Concurrency

Stories Academy: Ryerson & Natural Language Processing August 18, 2021

Welcome Back, Change Agents!

- A chance to get together and talk about the exciting projects happening at Concurrency!
- Stories Academy today = Ryerson and Natural Language Processing (NLP)

Ryerson

Cordell Crane, Account Executive

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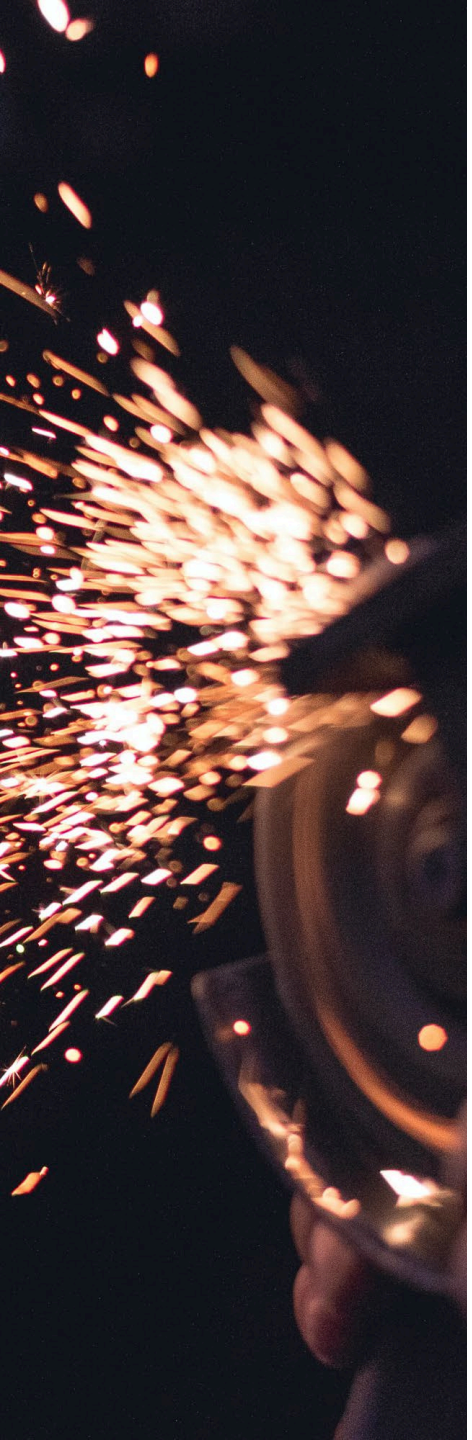
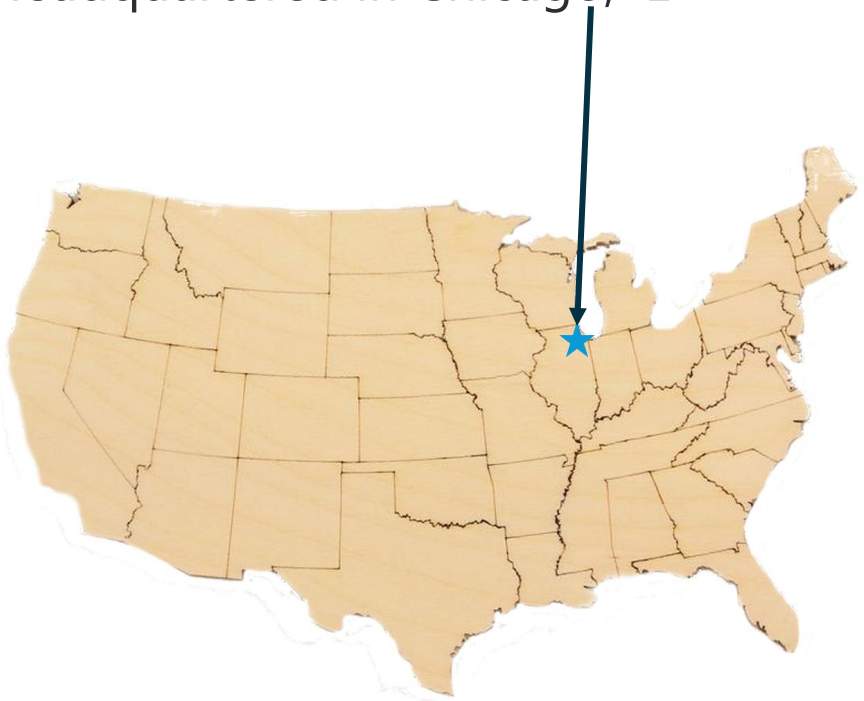
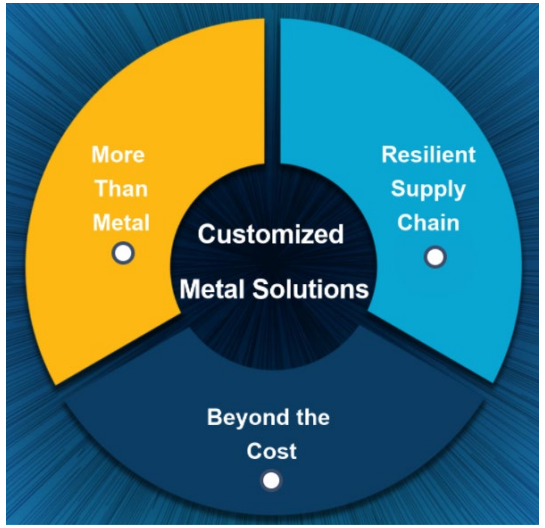
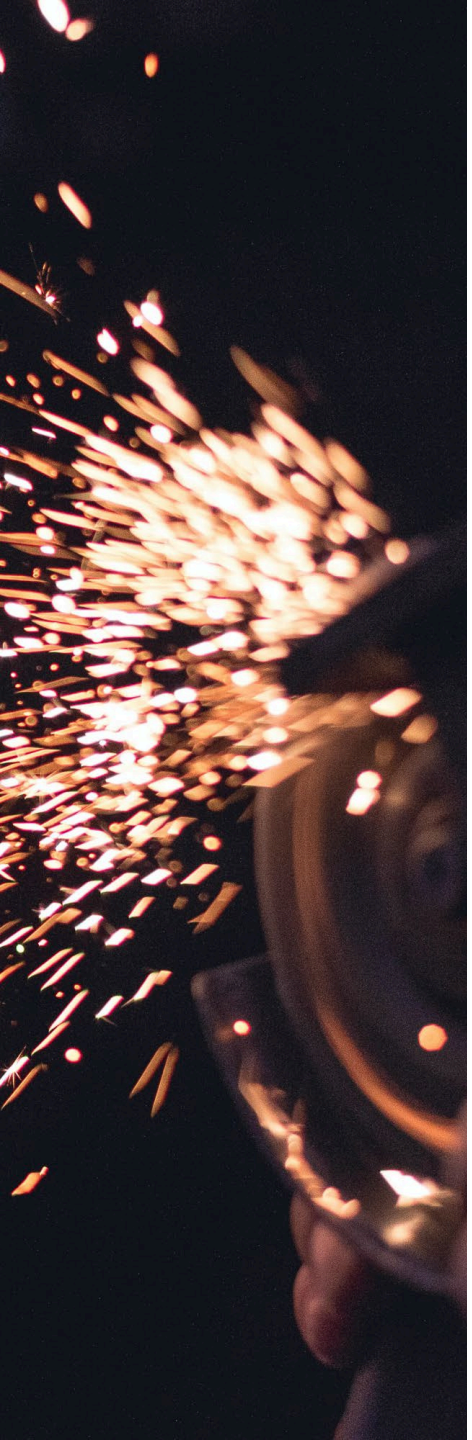


