

Allen Cypher's Portfolio

November 2019

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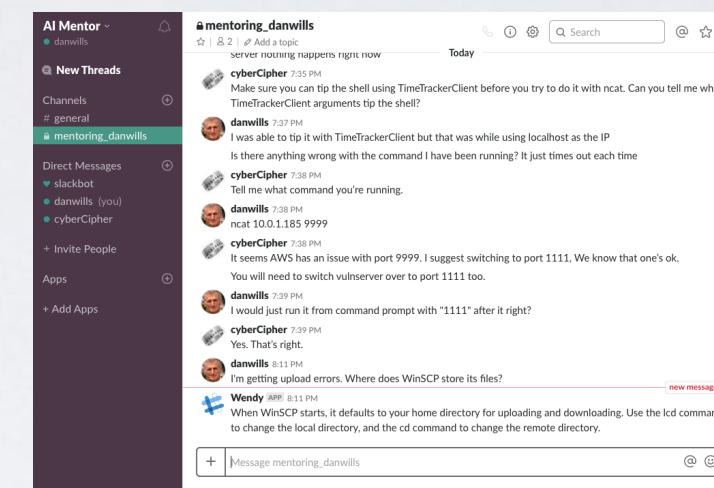
Three delivered products

Three 3-minute demos

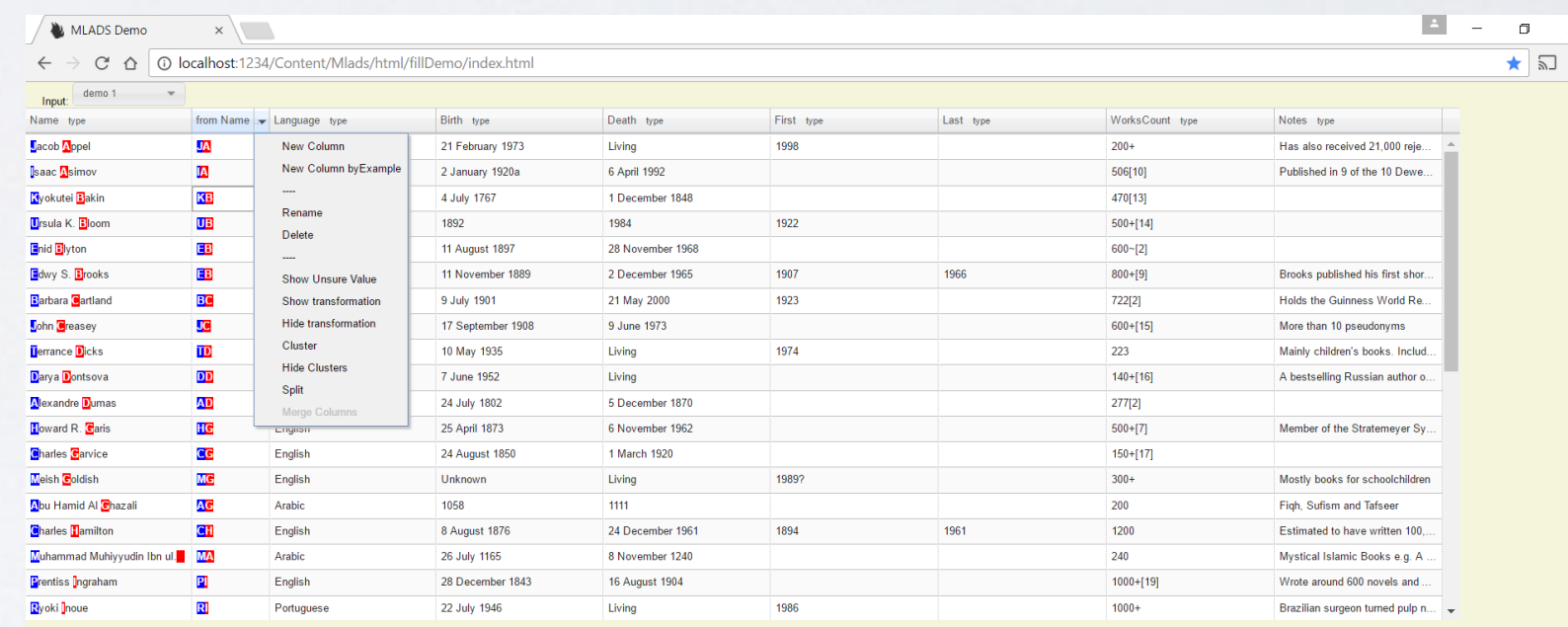
Three interaction design examples

Three delivered products

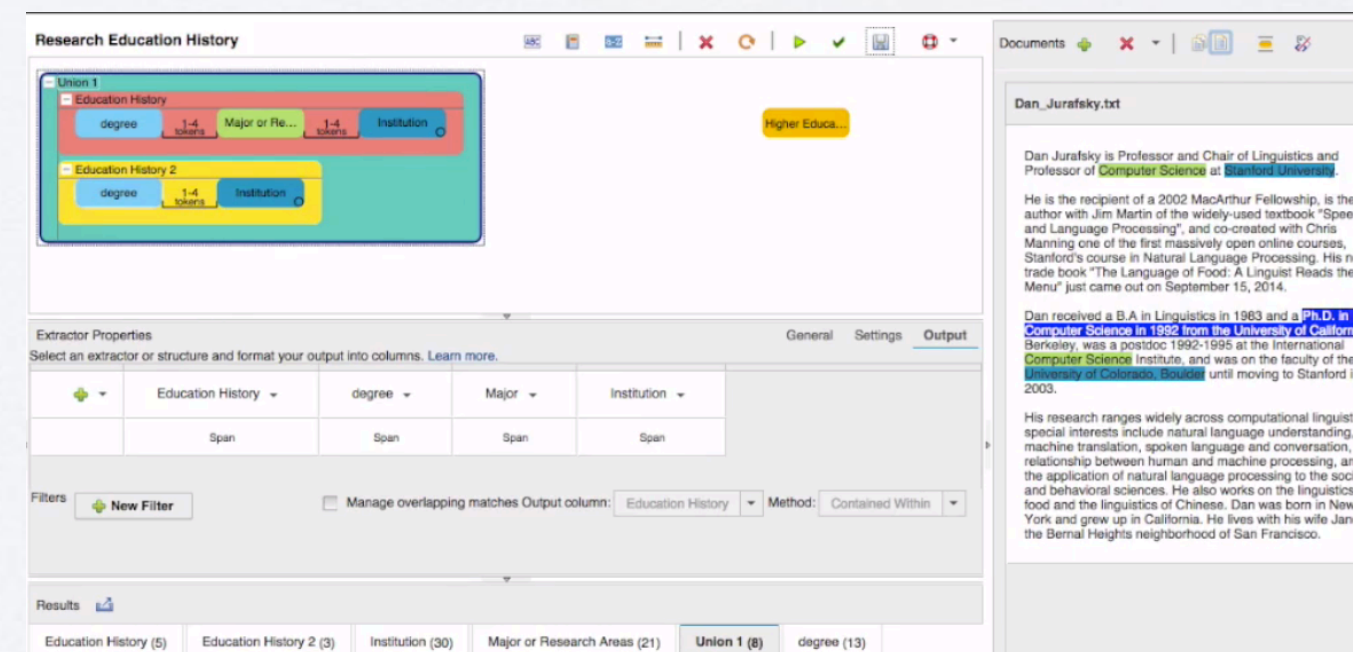
1 Socratic Arts Automentor (2019) suggests answers for online mentors



