Final Demo Presentation

waldo

A Program for Call Handling

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The Speakers

… Calvin Delamere

… Chris Bubernak

… Ben Limmer

… Andrew Taggart

Focus of This Presentation

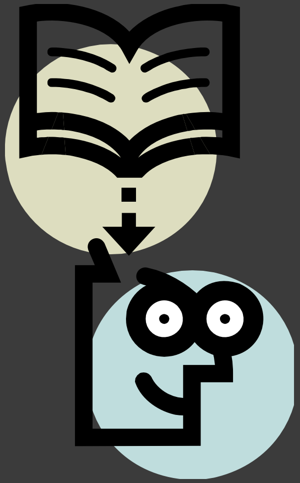
- Project Overview
- Software Demonstration
- Architecture

Focus of This Presentation

- Project Overview
  - The Class
  - The Problem
  - The Solution
- Software Demonstration
- Architecture

The Class

- CU Boulder's Computer Science Capstone
- 40 students, 9 teams
- Industry Projects
  - Online Video Editor
    - ReadyTalk (Denver, CO)
  - Augmented Me
    - Kerpoof Disney Studios (Boulder, CO)
  - Inflatable Icons as 3D Web App
    - AgentSheets, Inc/Google (Boulder, CO)

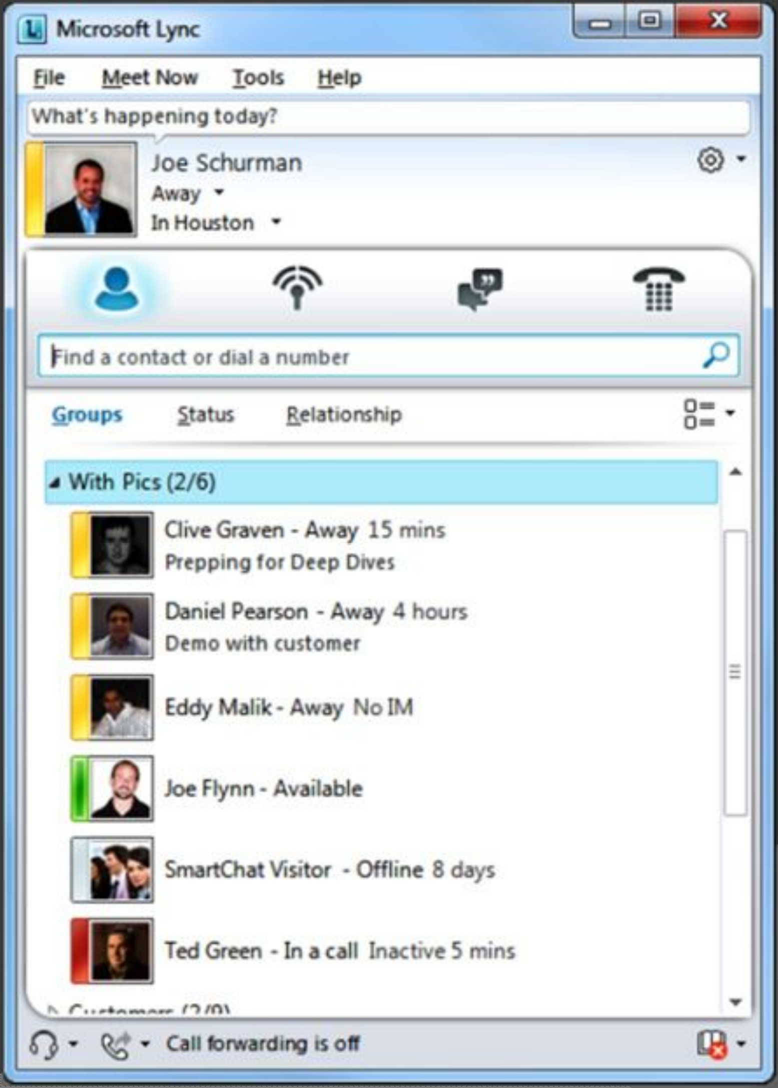


Problem: Dumb phones

- Phones are dumb; they do two things:
  - Connect the call
  - Send to voicemail
- Available data is unleveraged

What Kind of Data?

- “Presence”
  - Current Status
- Exchange Data
- Time of Day
- Caller Data



What's happening today?

Joe Schurman
Away
In Houston

With Pics (2/6)

Clive Graven - Away 15 mins
Prepping for Deep Dives

Daniel Pearson - Away 4 hours
Demo with customer

Eddy Malik - Away No IM

Joe Flynn - Available

SmartChat Visitor - Offline 8 days

Ted Green - In a call Inactive 5 mins

Call forwarding is off

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Solution: Waldo

- What is Waldo?
- Major Requirements
  - Environmental
  - Functional
- Conceptual View of Waldo

Solution: Waldo

- Dynamic call handling based on
  - User Information
  - Call Handling Rules
- Leverage centralized user data

Solution: Waldo

- Voice recognition based interface
- Route call based on data + rules
  - Connection over VOIP
  - Send to voicemail
  - Instant message to user
- Your digital personal assistant

Waldo Rules

- Rules are combinations of conditions & actions
- Conditions
  - Lync status, time of day, incoming caller name, incoming caller number
- Actions
  - Put caller on hold and query a user with an IM, connect via VOIP, send caller to voicemail

Waldo Rules

- Rules are executed sequentially based on conditions that are met (think email filters)
- Conditions are joined with ANDs and actions are joined with ORs
- Example of rule format:
  - Condition(s): Time of day > 6:00 AND Presence = Away
  - Action(s): Send to voicemail

Environment Requirements – Development and Server Runtime

- Windows Server 2008 R2
- Visual Studio 2010
- ASP.NET 4
- WCF
- IIS 7
- Lync Server 2010
- Microsoft Unified Communication Managed API (UCMA) 3.0

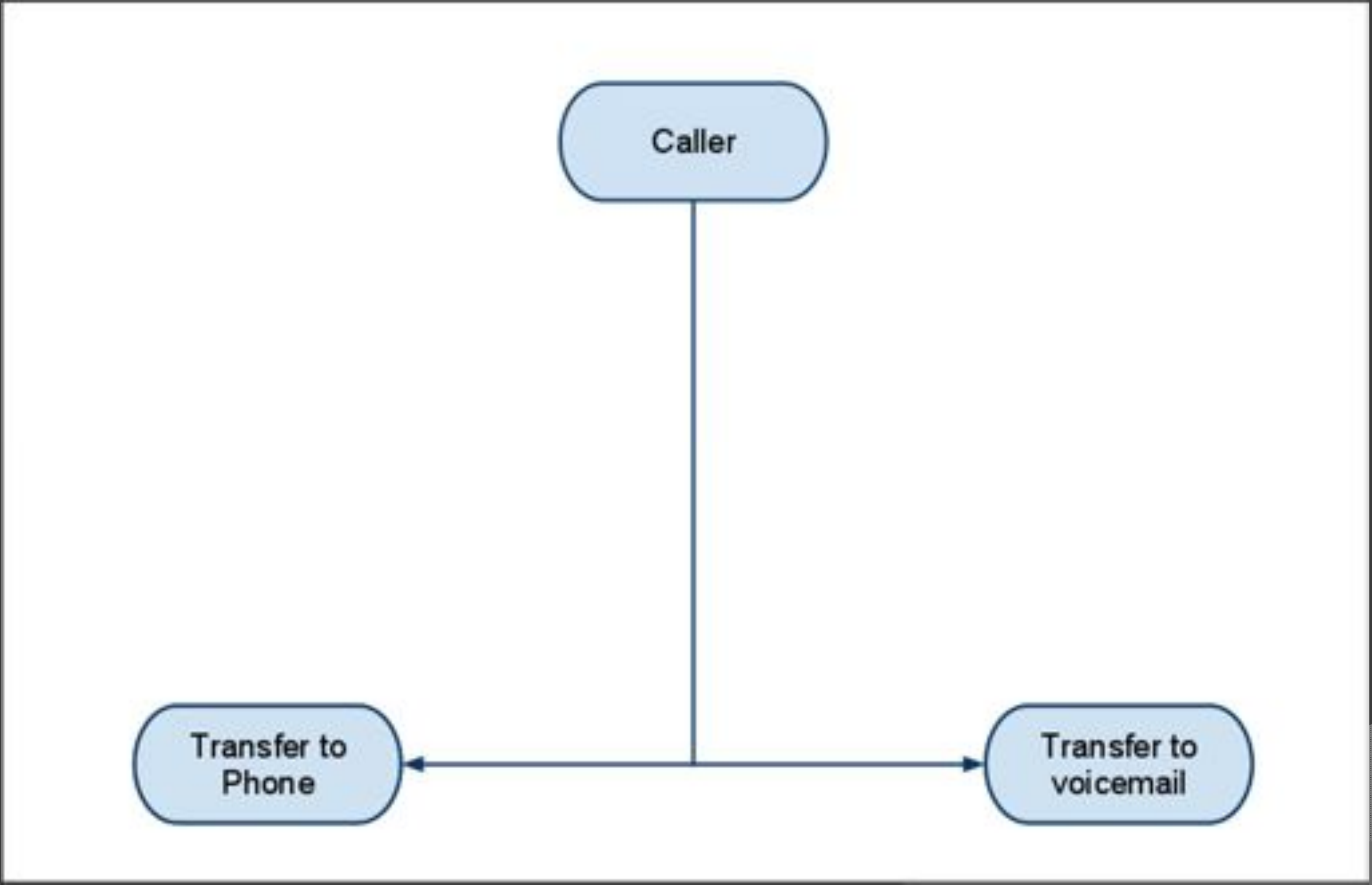
Environment Requirements – Client-side

- Rules web application
  - Modern Browsers
    - IE 8+
    - Firefox 3+
    - Chrome 5+
- Telephone interface
  - Standard phone
  - Voice Over Internet Protocol (VOIP)

Functional Requirements

- Awareness of a user’s data
  - Lync presence and location
  - Time of day
  - Exchange contacts
- Call handling based on data state
  - VOIP or cell phone
  - Voicemail
  - Instant message
- Web API for extending Waldo

Waldo Conceptual Diagram



Focus of This Presentation

- Project Overview
- Software Demonstration
  - Rules web application
  - Waldo daemon
  - VXML generator
  - VXML browser
- Architecture

