





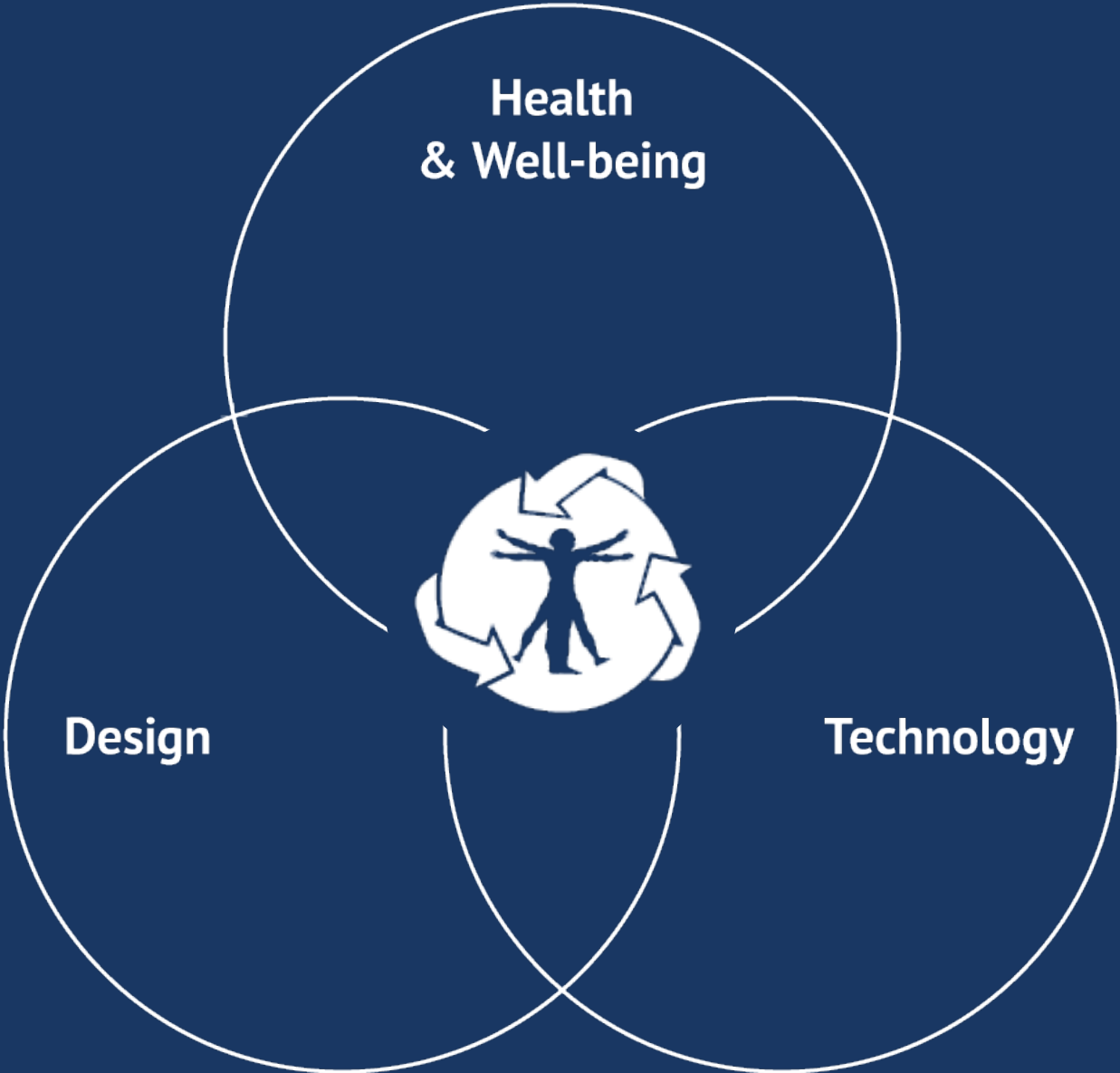
OSPEDALE  
SAN RAFFAELE



Fondazione  
**CENTRO SAN RAFFAELE**

**European  
Network of  
Living Labs**





The concept of

## **Predictive, Preventive, Personalised, and Participatory medicine**

especially

**improving the overall well-being of people**



# Health & Well-being

We support the implementation of P4 medicine  
through R&D on two of its major objectives:

## TECHNICAL OBJECTIVE

R&D on **strategies**  
and **product/software**  
**components**

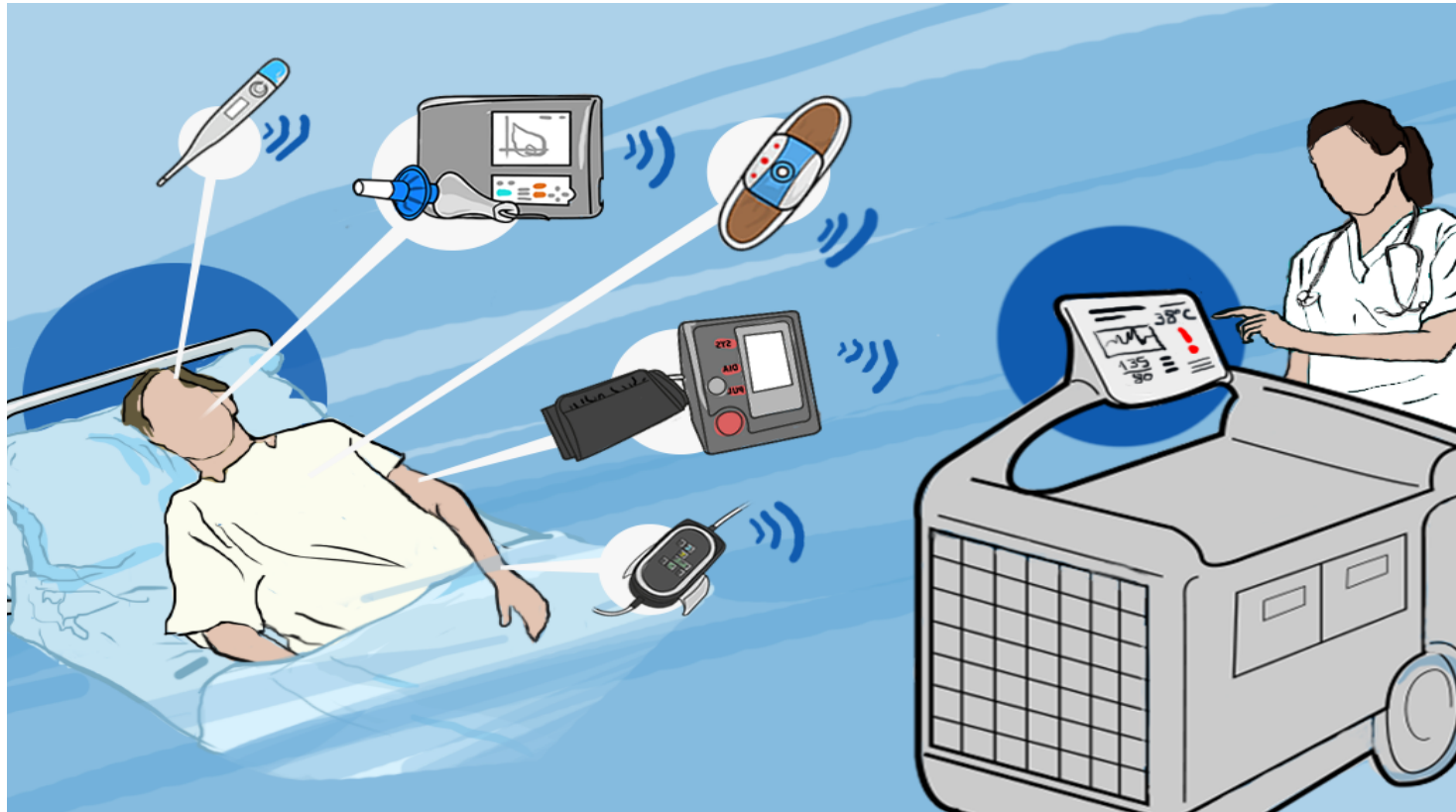
## SOCIETAL OBJECTIVE

R&D on users' **privacy, technology,**  
and **engagement** implications  
on experimental solutions



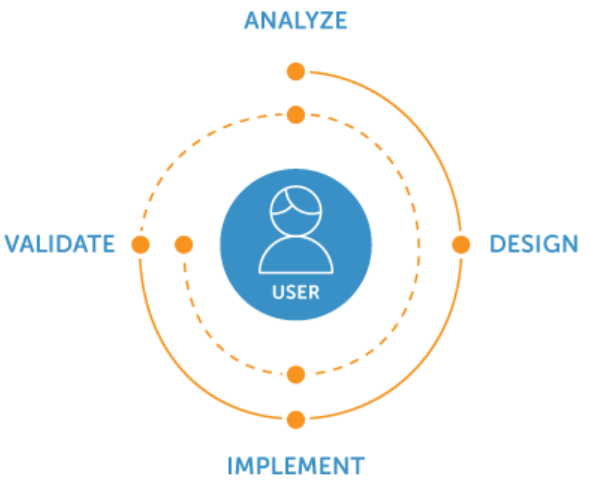


# Technologies



- **Cyber-physical systems**
- **Cloud computing**
- **Robotics**
- **Wearables & sensors**
- **Artificial intelligence**

