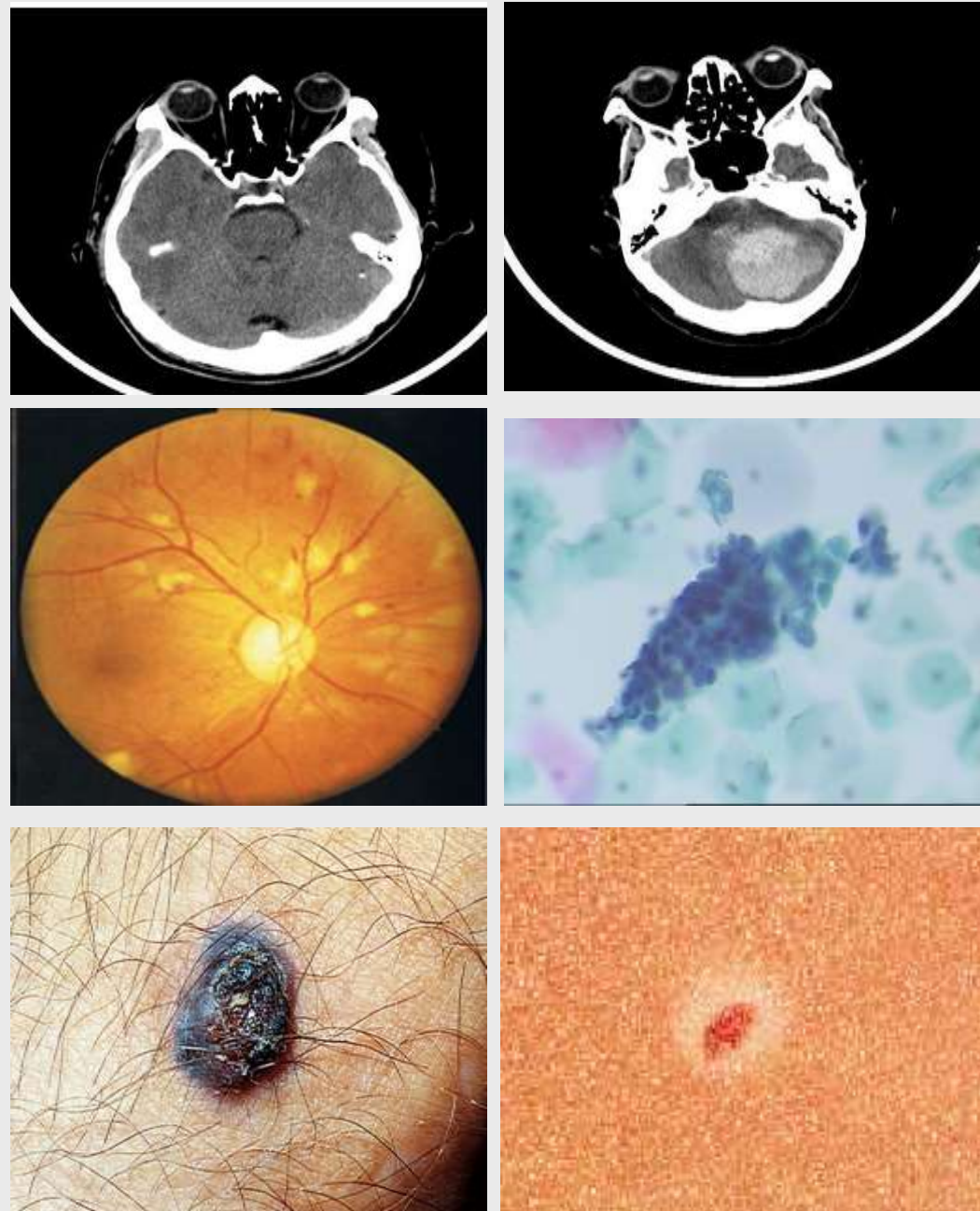


PowerAI Vision

IBM PowerAI Vision: "Point-and-Click" AI for Images & Video

Label Image or Video Data



Auto-Train AI Model

My DL Tasks / Create Task

New DL Task - Build Image Classifier

1 Choose Dataset
Select or create dataset

2 Build Model
Build model based on selected dataset

3 Deploy And Test
Deploy trained model and run test

Name of Image Classifier:

