



Ontology for Dynamic Help, Chatbot, and User Guides in a Software Product

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Agenda

- ▶ A glance at brief history of documentation techniques
- ▶ Current challenges
- ▶ Reusing Vs Repurposing content
- ▶ Ontology
 - ▶ Understanding and building an ontology
 - ▶ Repurposing it to generate various output formats

Current challenges



- ▶ Managing content for different deliverables
- ▶ Reducing the time in the documentation development and publishing life cycle
- ▶ Information for dynamic applications and dynamic information for applications

Reuse or repurpose?

Reuse is simply using the existing content for the same deliverable, in the same way, multiple times

Repurpose is altering or incorporating same content into other forms of deliverables

Why repurpose content



To maximize content ROI

Gain a better return on your content investment by adapting it for multiple use cases



To reduce time

Reduce the amount of time your teams spend creating redundant or similar content



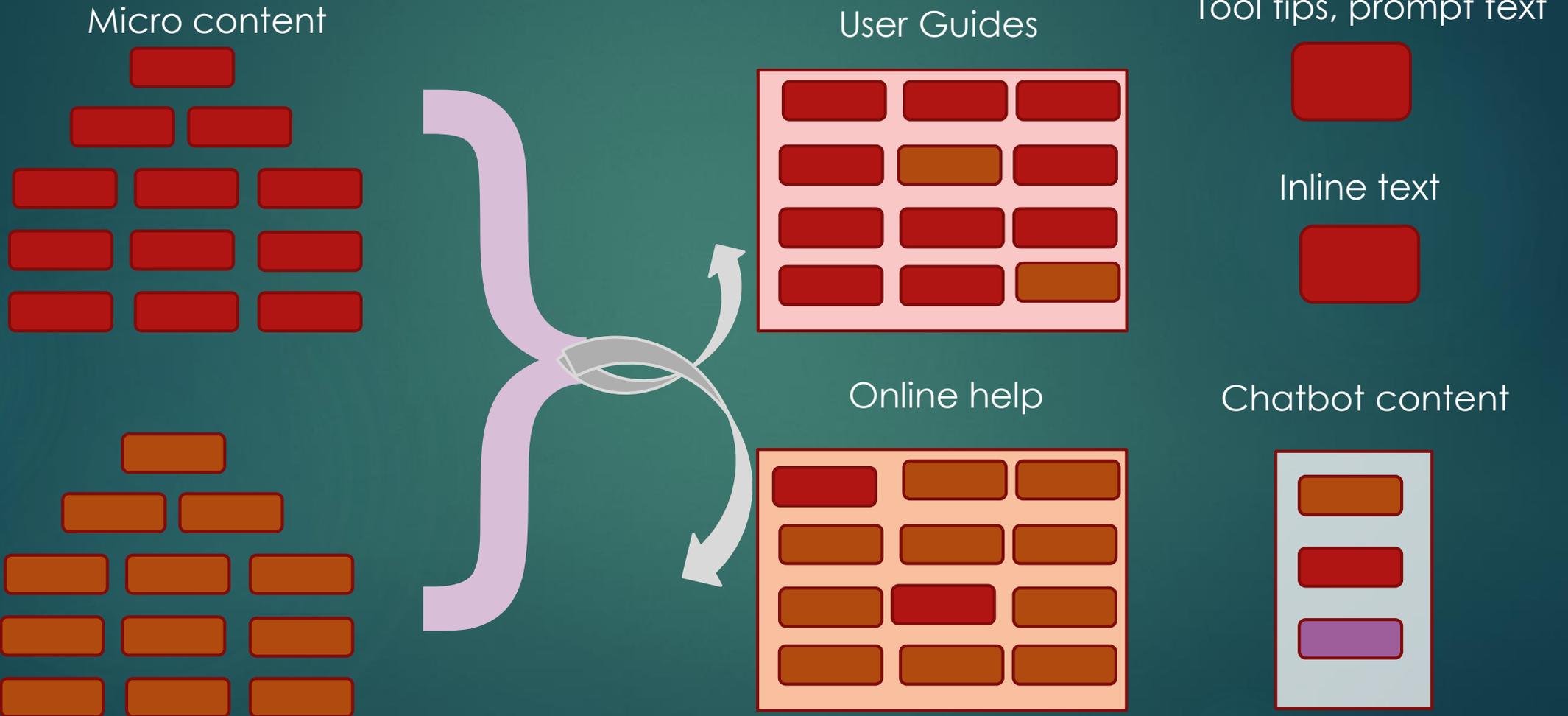
To achieve multiple goals

providing inline text or tooltips, in built help, user guides, Chatbot



To create content faster

Repurposing content in technical documentation



Ontology

What is ontology

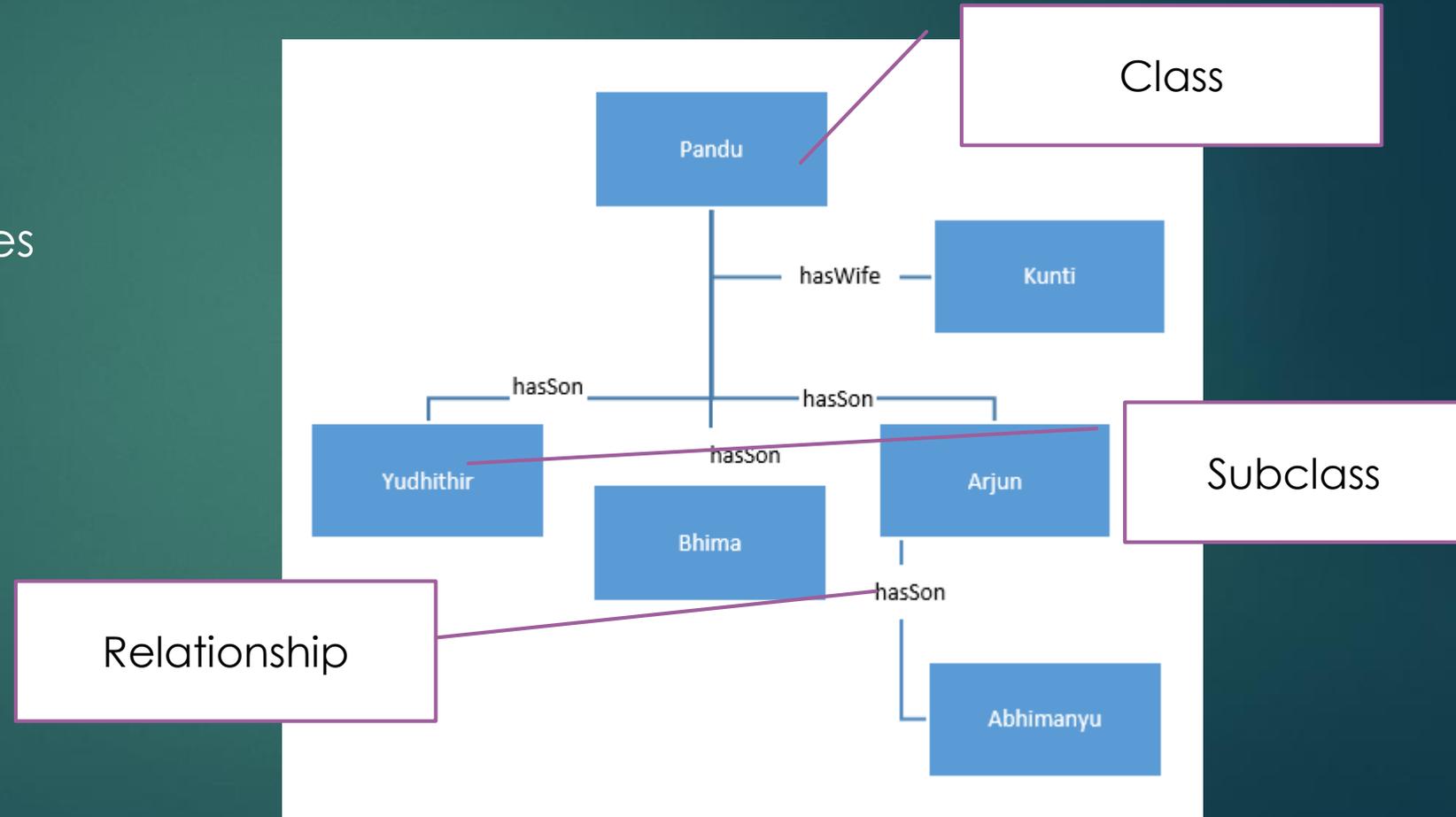
- ▶ Ontology is a formal representation of knowledge of a domain
- ▶ It is a language of semantic web