2 Microsoft Azure ML Data Wrangler (2018) applies program synthesis to cleaning big data



3 IBM BigInsights Information Extractor (2016) creates text analytic miners for non-programmers

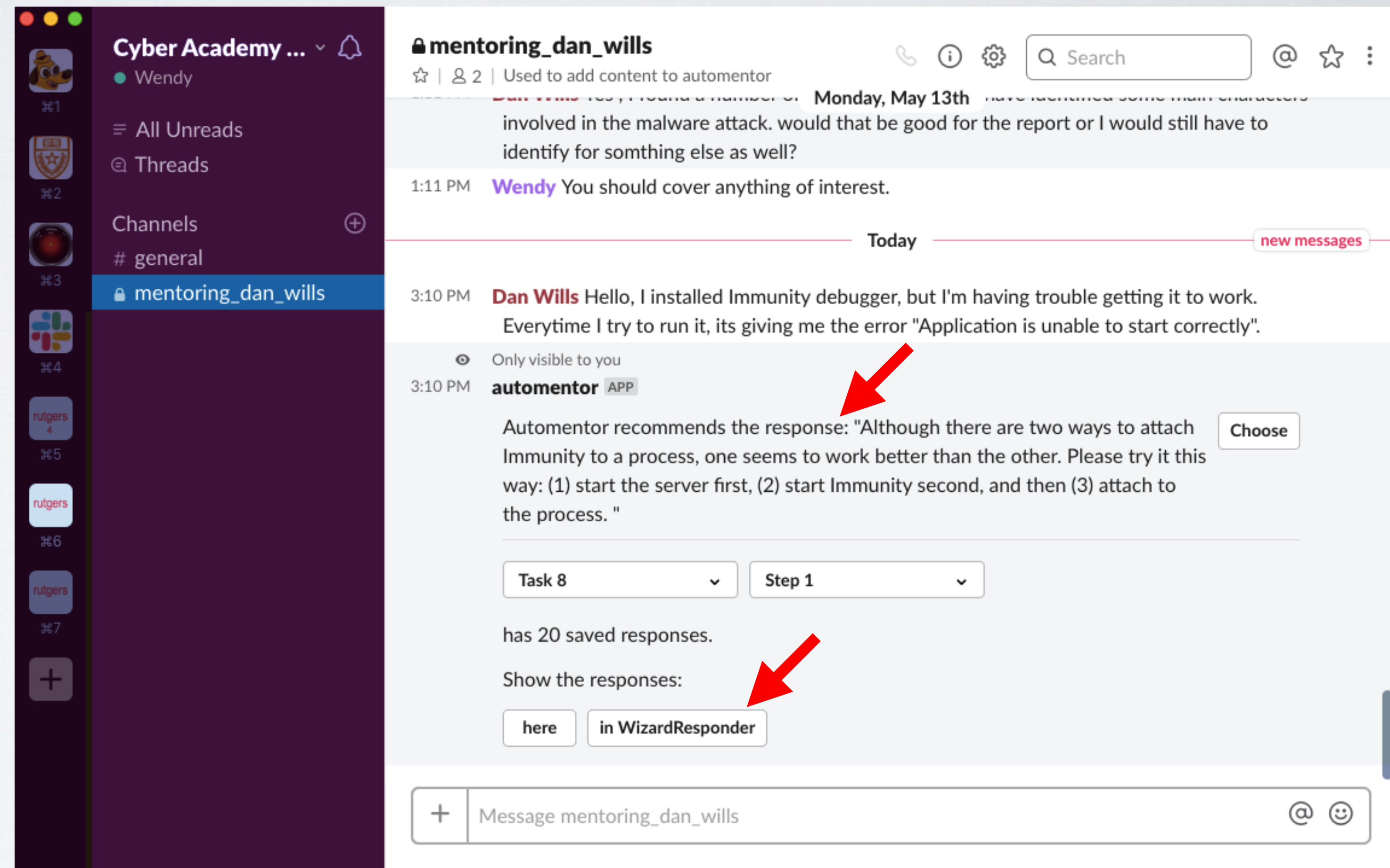


I Socratic Arts Automentor

At Socratic Arts, students and mentors converse in the Slack app.

Automentor finds previous responses to similar student questions and suggests them to mentors, directly inside Slack.

