ODF, OOXML, PDF/A validators
  - FOKUS metavalidator
  - Document analyser such as XML editors and Package explorer
  
  - Windows based office suites
  - Linux based office suites
  - Web / Cloud based office suites
  
  - Document library with ODF and OOXML documents
  - Scenario library
  - Interoperability assistance tool to ease access to the Interoperability Knowledge Base (on-going work)
    - Test management tool

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## Document Libraries



# Document Test Libraries

## Categories and Properties

- Document **categories** such as

- Letter
- Minutes
- Report
- CV
- Invoice
- Book
- Photo book
- Sales presentation
- Poster
- Data analysis
- ...

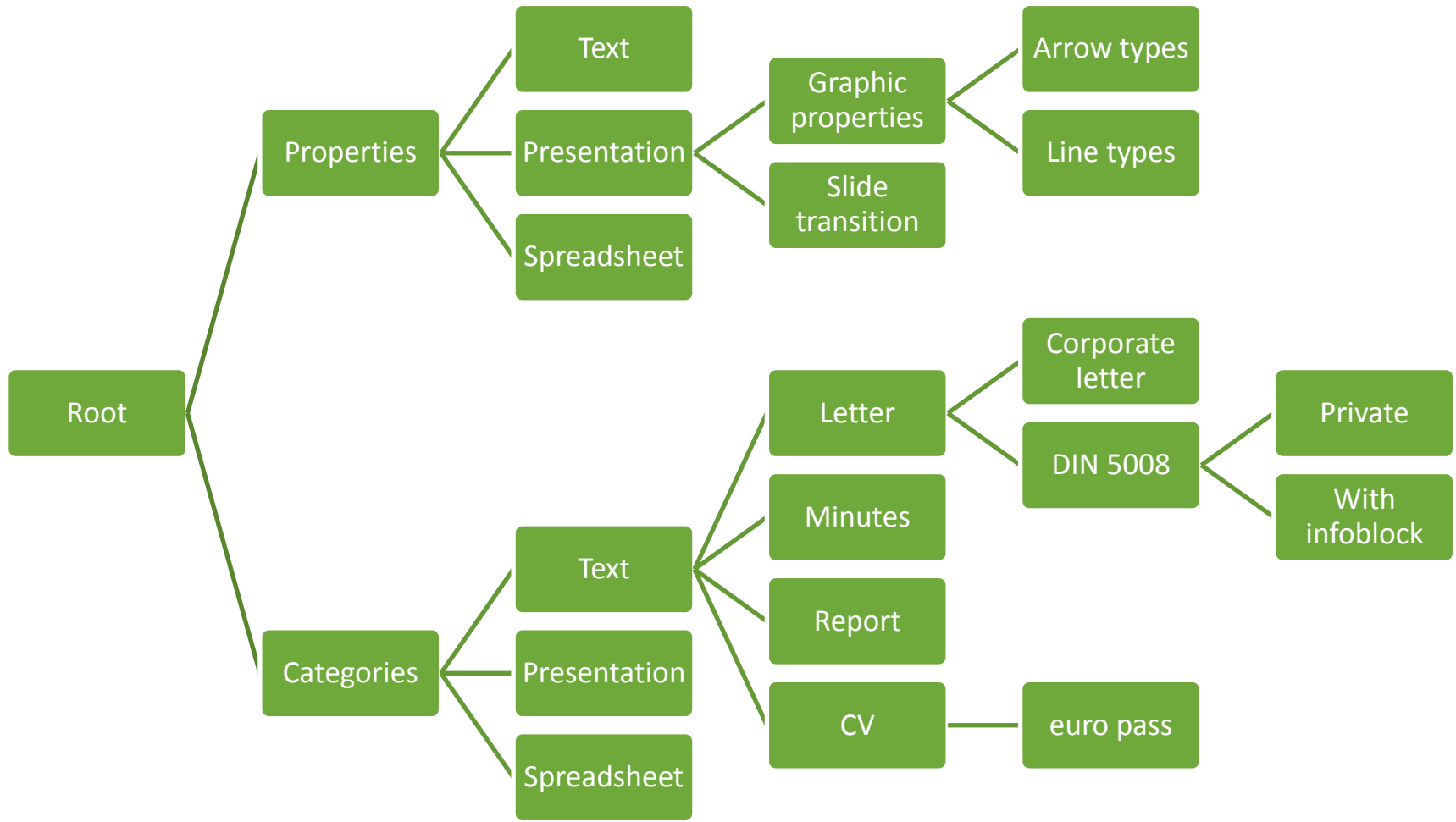
- Document **properties** such as

- Text formatting
- Paragraph formatting
- Tables
- Headers and footers
- Indices
- Digital signatures
- Change tracking
- Calculation
- Math functions
- Slide layout
- Graphic properties
- Colour models
- ...



