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DATA-PROTECTION TOOLKIT REDUCING RISKS IN HOSPITALS AND CARE CENTERS

Project Nº 826284

ProTego

D8.4 - Initial description of the project impact and business models definition

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Executive summary

This deliverable provides preliminary results from exploitation activities of the ProTego project. In order to reach these results, partners were requested to have a market-oriented mind, putting themselves in the shoes of a potential customer that would like to adopt ProTego in order to release current business pains.

On the one hand, we tried to understand which are the most valuable market opportunities of ProTego in terms of attractiveness and also time-to-market. On the other hand, and considering the previous input, we identified the project value propositions and their related business models that, at least from the perspective of the customer needs, could work in the market.

In the last period of the project, the final validation of these identified exploitation opportunities will be performed. For it, partners will select which business models will be actually exploited – individually or jointly – and for these selected ones an analysis of their financial sustainability will be included. Additionally, the valuable market opportunities will be reviewed thanks to i) a detailed analysis of the potential markets identified in this deliverable; b) a set of questionnaires about ProTego that will be shared with identified stakeholders in order to finetune our findings and the exploitation plans. As these questionnaires are ready at the moment of releasing this deliverable, the template is included. The exploitation activities of the project will conclude with a comparison between “before ProTego” and “after ProTego” in real market places in order to analyse whether we reached the expected project impact.

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Table of Acronyms and Definitions

Acronym	Definition
AWS	Amazon Web Services
BM	Business Model
CIA	Confidentiality, Integrity, Availability
EDR	Endpoint Detection and Response
GDP	General Data Protection
IoT	Internet of Things
ISP	Internet Service Provider
MRI	Magnetic Resonance Imaging
OS	Operating System
OWASP	Open Web Application Security Project
SIEM	Security Information and Event Management
VP	Value Proposition

I. INTRODUCTION

I.1. Purpose and organization of the document

This deliverable is part of the exploitation activities of the project, aiming at defining the elements for facilitating the market adoption of the ProTego results. It is the first exploitation deliverable, and will be followed by D8.6 – ”Final exploitation framework: Project impact, exploitation actions and sustainability plan”.

The purpose is to provide preliminary findings on business-oriented key elements: Market opportunities and Business models.

The document is organized in three main blocks, with an introductory description of the methodology used in obtaining the reported results and detailing how these elements fit into the overall ProTego exploitation strategy.

Section II. Work Methodology

Section III. Identification of ProTego Market Opportunities

Section IV. Identification of Value Propositions

Section V. Definition of business models

Section V. Identification of market opportunities

Section VI. Validation of preliminary results: Questionnaires to stakeholders

I.2. Scope and audience

The deliverable is intended to be used by project partners in order to further develop exploitation opportunities for ProTego results. They will need the combination of results in order to determine their chances of marketing.

II. WORK METHODOLOGY

In this section we describe the methodology used to identify the market opportunities and the maturity of these markets with respect to ProTego expected results, and the business model prototypes that can later be used to make the actual individual exploitation plans.

In contrast to the previous exploitation deliverable - D8.2 Initial market analysis and first standardization actions - where partners primarily focussed on considering the opportunities their own components afforded, the approach here was more collaborative across the consortium. People with a variety of roles from consortium partners came together to provide fresh ideas and analysis of the market opportunities, value propositions and business models for individual components and combinations of components, with the groups deliberately mixed to provide a spread of parter organisations and job roles in each group.

To structure the analysis, the same canvases were used as in D8.2, namely the Market Opportunity Navigator [Web1], the Value Proposition canvas and the Business Model Canvas [Web2].

First, we organized two workshops focused on placing the project expected results into the market, understanding the market maturity related to the results and which results might have more market success accordingly. For it, the market opportunity navigator tool was used. Details about this workshop are provided below, section II.1.

After that, three consortium workshops were organized that, applying the value proposition and business model canvas methodology, identified common stakeholders, business models elements and patterns shared between the different local ecosystems. During the workshops several value proposition and business model canvas prototypes where produced by participants organised in groups, and subsequently validated during discussion groups.

Due to the current restrictions on travelling, the workshops were organized remotely. For it, tools that provide collaboration environments were used, namely MIRO [Web3]. In addition, WebEx [Web4] was used as a conference call bridge capitalizing on a feature that allows splitting participants into different groups and merging them back for consolidation discussions and conclusions.

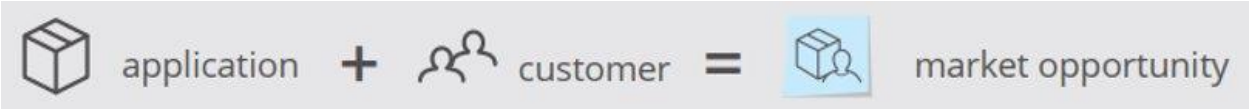
Subsequently the canvases where analysed in detail and all components analysed in order to be polished and to elaborate more structured reports. Finally, the different inputs where consolidated to elaborate the final business canvas prototypes that will be presented later in this deliverable.

Last but not least, the deliverable has been reviewed and finalised.

II.1. ProTego market opportunities

The aim of the Market Opportunity Navigator is to take a step back from the specifics of a piece of technology and consider the core capabilities or technical elements that are present and how they (or a subset) might be user by a customer. In doing so, one is encouraged to consider entirely different uses for the elements to form an “application” and the broadest range of customers. The pairings of “application” and “customer” are described as “market opportunities”.

In the first workshop, four groups were asked to consider the elements of ProTego and brainstorm how they might be used by different customers. In the introduction to the workshop, participants were given an overview of the whole project (as some had not previously had much exposure to the project), a review of the technical elements and some instructions specifically about completing the Navigator. The market opportunity element was described as follows:



What applications can you offer?	What customers may need the application?

Consider the core capabilities of what you have
• Describe them in a general manner
Given the capabilities, what applications could you offer that use some or all of your capabilities?
	What are the customer characteristics?
	• Do they need a certain size of IT infrastructure?
	• How expert in cyber-security do they need to be?
	Customer groups can be “segmented”
	• For instance, rather than “hospitals” consider
	  ○ Hospitals with some characteristic
	  ○ Hospitals in a geographic region
	  ○ Hospitals of a certain size
	  ○ Hospitals with a speciality

Using the Miro collaborative canvas [Web3] along with video-conferencing, participants (split into 4 groups) discussed and completed first canvas (Figure 1).

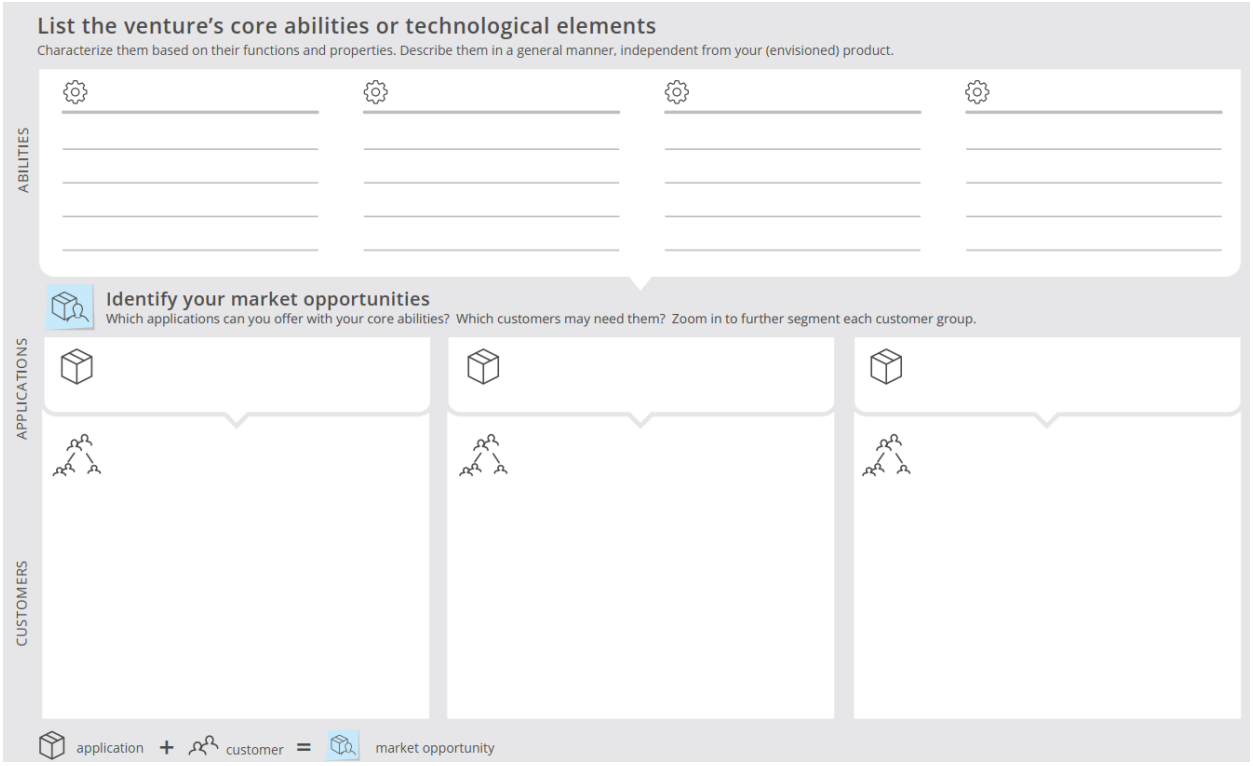


Figure 1 - Canvas used to develop Market Opportunities.[1]

In preparation for the second workshop, the opportunities identified in the first workshop were tabulated and some duplicated opportunities or very niche opportunities set aside. Some questions for clarification or discussion were also raised. While maintaining continuity of the discussion of the opportunities, the groups were slightly reformulated into the 3 stronger groups described in Table 1 and the groups continued to work in Miro and video-conference on the market opportunities identified previously but this time determining where to place the different opportunities in terms of market attractiveness using the scales of “potential” and “challenge”.

[1] Taken from https://wheretoplay.co under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License.

Table 1 - Groups used in the Market Opportunity workshops (first and second).

	Participants	Role
Group 1	Antonio Jesús Gamito (Inetum)	Management
	Luis Carrascal (Inetum)	Cybersecurity
	Michela Severgnini (OSR)	Generic Business Developer
	Carlos Mezquida (MS)	Technical
	Sarah Fairhurst (ICE)	Generic Business Developer
	Bart Lannoo (IMEC)	Generic Business Developer
	Kosta Kouvaris (IT Inno.)	Technical
Group 2	Dave Singelee (KUL)	Generic Business Developer
	Carlos Cilleruelo (UAH)	Cybersecurity
	Philip Usher (ICE)	Technical
	Usman Wajid (ICE)	Management
	Colin Upstill (ICE)	Management
	Paco Leal (Inetum)	Cybersecurity
	Salvador García (MS)	Technical
Group 3	María Pérez (Inetum)	Generic Business Developer
	Eliot Salant (IBM)	Technical
	Miquel Soldevila (MS)	Cybersecurity
	Stefano Grassi (OSR)	Management
	Farhad Aghili (KUL)	Cybersecurity
	Esteban Municio (IMEC)	Technical
	Juan Luis García (Inetum)	Health Sales Manager
	Stephen Philips (IT Inno.)	Cybersecurity

The exercise in positioning the Market Opportunities was not for fine-grained decisions but for mostly high-level relative assessments. The criteria used in making these judgements was provided to the participants through Figure 2 and the positioning was done through virtual Post-It notes (including some explanation of the decision) on three canvases such as that shown in Figure 3.

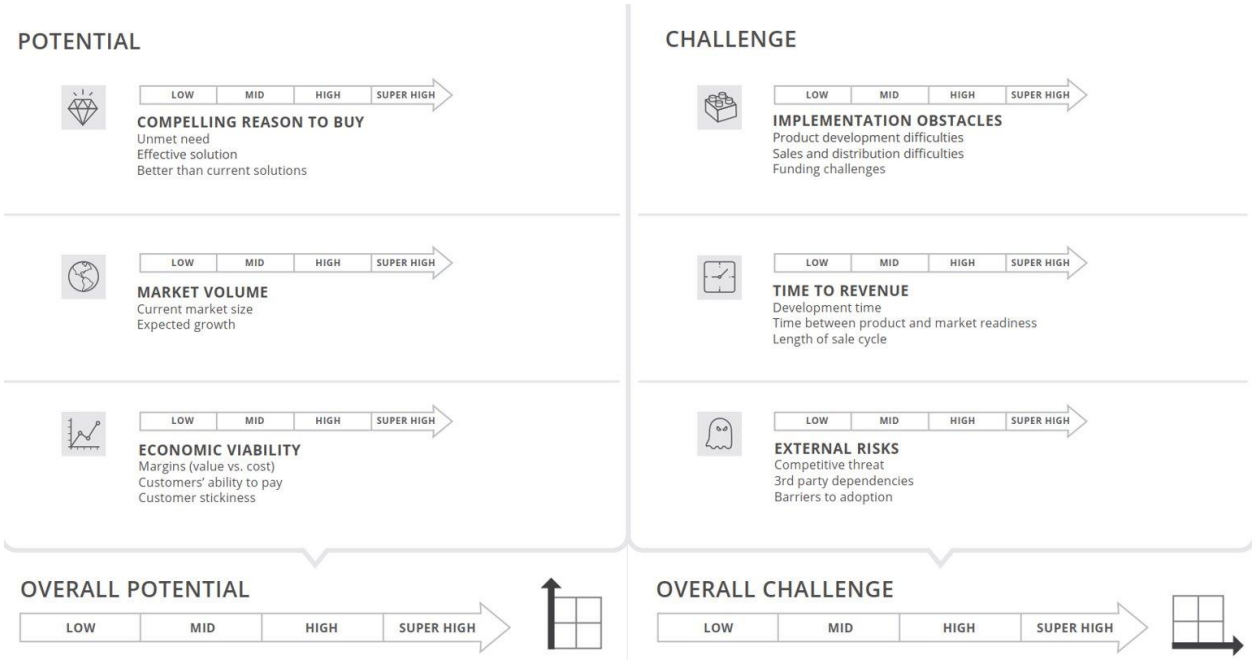


Figure 2 - Criteria for assessing potential and challenge.[2]

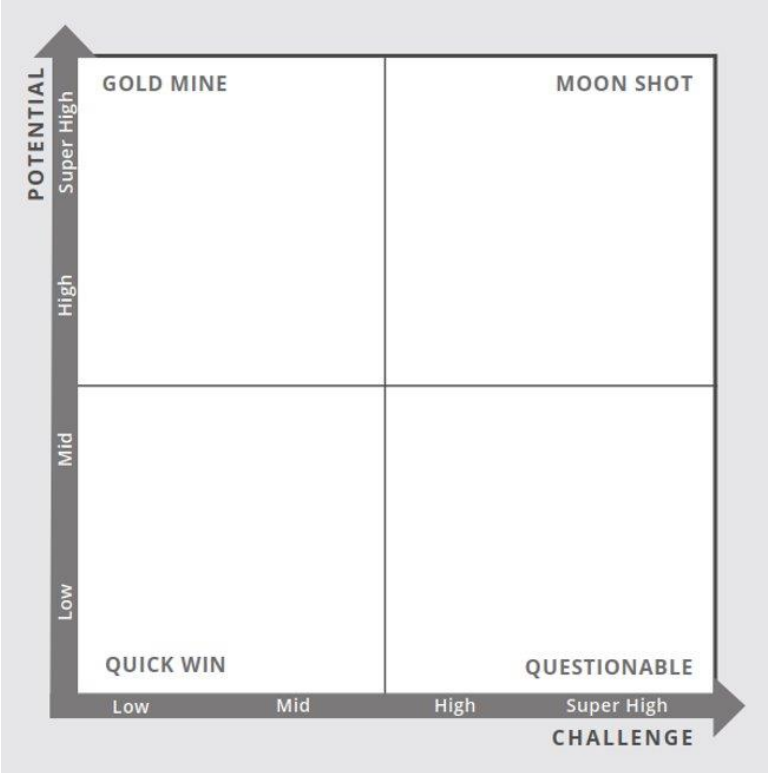


Figure 3 - Market Attractiveness canvas.[2]

The consolidated results of the exercises may be found in Section III.

[2] Taken from https://wheretoplay.co under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License.

II.2. ProTego value proposition and business models

II.2.1. The workshops

The goal of the workshops was to initiate the creation of business models, based on the input of a heterogeneous group of 20 to 22 members from the ProTego consortium that attended the workshops. The main part of the workshops consisted of a number of brainstorming sessions in which a number of value propositions and business model ideas were elaborated.

These workshops were held on November and December 2020, two were focused on the identification of Value Propositions identification and the last one on Business Models definition.

In the first workshop, an overall presentation of the Business Model Generation methodology and the Value Proposition (VP) was delivered, and a few examples were shown. Thanks to the output of the Market Opportunities Navigator exercise, presented in the previous section and in which ProTego potential customers were identified, each customer was placed in the middle of one VP canvas. There were 12 customers, and therefore we worked in 12 VP canvases. As during the available time for the 1st workshop participants were not able to complete all the canvases, a second workshop was organized.

The participants were divided in 4 groups and were assigned to several canvases:

1st workshop (05/11/2020):

Group 1 worked in the following canvases:

- Hospital & Healthcare
- Public administration incl. National health service
- Portal providers
- Structured companies (this term, identified during the workshops, was later replaced by Companies managing an internal IT system).
- Big data owners & managers

Group 2 worked in the following canvases:

- Hospital & Healthcare
- Generic business with sensitive data
- IT companies
- Citizens

Group 3 worked in the following canvases:

- Big data owners & managers
- Entities managing IT systems
- Mobile device OS providers

Table 2 – Configuration of the 1st VPs workshop

1st workshop	Participants	Customer types
Group 1:	Antonio Jesús Gamito (Inetum)	Management
	Luis Carrascal (Inetum)	Cybersecurity
	Michela Severgnini (OSR)	Generic Business Developer

	Carlos Mezquida (MS)	Technical
	Sarah Fairhurst (ICE)	Generic Business Developer
	Bart Lannoo (IMEC)	Generic Business Developer
	Kosta Kouvaris (IT Inno.)	Technical
Group 2:	Dave Singelee (KUL)	Generic Business Developer
	Carlos Cilleruelo (UAH)	Cybersecurity
	Philip Usher (ICE)	Technical
	Usman Wajid (ICE)	Management
	Colin Upstill (ICE)	Management
	Paco Leal (Inetum)	Cybersecurity
	Salvador García (MS)	Technical
Group 3:	María Pérez (Inetum)	Generic Business Developer
	Eliot Salant (IBM)	Technical
	Miquel Soldevila (MS)	Cybersecurity
	Stefano Grassi (OSR)	Management
	Farhad Aghili (KUL)	Cybersecurity
	Esteban Municio (IMEC)	Technical
	Juan Luis García (Inetum)	Health Sales Manager
	Stephen Philips (IT Inno.)	Cybersecurity

2nd workshop (18/11/2020):

Group 1 worked in the following canvases:

- Hospital & Healthcare
- Public administration incl. National health service
- Portal providers
- Structured companies
- Big data owners & managers

Group 2 worked in the following canvases:

- Hospital & Healthcare
- Generic business with sensitive data
- IT companies
- Citizens

Group 3 worked in the following canvases:

- Big data owners & managers
- Entities managing IT systems
- Mobile device OS providers

Table 3 - Configuration of the 2nd VPs workshop

2nd workshop	Participants	Customer types
Group 1:	Antonio Jesús Gamito (Inetum)	Management
	Luis Carrascal (Inetum)	Cybersecurity
	Michela Severgnini (OSR)	Generic Business Developer
	Sarah Fairhurst (ICE)	Generic Business Developer
	Bart Lannoo (IMEC)	Generic Business Developer
	Kosta Kouvaris (IT Inno.)	Technical
Group 2:	Dave Singelee (KUL)	Generic Business Developer
	Carlos Cilleruelo (UAH)	Cybersecurity
	Philip Usher (ICE)	Technical
	Usman Wajid (ICE)	Management
	Colin Upstill (ICE)	Management
	Salvador García (MS)	Technical
Group 3:	María Pérez (Inetum)	Generic Business Developer
	Eliot Salant (IBM)	Technical
	Miquel Soldevila (MS)	Cybersecurity
	Stefano Grassi (OSR)	Management
	Farhad Aghili (KUL)	Cybersecurity
	Esteban Municio (IMEC)	Technical
	Juan Luis García (Inetum)	Health Sales Manager
	Stephen Philips (IT Inno.)	Cybersecurity

The brainstorming consisted of allowing the participants, divided into groups, to add post-its with ideas in the different sections of canvases especially designed for this purpose. There were no restrictions, also at first sight strange and out-of-the-box ideas could be freely added.

Overall 12 Value Proposition Canvases were produced (see Annex A: Market opportunity brainstorming results) using the template shown in Figure 4.

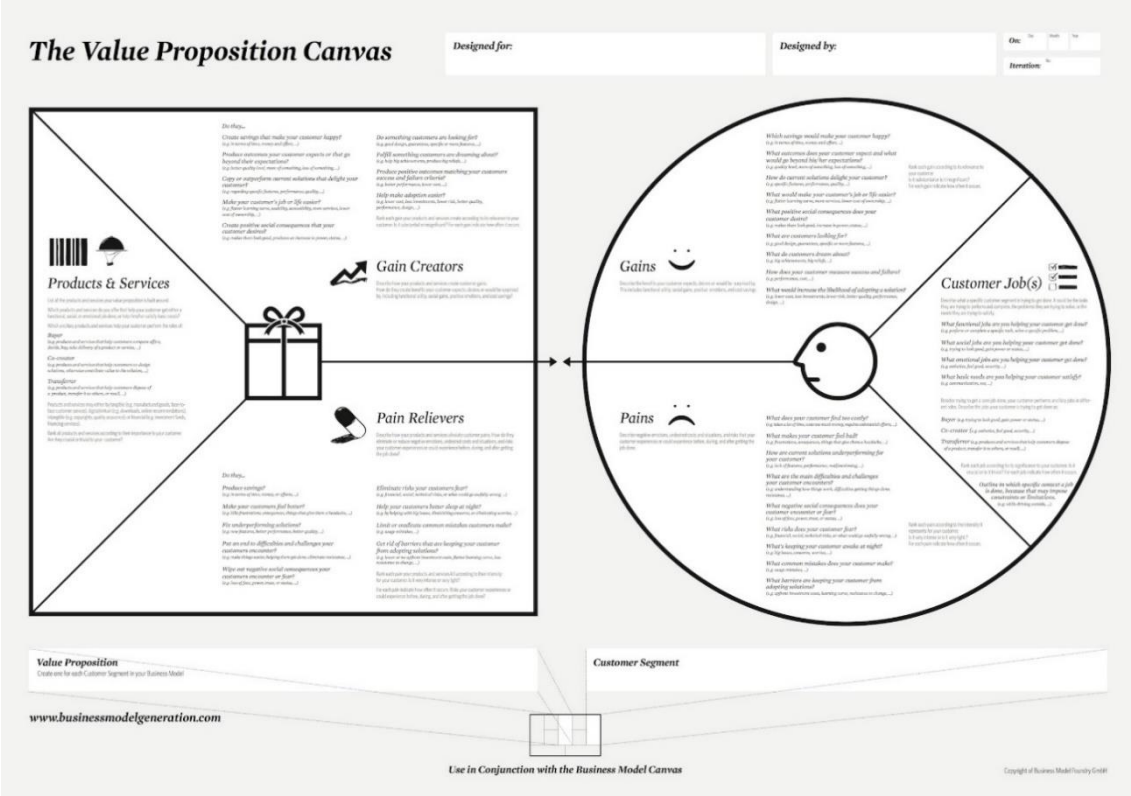


Figure 4 - The Value Proposition Canvas [Book1]

The third workshop exploited the results from the previous exercises to define business models linked to the identified VPs. For each valid VP a Business Model (BM) canvas was proposed by transferring the “Customer” and “Value Proposition” elements as shown in Figure 5.

