



General Cargo Terminal Operation System

GCTOS

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1. PROFILE

It is well known that terminal corporations are comprehensive and large scale companies that involve wide-range business. There is not only loading & unloading operation by shore, but also cargo management in freight yard. In order to get effective control on loading & unloading operation and make good use of freight yard, berth, manpower and equipment etc, Huadong particularly developed series excellent software for them. Terminal corporations have benefited from these solutions on providing better service for clients and improved core competitiveness. With time going, these products are updated constantly. General Cargo Terminal Operation System (GCTOS) is one of them.

GCTOS includes Market Management Subsystem, Vessel Planning Subsystem, Business Routine Subsystem, Operation Dispatching Subsystem, Warehouse Tallying Subsystem, Charge Counting & Billing Subsystem, Smart Gate Subsystem, Statistics and Graphic Monitoring Subsystem etc. This system supports both GROUP & COMPANY two-level management mode and single company management mode.

In GCTOS: truck, vessel, cargo, freight yard, manpower and equipment are base, operation is core and terminal income is node. All operating procedures have been involved and controlled strictly. Operating status is visible and manpower efficiency could be checked according to basic data analysis to lower cost and increase profit.

Berthing condition is clearly and quickly showed. Cargo loading & unloading processing, warehouse cargo storing and railway status are in real time. Above message make operating director well know information of cargo quantity, status, location etc. so that to give operation order and adjust relevant schedule to increase cargo turnover rate. This system also supports 'One Input Data, Several Share' design that makes work plan making & reporting in time. Thus reduces truck & vessel dwell time and cut down cost. Regarding statistic analysis, all kinds of data is collected in real time and form relational reports. To satisfy different level administrators' need, system can provide analysis reports on base of history data.

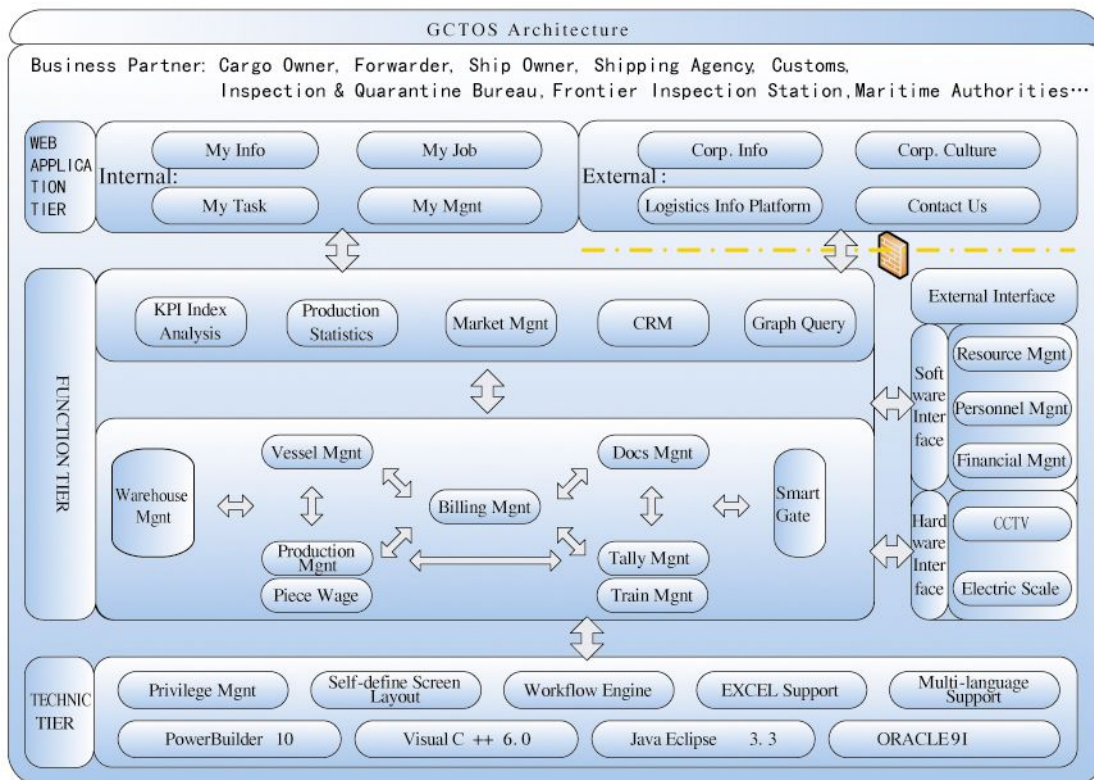
GCTOS can simplify & optimize work-flow, reduce error rate, avoid black hole of management, combine posts and reduce paper document and file use.

GCTOS was launched on market in 1994 and has been updated several times. It is available to both seashore and river ports, in South or North of

China, for Group & Company two-level management or single company management. It has been applied in about 20 domestic ports and gained clients' approval & reputation.

