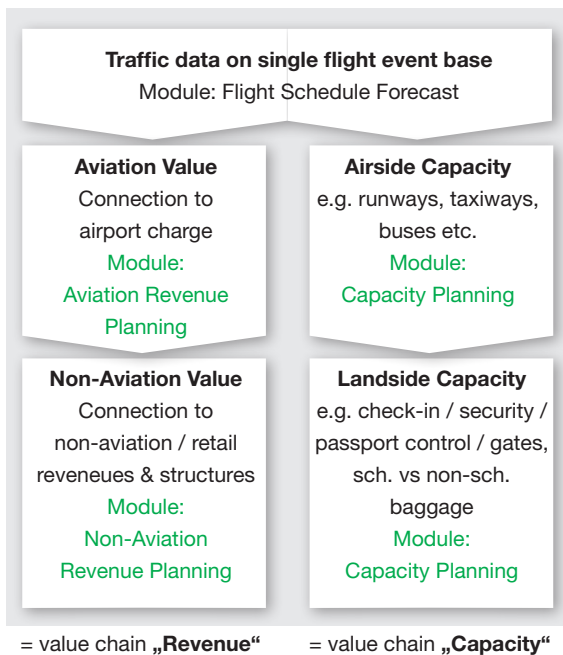




## INTEGRATED AIRPORT Systems

Support of short and long-term airport planning and optimization based on detailed forecasting results



The recent economical crisis combined with highly fluctuating fuel prices has created tremendous planning challenges for both the airline industry as well as airport operators around the world.

With airports being built and planned intended to serve and satisfy air travel demand for many years to come the provided infrastructure is expensive to create and requires a full utilization in order to be financially viable.

Due to the recent economic challenges affecting market players and structures, uncertainty exists over flight reductions, equipment changes and in the worst case, carrier bankruptcies and the consequences on individual airports.

As a result, the need for an airport to

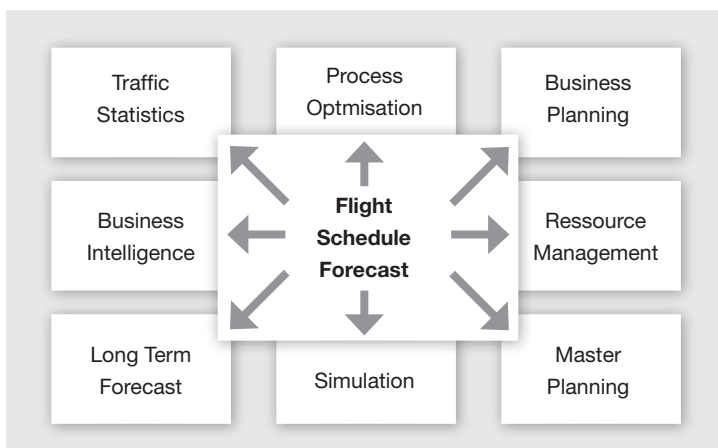
- plan, simulate and adjust the needed **infrastructure and resources**
- on base of continuously updated **traffic forecasts** and
- connected to **pricing scenarios** regarding the aviation and non-aviation revenues

is greatly increased in order to build a solid base for a strategic and economical successful airport operation.

### Airport Management System at a glance

- Forecasting and Traffic Planning
- Capacity and Master Planning
- Revenue and Investment Planning
- Non-Aviation- and Resource Optimization

### Modules of an integrated Airport Management System



### Why SYMBIOS?

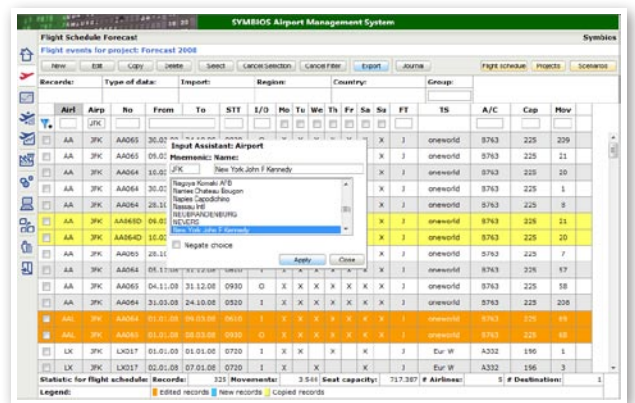
Symbios AG started developing airport systems supporting all dimensions of strategic airport planning in 1995.