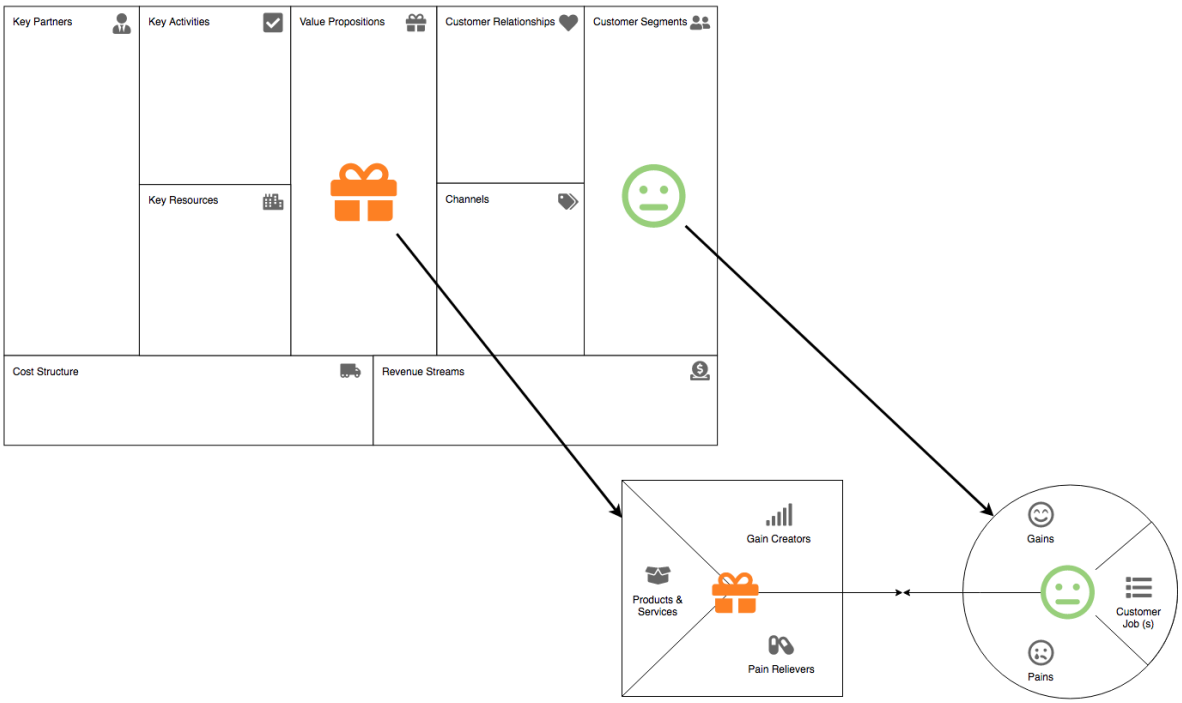


Figure 5 - Transfer from Value Proposition to Business Model

Following the same methodology as with the Value Propositions, Business Models were prepared. Attendees to this workshop were split into 3 groups, as shown in Table 4, in order to run a brainstorming session adding post-its with the different ideas and suggestions.

Table 4 - Configuration of the BMs workshop

	Participants	Canvas customer
Group 1:	Antonio Jesús Gamito (Inetum)	IT Companies Hospitals & Healthcare Public Administration Commercial Center Structured Companies Insurance Companies
	Luis Carrascal (Inetum)	Mobile device OS providers & app developers Hospitals & Healthcare Public Administration Commercial Center Structured Companies Insurance Companies
	Michela Severgnini (OSR)	Marketing Companies
	Sarah Fairhurst (ICE)	Big Data
	Bart Lannoo (IMEC)	Structured Companies Universities (student portal)
	Kosta Kouvaris (IT Inno.)	Mobile device OS providers & app developers
	Dave Singelee (KUL)	Big Data
	Carlos Cilleruelo (UAH)	Universities (student portal)
Group 2:	Philip Usher (ICE)	IT Companies
	Usman Wajid (ICE)	Transportation
	Colin Upstill (ICE)	Stock market & Banking
	Carlos Mesquida (MS)	Insurance Companies
	Salvador García (MS)	Online shopping
	Paco Leal (Inetum)	Public Administration Hospitals & Healthcare Commercial Center Structured Companies Insurance Companies
Group 3:	María Pérez (Inetum)	Commercial Center Hospitals & Healthcare Public Administration Structured Companies

		Insurance Companies
	Eliot Salant (IBM)	Stock market & Banking
	Miquel Soldevila (MS)	Online shopping
	Stefano Grassi (OSR)	Marketing Companies
	Farhad Aghili (KUL)	Hospitals & Healthcare
	Esteban Municio (IMEC)	Transportation
	Juan Luis García (Inetum)	Hospitals & Healthcare Public Administration Commercial Center Structured Companies Insurance Companies
	Stephen Philips (IT Inno.)	Marketing Companies

Overall 13 Business Model Canvases were produced (see Annex C: Business model workshop brainstorming results).

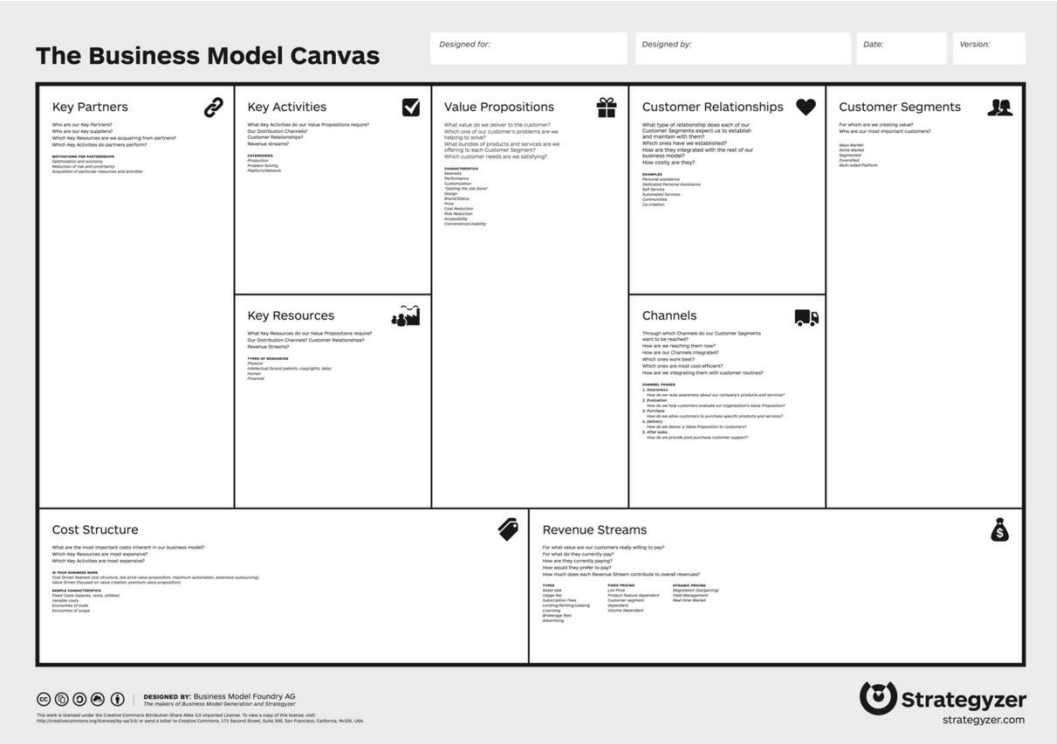


Figure 6 - The Business Model Canvas [Book2]

After each brainstorming exercise, a validation session to aid the consolidation of the brainstorming results was held.

II.2.2. Consolidation of results and findings

In this activity all the information collected during the workshops was consolidated.

This consolidation encompasses the grouping of ideas, the removal of double entries and unrealistic ideas, filling gaps, etc.

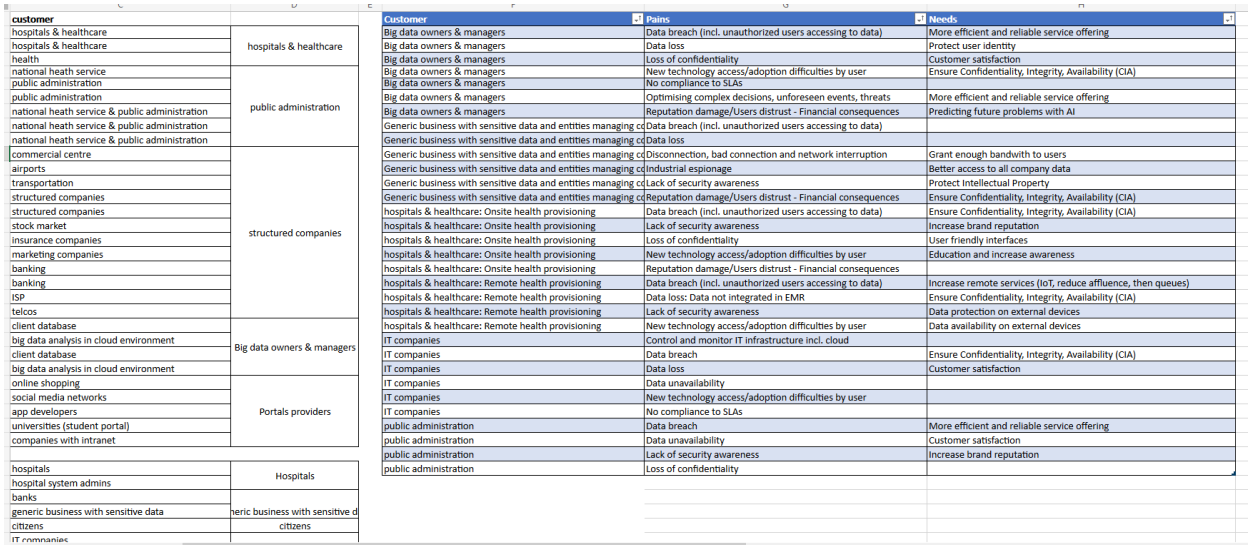
The final result (after multiple iterations) was an Excel sheet that contains a structured overview of the Value Proposition Canvases and the Business Model Canvases created during the brainstorming in the workshops.

A summary of the results of this activity can be found in sections IV and V.

II.2.2.a. Value proposition canvas overview

The Value Proposition Canvas overview lists the Value Proposition Canvas building blocks for the identified potential Customer Segments.

It contains the following elements, as described in the Business Model Generation methodology: Customer segment, Customer segment detail, Customer job, Gain, Pain, Gain creator, Pain reliever, Product/service.



customer	
hospitals & healthcare	hospitals & healthcare
hospitals & healthcare	
health	
national heath service	public administration
public administration	
public administration	
national heath service & public administration	
national heath service & public administration	
national heath service & public administration	
commercial centre	structured companies
airports	
transportation	
structured companies	
structured companies	
stock market	
insurance companies	
marketing companies	
banking	
banking	
ISP	
telcos	
client database	Big data owners & managers
big data analysis in cloud environment	
client database	
big data analysis in cloud environment	
online shopping	Portals providers
social media networks	
app developers	
universities (student portal)	
companies with intranet	
hospitals	Hospitals
hospital system admins	
banks	
generic business with sensitive data	neric business with sensitive d
citizens	citizens
IT companies	

Customer	Pains	Needs
Big data owners & managers	Data breach (incl. unauthorized users accessing to data)	More efficient and reliable service offering
Big data owners & managers	Data loss	Protect user identity
Big data owners & managers	Loss of confidentiality	Customer satisfaction
Big data owners & managers	New technology access/adoption difficulties by user	Ensure Confidentiality, Integrity, Availability (CIA)
Big data owners & managers	No compliance to SLAs	
Big data owners & managers	Optimising complex decisions, unforeseen events, threats	More efficient and reliable service offering
Big data owners & managers	Reputation damage/Users distrust - Financial consequences	Predicting future problems with AI
Generic business with sensitive data and entities managing cc	Data breach (incl. unauthorized users accessing to data)	
Generic business with sensitive data and entities managing cc	Data loss	
Generic business with sensitive data and entities managing cc	Disconnection, bad connection and network interruption	Grant enough bandwith to users
Generic business with sensitive data and entities managing cc	Industrial espionage	Better access to all company data
Generic business with sensitive data and entities managing cc	Lack of security awareness	Protect Intellectual Property
Generic business with sensitive data and entities managing cc	Reputation damage/Users distrust - Financial consequences	Ensure Confidentiality, Integrity, Availability (CIA)
hospitals & healthcare: Onsite health provisioning	Data breach (incl. unauthorized users accessing to data)	Ensure Confidentiality, Integrity, Availability (CIA)
hospitals & healthcare: Onsite health provisioning	Lack of security awareness	Increase brand reputation
hospitals & healthcare: Onsite health provisioning	Loss of confidentiality	User friendly interfaces
hospitals & healthcare: Onsite health provisioning	New technology access/adoption difficulties by user	Education and increase awareness
hospitals & healthcare: Onsite health provisioning	Reputation damage/Users distrust - Financial consequences	
hospitals & healthcare: Remote health provisioning	Data breach (incl. unauthorized users accessing to data)	Increase remote services (IoT, reduce affluence, then queues)
hospitals & healthcare: Remote health provisioning	Data loss: Data not integrated in EMR	Ensure Confidentiality, Integrity, Availability (CIA)
hospitals & healthcare: Remote health provisioning	Lack of security awareness	Data protection on external devices
hospitals & healthcare: Remote health provisioning	New technology access/adoption difficulties by user	Data availability on external devices
IT companies	Control and monitor IT infrastructure incl. cloud	
IT companies	Data breach	Ensure Confidentiality, Integrity, Availability (CIA)
IT companies	Data loss	Customer satisfaction
IT companies	Data unavailability	
IT companies	New technology access/adoption difficulties by user	
IT companies	No compliance to SLAs	
public administration	Data breach	More efficient and reliable service offering
public administration	Data unavailability	Customer satisfaction
public administration	Lack of security awareness	Increase brand reputation
public administration	Loss of confidentiality	

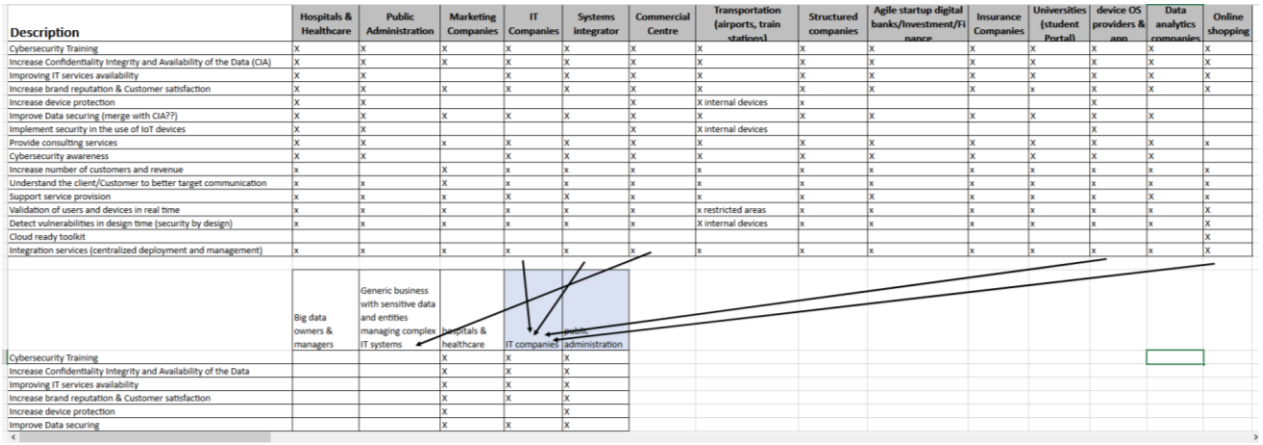
Figure 7 - Analysis for the consolidation of VPs results

II.2.2.b. Business model canvas overview

The Business Model Canvas overview lists the business model canvas building blocks in relation to the identified potential Customer Segments.

The Business Model Canvas building blocks are listed in a 2-level hierarchy (main & detail). The Business Model Canvas contains the following building blocks: Customer Segments, Value Propositions, Customer Relationships, Channels, Key Activities, Key Resources, Key Partners, Cost Structure and Revenue Streams.

The model is flexible as it allows the selection of one or more customer segments to filter out all related value propositions, channels, customer relationship options, revenue streams and costs.



Description	Hospitals & Healthcare	Public Administration	Marketing Companies	IT Companies	Systems integrator	Commercial Centre	Transportation (airports, train stations)	Structured companies	Agile startup digital banks/Investment/Finance	Insurance Companies	Universities (student Portal)	device OS providers & app	Data analytics companies	Online shopping
Cybersecurity Training	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Increase Confidentiality Integrity and Availability of the Data (CIA)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Improving IT services availability	x	x		x	x	x	x	x	x	x	x	x	x	x
Increase brand reputation & Customer satisfaction	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Increase device protection	x	x				x	x internal devices	x				x		
Improve Data securing (merge with CIA??)	x	x	x	x	x	x	x	x	x	x	x	x	x	
Implement security in the use of IoT devices	x	x				x	x internal devices					x		
Provide consulting services	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cybersecurity awareness	x	x		x	x	x	x	x	x	x	x	x	x	
Increase number of customers and revenue	x		x	x	x	x	x	x	x	x	x	x	x	x
Understand the client/Customer to better target communication	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Support service provision	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Validation of users and devices in real time	x	x	x	x	x	x	x	x restricted areas	x	x	x	x	x	x
Detect vulnerabilities in design time (security by design)	x	x	x	x	x	x	x internal devices	x	x	x	x	x	x	x
Cloud ready toolkit														x
Integration services (centralized deployment and management)	x	x	x	x	x	x	x	x	x	x	x	x	x	x

	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	hospitals & healthcare	IT companies	public administration
Cybersecurity Training			x	x	x
Increase Confidentiality Integrity and Availability of the Data			x	x	x
Improving IT services availability			x	x	x
Increase brand reputation & Customer satisfaction			x	x	x
Increase device protection			x		x
Improve Data securing			x	x	x

Figure 8 - Analysis for the consolidation of BMs results

The final step in the consolidation of the business model canvases is to evaluate if they are viable. For it, a qualitative analysis of a number of potentially viable business models was done. This took several iterations in which various combinations of customer segments, revenue streams, customer relationships or channels were evaluated. We created a number of Business Model Canvas prototypes considering the evaluation and market opportunity findings. The results of this analysis are presented in section 0

This information will be useful input for the parties that want to do the exploitation of ProTego. They will have to make a quantitative analysis which depends on the contracts and agreements they can make with customers and stakeholders, and that will be part of the Individual Exploitation plan that will be reported at the end of the project.

III. IDENTIFICATION OF PROTEGO MARKET OPPORTUNITIES

In the first workshop, the participants discussed the capabilities provided by ProTego and its component parts and thought about customer and customer segments that could use those capabilities. Each of the four groups had a variety of ProTego partners represented as well as different job roles. The original canvases may be found in Annex A: Market opportunity brainstorming results.

Following the workshop, the canvases were examined and tabulated. In this process, the words used were adjusted to avoid describing the same thing in two different ways. Duplicate and similar opportunities were removed to better focus the work of the second workshop on market attractiveness. Some questions were also posed to the participants for the second round in order to clarify their thinking and also look forward to the value proposition and business modelling exercises which are inevitably intertwined with the market opportunity thinking. The tabulated results, selected opportunities and questions are shown in Table 5.

Table 5 - Summary of results from the first Market Opportunity workshop. Opportunities taken on into the second workshop are highlighted.

Group	Application	Customer	Questions
1	ProTego toolkit	hospitals & healthcare	
	ProTego toolkit	structured companies	
	ProTego toolkit	public administration	
	network slicing	commercial centre	Are you selling a service, providing software, providing hardware, consultancy…?
	network slicing	airports	Why do these customers in particular need it?
	network slicing	transportation	
	network slicing	hospitals & healthcare	
	network slicing	structured companies	
	network slicing	public administration	
	real-time risk management	health	
	real-time risk management	banking	
	real-time risk management	ISP	
	SIEM	telcos	
	SIEM	stock market	

Group	Application	Customer	Questions
	SIEM	insurance companies	
	SIEM	national heath service	
	SIEM	online shopping	
	SIEM	banking	
	(data gateway) parquet files + access control framework	client database	Not clear who the customer is.
	(data gateway) parquet files + access control framework	big data analysis in cloud environment	
	continous authentication	marketing companies	What do you actually sell to the customers?
	continous authentication	social media networks	
	continous authentication	app developers	
	continous authentication	universities (student portal)	
	continous authentication	companies with intranet	
2	secure data storage (inc encryption + secure access)	hospitals	Do you sell the software, service or consultancy?
	secure data storage (inc encryption + secure access)	banks	
	secure data storage (inc encryption + secure access)	generic business with sensitive data	
	personal data vault on internet	citizens	SaaS presumably?
	consultancy for deploying complex systems (CI, CD)	IT companies	Are they software developers?
	building a secure network (slicing)	hospital system admins	Is this consultancy, software, hardware…?
	risk analysis of an IT system	5G telcos (or others with complex systems)	
	risk analysis of an IT system	security consultants	

Group	Application	Customer	Questions
	secure auth mobile app and framework	mobile app developers	
	building secure networking, slicing and containers	5g telcos	Consultancy?
3	encryption of data for big data analytics	public sector storing big data	Do you sell the software, service or consultancy? Who especially needs the parquet encryption?
	encryption of data for big data analytics	private entities storing big data	
	detecting abnormal behaviour in cloud & in-house IT	public sector managing IT	Software or service?
	detecting abnormal behaviour in cloud & in-house IT	private sector managing IT	
	detecting abnormal behaviour in mobile devices	mobile device OS providers	Given there are only 2, this could be a "moon shot".
	risk analysis of an IT system	public sector managing IT	Software, service or consultancy?
	risk analysis of an IT system	private sector managing IT	
4	real-time risk management	hospitals	Software or service?
	real-time risk management	insurance companies	
	privacy by design risk management	district heating and cooling companies	Why this customer?
	cloud service	manufacturing	What is the application really?
	cloud service	cloud providers to healthcare	Why to healthcare?
	cloud service	banks	

The three groups of the second workshop worked to place the identified opportunities relative to each other in terms of potential and challenge. Owing to time constraints, not all opportunities were addressed or their placement described. The tabulated data can be found in Table 6 and the original market attractiveness canvases may be found in Annex A: Market opportunity brainstorming results.

Table 6 - Summary of the Market Attractiveness canvases. "Gold mine" opportunities are highlighted in orange. "Quick win" opportunities are highlighted in green.

Group	Market Opportunity		Challenge	Potential	Comments
	Application	Customer			
1	Network slicing	Commercial centre	Mid	High	
	Network slicing	Hospital / healthcare	Mid	Mid/High	
	Real-time risk management	Banking	Mid/High	Super high	
	Real-time risk management	Health	Mid/High	High	
	ProTego toolkit	Public administration	Super high	High/Super high	
	ProTego toolkit	Hospital / healthcare	High/Super high	High/Super high	
	SIEM	National health service	Super high	High/Super high	
	SIEM	Banking	Low/mid	High/Super high	
2	Secure data storage	Hospital / healthcare	High	Super high	Challenging: We need collaboration with industry, that supply medical records products. Potential: good because the data is not currently encrypted at rest so this is big step forward in security.
	Secure data storage	Banking	Mid	Super high	Similar to hospitals but less of a challenge as banks have more money and the data is not quite so sensitive.
	Risk analysis	Consultants	Low	Mid	Market volume is not too big so slightly lower potential. There is quite a lot competition there is opportunity to be a gold mine if a niche is found.

