

Safe Harbor and Forward-looking Statements

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Generative AI Changes Everything

Infrastructure & Applications



About One Year Ago: ChatGPT 3.5 was Born ... the Baby Talks

- Developed by OpenAI: A Company Founded by Elon Musk 10 Years Ago
- Huge Artificial Neural Network: Multi-Billion Parameter Large Language Model (LLM)
- Trained on Language: Trillions of Data Elements ... Wikipedia + Public Internet
- ChatGPT 3.5 Talks: Generates Answers to Questions ... Engages in Conversations

A Big Surprise

ChatGPT's Scale Enabled it to Understand and Generate Language



ChatGPT: A Rare Event that Captured Worldwide Attention

- ChatGPT 3.5 Surprised OpenAI's Research Team
- Raised Concerns of Governments and AI Experts
- Writers Strike in Hollywood partially based on the Fear of AI
- Everyone wants to Know ... What Comes Next?

A Race...to Build what Comes Next: Better AI...Better Future...Risks



Generative Artificial Intelligence – Question?

Is Generative AI the Most Important New Computer Technology Ever? Probably!

- Countless Billions \$\$\$: Being Invested in Generative AI and Large Language Models
- Last Year: ChatGPT 4.0, Cohere, other LLMs Generated Images, Music, Computer Code ...
- Coming Soon: Self-Driving Cars, Antiviral Drug Design, Clinical Voice Digital Assistant ...

More Big Surprises !!

The bottom of the slide features a decorative graphic consisting of two overlapping, wavy lines. The upper line is a light beige or cream color, and the lower line is a vibrant red. These lines curve across the bottom of the dark grey background, creating a stylized, abstract shape.

Oracle Cloud: Best Cloud for Training Generative AI Models

- Oracle Gen2 Cloud: Ultra-Fast Remote Data Memory Access (RDMA) Network
- RDMA Network: Connects NVIDIA GPUs into Huge Superclusters
- Efficiently Train Generative AI Models: Twice the Speed and Less than Half the Cost
- AI Customers: NVIDIA, Cohere, xAI ... Plus Dozens More

Technology Leaders & Startups Train AI Models in Oracle's Cloud



Oracle Cloud: NVIDIA Superclusters — World's Largest Computer

- Supercluster: NVIDIA H100 GPUs + Oracle Cloud RDMA Network
- Supercluster Scale: 512 GPU Cluster to 16,000 GPU Cluster
- Node Bandwidth: Each GPU has a 200Gb/s RDMA connection
- Node Latency: Few Microseconds between Nodes
- Supercluster Bandwidth: 102,400 Gb/s to 3,200,000 Gb/s

RDMA Network Moves AI Training Data to GPUs Many Times Faster



Oracle Cloud has been using AI for Years ...

Generative AI is Transformational



Generative AI — Transforming Oracle Cloud Technologies

- Improved APEX Application Generator: No Code – not – Low Code
- Improved Autonomous Elastic Database: No Human Labor – No Human Error
- New Object Relational Database: Generate Relational Schema from JSON Documents
- New Oracle Vector Database: Specializes Generative LLMs for Medicine, Law ...
- New Cloud Data Intelligence Platform: Population Scale Data Trains Medical AI Models

Productivity – Performance & Cost – Security



APEX Cloud Application Generator – Most New Applications

- APEX: Generate Applications – No Code
 - From Java Programming to APEX Application Generation
 - **Most New Oracle Applications Generated by APEX**
 - Cerner New Millennium, Fusion Marketing, Banking, Retail, Hospitality ...
- APEX Application Development Methodology – Smaller Teams & Less Time
 - Smaller Development Teams: 50 becomes 10
 - Faster Development Methodology: Prototype Features and Iterate
 - More Secure: Does Not Generate Security Bugs
 - More Reliable: Generates Stateless Applications with Automatic Failover