Select dataset: or

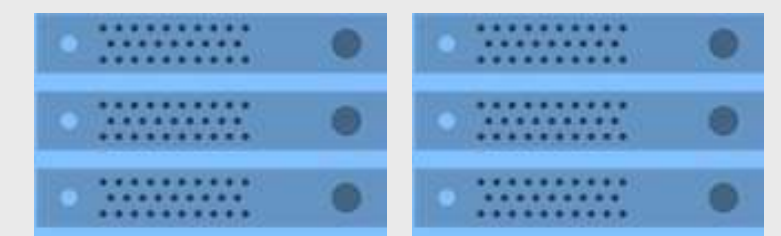
Latest Status: training 🔄

Train Iteration: 101
Train Loss: 0.62105

Test Iteration: 100
Test Loss: 0.47246
Accuracy: 0.81771

Estimated left time: 0 seconds

Package & Deploy AI Model



LABEL → TRAIN → DEPLOY

Value proposition

➤ AI Made Simple

- Clicker tools to train models with no coding or expertise in technologies

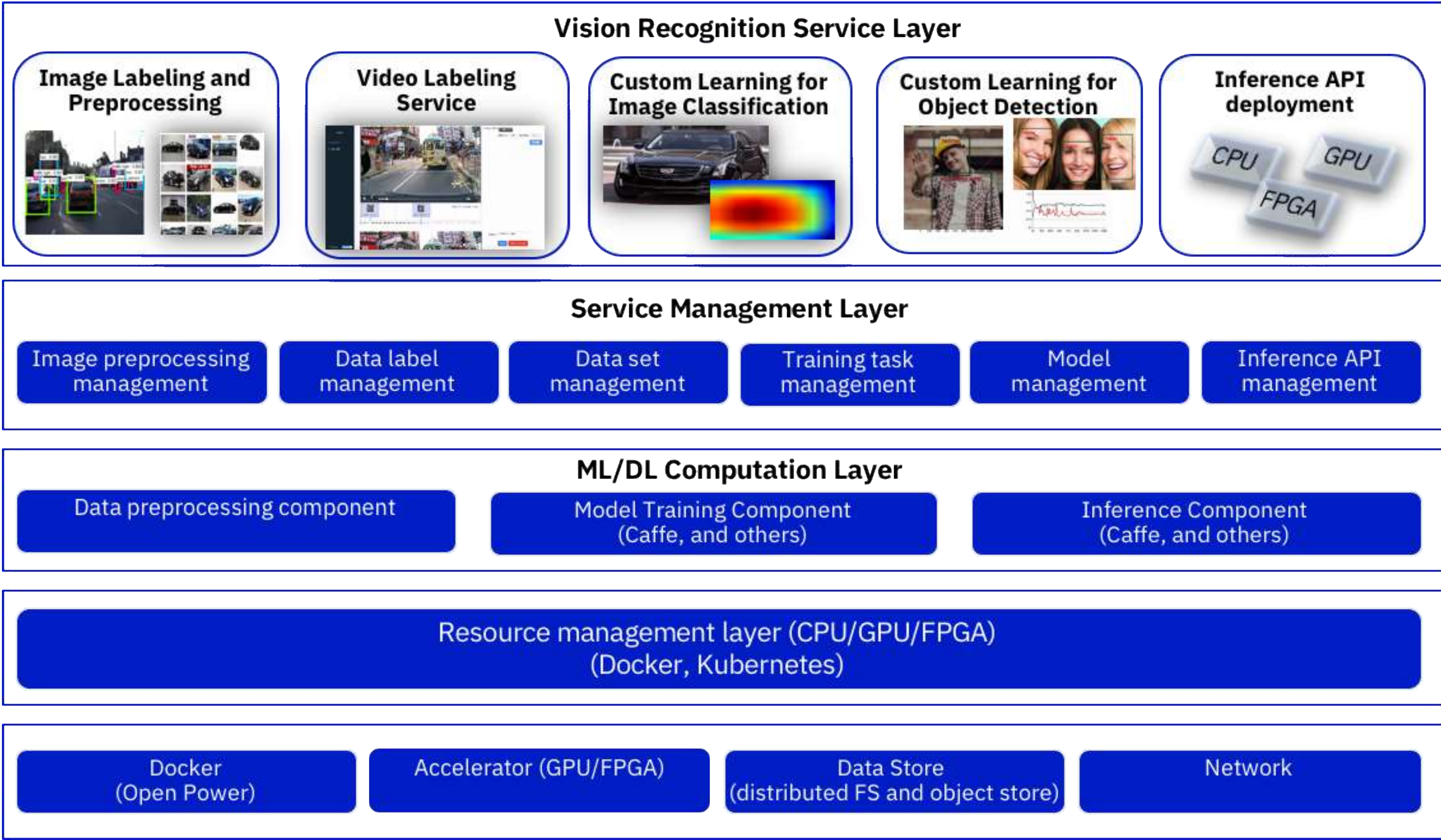
➤ End to End ecosystem

- Disjoint activities streamlined into simple sequential tasks
- Life cycle management for models and data
- Flexibility on inference- train on server but deploy on prem, cloud or edge

➤ Enterprise grade offering

- Collaborative platform between several personas
- Open architecture extensible with existing enterprise assets
- Backed with support and services from IBM and business partners