The planning functionalities and algorithms included in its products have been developed in close cooperation with aviation clients worldwide and are based on Symbios' over 25 years of aviation consultancy experience.



### Base module „Flight Schedule Forecast“:

- Scenario enabled forecasting system for flight schedule based short term forecasts
- Flexible forecasting time horizons, data structure and analyzing levels
- Long term methodological and practical experience through twenty years

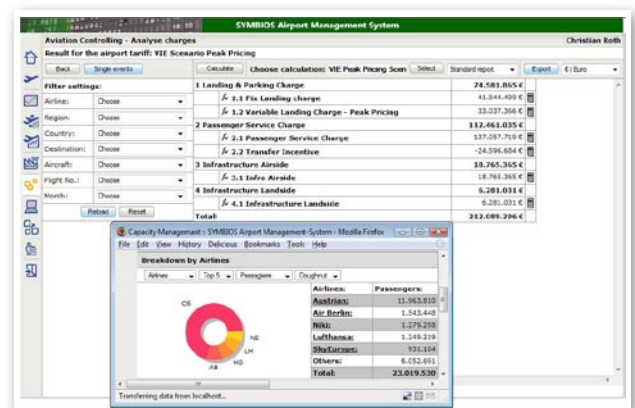


### Module „Long-Term Forecast“:

- Scenario-based, demand-driven econometrical forecasting model
- Bottom-up vs. top-down methods including external influencing factors (e.g. fare, tourism, economical development)
- Flight Event Generator: Creation of flight schedules based on long term forecasting results

### Module „Revenue Planning“:

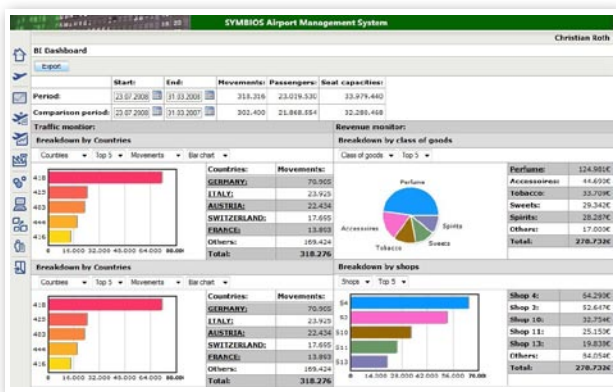
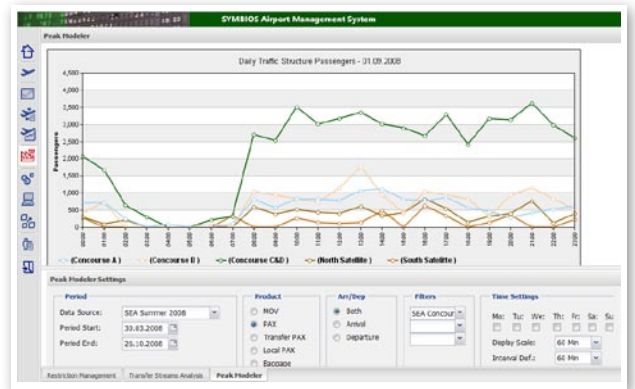
- Automated and dynamic aviation revenue and business planning based on actual traffic forecasting scenarios
- Simulation of alternative tariff and incentive scenarios (e.g. emission based, peak, luggage based pricing) based on statistical data or forecast traffic data
- Benchmarking of worldwide airport charges and tariff structures





**Module „Capacity Planning“:**

- Interface between traffic forecasting and capacity planning
- Dynamic evaluation of traffic peaks
- Arbitrary analyzing levels focusing on air- and landside capacity questions
- Simulation of capacity scenarios e.g. regarding the effects of airline/ concourse shifts