2. SYSTEM STRUCTURE

2.1. System Architecture



The Technical Architecture of GCTOS has 3 tiers. From bottom to top are: Technic Tier (base) , Function Tier and WEB Application Tier. Technic Tier is bottom technical support platform includes Database Management System & J2EE Application Server etc. that constructed by C/S and B/S basic frameworks. C/S framework use PowerBuilder, VC++ language to achieve Role-based Privilege Management, Self-define Screen Layout, Work-flow Engine, EXCEL Support, MOM (message-oriented middleware), Log Tracking and Multi-language Support etc. B/S framework use JAVA (Struts, Spring & Hibernate) to achieve Identity Validation, Resource Access, Log Framework and Tag Library etc.

Function Tier includes some subsystems such as: CRM (Customer Relationship Management), Market Management, Vessel Management,



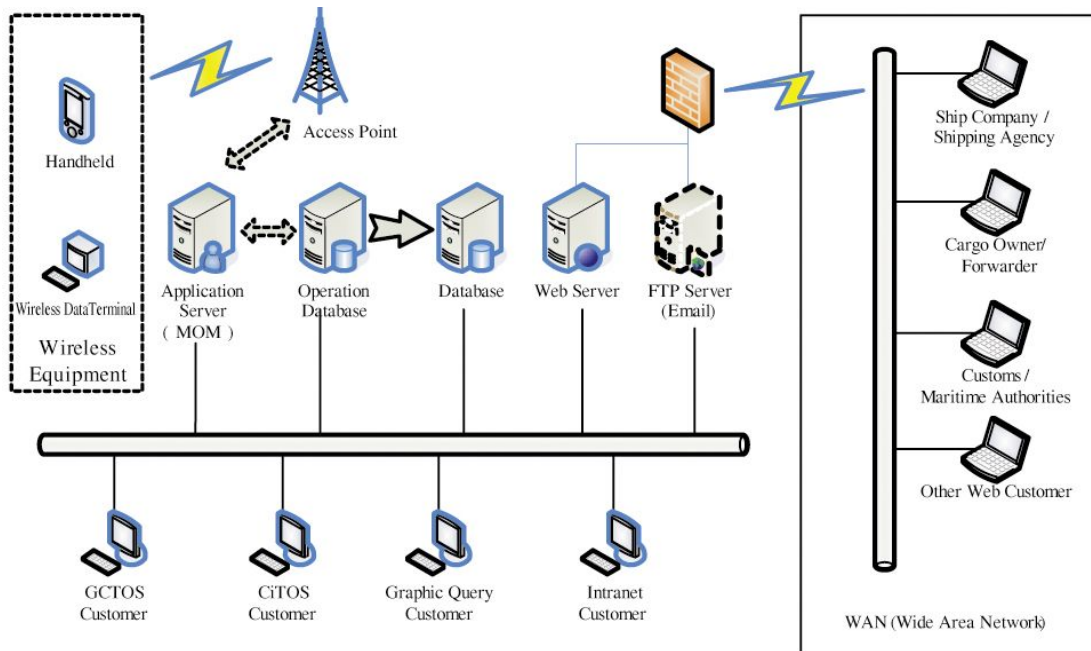
Documents Management, Operation Management, Tally Management, Warehouse Management, Smart Gate, Billing Management, Graphic Monitoring, Statistics etc. These subsystems apply to actual operation, achieved by C/S framework of Technic Tier.

Function Tier also includes Software & Hardware Interface that connect to External Interface. Software Interface connect interface of Financial Management System, Resource Management System and Personnel Management System etc. GCTOS share information with internal & external systems of the company by these interface. Hardware Interface connect interface of Electric Scale and CCTV etc. to support truck weighing, control truck in & out, monitoring quayside etc.