A mentor can view alternative responses in the Wizard Responder:



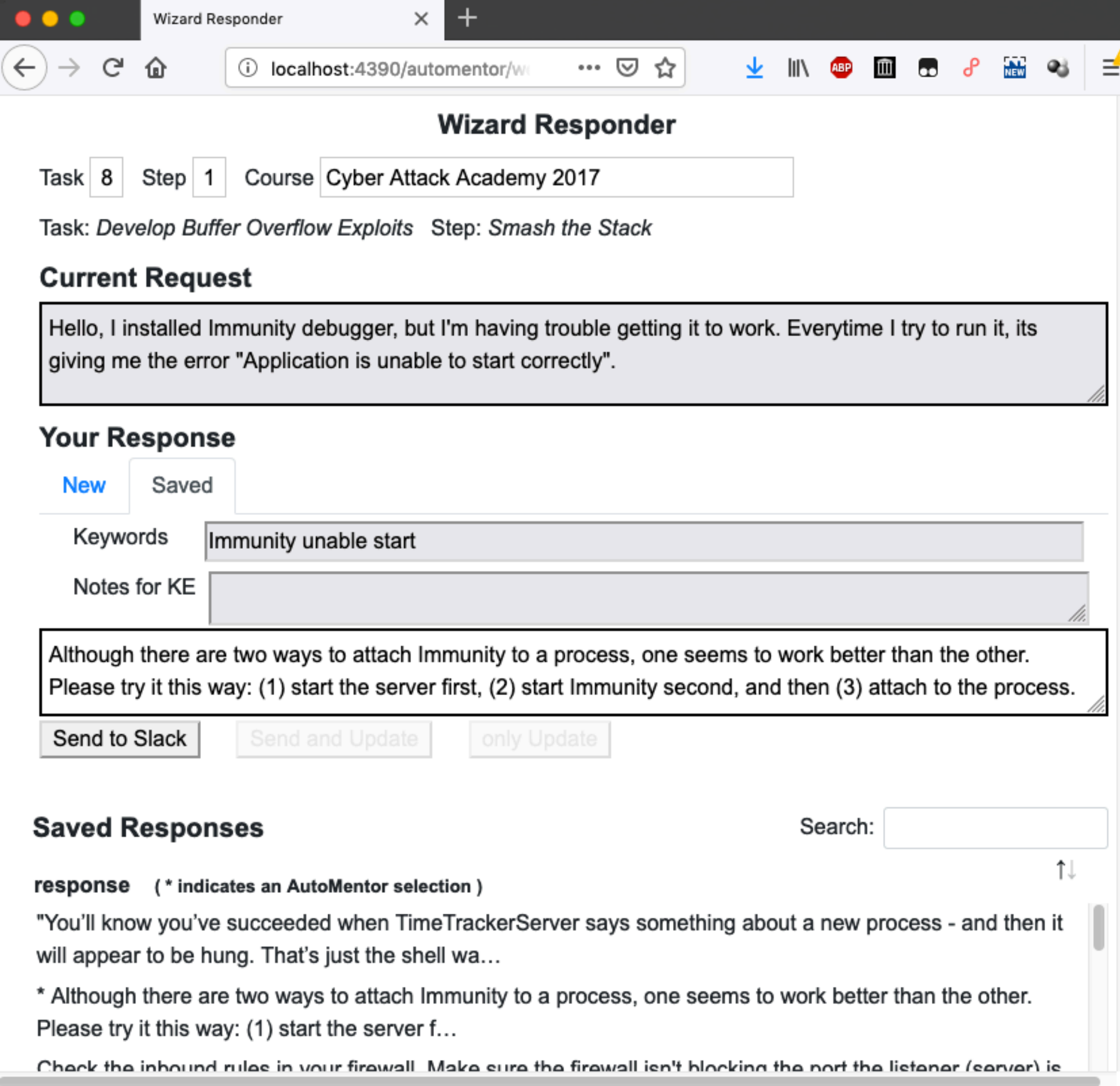
Three products

Automentor

I Socratic Arts Automentor (continued)

In the Wizard Responder, the mentor can browse saved responses, and select and edit a response.

I conducted a needs assessment, designed the Wizard Responder and the Slack interface, and implemented the AI engine in Java and the interfaces in JavaScript and the Slack API.



The screenshot shows the Wizard Responder web interface. The browser address bar indicates the URL is localhost:4390/automentor/w/. The page title is "Wizard Responder".

Task 8 Step 1 Course Cyber Attack Academy 2017
Task: *Develop Buffer Overflow Exploits* Step: *Smash the Stack*

Current Request

Hello, I installed Immunity debugger, but I'm having trouble getting it to work. Everytime I try to run it, its giving me the error "Application is unable to start correctly".

Your Response

New Saved

Keywords Immunity unable start

Notes for KE

Although there are two ways to attach Immunity to a process, one seems to work better than the other. Please try it this way: (1) start the server first, (2) start Immunity second, and then (3) attach to the process.

Send to Slack Send and Update only Update

Saved Responses Search:

response (* indicates an AutoMentor selection) ↑↓

"You'll know you've succeeded when TimeTrackerServer says something about a new process - and then it will appear to be hung. That's just the shell wa...

* Although there are two ways to attach Immunity to a process, one seems to work better than the other. Please try it this way: (1) start the server f...

Check the inbound rules in your firewall. Make sure the firewall isn't blocking the port the listener (server) is

2 Microsoft Azure ML Data Wrangler

I prototyped the UX for numerous “smart” features.

For example:

A user can create a *New Column by Example* to extract the initials from the *Name* column.

The user types *JA* in the first row, and the rest of the column is generated automatically. Colored highlighting indicates how the underlying algorithm determined the generated entries.

