

Accelerate **Machine Learning** projects with algorithms and models from AWS Marketplace

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At AWS, we've been making investments in ML for the last 20 years





Our Mission:

Put **machine learning** in the hands of
every developer and data scientist

Machine Learning & AI services

APPLICATION SERVICES

PLATFORM SERVICES

FRAMEWORKS & Interfaces



Machine Learning
solutions in



aws marketplace

AI services



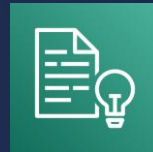
Amazon Rekognition



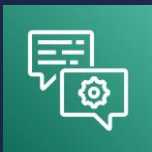
Amazon Forecast



Amazon Personalize



Amazon Comprehend



Amazon Lex



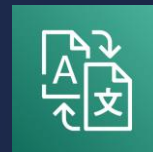
Amazon Polly



Amazon Textract



Amazon Transcribe



Amazon Translate

- Dashboard**
- Search^{Beta}
- ▼ **Ground Truth**
- Labeling jobs
- Labeling datasets
- Labeling workforces
- ▼ **Notebook**
- Notebook instances
- Lifecycle configurations
- Git repositories
- ▼ **Training**
- Algorithms
- Training jobs
- Hyperparameter tuning jobs
- ▼ **Inference**
- Compilation jobs
- Model packages
- Models
- Endpoint configurations

Amazon SageMaker > Dashboard

Overview



Ground Truth

Set up and manage labeling jobs for highly accurate training datasets using active learning and human labeling.

Labeling jobs



Notebook

Availability of AWS and SageMaker SDKs and sample notebooks to create training Jobs and deploy models.

Notebook instances



Training

Train and tune models at any scale. Leverage high performance AWS algorithms or bring your own.

Training jobs

Hyperparameter tuning jobs



Inference

Create models from training jobs or import external models for hosting to run inferences on new data.

