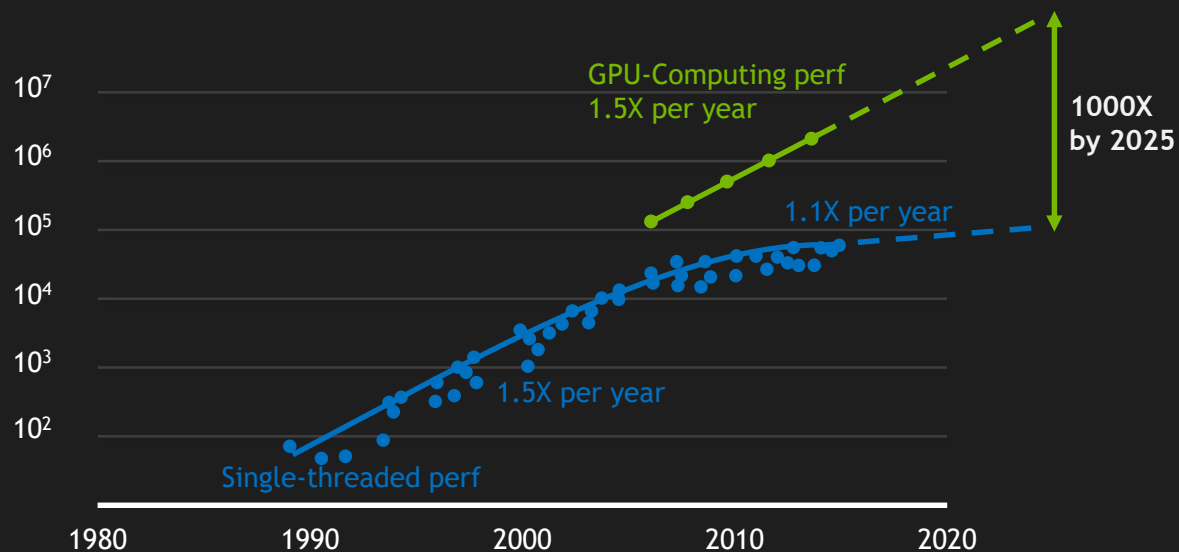


AI – THE FOUNDATION OF THE SMART CITY

Deepu Talla | VP & GM - AUTONOMOUS MACHINES | NVIDIA AI CONFERENCE SINGAPORE 2017



RISE OF NVIDIA GPU COMPUTING



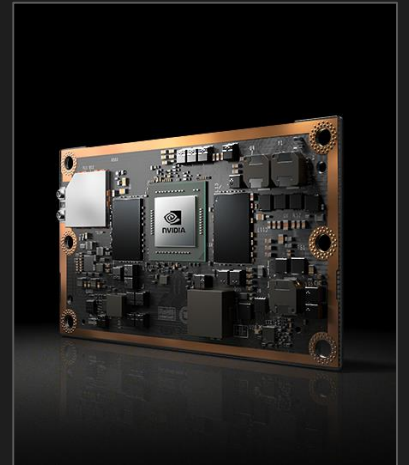
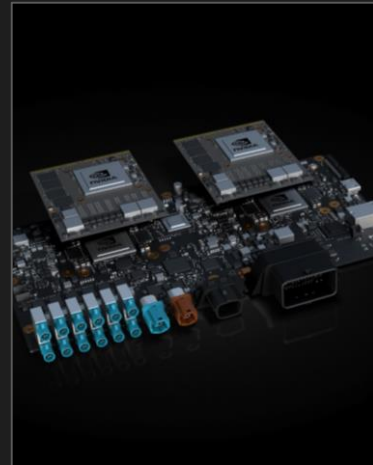
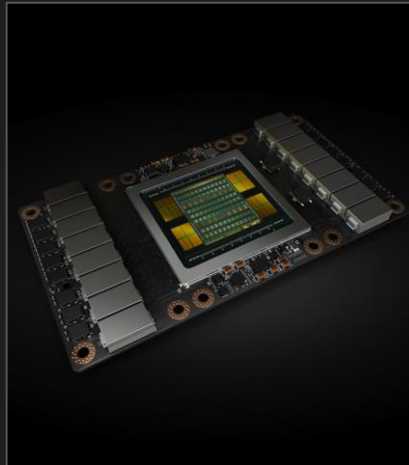
40 Years of Microprocessor Trend Data