About Ryerson

- 175+ years in the industry (since the Civil War!)
- Metal processing and distribution – extensive range of processing/fabrication capabilities
- Sheet & Coil Processing, Bar, Tube & Structural Processing, Plate Processing, Supply Chain Services, etc.
- Headquartered in Chicago, IL

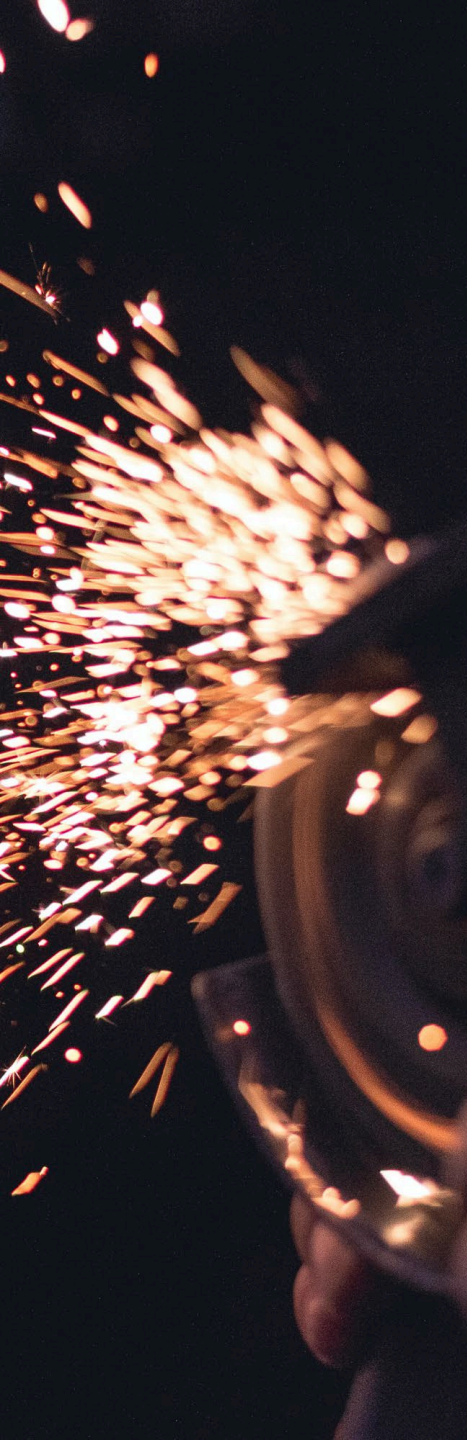






Ryerson & Concurrency

- Came to Ryerson at interesting time – legacy-driven organization
  - Average tenure for employee = 20-30 years
  - Brought in new CIO with goal of transforming organization
  - A lot of external pressure to change/key leader positions to drive that change
  - Focus on value and costs (CEO was promoted from former CFO position)
  - Ability to respond to quotes could take days to complete.
- Leveraging AI/ML to improve speed of quoting first in journey of digital transformation.
- First phase was to use a standard e-mail to integrate with their quoting system, pull up appropriate SKUs and provide a near real-time quote for their reps.
  - Integrates with SAP and Oracle
  - Integrated with Insta-Quote ordering system (in-house app)
- Power BI Reporting is the new dashboard for displaying relavant information



Ryerson & the NLP Opportunity

- Wanted to reduce the amount of time it takes to provide a sales quote.
- We provide a 'trained' AML AI module to help us. Runs on Azure
- Ryerson stocks over 100,000 SKUs and receives a request for quote every 4.5 minutes. Reducing amount of time required to provide a quote will positively impact its sales conversions.
- Would like to leverage NLP and text analytics to translate messages (email text) and identify specific products sold by Ryerson.
- Before, using SAP and home-grown tools for this.

- Future – create a DW (MS Synapse) for reporting. First use case will be credit reporting for aging invoices for pre-collection efforts.
- Future - Use AI to predict future demand generation efforts.

