sewer **i**nspection **a**utonomous **r**obot

D28.8 - Impact and Exploitation

SIAR Consortium

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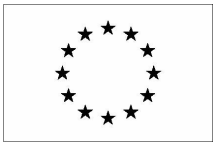

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1. Introduction

The dissemination of activities performed and results achieved represents one important aspect in a research and development project. The main objective being to raise awareness towards any potentially interested parties and to ensure that the final outcomes of the project are properly communicated and exploited.

In addition to the effort expended in the development of technology and its experimentation, the consortium has also put some of its effort in disseminating the knowledge acquired during these 2nd phase by means of a number of dedicated tools and activities, in order to guarantee that the most relevant project outcomes are communicated to the widest audience possible, in the most effective way.

This deliverable describes in detail the consortium's dissemination and communication activities and their impact for this 2nd phase of the SIAR project. It also presents a commercial exploitation scenario of the project outcomes based on current plans of the Consortium. The exploitation plan is expected to be refined as the SIAR solution evolves for its final configuration.

2. Dissemination

Dissemination of the acquired knowledge and achievements is an important element of a project. This section presents the methodologies that were followed to disseminated the project results to the scientific community, industry and general public.

2.1. Website

A public website has been created for the dissemination of project SIAR: http://siar.idmind.pt/. The website, depicted in Figure 2.1, was created as a subdomain of partner IDMind. This is also to strategic to highlight the role of the SME in the exploitation of the project outcomes.

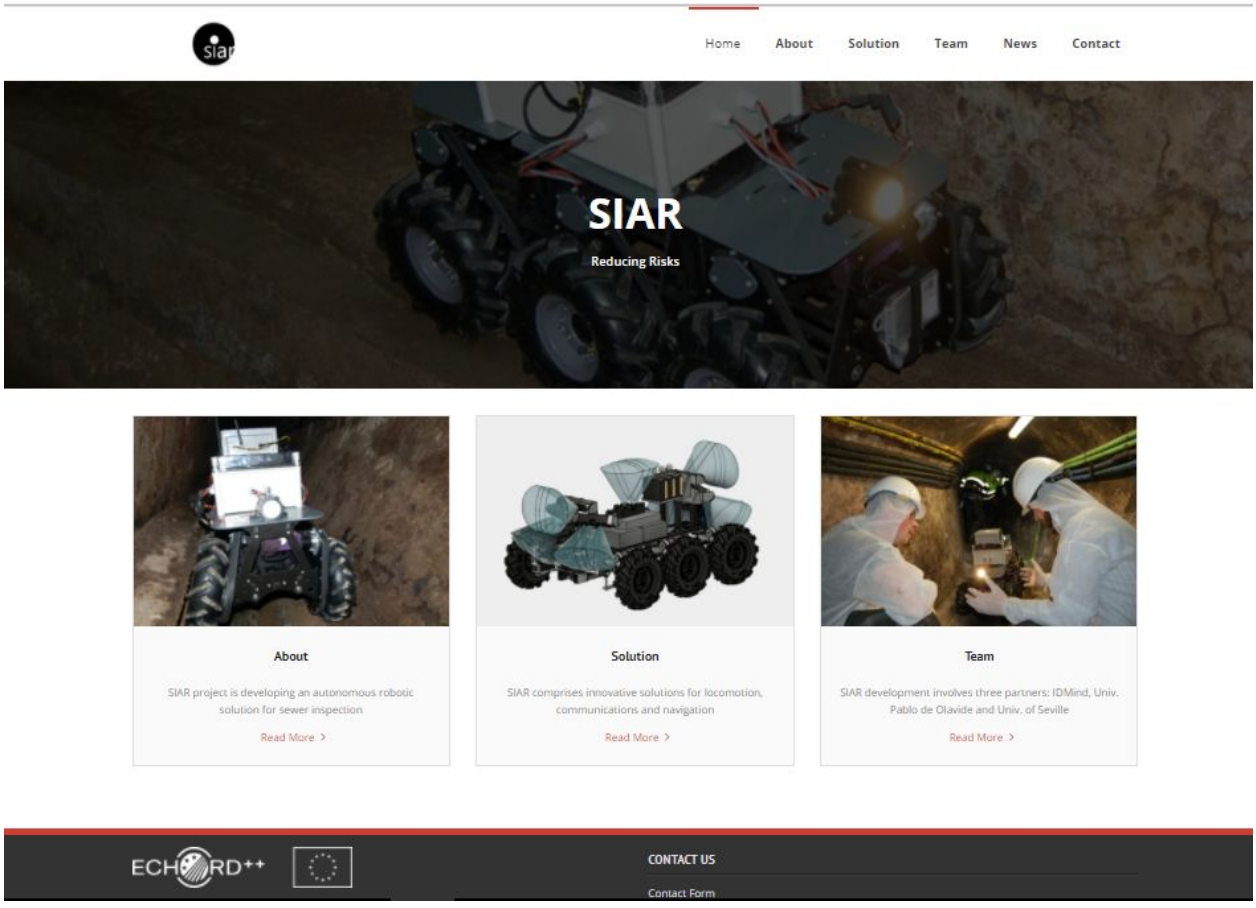


Figure 2.1. Project webpage layout.