10x Development Productivity Gain



Autonomous & Elastic Cloud Database – All Cloud Applications

- Autonomous Database – No Human Labor & No Human Error
 - 100% Self Driving: Automatic Installation, Configuration, Updates, Patching, Tuning ...
 - All New Oracle Applications Built on the Autonomous Elastic Database
 - New Cerner HealthIntent, Fusion Marketing, Banking, Retail, Hospitality ...
 - Fusion & NetSuite moving to Autonomous Elastic Database
- Elastic Database – Higher Performance & Lower Costs
 - Automatically Allocates and Releases Processors & Memory based on Workload
 - 10x Faster on Large Workloads while Costing Less Overall
 - Serverless when Idle – Do Not Pay for what you Do Not Use

Higher Performance – Lower Cost – More Secure



Object Database & Relational Database — Best of Both Worlds

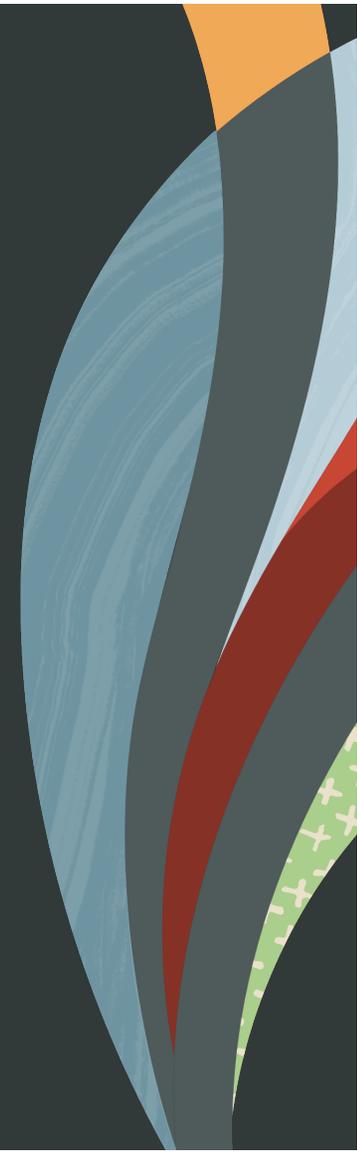
- Seamlessly Combines Easy-to-Use JSON Documents with the Power of SQL
- Programmers Use Mongo Compatible Get and Put on Standard JSON Documents
- Database Automatically Generates Relational Tables from JSON Documents
- Use Powerful SQL Language to Query Database

Easy-to-Use Document Database – Powerful Relational Database



Oracle Cloud Enables Customers

To Use Their Own Data to Train Generative AI Models



Oracle Vector Database: Easily Specialize AI Models & Build AI Apps

- Designing & Training Foundational AI Models: Complex and Expensive
 - Design Multi-Billion Parameter Artificial Neural Network: OpenAI, Cohere, xAI ...
 - Ingest Trillions of Training Data Elements: Wikipedia + Everything on the Internet
 - Oracle Cloud: 16,000 Node H100 NVIDIA Supercluster with RDMA Interconnect
- Specializing AI Models: Pretrained Foundational Model + Supplementary Training Data
 - Oracle Vector Database: Stores Vectorized Supplementary Training Data
 - Specialized AI Model with EHR Data: Generate Doctors' Orders – Cerner New Millennium
 - Specialized AI Model with Diagnostic Image Data: Rapid Cancer Detection – Imagen

Most Customers will Train Specialized AI Models for Specific Applications



Customers Maintain Data Privacy while Training Specialized AI Models

- Imagen: Biopsy Slide Images for Early Cancer Detection
- Ronin: EHR Data for Managing Cancer Care and Therapy
- Investment Banker: Financial Trading Data for Predictive Modeling
- Software Company: Service Request Data for Customer Support System

Oracle Cloud Vector Database – Private Training Data Remains Private



Oracle Analytics + Generative AI

New Oracle Cloud Data Intelligence Platform



New Oracle Public Health Data Intelligence Platform

- All New Cerner HealthIntent: Oracle Public Health Data Intelligence System
 - **Unified National Population Scale Health Data:** Oracle Cloud & Autonomous Database
 - Unified Patient Treatment & Outcome Data from Multiple EHRs: Cerner, Epic, DHIS2 ...
 - Unified Patient Claims & Cost Data: Providers and Payers