# Design



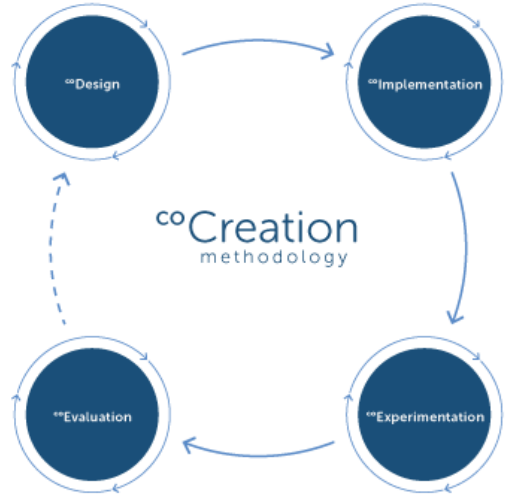
UCD

+



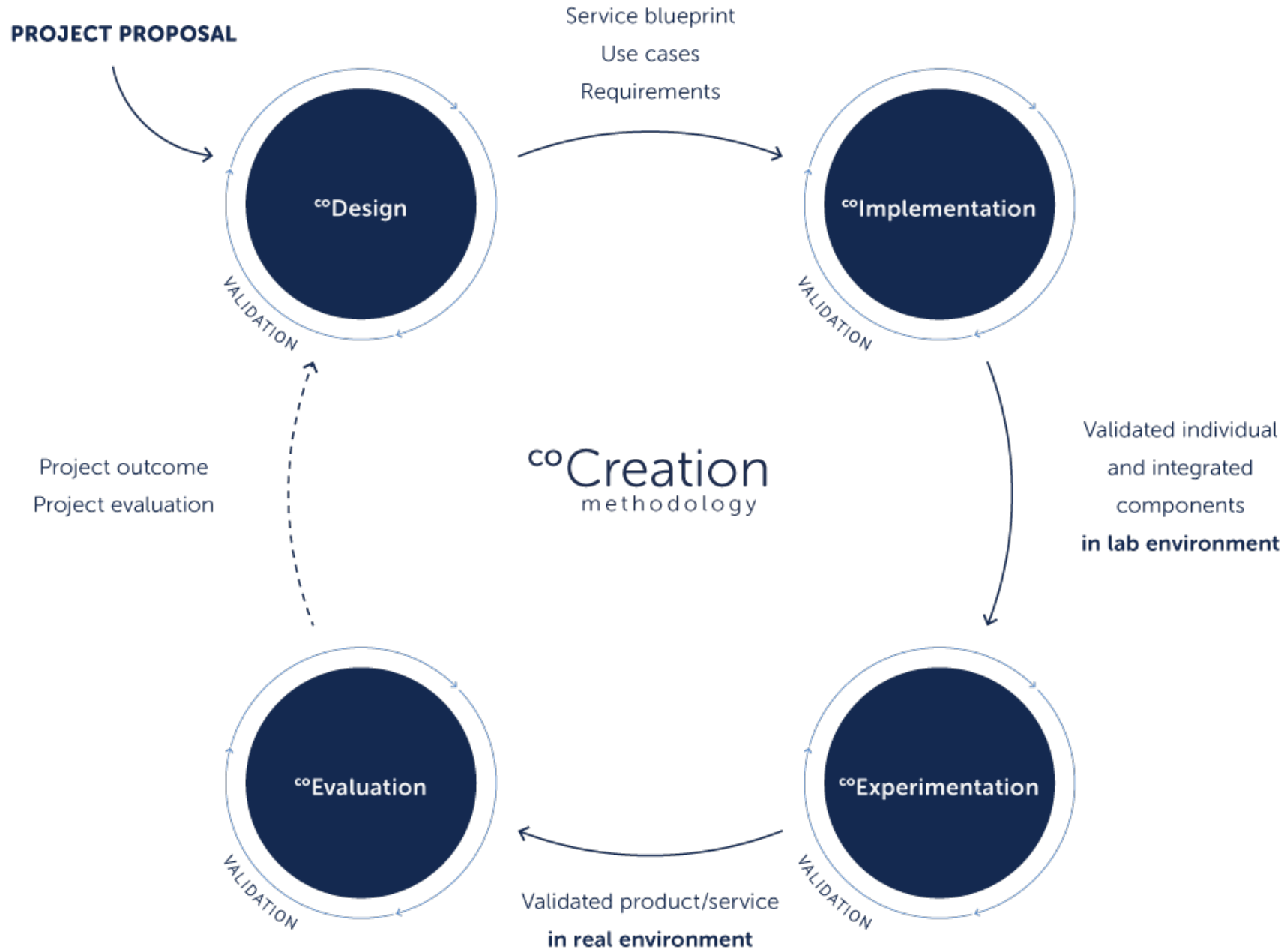
Living Lab

=

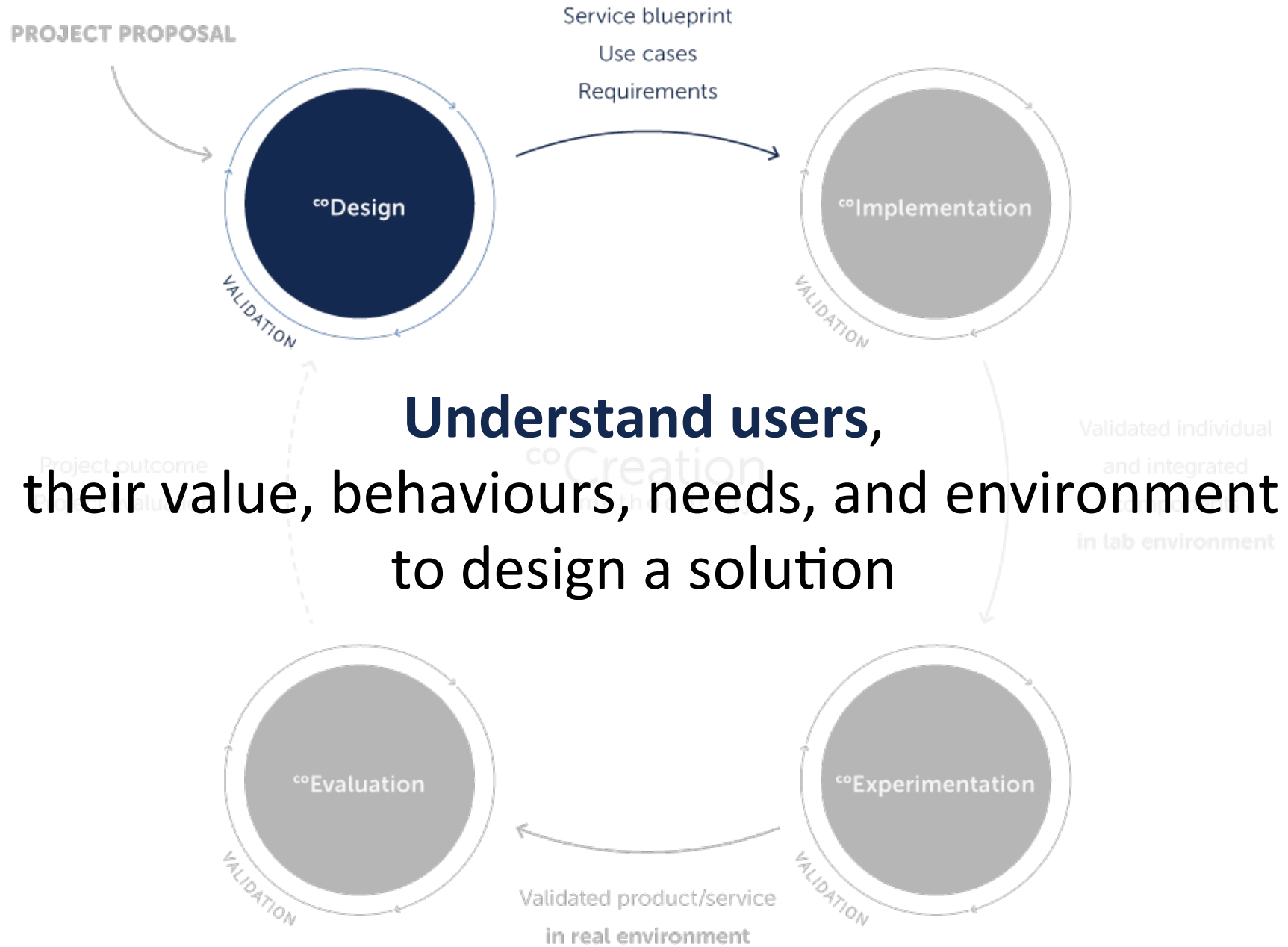


Co-Creation methodology













Plan


Understand

Analyse

Explore



Define

# coDesign > Analyse

TASKS	RATIONALE	METHODS	PARTICIPANTS	OUTCOME
 <p><b>ANALYSIS &amp; SYNTHESIS</b></p>	<p>Analyse and visualise the current processes and PSS with its segments of users, limits, and opportunities</p>	<ul style="list-style-type: none"> <li>• Business process</li> <li>• User Journey Mapping</li> <li>• Stakeholder mapping</li> <li>• Personas</li> <li>• Business modelling</li> <li>• SPACE methodology</li> <li>• Requirement</li> </ul>	<p>Designer Experts Stakeholders Users</p>	<p>Analyse report  Requirement update</p>
 <p><b>DESIGN BRIEF DEFINITION</b></p>	<p>Set the goal, drivers and area of intervention</p>	<ul style="list-style-type: none"> <li>• Design Brief Template</li> </ul>	<p>Client Designer Experts</p>	<p>Design Brief report</p>



