AMTA PRESENTATION

Tools-Driven Content Curation & Engine Training

ALEXYANISHEVSKY
Welocalize
October 2014

(Eds.) Pro

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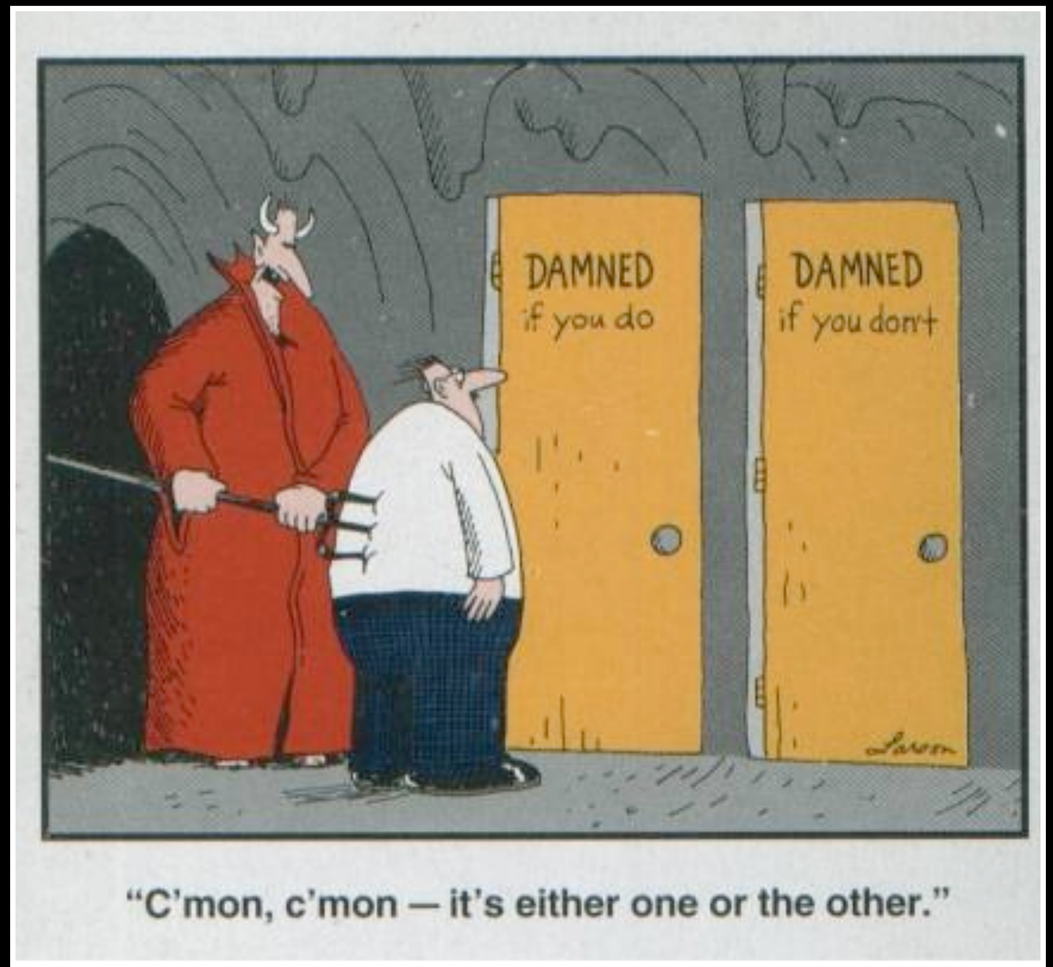
doing things differently



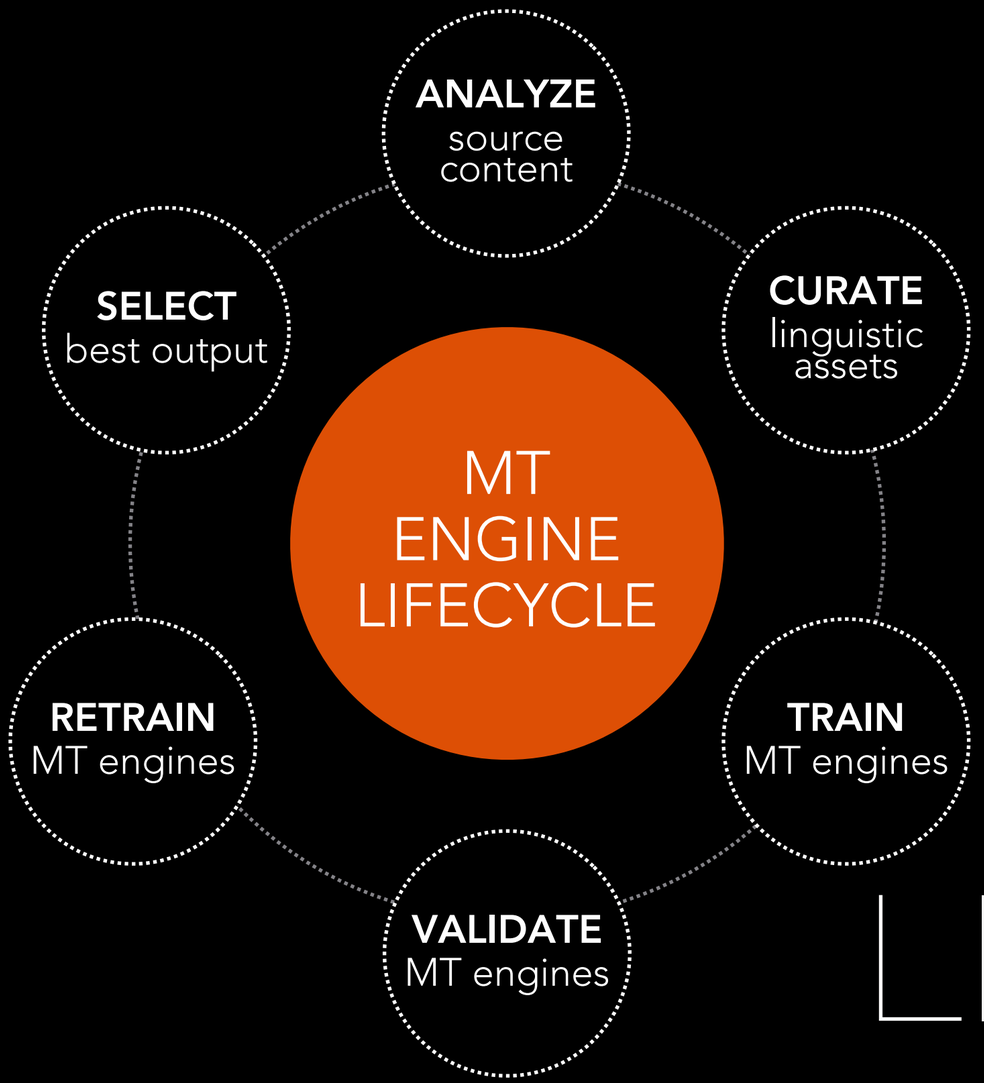
"C'mon, c'mon — it's either one or the other."