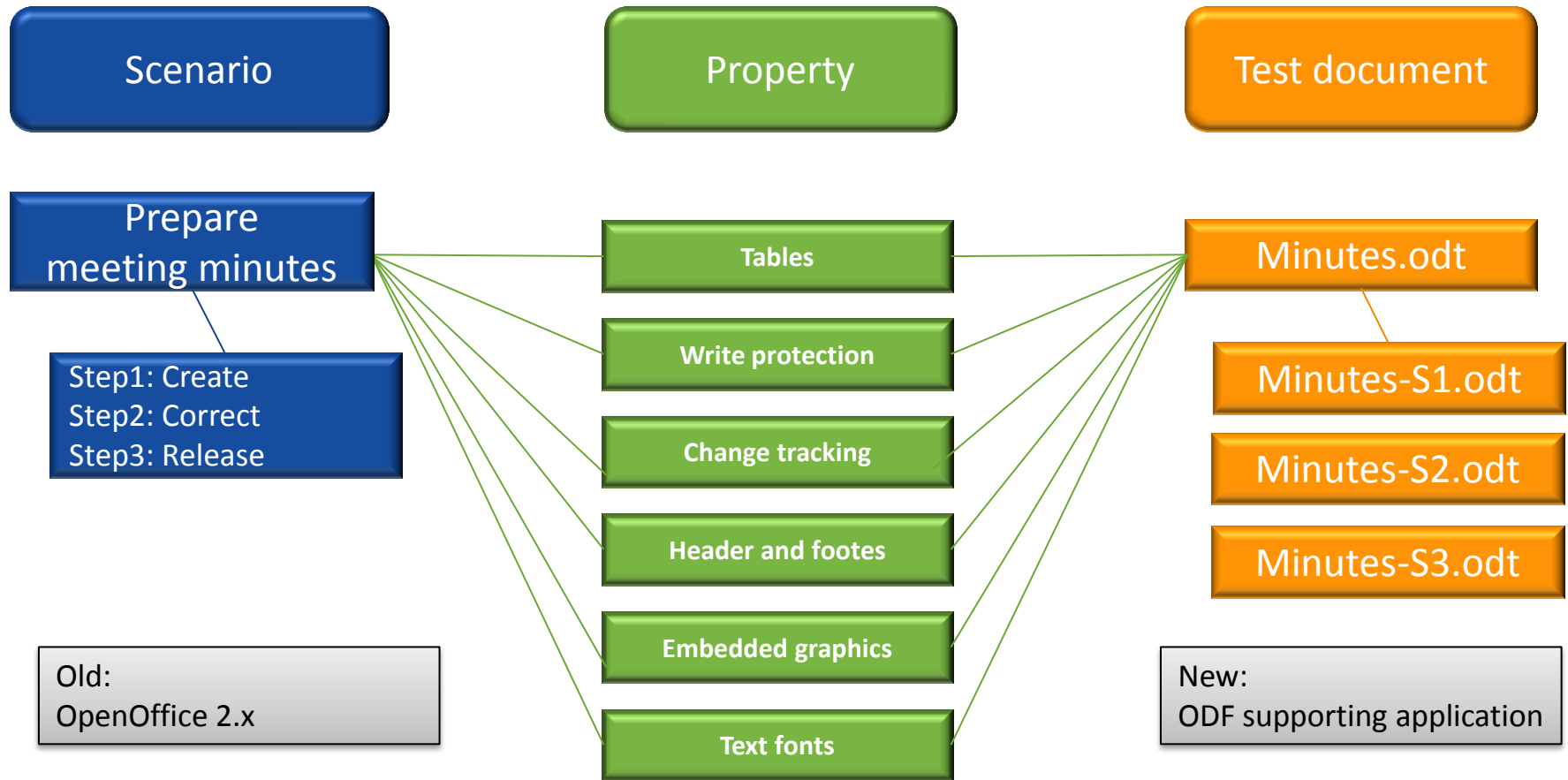
# Structure of the Document Library

## Examples