The Big Bang of Deep Learning

Original data up to the year 2010 collected and plotted by M. Horowitz,
F. Labonte, O. Shacham, K. Olukotun, L. Hammond, and C. Batten New plot and data collected for 2010-2015 by K. Rupp

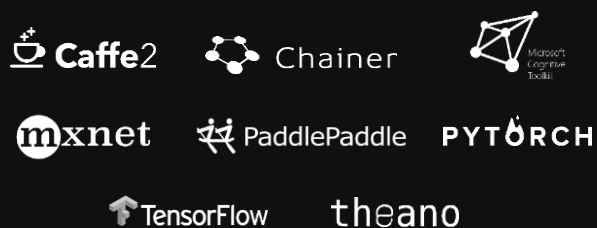
NVIDIA IS THE WORLD'S LEADING AI PLATFORM



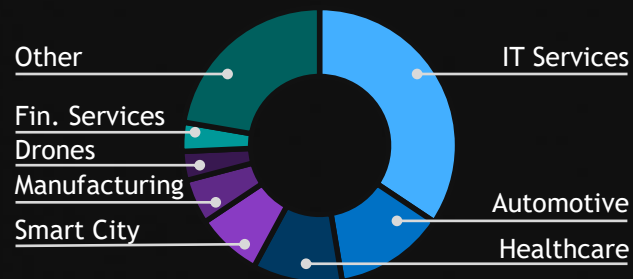
ONE ARCHITECTURE — CUDA

THE WORLD'S AI PLATFORM

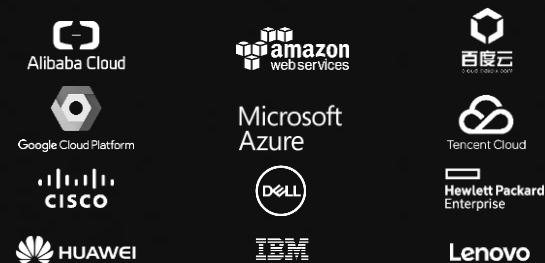
Every Framework