Models

Endpoints

Batch transform jobs

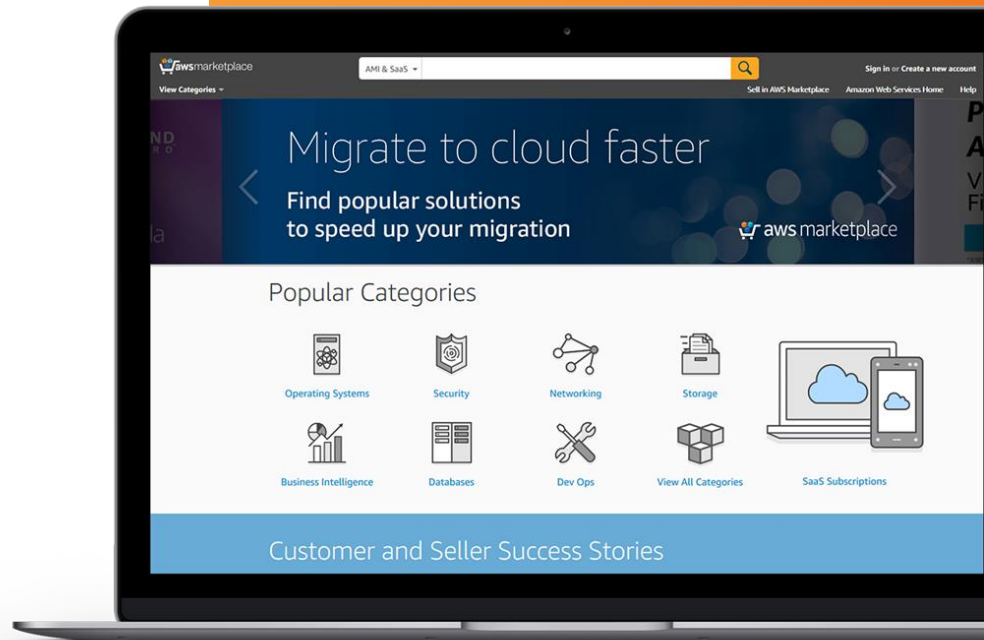
Recent activity

Recent activity within the

Last

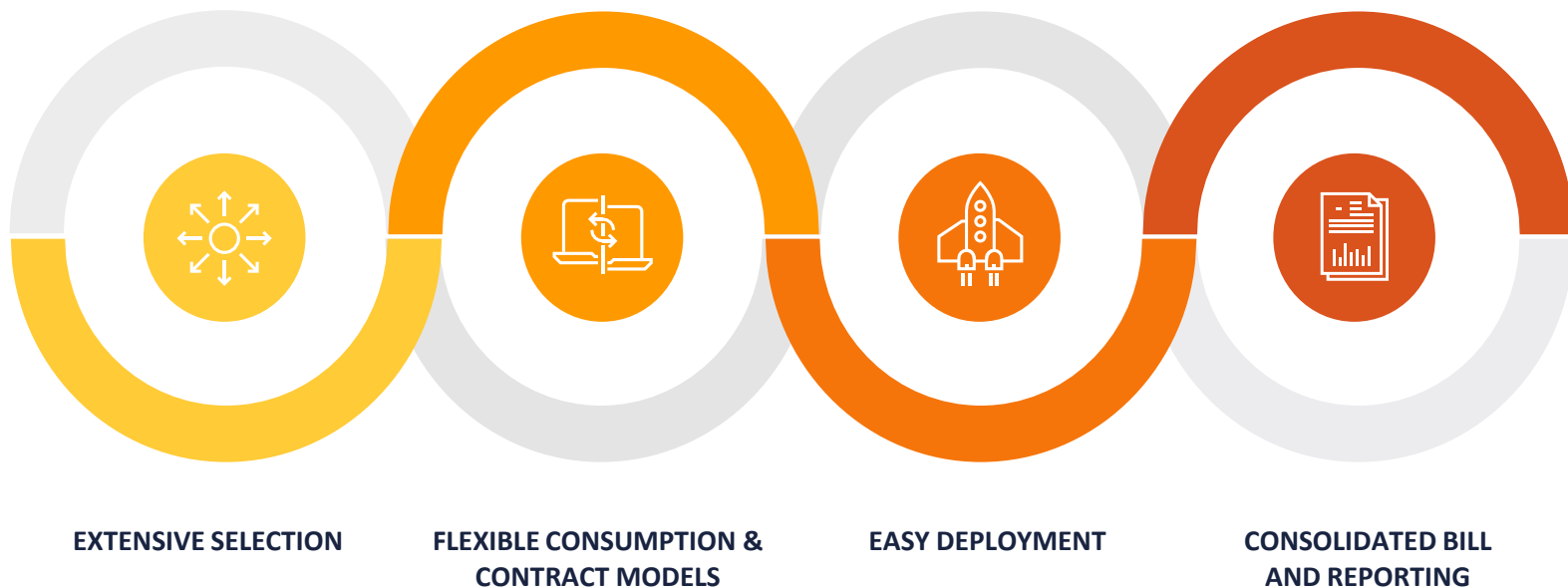
AWS Marketplace simplifies software provisioning

- Deploy software on demand
- **1,400+** ISVs
- Over **4,500** product listings
- **200,000** active customers
- Over **650 million** hours of EC2 deployed monthly
- Deployed in **18 regions**
- Offers **35 categories**
- Flexible consumption and contract models
- Easy and secure deployment, almost instantly
- One consolidated bill
- Always evolving



AWS Marketplace

A curated digital software catalog that helps customers **find, buy, test, and deploy** software

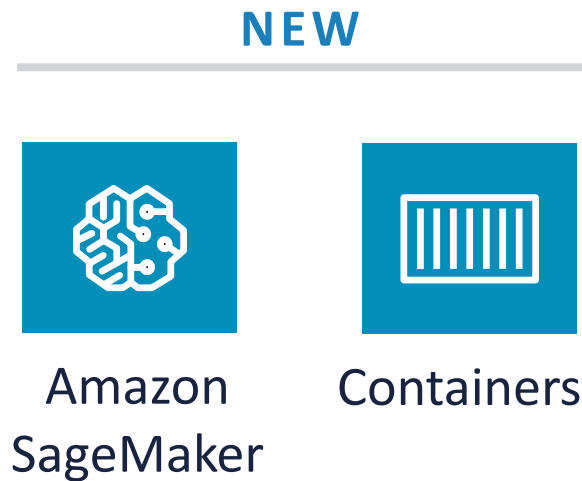
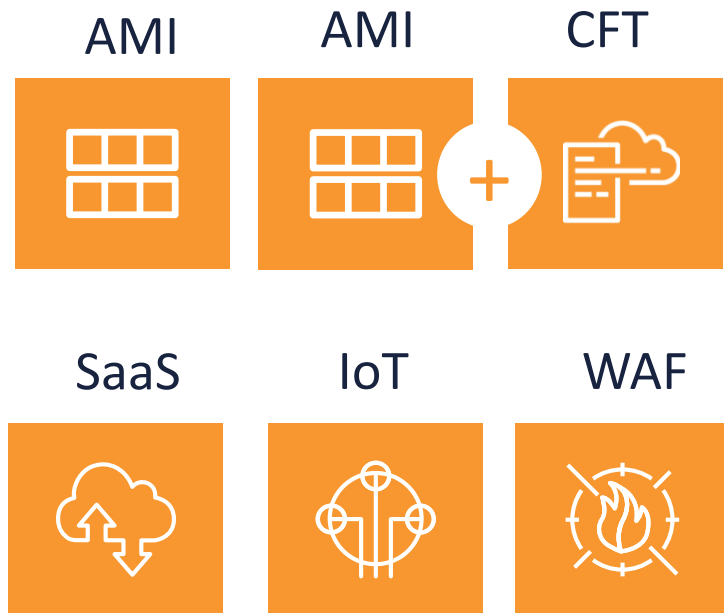


AWS Machine Learning Partners

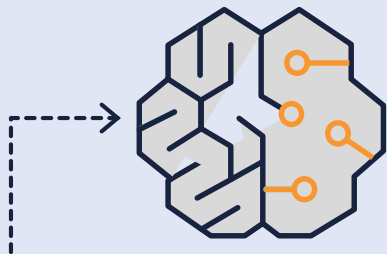
- Consulting partners
- Data services
- SaaS/API solutions
- Platform services



New: Machine Learning



AWS Marketplace for Machine Learning



 **aws marketplace**



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Catalog of **233** trusted, curated, ML algorithms, and model packages

53 machine learning categories

Seamless integration with **Amazon Sagemaker**

14 industry segments

40 partners

Free | Free trial | Paid licensing types

What can you buy from AWS Marketplace?

1

Pre-trained models

Model packages are pretrained and ready-to-use.