OVERVIEW

Sparsity of data is bad. Abundance of data is bad.

Let's talk about the proper way to curate data.

CLIENT CASE STUDY:
The Lifecycle of Content Curation Using weMT



weMT by welocalize

ANALYTICS AT EACH STEP

THE LIFECYCLE DIAGRAM

(Eds.) Pro

ANALYZE

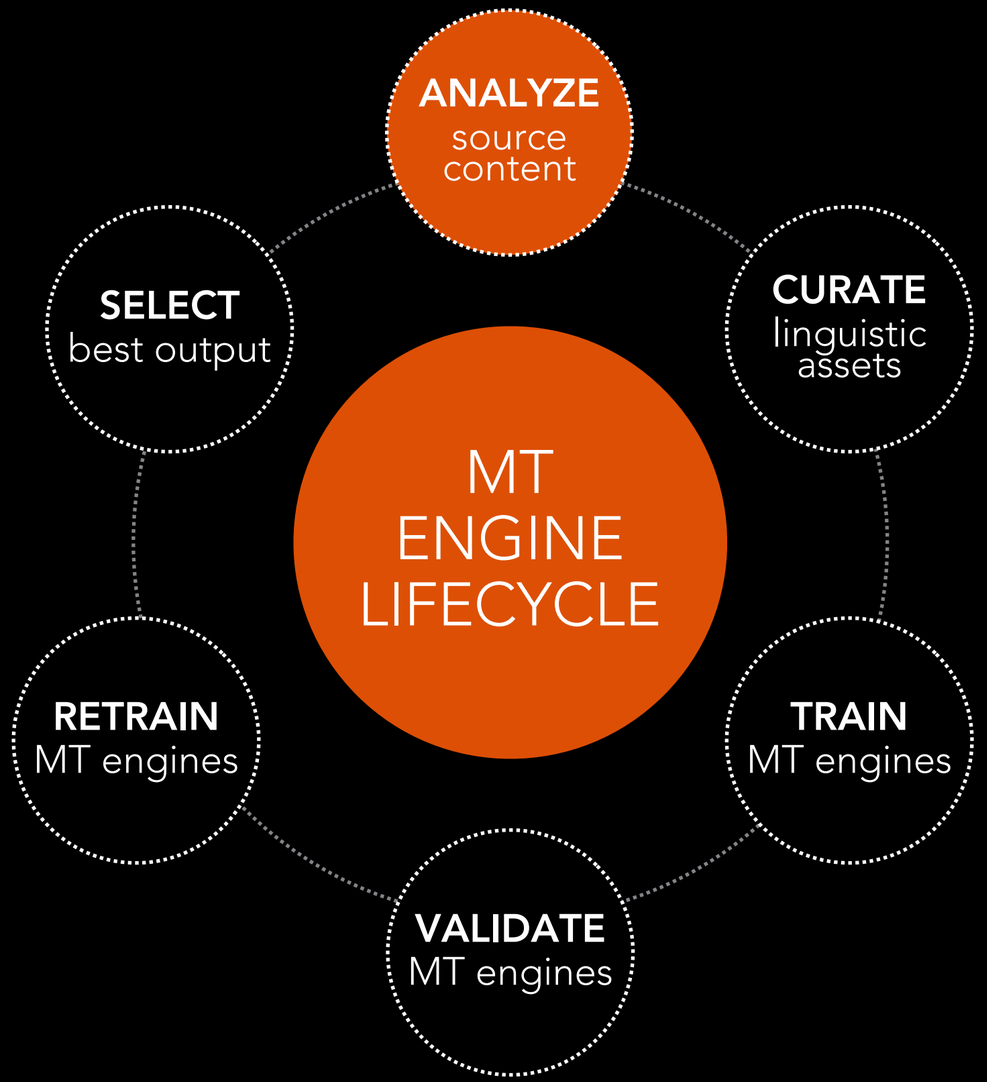
TWO STEPS: CLEAN & ANALYZE

CLEAN

- Remove Markup
- Remove Bullets
- Dedupe
- Remove Misaligned Tus
- Report on Discards (Potential Use as LM)

ANALYZE: Tools Used

- Candadite Scorer — Analysis of Content Suitability & Domain
- Style Scorer — Adhereance to Client's Style



Bergodaya et al. (Eds.) Proceedings of AMTA 2018, vol. 2: MT Users, Vancouver, BC, © The Authors

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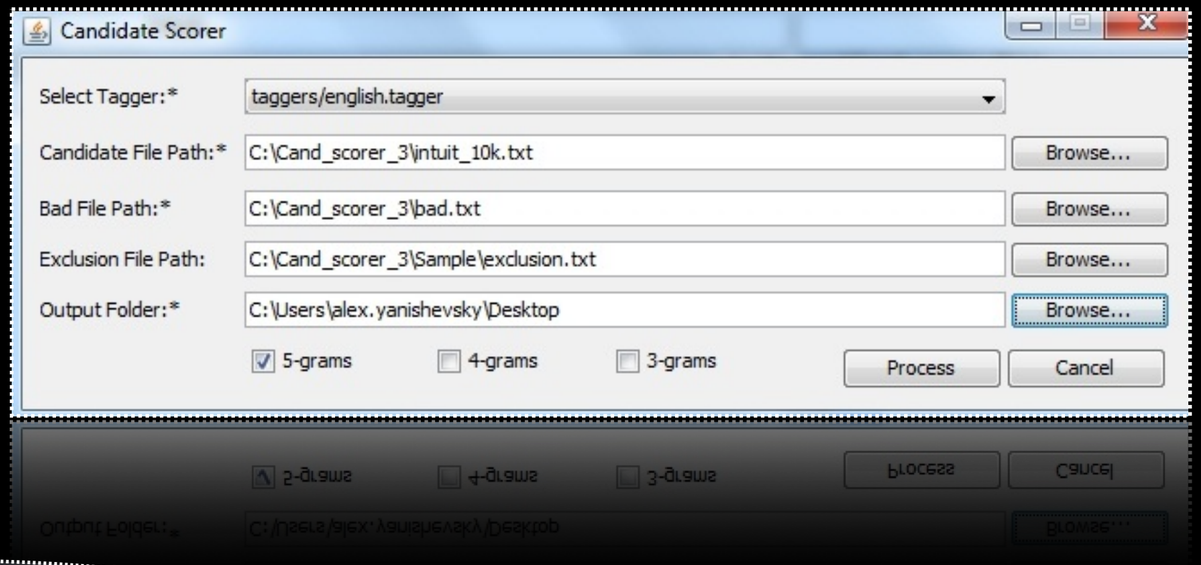
ANALYZE: CANDIDATE SCORER

How Good is Candidate Text?

