



CRIS

CUSTOMER
RELATIONSHIP
INFORMATION
SYSTEM

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INTRODUCTION

MERCATOR

MERCATOR is the Information Technology (IT) division of, and the sole IT services provider for the Dubai based Emirates Group, which includes Emirates Airline, Dubai International Airport and DNATA General Sales Agents (GSA) and Ground Handling Agents (GHA).

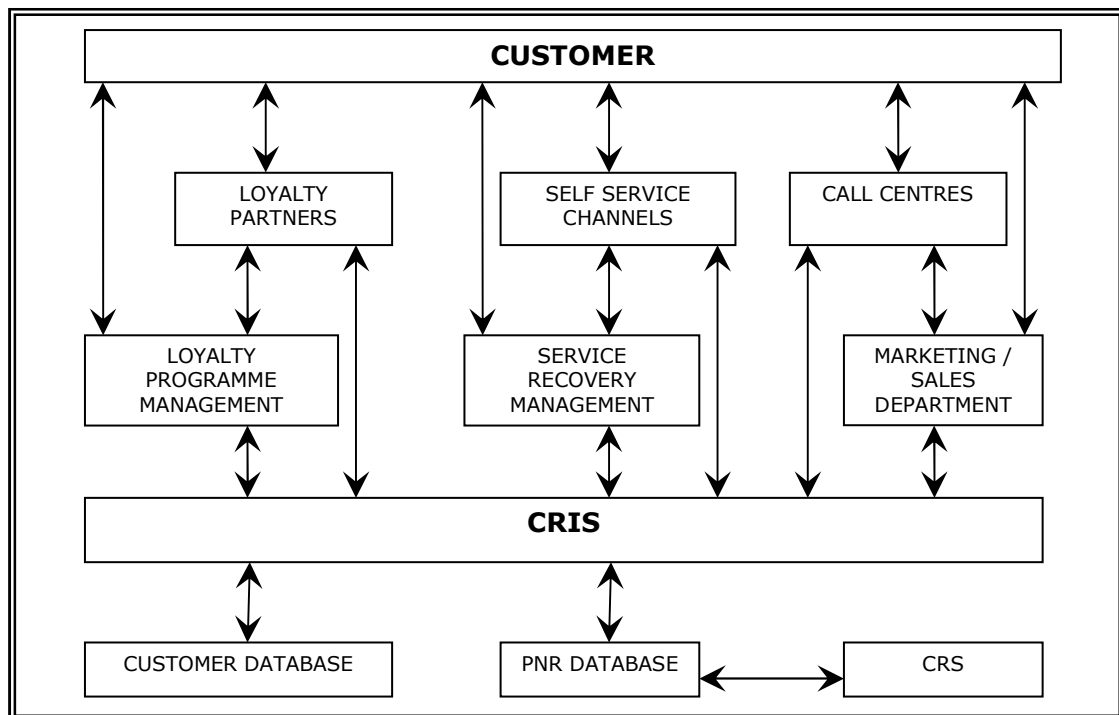
MERCATOR also supplies IT solutions to external business within the aviation industry.

CRIS

CRIS (Customer Relations Information System) is a powerful, flexible and yet scalable Loyalty / Customer Relationship Management solution offering the latest technology combined with business expertise. Demonstrably more than a mere customer database, CRIS provides a unique, unified view of the customer - profile, preferences, requirements and also customer life-time value - on user-friendly screens enabling the Loyalty Programme to offer value-added customer service, contributing thus to business retention and promotion. Customer segmentation can be achieved through profile and preference data with real-time access to customer activity. Multiple programs can be supported along with multiple tiers.

PRODUCT SCOPE

The following diagram depicts the coverage CRIS provides to various stakeholders during their interaction with customers