The website has a simple layout based on the following sections:

- *Home* - landing page;
- *About* - summary about the project and its motivation;
- *Solution* - page with a short description of the main technological components of the project;
- *Team* - description of the project partners;

- *News* - page in format of a blog with relevant news about the project;
- *Contact* - Contact form associated with a email account.

2.2. Press Releases

A press release was made with the help of the UPO communications department. As a result, news on the project were presented in regional newspapers (see Figure 2.2).

Figure 2.2. Press coverage.

2.3. Multi Media Report

A multimedia report about the different experiments performed during the 2nd phase of the project is presented in D28.7.

2.4. Networking With Associations

IDM already presented the SIAR project to the Department of Infrastructures and Sanitation from the Lisbon City Hall which has demonstrated its interest in following the evolution of the project and in hosting some local experiments.

IDM has been also promoting SIAR through its participation in the recently created Lisboa Robotics cluster.

2.5. Attendance to Trade Fairs

Integrated in the Echord++ booth, the SIAR robot prototype was presented at the Smart City Expo World Congress 2016, Barcelona, 15-17 November. This has been an excellent opportunity to show the solution to potential end-users and stakeholders.

Figure 2.3. Smart City Expo World Congress 2016, Barcelona, 15-17 November.

IDM presented the SIAR prototype at GALP 2017 Senior Staff Meeting. This annual Senior Staff Meeting, of the Portuguese oil and natural gas integrated operator, took place on 24 January 2017 at the Estoril Congress Centre and was attended by approximately 600 employees of GALP.

Integrated in the Echord++ booth, the SIAR robot prototype was presented at the Global Robot Expo 2017, Madrid, 2-4 February. This has been an excellent opportunity to show the solution to the robotics community, potential end-users and stakeholders.

Figure 2.4. Global Robot Expo 2017, Madrid, 2-4 February.

2.6. Attendance to Scientific Conferences

Researchers from the SIAR team have attended IROS'17, in Vancouver, Canada, in September 2017. They presented the results on the system for robot localization in the sewers (Figure 2.5). The presentation has raised interests from other research teams about the work done in the project.

Figure 2.5: David Alejo presents the work on SIAR localization in sewers at IROS'17.

2.7.Organisation of Events

UPO researchers David Alejo and Luis Merino presented the SIAR/ECHORD++ project during the European Researchers' Night, in Seville on Sept. 30, 2016.

The audience of the event was the general public. We made a small demo of the SIAR robot, and gave a presentation about the project.

Figure 2.6. David and Luis presenting SIAR/ECHORD++ to the audience during the European Researchers Night.

2.8. Posters, Leaflets and Roll-ups

Figure 2.7 depicts a two-sided leaflet describing the SIAR project. These leaflets were distributed in the events described in the previous section.

2.9. Social Media

As a result of the 1st press release, a team of the TV show "EnRed", from the regional public broadcasting station RTVA (with an average audience of 500.000 persons) made a reportage about the project. The documentary was aired on June 14th, 2016 and it can be accessed through the following link:

http://www.canalsur.es/television/programas/enred/detalle/320.html?video=879385

2.10. Scientific Papers

Some of the findings in the project have been already disseminated through the following scientific publications:

Figure 2.7. 1st two-sided leaflet about the SIAR project.

- David Alejo, Fernando Caballero, and Luis Merino. RGBD-based Robot Localization in Sewer Networks. In Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS, 2017.
- D. Alejo, C. Marques, F. Caballero, P. Alvito, and L. Merino. SIAR: an autonomous ground robot for sewer inspection. In Actas de las Jornadas de Automática, 2016.

In the next months some further publications are planned related to the different robot subsystems and the experiments.

2.11 Datasets and Code

The code and dataset from several of the modules developed in the project have been made publicly available at:

https://github.com/robotics-upo/siar_packages

3. Impact

The impact of project SIAR has been generating some good contacts and opportunities for the partners, either directly related to the inspection scenario of the project or to the use of its technologies in other scenarios of operation.

In Phase II the team has been frequently contacting with the BCASA company and making several visits to the Barcelona sewers in order to gather data and to have contact and feedback from the organizing entity. We have already contacted with local companies of sewer management in Seville and Lisbon, but they have informed us that their sewer system differs in a great deal to the Barcelona's sewer system. Therefore, the Consortium opted to stay focused on designing a prototype that adapts to the sewer system of Barcelona. Still the consortium intends to invite these entities for the final tests to be held in Barcelona.

Contacts were also made with companies that offer inspection services, e.g., the company Conlima[1]. Further companies will be contacted during the next dissemination activities (e.g., Smart City Expo, Barcelona, November 2017).

The Consortium received an expression of interest from the geographic information systems (GIS) coordinator at Aquafin in Belgium. Aquafin operates wastewater treatment infrastructure in the Flemish Region (Northern part of Belgium) and has a balance sheet total similar to the one of BCASA. They are mainly interested in finding out whether the proposed solution could be an alternative to other sewer inspection techniques currently used by Aquafin.