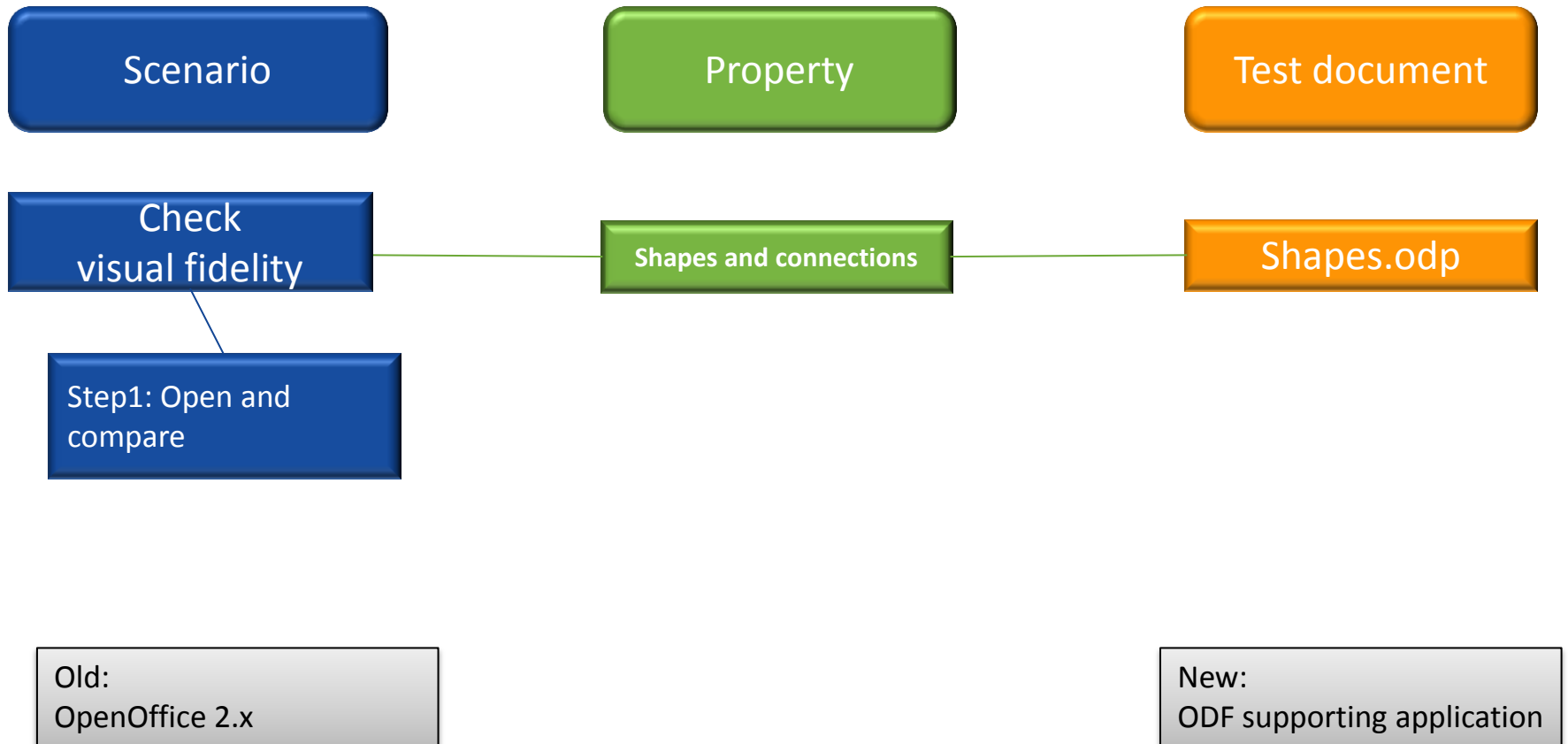
# Interoperability Scenarios

## Example using Document Category „Minutes“

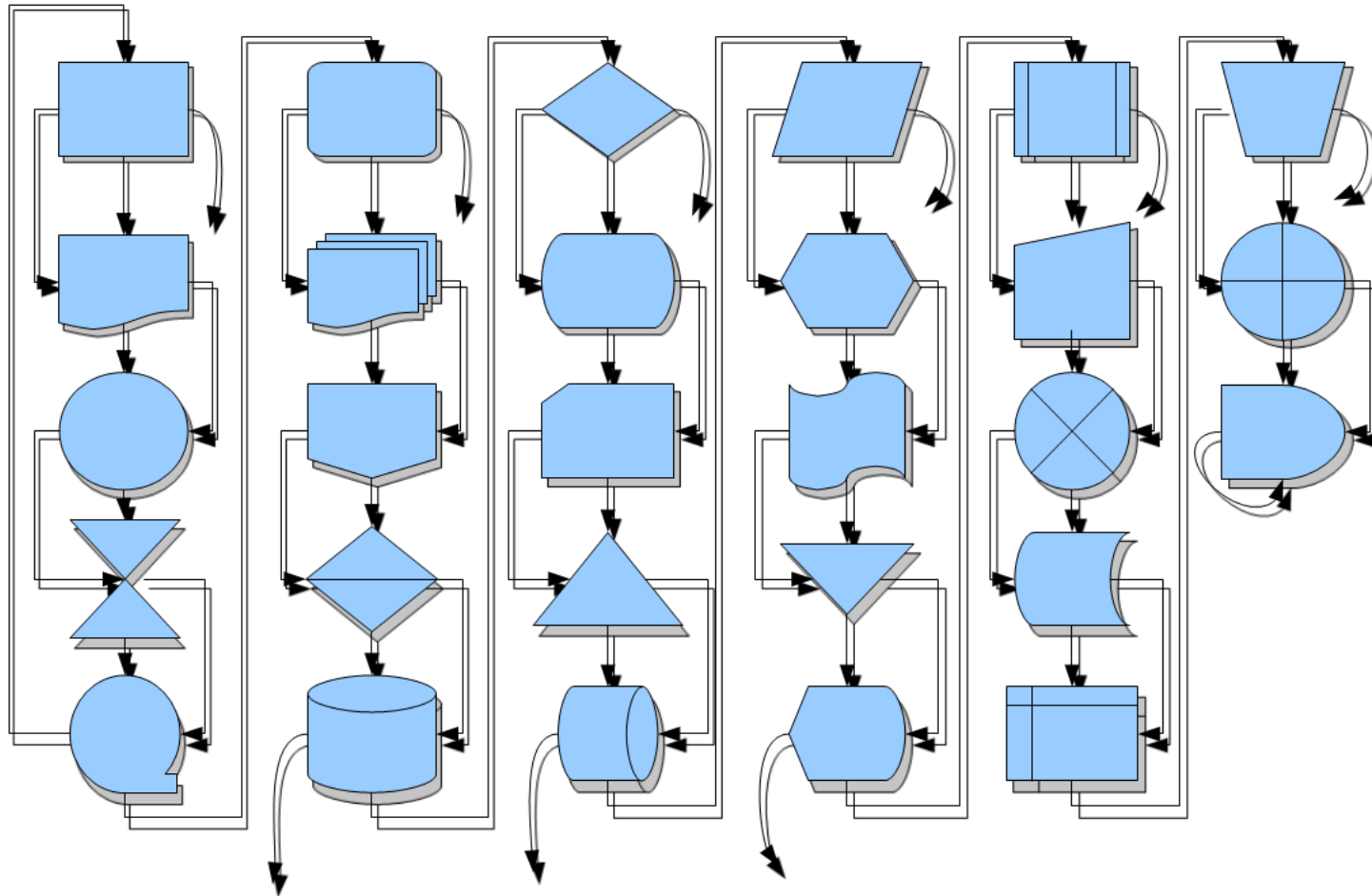


# Interoperability Scenarios

## Example using