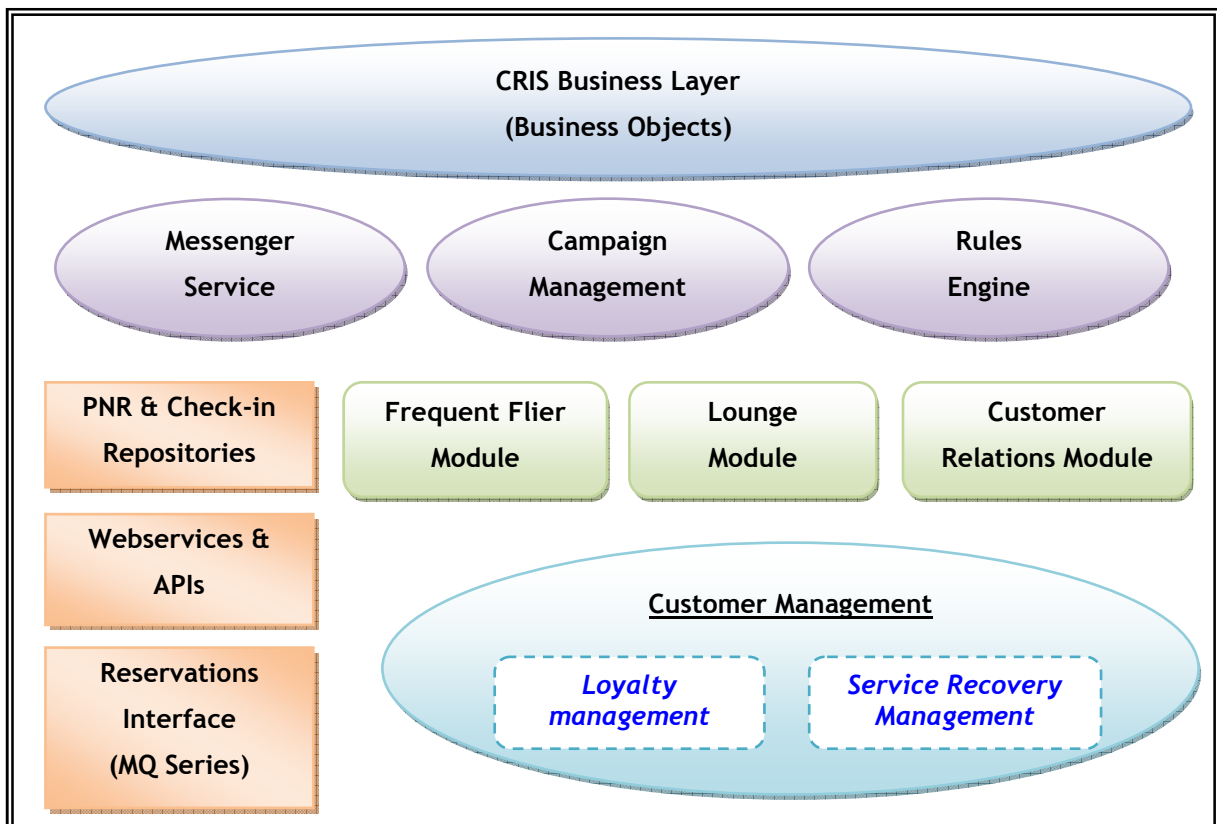
PRODUCT FRAMEWORK

The crucial elements in the framework of CRIS are:

- CRIS Business Layer - primarily used for data mining and gathering information retained in CRIS about members, their behaviours, patterns
- Messenger Service
- Campaign Management
- Rules Engine
- Modules of CRIS
 - Frequent Flier or Loyalty Programme Module
 - Customer Relations Module
 - Lounge Module
 - PNR, Check-in & Ticket repositories

Interface with other applications such as website or reservations systems is made possible through:

- Web services and APIs
- Reservations - MQ series



CRIS Product Framework

CUSTOMER LOYALTY MANAGEMENT

MEMBER MANAGEMENT

Enrolments

Customer Loyalty Programme functions related to members such as enrolment, fulfilment; tier changes and reporting are effectively supported by CRIS. Customer profiles which include personal details, preferences and family programme relationships are also stored in CRIS. Changes in customer profile in CRIS materialises in real-time update of dependent systems as a result of its integration capabilities. Online and offline logging of customer transactions is also supported. Both the system user and the member readily have access to account information including miles earned, redeemed and partner activities.

CRIS is a single comprehensive customer repository for members and prospects (non-members) capturing details of their interaction with the Loyalty Programme along with their Profile information. An on-line enrolment form facilitates the entry of customer enrolments directly into the System while a customer call is being answered.

CRIS also captures enrolments through various channels like:

- Web enrolments
- Batch enrolments using data files from various sources
- Enrolment Mask messages on the reservations system.

