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FIT4WORK

SELF-MANAGEMENT OF PHYSICAL AND MENTAL FITNESS OF OLDER WORKERS

CO-FUNDED BY

PARTNERS

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Market analysis

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1. Introduction

This document contains the summarized market analysis for the Fit4Work product, defined as the end result of the Fit4Work project. This means it contains the introductory market analysis (i.e. deliverable 6.1.1) that was the base of developing foundations for the business model of the Fit4Work product as well as the updates necessary following internal discussions within the consortium and feedback received during the Mid-term Review (summarized together with the contents of introductory market analysis into deliverable 6.1.2 as presented herewith).

The Fit4Work project aims to propose an innovative solution based on a wearable device (a wrist band), a smartphone and an environmental sensor device. Its purpose is to support its end users (i.e. workers aged 55 or more) in holistic management of their physical and mental fitness.

The main focus of this first version is on the following items, which were established as the objectives of the study:

- **Wearables Market**: Size, trends and growth. Qualitative and quantitative information of the global wearable electronics market and its segments, which wearable tech types are having the biggest impact and what is the value and role of wearables in business and how it will evolve. Trends of wearables market related to corporate wellness.
- **Socioeconomic Trends**. Demographic changes and the role of older workers in the European Union.
- **Target market and needs**. How can the market be segmented, characteristics of each segment, what is the market size and what are the preferences of potential Fit4Work users.
- **Marketing and sales**. How to deal with the “4P’s” (product, price, promotion, placement)
- **Competitors**. Who are the main competitors of the Fit4Work product? What are their characteristics?
- **SWOT Analysis**. Internal and external factors: strengths, weaknesses, opportunities and threats tothe Fit4Work product.

The research methodology can be put into the following sequence:

- **Secondary Research**. Preliminary data was compiled from authenticated data sources involving government sites, companies annual reports, articles, press releases, journals, white papers and research publications by recognized industry experts.
- **Primary Research**. Both quantitative and qualitative information was collected through “User requirements surveys”, focus groups (developed by UnieKBO in the Netherlands in 2015) and interviewing experts.
- **Data Analysis.** Once the data was gathered, this phase involved an analysis of the data collected, a market breakdown and an interpretation of the data.

2. Corporate Wellness and Wearables Market: Size, trends and growth

The Fit4Work project proposes an innovative easy-to-use and unobtrusive system that will support older workers and the relevant stakeholders in reducing and managing physical and mental stress resulting from their occupation, built on top of wearable wellness devices. With this it writes itself into the market trends observed over the recent years.

Global corporate wellness market is expected to expand at a rapid pace during the period between 2015 and 2023 owing to factors such as the introduction of new discounted Wellness Programs and the many benefits of offering corporate wellness programs to employees (TRANSPARENCY MARKET RESEARCH, 2015).

The sedentary lifestyle of corporate employees has led to growth in the number of people suffering from depression, obesity, hypertension, and other cardiovascular diseases. The increasing number of people suffering from various diseases has led to increased medical expenses. This has increased expenses for the corporations, as organizations have to spend more money on the management of human resources. To take care of this problem, companies avail corporate wellness solutions.

Corporate wellness programs aim to maintain and improve the health of employees. These programs are beneficial for the corporations in many ways, as they help in minimizing the attrition rate and in turn maximizing productivity. The company's profits are affected heavily by reduced productivity due to absenteeism. However, this can be avoided through effective wellness programs. Regular fitness activities effectively motivate employees to stay fit, which reduces unnecessary health expenses. As employees spend almost half of the day at or commuting to and from the workplace, it is also an important place to spread health awareness. Consistent increase in the healthcare costs, coupled with the availability of discounted wellness packages, has resulted in increased participation in wellness programs. These factors are expected to propel the global corporate wellness market in the years to come.

Earlier, employee wellness programs were only incorporated in bigger organizations. But today, even the smallest of firms have a corporate wellness program to keep their employees motivated and healthy. Employee retention is a major issue faced by many organizations across the globe. By implementing corporate wellness programs, this issue is predicted to be minimized, as it encourages employees to perform better and assures employee satisfaction.

Smart devices are the latest innovation in the ongoing health & wellness revolution and they are changing the game for wellness programs. Smart devices are not just more engaging because they materialize a commitment to take better care of oneself. They give users stronger incentives to walk the extra mile through algorithm based coaching. Users can build communities, share steps or weight objectives for mutual support, and engage in healthy competition. Health assessments designed by doctors can be made continuous and effortless. Real-time dashboard allows early detection and more effective risk mitigation.

According to the results of the survey "Wearables in Wellness. Employer use of wearable tracking devices in Wellness Programs" designed by Health Enhancement Research Organization (HERO) (Health Enhancement Research Organization, 2015), both employers and employees have a strong and growing interest in using wearable tracking devices to enhance wellness programs. The majority of companies currently offering

tracking devices intend to continue doing so, and many additional companies plan on beginning to offer the devices in the future.

The term 'wearable' refers to any electronic device or product which can be worn by a person to integrate computing into his or her daily activity or work and to use technology to make advanced features and characteristics available.