NVIDIA Inception: 2,000 DL Startups



Every Cloud and Data Center



NVIDIA AI PLATFORM

AI CITY

SMARTER, SAFER CITIES

1B cameras WW by 2020

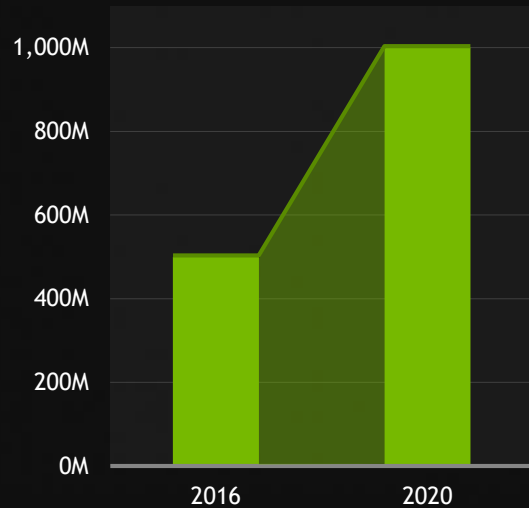
Finding lost people

Improving traffic

Enhancing law enforcement



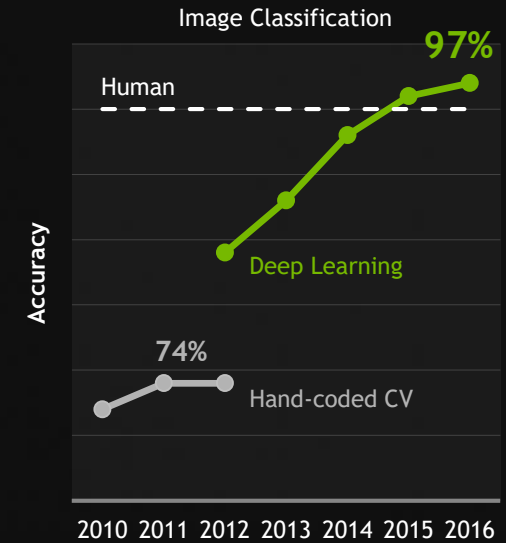
SMART AND SAFE CITIES NEED AI



1B security cameras WW (2020)
30 billion frames per day

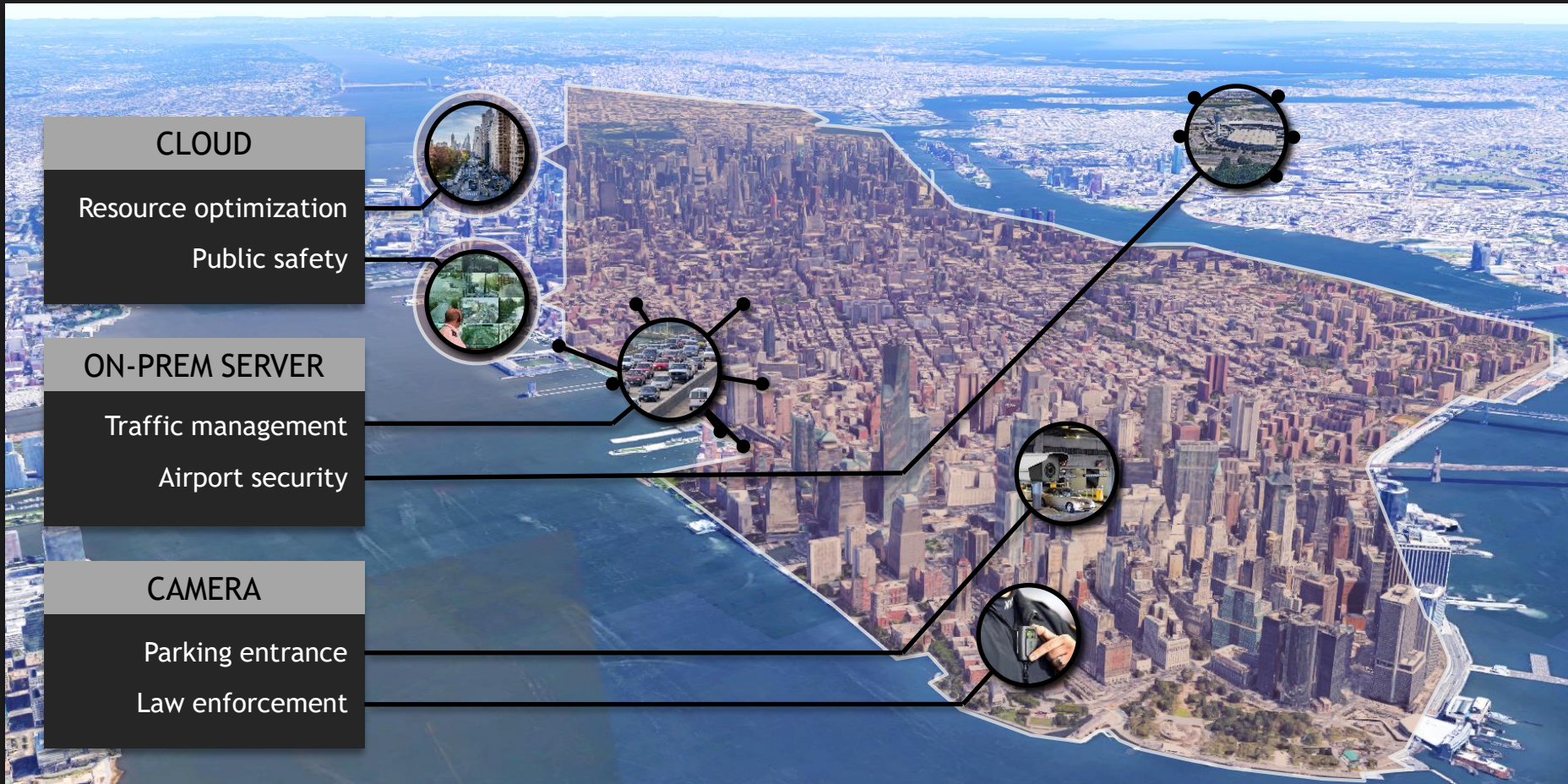


Challenging real world conditions