- ✓ Take Historically “Bad” Text
- ✓ POS Tagger on “Bad” Text & Candidate Text
- ✓ Exclude List to Reduce False Positives
- ✓ Lower Score is Better (Candidate Test Does NOT Match “Bad” Text



Compare to Historically “Bad” Text

LOWER SCORE IS BETTER

ANALYZE: CANDIDATE SCORER 2

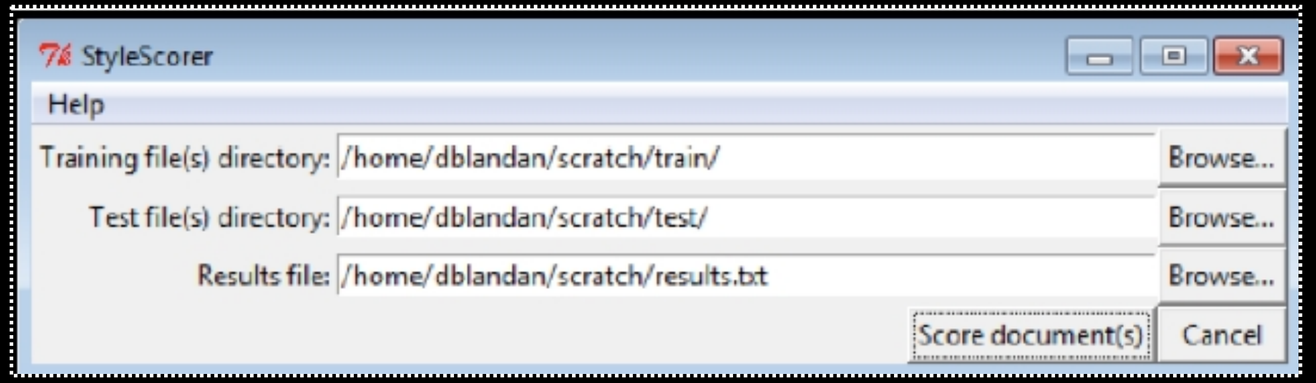
	A	B	C	D	E
1	Bad Constuct	# Words	# of Occur	Candidate Phrase 1 (Pos Tagged)	Candidate Segment 1 (Pos Tagged)
2	NN IN DT NN NNS CC NNS	7	1	notification_NN of_IN any_DT printer_NN problems_NNS or_CC errors_NNS	You_PRP can_MD also_RB set_VB up_RP automatic_JJ email_NN notification_NN of_IN any_DT printer_NN problems_NNS or_CC errors_NNS to_TO email_JJ addresses_NNS you_PRP designate_VBP in_IN advance_NN ._.
3	PRP MD VB DT NN TO VB	7	1	You_PRP can_MD use_VB this_DT procedure_NN to_TO cancel_VB	You_PRP can_MD use_VB this_DT procedure_NN to_TO cancel_VB the_DT regular_JJ acquisition_NN of_IN print_NN job_NN logs_NNS from_IN printers_NNS ._.
4	DT NN IN DT JJ NN IN	7	1	a_DT period_NN on_IN the_DT left_JJ side_NN of_IN	If_IN you_PRP are_VBP viewing_VBG regularly_RB acquired_VBN print_NN jobs_NNS ,_, selecting_VBG a_DT period_NN on_IN the_DT left_JJ side_NN of_IN the_DT window_NN displays_VBZ the_DT total_JJ costs_NNS for_IN that_DT period_NN and_CC the_DT amounts_NNS of_IN paper_NN and_CC ink_NN consumed_VBN ._.
5	NN IN DT JJ NN IN DT	7	1	period_NN on_IN the_DT left_JJ side_NN of_IN the_DT	If_IN you_PRP are_VBP viewing_VBG regularly_RB acquired_VBN print_NN jobs_NNS ,_, selecting_VBG a_DT period_NN on_IN the_DT left_JJ side_NN of_IN the_DT window_NN displays_VBZ the_DT total_JJ costs_NNS for_IN that_DT period_NN and_CC the_DT amounts_NNS of_IN paper_NN and_CC ink_NN consumed_VBN ._.
6	IN DT JJ NN IN DT NN	7	1	on_IN the_DT left_JJ side_NN of_IN the_DT window_NN	If_IN you_PRP are_VBP viewing_VBG regularly_RB acquired_VBN print_NN jobs_NNS ,_, selecting_VBG a_DT period_NN on_IN the_DT left_JJ side_NN of_IN the_DT window_NN displays_VBZ the_DT total_JJ costs_NNS for_IN that_DT period_NN and_CC the_DT amounts_NNS of_IN paper_NN and_CC ink_NN consumed_VBN ._.
7	DT NN IN DT NN IN DT	7	1	the_DT paper_NN in_IN the_DT printer_NN with_IN the_DT	Replace_VB the_DT paper_NN in_IN the_DT printer_NN with_IN the_DT correct_JJ paper_NN ._.

	A	B	C
1	Candidate Segment	# of Occurrences	
2	If you are viewing regularly acquired print jobs, selecting a period on the left side of the window displays the total costs for that period and the amounts of paper and ink consumed.	7	
3	You can use this procedure to cancel the regular acquisition of print job logs from printers.	4	
4	You can also set up automatic email notification of any printer problems or errors to email addresses you designate in advance.	3	
5	Replace the paper in the printer with the correct paper.	3	
6	Displays the ink level of every color in the printer.	2	
7	You can check the status of the hard disk and the documents saved on the hard disk.	1	
8	If the job has multiple pages, the size of the last page is displayed.	1	
9	If you do not set the standard prices, you cannot set the price for each roll paper.	1	
10	Enter the Width and Length of the paper, as well as the Price for the area of the configured width x height.	1	
11	The job items and details that can be displayed in the job list area are as follows.	1	
12	This feature collects print job logs from the printer at regular intervals and saves the logs on your computer.	1	
13	You can use the Job sheet in imagePROGRAF Status Monitor for operations such as pausing and canceling print jobs.	1	
52	Total	26	

ANALYZE: STYLE SCORER

Combines PPL Ration, Dissimilarity Score & Classification Score

- ✓ Each Document Receives a Score from 0-4
- ✓ Higher Score Indicates Better Match to Style Established by Client's Documents
- ✓ Does NOT Require Parallel Data
- ✓ Source Scored for Training/Tuning Suitability