Natural Language Processing

Min Maung, Managing Architect

Swami Venkatesh, Solutions Architect

Microsoft Most Valuable Professional

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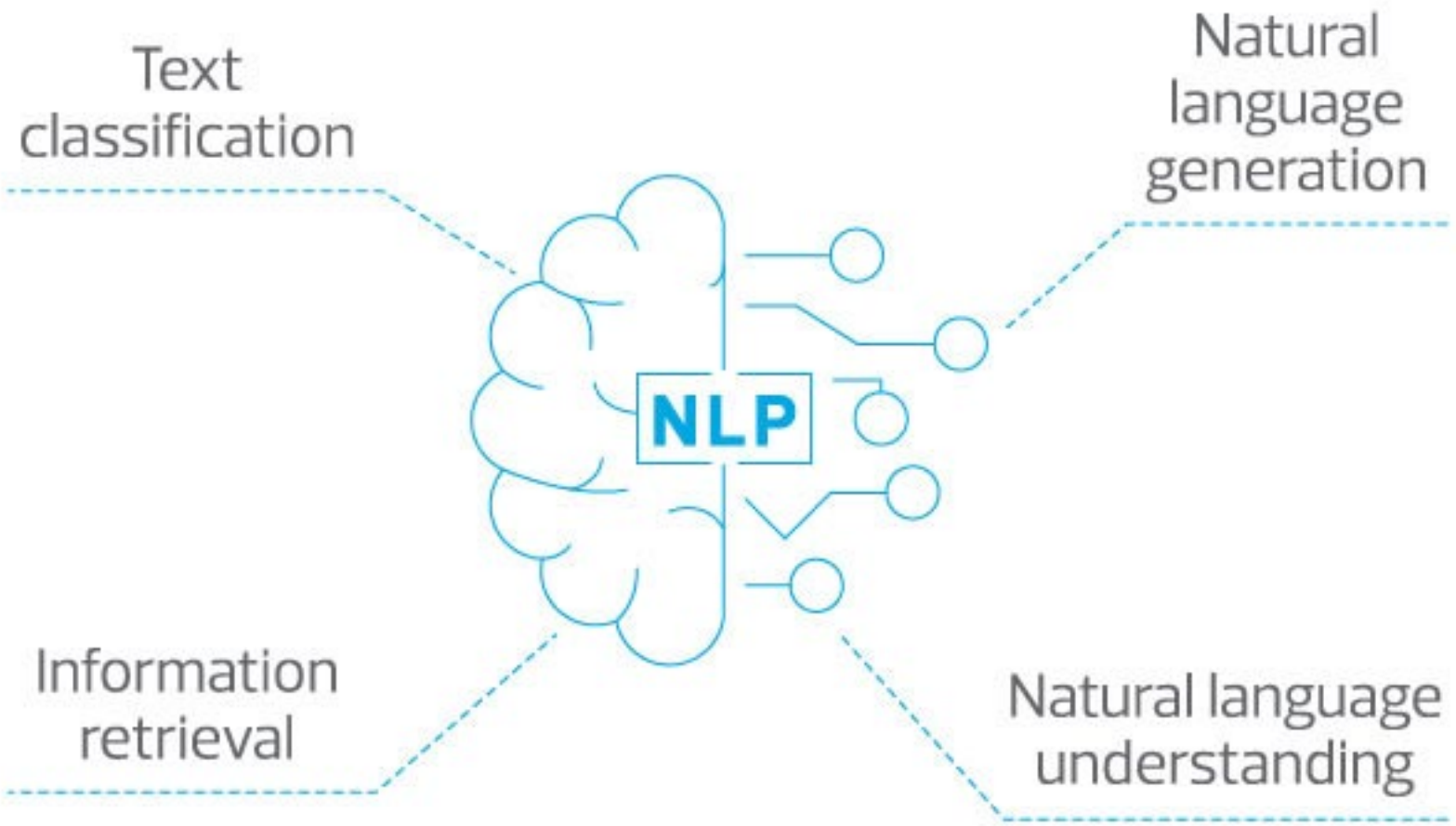
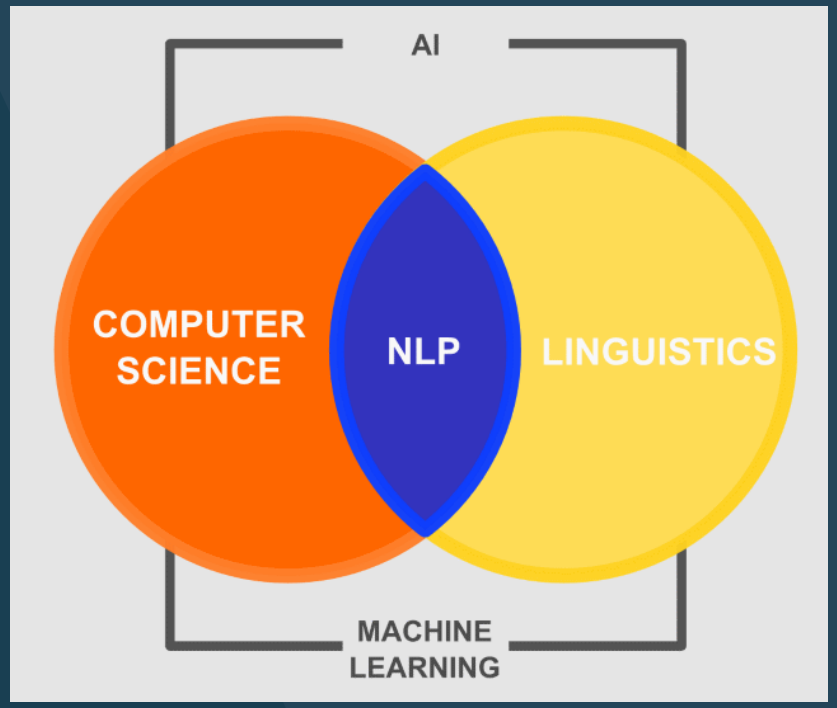
One Goal
One Team
One Company