Focus of This Presentation

- Project Overview
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- Architecture
  - Overview
  - Modules

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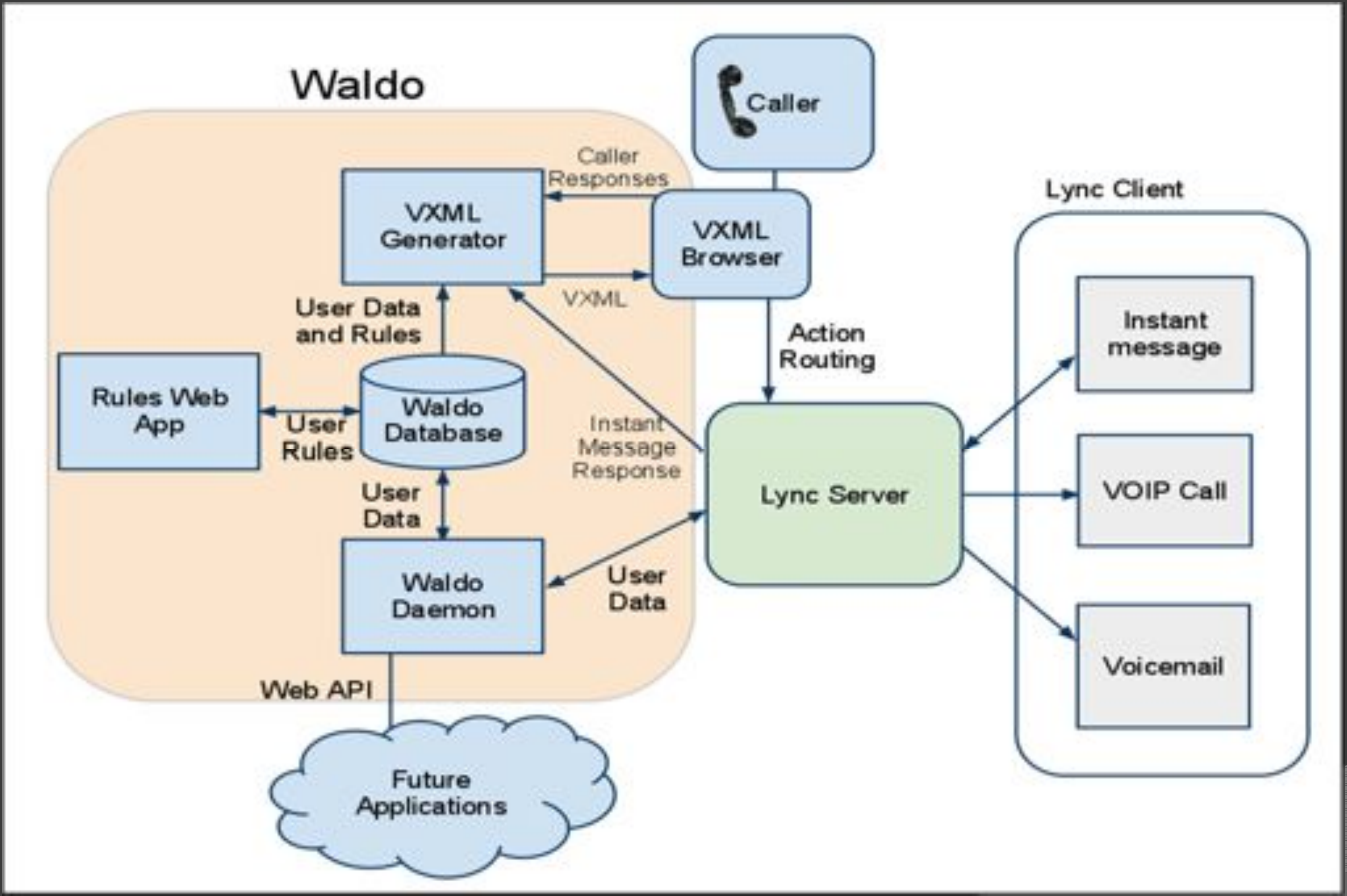
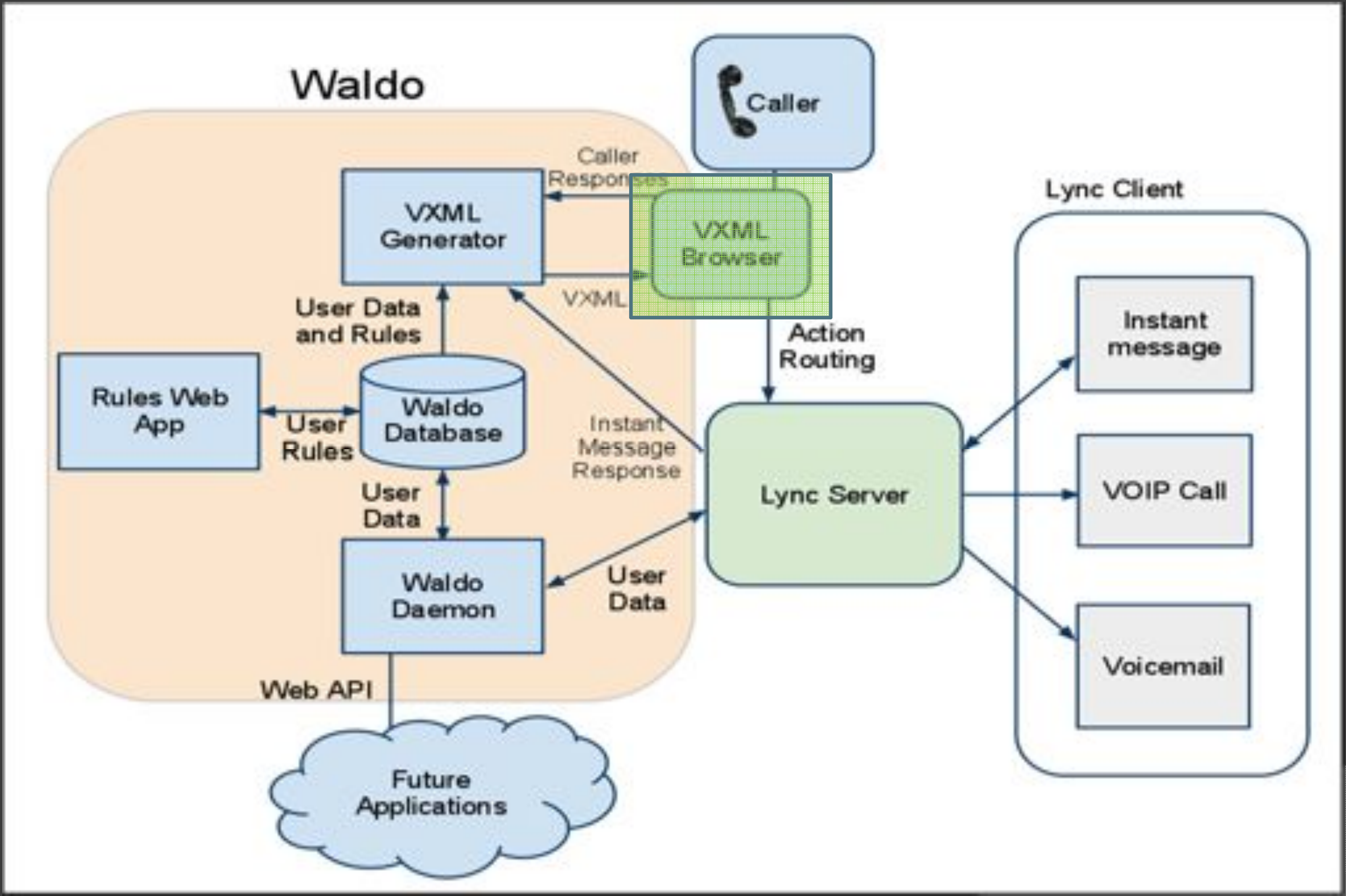
Waldo Architecture: Overview



