Electronic Commerce Interoperability with the Court System

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Features Integrated

- ebXML Business Process Specification
- ebXML Collaboration Protocol Agreement
- legalXML Contracts
- legalXML Court Documents
- Rule Based XML (currently with Court Filing)

XML and Rules

- XML provides the input to the Rules
- The Rules generate XML
- The rules themselves are in XML

Working Draft of XML Rules in XML standard submitted

- On Court Filing Work Group home page
  - un_100xx_2001_05_05.html
- Software has been implemented
  - Available for download
- Several small applications implemented
  - Not yet fielded
- Also, submitted to Rule ML standardization effort
- GUI to be enhanced

XML Markup

```
<LHS>
<Check DocumentName="VariableName:c"><a>
    <b><TextVariable VariableName="b"/></b>
</a></Check>
</LHS>
<RHS>
<Action>
<q><r b = "VariableName:b" ><TextVariable
  VariableName="b"></TextVariable><v><Te
xtVariable VariableName="c"/></v></r></q>
</Action>
```

Sample Input Document: c001

```
<a><b>blah</b></a>
```

Output Would Be:

```
<q><r b = “blah”>blah<v>c001</v></r></q>
```

Processing “Any” Content

Retrieving Info

```
<DefaultJudgmentRequest>
<PlaintiffList><AnyContentBinder VariableName="P"/>
</PlaintiffList>
<DefendantList><Defendant><TextVariable
   VariableName="D"/></Defendant>
</DefendantList>
```

Sending it Back in:

```
<DefaultJudgment>
  <PlaintiffList>
     <AnyContentVariable VariableName="P"/>
  </PlaintiffList>
  <DefendantList>
     <Defendant><TextVariable VariableName="D"/></Defendant>
  </DefendantList>
```

- Nesting Ellipse's for Matching:
  - `<Check><a1><NestingEllipse><e1>e1</e1></NestingEllipse></a1></Check>`
  - Matches
  - `<a1><b1><c1 >c1</c1><d1 a="2">d1<e1>e1<junk><f1/></junk></e1></d1></b1></a1>`

- LHS

```
<a>
<Loop ID="LoopOne">
<VariableList>  <Variable>u</Variable></VariableList>
<b><TextVariable VariableName="u"/></b>
</Loop></a>
```

- RHS

```
<d><Loop ID="LoopOne"><r><TextVariable
VariableName="u"/></r></Loop></d>
```

- SAMPLE INPUT

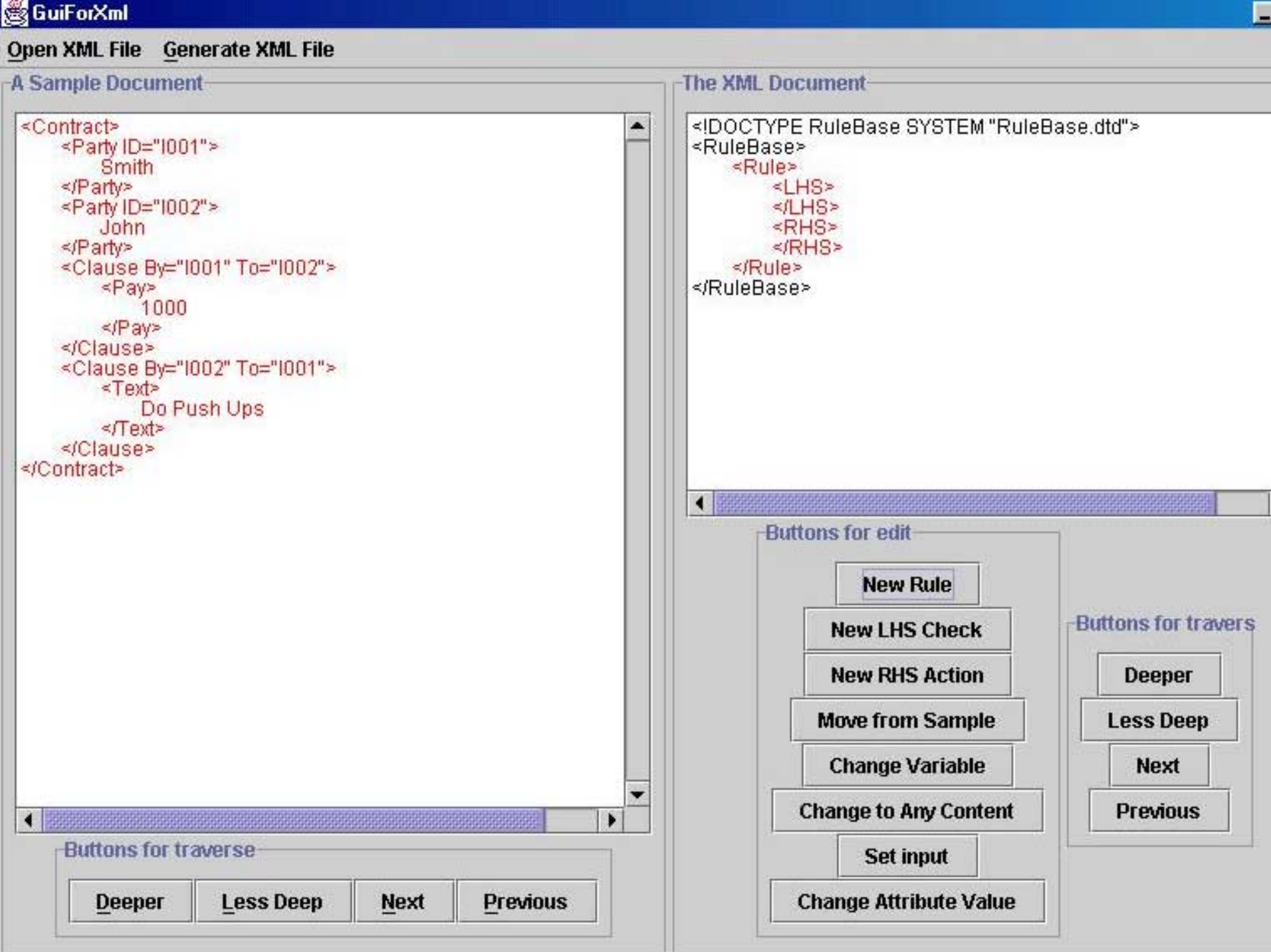
```
<a>
    <b>name</b>
    <b>name two </b>
</a>
```