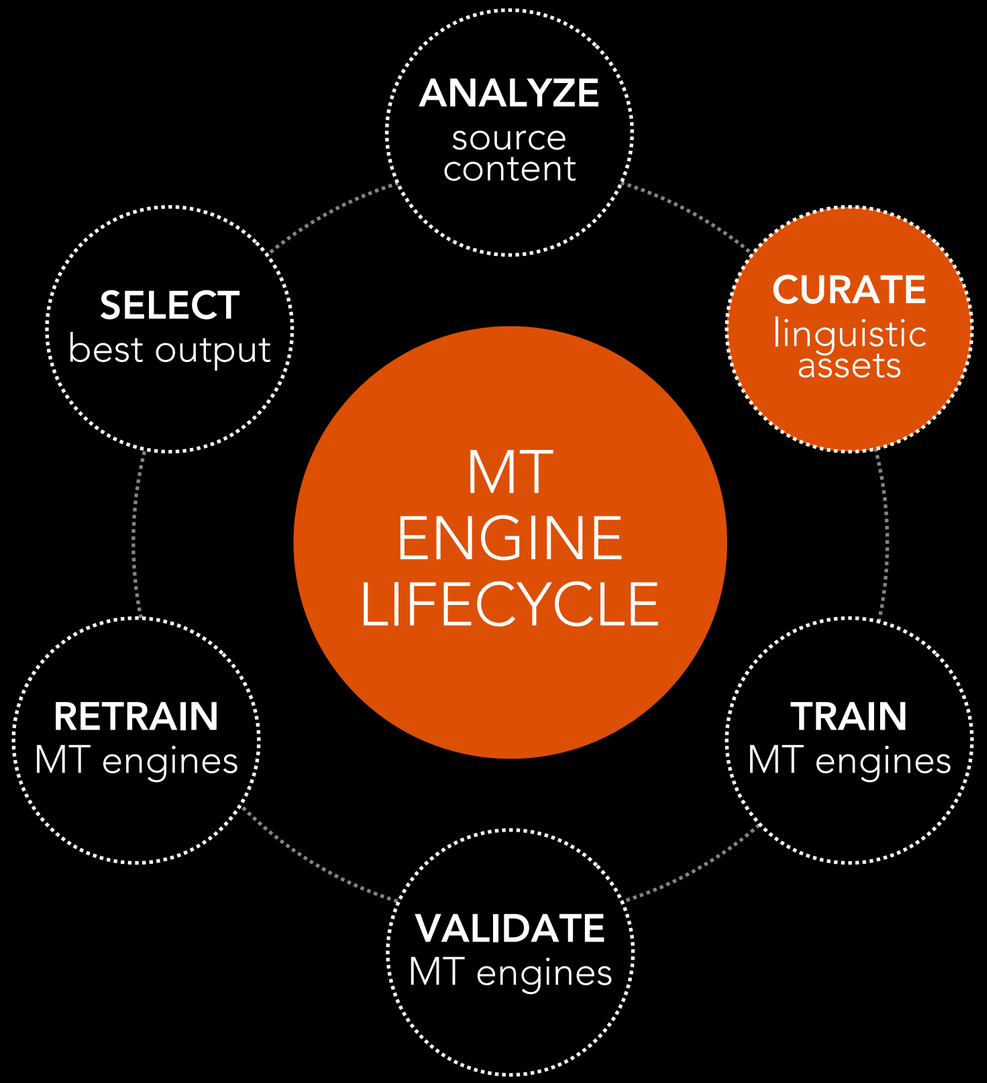
Filename	Score
/home/dblandan/scratch/test/test001.txt	2.73
/home/dblandan/scratch/test/test002.txt	0.20
/home/dblandan/scratch/test/test003.txt	3.32
/home/dblandan/scratch/test/test004.txt	1.19
/home/dblandan/scratch/test/test005.txt	3.98
/home/dblandan/scratch/test/test006.txt	3.89
/home/dblandan/scratch/test/test007.txt	0.38
/home/dblandan/scratch/test/test008.txt	0.73
/home/dblandan/scratch/test/test009.txt	3.72
/home/dblandan/scratch/test/test010.txt	3.43
/home/dblandan/scratch/test/test011.txt	2.84
/home/dblandan/scratch/test/test012.txt	2.60

CURATE

Tools Used:

Perplexity Evaluator

Source Content Profiler



CURATE: PERPLEXITY EVALUATOR

- ✓ Build Language Model (LM) of Historically “Bad” Text, Historically “Good” Text & Domain-Specific Text
- ✓ Is Candidate Text Closer to Historically “Bad” Text, Historically “Good” Text & Domain-Specific Text
- ✓ What Domain is Candidate Text Closest To?

LOWER SCORE IS BETTER

CURATE: PERPLEXITY EVALUATOR 2

FILE LEVEL

		LM		
		good	bad	client
document	good	7.78	1004.34	924.53
	bad	2910.85	33.46	511.04
	client	144.21	232.00	49.42

TU LEVEL

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CURATE: SOURCE CONTENT PROFILER

- ✓ A Collaborative Project Between CNGL & Several Industry Partners
- ✓ Analyses Source Content & Group Into “Profiles” Based on Set of “Features” — Syntax, Grammar, Readability Score, Terminology, Engineering Characteristics — DNT, Glossary Hits & Tag Ratio

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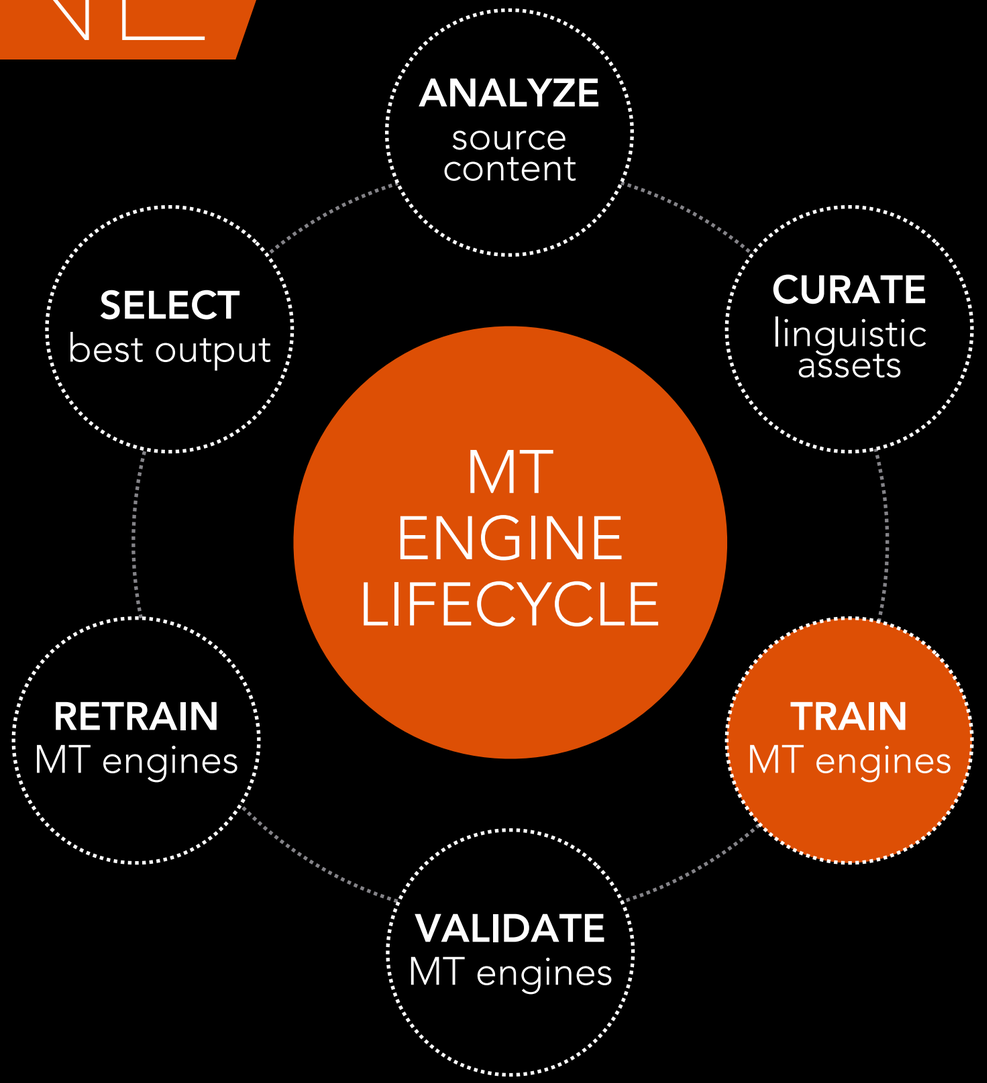
TRAIN MT ENGINE