Document Property „Shapes and Connections“

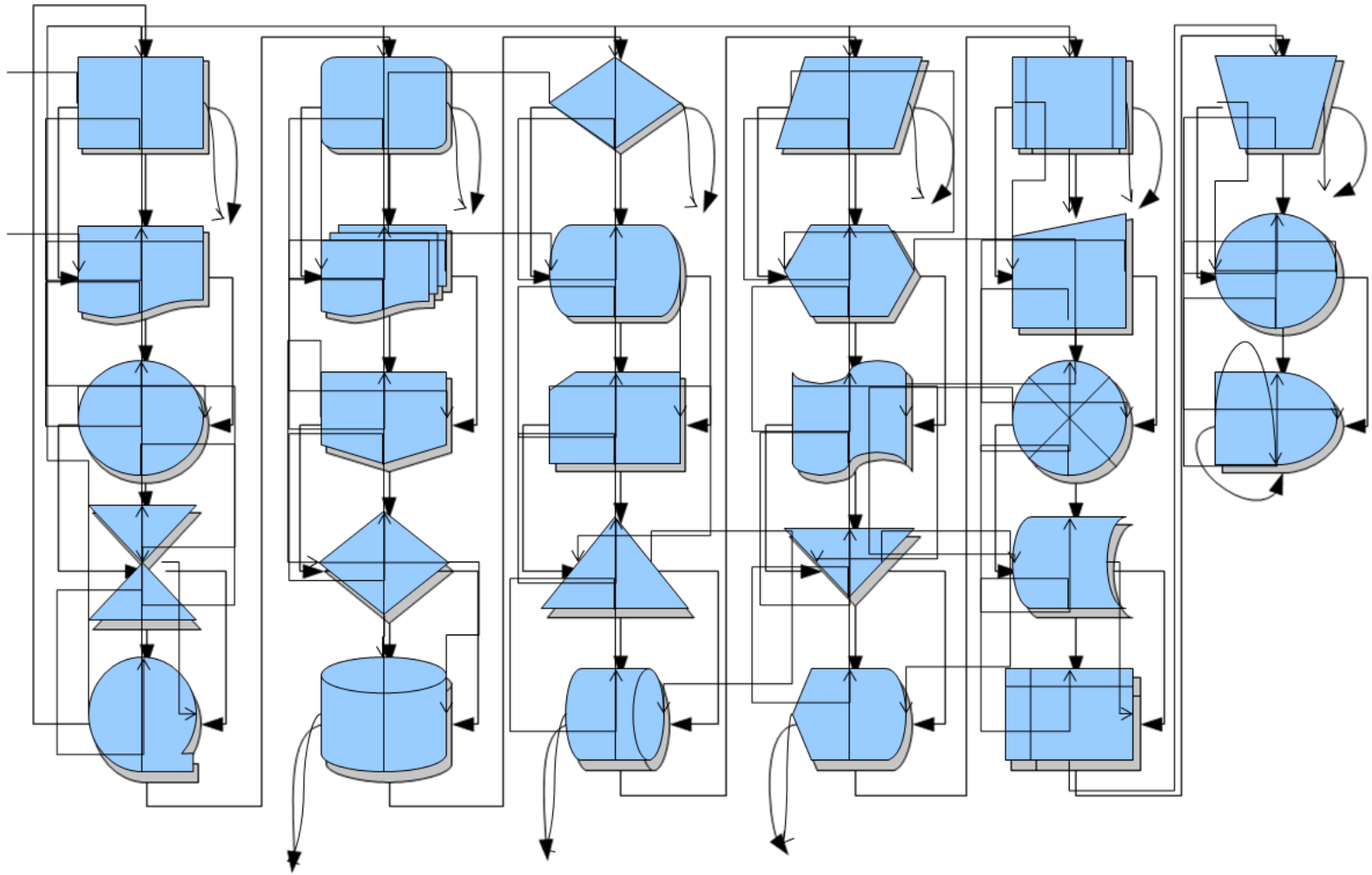


OK !





OK ?



