



AWS Heroes in 15:

Harnessing low-code/no-code Machine Learning on AWS

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AWS Machine Learning Hero
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Instrumental

New era of AI

AI is
commodity

- No need to build from scratch
- Low barrier to use/integrate
- No requirement for ML expertise
- No upfront cost

AI augmented
workforce

- Solving day-to-day tasks
- Personal assistant

AI as a core
product

- Smaller team to start
- Easier to get feedback early

AI as a
support tool

- Easy to embed AI features
- Reduce cost of manual processes

Agenda

Machine learning pipeline and challenges

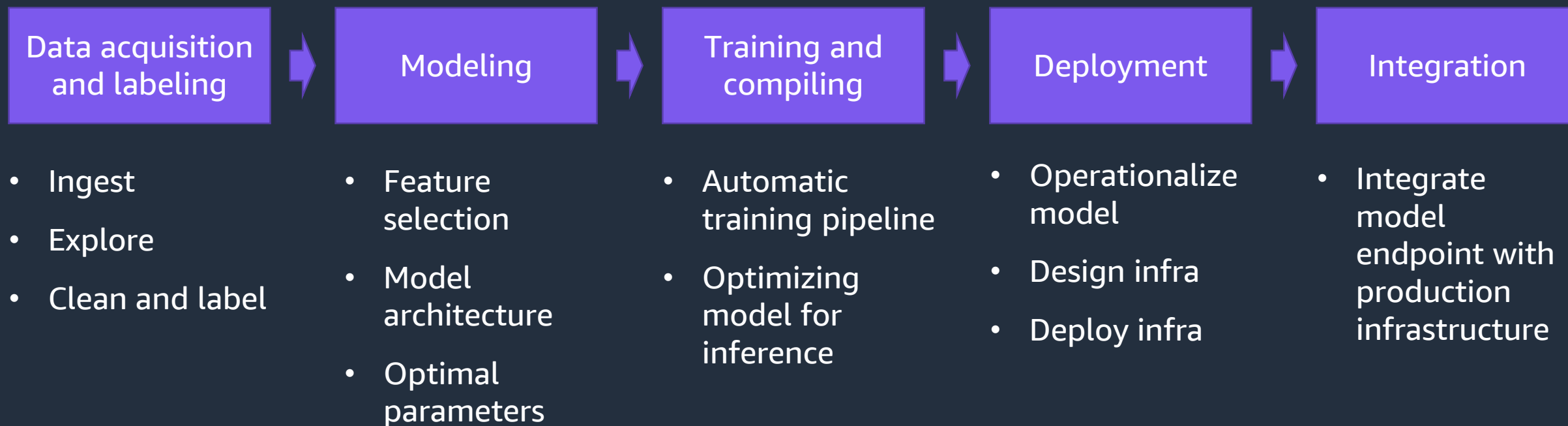
Framework for comparing low-code/no-code ML tools

Low-code/no-code AWS ML Services

SageMaker Canvas custom model demo

Summary

Machine Learning Pipeline



What's Low-code/no-code for ML

Low-code/
no-code ML



Low-effort/
no-effort ML

- People with domain knowledge can start getting value from ML
- Rapid deployment to get early customer feedback
- Speeding up bringing your model to the users

Low-code/no-code ML stack

Integrated ML	Integrated AutoML	MLaaS	AutoMLaaS	Pretrained Model	Managed pipeline
Gather dataset	Gather dataset	Gather dataset	Gather dataset	Gather dataset	Gather dataset
Label dataset	Label dataset	Label dataset	Label dataset	Label dataset	Label dataset
Build model	Build model	Build model	Build model	Build model	Build model
Train model	Train model	Train model	Train model	Train model	Train model
Compile model	Compile model	Compile model	Compile model	Compile model	Compile model
Deploy model	Deploy model	Deploy model	Deploy model	Deploy model	Deploy model
Integrate	Integrate	Integrate	Integrate	Integrate	Integrate