For a single customer, several addresses can be captured. Customer profiles can be created and maintained through preferences - meals, drinks, hobbies, lifestyle, and language. CRIS features an extremely flexible customer profile set-up.

Family programme

CRIS manages family programs within the loyalty program where a member can be designated as Family Head and a number of family members can be linked. All family members are customers in their own right and are enrolled as members with their own profiles/preferences but remain associated with the Family Head. When family members earn miles, a percentage of these can be posted into the Family Head's account - this percentage can vary for the Loyalty Programme host and its partners. It is configurable both at System and at Partner level.

Family members can be added, deleted or moved between Family Heads. The number of active family members linked to a Family Head can be configured in CRIS. Also, a pre-defined number of changes in Family members can be free of charge and additional changes can be recorded and charged to the customer.

Corporate Programme

CRIS comprehensively manages corporate accounts; allowing normal 'Earn and Burn' policies to apply and special bonuses can be set up for corporate accounts. Corporate accounts earn miles against member transactions - criteria for this can be determined by the Program Administrator. Members remain associated with the Corporate account and a Corporate account admin can manage the account on behalf of the company.

Accruals

CRIS supports two ways of defining accrued miles - Tier miles and Redemption miles. **Tier miles** are used to determine tier movement for members - they are used as the qualifying criteria and can be based on transactions with the Loyalty Programme Host or even the partners. **Redemption miles** are the points in a member's account which can be redeemed. Miles are accrued into a member's account, with the ability to track the miles at member activity level.

The system also enables the application of retrospective credit with the trigger being a member activity that applies defined rules to credit miles.

Partner activities are uploaded via the text file interface, with auto accrual of the host airline's flight activities made possible through the Passenger Name Record (PNR) repository. The expiry period of miles earned through individual transactions is configurable at an activity level.

Redemptions

Redemption activities can be setup in the system for each partner with the billing rate established at the activity level.

Redemption is a simple two-step process:

1. Debit member's account to an 'at-risk' balance
2. Upon confirmation, deduct the miles permanently

Multiple redemption activities can be booked against a single reward, for example a free ticket, hotel stay, or car rental. Cancellation of redemption re-credits a pre-defined percentage of the miles to the member's account, which may differ as per each reward. All rewards are created with an automatically generated authorisation code which in the case of flight rewards can be used for tracking redemption tickets, their utilisation and partner billing.

PARTNER MANAGEMENT

Loyalty programmes may have partners - organisations with whom members would earn miles or can claim rewards with these organisations to 'burn' miles earned. Partners can be airlines, financial institutions, car rental agencies or hotels, etc. All partner types are supported by CRIS.

An essential aspect of Collaborative CRM and a cost-neutral Frequent Flyer / Loyalty Programme, Partnership Management is managed with ease in CRIS with flexible data formats for B2B transactions and information exchange. CRIS provides comprehensive setup and handling of partners - partner contracts along with the earning and redemption activities can be set up in CRIS; also rates can be associated with each activity and can be modified for different time periods.

CRIS also has the facility of a double-dipping fraud prevention check. Activities with an airline partner can be uploaded and validated before being credited into a member's account, while activities of a partner loyalty programme member can be tracked, downloaded and exchanged with partner as per the agreed cycle. Customer accruals with each partner can be controlled as per their rules. Billing is also simplified through download from CRIS as per agreed format and support of inward and outward billing. CRIS generates files to track partner/member activities on the host airline through the Passenger Name Record (PNR) repository. Hand-back files from the partner can be synchronised against the original data. Billing reports are generated in CRIS to support Inward Billing and to carry out Outward Billing.

PROGRAM MANAGEMENT

CRIS provides a wealth of customer information which helps validate and adapt customer relationship strategy to suite the environment in which organisation is operating. Promotions can be quickly created and implemented effectively using this information. The generic and highly parameterised Rules engine controls member realisation, accruals, partner activities, promotions and tier changes. Rules of any complexity can also be added directly as SQL statements and re-used whenever required.

Administration

The CRIS Administration module facilitates the creation and maintenance of reference data such as Tiers, Enrolment methods, Activity types, and Address templates. CRIS uses Oracle's scheduling feature to execute offline jobs like tier upgrades, card-fulfilment mailing lists and welcome-letter mailing lists. It also maintains letter templates used for communications by the Call Centre agents.

