

Operating Systems

Card operating systems for public transport

HID's SOMA Atlas® chip operating system platform is designed to address a diverse set of applications and solve multiple access control use cases, especially for transport operators. Innovative architecture allows users to combine secure access functionality across transportation, events and tourism venues. Additionally, e-purse and other applications can be integrated into the OS.



A MODULAR OFFERING FOR MANY APPLICATIONS:

SOMA Atlas® KIAT® is a specialized multi-application operating system developed by HID Global. Due to vast experience in smart card and application development like the MIT® operating system in Italy, KIAT is flexible and customizable to solve typical Smarty City user requirements.

A light version of the KIAT operating system is also available in our portfolio. **SOMA Atlas KIAT Light** is a shrunk version of the original OS ported on a smaller and thinner microprocessor tailored for middle range paper ticket use.

SOMA Atlas, combines the **multi-application capabilities** of KIAT with the advantages of the **international Calypso Prime Rev 3 (3.1, 3.2, 3.3)** standard for ticketing and is the ideal choice for transportation and secure multi-application smart cards.

The **Calypso Light Application (CLAP)** helps public transport operators trying to reduce their costs. Our solution offers the same security of a full Calypso product, but at a very competitive price. The CLAP solution in form of a paper ticket is designed to replace traditional memory-only offerings adding advanced security features. HID Global has been awarded for developing the first certified CLAP implementation worldwide.

SOMA Atlas 4Digital SDK is the world's first Calypso certified software development kit to enable implementing secure and convenient transport tickets on mobile phones that support Host card emulation (HCE) via their NFC function.

All operating systems can be embedded in various, optionally customized and/or personalized, form factors like: Paper tickets, smart cards and key fobs. The SOMA Atlas 4Digital SDK enables virtual tickets on HCE supporting phones (Android).



KEY BENEFITS

- **Reliable Performance** – Innovative development, integration and quality testing
- **Versatile** – Addresses multiple markets and applications
- **Scalable** – Seamless operation, concurrent applications
- **Mobile ready** – SDK supporting mobile credentials via Host Card Emulation (HCE)

For more information, contact tagsales@hidglobal.com

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KEY TECHNOLOGY HIGHLIGHTS

- ISO 7816-4 compliant data structure
- Active authentication / PIN
- Transaction Management (KIAT and Calypso)
- Secure messaging
- Secure proprietary e-purse
- Roll back functionality
- SOMA Atlas 4Digital SDK enabling virtual Calypso tickets by HCE

TYPICAL APPLICATION AREAS

Fast, small and secure multi-application operating systems for:

- Transportation
- Loyalty
- Access Control

	Operating System			
Platform	Soma™ Atlas™			
Operating System	KIAT™	KIAT™ Lite	Calypso™	CLAP™
	SECURE MICRO-CONTROLLER			
Security	SOLID FLASH™ with full E²PROM functionality			
Memory	2 chip options: SLE77, 16-bit CPU with 6KB of RAM, or SLC36 32-bit CPU with 12KB of RAM			
Non-Volatile Memory	Flexible secure NVM size to choose from	Flexible secure NVM size to choose from	Flexible secure NVM size to choose from	60 KB or 100 KB
Symmetric cryptographic engine	DES, AES	DES	DES, AES	DES
Asymmetric cryptographic engine	RSA, ECC	N/A	RSA, ECC	N/A
Side channel attacks	Resistant			
Memory management & protection (MMU)	Yes			
Unique chip identification	Yes			
Environment sensors	Yes			
	CHIP CERTIFICATION			
Common Criteria certification	SLE77: EAL5+ high / SLC36: EMVco and EAL6+			
EMVCo	Yes	No	Yes	No
	COMMUNICATION PROTOCOLS			
Contact	ISO 7816 up to 192 kbps (T=0, T=1)	N/A	ISO 7816 up to 192 kbps (T=0, T=1)	N/A
Contactless	Contactless ISO 14443 type A & B up to 848 kbps; CEN/TS 16794 A&B, Calypso B Prime			
NFC Forum Tag Type 4	Yes			
	OPERATING SYSTEM FEATURES			
User Memory	5 KB, 20 KB, 64KB	20 KB	5 KB, 20 KB, 64KB	2 KB, 4 KB
Multi Application	Yes			No
	CRYPTOGRAPHIC ALGORITHMS			
Cipher	DES (TDES, DESX) ECB-CBC; AES	DES (TDES) ECB-CBC; AES	DES (TDES, DESX) ECB-CBC; AES	DES (TDES) ECB-CBC
Signature	DES MAC8	N/A		DES MAC8
MAC	ISO 9797, ISO 10118		Calypso™ MAC based on ISO 9797	
Checksum	CRC16/CRC32			
Random number	Secure Random			
DES Key sizes	up to 120-bit			
AES Key sizes	128 bit			N/A
	DELIVERY FORMATS			
Modules	Contactless, Contact & Dual-Interface			Contactless
Contactless prelamines for cards	Polycarbonate, PVC & PET-G, other materials on request			
ISO Smart cards	PVC, PET and PC			
Paper ticket	No	Yes	No	Yes
Other form factors	Yes e.g. Key fobs, wristbands			



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