AAL
AMBIENT ASSISTED LIVING
An initiative of the AAL Joint Programme

PERL
PRIX ENTREPRENDRE RÉGION LAUSANNE
1st prize 2013

DOMO
SAFETY

11th September 2014

"Enhancing the way we take care about each other"

Cost savings and ethical concern using monitoring system in private home

Prevention – early detection of incidents

ACCUEIL 13.2.2013 Mis à jour à 15h48 REP

Le Matin

SUISSE MONDE SPORTS FAITS DIVERS PEOPLE LOISIRS SOCIÉTÉ ÉCONOM

Images

Une mamie passe trois jours coincée sous un radiateur

ANNECY — Plus de peur que de mal pour une octogénaire d'Annecy, en France voisine. Après une chute dans son appartement, elle passe trois jours sans boire et sans manger, la tête immobilisée sous un radiateur.

Par Christine Talos . Mis à jour à 10h54

Tribune de Genève

Une personne âgée meurt dans l'incendie de son appartement

Aurélie Toninato Mis à jour le 27.03.2013

...ame vivait dans un immeuble du Lignon. Elle était décédée à l'arrivée des pompiers

Il est 20h mercredi soir lorsque le Service d'incendie et de secours (SIS) est appelé pour un feu d'appartement. Le feu s'est déclaré dans un appartement du 7e étage d'un immeuble de l'avenue du Lignon, au numéro 73, comme l'a révélé le site de 20 minutes.

...ux, la fumée avait envahi l'allée, rapporte le premier lieutenant Marc Feuradent. Nous avons ...portant et avait détruit une bonne partie du logement. Nous avons découvert la locataire, elle ...er les circonstances du décès ainsi que les causes du sinistre.

...ue de pompiers volontaires, ont quitté les lieux vers 21h45. Le feu ne s'est pas propagé aux ...voisins n'a été nécessaire. (TDG)

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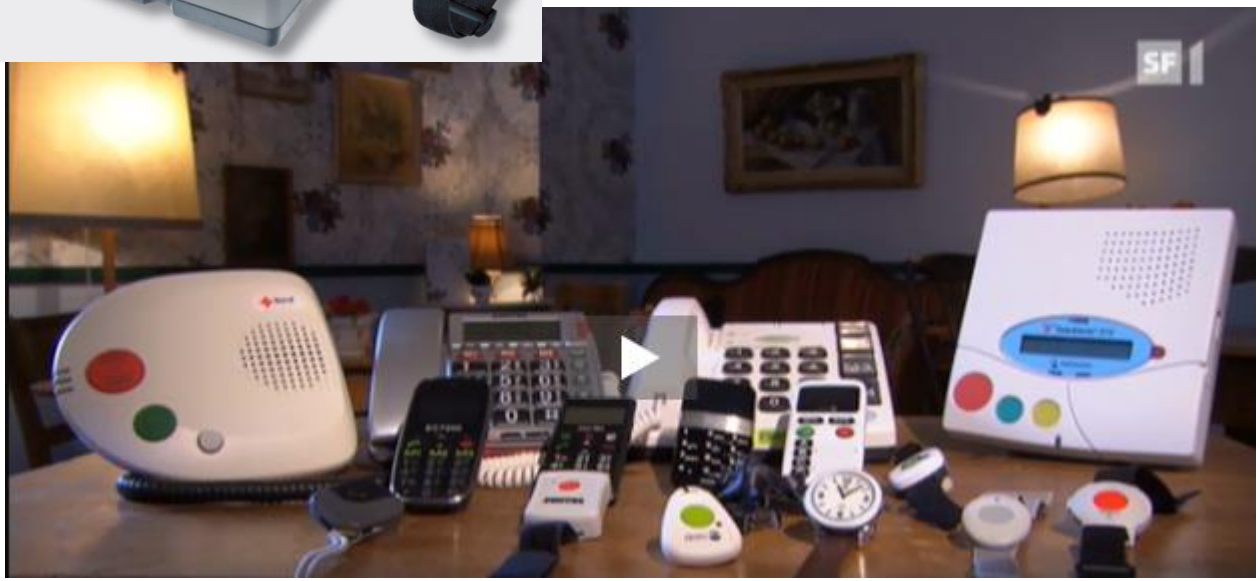
Limitation of panic button