Target Train, Tune, Test Data Selection:

- Random
- Frequency
- Length
- Product or Domain

Check for "Cheating"



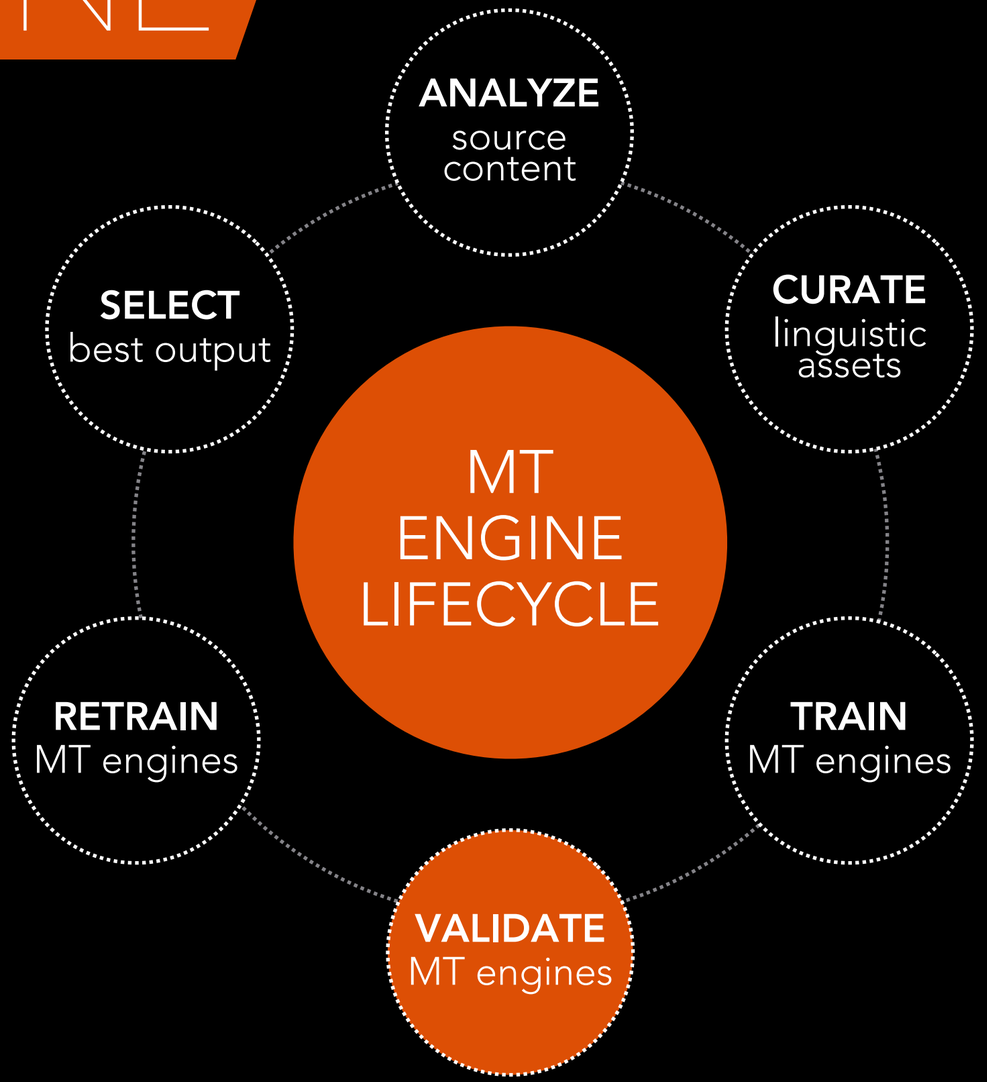
VALIDATE MT ENGINE

Targeted Error Correction of OOVs Based On:

Ratio Per Sentence

Token Count

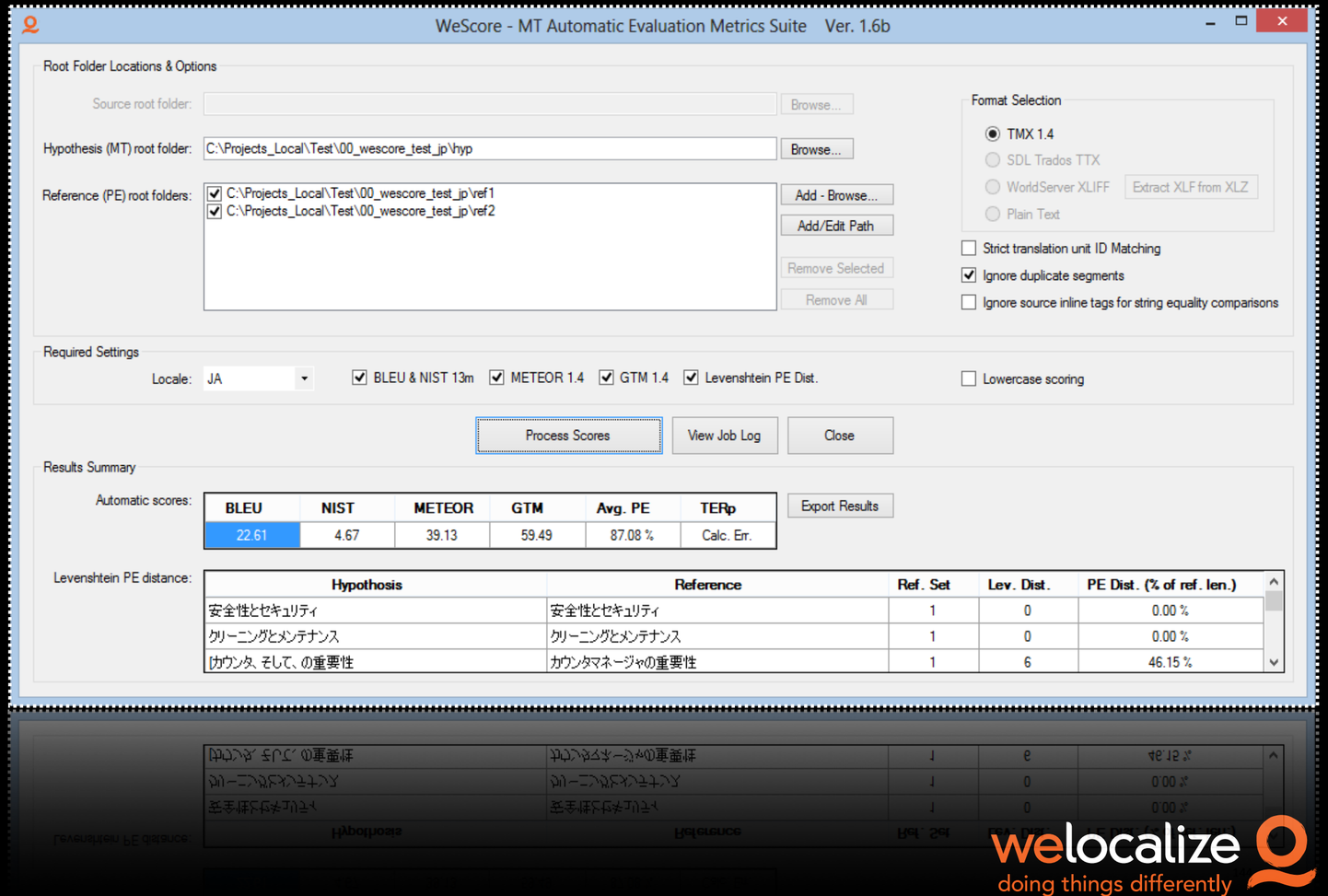
Ratio Per File



VALIDATE MT ENGINE 2: weSCORE

Dashboard for Viewing MT Metrics

- ✓ Tokenizes Input from Variety of Formats & Runs Several Scoring Algorithms in Parallel
- ✓ Exports Detailed Analysis to Spreadsheet for Sentence-By-Sentence Review



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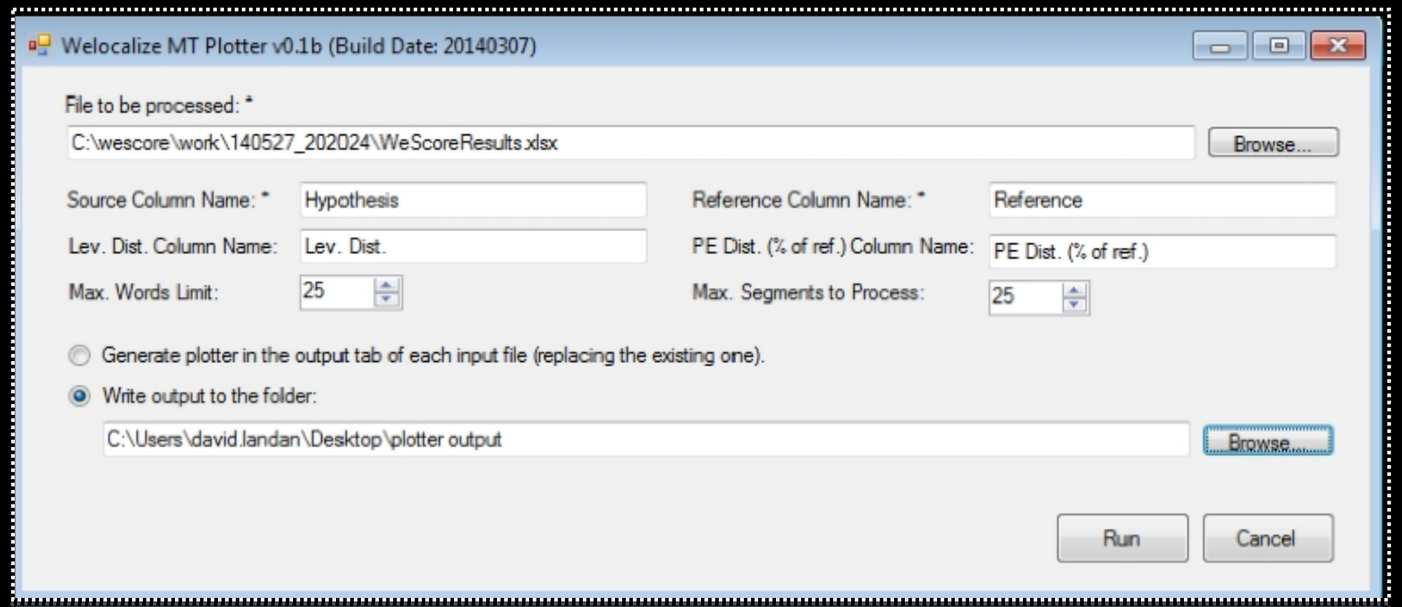
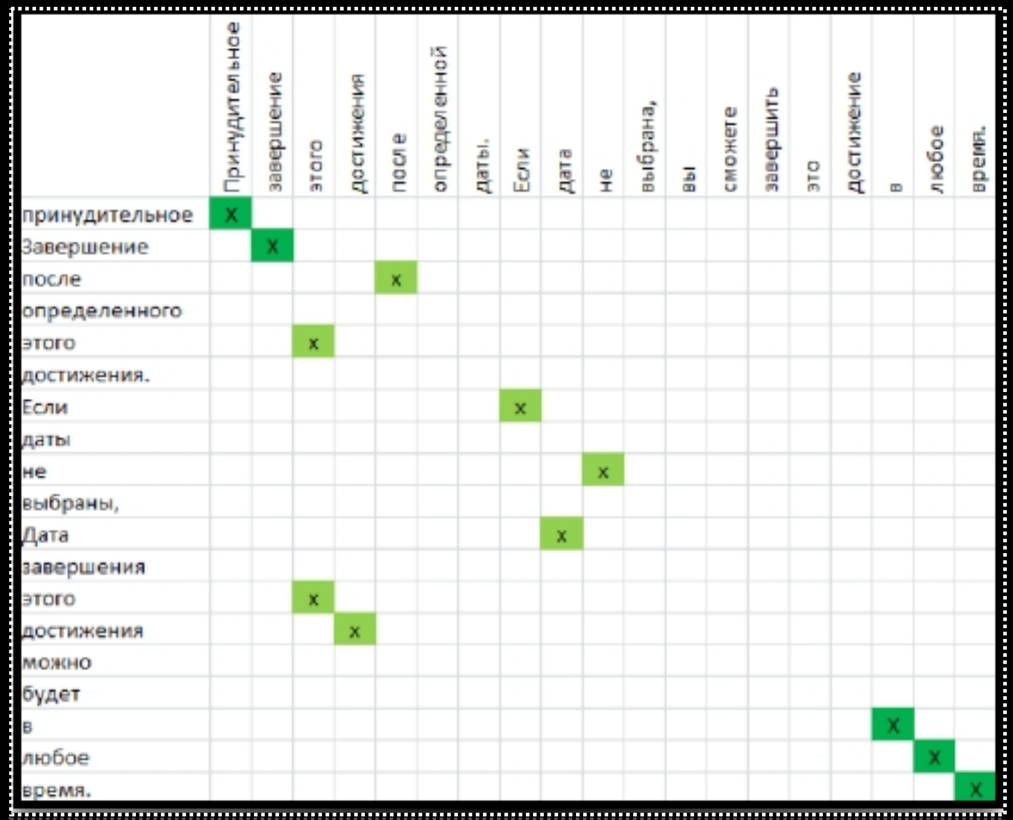
VALIDATE MT ENGINE 3: wePLOTTER