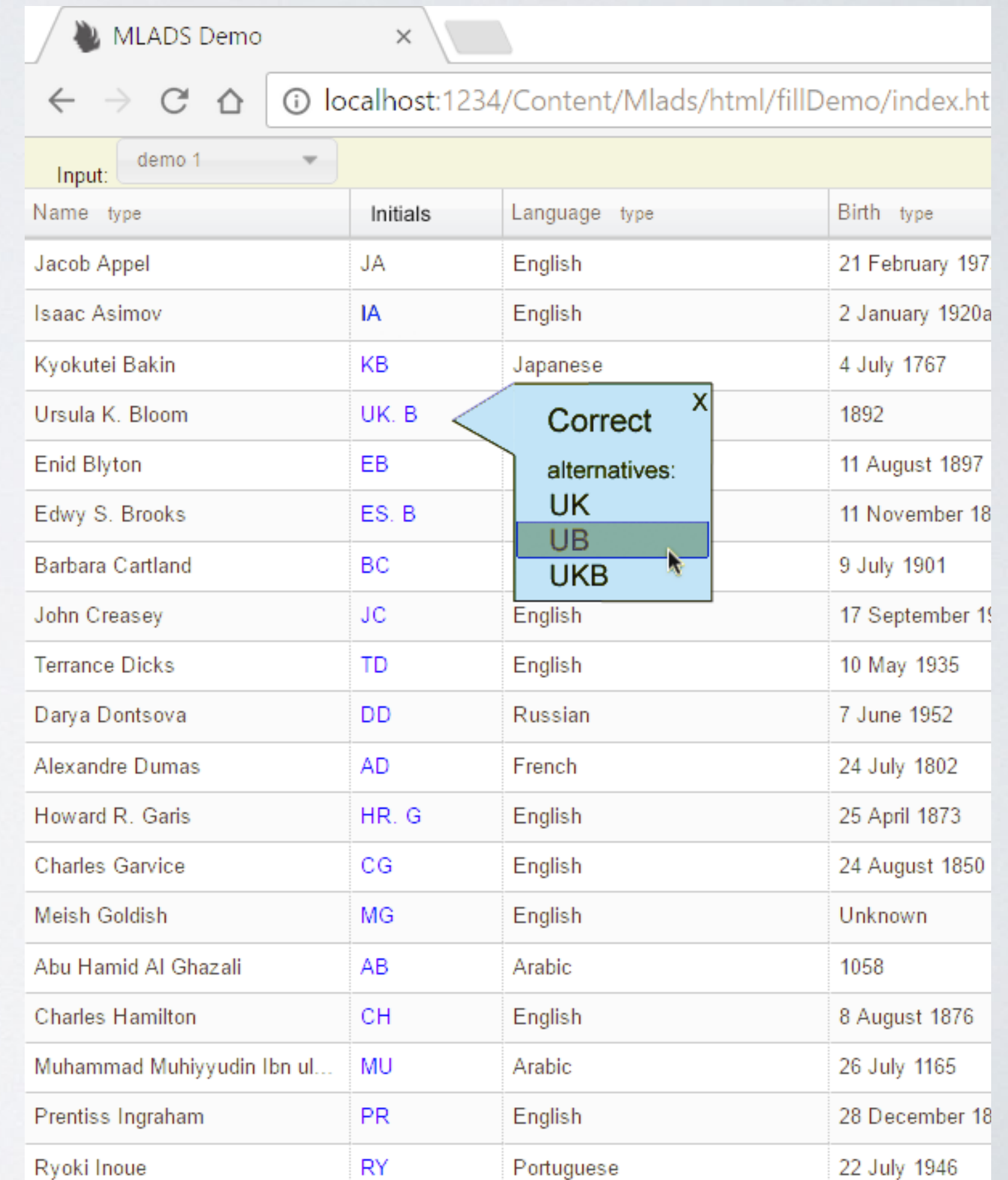
The system can also *Show Unsure Values*, ...

| Name | type | from Name | Language | type | Birth | type |
|-----------------------------|------|-----------|------------|------|------------------|------|
| Jacob Appel | | JA | | | 21 February 1973 | |
| Isaac Asimov | | IA | | | 2 January 1920a | |
| Kyokutei Bakin | | KB | | | 4 July 1767 | |
| Ursula K. Bloom | | UB | | | 1892 | |
| Enid Blyton | | EB | | | 11 August 1897 | |
| Edwy S. Brooks | | EB | | | 11 November 18 | |
| Barbara Cartland | | BC | | | 9 July 1901 | |
| John Creasey | | JC | | | 17 September 19 | |
| Terrance Dicks | | TD | | | 10 May 1935 | |
| Darya Dontsova | | DD | | | 7 June 1952 | |
| Alexandre Dumas | | AD | | | 24 July 1802 | |
| Howard R. Garis | | HG | English | | 25 April 1873 | |
| Charles Garvice | | CG | English | | 24 August 1850 | |
| Meish Goldish | | MG | English | | Unknown | |
| Abu Hamid Al Ghazali | | AG | Arabic | | 1058 | |
| Charles Hamilton | | CH | English | | 8 August 1876 | |
| Muhammad Muhiyyudin Ibn ul. | | MA | Arabic | | 26 July 1165 | |
| Prentiss Ingraham | | PI | English | | 28 December 18 | |
| Ryoki Inoue | | RI | Portuguese | | 22 July 1946 | |

2 Microsoft Azure ML Data Wrangler (continued)

... displaying reasonable alternative values,
and the user can make a correction.

I implemented these features in javascript to create a
working prototype. The product manager included the
features in the product, and the development team
implemented them in the shipping product.



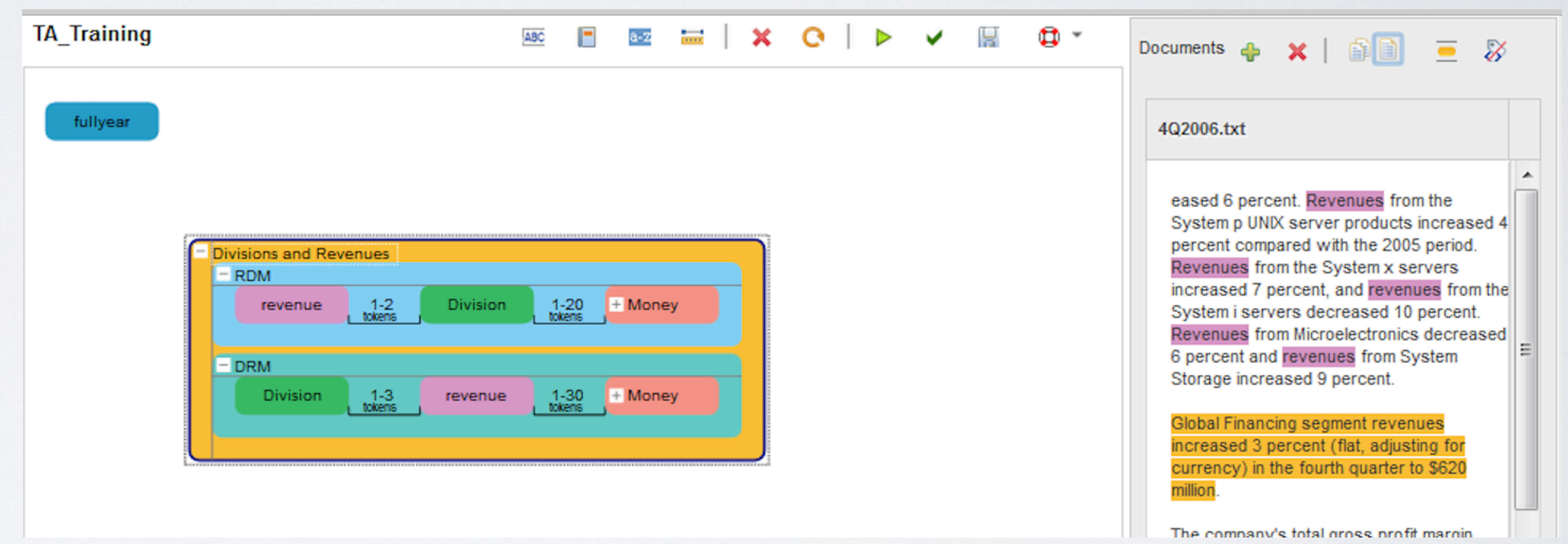
The screenshot shows a web browser window titled "MLADS Demo" with the URL "localhost:1234/Content/Mlads/html/fillDemo/index.ht". Below the browser is a table with columns: Name, type, Initials, Language, type, and Birth, type. The table lists various authors. A popup menu is open over the "Initials" field for "Ursula K. Bloom", which currently contains "UK. B". The popup is titled "Correct" and lists "alternatives: UK", "UB", and "UKB". The "UB" alternative is highlighted by the mouse cursor.