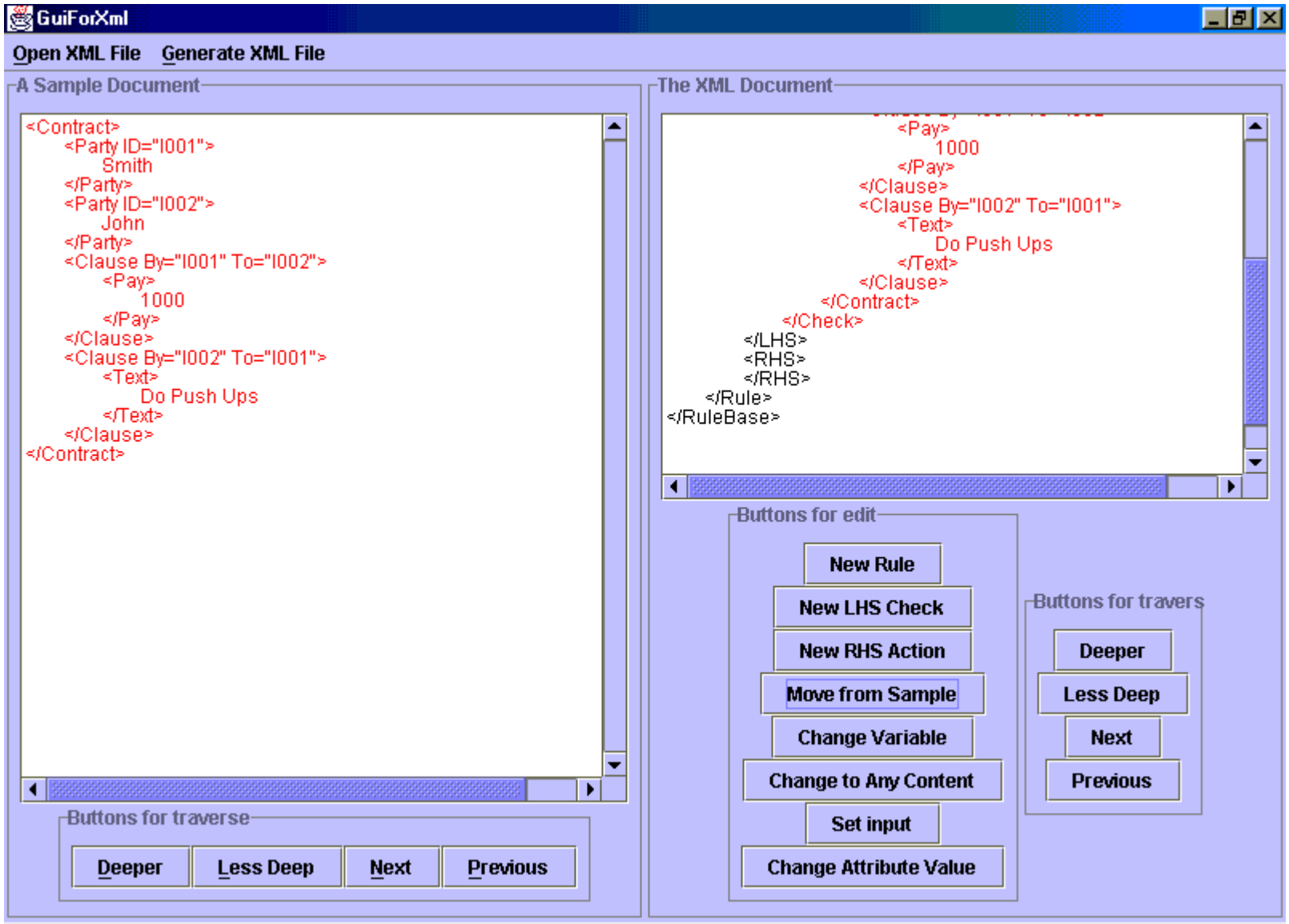
- SAMPLE OUTPUT

```
<d RoutingCode="Judge">
  <r>name</r>
  <r>name two </r>
</d>
```