Rules engine

CRIS Rules Engine is a powerful interface to define rules for promotions, tier changes and qualification of members. The pre-requisites for the application of these rules can be based on a variety of criteria such as Member related, Activity related, Historic Criteria or Special Criteria. These enhance the power and potential of the Rules Engine. Factors ranging from member profile details (such as tier, country, etc.) to transactions history (such as completion of a number of similar transactions) or transactions (such as flight or sectors) can be used as criteria for rules. Three types of rule can be defined in CRIS.

Promotional	These rules are useful for marketing campaigns and are triggered upon transaction by member. The miles earned are recorded as Bonus miles and a special 'miles to dollar' rate can be associated. These can be applied for member accounts, as well as corporate accounts and 'member get member' rules can also be supported.
Conditional	These rules are used to introduce qualification criteria for members and multiple conditional rules can be set up.
Tier Change	These rules are used to manage tier change for member such as upgrade or downgrade.
Tier management	<p>CRIS supports multiple user-defined tiers, with tier movement controlled as per the rules defined by the Administrator. These rules can be based on Tier miles, payment of charges for upgrade to premium tiers or the number of sectors flown. CRIS also supports rolling and fixed tier retention and expiries.</p> <p>The Tier Change process is submitted as a background job and can be scheduled by the user. A tier change for a member automatically triggers the appropriate fulfilment procedure.</p>
SECURITY AND ACCESS MANAGEMENT	CRIS ensures that customer data remains secure, with data privacy and integrity being key elements during CRIS developments. CRIS complies with various regulations including PCIDSS and is a safe platform for customer information. Furthermore, access to data is controlled through a well defined role-based access control mechanism and a detailed audit trail is provided for various transactions to prevent fraud and data loss. Access to modules can be restricted at group or user level with changes tracked through the audit feature.
COMMUNICATIONS MANAGEMENT	CRIS enables personalised and multi-lingual communication with members through the Customer Messaging Service (CMS) which can be used to send messages to members via e-mail or SMS - either as ad-hoc messaging (individually to member) or group messaging depending on a trigger like change in profile, address or crediting of an activity in the member's account. Messages are generated from user-defined templates which can be easily customised. Welcome e-mails can also be sent to newly enrolled members with a valid e-mail address and the member's accounts can be updated with details whenever a message is sent. Communication mail templates can also be defined in CRIS for acknowledgement letters or general communication.

CRM & CRIS

A change in the customer profile in CRIS can optionally trigger a corresponding change in the customer's information in the Reservation System either real-time or through Batch update. This assists the booking agent to confirm the membership number and creates an automated booking based on revised customer preferences. In case of flight delays, email notifications can be triggered to members.

CRIS facilitates the logging of all incoming and outgoing communication - telephone calls, e-mails, letters, and faxes - between Loyalty programme and customer or affected parties (travel agent or travel coordinator). Not only can customer interaction be logged but it can also be classified in detail up to 6 levels through Customer Relations Codes which help identify the pain areas and enable the Loyalty Programme to proactively fix these to improve the customer experience. These codes can optionally also have the recommended action/compensation mentioned along for appropriate handling of complaints. Reports can be pulled regarding payments for a particular Customer Relations code or period hence enabling the Customer Relations team to address any issues with a clear view of the financial impact through compensations if not resolved.

Compensations

A compensation profile, ranging from monetary compensations, vouchers, free upgrades to gifts or loyalty miles, can also be defined against a complaint category and stored for each complaint. CRIS includes in this functionality a basic inventory management for the gift items. Vouchers can be auto-generated and points can be auto-credited into the member's account. Tier upgrades can be provided as compensation, and tier downgrades or expiry of points can also be restricted for members. Details of payments can be recorded and also allow for recovery of cost from partners or other suppliers and airlines as well in case of interline baggage issues. Further, involved parties or contacts on behalf of the customer can also be recorded and communication can be addressed to them as well. In case the customer is not a member of the Loyalty Programme, details can still be logged by enrolling the customer as a prospect.