| Name | type | Initials | Language | type | Birth | type |
|-------------------------------|------|----------|------------|------|-----------------|------|
| Jacob Appel | | JA | English | | 21 February 197 | |
| Isaac Asimov | | IA | English | | 2 January 1920a | |
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| Ursula K. Bloom | | UK. B | | | 1892 | |
| Enid Blyton | | EB | | | 11 August 1897 | |
| Edwy S. Brooks | | ES. B | | | 11 November 18 | |
| Barbara Cartland | | BC | | | 9 July 1901 | |
| John Creasey | | JC | English | | 17 September 19 | |
| Terrance Dicks | | TD | English | | 10 May 1935 | |
| Darya Dontsova | | DD | Russian | | 7 June 1952 | |
| Alexandre Dumas | | AD | French | | 24 July 1802 | |
| Howard R. Garis | | HR. G | English | | 25 April 1873 | |
| Charles Garvice | | CG | English | | 24 August 1850 | |
| Meish Goldish | | MG | English | | Unknown | |
| Abu Hamid Al Ghazali | | AB | Arabic | | 1058 | |
| Charles Hamilton | | CH | English | | 8 August 1876 | |
| Muhammad Muhiyyudin Ibn ul... | | MU | Arabic | | 26 July 1165 | |
| Prentiss Ingraham | | PR | English | | 28 December 18 | |
| Ryoki Inoue | | RY | Portuguese | | 22 July 1946 | |


3 IBM BigInsights Information Extractor

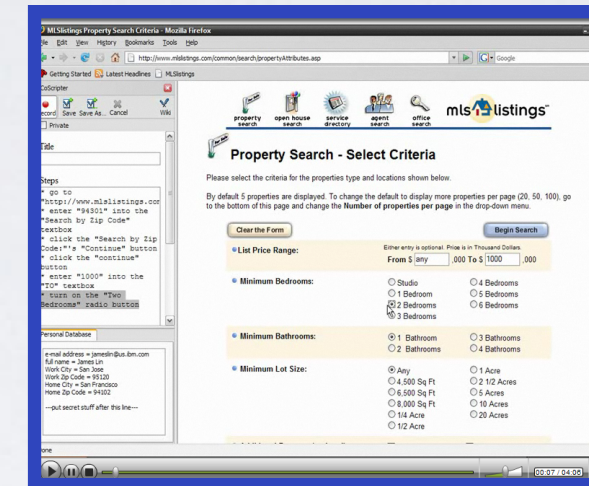
I designed the interface and interaction, won a competition against an alternative design, and joined the product team and implemented the design.


An extractor created without programming. Matching text is highlighted and automatically extracted.

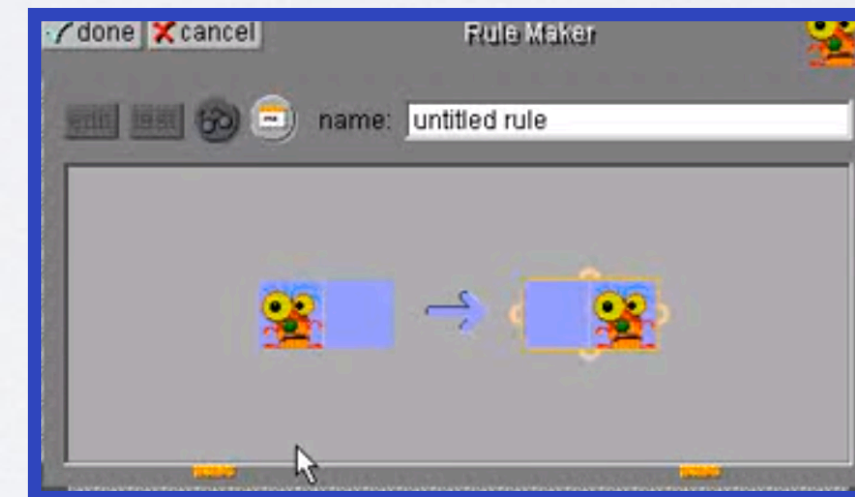



Three 3-minute demos of innovative interaction design

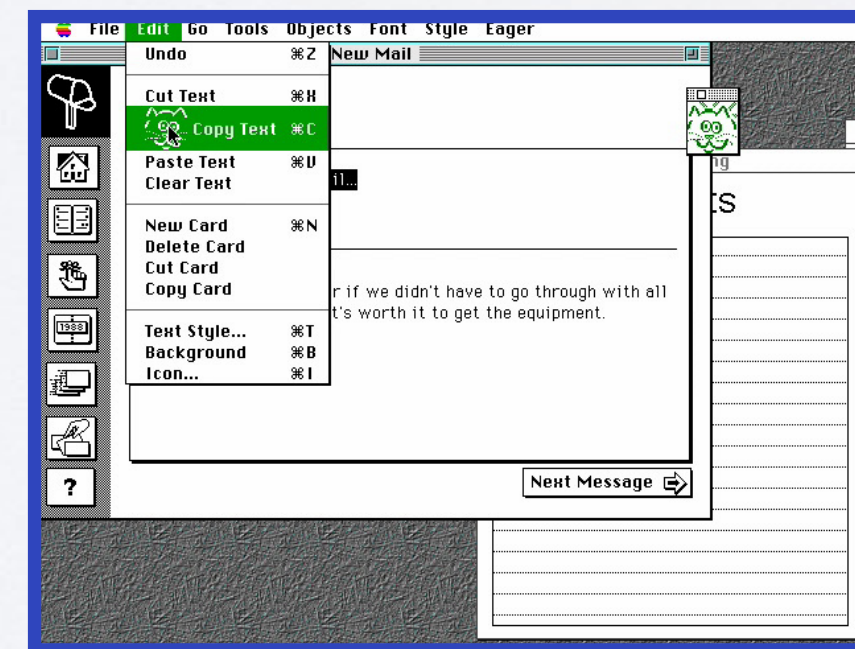
1 **CoScripter**  (2007) human-readable and computer-executable recording of user actions



