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RECOMMENDED PROCESS FOR THE AIRLINE INFORMATICS SYSTEM DEVELOPMENT

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Abstract

This paper presents the process of travelling by air from different points of view. First of all, it is very important to clear up the basic procedure. We can understand it quite simply from the passenger point of view. After this we have to analyze the process from the airline point of view in order to understand the real function of the information systems operating at different airlines.

We have to know that passengers cannot be serviced by the airline at an appropriate level having no effective informatics systems available. This fact is more and more recognised by airlines. A well-prepared system development process can help them to find the best solution. The method described in this article provides a solution to this.

Keywords: air transport, airline, informatics, system development.

1. Introduction

Air transport business is a complex and sophisticated industry. A network of airline organisations is engaged in the design, development, production, marketing and lifecycle support of aircraft and their associated systems. A diverse array of companies, all pursuing the same goal – the quest for more and more efficient and effective business processes. It means that they want to increase rate of production and the flexibility of production process. They want to reduce operational costs and decrease the time to market. They want people to be able to make more effective use of their time. They want to be responsive to the changing business environment. They want to deliver the best possible service to the customers. To enable them to do this, they need reliable communications, both within their organisation world-wide and with their customers, partners and suppliers, globally.

As airports of the world were flooded by more and more passengers it became more and more obvious that only the technology of the integrated intermodal flight information can be the way leading to the future. Based on this fact the role of information systems in the world of market has to be examined again and again not only from the point of view of internal design of the building of the airport, but from the point of view of total servicing of passengers, too.

2. Travelling by Air from the Passenger Point of View

Firstly, passengers inform themselves about running flights, then they reserve seats, tickets are filled out by the airline for them. When the day of flight comes, passengers appear at the check-in counter, let their baggage be registered, and receive their boarding passes. After having passed passport control and customs they go to the waiting lounge, from where they board the aircraft through a gate. Traffic within the terminal is helped by different passenger information boards, and monitors. Servicing of the passengers on board is cared for by the airline. At the destination airport passengers leave the terminal after having passed the usual passport control and customs. When changing flights they wait in the transit lounge.

This process does not seem to be a complex one from the point of view of passengers, but looking at it from the point of view of the airlines it certainly is. Furthermore, today's traveller is demanding more and more in terms of services – from reservation and information on flights, hotels and rental cars, to fast check-in, in-flight entertainment and information, and streamlined arrivals. The passenger demands towards airline, airport and reservation systems are increasingly sophisticated and costly to deliver [1].

For the shipment of cargo, these demands are just as rigorous. Customers expect cargo to reach its destination on time, every time, as cost-effectively as possible, with the ability to track it from end-to-end and with instant access to comprehensive information related to the shipment at every stage of the journey.

3. New Technologies and Difficulties in the Airline Industry

Recently, main suppliers in the world use complex multimedia, the INTERNET and system integrating tools. By using them on the side of passengers services can be brought next to passengers, lifting the level of services by it, so the passenger can save time, can plan his travels in his home sitting in his easy-chair, and can reserve the things related to his travel (like air ticket, car rent on the airport of destination, etc.). The passengers will be able to book, in one transaction, a complete travel package, from airline tickets to business conference rooms, from theatre tickets to scuba diving.

Due to the latest multimedia developments airlines can present the most different information to the passengers, like maps about optimal approaches of the terminal, about weather conditions at the airport of destination, pictures of the beaches, etc. [2]. By using information telematics the passengers can phone home or the office from anywhere their airliner is flying in the world.

It is anticipated that due to industry developments, the following system features may be required to the airline systems at a future date [3]:

- Ticket issuing and reading;
- Internet technology;
- Self-service check-in.

These services will convert the available systems into a complex, integrated and much more marketable system. As we can see in *Fig. 1* the integration has three main parts: communication, operations and in-flight solutions.

Fig. 1. Integrated Airline Solutions

The systems have to function in harmony with each other. If a change of aircraft type occurs (for example from Fokker to Boeing) because of different causes, let it be a technical one, or the purpose of a better use of capacities originated by Yield Management, all of the other subsystems are influenced. New staff might have to be found, and the total time of flight will be changed, because of the different characteristics of the new aircraft. The situation is much more complex, when other aircraft must also be changed because of this modification, requiring all the consequences to be solved. This example shows that the situation is not a simple one considering that we are speaking about global systems involving the whole world.

