

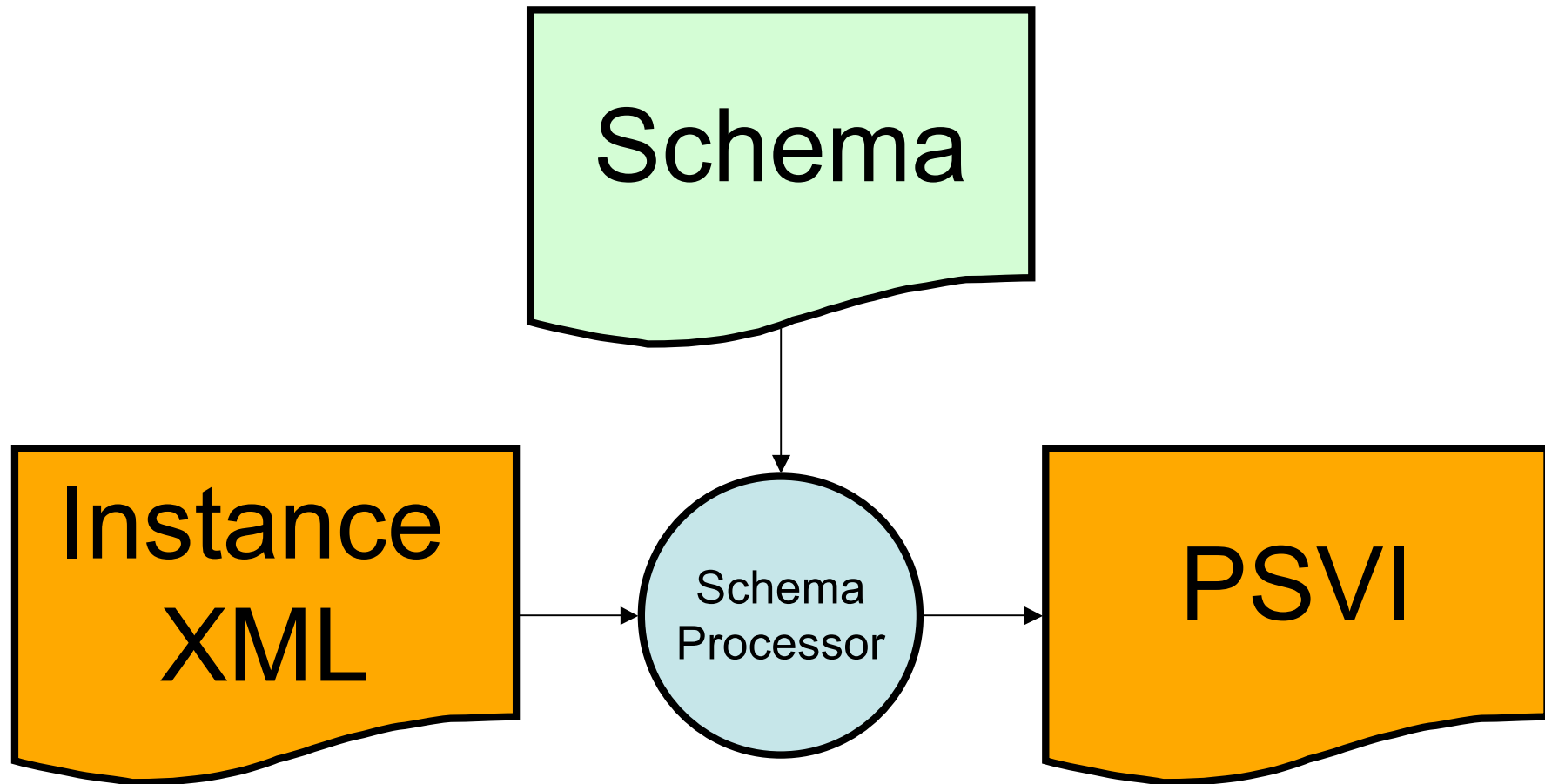
# **W3C XML Schema Patterns for Databinding**