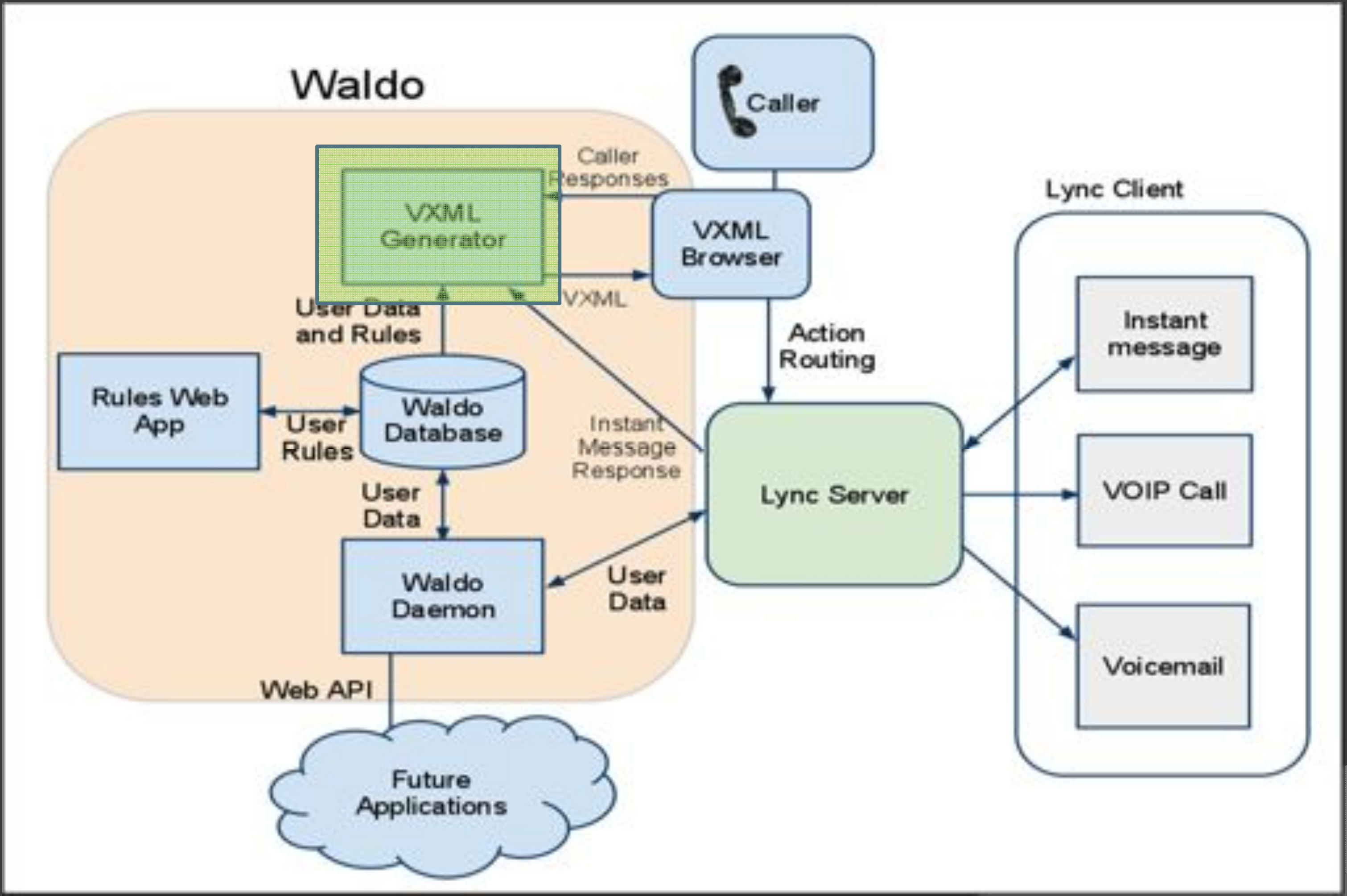
Waldo Architecture



Waldo Architecture: VXML Browser

- Primary interface for callers
- VXML 2.1 Browser
  - TellMe
  - UCMA 3.0
- Spoken interface with voice recognition

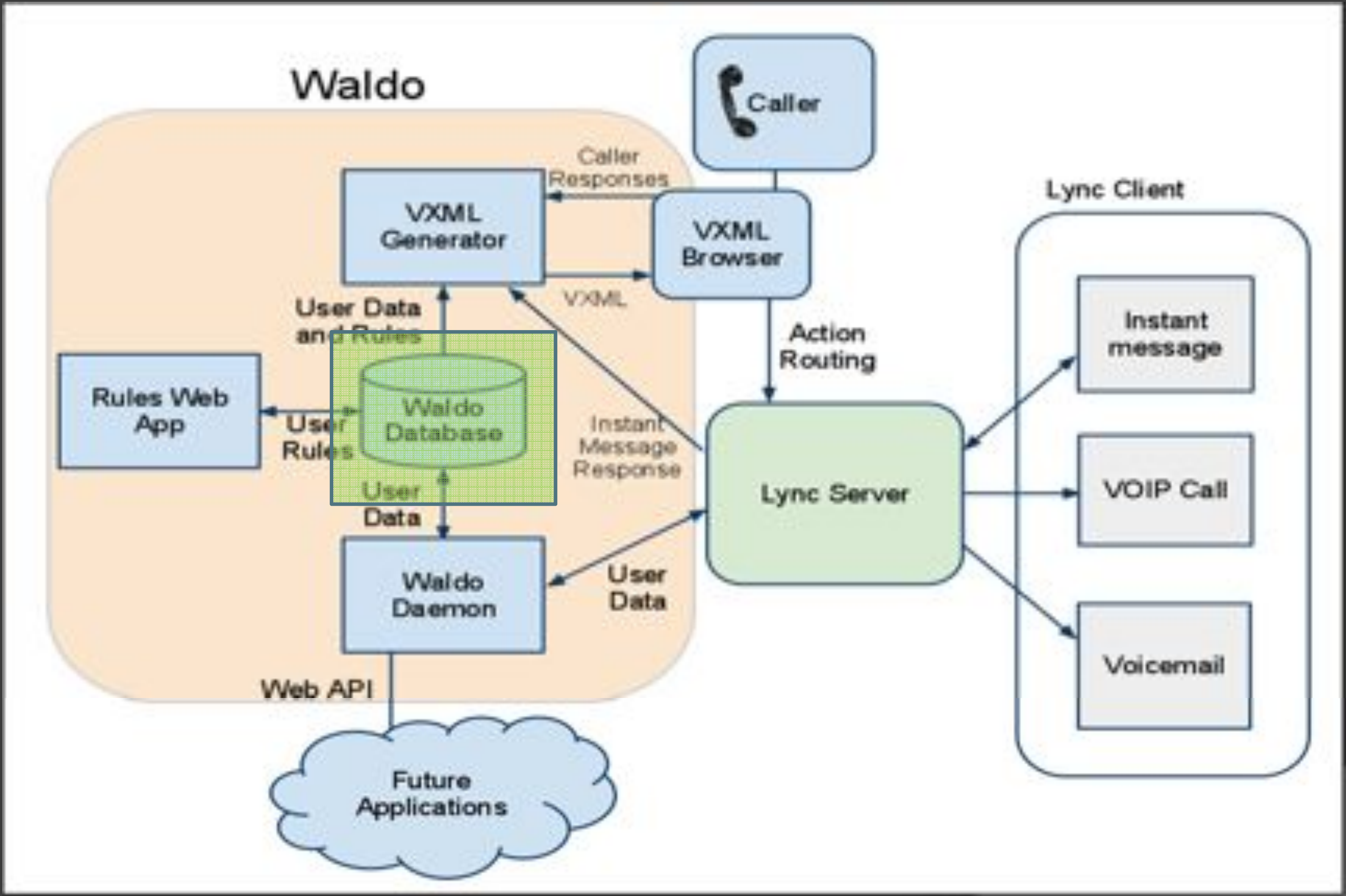
Waldo Architecture



Waldo Architecture: VXML Generator

- ASP.net application
  - HTTP request from VXML browser
  - Allows choice of compliant VXML browsers
- Based upon rules
- …and data state
  - What is the Waldo user's current status?
  - Is it a friend calling?
  - Etc.

Waldo Architecture



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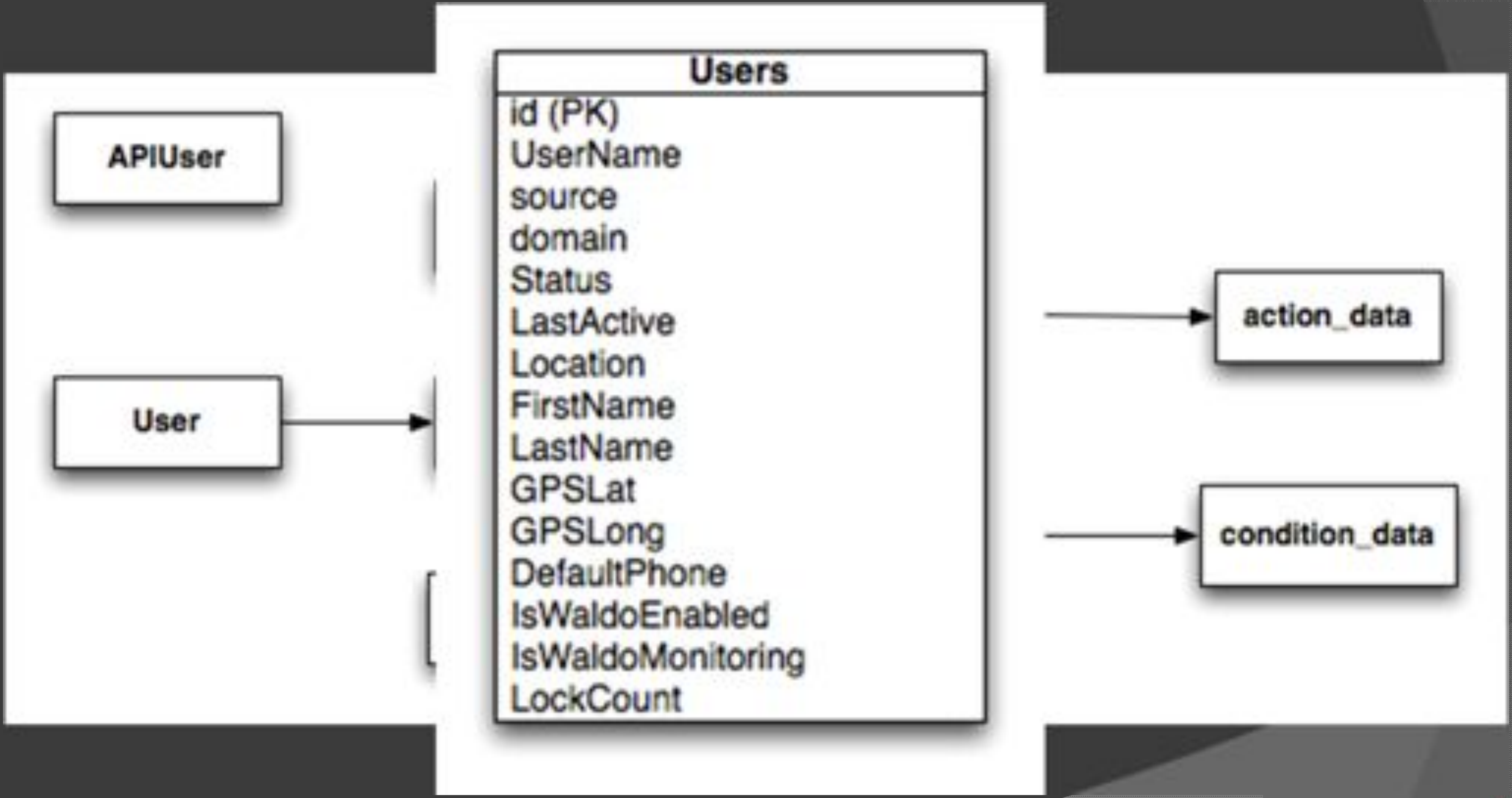
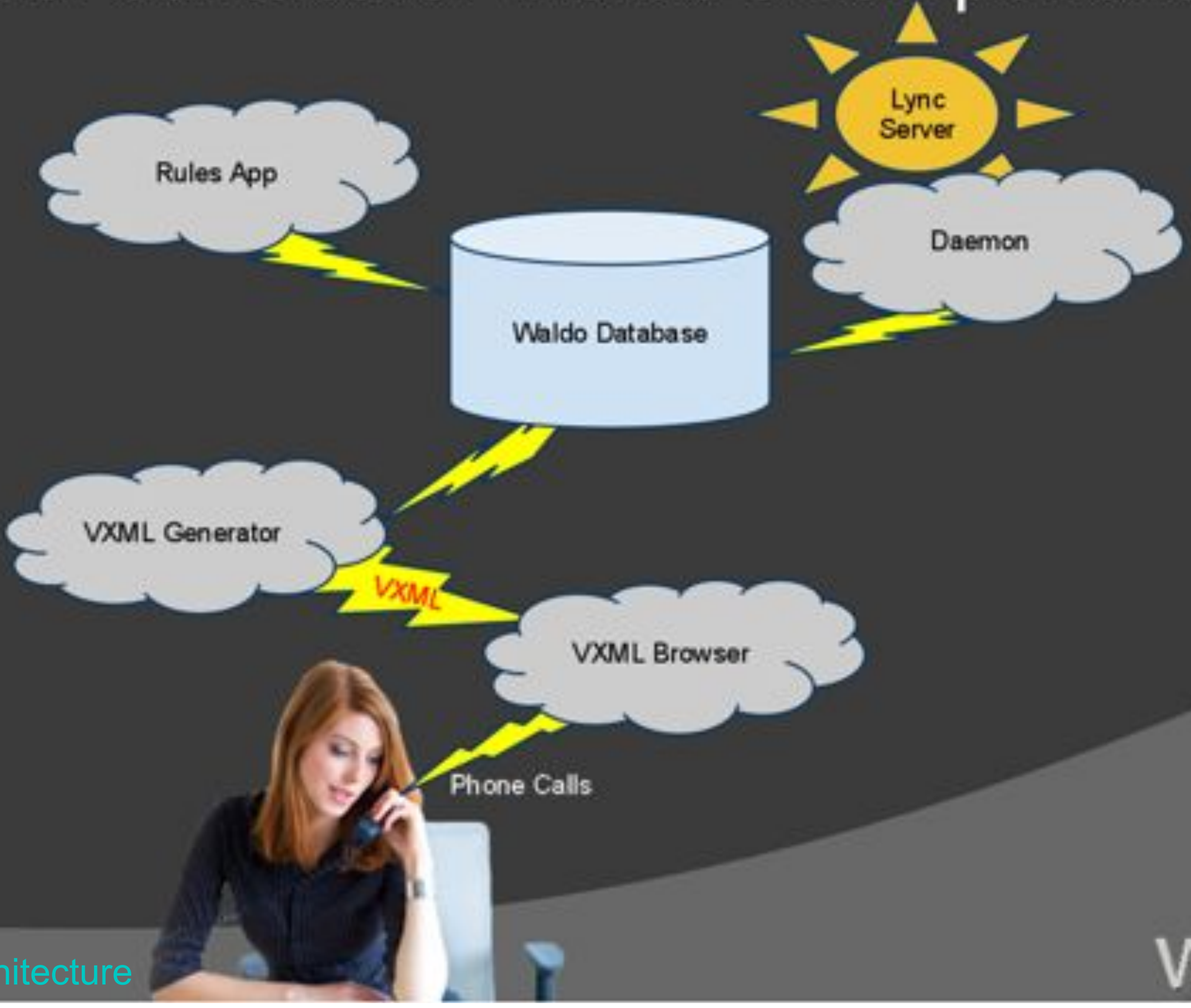
Waldo Architecture: Waldo Database



