DATA EXPLOSION

ENDPOINT DATA CREATION GROWTH
85% CAGR (2017-2025)

TOTAL DATA GENERATED BY IOT DEVICES
80 ZETTA BYTES (IN 2025)

ENTERPRISE DATA IS NEVER USED
90%

Source: IDC Research, Forbes
TECHNOLOGY ALIGNMENT IN AIoT

TECHNOLOGY CONVERGENCE
IOT, AI, 5G maturing roughly at the same time

NEW DESIGN MINDSET
AI transforms data to actionable insights

DECENTRALIZED INTELLIGENCE
Tremendous benefits of a distributed intelligence model

DATA EXPLOSION
Endpoint data creation to grow at 85% CAGR (2017-2025)
WHY DECENTRALIZE INTELLIGENCE?

REAL-TIME RESPONSE
- Minimized latency by transforming data at source
- Optimized processing for time-critical applications

SECURITY & DATA PRIVACY
- Minimized security concerns related to transfer & flow of data
- On-device data handling tightly coupled to hardware root-of-trust

NETWORK AGILITY
- Maximizing data gravity by operating on data at the source
- Reduced data transport improves power & cost efficiencies
AI/ML can solve for or enhance aspects of IoT systems related to maintenance, effectiveness, liability, personalization, service, safety, security, and more.
MCU / MPU CENTRIC AI/ML ON THE EDGE

RA6M3/Asset Movement
AI/ML – Realtime Analytics

Asset Tracking
AI based asset movement detection

This demo showcases AI based asset motion tracking solution developed using Reality AI Tools and deployed on Arm-Cortex M33.

Key Features
- On-board accelerometer-based tracking.
- Resource efficient model.

Key Benefits
- Easy to generate models using Reality AI Tools.

Key Applications
- Consumer
- IoT Devices
- Industrial

RA2L1/Voice Recognition
AI/ML - Voice

Voice Control
World's first JVU on CM03 — 48MHz

Palm size Voice kit platform, ready with RA2 for low power requirements of an application matter most for these device definitions. Realizes with ecosystem partner: Cyberon.

Key Features
- Endpoint voice recognition algorithms
- Low latency, perform real-time control
- Friendly voice modeling tool DISM
- Global 44+ language support
- High Robustness and Accuracy
- Maximum three main patterns

Key Benefits
- One-hand solution provider
- Simplicity Design
- Fully System Cost Reduction
- Accelerate to Revenue
- Faster Go-To-Market

People Detection
AI/ML - Vision

Complete software solution for camera-based people detection. The AI software solution is readily available for the RA family of MCUs and runs on Arm Cortex-M33, Cortex-M4, and Cortex-M8S microcontrollers.

Key Features & Benefits
- Detects each person in view, even if partially occluded
- Tracks people and assigns up to 20 unique IDs
- Detection distance of more than 20m / 65ft
- Trained with over 32 million labeled images
- Extensively validated on diverse people and scenarios
- Supports kernels up to 180 FOV

Key Applications
- Intelligent people detection sensors
- Security cameras and video analytics
- Video conferencing and webcams
- Video doorbells and smart home cameras

Plumerai
Renesas

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AI IS DISRUPTING EVERYTHING

The impact of AI in our lives is more visible than ever!
**Comprehensive portfolio of AI/ML tools and solutions**

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**AVAILABLE TOOLS**
- RealityAI Tools®
- RealityCheck™ AD
- RealityCheck™ HVAC
- RealityCheck™ Motor
- Automotive SWS
- RZ/V AI SDK
- DRP-AI TVM
- DRP-AI Translator
- e-AI Translator
- Dspotter Tool
**AI @ RENESAS**

**VOICE PLATFORM SUPPORTING 44 LANGUAGES**
Comprehensive & intuitive toolchain
Support for 44+ languages
Scalable + smart software features
Runs on Cortex M23/ M33 devices
License free development

**MULTI-MODAL MACHINE ACCESS/ PERSONALIZATION**
Enhances user safety or personalizes operation
User facial & voice signatures for authentication
Multi-modal design runs on M33 devices

**SMART APPLIANCES, MACHINES, ETC.**

**AI/ ML SOLUTIONS**

**HVAC, REFRIGERATION**
Complete end-to-end service
H/W, S/W reference design
AI-enabled anomaly detection
Predicting operating conditions

**REALITYCHECK HVAC SOLUTION SUITE**

**MULTIPLE IOT VERTICALS.**

**20+ PRE-TRAINED MACHINE VISION APPLICATIONS**
SUMMARY & KEY TAKEAWAYS

- The convergence of AI & IoT is a megatrend that cannot be ignored.

- With explosive growth in endpoint data creation a decentralized intelligence architecture will unlock tremendous potential.

- Renesas with its comprehensive offering of hardware, software, tools & ecosystem provides all the building blocks for you to unleash your creativity.

- Join Renesas and experts & through-leaders from across the industry at Renesas AI, where we present the latest innovations in this space.

- Come talk to us about your next AIoT challenge!
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