Customer relations and correspondence

An enhanced interface to Microsoft Word allows customised letters and standard templates to be stored in, and retrieved from the database. Templates can be stored both as standard templates and also at the level of the Customer Relation codes; thus enabling the user to select an appropriate response for the issue faced while maintaining consistency in response to the customer.

CRIS also enables mass-generation of acknowledgement letters to complaints or compliments received from customers during a period which can be selected by the user. Generic templates can be created and amended - then used for mass mailing purposes both via email and by post. Letters can be generated in bulk and all communication from the customer can be acknowledged by the Loyalty Programme efficiently. Multi-lingual communication is also enabled through CRIS.

Workflow

CRIS facilitates the flexible assignment of actions to a person or department, while simple workflow techniques within CRIS enable users to pick activities, action them, and post them back as completed ensuring service levels are measured. Email notifications can be generated to Customer Relations team or individuals when a case is assigned. Reminders can be sent if there has been no action on the case within a set timeline as per the Loyalty Programme and further escalations can be sent to the managers if the timelines are not met.

To reduce paper trail and also keep records of all outgoing, incoming written communication, CRIS allows document imaging and upload of images in several formats such as JPG, JPEG and also PDF documents.

INTERFACES

Interface functions in CRIS support seamless integration with other applications such as websites, on-board systems, internet payment gateways, kiosks and redemption channels providing consistent flow of information to support the customers' preferred communication channels at all key touch points. CRIS accesses flight activity and partner activity data through interfaces. The data referenced consists of booked and flown information for the airline along with flight schedules.

RESERVATIONS INTERFACE

The interactive entries interface between the Reservations system and CRIS is implemented using an application message broker (for example: MQ Series) architecture. The reservation agent can enter a command in the Reservations system which will post a request on the queue to CRIS. CRIS parses and processes the request and writes a response back to the message queue. The message or response from CRIS is read by the Reservations system and displayed on the agent's terminal. The period for the query and response is near real-time and is transparent to the end user.

This architecture enables deployment of CRIS functionalities via the existing Reservation system network. The interactive entries supported are:

- FQQA - Quotation of points that will be accrued for an itinerary
- FQBD - Member's account balance details
- FQQF / FQQU - Calculation of miles required to redeem an itinerary or an upgrade
- FQWF / FQBU - Redemption of miles for the itinerary or for the upgrade
- FQWX - Cancellation of a reward booking
- FQEN - Enrolments through Reservations system

WEBSERVICES

CRIS functions are made available to external interfaces via Application Programme Interface (API) calls, with these functions accessed by external applications through Oracle Data Base Connect (ODBC) or Java Data Base Connect (JDBC). This architecture ensures direct database updates in CRIS and all queries and/or changes are controlled by a common gateway interface.

PNR, CHECK-IN & TICKET
REPOSITORY

TECHNICAL
ARCHITECTURE

Some examples of API interfaces are:

- Personalisation - Member Authentication
- Loyalty Functions
- Miles Balance
- Statements
- Enrolment
- Profile updates
- Retroactive credit requests

The accrual process in CRIS is supported by a comprehensive and well-designed PNR repository which can store flown and booked data holding both past and future records of all bookings done in the airline reservation system. This information can be effectively used for activity tracking, retro-crediting, partner data exchange, booking abuses and a host of other MIS reports along with complaints management and service audit.

CRIS supports both online real-time and batch processing methods. The online method uses a dedicated channel from the reservation system using Application Messaging Tools e.g. IBM MQ Series. Information is relayed to CRIS, every time a booking is created or changed in the reservation system, which is stored in a relational database. The complete PNR is transmitted to CRIS, which may include both, flown segments as well as future bookings. Flight schedules for the host airline can also be maintained in CRIS once received from the flight inventory data in reservation systems. Batch processing uses data files which are uploaded in CRIS. Similarly information from the Departure Control System and also the Ticket Information are stored in CRIS.

CRIS has been developed and continually evolved using state-of-the-art, open and scalable technology:

- Oracle Database 10g
- Microsoft Dot Net based middle tier and front end
- Allows integration with Business Objects or other reporting tool
- Runs on Linux, Windows, Unix, Aix, Solaris
- Optional - MQ Series for App. Messaging

CRIS uses stored procedures to support real-time access by an Internet application. These procedures support transactions such as enrolment through the web, change of personal details, mini-statements and detailed statements. CRIS contains procedures that can be used by an airline reservation system to provide real-time data exchange through customer profile upload to the reservation system and interactive entries for real-time redemption. Online help and drop-down lists make the system easy to use.