# coDesign > Analyse

TASKS	RATIONALE	METHODS	PARTICIPANTS	OUTCOME
 <p><b>ANALYSIS &amp; SYNTHESIS</b></p>	<p>Analyse and visualise the current processes and PSS with its segments of users, limits, and opportunities</p>	<ul style="list-style-type: none"> <li>• Business process</li> <li>• User Journey Mapping</li> <li>• Stakeholder mapping</li> <li>• <b>Personas</b></li> <li>• Business modelling</li> <li>• SPACE methodology</li> <li>• Requirement</li> </ul>	<p>Designer Experts Stakeholders Users</p>	<p>Analyse report  Requirement update</p>
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# Personas

A conceptualisation of real user segmentations sharing common **value, behaviours, needs, and environment.**

# Personas

describe real segmentations of users

# Personas

describe **real segmentations of users**

put a **human face** on quantitative data

# Personas

describe **real segmentations of users**

put a **human face** on quantitative data

speak in **natural language** that everyone can understand

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prevent **self-referential design**



# Personas

describe **real segmentations of users**

put a **human face** on quantitative data

speak in **natural language** that everyone can understand

prevent **self-referential design**

**LEVERAGE DESIGN INTUITION**

# Elisa Staibene



## BEHAVIOR

- + DOESN'T USE SOFTWARE TO CREATE MEAL PLAN
- + MEET WITH PATIENT FACE TO FACE
- + TAKE NOTES ON PAPER DURING PATIENT VISIT
- + BETWEEN VISITS, PHONE/E-MAIL IS USED TO ADDRESS ANY QUESTION

## FACT

- + 28, BIOLOGIST NUTRITIONIST
- + MARRIED
- + LIVES IN MILAN
- + WORK IN a HOSPITAL

## NEEDS & GOALS

- + GET BLOOD TEST FROM PATIENT
- + ADDRESSING QUESTIONS AFTER HOURS IS NOT ALWAYS POSSIBLE
- + SHARED ACCESS TO ELECTRONIC MEDICAL RECORD
- + FOLLOWING PATIENTS AT A DISTANCE

# Personas methods in literature

**COOPERIAN  
INITIAL**  
Personas

**COOPERIAN  
FINAL**  
Personas

**PRUITT-  
GRUDIN**  
Personas

**SINHA**  
Personas

**NIELSEN**  
Personas

**AS HOC**  
Personas

**USER  
ARCHETYPES**  
as Personas

**MARKETING**  
Personas

# Purpose from literature

**GOAL-DIRECTED**  
perspective

**ROLE-BASED**  
perspective

**QUANTITATIVE  
DATA DRIVEN**  
perspective

**ENGAGING**  
perspective

**FICTION  
BASED**  
perspective

**USER  
ARCHETYPES**  
perspective

**MARKETING**  
perspective

# Source of the information from literature

**ETHNOGRAPHIC**  
DATA

**QUALITATIVE**  
DATA

**USER  
SURVEYS**

**FITICIOUS EL.**

**DESIGNER  
INTUITION**

**PERSONAL  
EXPERIENCE**

**MARKET  
RESEARCH**



# Limitations from our point of view

missing

**SEGMENTATIONS ABLE TO SUPPORT THE CHALLENGES OF  
TODAY'S HEALTHCARE PROFESSIONAL**

# Domain specific segmentations



**PRIVACY**  
BEHAVIOUR



**TECHNOLOGY**  
ACCEPTANCE



**ENGAGEMENT**  
IN WORK ACTIVITIES

# Domain specific segmentations



## **PRIVACY** BEHAVIOUR

**In personalised medicine there is the risks of disclosing personal information**

Because of cognitive, time or other constraints, users tend to minimize the uncertainties of disclosure - reducing their level of privacy concern and/or respect of other people privacy

# Domain specific segmentations



## PRIVACY BEHAVIOUR

*To develop e-Services with highly sensitive data, such as genetic data or patient electronic medical records*

### SEGMENTATIONS\*

- Information Controllers
- Security Concerned
- Benefit Seekers
- Crowd Followers
- Organisational Assurance Seekers

# Domain specific segmentations



## TECHNOLOGY ACCEPTANCE

**Knowing to what degree physicians will adopt an e-Service, despite obvious benefits, is important**

Tackle the problem of correctly “merging” technological e-Services with the right level of technology proficiency

# Domain specific segmentations



## TECHNOLOGY ACCEPTANCE

*To adapt e-Service development level  
given the extremely heterogeneous  
users' technology proficiency*

### SEGMENTATIONS\*

- Innovators
- Early Adopters
- Early Majority
- Late Adopters
- Laggards

\* J. Arndt. Role of product-related conversations in the diffusion of a new product. Journal of marketing Research, 1967

# Domain specific segmentations

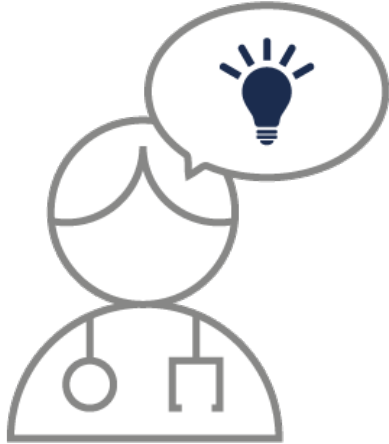


## **ENGAGEMENT** IN WORK ACTIVITIES

**Despite advances in medical technology,  
healthcare is still a people-intensive business**

Participatory medicine not only sees the active involvement of patients in their health, but that of physicians, care-givers and technicians.

