

PROTRACK

PROCEDURES TRACKING SYSTEM

Where IT can provide fast activation
and effective application of
airport contingency procedures

Introduction

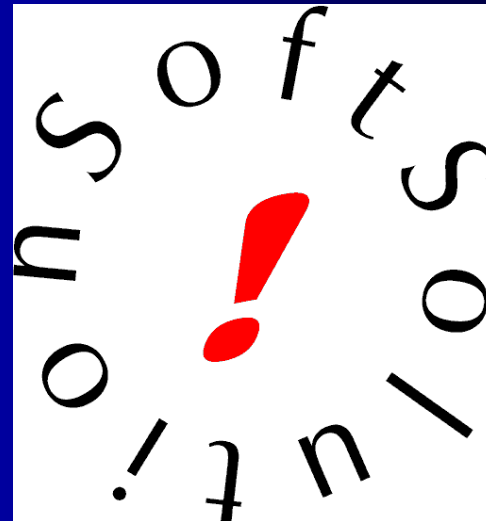
- Outline Main issues based on lessons learnt from many events concerning airport contingency/emergency management
- Identify where IT can address such issues
- Identify where Human Factors can be involved
- Propose an effective solution

First who are we:

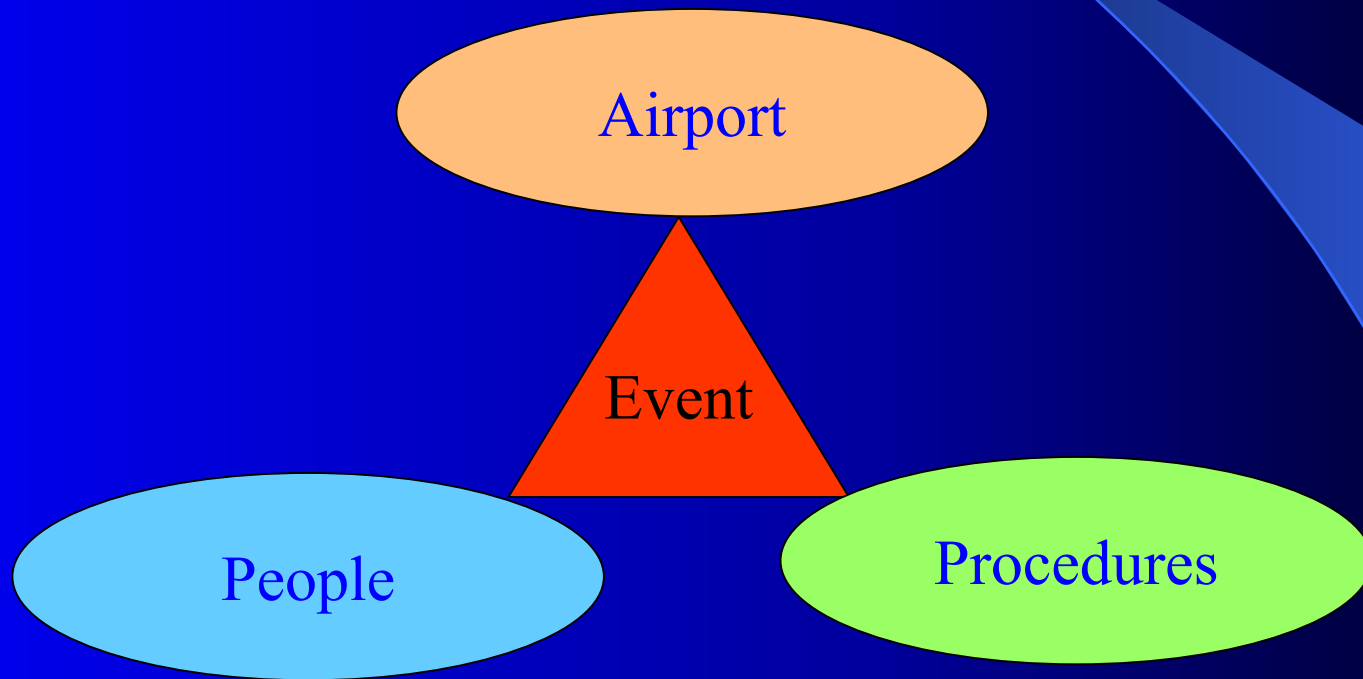
Magister Ludi
A V I A T I O N