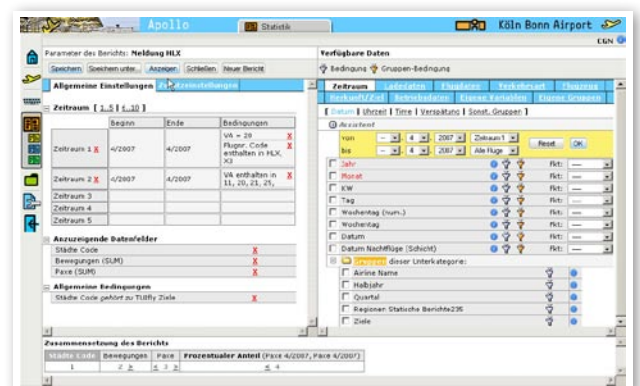


**Module „Non Aviation Planning“:**

- Combination of airports and concessionaires data
- Introduction of total flight values as an indicator e.g. consisting of aviation and non-aviation revenues per flight
- Base for non-aviation optimization e.g. regarding the pricing of retailing areas/ shops, airport advertisement, parking revenues
- Operational decisions (e.g. gate allocation) based on flight values, not operational aspects only

**Module „Traffic Statistics“:**

- Innovative traffic statistics tool for compiling and analyzing statistical reports
- Real-time analysis of traffic data
- Standard reports for „ad-hoc“ queries; flexible „Query-Builder“ for creating individual queries and reports





## REFERENCES

### **Aeroporti di Roma**

Rome / Italy

Conception and Development of an Airport Management-System for Aeroporti di Roma consisting of the system modules

- Flight Schedule Forecast and
- Long Term Forecast

used for forecasting traffic and traffic structures at Rome Fiumicino and Ciampino.

### **Athens International Airport**

Athens / Greece

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast
- Aviation Controlling and
- Long Term Forecast

### **Beijing Capital International Airport**

Beijing / China

Application of the Airport Management-Systems modules:

- Flight Schedule Forecast and
- Capacity Management

for simulating the traffic development and peaks during the 2008 Beijing Olympic and Paralympic Games

### **Berlin Airports**

Berlin / Germany

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast
- Aviation Controlling and
- Flight Schedule Analysis

### **Bratislava Airport**

Bratislava / Slovakia

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast and
- Aviation Controlling

### **Brussels International Airport**

Brussels / Belgium

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast

### **Budapest Airport**

Budapest / Hungary

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast and
- Aviation Controlling



**Cologne/ Bonn Airport**  
Cologne / Germany

Conception and development of “Apollo”, an Airport Management System including the modules (System “Apollo”) :

- Flight Schedule Forecast
- Air Traffic Statistics and
- Flight Schedule Analysis

**Dusseldorf Airport**  
Dusseldorf / Germany

Conception and development of an Airport Management System consisting of the modules:

- Flight Schedule Forecast
- Aviation Controlling and
- DES (“Datenerfassungssystem“, Noise based forecasts)

**Fraport AG**  
Frankfurt / Germany

Conception and Implementation of an Airport Management System for Fraport AG including the modules:

- Flight Schedule Forecast and
- Aviation Controlling

**Hamburg Airport**  
Hamburg / Germany

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**Hanover Airport**  
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**Malta International Airport**  
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Amsterdam / The Netherlands

Conception and implementation of “FAST Schiphol”, an Airport Management System including the modules

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**Stuttgart Airport**  
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- Flight Schedule Forecast and
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**Swissport**  
Zürich / Switzerland

Conception and Development of a Production-, Information and Management-System (PIMs) and a Tactical Operations Management-System (TOMs) for the Ground Handler Swissport at Zurich Airport

**Sydney Airport**  
Corporation Limited  
Sydney / Australia

Conception and development of an Airport Management System including the modules:

- Flight Schedule Forecast
- Long Term Forecast and
- Traffic Statistics

**Unique – Zurich Airport**  
Zurich / Switzerland

Conception and development of an Airport Management System including the module:

- Flight Schedule Forecast
- Aviation Controlling

**Vienna Airport**  
Vienna / Austria

Development of a customized Airport Management-System including the modules:

- Flight Schedule Forecast
- Aviation Controlling
- Long Term Forecast and
- Capacity Management

**Warsaw Airport**  
**(Polish Airport State Enterprise PPL)**  
Warsaw / Poland

Conception and development of an Airport Management-System including the modules:

- Flight Schedule Forecast and
- Long Term Forecast

## Contact

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