started to test out the market and the hedging process. The third group has been actively hedging for a number of years. All are now looking again at the subject and reviewing what they should be doing.

Airlines have historically been amongst the most active hedgers in the consumer community. Some have been scared off by the recent prices while others have carried on, wanting the comfort of a known cash flow. Whichever route is taken it is important that it is chosen on the basis of an understanding of the risk management market and the implications of using both hedging generally and the different instruments available. Being able to understand and design a risk management strategy that meets your requirements is an important aspect of this. Hedgers with a good understanding are able to negotiate with the hedge providers from a position of strength.

As with all aspects of the business, good training is the key to such understanding. And, in the case of hedging oil requirements, it is important to understand not just the hedging instruments but the physical markets from which the swap and other instrument prices are derived. Changing markets are a constant challenge and well-trained staff essential if the challenge is to be met. **JFR**

The Importance of Fuel Management Systems

In today's high and volatile jet fuel price environment, fuel management systems have become essential for airlines. April's Jet Fuel Report carried a feature on Solarc's approach and offering to customers. Here, ***FuelPlus's Klaus-Peter Warnke*** *sets out his company's views.*

Both companies will be represented at the Armbrust Jet Fuel Conference in Orlando in February 2007 to discuss their products and systems with prospective customers.

With fuel prices at record level and a fuel budget that comprises approximately 25% of an airline's expenses, the role of fuel management needs to be redefined. The corner-stones of the fuel management's new challenge are a revised process in which more than one department is involved and the ability to align fuel management with common airline business practices.

Ten to fifteen years ago, fuel was a low cost commodity that was generally available. The responsibility of fuel management was to ensure the reliable and timely supply at all operated stations. With new price records for fuel, this responsibility has evolved into the task of controlling the airline's highest cost factor. Today, top management has recognized that fuel needs to be handled like any other enterprise resource. This shift in the importance of fuel management requires a major change in the fuel management process

Klaus-Peter Warnke
Managing Director, FuelPLus

Top management has recognized that fuel needs to be handled like any other enterprise resource.

The fuel management process can be described briefly as follows:

In fuel planning, the fuel volume forecasts are calculated based on flight schedules published for the

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The Fuel Management Process

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next forecast period. Also the fuel budget is prepared by using forecasted fuel volumes and estimated prices per location.

To supply all operated locations, the required fuel quantities are tendered, and the supply contracts are negotiated. New or modified contracts resulting from these tender negotiations are filed and maintained with respect to any price changes.

Supply chains are set up to enable the self supply of fuel at the main hubs. For these hubs, supply lines are maintained which includes the following tasks:

- planning the fuel demand,
- ordering required volumes,
- handling movement documents,
- organizing the transportation of the volumes, and
- monitoring inventories.

Actual flight events and the related fuel messages are captured and processed to monitor the fuel uplifts as well as the consumption volumes and costs on a per flight level. These figures are used to investigate deviations and to prepare reports on the comparison of actual data versus budget data. The actual data per flight are also necessary to verify invoices.

Invoices which are received from suppliers are compared with the actual data that come from the internal sources of the airline. While verifying the invoice, each invoice line is checked against the actual flight events, the actual uplift volumes, and the actual prices. After resolving the detected discrepancies, the invoice is forwarded to the accounting department for payment.

Accruals for deliveries which are received but not invoiced yet are necessary for the month-end closing. These accruals are calculated and sent to the finance department.

Reports on fuel related items are prepared and sent to various departments and other companies.

Fuel Management Is An Enterprise Wide Process

Fuel management cannot be done by a single department anymore.

Fuel management cannot be done by a single department anymore. Today, fuel management is an enterprise-wide process which involves different departments. The flowchart above shows which departments take part in the fuel management process, and how they exchange information.

Company Planning is in charge of calculating the volume forecast plans and preparing the fuel budget.

Purchasing is responsible for tendering and contracting the fuel demand at the lowest possible price.