Slotted Facts

- Declared in First Part of Rule System
- Asserted in **RHS** of one Rule
- Read in **LHS** of another Rule
- **<RuleBase>**
  <Template><TemplateName>a</TemplateName>
  <Documentation>A Sample Ordered Fact</Documentation>
  <Slot><SlotName>SlotOne</SlotName></Slot>
  <Slot><SlotName>SlotTwo</SlotName></Slot>
  </Template>
  <Template><TemplateName>b</TemplateName>
  <Documentation>A Sample Ordered Fact</Documentation>
  <Slot><SlotName>SlotThree</SlotName></Slot>
  <Slot><SlotName>SlotFour</SlotName></Slot>
  </Template>


GuiForXml
Open XML File
Generate XML File
A Sample Document
<Contract>
<Party ID="I001">
Smith
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
</Contract>
Buttons for traverse
Deeper
Less Deep
Next
Previous
The XML Document
<!DOCTYPE RuleBase SYSTEM "RuleBase.dtd">
<RuleBase>
<Rule>
<LHS>
</LHS>
<RHS>
</RHS>
</Rule>
</RuleBase>
Buttons for edit
New Rule
New LHS Check
New RHS Action
Move from Sample
Change Variable
Change to Any Content
Set input
Change Attribute Value
Buttons for travers
Deeper
Less Deep
Next
Previous