Create a model and then use them for:

- Batch **inference**
- Real-time **inference**
- Generating **Synthetic features**

2

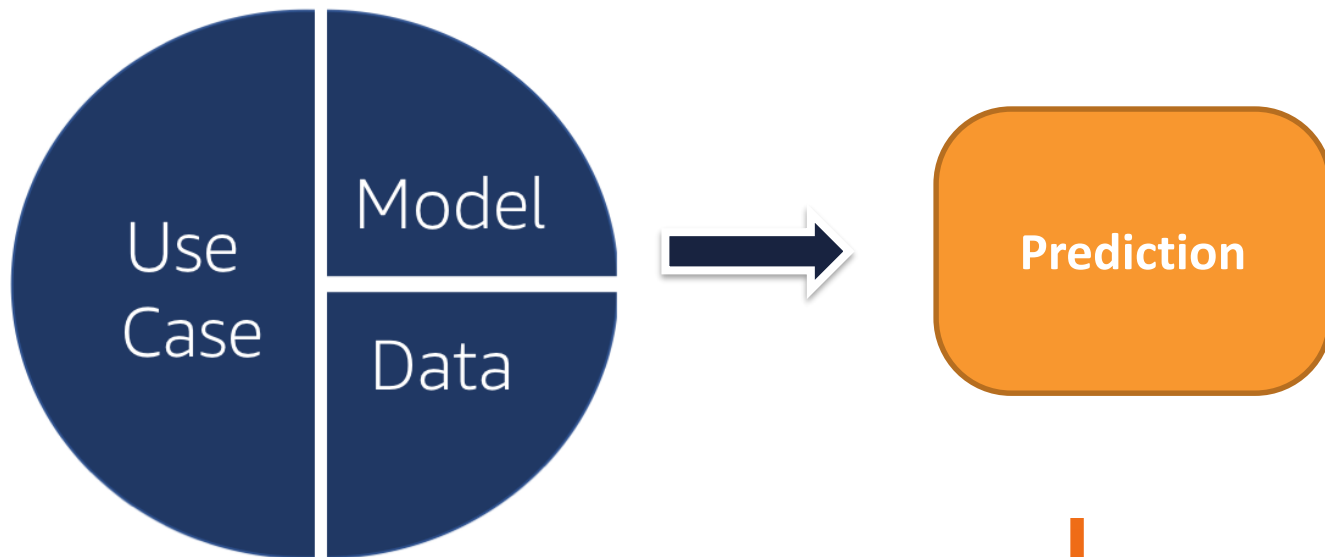
Train a custom model

Algorithms let you train a custom model using your data.

Use algorithms for:

- Training a model!
- Hyperparameter optimization

Machine Learning process



Assumptions

1. Time for the project!
2. Training data
3. Machine Learning developers who can
 - Train a model
 - Tune a model
4. But, wait why should I reinvent the wheel?

What if someone else has solved the problem?



Do I need to reinvent the wheel?