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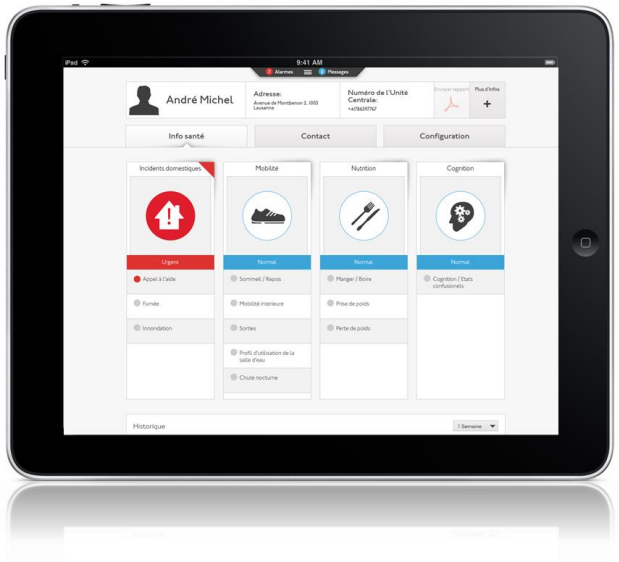
DomoCare – how it works

- Our gateway communicates with our servers via GSM or Ethernet

- The system collects and analyzes the data received, the algorithm reacts to different levels of information:
  - Emergency and Prevention



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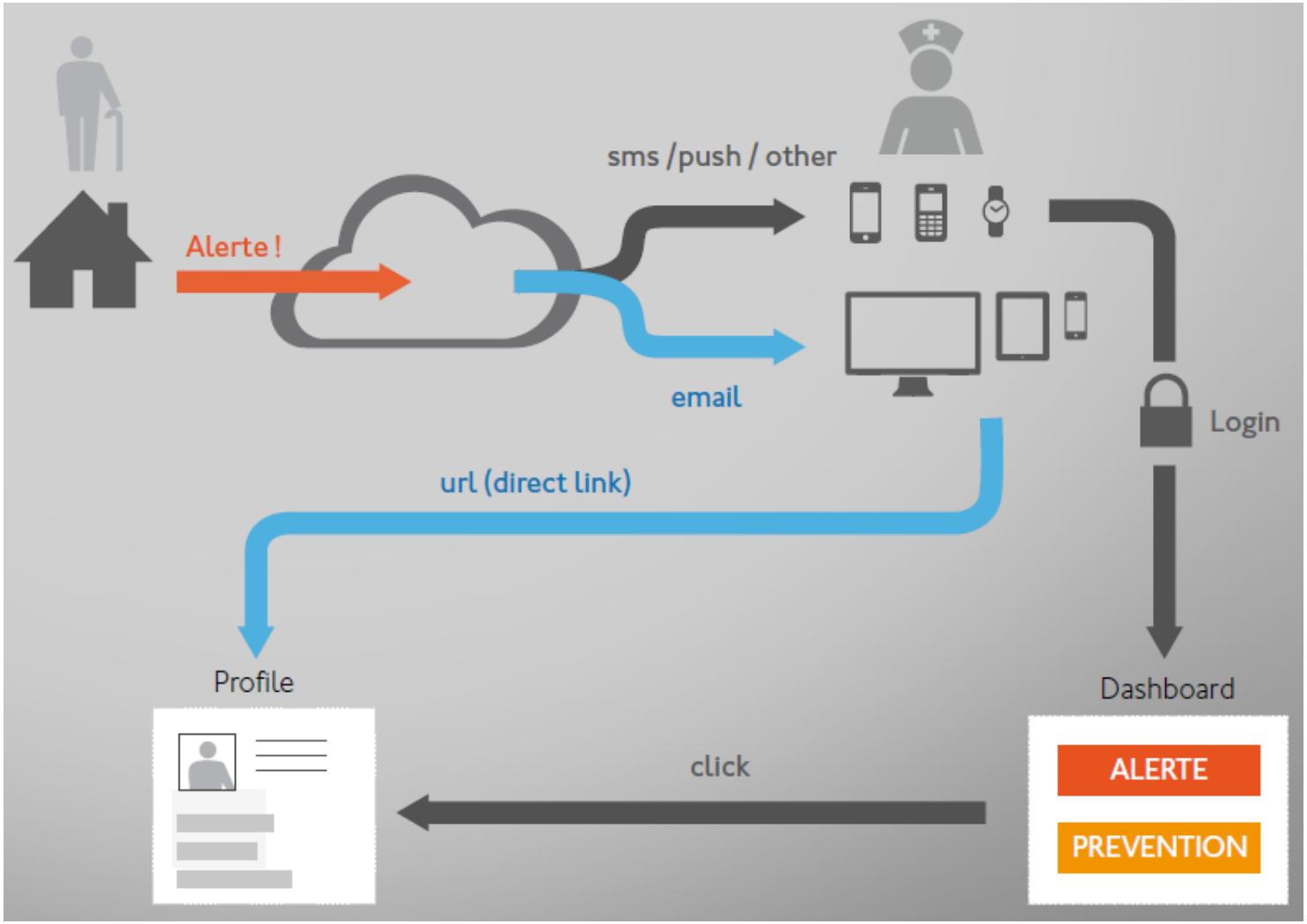
Mobility and simple flow of information increases response time