GuiForXml
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A Sample Document
<Contract>
<Party ID="I001">
Smith
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
</Contract>
Buttons for traverse
Deeper
Less Deep
Next
Previous
The XML Document
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
</Contract>
</Check>
</LHS>
<RHS>
</RHS>
</Rule>
</RuleBase>
Buttons for edit
New Rule
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Move from Sample
Change Variable
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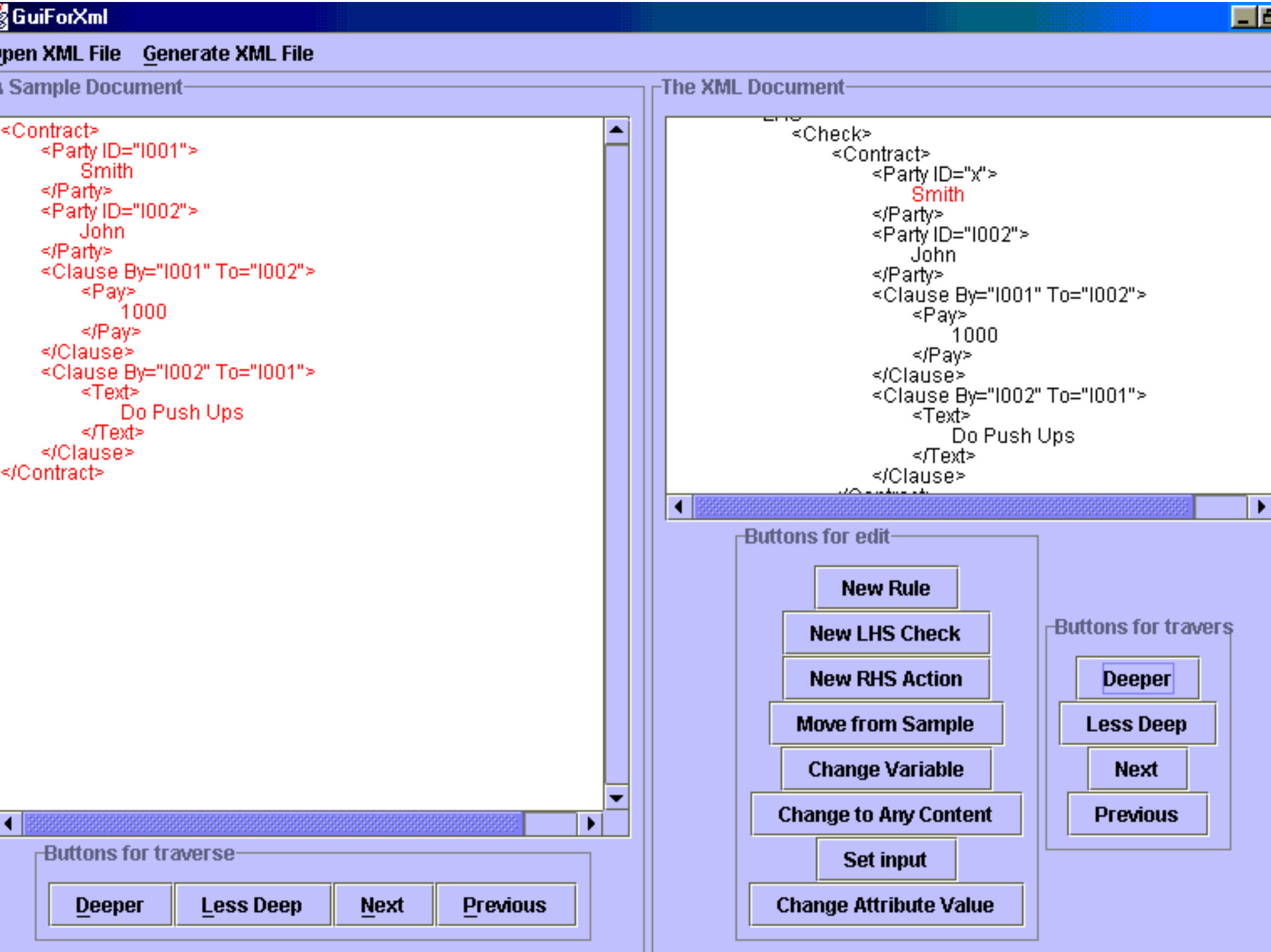
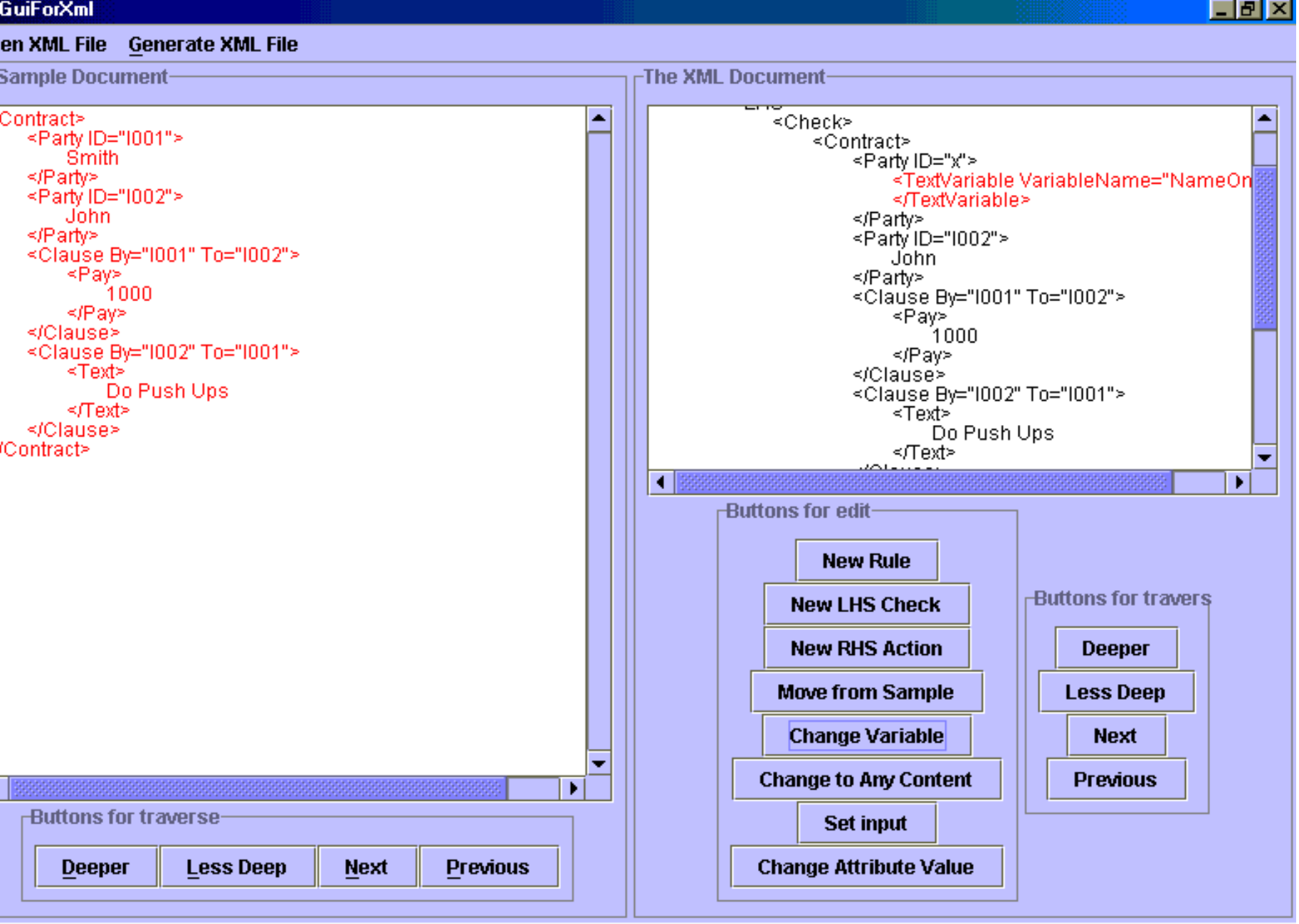

GuiForXml
pen XML File
Generate XML File
Sample Document
<Contract>
<Party ID="I001">
Smith
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
</Contract>
Buttons for traverse
Deeper
Less Deep
Next
Previous
The XML Document
<Check>
<Contract>
<Party ID="x">
Smith
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
Buttons for edit
New Rule
New LHS Check
New RHS Action
Move from Sample
Change Variable
Change to Any Content
Set input
Change Attribute Value
Buttons for travers
Deeper
Less Deep
Next
Previous


GuiForXml
en XML File
Generate XML File
Sample Document
Contract>
<Party ID="I001">
Smith
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
</Clause>
/Contract>
Buttons for traverse
Deeper
Less Deep
Next
Previous
The XML Document
<Check>
<Contract>
<Party ID="x">
<TextVariable VariableName="NameOn
</TextVariable>
</Party>
<Party ID="I002">
John
</Party>
<Clause By="I001" To="I002">
<Pay>
1000
</Pay>
</Clause>
<Clause By="I002" To="I001">
<Text>
Do Push Ups
</Text>
Buttons for edit
New Rule
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Move from Sample
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An XML standard for contracts