Battle of security

**Buyer's data
Vs
Seller's IP**

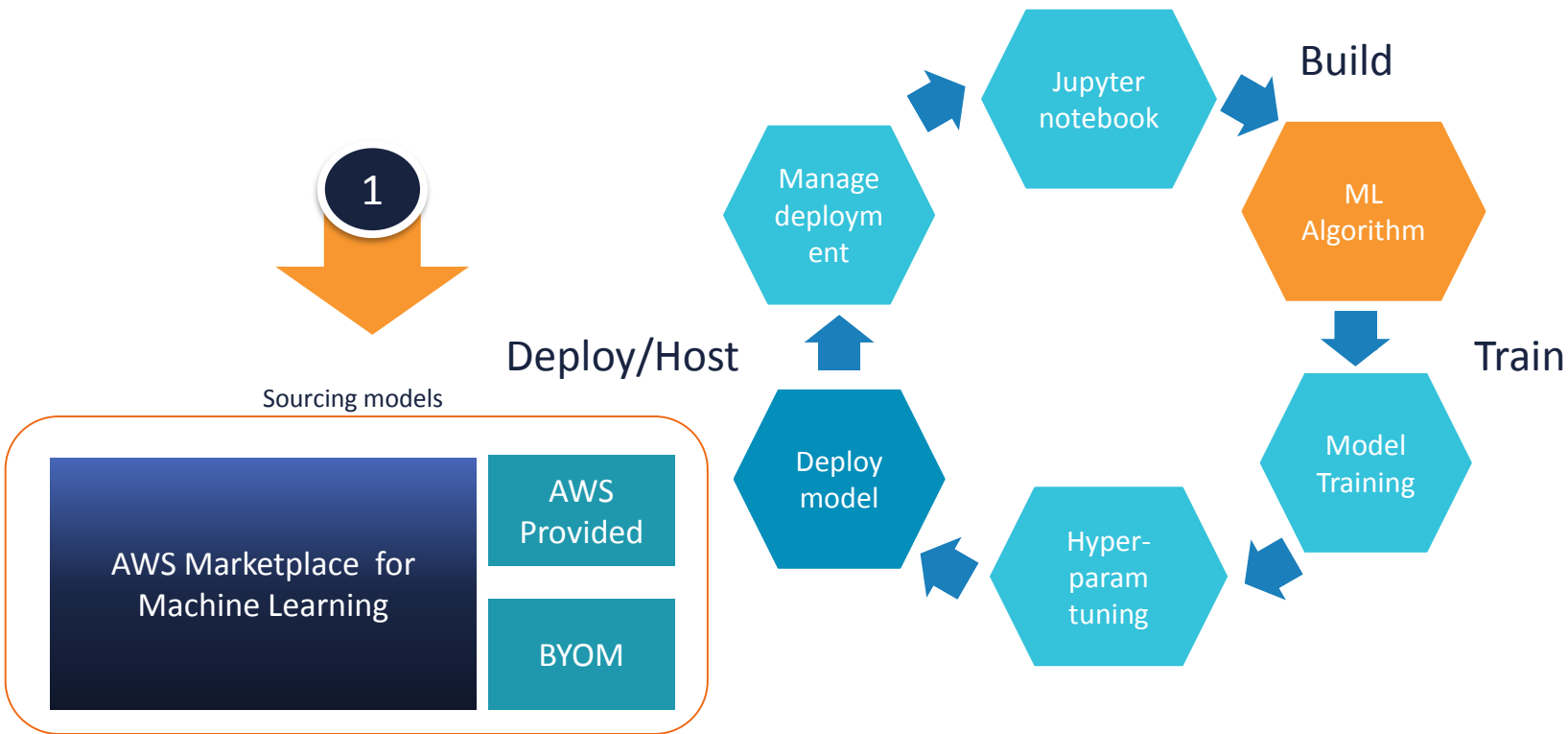


**Hard to find, evaluate,
and qualify 3'd party
solutions**



**Less time, too many
projects to prioritize**

Machine Learning Lifecycle – source a model!



3rd party models – What would you like to do?



Solve business problem - Perform

Inference

OR

generate **Synthetic features**

OR

Identify **High-Quality data** for **training**

How do I get started?

1

Discover model packages
in AWS Marketplace


2

Subscribe to the
Model package from
AWS Marketplace

3

Deploy model and perform
predictions with:

1. Sagemaker Endpoint
2. Or using Sagemaker Batch transform



Demo – deploy a
model package in
minutes..



Lets talk about the
model selection!

- Modjoul Heat Index Model
- Medical No Show Prediction
- Prediction of Patient Readmission Rate
- Acquired Hypothyroidism Disease State
- AFIB Disease State Predictor
- Alzheimers Disease State Predictor
- AMI Disease State Predictor
- Anemia / Asthma Disease State Predictor
- Breast Cancer Disease State Predictor/Classification
- Bronchiectasis Disease State Predictor
- Colorectal Cancer Disease Predictor
- COPD Disease State Predictor
- Depression Disease State Predictor
- Fibromyalgia Disease State Predictor
- Heart Failure Disease State Predictor
- Heart Transplant Disease State Predictor
- Hip Replacement Disease State Predictor
- Glaucoma Detection
- Hypertension Disease State Predictor
- Knee Replacement Disease State Predictor
- Leukemia Disease State Predictor
- Lung Cancer Disease State Predictor
- Lymphoma Disease State Predictor/Subtype Classification
- MS Disease State Predictor
- Opioid Addiction Disease State Predictor
- Ovarian Cancer Disease State Predictor
- Parkinson's Disease State Predictor
- Resuscitation Disease State Predictor
- Senile Dementia Disease State Predictor
- Sleep Apnea Disease State Predictor
- Total Joint Replacement Disease State
- ITP - Inflammation & Immunology
- ITP - Lymphoma
- ITP - Myeloid
- ITP – Solid Tumor
- Dementia Prediction

Domain	Some of the many models from AWS Marketplace	
Insurance – Auto/Industrial IOT domain	<ul style="list-style-type: none"> • Vehical Attribute Detection • Vehicle damage inspection • Deep Vision vehicle recognition • Modjoul Automotive Telematics Model • Construction Machines Detector • Construction Worker Detector • Person and Truck Segmentation 	<ul style="list-style-type: none"> • Modjoul Geo Fence Model • Modjoul Asset Utilization Model • Modjoul Stationary Work Model • Modjoul Walking Model • Modjoul Lower Lumbar Model • Modjoul Motion Model • Ball Bearings Quality Inspection
Retail	<ul style="list-style-type: none"> • Retail Store Sales Prediction • Barcode Detection • Credit card detection • Cortexica Fashion Localisation (CPU) • Person Attribute detection • Unbx AI - Fashion eCommerce NER • Category Recommendation Inference Model 	<ul style="list-style-type: none"> • Review Helpfulness Prediction • Basic Churn Predictor • Churn Prediction • Credit Default Prediction • Attrition Prediction • Bike Rentals Predictor

And many more..

Category	Some of the many models from AWS Marketplace	
Computer-Vision	<ul style="list-style-type: none"> • Cortexica Interiors Localisation • Cortexica BodyParts Localiser • Deep Vision brand recognition API • Logo Recognition in Images • Cortexica Interiors Localisation (CPU) Image collage classifier • Deep Vision visual search API • Barcode Detection • Vehical Attribute Detection • Cortexica BodyParts Localiser (CPU) • Image collage classifier • Image human classifier 	<ul style="list-style-type: none"> • Local Photo ID (Singapore) • Mighty Anonymize (GPU - Advanced) • Face blocking or blurring for Privacy • Face Anonymizer (GPU) • Skin Disease Classification (GPU) • Passport Data Page Detection • Waste Classifier (CPU) • Deep Vision brand recognition API • Local Photo ID (Singapore) • Deep Vision vehicle recognition • Image mosaic classifier • Image text classifier
Audio	<ul style="list-style-type: none"> • Deepgram Speech Recognition (en-GB/Spanish) • Deepgram Speech Recognition (General/Phonecall/Meeting) • Audio Gender Classifier 	<ul style="list-style-type: none"> • Background Noise Classifier • Automatic Audio or Sound Classification(algorithm) • Music Genre Recognition(algorithm)

