Rambus

Rambus at Bank of America Merrill Lynch 2019 Global Technology Conference

Presenters:

Luc Seraphin, CEO

Rahul Mathur, CFO

June 5, 2019

Safe Harbor for Forward-Looking Statements; Other Disclosures

This presentation contains forward-looking statements under the Private Securities Litigation Reform Act of 1995 including those relating to Rambus' expectations regarding product and service offerings, growth for 2019 and financial guidance for the second quarter of 2019, including revenue, operating costs and expenses, earnings per share and estimated, fixed, long-term projected tax rates. Such forward-looking statements are based on current expectations, estimates and projections, management's beliefs and certain assumptions made by Rambus' management. Actual results may differ materially. Our business is subject to a number of risks which are described more fully in our periodic reports filed with the Securities and Exchange Commission. Rambus undertakes no obligation to update forward-looking statements to reflect events or circumstances after the date hereof.

Effective January 1, 2018, the Company adopted Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers in ASC 606. The adoption of ASC 606 materially impacted the timing of revenue recognition for the Company's fixed-fee intellectual property licensing arrangements. The adoption of ASC 606 did not have a material impact on the Company's other revenue streams, net cash provided by operating activities, or its underlying financial position.

This presentation contains non-GAAP financial measures, including operating costs and expenses, operating margin, operating income (loss) and net income (loss). In computing these non-GAAP financial measures, stock-based compensation expenses, acquisition-related transaction costs and retention bonus expense, amortization expenses, non-cash interest expense and certain other one-time adjustments were considered. The non-GAAP financial measures should not be considered a substitute for, or superior to, financial measures calculated in accordance with GAAP, and the financial results calculated in accordance with GAAP and reconciliations from these results should be carefully evaluated. Management believes the non-GAAP financial measures are appropriate for both its own assessment of, and to show investors, how the Company's performance compares to other periods. Reconciliation from GAAP to non-GAAP results are made available and more fully described on our website as well as the back of this deck and in the earnings release.

Rambus at a Glance

Market Megatrends

- Renaissance of computer architectures, memory critical and driving innovation
- Internet giants moving SoC design in-house, enabling TAM expansion
- Secure semiconductor HW, SW and supply chain essential for global commerce

Rambus Offerings

Architecture Licenses	High-speed IO & DPA Countermeasures
IP Cores	Memory & SerDes PHYs; Secure Cores
Chips	Memory Buffers
Key Management	Secure Supply Chain Provisioning

Financial Performance

Revenue
Q119: $48.4M

2018: $231.2M
$401.1M (ASC 605)

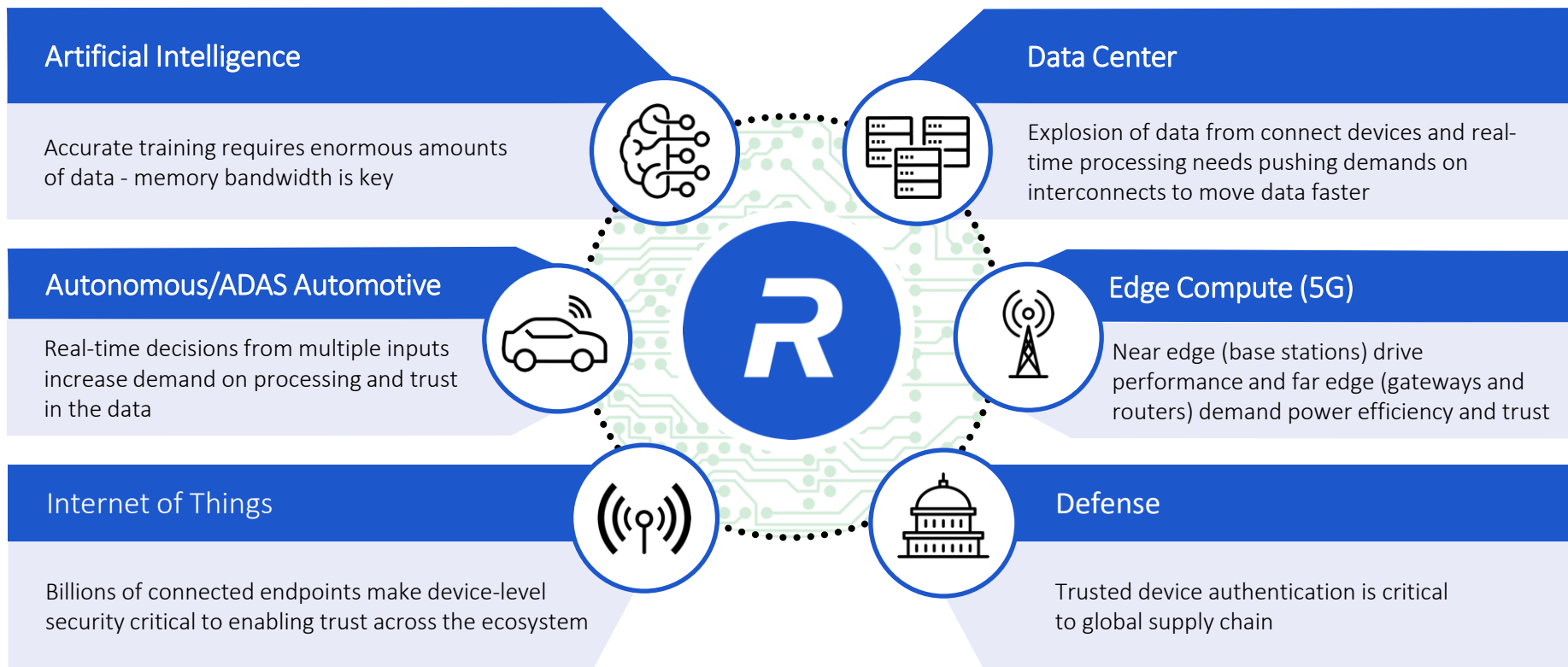**Cash from Operations**
Q119: $28.8M

2018: $87.1M

NASDAQ: **RMBS**

25+ Years
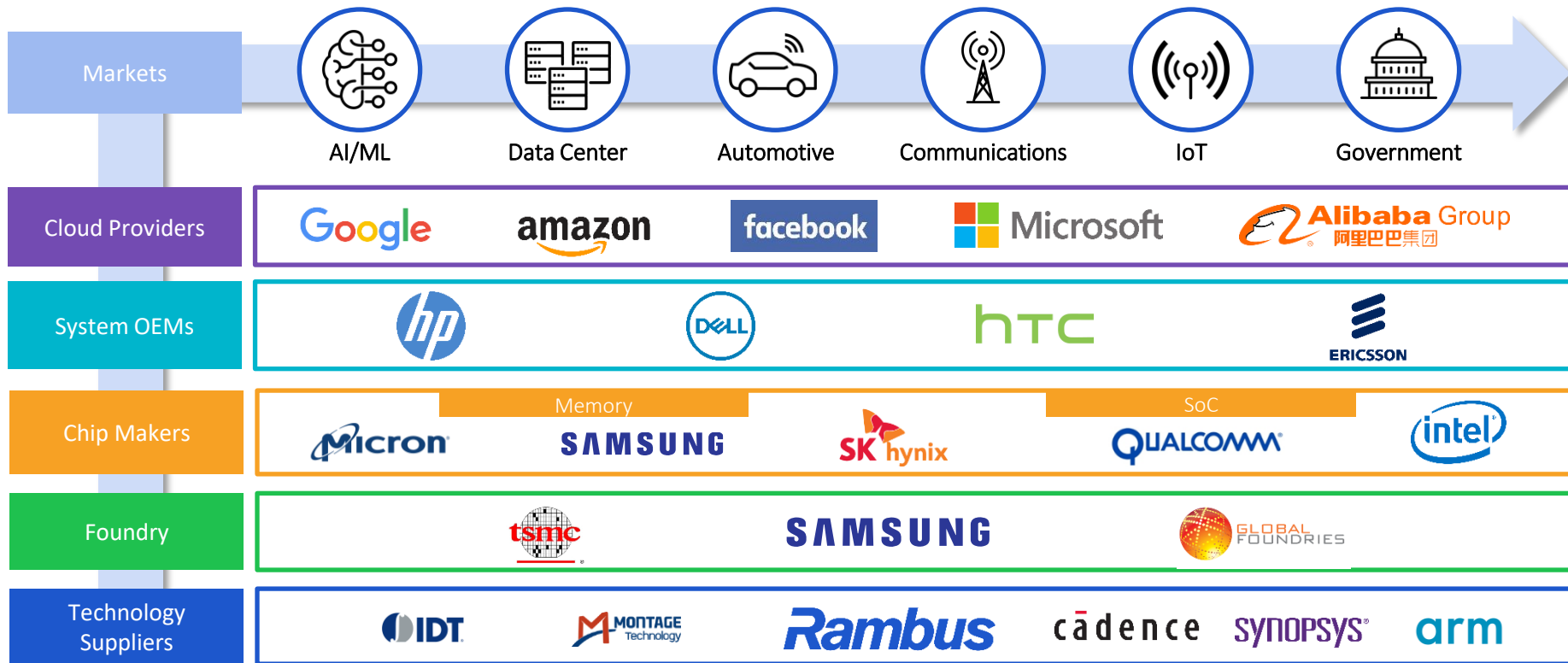Tech leadership & innovation

2500+ Patents and Applications

HQ: **California**
WW Offices in India, EU, Asia

~800 Employees Worldwide

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All Growth Markets Are Impacted by These Megatrends