# Domain specific segmentations



## **ENGAGEMENT** IN WORK ACTIVITIES

*Enable physicians to provide the best care through the development of personalized and engaging e-Services.*

### **SEGMENTATIONS\***

- Curious
- Decisive Thinker
- Skilled Influencer
- Personally Credible
- Collaborative
- Driven to Deliver
- Courage to Challenge
- Role Model



# Limitations from our point of view

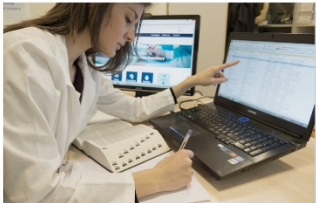
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**STANDARDISED PERSONAS PROFILE VISUALISATION**

# Enhanced personas profile visualisation

## BIOLOGIST NUTRITIONIST

ELISA STAIBENE



*"Improve patients' health (physiological, mental, and aesthetic) and provide them with the knowledge and tools to self-manage their weight and nutrition habits"*

MUST DO

Bond with patients face-to-face

MUST NEVER

Change PNP without my supervision

### ABOUT

AGE, SEX	28, Female
JOB	Biologist Nutritionist
NATIONALITY	Italian
STATUS	Married
PERSONALITY	Passionate, Empathic, Detail Oriented

### SEGMENTATION

PRIVACY BEHAVIOUR	Security Concerned
TECHNOLOGY ADAPT.	Early adopter
PROFESS. BEHAVIOUR	Courage to challenge

### EXPERTISE

Biology (physiology)	NO EXP	PRO
Nutrition	NO EXP	PRO
Pharmacology, Dietary	NO EXP	PRO
Medicine, Pathology	NO EXP	PRO

### THINGS SHE USES



### USER STORY

I'm a full-time researcher (at OSR) & a nutritionist with a part-time private practice where I create PNPs for patients who want to lose/gain/maintain weight or change nutrition habits. I see patients in person, check their blood test, anamnesis, measurements (height, weight, circumference), calculate BMI, provide interpretations, and educate on nutrition. I motivate, track, assess, and guide their habits & progress, updating their PNP when necessary to reach their goal.

### BEHAVIOURS & ATTITUDES

- I do not use software to create meal plans
- I meet with patients face to face
- Patients write what they eat & how they feel in a food diary
- During the visit, I write feedback/comments in their food diary.
- Between visits, phone/email is used to address any questions

### PROBLEMS & NEEDS

- I must build trust with the patient.
- Face-to-face meetings are imperative for PNP success
- If the blood test is not provided the 1st visit, I might have to adjust the PNP later.
- Immediately addressing patient phone/email questions after hours is not always possible.

### WORKS & DESIRES

- Following patients at a distance or having direct contact electronically (e.g. chat)
- Shared access to electronic medical records (e.g. blood test) and educational materials would save time for both of us
- Online invoice tracking and payment for stakeholders, with ability to print.

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# Enhanced personas profile visualisation

HEALTHCARE PROFESSION  
+  
FICTITIOUS NAME

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# Enhanced personas profile visualisation

**FICTITIOUS  
PICTURE**  
CAPTURING THE  
CONTEXT



## BIOLOGIST NUTRITIONIST

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# Enhanced personas profile visualisation

**QUOTE**  
DERIVED FROM  
FIELD RESEARCH

## BIOLOGIST NUTRITIONIST

ELISA STAIBENE



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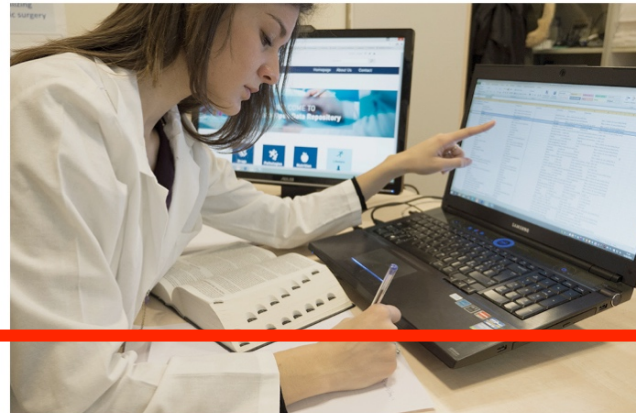


# Enhanced personas profile visualisation

## MUST-DO / MUST-NEVER

### BIOLOGIST NUTRITIONIST

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# Enhanced personas profile visualisation

## DEMOGRAPHICS

### BIOLOGIST NUTRITIONIST

ELISA STAIBENE



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**MUST DO**  **MUST NEVER**

*Bond with patients face-to-face* *Change PNP without my supervision*

ABOUT	
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# Enhanced personas profile visualisation