Group	Market Opportunity		Challenge	Potential	Comments
	Application	Customer			
	CI/CD consultancy	IT companies	Mid	Mid	Lots of software businesses are trying this but why would they not do it themselves?
	Personal data vault	Citizens	Super high	High	Challenging: technically to roll out to the large numbers (possibly even changing infrastracture of the web) Potential: high risk as unclear monetisation, but with large numbers.
3	Continuous authentication	Social media networks	Low/Mid	High/super high	They sell individuals' data so it's important for them to ensure their identity.
	Continuous authentication	App developers	Mid	High	Critical to avoid identity theft.
	Risk analysis	Public sector	High	Mid/high	It is reasonably mature and necessary.
	Risk analysis	Private sector	High	High/super high	It is reasonably mature and private sector would pay more than public sector.
	Real-time risk management	Banking	High/super high	Super high	Not quite ready yet but would be really useful.
	Real-time risk management	Hospital / healthcare	High/super high	High/super high	Similar to banks but less ready to buy?
	Data encryption for big data analytics	Private sector	High/super high	High	
	Data encryption for big data analytics	Public sector	Super high	Super high	

To maintain a broad outlook, rather than focussing on the "best" opportunities, all the potential customers were examined in more detail in the value proposition work that follows.

IV. IDENTIFICATION OF VALUE PROPOSITIONS

IV.1. Introduction

In order to effectively sell products or services, it is very important to fully understand what their value can be to existing or new customers. This section describes potential customer segments for ProTego, their needs, and the value ProTego can potentially bring to fulfil these needs. These value propositions have been brought up during the workshop, the market opportunities identification and in the scenarios.

Additional value propositions have been identified on top of those from the initial or current ProTego scope, identified at proposal stage. In order to have a strong and unique selling proposition, their implementation can be considered in the exploitation of ProTego.

As an evolution of this section's results, Section V will give an overview of the other aspects, next to the customers and the value propositions, to be considered when establishing a complete business model.

IV.2. Customer segments

The following table summarises the main potential customer segments. Primary customer segments use at least part of the ProTego core functionality. Other customer segments do not use ProTego functionality, but benefit from ProTego in other ways.

The list of customer segments is based on the initial findings from the Market Opportunities exercise (see Section III). The stakeholders that are not customers (such as infrastructure providers including cloud providers) are not present as customer segments, but rather as Key Partners (see V.1.5.).

Customer segment	Customer types	Description
Hospitals & healthcare entities	Hospitals including management and IT system administrators; Clinics including management and IT system administrators; Primary assistance including management and IT system administrators	In this segment of customer are Hospital Centers (public and private), specialty centers (X-ray and MRI centers, medical specialties, etc.), primary care health centers, dental clinics, aesthetic clinics, residences medicalized of elderly.
Public administration	National/Regional Health Service; Public Administration IT systems administrators	The clients of the public administration are all those ministries or public entities, such as the Ministry of Transport or the Ministry of Education ... or city councils of large cities.
Generic business with sensitive data and entities managing complex IT systems	Areas providing Wifi services e.g. Commercial Centres; Transportation operators including essential infrastructure i.e. airports and ports; Financial Entities including Banking and Stock markets; Insurance Companies; Marketing Companies;	In this generic group of customers who manage sensitive data and have complex IT systems we find large shopping centers, airports, train stations, insurance companies, marketing companies, banks, universities ... They are not clients that handle health data, but they are personal data of users.

	ISP; Universities (student portal); Entities providing corporate intranet	
Big data owners & managers	Client database owners and managers, both public and private sectors; Entities performing Big Data analysis in cloud environment, both public and private sectors	These clients are large corporations that store a large amount of user data, such as AWS or Google or all those companies that have a storage cloud.
Citizens	Citizens	
IT companies	Complex IT systems administrators; Telcos (incl. 5G); Security consultants; Mobile app developers; Online shopping; Social media networks	In this type of customer (IT companies) we can find consultants, ICT service companies, software development companies, e-commerce portals, etc. They are a type of customer who have some specialization in ICT and are aware of cybersecurity, but due to the importance of their data, their protection is very necessary.

IV.3. Customer needs

In “Annex D: Customer insights” it was analysed the identified potential customer segments for ProTego and their needs. It gives an insight into the activities performed by the potential ProTego customers, their needs, the problems they encounter and the improvement they imagine.

It was noticed that many of them have similar needs with regard to the potential usage of ProTego. It could be, however, identified some elements which play an specific role for some segments:

- More efficient and reliable service offering
- Protect user identity
- Customer satisfaction
- Ensure Confidentiality, Integrity, Availability (CIA)
- Predicting future problems with AI
- Grant enough bandwidth to users
- Better access to all company data
- Protect Intellectual Property
- Increase brand reputation
- User friendly interfaces
- Education and increase awareness about security aspects
- Increase remote services (IoT, reduce affluence, then queues)
- Data protection on external devices
- Data availability on external devices

The next subsectionswill analyse which value propositions ProTego can bring to address these needs.

IV.4. ProTego core values and functions

This subsection gives an overview of the value proposition consolidation analysis. All detailed value elements have been grouped in a relatively small set of value propositions, in order to get a high-level insight into the value of ProTego.

The following table lists the main value proposition categories that can potentially be offered by ProTego.

Value proposition	Description
Cybersecurity Training	The ProTego Educational Framework provides an essential training in the development of individuals and teams that allows organization members to recognize possible threats, and know how to react, keeping them alert at all times.
Detect Vulnerabilities in Design-Time (Security by Design)	The ProTego System Security Modeller is a graphical tool that allows a system architect to perform a design-time risk analysis of an Information System. The tool identifies threat to the system and performs a risk analysis taking into account the likelihood of a threat and the impact on the business. The user is then guided to understand what security measures should be added to reduce the risk.
Increase Confidentiality, Integrity, and Availability of the Data	The ProTego Integrated Toolkit provides tools that protect data in all its stages: at rest (Data Gateway), in transit (Network Slicing), and in use (Hardware Enclaves). This protection prevents data from unauthorized access and misuse, unauthorized alteration, and unplanned interrupted access. In addition, the ProTego Secure System Modeler allows to perform Risk Assesment, and the ProTego SIEM monitors Risk in real time.
Improving IT Services Availability	Network Slicing in ProTego provides two types of slices: Privacy and Performace. While Privacy Slices provide Confidentiality, Performance Slices provide Availability. This Availability is especially important since it guarantees a communication channel with a specific bandwidth regardless of what happens in the rest of the network. This is especially important for some critical services. For example, in the Healthcare sector, medical records have to be available above any other type of data, such as management, financial, etc. The ProTego Toolkit Assembler also provides the means to guarantee that the ProTego components themselves are highly available.
Validation of Users and Devices in Real Time	A key step to protect information and maintain the confidentiality of data is the authentication of users that have access to such information. The main three ways to authenticate users are by something they know, something they have, or something they are. The latter involves the intrinsic features of the individual and therefore is more difficult to forge. The Continuous Authentication constantly analyses the behaviour of a user on a specific device to detect patterns that uniquely identify that user and validate that the user has not changed to another that is unauthorized.
Increase Device Protection	Mobile devices are pervasive nowadays, and everyone wants the possibility of accessing their own information from their own devices, anytime, anywhere. ProTego provides the first EDR (Endpoint Detection and Response) system for mobile devices with Continuous Authentication capabilities that ensures the device is protected and

	guarantees the user is authorized. Even if the device is lost or stolen, Continuous Authentication detects whether the user has changed and locks access to protected data. In addition the Continuous Authentication raises an alert to the SIEM to notify the incident.
Implement Security in the Use of IoT Devices	The use of IoT devices is growing daily. Nevertheless many of these devices are insecure by default and that behaviour can only be changed by manufacturers. To accomplish some degree of protection despite this caveat, ProTego provides Network Slicing to protect wired and wireless networks where IoT devices are placed, and provides the means to layout a secure infrastructure. Besides, the Secure System Modeler provides Risk Assesment that contemplates the IoT domain, including OWASP IoT Top Ten security issues, providing the resources to design a secure architecture. Also, the SIEM detects certain types of IoT threats when attackers try to exploit some of the underlying vulnerabilities.
Integration Services (Centralized Deployment and Management)	The Toolkit Assembler provides a platform to deploy Toolkit components to work as an integrated unit. It offers all the tools for the different steps of the Software Development Life Cycle. This platform is based on the use of container clusters and all the complementary technologies, managed as a single “pane of glass”. This architecture provides additional benefits that contribute to protect the Toolkit itself.
Provide Consulting Services	No cybersecurity product, that covers such a wide range of functionality as the ProTego Integrated Toolkit does, works out of the box. It requires understanding the infrastructures where it will be deployed as well as setting a baseline for the normal behaviour. Therefore customization, integration, and assessment is a must. All of this is accomplished through Consulting Services.
Support Service Provision	Like any other IT solution, the ProTego Integrated Toolkit also needs support services. As long as an IT solution is alive vendors provide support for customers. But that is even more so in the case of cybersecurity. Just as cybersecurity threats are evolving daily, the tools and knowledge to counteract them have to do exactly the same. Support Services provide the means by which customers can create support cases to solve possible incidents, and receive product updates.
Cybersecurity Awareness	One of the biggest cybersecurity challenges is the human factor. Cybersecurity Awareness is not just knowledge. It is knowledge combined with attitudes and behaviours to protect information assets. All organizations need to create a collaborative effort to ensure that every IT user has the resources to stay safer and more secure online. The ProTego Educational Framework provides the resources to achieve that goal. The result is that organizations can carry on with normal functions without cybersecurity incidents that disrupt operations.
Understand the Final Customer to Better Target Communication	Cybersecurity issues involve not just organization members but also their final customers or users. Therefore Cybersecurity Awareness requires knowing final customers to understand their behaviour which in turn contributes to better target communication with them. This is especially important since this final customers also need to be aware of basic cybersecurity concepts.
Increase Brand Reputation & Customer Satisfaction	The ProTego Integrated Toolkit along with the Educational Framework provide all the resources that organizations need to prevent data breaches. This breaches involve a very high cost, not just in an economic sense, but also in the reputation of an organization. Customers trust those organizations that provide the necessary mechanisms to protect

	their sensitive information. That perception increases Brand Reputation and Customer Satisfaction.
Increase Number of Customers and Revenue	The increase of Brand Reputation and Customer Satisfaction has a direct bearing and a very positive impact from the business point of view. The result is that the Number of Customers increase which in turn produces an increase of Revenue.

The connection between the identified potential customers and the value propositions explained above is detailed in the following table:

Customers vs Value Propositions	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare entities	IT companies	Public administration
Cybersecurity Training	X	X	X	X	X
Increase Confidentiality, Integrity, and Availability of the Data	X	X	X	X	X
Improving IT Services Availability	X	X	X	X	X
Increase Brand Reputation & Customer Satisfaction	X	X	X	X	X
Increase Device Protection		X (internal devices)	X	X (mobile devices)	X (mobile devices)
Implement Security in the Use of IoT Devices		X (internal devices)	X		X
Provide Consulting Services	X	X	X	X	X
Cybersecurity Awareness	X	X	X	X	X
Increase Number of Customers and Revenue	X	X	X	X	X
Understand the Customer to Better Target Communication	X	X	X	X	X
Support Service Provision	X	X	X	X	X
Validation of Users and Devices in Real Time	X	X (restricted areas)	X	X	X
Detect Vulnerabilities in Design-Time (Security by Design)	X	X (internal devices)	X	X	X
Integration Services (Centralized Deployment and Management)	X	X	X	X	X

V. DEFINITION OF BUSINESS MODELS

In the previous sections we have analysed the potential customers of ProTego and the value propositions that could be made for them. This section is now focused on the analysis of the elements that compose the business models and the actual definition of the consolidated results.

V.1. Business model elements

In this section we analyse the remaining elements that are needed to elaborate a viable business model for ProTego, i.e. the customer relationships to be set-up; the channels to distribute the ProTego value to the customers; the key activities, resources and partners needed to make the value available; the cost elements and the revenues streams.

The information in this section is based on the consolidation of the workshop and the market analysis information, and on the business scenarios. The sections refer to the terminology used in the Business Model Canvas (see Figure 6).

V.1.1. Customer relationships

Three cross-cutting needs that are detected for all customers: 1) A dedicated Account Management is essential to keep the customer interest and engagement; 2) Technical Support should facilitate the correct execution of ProTego's implementation by the customer; 3) Training for all customer's staff is an important and remarkable task in order to create cybersecurity awareness at all levels of the entity.

Additionally, interesting relationships were identified. For example, the fact that co-creation with the customer is possible in some cases or that business alliances, with IT companies and specific big data owners and managers, could be created.

Table 7 - Identified customer relationships

Customer relationships	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
Technical support	X	X	X	X	X
Account management	X	X	X	X	X
Training / Customer Staff	X	X	X	X	X
Co-Creation with customer (tailor made service)		X	X		X
Dedicated personal assistance		X	X		X
Finance support		X			
Sales relationships	X			X	

V.1.2. Channels

As can be seen in the table below, there are multiple channels of the different customers detected in the business models.

The most notable and the most repeated in all identified clients are:

- Opportunities via customer tenders, bids and services requests

- All type of support channels including online toolkit, website and FAQs, email, support call centre, chatbots, etc
- Training channels both online and onsite.

Channels	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
Tenders, bids, services proposals	X	X	X	X	X
Alliances with other IT providers		X	X		X
Online toolkit / Website	X	X	X	X	X
Reporting (docs, presentations)		X	X	X	X
Email / Phone / FAQ / chatbot channels support	X	X	X	X	X
Training channels (online, onsite)	X	X	X	X	X
Marketing gurus (testimonials)	X	X			
Social Media		X			
Marketing communities		X			
Software Evangelist (events, workshops)		X		X	
FAQ		X			
Public dissemination	X	X	X	X	X

V.1.3. Key activities

According to the identified homogenity of offerings among customer types, the key activities necessary to provide that offering are also similar i.e. To create the training material and framework to increase the cybersecurity awareness, the provision of support and consultancy services, the preparation of marketing elements (including dissemination), etc.

Hence, all activities (described in generic terms) in the table are relevant to all customer types identified. However, an in-depth analysis of each customer would be necessary to know in detail what dedicated activities can be implemented in each case.

Activities	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
Cybersecurity training material and mechanisms	X	X	X	X	X
Consultant led sales	X	X	X	X	X
Customising ProTego offerings	X	X	X	X	X

Marketing campaign	X	X	X	X	X
Deliver all key propositions	X	X	X	X	X
Technical support	X	X	X	X	X
Preparation of dissemination material	X	X	X	X	X
Integration with custom services	X	X	X	X	X

V.1.4. Key resources

As for key resources, the whole ProTego IP stands out in the first place, followed by the ProTego consultants and Cybersecurity consultants that parameterizes the ProTego components.

It is important to highlight that DPO is required in all cases. Also specific elements are considered for some cases such as the provision of a mobile app or the need of a community manager if social networks are part of the proposed channels.

Resources	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
ProTego IP	X	X	X	X	X
Marketers	X	X	X	X	X
Consultants	X	X	X	X	X
DPO data protection office (gdp compliance)	X	X	X	X	X
Developers	X	X	X	X	X
Sales team	X	X	X	X	X
Community manager		X			
Mobile app		X	X		X

V.1.5. Key partners

In the following table we can see the most relevant partners for the identified costumers. Technology providers (in order to complement partners' expertise in certain areas) including APP developers, systems integrators and cloud providers are required. Additionally, external training experts might be needed, if not covered by the ProTego partners.

Partners	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
Technology providers	X	X	X	X	X
APP developers		X	X		X

Training providers	X	X	X	X	X
User experience designers		X	X		X
Technical support partners	X	X	X	X	X
Incumbent service provider or systems integrator	X	X	X	X	X
APP Stores		X	X		X
Cloud providers	X	X	X	X	X

V.1.6. Revenue streams

As revenue streams, it could be highlighted the ones from ”consulting services”, ”per task contract” from which ”customizarion” can be an specific type, ”long term contract”, ”training services” and ”support level” as the evenues that are repeated by most of the clients.

Revenue streams	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
Consulting services	X	X	X	X	X
Usage/yearly subscription Fee	X	X	X	X	X
Customization of the service (SIEM rules, dev)	X	X	X	X	X
Per task contract	X	X	X	X	X
Long term contract	X	X	X	X	X
Training services	X	X	X	X	X
Cross Selling	X	X	X		X
Call-off contracts				X	
Monthly/annual/usage subscriptions to SaaS		X			
Support level	X	X	X	X	X
Product marketing with possible future clients		X			

V.1.7. Cost structure

The cost of structure is a crucial factor for the business models towards our clients. One group of costs is related to the personnel that includes the IT & Support Team, the Sales Team, the Management Team, the Consultants and, in the cases that consider social networks, the Community Manager. Another set of cost is related to the Key Partners that are necessary to deliver the proposed offering, and that will be rewarded in different ways. Also costs related to marketing and dissemination are considered. Finally for all business models, expenses relate to training is included.

Cost structure	Big data owners & managers	Generic business with sensitive data and entities managing complex IT systems	Hospitals & healthcare	IT companies	Public administration
IT & Support Team	X	X	X	X	X
Sales Team	X	X	X	X	X
Partner costs	x	X	X	x	X
Fee for distribution partners	X	X		X	
Marketing campaign investments	X	X			
Comumunity manager	X	X		X	
Certification	X	X	X	X	X
Development cost	X	X	X	X	X
Maintaince service cost	X	X	X	X	X
Training sessions events	X	X	X	X	X
Management	X	X	X	X	X
Initial cost of tools	X	X	X	X	X
Consultants	X	X	X	X	X

V.2. Business models

After the consolidation of the tables above, in this section the five business models are described. There is one business model per identified customer.

One of the main findings is that the identified value propositions are valid in almost all business models. This confirms the initial vision that ProTego solutions and acquired knowledge are adaptable to almost any customer managing IT systems, with some pecualiarities depending on the specific customer context. This allows maximizing the project impact.

According to these commonalities among the business models, the rest of the canvases elements follow a similar approach. Resources and activities are alligned in order to be able to offer the proposed propositions and revenues and cost result on similar structures.

It is interesting to analyse the way these propositions could be presented to the customer: i) Specific projects; ii) Consultancy services; iii) Support services and iv) Training. These four offerings generate a full flow of elements completing the business models. For example, the Training offering (in blue in all the canvases detailed in the next sections) requests training material, and therefore one of the activities to be performed is to create such mechanisms and material. Additionally, training creates new communication channels towards the customers and the relationship coach-trainee should be correctly managed. This creates certain costs and, in parallel, provides revenues. Same complete flow applies in the case of consultancy services with cybersecurity experts being involved in all the elements of the business model, providing different propositions.

Despite these commonalites, in the next sections some differentiators per customer are presented.

V.2.1. Business model based on customer Hospitals & Healthcare entities

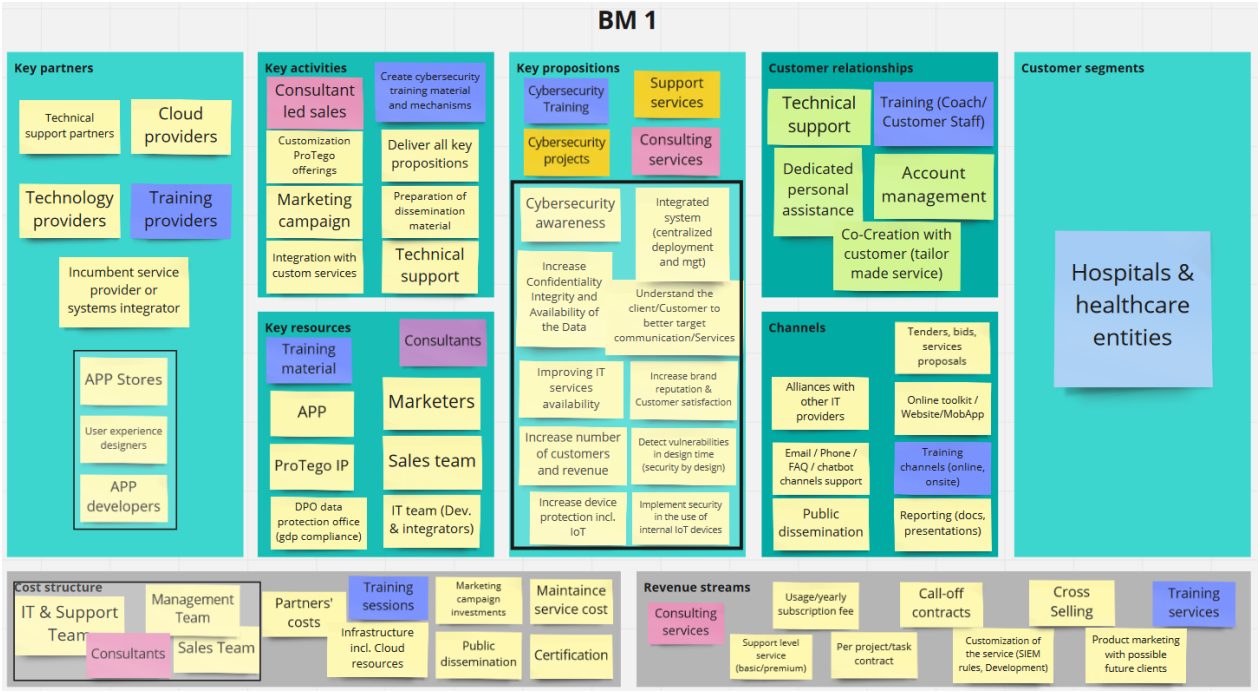


Figure 9 - Business model #1, Hospitals & Healthcare entities

This business model provides the complete value proposition of ProTego to Hospitals & Healthcare entities, which are actually the main target of the project. It is important to note that in this model both public and private health entities are target customers, in order to understand why propositions such as ”Increase number of customers and revenue” is part of it. Framed in black, the key propositions are detailed. In this case, it is important to highlight some specificities for this customer type:

- It is considered that a mobile app will be facilitated to interested parties in the health sector to monitor the effectiveness of the implemented cybersecurity solutions, understanding that decision makers related to these solutions adoption might not be IT experts;
- The inclusion of cybersecurity solutions related to IoT devices that can be used in the cases of remote health assistance.
- Co-creation is also an interesting element of this model, in which this customer is considered as active in the design solutions process due to the specifications of the health sector. Dedicated co-creation sessions are possible.

V.2.2. Business model based on customer Public Administration

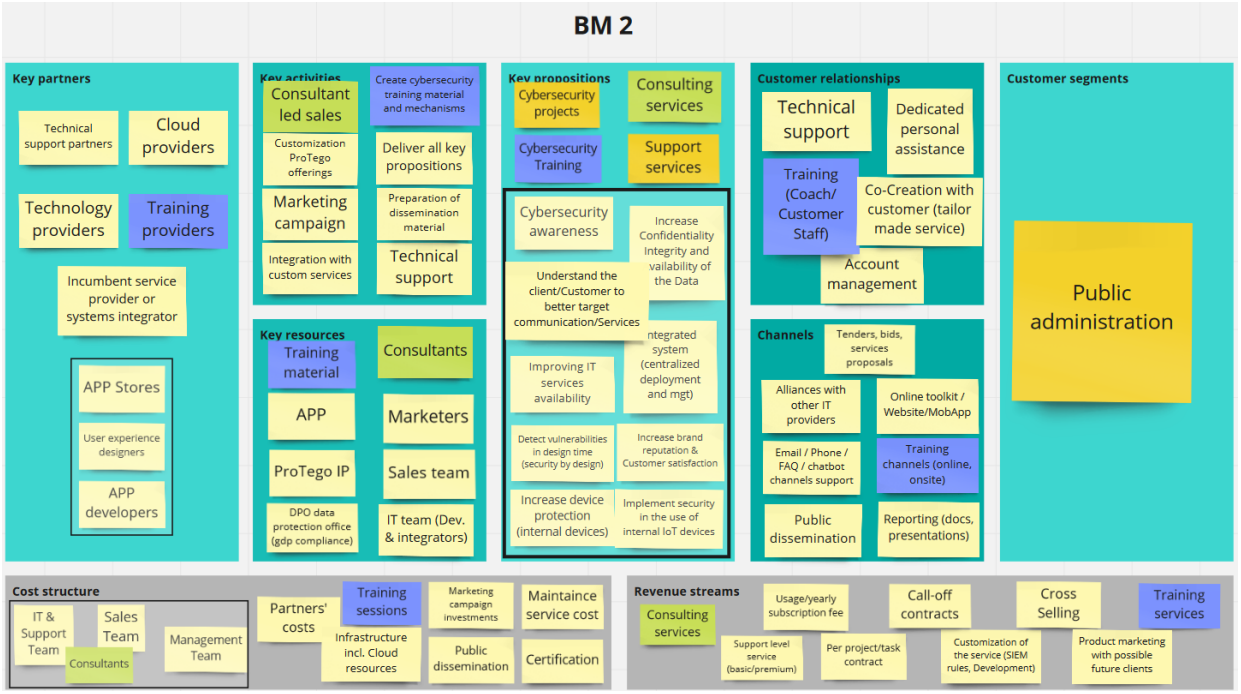


Figure 10 - Business model #2, Public administration

This business model is quite similar to the previous one. Basically it contains the same propositions to be offered to entities beloging to the public administration. However, the implementation could have some peculiarities. For example, the offering around devices and IoT is related to services such as those related to ”smart cities” in which municipalities and regions are deploying sensors (air quality, temperature, etc) and smart devices (thermal cameras, smart lamposts, traffic drones) to offer better urban services. In this case, the ”client” of our customer is the citizen for which ProTego offering can increase trust in the public administration services.