These devices, from fitness bands that monitor activity and sleep patterns to flexible patches that can detect body temperature, heart rate, hydration level and more, produce data that, often in conjunction with analytics, can be used by consumers to manage their health, and by healthcare organizations to improve care and potentially reduce costs through systems such as remote patient monitoring. Data generated by personal devices can be used by insurers and employers to better manage health, wellness and healthcare costs.

Regarding wearable users, there is also a growing population specifically interested in the concept of self-discovery via personal analytics, the Quantified Self (QS) movement. A number of scientific and popular publications describe methods and techniques for using consumer wearables as "self-hacking" devices—to improve sleep, manage stress, or increase productivity. Thus, consumers enjoy wearables not just for training and exercising, but also for everyday use as an integralpart of their lives.

Below is a timeline of release dates of the most important wearable devices 2011-2015.

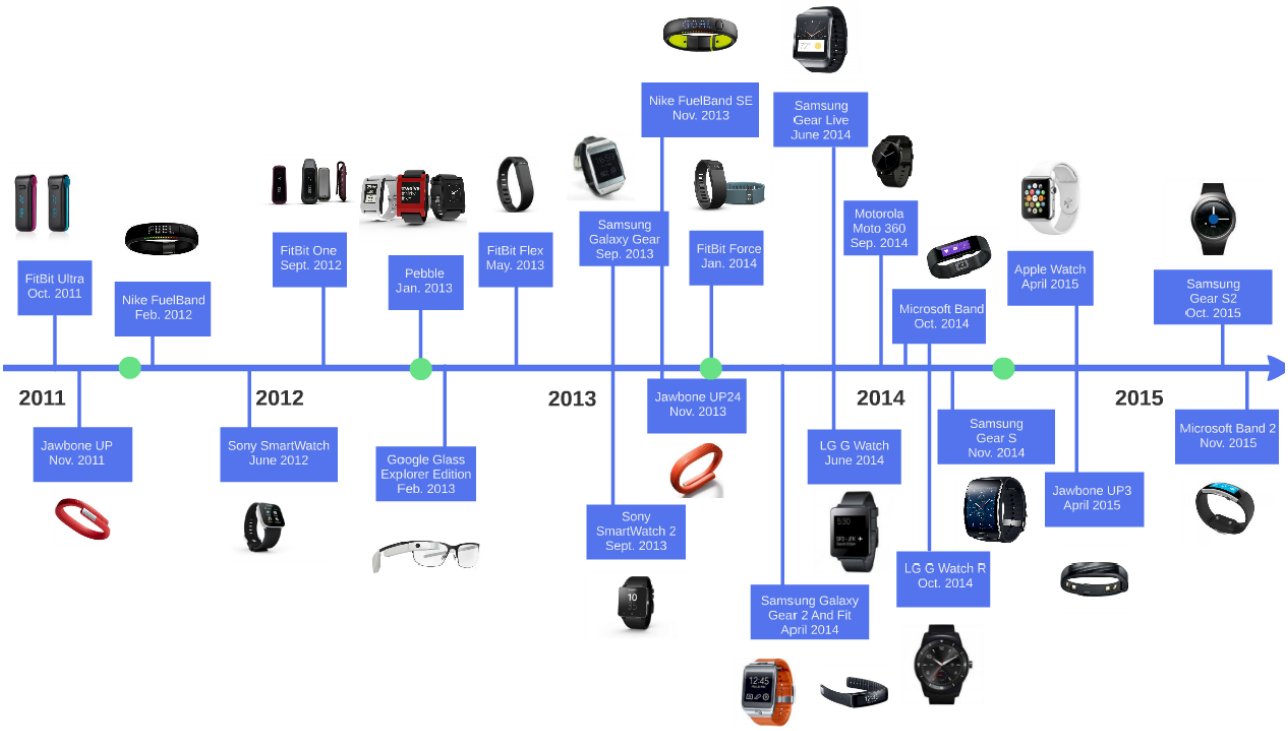

Figure 1. Wearable Device Release Date Timeline

According to BI Intelligence, the global wearable electronics products market revenue is expected to grow roughly at a CAGR (Compound Annual Growth Rate) of 35% and hit 148 million units shipped in 2019.

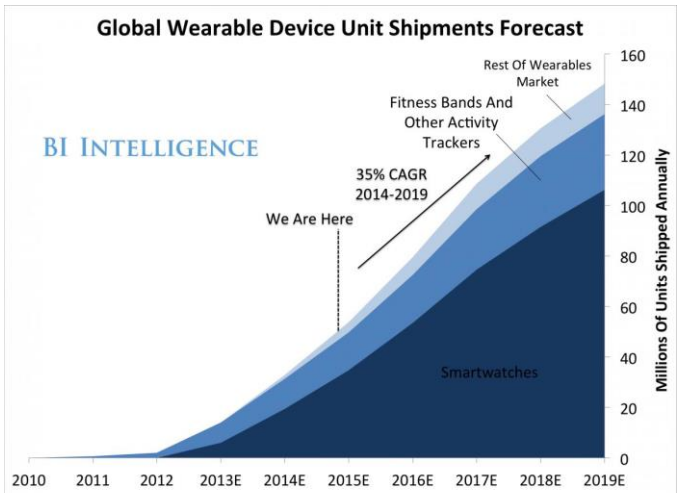

Figure 2. Global Wearable Device Unit Shipments Forecast (BI INTELIGENCE, 2015)

