How others do it with CA Plex (SOA, Business Objects, SOAP)

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Speaker

George Jeffcock, CA Plex Consultant

- Working with CA Plex since 1996
- Based in Stockholm, Sweden
- Currently at www.agria.se
  - Leading specialist in the provision of pet insurance for domestic pets, horses and agriculture in Sweden, Norway, Denmark and UK
  - Agria Philosophy: Providing security and peace of mind for animal lovers and their pets and creating a healthier society for pets and their owners.
  - CA 2E – CA Plex (OBASE, PATTERNS, ATOL, Websydian Web Developer & TransacXML)
- Author of Stella Tools
  - Tools to aid CA Plex development

Agenda

Today I will talk about my CA Plex experiences at the Agria Group with the backing of management but please note I do not speak on behalf of the Agria Group.

- A practical session
- Outline how CA Plex and Websydian TransacXML were used to implement projects with greater emphasis on:
  - Service Orientated Architecture
  - Delivery of Business Processes as Webservices
- Aim for Attendees to have one of two results
  - Yep I can borrow/steal/use/adapt/copy that for my site 
  - Smug as we did it better ourselves 

Both positive results from the last session hour at Chicago 2011

Plan

Back Office Tier	Business Services Tier	Webservices (Published) Tier
– Brief outline of Legacy Modernization – CA Plex Tutorial example used as Back Office System	– Requirements overview – Pattern overview – Demo	– Pattern overview – Demo
5 Minutes	25 Minutes	15 Minutes

Back Office tier

Back Office Systems

- Business critical
- Embedded business knowledge
- High maintenance cost.
- Complex structure.
- Obsolete support software.
- Obsolete hardware.
- Lack of technical expertise
- Backlog of change requests.
- Poorly documented.
- Poorly understood.

The Usual Suspects

Period of Legacy Modernization

- No Big Bang rewrite
- Leverage of existing investment
- Brownfield architecture.
- Process of application retirement.
- Service-enabled access to existing business logic and data.
- No Silver Bullet – No package

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Business Service tier requirements

General Requirements

- Achieve the following when data can exist in many files on many databases and on many platforms.
  - Fetch a data set
  - Fetch an array of data
  - Update (Add, Delete, Change) data
  - Update an array of data
  - Validate a data set

- Provide stable & standardized interfaces.
  "Once you have seen one Fetch/Update you have seen them all"

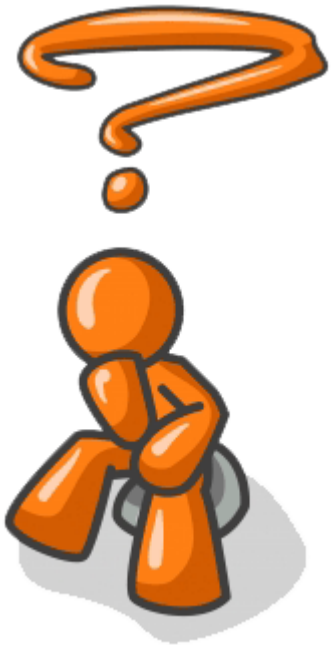
- Externalize business logic

- No direct data access (portability)

- Provide standardized message output

- Provide a method to test in isolation with out knowledge of calling tiers

- Increase Error Handling



Business Service tier patterns

Entity Patterns

- Implementation via Is A triples, Replacement, and action diagram code limited to business logic
- Must work in Combination – Add further functionality in the future and no re-code. *Not good enough just to work on initial release*

Skeleton Container Structures

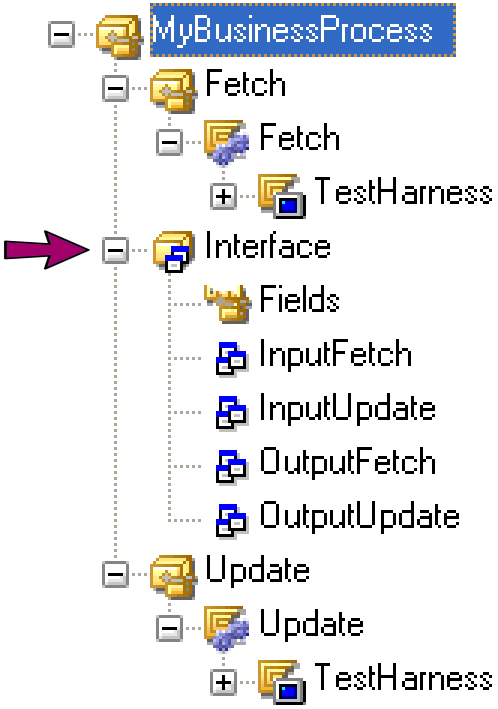
- Common Fetch, Update, Interface containers. In order to provide uniformity across models and ability to create complex abstracts in a simple manner while allowing for replacement Plex methodology