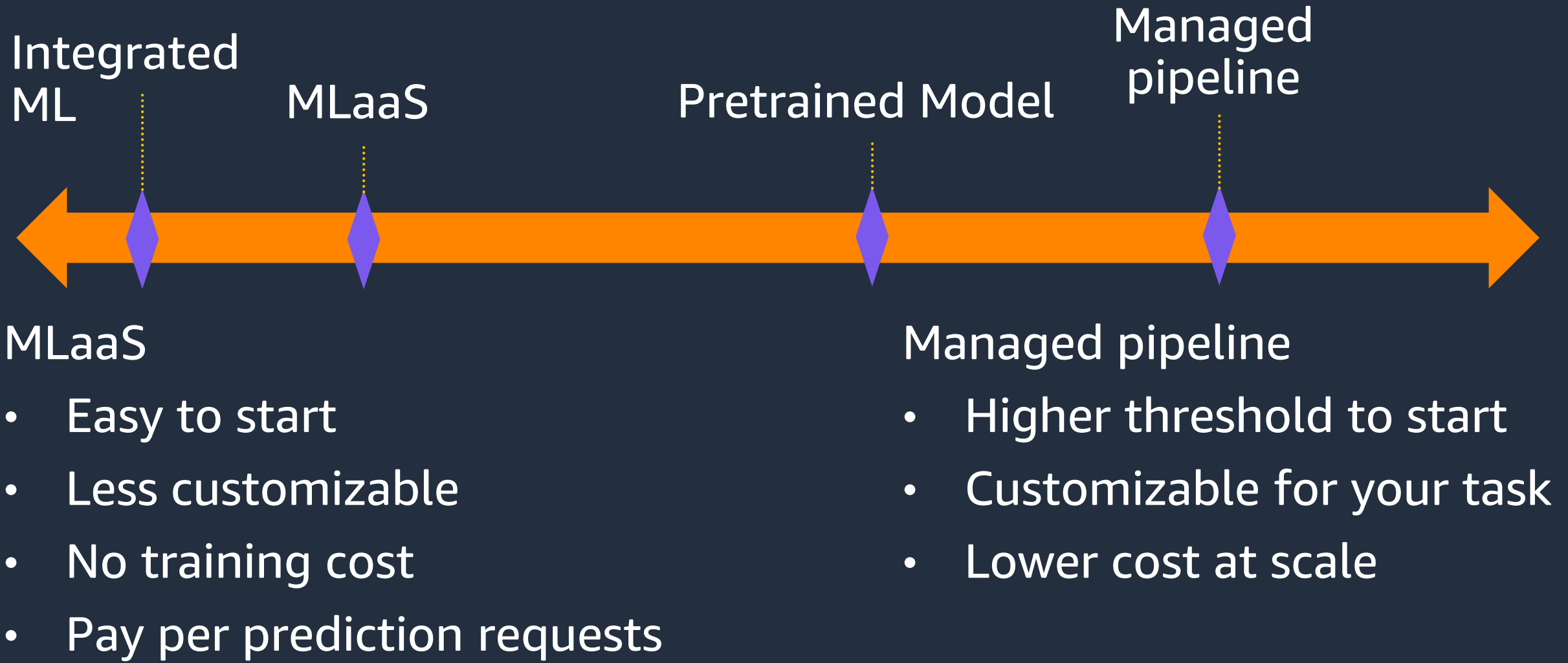
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Can be used by business analyst

Can be integrated by backend engineer

Low-code/no-code comparison



Low-code/no-code tools by ML Task

	Integrated ML	Integrated AutoML	MLaaS	AutoMLaaS	Pretrained Model
Visual tasks	Canvas, Rekognition, Textract	Canvas + Custom models	Rekognition, Textract	Rekognition Custom labels	JumpStart
Text tasks	Canvas, Comprehend	Canvas + Custom models	Comprehend	Comprehend Custom	JumpStart
Tabular tasks	N/A	Canvas, Autopilot	N/A	Autopilot	JumpStart

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New! Released March 30

Low-code/no-code Services

ML-as-a-Service Family

ML endpoint/service which you can call

- No need to provision it separately
- Pay per request
- Model can be retrained, but will have to be provisioned

Examples:

- Amazon Rekognition/Textextract => For images
- Amazon Comprehend => For text

Facial Analysis
Get full analysis of facial attributes, including confidence scores.