V.2.3. Business model based on IT companies

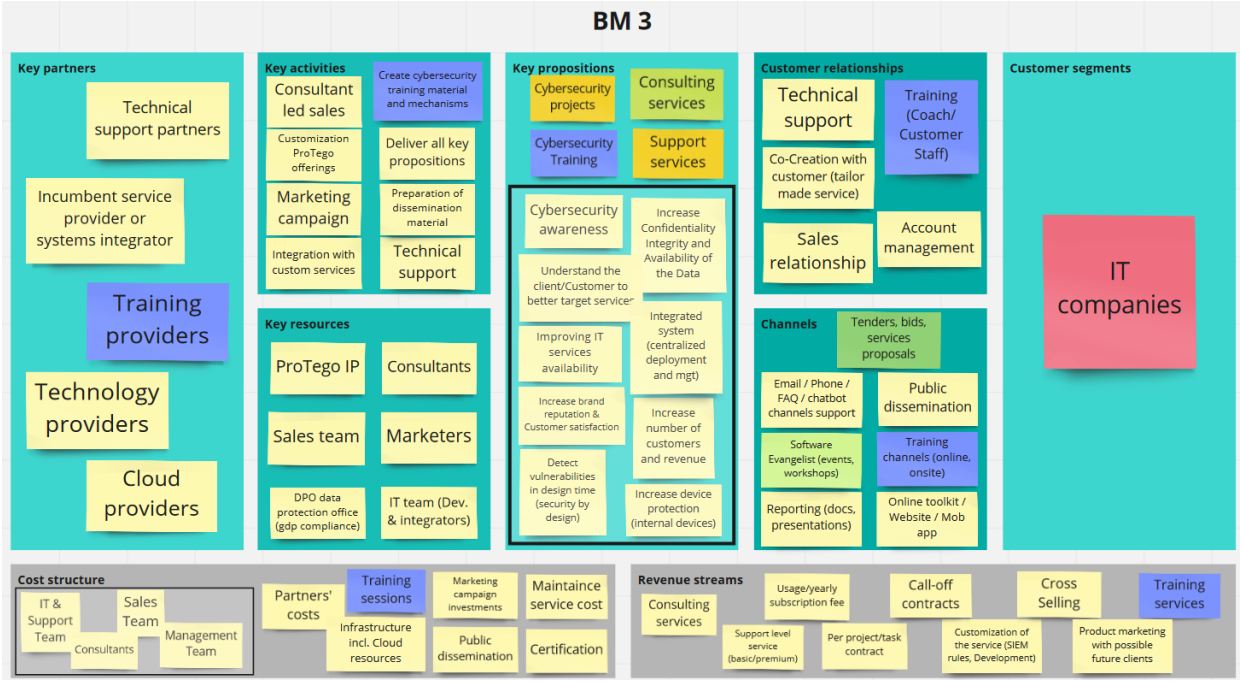


Figure 11 - Business model #3, IT companies

The case for IT companies has some specifications that are different from the previous ones. First of all, by nature the customer has IT expertise. Therefore there is no need of certain tools such as an app or dedicated channels such as social networks. The relationship with the customer is

based on technical expertise, in which ProTego proposition increases the security of their IT systems. It is considered that the proposed offering will be incorporated to their internal systems. In addition, this offering could be linked to the next business model (see Generic business with IT systems) in which IT companies could be customers and, at the same time, business partners. In fact, IT companies can facilitate the incorporation of ProTego offering to their own customers.

Another detail for this business model is the exclusion of propositions related to IoT devices, as they are not widely adopted by IT companies in their regular business. In the case of mobile devices protection, in some cases, it can be included when these entities provide with e.g. mobile phones to their employees and are able to access corporate IT systems (email, CRMs, etc).

V.2.4. Business model based on customer Generic business with sensitive data and entities managing complex IT systems

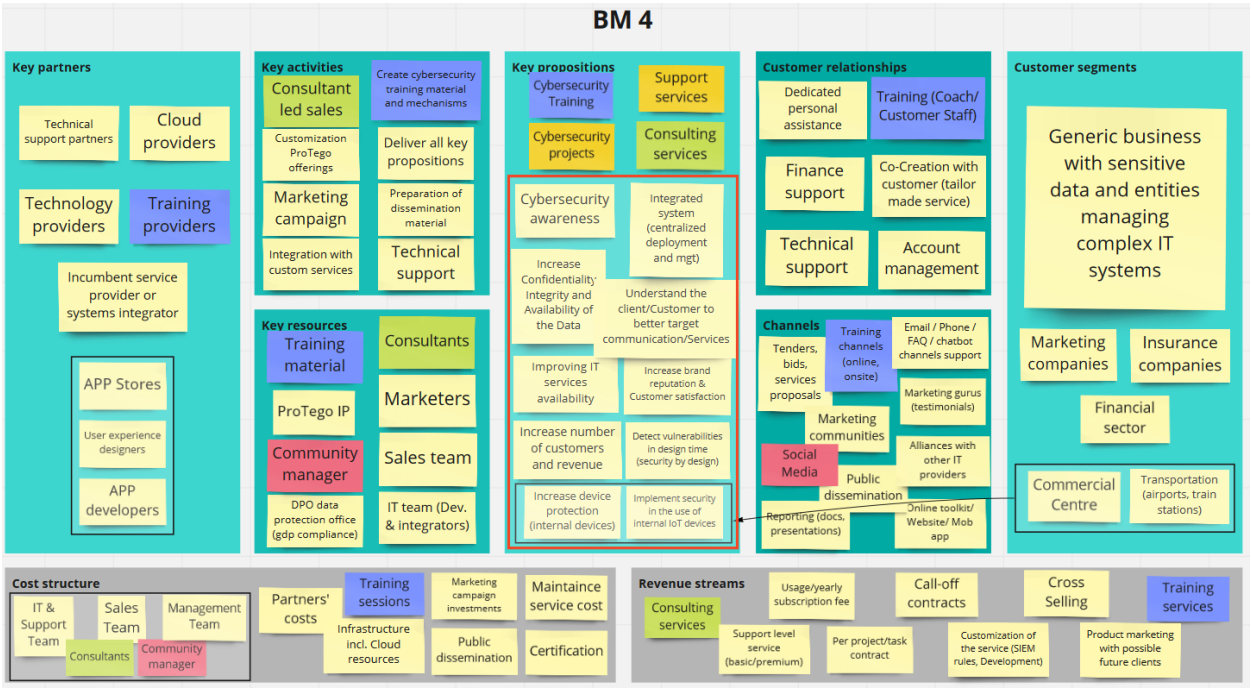


Figure 12 - Business model #4, Generic business with sensitive data and entities managing complex IT systems

This business model targets any entity that manages sensitive data (including employees' or customers' data) or that owns complex IT systems. For all of them, protecting their systems - including data - from all type of cyberattacks is essential. In this case, it is interesting to consider IT companies as key partners (reaching business alliances), as they can offer ProTego's proposition to their existing customers or even open new channels for ProTego to reach new customers.

Considering that this customer type encompasses a wide variety of entities, it is worth to clarify that propositions might not completely suit all of them and customization might be requested. Indeed, entities offering services to extermal users e.g a commercial centre offering free wi-fi to visitors, could capitalize on specific services related to network security. Another interesting case is provided by Transport Operators that manages specific devices for their business e.g. ticketing systems, infrastructure monitoring devices, etc.

In terms of channels, and different from the other previous business models, social networks are included. Some entities belonging to this customer type could have an strong online presence (even exclusively) and, accordingly, ProTego should use similar channels to let its offering know. Therefore one of the key resources to include is a community manager, which will help targeting potential customers through online presence.

V.2.5. Business model based on Big data owners & managers

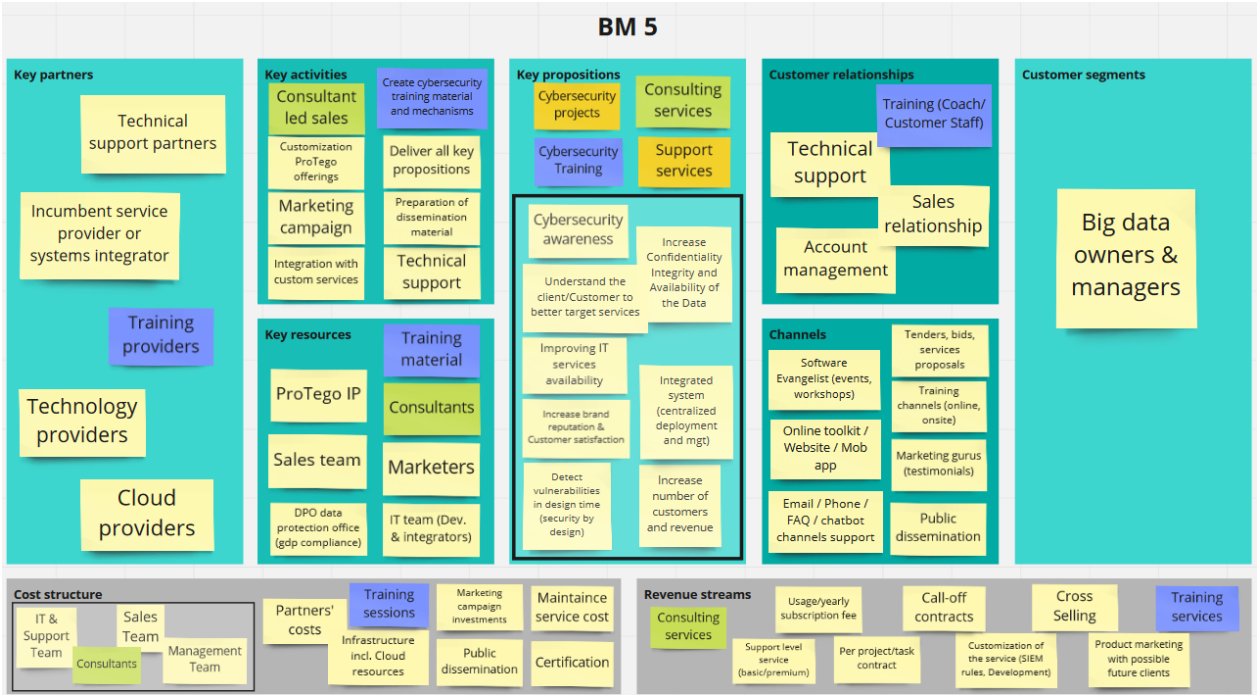


Figure 13 - Big data owners & Managers

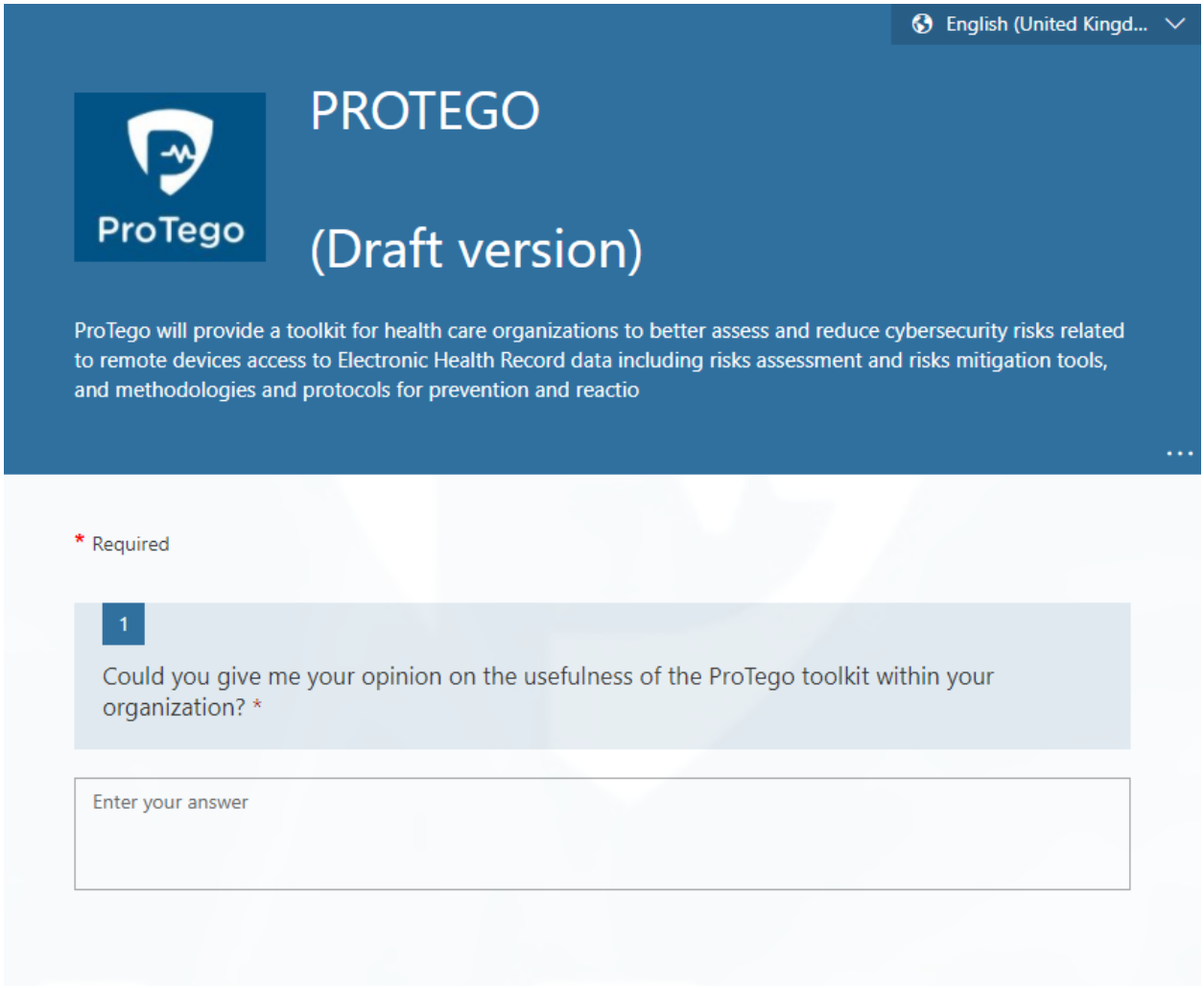
In terms of offering, this case is very similar to the previous one. It could be understood that Big Data Owners & Managers can be part of “entities managing complex IT systems”. However, it is worth to differentiate a complete business model for this type due to the complexity of this customer. The offering should be customized in terms of size, scalabilty, reliability, computation capacity needs when referring to – actual – big data services provision. In fact, the financial model extracted from this business model can significantly differ from the BM#4.

VI. VALIDATION OF PRELIMINARY RESULTS: QUESTIONNAIRES TO STAKEHOLDERS

To validate that the preliminary Business Models presented in the previous sections, and created by the work carried out through the activities involved in this deliverable, are feasible and generate the expected business interest, a questionnaire has been designed.

The objective is to approach different stakeholders of all the customer segments that have been determined and ask them to fill this questionnaire to get independent and objective opinions coming from sources that are external to the project.

The questionnaire is available online and is represented by the following images:



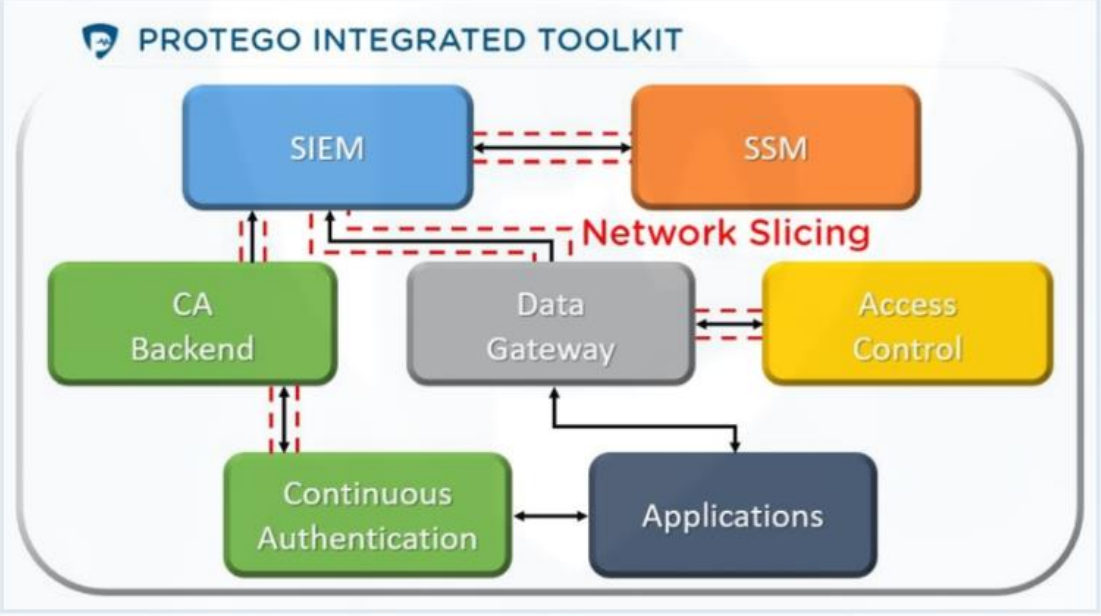
2

Could the complete ProTego toolkit be implemented in your organization or would it have to be implemented by isolated components? *

Enter your answer

3

From the following components, please select the ones that you think are the most important to implement within your organization. *



- [ ] SSM (System Security Modeller)
- [ ] SIEM (Security Information and Event Management)
- [ ] Data Gateway + KMS (Access Control Framework)
- [ ] Continuous Authentication
- [ ] Network Slicing
- [ ] Toolkit Assembler

4

Do you think the designed use cases are correct or do you think it could be complemented with an additional one? *

Enter your answer

5

In what period of time do you estimate that ProTego could be implemented in your organization? *

Enter your answer

6

Please list the main barriers (technical and non-technical) to implement ProTego within your organization. *

Enter your answer

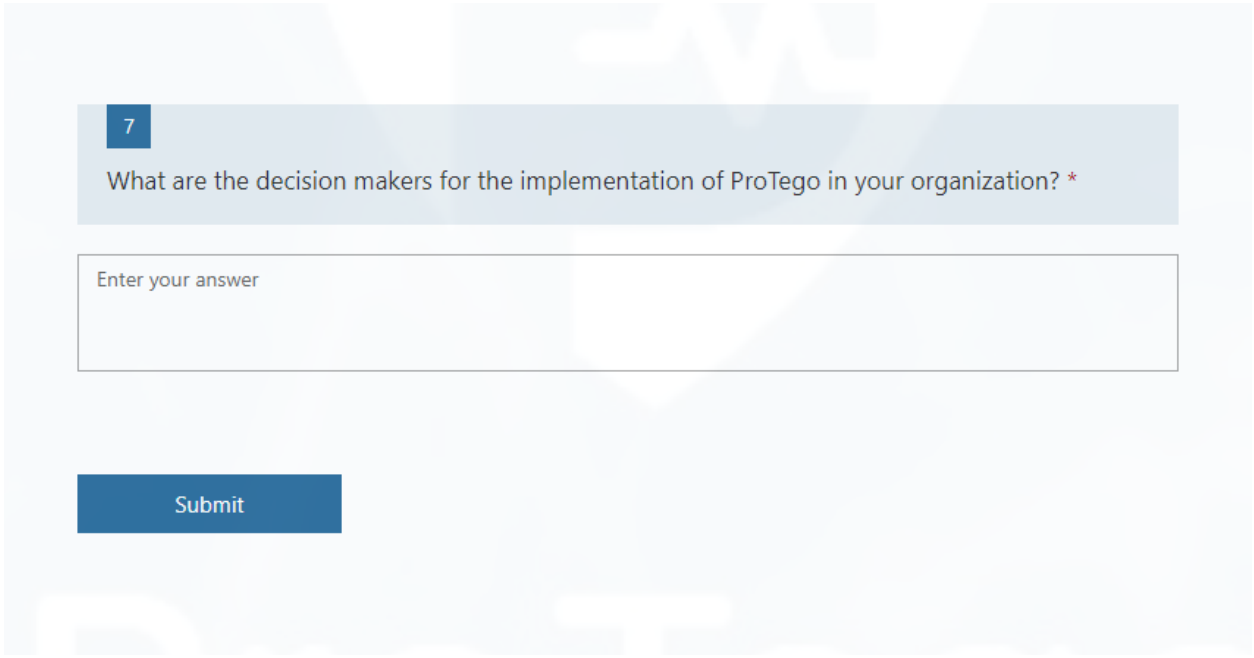


Figure 14 - Set of questions included in the questionnaire for stakeholders

As previously mentioned, the resources needed for this activity are ready and the distribution of this questionnaire will be tackled in the following months, being the results reported in upcoming deliverables.

VII. CONCLUSIONS

This deliverable has presented the results of market navigation and proposed business models for ProTego.

The market navigator has indicated that there is a high potential for some of the offering identified from ProTego, namely i) the complete Toolkit, ii) the SIEM, iii) the Real-time risk management tool and iv) the Data encryption, all targeting the Hospital & Healthcare entities and Public Administration.

Key differentiators for ProTego are

- the possibility of providing several solutions around cybersecurity that can be offered as stand-alone assets or as fully integrated toolkit;
- the services that complements this offering specially related to increasing the awareness of cybersecurity risks and of the attacks impact in the organization. For it, training and dedicated consultancy services could be provided;
- the heterogeneity of customers in which ProTego's offering can be implemented. As the project main target customer is Health entities, the adoption is quite straightforward in that case. Additionally, by customization services basically all entities, from the private or public sector, are potential adopters. This opens extensive market opportunities.

There is no 'one size-fits all' business model. ProTego should adopt a customer by customer approach that takes the different market situations, and considering the maturity of the customer in terms of security and cybersecurity, into account. However, the offering to all of them is quite similar, demonstrating that the developed exploitable results are adaptable to customer needs.

An analysis of the ProTego value proposition identified that the final business model should include at least, in the first place, the Health entities (public and private), public authorities, IT companies that offer IT services to their customers (and that can incorporate ProTego to their offering) or any type of entity that manager its own IT system from a certain level of complexity.

Customer relations analysis showed that a number of lock-in mechanisms, such as dedicated account managers, support services and training, should be established with 'mass' customer segments.

Analysis revealed that key activities, resources and partners are essentially the same for the main customer segments. They are mainly related to customization, provision of the integrated toolkit and/or individual solutions and sales and marketing. This means that once they are available for one customer segment, the other customer segments can become operational at a low marginal cost.

Multiple types of revenue can potentially exist for ProTego:

- Fees. One-time or recurrent. Data, service or usage based. A small fee for a large number of customers could generate substantial revenue;
- Revenue sharing. This is possible for customer segments that generate sales via ProTego. For example business alliances with IT providers can become an essential source of revenue;
- Specific projects and consultancy services.