Artificial Intelligence

Accurate training requires enormous amounts of data - memory bandwidth is key

Data Center

Explosion of data from connect devices and real-time processing needs pushing demands on interconnects to move data faster

Autonomous/ADAS Automotive

Real-time decisions from multiple inputs increase demand on processing and trust in the data

Edge Compute (5G)

Near edge (base stations) drive performance and far edge (gateways and routers) demand power efficiency and trust

Internet of Things

Billions of connected endpoints make device-level security critical to enabling trust across the ecosystem

Defense

Trusted device authentication is critical to global supply chain

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Semiconductor Industry Ecosystem Built on Leading-Edge IP

Markets: AI/ML · Data Center · Automotive · Communications · IoT · Government

Cloud Providers: Google · amazon · facebook · Microsoft · Alibaba Group 阿里巴巴集团

System OEMs: hp · DELL · htc · ERICSSON

Chip Makers:
- Memory: Micron · SAMSUNG · SK hynix
- SoC: QUALCOMM · intel

Foundry: tsmc · SAMSUNG · GLOBAL FOUNDRIES

Technology Suppliers: IDT · MONTAGE Technology · Rambus · cādence · synopsys · arm

Ecosystem Example

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Rambus Semiconductor Solutions Built on Leading-Edge IP

High growth; differentiated margin

Provisioning

Secure Supply Chain Provisioning

Chips

Buffer Chips

High margin; predictable; fuels investment

IP Cores

High-speed Interfaces and Embedded Security

Architecture License

Foundational Patents
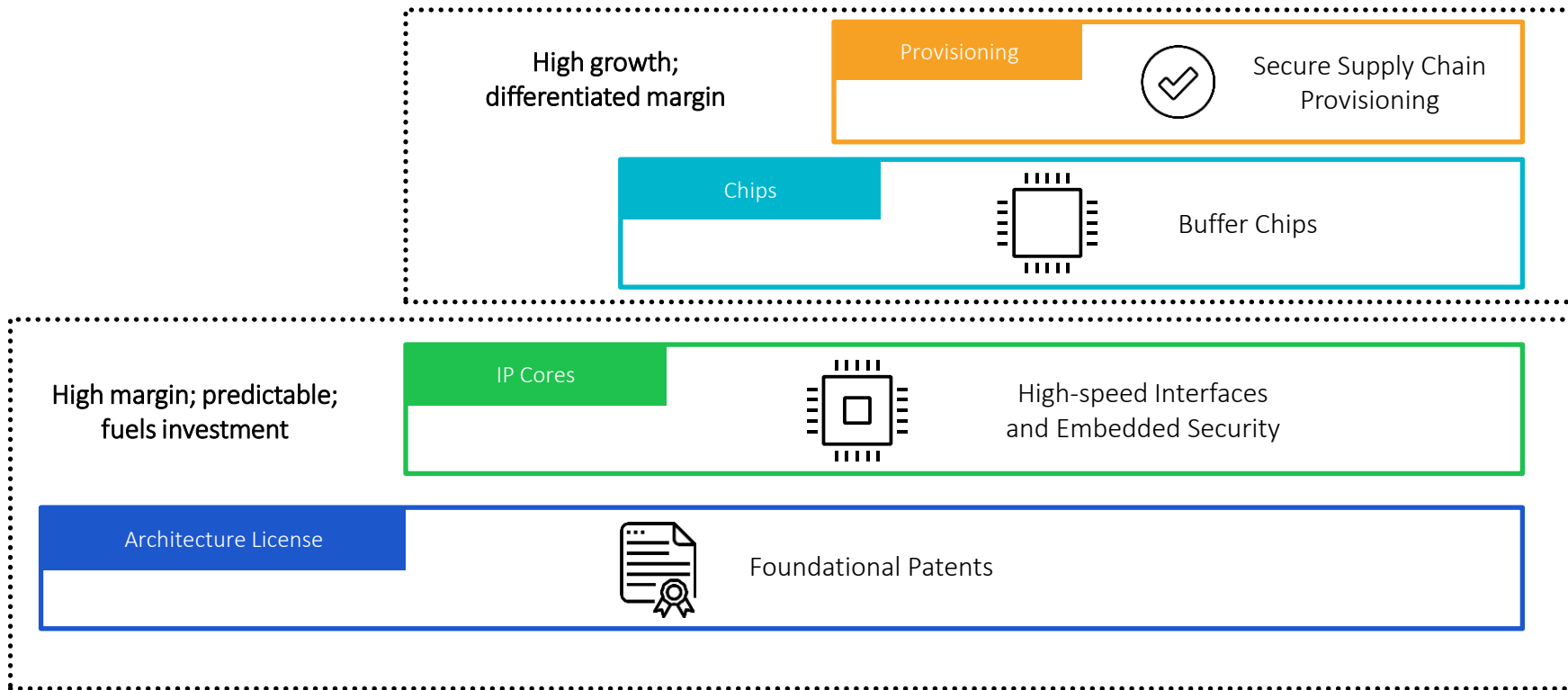
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Rambus Solutions Throughout the Data Center

Registered DIMM (RDIMM)

Register Clock Driver (RCD)

Load Reduced DIMM (LRDIMM)

RCD

Data Buffer

Buffer Chips

HBM DRAM
HBM DRAM
HBM DRAM
HBM DRAM
Logic Die
PHY
SOC
PHY
Interposer
Package

Memory Interface IP

Secure Cores

SerDes Interface IP

CryptoManager Root of Trust

Secure Processing

General Processing

Custom RISC-V CPU

Secure Memory

Crypto Accelerators
(AES, SHA, others...)

Networking Line Card Example

Backplane Interface

SerDes Serial Links

Memory

SerDes

Fabric Interface ASIC

PHY of Retimer

Port Side

ASIC

DDR

DDR

SerDes

HBM

SerDes

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7

Delivering More Data, Faster: High-speed IP Cores and Chips

High-speed memory and SerDes interfaces are critical for performance in data-intensive applications

Networking Line Card Example

Memory buffers are the key to expanding capacity for data centers and high-performance computing
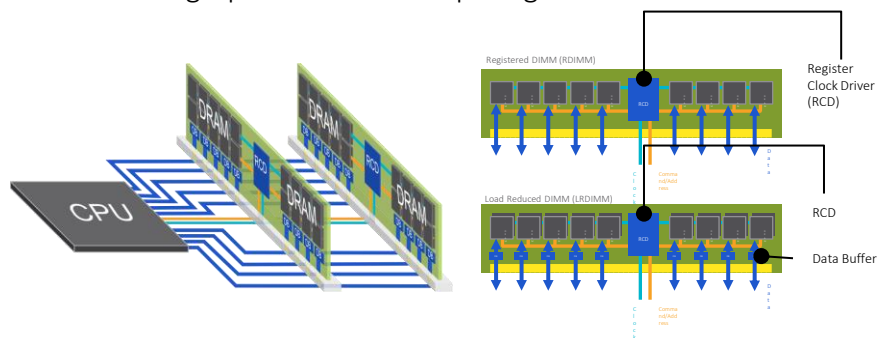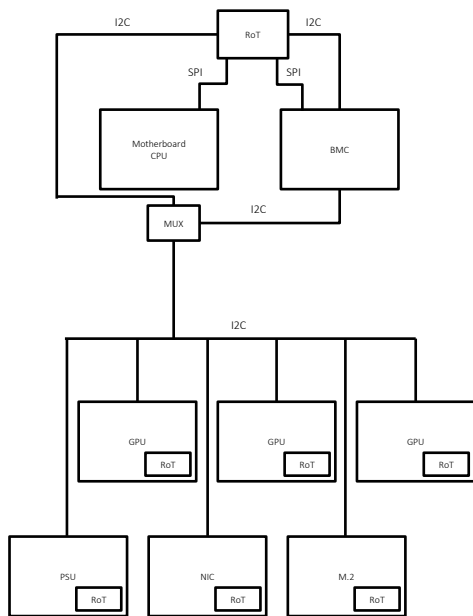

Revenue SAM ($M)
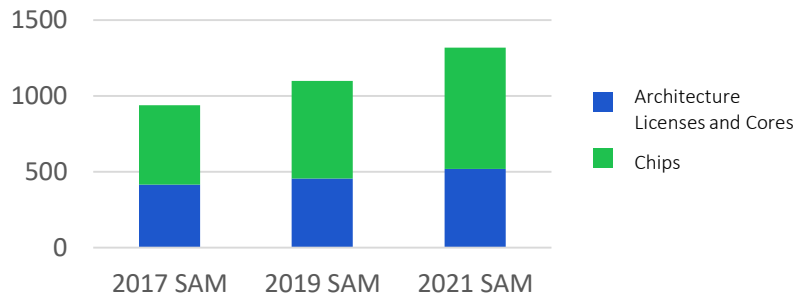
Revenue Growth
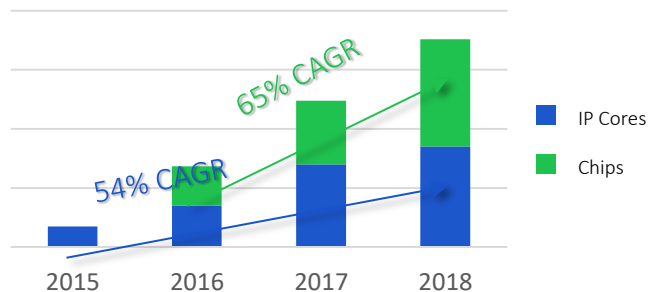
# Keeping Data Safe: Secure Silicon IP and Provisioning