Why ontology

- ▶ To share common understanding of structure of information among people and software agents
- ▶ To enable reuse and primarily repurpose of domain knowledge
- ▶ To build, support, and use knowledge model

Components of an ontology

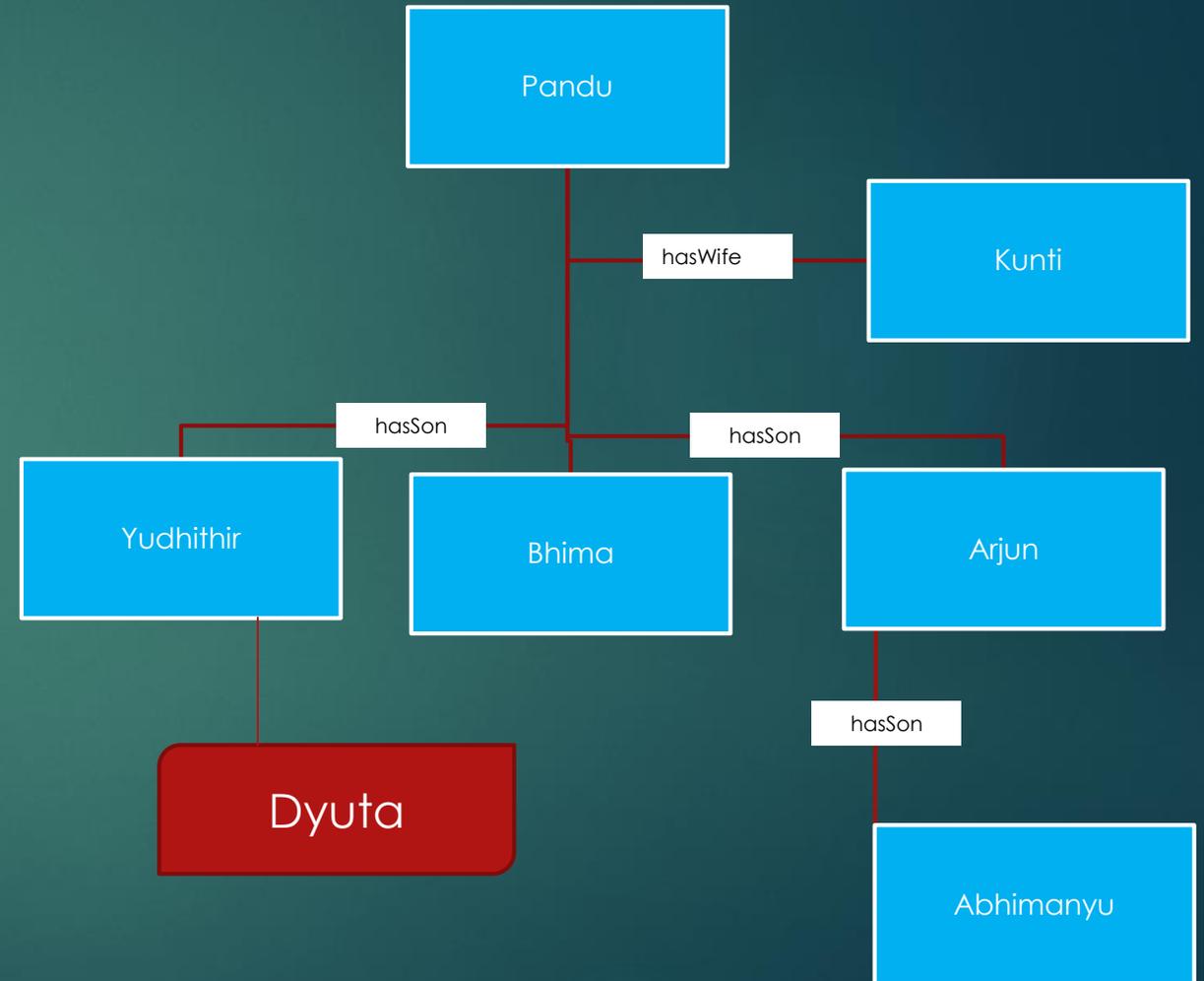
- ▶ Classes
- ▶ Individuals
- ▶ Attributes or properties
- ▶ Relations