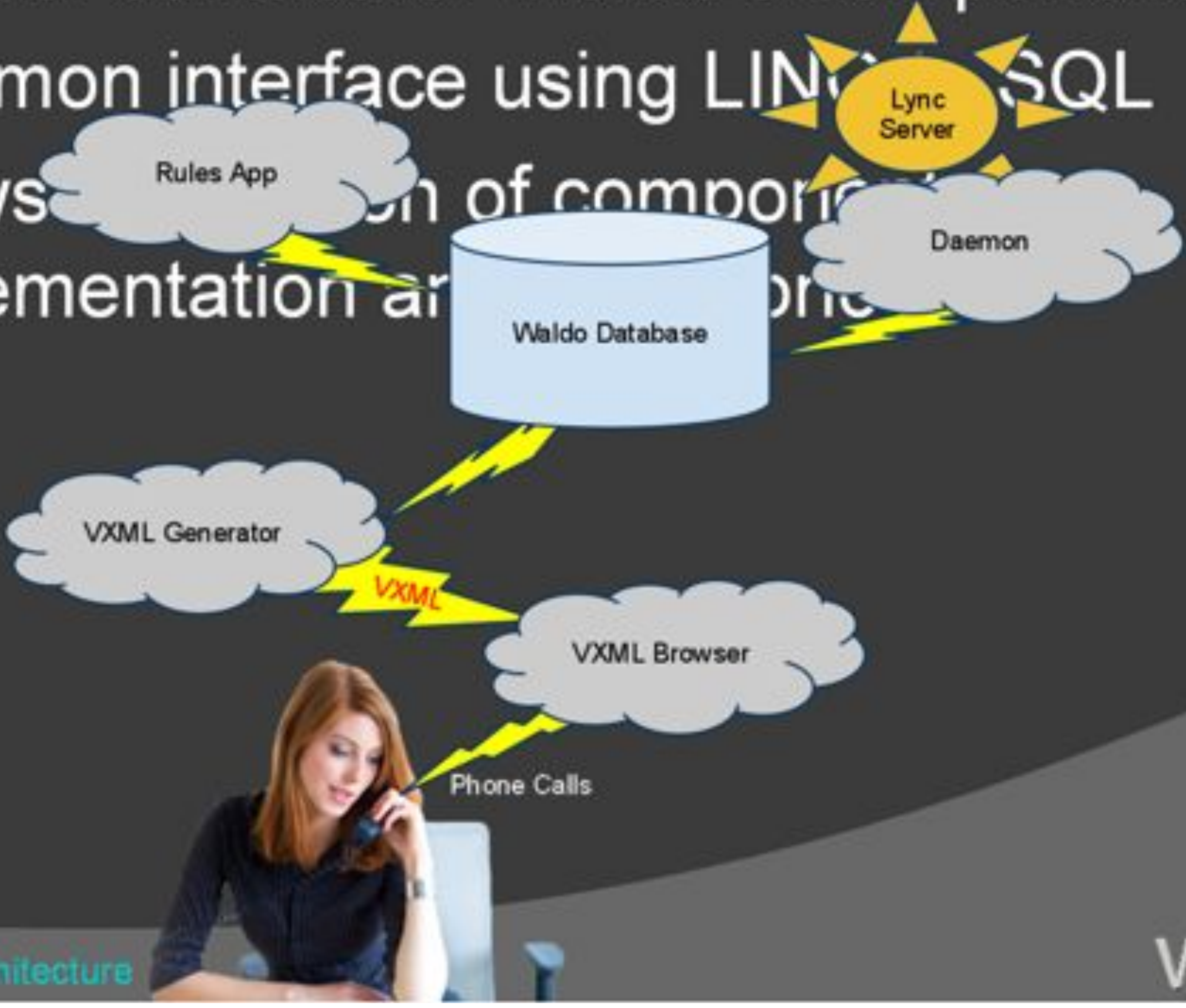
Waldo Architecture: Waldo Database

- Point of contact for Waldo's components



Waldo Architecture: Waldo Database

- Point of contact for Waldo's components
- Common interface using LIN [illegible] SQL
- Allows [illegible] n of compon [illegible] implementation ar [illegible] on [illegible]



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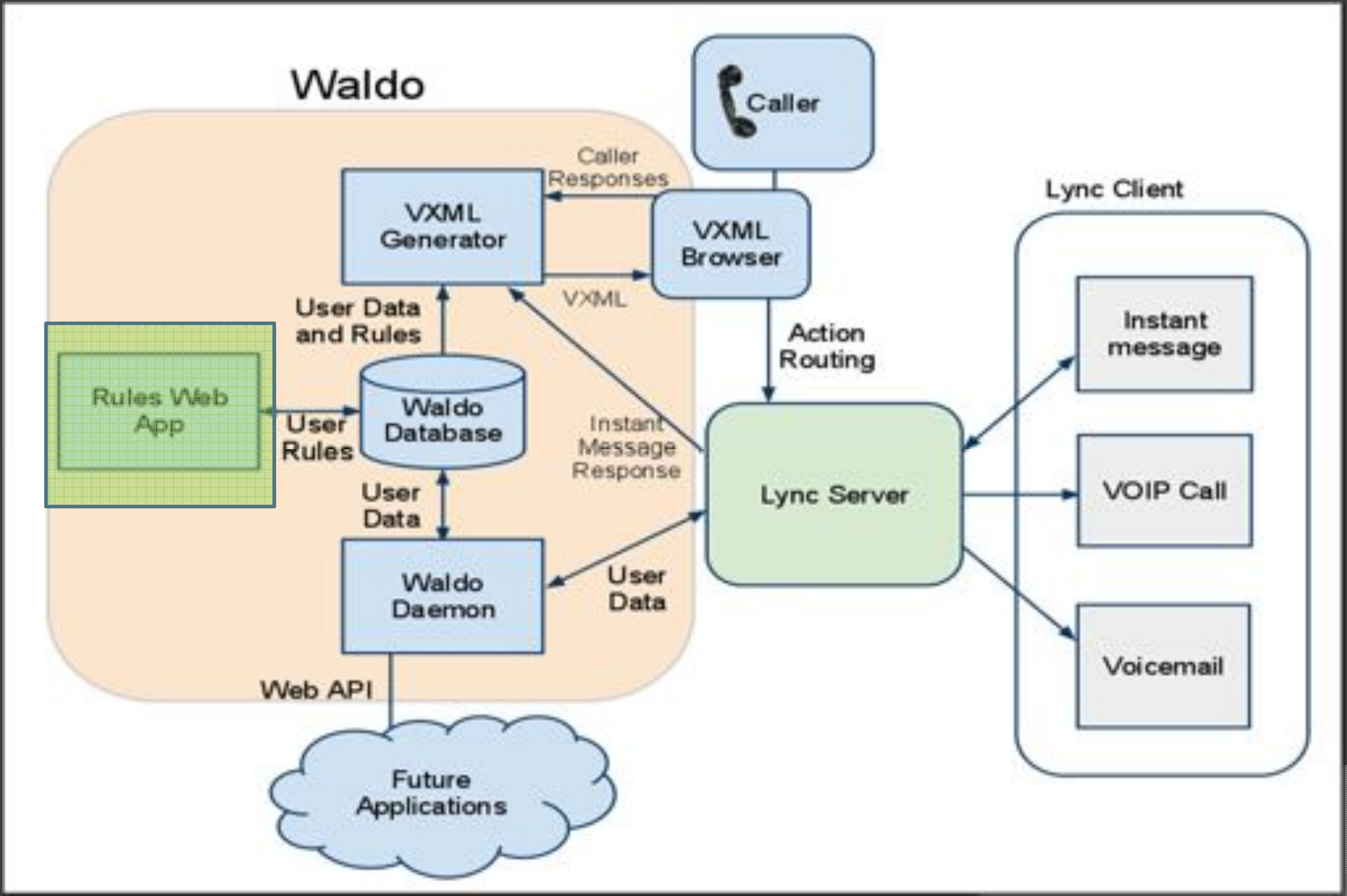
Waldo Architecture: Waldo Database