Icons

- Visual Distinction
- Help Developer Training
- Model Clarity

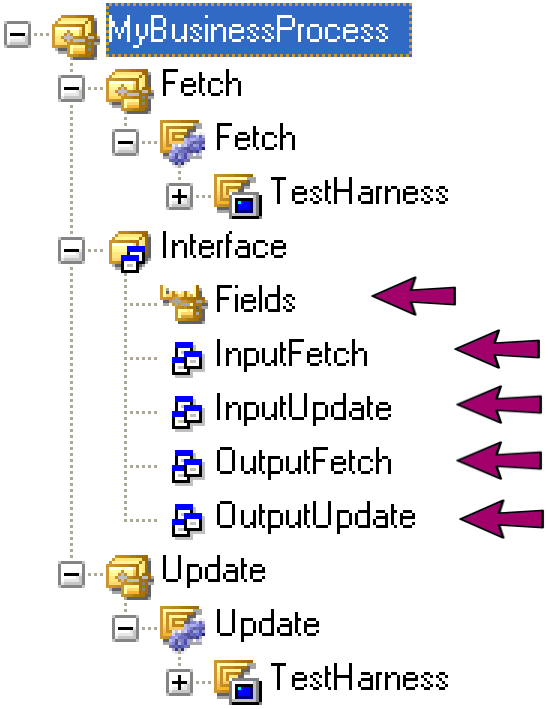
Business Service tier patterns

- Interface Entity
  - Scopes the business service interfaces
  - Allows abstract development
  - Quick development as fields are added as Has Relationships are then available to all interfaces
  - Quick maintenance, changes need only be done in one place.
  - Helps impact analysis
  - Helps project development as the model clearly breaks down the need for Interface development as well business logic development



Business Service tier patterns

- Scoped Function Field Container
  - Unique Fields to Service
- Field Lists
  - Keeps Triples
  - Non implemented Views
  - Collection of Fields from many Tables/Sources
  - Interface Contract
  - Only what is necessary
  - Flags to absolute minimum (ModeFlag)
  - Used across models, fncs, local variables, impact analysis, change management



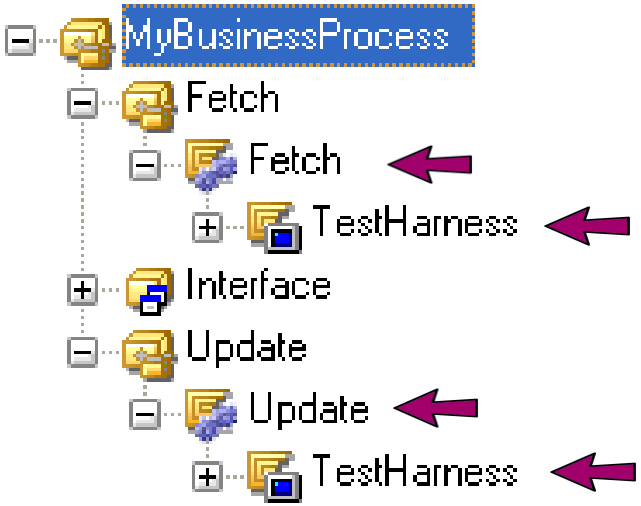
Business Service tier patterns

Scoped Service Function

- Black Box
- No data formatting
- Validation - Allowed Values
- Initialize Variables & Fields
- Inherit ErrorHandling / CheckCallStatus
- Message Handling
- ProcessBlockFetch