This analysis led to the proposal of ProTegp business models. Different combinations of them can be implemented, depending on the local differences and the actual customers that can be contracted. They can also be extended with additional customers to make them viable.

VIII. ANNEX A: MARKET OPPORTUNITY BRAINSTORMING RESULTS

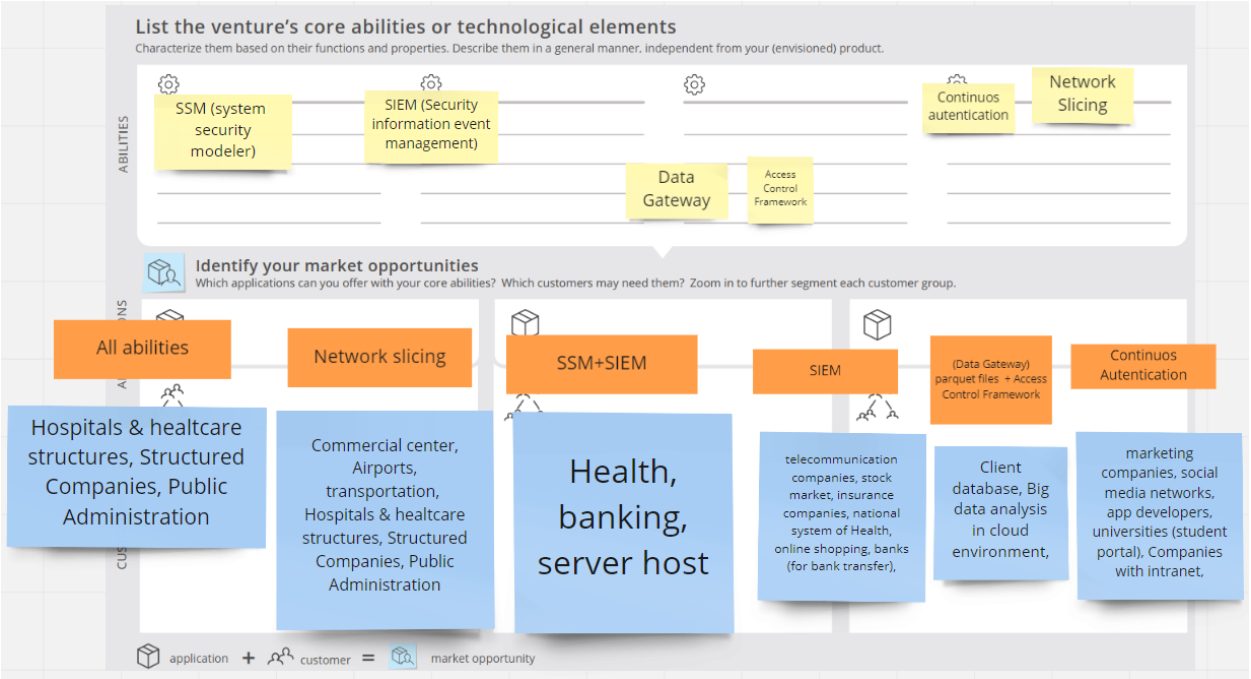


Figure 15 - Market opportunity canvas from group 1.

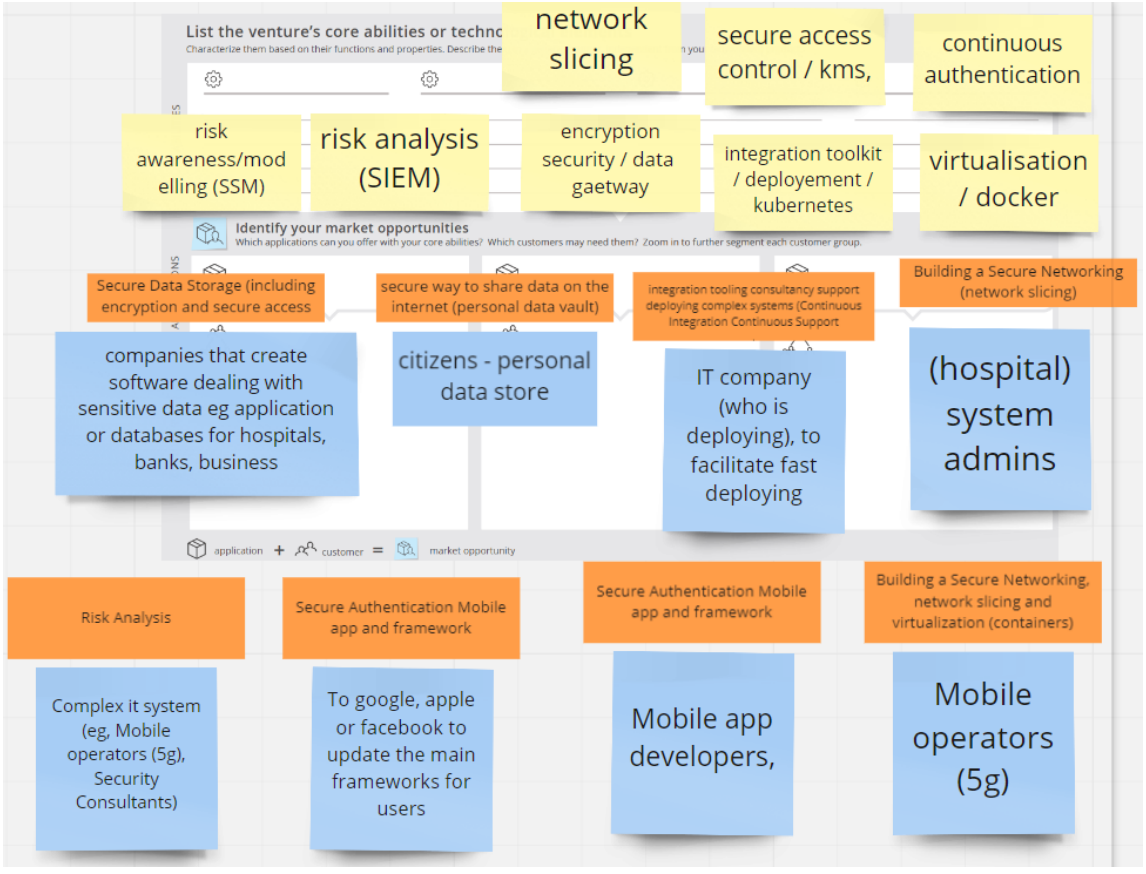


Figure 16 - Market opportunity canvas from group 2.

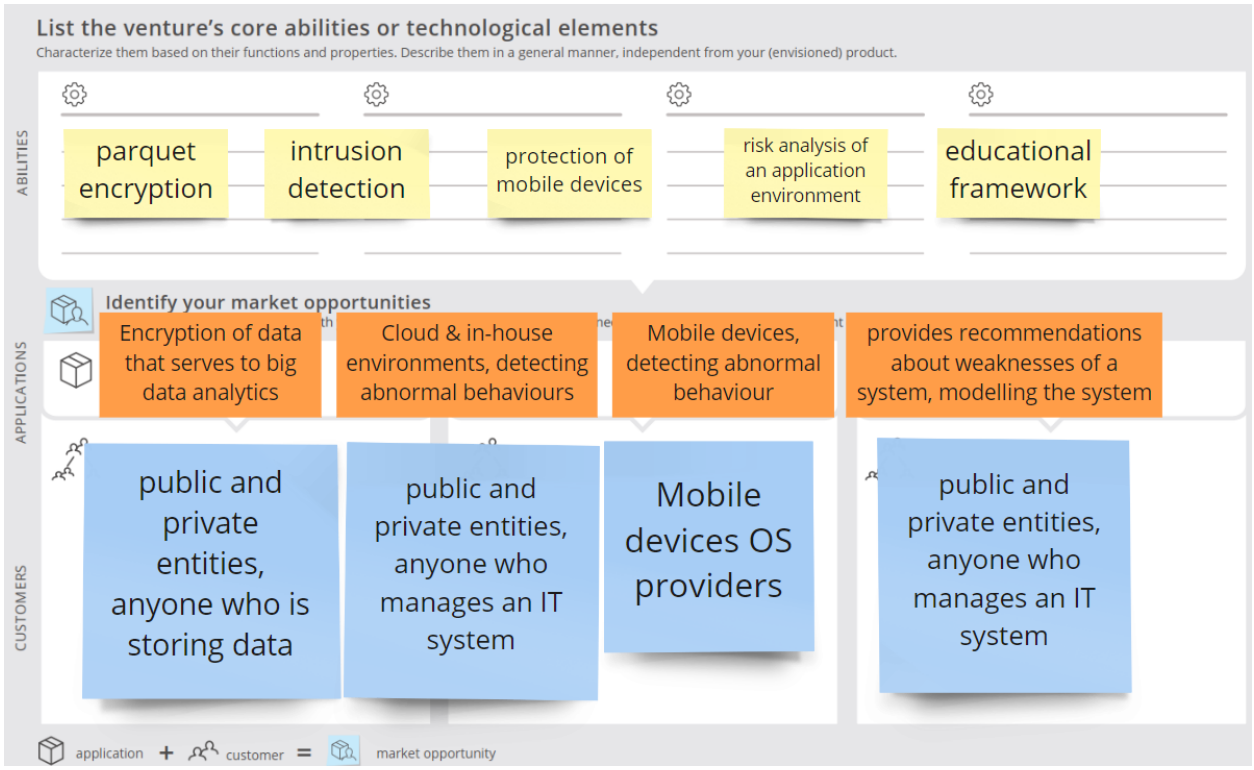


Figure 17 - Market opportunity canvas from group 3.

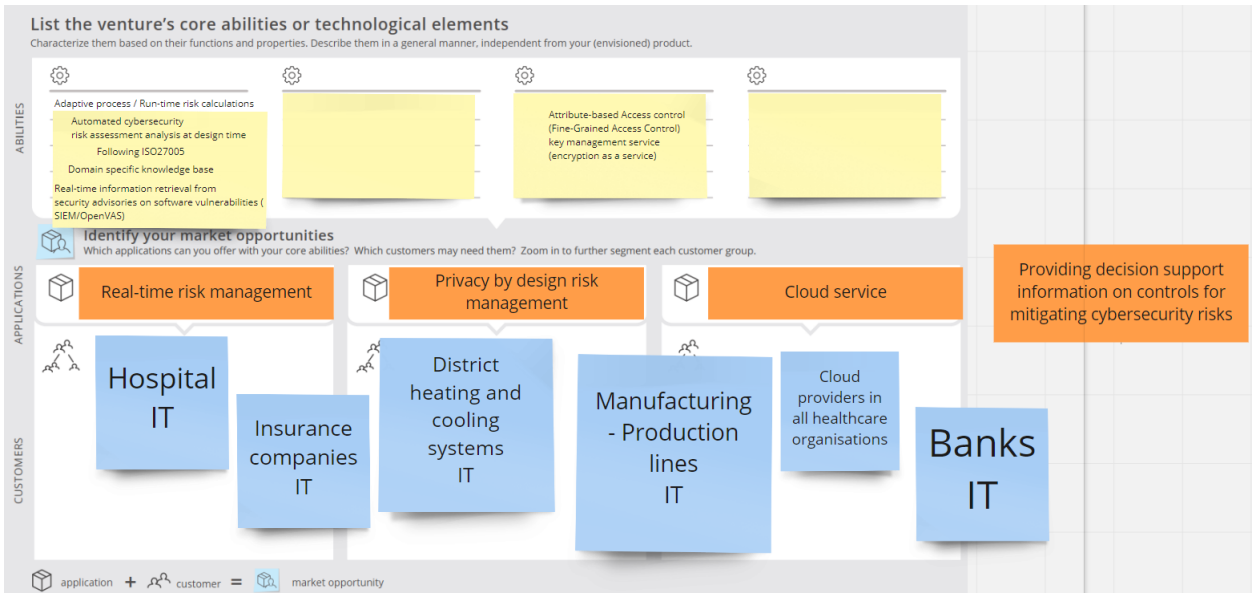


Figure 18 - Market opportunity canvas from group 4.

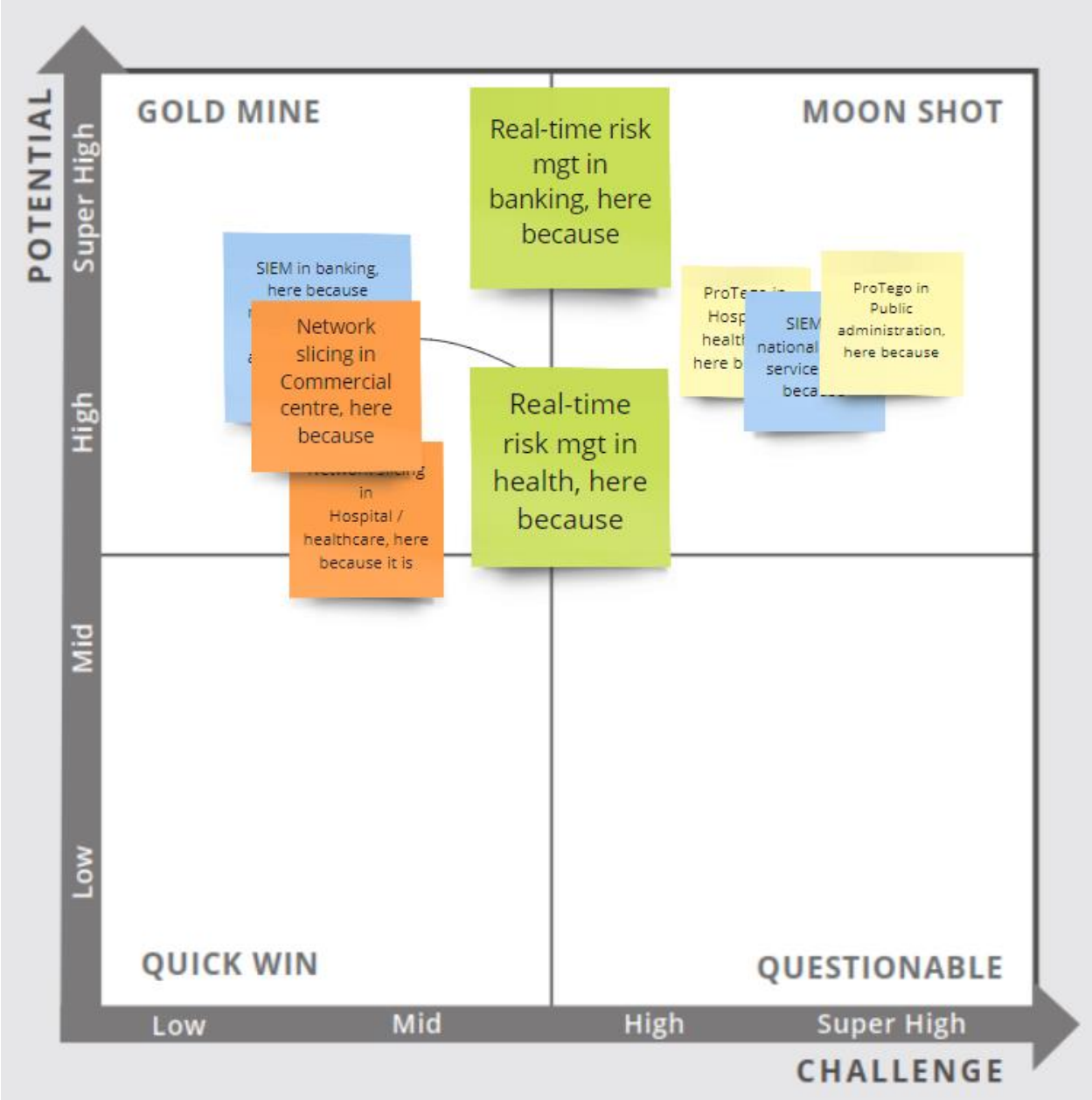


Figure 19 - Market attractiveness canvas for group 1.

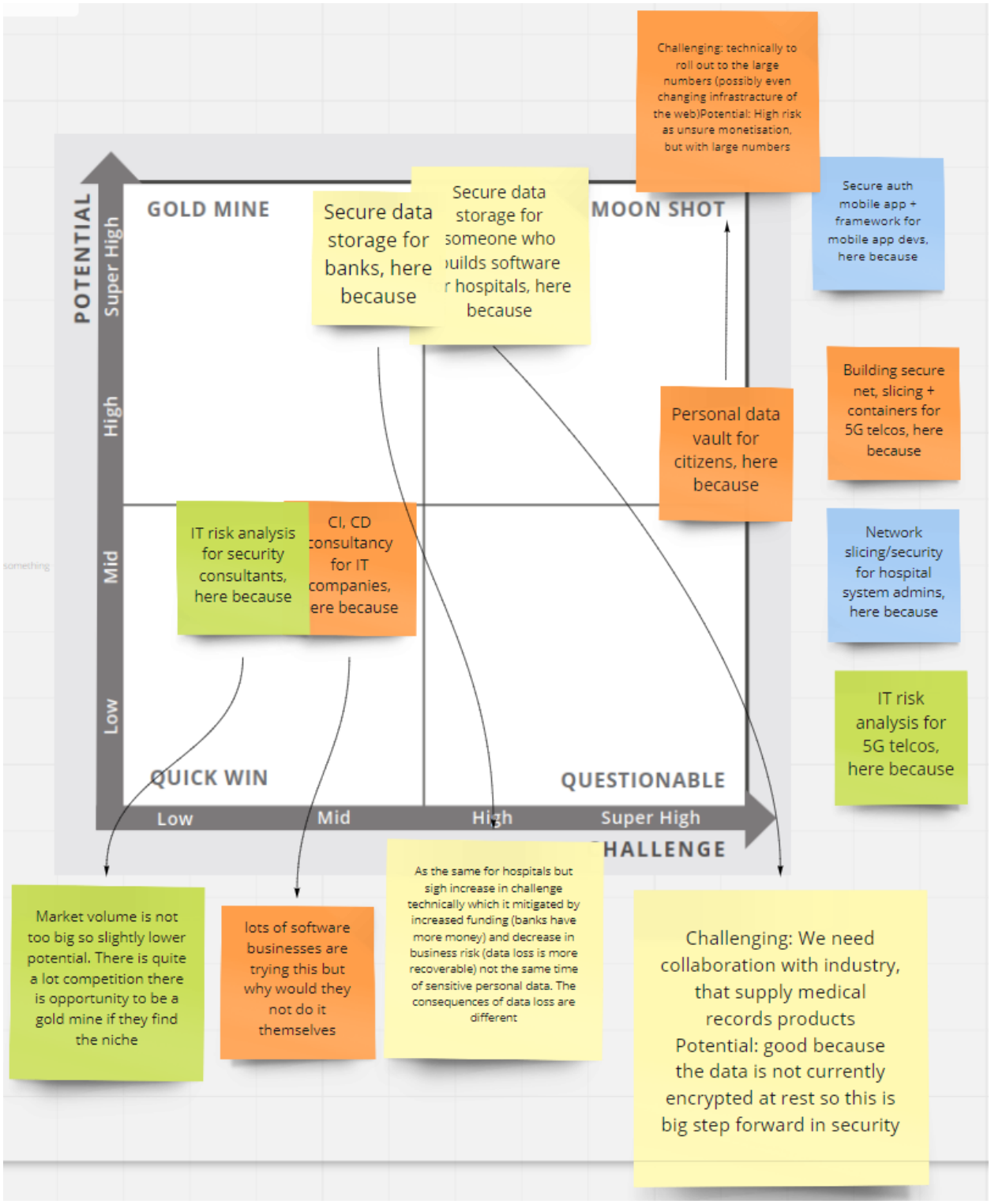


Figure 20 - Market attractiveness canvas for group 2.