- Point of contact for Waldo’s components
- Common interface using LINQ to SQL
- Allows separation of component implementation and data concerns

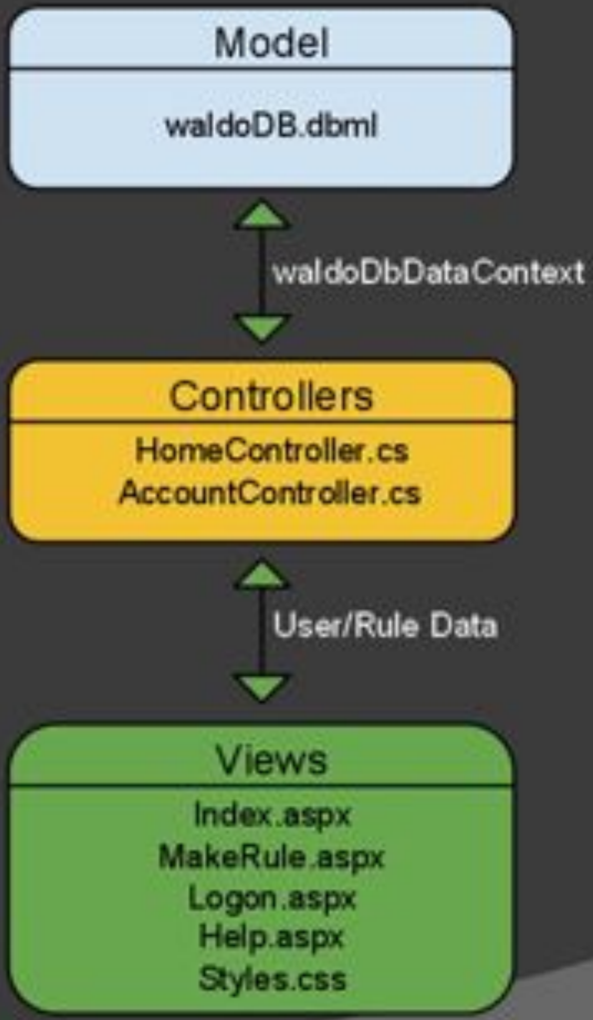
Waldo Architecture



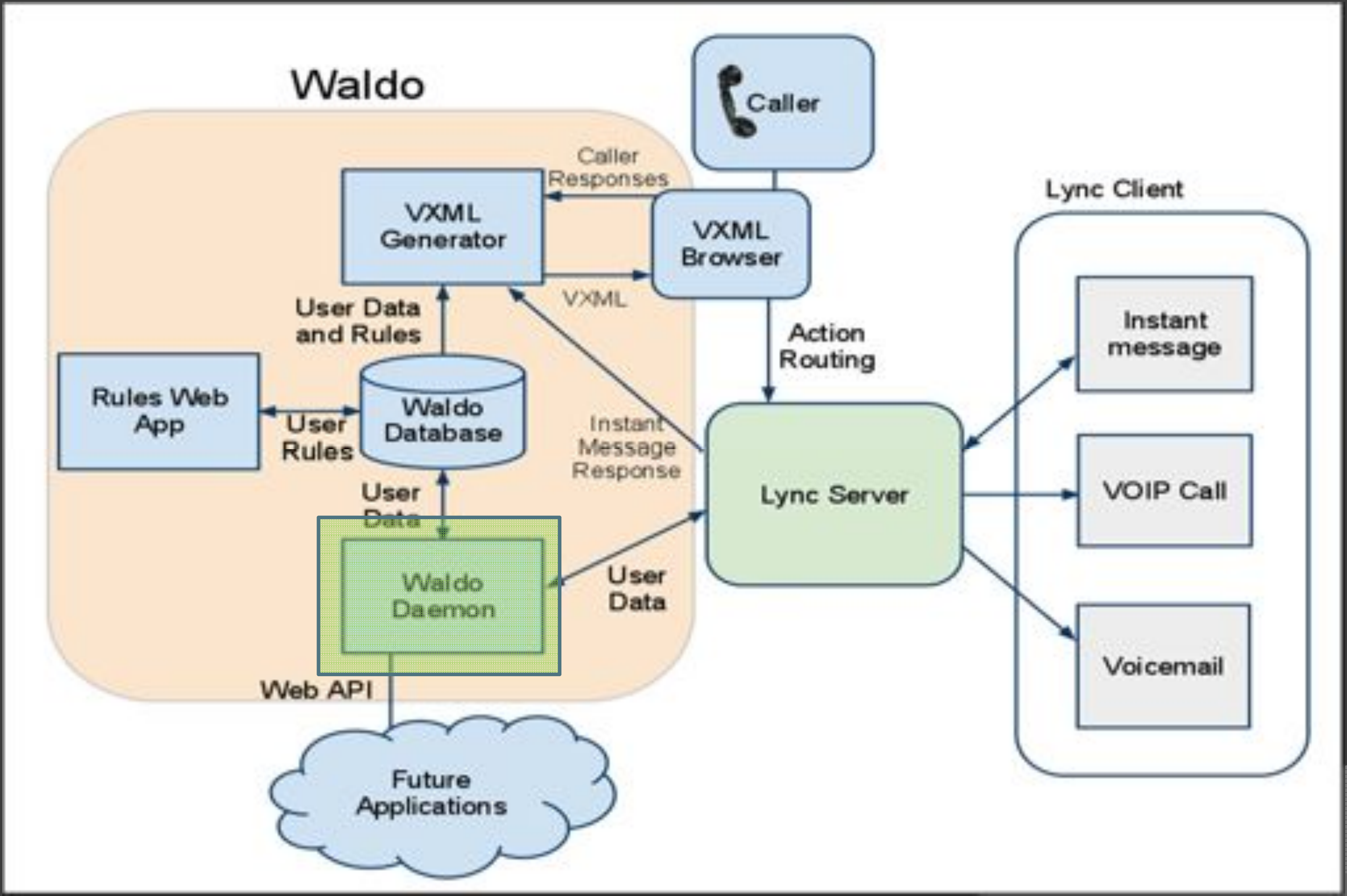
Waldo Architecture: Web App

- ASP.NET MVC 2 Web Application
- Allows Waldo users to manipulate their rules
  - Add rules
  - Delete rules
  - Toggle rules on and off
  - Change priority of rules
- Enable/Disable Waldo