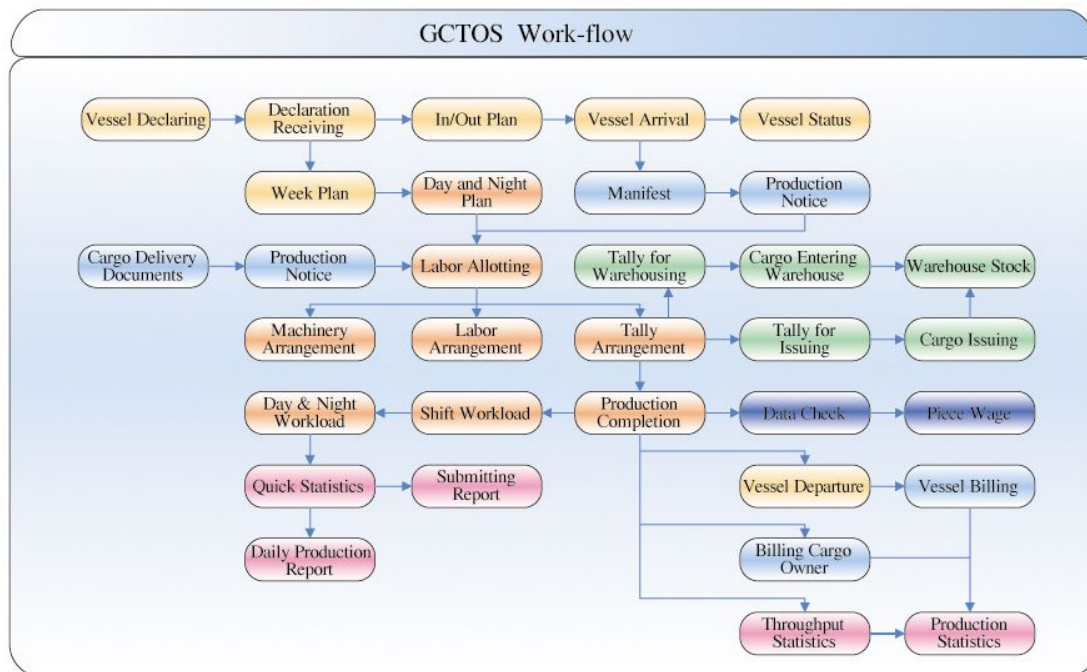
WEB Application Tier has two parts: Internal and External. Internal Part mainly applies to quayside internal users such as director, operation Dept. etc. External Part mainly applies to quayside external users such as cargo owner, forwarder, shipping agency, customs, inspection & quarantine bureau, frontier inspection station, maritime authorities etc. WEB Application Tier runs under Microsoft-IE or other IE, no need to equip client terminal, achieved by B/S framework of Technic Tier.

C/S framework has some characters such as efficient data input, simple operation, high security, speediness operation and good interaction etc. However, B/S framework has other characters like strong openness, easy upgrade, simple extending, strong information system integration and flexible information sharing & release etc. Considering B/S's advancement and C/S's maturation, combine terminal company's actual situation, GCTOS introduce C/S + B/S crossed system structure that can assist and match each other nicely to satisfy different requirements. C/S framework has good information processing technic in control, statistics and analysis and B/S framework is good at information seeking and release. The combination of C/S and B/S is the best solution method for company informatization and also the most popular technology applying in current huge information systems.