IBM PowerAI Vision: Deep Learning Development Platform for Computer Vision



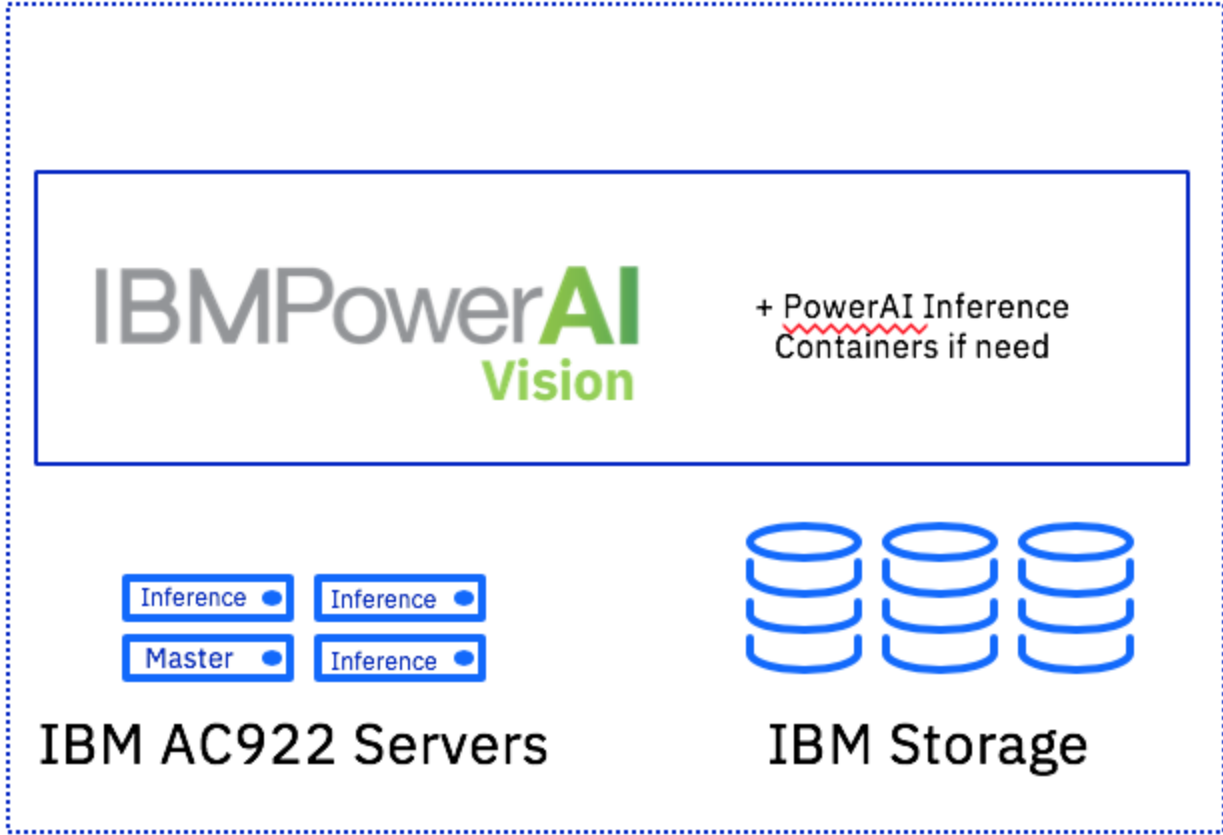
PowerAI Vision on bare metal server

Single Training Server and Multiple Inference Servers

ON-PREM

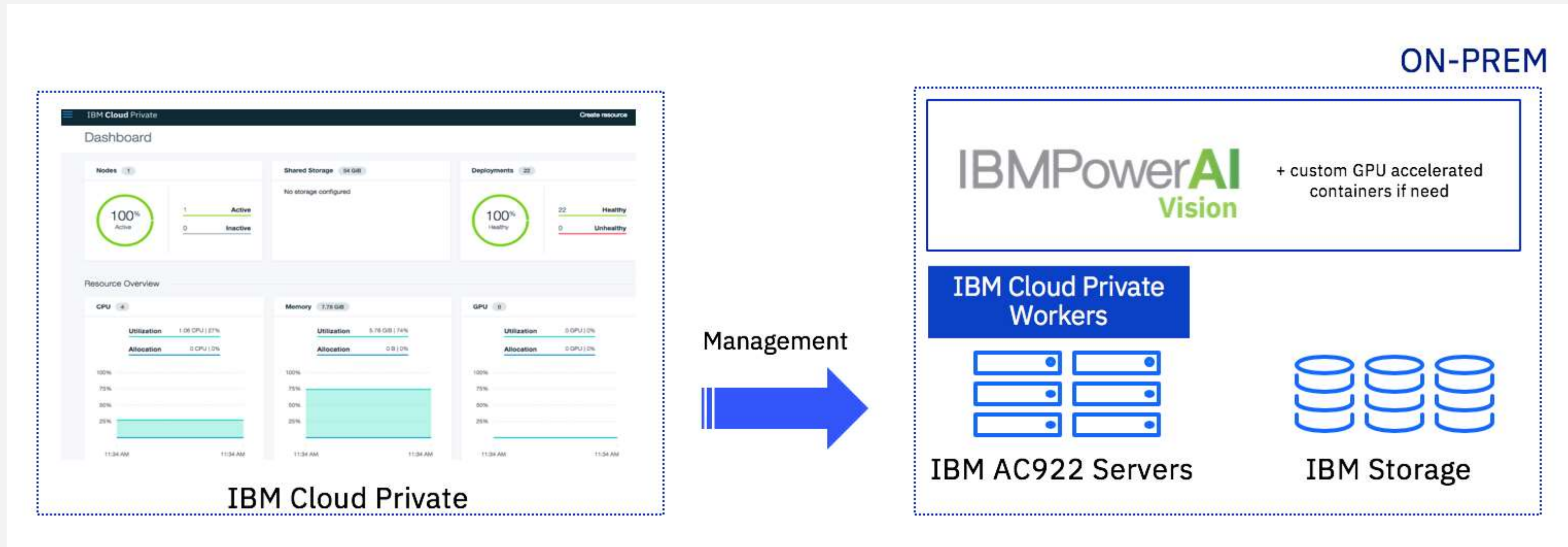


Running on Master
➔



PowerAI Vision on Kubernetes Cluster

IBM Cloud Private integration with PowerAI Vision



Core Capabilities

Semi-Automatic Labeling from video content

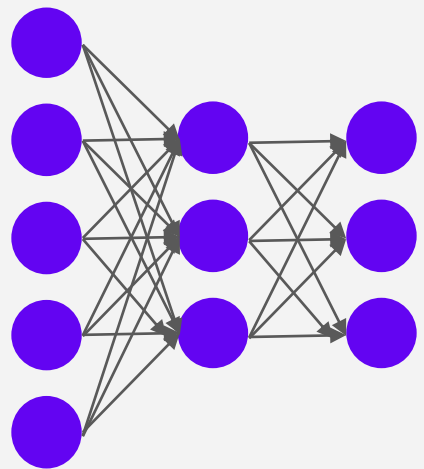
with PowerAI Vision

Manually Label



Define Labels
Manually Label Some
Images / Video Frames

Train DL Model



Use Trained DL Model



Run Trained DL Model
on Entire Input Data to
Generate Labels

Correct Labels on
Some Data



Manually Correct
Labels on Some Data

Repeat Till Labels Achieve Desired Accuracy

Augment limited datasets for higher accuracy

work with limited data

- Generate variety of images for initial datasets
- Software can apply filters to augment data and increase images for training
- Augmented data reduces overfitting for small datasets and increases accuracy



Augment data

Select the filters to use to augment your data. A new data set will be created that contains the original data as well as additional images created by using these filters. Visit the [IBM Knowledge Center](#) for more information about data augmentation.

<input checked="" type="checkbox"/> Blur		<input type="checkbox"/> Color	
<input type="checkbox"/> Sharpen		<input type="checkbox"/> Rotate	
<input type="checkbox"/> Crop		<input type="checkbox"/> Noise	
<input type="checkbox"/> Vertical flip		<input type="checkbox"/> Horizontal flip	

