



***“A future vision of e-Health services
for chronic diseases management”***

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A future vision of e-Health services



Sharing Experience across Europe



Brussels, February 13th 2007

"Personal Health Systems" Conference



Pan European Vision and Dimension

SARAH – Swedish Region

MEDICATE - EU

DOMUS – Tuscany Region





MISSION

Personalized healthcare

is an challenging goal requiring, on the one hand:

an aptitude to undertake the necessary changes to be in step with the current world,

whilst at the same time,

preparing for tomorrow's world.

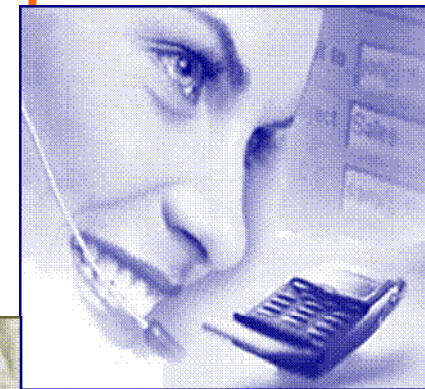


Domain Prospective

**e-Health for elderly persons and
for disease management:**

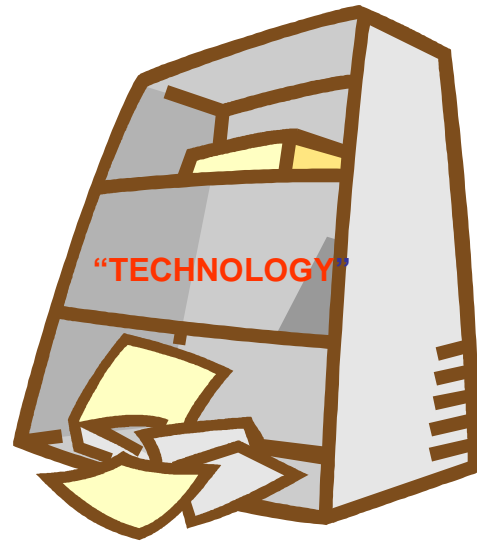
IMPLIES

**provision of CONTINUOUS CARE
and SERVICES INTEGRATION**



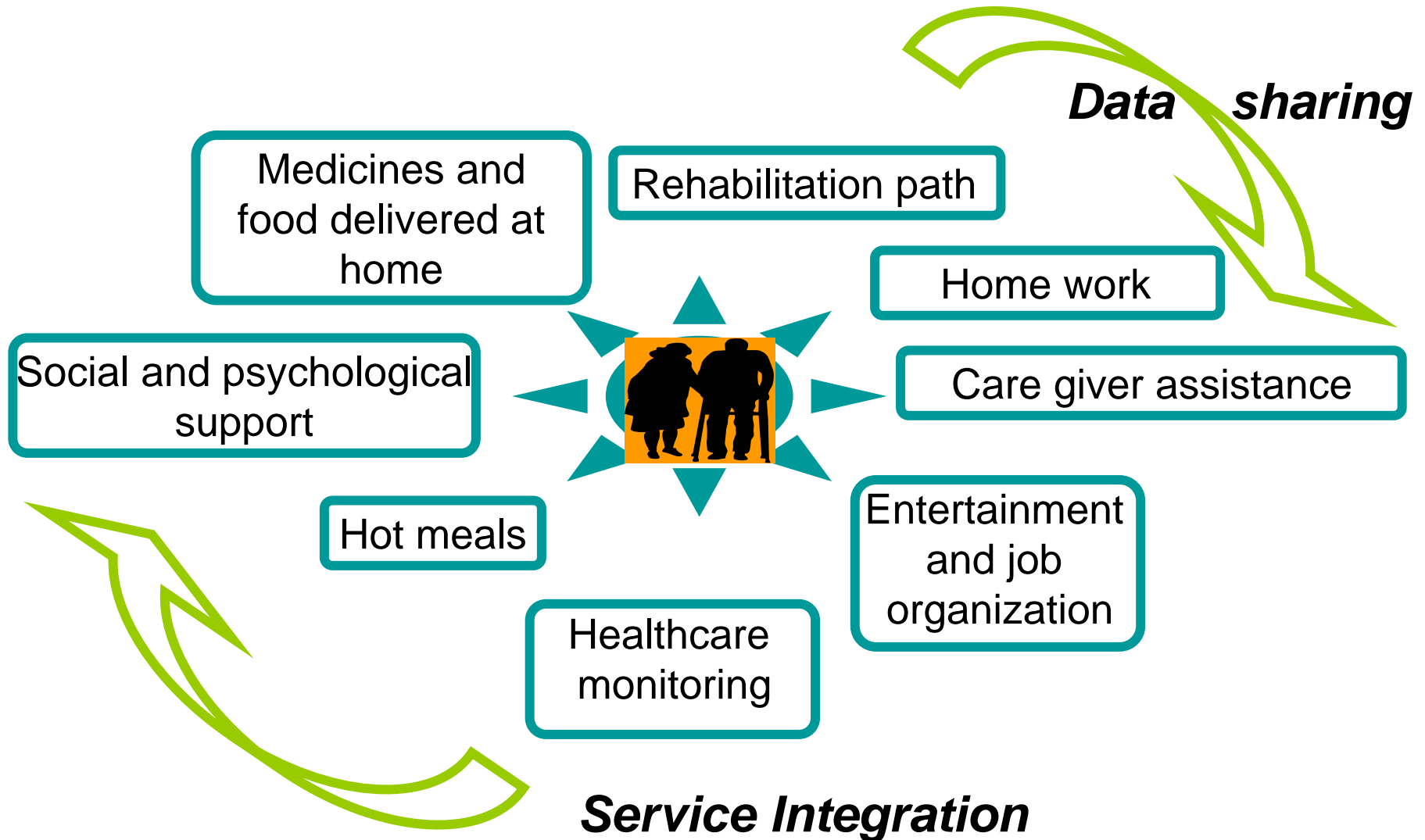


IT IS NOT JUST SIMPLY





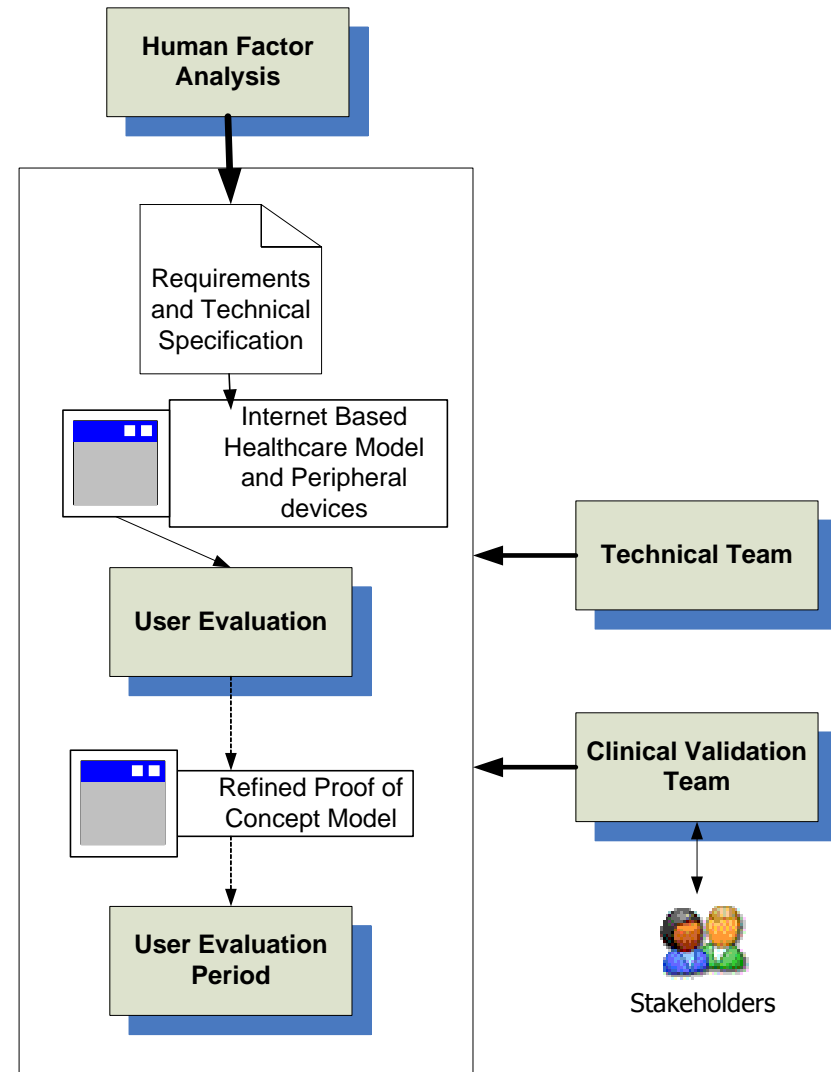
Complexity of care provision





Implementation of e-Health solution

- Efforts within this domain have addressed the deployment of home based technology.
- Specifically we have addressed the following issues:
 - Assessment of user needs.
 - Assessment of existing means of service delivery.
 - Identification of technological innovation.
- Technologies have lead to the development of classical e-Health models – mobile technologies and backend web service.
- **Have a more user centered approach to requirements, design and implementation.**
- Many challenges have resulted in strategic redevelopment of approach to be adopted.