As reported by BI Intelligence, the smartwatch will be the leading product category and take an increasingly large share of wearable shipments (smartwatch shipments will rise by a compound annual rate of 41% over the next five years and these devices will account for 70% of total wearable device shipments by 2019), but according to latest NPD Intelligence forecast numbers, while the smartwatch category continued to gain in popularity due to the Apple Watch launch in April 2015, overall ownership growth has continued to trail the more mainstream fitness tracker category (fitness tracker ownership in the U.S. market stood at nearly 33 million devices at the end of Q4 2015, while smartwatch ownership stood at almost 13 million).

The fitness band is the wearable device that has been most accessible to the everyday consumer thus far, in terms of price and array of devices. Fitness bands' share of the wearable market is expected to be a 20% share in 2019 (BI INTELLIGENCE, 2015).

According to the NPD Group, annual 2015 dollar and unit sales of connected activity trackers experienced respective growth of 110 percent and 85 percent versus 2014, despite the average selling price (ASP) increasing from $96 to $109 (NPD Group, 2016)

The increase in ASP speaks to these devices becoming more sophisticated, and that consumers are looking for better-quality devices, not just entry-level products. This, combined with unit growth, shows that prices aren't falling to drive demand; demand is increasing along with rising prices.

Although awareness of the smartwatch device category is currently even higher than fitness trackers, fitness trackers are still showing strong sales and ownership, which shows that the category still has more headroom for growth, while strong awareness has not yet translated into more robust sales for smartwatches.

Otherwise, the US will be the dominant region in the wearables market over the period of 2014-2019 (BI INTELLIGENCE, 2015) Although it is estimated the US accounted for roughly 80% of the global wearables

market in 2014, in the long run, the US will phase into the middle stages of the adoption curve, while early adopters in other regions will propel growth in their countries, so share will fall to roughly 55% by 2019.

Many wearables are still in the early stages of development, but they can be broken down in general into two categories: **consumer and business**. And in all cases, wearables can be taken nearly anywhere (their mobility and portable form factor making up part of their powerful appeal and value proposition)(IHS Technology, 2014).

Regarding **business wearables**, according to Gartner, by 2018, two million employees will be required to wear health and fitness tracking devices as a condition of employment. The health and fitness of people employed in jobs that can be dangerous or physically demanding will increasingly be tracked by employers via wearable devices (Gartner, 2015)

Health tracking of employees in critical roles, including emergency responders, industrial workers, professional athletes, airline pilots, and so on, is very important because the monitoring not only helps to keep these types of workers safe, but it could also potentially alert them to future dangers to their health. For office employees, it could promote a healthier and happier office lifestyle. Thus, it can improve productivity and decrease health costs.

The Human Cloud At Work (HCAW) (RACKSPACE, 2014) study found that wearable technology can have significant benefits for both productivity and job satisfaction. Thus, productivity for people using wearable technology increased 8.5%, while their job satisfaction levels were up 3.5%.

However, employee wearable technology is in its infancy. Initially companies are focusing on basic use cases: workplace security access (23% currently using), employee time management (20% currently using) and real time employee communication (20% currently using). But basic work activities are just the tip of the iceberg for employee wearables, and 52% of companies are currently using (15%), piloting or planning (36%) to use wearables to track workplace productivity (Salesforce Research, 2015).

A survey conducted by Salesforce to discover who is already using or planning to use wearables in business revealed that 79% of adopters agree that wearables are or will be strategic to their company's future. Among current users, 76% report already seeing improvement in their business performance since implementing wearable device technology and 86% expect their wearable technology spend to increase in the next months. In addition, companies are embracing the emerging trend Bring Your Own Wearables (BYOW), which is the use of employee-owned wearable computing device in a business settings. Thus, 54% of adopters are currently supporting a BYOW model and 40% are planning to support this model in the future.

Moreover, US companies have been shown as particularly receptive to wearable technology and UK companies have not ignored the trend. The reasons for adopting the technology are improving employee well-being, instant access to important information and improved customer service as well as increasing employee productivity.

About the size and types of organization adopting wearable technologies, analysis shows that generally smaller companies (1.000-3.000 employees) are more interested than larger companies (more than 3.000 employees). Retailers and manufacturers have tended to be ahead of other sectors in this technology adoption.

Despite the growing interest in wearables and the positive overall predictions of the wearables market, most of these devices fail to achieve **long-term utilization**, they are not driving long term sustained engagement for the majority of users. According to Endeavour's Partners' research, more than a half of US consumers who have owned a modern activity tracker no longer use it. A third of US consumers who have owned one stopped using the device within 6 months of receiving it (ENDEAVOUR PARTNERS, 2014). This is because products and services that provide utility but fail to have a meaningful impact on users' behaviours and habits (e.g. an activity tracker that provides data but does not inspire action ends up failing in the market) mean users quickly abandon wearables that don't help them make positive changes.