Paul Downey, BT

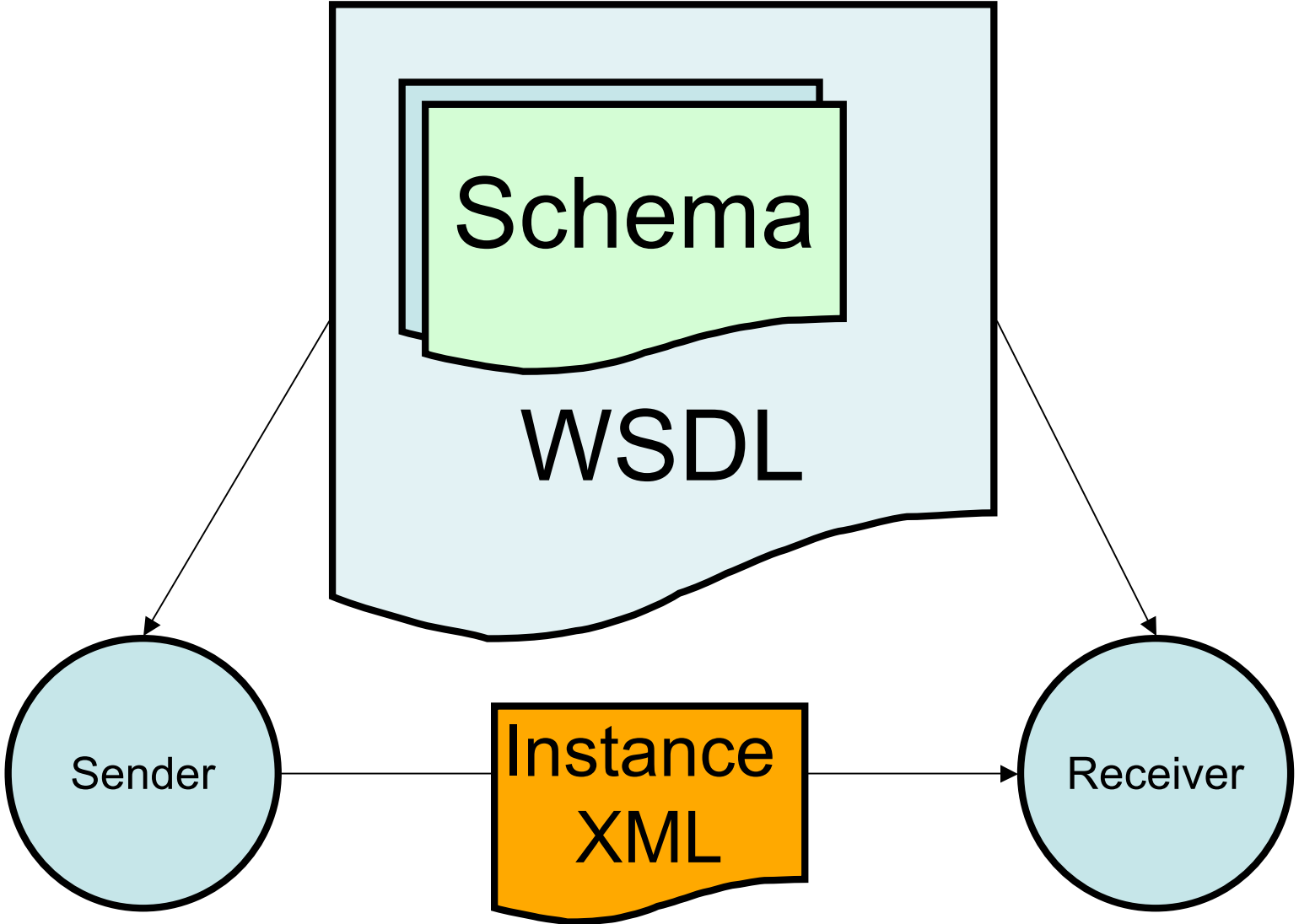
*Chair, XML Schema Patterns for  
Databinding Working Group*

[WWW2006](#), May 25th 2006

# XML Schema 1.0



# Web Services



# Databinding : Abstraction

```

.../web/.../...
ent name="testRequestPart" element="s0:testRequestElement"/>
</testRequestPart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testPart>
<!-- ... -->
</testPart>
<!-- ... -->
</testBinding type="service:testPart">
<!-- ... -->
</testBinding>
<!-- ... -->
</testBody use="literal"/>

```

```

.../schema2.xsd(816, 8):
Schema validation warning: Type 'http://www.openapplications.org/oas4:Id' is not declared, an error occurred at file:///I:/d/htdocs/usa1/FeatureTest/us1/08015/...
.../schema2.xsd(823, 8):
Schema validation warning: Type 'http://www.openapplications.org/oas4:DateTime' is not declared, an error occurred at file:///I:/d/htdocs/usa1/FeatureTest/us1/...
.../schema2.xsd(830, 8):
Schema validation warning: Type 'http://www.openapplications.org/oas4:Code' is not declared, an error occurred at file:///I:/d/htdocs/usa1/FeatureTest/us1/0801...
.../schema2.xsd(831, 8):
Schema validation warning: Type 'http://www.openapplications.org/oas4:Name' is not declared, an error occurred at file:///I:/d/htdocs/usa1/FeatureTest/us1/0801...
.../schema2.xsd(832, 8):

Warning: Schema could not be validated. Class generation may fail or may produce incorrect results.

Error: Error generating classes for schema 'schema2'.
- The datatype 'http://www.openapplications.org/oas4:DocumentIdType' is missing.

If you would like more help, please type "xsd /?".

[1819873699][1819873632] /web/si/d/htdocs/usa1/FeatureTest/us1/08015