Next Steps: [Developer Guide >](#)

▼ Faces | Confidence

	looks like a face	99.9%
	appears to be female	100%
	smiling	92.8%
	appears to be happy	99.0%
	notwearing eyeglasses	99.8%
	notwearing sunglasses	94.4%
	eyes are open	94.8%
	mouth is closed	81.6%
	does not have a mustache	99.9%
	does not have a beard	99.2%

Show Less

► Request

► Response

Select A Sample Image

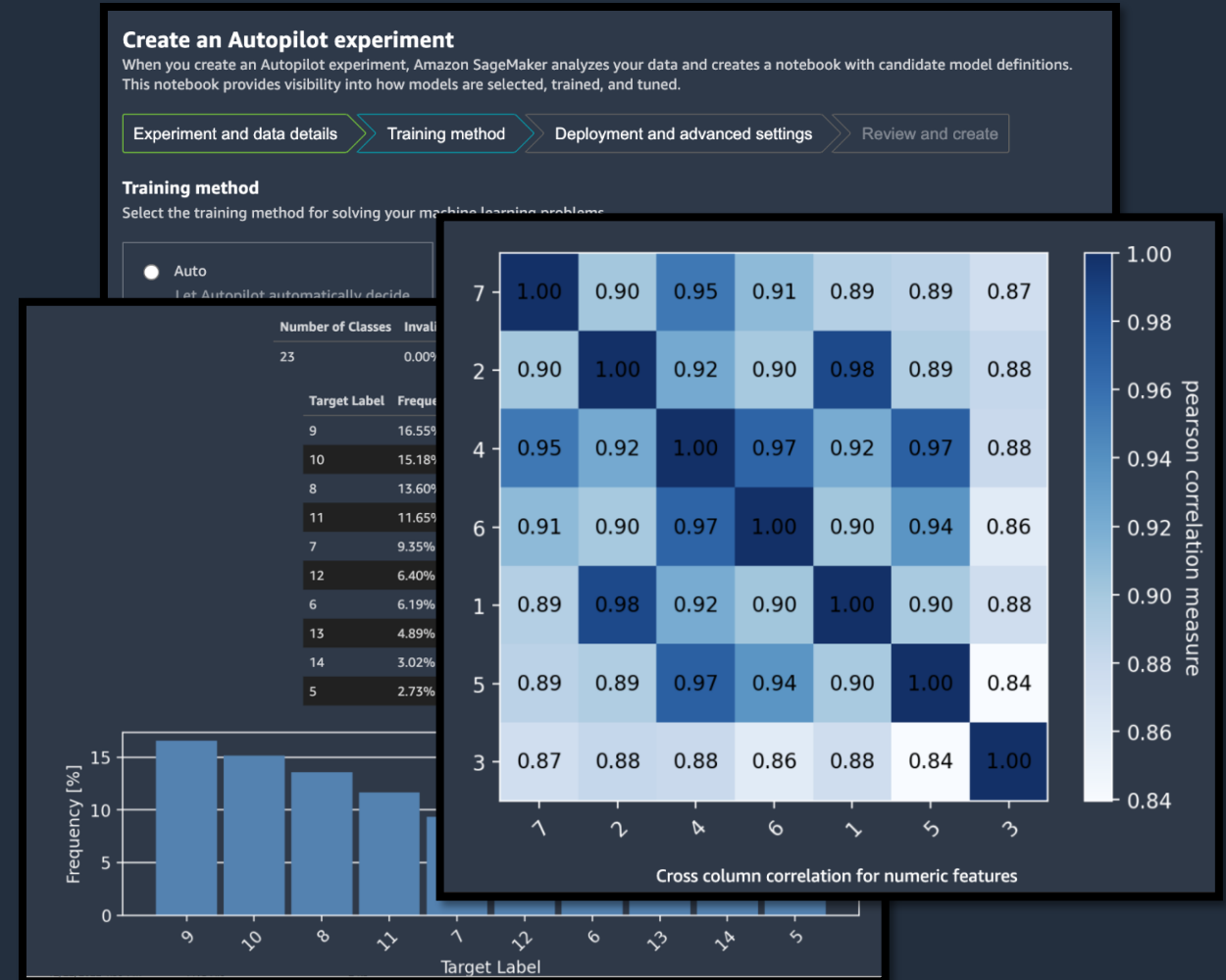
Use Your Own Image

or

SageMaker Autopilot

AutoML solution for tabular data without need for writing code or choosing architecture

