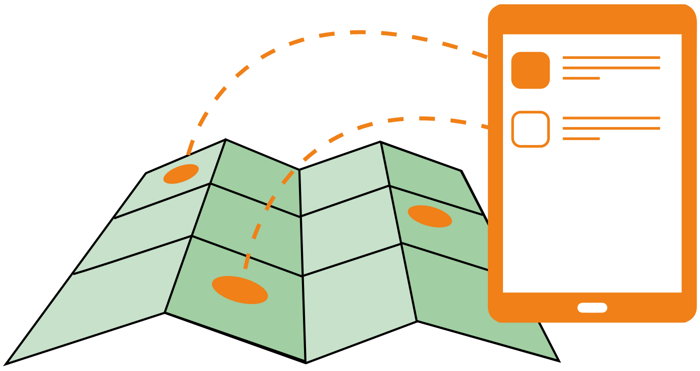

Success factors of mobile data entry systems

Whitepaper

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Index

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1 Overview

Mobile data entry systems in the event, incident and control management field increase productivity and simplify process management.

Avoiding duplicate entry effort

The use of computer-based systems to support the mobile entry of electronic forms is a quantum leap over paper-based methods. Without mobile entry systems, a handwritten initial entry has to be made on the spot, which makes a later second recording in the computer system unavoidable.

Improving the data quality

The creation of handwritten notes - often in shorthand form - and the transfer, possibly hours later, to a database system have a negative impact on data quality.

With mobile entry devices on the other hand, valuable detailed information from the current location can be collected through to image documentation in a matter of seconds.

Accelerating the workflow

Mobile data is available more quickly. As soon as data is transmitted to the management system in the background, e-mail alerts can be triggered or other push procedures used, in order to initiate further process steps.

The successful introduction and operation of mobile entry systems are simplified, if the recommendations listed in this white paper are taken into consideration.

2 Keep it...

2.1 ...simple

Mobile terminal devices must be easy to use. Mobile data entry makes substantial additional demands on the user, from situational perception to adverse environmental conditions. (It is therefore all the more important having a simple and intuitive entry, that requires no avoidable user input)

For this reason, the user interface may only display operating elements that are suitable for mobile data entry due to their nature. These operating elements must be suitable for touch interfaces and be capable of being used without a keyboard or mouse.

2.2 ...self-explanatory

The operation of a mobile terminal device shall require no or only minimal training. Training courses should be focussed less on technical and more on workflow content:

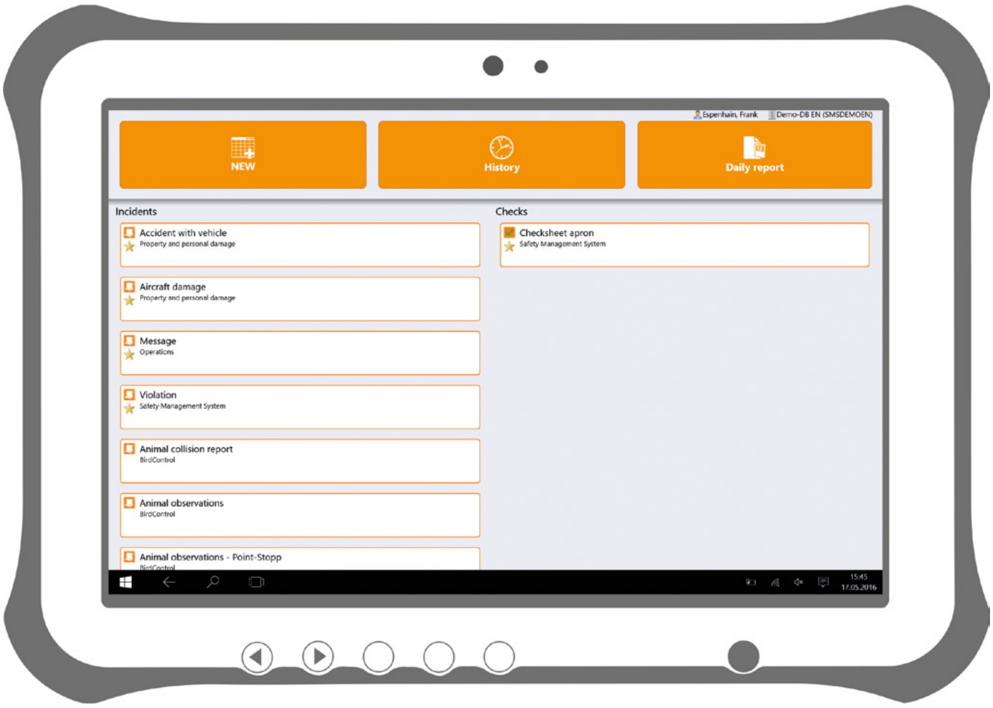
"Who should acquire mobile data, when and how?"