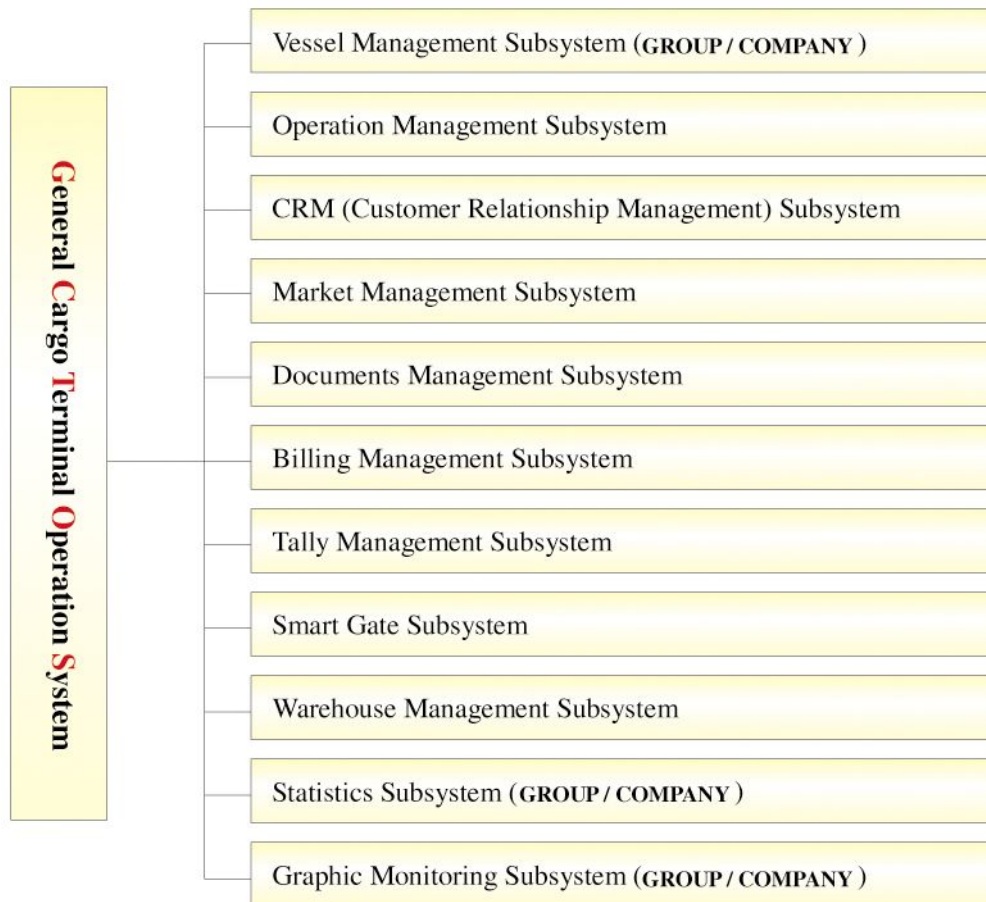
2.2. Network Architecture



2.3. Brief Work-flow



2.4. Modular Specification



3. SYSTEM FEATURES

Being a professional software provider on port and shipping industry's informationization, Huadong developed GCTOS for terminal corporations. It has a high starting point with safe, useful, flexible, open and advanced characters on technic. It is available to both seashore and river ports, in South or North of China, for Group & Company two-level management or single company management. The terminal could be specialized in mineral, oil, coal or universal.

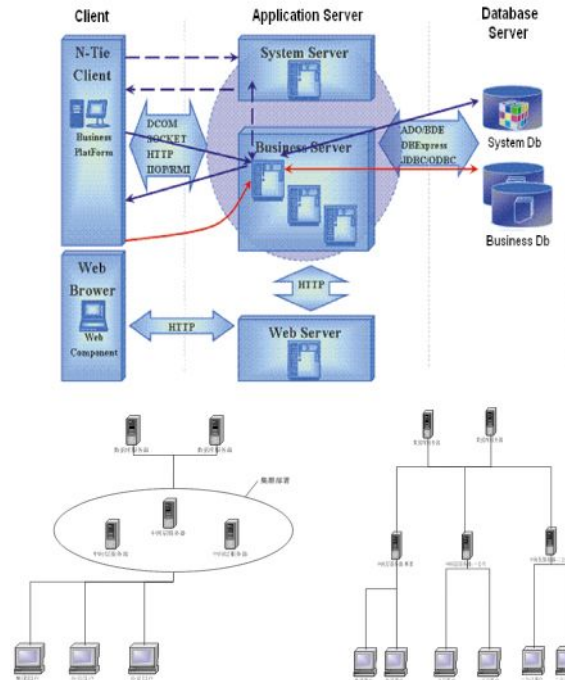
3.1. Technical Features

- Flexible Deployment

GCTOS introduces C/S + B/S crossed system structure. C/S framework:

flexible operation and high speed. B/S framework: simple, safe and easy maintenance.

GCTOS WEB Application Tier has 3 tiers architecture which improve system's extension and stability.



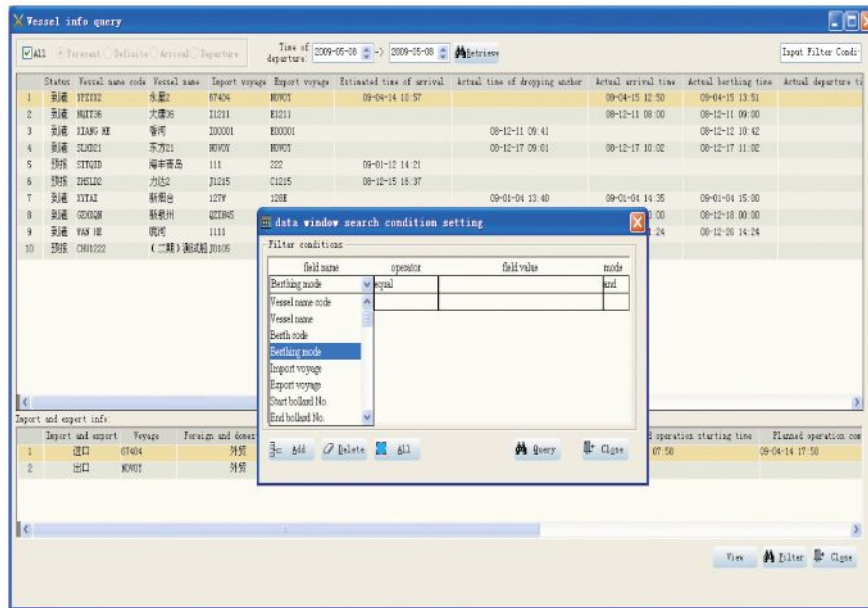
- User-define

Support user-define different function role in any time, each role operates corresponding function and has related privilege (maintenance or query).

Support user-define interface show style: grid color, window background color and font size, color etc.



Can search needed data according to any field.