Blur sample

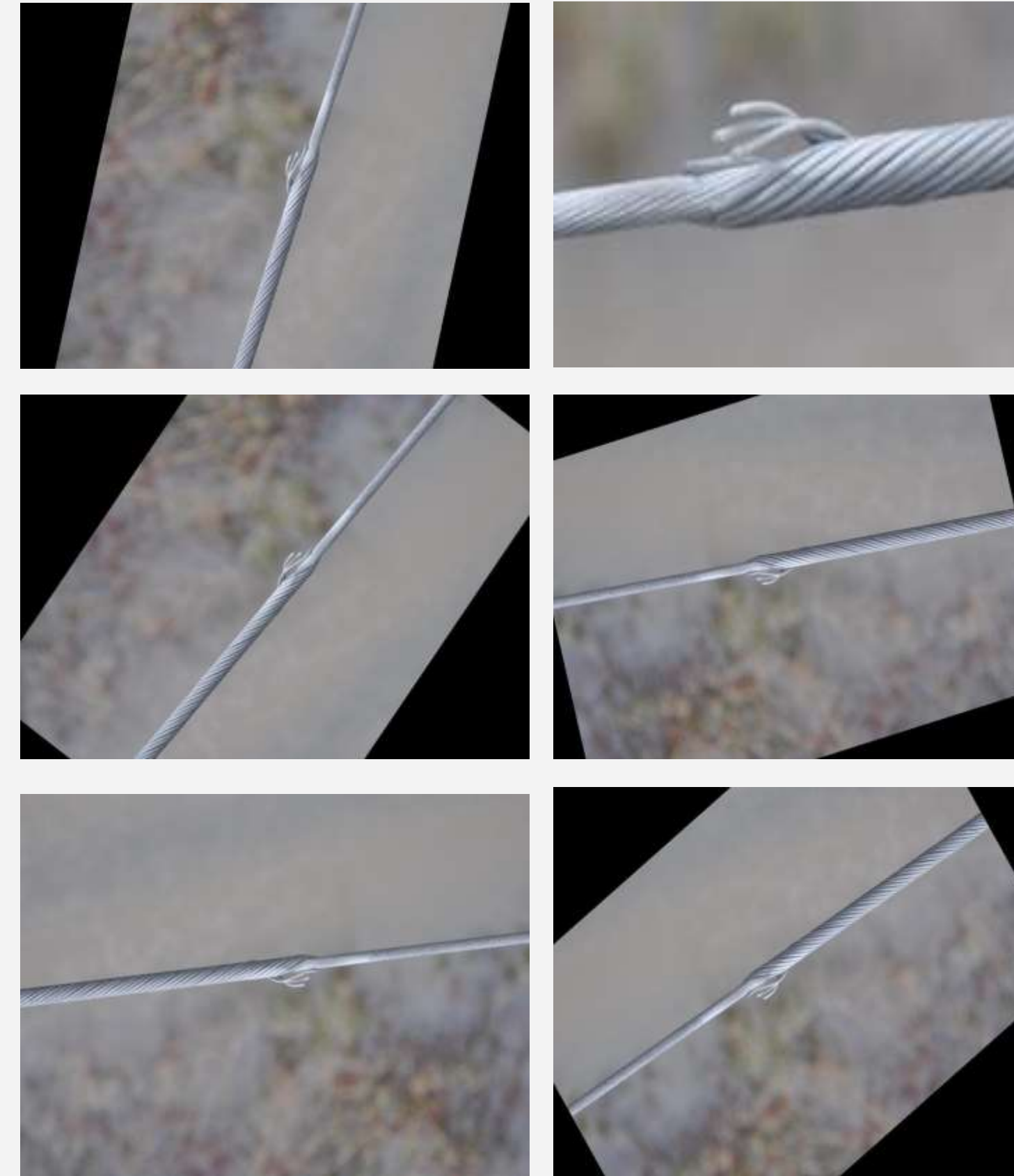
Gaussian blur
0 100 100

Motion blur
0 100 100

Selected items in current data set: 92
New items to create: 920
Total items in new data set: 1012

Cancel Continue

Limited dataset



Inbuilt augmentation algorithms

Prebuilt models

jump start solutions

- Prebuilt base-models for known objects around us
- Prebuilt base-models transfer learn faster on the defined topics
- Prebuilt base-models result in higher precision networks



Add Dataset - Image Classification

DataSet Name

Scenario -- Flower

Flower (various flowers)

Landscape (mountain, coast, forest, country side)

Chinese food (dumpling, rice, noodle, seafood, etc.)

Action (fishing, reading, climbing, etc.)

Scene (airport, street, building, campus, etc.)

Face (human face)

Vehicle (Jeep, Car, Sport Car, SUV, Van)

Others (other scenarios)

Cancel Add Dataset

PowerAI Vision APIs

Inference APIs for Object Detection (example)

Developer could use these APIs for object detection with the deployed model in PowerAI Vision from any IP device

<http://IP:PORT/> (of the deployed inference instance)

/test

GET: Only to test if the monitor service is running.

