CONSULTANCY SERVICES IN ADVANCED SOLUTIONS

Automated Parking Solutions
Realog is an independent analytic, planning and engineering firm specializing in parking systems for operations, planning, design site supervision and project management.

- **Experienced Specialists**: Our team has extensive experience, seniority and expert know-how.
- **Technical Precision**: Realog provides technical precision in analytics, design, tender management, and site supervision.
- **Business Solutions**: Realog focuses on business oriented solutions to meet stakeholder operational and financial expectations.
- **Global Reach**: Realog has designed automated parking systems of all sizes and complexity.
- **Independent Representation**: Realog is an independent consulting firm that offers outside and impartial assessments and representation.
Realog Consulting GmbH is one of the leading on-airport logistics, process and engineering consultants in the world with a vast resume of experience in air cargo.
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conrad Hotel Parking (1,200 cars), Dubai:</td>
<td>Design &amp; Tender Management</td>
</tr>
<tr>
<td>Residential Parking (3,400 cars), Abu Dhabi: &amp; Site Supervision</td>
<td>Design, Tender Management &amp; Site Supervision</td>
</tr>
<tr>
<td>Municipality Parking, Sharjah: 550 cars</td>
<td>Initial Planning, Comparative Analysis and Design</td>
</tr>
<tr>
<td>Latifa Tower (2,260 cars), Dubai:</td>
<td>Feasibility Study, Design, Tender</td>
</tr>
<tr>
<td>Griffinton Project in Montreal (5,000 cars):</td>
<td>Feasibility Study and Initial Design</td>
</tr>
<tr>
<td>Project</td>
<td>Services</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Meydan: Traffic &amp; Parking Management System</td>
<td>Design, Specification, Site Supervision</td>
</tr>
<tr>
<td>Mekkah Hills Project; Jeddah, KSA</td>
<td>Logistics and Traffic Impact Study</td>
</tr>
<tr>
<td>Souq Waqif Parking Facility with a capacity of 1000 spaces, Qatar</td>
<td>Audit of parking design of underground Business Park Hotel Facilities with a capacity of 650 spaces</td>
</tr>
<tr>
<td>Parking Management System for Sport City, Qatar</td>
<td>Design and Specification</td>
</tr>
<tr>
<td>Traffic Signal System</td>
<td>Designed and/or reviewed over 300 traffic signals in Qatar, Jordan, Syria, Lebanon, Bahrain, Saudi Arabia, Sudan &amp; Yemen.</td>
</tr>
<tr>
<td>Parking design audits in Qatar</td>
<td>Managed several parking designs and parking audit studies including parking sufficiency check, access management, entry/exit design, circulation, signing &amp; marking, and parking management</td>
</tr>
</tbody>
</table>
### PLANNING AND SPECIFICATION OF ADVANCED PARKING SOLUTIONS

<table>
<thead>
<tr>
<th>Design</th>
<th>Automated Parking</th>
<th>Multi Level Parking</th>
<th>PMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Design Image" /></td>
<td><img src="image2.png" alt="Automated Parking Image" /></td>
<td><img src="image3.png" alt="Multi Level Parking Image" /></td>
<td><img src="image4.png" alt="PMS Image" /></td>
</tr>
</tbody>
</table>

**Park & Charge**

*Images and diagrams depict various aspects of advanced parking solutions.*
Increasing traffic in fast growing cities leads to high pressure on the development of parking solutions both for public and private entities. Like e.g.:
- Municipalities
- Airports/ railway stations
- Inner city retailers
- Office developers

- **Solution A:** regulatory action
  - Access limitations (London, Oslo)
  - City-Fees (London, Singapore)
  - Price increases

- **Solution B:** Logistical Optimisation
  - Capacity increase through optimised solutions
  - Capacity increase through entirely new concepts

Infrastructural shortages in congested areas are the main driver for new parking solutions.
Main market drivers

Variables for the development of the parking market

- Development of individual travel
- urbanisation
- Development of public transport
- Parking prices

- Real estate prices
- Average price for parking
- Governmental regulation (city toll)
- Acceptance of alternative solutions
The necessity for condensed parking solutions is driven by two main trends:

1. **Urbanisation**
   - Example Germany
   - Concretion of urban areas:
     - Highly increasing 7-12% till 2020
     - Lowly increasing 2-7% till 2020
   - Emigration from less dynamic regions 5,000 to 100,000 MA

2. **Extended mobility demand/ increased number of vehicles**
   - Number of Personal cars worldwide:
     - 2007: 46.6 Mio.
     - 2010: 48.3 Mio.
     - 2015: 50.0 Mio.
     - 2020: 51.2 Mio.

Sources:
*Prof. Garelli, Université Lausanne, 2006; Wirtschaftswoche, 12.02.2007
**http://www.wegweiserdemographie.de/common/wegweiser/html/wegweiser_entwicklung.html
***http://www.sasi.group.shef.ac.uk/worldmapper/data/nomap/31_worldmapper_data.xls
****B&D-Forecast - Dr. Ferdinand Dudenhöffer, Kraftfahrtbundesamt 2007
The future of advanced parking solutions is also proven by professional financial investors.
The pricing of parking space shows the enormous potential of high density solutions

- In the inner cities the load factor of a parking facility lies at 60-70%.