2 **Stagecast**  (1995) a mouse-only visual programming language for creating simulations and interactive games



3 **Eager**  (1991) one of the first intelligent agents. Introduced "anticipation highlighting" to show a user what a computer-generated program will do



Three interaction design examples

1 Creating text miners

wireframe

scenario

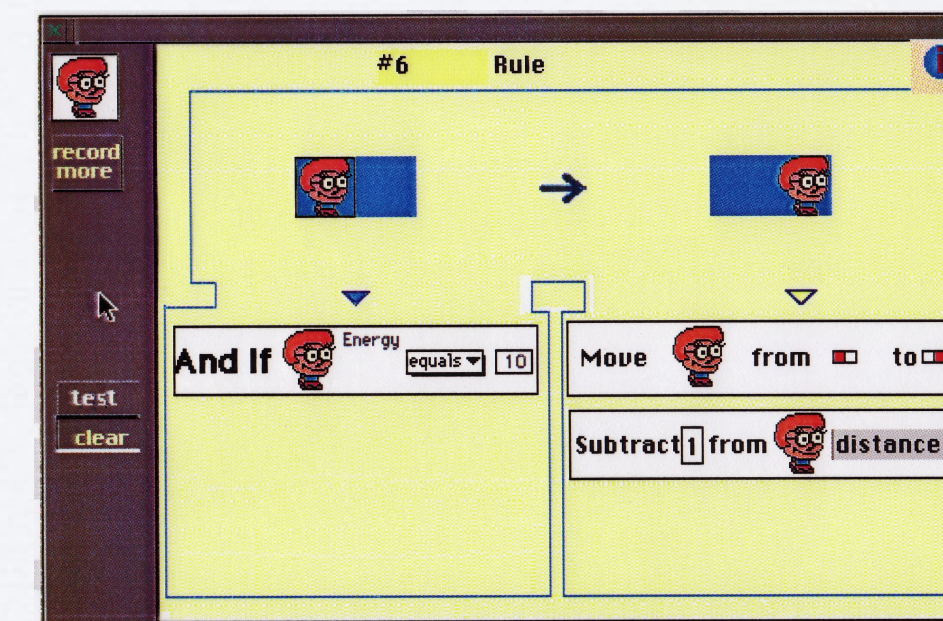
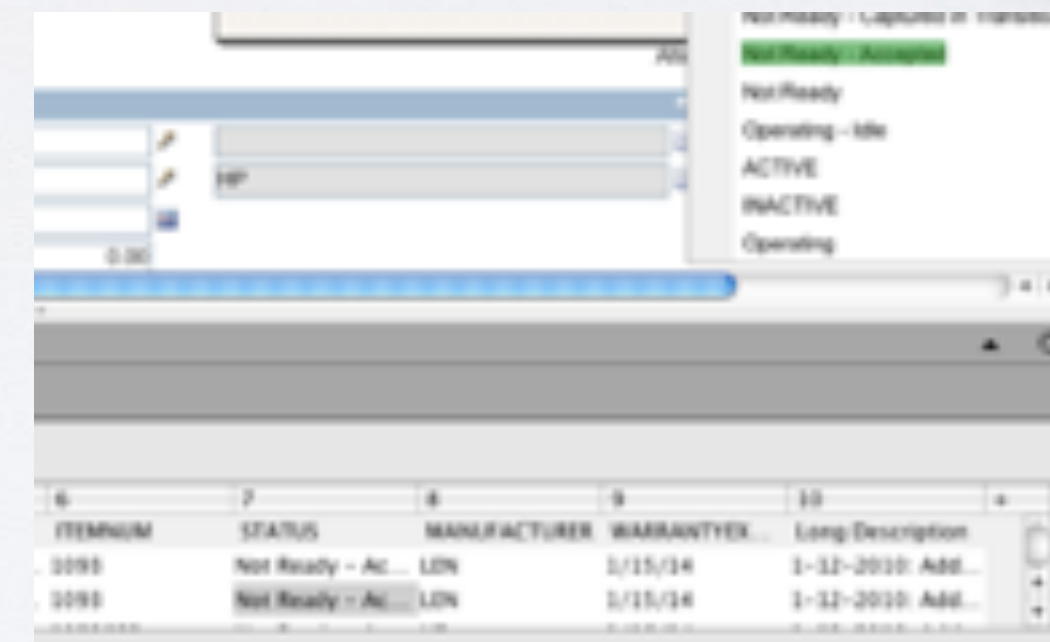
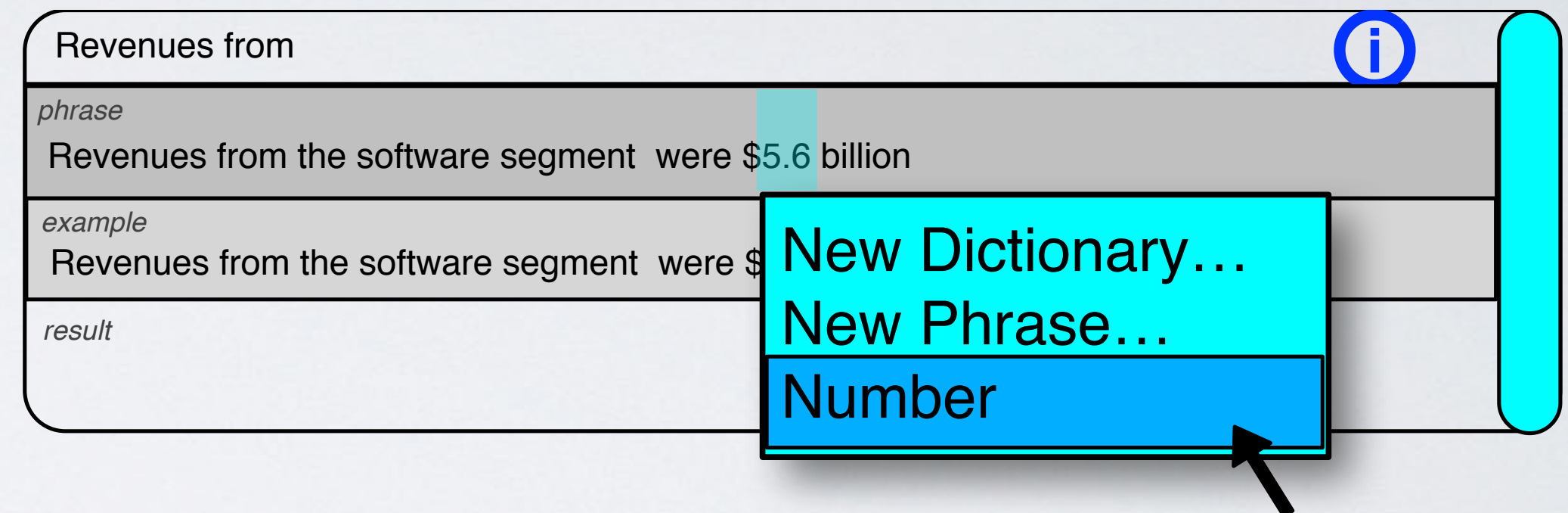
storyboard