- Conditional clauses
- Header for standard information such as:
  - Choice of law
  - Choice of venue
  - Effective date for offers

An (over)-simplified situation

1. Acme Pizza Company will deliver ten boxes of Pizza on April 10th to Joan Smith if it is not raining.
2. Joan Smith will pay $100.00 to Acme Pizza

- Two example XML markups

Header

•<?xml version="1.0" encoding='UTF-8'?>
<!DOCTYPE Offer SYSTEM "xmlcontract2.dtd">
<Offer ID="I003">
<PartyList>
<Party ID="P001" type="Offeror">
<Actor ID="ACT001"><Name ID="NAME001">
<Entity Type="Company"><FullName>Acme
Pizza</FullName></Entity> </Name></Actor>
</Party>
<Party ID="P002" type="Offeree">
<Actor ID="ACT002"><Name ID="NAME002">
<Entity Type="Person"><FullName> Joan Smith</FullName></Entity>
</Name></Actor>
</Party>
</PartyList>

Sample Continuation One

•<Clause ID="C001">
<Implication><Condition>not raining April 10th</Condition><Then>
<Clause ID="C002“ By=“P001” To=“P002”>
deliver ten boxes Pizza</Clause>
<Clause ID="C003“ By=“P002” To=“P001”>Pay
$100.00</Clause></Then>
•</Implication></Clause>
•
<LawsuitTo><CourtInformation><Location><LocationId>
Court 1</LocationId><LocationFunction>N.A.
</LocationFunction></Location>
</CourtInformation></LawsuitTo>
<ApplyLawOf>NY</ApplyLawOf>
<EffectiveDate><Date>20000313</Date></EffectiveDate>
<ResponseDate><Date>20000315</Date></ResponseDate>
</Offer>

Sample Continuation Two

•<Clause ID="C001">
<Implication><Condition>not raining April 10th</Condition><Then>
<Clause ID="C002“ By=“P001” To=“P002”>
deliver ten boxes Pizza</Clause></Then>
•</Implication></Clause>
<Clause ID="C003 By=“P002” To=“P001”>Pay $80.00</Clause>
<LawsuitTo><CourtInformation><Location><LocationId>
Court 1</LocationId><LocationFunction>N.A.
</LocationFunction></Location>
</CourtInformation></LawsuitTo>
<ApplyLawOf>NY</ApplyLawOf>
<EffectiveDate><Date>20000313</Date></EffectiveDate>
<ResponseDate><Date>20000315</Date></ResponseDate>
</Offer>

Sample Acceptance

•<?xml version="1.0" encoding='UTF-8'?>
<!DOCTYPE Accept SYSTEM "xmlaccept.dtd">
<Accept ID="I003">
</Accept>

Advanced Features

- Intervals for Clauses
- New Clause Types: Payments, Electronic Acts (Link with ORML), Payments
- Commercial Infeasibility
- “Exceptions”

A Test Case, Four Inputs

1. Our first XML contract specifying that Acme pizza will deliver ten boxes of pizza to Joan Smith and Joan Smith, in turn, will pay $80.00..
2. A Lawsuit on that Contract for $80.00
3. An affidavit stating that the Plaintiff delivered the Pizza.
4. A request for Summary Judgment by the plaintiff

Our Complaint

- <?xml version="1.0" encoding='UTF-8'?>
  <!DOCTYPE DocumentInformation SYSTEM
  "lawsuit.dtd">
  <DocumentInformation>
  <Actors><Actor ID="PP"><Name>Acme
  Pizza</Name>
  <Role>Plaintiff</Role></Actor>
  <Actor ID="DD"> <Name>Joan Smith</Name>
  <Role>Defendant</Role></Actor>
  </Actors>
  <DocumentContent>
  <Complaint><Prayer Amount="80.00"/></Complaint>
  </DocumentContent>
  </DocumentInformation>

An Affidavit:

- <?xml version="1.0" encoding='UTF-8'?>
<!DOCTYPE DocumentInformation SYSTEM "lawsuit.dtd"> <DocumentInformation>
<Actors>
<Actor ID="PP">… <Actor ID=“DD”>…
</Actors>
<DocumentContent>
<Affidavit>
<Assert Clause="C002" ContractID="I003"/>
<Text>More Text about how he delivered the Pizza that the Court may not have tolook at </Text>
</Affidavit></DocumentContent></DocumentInformation>

Our Reasoning

- Rule Two examines each contract and matches the Party Name to the human name.
  f-77 (RealName (DocumentName "http://web.mit.edu/leff/www/xmlcontract.xml") (PartyName "P002") (HumanName "Joan Smith"))
  f-78 (RealName (DocumentName "http://web.mit.edu/leff/www/xmlcontract.xml") (PartyName "P001") (HumanName "Acme Pizza"))
- Rule Three matches up the contract clauses with the human name
- Rule Five matches the affidavit with the contract, generating:

(ObligationMet (ContractID "I003") (ClauseID "C002"))