- **Magister Ludi Aviation**
- **Softsolutions!**



Principle elements involved in a contingency event



People

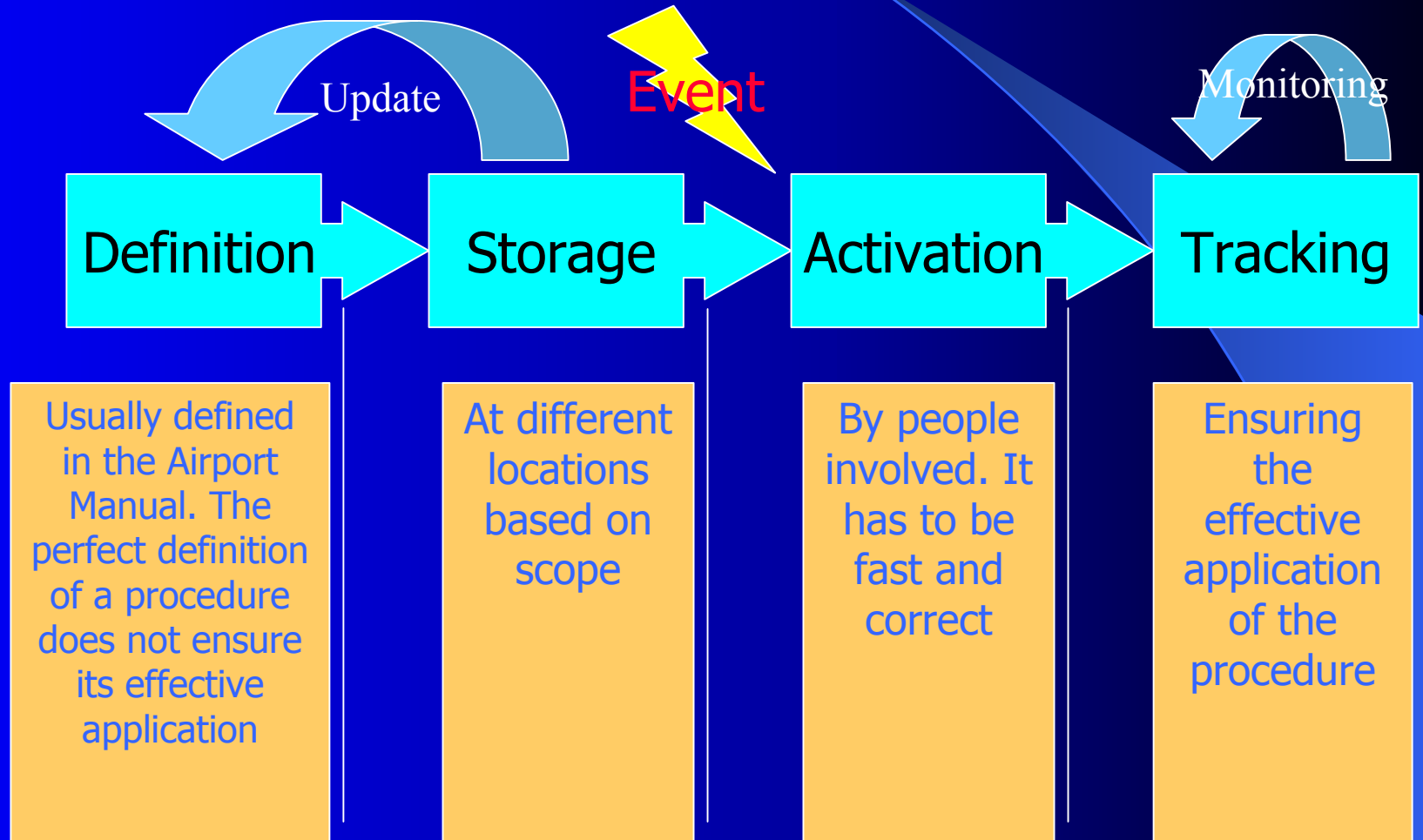
- **Within Airport Grounds**

- **Airport Authority**
- **Police**
- **Firemen**
- **ATC, Tower**
- **Ambulance Service**
- **Customs**
- **Security Companies**
- **Airline Companies**

- **External to Airport Grounds**

- **Hospitals**
- **Police**
- **Media (TV etc.)**

Procedure Lifecycle



What has the analysis of airport contingency/emergency management revealed?