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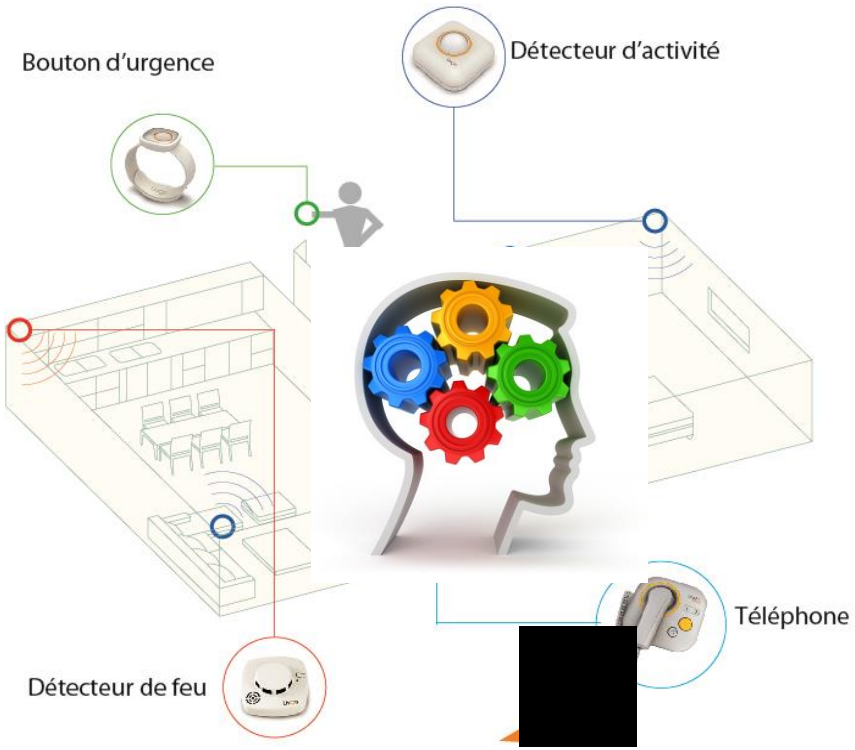
An evolutive and personalized system

Learning activities



Evaluation and validation by health care professional

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Messages reaches out and connects the relevant environment of caregivers

