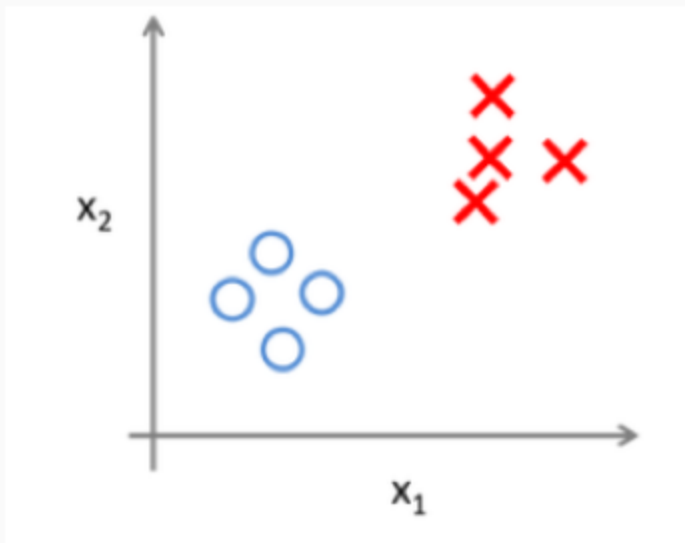


Amazon Sagemaker

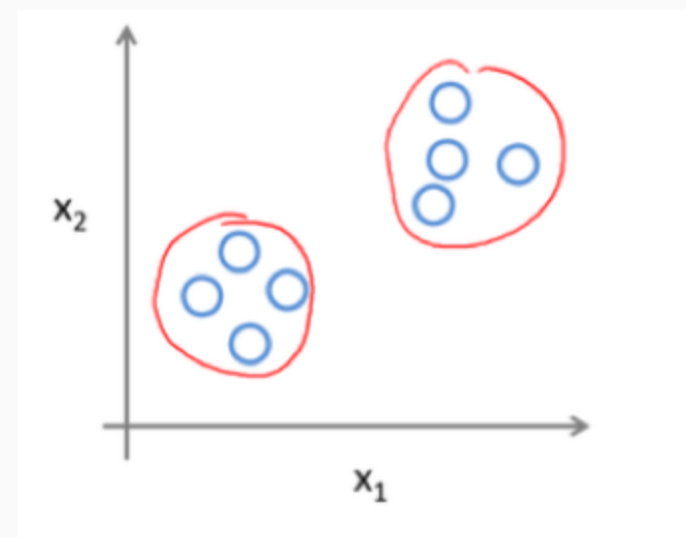
Machine Learning

- Aprendizaje automático o aprendizaje automatizado o aprendizaje de máquinas
- Del inglés, machine learning.
- En el aprendizaje de automático un software observa datos, construye un modelo basado en esos datos y utiliza ese modelo a la vez como una hipótesis acerca del mundo.
- Nos puede servir para predecir o para analizar esos datos.

- Aprendizaje Supervisado: Los ejemplos vienen con una variable de salida o etiqueta que queremos aprender.
- Aprendizaje No Supervisado: No existe una variable o concepto objetivo. Nos interesa descubrir patrones o relaciones que expliquen los datos.



Aprendizaje Supervisado
















Aprendizaje No Supervisado

- Amazon SageMaker ayuda a los científicos de datos y a los desarrolladores a preparar, crear, entrenar e implementar con rapidez modelos de aprendizaje automático de alta calidad
- <https://aws.amazon.com/es/sagemaker/>


The AWS ML Stack

Broadest and most complete set of Machine Learning capabilities

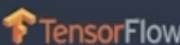
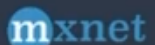

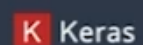

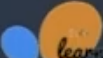

AI SERVICES

VISION	SPEECH		TEXT			SEARCH	CHATBOTS	PERSONALIZATION	FORECASTING	FRAUD	DEVELOPMENT	CONTACT CENTERS
												
Amazon Rekognition	Amazon Polly	Amazon Transcribe <small>+Medical</small>	Amazon Comprehend <small>+Medical</small>	Amazon Translate	Amazon Textract	Amazon Kendra	Amazon Lex	Amazon Personalize	Amazon Forecast	Amazon Fraud Detector	Amazon CodeGuru	Contact Lens <small>For Amazon Connect</small>

