

PCP - STARS

OMC's: Common Innovation Need



Italy – Ancona

January 18th, 2018

Germany – Mülheim

January 24th, 2018

The Netherlands – Maastricht

January 25th, 2018

Spain – Cordoba

January 31st, 2018

Spain – Barcelona

February 02nd, 2018

On behalf of the STARS Consortium:

P.B. Kwant, PhD, MSc, MBA

Structure of presentation

Common Innovation Need - Summarized

Needs assessment

- Methodology
- Example of patient journey
- Commonalities

Results

- Uncovered functionalities
- Non functional requirements

Questions

Common Innovation Need - Mission Statement

A consortium of five leading European academic hospitals uses the European commission's Pre-commercial Procurement (PCP) funding scheme to challenge and stimulate European industry to:

Design and develop a resilient support tool, to be applied in the field of patients, planned for surgery, with the aim of reducing stress and anxiety as well as improving the health condition of the patient during the complete care path.

The available budget for the development of this innovative solution is **4.7 million euro** of which **3.26 million euro** (including VAT) will flow as innovation subsidies to the industry.

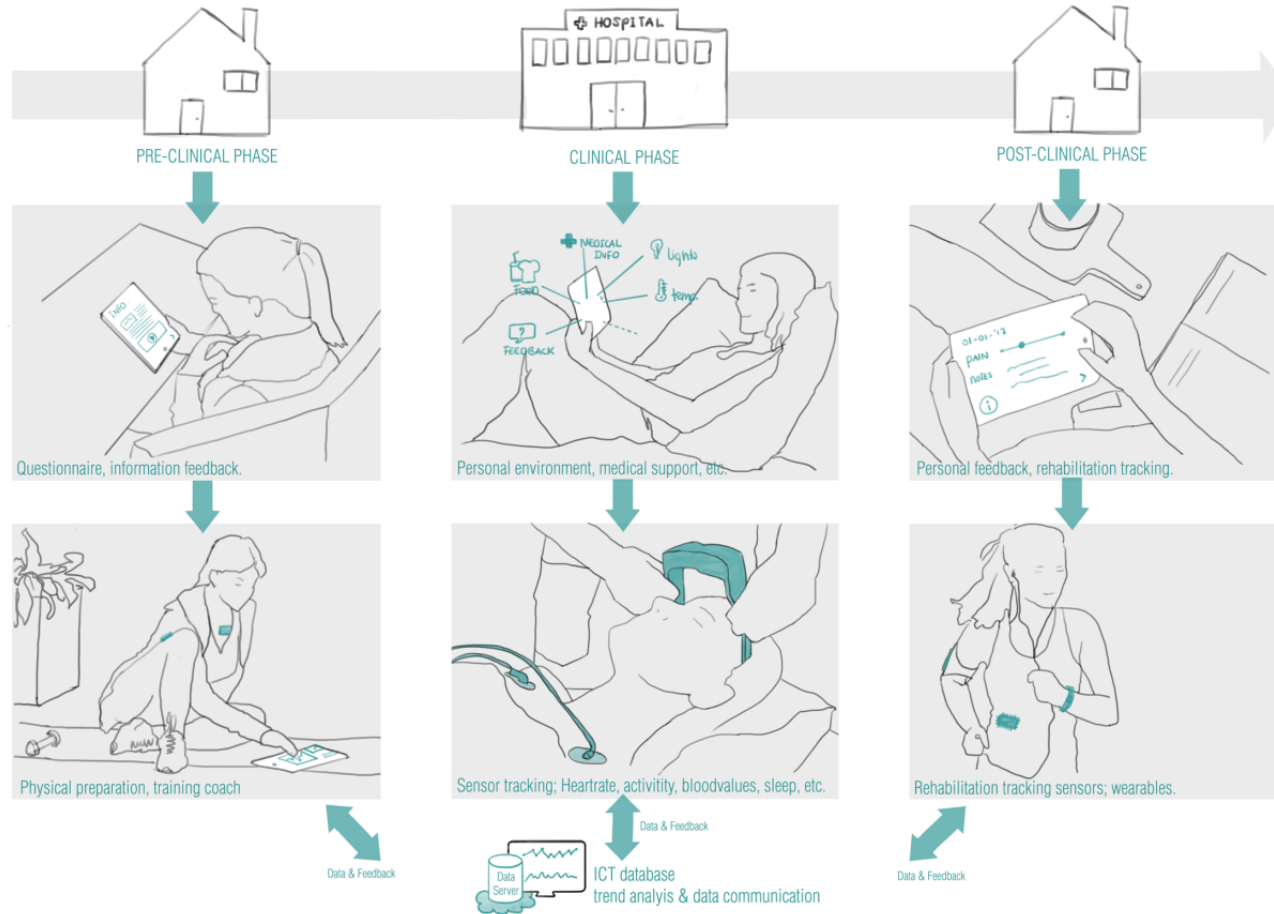


STARS as Service Innovation

Empowering patients by professional **ST**ress **A**voidance and **R**ecovery **S**ervices during entire patient journey

PCP eHealth Innovation in Empowering the patient

11-02-2016



Patients should not be public, but become players

STARS: KPI's & Business case

Selection of some KPI's

- Reduction of use of medications during patient journey, such as sedatives.
- Safe reduction of Length of Stay (LOS) in the hospital
- Reduced number of avoidable re-admissions to Intensive Care Unit (ICU)