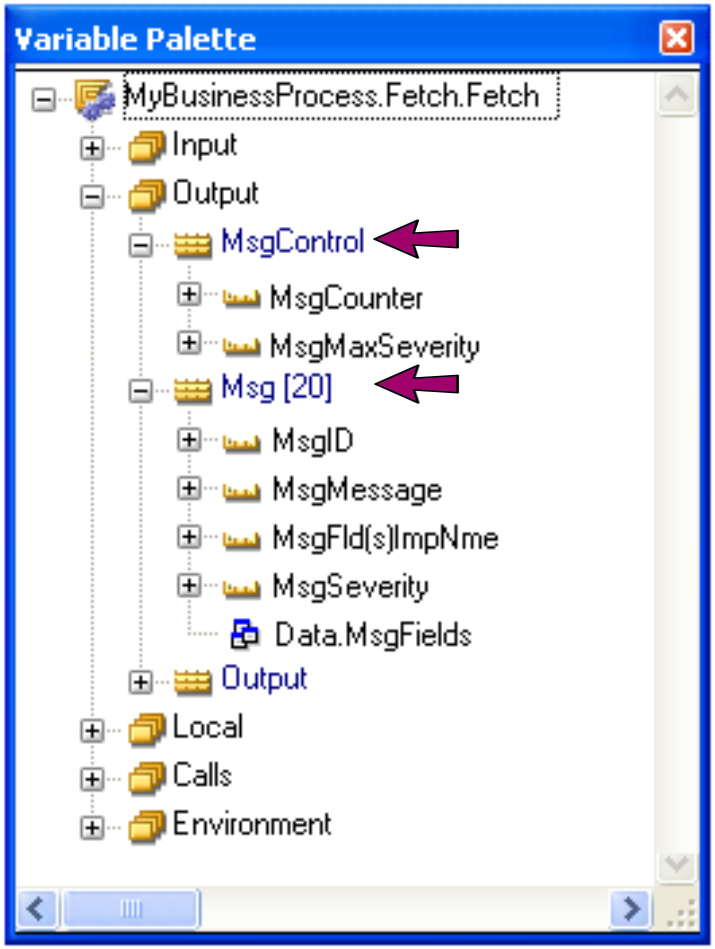
Scoped TestHarness / TestBench

- No Action Diagram coding
- No Replacement just IS A at entity level
- Testing in Isolation
- Identifying which Tier in Error
- Assume and recreate poor quality data entry
- Remove all panel controls – Raw data entry