```

```

<!-- ... -->
</testRequestPart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testPart>
<!-- ... -->
</testPart>
<!-- ... -->
</testBinding type="service:testPart">
<!-- ... -->
</testBinding>
<!-- ... -->
</testBody use="literal"/>

```

```

<!-- ... -->
</testRequestPart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testResponsePart>
<!-- ... -->
</testPart>
<!-- ... -->
</testPart>
<!-- ... -->
</testBinding type="service:testPart">
<!-- ... -->
</testBinding>
<!-- ... -->
</testBody use="literal"/>

```

**Databinding Tools Suck!**

**Databinding Tools Suck**

**... *differently!***

# W3C Workshop on XML Schema 1.0 User Experiences



<http://www.w3.org/2005/03/xml-schema-user-cfp>

# Don't Change Schema!



*... 300,000+ developers use XSD  
... There is tremendous value in  
XML Schema. Don't just change it...*

**Soumitra Sengupta,**  
Microsoft



# Discussion Topics



**FIX THE LANGUAGE !!** xsl:choose → JANA  
REGULATION BY RESTRICTION oo/oo  
• ANNOTATION PROBLEMS  
• MAPPING OF DATATYPES — DURATION !!  
• ANNOTATIONS FOR DATA MAPPING (AANA)  
• KEY/REF ACCESS DOCUMENT COLLECTION  
REFINE — DOES ANYONE USE IT (40)!

**WPA!**

EN • SIGNAL "MIXED" BUT ATTRIBUTES ON  
• CUSTOMER WANT INVALID SCHEMAS  
SHARPER  
• LARGE SCHEMAS → TOO MANY SPINOS  
(FRAGILITY)  
• CIRCULAR INCLUDE — UNDERSTANDING  
• SCHEMA LOCATION HINTS  
• LAYERED STANDARDS  
MAPPING DTD → SCHEMA  
• XSL NOT IN DTDs  
• SUPPORT FOR ENTITIES — DTDs — Vene  
• NAMESPACE POLLUTION  
• BUSINESS LEVEL VALIDATION?  
• NATIVE DATA TYPES?

• UNNECESSARILY FORBIDDING SYNTAX  
• NON-COMPARABLE IMPLEMENTATIONS  
• "VERSIONING" could justify NEW VERSION OF SCHEM  
• DOCUMENTS → DATA SUPPORT  
• IMPACT OF XML 1.1 ON SCHEM

• EXTENSIBILITY OPT-IN — NOT OPT-OUT  
• COMPLEXITY OF SPEC  
• IDENTIFICATION OF IT ELEMENT  
• TWISTED CONTENT MODELS TO SATISFY SCHEM  
• ANNOTATION FOR PARTICLES  
• TEST SUITE ERRORS, COVERAGE, UPDATE  
• NO APPEAL PROCESS  
• CRITICAL ERROR MESSAGES  
• "SCHEMA LOCATION HINT" FAILURES  
• CLEAR WPA RULES / VIOLATIONS  
• BAD EDITORS — XMLSHY !!  
• "BEST PRACTICES" / BAD PRACTICES  
PLEASE NO XML SCHEMA !!