- Reduced number of avoidable re-admission to hospital after discharge
- Reduced number of visits to the hospital during the patient journey
- Increase in patient empowerment: increase level of information of next step
- Enhanced personal autonomy
- Increase in patient satisfaction

Methods to assess: Morisky and Green, PAM, NET Promoter Score, Resource Consumption

Business Case

- Reduced number of direct contacts with medical team.
- Reduced number of complementary medical examinations.
- Reduced use of medications with 20%.
- Reduced LOS with 10% (Costs per day extra is approx. €600 in the Netherlands & approx. 400 €/ day in Spain).
- Reduced re-admissions to hospital and ICU (estimated costs per readmission are € 6.000).
- Reduced numbers of avoidable patient mortality, time off from work and overall utilization of health care.

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Needs assessment (I): Methodology

Activity	Aim	Target	Output
1. Real life Job & User analysis	Analysis of the clinical environment through participant observation in real life	Health professionals, patients, key decision makers	Report following a common structure
2. Semi-structured interviews	Define the common outcome	Health professionals Policy makers	Detailed description of functionalities & performances Integrated with Real Life analysis.
3. Empathy Map	Describe the end-users profiles in details	Formal caregivers/health professionals	Final Personas definition List of problems and needs
4. Creative workshop	Define the structure of the services in the pre-, post- and clinical phase	Informal caregivers Formal caregivers/health professionals	List of prioritized needs to be solved Requirements