Embedding secure roots of trust in silicon and siloing it from general processing is critical to creating trust across connected devices
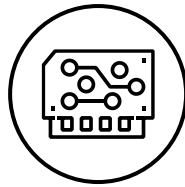

Source: Microsoft Cerberus Datacenter Architecture

Revenue SAM ($M)

- Architecture Licenses and Cores

Total Provisioned Devices (B)

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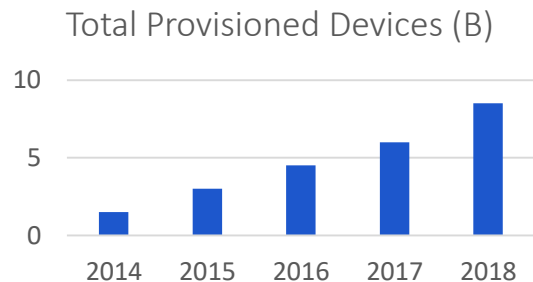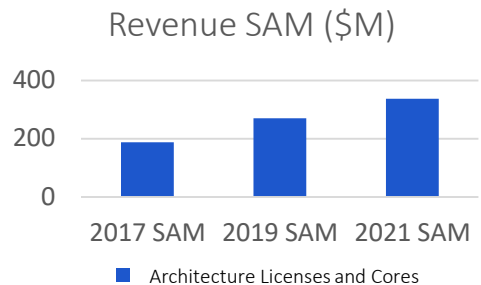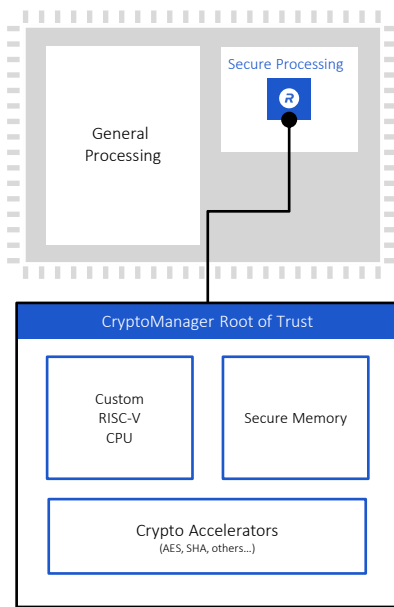
Rambus R&D Drives Datacenter Innovation in Foundational Areas
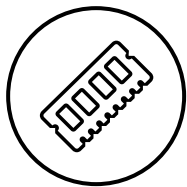
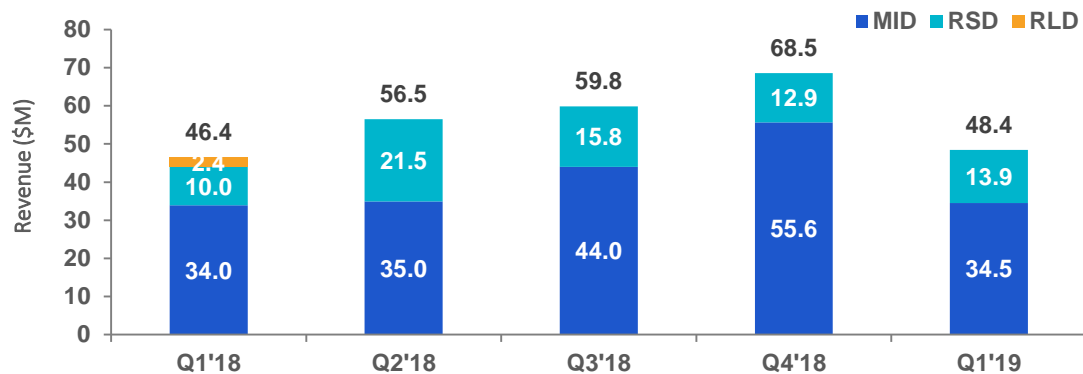
Extending the performance of DRAM for future generations

Next-generation hybrid memory subsystems for cost-effective performance

Application-specific memory solutions for Artificial Intelligence and Machine Learning

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Predictable Revenue Base

Large portion of our revenue is fixed & predictable

- Continue to leverage our high margin historic businesses to fuel growth in adjacent areas

- Revenue does not reflect billings related to fixed-fee licensing arrangements

Quarter	Q1'18	Q2'18	Q3'18	Q4'18	Q1'19
Licensing Billings	$75.9	$73.2	$75.4	$76.7	$75.4
Royalty Revenue	$21.4	$30.0	$33.6	$45.4	$24.8
Delta	**$54.6**	**$43.2**	**$41.8**	**$31.3**	**$50.6**

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Non-GAAP Income Statement

In Millions	ASC 606 Q1 2018	ASC 606 Q2 2018	ASC 606 Q3 2018	ASC 606 Q4 2018	ASC 606 Q1 2019	
Revenue	$46.4	$56.5	$59.8	$68.5	$48.4	Driven by the structure and timing of key deals. Year over year growth from product revenue, royalties and incremental licensing agreements
Total Operating Expenses[1]	$68.7	$66.8	$67.6	$61.6	$67.3	Managed expenses through refocus on core growth initiatives. Adoption of ASC 842 in Q1'19 increased operating expense with corresponding decrease in interest expense
Operating Income (Loss)[1]	($22.3)	($10.3)	($7.9)	$6.9	($18.9)	Operating results under ASC 606 do not reflect significant cash flow from fixed-fee licensing arrangements
Cash from Operations	$16.8	$3.6	$31.6	$35.1	$28.8	Consistent performance in line with expectations

[1]Please refer to reconciliations of non-GAAP financial measures included in this presentation and in our earnings release

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Financial Strength

In Millions	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	
Total Cash & Marketable Securities	$291.2	$298.3	$248.2	$277.8	$305.9	Issued $172.5M convert and extinguished $56.8M of debt in Q4 2017 and $81.2M of debt in Q3 2018
Total Assets	$1,539.7	$1,525.8	$1,344.0	$1,361.1	$1,321.4	Strong balance sheet with limited debt $50M of cash used for share repurchases in Q1 2018
Stockholders' Equity	$1,119.0	$1,105.5	$1,008.3	$1,012.1	$999.9	$674M and $629M contract assets in Q4 2018 and Q1 2019 respectively, related to ASC 606 adoption
Cash from Operations	$16.8	$3.6	$31.6	$35.1	$28.8	Continued strong cash performance

[1]Please refer to reconciliations of non-GAAP financial measures included in this presentation and in our earnings release

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Strong Cash From Operations

Low Capital Expenditure, Consistent Return to Shareholders
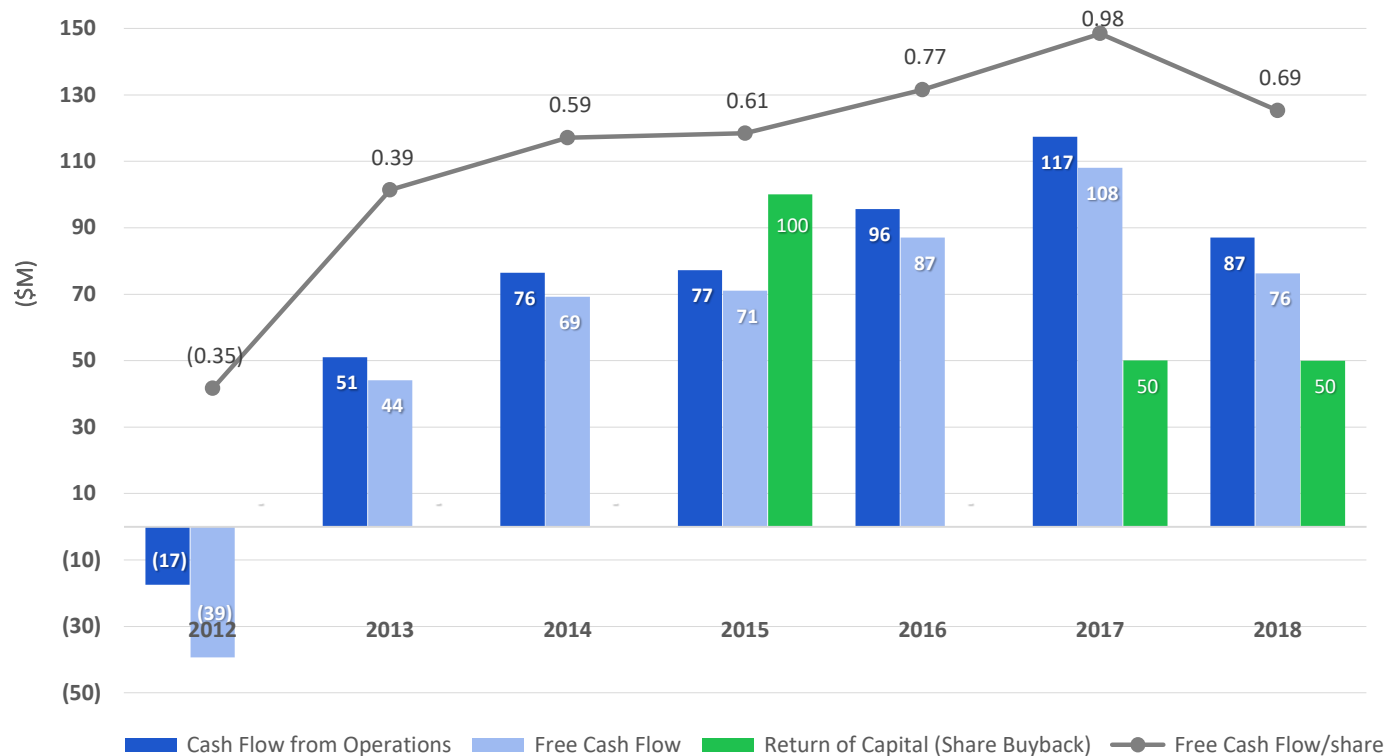
- Predictable revenue stream provides consistent cash flow