• MAINTAIN CONVENTIONS  
PROFILES (AANA) LIMIT PARTIAL  
DIFFICULTY IN IMPLEMENTATION  
REDEFINE, SHARPER / ~~...~~

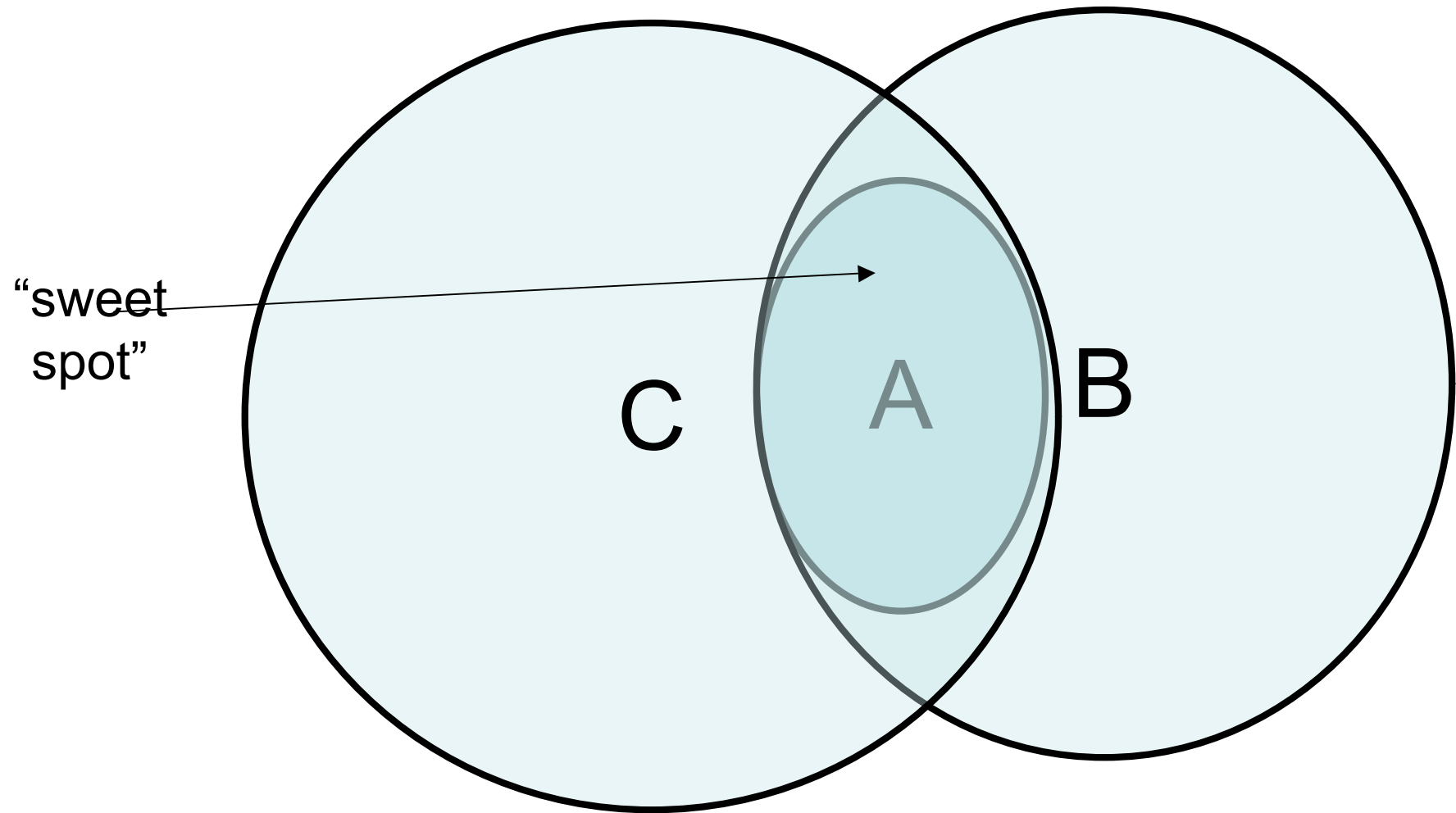
→ INCREASINGLY USED PARTICLES, KEY/REF/REF  
→ RECURSIVE TYPES — LIMIT/END RECURSION  
→ ANNOTATION OF TYPES "e.g. machine generate T java  
"SHARPER"  
SUPPORT FOR GRAPH SEMANTICS  
TYPES TO ANOTHER APPLICATION PROTOCOLS  
OUR ~~...~~ PRODUCE "NACKED OUT CODE"  
WRAPPED XSL:ANY TECHNIQUE FOR NSA  
CUSTOM TYPES WITH ANNOTATIONS  
DOMAIN SPECIFIC PROFILES "WS-I"  
"USER EXPERIENCE"  
TRACKING SCHEMA SPEC IN IMPLEMENTATION  
MATURITY OF STANDARDS HAVING NEW  
REDEFINING OF ~~...~~ EMA FILES  
XSL:all TO WEAK  
MODEL DIFFICULT TO IMPLEMENT  
MIGRATION PROBLEMS NEW FEATURES  
FORMAL NOTATION/MODEL — "!!"