Wearable technology today is underwhelming because the amount of data it provides is overwhelming. PWC's research shows that consumers appreciate the data wearable technology feeds them, but they have little sense of what to make of it, or how to adjust their lives accordingly (PWC, 2014). Users need "actionable" insights and this requires giving them accurate information in real time, then filtering and synthesizing the information and finally providing insights that lead to a better decision or change of behaviour.

However, despite the many benefits of wearables, some barriers to adoption have to be considered, such as price, style, lack of a killer app ecosystem and limited functionality.Employers also have to consider privacy, BYOD rules and technology cost.

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3. Socioeconomic Trends

The European Union's population is becoming older: the number of people aged 60 and over in the EU is now increasing by more than 2 million every year, twice as fast as it did before 2007. The working population is also ageing, as the proportion of older workers in employment increases in comparison with the cohorts of younger workers. In 2025, 35 % of the workforce is expected to be over 50 years old. In the 27 Member States of the EU, the 55 to 64 years-old working-age population is expected to increase by about 16% between 2010 and 2030. In many countries, older workers will then make up 30% or more of the total workforce (Ilmarinen, 2012)

The health and safety of older workers is a growing issue at EU level and in Member States. Retaining the older population at work is becoming a crucial economic success factor and improving health and safety in workplaces is one of the main contributing factors to increasing the employment rate of workers aged 55–64. Policies that address the ageing of the population and its workforce focus on enabling older workers to remain active and productive for longer (**E**uropean Agency for Safety and Health at Work, 2013)

Research on the employability of older workers has identified that the low participation of older people in the labour market is the result of a combination of wage conditions, rigidity in workplace organisation, inadequate skills and competencies and poor health status, rather than the wish to retire early (European Agency for Safety and Health at Work, 2013)

Health has strong effects on labour market participation in general and the labour supply of older workers in particular. Ageing leads to an increase in the risk of developing disorders and diseases, and health issues are the most common reason for leaving the workforce before the statutory retirement age. Musculoskeletal disorders (MSDs) and the growing incidence of mental ill health are the primary diagnostic causes for disability retirement(OECD, 2010)

It is obvious that prolonging working careers strongly depends on the adaptation of workplaces and work organisations, and enabling an 'active life in old age' ethos will become one of the major challenges in Europe and other highly industrialised world regions in future years (**E**uropean Agency for Safety and Health at Work, 2013)

Much of the research literature on ageing and health focuses primarily on the health of people over 65 years old. Very little is known about the overall health (physical, psychological, social) and age-related health changes among the older worker population (aged 40–65) (Robertson & Tracy, 1998). According to a report by Eurofound (Eurofound, 2008), greater dissatisfaction with working conditions appears in the 45–54 age group and is higher in low-skilled occupations and mid-skilled manual occupations. In the 50–59 age group, self-evaluated health is particularly poor among mid-skilled manual workers and low-skilled workers.

As stated in Work Ability studies, work ability promotion should cover all factors affecting individual work ability: health and functional capacities; competence; values, attitudes and motivation and working life. The workers are more responsible for their health and competence, and the employer has more responsibility for the organisation and arrangement of work. Good practice examples demonstrate that the costs of investing in older employees' work ability promotion are outweighed by the benefits. People can go on working productively, the work atmosphere improves, productivity improves, and age-related problems

decrease. Cost–benefit analysis shows that the return on investment (ROI) can be very good: the return on €1 amounts to €3–5 after a few years. The positive ROI is based on lower rates of sick leave, lower work disability costs and better productivity (Ilmarinen, 2012)

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4. Target market and needs

4.1. Target end users vs. target customers

Regarding target customer groups of the Fit4Work system, the main ones are employers of older adults, providers of integrated solutions and older adults themselves. In the background, potential customers considered are geriatrics, insurance providers and social & healthcare groups.

In relation to employers, as the 1.000-3.000 employee small and medium sized companies are the most interested in wearable solutions, at first we should aim at them. We should also consider factors as high age average and high absenteeism.

The initial final user of the Fit4Work system is an older worker aged 55+, and it is being designed following specific requirements and needs of this segment. However, once the system has been tested, it will be easily adaptable to a wider range of age.

It has to be considered that people of different ages have different expectations. Those who grew up around the same time often share certain preferences and have common values.

Workers can be described according to which of the following five generations they belong to:

- *Pre-boomers or mature/silent generation*, born before 1946 (they represent only a very small percentage of today's workforce, but for financial and personal reasons, those in this generation still in the workforce intend to stay).
- *Baby boomers*, born approximately during the years of 1946 to 1964.
- *Generation X-ers*, born approximately during the years of 1964 to 1981.
- *Generation Y-ers* (*Millenials*), born approximately since 1981.
- *Generation Z-ers*, born approximately starting in 1996 (they represent only a very small percentage of today's workforce. Their oldest members are turning 19 and they will start entering the work force in large numbers in just a few years).

