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# Aml for Health and Well-Being

Theme of the year 2016

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Politecnico di Torino, 2015/2016



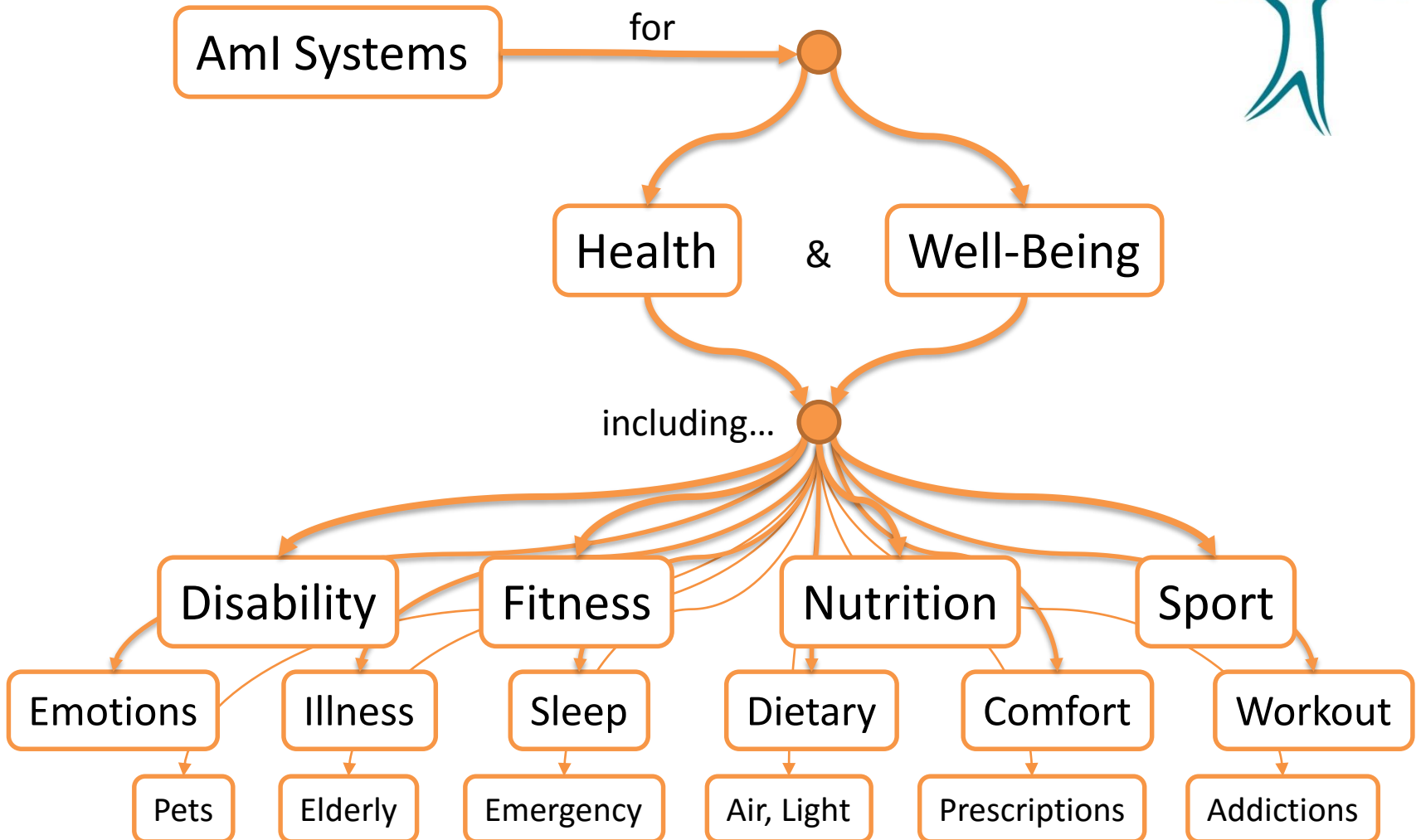
# Summary

- Definition of the Theme
- Essential features
- Analysis of survey results
- Hints, ideas, suggestions
- How to proceed?