- Returned $200M of cash to shareholders from 2015 through 2018 through Accelerated Share Repurchase programs

Rambus Investment Summary

- Focus on core strength in semiconductor

  Targeting high-growth data center and edge markets with steady growth in product revenue

- Solid foundation of committed, long-term revenue

  Continued profitable growth with high, predictable margin from reoccurring royalties and fees

- Strong balance sheet to support strategic initiatives

  Consistent generation of cash from operations

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Thank you

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Reconciliation of Non-GAAP Financial Measures

Net Income (Loss) in Millions	Q1 2018 (ASC 606)	Q2 2018 (ASC 606)	Q3 2018 (ASC 606)	Q4 2018 (ASC 606)	Q1 2019 (ASC 606)
GAAP Net Loss	($36)	($15)	($105)	($2)	($27)
Adjustments:					
Stock-based compensation	$8	$2	$6	$6	$7
Acquisition-related transaction costs & retention bonus	$0	$0	$0	$0	$0
Amortization	$11	$9	$5	$5	$5
Restructuring charges	$3	($1)	$0	$0	$0
Non-cash interest expense	$3	$3	$2	$2	$2
Provision for (benefit from) income taxes	($0)	($0)	$90	($2)	$3
Non-GAAP Net Income (Loss)	($11)	($3)	($1)	$9	($9)

Operating Income (Loss) in Millions	Q1 2018 (ASC 606)	Q2 2018 (ASC 606)	Q3 2018 (ASC 606)	Q4 2018 (ASC 606)	Q1 2019 (ASC 606)
GAAP Operating Loss	($44)	($20)	($19)	($4)	($31)
Adjustments:					
Stock-based compensation	$8	$2	$6	$6	$7
Acquisition-related transaction costs & retention bonus	$0	$0	$0	$0	$0
Amortization	$11	$9	$5	$5	$5
Restructuring charges	$3	($1)	$0	$0	$0
Non-GAAP Operating Income (Loss)	($22)	($10)	($8)	$7	($19)
Depreciation	$3	$3	$3	$3	$3
Adjusted EBITDA	($19)	($7)	($5)	$10	($16)

Certain amounts may be off $1.0M due to rounding.

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GAAP & Non-GAAP P&L

ASC 606 In $ Millions	GAAP Actual Q1'19	Pro Forma Actual Q1'19	Delta to GAAP
Revenue	48.4	48.4	-
Cost of revenue	11.2	7.3	(3.9)
Research and development	40.6	37.4	(3.2)
Sales, general and administrative	27.6	22.6	(5.0)
Restructuring charges	0.3	0.0	(0.3)
Total operating costs and expenses	79.8	67.3	(12.5)
Operating loss	(31.4)	(18.9)	12.5
Interest and other income (expense), net	5.1	6.8	1.7
Loss before income taxes	(26.3)	(12.1)	14.2
Income tax provision	0.3	2.9	2.6
Net loss	(26.6)	(9.2)	17.4

Certain amounts may be off $0.1M due to rounding.

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Non-GAAP Provision for (Benefit from) Income Taxes

ASC 606 In $ Millions	Actual Q1'19	Actual Q4'18	Variance QoQ
Provision for income taxes (GAAP)	0.3	1.8	
Adjustment to GAAP provision for income taxes	(3.2)	1.2	
Non-GAAP provision for (benefit from) income taxes	(2.9)	3.0	(5.9)

Supplemental Reconciliation of GAAP to Non-GAAP Effective Tax Rate (1)

	Actual Q1'19	Actual Q4'18	Variance QoQ
GAAP effective tax rate	(1)%	(894)%	
Adjustment to GAAP effective tax rate	25%	918%	
Non-GAAP effective tax rate	24%	24%	0.0

(1) For purposes of internal forecasting, planning and analyzing future periods that assume net income from operations, the Company estimates a fixed, long-term projected tax rate of approximately 24 percent for both 2018 and 2019, which consists of estimated U.S. federal and state tax rates, and excludes tax rates associated with certain items such as withholding tax, tax credits, deferred tax asset valuation allowance and the release of any deferred tax asset valuation allowance. Accordingly, the Company has applied these tax rates to its non-GAAP financial results for all periods in the relevant year to assist the Company's planning. Certain amounts may be off by $0.1M due to rounding.

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Revenue Breakdown

In Millions

Rambus	ASC 606					ASC 606
	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19
Royalty Revenue	$21.4	$30.0	$33.6	$45.4	$130.5	$24.8
Product Revenue	$7.3	$8.1	$11.8	$11.5	$38.7	$9.0
Contract and Other Revenue	$17.7	$18.3	$14.4	$11.6	$62.0	$14.6
Total	$46.4	$56.5	$59.8	$68.5	$231.2	$48.4

MID	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19
Royalty Revenue	$19.5	$18.3	$27.3	$40.3	$105.4	$19.4
Product Revenue	$6.3	$7.6	$11.3	$11.1	$36.4	$8.8
Contract and Other Revenue	$8.2	$9.1	$5.4	$4.2	$26.8	$6.3
Total	$34.0	$35.0	$44.0	$55.6	$168.6	$34.5

RSD	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19
Royalty Revenue	$1.5	$11.8	$6.3	$5.1	$24.6	$5.4
Product Revenue	$0.1	$0.4	$0.5	$0.4	$1.4	$0.2
Contract and Other Revenue	$8.5	$9.3	$9.0	$7.4	$34.2	$8.3
Total	$10.0	$21.5	$15.8	$12.9	$60.2	$13.9

RLD	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19
Royalty Revenue	$0.4	$0.0	$0.0	$0.0	$0.4	$0.0
Product Revenue	$0.9	$0.0	$0.0	$0.0	$0.9	$0.0
Contract and Other Revenue	$1.1	$0.0	$0.0	$0.0	$1.1	$0.0
Total	$2.4	$0.0	$0.0	$0.0	$2.4	$0.0

Certain amounts may be off $0.1M due to rounding.

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Revenue and Licensing Billings

In Thousands

Rambus	ASC 606					ASC 606	ASC 605				
	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018
Royalty Revenue	$21,374	$30,049	$33,599	$45,430	$130,452	$24,853	$77,174	$73,626	$75,704	$76,717	$303,221
Product Revenue	$7,313	$8,087	$11,753	$11,537	$38,690	$8,964	$7,556	$8,221	$11,753	$11,867	$39,397
Contract and Other Revenue	$17,739	$18,322	$14,402	$11,596	$62,059	$14,567	$15,729	$16,973	$12,383	$13,398	$58,483
Total	$46,426	$56,458	$59,754	$68,563	$231,201	$48,384	$100,459	$98,820	$99,840	$101,982	$401,101

Rambus	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19
Royalty Revenue	$21,374	$30,049	$33,599	$45,430	$130,452	$24,853
Licensing Billings[1]	$75,924	$73,210	$75,374	$76,717	$301,225	$75,460
Delta	$54,550	$43,161	$41,775	$31,287	$170,773	$50,607

[1] Licensing billings is an operational metric that reflects amounts invoiced to our patent and technology licensing customers during the period, as adjusted for certain differences.
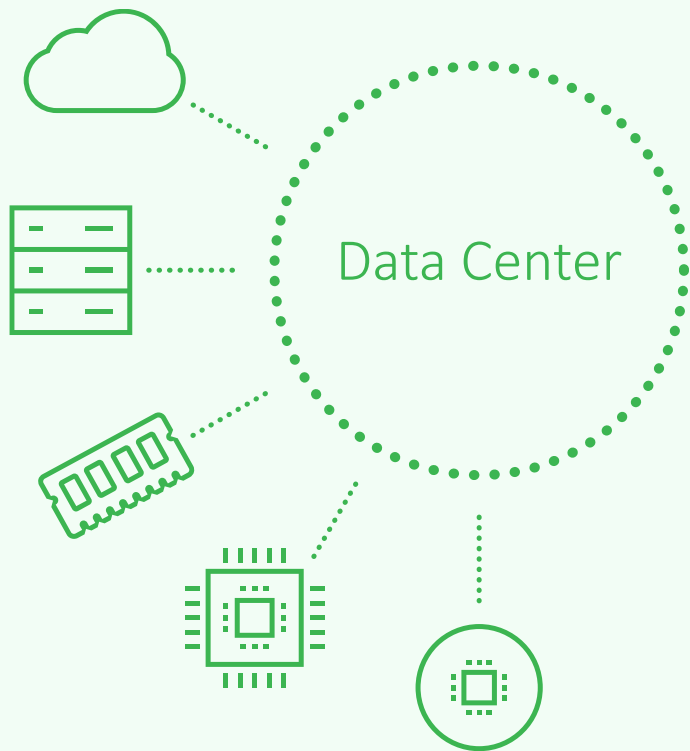
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Product Overview

The Data Center

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Cores

SerDes PHYs
Move data from chip to chip

Memory PHYs
Move data between chips and memory

Chips

Server DIMM Chipsets
Enables more capacity at high performance

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SerDes PHYs

Optimized for power and area, our line-up of SerDes Interface solutions deliver maximum performance and flexibility for today's most challenging systems.