Emergency

- Fall at night
- Panic button
- Smoke
- No movement for a period of time

7/7 – call center / family

Prevention short term

- Sleep cycles changes
- Outings frequency changes

Nurse

Prevention long term

- General health state degradation

Nurse / Doctor

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Implementation a monitoring system has challenges

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Pilot Case settings being a sample of elderly persons affiliated to an health care institution

- 40 elderly persons
- 2 public home care organization
- 12 nurses
- 3 selection criteria
  - 65+
  - Affiliate to a health care service
  - Understanding French
- Period – 9 month (June 2013 to February 2014)
- RAI-HC tool for evaluation
- More than 10’000 days analyzed
- 2 installers partners

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Socio- demographic data

Variables	Total (n=40)	Morges (n=18)	Yvonand (n=22)	*p*
Âge - moyenne (*ET*) Min – Max	84,5 (*7,5*) 62 - 96	85,3 (*6,1*) 75 - 95	83,9 (*8,7*) 62 – 96	0,577
Genre				
Homme	13	7	6	
Femme	27	11	16	0,435
État civil				
Célibataire	4	0	4	
Marié-e	3	0	3	**0,030***
Veuf-ve	29	14	15	
Séparé/divorcé-e	4	4	0	
Cohabitation				
Seul(e)	34	17	17	
Avec conjoint	2	0	2	0,457
Avec conjoint et autres	1	0	1	
Avec enfants / membre famille	3	1	2	
Habitation				
Appartement/maison privé sans aide CMS	5	4	1	0,083
Appartement/maison privé avec aide CMS	32	14	18	
Logement encadrés CMS	3	0	3	

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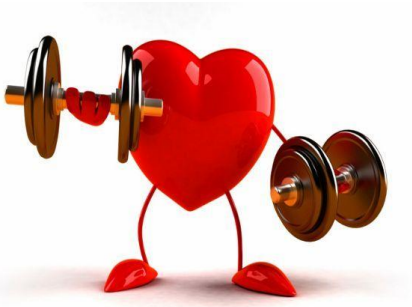
Health conditions



- Memory loss – 20%
- Cognitive impairments – 33%
- Average of 8 medicine pills taken per day