• Free Printing Format

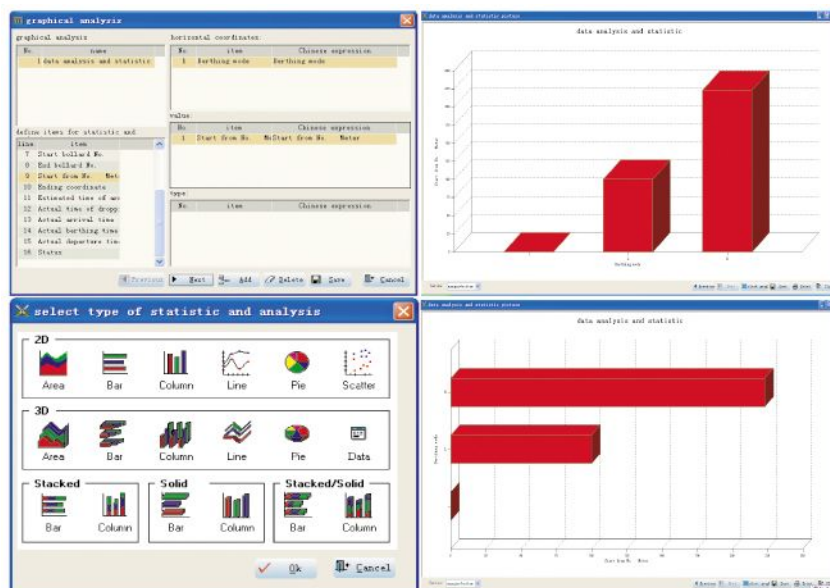
Besides routine format printing, also provides customer format printing such as: ratio printing, column opting printing, zoom in/out printing, font, color and line opting printing etc.

• User-define Report Format

System provides easy-to-use report design proposal. Supports multilevel report filling.

• Strong Graph Support

Graph has nice visual effects. System provides several graphs such as: broken line, column, bar, area, scatter and pie. Each graph can be showed by 2 terms: stereoscopic and planar.



3.2. Function Features

- Wide Coverage

Support both GROUP/COMPANY two-level management mode and single company management mode.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

- Strict Operation Control, Continually Improve Operation Flow

Operation flow and data is strictly controlled. System records incorrect operation which can help to trace responsibility. It also reflects if the original operation flow is reasonable and helps to mend to improve profit.

210000 kg

Vehicle plate No.: 1776 GW: 0
 Vehicle team: 鲁F TW: 210000
 Plan No.: 2009100001 NW: 0

Relative info:
 Vessel name: Sub-order:
 Cargo owner: Cargo name:
 Cargo type: SPEC:
 Operation procedure: Stock yard:
 Operation date: 2009-05-27 Original bill No.:
 position:
 Remark:

Warehouse No. Planned amount: I.H.A.B.W.
 Previous truck:
 Shortage:

No.	Plan No.:	Remark

 Clear all Close Save
 P.V.S. N.P.V.S. 2009-05-27 10:40

- Analyzing on Operating Status, Improve Corporation Management

There is basic data such as throughput, vessel dwell time, quayside crane working time, in/out warehouse quantity and berth utilization time in the system, operator could analyze them and summarize terminal operation situation.



- Reducing Workload and Improving Efficiency

GCTOS helps to achieve vessel integrated management in both group and company. Various documents and reports flow automatically in different dept. and manpower, machinery operation status reflects clearly. Also includes storage cost counting etc.

- Refining Cost Analysis

GCTOS provides basic data on single machinery, operation team and shift etc for future counting on single vessel and machinery.

- Improving Corporation Competitiveness

Reduces vessel or truck dwell time, lightens berth or railway carriage pressure. By doing this not only improves resource utilization ratio, but also drops transportation cost for customers.

- Promoting Port Economy Development, Enable Port Corporation Online Work, Providing WEB Service for Customers

It supports customs, Inspection & Quarantine Bureau, Frontier Inspection Station and Port Supervisor to monitor quayside operation by WEB platform. Supports customers to query related information and transmit documents by net.

- Real Time Query on Quayside Vessel and Warehouse Storage

GCTOS has various graphs to reflect quayside vessel status and storage situation. Provides filter and composition query.

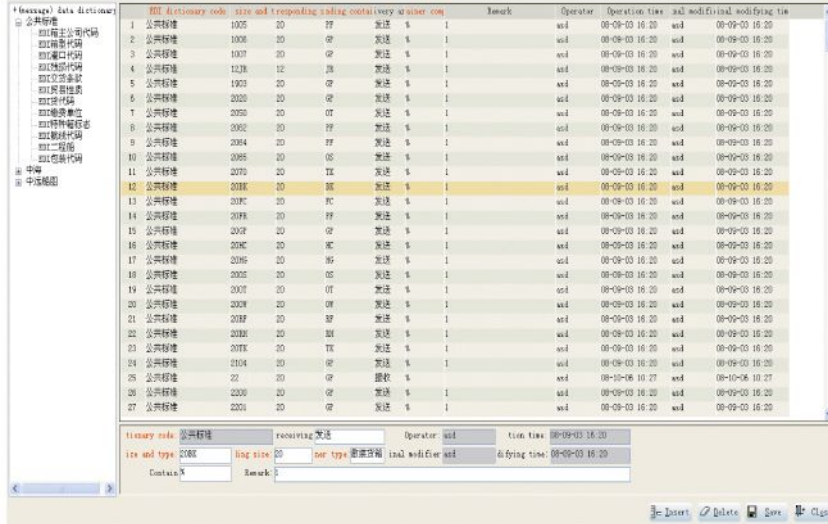
- Debt Analyzing and Pre-warning

It has pre-warning function on customers in debt by setting different time conditions.