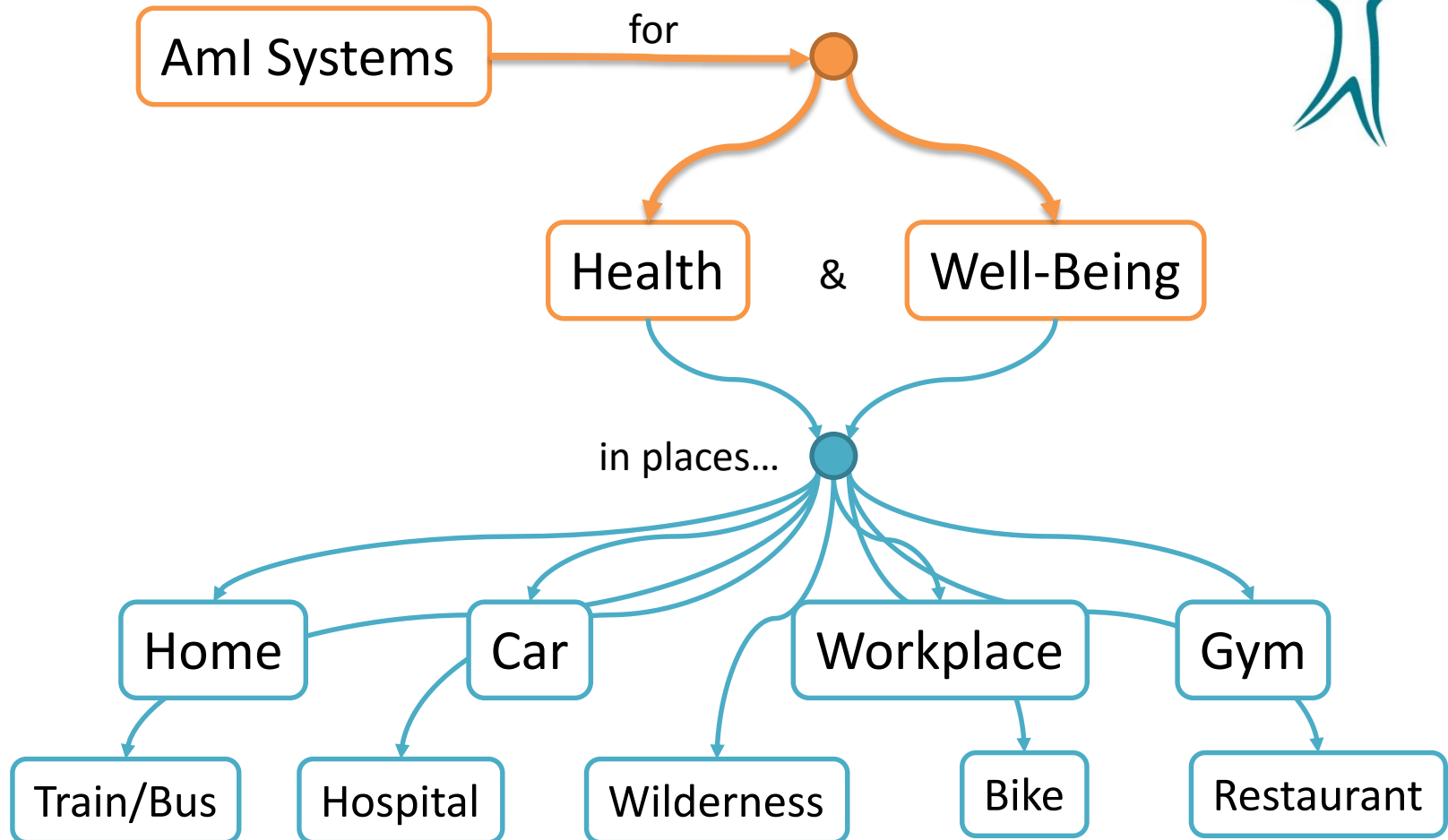
Aml for Health and Well-Being

# **DEFINITION OF THE THEME**

# Theme of