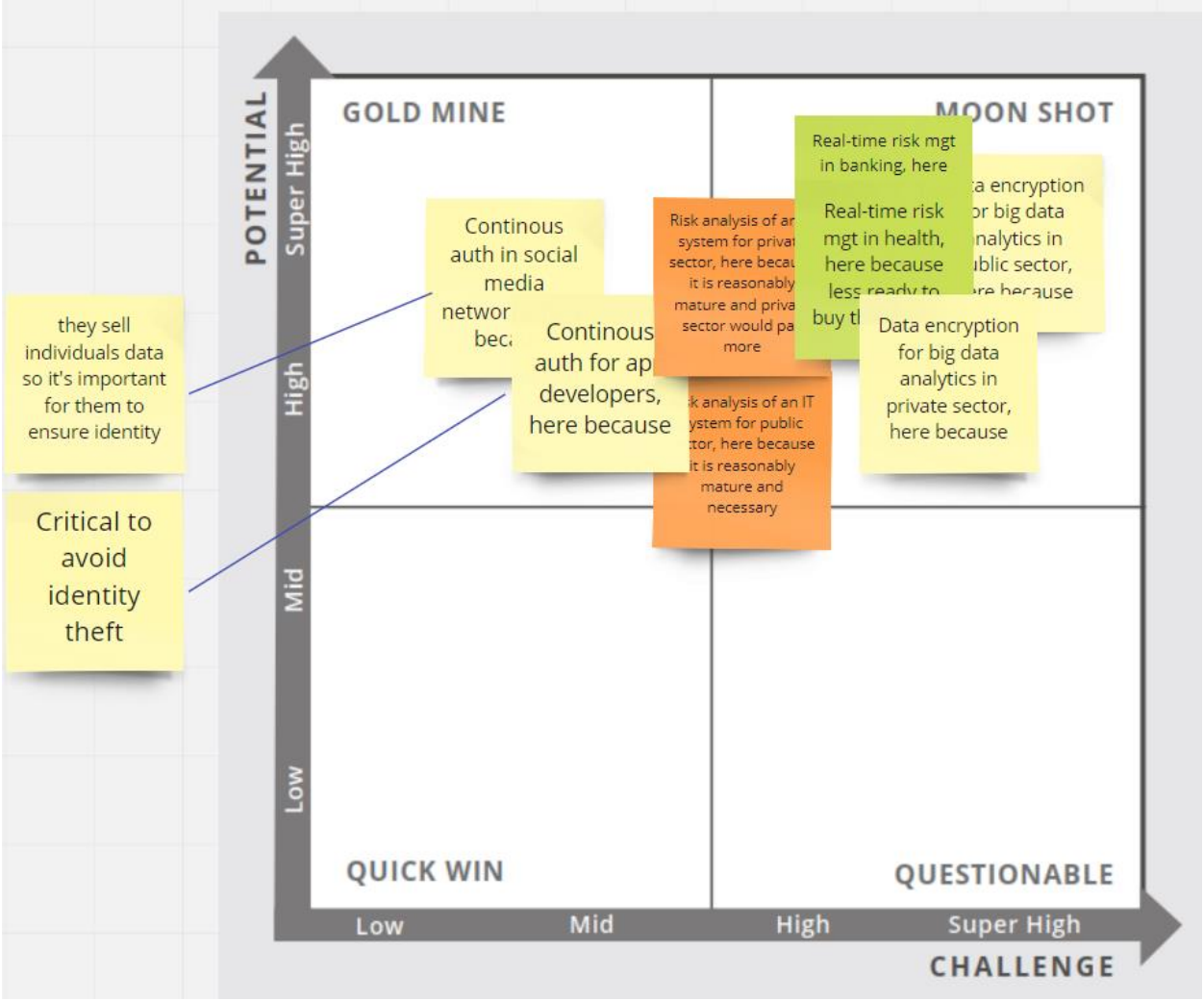
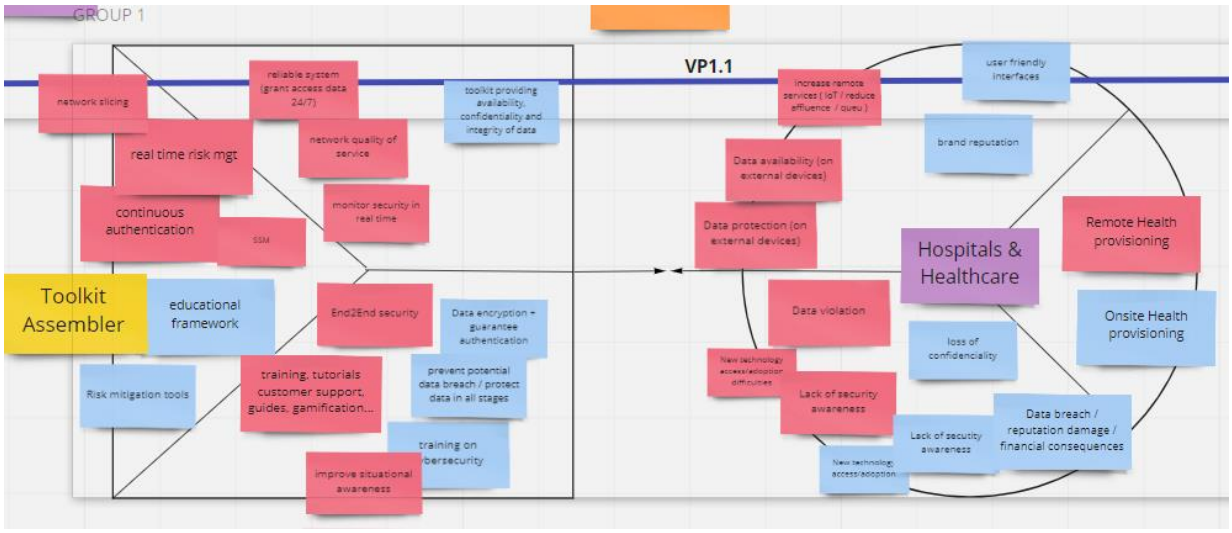
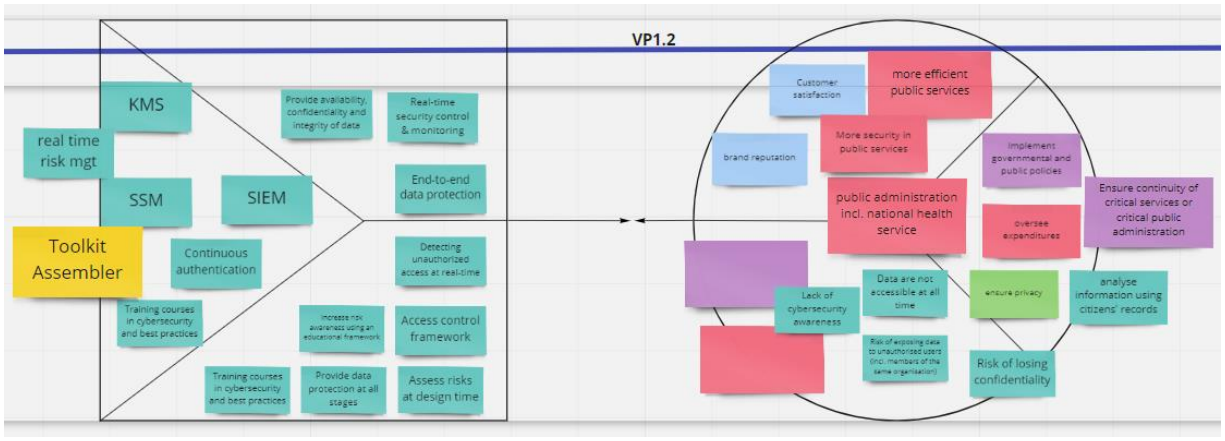
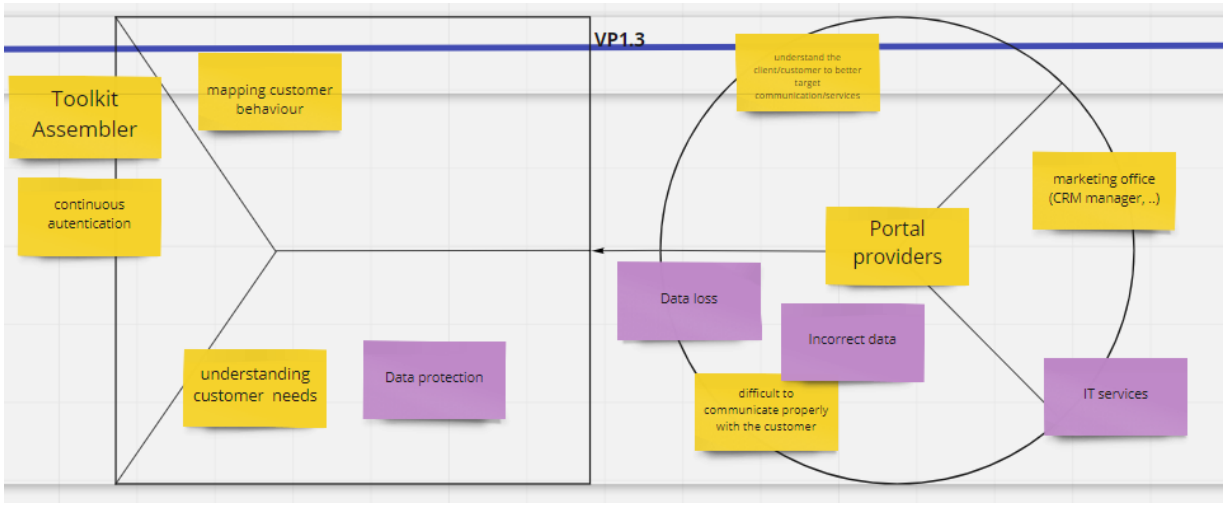


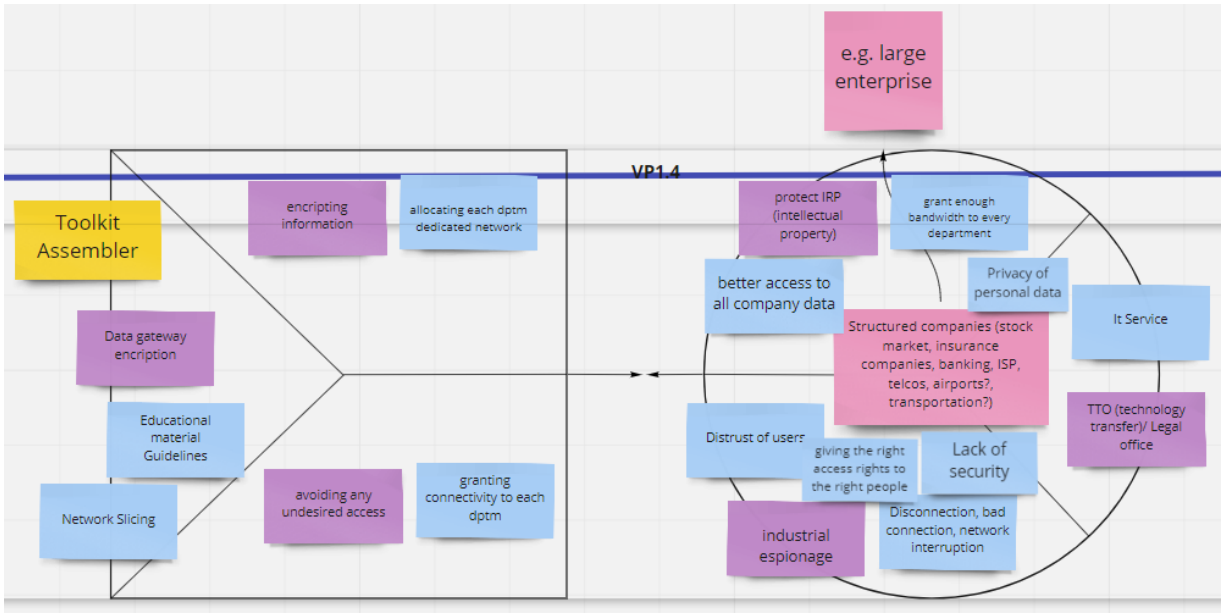
Figure 21 - Market attractiveness canvas for group 3.

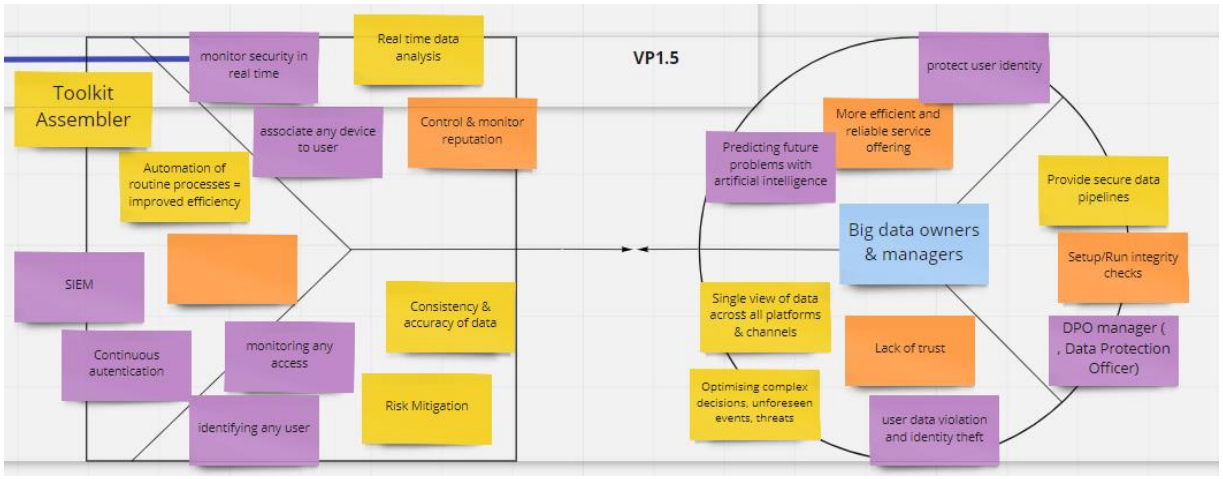
IX. ANNEX B: PROPOSITION BRAINSTORMING RESULTS

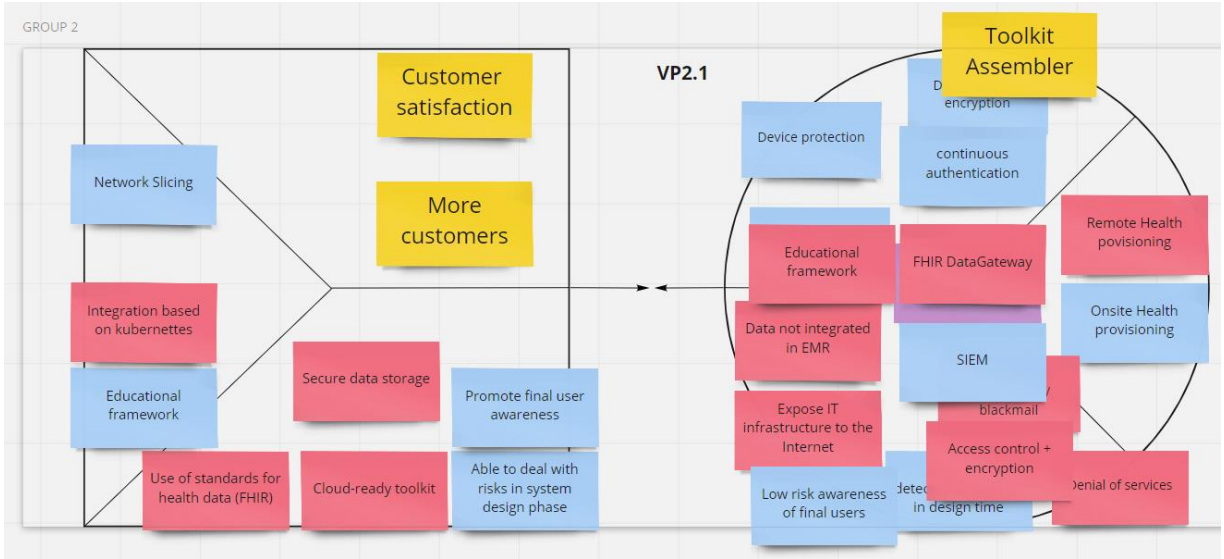


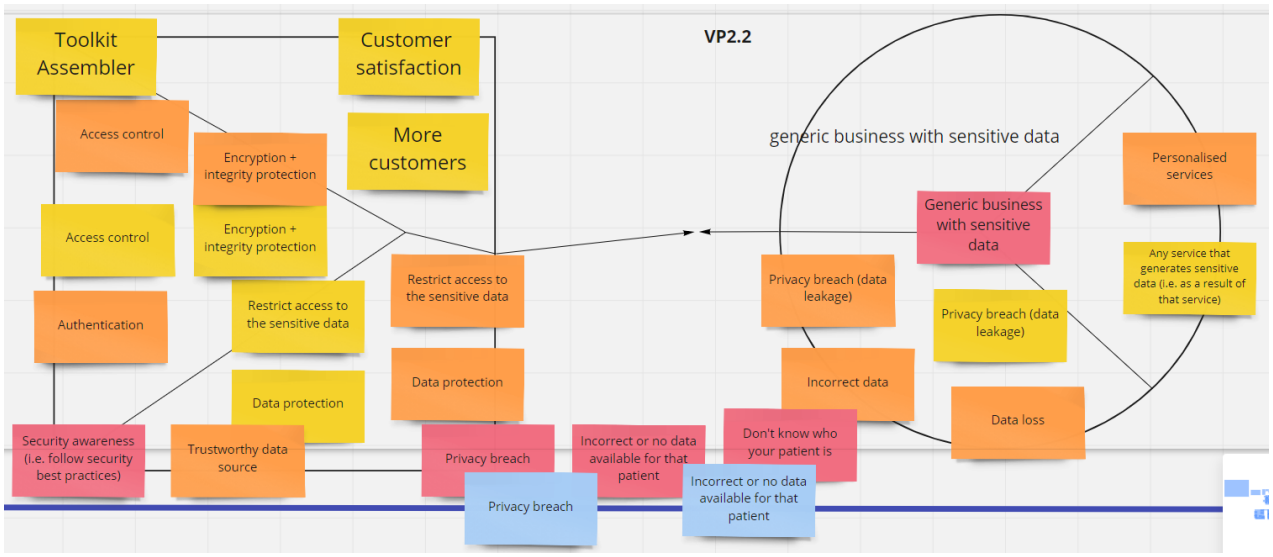


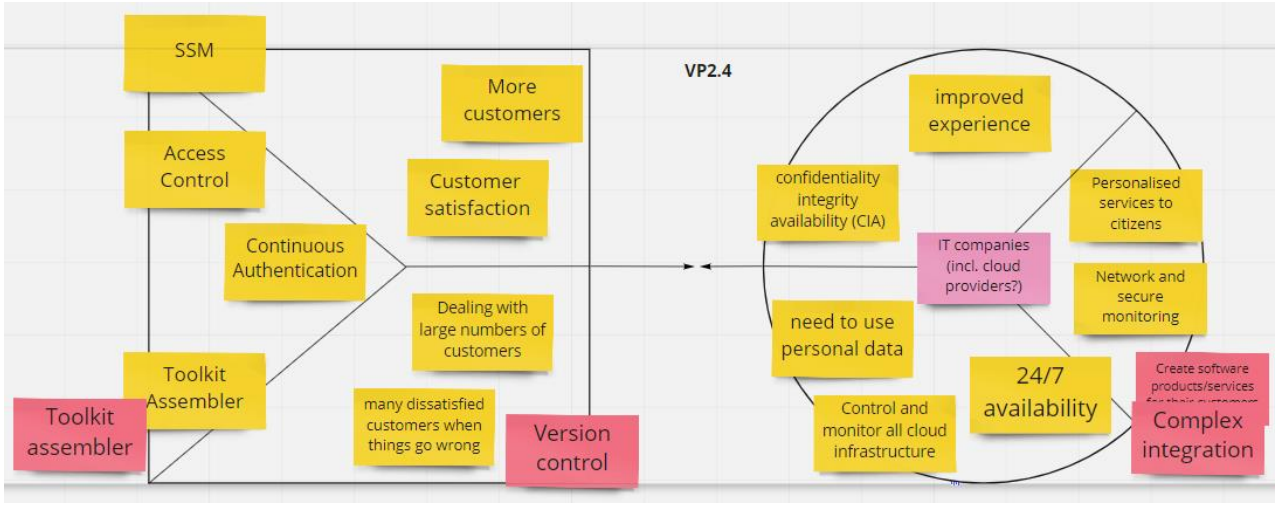


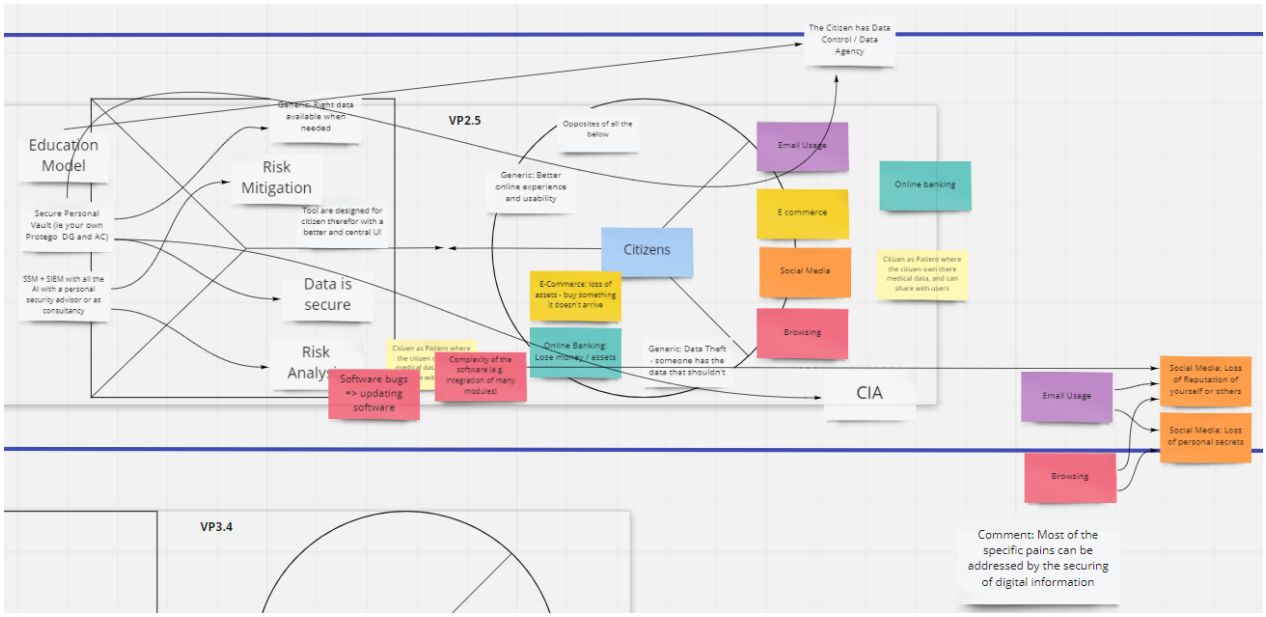

e.g. large enterprise
VP1.4
Toolkit Assembler
encripting information
allocating each dptm dedicated network
Data gateway encription
Educational material Guidelines
Network Slicing
avoiding any undesired access
granting connectivity to each dptm
protect IRP (intellectual property)
grant enough bandwidth to every department
better access to all company data
Privacy of personal data
It Service
Structured companies (stock market, insurance companies, banking, ISP, telcos, airports?, transportation?)
TTO (technology transfer)/ Legal office
Distrust of users
giving the right access rights to the right people
Lack of security
industrial espionage
Disconnection, bad connection, network interruption

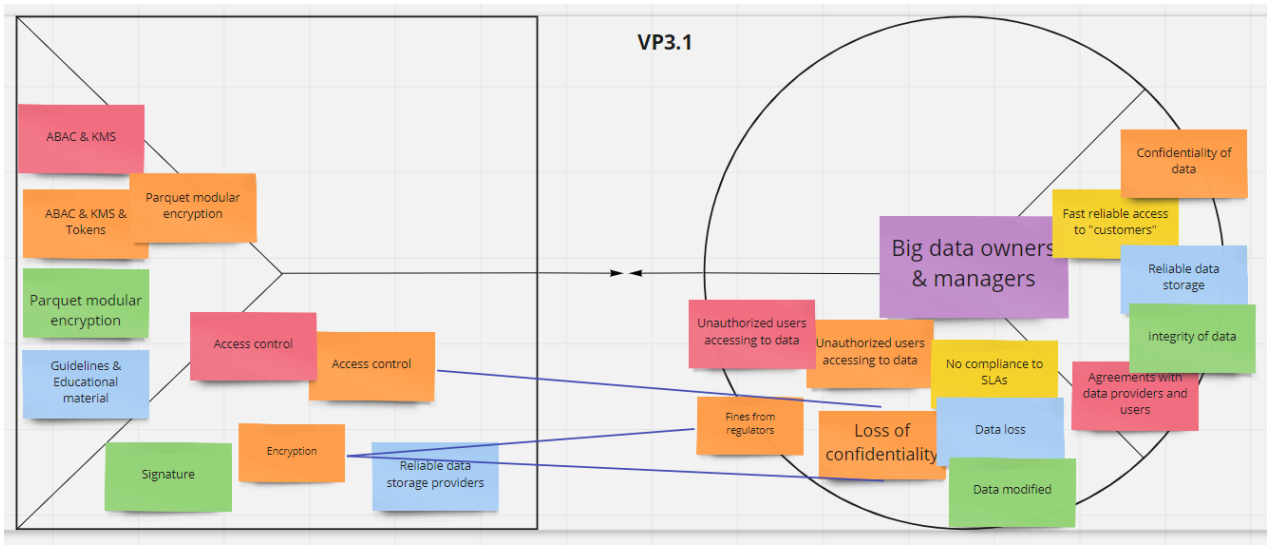

VP1.5
Toolkit Assembler
monitor security in real time
Real time data analysis
associate any device to user
Control & monitor reputation
Automation of routine processes = improved efficiency
SIEM
Continuous autentication
monitoring any access
identifying any user
Consistency & accuracy of data
Risk Mitigation
protect user identity
More efficient and reliable service offering
Predicting future problems with artificial intelligence
Provide secure data pipelines
Big data owners & managers
Setup/Run integrity checks
Single view of data across all platforms & channels
Lack of trust
DPO manager (, Data Protection Officer)
Optimising complex decisions, unforeseen events, threats
user data violation and identity theft

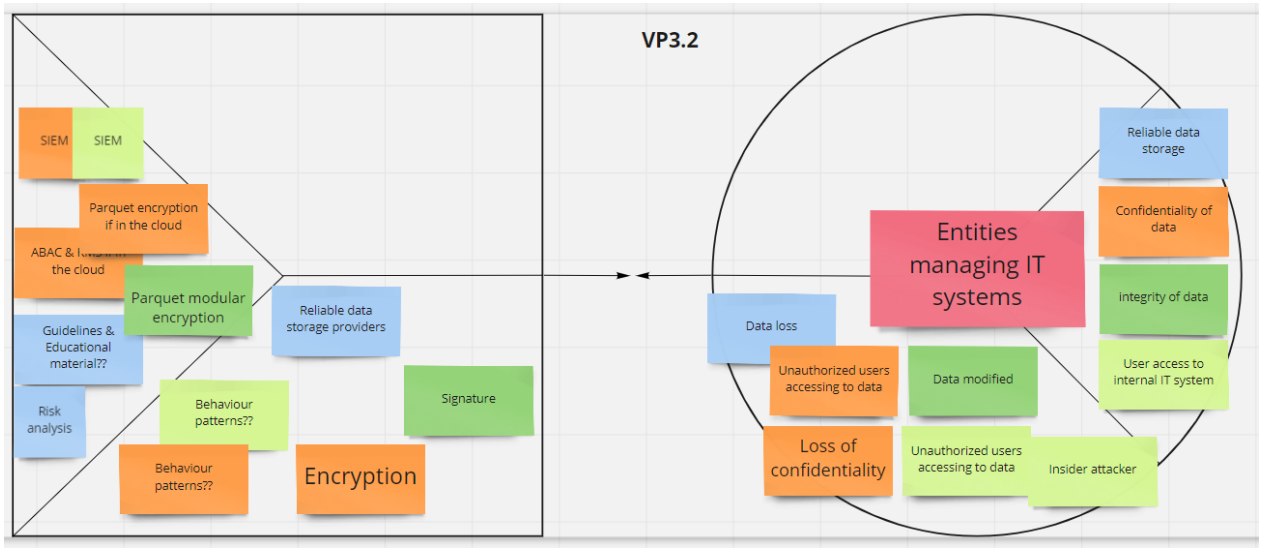

GROUP 2
VP2.1
Customer satisfaction
More customers
Network Slicing
Integration based on kubernettes
Educational framework
Secure data storage
Promote final user awareness
Use of standards for health data (FHIR)
Cloud-ready toolkit
Able to deal with risks in system design phase
Toolkit Assembler
encryption
Device protection
continuous authentication
Educational framework
FHIR DataGateway
Remote Health povisioning
Onsite Health provisioning
Data not integrated in EMR
SIEM
blackmail
Expose IT infrastructure to the Internet
Access control + encryption
Low risk awareness of final users
in design time
enial of services