→ GRANULARITY AT NAMESPACE  
→ TYPES → DATA BINDING  
→ HEWRY — SPEA  
→ COMPONENT MODEL (AANA)  
→ CHAMELEON INCLUDE  
→ NAME MAPPING  
→ EXTEND ONLY AT EN  
→ CO-CONSTRAINTS VALUE (V) "CHANGE SHED  
↳ OPTIONALITY  
WILDCARD DEFICIENCIES  
↳ WEAK WILDCARDS  
↳ TYPED WILDCARD  
→ ANONYMOUS TYPES LACK IDENT  
↳ LIMITATIONS ON ALL GROUPS  
→ STREAM VALIDATION REQUIREMENT  
→ COMPLIANCE (CONFORMANCE) CLAIMS  
→ SECURITY REQUIREMENTS OS, DOS  
→ XSL:TYPE SUPPORT  
→ CANONICALISATION / VALIDAT

# Discussion Topics

- versioning
- profiles and patterns of use
- code generation (v) validation
- Unique Particle Attribution (UPA)
- XML Schema 1.1
- test suite

# Implementations



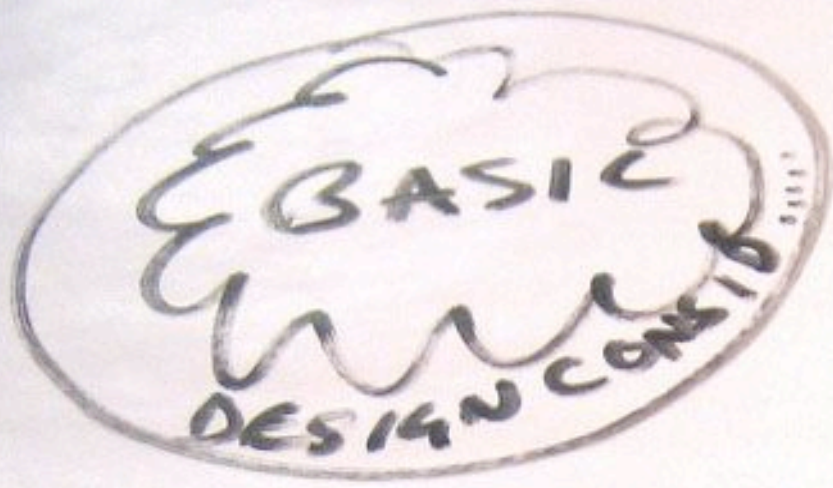
**W3C  
XML Schema  
Patterns  
for Databinding  
Working Group**

# Deliverables

- **requirements and a roadmap**
- W3C Recommendations:
  - **“basic”** patterns
  - **“advanced”** patterns and versioning
- **test suite**
- **identifying the patterns**

# Roadmap

	Basic Patterns		Advanced Patterns	
	Charter	Expected	Charter	Expected
Jan 2006	First WD			
Feb 2006				
Mar 2006	Last Call WD			
Apr 2006				
May 2006		First WD		
Jun 2006	CR		First WD	
Jul 2006		Last Call WD		
Aug 2006	PR			
Sep 2006		CR	Last Call WD	
Oct 2006				
Nov 2006		PR	CR	
Dec 2006				
Jan 2007				
Feb 2007			PR	