Fully Standards-Compatible

- Compliant with the latest industry-standard specifications
- Support for multi-modal functionality

Enhanced Design Flexibility

- Support for multiple packaging options
- Enhanced margin and yield

Reduced Power

- Improved power efficiency
- Lower signaling and stand-by power

Improved Performance

- Increased data rates
- Improved bandwidth
- Higher capacity

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Rambus High-Speed SerDes PHY Solutions

Complete Solutions: SerDes PMA+ PCS, MAC (Partners)

16G	28G	56G	112G
28nm & 14nm	14nm	10nm	7nm
• PCIe 4/3/2 • CEI 11/6 • XFI/XAUI • SATA • SAS	• CEI-28/25/11 • 100/10GbE • FC28 • XFI/XAUI	• CEI-56G MR • CEI-56G LR • CEI-28/25/11 • 400/100GbE • PAM-4/NRZ	• CEI-112G LR • CEI-56/28/25 • 800/400/200/100GbE • PAM-4/NRZ ROAD MAP: • CEI-112G XSR
Si ✓	Si ✓	LEAD CUSTOMERS	
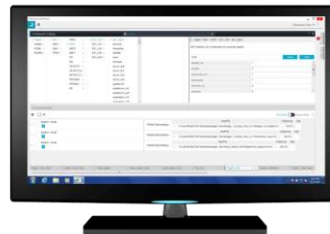
Integrated tools for easy bring-up and characterization

LabStation Platform

- Easy-to-use PC Interface
- Interface to 3rd party software
- Pre-defined test scripts
- PHY control settings
- External instrument control
- System characteristics and analysis

Validated solutions with partners

PLDA   avery design systems   CoMIRA SOLUTIONS

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25

Memory PHYs

With their reduced power consumption and industry-leading data rates, our line-up of enhanced memory interface solutions support a broad range of industry standards with improved margin and flexibility.

Fully Standards-Compatible

- Compliant with the latest JEDEC and industry-standard specifications
- Support for multi-modal functionality

Enhanced Design Flexibility

- Support for multitude packaging options
- Enhanced margin and yield

Reduced Power

- Improved power efficiency
- Lower signaling and stand-by power

Improved Performance

- Increased data rates
- Improved bandwidth
- Higher capacity

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Rambus Memory PHY Solutions

Memory PHY Solutions for Networking and Data Center

DDR4/3
28nm & 14nm

- 3200Mbps
- x16 – x72-bits
- 1-4 Ranks
- DFI 4.0

HBM2
14nm

- 2000Mbps
- 1024-bit
- 2.5D design architecture

GDDR6

- 12-16 Gbps
- 2x 16-bit channels

In Development

DDR5 & HBM3

ROADMAP

Integrated tools for easy bring-up and characterization

LabStation Platform

- Easy-to-use PC Interface
- Interface to 3rd party software
- Pre-defined test scripts
- PHY control settings
- External instrument control
- System characteristics and analysis

Validated solutions with partners

Server DIMM Chipsets

Built for speed, power efficiency and reliability, the DDRn chipsets for RDIMM, LRDIMM and NVDIMM server modules delivers the top-of-the-line performance and capacity needed to meet the growing demands on enterprise and data center systems.

Industry-leading Performance

- Fully-compliant with the latest JEDEC standards
- Operational speeds up to 3200 Mbps

Enhanced Margin

- Wide margin I/O design with advanced programmability
- Exceed JEDEC reliability standards for ESD and EOS

Optimized Power

- Advanced power management
- Frequency-based, low-power optimization

Superior Debug and Serviceability

- Integrated tools for bring-up and debug
- Works out-of-the-box with no BIOS changes required

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Rambus Server DIMM Chipset Solutions

Server DIMM Chipsets: enabling performance and capacity

DDR3
DB & RCD

- JEDEC Compliant
- Speeds up to 2133
- Multiple OEM qualifications

AVAILABLE IN PRODUCTION

DDR4
DB & RCD

- JEDEC Compliant
- Speeds up to 3200
- Multiple OEM qualifications

AVAILABLE IN PRODUCTION

NV
DDR4 NVRCD

- JEDEC Compliant
- Speeds up to 3200
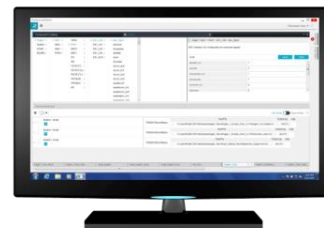- Ongoing qualifications

AVAILABLE IN PRODUCTION

DDR5
DB & RCD

- Consistent with JEDEC direction

UNDER DEVELOPMENT

Smart tools for easy integration and reduced time to market

LabStation Platform
and Buffer BIOS Integration Tool

Validated solutions with partners

SAMSUNG   SK hynix   Micron

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The Mobile Edge

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Embedded Security

Secure Cores
Embedded device protection

CryptoManager Platform
Secure provisioning and key management

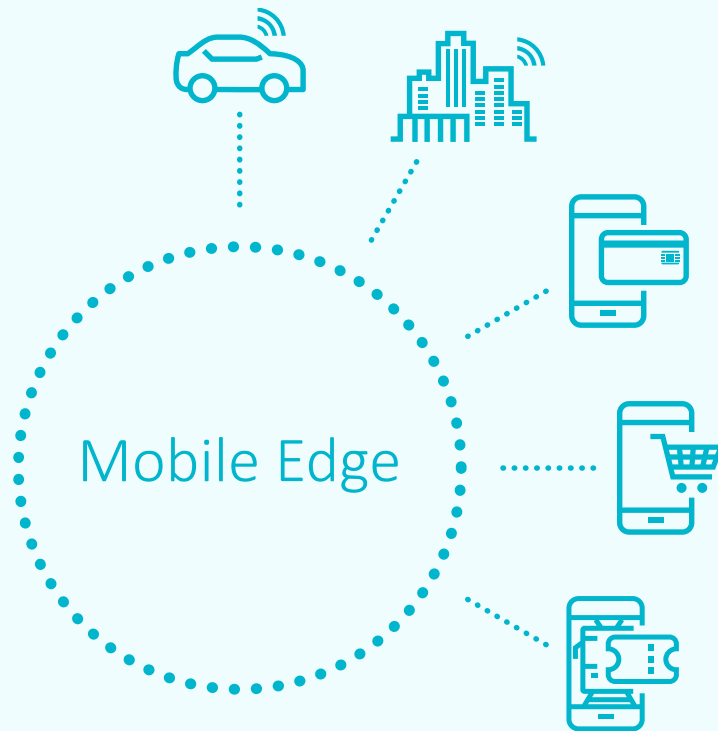## Secure Services

CryptoManager Trusted Services
IoT Security Service

Secure Software

Mobile Payments
Secure payments and trusted transactions

Smart Ticketing
Simplified travel with mobile ticketing
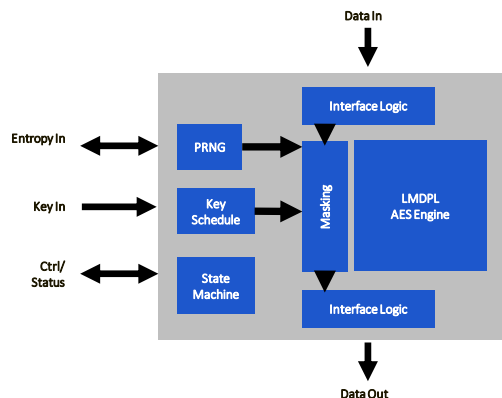
Mobile Edge

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Secure Silicon IP

DPA Countermeasures
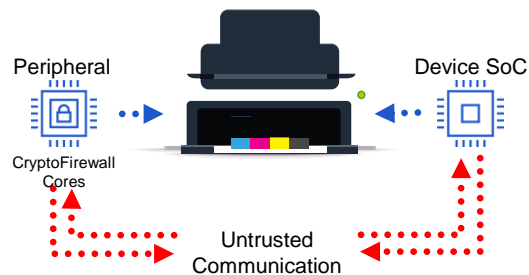
Cores, Software, and Workstation

- Cores and services
- Accelerate integration & TTM

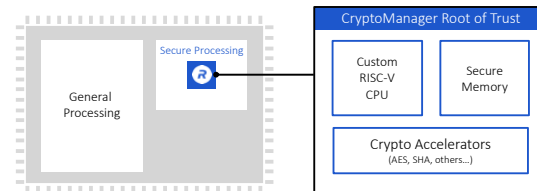## Anti-Counterfeiting

CryptoFirewall Cores

- Consumable authentication
- Major printer OEMs

Hardware Root of Trust

CryptoManager Root of Trust

- Siloed, layered security co-processor
- Designed with security as the #1 priority, not speed

CryptoManager Security Platform

From security cores to high-performance secure device provisioning, the CryptoManager Security platform is a family of hardware security cores and provisioning infrastructure that creates a trusted path from the SoC manufacturing supply chain to downstream service providers with a complete silicon-to-cloud security solution.