Table 1 shows an overview of the working generations.

Table 1. An overview of the working generations (Whymandesign Creative Innovation, 2015)

Characteristics	Maturists (pre-1946)	Baby Boomers (1946-1964)	Generation X (1964-1981)	Generation Y (1981-1996)	Generation Z (Born after 1996)
Formative experiences	Second Word War Rationing Fixed-gender roles Rock 'n' Roll Nuclear families Defined gender roles-particularly for women	Cold War Post-War boom "Swinging Sixties" Apollo Moon landings Youth Culture Woodstock Family-orientated Rise of the teenager	End of the Cold War Fall of the Berlin Wall Thatcherism Live Aid Introduction of first PC Early mobile technology Latch-key kids: rising levels of divorce	9/11 terrorist attacks PlayStation Social media Invasion of Iraq Reality TV Google Earth Glastonbury	Economic downturn Global warming Global focus Mobile devices Energy crisis Arab Spring Produce own media Cloud computing Wiki-leaks
Aspiration	Home ownership	Job security	Work-life balance	Freedom and flexibility	Security and stability
Attitude toward technology	Largely disengaged	Early information technology (IT) adaptors	Digital immigrants	Digital Natives	"Technoholics"-entirely dependent on IT, limited grasp of alternatives
Attitude toward career	Jobs are for life	Organisational-careers are defined by employees	Early "portfolio" careers - loyal to profession, not necessarily to employer	Digital entrepreneurs – work "with" organizations not "for"	Career multitaskers – will move seamlessly between organizations and "pop-up" businesses
Signature product	Automobile	Television	Personal Computer	Tablet/Smartphone	Google Glass, grapheme, nano-computing, 3-D printing, driverless cars
Communication media	Formal letter	Telephone	E-mail and text message	Text social media	Hand-held (or integrated into clothing) communication devices
Communication preference	Face-to-face	Face-to-face ideally, but telephone or email if required	Text messaging or e-mail	Online and mobile (text messaging)	Facetime
Preference when making financial decisions	Face-to-face meetings	Face-to-face ideally, but increasingly will go online	Online – would prefer face-to-face if time permitting	Face-to-face	Solutions will be digitally crowd-sourced

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Moreover the following workplace characteristics have sometimes been linked to these 5 generations (Alberta Human Resources and Employment, 2006; Bhattacharya, 2015).

Table 2.Workplace characteristics linked to working generations

Pre-boomer/mature/silent generation	**Baby boomers**
• Long tenure with organizations • Respect hierarchies and authority • Figures • Like structure and rules • Demonstrate strong work ethic • Pay attention to the quality of work • Less mobility between jobs	• Sceptical of authority figures • Results-driven and ambitious • Have long-term aspirations • Organizations • Retain what they learn • Idealistic and competitive • People-focused • Generally optimistic
Generation X	**Generation Y**
• Comfortable with diversity • Value freedom and informality • Have short-term loyalty • Work well in networks and teams • Embrace technology • Seek life-work balance • Learn quickly • Generally sceptical	• Comfortable with diversity • Value informality • Have short-term loyalty • Learn quickly • Embrace technology • Need supervision
Generation Z	
• Highest level of technological connectivity • Entrepreneurial • Independent streak	

Those born in the same year or belonging to the same generation are not all alike. However, some of these shared characteristics may explain how workers from the same generation approach work. Generational differences can show up in workers':

- Attitudes about and expectations of work
- Attitudes toward authority
- Methods of communication
- Approaches to learning

Nevertheless, some of the social, economic, safety and medical myths about older workers are based on a perception that older workers are frail, unreliable and incapable of working effectively and safely. Some of these stereotypes and negative attitudes are responded below:

- *Older workers are more likely to have work-related injuries*. Not true. In fact, older workers suffer fewer job-related injuries.

- *Older people are all alike*. Differences within age groups are often greater than those between age groups.
- *Older adults are unable or unwilling to learn new things or skills*. Age does not determine curiosity or the willingness to learn. Older workers may sometimes take slightly longer to learn certain tasks and may respond better to training methods more suited to their needs.
- *Older adults avoid new approaches or new technologies*. Many people, regardless of age, enjoy new technology. Older workers are likely to respond well to innovation if it:
    - Relates to what they already know
    - Allows for self-paced learning
    - Provides opportunities for practice and support
- *Older workers have failing memories*. Long-term memory continues to increase with age.
- *Older workers are inflexible*. Older workers may be more cautious, a trait that can improve accuracy and safety.

Regarding employers drivers to incorporate wearables in Wellness Programs, according to the results of the survey " Wearables in Wellness. Employer use of wearable tracking devices in Wellness Programs" (Health Enhancement Research Organization, 2015), the main employer's objective of incorporating trackers into their programs is to increase physical activity (94%). Additional objectives included increasing engagement with health (77%), adding excitement and fun to the Wellness Program (75%), improving Wellness Program participation (59%), improving employee performance and productivity (51%), and controlling health care costs (34%).