4. Method of the Airline Informatics System Development

Aviation systems are characterised by a wide range of maintaining connections, portability, constant renewing and development. Operation of airlines is helped by these systems both in servicing passengers, and in effective operation of internal services. Two different methods of system development are known in the air traffic:

1. According to the first method a new, more effective system meeting more expectations is *developed by the airline itself*. This can be afforded only by big airlines, called MEGACARRIER-s, which can assign special manpower to this object. It is possible that self-developing sometimes takes about 200–300 man-year. But when a system is ready, it also will be offered as a market

product. It is possible that the market needs simplified, minimised (mini, midi) versions.

2. Little and medium sized airlines choose a system according to different points of view from the ones *available on the market*. Is it in a business association with a bigger company, it buys then the system of them, or if it had purchased a given system (e.g. Seat Reservation System) from a vendor (like Speedwing or Sabre Company), it also will purchase the other systems close fitting to the existing one from the same vendor.
   In the second case a big part of the task of the system development will be executed by the vendor firm, and the task of the purchasing airline is to co-operate in adapting, and integrating it into the existing system.

The selected method depends on:

- Size of the airline,
- Market position of it,
- Historical traditions (first the airlines then the banks were developing connections to international systems).

The operating information systems have to present data to the airline management to make possible analyses according to different points of view. These analyses will form the basis for their future planning and developing works.

5. Working Phases of System Development

Airlines, airports and airport application designers face the dilemma of making their often incompatible systems communicate with each other [4]. A well-prepared system development process can help to find the best solution. The recommended working phases of system development in the airline industry are the following:

1. Preparation;
2. Market research;
3. Decision proposal;
4. Decision;
5. Procedure of awarding a contract;
6. Introduction of the system;
7. Cutover.

Let us look at these phases in detail. The *requirements* for automation originate from internal causes (it was manually done until now) or external causes (requirements come from the business branch). The latter is the stronger one. A significant change may take place in the branch, therefore systems and platforms – however operating well – are to be replaced (e.g.: using of automated tickets, which is a ticket with magnetic bands and a special device can read the data automatically from this card, can be used as boarding pass, so the new technology will be changed by this fact). We can say that these are the so-called aggregated changes, it means that a change

in one system has an impact on other systems. The managers have to decide what is the best way for development: to develop by the airline itself or to purchase on the market. The latter is more typical at little and medium sized airlines.

Market research depends on the targets of automation and the functional requirements. It is very frequent that these have to be iterated, because there are systems having more or less capabilities than required, but none of the systems is consistent with all the requirements.

In every period of development it is very advantageous to set up a team. The best form is when share of users and operators is 60%, share of informatical experts is 40% in the team.

The team has to compare available products (e.g. from the catalogue of IATA). The result of this comparison is a primary selection, a short list (e.g. 20 well-known systems, the team has to select from them at least 3 selfstanding ones), and the way of the comparison is the fit analysis.

It is purposeful to prepare at least 2 alternatives for *decision proposal*, which contains:

- Targets of automation;
- Listing all of the studied solutions;
- Methods of performing the studies, and making comparisons;
- Services, fitting of the supplier of the services into the business politics;
- Financing opportunities;
- Compatibility: hardware and software platforms;
- The connections to the partner systems;
- Compatibility with the recent system;
- Statement of the team – which system is recommended, and which system is not recommended;

Lots of resources are required for the development (workpower, tools, other resources to be allocated to the introduction). All these resources (human, and material) required to the implementation have to be sanctioned and guaranteed by the management. The study has to be submitted to the authority being able to decide it with responsibility.

We have to know that every system has its own benefits and drawbacks, that is why the *decision* is not easy. After the decision it has to be published. After procedure of *awarding a contract* the following phase is the *introduction*. This contains:

- Informing the departmental management (undertaken by the team).
- Preparing a schedule for the introduction.
  - It is starting from a deadline, calculating dates backwards from it. The tasks always have to be allocated to individuals. The leader of the team should be a user rather than informatics expert because of sympathy and responsibility, but the vice leader of the team should be an informatics expert (the team will actually be led by him).