/detect_url

GET: Upload image with image url and detect objects

/detect_upload

POST: Post image file and do the object detection

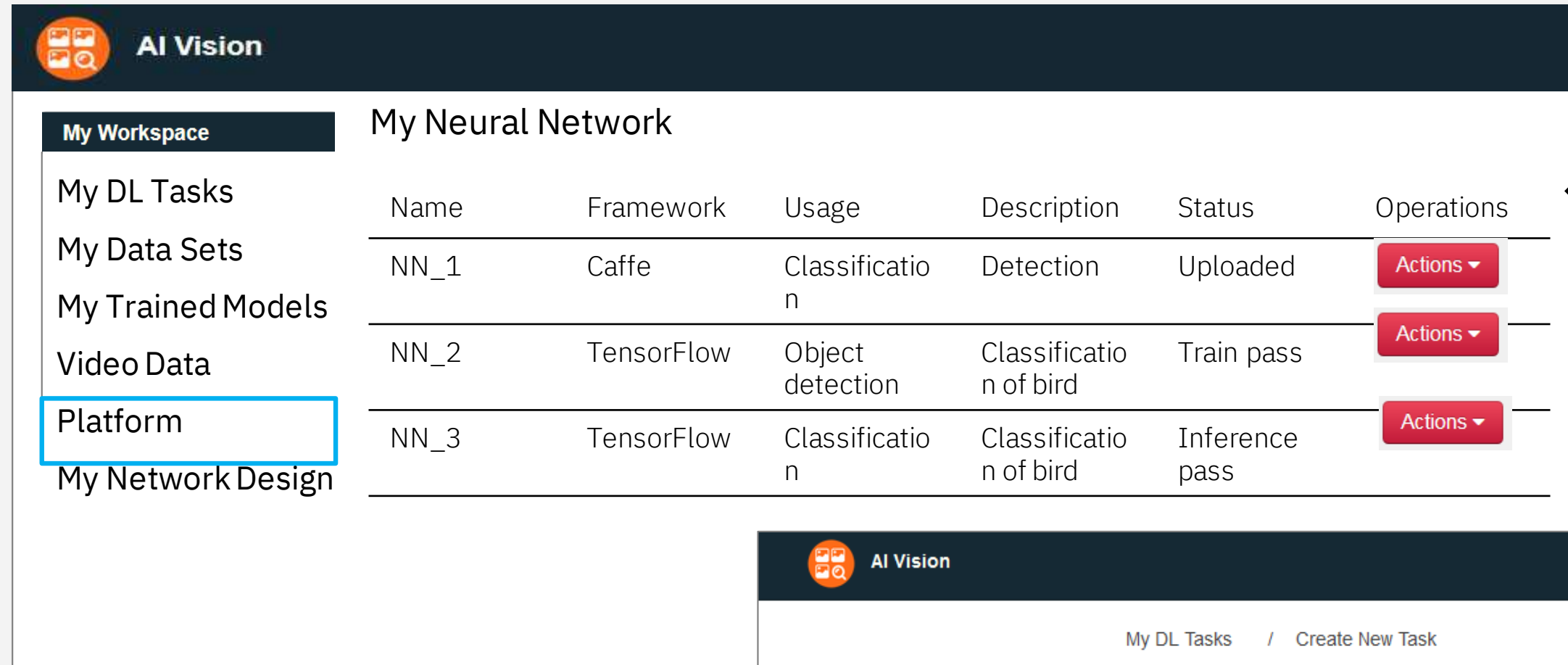
Inference return:

```
{'confidence': 0.9038739204406738, 'ymax': 145, 'label': 'badge', 'xmax': 172, 'xmin': 157, 'ymin': 123}
```