Table 1: Methodologies to assess the unmet needs and required functionalities

Needs assessment (II): #Participants / Clinical indications

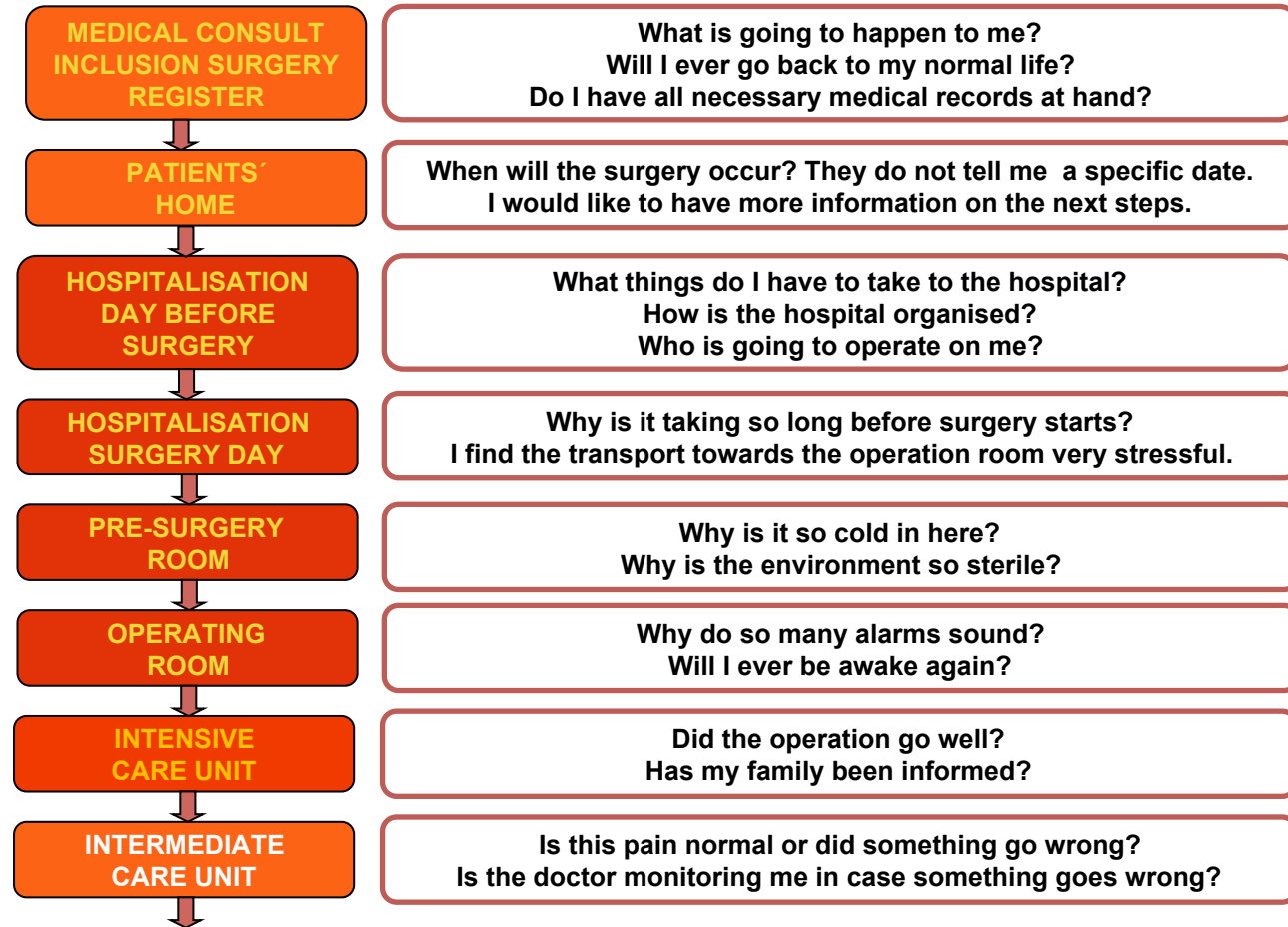
# Patients observed	INRCA	AZM	Parc Tauli	HSJD	Reina Sofia	Totals
Pre-clinical phase	20	16	8	16	10	70
Clinical phase	20	26	24	35	20	125
Post clinical phase	6	n/a	16	15	4	41
# Participants (experts)	INRCA	AZM	Parc Tauli	HSJD	Reina Sofia	Totals
Semi Structured Interviews	6	n/a	n/a	n/a	n/a	n/a
Empathy map	6	11	7	8	8	40
Creative Workshop	5	11	7	9	7	39