SIAR has been also contacted by Gas Natural Fenosa[2]. The contact was a result of the exhibition in the Smart City Expo 2016. Two meetings were held with the company, the last one in September 2017, about the possibility of proceeding with a pilot study. They are interested on the potential uses of the SIAR platform for tunnel inspection.

Furthermore, during this second phase, the SIAR partners were invited to enter two H2020 proposals where they would be working over the developments made for SIAR.

Meanwhile IDM has applied for a provisional patent for the locomotion platform, with width adjustment feature, developed during this second phase of the project.

[1] https://www.conlima.es
[2] http://www.gasnaturalfenosa.com/en/the+company/1285338472790/our+figures.html

4. Exploitation Plans

The Consortium proposes the development of an innovative sewer inspection solution that will result in a close to market prototype. The launch of this product is predicted to happen 18 months after the project completion. These 18 months will be used to start some pilot experiments with selected end-users, while preparing the developed prototype for the market as an off-the-shelf product, composed of a hardware robot platform, sensing payload and software packages.

The developed prototype will result from the joint work of all the partners and they will all define their participation on the future commercial exploitation of it (IP exploitation agreements). IDM, as a SME, will lead the exploitation process.

In contrast to current approaches, SIAR focuses on achieving high dependability, usefulness and affordability through technological innovation, but also the provision of a convincing market approach to launch an off-the-shelf product version onto the market 18 months after the project end and through a Business to Business (B2B) model, where the target clients will be organizations (private or public) providing sewer inspection services. IDM will be providing the technological solution while these organizations will provide locally the service. IDM will provide technical support and maintenance (advanced) of the robots. IDM will provide also expertise for the customization of the solution in some specific use case scenarios.

This project is expected to have an important impact in the turnover of IDM as well it will open a door for a market with a strong potential of growth and which is simultaneous eager to new (more autonomous) solutions.

This document presents the business opportunity and a preliminary exploitation plan based on financial projections. The economic advantage that the solution will bring to their users is also presented.

4.1. Opportunity

4.1.1. Market

The interest in autonomous robotic solutions for inspection and maintenance is growing rapidly throughout different industries. As indicated in the Multi Annual Roadmap of EU Robotics[3]:

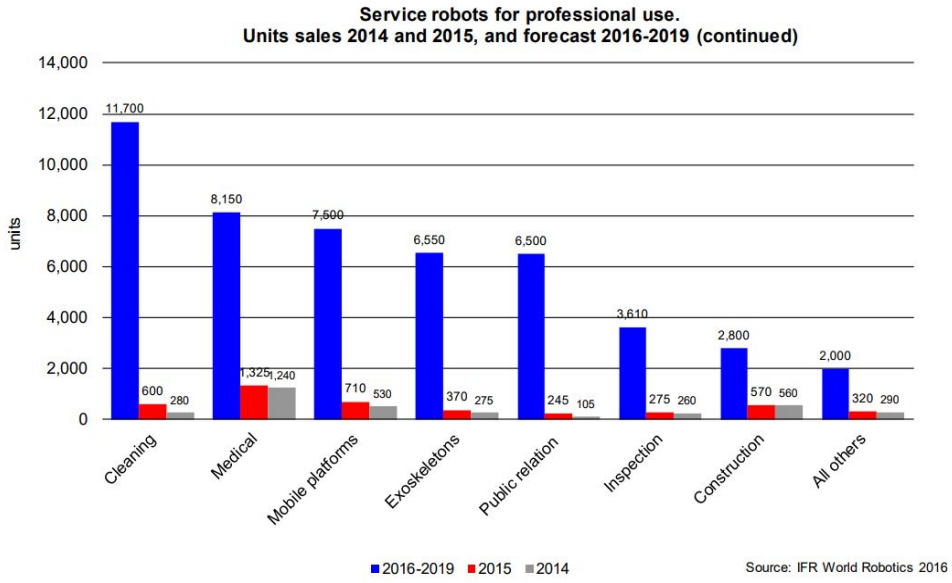
“The application of robotics technology to the Civil domain is still at an early stage and it is therefore difficult to estimate eventual market size. Key Market drivers are:

- *Growing interest in UAS not only by US and European countries but also by emerging countries.*
- *Potential for improved coverage of large areas for environmental monitoring.*
- *Increase in quality of monitoring data and regularity of monitoring due to lower cost per task.*
- *Reduction of total operational costs with respect to existing manned systems.*
- *Increasing acceptance of robotics technology.”*

[3] Robotics 2020 Multi-Annual Roadmap - MAR 2016 (ICT-25 & ICT-26)

This market is broadly characterised by Business to Government (B2G) business models. Typical purchasers/operators of civil robots are likely to include: civil authorities running or contracting services that can be augmented by robotics technology; private companies operating under contract within the Civil domain.

According to IFR[4] "a significant higher number of robots for inspection and maintenance will be needed in the period between 2016 and 2019: 3,600 units."