Operations calculate operational flight plans and capture actual data that concern the operated flights and the performed fuelings.

Supply Management has to ensure that the stocks are provided for all inventory locations. Furthermore, it needs to monitor the inventory on a daily base.

Accounting is in charge of

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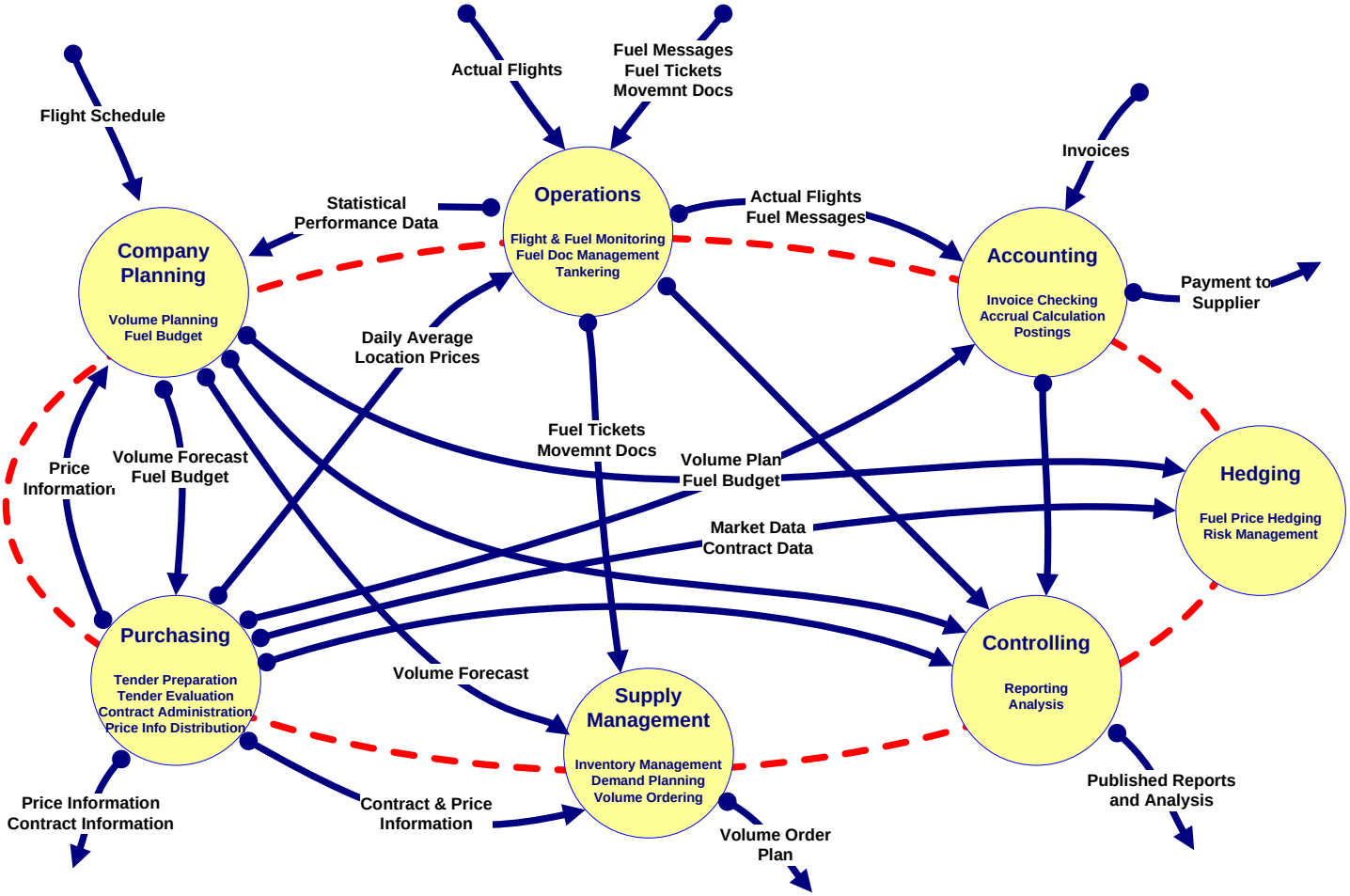

There are several good reasons why all these data should be managed in one integrated system.

verifying and posting the invoices and of paying the suppliers punctually.