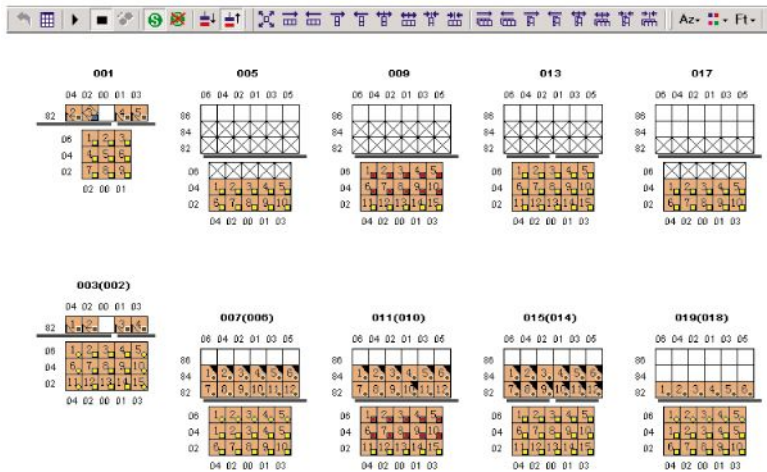
● Providing Interface to Other Software

It has interface to other software such as financial and equipment system. Common connect model: data report connect model, EDI model or other agreed model.



● Integration with Container Terminal Management System

It can satisfy mixing management need on both container terminal and general cargo terminal.



4. FUNCTION INTRODUCTION

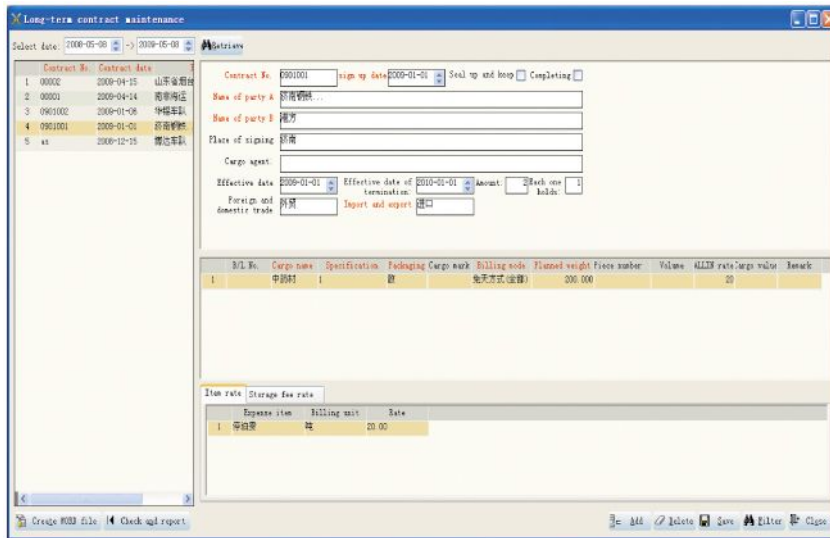
GCTOS supports customer user-define subsystem, supports GROUP /COMPANY two-level management mode and single company management mode. It includes below subsystems:

● Market Management Subsystem

Salesman seek freight source and make freight plan. After make an

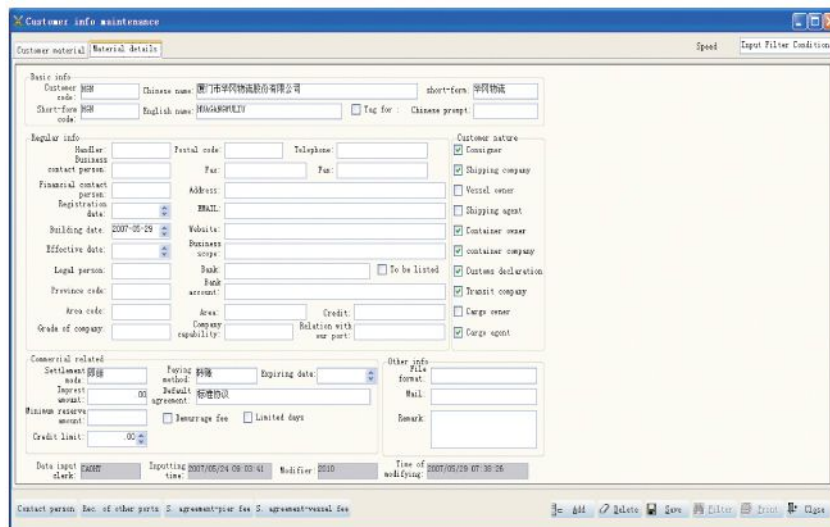


agreement with customer, make a contract and submit it to administrator to be examined and approved.