the year 2016



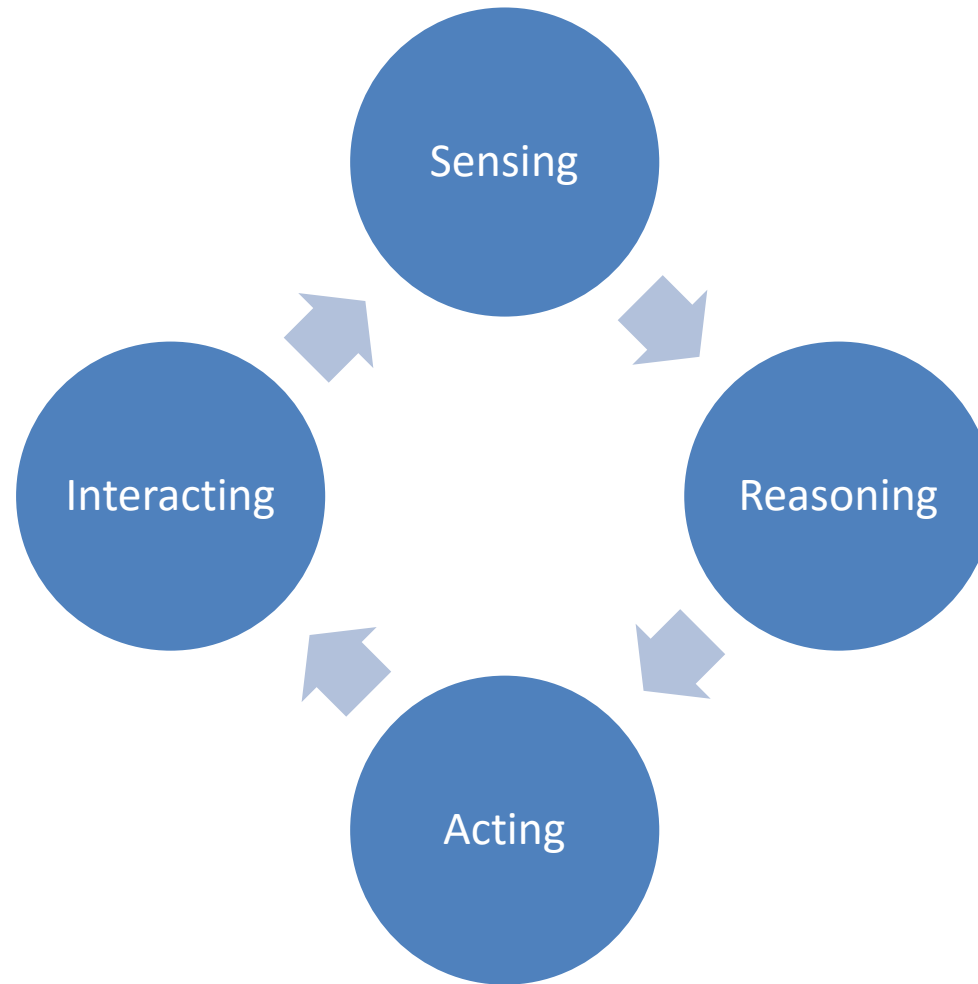
# Theme of the year 2016



Smart «Cittadella Politecnica»