Visualization of Individual Segments Based on Candidate & Reference

- ✓ Precision
- ✓ Recall





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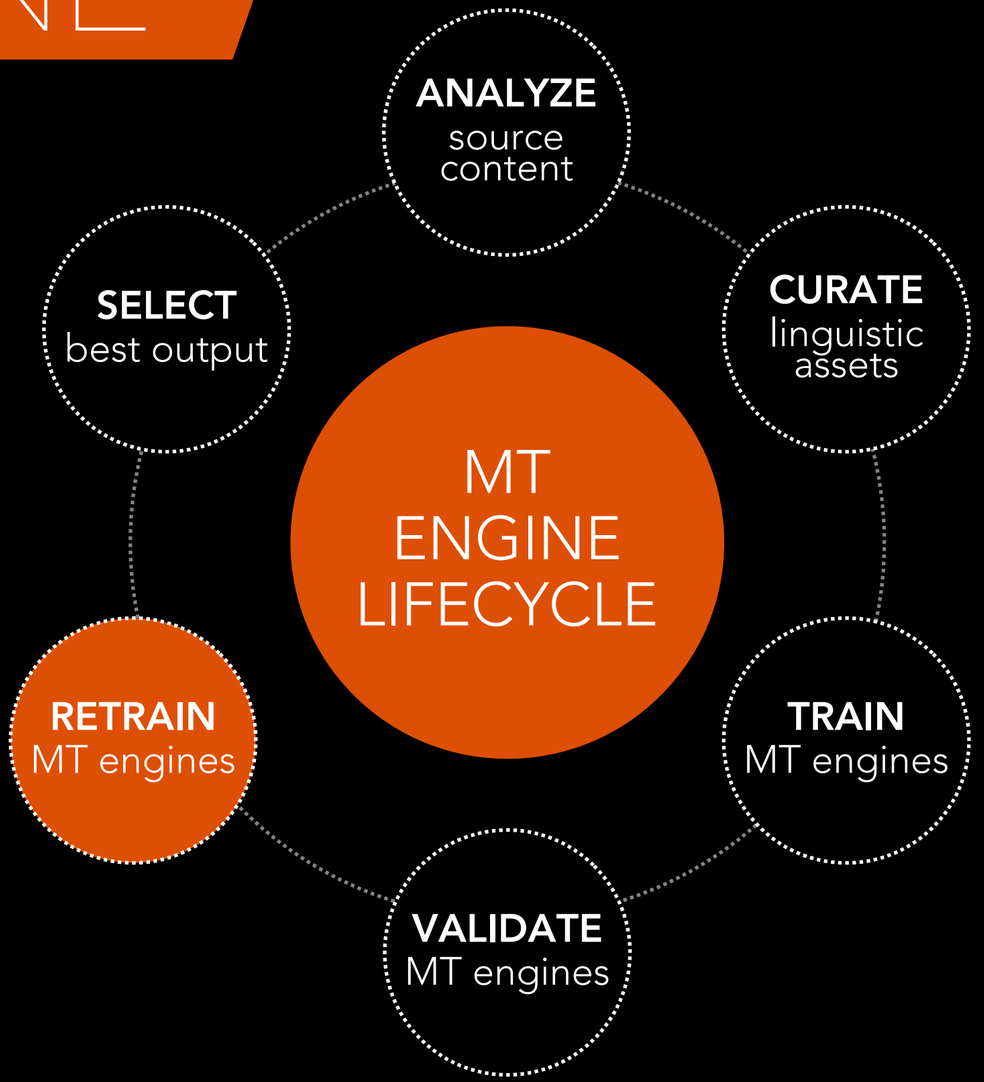
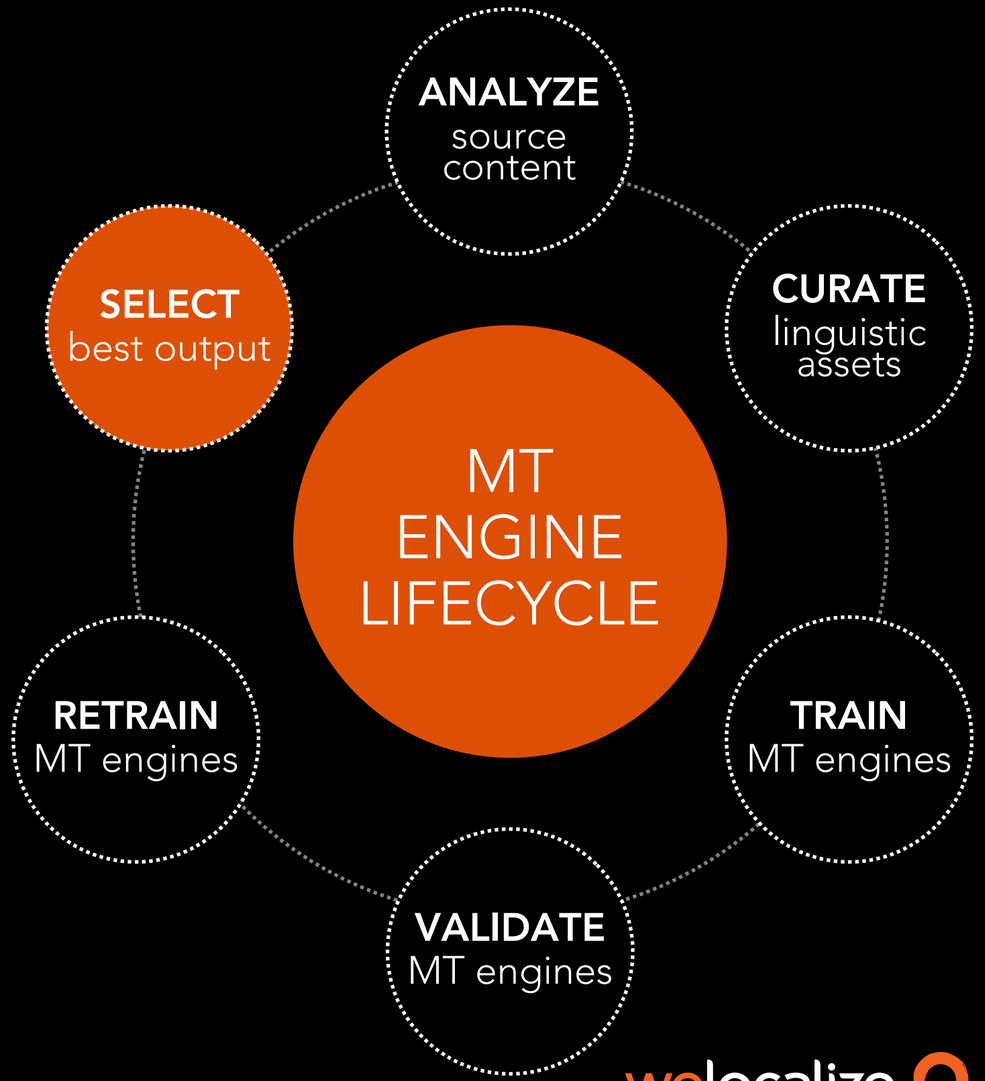
RETRAIN MT ENGINE