Category/Domain	Some of the many models from AWS Marketplace	
Text	<ul style="list-style-type: none"> • Cognitive QnA • Word Associations Inference Model • Sentiment Analysis Inference Model • Topic Tagging Inference Model • Novetta Text Tagger • Insult detection • Emotion Analysis Inference Model • Abusive Text Content Detection • Sentiment Analysis • Review Helpfulness Prediction • Lemmatizer Inference Model • Named Entity Recognition • Text Similarity • Text Similarity Inference Model • Text Similarity Analyzer • Language Scoring Inference Model 	<ul style="list-style-type: none"> • Demisto Phishing Email Classifier • Lyrics Generator (CPU) • Neural Paraphrase Generation • LexisNexis US Legal Taxonomy - Level 1 • Novetta News Tagger - Russia 360° • Novetta News Tagger - Syrian Conflict • Novetta News Tagger (Foreign Policy) • Novetta News Tagger (Humanitarian) • Banking FAQ Intent Matching • Wipro HOLMES™ E-KYC Controller Extractor

- Detect Phishing Websites
- NFL Games Predictor
- Neural Paraphrase Generation
- Detect Phishing Websites
- NFL Games Predictor
- Crop Quality Inspection
- Bitcoin Predictor
- Simple Chemistry Binding Predictor
- Simple Income Predictor
- Automatic Date & Time Features
- Attrition Prediction

Amazon Web services provided models

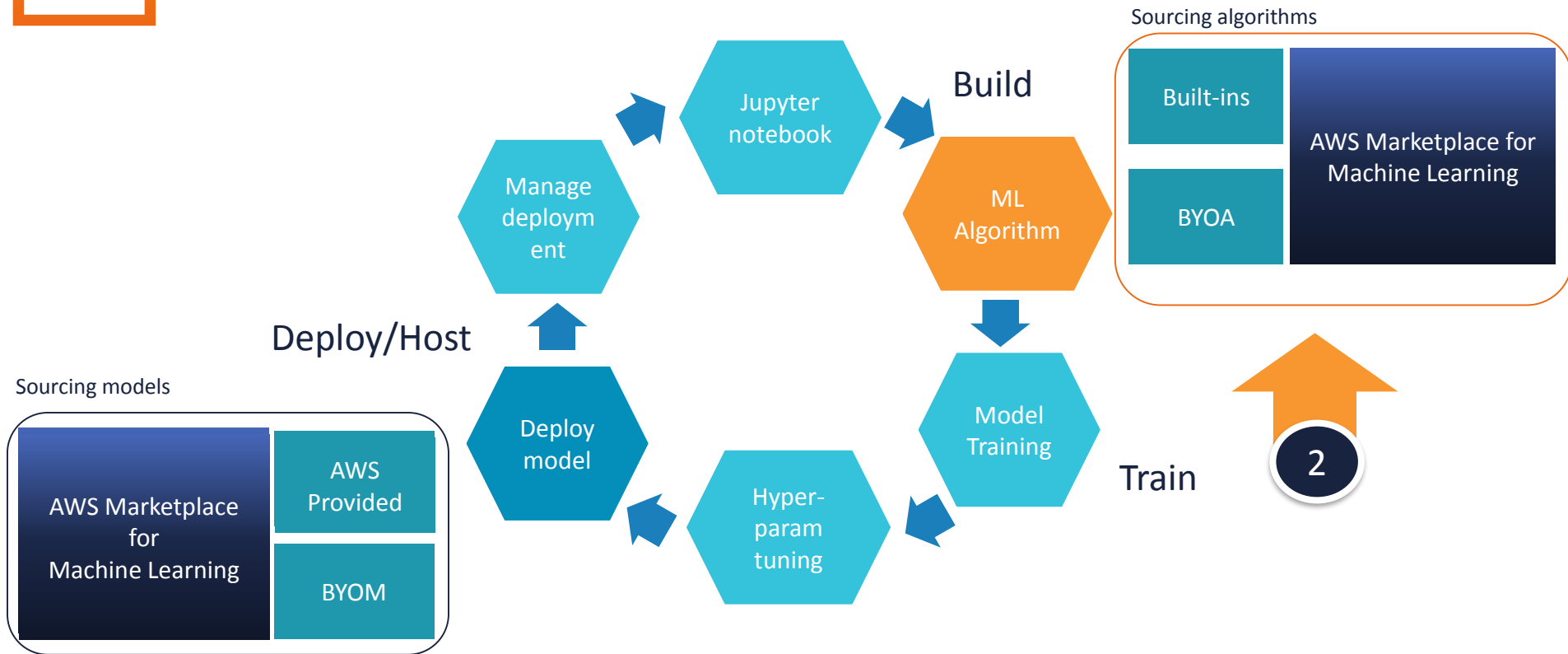
- GluonCV DeepLab Semantic Segmentation
- GluonCV Faster-RCNN Object Detector
- GluonCV MobileNet Classifier
- GluonCV ResNet50 Classifier
- GluonCV SSD Object Detector
- GluonCV YOLOv3 Object Detector
- GluonNLP English to German Translation
- GluonNLP Sentence Generator

And many more..