ML SERVICES

 Amazon SageMaker	Ground Truth	AWS Marketplace for ML	SageMaker Studio IDE								Neo	Augmented AI
			Built-in algorithms	Notebooks	Experiments	Processing	Model training & tuning	Debugger	Autopilot	Model hosting	Model Monitor	

ML FRAMEWORKS & INFRASTRUCTURE

 TensorFlow		 mxnet	 GLUON		 Keras	Deep Learning AMLs & Containers		GPUs & CPUs	Elastic Inference	Inferentia	FPGA
 PYTORCH			 fastai		DeepGraphLibrary						

Play (k)

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Amazon SageMaker

Prepare →

SageMaker Ground Truth
Label training data for machine learning

Información general acerca de SageMaker

SageMaker Data Wrangler NEW
Aggregate and prepare data for machine learning

SageMaker Processing
Built-in Python, BYO R/Spark

SageMaker Feature Store NEW
Store, update, retrieve, and share features

SageMaker Clarify NEW
Detect bias and understand model predictions

Build →

SageMaker Studio Notebooks
Jupyter notebooks with elastic compute and sharing

Built-in and Bring-your-own Algorithms
Dozens of optimized algorithms or bring your own

Local Mode
Test and prototype on your local machine

SageMaker Autopilot
Automatically create machine learning models with full visibility

SageMaker JumpStart NEW
Pre-built solutions for common use cases

Train & tune →

One-click Training
Distributed infrastructure management

SageMaker Experiments
Capture, organize, and compare every step

Automatic Model Tuning
Hyperparameter optimization

Distributed Training Libraries NEW
Training for large datasets and models

SageMaker Debugger NEW
Debug and profile training runs

Managed Spot Training
Reduce training cost by 90%

Deploy & manage →

One-click Deployment
Fully managed, ultra low latency, high throughput

Kubernetes & Kubeflow Integration
Simplify Kubernetes-based machine learning

Multi-Model Endpoints
Reduce cost by hosting multiple models per instance

SageMaker Model Monitor
Maintain accuracy of deployed models

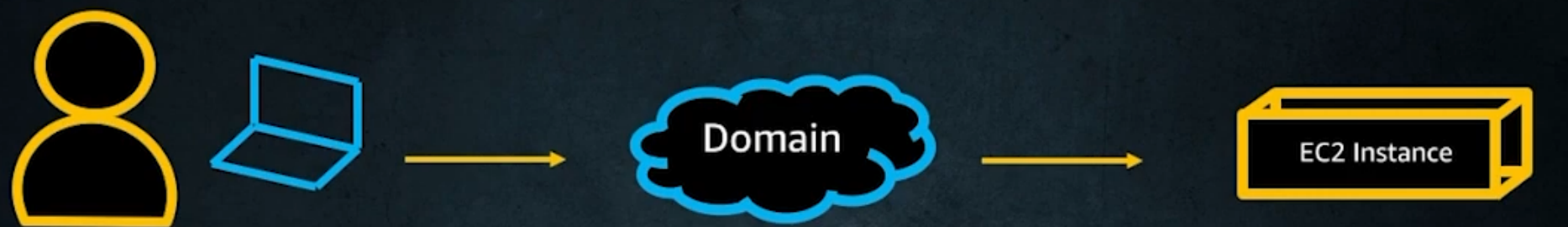
SageMaker Edge Manager NEW
Manage and monitor models on edge devices

SageMaker Pipelines NEW
Workflow orchestration and automation

SageMaker Studio

Integrated development environment (IDE) for ML

Amazon SageMaker Studio



You!