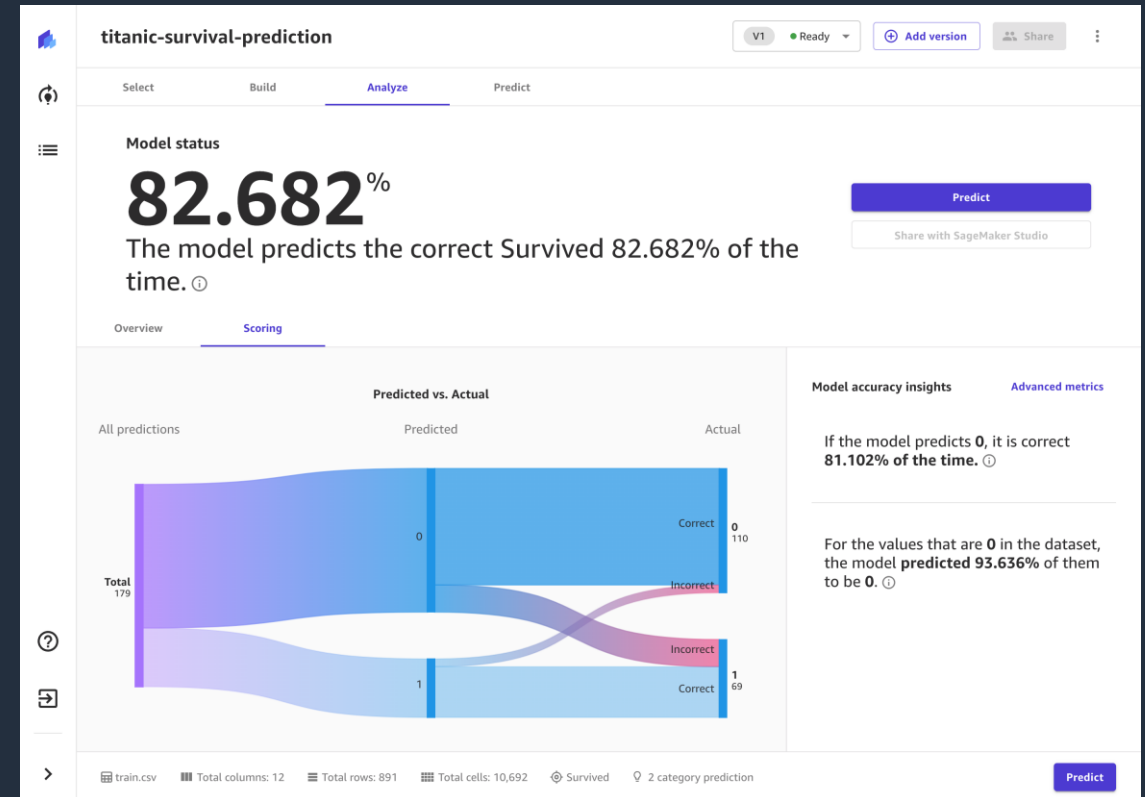
- Tries multiple models and chooses the best performing one
- Enables integration with SageMaker Data Wrangler for custom data preprocessing



Amazon SageMaker Canvas + Ready/Custom models

Visual, no-code machine learning interface with the ability to access ready-to-use models or automatically create ML models