"How is the mobile data integrated into the process chain?"

"Who can read and process mobile data, when and how?"

These regulations are also required for paper-based data entry and are documented in SOPs - mobile data entry, however, raises additional questions concerning data transfer and backup, etc., that need to be answered in a process-specific manner.

Handling the device must not set up any additional hurdles.



Espenhain, Frank Demo-DB EN (SMSDEMOEN)

NEW History Daily report

Incidents

- Accident with vehicle
Property and personal damage
- Aircraft damage
Property and personal damage
- Message
Operations
- Violation
Safety Management System
- Animal collision report
BirdControl
- Animal observations
BirdControl
- Animal observations - Point-Stopp
BirdControl

Checks

- ☑ Checksheet apron
Safety Management System

15:45 17.05.2016

2.3 ...smart

The employees must be supported as far as possible by an intelligent system:

Technological support through predefined settings:

„Who?“ – the logged-in user

„When?“ - now

„Where?“ – here /GPS

„How does it look?“ – built-in camera

Organisational support in the design

With predefined form or process-specific settings, the entry of standard values can be simplified. The user's burden is eased and acceptance of mobile data entry increases over time.

2.4 ...complete

More than 90% of mobile routine controls carried out or events documented require no further processing.

For the remaining 10%, the workflow requires editing at a PC workstation. This incident management must be possible for **all** events and build seamlessly on the mobile data.

A situation where some events are not (firstly) entered as mobile data due to a lack of mobile forms must be avoided. Complete integration and use of all mobile data ensures acceptance and opens up potential for rationalisation.

2.5 ...unique

No separate user administration for mobile terminal devices.

User administration in the mobile data entry field consists of user master data and user rights for the workflow management.

From a process viewpoint, mobile data entry is the same activity as in the recording of events, incidents or control results at the PC workstation.

To keep the administrative effort for mobile data entry to a minimum, the editing rights on the mobile terminal device should reflect those at the PC workstation. A good mobile data entry system mirrors the PC workstation in terms of editing rights and user settings.

2.6 ...consistent

The continuous improvement of processes has an impact on the forms used and the respective form fields. This applies for both electronic and handwritten forms.

„Which user may capture which forms?“

“Which data fields should (or must) be captured?”

“What choices are available?”

These parameters are process-specific and must be adapted in the event of changes in structures and responsibilities.

Good mobile data entry uses simplified entry forms for ergonomic reasons and adopts all settings fully automatically from the leading event and incident management system.

The operation of the electronic form at the PC workstation and on the mobile client must be identical in respect of labels, selection areas and help texts. This simplifies operation and creates acceptance.

Furthermore, an elaborate technical update service for the mobile terminal devices can be avoided. As soon as a new form definition is in use, this should be used automatically company-wide and everywhere.

2.7 ...always available

100% available, always and everywhere, on- and offline!

A mobile terminal device must be always available. If this is not ensured, then an avoidable paper-based or other reliable documentation method must be provided in addition.

Thanks to the use of modern hardware and appropriate compatible software, the former limited running time caused by battery capacity is no longer a bottleneck. On the other hand, systems that can only be used with a network connection cannot always be operated reliably in buildings, outside areas and other areas with often insufficient network coverage.

The operating areas of civil airports are very large and, due to the varying use of aircraft handling positions, can only be covered by a perfect WLAN network with a great deal of effort. Opening up using mobile radio standards such as GPRS, EDGE, UMTS or LTE would be an alternative, at least outside sealed buildings, but often falls down on the - understandably - strict security policies of many airports.

However, mobile systems that in addition have offline capabilities can be used reliably for data entry. An intelligent communication service automatically takes care of connection management in the background and reconnects to the network when it is available.