Your IDE

Your Compute

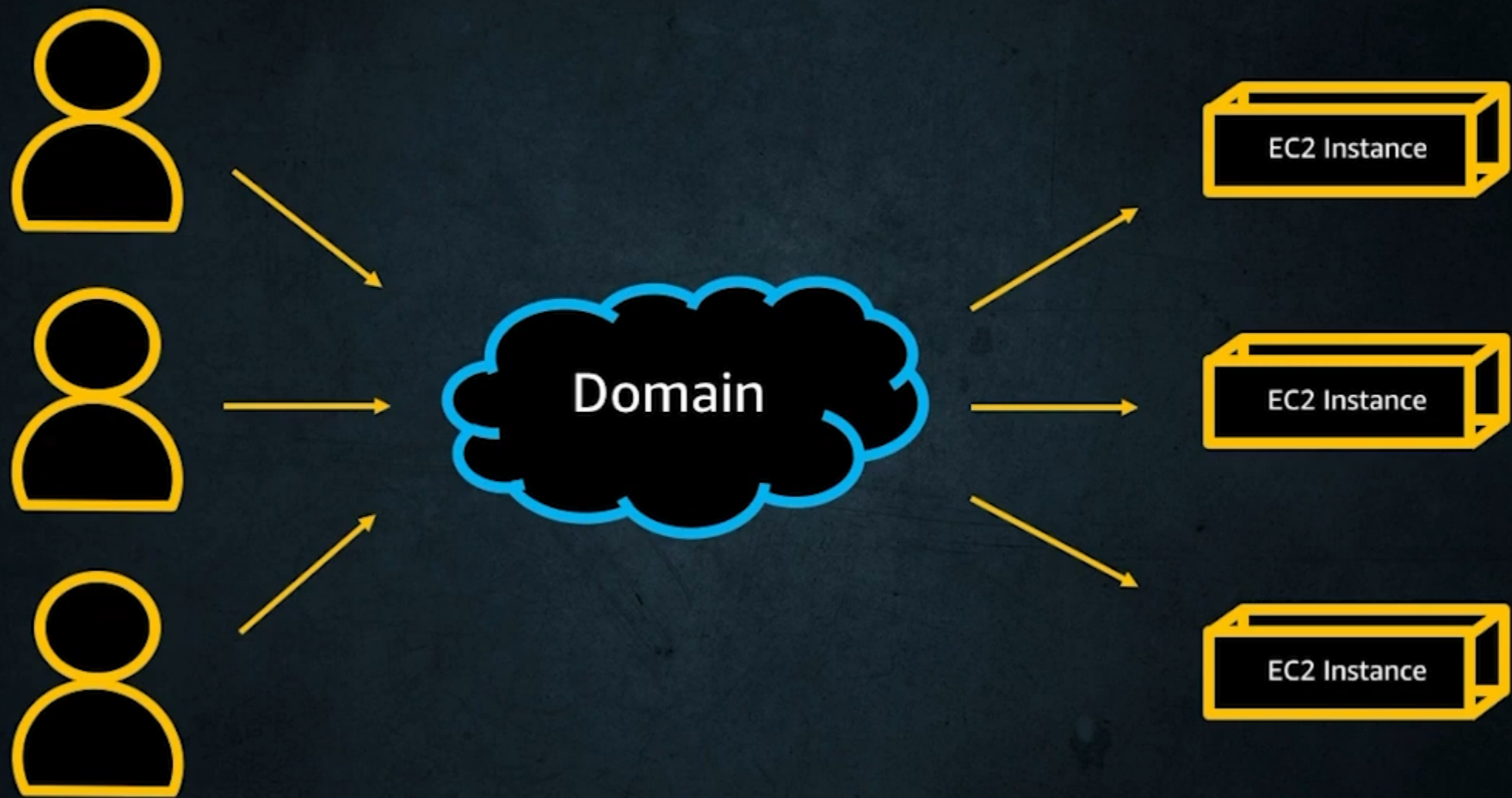
- Can enable IAM or SSO
- Fast notebook start-up
- Consolidated experience

Low-lift / automatic feature access

- Autopilot
- Experiments
- Debugger
- Model Monitoring
- Versioning
- Endpoint management

- Can create a shareable link with package dependencies in single click
- Billing is per usage, not up time.
- Change environments per project