## USER STORY RELATED TO HEALTHCARE PROFESSION PERSONAS

### BIOLOGIST NUTRITIONIST

ELISA STAIBENE



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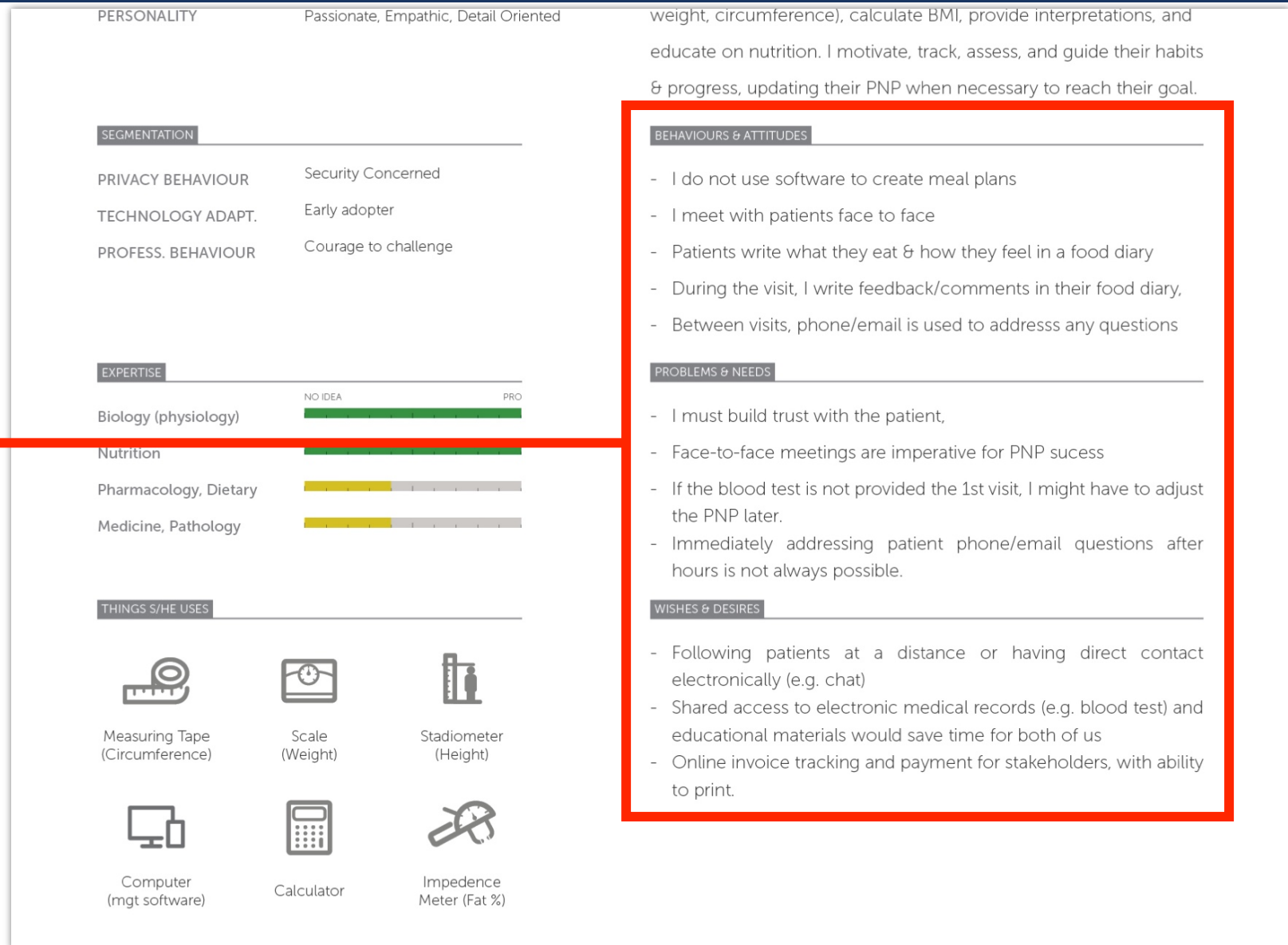
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# Enhanced personas profile visualisation

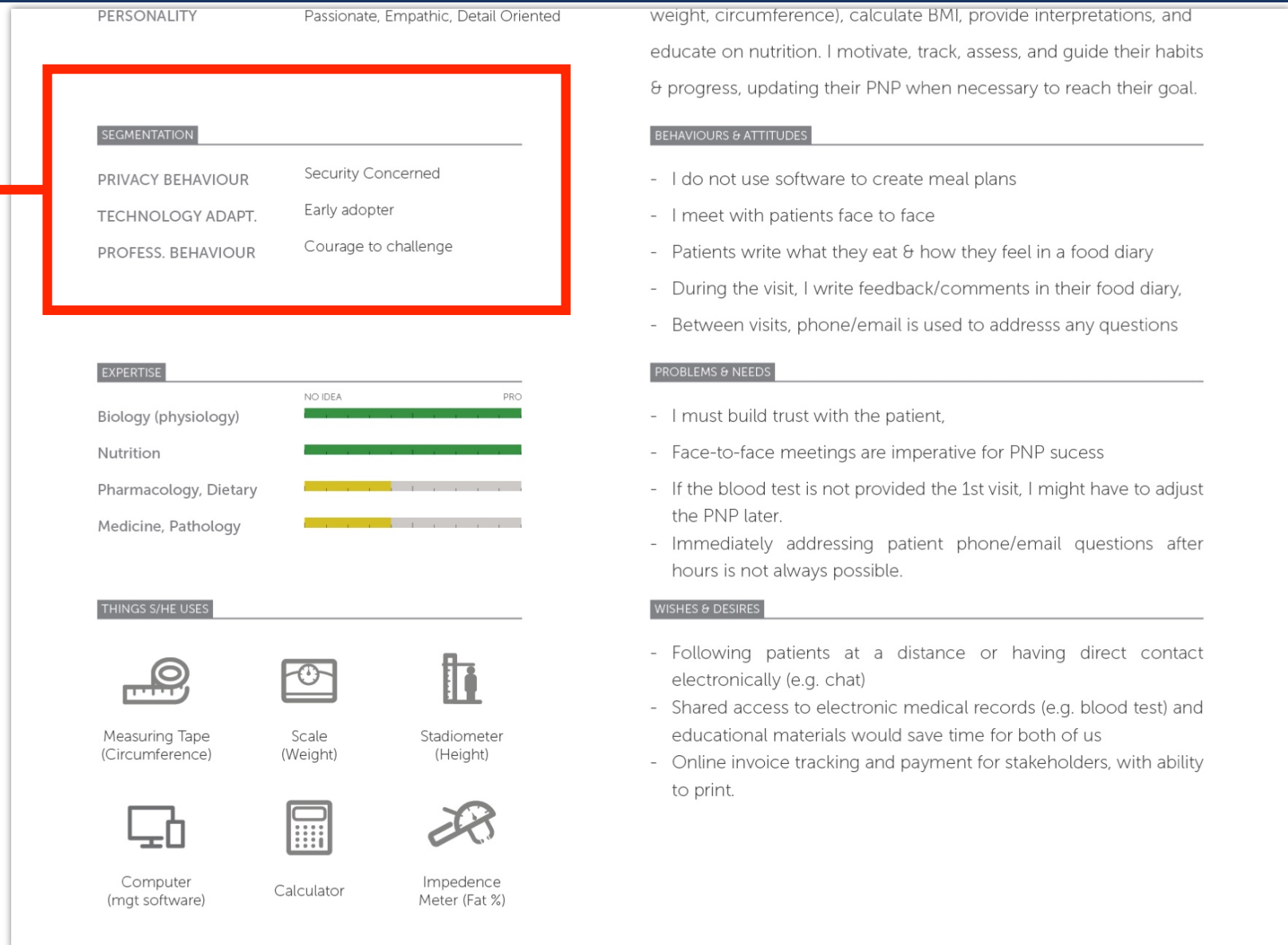
**BEHAVIOUR**  
+  
**PROBLEMS**  
+  
**WISHES**