RESTful API
GET PUT POST DELETE

Training: Import Custom models

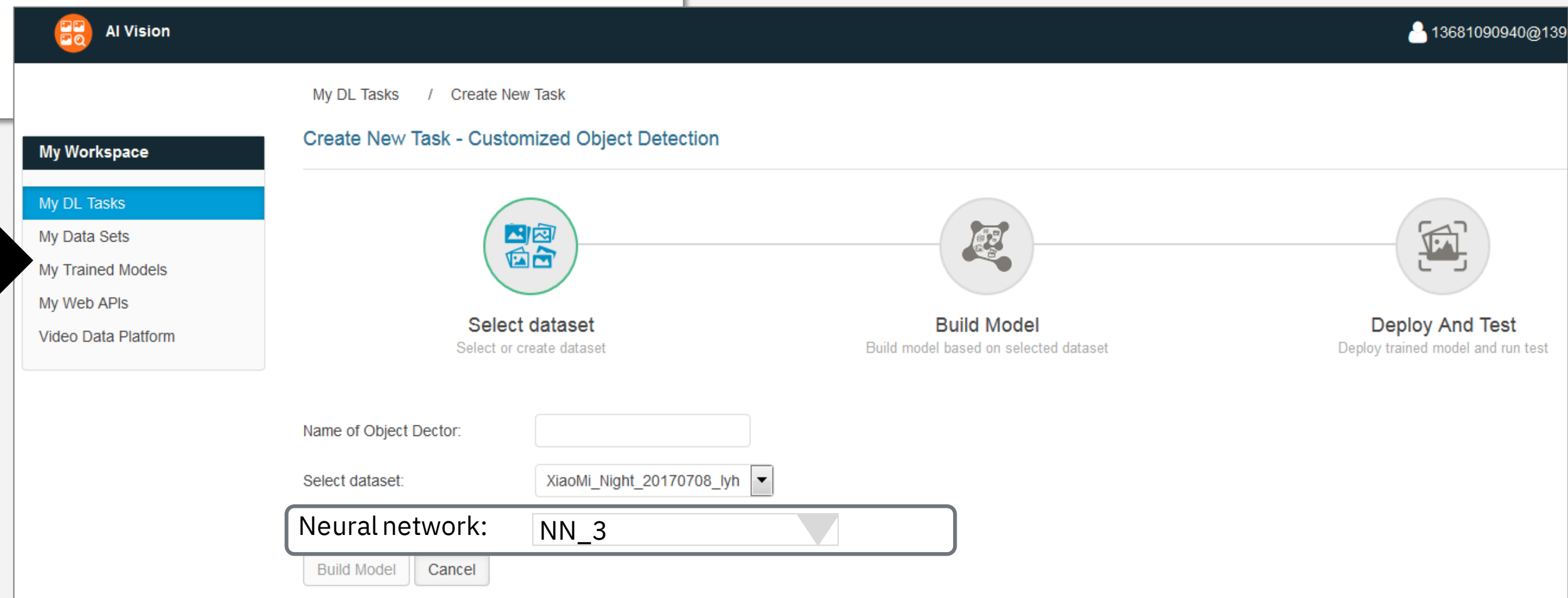


The screenshot shows the AI Vision dashboard with a sidebar on the left containing navigation items: My Workspace, My DL Tasks, My Data Sets, My Trained Models, Video Data, Platform (highlighted with a blue box), and My Network Design. The main area is titled 'My Neural Network' and contains a table with the following data:

Name	Framework	Usage	Description	Status	Operations
NN_1	Caffe	Classification	Detection	Uploaded	Actions ▾
NN_2	TensorFlow	Object detection	Classification of bird	Train pass	Actions ▾
NN_3	TensorFlow	Classification	Classification of bird	Inference pass	Actions ▾

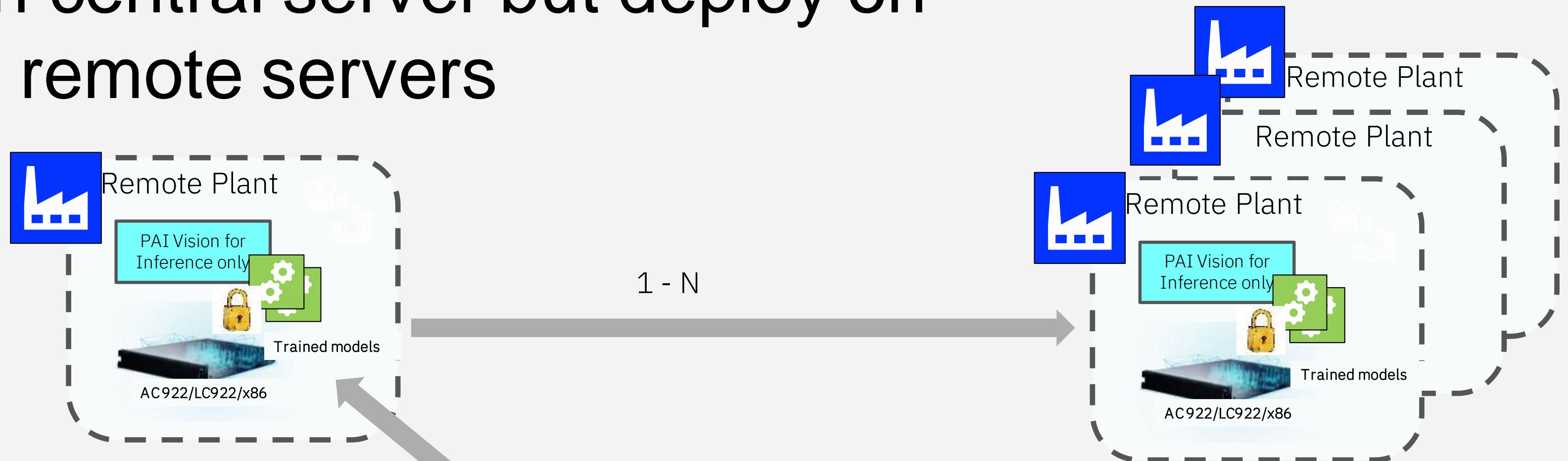
A large black arrow points from the 'Actions' button of the NN_3 row towards the right-hand text.

- Support TensorFlow modeller to develop custom neural network, then import into PowerAI Vision
- Train and deploy custom neural networks






The screenshot shows the 'Create New Task' workflow in AI Vision. The breadcrumb is 'My DL Tasks / Create New Task'. The title is 'Create New Task - Customized Object Detection'. The workflow consists of three steps: 'Select dataset' (Select or create dataset), 'Build Model' (Build model based on selected dataset), and 'Deploy And Test' (Deploy trained model and run test). Below the workflow, there are input fields: 'Name of Object Detector' (empty), 'Select dataset' (dropdown menu with 'XiaoMi_Night_20170708_lyh' selected), and 'Neural network:' (dropdown menu with 'NN_3' selected). At the bottom, there are 'Build Model' and 'Cancel' buttons. A large black arrow points from the 'Platform' item in the first screenshot to the 'My DL Tasks' item in this screenshot.