- CRM (Customer Relationship Management) Subsystem

Set up customer file (customer basic information, contact person etc). Provide suitable service to satisfy customers. Provide bill query function.



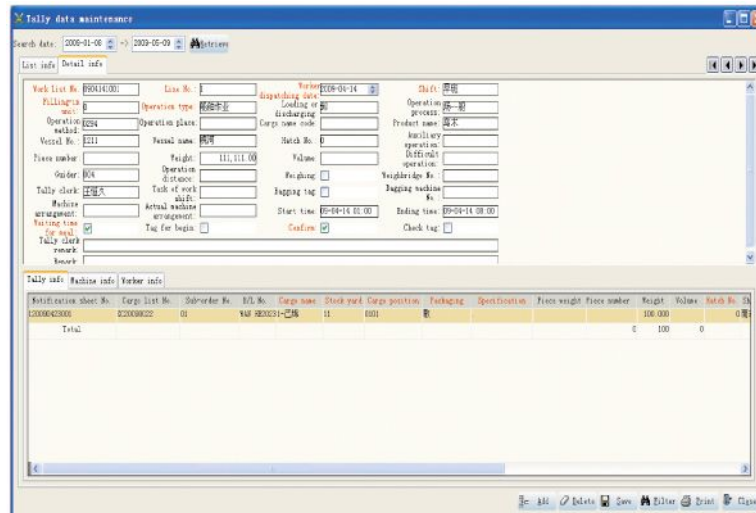
- Vessel Management Subsystem

Planner receive vessel declaration, then make an production plan according to labor, machinery, storage yard & warehouse and berth etc. Then declare to internal and external departments. Under the plan dispatcher makes arrangements for vessel arrival, in port operation and vessel departure.

- Tally & Warehouse Management Subsystem

Team leader arranges tally clerk of each operation line to work on-site according to planner's operation plan. Related operation reports are filled and handed in to store keeper and person on ship after each shift.

Store keeper transfers cargo to tally clerk or cargo owner according to transport document. He also keeps cargo in storage and make record of cargo's loading / unloading or other operations for future billing.



- Billing Management Subsystem

Cargo owner should keep enough port cost in his account, after operation finish, biller deducts all expenses incurred in port.

Bill No.	Invoice No.	Invo. comp/total raw/usage	Fee name	Type	Billing in Billing amount	Unit price	Unit/qty	Money amount	Bal. unit	order money	usage in	Remark
000000002	*	*	段长系统维护费	维护费	27 F	28.00	100.00 1.00	2,400.00	100.00	2,400.00	1 *	
000000023	cha_bill_2	E0000057	CHYF	C12:3	港务费	47 F	5.00 80.00 1.00	400.00	80.00	400.00	1 *	
000000023	cha_bill_2	E0000057	CHYF	C12:3	港务费	47 F	5.00 8.00 1.00	40.00	8.00	40.00	1 *	
000000023	cha_bill_2	E0000057	CHYF	C12:3	港务费	47 F	5.00 120.00 1.00	600.00	120.00	600.00	1 *	
000000024	DKW04	F0000235	段长系统维护费	维护费	47 F	3.00 50.00 1.00	150.00	50.00	150.00	1 *		
000000024	DKW04	F0000235	段长系统维护费	维护费	47 F	3.00 50.00 1.00	150.00	50.00	150.00	1 *		
000000025	*	F0000024	*	*	港务费	*	5.00 0.00 1.00	5.00	0.00	5.00	1 *	
000000026	*	*	段长系统维护费	维护费	47 F	13.00 1.00 1.00	13.00	1.00	13.00	1 *		
000000026	*	*	段长系统维护费	维护费	47 F	13.00 1.00 1.00	13.00	1.00	13.00	1 *		
000000026	*	*	段长系统维护费	维护费	47 F	4.00 200.00 1.00	800.00	200.00	800.00	1 *		
000000026	*	*	CHYF	C12:3	港务费	47 F	5.00 5.00 1.00	25.00	5.00	25.00	1 *	
000000030	000000002	*	中德船船	J12:3	装卸费包干费	船	1.00 1.00 1.00	1.00	1.00	1.00	1 *	
000000030	000000002	*	中德船船	J12:3	装卸费包干费	船	1.00 1.00 1.00	1.00	1.00	1.00	1 *	
000000030	000000002	*	中德船船	J12:3	装卸费包干费	船	1.00 1.00 1.00	1.00	1.00	1.00	1 *	
000000031	000000002	*	中德船船	J12:3	装卸费包干费	船	3,330.00 12.00 1.00	36,990.00	0.00	3,000.00	1 *	
000000027	000000002	*	段长系统维护费	维护费	47 F	1.00 400.00 1.00	400.00	400.00	400.00	1 *		
000000028	000000002	*	段长系统维护费	维护费	47 F	5.00 100.00 1.00	4,900.00	100.00	500.00	1 *		
000000029	000000002	*	段长系统维护费	维护费	47 F	5.00 1200.00 1.00	6,000.00	200.00	1,000.00	1 *		
000000029	000000002	*	段长系统维护费	维护费	47 F	5.00 4,000.00 1.00	180,000.00	4,200.00	20,000.00	1 *		
000000029	000000002	*	段长系统维护费	维护费	47 F	5.00 1,000.00 1.00	45,000.00	1,200.00	5,000.00	1 *		
000000033	000000004	*	CHYF	C12:3	港务费	47 F	5.00 10.00 1.00	50.00	10.00	50.00	1 *	
000000033	000000004	*	CHYF	C12:3	港务费	47 F	5.00 10.00 1.00	50.00	10.00	50.00	1 *	
Total:						3,448.00		232,280.00		21,794.00		