1-Click Notebook Sharing



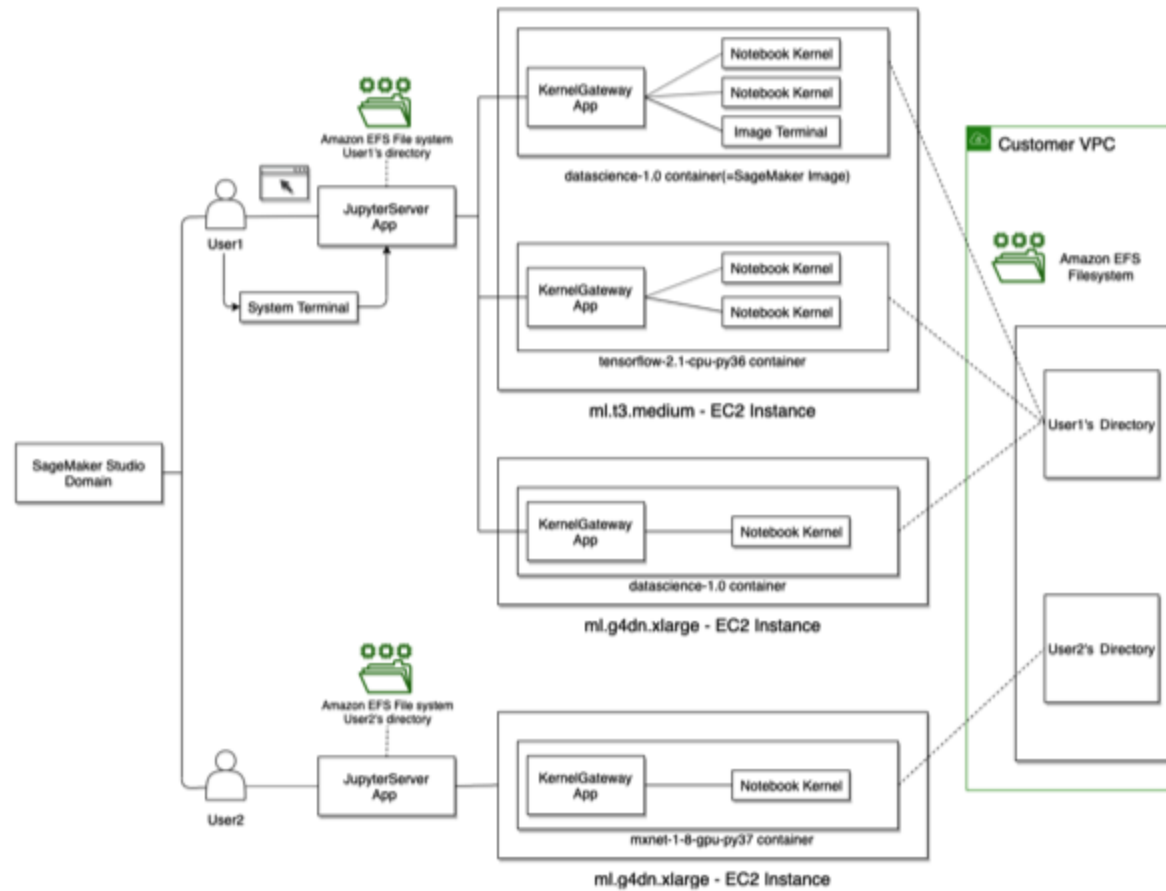
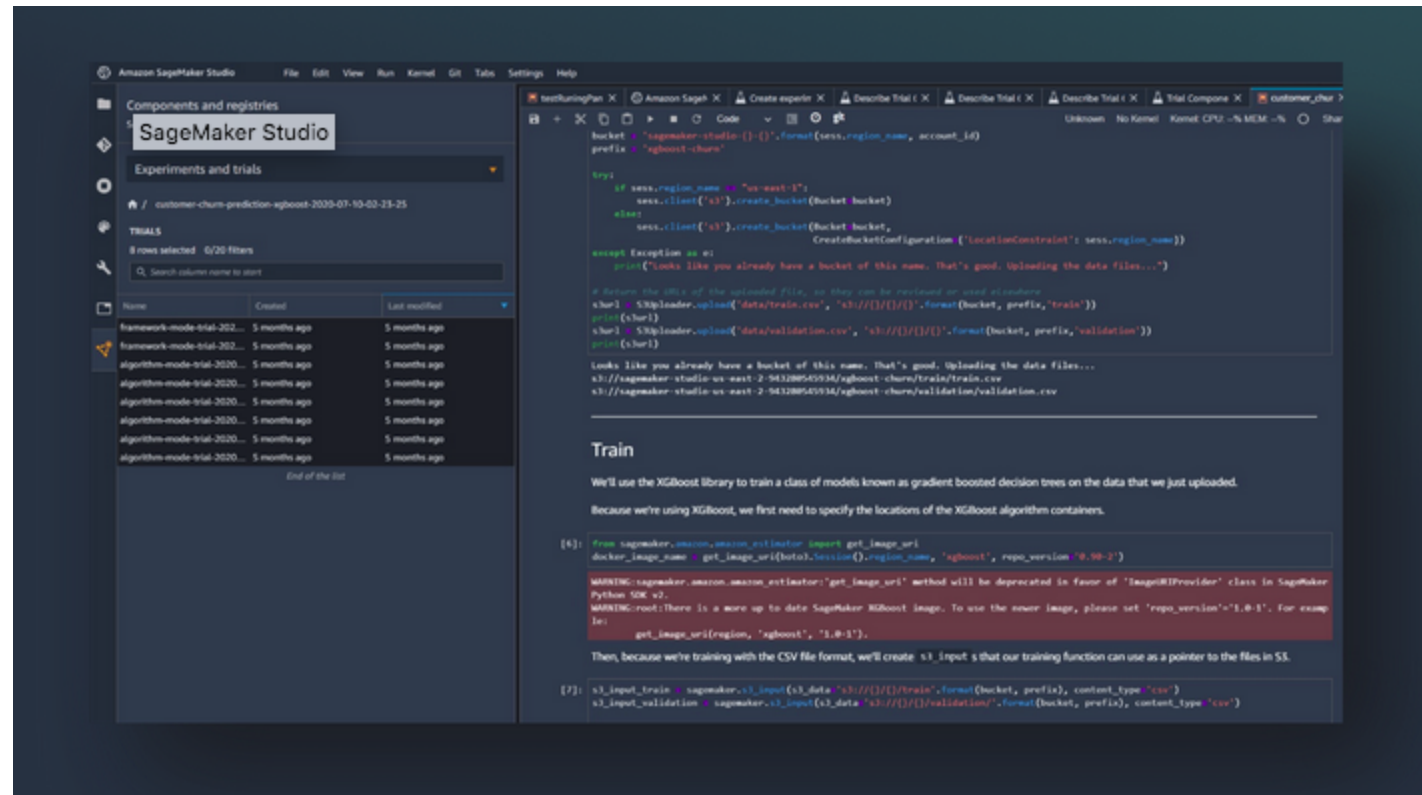