Another benefit of the mixed online/offline operation is that downtimes in the server infrastructure have no effect on the availability of the mobile clients.

2.8 ...integrable

Not yet another new device!

Every user needs an e-mail client, a virus scanner, encryption, a VPN tunnel (or something comparable) and access to other operating systems

"which aircraft is moving to which handling position?"

"which services in a handling procedure must be booked as special services?"

For a user who is underway with an apron vehicle or similar equipment, it is conceivable that several mobile terminal devices could be mounted on it.

But, when the user leaves the vehicle, at the latest, all mobile applications must be available on hardware, for practical reasons.

Mobile entry software must be able to be used in cooperation with all other applications and company standards. To guarantee this, mobile entry software must comply without restriction with the standards of the operating system in use. This applies to both the mobile software and the interfaces.

Windows-based Tablet systems are a widely used standard and offer the necessary business features for a comprehensive operating concept.

2.9 ...multi-user friendly

No individual terminal devices!

Every user should be able to use every terminal device at any time. In this way, the number of terminal devices can be reduced, which simplifies shift use in particular. From a technical perspective, this means that permissions, data, documents and all other settings have to be controlled reliably and completely via the authentication on the operating system of the terminal device - one single sign-on for the mobile terminal device.

Under these conditions, mobile terminal devices can simply be handed to another user after logging out, without the need to take precautions concerning data protection or them being sufficiently audit-proof.

2.10 Keep the configuration workload small

Ease your IT burden - avoid unnecessary administrative tasks!

The IT department is a critical success factor in mobile applications. Architectures that give rise to substantial or unnecessary administrative tasks for your IT department should not only be avoided for mobile applications.

The administration of (additional) mobile users leads to a great deal of effort, if the Active Directory of the Windows server systems cannot be used.

This area also includes software distribution. The initial "fuelling" of the mobile terminal devices, regular software updates and the inventory of mobile installed products head the list here.

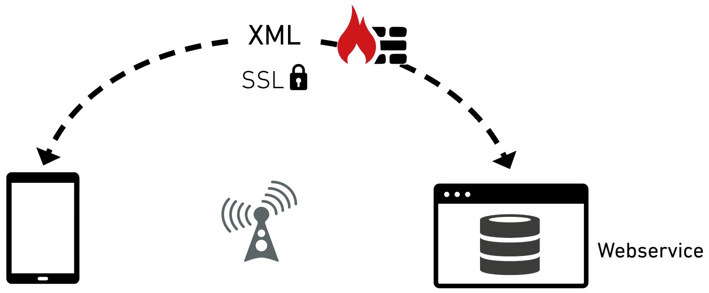
2.11 Keep the connectivity support low

Ease your users' and your IT burdens through simple and robust data interfaces!

Mobile terminal devices can cause a high operating workload if the upload and download data streams are not sufficiently error-tolerant. A transaction control for the data and file transfer is desirable in order to guarantee a reliable and complete transfer of data. Transfer errors should be detected by the software product itself and automatically remedied by a new transfer.

It is detrimental to users' acceptance if the data transfer is not sufficiently robust and requires permanent monitoring. Insofar as this data transfer also means an increased operating workload for the IT Department, a polyphonic cacophony will quickly result.

From a technical system perspective, mobile terminal devices should make no special demands on the interfaces, to ensure that they are incorporated seamlessly into your existing security concept and to avoid problems with transfers. Communication based on XML enables a firewall-friendly, transparent data transfer.



2.12 ...audit proof

The audit-proof documentation of events is a minimum requirement for mobile terminal devices. For every event, incident or control, it must be possible to reliably prove which employee has collected the data.

This requires personalised access protection on the terminal devices on the system side, so that they are also guaranteed audit-proof in multi-user operation. Group accounts or log-ins are not generally compatible with an audit-proof documentation.

2.13 Keep the SOP up-to-date

The introduction of mobile terminal devices brings with it numerous smaller changes to work processes. The existing process documentation should be updated proactively in order to exploit the potential for optimising this technology. Insofar as it is left to the specialist departments themselves how the mobile terminal devices can best be deployed, a risk exists that undesired processes will be memorised and avoidable errors will diminish the success of the project.

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