Table 2: Number of participants: 236 patients and approximately 90 professionals

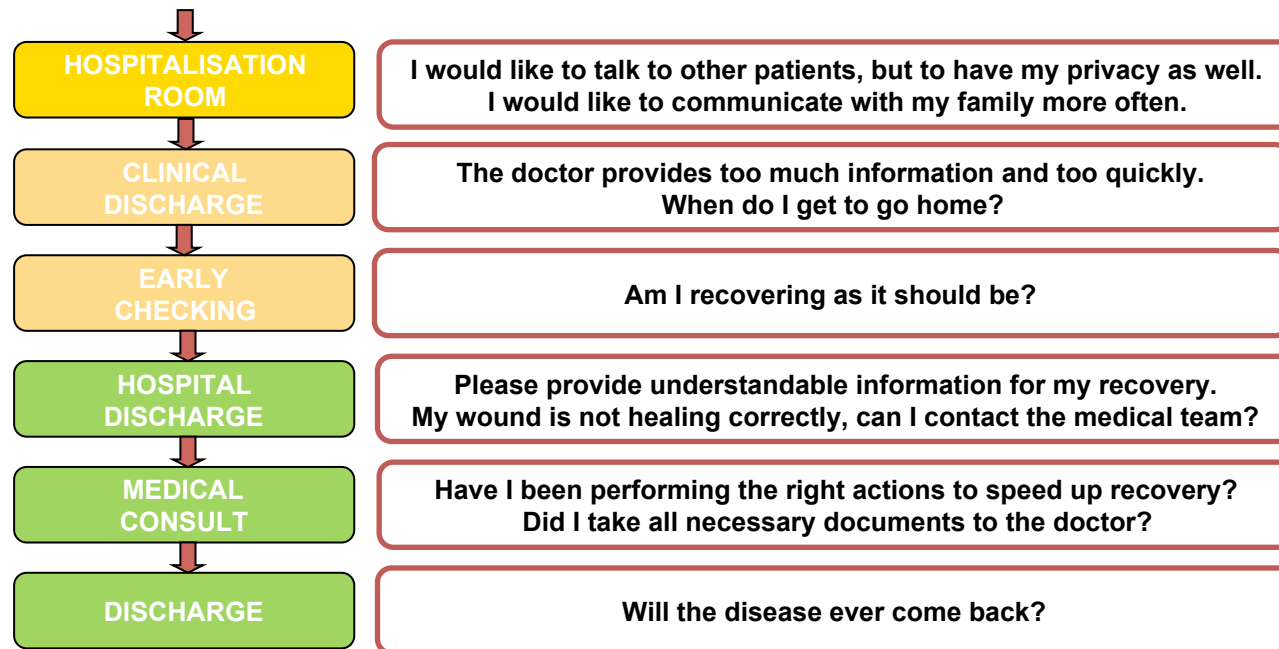
Involved departments	Clinical indications
Urology Cardiothoracic Surgery Orthopedia and Traumatology	Prostate cancer Heart surgery: bypass surgery and valve replacement Hip and knee replacement
Inclusion criteria	Exclusion criteria
ASA1 – ASA4 Planned Surgery Outpatient: distance from hospital <1h	ASA5 Acute Surgery Outpatient: distance from hospital >1h

Table 3: Clinical indications and patients inclusion / exclusion criteria

Needs assessment (III): Example of Patient Journey



Needs assessment (IV): Example of Patient Journey (cont.)



Needs assessment (IV): Commonalities

The buyers group, consisting of a geriatric hospital, a paediatric hospital and academic hospitals, has found the following commonalities:

1. Knowledge area - providing information
2. Information / reassurance area: increase self-management and self-empowerment of patient
3. Provide effective communication channels
4. Improvement of use of database of patient
5. Personalising the environmental area
6. Timely monitoring by clinicians
7. Ensure data for research purpose

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Uncovered functionality (I): Knowledge area

A well-informed patient will lead to an empowered patient. They will feel more secure and involved. Medical information provided to the patient is likely to improve the communication between healthcare professionals and patients and enhance the quality of the service

The solution must at least include:

- The solution should provide reliable information about the entire patient journey of the specific clinical indication and the expected outcome in an easy to use, easy to read, personalized (and interactive) manner.
- The solution must be interactive and allow personalized level of information, such as operation and perioperative risks.
- Familiarization with environment and surgical team
- Explanation of the functional limitations and impairment related to the operation.
- The solution must be based on reliable, clinically - and scientifically validated information

Assessment of knowledge area:

- Possibility for patients to get information at a comprehensive level.
- Quality and structure of this information.
- User satisfaction, usability and simplicity for patients and stakeholders

Uncovered functionality (II): Information and Reassurance area

Empowering patients by in assessing their stress levels and acting on interactive information will help them feel more secure from both a psychological and physical conditions. The right level of information will empower the patient to be more autonomous through self-management.

The solution must at least include:

- The solution has to provide an interactive psychological support (on demand)
- The solution should provide a self-assessment tool to determine the subjective stress of the patient and provide feedback with reassuring information or actions to reduce stress.
- The solution should provide (interactive) timely information about what is expected from the patients and informal caregivers during the journey.
- The solution should provide information on the process of recovery and give advice on returning to the routine of normal life (e.g. dietary prescriptions).
- The solution must be based on reliable, clinically - and scientifically validated information.