- **Late activation of procedures**
- **Late communications of relevant information**
- **Late communications to relevant people**
- **Information overlapping**
- **Incorrect application of procedures**
- **Incorrect storage of information**
- **Only minimal training to the people involved**

Critical Points of Contingency/Emergency Management

- **Involvement of a number of different internal and external bodies with possible overlapping authorities and responsibility**
- **Lack of dedicated software tools that support the paper based procedures**
- **Difficult to have a diffusion of pertinent information in parallel to the activation and monitoring of procedures**
- **Effective training to the personnel requires airport's paralysis**

PROTRACK

addresses all these issues, providing:

- **Fast and correct activation of procedures**
- **Best communication tools**
- **Correct dissemination of information**
- **Continuos tracking of procedures**
- **Effective training scenarios**

Event

PROTRACK activated
by any authorised person

Immediate activation of the system
in designated stations



Immediate communication
to designated people



Fax



Voice



SMS



Email



A prototype of a use case
is currently under development:
please contact
MagisterLudi or SoftSolutions!

Communication Technical Issues

- **Definition of flow**
 - Where ?
- **Information exchange**
 - What ?
- **Media/Channels**
 - How ?

Communication Human Factor Issues

- **Provide an ordered sequence of tasks but avoid too rigid procedures.**
- **Improve the dissemination of information but implement a dedicated filtering of messages.**
- **Provide proper training and simulations.**

The importance of Human Factors Expertise during the realization of this system

- **Ergonomic design facilitates the definition of easy to use, efficient and error precluding human to device interfaces.**
- **Support the transition of paper based procedures into a system that is practicable and useable.**

The application of Information Technology

- **Based on the previously discussed issues the following four areas of IT are applicable for this problem domain:**
 - **State of the Art Software Engineering Techniques**
 - **Knowledge Management & Networking**
 - **Information Exchange Standards**
 - **Messaging Systems**

Messaging Systems

- **Messaging systems can handle the concurrent distribution of different message formats to different device types, rapidly and reliably, supporting filtering.**
 - **Message Bus**
 - Transport formats TCP/IP, UDP ..etc).
 - **Multiple Message Formats**
 - Text, SMS, ASCII, FAX, Audio, Multi-Media).

A General Architecture

System Management Services

Certificate Management



Procedure Maintenance



Procedure Activation



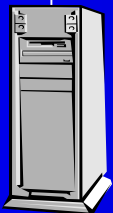
Client Services

Browser based procedure monitors

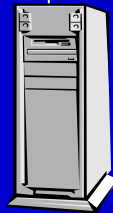


Message Bus

Knowledge base



Digital Certificates



Message Dispatch Engine

Procedure Tracking Engine

System Storage Services

System Engine Services

Gateway

Fax



Voice



SMS



Email



Main Software Components

- **Certificate management**
 - **Certificate Management for maintaining changes in authority and upholding system security.**
- **Procedure Maintenance**
 - **Allowing the creation, update and maintenance of stored procedures.**
- **Procedure Activation**
 - **Supporting the Activation, Tracking & Logging during an emergency situation.**
- **Procedure Monitor**
 - **A Multi-Platform interface to the Emergency Management system (in read only), provides external and internal entities with information on evolution of the event and possible status of the procedures.**
- **Procedure Tracking Engine**
 - **Multi-threaded distribution of messages according to stored information**

Conclusions 1 : What is the advantage of our approach?

- ***A pragmatic solution that combine state of the art technology and Human Factors issues within the Aviation System***
- ***A systematic, tried and tested design approach for development of a software system***
- ***Open system supporting both networked and other information transmission media.***
- ***Is multi-tasking & secure***
- ***Integrates different software components and information repositories to specifically support paper based procedures***
- ***Supports different end user devices (PC/Laptop/Palmtop/FAX/Phone/GSM)***
- ***Should be compatible with legacy/proprietary systems***
- ***Facilitates training & emergency simulation***

Conclusions 2 : A Possible Work Path

- **Analysis**

- **User Requirements Specification including:**
 - **Airport procedures and Information Flow Analysis**

- **State of the Art Study**

- **Existing Systems, Software and Procedures**
 - ***Emergency Management, Work Flow Management, Crisis Management***
 - **Standards developed and in progress**
- ***Mature Industrial IT Technologies!***

- **The development of a prototype application**