4.2. Market size

The users target group of the Fit4Work product is older workers aged 55+. In 2025, 35 % of the workforce is expected to be over 50 years old. In the 27 Member States of the EU, the 55 to 64 year-old working-age population is expected to increase by about 16% between 2010 and 2030. In many countries, older workers will then make up 30% or more of the total workforce (Ilmarinen, 2012) According to projections, in the UE of the 27 states the age 55+ workforce will be 55.865.400 workers in 2033 (ILO, 2011).

Just based on the projected development of the target group, the project consortium sees a huge and increasing market for the Fit4Work product. In addition, there are other favourable factors apart from the demographic change, as the increasing awareness of the importance of a healthy lifestyle, the growth of both the wearables market and the corporate wellness market, and all policies that address the ageing of the population and its workforce.

4.3. End user preferences

Customer preferences and user requirements have been analysed through work done in WP2 within a survey performed on an international population of older adults, focus groups consisting of

representative of this population and interviews with several experts active in supporting older adults. The results of the analysis have been presented in detail in Fit4Work deliverable D2.2 (Blok et al, 2016) Herewith we extract those findings of the analysis related to interest in Fit4Work technology, purchasing Fit4Work technology and Business requirements.

The survey based on a questionnaire designed by the project team (Bussink et al, 2014) was conducted in five countries: The Netherlands, Poland, Romania, Slovenia and Spain. Altogether 277 older adults participated in the survey. Analysis of the respondents replies related to market and business are summarized below:

A typical user of the Fit4Work system is:

- A woman (67%).
- 50-65 years old (78%).
- Living in an urban area (66%).
- Holding a secondary or higher education (80%).

Regarding the interest in Fit4Work technology:

- *Half of the users (53%) declare interest in the Fit4Work solution*.
- *Users in the Netherlands are less interested (66% are not interested)*. The Netherlands is confirmed as the right place to perform the field test as we should attempt to convince the users that are hardest to convince. The reasons for the Dutch market to be less interested might be that this market is more demanding or it could be more crowded with well-being / e-health solutions.
- *About half of the users are interested in exchanging information with their peers and with specialists (45-55% in each country, except for Poland - more than 65% - and the Netherlands - only 29% - interested in exchanging information with their peers)*. Social networking within the system is confirmed as an aspect of interest to users.
- *Users are concerned about the privacy of their information (83%), too much interference (80%) and lack of control (77%)*. Privacy and security of data is an issue to take care of throughout the project and resulting product creation.

With reference to purchasing Fit4Work technology:

- *Users are not convinced to buy the Fit4Work product yet (70%)*. A marketing plan and good business model will be very important for the success of the Fit4Work products.
- *Users want to buy the Fit4Work product in a specialised store (72%)*. If the Fit4Work product is sold directly to users, it should be available in specialised stores.
- *Users don't know of a solution similar to Fit4Work*.

- *Users will be looking for information about Fit4Work on the Internet (45%), from friends or family (17%) and on TV (14%)*.
- *User want to pay less than 600€ in total and/or 50€/month for the Fit4Work product*. If the Fit4Work product isto be paid for by the target users themselves it has to be fairly cheap.

The focus group was organized as a series of meetings with 9 persons aged 55-75. The discussion in the group was related to the following topics: motivating factors to use ICT for health, privacy, preferred device, special features and costs.

The conclusions of the focus group related to the business requirements are summarized below:

- If Fit4Work system is mainly for work, let the employers pay. If the employee is asked to contribute, the product must also be interesting at home.
- If insurance or employer pays, benefits for employee need to be very clear (how are insurers and employers going to use health data?).

5. Marketing and Sales

5.1. Product

It is foreseen that the complete Fit4Work system will consist of the following elements:

- A user device package, containing:
    - Wrist-worn wearable device – Microsoft Band 2;
    - Environment sensor device – Netatmo
    - A smartphone.
- User applications enabling to assess the fitness of the end user, propose recommendations and lead through exercises (mobile app, cloud platform).

The Fit4Work product will be sold in different modules. Today's technological developments tend to be increasingly modular for better adaptability to market developments and customer wishes.

Regarding the unique selling proposition, the Fit4Work solution differs from other competitors by offering both physical and mental stress management through smart biomonitoring (physical activity, physical stress and mental stress) as well as integrating both biosignal data of the user together with ambient parameters data. Furthermore, the recommendation system consists of mean to provide:

- **Real time feedback**.
- **Individual Fitness Plan**, which includes a set of physical exercises and stress relief exercises.

5.2. Price

Due to the high development costs of the Fit4Work solution, it is proposed to use the skimming strategy in marketing the end product. In the beginning, the price will be relatively high to cover the costs and will then go down due to reduced technology and development costs. This is justifiable due to the unique selling propositions and the high quality promise of the product.

Due to the Fit4Worksystem still being in the development phase, the final price cannot be determined. It should, however, not exceed 600€ if it is sold directly to individuals and/or older workers, according to results of our survey. Another option to consider for this target group is to lease the system for a monthly fee (less than 50€/month). According to Vandrico Inc. Wearables Tech Market Database, which is based on 433 devices, the Average Selling Price (ASP) of wearables is 290 $ (Blok et al, 2016) but this ASP decreases if we are talking about Lifestyle wearables (238 $) or Fitness wearables (169 $). The following table shows the ASP of wearables devices by body location.