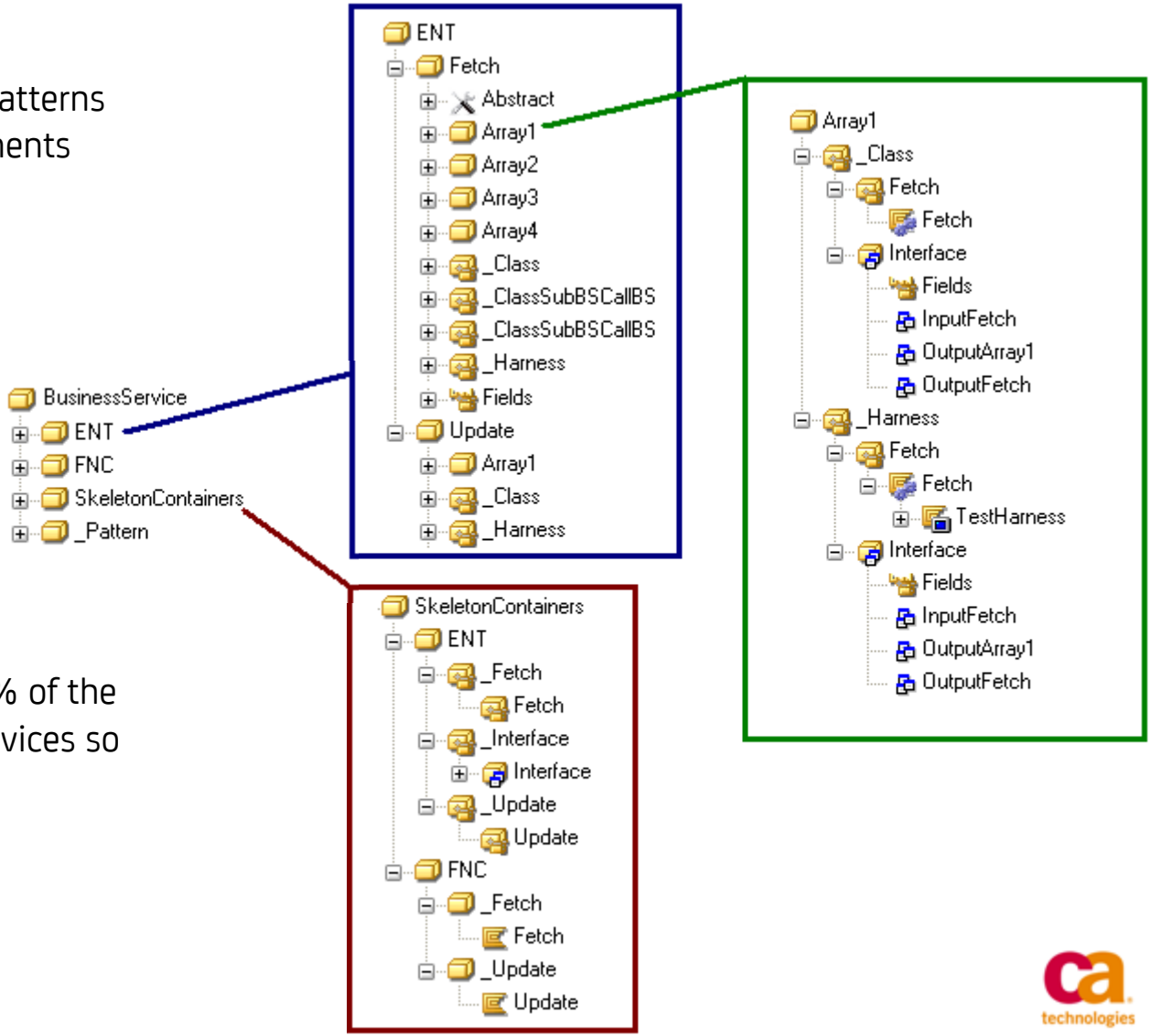
Business Service tier patterns

- Messaging
  - More time spent here less time explaining to calling Tiers developers Errors and Functionality.
  - Integrated into your Go Sub Send Message
  - No developer coding but for populating msg details
- **MsgControl (SingleInstance)**
  - MsgCounter – Total number of messages
  - MsgMaxSeverity – What was the most severe message contained in the Array
- **Msg (MultipleInstance)**
  - MsgID – so that calling tier can use their own messages but recognize yours – Msg Imp Nme
  - MsgFld(s)ImpNme – Calling tier recognizes what fields the msg refers to
  - MsgSeverity
    - Info
    - FailedValidation
    - ApplicationError



Business Service tier patterns

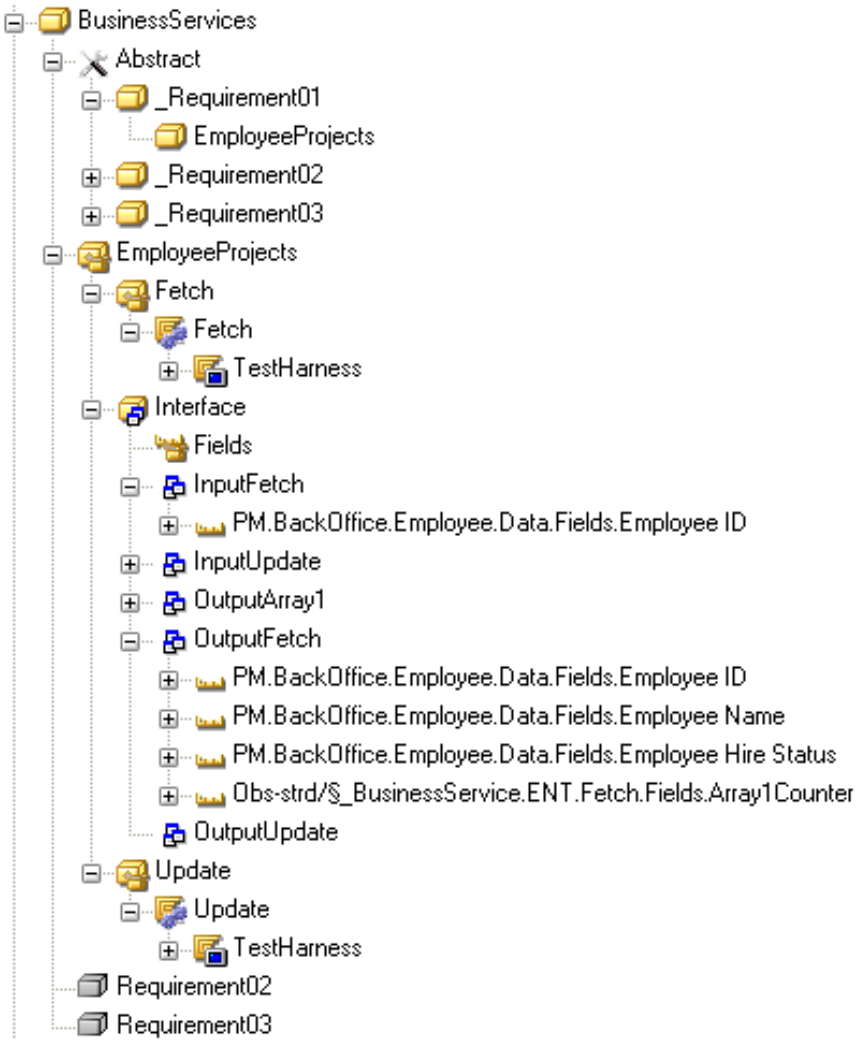
Aim was to produce a set of patterns that met 85% of the requirements