Reassurance area

- The solution has to provide reassuring description of operation, pointing out the positive effects of surgery treatment and giving positive examples.
- The solution should enable distraction during the period starting from admission till anesthesia is being introduced.
- The solution must provide reassuring information about anesthesia and pain control.

Uncovered functionality (III): Effective Communication Channels

The consortium identified a lack of effective communication channels between stakeholders. Pain and ineffective wound healing lead to stress and often unnecessary visits. This does not imply reducing the valuable direct contact with the clinician. Simultaneously, when present at the hospital, patients do care to share information with their relatives and informal caregivers.

The solution must at least include:

- The solution should provide a direct communication platform between patients and clinical team for medical consultation, in which photos of wounds and scars can be shared as well.
- Direct communication between the patients and their informal caregivers.
- To allow family/caregiver to know where patient is during whole operation phase.

Examples on how this domain will be assessed are:

- Effectiveness and sustainability of the communication channels between patients, clinician and informal caregivers.
- Possibility for health care provider to adapt these communication channels in a clinical situation (at both clinic and individual level).
- User experience and satisfaction.

Uncovered functionality (IV): Improvement of use of Database

Patients often have a long medical history before being submitted to surgery. Having information in a structured way before will allow more time to focus on the interview and optimize analysis of the situation. This need was highly rated by patients and professionals.

The solution must at least include:

- Basic information, such as clinical information, social information, medical history, stress evaluations, pain evaluations and psychological information.
- Direct access of all relevant medical data to the patient and informal care giver.
- Direct access of all relevant medical data of the patient to the clinical.
- Provide additional data, obtained during the pre-clinical phase (measured or self-assessed) to the medical team.

Examples on how success will be assessed are:

- Information that the solution is able to gather in advance from patient.
- User friendliness of the information.
- Usability, standardization and estimated cost-effectiveness.
- User satisfaction assessed by patients and health care professionals.

Uncovered functionality (V): Personalizing environmental area

Patients often experience the hospital to be a cold and sterile place. Most in-house patient's rooms are shared. Patients need the possibility to personalize the environmental area to feel at ease, balancing between human contact and privacy.

The solution must at least include:

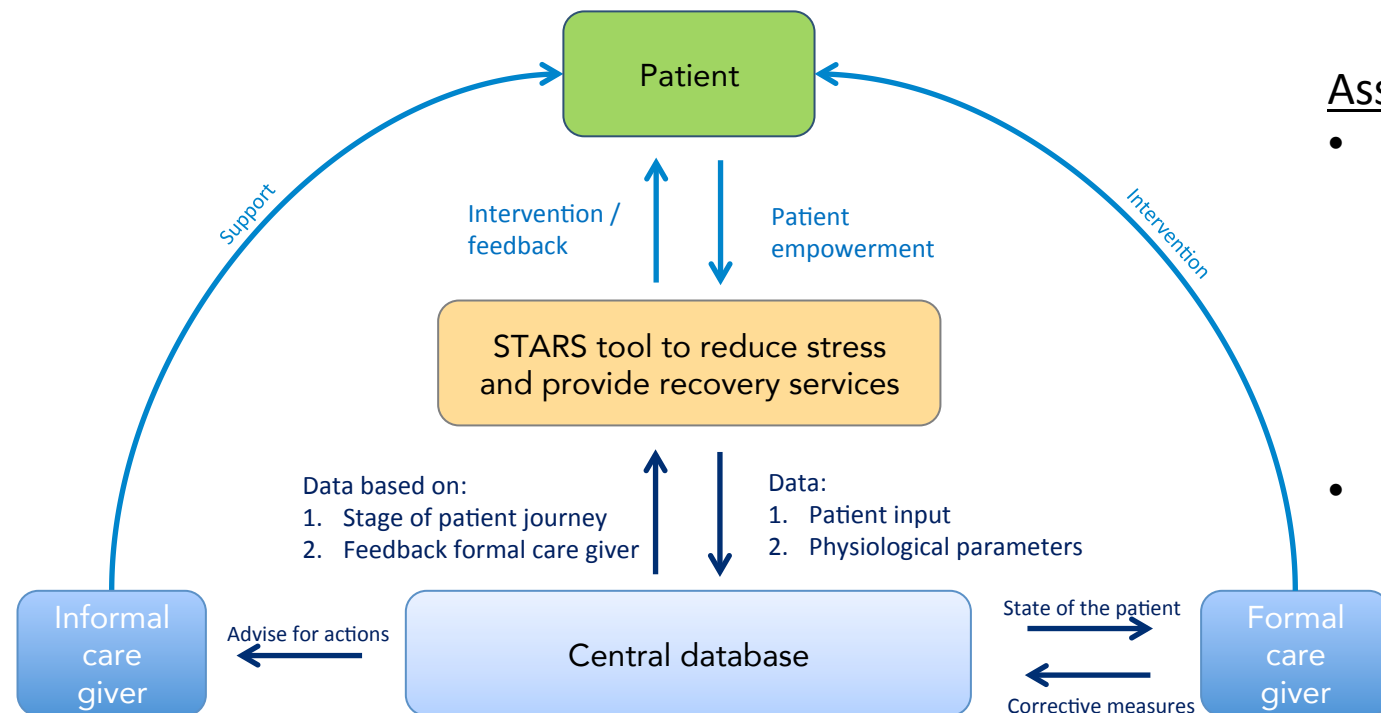
- The solution must give the opportunity to create a personalized “space”.
- The solution should allow reducing noise, light, confusion
- The solution must give the opportunity to create a friendly and less stressful environment.
- The solution should be able to communicate with different types of devices.