I cant find any service/model for solving my problem

- Solution - A ***Machine Learning*** project to train a custom model
- Concerns:
 - My Machine learning developers just need to run **Auto-ML** on big data.
 - Can't find Amazon **Sagemaker *built-in* algorithm** I need
 - Use **right** algorithm for solving the problem.
 - Implement, package, and test the algorithm
 - In-house **DevOPS** availability for **BYOA**

Machine Learning Lifecycle – source an algorithm



3rd party Algorithms

*Can I Train/Tune a model – **Yes!***

*Do you have an **Auto-ML** algorithm? **Yes!***

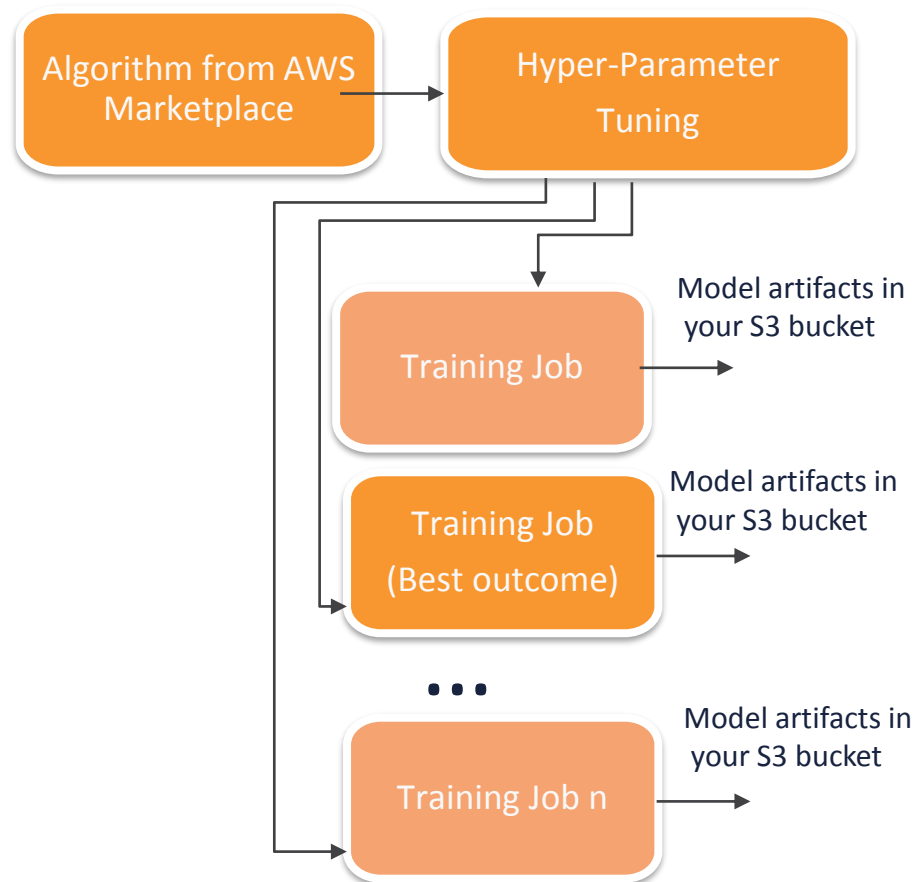
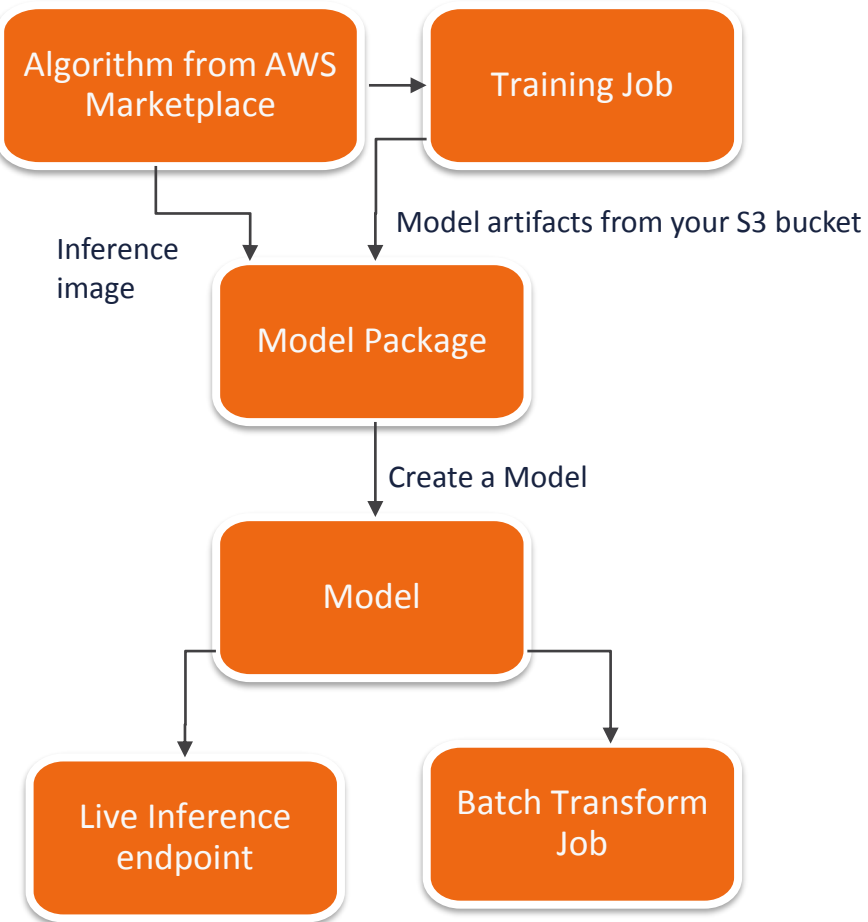
How's the experience?