  - The introduction team consists of 3 persons ideally. A big team begins to structurate. It is not good. Furthermore, members of the team should be dedicated, they have to be exempted from doing normal work. Usually this is not the case, but this would be very important. Selection of the team may change as time goes, because inactive members have to be replaced, there is no need for fictive members.
  - Team meetings are necessary as the work progresses, according to success. Paper work is negligible as it takes valuable time and deviate responsibilities to others. The result is much more important.
- Establishing a testing environment for the system, testing and training.
  - When setting up the testing environment, the system will be implemented in a separate room. The test user tries to simulate the real environment, and process, he needs to be patient and creative, because this work could be successful but sometimes miscarriages can happen, that is why not everybody is cut out for all that.
  - We have to know that systems regularly fail not for informatical qualities, but for fitting it into the organisation, for connections to the user, that is why it is very important to test the system by the users, therefore the consultations with the end users are very important.
  - The key-user will be born by experience, will spontaneously be selected by the users. He or she gives realistic feedback, gives genuine support, he is the partner in the informatics. During the test it turns out how the system will be used by the user in real-time.
  - The training process of the users is presented in *Fig.2*.

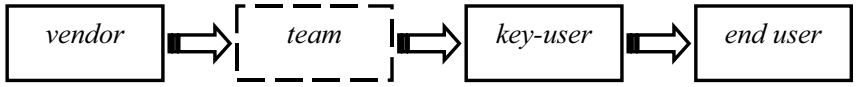

Fig. 2. Training process of the users

The first is the key-user, he (or she) is taught by the vendor and, if necessary, by the team, he teaches then the end-users. A computerised training program cannot replace the individual impact of the trainer. During the training, processes are needed to teach not transactions. At the end of the training participants are to pass an exam. There is a great fluctuation, and it is possible that there will be lots of pirate users without training, that is why only those having done a successful exam may have right to use the machine.

- Requirements for modifying shall be provided to the manufacturer.

These working phases are merging together, as it is shown in *Fig.3*.

Finally, introduction of the system can affect:

- Human changes – ill-suited staff will leave or will be disemployed.
- Organisational changes – redundancies may be in the system, which have to be cleared, for this reason the new system needs a well algorithmized decision process.
- Changing of the operative processes - manual data holders will be outfiltered, they will leave, so the process will be modified.
- Hardware changes - it is purposeful to implement it in the last minute, as the training has ended.

Cutover means the starting of the new system and transition to it. This is to be designed as exactly as hours and minutes, because there is no return.

The oral communication is a very dangerous thing, because it may cause mass misunderstandings, so we have to avoid it in operating information systems. That is why it is very important to have the system documentation like the following:

- User Manual – the system must not be purchased with no manual, it contains how to operate the transactions, what the error messages mean, what is the process of error preventing. These have to be up-dated manually (for example with changeable pages) or electronically.
- Internal User Manual – e.g. Hungarian translation of the original User Manual, or a compressed version of it. When not the whole system will be used by the user, it is simply the part of the whole User Manual.
- Training Manual – presentation of exercises, situations.
- Quick Reference – contains the most frequent transactions, and failures.

System Interface connectivity simplifies the drive to improve customer service and safety, coupled with the need to reduce costs simultaneously, creates the connection between airport automation systems, and the airline data communications network by providing application interfaces to all major airlines communication systems. This includes [1]:

- Direct airline host connections,
- Connections via the SITA Network,
- Connections through SITA Airport Services ,
- CUTE/OS platform.

6. SITA – A Possible Choice for Development Partner

Founded in 1949 by 11 airlines [5], SITA's primary aim was to bring together their existing communications facilities so that all users could take advantage of the cost efficiencies of a shared infrastructure. Operating at the forefront of technology has enabled SITA to continuously meet customer needs in the most efficient and reliable manner.

The air transport, information and telecommunications industries have come a long way. SITA was founded in the days of teletype messaging, but the airline of