4.1.2. Competition

Current sewer inspection scene can be divided in two fields: pipe inspection performed by small robots which can fit inside pipes; and sewer inspection performed by medium to big sized robots which move inside galleries. Pipe inspection can be purely remote controlled, e.g., Alligator, Minigator, Multigator and Flexigator wheeled robots from IBAK[5] or Geolyn's[6] tracked robots, but it can be also autonomous, e.g., Solo tracked robots from REDZone[7] or Makro's[8] wheeled worm type robot. In sewer inspection is also possible to find teleoperated solutions, e.g., PureRobotics' Pipeline Inspection tracked robot[9], and autonomous solutions, e.g., ServiceRoboter wheeled solution from Fraunhofer IFF[10]. The proposed solution aims the sewer gallery inspection, with the use of a kinematic system that can be adapted to the sewer gallery characteristics.

The SIAR system will go beyond existing solutions through the inclusion of some innovative features: robust configurable locomotion system; reliable autonomous navigation system; modular inspection

[4] World Robotics 2016 Service Robots
[5] http://www.ibak.de/en/produkte/ibak_show/frontendshow/category/sanierung/
[6] http://www.geolyn.ca/
[7] http://www.redzone.com/products/solo-robots/
[8] http://www.inspector-systems.com/makro_plus.html
[9] http://www.puretechltd.com/services/robotics/
[10] http://www.iff.fraunhofer.de/de/geschaeftsbereiche/robotersysteme/forschung/serviceroboter-inspektion-reinigung-wartung.html

system with inclusion of devices for air/waste sampling which is currently not not available in the commercial inspection robots.

4.1.3. SWOT Analysis

Strengths

- The availability of a **high tech product**, **innovative** and **unique** will have a great impact on the market.
- The product marketing will focus its **usability and autonomy**.
- One of the major concerns of the Consortium is the development of an **affordable solution** through the minimization of the onboard technology costs.
- The curriculum of the partners certifies their **knowledge and experience** in the various aspects of the project.

Weaknesses

- The **investment** inherent to the **industrialization process** will be supported through the establishment of partnerships with external entities, both in terms of production or in the capital raising shed.
- The need to establish **partnerships for the exploitation** process (e.g. service providers) can increase the business risks. There has to be a good control of established partnerships.

Opportunities

- **Current trends in robotics** and the increasing interest in robotic solutions is a key enabler for the entry of new products.
- Despite the existence of a varied range of sewer inspection solutions in the market, the **absence of products with the same capabilities** is an important factor for the success of the project.
- **Global market** for product placement.

Threats

- With time and by the success of the project, it is expected the emergence of **similar products**. A focus on quality of products and a continuous drive to create new differentiating features will be decisive against possible competitors. The community will have SIAR as the reference.
- The **global economic crisis** effect in robot development/commercialization is twofold. While it negatively impacts the investments that are made in the development of new (more risky) technology, it positively impacts the request for solutions to optimize the costs associated with the execution of specific tasks/services.

4.2. Marketing

4.2.1. Positioning

The product will be positioned as follows: high dependability, usefulness and affordability. It is intended for clients who are looking for a reliable solution, that can be easily used by current work forces of sewer inspection services and, last but not the least, will contribute for an effective reduction of costs related with the sewer network inspection and maintenance.

The marketing strategy will be based mainly on the technological and reliable nature of the product. In contact with potential customers this will be the differentiating factor transmitted. It is very important that the customer feels that the acquisition of the equipment will improve its service quality.

The marketing will have to convey a sense of quality and high tech character in each image, each campaign and each publication associated with the product. Marketing campaigns will be strengthened by demonstrations which will be recorded and disseminated through the internet social channels.

4.2.2. Price

The added value supported by technological product differentiation allows us to offer the customer the state of the art of sewer inspection. The client will value the innovative features of the product and its effectiveness compared to competing offers. This will allow to define the price of the product based on existing top solutions. Price strategy will be to offer more for the same price range of top ranked competitors.

Preliminary cost estimation. Based on the experience gained from the development of prototypes for phases 1 and 2, the cost of the SIAR solution, when considering the costs of included raw materials and equipment, should be less than 16k€ (see Table 4.1).

Item	Unit Price	Qtty	total
Locomotion Platform			
Motors Locomotion	450	6	2700
Linear motors	300	3	900
Low-level electronics	1000	1	1000
Raw materials	1000	1	1000
Batteries	200	2	400
Payload			
Robotic Arm	2000	1	2000
Cameras	140	5	700
Communications	450	5	2250
Batteries for repeaters	50	4	200
Environmental Sensors	1000	1	1000
PC-NAV	500	1	500
PC-PERCEPT	400	1	400
Low-cost IMU	50	1	50
External Equipment			
Laptop	1500	1	1500
Transport case	300	1	300
Communications	450	1	450
		Total	15,350.00€

Table 4.1. SIAR raw materials and equipment costs

IDM estimates a **target price of about 50,000.00€** for the complete SIAR solution at the beginning of its commercialization. This price is based on the costs presented in Table 1 (30% of the commercial price), combined with the costs related with the production and commercialization of the solution (presented in section 4.3), and considering a profit of 30% for each sold unit.