„New York: ca. $600 pp. months in inner city vicinity“
(Source: http://www.sueddeutsche.de/automobil/artikel/196/165724/, 28.3.2008)

Expensive Parking charge per day in $, 31.7.2007

- = 62€
- = 47€
- = 37€
- = 31€
- = 27€
- = 20€
Automated Car Parking System (ACPS) provide solutions for different areas

**Scenario Terminal**
- An optimisation of passenger flows requires a higher capacity of parking close to the terminals
  - Seamless travel
  - Parking close to the terminals
  - Integration of pass. handling solutions
  - Optimised park & Ride solutions

**Scenario Inner City**
- Conventional parking solution do either not deliver the necessary efficiency or cannot be integrated in new infrastructure developments
  - Capacity Increase
  - Compensation of old parking garages
  - Development of new green areas
  - Comfort

**Scenario Car Rental**
- The demand in space and the necessity to deliver 24/7 service at affordable cost is increasing
  - Personnel reduction
  - Extended Availability
  - Capacity increase
  - Cost Effective storage
Automated Car Parking System (ACPS):
Basic Principles
New Generation of Automated Car Parking System Technology

- System can have capacity with far more than 1,000 storage positions
- 40% throughput in peak hour and high performance
- Availability of the system is 99.7% and redundancy in all systems and parts
- High quality, proven and reliable mechanical machinery and technical equipment
- Cutting-edge technology in electrical parts and IT systems
- Strong stability of the steel rack system
- Efficient processes and functioning
- High performance for short and long parking
- Easy maintenance operation
- User friendly operation in modern environment
- Highest safety and security features
- Life cycle time of 25 years
Main Advantages of Automated Parking

► Up to double the amount of cars can be parked in the same space as would be possible in a conventional garage.

► Unlimited number of storage levels due to the vertical lifts.

► High level of security for patrons and their vehicles.

► Better Premium Valet Service: the patron parks and retrieves his car on entrance level and takes the keys with him.

► Ample architectural freedom both, for the facade design and for accommodating the parameters of the site and room program.

► Reduced traffic: up to 30% of the traffic in a typical city centre is merely searching for vacant and convenient parking spaces. Elimination of huge amounts of toxic emissions, otherwise detrimental to the environment.
Automated Car Parking System as „Greens Solutions“

- Pollution in Parking Facility will be avoided
- Reduced traffic: up to 30% of the traffic in a typical city centre is merely searching for vacant and convenient parking spaces
- Elimination of huge amounts of toxic emissions
- Noise Level will be reduced
- Installation of Solar Panel on roof and cladding for gaining own energy as part of drive system power supply
- Park&Charge Station
Selected Projects

Automated Car Parking Station for 400 spots, UAE
Automated Car Parking Station for 1,600 parking spots, UAE
Automated Car Storage Station for 450 parking spots, UAE
Automated Car Parking Systems for 3,000 parking spots, Reem Island, Abu Dhabi (Aurora Project, Mayadeen)
Why REALOG’s Consulting Services?

• Each Auotamed Car Parking System solution is tailor-made for the Clients requirements
• Identification of the specific risks of investing in an ACPS
• Identification of measures which will avoid or minimize the risks
• Development of operator and user requirements by consideration of traffic peak hours
• Setting industrial standards by determining adequate commercial and technical specification for contracting
• A detailed technical Tender specification and review of all material submittals and shop drawings and testing phase to assure a high quality of material, availability of the system, performance of the operation and life cycle of ACPS of minimum 25 years
• Through is rigorous Tender Process Clients will get the best technical solution by reducing the investments up to 20%
• Prevention of unnecessary down time of the system by using the most reliable system elements available. Such elements are typically used in the conveying and storage systems of the cargo, logistics and automotive industry
• Insufficient provisions for minimizing the duration of preventive maintenance and repairs

REALOG’s methodology with the expertise to determine the reliability parameters, design items and technical specifications for the ACPS and supervise the fabrication, installations and commissioning according to the specification.
Examples of Automated Car Parking Systems in Russia
OUR INNOVATIVE SOLUTIONS BENEFITS

OUR SERVICE = YOUR VALUES

Enhancing services and quality
Meet the customer’s requirement

Business development and technology
Innovative and competitive solutions

Reduction of logistic and transportation costs
Wide ranging and sustainable solutions

Objective feasibility studies
Limitation of investment risk

Modular and process oriented planning
Successful and in-time hand over of system to operation

Simplification of logistic processes
Achieve standardization and transparency
Contact:

Realog Consulting GmbH
Oliver Schaaf, Managing Director
Fremersberstrasse 111
76530 Baden-Baden
Germany

Phone: +49 7221 970766
Fax: +49 7221 970767
E-Mail: oliver.schaaf@realog.com
www.realog.com