Natural Language Processing (NLP)



Natural Language Processing (NLP)

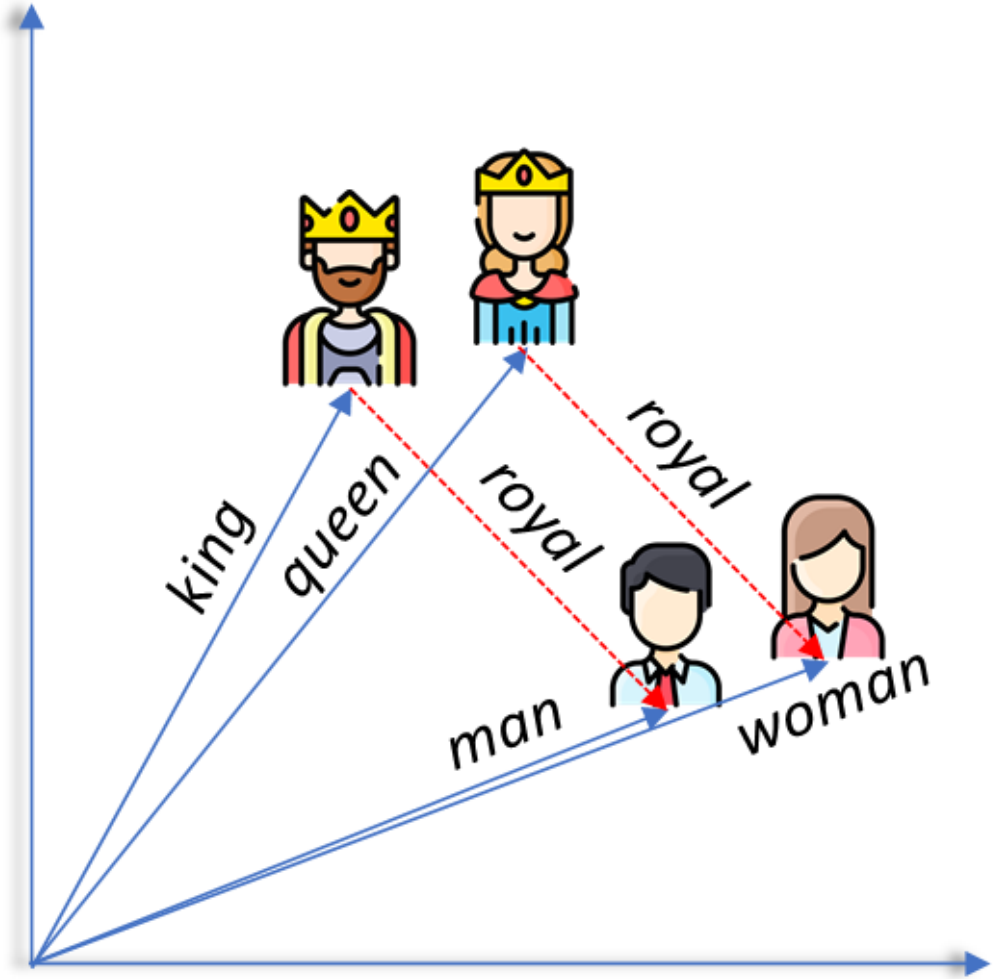


- NLP = field of artificial intelligence that deconstructs vast amounts of text data and codes the semantic relationships between words.
- Goal is to create a system that can understand and quantify intent hidden within human language and generate sensible text responses that mimics a human.
- NLP Algorithms power innovation with ease while staying hidden behind everyday interactions in digital world.
- Ex: Word suggestions that show up when you type into Google, chat bots, etc.

Understanding language – the human way

King – Man + Woman =

Queen



Project Perspectives

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Project Perspectives

- Requirements = Speed to quote
- Achievements : Reduce time to quote from ~5 min to less than 30 sec
- In these 30 sec the tool
  - Processes emailed quote request,
  - Skims for important details (like size/quantity)
  - Translate it into Ryerson's own description of the metal
  - Search and list correct SKU
  - Send information to the quote app
- NLP model integrated with Microsoft Outlook
- NLP model leverages Azure Infrastructure:
  - Azure Functions,
  - Logic Apps,
  - Service Bus,
  - SQL, Databricks
  - Azure Kubernetes Services