Unified Population Health Data: 1,000x More Data to Train Medical AI Models

New Oracle Public Health Data Intelligence Platform

- National Population Scale Public Health Data: 1,000x More Training Data
 - Enables Personalized Medicine: Which Statin works for Patients with your Genome
 - Enables Value Based Care: Better Treatment , Better Outcomes, Lower Cost
 - Machine Learning on Diagnostic Images Accelerate Cancer Treatment: Imagene
 - AI on Patient Monitoring Data Reduces Hospitalization after Chemotherapy: Ronin

Personalized Treatment with Better Outcomes for Millions of Patients

New Oracle Cloud IoT Automated Data Capture Sensors & Robots



Automatically Capture Patient Data with Cloud IoT Devices

- Patient Monitoring: New Cerner CareAware in Hospitals, Clinics and at Home
- Patient Diagnostic Image Capture and Storage: MRI Images, Sonograms, X-Rays ...
- Laboratory Test Results: Blood Tests, Respiratory Infection Panel ...
- Home Devices and Wearables: Blood Pressure, Pulse/Oximeter, Smart Watch ...

Diagnostic, Lab and Monitoring Data Stored in EHR + Public Health Data Platform



Automated Cloud IoT Data Capture Platform: Other Medical Data

- Automatically Collect Hospital & Clinic Inventory & Supply Chain Data
- Fusion Supply Chain: Medical Supply Inventory RFID Tags with Automatic Reordering
- Laboratory Robotic Automation: Cerner Lab Robotics + Oracle IoT Data Capture
- Medical Device Robotic Manufacturing: Building Microfluidics Disks for Fast PCR

Automated Data Capture & Robotics Improves Data Accuracy, Lowers Costs



IoT Sensors: Collect Huge Amounts of AI Training Data

- Healthcare Training Data: Some Data Not Saved
 - Patient Monitoring: Blood Pressure, Pulse Oximeter, Smart Watch
 - Diagnostic Images: X-Rays, MRI Scans, Biopsy Slides ...
 - Genomics: Gene Sequences, Variations and Mutations
- Diagnostic Image Storage Cost Problem
 - Diagnostic Images & Genomics: Not Saved Due to Cloud Storage Costs
 - Oracle Cloud: Provides an Economic Solution to this Problem

Generative AI & Sensors & Robots

Can Transform Other Industries



Transformative Technologies: Applied to other Industries

- Generative Artificial Intelligence
 - APEX No Code Application Generation System
 - Autonomous Database Stores Vast Amounts AI Training Data
- Internet of Things: Sensors & Robots
 - Sensors Collect Vast Amounts of Training Data
 - Robots Lower Costs and Improve Product Quality & Job Quality

21st Century Agriculture

Growing Indoors: Applied Inventions Project



Advantages Growing Indoors: Robotic Greenhouses

- Grow using 98% Less Water: Adapt to Changing Climate ... Droughts in Ethiopia, Somalia ...
- Grow using 90% Less Land: Preserve Amazon Rainforest and African Animal Habitat
- Grow Near Population Centers: Lower Food Transportation Costs and CO₂ Emissions
- Daily Harvest with Same Day Delivery: Less Expensive, Fresher more Nutritious Food
- Better Job Security and Job Quality: Hand Harvest Inside in Climate Controlled Building

Agriculture Accounts for Over 30% of Global Greenhouse Gas Emissions

Challenges Growing Indoors: Robotic Greenhouse

- Operate Cost Efficiently in Any Climate Anywhere in the World: Local Solar Power
- Complete Growing System: Standard Enclosure, Irrigation System, Sensors, Robots ...
- Inexpensive To Build: Robotic Factory Builds Greenhouse Modules
- Inexpensive to Ship: All Greenhouse Modules Fit in Standard Shipping Containers
- Inexpensive to Install: Robot Digs Foundation ... Greenhouse Quickly Assembled
- Inexpensive and Easy to Operate: Sensors, Robots ... Always Satellite Connected to Cloud
- Same Greenhouse Grows Multiple Crops: Leafy Greens, Berries, Rice ...