4.2.3. Promotion

An important vehicle for the promotion will be the publication of the offer in speciality magazines whose target audience are professionals linked to civil infrastructures, urban organization, engineering, etc. In

order to better reach these professionals will be sent catalogues for engineering firms and entities with intervention in the public space (city councils, foundations, etc.).

Another important form of promotion will be the participation in fairs related to the sewer inspection sector.

Finally, an important vehicle to promote a global scale is WEB2.0. Apart from maintaining a website with videos depicting the products, social networks and mailing lists will be used in an effective way.

4.2.4. Distribution

In order to maximize the profit, the distribution chain should be reduced to a minimum. Given that the product aims to reach international markets, partnerships will be established with local companies to facilitate the entry in these markets and to provide local support.

IDM will privilege a business to business (B2B) model, where the target clients will be organizations (private or public) providing sewer inspection services. IDM will be providing the technological solution while these organizations will provide locally the service. IDM will provide technical support and maintenance (advanced) of the robots. IDM will provide also expertise for the customization of the solution in some specific cases.

4.3. Financial Projections

IDM will consider the possibility of creating an internal department or a spin-off company for this specific new business area, which will allow a better definition of the business strategy as well a better control of its execution.

For the financial projections IDM is only considering the part of the business which is related with the production and sales of the SIAR robot. As mentioned in the previous section, IDM will be also providing advanced support and maintenance, as well engineering services for customized solutions, these activities will bring additional income for the company, but because the turnover related with these extra activities is not so easy to account, it will not be included in the financial projections.

4.3.1. Pre-production Costs

In contrast to current approaches, SIAR focuses on achieving high dependability, usefulness and affordability through technological innovation but also the provision of a convincing market approach to launch an off-the-shelf product version onto the market 18 months after the project end. Table 4.2 reflects the costs related with the development of SIAR robot in the scope of the ECHORD++ PDTI scheme and the following 18 months to prepare the product for market launch.

Item	2016	2017	2018	2019	Total
Customization	0.00	0.00	25,000.00	60,000.00	85,000.00
R&D	100,000.00	125,000.00	65,000.00	0.00	290,000.00
Registry trademark/patents		0.00	0.00	10,000.00	10,000.00
CE Certification		0.00	0.00	10,000.00	10,000.00

Cumulative Costs	**100,000.00**	**225,000.00**	**315,000.00**	**395,000.00**	**395,000.00**

Table 4.2. Pre-production costs.

4.3.2. Sales

The targeted price is about 50,000.00€ for the complete SIAR solution. Based on sales forecast for this market, IDM expects to make 5 supplies in the first year of commercialization and 20 in the second year. While the solution is distributed over a larger number of customers it is expected an increase in its popularity and 50 supplies are expected for the third year. These numbers will certainly be overcome in the years to come. Table 4.3 shows the expected number of units sold along 5 years after the product launch in the market. Table 4.4 shows the equivalent gross sales.

Year	Sold Units
2020	5
2021	20
2022	50
2023	70
2024	80

Table 4.3. Expected sales

Product	2020	2021	2022	2023	2024	Total
SIAR Robot	250,000.00	1,000,000.00	2,500,000.00	3,500,000.00	4,000,000.00	11,250,000.00
Gross Sales	**250,000.00**	**1,000,000.00**	**2,500,000.00**	**3,500,000.00**	**4,000,000.00**	**11,250,000.00**

Table4.4. Gross sales.

4.3.3. Purchases

The values presented in Table 4.5 are based on an estimated cost of 16,000.00€ for all the materials and equipment included in each sold unit.

Materials and	2020	2021	2022	2023	2024	Total

Equipment						
Electronics, mechanics and raw materials	80,000.00	320,000.00	800,000.00	1,120,000.00	1,280,000.00	3,600,000.00
Cost of Materials and Equipment	**80,000.00**	**320,000.00**	**800,000.00**	**1,120,000.00**	**1,280,000.00**	**3,600,000.00**

Table 4.5. Costs of materials and equipment.

4.3.4. Personnel Costs

Table 4.6 presents the costs related with the personnel.

Item	2020	2021	2023	2024	2025	Total
Salaries	146,580.00	210,980.00	237,779.50	243,723.99	249,817.09	1,088,880.57
Social Security	34,812.75	50,107.75	56,472.63	57,884.45	59,331.56	258,609.14
Other duties	822.50	1,120.00	1,148.00	1,176.70	1,206.10	5,473.30
Training	500.00	500.00	750.00	750.00	1,000.00	3,500.00
Total Personnel	**182,715.25**	**262,707.75**	**296,150.13**	**303,535.13**	**311,354.75**	**1,356,463.01**

Table 4.6. Personnel costs.

4.3.5. Equipment Costs

Table 4.7 presents the costs related with the equipment that supports the activity of the company.

Item	2020	2021	2022	2023	2024	Total
PCs and Laptops	3,000.00	3,000.00	1,500.00	1,500.00	1,500.00	10,500.00
Software licenses	8,500.00	3,500.00	1,400.00	1,400.00	1,400.00	16,200.00
Production Equipment	5,000.00	5,000.00	3,000.00	2,000.00	2,000.00	17,000.00
Reg. trademark/patents/design	5,000.00	5,000.00	5,000.00			15,000.00
Total	**21,500.00**	**16,500.00**	**10,900.00**	**4,900.00**	**4,900.00**	**58,700.00**

Table 4.7. Equipment Costs.