- Rule Seven makes sure there is an ObligationMet for each

- Rule Eight Looks for a Request for Summary Judgment
  - Which creates these facts:
  - (PlaintiffWantsSummaryJudgement (CaseNumber "http://web.mit.edu/leff/www/l2.xml"))
    f-84 (PlaintiffEntitledToSummaryJudgement "http://web.mit.edu/leff/www/l2.xml")
    f-85 (Judgement (To "Acme Pizza") (From "Joan Smith") (Amount "80.00") (f nil))

Some Sample Rules:

```
<Rule Name="RuleTwo" Documentation="Match Party Names to Real
   Names" DocumentName="VariableName:dx">
<LHS><Check ><Offer ID="VariableName:ContractID"
   DocumentName="VariableName:dx"><PartyList><Party
   ID="VariableName:P"><Name><TextVariable
   VariableName="RealName"/></Name></Party></PartyList></Offer
   ></Check>
</LHS>
<RHS><Action><assert><Template><TemplateName>RealName</Templat
   eName><Slot><SlotName>PartyName</SlotName><Value><Variable>
   P</Variable></Value></Slot><Slot><SlotName>DocumentName</Sl
   otName><Value><Variable>dx</Variable></Value></Slot>
<Slot><SlotName>HumanName</SlotName><Value><Variable>RealName<
   /Variable></Value></Slot><Slot><SlotName>ContractID</SlotNa
   me><Value><Variable>ContractID</Variable></Value></Slot>
</Template></assert></Action></RHS></Rule>
```

Integration with ebXML

Business Process Specification

Collaboration Protocol Agreement

For BPS, we ensure:

- Name and schema location match the Business Document
- Business Document matches the Business Transaction
- Binary Collaboration matches that Business Transaction

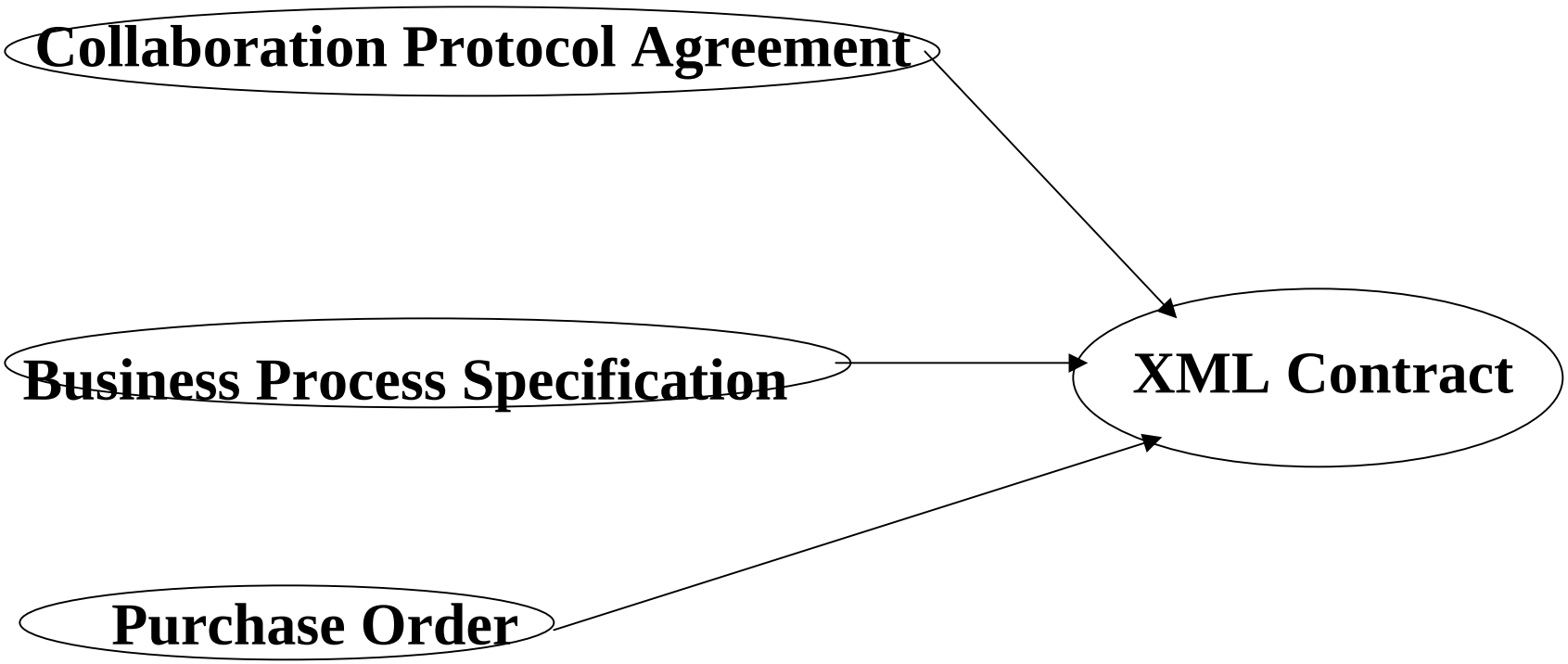
```
<Check DocumentName="VariableName:d1">
  <ProcessSpecification>
    <BusinessDocument name="VariableName:po“
specificationLocation="VariableName:schema"/>
  </ProcessSpecification>
 </Check>
 <Check DocumentName="VariableName:d2">
     <PurchaseOrder specificationLocation="VariableName:schema"/>
 </Check>
 <Check DocumentName="VariableName:d1">
    <ProcessSpecification>
   <Package>
     <BusinessTransaction name="VariableName:co">
       <RequestingBusinessActivity>
         <DocumentEnvelope businessDocument="VariableName:po">
         </DocumentEnvelope>
       </RequestingBusinessActivity>
     </BusinessTransaction>
     </Package>
  </ProcessSpecification>
```