Uncovered functionality (VI): Timely Monitoring by Clinicians

Currently, doctors and clinicians base their decisions mainly on retrospective information. Timely monitoring will allow timely decisions by the health professional to intervene when measurements would indicate a critical situation in stress, anxiety or other discomfort.

The solution must involve timely monitoring of:

- Monitoring of physiological parameters depending on type of surgery (blood pressure, heart rate (variability), breathing rate, skin conductance).
- The solution should send an indication of pain/stress (subjective) to the clinical team.
- The solution must be able to communicate with different sensors and devices.



Assessment:

- The ability of the solution to collect, monitor and provide systemized comprehensive information that is well displayed for both patient and health care provider.
- Usability and simplicity

Uncovered functionality (VI): Ensure Data for Research Purpose

Health care systems store a huge amount of clinical data. Unfortunately, the way of storing this information makes it difficult to use the data for research purposes. Collecting data for research use will have the potential to revolutionize the way stress can be treated and will result on the long term in an improvement of stress management.

The solution must include:

- Data transfer and storage that enables use for research purposes

Examples on out assessment will be:

- Capacity to collect the data for research purposes
- Flexibility in data cleaning for specific research projects.

Non – functional Requirements (I)

Robustness

The end solution of STARS has to fulfil the robust criteria. It has to support a resilient architecture to avoid single-point-of-failure. The solution should self-heal when errors occur and allow low-maintenance & high availability.

Usability

The solution should meet the standards of https://ec.europa.eu/eip/ageing/standards_en, giving top priority to “Healthcare” standards instead of “ICT and communication” standards. The solution must have a responsive design, be friendly and accessible to any kind of user. The solution should adapt the information to the educational level of patients.

Interoperability

The solution has to allow future integration with any health information system. The most pragmatic way to accomplish this requirement is to include a HL7 interface engine. The interoperability of the solution should meet the standards stated in https://ec.europa.eu/eip/ageing/standards/healthcare/e-health_en.

Non – functional Requirements (II)

Security

The solution should meet standards of

https://ec.europa.eu/eip/ageing/standards/healthcare/e-health_en. The solution should allow different roles to be assigned to each user. The solution must abide by the European Regulation on personal data protection, prevent non-authorized accesses and exchange information using secure communication protocols.

Certification Procedures

The development should be based on ISO/IEC 12207:2008 (Systems and software engineering & Software life cycle processes). This standard will be used both by the procurers and the suppliers of the project. If applicable, the ISO13485:2017 has to be respected as well.

Scalability

It is expected that the number of devices which connect to the system data delivery for storage and processing will grow exponentially. Therefore, the system must be highly scalable to support streams of data both today and in the future.

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Thank you for your attention!



More information can be found in the “*Challenge Brief and Uncovered Functionalities*”, published on:

www.stars-pcp.eu

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