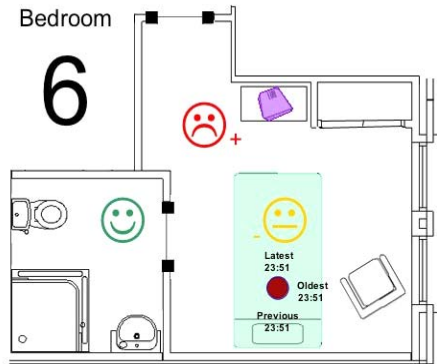




Understanding of user requirements

Date 15/06/2005
Time 23:53

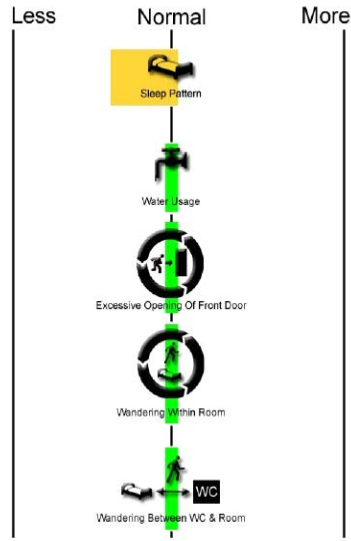
Tenant: John Martin



Time Water Currently Running
00:00:00.00

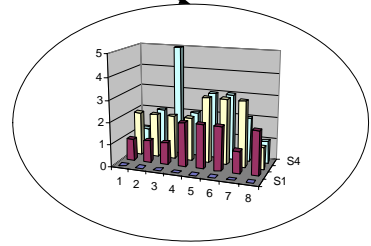
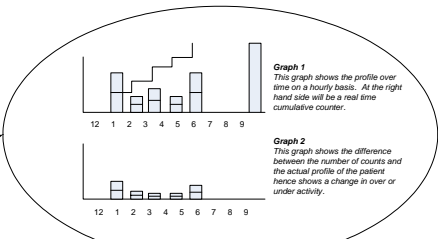
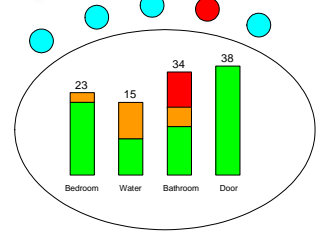
Total Duration Water Last Turned On For
00:00:43.99

Fall Estimator Timer
00:00:00.00



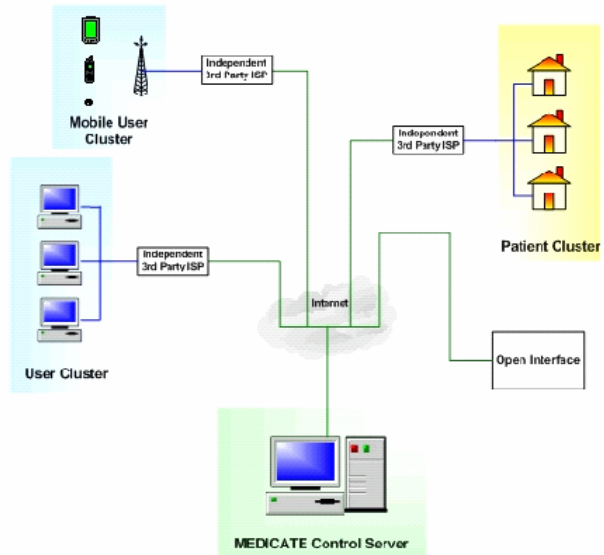
•An additional area of concern is the manner in which the information can be presented to those using the systems.

•Careful consideration should be given to the level of understanding the caregivers have and the actual information they require in support of patient monitoring.





Medicate - Technology



Medicate Care Agency Client

File Patients Doctors Pharmacists Tools Help

Pharmacist Data Form

Personal Information

First Name: PHARMACIST, Last Name: PHARMACIST, Middle Name: PHARMACIST

Contact Information

Home Phone, Mobile Phone, Office Phone, Fax, Email

System Information

Pharmacist ID: PHARMACIST, Agency ID: PHARMACIST, Date Joined: 10/31/04, Active: [X]

MEDICATE

Compartment 1	Compartment 2	Compartment 3	Compartment 4
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	2 x Aspirin 1 x Diclofenac Sodium	2 x Aspirin 1 x BOI-K	1 x E someprazole 2 x Aspirin 1 x Diclofenac Sodium
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	1 x Aspirin 1 x Diclofenac Sodium	1 x Aspirin 1 x BOI-K	1 x E someprazole 1 x Aspirin 1 x Diclofenac Sodium
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	1 x Aspirin 1 x Diclofenac Sodium	1 x Aspirin 1 x BOI-K	1 x E someprazole 1 x Aspirin 1 x Diclofenac Sodium
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	1 x Aspirin 1 x Diclofenac Sodium	1 x Aspirin 1 x BOI-K	1 x E someprazole 1 x Aspirin 1 x Diclofenac Sodium
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	1 x Aspirin 1 x Diclofenac Sodium	1 x Aspirin 1 x BOI-K	1 x E someprazole 1 x Aspirin 1 x Diclofenac Sodium
1 x E someprazole 1 x Rampipil 1 x Nebivolol Hydrochloride	1 x Aspirin 1 x Diclofenac Sodium	1 x Aspirin 1 x BOI-K	1 x E someprazole 1 x Aspirin 1 x Diclofenac Sodium

First Name: SURNAME, Patient ID: 2, Prescription ID: 12, Start Date: Monday, October 25, 2004, End Date: Sunday, October 31, 2004

Unlabeled Note: Please select an option below and press proceed.

Write a Single Cartridge

Write a set of Seven Cartridges

Proceed

Select New Patient

Log Out

Medicate

PatientLastName, PatientFirstName Patient MN
ID: 4 Start: 2003-09-05 End: 2003-09-11