Improved Profitability

- Improved time-to-market and reduced inventory waste
- Dynamic SKU and feature management lowers inventory costs
- Reduced operating costs through unified manufacturing and provisioning systems

Superior Security

- Provide a robust hardware root-of-trust
- Secure valuable secret keys, identity credentials, intellectual property, and other sensitive data
- Protect against cloning, counterfeiting, and reverse engineering

Control the Value Chain

- Actively monitor production status, availability, and inventory levels
- Validate process information through secure logs
- Proven in today's high-volume manufacturing facilities

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Root of Trust: Implementing Trust by Design in Silicon

Design Freedom

- Root of trust designed from the bottom up for security
- Control all implementation starting with open RISC-V Instruction Set Architecture

Siloed
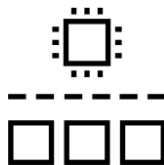
- Separate general and secure processing
- Optimize independently for performance and security

Layered Security
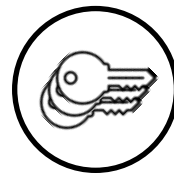
- Strongest security enforced in hardware at inner layer
- Outer layers are more flexible, but less trusted

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CryptoManager Root of Trust

Secure Functionality:

- Secure Boot
- Remote Attestation
- Authentication
- Runtime Integrity

CryptoManager Embedded Security Infrastructure

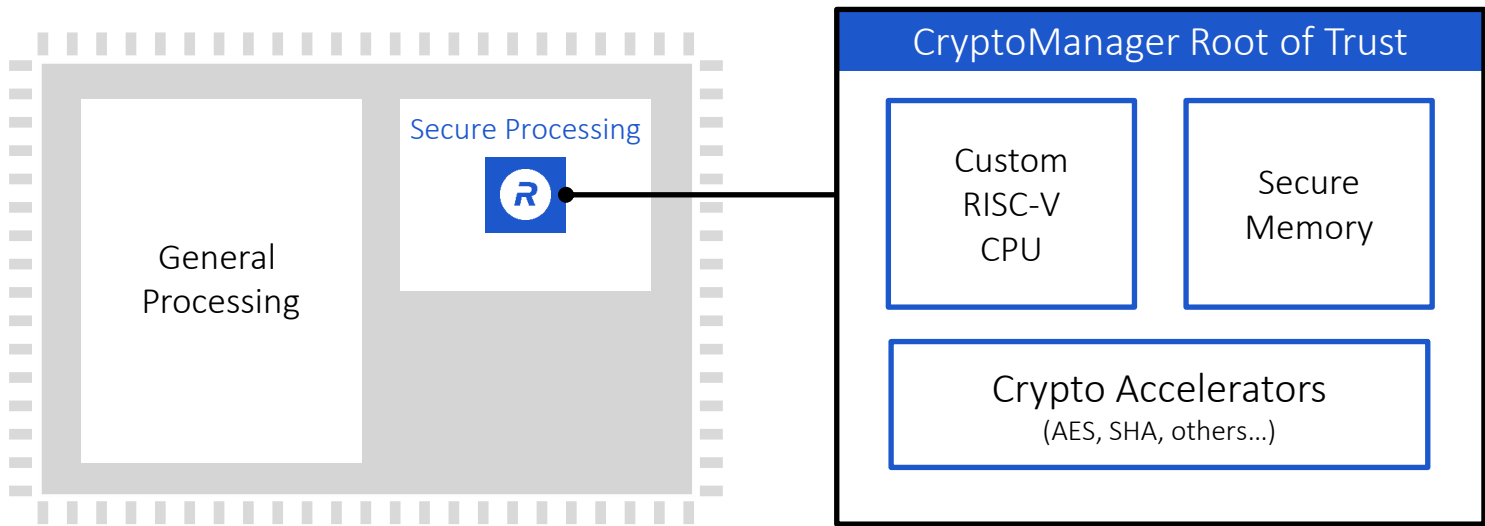| Offline Root Server	CryptoManager Service	CryptoManager Appliances
System Root-of-Trust, manages high value keys, kept in secure facility, authorizes all provisioning activity	Control center used for monitoring and managing all provisioning activity, typically located in chip maker data center	Tamper proof HSM-enabled devices that connect directly to testers in the manufacturing facility

CryptoManager Control Center

Offline Root Server

CryptoManager Server

Admin Console

CryptoManager Appliance Cluster
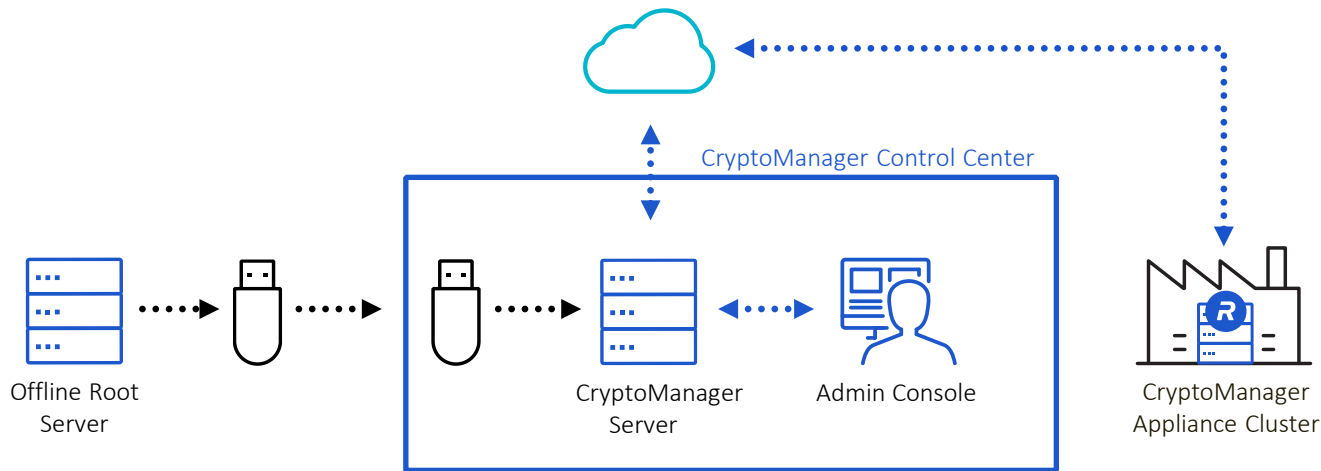
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Payments & Tokenization

Comprehensive solutions for banks, financial institutions and retailers alike. From Host Card Emulation (HCE) and OEM Pays, to retail scan and go with real-time loyalty redemption, to tokenization of real-time payments (RTP) and Automated Clearing House (ACH) transactions, to blockchain, Rambus software and services, secure a wide range of applications for customers worldwide.

Improved Time-to-market

- Reduce implementation time with proven solutions for mobile, direct debit and credit, and retail payments
- Vertically integrated to provide a comprehensive solution

Enhanced User Experience

- Retain branding and drive digital engagement with bank and retail mobile wallets
- Increase customer adoption with support for major mobile payment platform

Superior Security

- Utilizes tokenization to reduce risk of card-and account-based fraud
- Provides layered security with cryptograms, domain controls and tokenization

Reduced Cost

- Integrates with existing infrastructure and processes
- Supports closed- loop payments to reduce transaction fees

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Enabling Mobile Payments for NFC Devices

Token Service Provider

- Leverages Host Card Emulation (HCE) and tokenization to enable secure mobile payments

- Single interface to connect with multiple schemes and OEM Pay platforms

- Maintained up-to-date with latest TSP specifications

Bank Pay / OEM Pay

Credit and Debit Schemes

HCE

Tokenization Manager

Transaction Manager

Secure Element Management

Token Service Provider
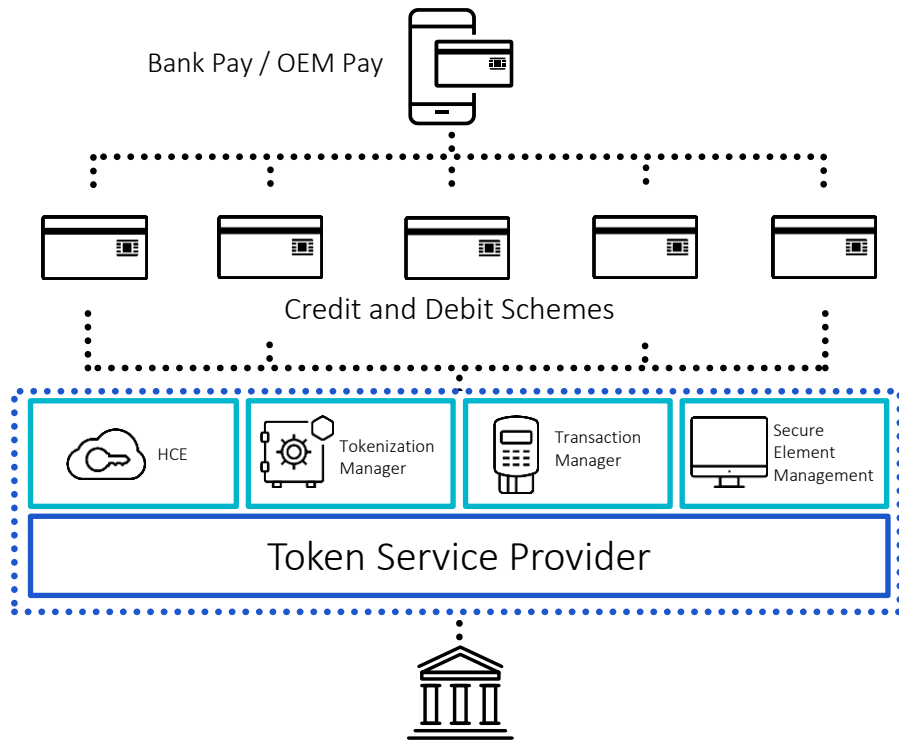
Scan and Go with In-aisle Check Out