# ESSENTIAL FEATURES

# Include all 4 steps of Aml



# Corollary

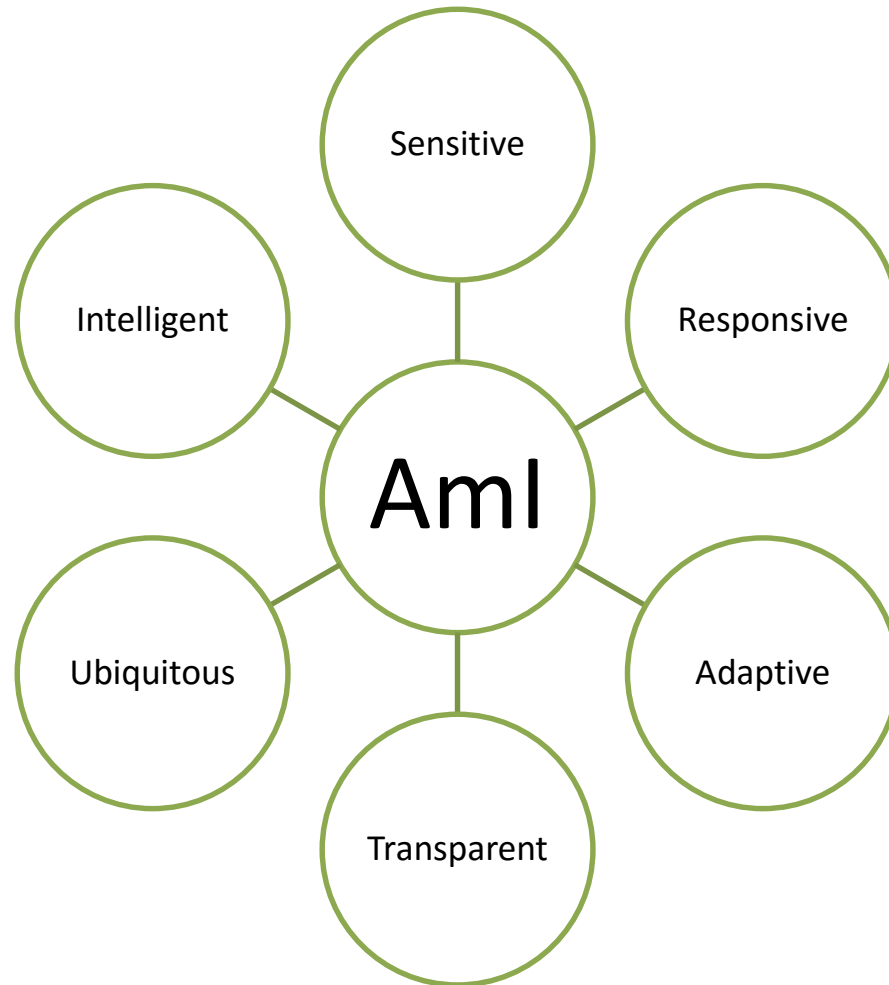
- No mobile-only or software-only or cloud-only or wearable-only solutions
- No totally automated behind-the-scenes solutions (that don't involve the users)
- Should involve some sensing (environmental, user, social, cloud, body, ...)
- Should involve some actuation (on the environment, user, social, cloud, ...)
- Should not be simply deterministic (some form of adaptation/intelligence is needed)



# About Cloud

- Integrating with cloud services (Facebook, Google Calendar, Twitter, IFTTT, ...) can be very useful
- May be used as “sensors” or “actuators”
- Must not be the only sensor and actuator

# Try to incorporate most Aml features



# Additional constraints (1)

- We can't modify the infrastructure
  - Walls, doors, hallways, ...
  - Lighting, heating, cooling, Wi-Fi, Internet, ...
  - Additional devices are ok
- Feasible with existing equipment
  - Devices available in LADISPE
  - Devices you own or you may lend
  - Cheap devices that may be purchased

# Additional constraints (2)

- Easy to demonstrate
  - Easy to show in a lab setting
  - Easy to be moved, installed elsewhere
  - No permanent installations required
    - Except in special “safe” places (Ladispe, some office, some department, ...)

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# **ANALYSIS OF SURVEY RESULTS**

# The question

- Please provide (max 3) short phrases for describing how would you create a smart environment for Health and Well-Being.
- Try to describe them by the "end user" (student, worker, driver, runner, housewife, elderly, ...) point of view, don't focus on the technology.
- Try to include the role of the environment (i.e., not just a mobile application!).
  - 66 respondents to the survey
  - 34 provided ideas (62%)

# Idea Categories

- Infrastructure
  - no
- Mobile-only
  - no
- Only Human behavior
  - no
- Procedures, bureaucracy
  - no (even if we all would love)

# Your responses

- Can be used by command voice ; can be reliable on existing devices
- Using wearable devices in order to know more from people who are using the service and to help them with more accurate information.
- The end user is advised on the best places in their city where people go jogging. The end user is informed when special fitness/health seminars are happening in their city and how to participate.
- green, artistic and happy
- Our body is like a car and responds to what we feed it, to live long and healthy life we need to be conscious of what we eat and keep track of it,
- I would create an automatic system that provide the perfect illumination and temperature using natural light when possible. For example this system should open windows shutter south exposed during winter but paying attention to not disturb any occupant only if in the room.
- And when the sunlight is too low automatically turn on lights at the right intensity and the same with the heating system.
- Breathalyzer on the steering wheel which doesn't allow the car ignition in the event of prohibited values



# Your responses (2)

- Remote medical consultation service via video call.
- An application that with the scan of the bar code of a product, recognizes the presence of substances which are allergic for your body.
- A reminder for the last time you went for a run in the park, how long have you been sitting without moving and doing desk job.
- I think the smart devices should simplify human life . For example, in our homes, could be useful a device that can control temperature and light of the environment.
- For a housewife, would be a fantastic thing to control all appliances of her own home!
- improve the basic teaching systems to get rid of ignorance and poverty.
- It will be better if we start using the bike instead of the car
- to my mind nowadays will be great to design some device which will help old/people with disabilities to send data to hospital and if smth will went wrong the aambulance will help them. Also this system shoudl be smart not to annoy doctors and users. Also it shoudl have some smart statistics mechanism which may be in future will help to avoid some health problems.