DURING RELATED  
HEALTHCARE  
PRACTICE



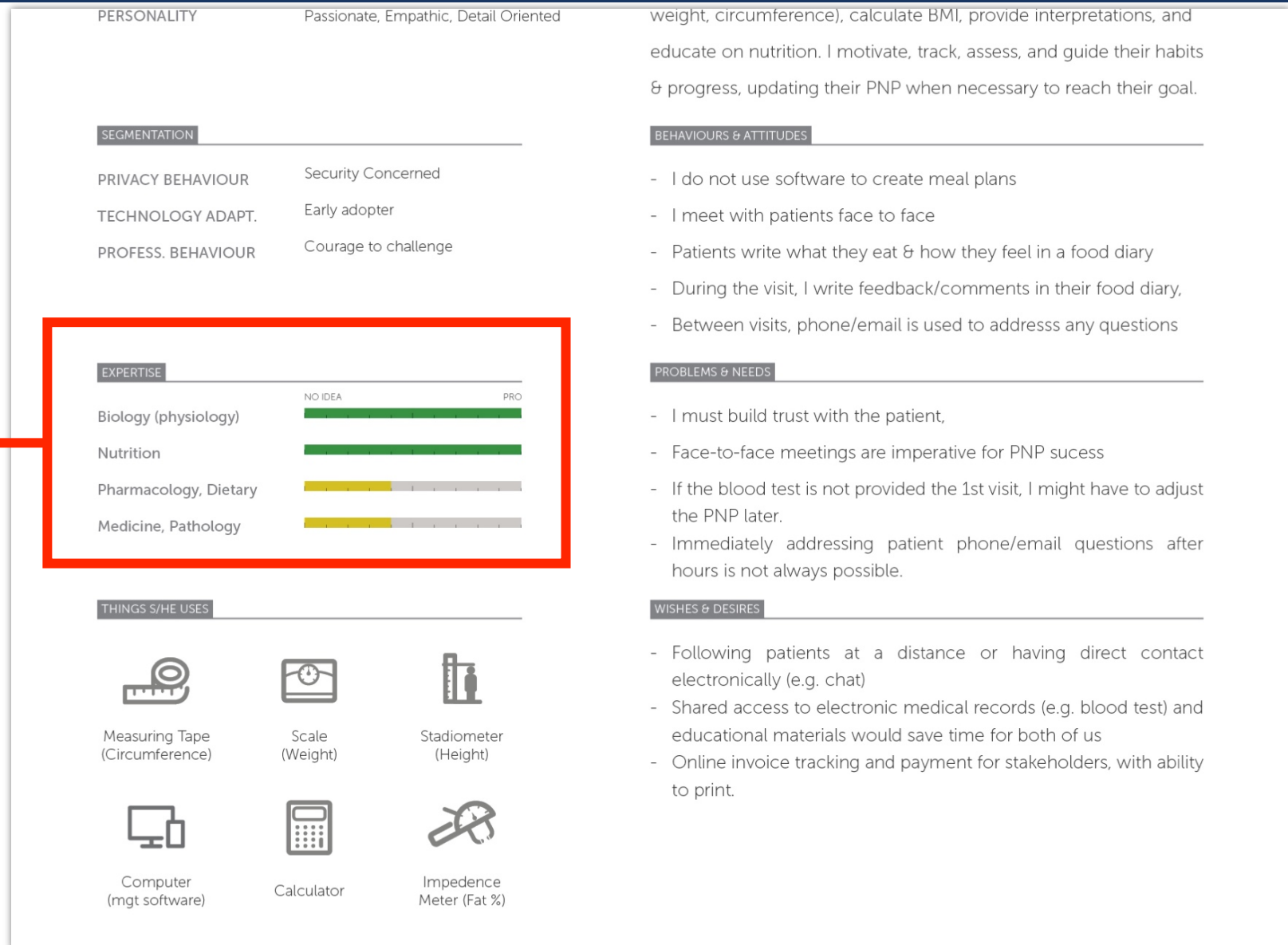
# Enhanced personas profile visualisation

## DOMAIN SPECIFIC SEGMENTATIONS



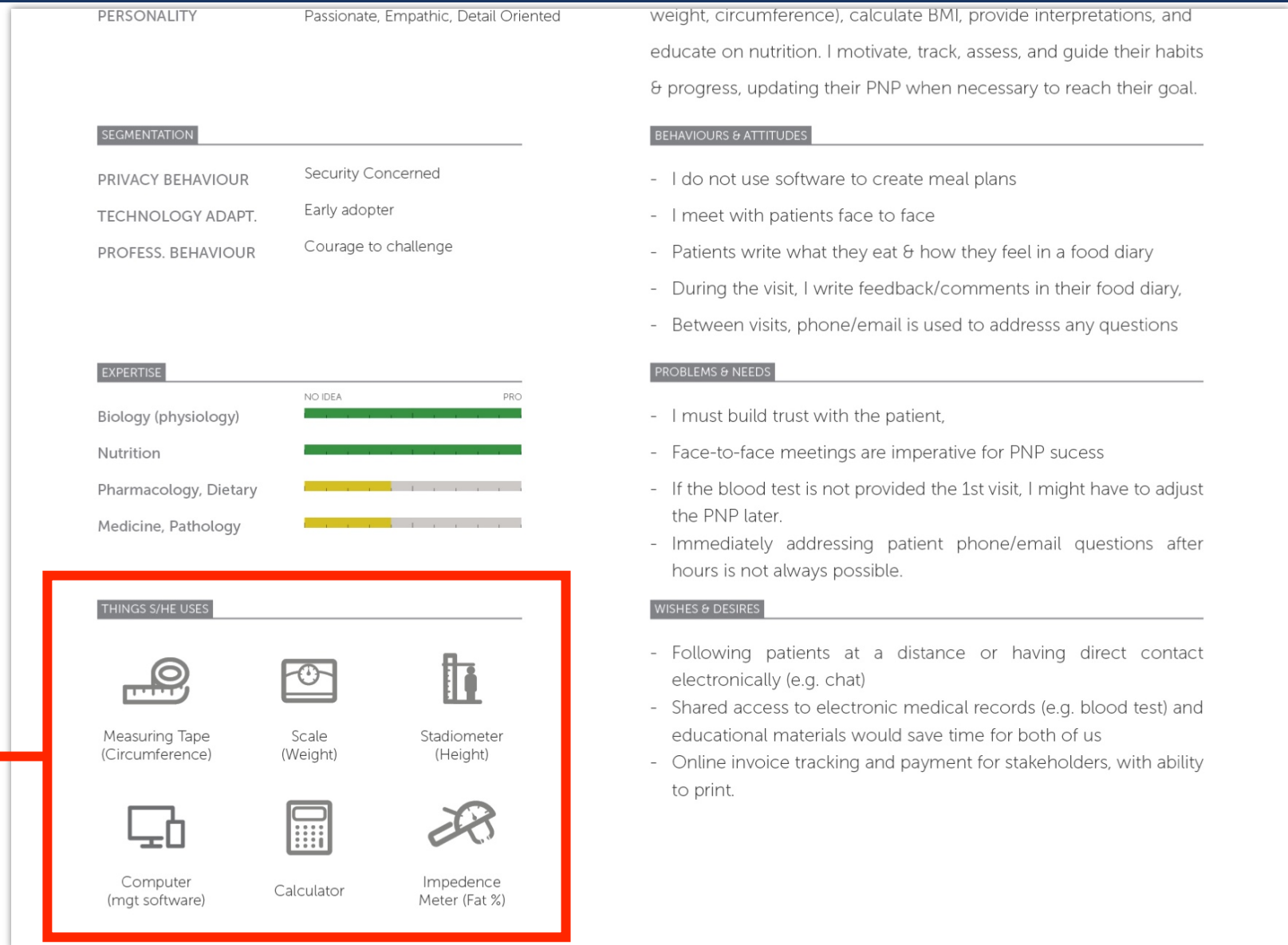
# Enhanced personas profile visualisation

