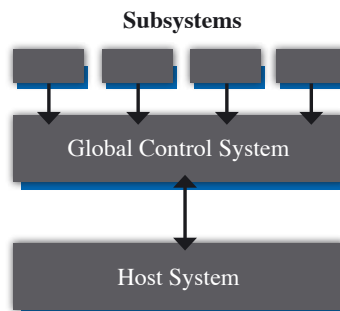




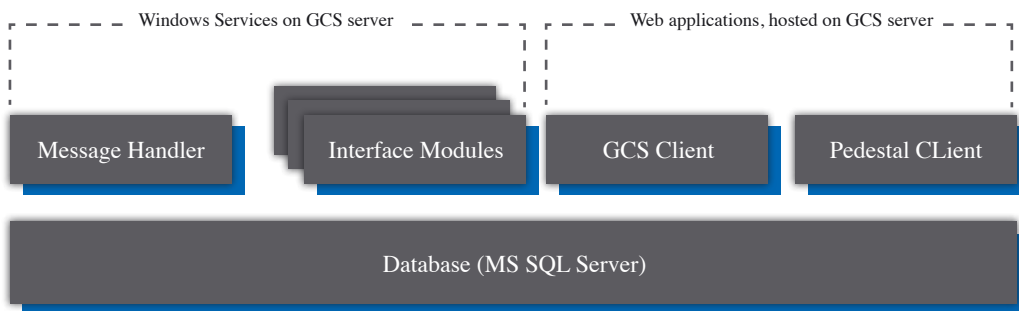
“The down to earth approach”

Introducing GCS

GCS is a software layer that is designed to operate as middle-ware between the various subsystems and a (terminal) host system. Every subsystem has a specific task, e.g. capturing OCR, handling Card Access Control, reading RFID tags, handling I/O signals. Where the host system (often a TOS) is controlling the main flow of the business, GCS can be used to handle all subsystems and manage all functional flows. Basically there is only a need for a single interface between GCS and the host system. This simplifies the implementation of existing and new technology.



GCS Architecture



GCS is developed as a modular application suite:

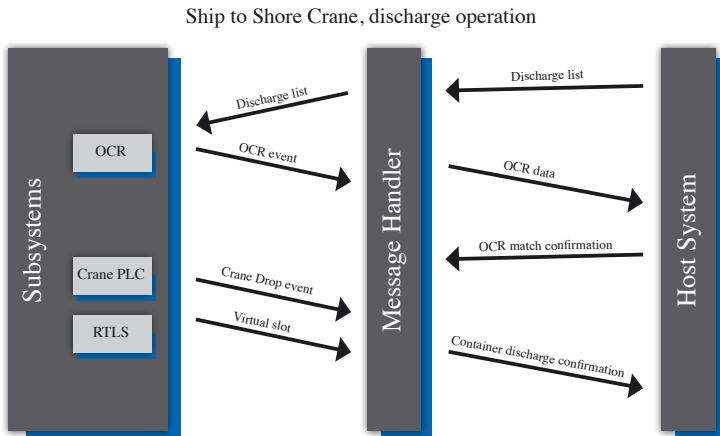
- All data is stored in a database, e.g. messages, settings, authorization, statistics.
- The Message Handler is controlling all input and output from/to subsystems and Host System.
- The Interface modules are performing the dedicated tasks with subsystems and Host System.
- The GCS WebClient is the general user interface for controlling and managing GCS, it provides Exception handling, Manual interventions, viewing OCR images etc.
- The Pedestal Client is the user interface for specific area's, like a Truck Gate display.

This architecture gives us the flexibility to realize any configuration with the existing building blocks, just by selecting the required modules.