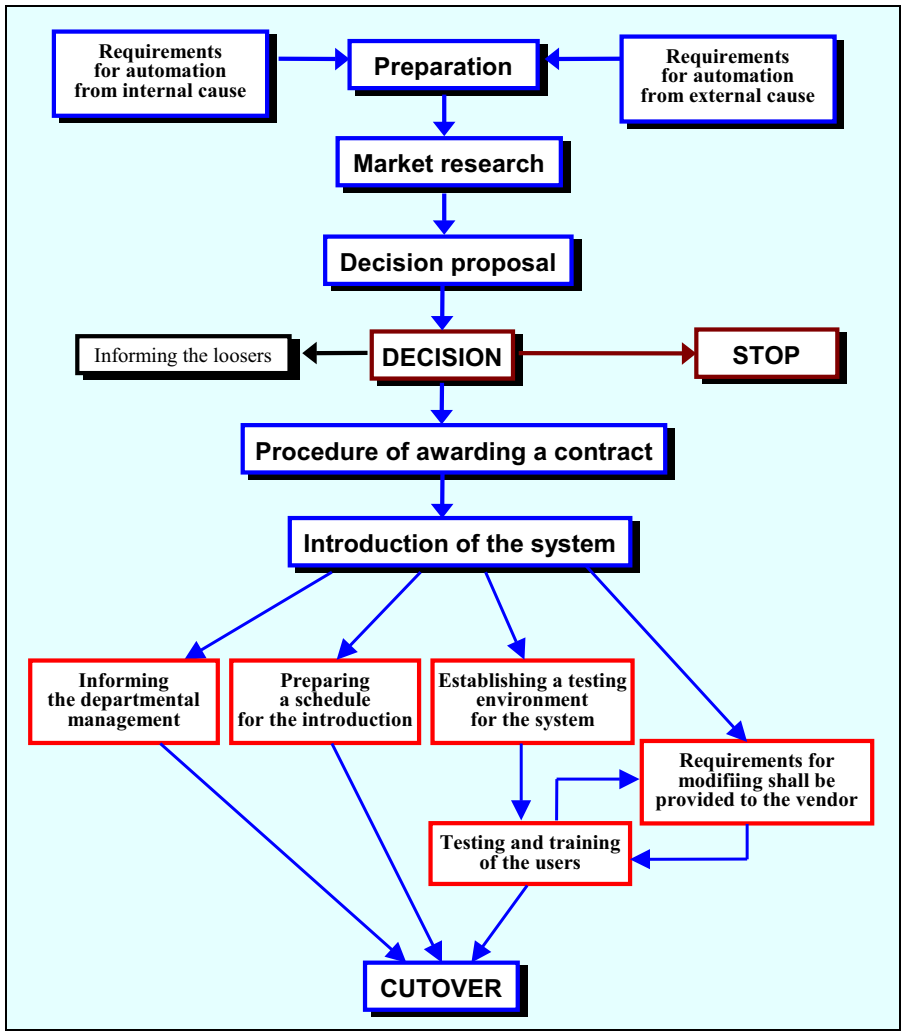

Fig. 3. Process of system development at the airline industry

2000 now has at its fingertips sophisticated desktop and Internet technologies, in the form of powerful personal computers and connection to a wealth of information on corporate intranets, through e-mail and the Internet.

With the mission to be their customers' first-choice partner delivering integrated information and telecommunication solutions world-wide, SITA today serves 680 customers in 225 countries and territories [5], over the world's largest, most advanced voice and data network. SITA continues to focus on providing solutions to meet business requirements of the air transport industry.

Innovation and a unique relationship with the air transport industry will continue to be key to the future. Innovation and partnership play a major role in SITA's strategy, which focuses on leadership in Internet Protocol technologies, end-to-end services to the desktop, outsourcing and airport integration.

Indeed, the mainstay of SITA's business is increasingly provided by high-level value-added solutions. SITA will continue to progress in developments such as online distribution, ticketless travel, self-service ticketing and smart cards. There is a great opportunity for the integration of airport, airline and immigration systems, along with new applications for biometric security, electronic passports, wireless bag tracing and much more.

7. Conclusion

Staff of different airlines understand well the obligation their predecessors' work places on them. That is why they continue to provide an even more punctual and polite service for passengers in order that everyone who travels with the airline leaves the flight fully satisfied. Unavoidable background of this service is the information system suitably set up, and updated all the time. It is well known: 'Boarding passengers is the lifeblood of an airline'. Aim of all the airlines is to have passengers leaving the airport satisfied, and choosing the same airline again when next travelling. Nowadays, after the terrorist attacks at WTC in New York, and at The Pentagon in Washington, safety is likely be the key word, so the airlines have to consider it much more intensive than they did before.

Gazing further into the future, who knows what new innovations there will be? What is certain today is that vendors offer an innovative and cost-effective response to the information and telecommunications needs of the air transport industry. The task of the airline's experts is to adapt and integrate these functions into their existing airline system.

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