Project Perspectives - Challenges

- Identifying key words from plain text or natural language
  - Different types of metal have different measurement and system - needed translator training to learn whether request for a tube or an angle based on request.
  - Train a model for all different variations in the emails to create dictionary/thesaurus
    - “Steel” “Stainless steel” “SS” all would mean the same thing.
  - Interpret the unsaid parts in an email.
    - W1 would mean beam width
    - No product specified would mean carbon

Software Transformation

Metal Detector

https://rye-human-validation-ui-dev.azurewebsites.net/?tid=06C3DD23-AA6F-46B4-9743-E94CF259B6F5

InPrivate

Original Email

Sent:
2019-05-02T11:36:34

From: Vivek Inumula

Subject: RFQ

I need a quote for following:

1. A36 CS FLOOR PLATE-- 2 PCS- 1/4 X 96.0000" X 240.0000"
2. SQUARE TUBING A500 GR B-- 8 PCS -- 3 X 3 X .250 X 20'
3. RECTANGULAR TUBING A500 GR B--- 2 PCS --- 8 X 4 X .250 X 40'

please add freight charges and lead time separately on the quote

What is your minimum to avoid delivery charges?

Regards,
Vivek Abhimanyu Inumula,
Quality Control Engineer,
Windlass Metal Works,LLC. &
Windlass Engineers & Services, Inc.
7042 Satsuma Dr
Houston, TX 77041
Phone: (713) 680-3338
Cell: (361) 660-9888
Fax: (713) 680-3328
www.windlassengineers.com

www.windlassmetalworks.com

1.

1 2 3

Extracted Product 2 of 3

2 square tube a500 gr_b 3 x 3 x 0.25 x 240 8 pcs

PRODUCT	FORM	SHAPE	GRADE		
	tube	square	a500 gr_b		
TYPE	**SCHEDULE**	**DIMENSIONS [inches]**	**CONDITION**	**FINISH**	**TEMPER**
		0.25 240 3 2			
PACKAGING	**QUANTITY**	**UOM**			
	8	pcs			