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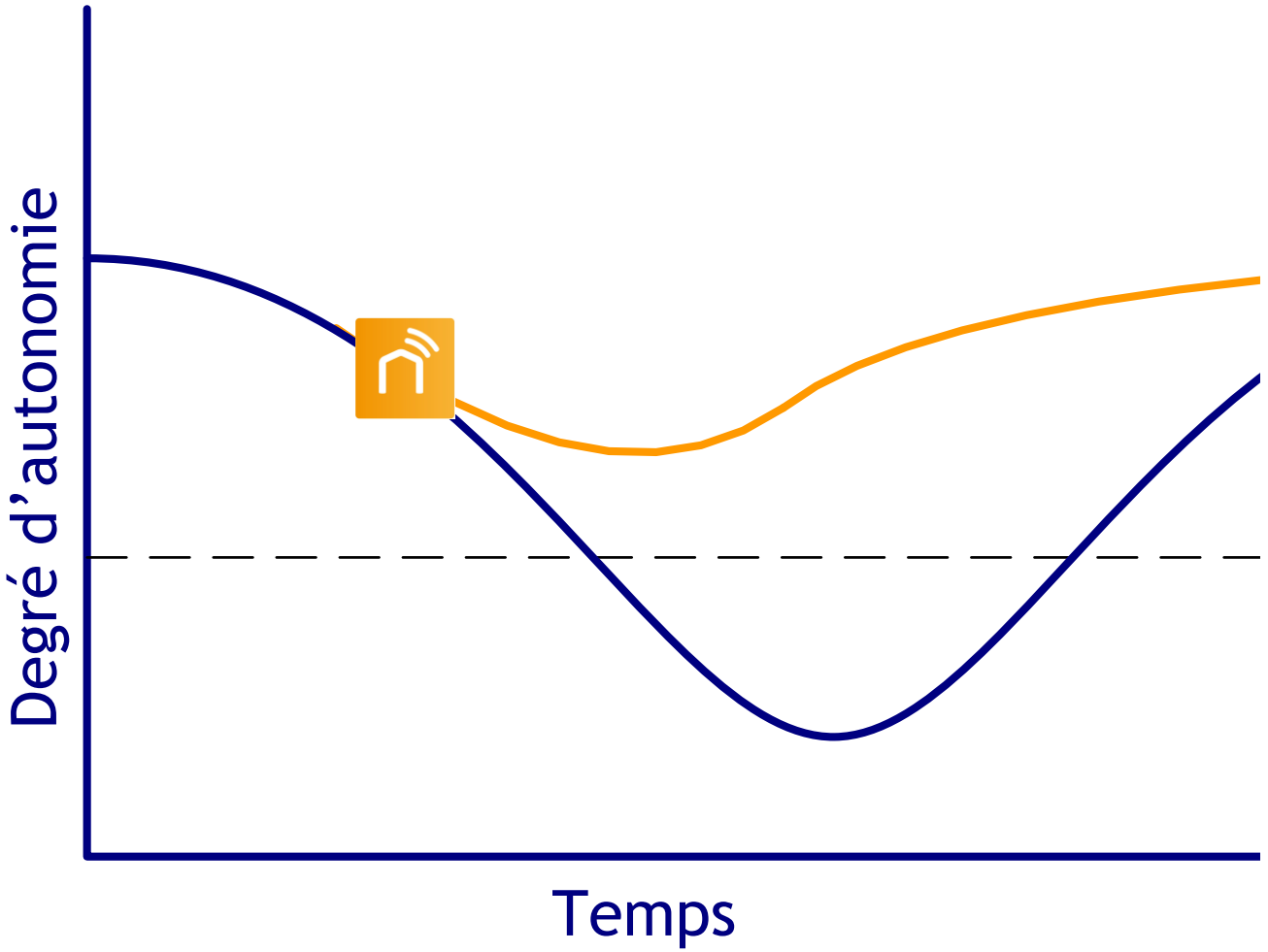
Detect a frail earlier allows to avoid an incident that could cause a sudden loss of autonomy



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Adapt into the care process of different organisations

	Territory 1	Territory 2	Total
Emergency	29	25	54
Prevention short term	223	131	354
Prevention long term	302	98	400
Total	554	254	808

- Territory 2 acknowledges more alarms due to quicker process handled by referent nurses
- It represents 3 messages per day in average for both location

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2 examples of situations

- **Not severe** – home care **service 1x per day**
  - **Elderly person:** No need of visit every day
  - **Nurse:** Changed the number of visits
- **Severe** - home care **service 2x per day**
  - **Elderly person:** change in sleep cycle
  - **Ergotherapist:** enhance environement

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Ethical concerns

- Data are sensitive
- Data shall be anonymized
- Data shall be encrypted end-to-end
- Data shall be located inside the country