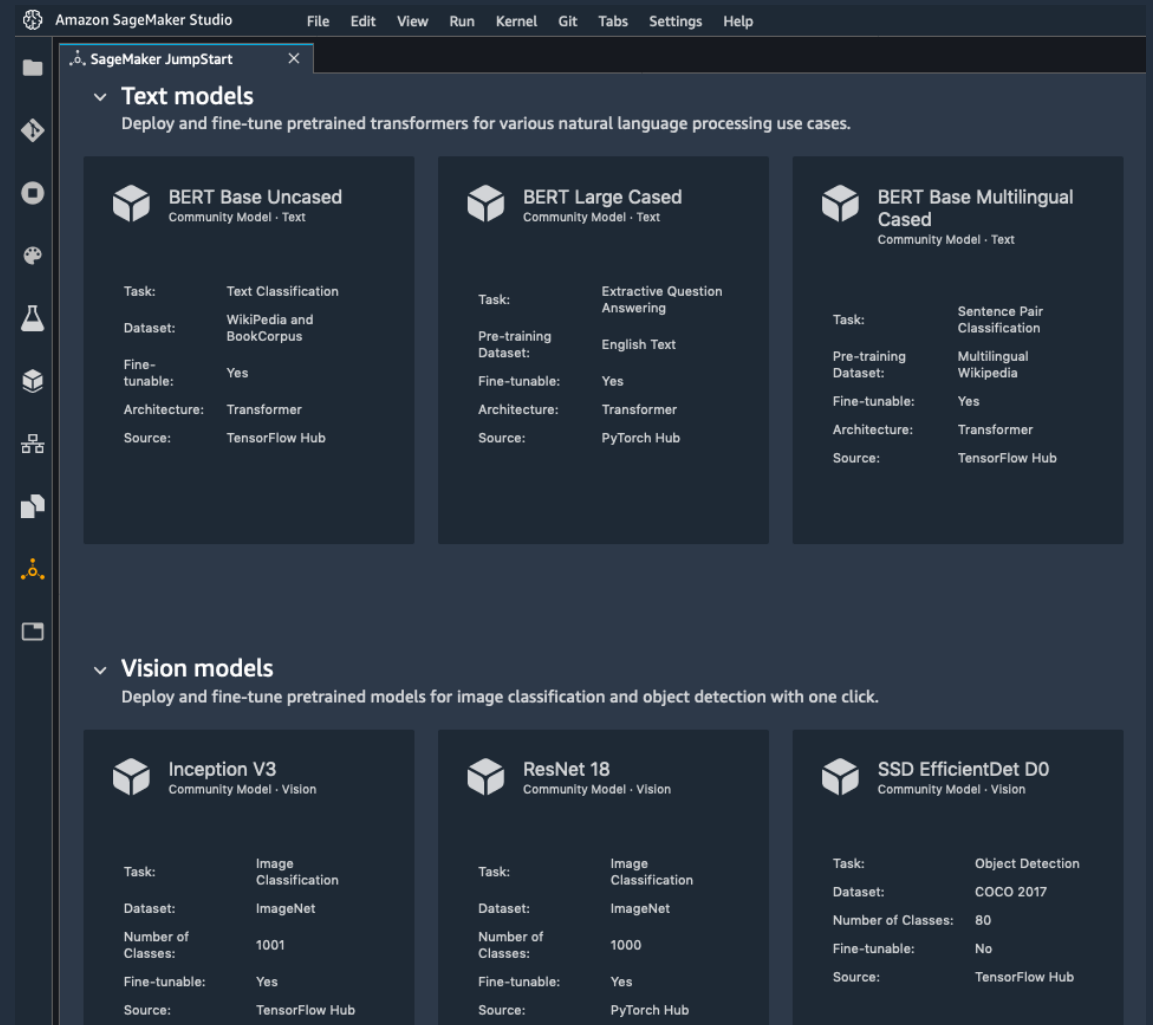
- No-code visual UI for ingesting, and exploring data
- No-code models – from ready-to-use models to custom models
- Supports multiple data sources



Amazon SageMaker JumpStart

Collection of pretrained proprietary and publicly available models with easy way to deploy them

- Collection is continuously updated with different types of models (e.g. foundational models like stable diffusion)
- One-click model deployment into your account and notebook to test it



Amazon SageMaker Studio

SageMaker JumpStart

Text models

Deploy and fine-tune pretrained transformers for various natural language processing use cases.