Controlling needs access to all fuel related data to analyze the fuel costs and to fulfill the company's requirements regarding the reporting.

In general, each of the departments that are involved in the fuel management produces data for other departments and depends on fuel related data coming from other departments.

There are several good reasons why all these data should be managed in one integrated system:

- ✈ There is no loss of quality when exchanging data between departments.
- ✈ Updated data are immediately available to all parties.
- ✈ A repository of fuel related data provides a full picture of the fuel situation and allows detailed analysis and in-time reporting.
- ✈ As reliable data is available in good quality, several routine tasks can be automated, for example:
  - Contract price updates,
  - Volume forecasts,
  - Budget calculation,
  - Invoice verification.
- ✈ Unnecessary double work in different departments is avoided.
- ✈ Discussions between departments are based on the same set of data.
- ✈ Data exchange can be automated.
- ✈ Add-ons can easily be interfaced.

Compatibility and industry-standard interfaces are relevant in various enterprise-wide tasks but become essential to hedging in particular.

Hedging

Hedging introduces to fuel management the intricacies of financial

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An integrated fuel management system that supports the complete fuel management process for all involved departments, and that adopts the flight-centric approach enables airlines to master the challenges of the future.

derivatives and of the mathematics behind it. While these are best handled by a specialized add-on application the integrated fuel management system remains at the center of the action. Since the output of even the most sophisticated pricing engine can only be as good as the input it gets quality and reliability of the data feed are mission critical to the ever more important field of hedging.

Flight Orientation

And yet, there is another and even more important aspect regarding the change in fuel management: the concept of flight orientation.

Flight events have always been the heartbeat of airlines. Planning, sales, revenue calculation, and controlling are focused on flight events. They belong to the core data of each airline and are available in reliable quality. Therefore, it is only natural to place flight events in the center of fuel management activities.

Basically all departments that are involved in the fuel management process are in need of a flight oriented view on the business to perform their tasks:

Planning

- ✈ Estimate volumes and costs for planned flight events.

Operations

- ✈ Capture fuel quantities per flight event.
- ✈ Match fuel receipts against flight events. This helps to validate the received data and to improve the data quality.
- ✈ Provide uplift and consumption figures per flight event.
- ✈ Calculate actual costs per flight event based on actual or estimated fuel quantities and contract data.

Accounting

- ✈ Verify invoices against flight events instead of fuel receipts. By this means often observed problems can be detected as for example:
  - Invoicing for flight events that were not operated by the airline.
  - Duplicate invoicing for same flight event.
- ✈ The usage of flight events and fuel messages generated in airline systems also resolves the issue of checking invoices against reference data which comes from non-airline sources.
- ✈ Match invoices against flight events which enables to calculate accruals per flight event even for flights where fuel tickets are missing.

Controlling

- ✈ Analyze variances as planned and actual data are available per flight event.
- ✈ Analyze fuel cost and calculate route profitability based on the consumption cost and volume per flight event.
- ✈ Detect over-fuelling situations by comparing the recommended fuel volume with the actual uplifted fuel volume on flight event level

Conclusion

Today, fuel management is an enterprise wide process involving different departments. All these departments need to exchange fuel related data in order to perform their tasks. Airlines are driven by flight events, and fuel management must align with this fact by placing the flight events in the focus of their activities.

An integrated fuel management system that supports the complete fuel management process for all involved departments, and that adopts the flight-centric approach enables airlines to master the challenges of the future.

The success of major airlines such as **ANA** and **Lufthansa**, winner of AAG's award 2006, proves the feasibility of this approach.**JFR**

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