New Account	In-Aisle Purchase	In-store Advertising	Mobile Check Out	Complete Shopping

Consumer

- **New Account**
  - Create account with retailer
  - Load CC info

- **In-Aisle Purchase**
  - Chose an item, photo/scan to add to virtual cart
  - Place item in cart or collect on check-out

- **In-store Advertising**
  - Receive in-store coupons and recommendations based on cart items or geo-beacons
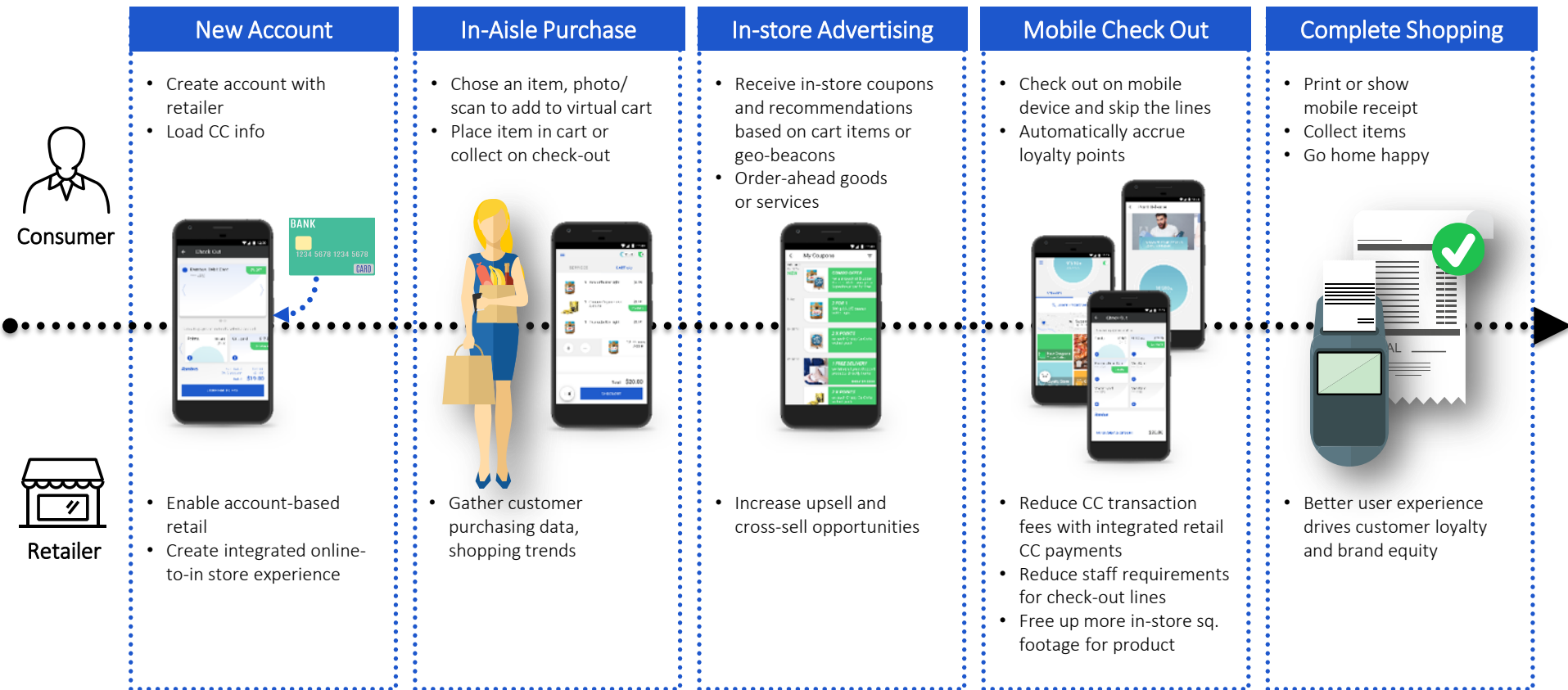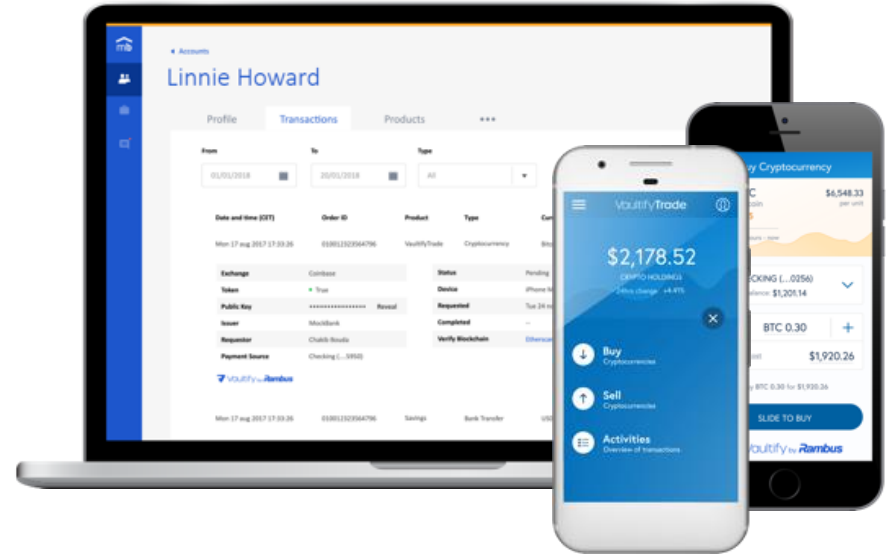 - Order-ahead goods or services

- **Mobile Check Out**
  - Check out on mobile device and skip the lines
  - Automatically accrue loyalty points

- **Complete Shopping**
  - Print or show mobile receipt
  - Collect items
  - Go home happy

Retailer

- **New Account**
  - Enable account-based retail
  - Create integrated online-to-in store experience

- **In-Aisle Purchase**
  - Gather customer purchasing data, shopping trends

- **In-store Advertising**
  - Increase upsell and cross-sell opportunities

- **Mobile Check Out**
  - Reduce CC transaction fees with integrated retail CC payments
  - Reduce staff requirements for check-out lines
  - Free up more in-store sq. footage for product

- **Complete Shopping**
  - Better user experience drives customer loyalty and brand equity
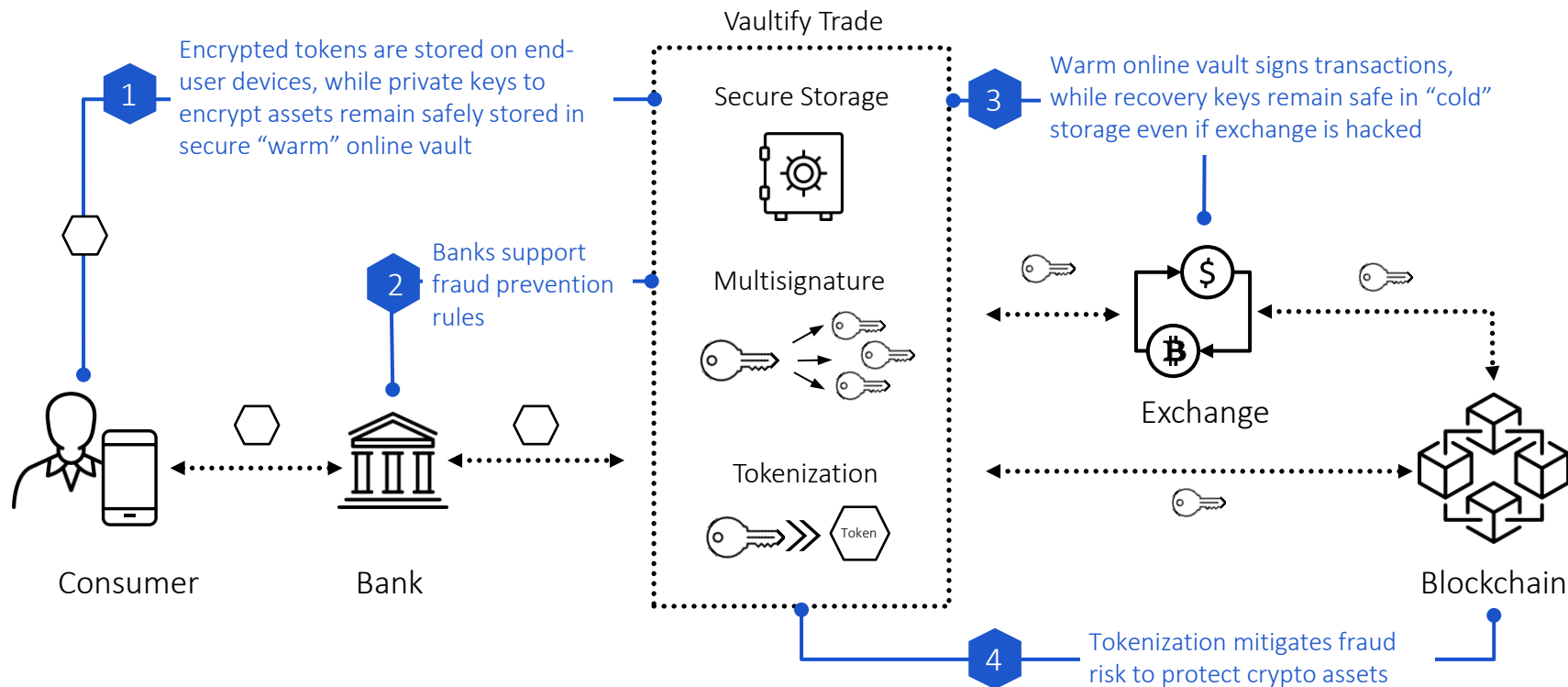
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38