Model Name	Task	Dataset	Fine-tunable	Architecture	Source
BERT Base Uncased	Text Classification	Wikipedia and BookCorpus	Yes	Transformer	TensorFlow Hub
BERT Large Cased	Extractive Question Answering	English Text	Yes	Transformer	PyTorch Hub
BERT Base Multilingual Cased	Sentence Pair Classification	Multilingual Wikipedia	Yes	Transformer	TensorFlow Hub

Vision models

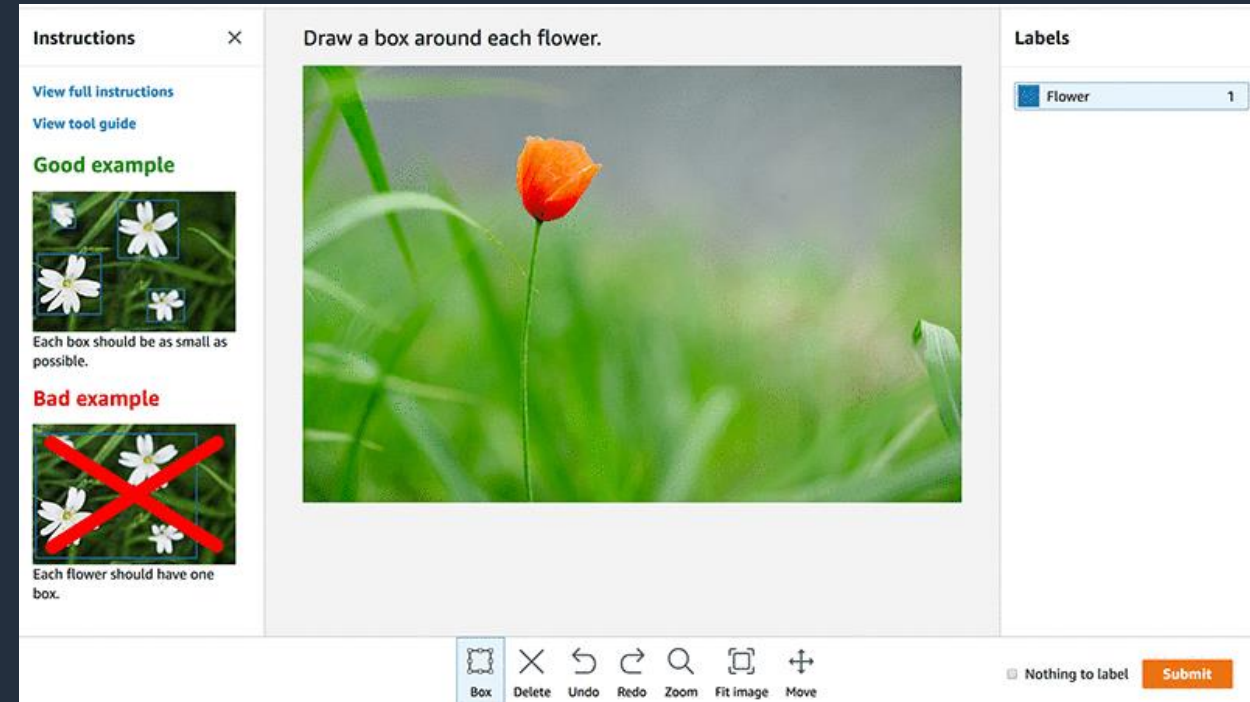
Deploy and fine-tune pretrained models for image classification and object detection with one click.