Table 3. Average Price by location (Blok et al, 2016)

Eye	$1944 USD
Legs	$846 USD
Head	$579 USD
Torso	$385 USD
Thighs	$299 USD
Shoulders	$284 USD
Body	$250 USD
Feet	$247 USD
Pelvis	$199 USD
Body (Anywhere)	$187 USD
Waist	$180 USD
Wrist	$179 USD
Arm	$164 USD
Neck	$158 USD
Ear	$138 USD
Ankle	$136 USD
Fingers	$134 USD
Hand	$111 USD
Eyes	$95 USD
Chest	$92 USD

Concerning the other target groups (employers, providers of integrated solutions), a price can be set as an incremental quantity based pricing per product. A different price may be applied to each quantity range.

5.3. Promotion

Due to the fact that the target group of older workers prefer face to face communication and usually want to be advised by a trusted person, Fit4Work must definitely be promoted through very personal and reputable communication channels. The most promising promotion channels are at the moment:

- Meetings/workshops at companies/insurance companies
- Initiative centre for seniors (UnieKBO)
- Advertisements in newspaper, television broadcasting for seniors

5.4. Placement/Distribution Channels

According to the results of our survey, the preferableplaces for older workers to buy the Fit4Work product seem to be specialised stores, but online stores have to be taken into account.Internet is a selling channel relatively easy to set up and to maintain, and even though the elderly are not necessarily used to this kind of shopping, their younger relatives could buy the Fit4Work system for them.

Apart from the actual selling place, it is extremely important to set up a service infrastructure which can be contacted in case of questions and problems, as well as to gather feedback from the user.

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In relation to employers, they are showing themselves particularly receptive to wearables for health and wellness management. If wearables usage leads to improved productivity, reduced work absence, lowered health bills, and cutbacks on health insurance premium payments, then employers can become a significant distribution channel for wearable device makers. Thus, the Fit4Work product may be sold directly to the employer or through a wellness company, integrating the Fit4Work system in their corporate wellness programs.

Companies providing broader smart space solutions will be another indirect distribution channel for our product.

6. Competitors

Based on both consumer and business applications, the wearables market can be divided into 4 categories:

- **Fitness and Wellness**. Devices which are used in the monitoring of activity and emotions.
- **Healthcare and Medical**. Devices which require FDA or equivalent approval. They are used in monitoring of vital signs, as well as for augmenting senses.
- **Industrial and Military**. Devices that receive/transmit real-time data in military and/or industrial environments.
- **Infotainment**. Devices that are used to receive and transmit real-time information for entertainment or enhanced lifestyle purposes.

Considering the previous segmentation, the Wearables Vendor Landscape is shown in the figure below:

Figure 3. Wearables Vendor Landscape (Bussinket al, 2014)

According to IDC and its Worldwide Quarterly Device Tracker of February 23, 2016, the worldwide market shares, shipments and year-over-year growth of the top 5 wearables vendors, are shown in the following tables (2015, Q4 2015) (IDC Technology, 2016).

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Table 4. Top Five Wearables Vendors, Shipments, Market Share and Year-Over-Year Growth, 2015 (Vandrico Inc., 2015)

Top Five Wearables Vendors, Shipments, Market Share and Year-Over-Year Growth, 2015 (Units in Millions)					
Vendor	**2015 Unit Shipments**	**2015 Market Share**	**2014 Unit Shipments**	**2014 Market Share**	**Year-Over-Year Growth**
1. Fitbit	21.0	26.9%	10.9	37.9%	93.2%
2. Xiaomi	12.0	15.4%	1.1	4.0%	951.8%
3. Apple	11.6	14.9%	0.0	0.0%	NA
4. Garmin	3.3	4.2%	2.0	7.1%	60.9%
5. Samsung	3.1	4.0%	2.7	9.2%	18.5%
Others	27.0	34.5%	12.0	41.9%	124.0%
Total	78.1	100.0%	28.8	100.0%	171.6%

Table 5. Top Five Wearables Vendors, Shipments, Market Share and Year-Over-Year Growth, Q4 2015 (Vandrico Inc., 2015)

Top Five Wearables Vendors, Shipments, Market Share and Year-Over-Year Growth, Q4 2015 (Units in Millions)					
Vendor	**4Q15 Unit Shipments**	**4Q15 Market Share**	**4Q14 Unit Shipments**	**4Q14 Market Share**	**Year-Over-Year Growth**
1. Fitbit	8.1	29.5%	5.3	43.9%	52.8%
2. Apple	4.1	15.0%	0.0	0.0%	NA!
3. Xiaomi	2.7	9.7%	0.7	6.2%	258.5%
4. Samsung	1.3	4.9%	0.8	6.7%	65.0%
5. Garmin	1.0	3.5%	0.6	5.3%	48.2%
Others	10.3	37.4%	4.6	38.0%	123.7%
Total	27.4	100.0%	12.1	100.0%	126.9%

Fitbit ended 2015 as the undisputed worldwide leader of wearable devices. The drivers in play are a well-segmented device portfolio, a fast-growing corporate wellness program, and extended market reach around the world. 2016 shows new hardware development with a watch (Fitbit Blaze) and a fashion-oriented wristband (Fitness Alta), while the company remains true to its fitness tracking DNA.