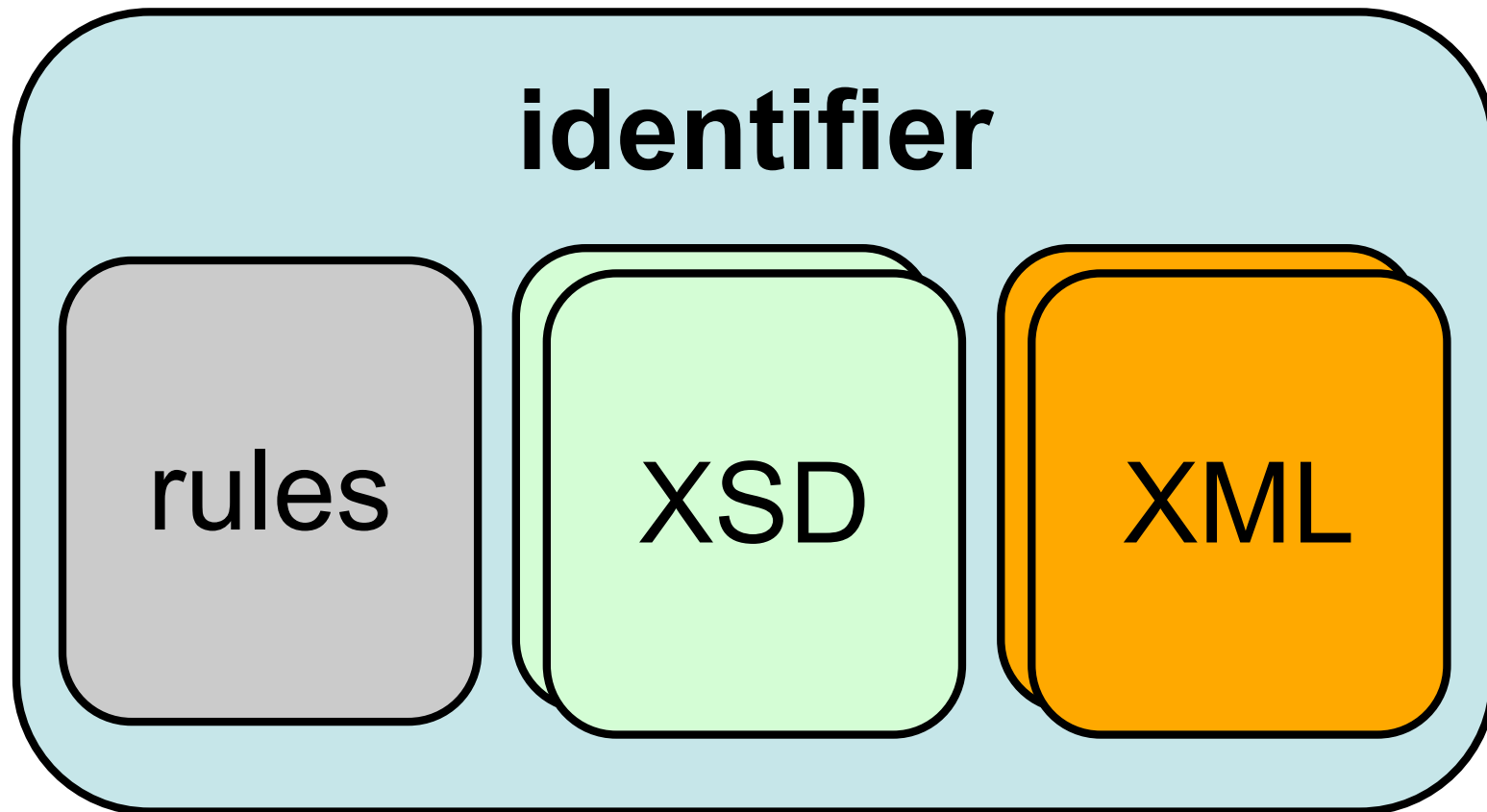


ADVANCED

"THE REST"

"BROKEN"

# What is a Pattern?





# Collecting Patterns



# Data Structures

## Null Value

### Definition

A special value used to represent an "unknown", "missing", "not applicable", "uninitialised" or "undefined value".

### Patterns

- \* 3.9 Optional Element
- \* 3.10 Nillable Element
- \* 3.11 Nillable-Optional Element

# Versioning

<http://www.w3.org/XML/2005/xsd-versioning-use-cases/>

# StringEnumeration XSD

```
<xs:element name="beatle" type="ex:Beatle"/>  
  
<xs:simpleType name='Beatle' >  
  <xs:restriction base='xs:string' >  
    <xs:enumeration value='John' />  
    <xs:enumeration value='Paul' />  
    <xs:enumeration value='George' />  
    <xs:enumeration value='Stuart' />  
    <xs:enumeration value='Pete' />  
    <xs:enumeration value='Ringo' />  
  </xs:restriction>  
</xs:simpleType>
```