Model Name	Task	Dataset	Number of Classes	Fine-tunable	Source
Inception V3	Image Classification	ImageNet	1001	Yes	TensorFlow Hub
ResNet 18	Image Classification	ImageNet	1000	Yes	PyTorch Hub
SSD EfficientDet D0	Object Detection	COCO 2017	80	No	TensorFlow Hub

Amazon SageMaker Ground Truth

Fully managed data labeling service

- Supports human annotators through Amazon Mechanical Turk, third-party vendors, or private workforce
- ML-powered automation
- Supports different types of data including images, videos, texts



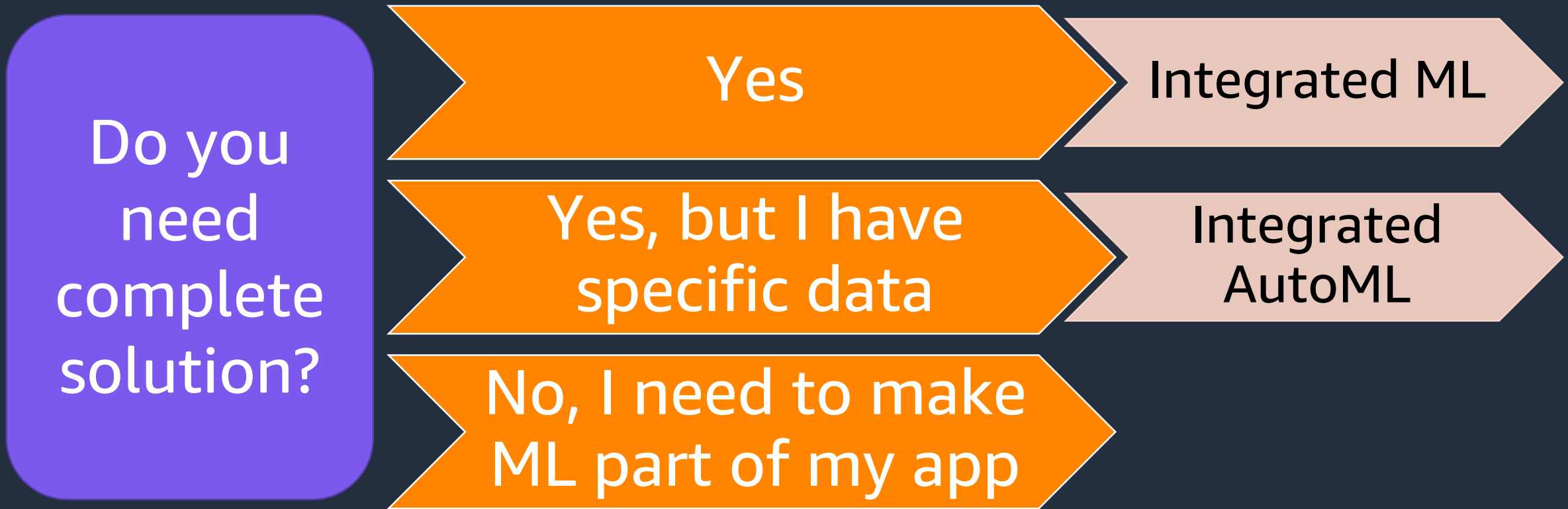
Pricing of Low-code/no-code tools

- Environment
 - Cost for running environment where your work
- Labeling
 - Cost for labeling object, by your or external workforce
- Training
 - Cost per training the model on labeled data
- Inference
 - Cost per infrastructure for making predictions

Pricing – Image classification

	Canvas + Rekognition	Canvas + custom models	Rekognition	Rekognition Custom Labels	Managed infra + Ground Truth
Environment	Per hour	Per hour	Free	Free	Free
Labeling	N/A	Free	N/A	Free	Per image
Training	N/A	Per hour	N/A	Per hour	Per infra
Predictions	Per image	Per hour	Per image	Per hour	Per infra

How to decide on the tool you need?



How to decide on the tool you need to integrate ML?

Does MLaaS solve your problem?

Yes

MLaaS

No, it doesn't perform well on my data

AutoMLaaS

No, it doesn't solve my type of task

Pretrained model

No, it's too expensive at my scale

Managed pipeline

SageMaker Canvas custom model demo

SageMaker Canvas custom model demo

- Log into SageMaker Canvas
- Upload images
- Train model for image classification
- Run model on images
- Provide feedback and retrain model

Summary

- Low-code/no-code ML tools can help you in different cases
- Even if it's not a tool which you end up with, it may be a good tool to start with
- AWS has a lot of tools available for different tasks and contexts



Thank you!

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