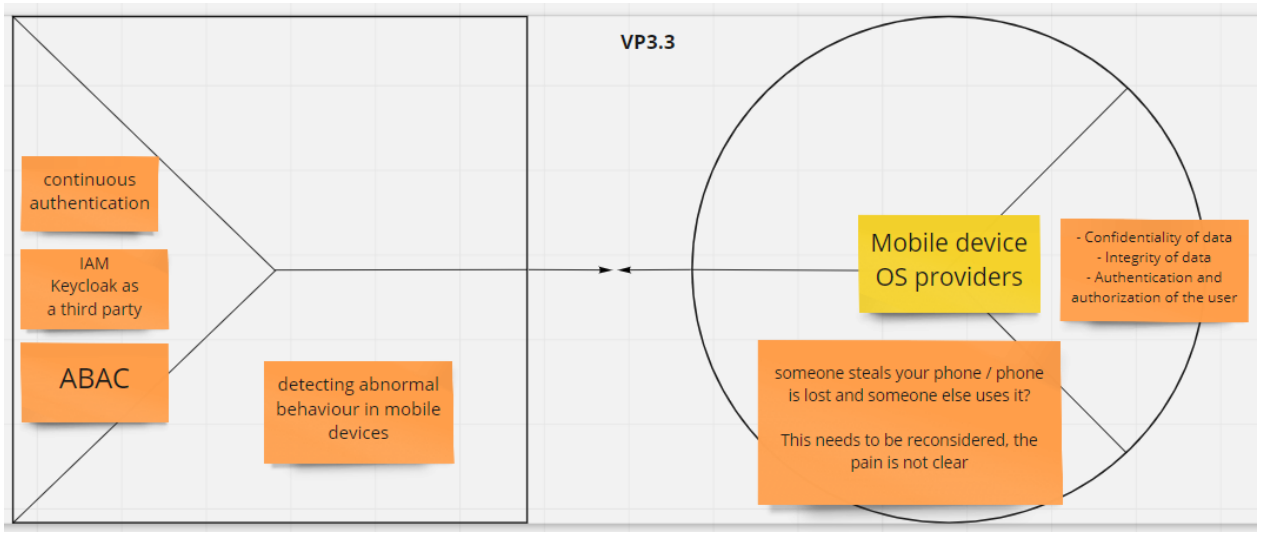

VP2.2
Toolkit Assembler
Customer satisfaction
Access control
Encryption + integrity protection
More customers
Access control
Encryption + integrity protection
Restrict access to the sensitive data
Authentication
Restrict access to the sensitive data
Data protection
Data protection
Security awareness (i.e. follow security best practices)
Trustworthy data source
Privacy breach
Privacy breach
Incorrect or no data available for that patient
Incorrect or no data available for that patient
generic business with sensitive data
Generic business with sensitive data
Personalised services
Any service that generates sensitive data (i.e. as a result of that service)
Privacy breach (data leakage)
Privacy breach (data leakage)
Incorrect data
Don't know who your patient is
Data loss


VP2.4
SSM
More customers
Access Control
Customer satisfaction
Continuous Authentication
Dealing with large numbers of customers
Toolkit Assembler
Toolkit assembler
many dissatisfied customers when things go wrong
Version control
improved experience
confidentiality integrity availability (CIA)
Personalised services to citizens
IT companies (incl. cloud providers?)
Network and secure monitoring
need to use personal data
24/7 availability
Create software products/services
Control and monitor all cloud infrastructure
Complex integration

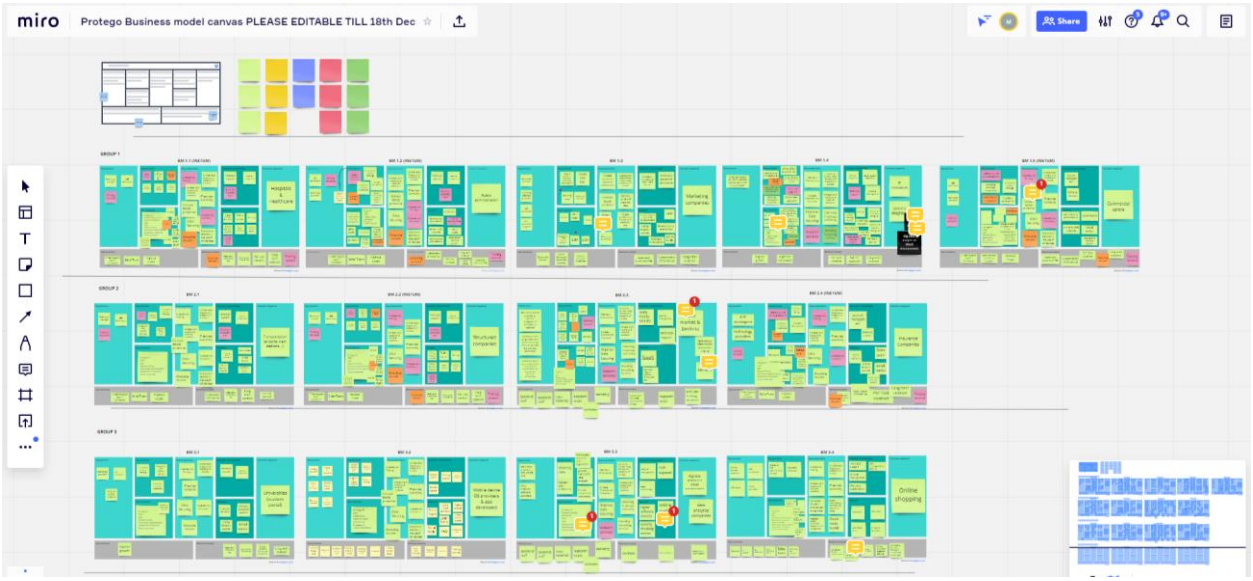

VP2.5
The Citizen has Data Control / Data Agency
Education Model
Risk Mitigation
Secure Personal Vault (ie your own Protego DG and AC)
Data is secure
Risk Analy
Citizens
Email Usage
Online banking
E commerce
Social Media
Browsing
CIA
Social Media: Loss of Reputation of yourself or others
Social Media: Loss of personal secrets
Email Usage
Browsing
VP3.4
Comment: Most of the specific pains can be addressed by the securing of digital information

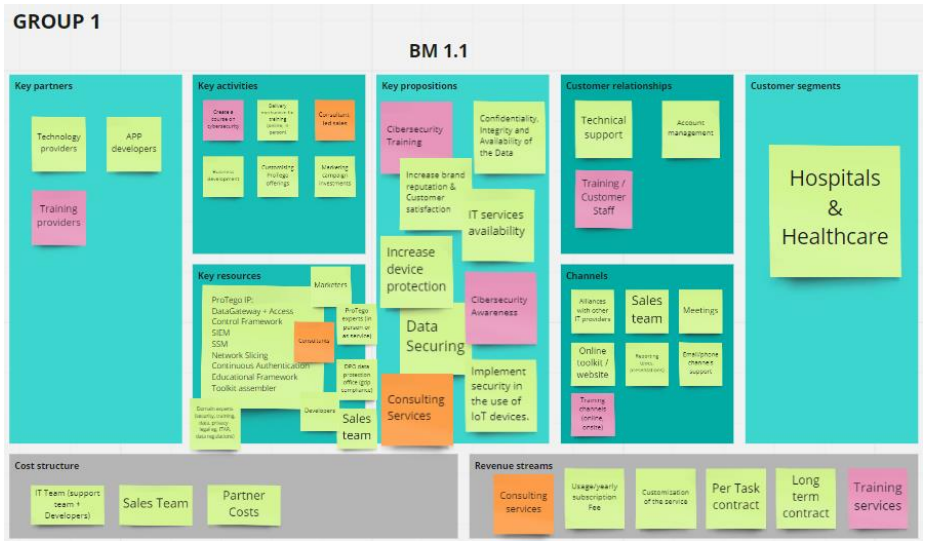

VP3.1
ABAC & KMS
ABAC & KMS & Tokens
Parquet modular encryption
Parquet modular encryption
Guidelines & Educational material
Access control
Access control
Signature
Encryption
Reliable data storage providers
Big data owners & managers
Confidentiality of data
Fast reliable access to "customers"
Reliable data storage
integrity of data
Agreements with data providers and users
Unauthorized users accessing to data
Unauthorized users accessing to data
No compliance to SLAs
Fines from regulators
Loss of confidentiality
Data loss
Data modified


VP3.2
SIEM
SIEM
Parquet encryption if in the cloud
the cloud
Parquet modular encryption
Guidelines & Educational material??
Risk analysis
Behaviour patterns??
Behaviour patterns??
Reliable data storage providers
Signature
Encryption
Entities managing IT systems
Reliable data storage
Confidentiality of data
integrity of data
User access to internal IT system
Data loss
Unauthorized users accessing to data
Data modified
Loss of confidentiality
Unauthorized users accessing to data
Insider attacker

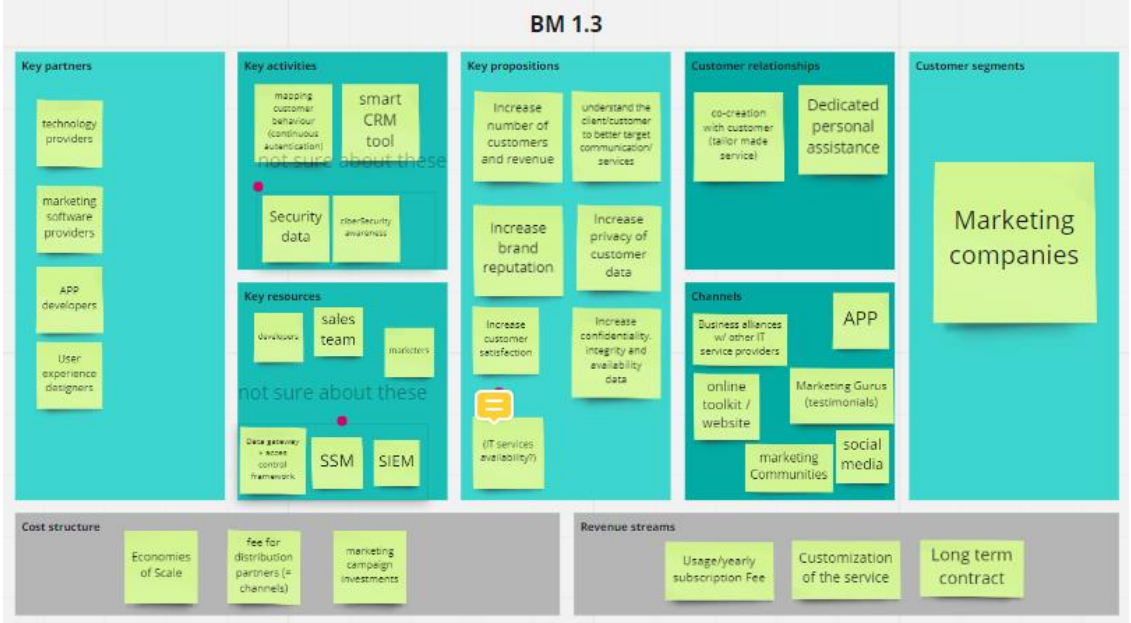

VP3.3
continuous authentication
IAM Keycloak as a third party
ABAC
detecting abnormal behaviour in mobile devices
Mobile device OS providers
- Confidentiality of data
- Integrity of data
- Authentication and authorization of the user
someone steals your phone / phone is lost and someone else uses it?
This needs to be reconsidered, the pain is not clear

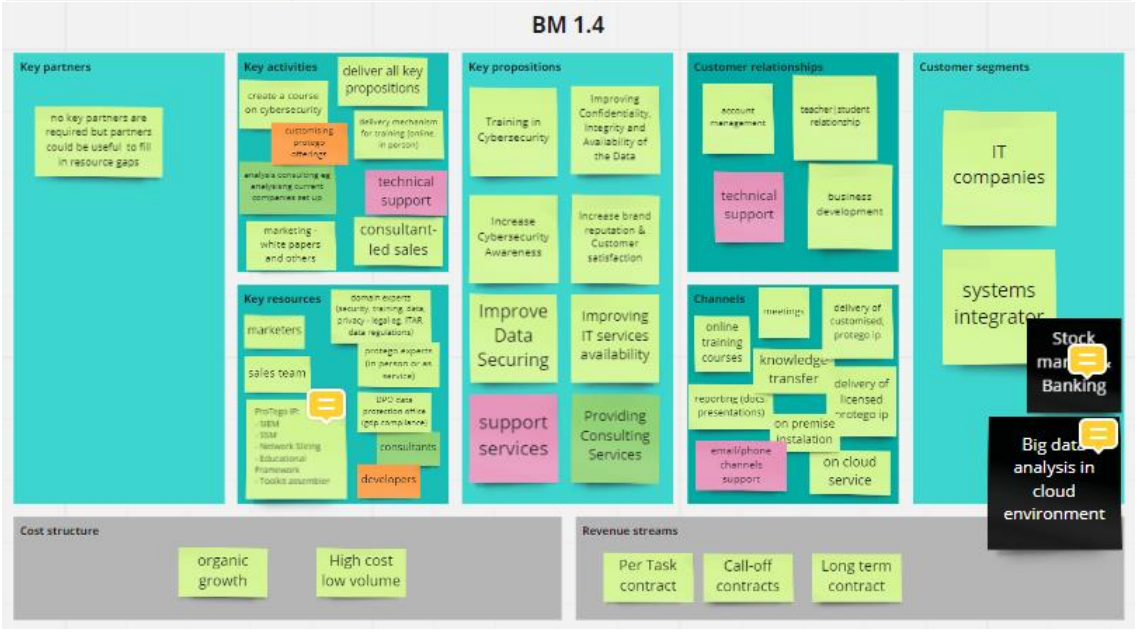
X. ANNEX C: BUSINESS MODEL WORKSHOP BRAINSTORMING RESULTS

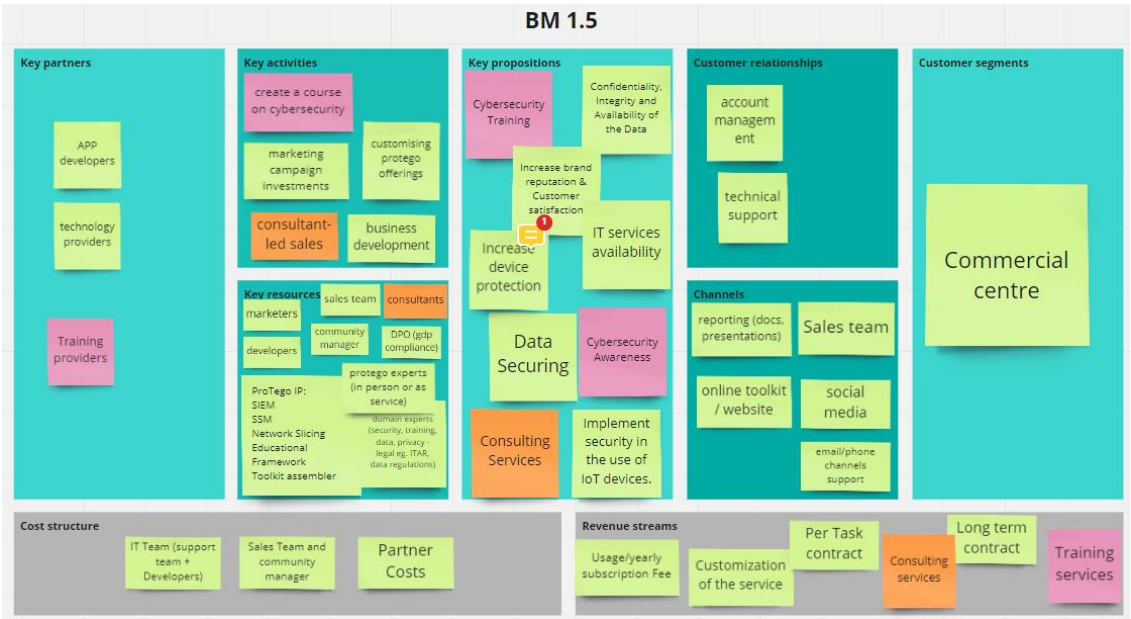


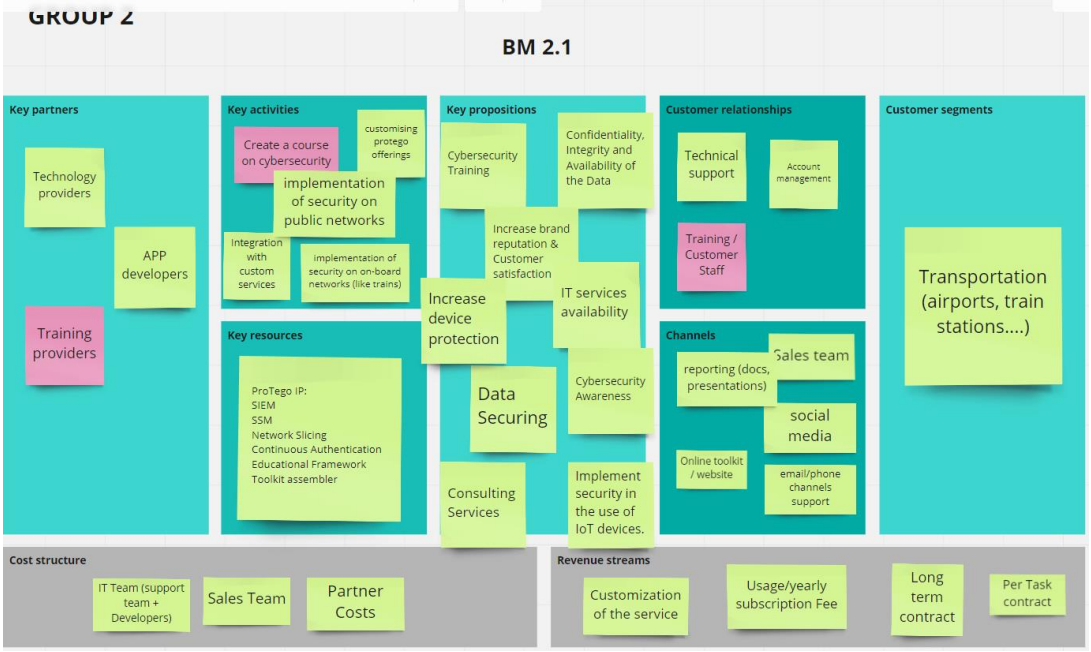


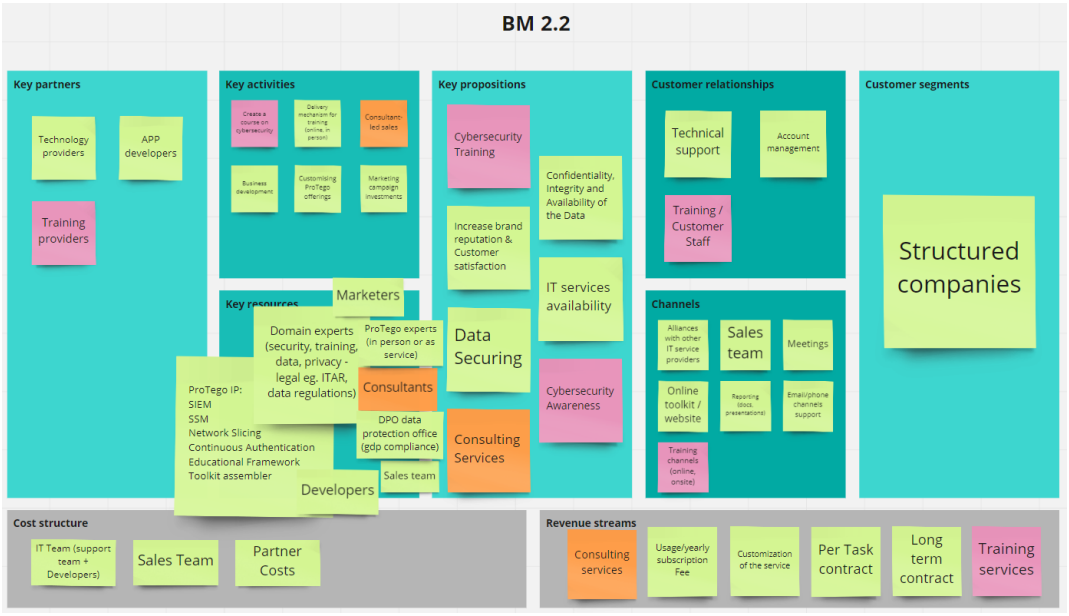


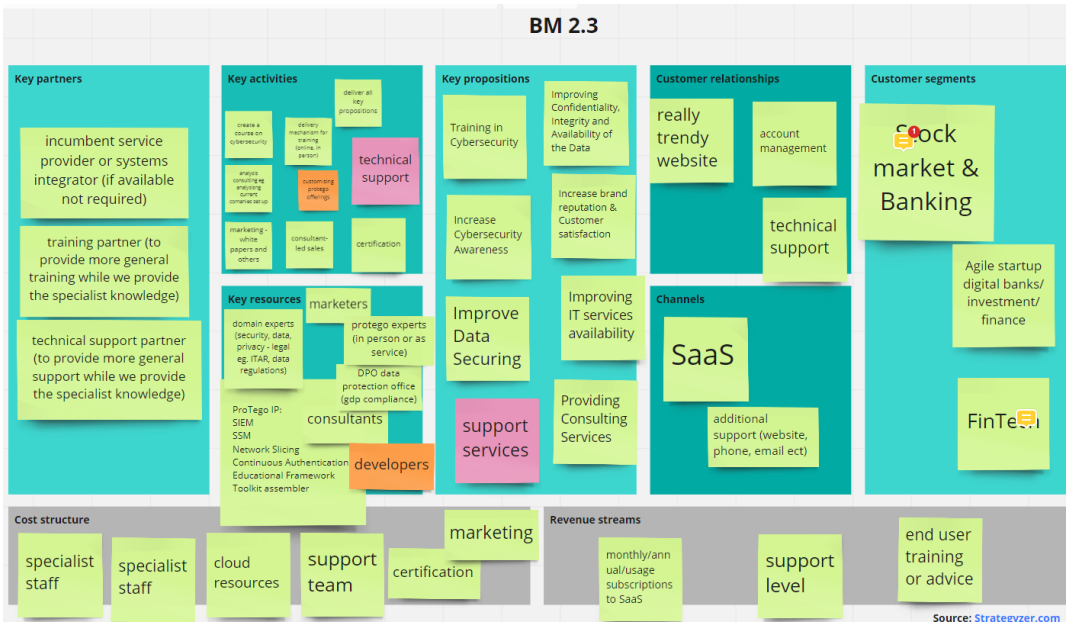

BM 1.3
Key partners
technology providers
marketing software providers
APP developers
User experience designers
Key activities
mapping customer behaviour (continuous autentication)
smart CRM tool
not sure about these
Security data
cyber-Security awareness
Key resources
developers
sales team
marketers
not sure about these
Data gateway + access control framework
SSM
SIEM
Key propositions
Increase number of customers and revenue
understand the client/customer to better target communication/ services
Increase brand reputation
Increase privacy of customer data
Increase customer satisfaction
Increase confidentiality, integrity and availability data
(IT services availability?)
Customer relationships
co-creation with customer (tailor made service)
Dedicated personal assistance
Channels
Business alliances w/ other IT service providers
APP
online toolkit / website
Marketing Gurus (testimonials)
marketing Communities
social media
Customer segments
Marketing companies
Cost structure
Economies of Scale
fee for distribution partners (# channels)
marketing campaign investments
Revenue streams
Usage/yearly subscription Fee
Customization of the service
Long term contract