Waldo Architecture: Web App

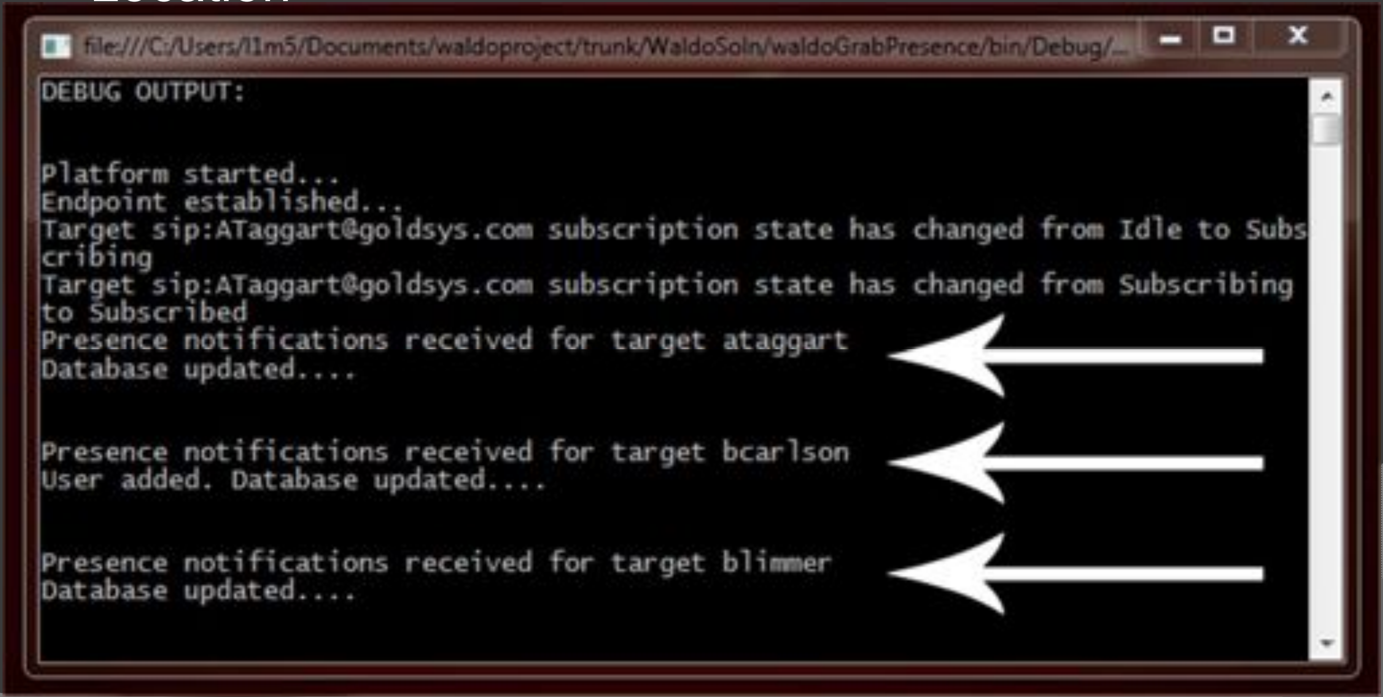


Waldo Architecture



Waldo Architecture: Daemon

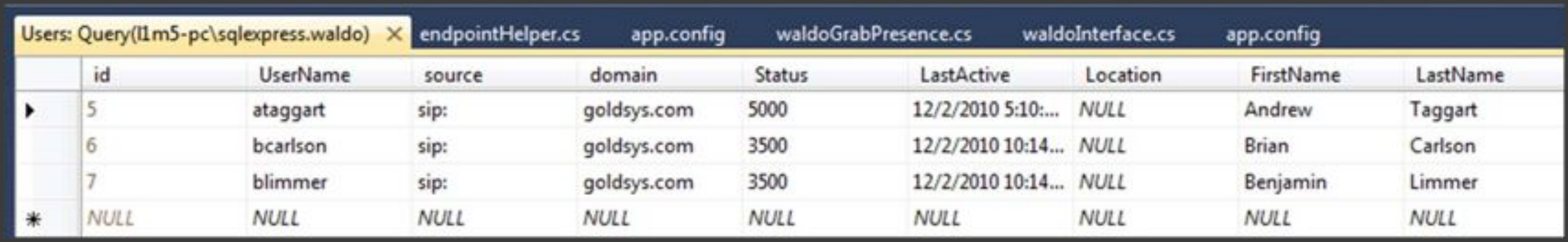
- UCMA 3.0 SDK
- Subscribes to users
  - Receives user updates from Lync Server
    - Presence
    - Location


file:///C:/Users/l1m5/Documents/waldoproject/trunk/WaldoSoln/waldoGrabPresence/bin/Debug/...

```
DEBUG OUTPUT:


Platform started...
Endpoint established...
Target sip:ATaggart@goldsys.com subscription state has changed from Idle to Subs
cribing
Target sip:ATaggart@goldsys.com subscription state has changed from Subscribing
to Subscribed
Presence notifications received for target ataggart
Database updated....


Presence notifications received for target bcarlson
User added. Database updated....


Presence notifications received for target blimmer
Database updated....
```

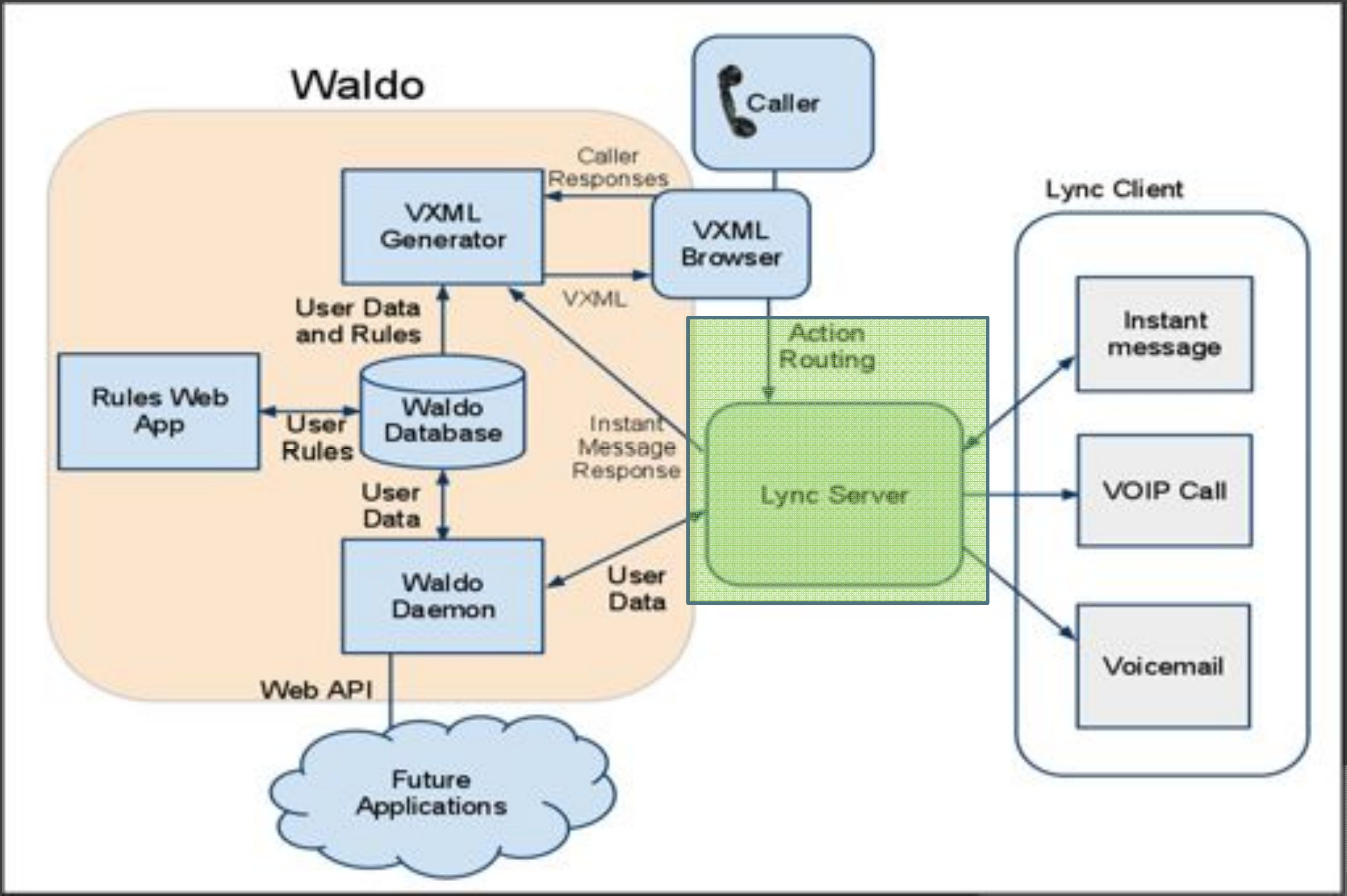
Waldo Architecture: Daemon

- Saves data to the WaldoDB in the Users Table
  - Data utilized by VXML generator
  - Web API



	id	UserName	source	domain	Status	LastActive	Location	FirstName	LastName
▶	5	ataggart	sip:	goldsys.com	5000	12/2/2010 5:10:...	NULL	Andrew	Taggart
	6	bcarlson	sip:	goldsys.com	3500	12/2/2010 10:14...	NULL	Brian	Carlson
	7	blimmer	sip:	goldsys.com	3500	12/2/2010 10:14...	NULL	Benjamin	Limmer
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

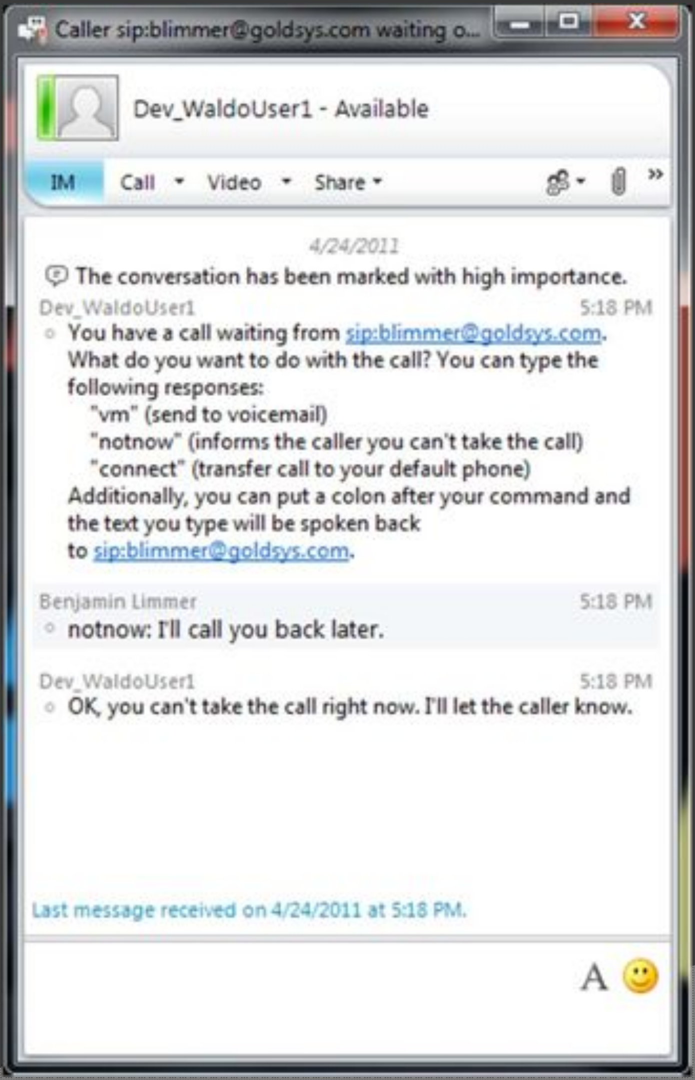
Waldo Architecture



Waldo Architecture: Action Routing

- Allows for:
  - Transfer of calls
    - Transfer tag (VXML)
    - SIP or telephone
  - Direct transfer to voicemail
  - Lync Instant Message

Waldo Architecture: Action Routing


Caller sip:blimmer@goldsys.com waiting o...

Dev_WaldoUser1 - Available

4/24/2011

The conversation has been marked with high importance.

Dev_WaldoUser1 5:18 PM

You have a call waiting from sip:blimmer@goldsys.com. What do you want to do with the call? You can type the following responses:
"vm" (send to voicemail)
"notnow" (informs the caller you can't take the call)
"connect" (transfer call to your default phone)
Additionally, you can put a colon after your command and the text you type will be spoken back to sip:blimmer@goldsys.com.

Benjamin Limmer 5:18 PM

notnow: I'll call you back later.

Dev_WaldoUser1 5:18 PM

OK, you can't take the call right now. I'll let the caller know.

Last message received on 4/24/2011 at 5:18 PM.