Train on central server but deploy on several remote servers



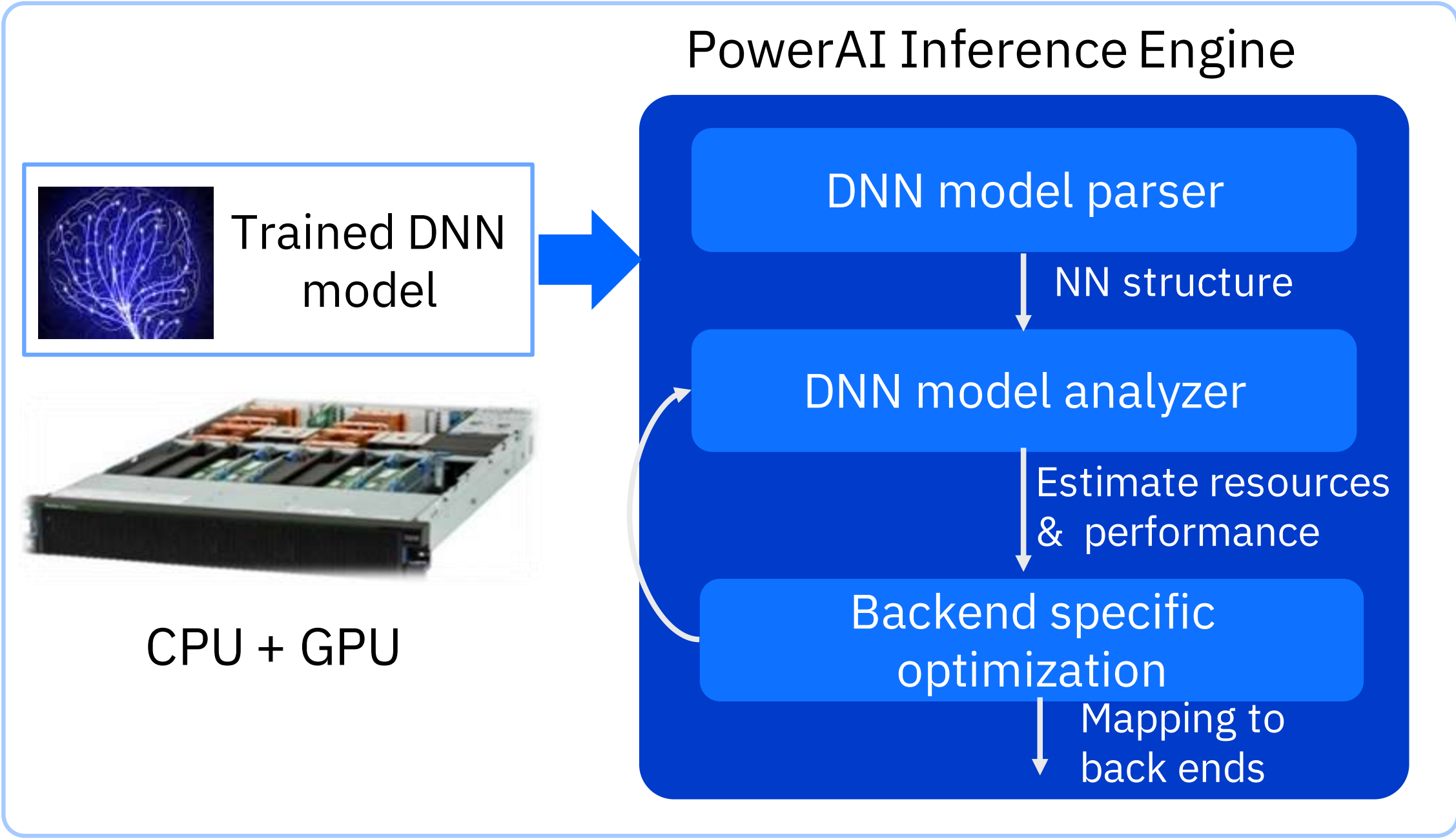
1. Manually export trained models from Central server to remote locations
2. Import and deploy models with Inference-only license of PowerAI Vision
3. Once the models are deployed, each plant can work stand alone for inference.
4. Supports Power servers with minimum of one GPU

-  Provided in MVP
-  New feature (Inference-only)
-  Models trained on PAI Vision; Password protected

PowerAI Inference Engine (PIE)

Automatically Map Trained AI Models to Cloud or Edge

Data Center: Train model & Compile to Edge



Map to Different Platforms

Cloud or Edge