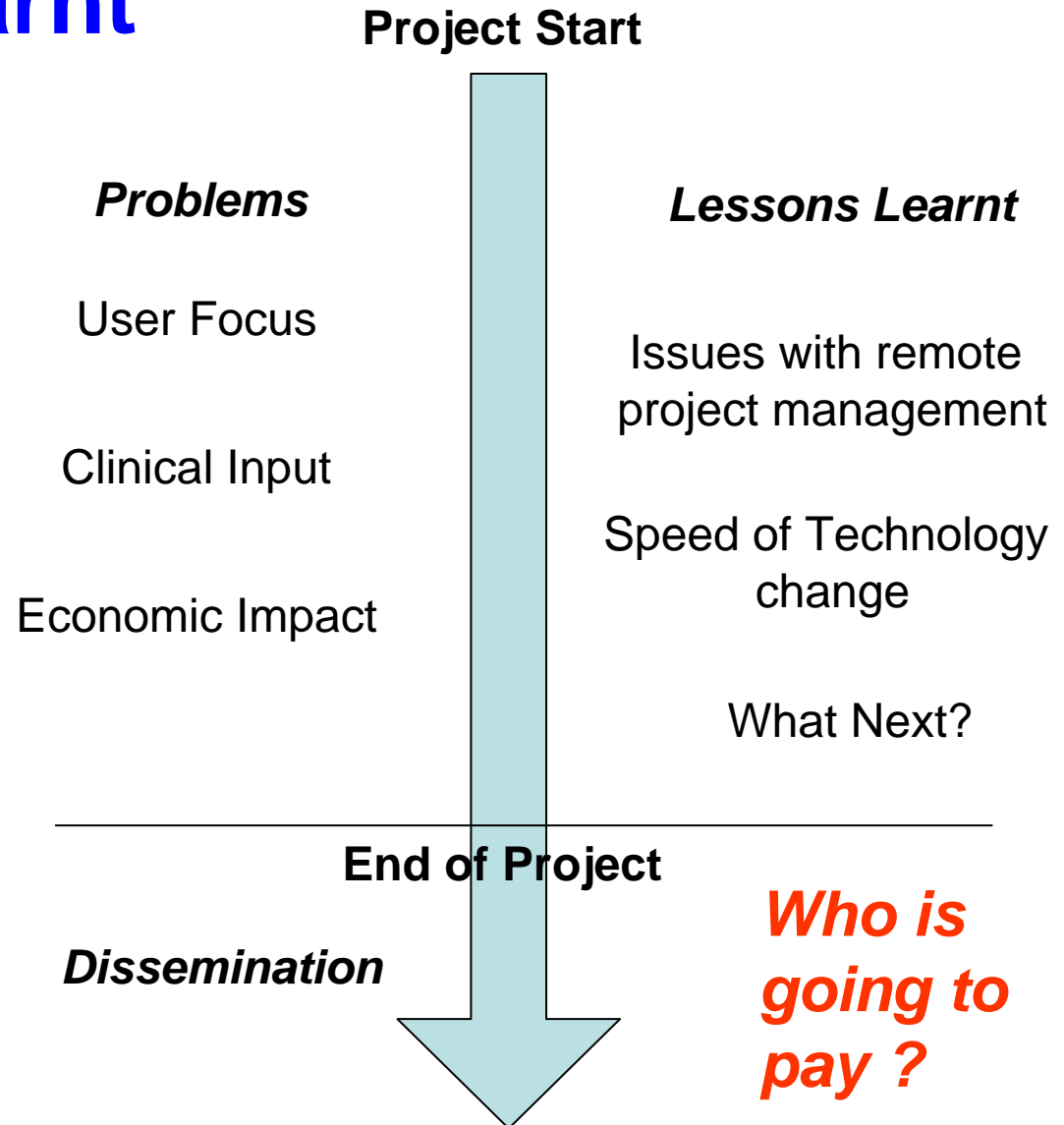
Intake	Intake Date	Start	Alert	End	Urgent	Details	Drugs
Cartridge 1							
1	2003-09-05	08:00	12:00	12:00	No	Edit	Edit Drugs
2	2003-09-05	12:00	12:05	12:10	No	Edit	Edit Drugs
3	2003-09-05	17:00	17:05	17:10	No	Edit	Edit Drugs
4	2003-09-05	21:00	21:05	21:10	No	Edit	Edit Drugs
Cartridge 2							
1	2003-09-06	08:00	08:05	08:10	No	Edit	Edit Drugs
2	2003-09-06	12:00	12:05	12:10	No	Edit	Edit Drugs
3	2003-09-06	17:00	17:05	17:10	No	Edit	Edit Drugs
4	2003-09-06	21:00	21:05	21:10	No	Edit	Edit Drugs
Cartridge 3							
1	2003-09-07	08:00	08:05	08:10	No	Edit	Edit Drugs
2	2003-09-07	12:00	12:05	12:10	No	Edit	Edit Drugs



Lessons Learnt

Evaluation of Developments

- Patients think the Care Model could improve their autonomy and quality of life.
- Patients reported to appreciate the support as a useful educational tool for their medication compliance regimen.
- Two patients reported a reduction of non-compliance level during the observation time.
- No significant changes were observed in patients' clinical status.
- Organisational and work skills assessment indicated reduced effort, mainly for careers, but also for GPs.





Specific conditions in north Sweden

- Sparsely populated region over large distances adds to need for solutions for elderly persons at home
- Very good Internet/wireless coverage
- Good computer/Internet literacy, also among elderly population
- Excellent testbed opportunities for new prototypes and citizen services



Were are we today in north Sweden?

- Award-winning electronic patient record and administrative system, and mobile access to patient record
- MobiMed – Ambulances with computer equipment
 - Paramedics can send ECG/other parameters to physician on call at hospital
- Doctors' rounds via videoconference between Sunderby hospital and Umeå university hospital
- 81% of e-prescription



Were are we today in north Sweden?

- Teleradiology – electronic exchange of X-rays between hospitals
- Exercise activity over distance from physiotherapist to patient's home
- Visual reinforcement very important





SARAH

Collaboration in elderly care with support of distance-spanning technology

- General practitioners and nurses are involved
- Use of an "e-Health box" containing equipment for use in patient's home by nurses and a PC for test with mobile access to patient record/VAS journal system
- Use of headset and webcam for consultations between a doctor at a distance and elderly residential care
- Evaluation of the perception (patient, families) and usefulness (nurse and GP)



The content of SARAH eHealth box



Hemoglobin



Bladder scan



Electronic stethoscope with audio file storing option directly in VAS/patient record
Via USB from laptop



12-lead ECG (Cabrera) with storing possibility of resting-ECG directly in VAS/patient record
Via USB from laptop



Pulmonary function (PEF)



Web-camera and headset for videoconference



Blood pressure



Laptop with mobile access to the patient record at the county council server via 2.5/3G-phone



Digital cam with storing option for pictures directly in VAS/patient record



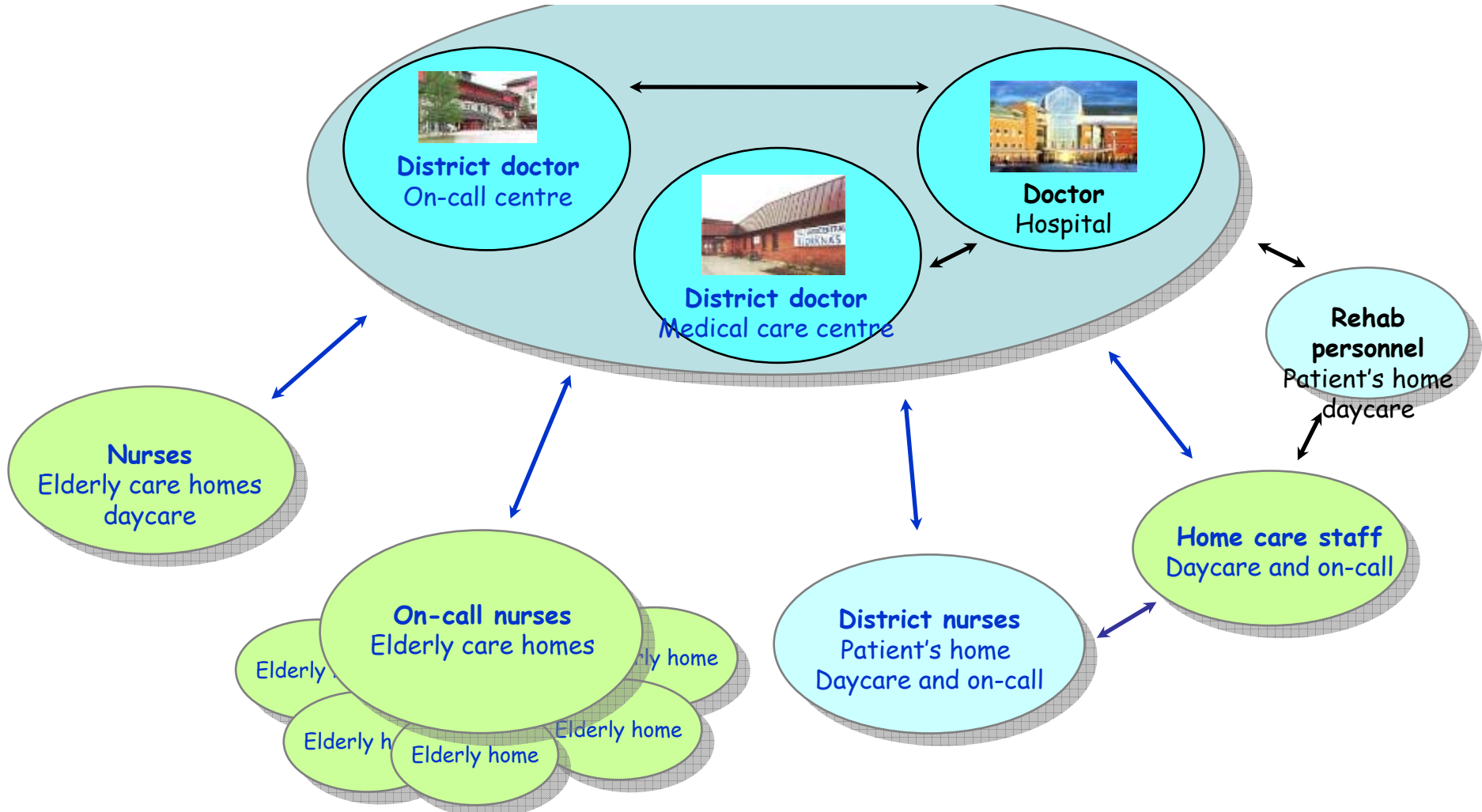
SARAH Remote e-meeting

- Audio and image communication between doctor, care staff in the home and the patient
- Simple to connect other participants in the consultation at need
- In real time the doctor can, for example:
 - Examine heart and lung audio (electronic stethoscope)
 - Check ECG curves
 - Compare new with old photos of leg wounds