BUSINESS BENEFITS

ONE-STOP SHOP

CRIS offers a 'one-stop' repository of customer information and profile for all departments in an organisation interacting with customers such as the Customer Loyalty Programme (CLP), Marketing, Customer Relations, Reservations and Call Centres. Profitability and customer retention are improved by identifying, acknowledging and rewarding valuable corporate or individual customers and also anticipating their needs through a record of their preferences. This well-defined customer repository provides a strong foundation for customer segmentation empowering marketing units to drive CRM initiatives. CRIS interfaces allow the exchange of data between several key touch points like reservations, check-in, call centre, website and partners hence offering complementary information channels and providing superior customer service. Customer bookings - both flown and future - and check-in details are maintained in a relational database to support automatic member accruals, complaints management and service audit.

FLEXIBLE LOYALTY PROGRAMME DESIGN

This design allows the core program specifications to be scaled to the business requirements of the user in terms of direct communication, member services and partner management. System parameters and configurations are done in a way to allow a switch on/off mechanism for features thus making the system very flexible and easily configurable as per requirements. A one-time setup of reference data is required which can be easily maintained through the user-friendly GUI-based administration menu.

PARTNER INCOME OPPORTUNITIES

Customer Loyalty Programmes benefit from CRIS' easy to use partnership management functions which facilitate partner setup and data exchange. The CLP can utilise mileage sales, advertising revenue and shared promotions to manage and reduce costs.

REAL TIME 'EARN AND BURN'

The centralised Passenger Name Record (PNR) repository automatically updates the database from the Departure Control System (DCS), resulting in auto-accruals of activities in the member's account. This data exchanged over the web allows members to view their account information in near real-time encouraging use of website and reducing load on the airline's resources. The Internet interface also helps to reduce marketing costs and allows direct two-way communication with the customer. With CRIS' automated accrual and ticket awards procedures, staff and customers can book redemption tickets with real-time access to the member's account for validation and debit of redemption points.

YIELD MANAGEMENT

Influence customer behaviour patterns by using spare 'uplift' capacity as a motivating factor for redemption thus encouraging travel during the off-peak season or on new routes. This results in greater market penetration, more travel by customers and helps to lock customers into the airline's Customer Loyalty Program (CLP).

MARKET AUDITS -

CRIS enables the swift deployment of tactical marketing programs in response to changes in this highly competitive market, making better

TACTICAL PROMOTIONS

use of the airline's marketing budget. Data mining analyses customer segment behaviour and identifies booking patterns as sample opportunities allowing set up of promotions designed around this information ensuring the right customers are focused on, responded to and rewarded.

CUSTOMER
RETENTION AND
LOYALTY

The optional Customer Affairs module delivers a complete customer profile to Customer Relations team equipping them to effectively deal with customer complaints, identify service recovery opportunities and retain customer loyalty. Compensation records can be saved along with baggage handling data and assist in recovery from partners or suppliers. Data mining and analysis assists in identifying key issues and addressing them pro-actively to enhance customer experience.

MEASURE SUCCESS

Customer Loyalty Programme (CLP) benefits are progressive, and CRIS measures this continuous improvement.

PROVEN ROI

CRIS is designed to be a cost-effective Customer Loyalty solution. Through a high degree of automation of regular but laborious tasks; from fulfilment and statementing to auto-accrual of activities in member's account; along with re-defined work processes, CRIS allows for effective utilisation of resources resulting in reduced cost of operations and excellent ROI.

CALL CENTRE / SERVICE
CENTRE SUPPORT

CRIS supports the real-time download of reservation records, that is: Passenger Name Record (PNR) from the airline reservation system. Call Centre and Customer Service Agents are empowered through a central Oracle database to deal with ticket related queries and retrospective accrual requests from members without the need to refer to an actual ticket or boarding pass copy. E-mails sent by a customer are automatically linked to that customer's information base. The response process automatically logs communication information using defined complaint codes. CRIS also supports integration with Interactive Voice Response (IVR) for: member verification, Personal Identification Number (PIN) changes, balance and statement requests, without any human intervention.