Sensors Collect Lots of AI Training Data

- Robotic Hydroponic Greenhouse
 - Environmental: Sunlight, Temperature ...
 - Nutrition: Water, Nitrogen ...
 - Plant Images: Size, Health, Ready to Transplant or Harvest ...
 - Plant Genomics: Different Varieties of Foods for Different Climates and Cultures

Robots do the Heavy Lifting: Improved Job Quality

- Hydroponic Greenhouse
 - Robot Moves Rows of Plants from Growing Area to Harvesting Area ...
 - People Do not Go Into Growing Area to Reduce Contamination and Infestation
 - Largely Eliminates the use of Pesticides



Applied Inventions Robotic Greenhouse Oracle Technology

- Oracle Cloud
- Autonomous Database
- NetSuite to Manage Growing Business
- Collaborating with Oracle on AI, IoT, Robotics, Analytics, Satellite Network ...

New Oracle First Responder System

Satellite + Terrestrial Fail-Safe Mobile Network



Always-on Audio/Video IoT Network Connects First Responders

- **First Responder Fail-Safe IoT Mobile Network: 5G + Satellite Connection**
 - EMTs, Fire Fighters, Police Officers: Wearable Computer with Audio/Video Connection
 - Ambulances, Fire Trucks, Police Cars Always Connected with Cameras & Microphones
- **Dispatch & Command Center: Assists First Responders in the Field**
 - Police/Fire Command Center: Real-Time Monitor & Manage Any Incident Anywhere
 - Hospital Emergency Command Center: ER Doctors Assist EMTs with Patients in Transit