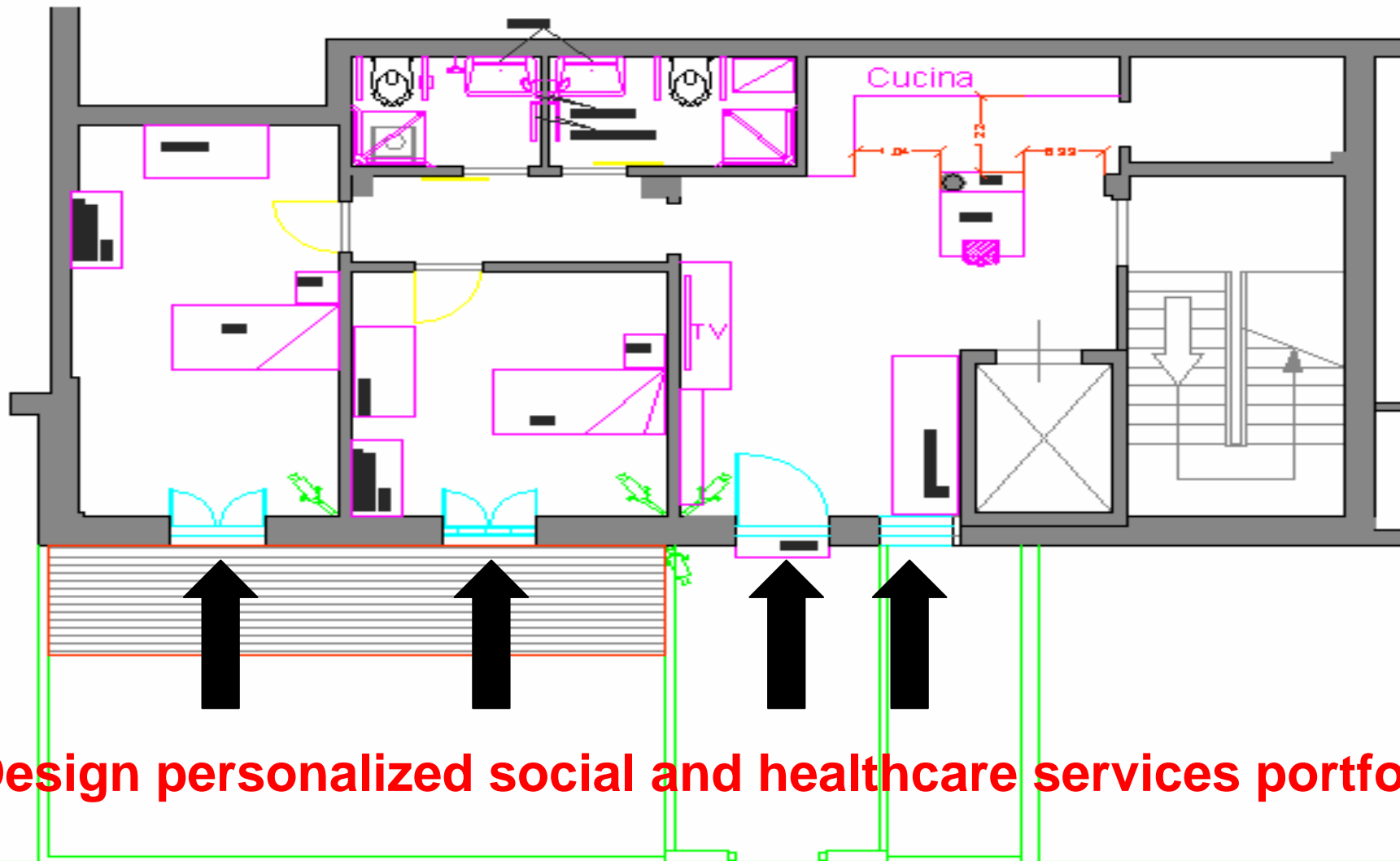
Real example of service integration





DOMUS Services

Home automation

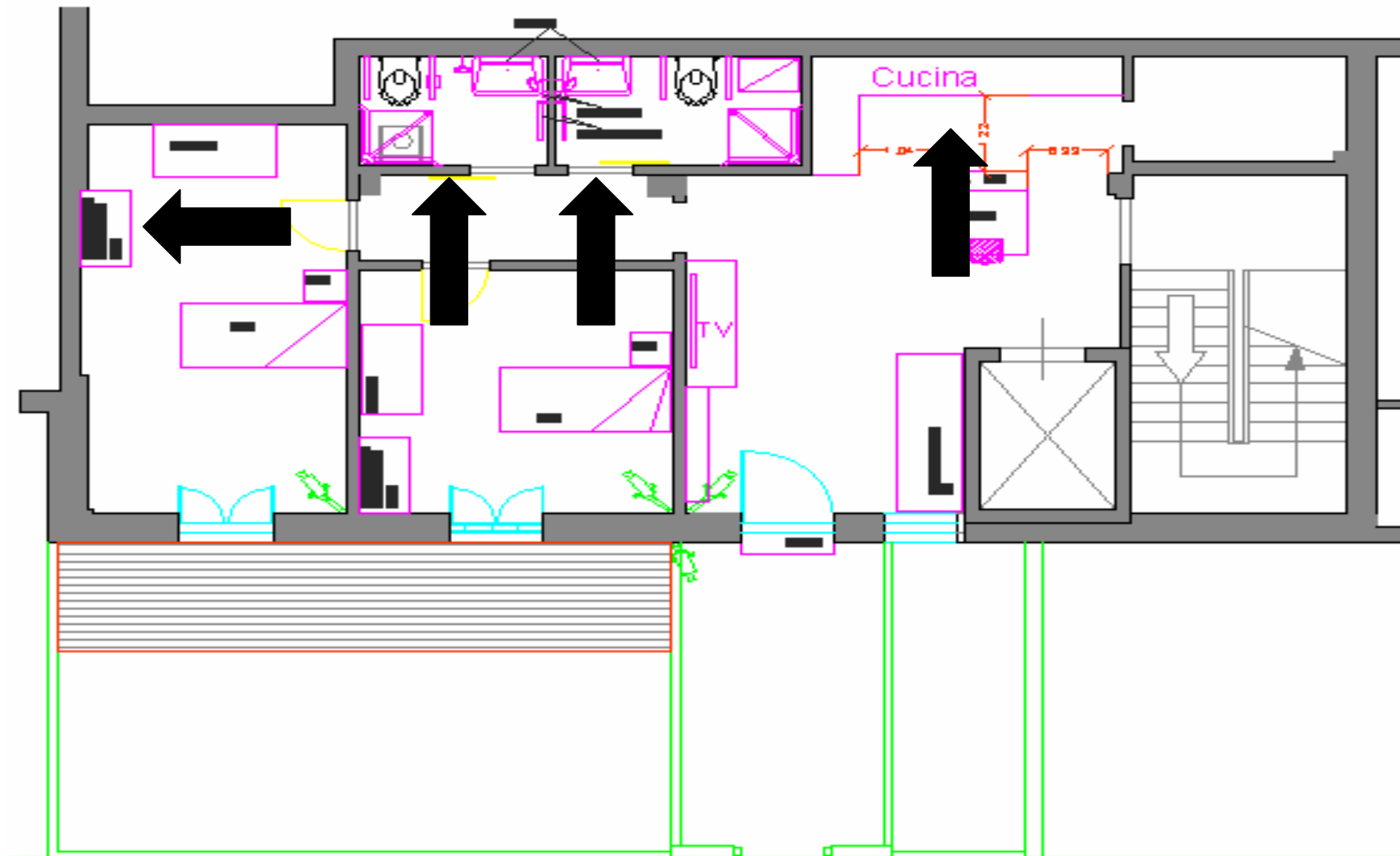


Design personalized social and healthcare services portfolio



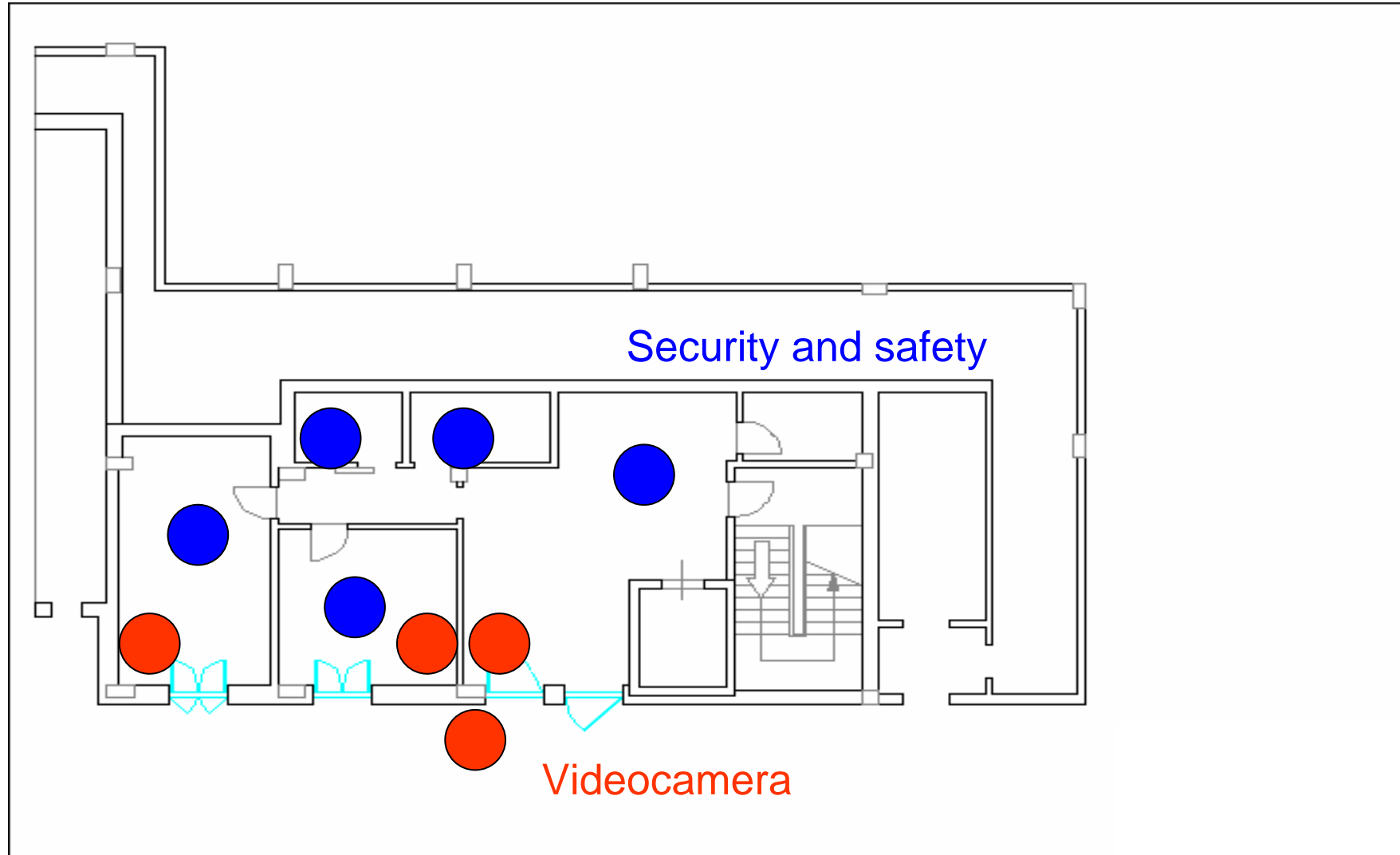
DOMUS Services

Assistive devices and furnitures automation



DOMUS Services

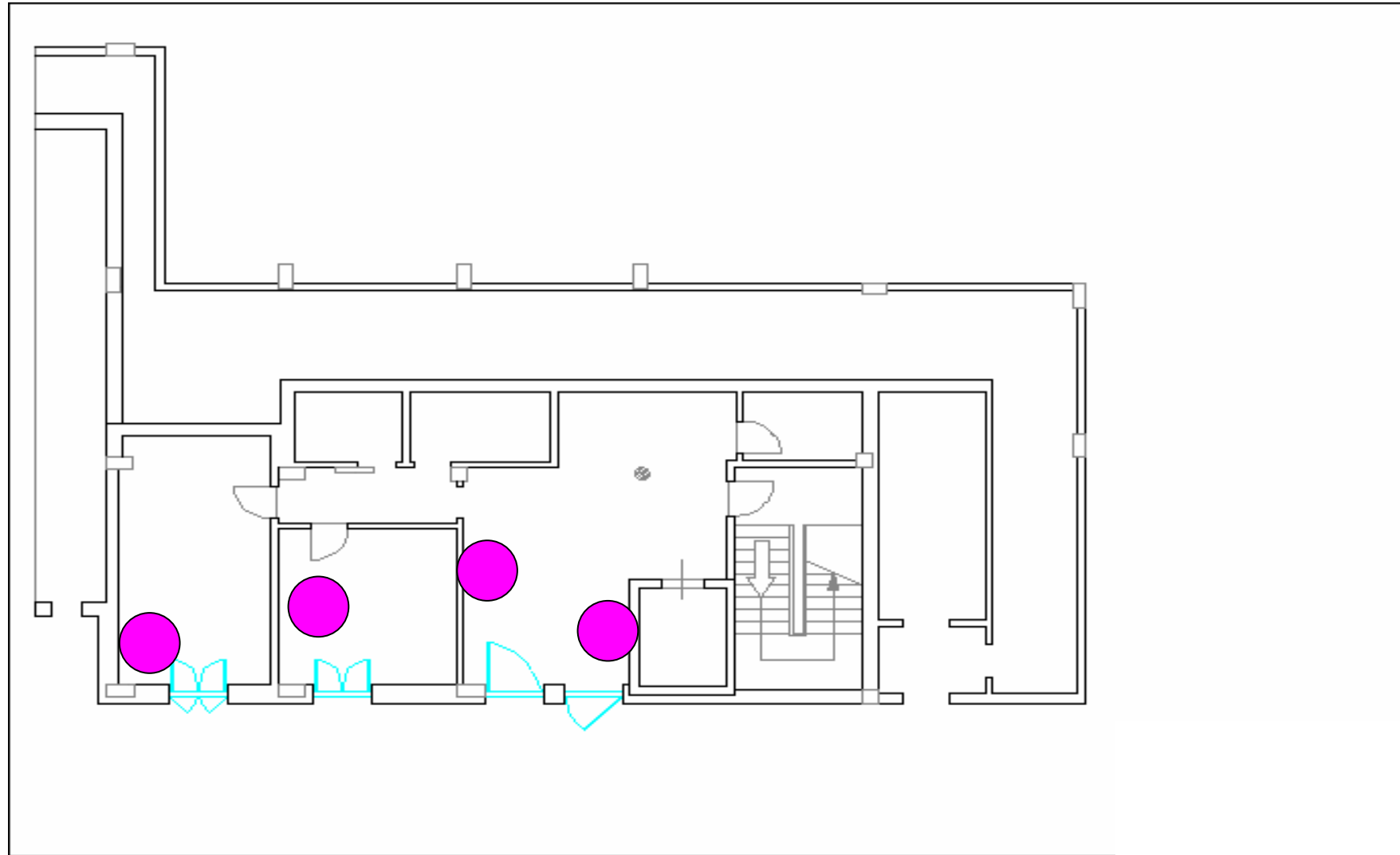
Safety and video-surveillance





DOMUS Services

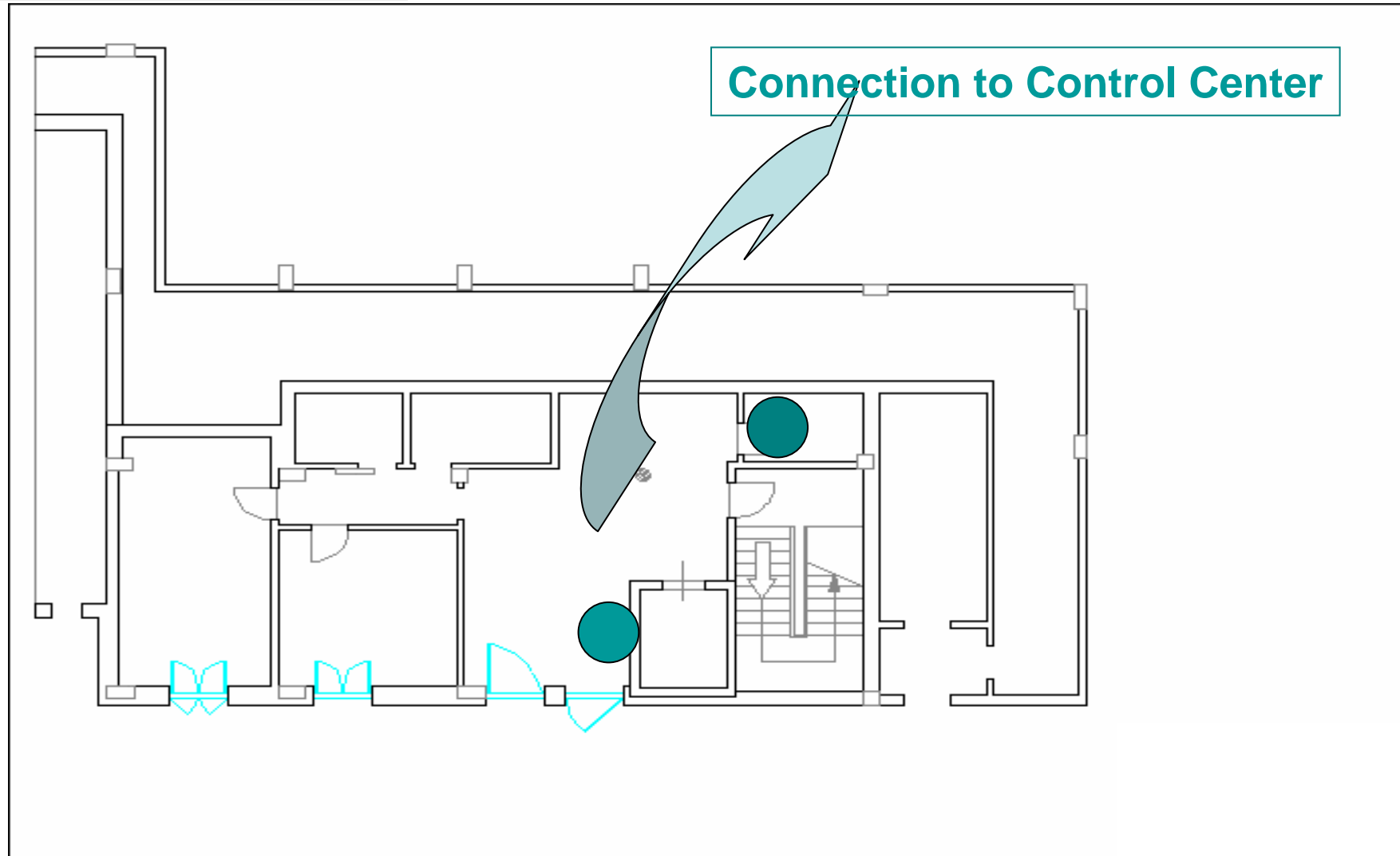
Comfort





DOMUS Services

Remote control and management



DOMUS Technology

Video
Cameras
Monitoring



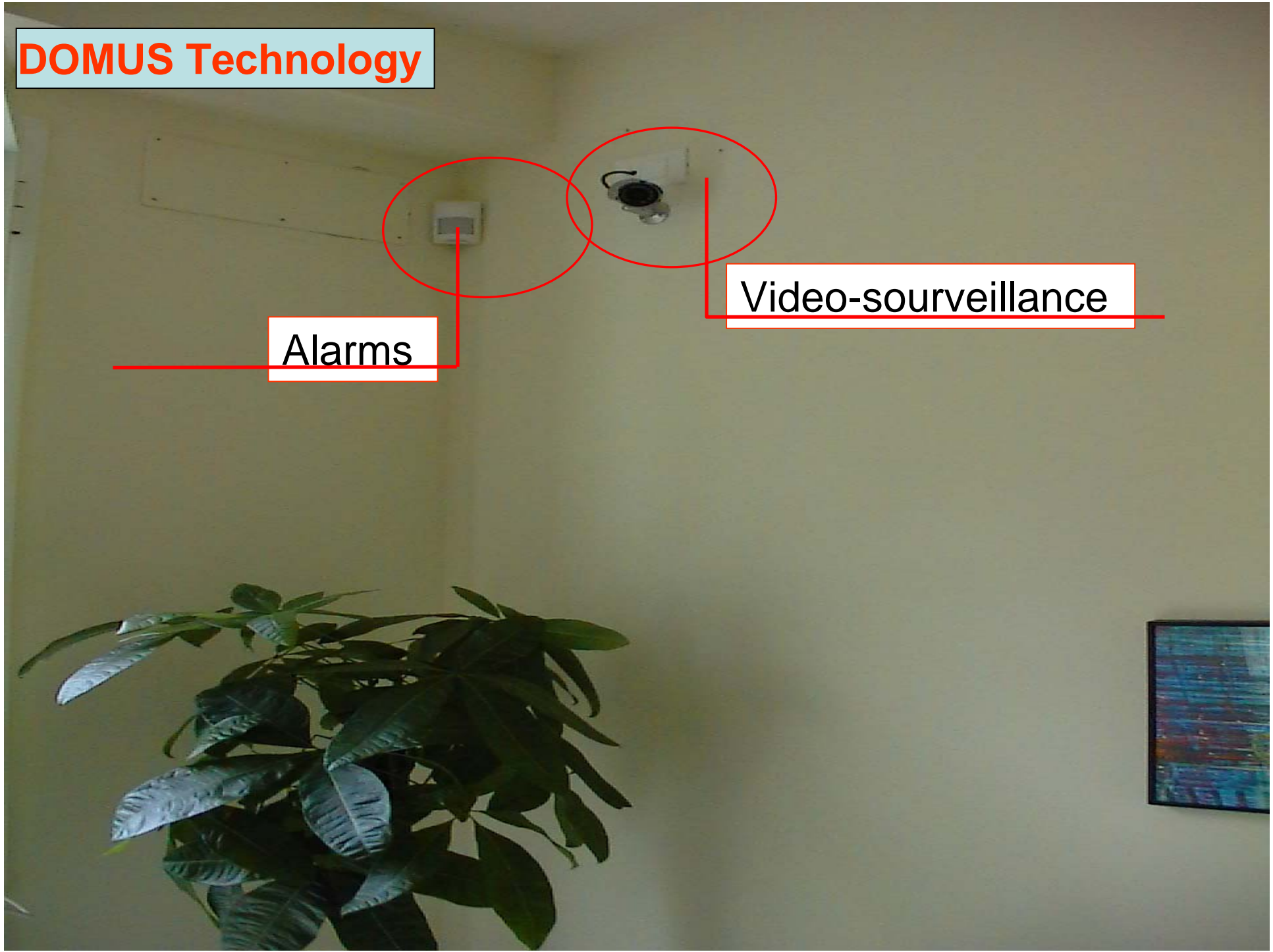
DOMUS Technology