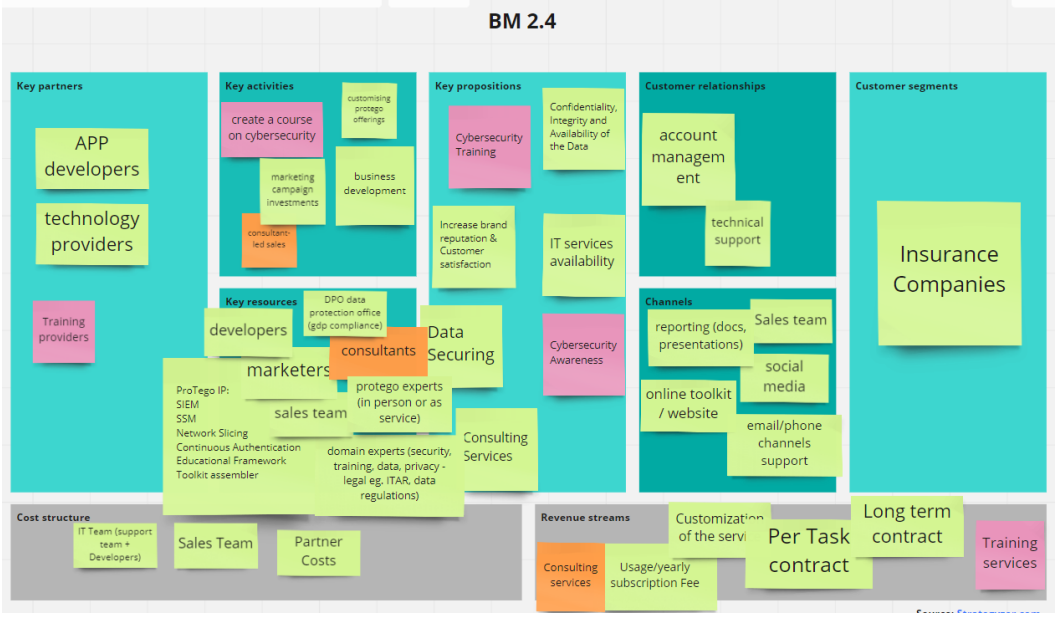

BM 1.4
Key partners
no key partners are required but partners could be useful to fill in resource gaps
Key activities
deliver all key propositions
create a course on cybersecurity
customising protego offerings
delivery mechanism for training (online, in person)
technical support
consultant-led sales
marketing - white papers and others
Key resources
marketers
domain experts (security, training, data privacy - legal eg. ITAR, data regulations)
sales team
protego experts (in person or as service)
DPO data protection officer (gdp compliance)
consultants
developers
Key propositions
Training in Cybersecurity
Improving Confidentiality, Integrity and Availability of the Data
Increase Cybersecurity Awareness
Increase brand reputation & Customer satisfaction
Improve Data Securing
Improving IT services availability
support services
Providing Consulting Services
Customer relationships
account management
teacher/student relationship
technical support
business development
Channels
meetings
online training courses
delivery of customised protego ip
knowledge transfer
reporting (docs, presentations)
delivery of licensed protego ip
on premise instalation
email/phone channels support
on cloud service
Customer segments
IT companies
systems integrator
Stock
Banking
Big data analysis in cloud environment
Cost structure
organic growth
High cost low volume
Revenue streams
Per Task contract
Call-off contracts
Long term contract

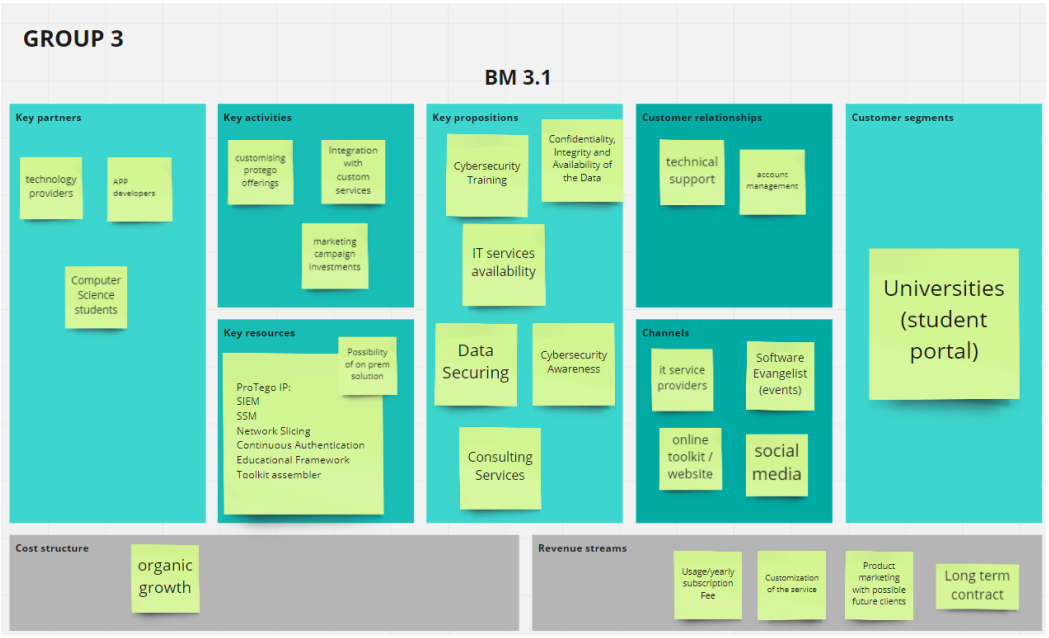

BM 1.5
Key partners
APP developers
technology providers
Training providers
Key activities
create a course on cybersecurity
marketing campaign investments
customising protego offerings
consultant-led sales
business development
Key resources
sales team
consultants
marketers
community manager
DPO (gdp compliance)
developers
protego experts (in person or as service)
ProTego IP:
SIEM
SSM
Network Slicing
Educational Framework
Toolkit assembler
domain experts (security, training, data privacy - legal eg. ITAR, data regulations)
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
Increase device protection
IT services availability
Data Securing
Cybersecurity Awareness
Consulting Services
Implement security in the use of IoT devices.
Customer relationships
account managem ent
technical support
Channels
reporting (docs, presentations)
Sales team
online toolkit / website
social media
email/phone channels support
Customer segments
Commercial centre
Cost structure
IT Team (support team + Developers)
Sales Team and community manager
Partner Costs
Revenue streams
Usage/yearly subscription Fee
Customization of the service
Per Task contract
Consulting services
Long term contract
Training services

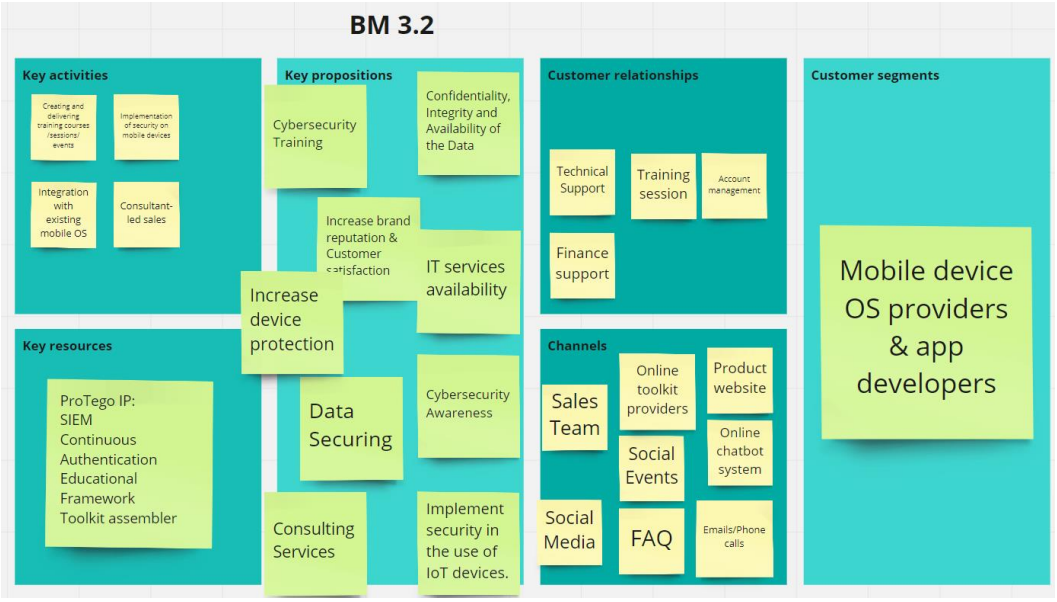

GROUP 2
BM 2.1
Key partners
Technology providers
APP developers
Training providers
Key activities
Create a course on cybersecurity
customising protego offerings
implementation of security on public networks
Integration with custom services
implementation of security on on-board networks (like trains)
Key resources
ProTego IP:
SIEM
SSM
Network Slicing
Continuous Authentication
Educational Framework
Toolkit assembler
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
IT services availability
Increase device protection
Data Securing
Cybersecurity Awareness
Consulting Services
Implement security in the use of IoT devices.
Customer relationships
Technical support
Account management
Training / Customer Staff
Channels
reporting (docs, presentations)
Sales team
social media
Online toolkit / website
email/phone channels support
Customer segments
Transportation (airports, train stations....)
Cost structure
IT Team (support team + Developers)
Sales Team
Partner Costs
Revenue streams
Customization of the service
Usage/yearly subscription Fee
Long term contract
Per Task contract

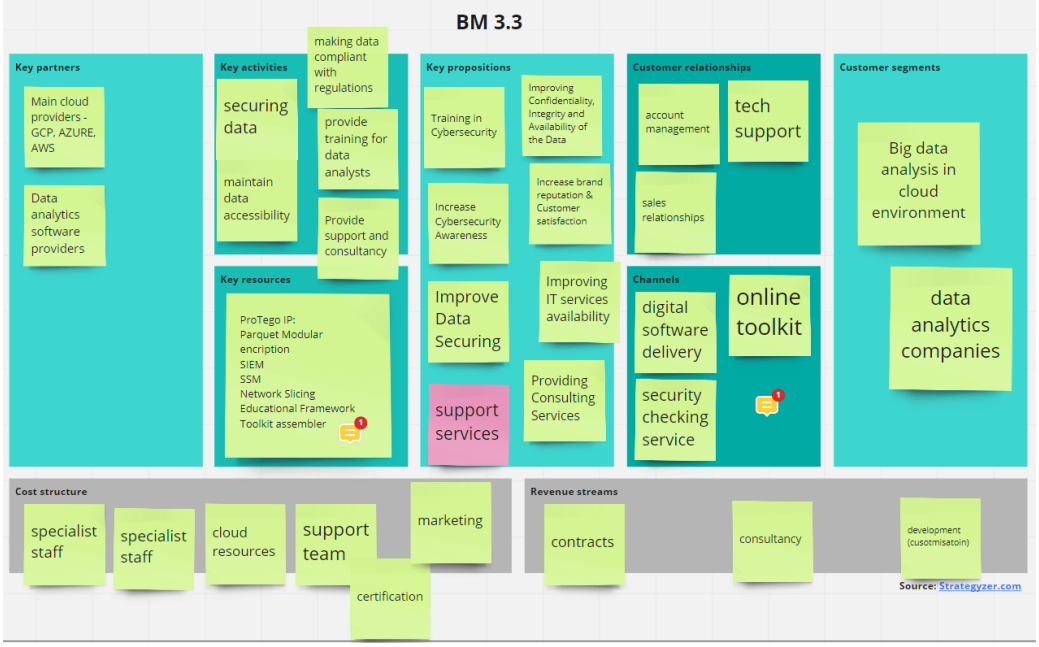

BM 2.2
Key partners
Technology providers
APP developers
Training providers
Key activities
Key resources
Marketers
Domain experts (security, training, data, privacy - legal eg. ITAR, data regulations)
ProTego experts (in person or as service)
Consultants
DPO data protection office (gdp compliance)
Sales team
Developers
ProTego IP:
SIEM
SSM
Network Slicing
Continuous Authentication
Educational Framework
Toolkit assembler
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
IT services availability
Data Securing
Cybersecurity Awareness
Consulting Services
Customer relationships
Technical support
Account management
Training / Customer Staff
Channels
Sales team
Meetings
Online toolkit / website
Customer segments
Structured companies
Cost structure
IT Team (support team + Developers)
Sales Team
Partner Costs
Revenue streams
Consulting services
Usage/yearly subscription Fee
Customization of the service
Per Task contract
Long term contract
Training services

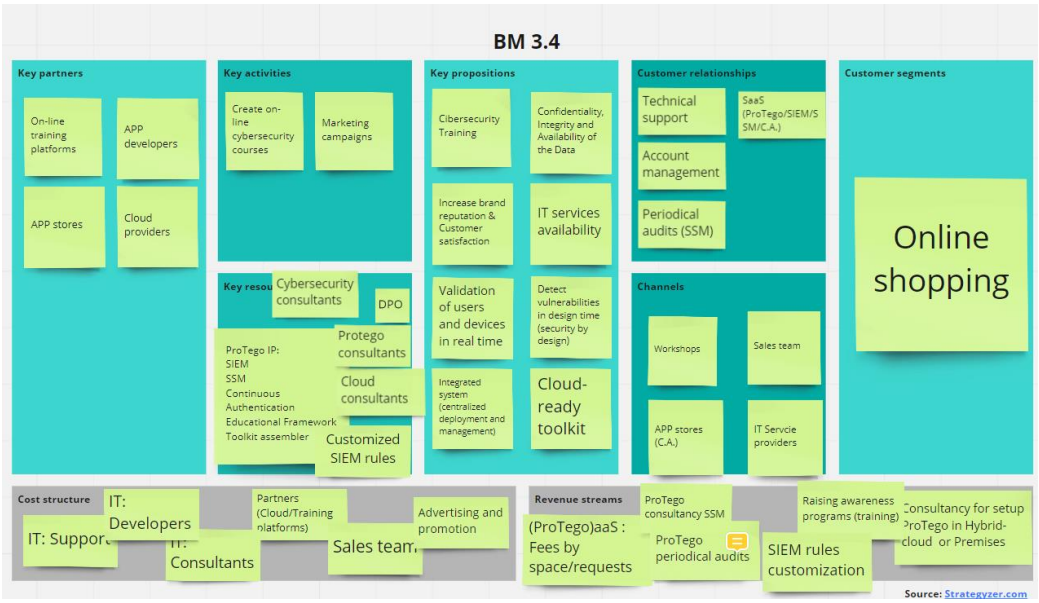

BM 2.3
Key partners
incumbent service provider or systems integrator (if available not required)
training partner (to provide more general training while we provide the specialist knowledge)
technical support partner (to provide more general support while we provide the specialist knowledge)
Key activities
technical support
certification
Key resources
marketers
domain experts (security, data, privacy - legal eg. ITAR, data regulations)
protego experts (in person or as service)
DPO data protection office (gdp compliance)
consultants
ProTego IP:
SIEM
SSM
Network Slicing
Continuous Authentication
Educational Framework
Toolkit assembler
developers
Key propositions
Training in Cybersecurity
Improving Confidentiality, Integrity and Availability of the Data
Increase Cybersecurity Awareness
Increase brand reputation & Customer satisfaction
Improve Data Securing
Improving IT services availability
support services
Providing Consulting Services
Customer relationships
really trendy website
account management
technical support
Channels
SaaS
additional support (website, phone, email ect)
Customer segments
Stock market & Banking
Agile startup digital banks/ investment/ finance
FinTech
Cost structure
specialist staff
specialist staff
cloud resources
support team
marketing
certification
Revenue streams
monthly/annual/usage subscriptions to SaaS
support level
end user training or advice
Source: Strategyzer.com


BM 2.4
Key partners
APP developers
technology providers
Training providers
Key activities
create a course on cybersecurity
customising protego offerings
marketing campaign investments
business development
consultant-led sales
Key resources
developers
DPO data protection office (gdp compliance)
consultants
marketers
ProTego IP:
SIEM
SSM
Network Slicing
Continuous Authentication
Educational Framework
Toolkit assembler
sales team
protego experts (in person or as service)
domain experts (security, training, data, privacy - legal eg. ITAR, data regulations)
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
IT services availability
Data Securing
Cybersecurity Awareness
Consulting Services
Customer relationships
account managem ent
technical support
Channels
reporting (docs, presentations)
Sales team
social media
online toolkit / website
email/phone channels support
Customer segments
Insurance Companies
Cost structure
IT Team (support team + Developers)
Sales Team
Partner Costs
Revenue streams
Customizat ion of the servi
Per Task contract
Long term contract
Training services
Consulting services
Usage/yearly subscription Fee


GROUP 3
BM 3.1
Key partners
technology providers
APP developers
Computer Science students
Key activities
customising protego offerings
Integration with custom services
marketing campaign investments
Key resources
Possibility of on prem solution
ProTego IP:
SIEM
SSM
Network Slicing
Continuous Authentication
Educational Framework
Toolkit assembler
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
IT services availability
Data Securing
Cybersecurity Awareness
Consulting Services
Customer relationships
technical support
account management
Channels
it service providers
Software Evangelist (events)
online toolkit / website
social media
Customer segments
Universities (student portal)
Cost structure
organic growth
Revenue streams
Usage/yearly subscription Fee
Customization of the service
Product marketing with possible future clients
Long term contract


BM 3.2
Key activities
Creating and delivering training courses /sessions/ events
Implementation of security on mobile devices
Integration with existing mobile OS
Consultant-led sales
Key propositions
Cybersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
IT services availability
Increase device protection
Data Securing
Cybersecurity Awareness
Consulting Services
Implement security in the use of IoT devices.
Customer relationships
Technical Support
Training session
Account management
Finance support
Customer segments
Mobile device OS providers & app developers
Key resources
ProTego IP:
SIEM
Continuous Authentication
Educational Framework
Toolkit assembler
Channels
Sales Team
Online toolkit providers
Product website
Social Events
Online chatbot system
Social Media
FAQ
Emails/Phone calls


BM 3.3
Key partners
Main cloud providers - GCP, AZURE, AWS
Data analytics software providers
Key activities
securing data
making data compliant with regulations
provide training for data analysts
maintain data accessibility
Provide support and consultancy
Key resources
ProTego IP:
Parquet Modular encription
SIEM
SSM
Network Slicing
Educational Framework
Toolkit assembler
Key propositions
Training in Cybersecurity
Improving Confidentiality, Integrity and Availability of the Data
Increase Cybersecurity Awareness
Increase brand reputation & Customer satisfaction
Improve Data Securing
Improving IT services availability
support services
Providing Consulting Services
Customer relationships
account management
tech support
sales relationships
Channels
digital software delivery
online toolkit
security checking service
Customer segments
Big data analysis in cloud environment
data analytics companies
Cost structure
specialist staff
specialist staff
cloud resources
support team
marketing
certification
Revenue streams
contracts
consultancy
development (customisatoin)
Source: Strategyzer.com


BM 3.4
Key partners
On-line training platforms
APP developers
APP stores
Cloud providers
Key activities
Create on-line cybersecurity courses
Marketing campaigns
Key resou
Cybersecurity consultants
DPO
ProTego IP:
SIEM
SSM
Continuous Authentication
Educational Framework
Toolkit assembler
Protego consultants
Cloud consultants
Customized SIEM rules
Key propositions
Cibersecurity Training
Confidentiality, Integrity and Availability of the Data
Increase brand reputation & Customer satisfaction
IT services availability
Validation of users and devices in real time
Detect vulnerabilities in design time (security by design)
Integrated system (centralized deployment and management)
Cloud-ready toolkit
Customer relationships
Technical support
SaaS (ProTego/SIEM/SSM/C.A.)
Account management
Periodical audits (SSM)
Channels
Workshops
Sales team
APP stores (C.A.)
IT Servcie providers
Customer segments
Online shopping
Cost structure
IT: Developers
IT: Suppor
IT: Consultants
Partners (Cloud/Training platforms)
Sales team
Advertising and promotion
Revenue streams
(ProTego)aaS : Fees by space/requests
ProTego consultancy SSM
ProTego periodical audits
SIEM rules customization
Raising awareness programs (training)
Consultancy for setup ProTego in Hybrid-cloud or Premises
Source: Strategyzer.com

XI. ANNEX D: CUSTOMER INSIGHTS

Table 8 - Customer pains identify for the ProTego potential customers

Customer	Pains
Big data owners & managers	Data breach (incl. unauthorized users accessing to data)
	Data loss
	Loss of confidentiality
	New technology access/adoption difficulties by user
	No compliance to SLAs
	Optimising complex decisions, unforeseen events, threats
	Reputation damage/Users distrust - Financial consequences
Generic business with sensitive data and entities managing complex IT systems	Data breach (incl. unauthorized users accessing to data)
	Data loss
	Disconnection, bad connection and network interruption
	Industrial espionage
	Lack of security awareness
	Reputation damage/Users distrust - Financial consequences
Hospitals & healthcare entities: Onsite health provisioning	Data breach (incl. unauthorized users accessing to data)
	Lack of security awareness
	Loss of confidentiality
	New technology access/adoption difficulties by user
	Reputation damage/Users distrust - Financial consequences
Hospitals & healthcare entities: Remote health provisioning	Data breach (incl. unauthorized users accessing to data)
	Data loss: Data not integrated in EMR
	Lack of security awareness
	New technology access/adoption difficulties by user
IT companies	Control and monitor IT infrastructure incl. cloud
	Data breach
	Data loss
	Data unavailability
	New technology access/adoption difficulties by user
	No compliance to SLAs
Public Administration	Data breach
	Data unavailability
	Lack of security awareness
	Loss of confidentiality

Table 9 - Customer gains identified for the ProTego potential customers

Customer	Gains
Big data owners & managers	More efficient and reliable service offering
	Protect user identity
	Customer satisfaction

	Ensure Confidentiality, Integrity, Availability (CIA)
	More efficient and reliable service offering
	Predicting future problems with AI
Generic business with sensitive data and entities managing complex IT systems	Grant enough bandwith to users
	Better access to all company data
	Protect Intellectual Property
	Ensure Confidentiality, Integrity, Availability (CIA)
Hospitals & healthcare entities: Onsite health provisioning	Ensure Confidentiality, Integrity, Availability (CIA)
	Increase brand reputation
	User friendly interfaces
	Education and increase awareness
Hospitals & healthcare entities: Remote health provisioning	Increase remote services (IoT, reduce affluence, then queues)
	Ensure Confidentiality, Integrity, Availability (CIA)
	Data protection on external devices
	Data availability on external devices
IT companies	Ensure Confidentiality, Integrity, Availability (CIA)
	Customer satisfaction
Public administration	More efficient and reliable service offering
	Customer satisfaction
	Increase brand reputation

XII. REFERENCES AND INTERNET LINKS

[IEEE citation style] https://library.concordia.ca/help/citing/ieee.php

Model for a book in print

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[1] A. Hunt and D. Thomas, *The pragmatic programmer: from journeyman to master*. Reading, Mass: Addison-Wesley, 2000.

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[Web1] https://wheretoplay.co/

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[Web3] https://miro.com/app/dashboard/

[Web4] https://www.webex.com/es/index.html

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[1] J. Evans, "Linux tracing systems & how they fit together," *Julia Evans*. Updated July 05, 2017. [Blog]. Available: https://jvns.ca/blog/2017/07/05/linux-tracing-systems, Accessed on: Dec. 19, 2017.


ProTego