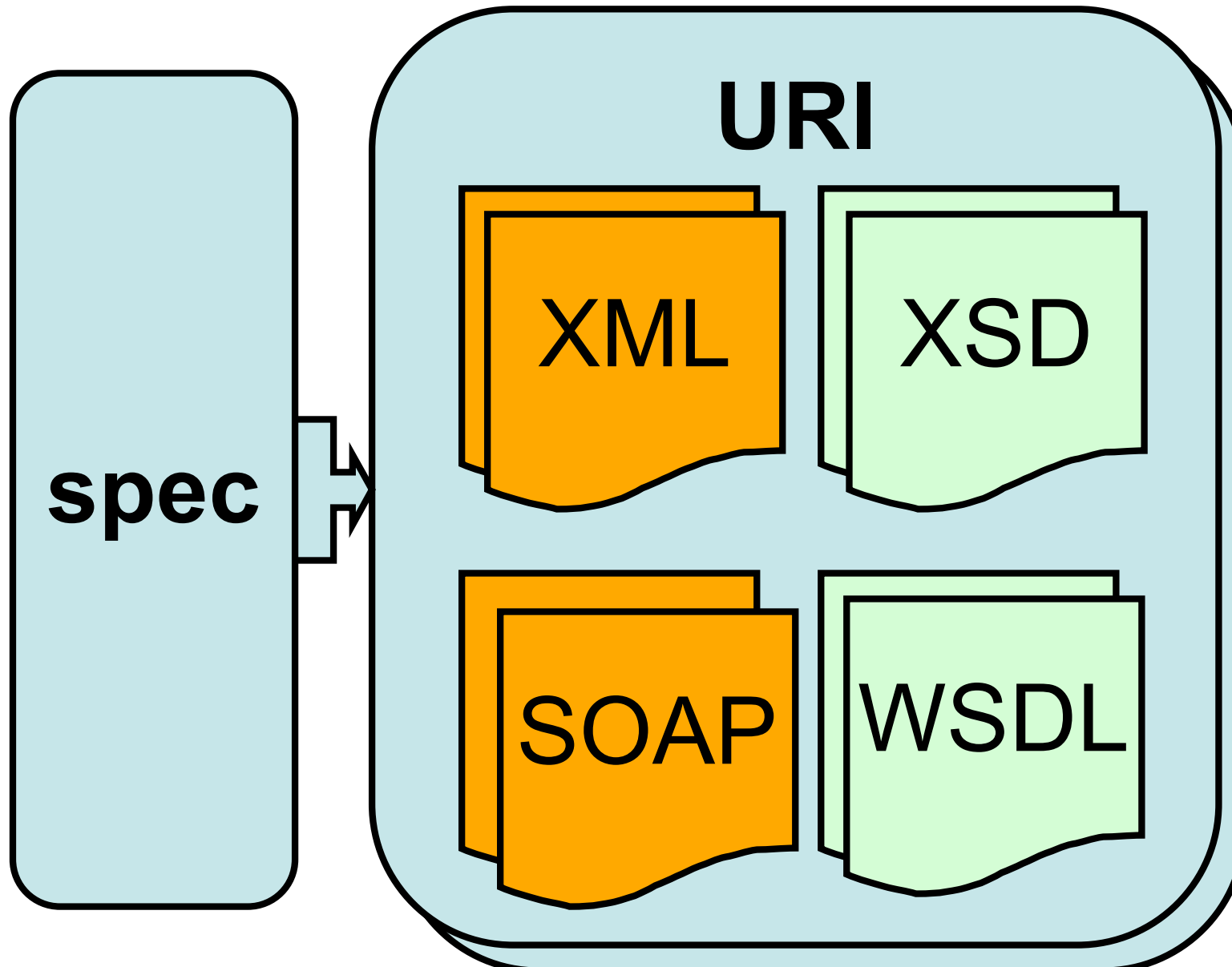
# StringEnumeration XML

```
<ex:beatle>George</ex:beatle>
```

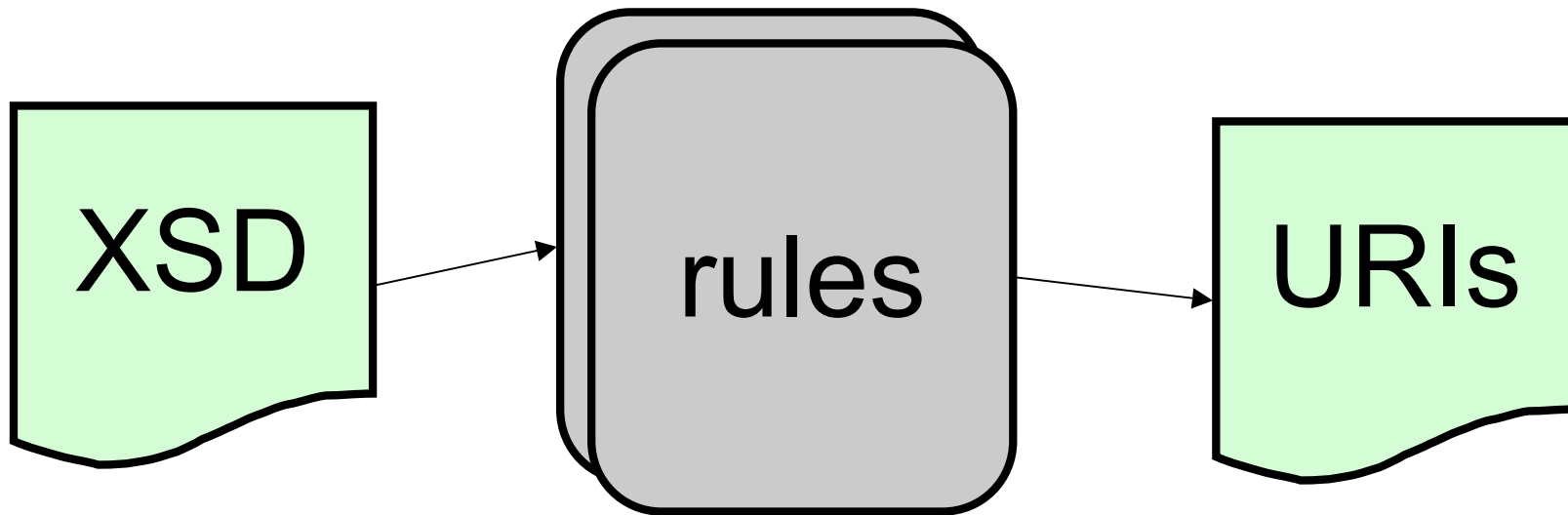
```
<ex:beatle>John</ex:beatle>
```

```
<ex:beatle>Ringo</ex:beatle>
```