Much like **Amazon Sagemaker Built-in**
algorithms

What do I need to know:

- **EnableNetworkIsolation=True**







Demo – Run AutoML algorithm



Lets talk about the
selection!

Machine Learning problem	Amazon Sagemaker Built-in	AWS Marketplace
Classification	<ul style="list-style-type: none"> Linear Learner XGBoost KNN 	Dense Random Forest Classification Sparse Random Forest Classification H2O.ai H2O-3 Automl Algorithm H2O.ai H2O-3 GBM Algorithm + Sparse Gradient Boosting Classification Dense Gradient Boosting Classification Intel® DAAL k-Nearest Neighbors (kNN) H2O.ai's H2O-3 Deep Learning Algorithm Sparse Logistic Regression
Regression	<ul style="list-style-type: none"> Linear Learner XGBoost KNN 	Dense Random Forest Regression Sparse Random Forests Regression Dense Gradient Boosting Regression + Sparse Gradient Boosting for Regression H2O.ai H2O-3 GBM Algorithm H2O.ai's H2O-3 Deep Learning Algorithm
Anomaly Detection (is the behavior normal?)	<ul style="list-style-type: none"> IP Insights Random Cut Forests 	+ Bigfinite OutlierDetection Autoencoder for Anomaly Detection

Machine Learning problem	Amazon Sagemaker Built-in		AWS Marketplace
Computer Vision	<ul style="list-style-type: none"> Semantic Segmentation Image Classification <> Object Detection <> 	+	<ul style="list-style-type: none"> Batch Image/Video Object Detection Image/Video Embeddings using SVD Automatic Video/Image Recognition Automatic Video Recognition and Tagging Action/Sport Recognition in Video Image/Video Face Recognition Automatic Image Tagging Batch Object Detection
Recommendation	<ul style="list-style-type: none"> Factorization Machines 	+	<ul style="list-style-type: none"> Implicit Alternating Least Squares Implicit BPR Spotlight Implicit Sequence/Factorization Spotlight Explicit Factorization
Reinforcement learning	Amazon SageMaker RL	+	Multi-Armed Bandits & Thompson Sampling Game Tweaks Sustainable Dynamic Pricing

Machine Learning problem	Amazon SageMaker Built-in		AWS Marketplace
Forecasting	<ul style="list-style-type: none"> DeepAR 	+	<ul style="list-style-type: none"> Demand Forecasting for Intermittent Data Demand Forecasting for Frequent Data Demand Intermittency Classifier
Feature Reduction	<ul style="list-style-type: none"> PCA Object2Vec 	+	<ul style="list-style-type: none"> Intel® DAAL PCA Sparse Singular Value Decomposition
Working with Text	<ul style="list-style-type: none"> Blazing Text <ul style="list-style-type: none"> Supervised Unsupervised 	+	<ul style="list-style-type: none"> Cognitive QnA Novetta Text Tagger Text Similarity Analyzer

Machine Learning problem	Custom algorithms from AWS Marketplace
Time-series Clustering	K-Shape: Time Series Clustering
Segmentation	Customer Segmentation
Churn Classification	Non-Contractual Churn Classification
QnA	Cognitive QnA algorithm

And many more..

Securing buyer's data and seller's IP



NETWORK ISOLATION

No internet access for algorithm/model artifacts during runtime



ENCRYPTION

All algorithm and model artifacts and other system artifacts in transit and at rest and communications are through SSL