Alarms



Video-surveillance



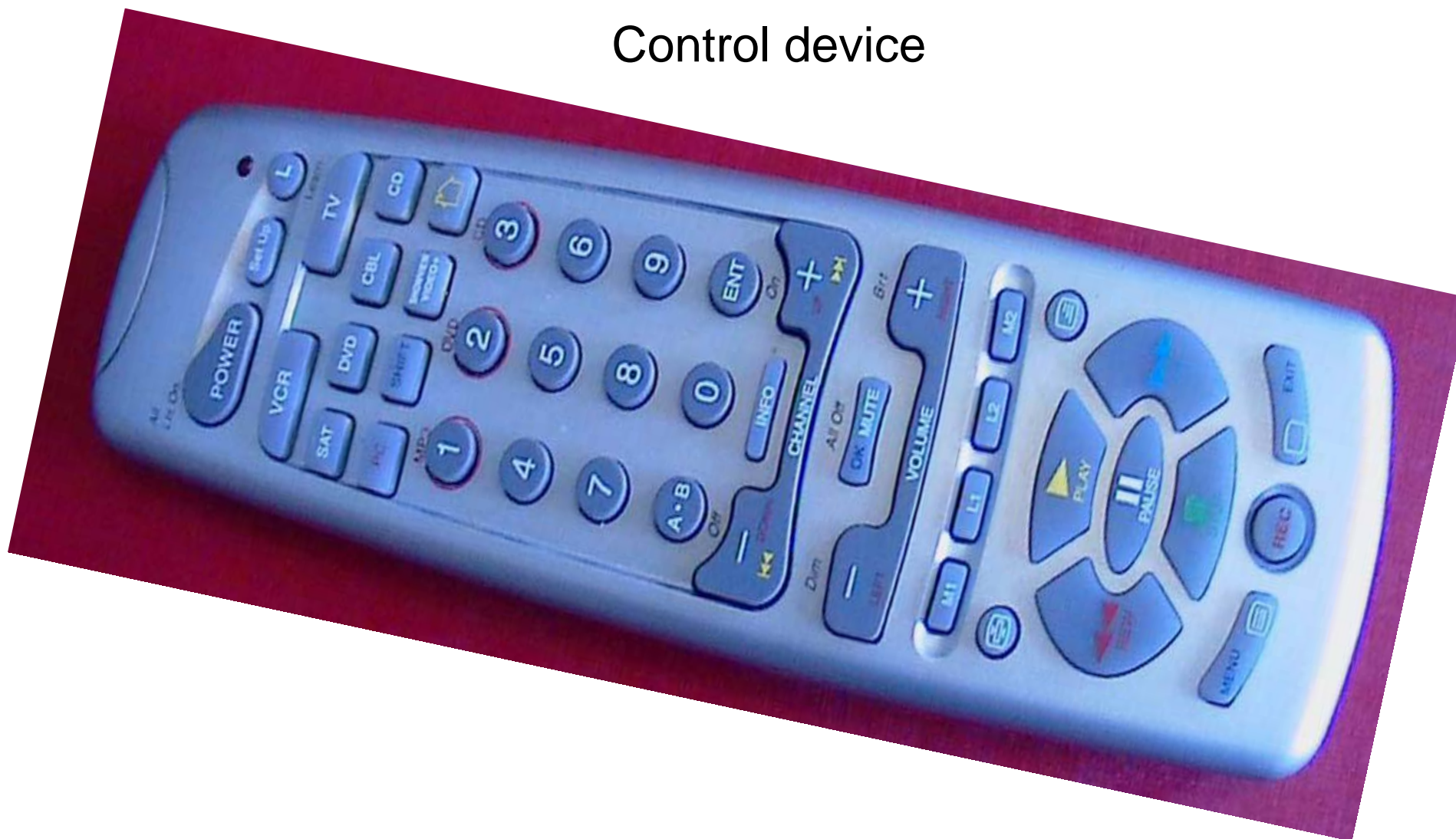
DOMUS Technology

Servomechanism
for wardrobes

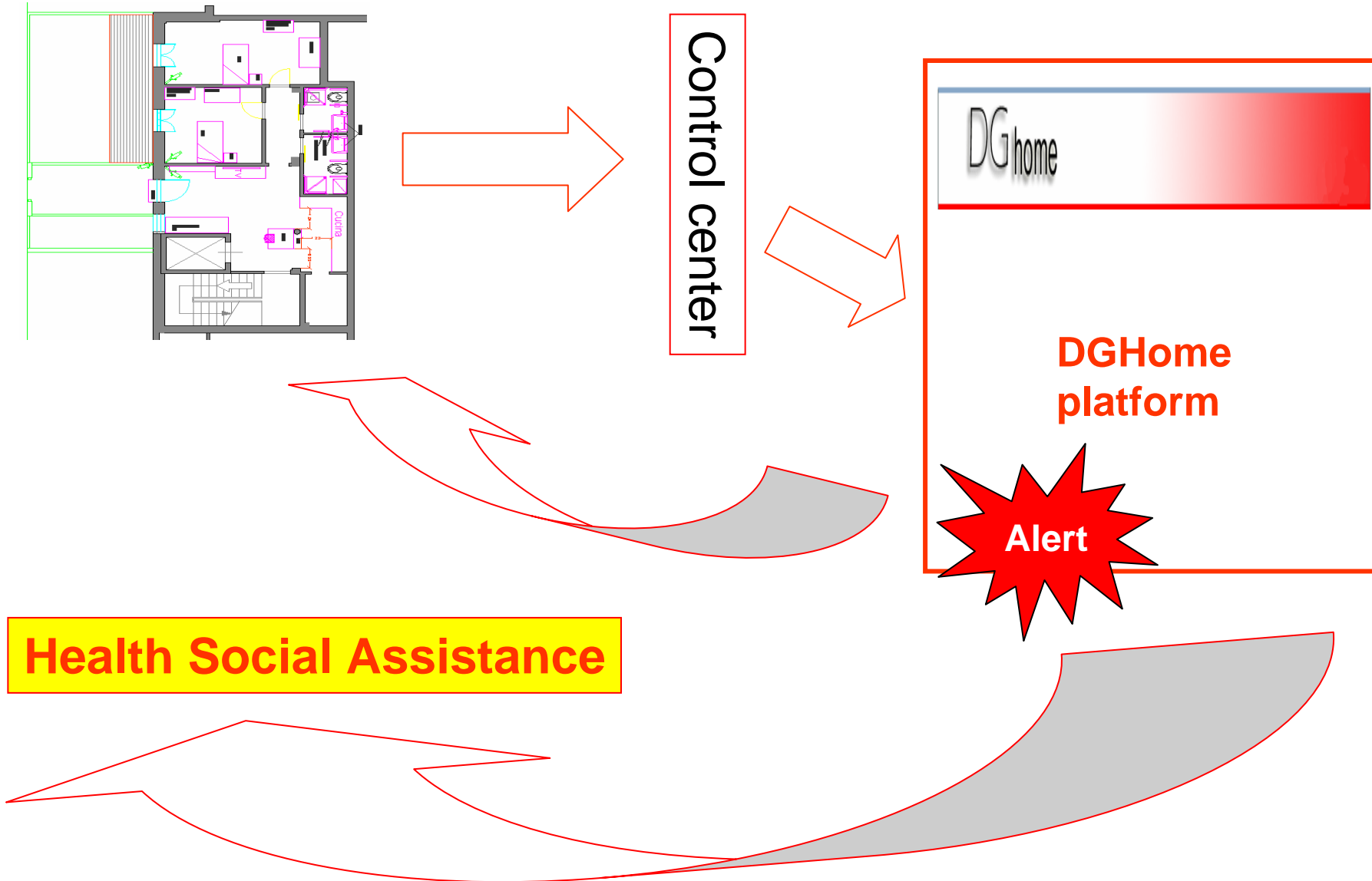




Control device



A future vision of e-Health services





DG home

Logout

Ricerca Assistito

EVENTI PRESI IN CARICO

Fuga di gas
Antonio Gubellini

Teleconforto
Antonio Rossi

Operatore Sandro Bianchi

COD. : " 1 - "Fuga di gas"

- Priorità : 1
- Nome : " Antonio"
- Cognome : " Gubellini"
- Numero Telefono fisso : " 0573557024 "
- Numero Telefono mobile : " 339895656 "

Procedura Gestione Evento :

- 1) Chiamare Assistito
- 2) Avvertire **Contatti Assistito**