# Your responses (3)

- A program that determines the nutritional value of a food once inserted the name, quantity and brand. Furthermore it is able to determine the characteristics of a meal, collecting the various statistics.
- students are provided with virtual teaching system .
- workers don't have a hard job physically
- the houses based on smart devices and useful technologies .
- the industry doesn't harm the nature
- I will create something that help the elderly. Like a device that tell's you when to take the pill and/or which one.
- The system should be something the end user might forget to have, but he/she can manage it whenever he/she wants and in an extremely easy way.
- Thus sensors should be:
  - - in ordinary object the user already uses and not in on-purpose devices
  - - in his/her house/office/school etc.
- And control could be done via smartphone or similar.

# Your responses (4)

- Regarding health and personal info I'd focus the attention of the project also on extreme privacy for the user.
- 1) I would create an interface that run on various instruments (pc, smartphone and tablet).
- 2) The interface will be monitoring a bi-monthly blood test via a medical service and a daily heart-rate, body-heat and blood pressure variation via an an additional device.
- 3) the data (generated by the external device and accumulated by the interface via wi-fi to the tablet/smartphone/computer) - will be used by the interface once more to suggest a diet, sleeping hours needed, and even an optional exercise plan.
- 4 - bonus) The interface will also be able to suggest where exactly the user could buy the food for the specific diet, calculating the ultimate distance, quality and cost ratio of the latter, and outputting a map with simple conceptual representation of the 3 mentioned categories.
- A system targeting possibly anyone that helps handling regularly one's daily routine.
- Or something (a bit ambitious) focusing on compensating blindness or deafness working on an enhancement for the "working" sense.

# Your responses (5)

- Something that helps you shutting down your social connection temporarily for social media dependent people
- 1) without any refuse
- 2) without any stress to use enviroment
- 3) with natural prower (solar, win, water)
- I think that a good system can be improve our Health and Well-Being could be control home ambient, humidity, temperature, quality air.. I immagine that in some time we will have need to have safety air at home in order to save our life, and you coming at home can be choose ambient condition, as today when use climate system in the car.
- It facilitates my life at home.
- I can have a continuous control of my well-being without involving other people directly.
- I don't need to rely on my sons.

# Your responses (6)

- An application for smartphone and wearables that helps me with diabetics. It can take information from a glycemia meter placed in my arm, but also other meters (blood pressure for example), and learning my lifestyle, it gives me advices and reminds me what to do (take my insuline for ex).
- first of all, the environment should be easy for using, clear UI design, short process to finish work.
- then of course, functions that user needs, extra functions that be provided to download.
- great user's privacy security.
- Through an app the housewife knows exactly what food is in her fridge. The app suggests healthy recipes with the right amount of calories for each family member. Food will not be wasted.
- A sensor to point when too much time has been spent while sitting
- Calculating and showing how to reduce the humidity in the air
- A device that improves athletes skills, movements and muscular work. Focusing in particular on monitoring muscles used during exercises by the athletes

# Your responses (7)

- Eating habits for intense routine (students, workers)
- Providing good education for better awareness
- Encourage people to have good habits (sport...)
- Improve and backup researches
- Have an interconnected and positive environment, where discussing and confronting problems together is encouraged. People should be able to share their knowledge in any field with others, so as to support each other.
- Self-driven car which can be used by driver without car license (i.e. for disabled people).
- System for cars parking in large city (i.e. autonavigation to already booked place - optimization time, also emission)
- A smart environment for Health and Well-Being should be created thinking to the satisfaction achievable by the user in respect of his person and natural way of living.
-

# Your responses (8)

- In my opinion domestic and town/city environment does influence Health and Well-Being.
- As user I would like live in a smart-city which share information with its citizen, giving update about city status and allowing people to manage better their own time.
- View response Health and Wellbeing is the start of an ambitious desire to feel good and live well, Health and Wellbeing services for students including UWE's Wellbeing Service, the University Health Centre, faith and spirituality guidance and Disability .
- View response Intelligent pantry's inventory with which it's easy to know what is missing.
- A centralized and automated control for the house's light.