-> IT infrastructure shall be well though

-> 3rd party might be involved to assess given architecture

- Intrusion in private sphere
- Access of data from nurses or family

-> Ethical committee

-> No camera, no microphone installed

-> Access to graph only when an alert has been generated

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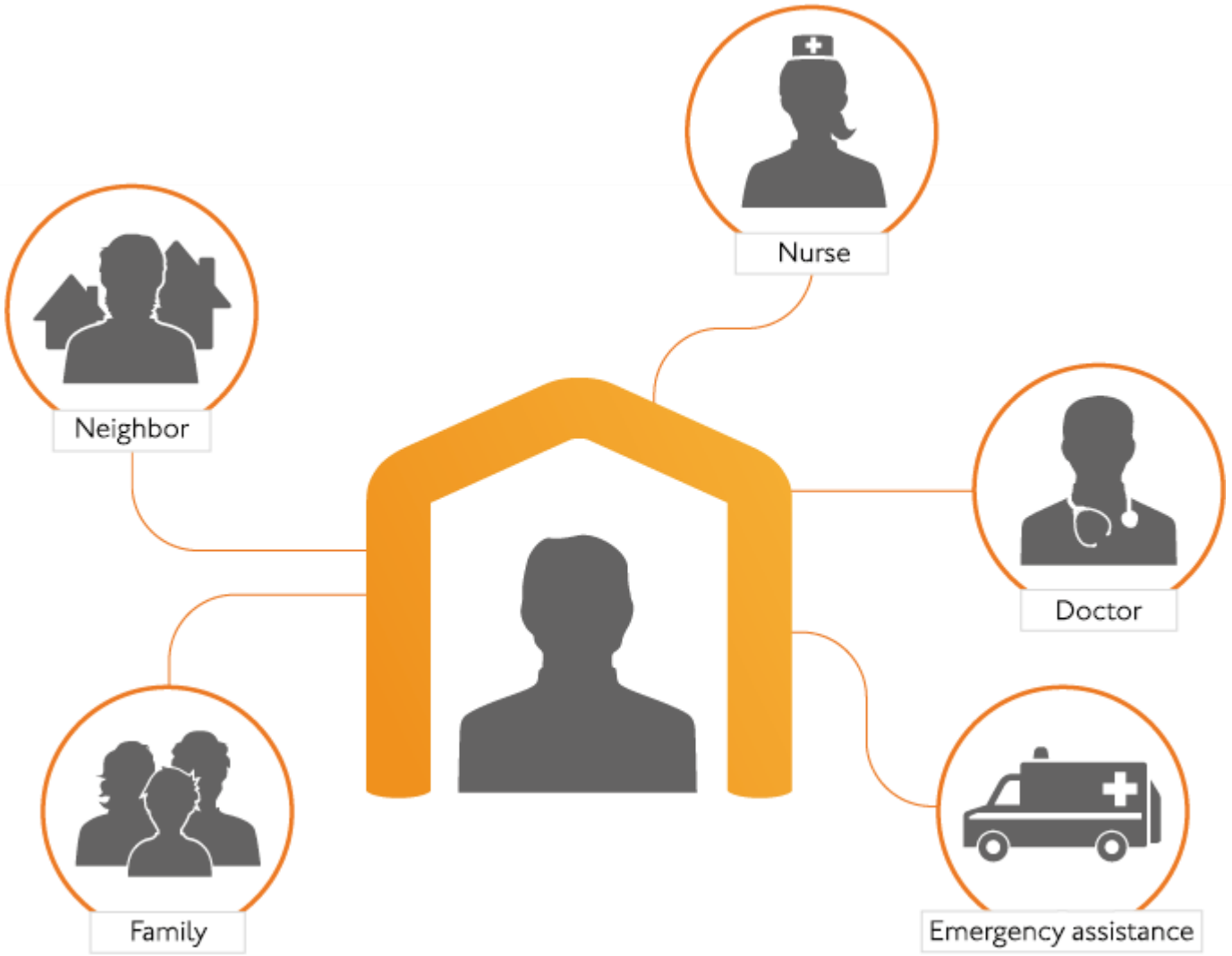
Who shall access to which information?



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Cost savings example: Fire detection

- CH - 20'000 home fire per year / 40 dead- 200 wounded - > Cost **600 millions CHF**
- 30 % of fire due to negligence
- DomoSafety: 40 people at risk 13 smoke alarm, 7 intervention by firemen

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Benefits and cost savings for different stakeholders

- **Health Care institution**
  - Permits to decrease the number of security visits
  - Allows to increase the number of customers
- **Public Health State**
  - Decrease health costs by avoiding or postpone hospitalization (one day in hospital costs at least 1’000 EUR)
- **Nurse**
  - Give objective data in real time allowing her to adapt quicker the care service
- **Family**
  - An elderly staying at home longer costs less than a nursing home

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