How to build ontology

- ▶ Determine domain and scope
- ▶ Enumerate important terms
- ▶ Define classes and class hierarchies
- ▶ Define relationships
- ▶ Define restrictions (cardinality, value-type) on relationships
- ▶ Create instances

Mahabharata



Selective display of information

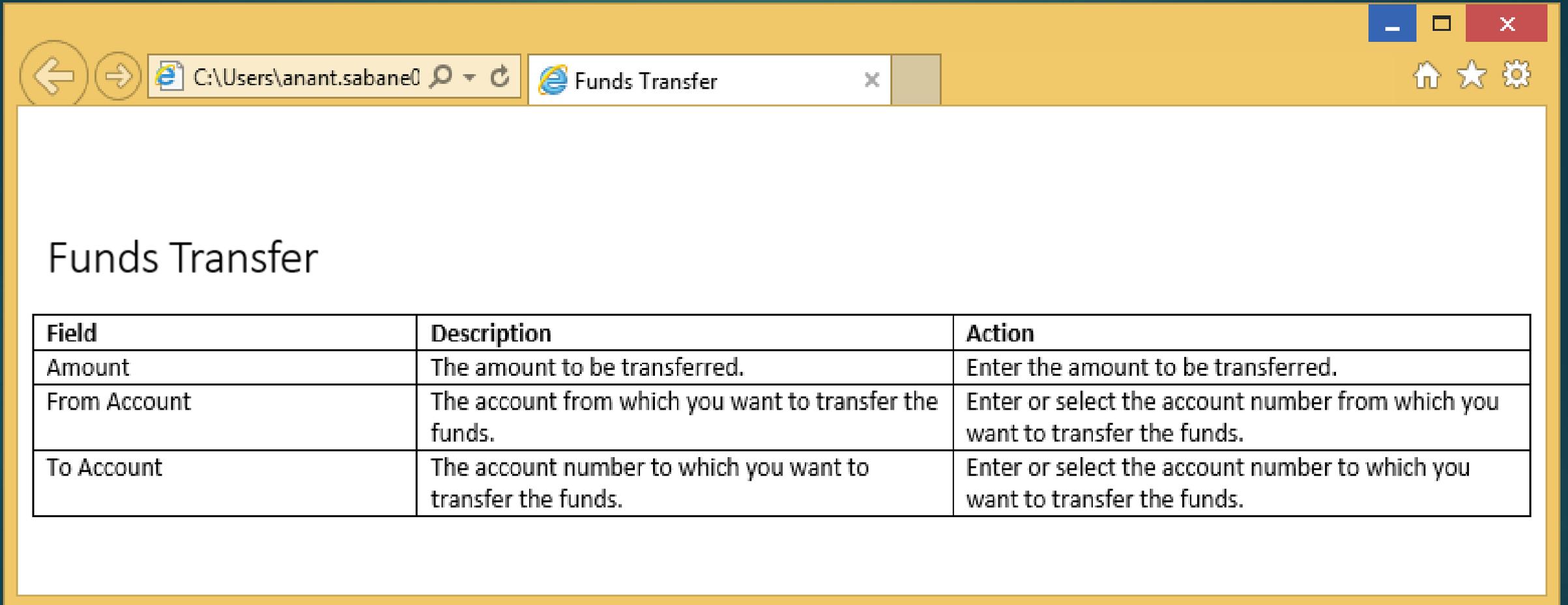
Amount

Id	Name	Action	Definition
37	Amount	Enter the amount to be transferred	Amount involved in transaction

[Back](#)

Disclaimer: The screen shown on this page is only for illustration purpose and does not belong to any software.