4.3.6. Costs with External Services and Subcontracting

Table 4.8 presents the costs related with the external services and outsourcing that support the activity of the company. Of special relevance is the cost related with subcontracting the assembly of some robot parts. An estimation of 3,000.00€ per sold robot was considered for this assembly service.

Item	2020	2021	2022	2023	2024	Total
Premises	16,800.00	17,304.00	17,823.12	18,357.81	18,908.55	89,193.48
Electricity	1,080.00	1,112.40	1,145.77	1,180.15	1,215.55	5,733.87
Communications	1,200.00	1,236.00	1,273.08	1,311.27	1,350.61	6,370.96
Consumables	600.00	600.00	700.00	700.00	700.00	3,300.00
Advertising	5,000.00	20,000.00	25,000.00	40,000.00	40,000.00	130,000.00
Assembly subcontracting	15,000.00	60,000.00	150,000.00	210,000.00	240,000.00	675,000.00
Representation expenses	5,000.00	16,000.00	32,000.00	30,000.00	30,000.00	113,000.00
Legal services	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00	15,000.00
External account	2,800.00	2,884.00	2,884.00	2,970.00	2,970.00	14,508.00
Total	**50,480.00**	**122,136.40**	**233,825.97**	**307,519.23**	**338,144.71**	**1,052,106.31**

Table 4.8. Costs with External Services and Subcontracting.

4.3.7. Total Costs

The total costs are presented in Table 4.9 and depicted in Figure 4.1.

Costs	2020	2021	2022	2023	2024	Total
Fixed	254,695.25	401,344.15	540,876.10	615,954.37	654,399.45	2,467,269.32
Variable	80,000.00	320,000.00	800,000.00	1,120,000.00	1,280,000.00	3,600,000.00
Pre-production	395,000.00	0.00	0.00	0.00	0.00	395,000.00
Total	**729,695.25**	**721,344.15**	**1,340,876.10**	**1,735,954.37**	**1,934,399.45**	**6,462,269.32**

Table 4.9. Total Costs.

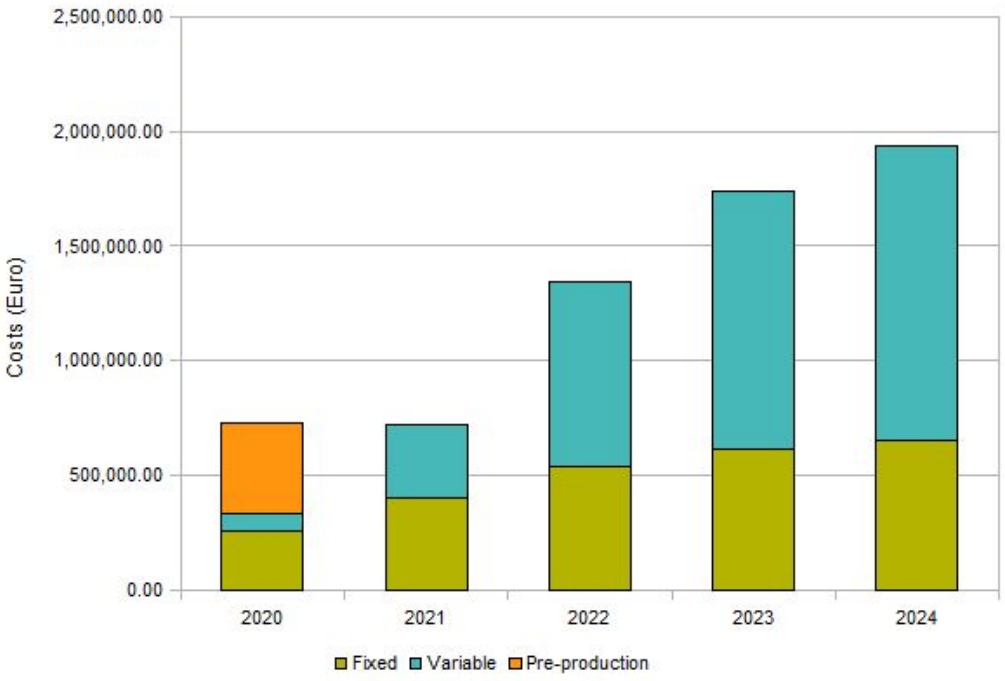


Figure 4.1. Annual total costs.

4.3.8. Operating Income

Table 4.10 presents the operating income (before taxes). The results are also presented graphically in Figures 4.2 and 4.3.

	2020	2021	2022	2023	2024
Total Costs	729,695.25	721,344.15	1,340,876.10	1,735,954.37	1,934,399.45
Gross Sales	250,000.00	1,000,000.00	2,500,000.00	3,500,000.00	4,000,000.00
Operating Income	**-479,695.25**	**278,655.85**	**1,159,123.90**	**1,764,045.63**	**2,065,600.55**
Cumulative Results	**-479,695.25**	**-201,039.40**	**958,084.50**	**2,722,130.13**	**4,787,730.68**

Table 4.10. Operating income.