GCS Messaging

The Message Handler is a very important part of the GCS system. Every input/output is converted into a message. The Message Handler receives all incoming messages, triggers events to the host system and subsystems, and takes care of exception handling. It controls the entire flow. The diagram below shows an example of the messaging between subsystems, GCS and the host system:



Description of the flow:

The TOS provides the discharge list, which is published to the relevant OCR engines by GCS. This improves OCR recognition. During discharge, the OCR subsystem captures data, images and video files, which is handed over to GCS. GCS triggers verification by the TOS and handles the result (match / no-match). When the container is dropped by the crane, the Crane's PLC will confirm this and provides lane information. Also a RTLS subsystem (Real Time Location System) confirms the drop of the container and provide an exact location. GCS will inform the TOS that the container is actually available for further handling. The whole message flow is fully visible in the GCS WebClient, which is very useful during testing and implementation and later on for tracing problems. All messages can be simulated.

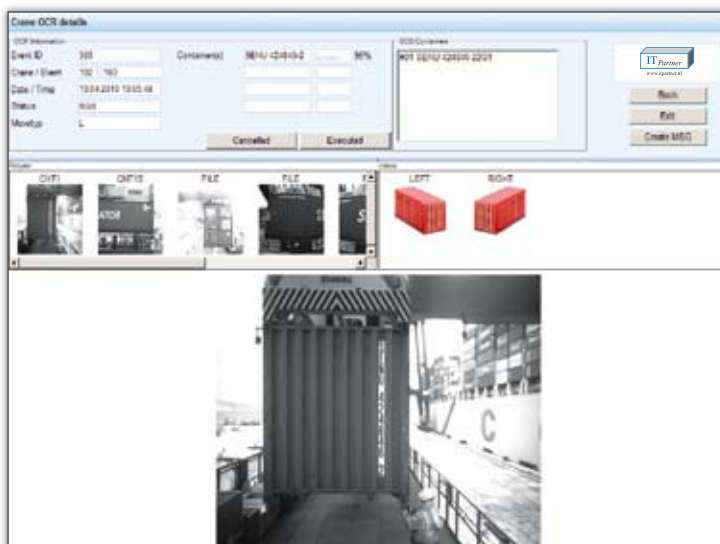
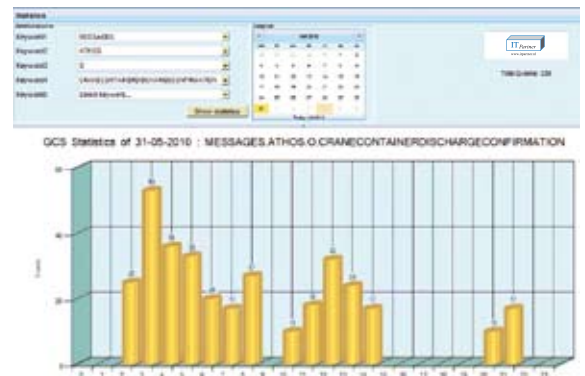
GCS Interface Modules and Clients

For every specific task a dedicated module is designed. Many interface modules are standard applications, which can be selected for a project. In some cases new modules will be designed or existing ones will be modified to meet the requirements for the project.

GCS WebClient

Where 90% of GCS is running invisible as Windows services on the GCS server(s), there is also a very flexible visible part of the system, known as GCS WebClient. It can be accessed using a web browser and provides a lot of functions. Examples of functions:

- Exception handling
- OCR data and images handling
- Messages monitoring
- Simulator
- Managing GCS
- Statistics



Pedestal client

For Gate operations often pedestals with various devices are used, including touch screens. GCS provides a Pedestal Client, fully controlled by GCS, which enables truck drivers to enter information during the Gate process.

GCS Systems

GCS is designed for the Microsoft .Net Framework with Microsoft Visual Studio. It runs on Microsoft Windows machines. The deployment is customized in cooperation with the customer's IT department. We support GCS in virtualized environments. We advise to use high availability and recovery solutions to reduce downtime. To ensure correct processing, we also advise to use time synchronization within the network. To be able to do effective remote support we always ask for remote access, based on VPN, RDP, Teamviewer or other tools. GCS is an excellent product for integration issues. Visit www.itpartner.nl for more information.