- Statistics Subsystem

This Subsystem applied for statistics. By analyzing throughput and vessel dwell time to form related reports for administrator's reference. It also provides real time query and statistics.

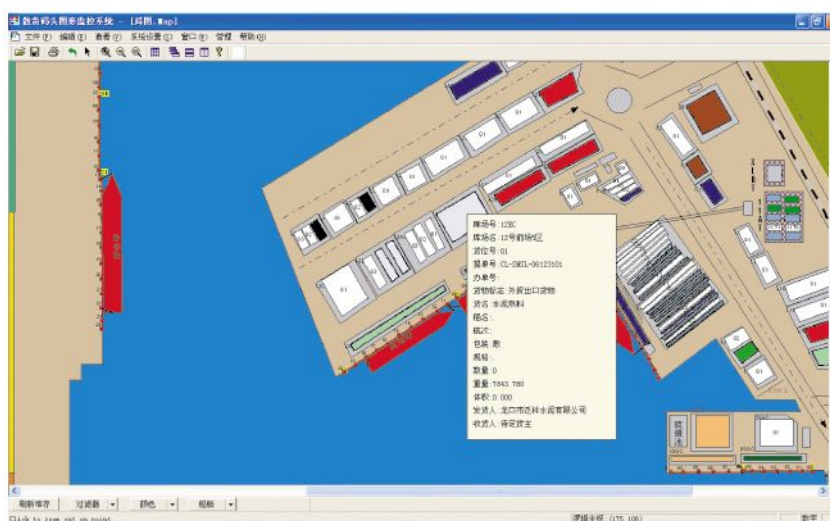
Statistic month: 2008-12

Monthly throughput report based on different berths

Berth	Report of first ten days of a month		Report of the middle ten days of a month		Report of last ten days of a month		Report of first ten days of a month		Report of the middle ten days of a month		Report of last ten days of a month	
	Domestic trade	Foreign trade	Domestic trade	Foreign trade	Domestic trade	Foreign trade	Domestic trade	Foreign trade	Domestic trade	Foreign trade	Domestic trade	Foreign trade
01泊位			22000		55000					0		
02泊位												
03泊位					6400	36900					3340	5454
04泊位						30440						430
11泊位												
12泊位												
13泊位				36900						4300		
14泊位												
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30泊位												

● Graphic Monitoring Subsystem

It provides query on vessel operation progress, berthing situation, berth utilization and warehouse storing situation. Supports berth and warehouse layout editing.



● System Management

Maintain basic data, control system management and operator's privilege.

5. APPLICATION CASES

Yantai Port Group					
Yingkou Port Group					
Quanzhou Harbour Group					
Jinzhou Port Stock Co., Ltd.					
Qingdao Port Group					
Shenzhen Chiwan Wharf Holding Co., Ltd.					
Longkou Port Group Co., Ltd.					
Zhangzhou China Merchants Port Co., Ltd.					
Jingtang Port Co., Ltd.					
China Merchants Port Service (Shenzhen) Co., Ltd.					
Zhangjiagang Port Group Co., Ltd.					
Zhangjiagang Free Trade Zone of China					
Surun Container Terminal Co., Ltd.					
China Merchants Holdings (International) Co., Ltd.					
Yangpu Port Co., Ltd.					
Yantai Port Associates					
AKR Guigang Port					
.....					