## EXPERTISE LEVEL IN THE RELATED HEALTHCARE FIELD



# Enhanced personas profile visualisation


## TOOLS USED IN THE RELATED HEALTHCARE PROFESSION



# Living Lab Tools: Personas Deck

## SONIA PRE

BIOINFORMATIC



"Ha"

**MUST DO**  
Send to Biologist

---

**ABOUT**

AGE, SEX: 35, Female  
 JOB: Postdoctoral Researcher in Bioinformatics  
 WORK EXPERIENCE: 7 years  
 NATIONALITY: Italian  
 STATUS: Married with one kid  
 PERSONALITY: Competent, always on time, precise

---

**IDENTIFICATION**

TECHNOLOGY ADAPTION: Innovators  
 PRIVACY BEHAVIOUR: Security Concerned

---

**EXPERTISE**

MOLECULAR BIOLOGY:   
 ANALYSIS OF SEQUENCING DATA:   
 PARALLEL COMPUTATION:   
 LINUX-UNIX:   
 PROGRAMMING (PYTHON, R, BASH):


---

**THINGS SHE USES**

- Sequencer
- Workstation
- Computer with different programs

## DIANA CARD

BIOLOGIST



"Give"

**MUST DO**  
Validates P

---

**ABOUT**

AGE, SEX: 56, Female  
 JOB: Sr. Researcher in Biology  
 WORK EXPERIENCE: 25 years  
 NATIONALITY: Italian  
 STATUS: Married with 3 kids  
 PERSONALITY: Active, Responsible, Well-organized, Inclusive, able to work with multi-disciplinary staff

---

**IDENTIFICATION**

TECHNOLOGY ADAPTION: Late Majority  
 PRIVACY BEHAVIOUR: Security Concerned

---

**EXPERTISE**

MOLECULAR BIOLOGY:   
 INFORMATICS INSTRU:   
 POLICY KNOWLEDGE:   
 PATHOLOGY:   
 LAB PROCEDURES(WET) & ANNOTATION:

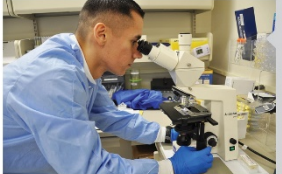
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**THINGS SHE USES**

- Computer with different programs

## KEVIN TE

BIOLOGIST



"Give"

**MUST DO**  
Validates P

---

**ABOUT**

AGE, SEX: 28, male  
 JOB: Technician, Jr. Biologist  
 WORK EXPERIENCE: 5 years  
 NATIONALITY: Italian  
 STATUS: Single  
 PERSONALITY: Reliable, Accurate, passionate, patient

---

**IDENTIFICATION**

TECHNOLOGY ADAPTION: Early Adopters  
 PRIVACY BEHAVIOUR: Security Concerned

---

**EXPERTISE**

MOLECULAR BIOLOGY:   
 BIOCHEMISTRY:   
 BIOTECHNOLOGY:   
 GENOMICS:


---

**THINGS SHE USES**

- Paper Documents
- Sequencer
- Extractor
- Reagents
- Sequencer
- Computer with different programs & files

## BIOLOGIST NUTRITIONIST

ELISA STAIBENE



*"Improve patients' health (physiological, mental, and aesthetic) and provide them with the knowledge and tools to self-manage their weight and nutrition habits"*

**MUST DO**  
Bond with patients face-to-face

**MUST NEVER**  
Change PNP without my supervision

---

**ABOUT**

AGE, SEX: 28, Female  
 JOB: Biologist Nutritionist  
 NATIONALITY: Italian  
 STATUS: Married  
 PERSONALITY: Passionate, Empathic, Detail Oriented

---

**IDENTIFICATION**

PRIVACY BEHAVIOUR: Security Concerned  
 TECHNOLOGY ADAPTION: Early adopter  
 PROFESS. BEHAVIOUR: Courage to challenge

---

**EXPERTISE**

Biology (physiology):   
 Nutrition:   
 Pharmacology, Dietary:   
 Medicine, Pathology:

---

**THINGS SHE USES**

- Measuring Tape (Circumference)
- Scale (Weight)
- Stadiometer (Height)
- Computer (img software)
- Calculator
- Impedance Meter (Fat %)

---

**USER STORY**

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**WISHES & DESIRES**

- Following patients at a distance or having direct contact electronically (e.g. chat)
- Shared access to electronic medical records (e.g. blood test) and educational materials would save time for both of us
- Online invoice tracking and payment for stakeholders, with ability to print.

CREATIVE COMMONS, FREE ACCESS, VERIFIED AND READY TO USE



**e-Services**  
for Life and Health

# Designing technology

How to map professional healthcare figures with Personas for P4 medicine

S. Vicini, A. Gariglio, F. Alberti, A. Sanna

27<sup>th</sup> June, 2016