Traditional video analytics not trustworthy

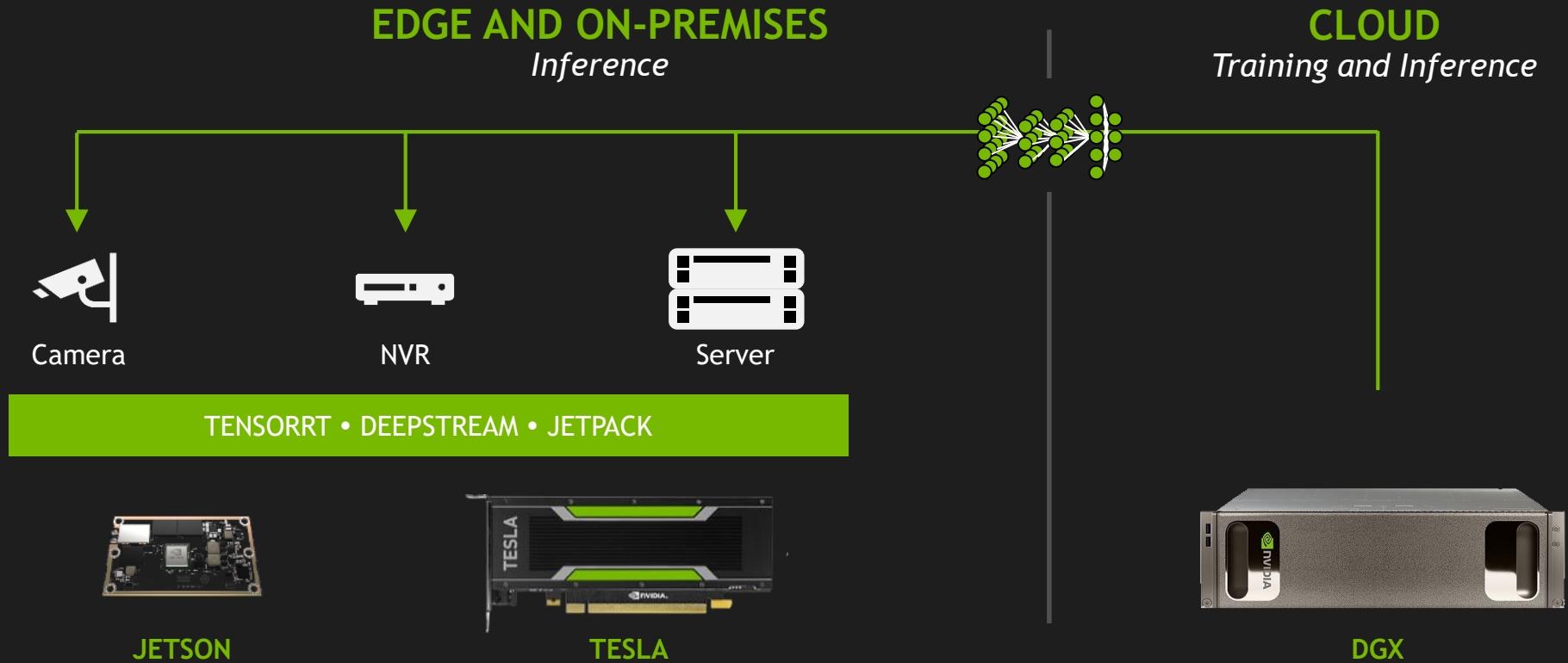


AI achieves super human results
AI driven intelligent video analytics

AI CITY NEEDS AN EDGE TO CLOUD ARCHITECTURE

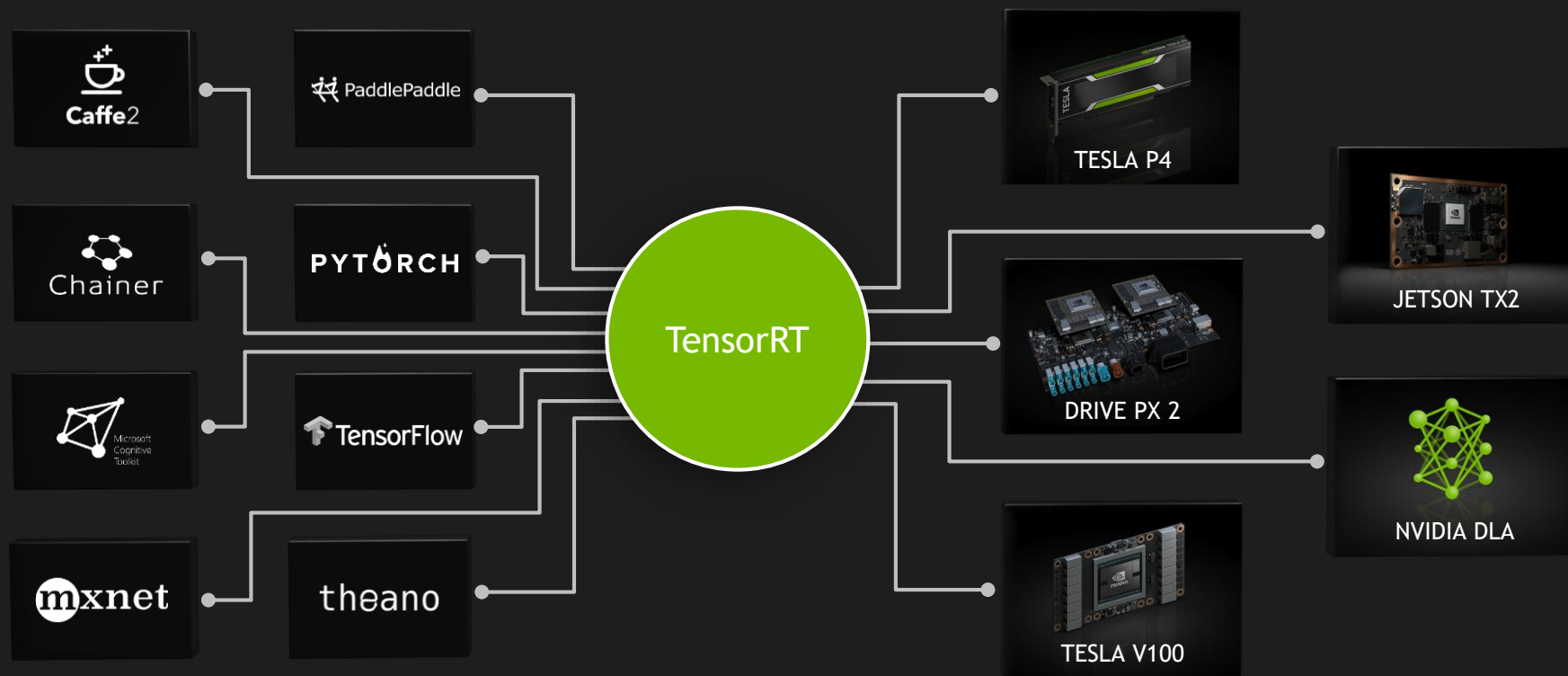


NVIDIA METROPOLIS – AI CITY EDGE TO CLOUD



NEW NVIDIA TENSORRT 3

Programmable Inference Accelerator



Compile and Optimize Neural Networks | Support for Every Framework
Optimize for Each Target Platform