# Spec Driven Testing



# Detecting Patterns

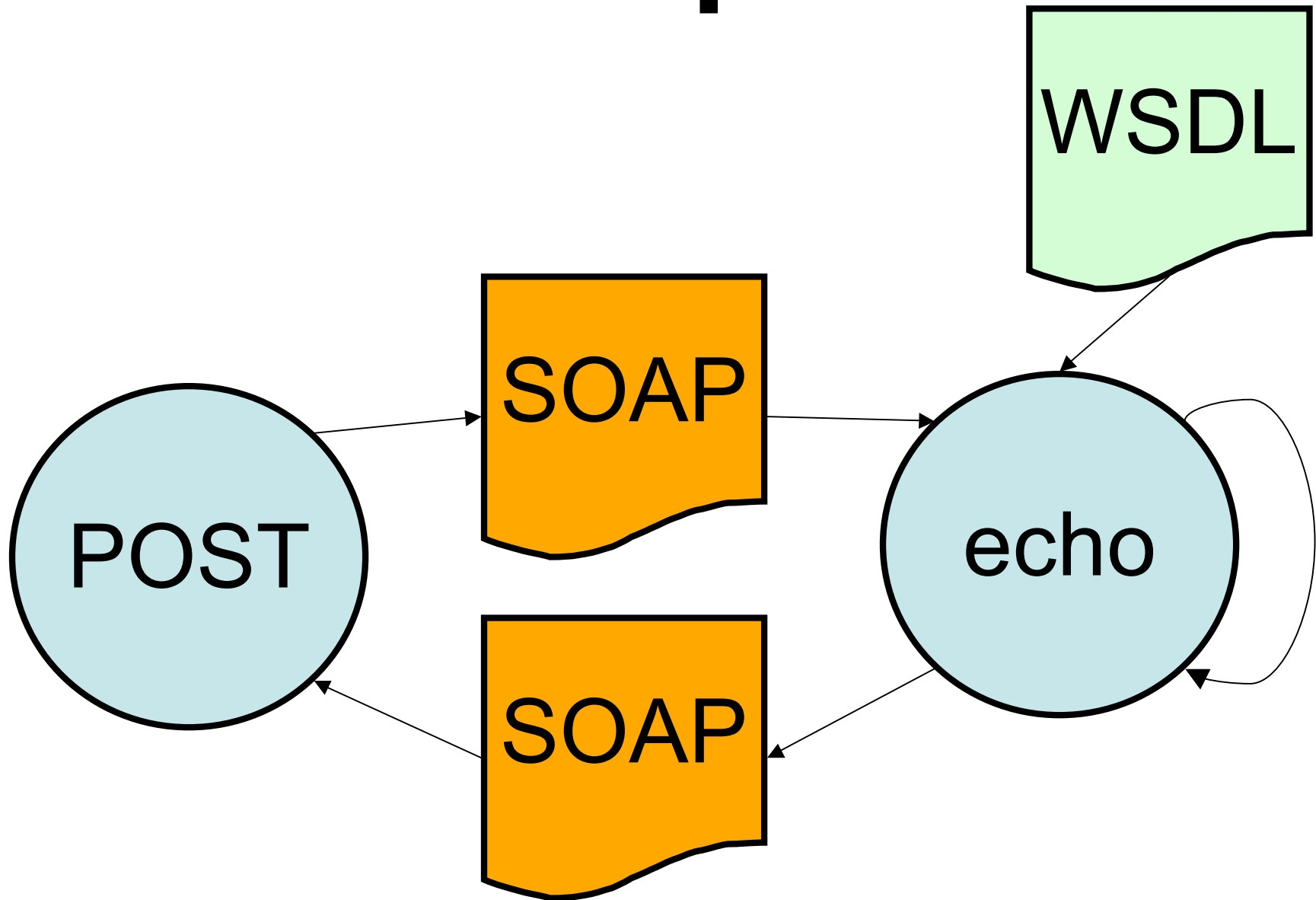


# Detection of Patterns

*“Note that this method is not intended to be used (and must not be used) by Web Services toolkits as an excuse for restricting their support of XML Schema.”*



# Test Endpoint



# Participation



# We Need Your Help!



<http://www.w3.org/2002/ws/databinding/>