Figure 2.10 – The infrastructure behind the SageMaker Studio IDE

SageMaker Studio



Precios

Amazon SageMaker capability	Free Tier usage per month for the first 2 months
Studio notebooks, and notebook instances	250 hours of ml.t3.medium instance on Studio notebooks OR 250 hours of ml.t2 medium instance or ml.t3.medium instance on notebook instances
RStudio on SageMaker	250 hours of ml.t3.medium instance on RSession app AND free ml.t3.medium instance for RStudioServerPro app
Data Wrangler	25 hours of ml.m5.4xlarge instance
Feature Store	10 million write units, 10 million read units, 25 GB storage
Training	50 hours of m4.xlarge or m5.xlarge instances
Real-Time Inference	125 hours of m4.xlarge or m5.xlarge instances
Serverless Inference	150,000 seconds of inference duration
Canvas	750 hours/month for session time, and up to 10 model creation requests/month, each with up to 1 million cells/model creation request

- <https://aws.amazon.com/es/sagemaker/pricing/>

Ejercicio

- Crea un nuevo dominio y usuario.
- Lanza Sagemaker Studio.

Docs

- *Getting Started with Amazon SageMaker Studio* by Michael Hsieh.



- Sagemaker Developer Guide:
<https://docs.aws.amazon.com/sagemaker/latest/dg/whatis.html>
- Amazon SageMaker Python SDK:
<https://sagemaker.readthedocs.io/en/stable/index.html>
- Sagemaker Examples: <https://sagemaker-examples.readthedocs.io/en/latest/index.html>