Help page

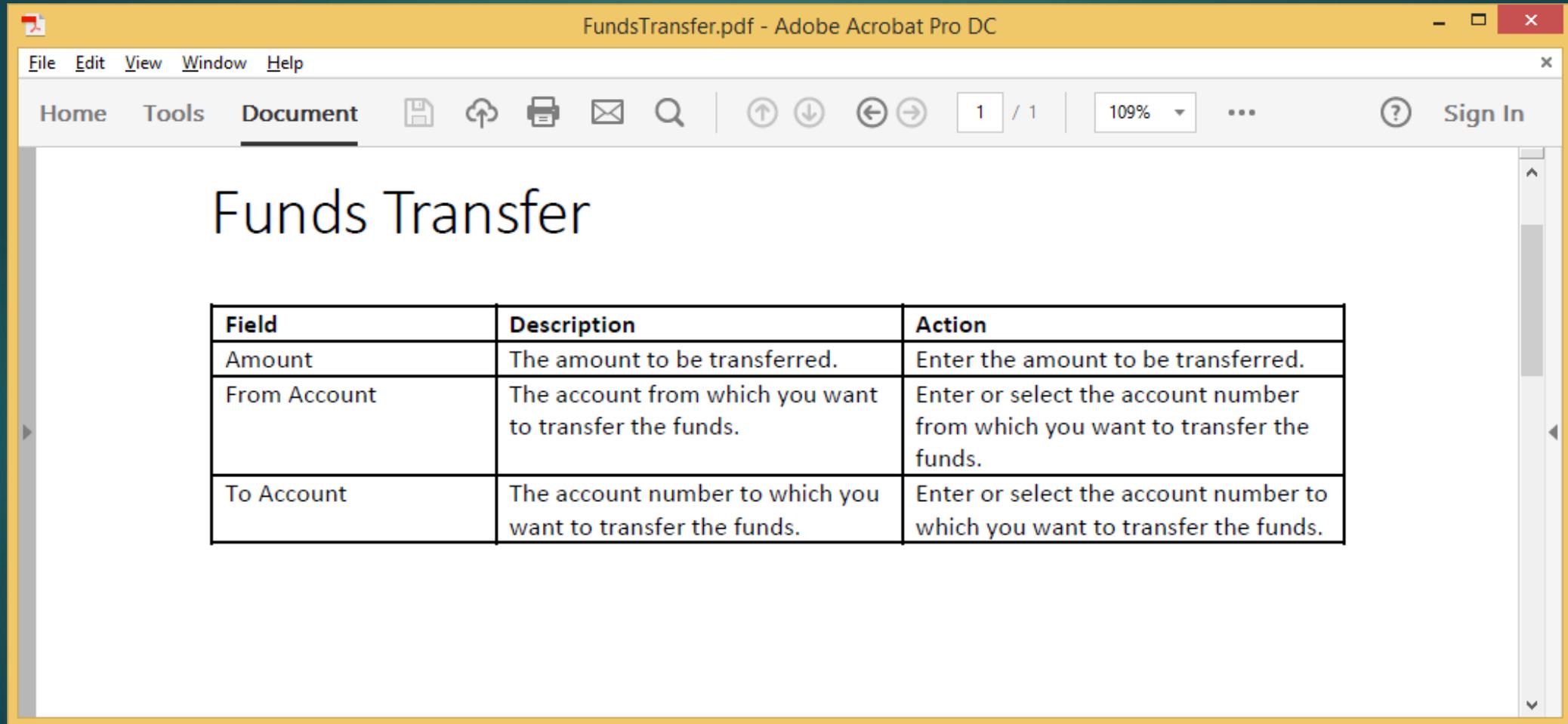


Funds Transfer

Field	Description	Action
Amount	The amount to be transferred.	Enter the amount to be transferred.
From Account	The account from which you want to transfer the funds.	Enter or select the account number from which you want to transfer the funds.
To Account	The account number to which you want to transfer the funds.	Enter or select the account number to which you want to transfer the funds.