2 Automating data entry

mockup

3 Visual programming

prototype



Three examples

Miners

wireframe

I Creating text miners

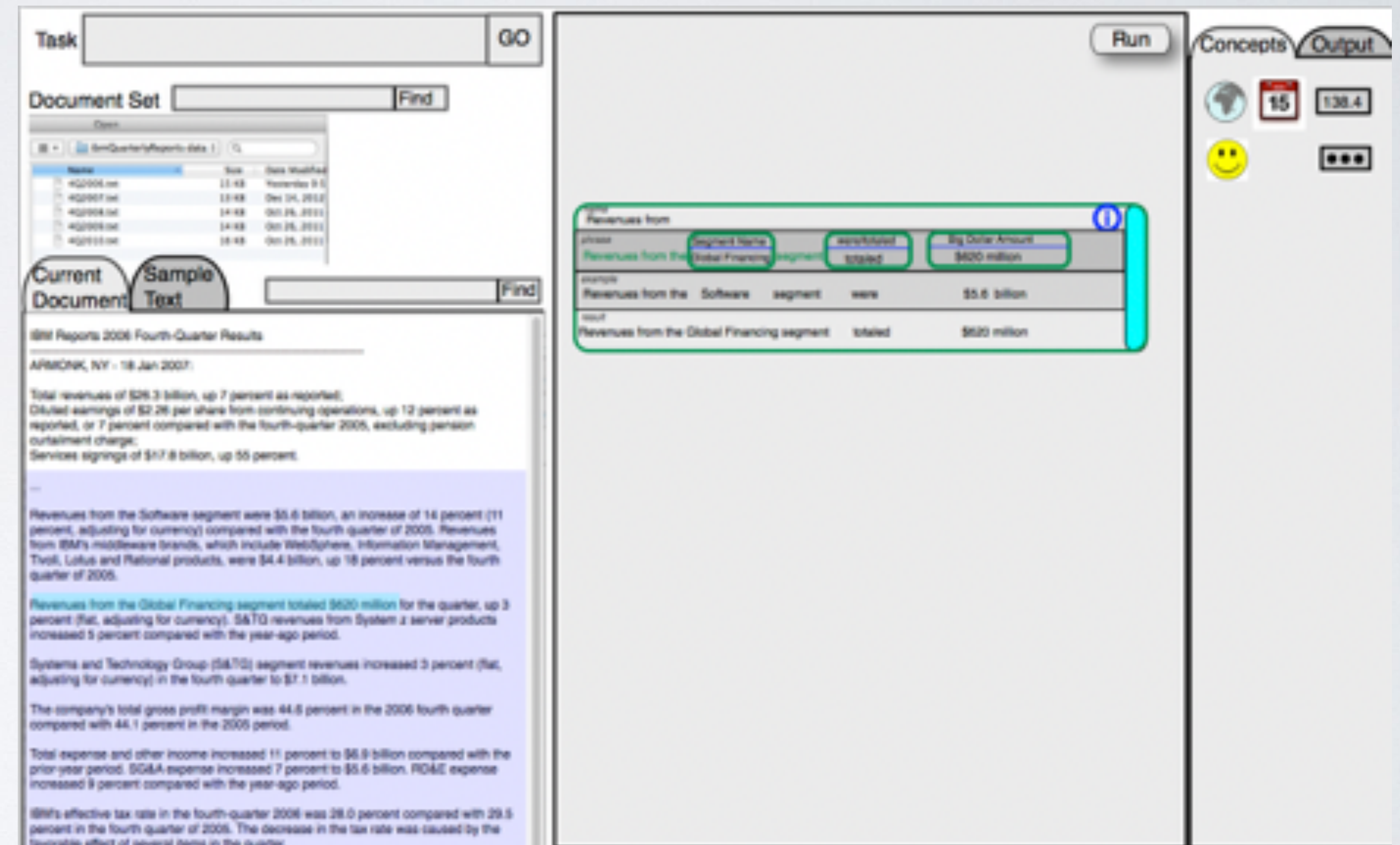
Wireframe for the main screen

Text Analytics uses text miners to recognize meaningful concepts such as street address, date, or price in ordinary text.

IBM had a tool that enabled programmers to create text miners using the AQL language.

I designed a new product to enable non-programmer subject matter experts — such as business analysts — to create their own text miners.

I created wireframes and detailed scenarios with storyboards.



Three examples

Miners

scenario

I Creating text miners (continued)

Scenario for creating text miners

I created three scenarios and storyboards which were used for comparison with a competing design, and my design was chosen for the product.

I then joined the software group and wrote product code in javascript and Dojo to implement the design.

