PRODUCT SPECIFICATION

Issued
Niklas Forslund

Approved
Tommy Larsson

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GABRIA

Product Specification

Fleet

The following document describes the functionality, system dependencies and operational environment requirements of the Gabria Fleet platform.

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1 Overview

1.1 Revision history

Date	Version	Name	Comment
2003-03-01	1.0A	Niklas Forslund	First issue

1.2 Glossary

API	Application Programming Interface
bean	A small Java program
CIMD	Computer Interface to Message Distribution, an interface for talking to a Nokia SMSC
Customer	A company that uses the system to handle it's fleet.
ESRI	GIS and mapping company, http://www.esri.com
GIS	Geographic Information System
HTML	Hyper Text Markup Language
http	Hyper Text Transfer Protocol
Java	Programming language created by SUN Microsystems
JSP	Java Server Pages
LIF	Location Interoperability Forum, http://www.locationforum.org/
MLP	Mobile Location Protocol
Mobile	A mobile phone
PDA	Personal Digital Assistant
SMSC	Short Message Service Center
SMTP	Simple Mail Transfer
Subscription	A subscription that gives a company the right to use the system.
tag library	A type of HTML tag that generates dynamic output
URL	Uniform Resource Locator, standardiserad adress till en resurs. Vanligtvis webbsidor, bilder, eller liknande. Exempel: http://www.whitehouse.gov
User	A person with a username and password, connected to a subscription, that allowes him or her to log in to the system.
WAP	Wireless Application Protocol, ett protokoll för överföring av webbliknande WML sidor till handterminaler.
WEB	Förkortning för Word Wide Web
WML	Wireless Markup Language, språk för att skapa webbliknande sidor för handterminaler. Baserat på XML.
XML	eXtensible Markup Language, standardspråk för överföring av strukturerad information.

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2 Background

The purpose of the system is to enable telecom operators and service providers to offer fleet management services to small and mid size companies. The bases for all services are company subscriptions. Multiple users and multiple mobiles can be added to the company subscription by the customer himself, avoiding the need for operator administration.

2.1 Functional overview

Short summary of functions:
- Company subscriptions with multiple users and mobile units.
- Positioning of a single mobile, groups of mobiles or all mobiles.
- Positioning with reference to a geographic location
- Position results presented in textual and/or graphical form (map).
- Position history with filters for mobile, user, group, time/date, etc
- Send and receive text messages
- Message history with filters for mobile, user, group, time/date, etc.
- Predefined messages, both personal (per user) and company wide (per subscription).
- Handling of lost passwords
- Self (customer) administration of company subscriptions, mobiles, users, groups, settings, etc
- Invitation of new mobiles. The customer can invite mobiles to his subscription.
- Operational status of mobiles administrated by the customer and selectable via SMS from mobiles, i.e. "free", "loaded", "lunch", etc
- Web based operator administration of subscriptions, users, mobiles, configuration, etc.
- XML for integrating i.e. billing.

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3 System functionality

The following chapter describes the functionality of the system, from a user/operator point of view.

3.1 Subscriptions

To use the system the customer company needs a subscription. The mobiles the customer needs to position are added to the subscription. One or more users can be associated with the subscription, to allow multiple employees to handle the fleet. The subscriptions are identified by an id and password. The same id and password is used when the system accesses the location server.

3.2 Customer and user authentication

When a user logs in to the system the system first looks for the username and password in the local database. If the username and password are found and correct the associated subscription is authenticated against the Location Server using MLP or the external administration system. If this succeeds the user is allowed to enter the system.

If the username is not found in the local database an attempt is made to authenticate it with the Location Server. If this is successful a new subscription is created in the local database and the mobiles associated with the subscription are fetched from the external administration.

3.3 Users

The original id and password created with the subscription can always be used as login. Additional users can be added by the customer once logged in. It is possible to limit the maximum number of users per subscription.

When the system communicates with the Location Server and other external systems the original subscription id and password is always used, independent of which user is logged in.

