

FIELD USE OF COMPUTERS IN EMERGENCY MEDICAL SYSTEMS

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EuSEM 2008, 15 – 18 September 2008, Munich Germany

Introduction

- ◆ Project name: Information and Communication System for Emergency Medical Service
- ◆ Project time frame: start in July 2007, end in September 2009
- ◆ Project budget: approximately 300.000 EUR
- ◆ Project partners and partial financing:
 - University Medical Centre Ljubljana, Slovenia
 - Jozef Stefan Institute, Ljubljana, Slovenia
 - Computel d.o.o., Technology Park Ljubljana, Slovenia
- ◆ Project co-financing within the research programme "Knowledge for Peace":
 - Ministry of Defence, Republic of Slovenia
- ◆ Project goal "I02": to reduce the "bureaucratic" work of emergency doctors and medical technicians through:
 - Better and faster treatment of patients in EMS
 - Reducing the work overload of doctors and technicians in EMS
 - Quality data collection for statistic analysis and better management

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Forms of pre IT state

- ◆ Doctors and medical technicians in Ljubljana EMS team have to fill out up to 4 documents out of 5 regarding each intervention.

SNI call taking

NP transport-technicians

PRP
intervention -technicians

PNI
intervention - doctors

PPO
re-animation -doctors

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Timings on pre IT work flow

Document	Measured Time (mm:ss)
NP	03:29
SNI	02:58
PNI	06:20
PPO	05:27

Statistical relevance:

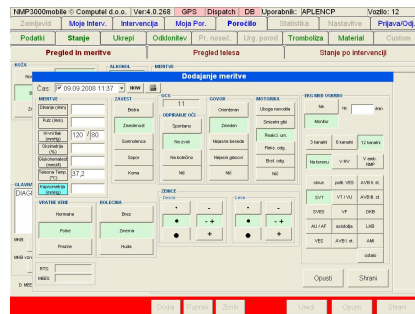
- 10 EMS doctors
- 20 EMS technicians
- No. of measurements = 350
- Source: XNMP project report "I01"

Avg. Time spent on filling the Documents = **18 min 14 sec**

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Mobile Program Development

- ◆ Developed by specialists from the sectors of EMS, informatics and communications
- ◆ Easy terrain use:
 - Touch-screen buttons
 - Letter by letter filtering in code tables
 - Use of intuitive colour coding
 - Step-by-step leading structures
 - Full-screen mode
 - Information exchange with EMS dispatch program to avoid double data insertion
 - ...



Adding vital signs in EMS mobile program

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Mobile Program Testing



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Testing The Program And Partial Results

PRP

intervention - technicians

PNI

intervention - doctors

Document	Measured Time (mm:ss)
NP	00:44 (N = 46)
SNI	00:00 (all data imported from EMS dispatch program)
PNI/PRP	02:58 (N = 22)*
PPO	<03:00**
TOTAL	<06:42 * **

* Measurement of timings for PNI that is filled in by doctors is not elaborated yet. These are just partial results from the beginning of the testing on 31 of July, 2008 made by technicians on PRP. We assume that times for filling in PRP and PNI should be approximately the same since the content and the number of data is similar.

More tests and measurements are under way at the moment and in the near future.
**We didn't officially measure timings for PPO in computer as we did for paper forms, but some preliminary tests made by programmers showed that this will be significantly faster than for paper forms.

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Comparison

Document	On Paper: Measured Time (mm:ss)	In Computer: Measured Time (mm:ss)
PN	03:29	00:44
SNI	02:58	00:00 (all data imported from EMS Dispatch program)
PNI/PRP	06:20	02:58
PPO	05:27	03:00
TOTAL	18:14	06:42

* Measurement of timings for PNI that is filled in by doctors is not elaborated yet. These are just partial results from the beginning of the testing on 31 of July, 2008 made by technicians on PRP. We assume that times for filling in PRP and PNI should be approximately the same since the content and the number of data is similar.

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Conclusions

- ◆ The use of computers in EMS significantly reduces the time needed for "bureaucratic work".
- ◆ Decreased time for filling in the forms allows doctors and technicians to spend more time with patient.
- ◆ This increases the total quality of EMS service.
- ◆ Automatic information exchange decreases the probability of errors that happen when manually retyping.
- ◆ In this regard the errors in decisions are less likely.
- ◆ All the data are safely stored centrally.
- ◆ This enables managers to make statistical analysis and well informed decisions.
- ◆ We are open to share experience.
- ◆ Don't hesitate to contact us.
- ◆ Thank you for your time.

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