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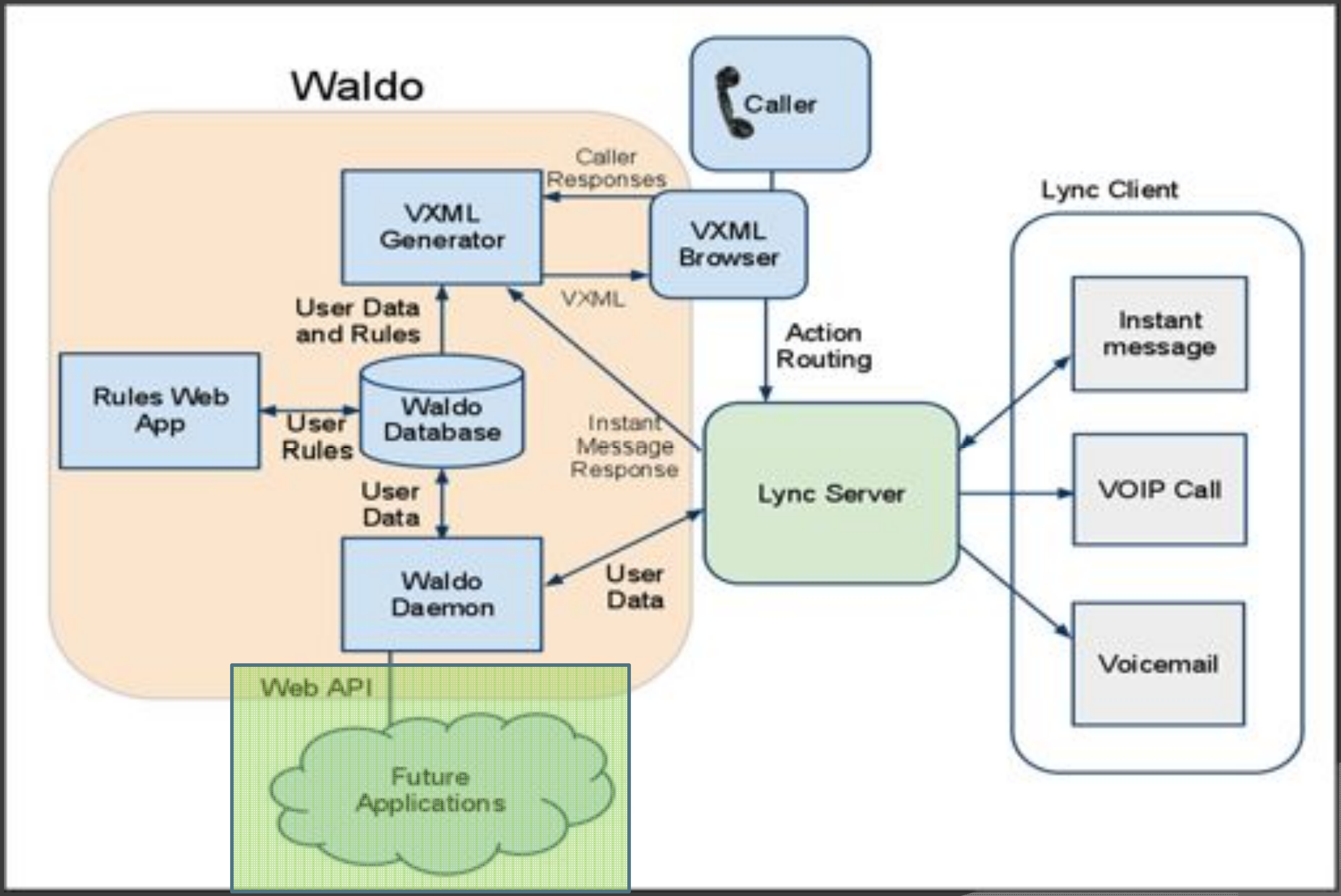
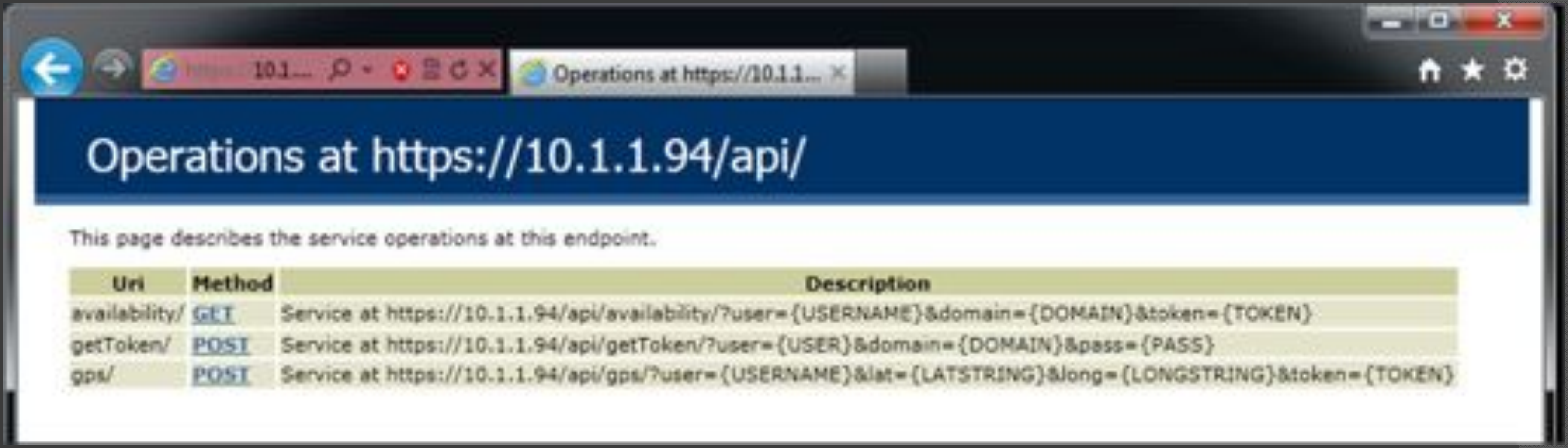
Waldo Architecture



Waldo Architecture: Web API & Future Applications

- WCF Service + REST
- Future Developers
  - Provides easy access to DB
- Functionality
  - Get Waldo data
- Remote GPS update
- Security
  - SSL
  - Access Token
  - AD Credentials

Web API: WCF Help Page

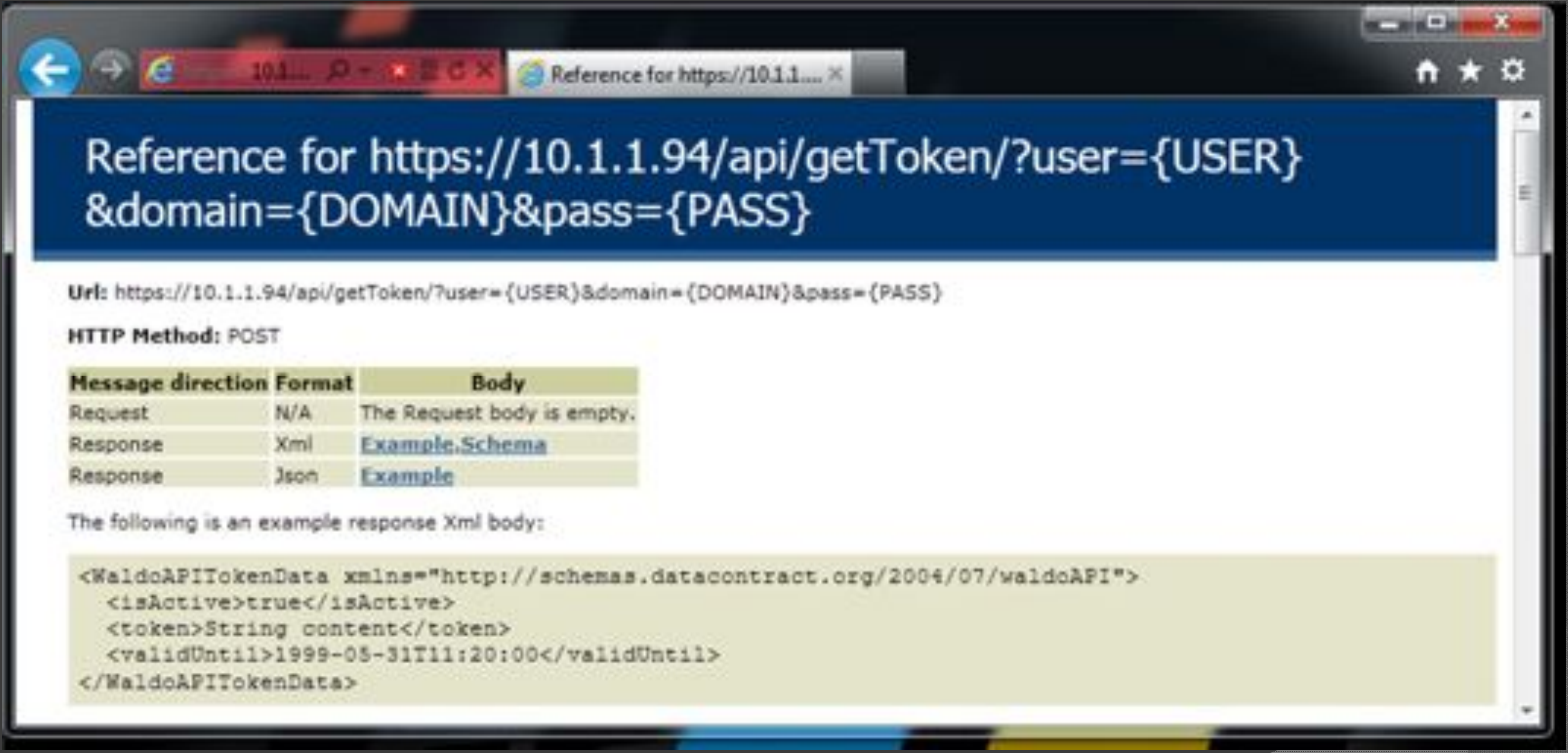


Operations at https://10.1.1.94/api/

This page describes the service operations at this endpoint.