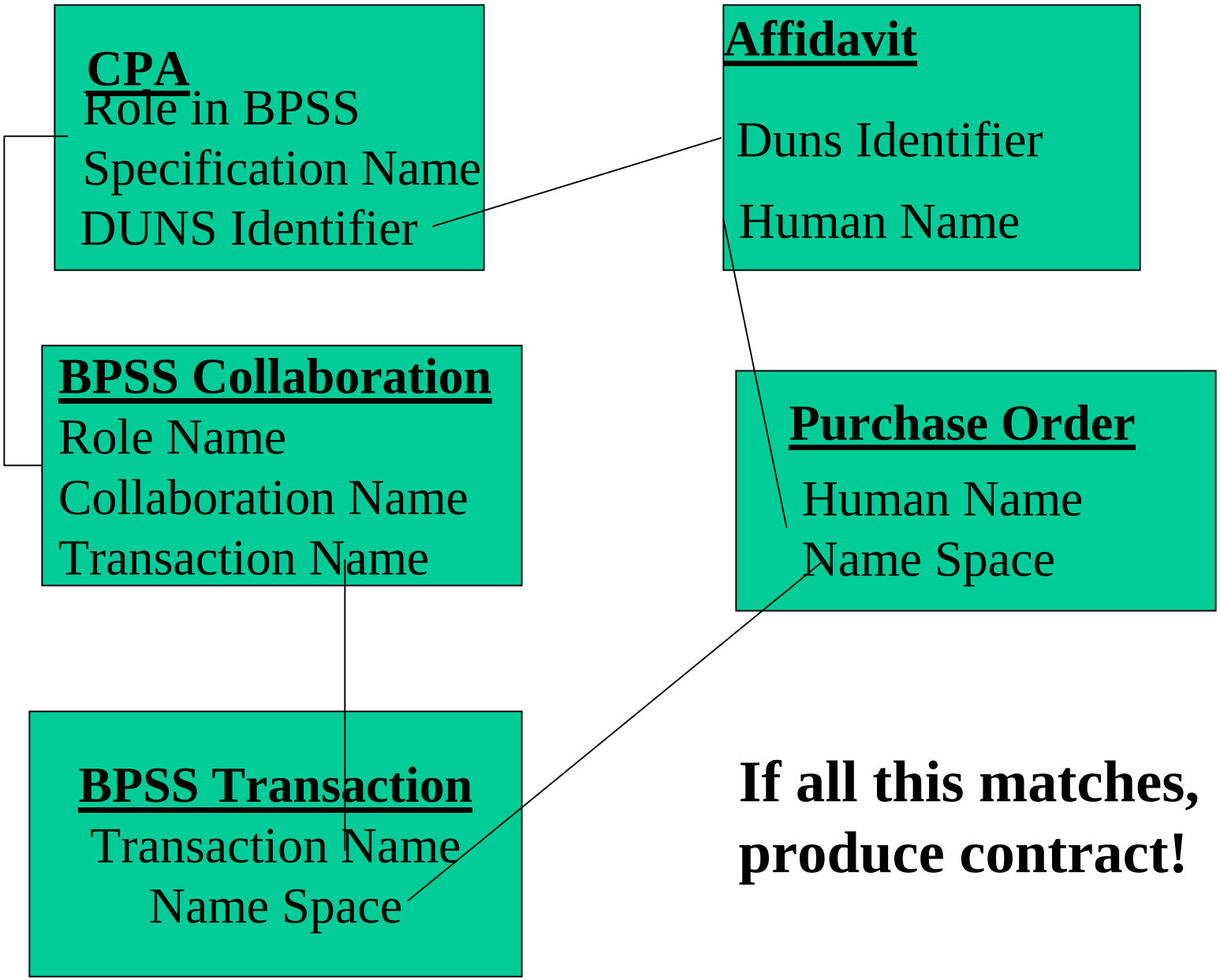
We also ensure

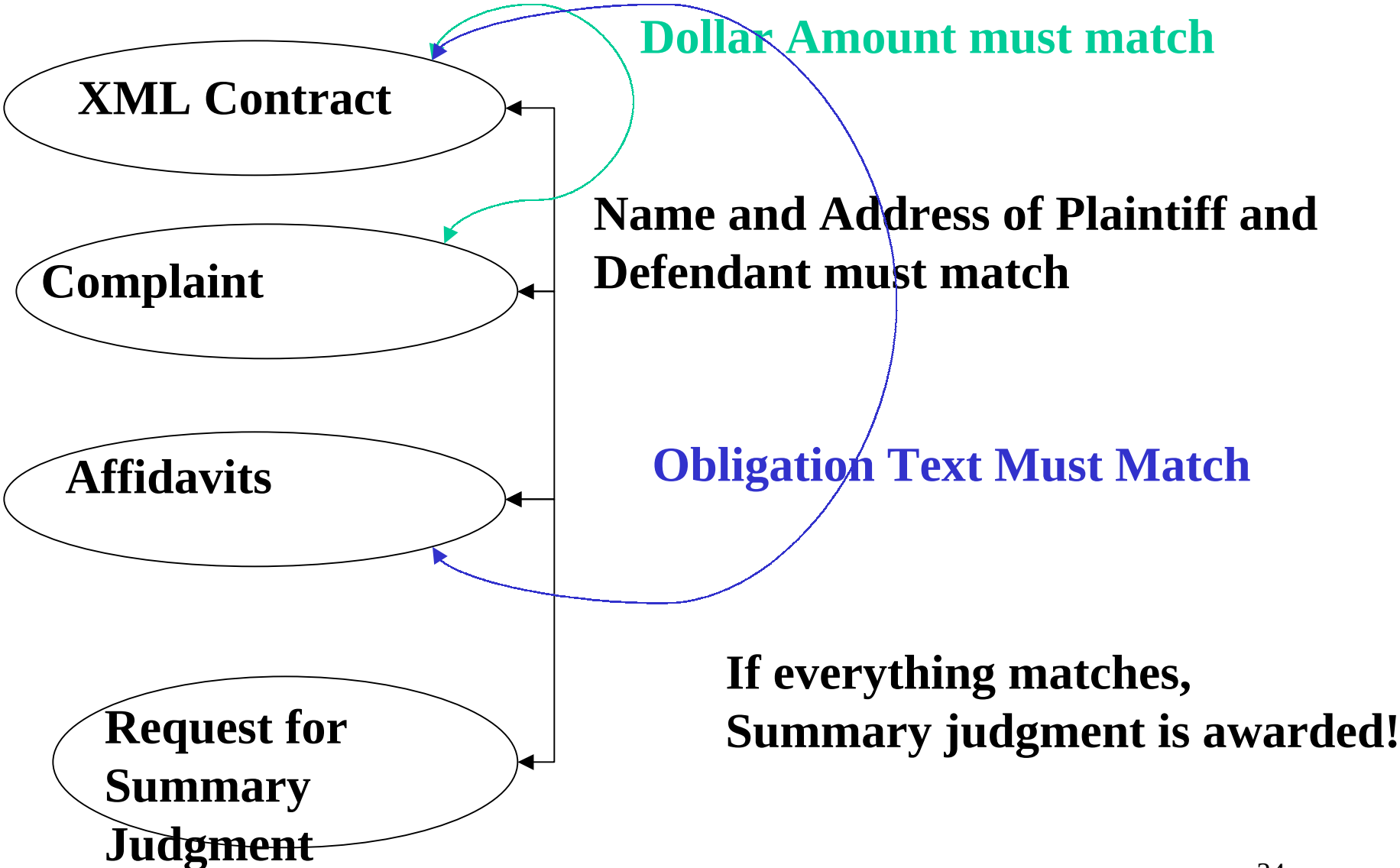
- Buyer and Seller information in the Purchase Order match that in the Collaboration Protocol Agreement
- Collaboration Protocol Agreement references the business transaction

Then we

- Generate a contract document
  - Substitutes information from the Purchase Order into the text of the contract
  - Moves the payment information
  - Moves the transportation information
- And, then, the contract goes right into the rule system of the court


Collaboration Protocol Agreement
Business Process Specification
Purchase Order
XML Contract


CPA
Role in BPSS
Specification Name
DUNS Identifier
Affidavit
Duns Identifier
Human Name
BPSS Collaboration
Role Name
Collaboration Name
Transaction Name
Purchase Order
Human Name
Name Space
BPSS Transaction
Transaction Name
Name Space
If all this matches, produce contract!


XML Contract
Complaint
Affidavits
Request for Summary Judgment
Dollar Amount must match
Name and Address of Plaintiff and Defendant must match
Obligation Text Must Match
If everything matches, Summary judgment is awarded!

Next Step

- Look at ebXML messages to
  - Messages sent between correct parties
  - Messages have time stamp as specified by deadline
  - Messages have appropriate signature

Question for audience

- Are there libraries/techniques for checking signatures in ebXML messages?
- What do we do about variations, e. g. no receipt acknowledgement but do have acceptance acknowledgment
- What is the significance of multiparty agreements?

Summary

- New techniques for manipulating rules and transformations in XML
  - Rules
    - About XML
    - Input is XML
    - Output is XML
    - Rules in XML

Summary cot’d

- End to end integration from ebXML-mediated electronic commerce to pre-trial litigation using Legal XML standards
- Use of XML Contracts as intermediary

Further Work

- Look at ebXML messages as opposed to just the payload
- Use metagraphs (Basu and Blanning) to provide theoretical underpinning for complex workflows

A Pending Grant Proposal

National Science Foundation
Division of Undergraduate Education

To Really Learn Something

- Teach it to someone else

To really learn something

- Program it!

To Really Learn Electronic Commerce

- Use Rules to **Program**
  - Litigation About that Electronic Commerce
- Also learn
  - XML
  - Rule-based programming
  - Business Law
  - Civil Procedure

Other Parts of the Operating Rules Master Agreement

- Who is in your community?
- Indemnification
- Choice of Law
- Policy changes and ammendments
- Confidentiality
- Disaster Recovery/Business Continuity
- Bonding and Insurance
- Auditing