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## Interoperability Assistance Toolset



# Interoperability Assistance Tool

## Overview

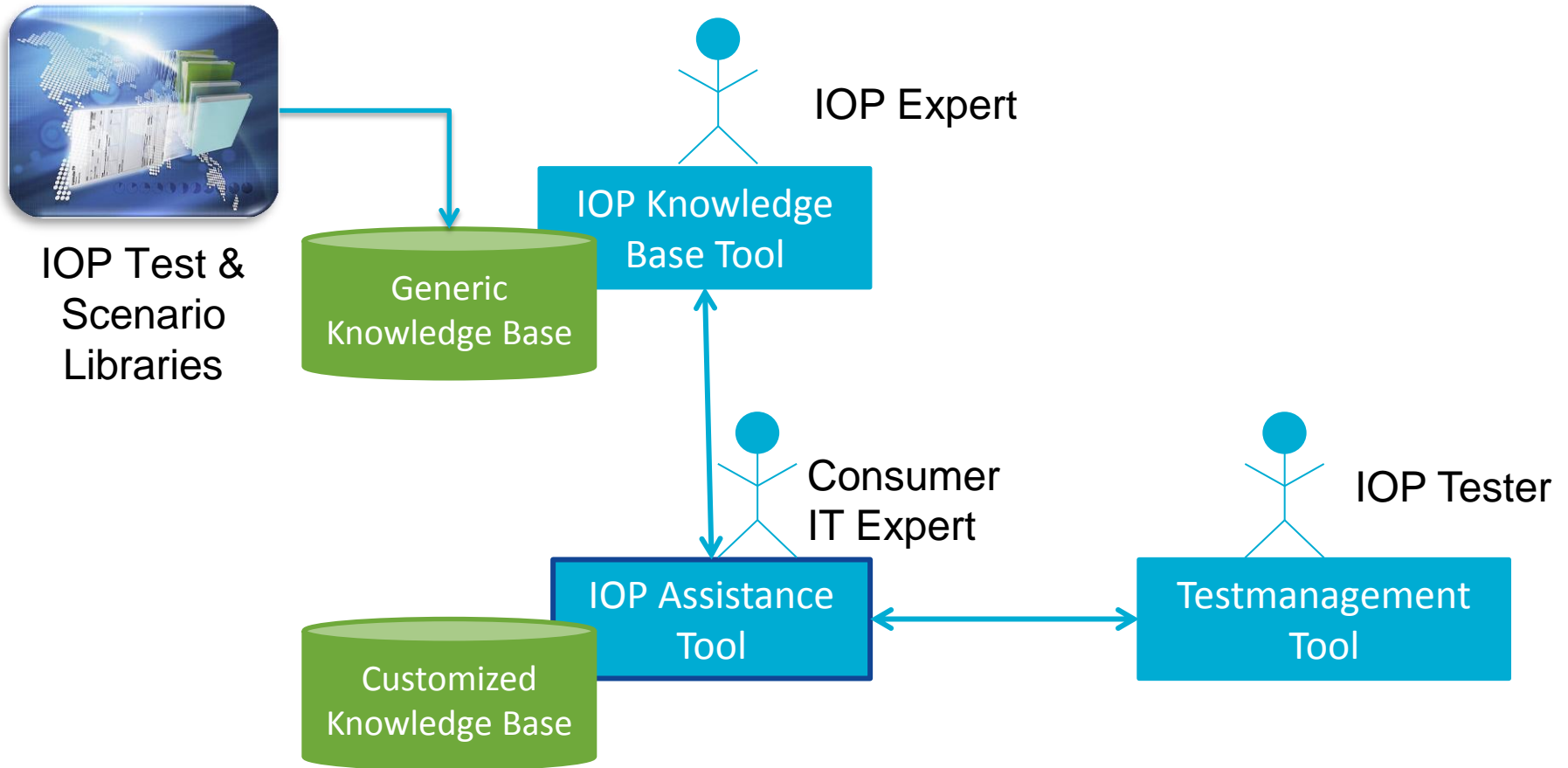
- Support the identification and definition of interoperability related requirements
  - Scenario based testing
  - Integrated into the procurement process of German federal administrations
  - Generation of IEEE 829 (software test documentation) conformant documents as part of the
    - Requirement specification
    - Test documentation
  
- Provide easy access to interoperability knowledge base
  - Scenario library
  - Test (document) library
  