That said it has matched 100% of the current needs for Business Services so far…

business service tier demo

DEMO



Webservices tier patterns (published)

Aim was to model the Business Services into a SOAP service

- Limited TransacXML experience and licenses within Department so solution must be simple, plug-in and play
- Advantage is we know exactly how the BS looks like as opposed to consumed services
- Create matching Fetch & Update patterns to wrapper the BS versions
- WEBSYDIAN™ Websydian TransacXML .ity granular patterns, first rate support and cumentation

- Entity Patterns
  - Implementation via Is A triples, replacement, Naming objects and Has relationships and absolutely no Action Diagram Code
- Skeleton Container Structures
  - Common Fetch, Update containers. Maintain the BS uniformity and allow entity level replacement.

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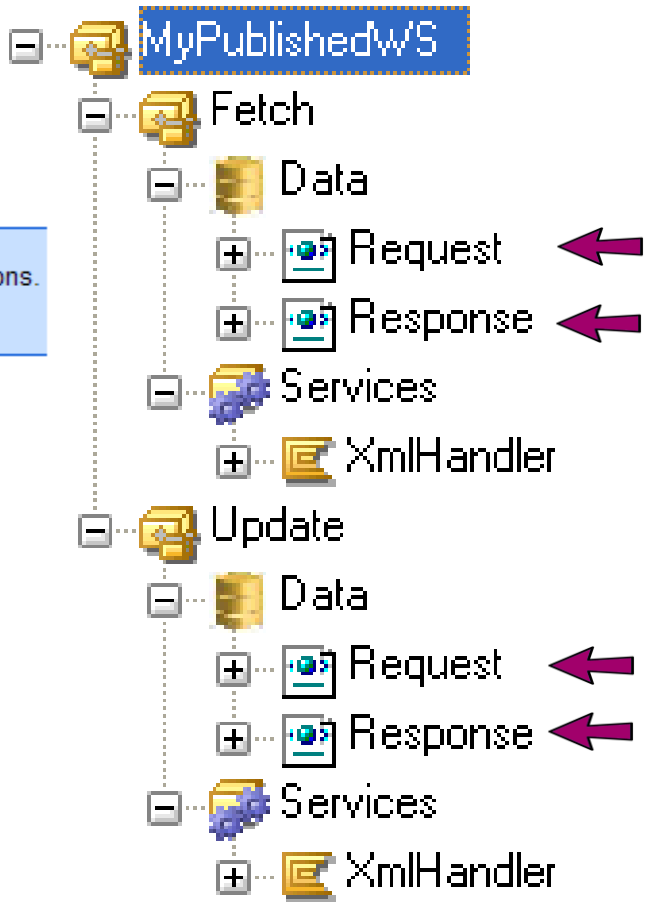
Webservices tier patterns (published)