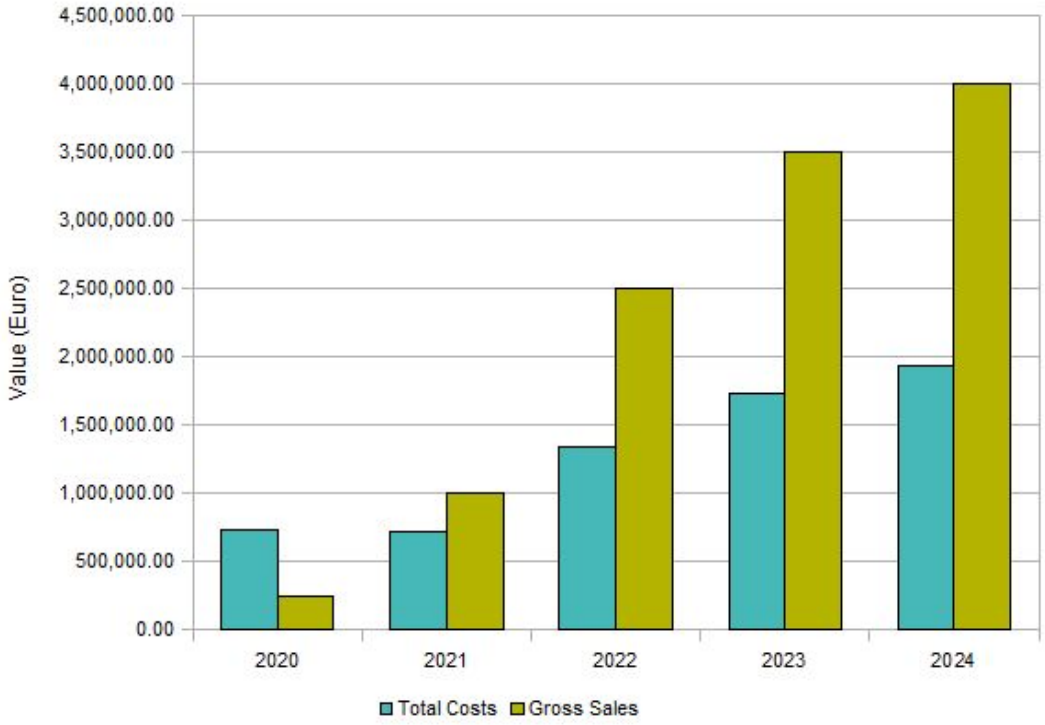


Figure 4.2. Annual total costs and gross sales evolution.

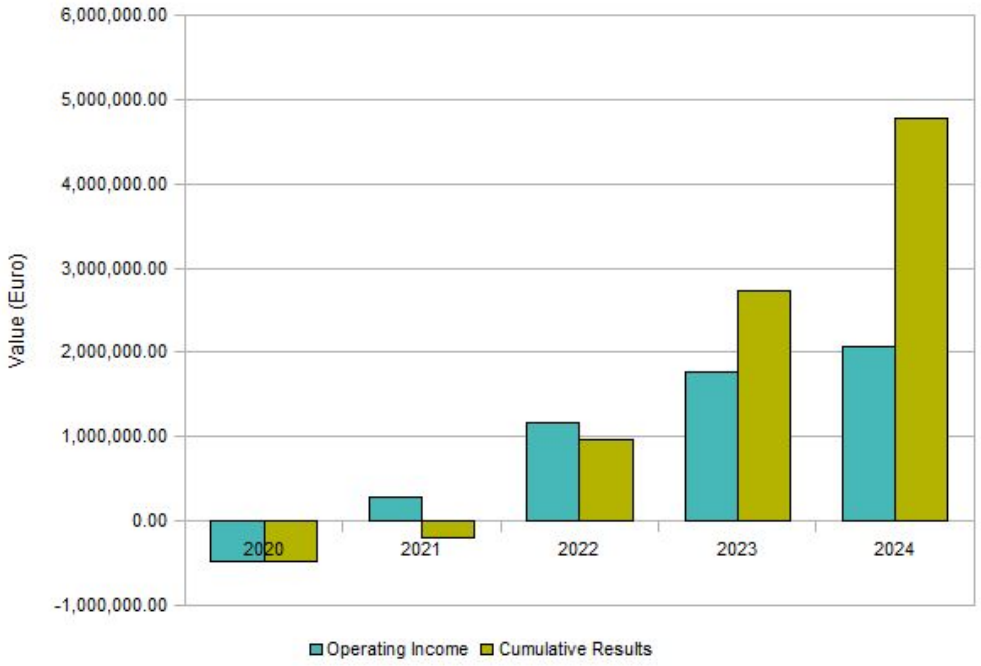


Figure 4.3. Operating income and cumulative results evolution.

It is predicted that during its 3rd year of commercialization (within 3.5 years after project completion) the SIAR business exploitation will reach its break-even with the return of the development investment

(self-funding along with all public funding) and also the income of significant revenues as well. This performance is depicted in Figure 4.4.