- Interface to test management tools

# Interoperability Assistance Toolset Architecture

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# Interoperability Assistance Tool

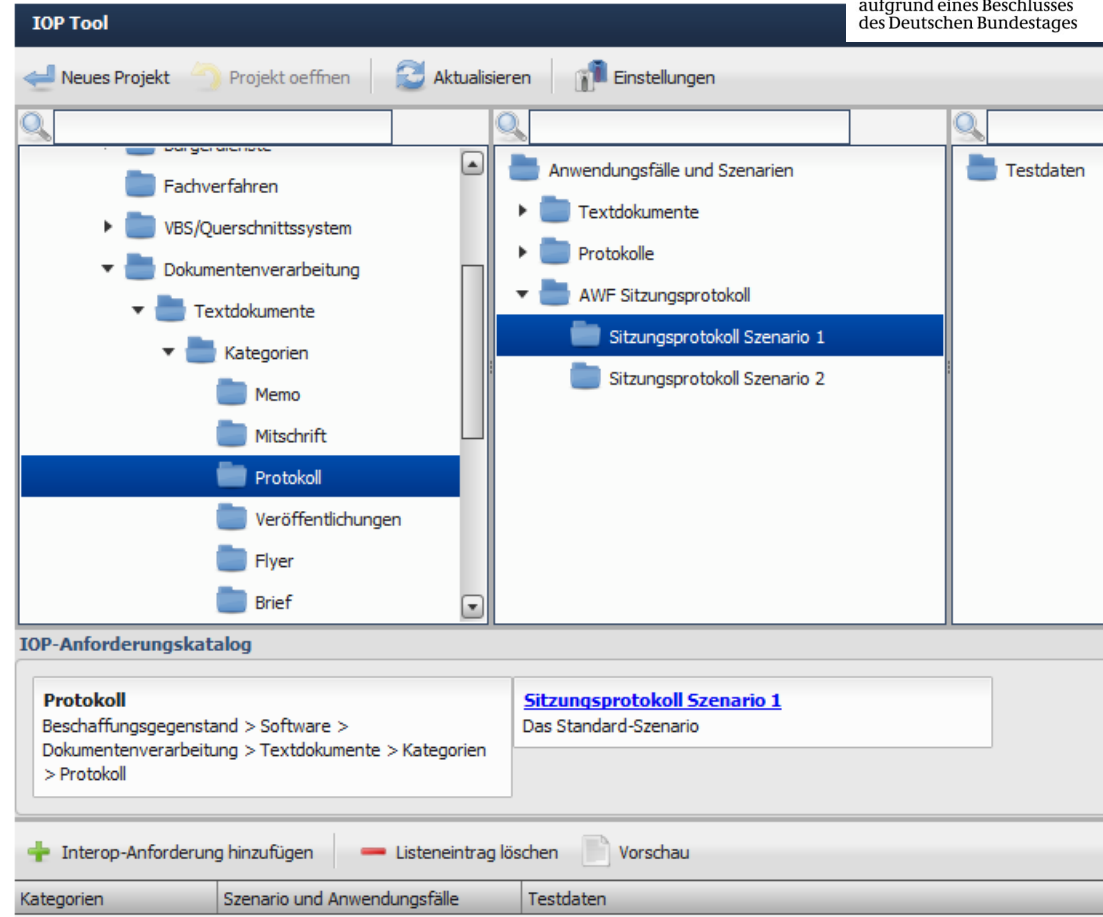
## Functionality

- Import knowledge base
- Customize knowledge base
- Navigate through
  - Requirement catalogues
  - IOP use cases
  - IOP scenarios
- Edit
  - Requirement catalogues
  - IOP use cases
  - IOP scenarios
- Customize
  - IOP scenarios
- Generate IEEE 829 documents

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# Conclusion



# Conclusion

- A property based approach helps to define domain specific document categories
- Associated test document libraries help to evaluate the interoperability of office applications
  - A complete systematic approach is time consuming
- Associated scenario libraries help to perform comprehensible tests
- An associated IOP assistance tools helps to navigate through
  - properties,
  - categories,
  - scenarios and
  - test documents



Thank you !

Any questions ?



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