Group2 Tooling UI 'Quarterly Revenue' Manual Scenario

A financial analyst at Schwab wants to get quarterly revenue figures for IBM for the last 10 years. The analyst has available IBM's quarterly press releases which contain this information.

Input

Several "Quarterly Report" Text Documents. See the Resources section of the BigInsights Text Analytics Toolings (Group 2) Activity at <https://w3-connections.ibm.com/activities/service/html/mainpage#activitypage,b805f83a-d4f7-412c-9a39-ef5a67791134>

Output

For each document, the Year and Quarter of the document, and the revenue for each IBM Segment reported in the document.

Detailed Scenario

The user looks over the text in a few of the documents. She understands what the output should be, and believes that she could do the task by hand. She types "Collect quarterly revenue figures for every IBM segment" into the *task specification* textbox. The tooling does not produce any useful results automatically.

She decides to manually develop her extractor based on the document **IBM Quarterly Report 4Q2006** at <https://w3-connections.ibm.com/activities/service/download/forms/31713ec0-cf0e-4e21-97b7-3ae54589ad60/4Q2006.txt>

Using a Prebuilt concept

...

Creating a new Dictionary

...

Creating new Phrase concepts

...

Generalizing Phrases

The user is now ready to construct generalized phrases to match the relevant occurrences of revenue.

a) To handle

- Revenues from the Software segment were \$5.6 billion she generalizes the phrase to

Revenues from the **segmentName** segment were **\$numberWithDecimal milBilTrillion**

b) To handle

- Revenues from the Systems and Technology Group (S&TG) segment totaled \$7.1 billion

she generalizes the phrase to

Revenues from the **segmentName** segment **were/Totaled**

\$numberWithDecimal milBilTrillion

where **were/Totaled** is a dictionary, and she adds

"Systems and Technology Group (S&TG)" as a synonym of "Systems and Technology Group" in the **segmentName** dictionary

She will probably also want to select the setting for this concept to allow arbitrary whitespace

c) To handle

- segment revenues from Global Technology Services increased 7 percent (4 percent, adjusting for currency) to \$8.6 billion

She generalizes the phrase to:

segment revenues from **segmentName ... bigDollarAmount**

where she has created a new concept called **bigDollarAmount** from the generalized phrase

\$numberWithDecimal milBilTrillion

where ... is a **predefined** concept that matches arbitrary text, with settable parameters.

Creating text miners (continued)

Storyboard for the *Generalizing Phrases* section of the above Scenario

Excerpts show the user creating a *Big Dollar Amount* extractor, to match text similar to *\$17.2 million*

1. Select an example phrase to generalize

| | |
|--|---|
| Revenues from | i |
| phrase Revenues from the Software segment were \$5.6 billion | |
| example Revenues from the Software segment were \$5.6 billion | |
| result | |

4. Continue generalizing to get *Big Dollar Amount* Phrase

| | |
|---|---|
| name Revenues from | i |
| phrase Revenues from the <input type="text" value="Segment Name"/> segment <input type="text" value="were/totald"/> <input type="text" value="Big Dollar Amount"/> | |
| example Revenues from the Software segment were \$5.6 billion | |
| result | |

2. Generalize 5.6 to *Number*

| | |
|---|---|
| Revenues from | i |
| phrase Revenues from the software segment were \$5.6 billion | |
| example Revenues from the software segment were \$ | |
| result | |

New Dictionary...
New Phrase...
Number

3. The generalization is inserted

| | |
|--|---|
| Revenues from | i |
| phrase Revenues from the software segment were \$ <input type="text" value="number"/> billion | |
| example Revenues from the software segment were \$ 5.6 billion | |
| result | |

5. The user now runs the generalization on a new document, and the phrase *Revenues from the Global Financing segment totaled \$620 million* is matched

| | |
|--|---|
| name Revenues from | i |
| phrase Revenues from the <input type="text" value="Global Financing"/> segment <input type="text" value="totald"/> <input type="text" value="\$620 million"/> | |
| example Revenues from the Software segment were \$5.6 billion | |
| result Revenues from the Global Financing segment totaled \$620 million | |

Three examples

Data entry

mockup

2 Automating data entry

There are workers at IBM whose job is to enter spreadsheet data into web forms.

I conducted interviews to assess their needs, and then implemented CoScripter Tables, which is based on my earlier CoScripter product.

Workers enter one row, and the tool automatically enters all of the other rows.

Mockup

Recorded script

Web form

The screenshot displays a web browser window with a CoScripter interface on the left and a Maximo web form on the right. The CoScripter interface shows a recorded script for 'ISI update' with the following steps:

- * repeat
 - * enter the cell in the "ASSETTAG" column of row 2 of the scratchtable into the "Asset Tag" textbox
 - * enter the cell in the "ITEMNUM" column of row 2 of the scratchtable into the "Rotating Item" textbox
 - * click the "Change Status" button
 - * click the "New Status" button
- * click the link that equals the cell in the "STATUS" column of row 2 of the scratchtable
- * click the "OK" button

The web form shows the 'Change Status' dialog box for asset J26490. The 'New Status' dropdown menu is open, showing various status options, with 'Not Ready - Accepted' highlighted in green.

Spreadsheet data

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | + |
|---|----------|----------|-----------|-------------|------------------|---------|-------------------|--------------|---------------|-------------------|---|
| | ASSETNUM | ASSETTAG | ASSETTYPE | SERIALNUM | LOCATION | ITEMNUM | STATUS | MANUFACTURER | WARRANTYEX... | Long Description | |
| 1 | J238A | T38280 | PR | W8814258YJZ | US-SANJRES-BL... | 1093 | Not Ready - Ac... | LEN | 1/15/14 | 1-12-2010: Add... | |
| 2 | J264 | T41522 | PR | W2117424RVD | US-NYRES-BLD... | 1093 | Not Ready - Ac... | LEN | 1/15/14 | 1-12-2010: Add... | |

3 Visual Programming

As part of Alan Kay's project to fulfill his Dynabook vision,

I co-invented a visual programming environment that

- enabled 10 year olds to create their own interactive video games for the web, and
- learn the concepts of object-oriented programming in the process.

I created multiple approaches for the interaction design,

and we jointly conducted numerous user studies and

implemented a prototype.

Prototype for rule creation window