Never Lose Communications – Continuous Assistance & Supervision





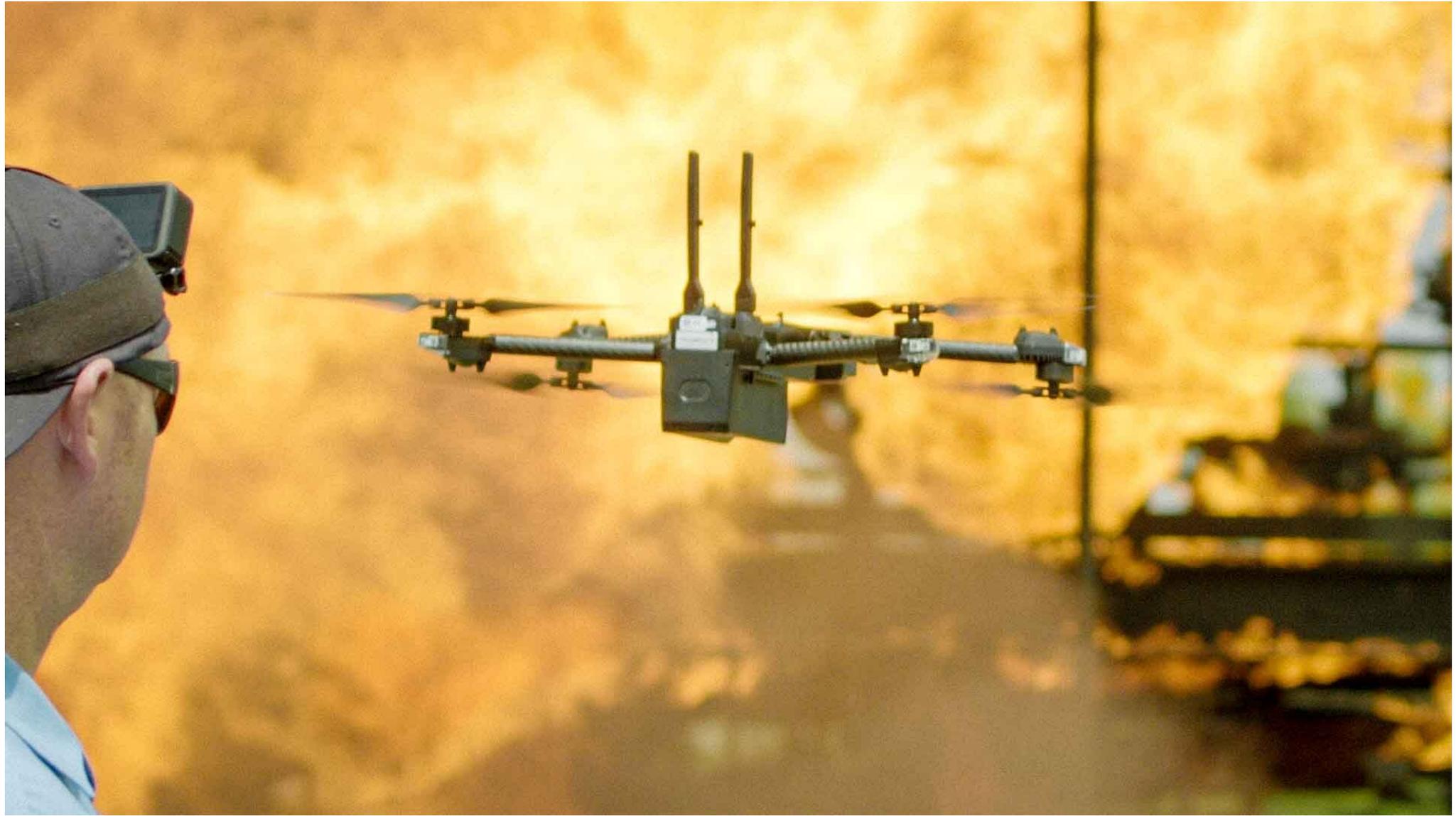




Autonomous Robot Drones Support First Responders

- Continuous Monitoring for Early Detection of Brush Fires in Dry Season
- Replace Conventional Aircraft for Routine Traffic Monitoring
- Arrive Early for Improved Situational Awareness

Dramatically Lower Cost than Conventional Piloted Aircraft



MultiCloud: Microsoft & NRI



Most Customers use Multiple Clouds

- Infrastructure: AWS, Azure, Google, Oracle ...
- Applications: Oracle, Salesforce, ServiceNow, Workday ...

All Clouds Should be Open and Connected

Easy for Customers to Combine Different Services from Different Clouds



MultiCloud Announcement: Microsoft Cloud & Oracle Cloud

Microsoft Cloud & Oracle Cloud are Open — Not Walled Gardens

- 2019: Microsoft Oracle Cloud High-Speed Interconnect – 470+ Customers Today
- 2023: Oracle Cloud Hardware & Software to be Installed in Azure Datacenters
- Fastest Database: Oracle Databases on Exadata Hardware
- Fastest Network: Microsecond Connection from Oracle Database to Azure Services
- Easy to Use: Provision Oracle Database Services from Azure Portal
- Low Cost: No Data Egress Fees on Your Data