- A SOAP based webservice consists of a Request and Response.
- +GetNameOfField replaced +GetNameOfFieldByXML_Label



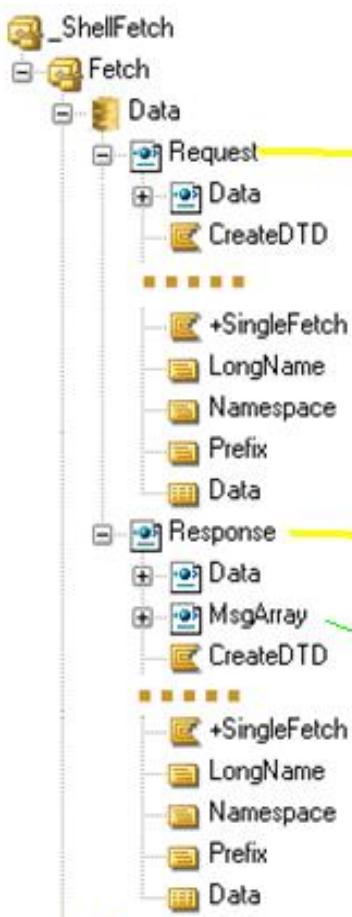
The behavior of both XmlElement and XmlRepeatingElement are controlled by a number of options. These options are set on the function ElementOptions.

fields are handled as if they were **simple elements**. This way it is possible to reuse existing fields without changing them."

- Function: ElementOptions NullValueCreate Set to Yes
- Limitation to approach: http://www.websydian.com/websydiandoc/v61/source/Websydian%20v6.1/TransacXML/wsyxml/parts.htm#ElementOptions

Webservices tier patterns (published)

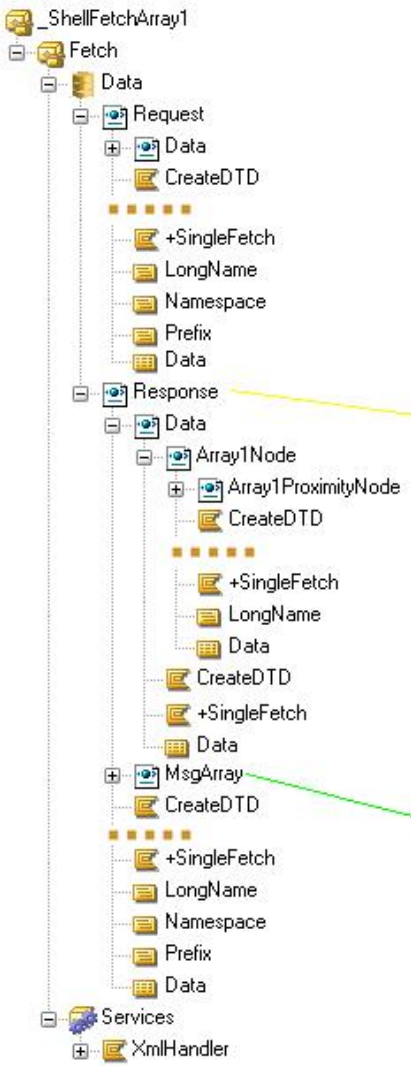
- Root Elements Request & Response (Complex Element)
  - LongName
  - Includes Data (Complex Element)
  - Response includes MsgArray (Complex Element)




```
- <soapenv:Body>
  - <emp:Request>
    - <emp:Data>
        <emp:EmpID>1</emp:EmpID>
      </emp:Data>
    </emp:Request>
  </soapenv:Body>
```

```
- <SOAP-ENV:Body>
  - <p1:Response>
    + <p1:Data>
    - <p1:MsgArray Counter="1" MaxSeverity="20">
      - <p1:MsgDtls>
          <p1:MsgID>MSG0010</p1:MsgID>
          <p1:MsgSeverity>20</p1:MsgSeverity>
          <p1:Message>The data could not be read</p1:Message>
          <p1:MsgElement>EmpID</p1:MsgElement>
        </p1:MsgDtls>
      </p1:MsgArray>
    </p1:Response>
  </SOAP-ENV:Body>
```

Webservices tier patterns (published)



W3C XML Document: Arrays Represented as

- Complex Element with Attributes
- Multiple occurrence Complex Element with Simple elements