Scanning

Static and dynamic scanning of all entities for security vulnerabilities

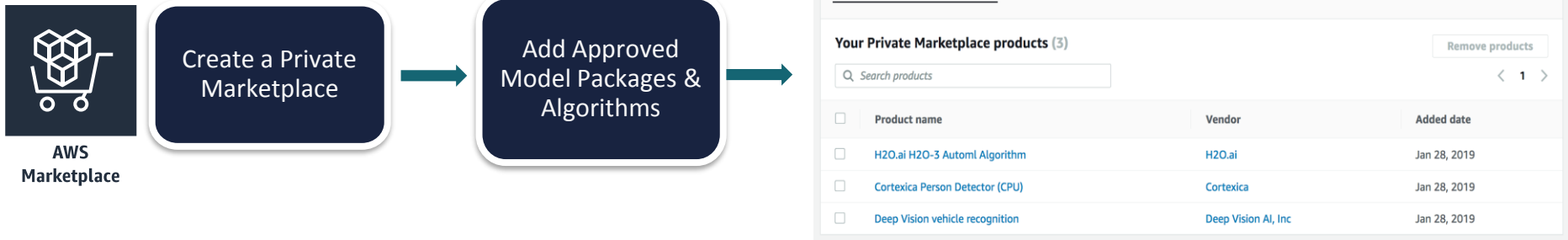


IAM Policies

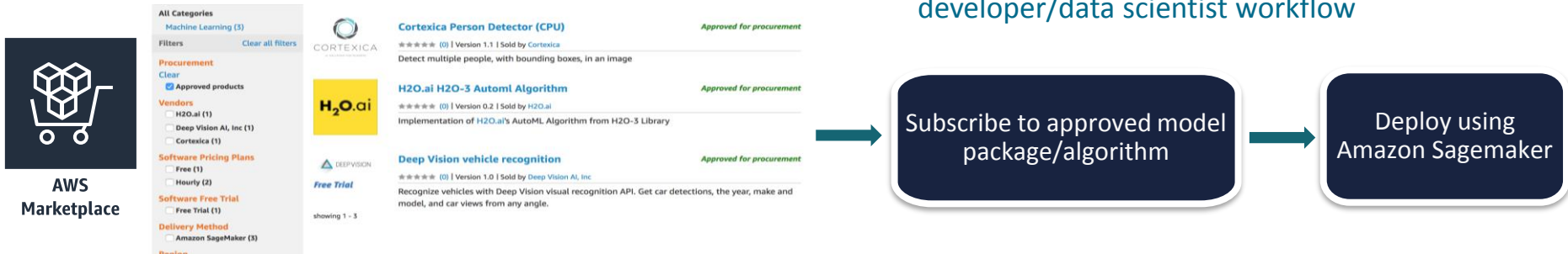
Secure your resources using fine grained IAM policies

How do I **allow** my users to procure only approved products from AWS Marketplace?

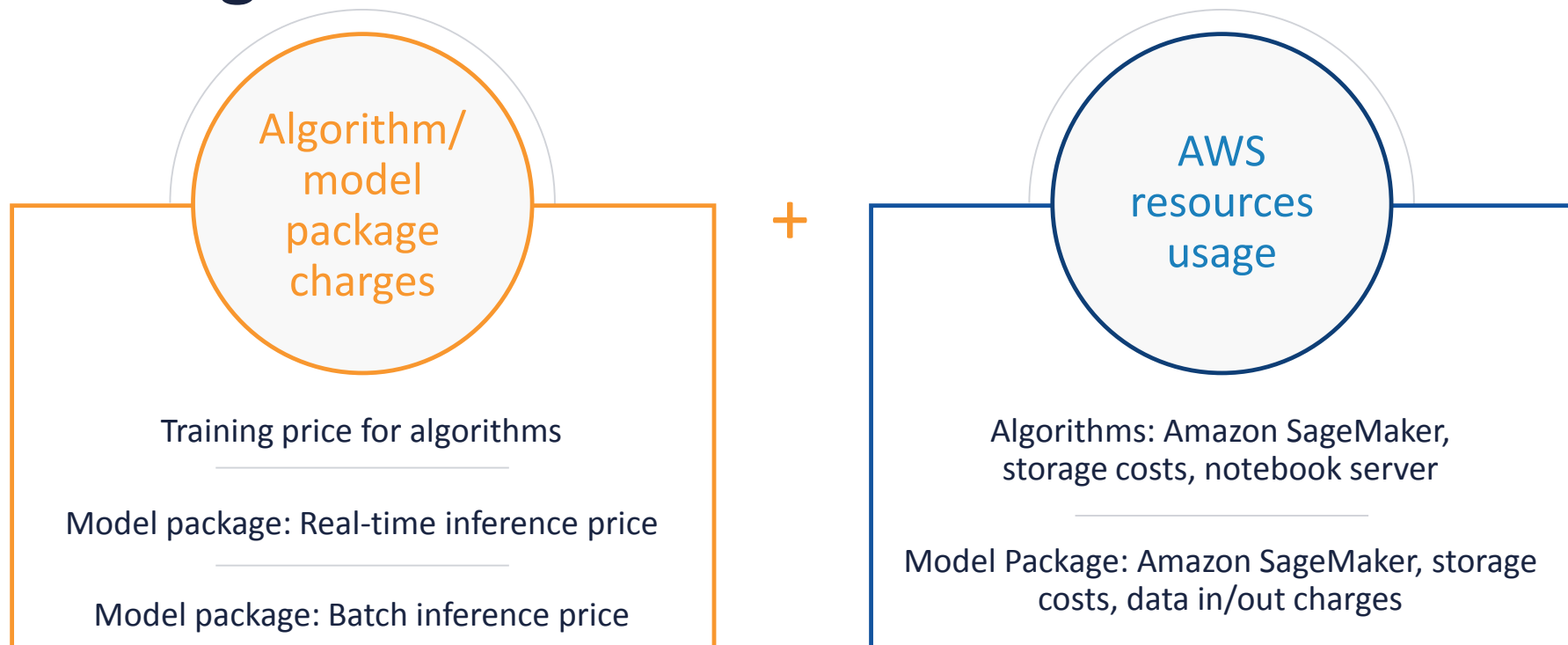
Procurement team workflow



developer/data scientist workflow



Pricing details



Resources..

Sample notebooks:

- In the Additional resources/Usage instructions section of the AWS Marketplace listing.
- Official GitHub repo –

https://github.com/aws-labs/amazon-sagemaker-examples/tree/master/aws_marketplace

- Process of listing your algorithm/model:

<https://docs.aws.amazon.com/sagemaker/latest/dg/sagemaker-marketplace-sell.html>

Questions

Some more resources

- Official GitHub repo –

https://github.com/awslabs/amazon-sagemaker-examples/tree/master/aws_marketplace

- Dallas – May 17th -

• <https://immersiondaydallasmay17.splashthat.com/>

- Chicago – May 27th - <https://awsmarketplaceformachinelearning.splashthat.com/>