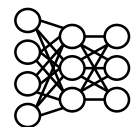
NVIDIA DEEPSTREAM

Sample Networks

Developer Tools

DeepStream API

Deep Learning



TensorRT
cuDNN

Multimedia



Video Codec
SDK

Compute Graph

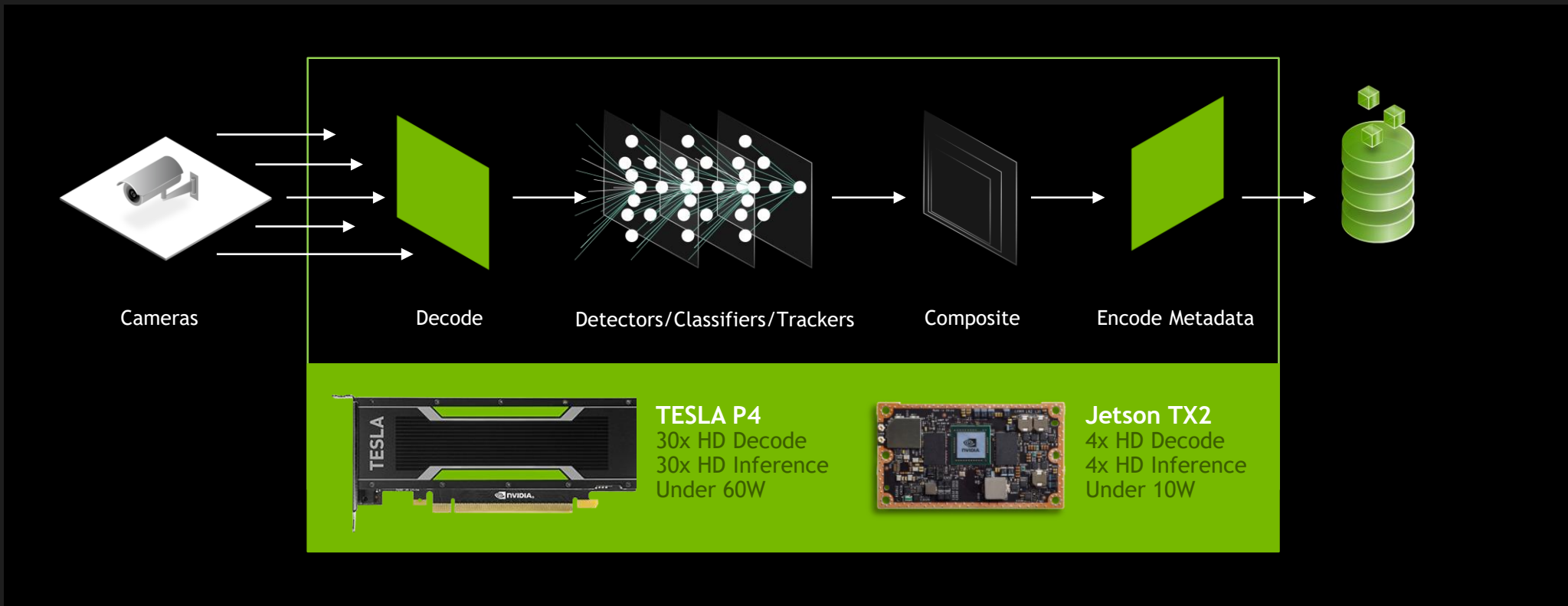


Bitstream
Management

CUDA, Linux

Tesla • Jetson

DEEPSTREAM – 100'S OF HD VIDEO STREAMS REAL-TIME



DEEPSTREAM REALTIME ANALYTICS AT SCALE



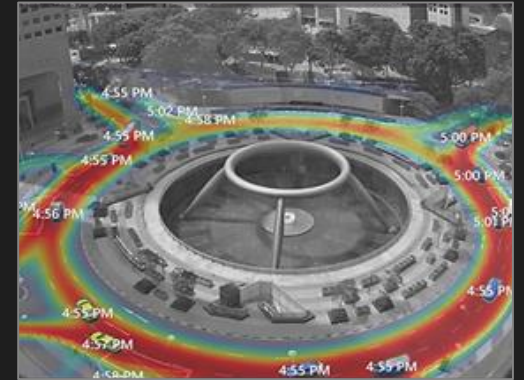
Content Filtering



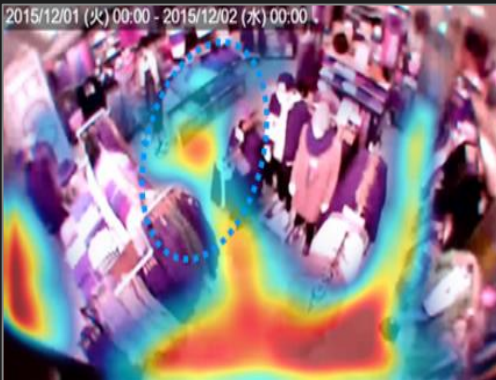
Ad Injection



Parking Management



Traffic Engineering



Retail Analytics



Securing Critical Infrastructure



In-Vehicle Analytics



Law Enforcement

Camera 1 14:05:17 10/05/2017



ID: 2028
14:05:14
sedan white Ford

ID: 1946
14:05:07
white

ID: 1819
14:05:01