Plex Model: Arrays Represented as

- Parent entity is a XMLElement has AttributeFieldUT
- Child entity is a XMLRepeatingElement has ElementFieldUT
- LongName

```
- <SOAP-ENV:Body>
  - <p1:Response>
    - <p1:Data>
        <p1:EmpID>1</p1:EmpID>
        <p1:EmpName>Employee One</p1:EmpName>
        <p1:EmpHireStatus>CT</p1:EmpHireStatus>
      - <p1:EmpProjects Counter="2">
        - <p1:Project>
            <p1:ProjectID>Pr1</p1:ProjectID>
            <p1:ProjectDescription>Project One</p1:ProjectDescription>
          </p1:Project>
        + <p1:Project>
        </p1:EmpProjects>
      </p1:Data>
      <p1:MsgArray Counter="0" MaxSeverity="" />
    </p1:Response>
  </SOAP-ENV:Body>
```

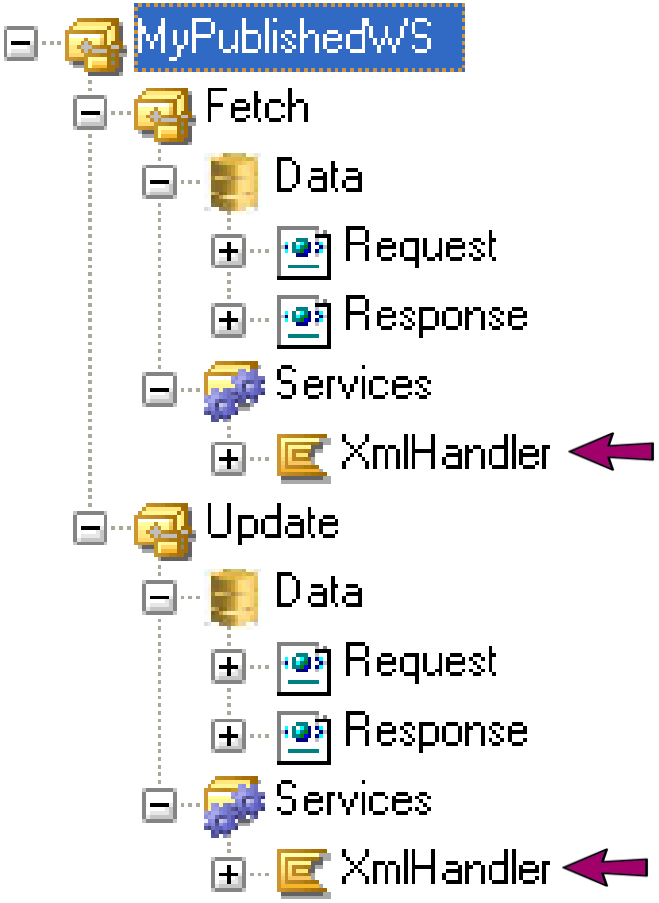
Webservices tier patterns (published)

- XMLHandler - read the incoming request (SoapPayload) and send outgoing Response (SoapResponseMesssage)

- Sub ProcessRequestDocument
  - Reads Root, Gets Data
  - Call BS with Input mapped from Get Data

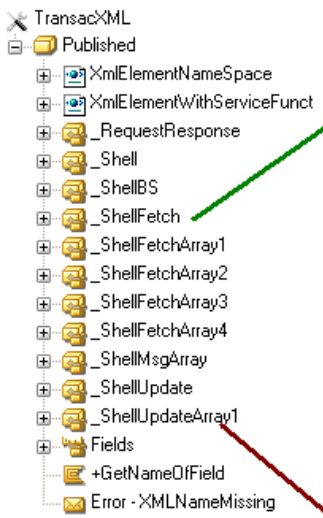
- Sub CreateDataResponseDocument
  - Creates Root
  - Detemines Response Type
  - Creates Data mapped from BS