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Topic from user guide



FundsTransfer.pdf - Adobe Acrobat Pro DC

File Edit View Window Help

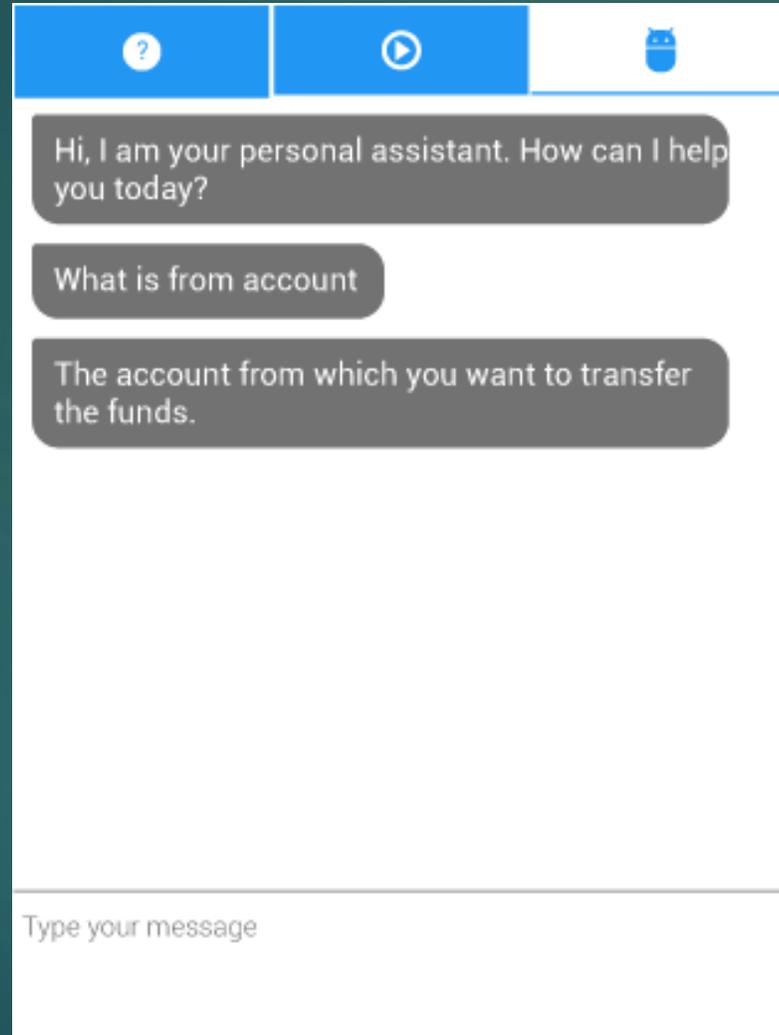
Home Tools Document 1 / 1 109% Sign In

Funds Transfer

Field	Description	Action
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Chatbot



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Creating ontology in Protégé

The screenshot shows the Protégé ontology editor interface for an ontology named 'FundTransfer'. The main window displays the 'Ontology header' section, which includes the 'Ontology IRI' and 'Ontology Version IRI'. Below this, the 'Annotations' section is visible, showing three comments in different languages: Hindi, French, and English. The English comment reads: 'This ontology defines funds transfer operation for savings bank account.' A red box highlights the text 'Internationalized resource identifier' with a line pointing to the 'Ontology IRI' field. Another red box highlights the text 'Description of ontology' with a line pointing to the English comment. On the right side, the 'Ontology metrics' panel is visible, showing various counts for the ontology. A watermark 'https://protege.stanford.edu/' is overlaid diagonally across the center of the image.

Internationalized resource identifier

Annotations

- comment [language: hd]
यह ऑनलाइन बचत बैंक खाते के लिए फंड ट्रांसफर ऑपरेशन को परिभाषित करता है।
- comment [language: fr]
Cette ontologie définit l'opération de transfert de fonds pour un compte bancaire d'épargne.
- comment [language: en]
This ontology defines funds transfer operation for savings bank account.