# Surviving ideas (to be refined!)



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# **HINTS, IDEAS, SUGGESTIONS**

# Ideas

- Warning: these are NOT Aml systems, they don't qualify as projects. However, they may inspire, or be included, in your project
  - <http://www.hongkiat.com/blog/health-fitness-devices/>
  - <http://mobihealthnews.com/content/ces-2016-running-list-health-and-wellness-devices>
  - <https://www.beurer.com/>
  - [https://cache.freescale.com/files/corporate/doc/white\\_paper/IOTREVHEALCARWP.pdf](https://cache.freescale.com/files/corporate/doc/white_paper/IOTREVHEALCARWP.pdf)
  - ...Google is your friend!

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# HOW TO PROCEED?

# Immediate next steps

- By 16/03 (upload on Google Docs)
  - Forming groups
  - Submitting ideas
    - Title
    - [very] short description
- Already think at Aml steps & Aml features
- Teacher validation during 17/03 class
- Final version on Google Docs by 18/03



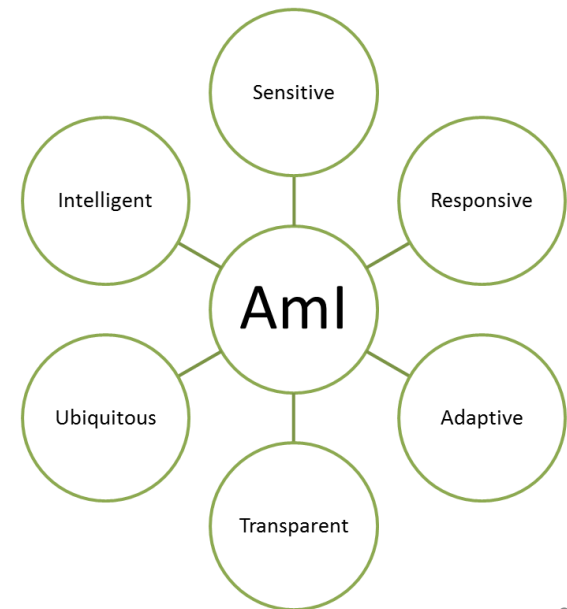
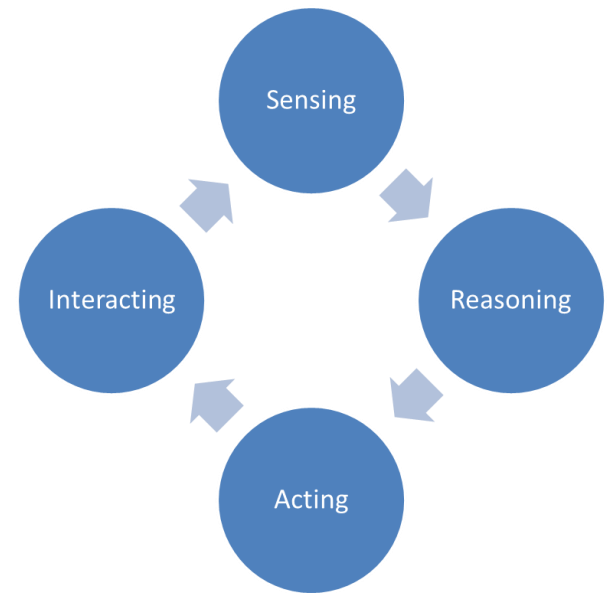
<https://docs.google.com/document/d/1hA4I293C8lgLQDumWmQg0-VF0SGf9qqF38TVFZEZw0U/edit?usp=sharing>

# An example

- Group: X, Y, Z, [,W]
- Title: Effective Wake-up call (the most hated Aml feature, ever)
- Acronym: WakeKill
- Description: Exploit different means to wake me up (ring, switch-on lights, turn on radio). Automatically adjust time according to agenda. When not at home (e.g. hotel) use only phone ringing. Detect when I actually wake up (or if I'm already up).

# Final tips

- Be creative
- Exploit your skills or passions
- Concentrate on 2-3 key features
- What will your users like?
- Avoid too much “integration” or “device support” or “data processing” work



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