Correct OOV
Implement Feedback From Production & LQA



Select Best Output: TMT PRIME

- TMT Prime Provides a Commercially Viable Platform that Allows for the Seamless Integration of MT/TM Systems
  - MT/TM System Recommender
- Recommendation Based on **TMT Prime Score**
  - Confidence Score
  - "Intelligent" Fuzzy Match
- Translation Can Be Obtained from Either In-House or Third Party Systems (Bing or Google)
- A Cloud-Based Framework that Effectively Selects Translation Outputs by Using Different MT/TM Systems



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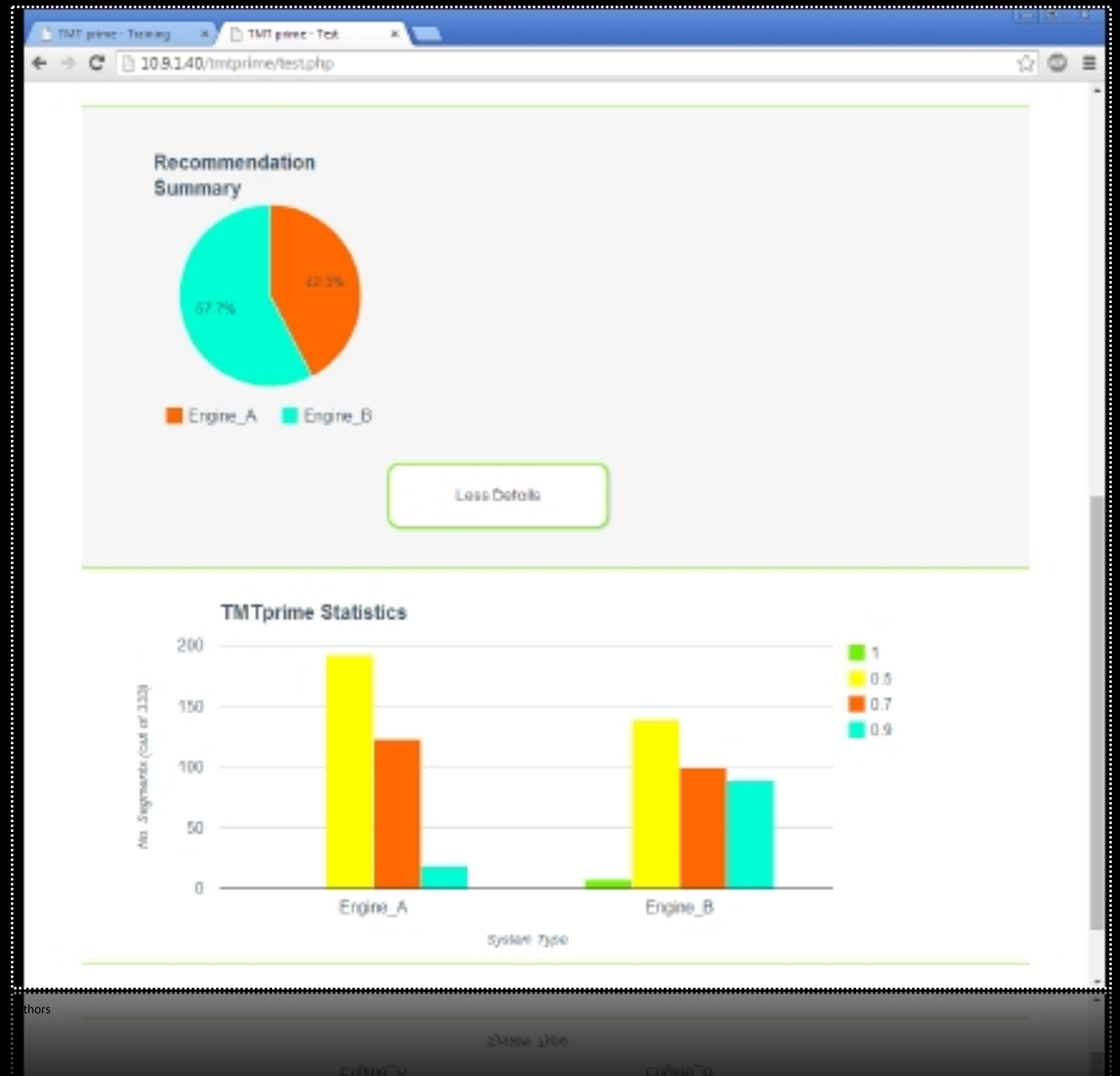
Select Best Output: TMT PRIME 2



CLIENT RESULTS

- ✓ All TMs for All Languages Have Been Profiled
- ✓ Implemented Tool to Query Most Relevant TUs by Domain
- ✓ BLEU Scores Increased by 10 Plus Points on Domain-Specific Engines for Both Asian & European Languages
- ✓ Productivity Increased by 5-7% on Domain-Specific Engines for Both Asian & European Languages

NEXT STEPS

- ✓ Develop Domain-Specific Engines for All Languages Localized by the Client (50-60 Engines)
- ✓ Assess Productivity Increase for All Languages & Engines as Related to BLEU Score Improvement
- ✓ Use TMT Prime to Recommend & Get Best Engine Translation on a Per Segment Bases as Opposed to Current File Level

THANK YOU

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