Ontology metrics:

Metrics	
Axiom	30
Logical axiom count	3
Class count	4
Object property count	2
Data property count	0
Individual count	0
AL	AL

Class axioms	
SubClassOf axioms count	0
EquivalentClasses axioms count	3
DisjointClasses axioms count	0
GCI count	0
Hidden GCI Count	0

Ontology IRI: /FundTransfer

Ontology Version IRI: e.g. /FundTransfer/1.0.0

Imported ontologies:

Direct Imports

Indirect Imports

No Reasoner set. Select a reasoner from the Reasoner menu Show Inferences

Adding classes in ontology

The screenshot displays the Protege ontology editor interface. The main window title is "ban (http://www.mis.ugent.be/ontologies/bank2.owl) : [C:\Users\anant\Desktop\bank.owl]". The menu bar includes File, Edit, View, Reasoner, Tools, Refactor, Window, and Help. The address bar shows the URL "ban (http://www.mis.ugent.be/ontologies/bank2.owl)" and a search box for entities. The "Active Ontology" tab is set to "Entities".

The left sidebar shows the "Class hierarchy: Bank" view. The "Thing" class is selected, and its subclasses are listed:

- AddedValue
- APR
- Branch
- buyCostProperty
- Capital
- Channel
- Collection
- Company
- Currency
- DelayInterestRate
- Department
- Employee
- EndingDate
- 'Event Type'
- ExpirationDate
- FormalRelationshipType
- HandlingCapital
- HomeInsurance
- InitialPeriod
- InitialQuota
- InterestDelay

The right sidebar shows the "Class Annotations" and "Class Usage" tabs. The "Annotations: Thing" panel is active, displaying a list of annotations with plus signs for expansion. A red box highlights the word "Classes" in this panel, with a red arrow pointing from the "Collection" class in the left sidebar to it. Below the annotations panel is the "Description: Thing" panel, which lists various relationships and axioms:

- Equivalent To (+)
- SubClass Of (+)
- General class axioms (+)
- SubClass Of (Anonymous Ancestor)
- Instances (+)
- Target for Key (+)
- Disjoint With (+)

Properties for types of classes

Property	Purpose
Label	To provide the display name
Concept	Concept of the class
Definition	Purpose or definition of the class
Description	Action required
Question	Question to display in FAQ
Answer	Answer to display in FAQ
Comment	Anything other than the above details that are required for Chatbot

Adding properties for classes

The screenshot shows the Protégé software interface with the 'Fund Transfer' ontology open. The 'Amount' dialog box is active, allowing the user to define a new data property. The dialog is titled 'Amount' and contains the following elements:

- Data Property:** A section with icons for adding, deleting, and asserting properties. A dropdown menu is set to 'Asserted'.
- Property List:** A tree view under 'owl:topDataProperty' showing existing properties: Comment, Question, Answer, Label, Concept (highlighted in blue), Description, and Definition.
- Description:** A large text area containing the text 'The amount to be transferred.'.
- Type and Lang:** Two dropdown menus at the bottom for selecting the property type and language.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

In the background, the main interface shows the 'Fund Transfer' class hierarchy with 'Amount', 'From Account', and 'To Account' listed as subclasses.

Using properties for help and user guides

The screenshot displays a software development tool interface with several panels. The top-left panel shows a class hierarchy for 'Fund Transfer' with sub-items 'From Account' and 'Funds Transfer'. The top-right panel, titled 'Class Annotations', shows annotations for the 'Amount' field, including 'label [language: en]'. The middle-left panel contains a table with columns 'Field', 'Description', and 'Action'. The middle-right panel shows multiple definitions and descriptions for the 'Amount' field in different languages (en, hd, fr). The bottom-left panel lists various annotation properties like 'answer', 'backwardCompatibleWith', etc. Three red boxes with arrows point to specific elements: 'Field name' points to 'Amount' in the annotations list; 'Purpose of field' points to the 'description' in the English definition; 'User action required on the field' points to the 'description' in the French definition.

Field	Description	Action
Amount	The amount to be transferred.	Enter the amount to be transferred.
To Account	The account number to which you want to transfer the funds.	Enter or select the account number to which you want to transfer the funds.