Users can either be normal users or administrators. Normal users can only position mobiles, send SMS and change personal settings. Administrators can create new users, invite mobiles, change subscription settings, create and change groups etc.

3.4 Mobiles

One or more mobile phones are associated with a subscription. The mobiles are either added by the operator when the subscription is created, added by the operator when the customer requests additional mobiles, or invited by the customer. Invited mobiles receive the invitation in a SMS and are requested to respond yes or no. If the mobile user responds yes a message is sent to the operator to add the mobile to the subscription.

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3.5 Positioning

Users can position single mobiles, groups of mobiles, or all mobiles. Positioning can be made in reference to a geographic location, for example a city. Results are presented in both textual form and graphically on a map. When positioning with a reference the result is sorted in distance order, the closest mobile first. The number of mobiles in the resulting list can be limited both in number and distance.

3.6 Text messages

Text messages can be sent to a single mobile, a group of mobiles or all mobiles. Users can create, both personal and subscription wide, predefined template messages.
The inbox and outbox stores all messages sent and received the last 30 days. Users can forward and reply to messages in both the inbox and outbox.

3.7 Operational status

The customer can define a number of status messages to be used by the mobiles, for example "free", "lunch", "vacation", etc. Each status is associated with a key, enabling the mobiles to change status via SMS.

3.8 User interfaces

The system comes with a standard user interface and integration examples refer to 4.1 for details. Multiple user interfaces can be used to provide different services or different formats, for example Web, WAP and PDA versions.

3.9 Administration

An administration interface provides the basic tools needed for customer support and problem identification:

- Search, view, create and delete subscriptions
- Search and view customer created users, mobiles and groups
- View statistics for the last 24 hours, the last 7 days and the last 30 days
- View technical logs, including stack traces of any exceptions
- View and change system settings
- View system status, including external system connection status

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4 Integration

4.1 User interfaces

The user interfaces are fully customizable. All dynamic output is generated using a tag library and Java beans handle all input processing. The customization or integration of a new user interface is easily done either by the operator or a third party systems integrator. The programming skills needed are minimized by the extensive use of tag libraries and beans. A simple standard web based user interface can be created without any programming other than HTML.

4.2 Surrounding systems

Most surrounding systems have standard interfaces, eliminating the need for operator specific integration, refer to chapter 6.

A billing system can be integrated using the provided XML interface.

External administration can be integrated using the provided XML interface.

5 Operating environment

5.1 Operating system

The operating system is Red Hat Linux 9.0 running on i386 hardware.

5.2 Database

The database used is MySQL 4.0

5.3 J2EE Servlet Container

The Servlet container used is Apache Tomcat 4.1

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6 System dependencies

The following chapter describes the systems external dependencies. These dependencies must be met in order for the system to work properly.

6.1 Location server

The system uses a Location Server to position mobiles. The location server must comply with the LIF MLP 3.0 specification. Refer to http://www.locationforum.org/

6.2 GIS

The system requests GIS information using an Open-LS interface provided by for example ESRI Arc-IMS. Refer to http://www.openls.org for further information.

6.3 Mail

The system uses E-mail to send information to users, for example lost passwords. E-mail is also used to send information from the users to customer support. The mail interface is SMTP.

6.4 SMS

The SMSC interface used is Nokia CIMD version 2. Integration with other SMSC interfaces can be provided.

6.5 Billing

Billing information is provided in a simple HTTP/XML based request interface. An external system can request billing information for one or all subscriptions for a specified period in time.

6.6 External administration

To allow external administration of subscriptions a XML interface is provided that fetches a list of allowed mobile stations from an external system. The list is fetched each time a user logs in, eliminating the need for local administration of subscriptions.

6.7 System monitoring and supervision

The system exports a simple http based interface for monitoring and supervision, enabling a supervision system to monitor the following functions:
-   Web server operation
-   Database
-   External interfaces (Location Server, GIS, Billing)