Calypso Standard License for cards

The Calypso standard is the only open ticketing standard widely deployed, with more than 150 million cards used daily in more than 125 transport networks in many countries in the world.

This success has confirmed the initial choices: *openness*, *high security*, *based upon international standards*.

The Calypso license is accessible to any company wishing to supply Calypso cards.

A **Calypso card** is a secure element containing at least one application compliant with one of the Calypso card specifications and has received a certificate from CNA. A card may be any portable device with an ISO/IEC 14443 interface (e.g.: a contactless smart card, a mobile phone with contactless communication, a wristwatch with an embedded contactless component).

Only manufacturers of Calypso cards need a license. Other companies may freely use the standard and access the Calypso specifications: users (public transport company or authority, parking applications, etc.), integrators, manufacturers of readers and terminals. If you are a user, you might find the right solution for your needs by contacting other Calypso users within the Calypso Networks Association.

Innovatron (www.innovatron.fr) is at the origin of the developments of the smart card technology since 1974. From 1992, a major program of Research & Development in partnership with the RATP and the SNCF has resulted in Innovatron extending the application of the Smart Card technology, enabling its use through a contactless communication interface, particularly suitable for public transport applications.

During this program, Innovatron developed proprietary technology, the subject of many patent applications protecting the investments made and used in particular in the European remote ticketing projects, called Icare and Calypso.

The *Calypso standard* and the international standard *ISO/IEC 14443 B* directly result from this research.

Innovatron has licensed these technologies to more than 60 companies all over the world and manages the Calypso licensing since these initial developments.

CNA, Calypso Networks Association (www.calypsonet.org), the nonprofit association of users of the Calypso standard, has played a central role in the development of the standard, particularly in recent years with the deployment of new ticketing approaches: NFC phones, account-based ticketing, post-payment, mobility as a service ("MaaS"), light ticketing and open source.

CNA and Innovatron promote the Calypso standard since more than twenty years, contribute to its development by updating and the maintaining its specifications, managing the database of unique Calypso serial numbers and associated registries.

CNA is also in charge of the certification process of Calypso cards designed to ensure the security and interoperability of products implementing the Calypso standard while protecting the licensees products from unfair competition. CNA also manages the CALYPSO trademark (European Union no. 006917173) whose use is regulated by the *Calypso Trademark Policy*.

1. Calypso Cards

Suppliers of Calypso cards need to sign a Calypso license.

Integrators and users of cards and components manufactured under license do not need to take a license nor pay any fee (including card embedders integrating OEM Calypso components).

The license for cards (phones, etc.) allow the use of the Calypso IP (brand, specifications, etc.) to develop Calypso compliant software and to market cards including it.

The duration of the license is the duration of the market for the contractual products. The licensee has the possibility of terminating the contract at any time. The financial conditions include an initial payment and royalties.

The financial conditions of the Calypso license for certified cards are given below.

License Costs

Initial Payment: 10 000 euros (includes a one-year membership to Calypso Networks Association).

Calypso Product	*Royalty per product*	
Calypso Basic	*< 80 million units* 0.0035 euro (0.35 cent)	*> 80 million units* 0.0025 euro (0.25 cent)
Calypso Light	*< 30 million units* 0.0115 euro (1.15 cent)	*> 30 million units* 0.0080 euro (0.80 cent)
Calypso Prime *(NOT using the Calypso applet)*	0.0200 euro (2.00 cent)	
Calypso Prime ***using the Calypso Applet***	0.0250 euro (2.50 cent)	
Calypso HCE	0.050 euro (5.00 cent)	

Calypso Applet for non-licensee

Remote activation of Calypso certified Java applets may be done with an activation module:

	Module cost	*Cost per activation*
Calypso Applet	300 euros	0.045 euro (4.5 cent)

2. Indicative summary of the Calypso technical documents

The Calypso Standard details how to securely transmit ticketing data between a traveler card, a phone, a watch, etc., and a ticketing reader, such as an access control barrier, vending machine, handheld reader.

The technical documents cover card personalization, purchase, loading, validation and control of tickets and transport contracts.

All Calypso products are based on existing standards to ensure seamless integration and support global interoperability. Using chips and near-field-communication (NFC) technology, it is a *contactless* standard that supports fast throughput at transport locations during peak commute times, taking less than 150 milliseconds to transact.

The Calypso Standard enables transport operators to effectively fight fraud as tickets cannot be duplicated, transferred, or altered. Prior to any modification being made to a ticket hosted in a Calypso card, the card is authenticated by the reader, and the reader by the card. To date, no Calypso card has experienced a security breach.

Manufacturers use the technical documents as a baseline on which to build secure ticketing and access control products to integrate into established systems; across different modes of transport (bus, train, parking), different transport networks (across regions and cities) and international borders.

Transport operators and authorities specify the use of standards within their ticketing systems to:

- Supervize their ticketing network.
- Avoid vendor 'lock-in', as multiple manufacturers provide Calypso products, to ensure system sustainability.
- Optimize card performance as Calypso evolves with the latest technology advancements.
- Enable mobility services to be combined.
- Offer seamless travel and end-to-end ticketing services.
- Deliver true scalability, as the Calypso community evolves and adapts the ticketing technology throughout a system entire lifecycle.
- Enable interoperability by following international standards.

All Calypso technical documents are available from Calypso: *http://calypsonet.org/documents*

To download the technical documents, you need to register on the web site.

Some of them are only accessible to CNA members or after signing a NDA for security purposes.

In addition, Calypso licensees have also access to the Calypso security and cryptographic specifications.

For more information, please contact us:

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