Approve Reject

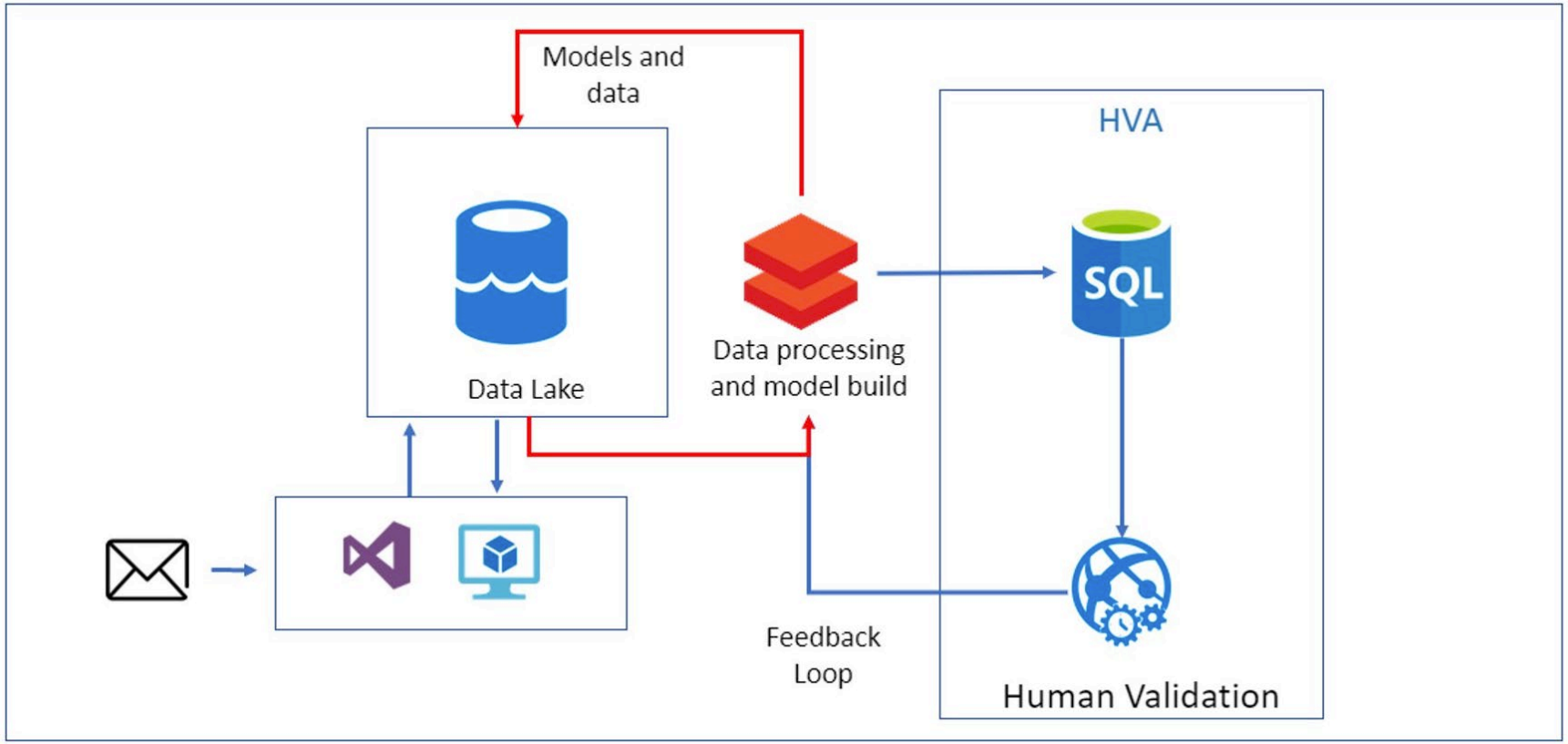
Translated Product

PRODUCT	FORM	SHAPE	GRADE		
CARBON	TUBE	SQUARE	A500		
TYPE	**SIDE 1 [inches]**	**WALL 1 [inches]**	**GAUGE [inches]**	**LENGTH [inches]**	**FINISH**