- 3) Allertare Vigili del Fuoco - numero di telefono 115

Dati servizio:

- In caso di Fuga di Gas chiamare Zio Antonio al numero di telefono 333/4123352356 o al numero 055345678

Note:

[Chiudi Gestione Evento]

[Libera Evento]

EVENTI IN CORSO

Caduta assistito
Antonio Rossi

Prescrizione
Antonio Gubellini

A future vision of e-Health services



CONTEXT	SERVICE	STAKEHOLDERS
Active Home Assistance	Agenda, user profile, Active support	Social Care Providers
Telecare	Telesupport User's alarms (security and safety requirements) Monitoring of clinical parameters	Health and Social Care Providers
Drugs Compliance Management	User prescriptions profile, drugs reminder and compliance monitoring	Health and Social Care Providers
Smart Living	User's alarms eServices at home Integrated support	Social Care Providers



Market Vision

Customers:

Citizens

Nursing home

Public Administration

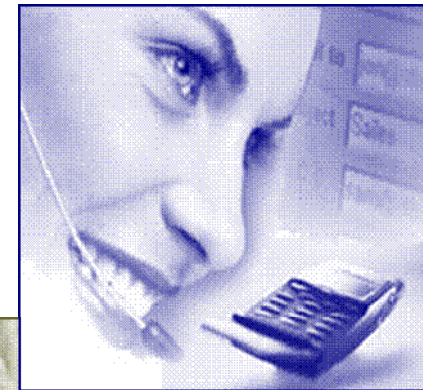
Products:

Devices

Middleware

Connectivity

Services





Not only..... Cost Benefits

COST per patient per month :

eHome Assistance: 360 Euro

eHealth Service Price: 60 Euro

Tele - support increase self-care management and reduce complications and mortality (i.e. from 18% to 8% cardiologic patients after heart transplantations)