Uri	Method	Description
availability/	GET	Service at https://10.1.1.94/api/availability/?user={USERNAME}&domain={DOMAIN}&token={TOKEN}
getToken/	POST	Service at https://10.1.1.94/api/getToken/?user={USER}&domain={DOMAIN}&pass={PASS}
gps/	POST	Service at https://10.1.1.94/api/gps/?user={USERNAME}&lat={LATSTRING}&long={LONGSTRING}&token={TOKEN}

Web API: Access Tokens



Reference for https://10.1.1.94/api/getToken/?user={USER}&domain={DOMAIN}&pass={PASS}

Url: https://10.1.1.94/api/getToken/?user={USER}&domain={DOMAIN}&pass={PASS}

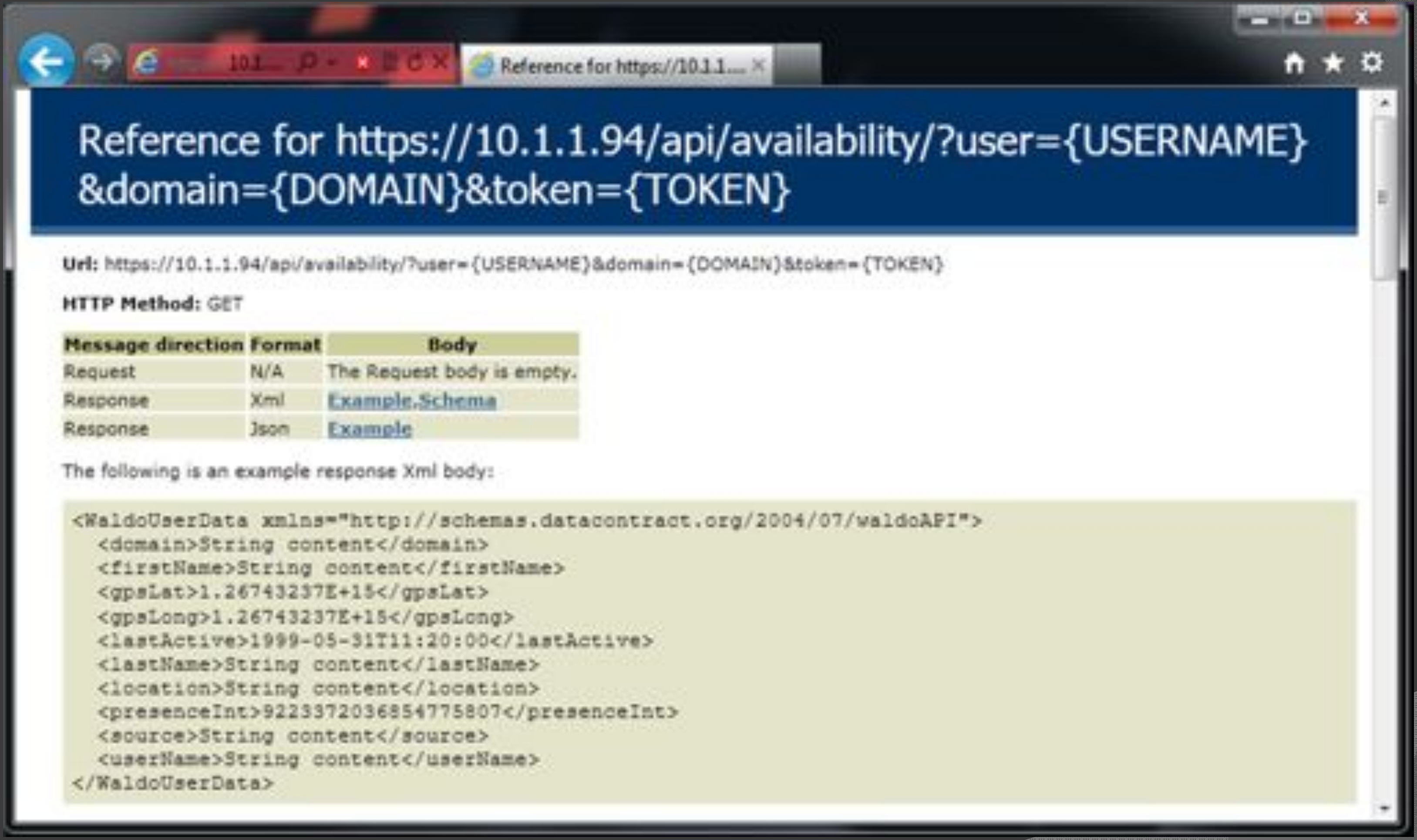
HTTP Method: POST

Message direction	Format	Body
Request	N/A	The Request body is empty.
Response	Xml	Example,Schema
Response	Json	Example

The following is an example response Xml body:

```
<WaldoAPITokenData xmlns="http://schemas.datacontract.org/2004/07/waldoAPI">
  <isActive>true</isActive>
  <token>String content</token>
  <validUntil>1999-05-31T11:20:00</validUntil>
</WaldoAPITokenData>
```

Web API: Availability



Reference for https://10.1.1.94/api/availability/?user={USERNAME}&domain={DOMAIN}&token={TOKEN}

Url: https://10.1.1.94/api/availability/?user={USERNAME}&domain={DOMAIN}&token={TOKEN}

HTTP Method: GET

Message direction	Format	Body
Request	N/A	The Request body is empty.
Response	Xml	Example,Schema
Response	Json	Example

The following is an example response Xml body:

```
<WaldoUserData xmlns="http://schemas.datacontract.org/2004/07/waldoAPI">
  <domain>String content</domain>
  <firstName>String content</firstName>
  <gpsLat>1.26743237E+15</gpsLat>
  <gpsLong>1.26743237E+15</gpsLong>
  <lastActive>1999-05-31T11:20:00</lastActive>
  <lastName>String content</lastName>
  <location>String content</location>
  <presenceInt>9223372036854775807</presenceInt>
  <source>String content</source>
  <userName>String content</userName>
</WaldoUserData>
```

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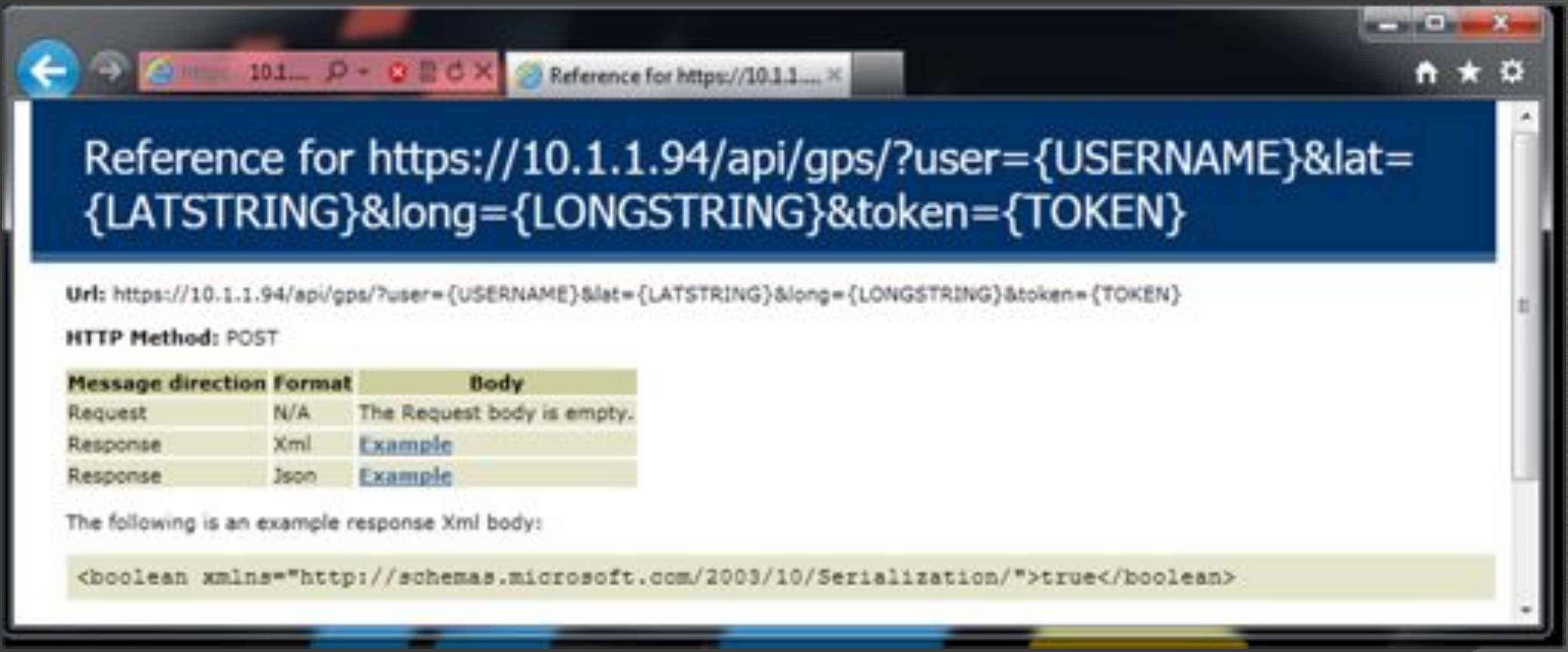
Web API: Setting GPS



Reference for https://10.1.1.94/api/gps/?user={USERNAME}&lat={LATSTRING}&long={LONGSTRING}&token={TOKEN}

Url: https://10.1.1.94/api/gps/?user={USERNAME}&lat={LATSTRING}&long={LONGSTRING}&token={TOKEN}

HTTP Method: POST

Message direction	Format	Body
Request	N/A	The Request body is empty.
Response	Xml	Example
Response	Json	Example

The following is an example response Xml body:

```
<boolean xmlns="http://schemas.microsoft.com/2003/10/Serialization/">true</boolean>
```

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Challenges

- Microsoft Stack
  - Visual Studio
  - MSSQL
- UCMA 3.0 Documentation
  - Application Endpoint
  - VXML Browser
- Cross-Browser Compatibility
- Architecture
  - Time Constraints

Victories

- "Speed Dating"
  - 2nd place * 2
- ITLL Design Expo
  - 1st place
- Verbal Feedback
  - "I need this!"

Waldo Helps Dumb Phones

- A personal assistant for all users
- Lets users leverage data they are already setting
- Allows a lot of customization

Summary

- Project Overview
  - The Class
  - The Problem: Dumb Phones
  - The Solution: Waldo
- Software Demonstration
- Architecture
  - Overview
  - Module

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Acknowledgements

- Ned Endler
- Brian Carlson
- Kirk Jubeck
- Terry Gold
- …and the rest of the Gold Systems team!

Thanks for your attention!

Questions? Comments?