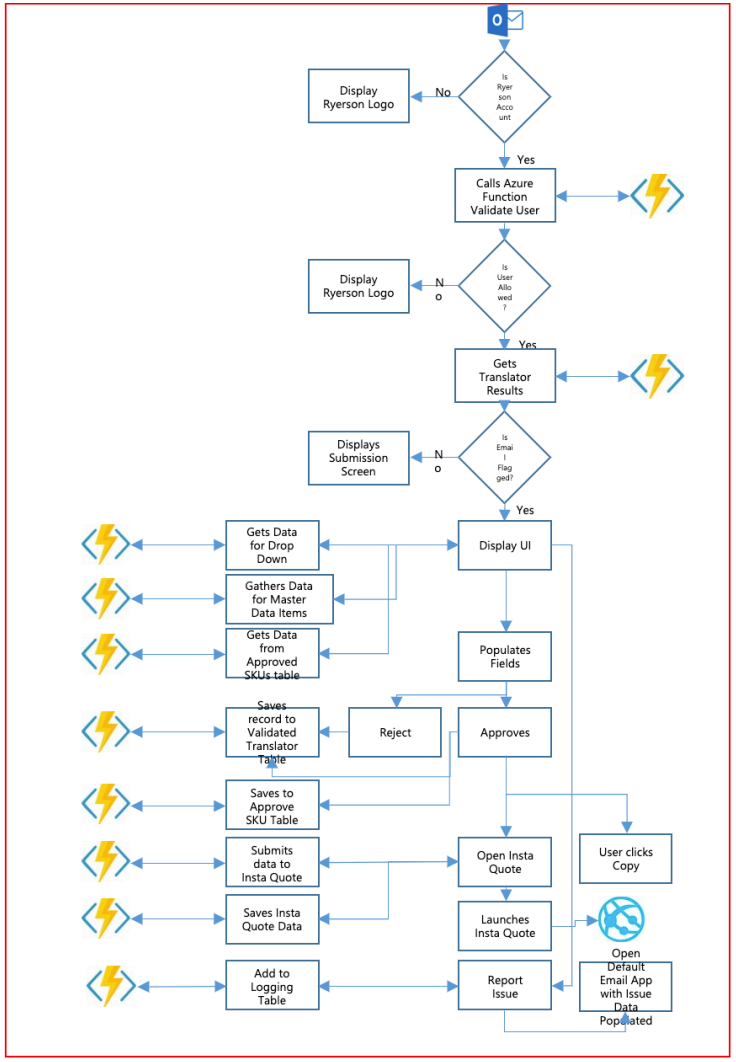
CUT

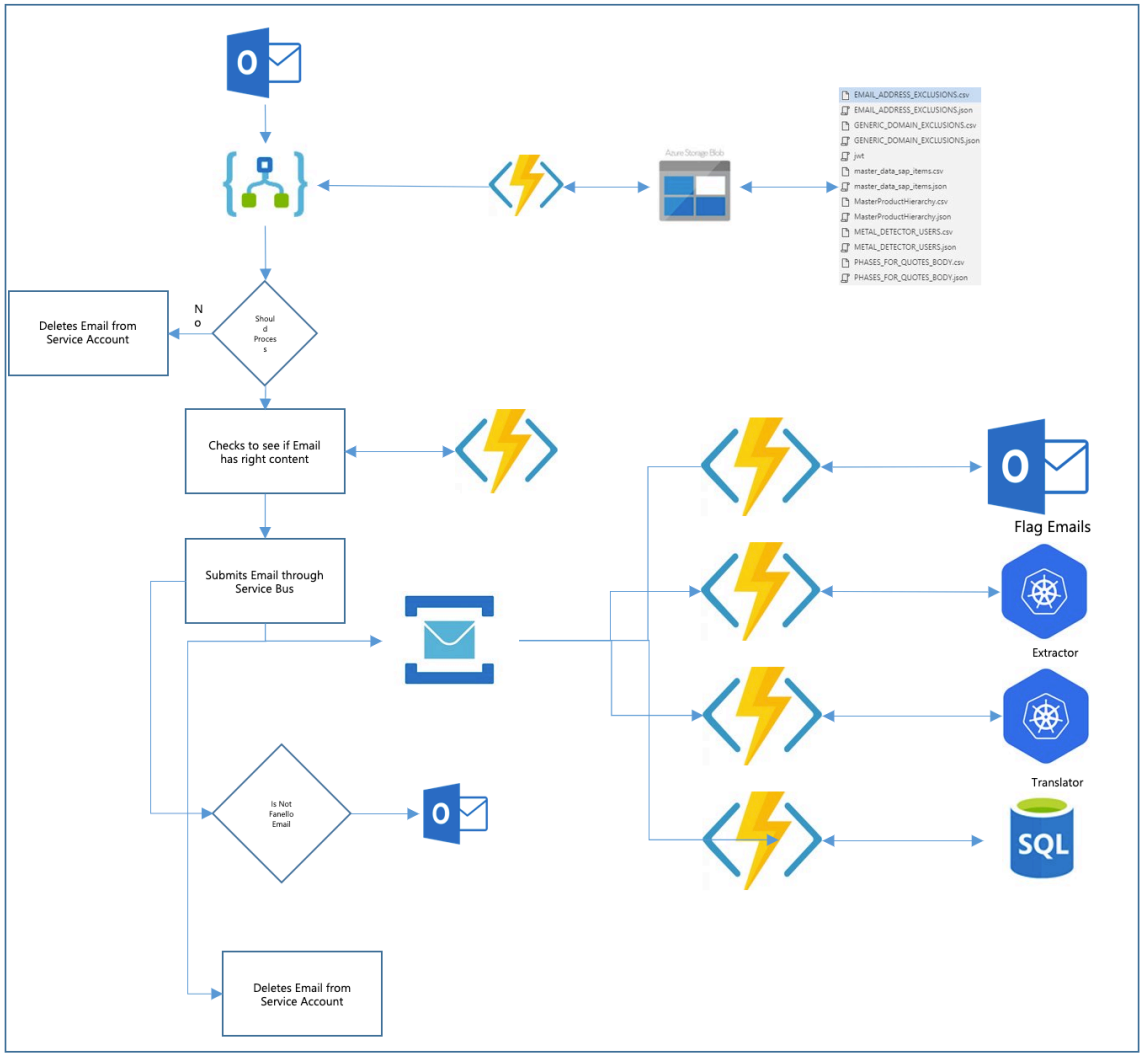
Accept Reject

Simple Process



Advance Process





Why is this a Change Agent Story

- Unique way to leverage technology to transform business operations – truly innovative project that creates marketplace disruption!
  - Increasing speed of time to quote within its sales process, positioning its 600+ person sales team to provide more timely, accurate customer responses.
  - Project sales lift
- Gaining competitive advantage by reducing amount of time it takes to provide sales quotes.
- Setting up an organization for success in digital transformation journey.

Q & A

Ryerson & Natural Language Processing

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Calling all Change Agents!
Submit your story for our next Change Agent Stories Academy!

Thank You