Field name

Purpose of field

User action required on the field

Repurposing properties for Chatbot

The image displays a software interface with two main panels. The left panel shows a chatbot conversation with a user asking 'What is from account' and receiving a response: 'The account from which you want to transfer the funds.' The right panel shows the 'Class Annotations' for the 'From Account' property, listing various annotations in different languages.

Field name

Purpose of field

User action required on the field

Annotation Type	Language	Text
label	en	From Account
label	hd	खाते से
label	fr	Du compte
definition	en	The account from which you want to transfer the funds.
definition	fr	Le compte à partir duquel vous souhaitez transférer les fonds.
definition	hd	जिस खाते से आप फंड ट्रांसफर करना चाहते हैं
description	en	Enter or select the account number from which you want to transfer the funds.
description	fr	Entrez ou sélectionnez le numéro de compte à partir duquel vous
description	hd	

Maintaining translations

The screenshot shows the Protege ontology editor interface. The main window displays the class hierarchy for 'Fund Transfer', with 'To Account' and 'From Account' as subclasses. A dialog box is open, showing a list of annotation types on the left, including 'label', 'literal', and 'question'. The 'literal' type is selected, and the dialog box shows the value 'To Account' in the 'Value' field. The 'Lang' dropdown menu is open, showing options for 'en', 'de', 'es', and 'fr'. The 'en' option is currently selected.

untitled-ontology-9 (/untitled-ontology-9)

Active Ontology x Entities x Individuals by class x DL Query x

Class hierarchy Class hierarchy (inferred) Description

Class hierarchy: To_Account

'Fund Transfer'

- 'To Account'
- 'From Account'

Annotations

- label [To Account]
- definition [The account]
- description [Enter the...]

Description:

Equivalent To

SubClass Of

General class

SubClass Of

Instances

Target for K

Disjoint With

Literal Entity IRI IRI Editor Property values

Value

To Account

Type [] Lang [en]

en
de
es
fr

OK Cancel

Maintaining translations

The screenshot displays a software interface with several panels. The top-left panel, titled 'Class hierarchy: Amount', shows a tree view with 'Fund Transfer' expanded to show 'From Account', 'To Account', and 'Amount'. The bottom-left panel, 'Annotation property hierarchy', lists various properties like 'answer', 'backwardCompatibleWith', 'comment', 'definition', 'deprecated', 'description', 'incompatibleWith', 'isDefinedBy', 'label', 'literal', 'priorVersion', 'question', 'seeAlso', and 'versionInfo'. The right side of the interface is split into two main sections: 'Class Annotations' and 'Class Usage'. The 'Class Annotations' section, titled 'Annotations: Amount', lists several annotations for the 'Amount' class, including labels in English, French, and Hindi, and definitions in English and Hindi. The 'Class Usage' section, titled 'Description: Amount', is currently empty. At the bottom right, there is a status bar with the text 'No Reasoner set. Select a reasoner from the Reasoner menu' and a checked checkbox for 'Show Inferences'.

Class hierarchy (inferred) Description

Class hierarchy: Amount

- 'Fund Transfer'
 - 'From Account'
 - 'To Account'
 - Amount**

Individuals by type Annotation property hierarchy Datatypes

Object property hierarchy Data property hierarchy

Annotation property hierarchy:

- answer
- backwardCompatibleWith
- comment
- definition
- deprecated
- description
- incompatibleWith
- isDefinedBy
- label
- literal
- priorVersion
- question
- seeAlso
- versionInfo

Class Annotations Class Usage

Annotations: Amount

Annotations +

- label [language: en] Amount
- label [language: fr] montant
- label [language: hd] रकम
- definition [language: en] The amount to be transferred.
- definition [language: hd] हस्तांतरित की जाने वाली राशि
- definition [language: fr] Le montant à transférer.
- description [language: en] Enter the amount to be transferred.
- description [language: fr] Entrez le montant à transférer.
- description [language: hd] हस्तांतरित की जाने वाली राशि दर्ज करें

Description: Amount

No Reasoner set. Select a reasoner from the Reasoner menu Show Inferences

Questions

Thank you!

