

AI Use Case Name	AI Use Case Summary	Production Stage
Inventory Item Replenishment MLR Modeling POC - Phase 1	Build and evaluate a multiple linear regression model to predict to determine if the replenishment of an inventory item was received before or after the need by date to predict the likelihood that an item will be received on time in the future.	Planned (not in production)
Inventory Item Replenishment MLR Modeling POC - Phase 2	Built and evaluate a multiple linear regression model to predict to determine if the replenishment of an inventory item would receive by the standard Need By time of 128 days set for all inventory items.	Planned (not in production)
Collection Chat Bot	The Natural Language Understanding (NLU) model will be located inside the eGain intent engine. This NLU will take customer typed text input aka – Utterances. It will map the utterance to a specific intent and return the appropriate knowledge article.	In production: less than six months
Collection Voice Bot	The NLU model will be located inside the Automated Collections IVR (ACI) main menu. This NLU will take customer speech input aka – Utterances. It will map the utterance to a specific intent and direct the taxpayer down to a certain call path.	In production: less than six months
Evaluate Multilingual BERT for Software Translation Use Case Evaluations	Project is evaluating the cost-effectiveness of training a multi-lingual BERT model on IRS corpora and using the model as means to evaluate software translation output of IRS content. The framework is leveraging COMET, ROGUE, and BLEU measures. Furthermore, the product will also be assessed for English-Only and Spanish-Only content content classification.	In production: less than six months
Large Corporate Compliance	Large Corporate Compliance is a machine learning model for classifying corporate taxes.	In production: more than one year
Large Partnership Compliance	Large Partnership Compliance is a machine learning model for stratifying Partnership data and score risk of potential non-compliance.	In production: more than one year
LB&I Text Analytics (including Appeals Case Management)	Trained text extraction and tax domain-specific BERT models (called TaxBERT) using about 190,000 documents including Internal Revenue Code, Internal Revenue Manual, and PDFs from irs.gov, Revenue Rulings, Private Letter Rulings, Revenue Procedures, Treasury Decisions, and other legal tax-related documents. The extracted text was decomposed into 21 million sentences with 1 million unique tokens. Further filtering refinement resulted in 11 million unique sentences and 31 thousand	In production: less than six months

AI Use Case Name	AI Use Case Summary	Production Stage
	unique vocabulary tokens which are then used to train domain-specific NLP models which can be used for targeted analytics.	
Line Anomaly Recommender	This use case seeks to identify a workload selection model that uses two recommender system models to measure overall compliance risk and identify anomalous tax returns and line-item values. The delivered pipeline capabilities can supplement the core case selection model processes by providing additional insight to IRS LB&I reviewers through the use of advanced deep learning techniques for anomaly detection.	In production: less than six months
NRP Redesign	Deploy innovative active learning methods to provide a lower opportunity cost method of estimating a compliance baseline to support tax gap estimation, improper payments reporting, development and validation of workload identification and selection models, and inform policy analysis. System inputs require existing NRP data which provide an acceptable level of precision and quality for an acceptable level of data quality output.	In production: less than one year
Projected Contract Award Date Web App	Projected contract award dates are generated with a machine learning model that statistically predicts when procurement requests will become signed contracts. Input data includes funding information, date / time of year, and individual Contract Specialist workload. The model outputs projected contract award timeframes for specific procurement requests. 'When will a contract be signed?' is a key question for the IRS and generally for the federal government. This tool gives insight about when each request is likely to turn into a contract. The tool provides a technique other federal agencies can implement, potentially affecting \$600 billion in government contracts. Weblink: <a href="https://www.irs.gov/newsroom/irs-announces-use-of-projected-contract-award-date-web-app-that-predicts-when-contracts-will-be-signed">https://www.irs.gov/newsroom/irs-announces-use-of-projected-contract-award-date-web-app-that-predicts-when-contracts-will-be-signed</a>	In production: less than one year
SBSE Issue Recommender	Developed an AI-based recommender for detecting potential non-compliance issues which makes training returns selection more efficient	In production: less than 6 months

August 2022

AGENCY INVENTORY OF USE CASES  
U.S. DEPARTMENT OF THE TREASURY

<b>AI Use Case Name</b>	<b>AI Use Case Summary</b>	<b>Production Stage</b>
	and scalable, which has been applied to the process for selecting training returns and field work.	