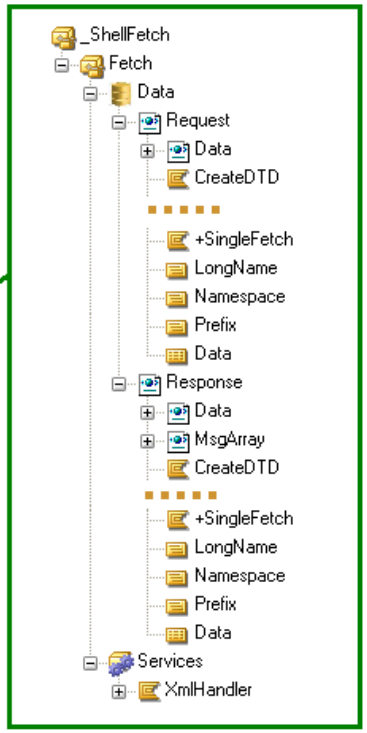
- Sub CreateErrorResponseDocument
  - Creates MsgArray mapped from BS

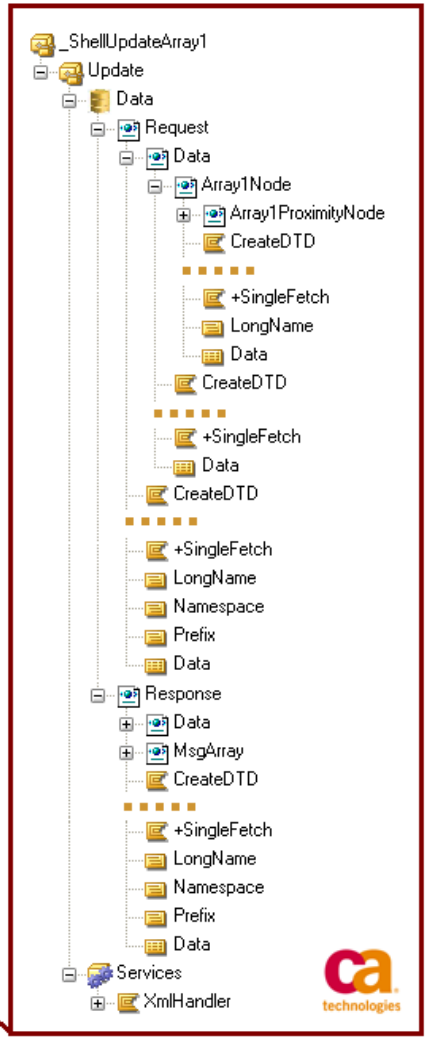


Webservices tier patterns (published)

Aim was to produce a set of patterns that wrappered the BS objects with no action diagram coding or logic or formatting





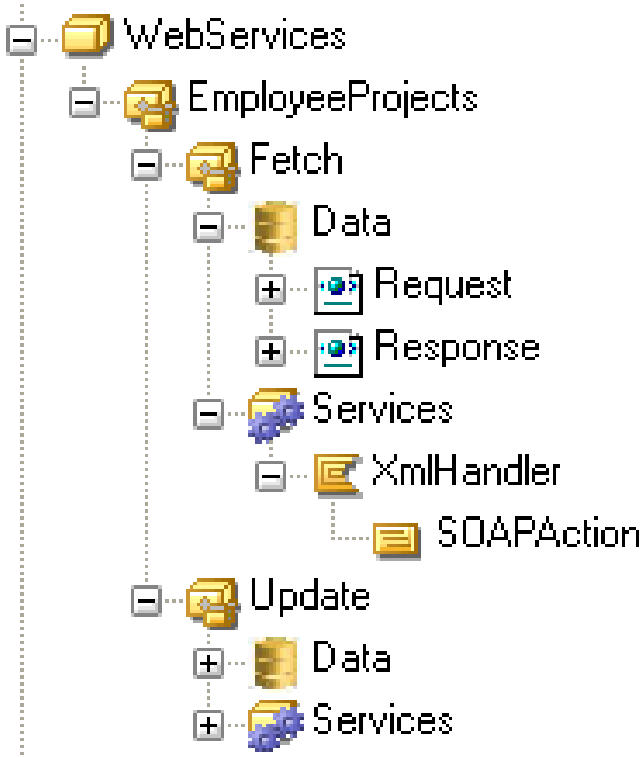


Some Outcomes:

- Reduction in development time
- Increased developer resources
- Decreased bugs
- Less tier developer confusion through Messaging and Interface uniformity

Webservices tier demo (published)

DEMO



Thank you for participating and that concludes the session and indeed concludes Chicago 2011 sessions.

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