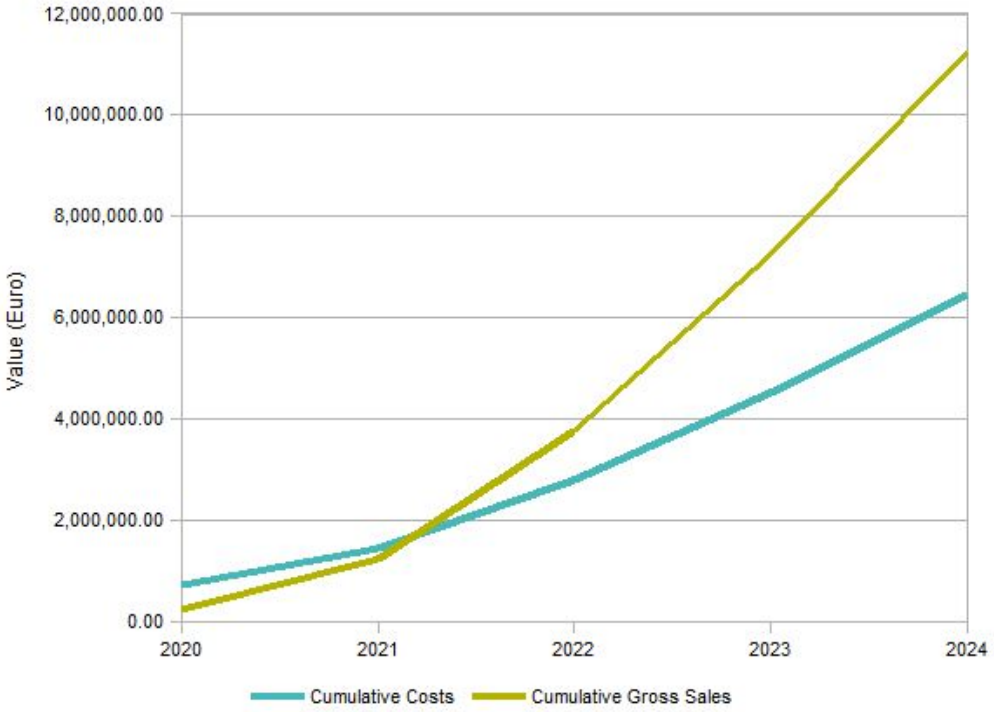


Figure 4.4. Cumulative costs vs Cumulative sales. Break-even during the third year of commercialization.

5 years after its introduction in the market, IDM expects a total turnover close to 11M€ from this business area, with a margin of 40% and ROI of 72%.

The operating income shows the need for an investment of a total of approximately 480k€ for the pre-production phase and the 1st year of commercialization. This investment will be covered according with the following:

- 210k€ will be funded by the EU through the ECHORD++ PDTI initiative
- 100k€ will covered by IDM through its robotics commercial activity (other applications)
- 170k€ will come from seed funding (angel investors, venture capitalists, accredited investors, etc)

4.3.9. Implementation and Control

The execution of the Business Plan will be made more effective by monitoring the activities associated with marketing, i.e., control of the inherent characteristics of the product, its price, distribution and promotion.

In a first phase the development of the prototype will be controlled, optimizing it for production and marketing scale. After the development of the prototype is intended to start production and marketing of

pilot units. In addition to the immediate return of investment, these initial sales will also accelerate customer membership curve.

Articulating the marketing of pilot applications and a better knowledge of the market in real time, there will be contacts with potential investors in order to boost the production and marketing of the product on a large scale.

This first phase includes also the control of the product promotion processes and the establishment of partnerships to ease the product entry.

While the product is being placed on the market, the mechanisms that enable an effective customer support will be created. In order to monitor the rate of satisfaction with the products and rapidly introduce any corrective measures, special attention will be given to customer feedback.

The management team will regularly meet to compare the actual results with the expected execution times and the implementation of the budget by introducing any adjustments in the planned activities. They will be metrics to measure progress of short, medium and long term, including:

- Sales volume (monthly analysis by type of customer)
- Results and costs (monthly analysis by type of customer)
- Responsiveness to orders (monthly analysis by type of customer)
- Satisfaction rate with the product (monthly analysis by type of customer)
- Introduction into new markets (quarterly analysis)
- Public perception of the product and attitude toward the brand (half-yearly analysis)
- Annual review of performance of the product in the market

5. Conclusion and Future Activities

The intention of this document was to present all the dissemination and communication activities that were carried out during the 2nd phase of the project. The Consortium has been finding a good tradeoff between the technology development related activities and the additional effort to communicate and disseminate its achievements in order to maximize the impact of the full project. For the final stage of the project, the Consortium will continue this strategic balance, and as the SIAR solution gets closer to its conclusion, it is expected an increase of its impact on the network of potential stakeholders.

A preliminary commercial exploitation scenario of the project outcomes, based on current plans of the Consortium, has been also presented. This exploitation plan is expected to be refined as the SIAR solution evolves for its final configuration.