Nursing Home: 2700 Euro

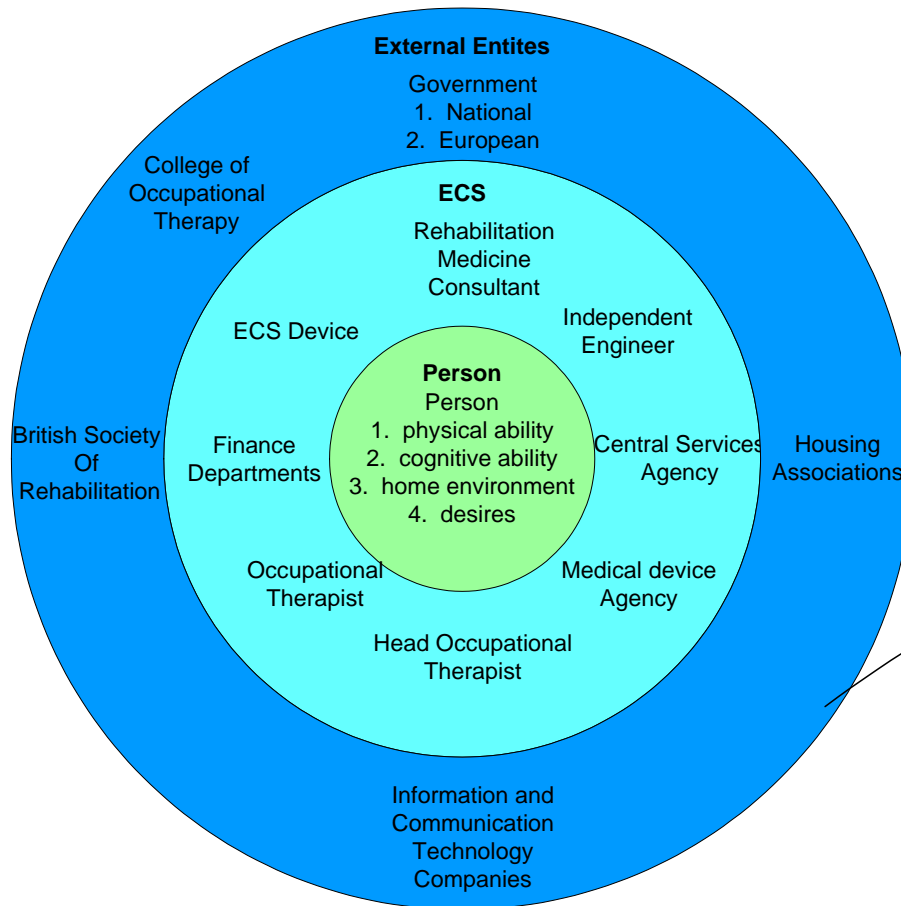
Cost reduction: 2280 Euro

avoiding patient staying in nursing home

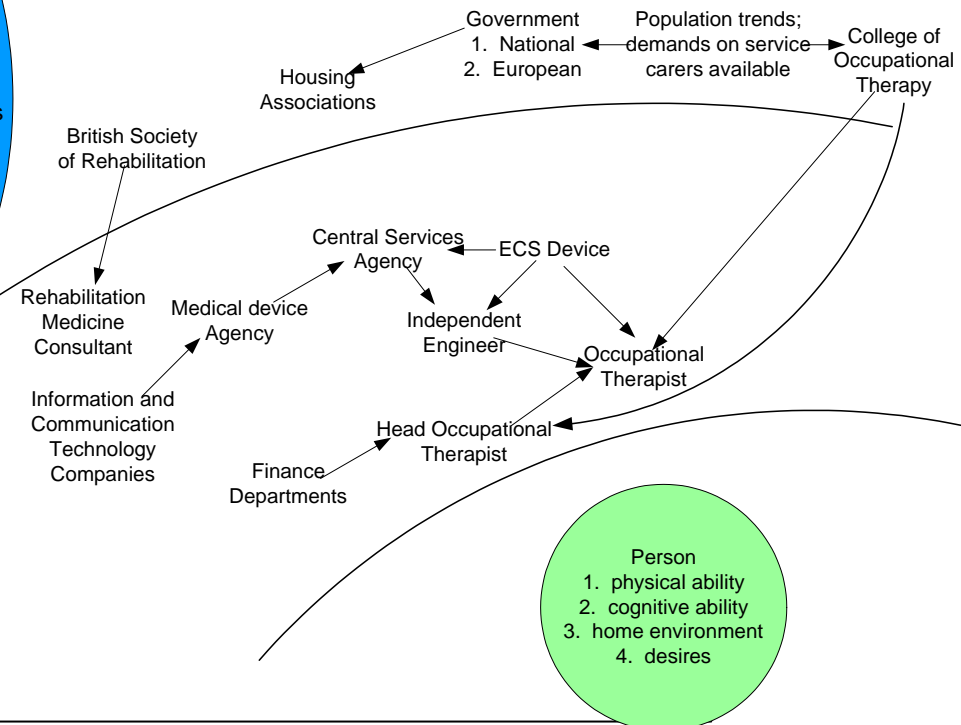




Complexity of Services organization



- Main barriers to success have been in the integration of the developed solutions into existing practice.
- Close analysis of infrastructure indicates a complex multi-disciplinary exists.
- A systems map showing the main components of the environmental control system and Influence map demonstrate this level of complexity.



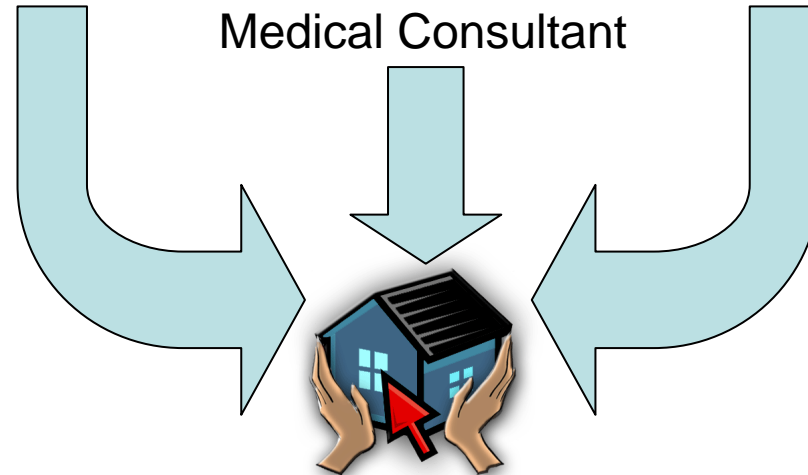


Change in working relationship

Technical Partner

Health Institution Partner

Medical Consultant

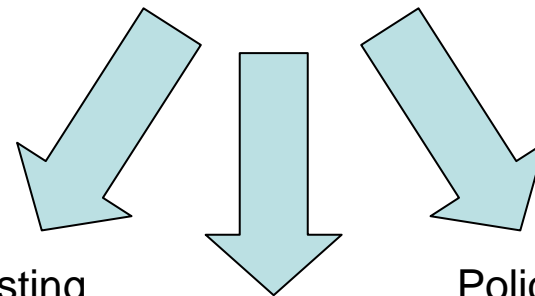


Partnering

Existing Practice

Commercial Support

Policy & Standards





e-Health future vision

- Future visions should take into consideration promotion of **regional policies** to ensure pan-European benefit for future developments.
- For successful uptake **complexity of organisation** needs to be understood.
- Early Involvement of users and proper **training** strategies.



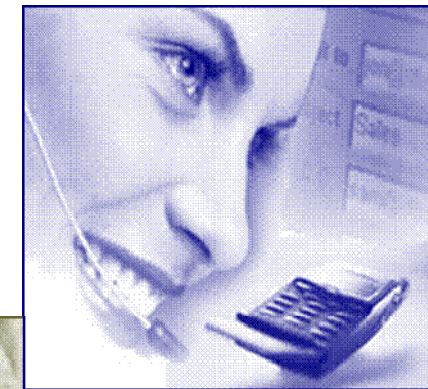
e-Health future vision

Solutions are available and several experiences are running across Europe

NEXT GOAL IS:

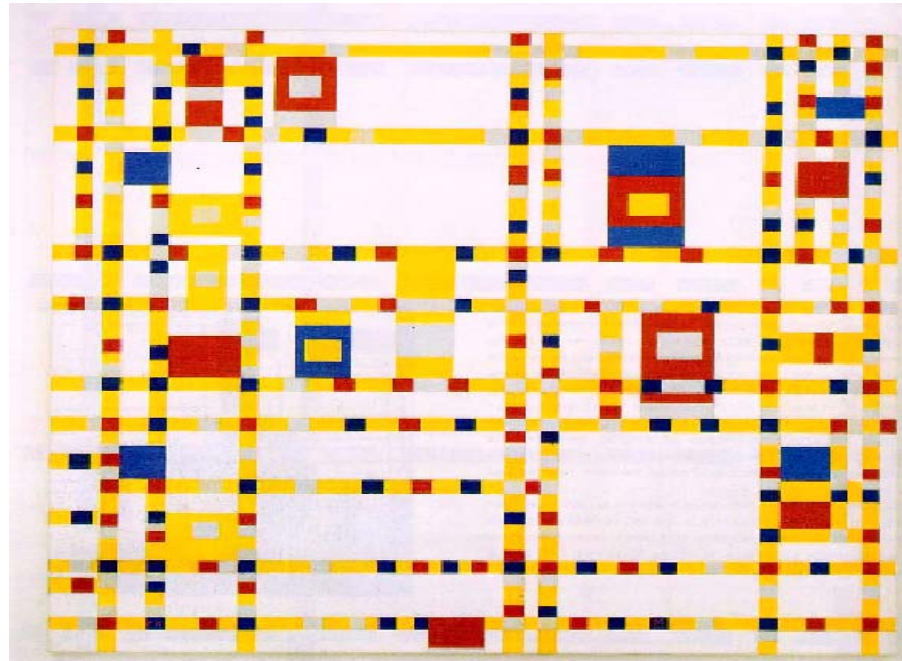
UNDERSTAND THE PROCESS OF E-HEALTH SERVICES TAKE-UP

IN ORDER TO IMPROVE THE CHANGE MANAGEMENT





THANK YOU



MEDEA

e-Health solutions integrator

www.medeaproject.eu