MultiCloud: Microsoft Cloud & Oracle Cloud

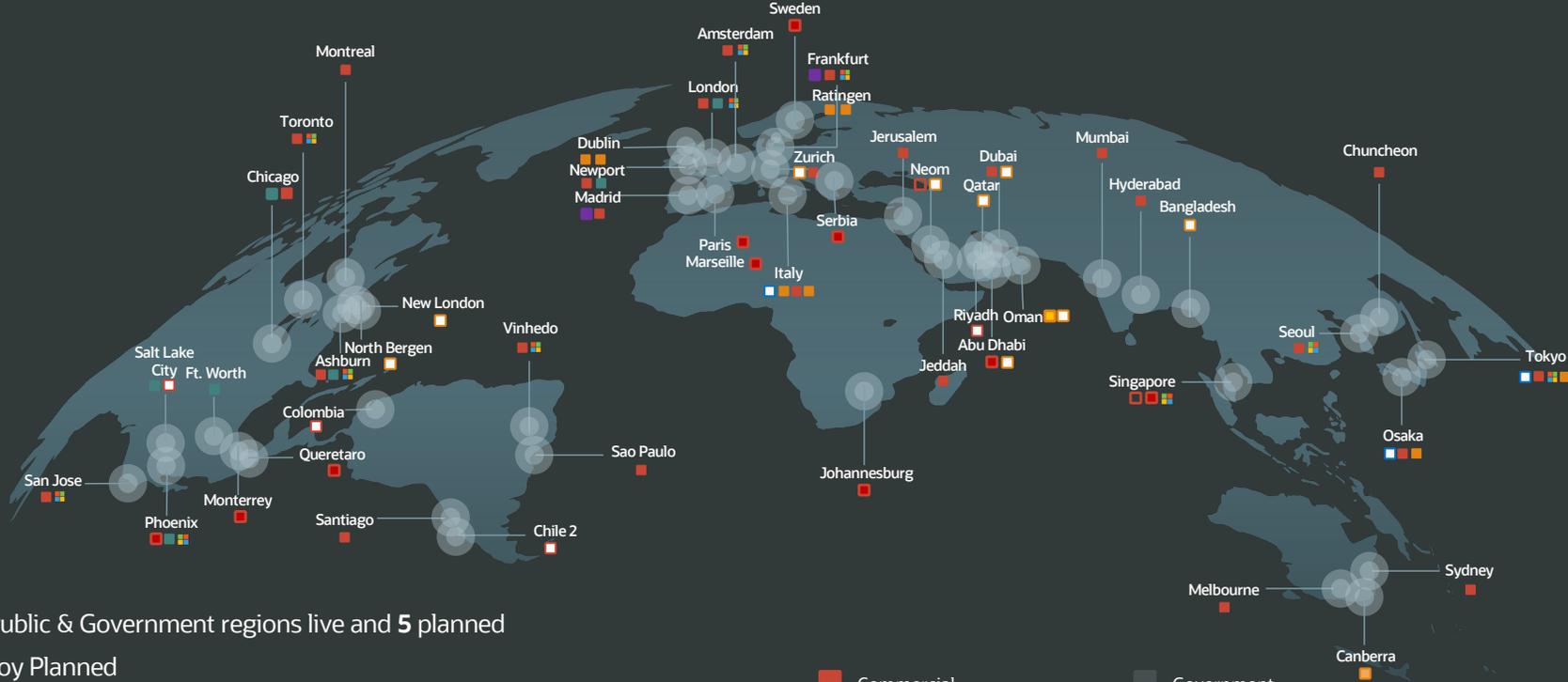
Is it a complete Oracle Cloud inside the Azure Datacenters? Yes!

- All Oracle Cloud Datacenters have the identical Hardware and Software: Vary by Scale
 - Because the Datacenters are Identical it's possible for them to be Fully Automated
 - Automation makes Cloud Datacenters More Secure, More Reliable, Much Lower Cost
 - Oracle Cloud Datacenters Economical for Small Countries and Medium Sized Customers
- 

More Cloud Regions than any Hyperscaler



64 Customer-Facing Regions Live



44 Public & Government regions live and 5 planned
 3 Alloy Planned
 9 Dedicated Regions (DRCC) live and 11 planned
 + EU Sovereign and National Security Regions (Gov)

- Commercial
- Government
- DRCC
- DRCC Planned
- Alloy (PLC) Planned
- EU Sovereign Cloud
- Microsoft Interconnect Azure

Dedicated Region Cloud@Customer (DRCC)

Runs All Oracle Cloud Services in Customer Datacenter

Nomura Research Institute (NRI)

- Largest Economic Research and Consulting Firm in Japan
- Installed 2 Oracle Dedicated Cloud Regions in Japan: Adding 2 More
- Resells Oracle Cloud Services with NRI Services
- Major Financial Services Customers in Japan
- Runs Tokyo Stock Exchange on NRI Oracle Cloud
- Uses APEX to Reduce Application Development Costs by 65%

The logo for Nomura Research Institute (NRI) is displayed in a large, bold, white sans-serif font. The letters 'NRI' are closely spaced and occupy the left side of the slide.

Oracle Dedicated Region Cloud@Customer (DRCC)

Runs All Oracle Cloud Services in Your Datacenter

Only Pay for What You Use — \$2 Million per Year Minimum

Connects to Other Clouds

Thank You ...



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