sedan white Toyota



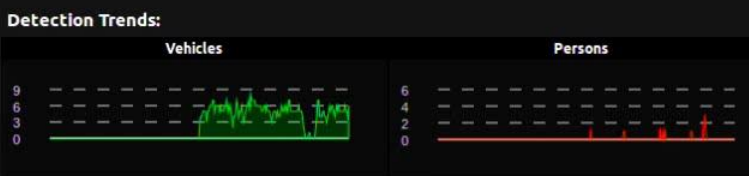
Camera 2 14:05:17 10/05/2017



ID: 2061
14:05:17
sedan white Mercedes

ID: 2049
14:05:16
Van

ID: 2045
14:05:15
sedan silver



Camera 3 14:05:17 10/05/2017



ID: 2052
14:05:16
van blue Toyota

ID: 2039
14:05:15
van silver Honda

ID: 2026
14:05:14
sedan grey Honda



Camera 4 14:05:17 10/05/2017



ID: 2051
14:05:16
van white

ID: 1852
14:05:02
sedan Honda

ID: 1746
14:04:56
sedan black Mercedes



ID: 2008
14:05:12
coupe white Toyota

ID: 1732
14:04:55
suv brown Jeep

NVIDIA METROPOLIS ADOPTION



COMBATING TRAFFIC CONGESTION

PROBLEM

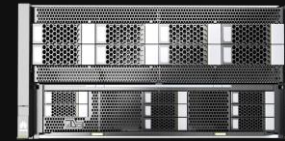


3.3 million vehicles in Shenzhen
Frequent traffic congestion
Billions of dollars of annual economic impact