Vaultify Trade

A Tokenization platform for the secure transaction and storage of digital assets on blockchain

- Combines multi-signature with bank-grade tokenization to enhance security, confidentiality and privacy of private keys

- First solution to enable banks, exchanges and investment companies to leverage tokens to securely buy, sell, trade and store crypto assets

- Integrates with existing mobile banking, trading and wallet apps for easy access to crypto assets

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Improving Security of the Blockchain

Vaultify Trade

1 Encrypted tokens are stored on end-user devices, while private keys to encrypt assets remain safely stored in secure "warm" online vault

3 Warm online vault signs transactions, while recovery keys remain safe in "cold" storage even if exchange is hacked

Secure Storage

2 Banks support fraud prevention rules

Multisignature

Tokenization

Token

Consumer

Bank

Exchange

$

₿

Blockchain

4 Tokenization mitigates fraud risk to protect crypto assets

Smart Ticketing

Suitable for multi-modal transport solutions including rail, bus, ferry and taxi, our end-to-end smart ticketing solutions can be implemented in any transport scenario.

Ease of Integration

- Comprehensive solutions from back office, to mobile device, to smart card
- Compatible with existing smart systems and suppliers
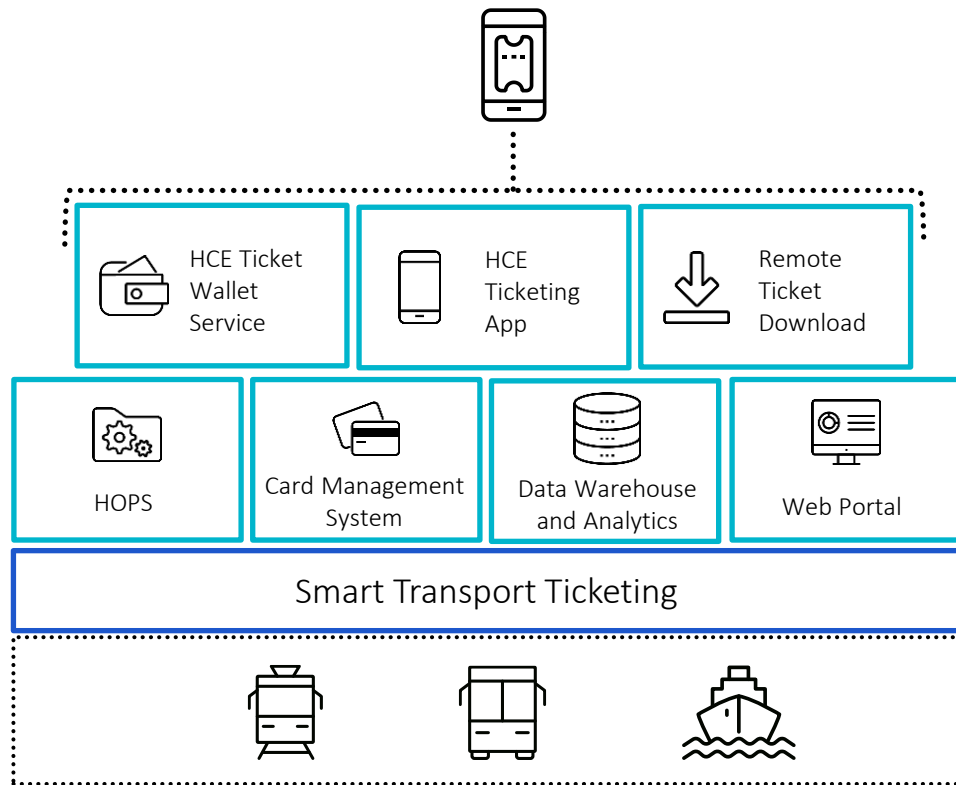
Improved Profitability

- Enhanced business intelligence through account-based ticketing and data analytics
- Easy management of transaction data to ensure correct reimbursements

Superior Security

- Reduced risk of fraud with smart technology versus paper tickets

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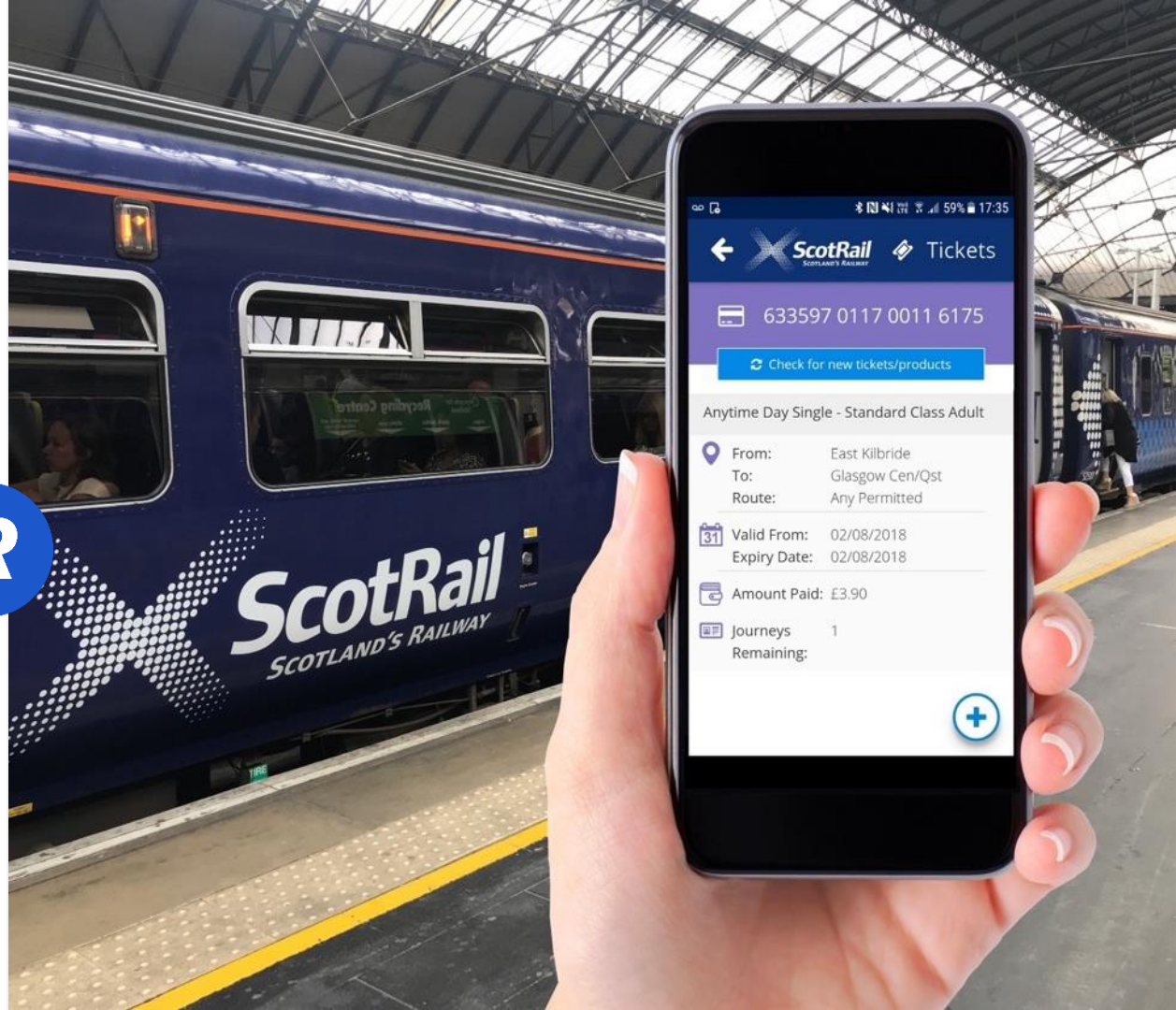
Comprehensive Smart Ticketing Solutions

- End-to-end smart ticketing solutions from back-office processing and traveler analytics, to online purchasing and remote download of tickets

- Leverages secure NFC and mobile technology to replace paper tickets

- Integrated systems for operators to manage passenger journey transactions and analytics to optimize transport systems

HCE Ticket Wallet Service

HCE Ticketing App

Remote Ticket Download

HOPS

Card Management System

Data Warehouse and Analytics

Web Portal

Smart Transport Ticketing

Rambus Ticketing

First to bring Smart Mobile Ticketing to Rail in UK

Enabling passengers on Scotland's national railway to use their smartphone to purchase tickets and simply tap to travel

Thank You

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