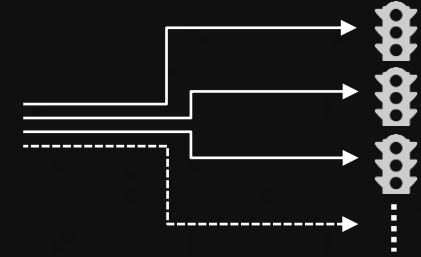
SOLUTION



Realtime monitoring
entire intersection



Huawei server
with NVIDIA P4s



Dynamic control
of traffic lights

Dynamic traffic light control with AI



IMPACT – 15% reduction in peak traffic congestion

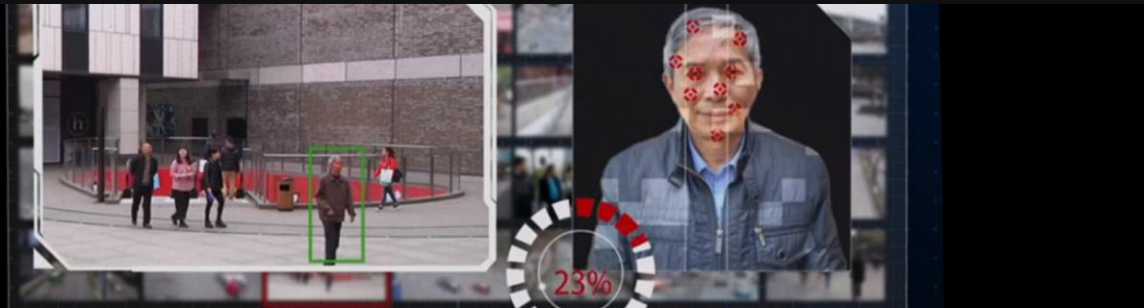
FINDING LOST PEOPLE

PROBLEM



Elderly man wandered from home
Potentially travelled over large area
Must locate before dark

SOLUTION



AI enables database search through 10x as many people

City-wide face search

HIKVISION

IMPACT — Person located in 30 minutes and reunited with family

OPTIMIZING CITY RESOURCES

PROBLEM



High parking demand in downtown
Underutilized parking garage
No visibility into space availability

SOLUTION



Signage

CO Sensor

Ventilation

Revenue

Spaces Available:

432



\$2630.00
Since 8:00am
Flat rate \$3.50

AI for car in/out tracking

VIMOC
Technologies

IMPACT – Garage utilization increased from 20% to 70%

CATCHING A DANGEROUS CRIMINAL

PROBLEM



Dangerous criminal reported by eye-witnesses
Many days of surveillance footage to analyze
Narrow window of opportunity for arrest

SOLUTION



AI-powered video synopsis and analysis



IMPACT – Suspect quickly identified and arrested

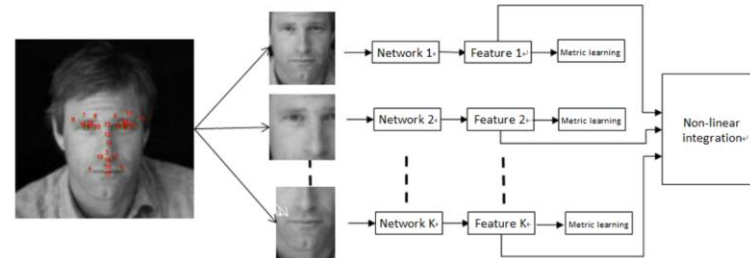
SECURING A GLOBAL EVENT

PROBLEM



Security installation for big, high-profile event
Many entrances, exits
Short setup time

SOLUTION



Dahua's world-leading facial recognition system

AI monitoring crowd for known bad actors



IMPACT — Added equivalent capability of 100 security personal

METROPOLIS SOFTWARE PARTNER PROGRAM



The latest technology



Vetted partners and solutions



Faster time to market

METROPOLIS SOFTWARE PARTNERS



AI – THE FOUNDATION OF THE SMART CITY



Learn more | Become a partner | Purchase solutions | nvidia.com/aicity