Apple grew its Watch distribution, enjoyed holiday promotions, and drove the company's overall 'Other Products' revenue during 4Q15. However, volumes for the quarter grew only slightly from the previous quarter and total revenues have yet to counterbalance the slowing growth and declines from the company's other product categories. Expectations are higher for the next-generation Watch that can leverage the company's platforms (HealthKit, ResearchKit, WatchKit, and watchOS 2) and connectivity capabilities.

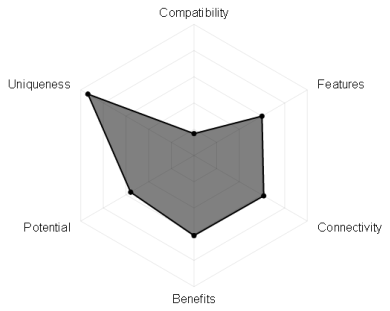
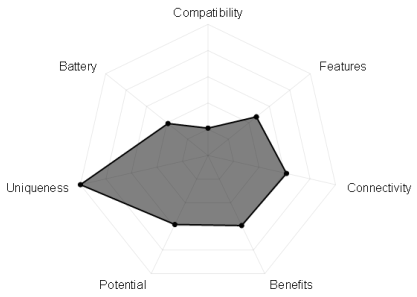
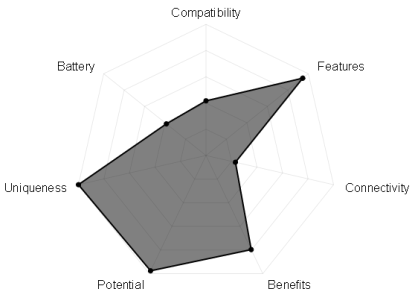
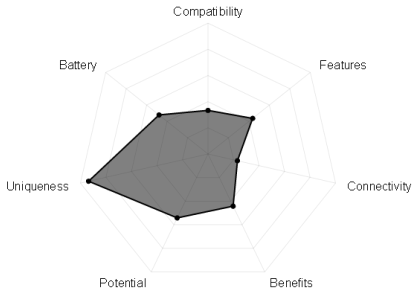
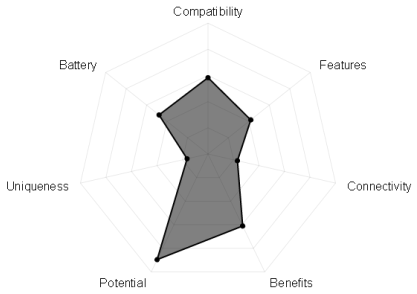
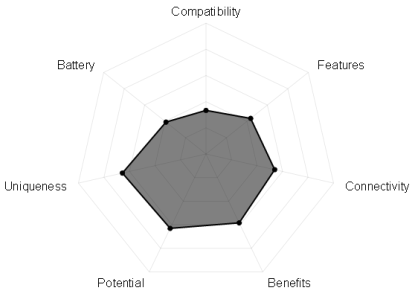
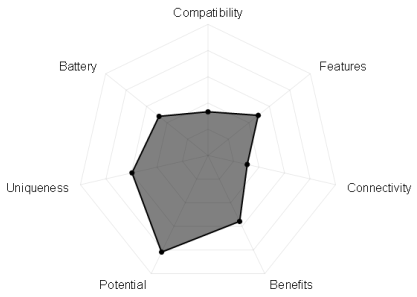
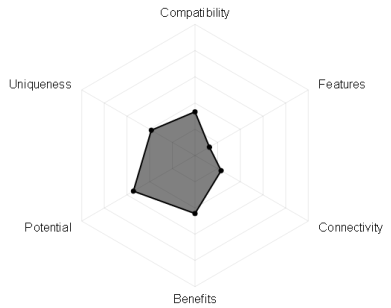
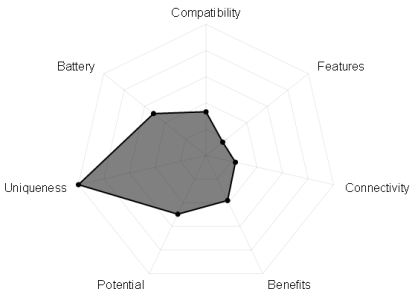
Xiaomi's focus on inexpensive fitness trackers resonated within China, with prices far below the competition (as low as $11 USD), making the Mi Band an inexpensive purchase. This allowed Xiaomi to have the largest year-over-year improvement of any vendor on the IDC list. Xiaomi's latest device, the Mi Band Pulse, continues that tradition ($13 USD) even as it adds constant heart rate monitoring. This puts the company on a more even playing field with other vendors, but not enough to stand out against the crowded market.

Samsung finished just ahead of Garmin to take fourth place during the quarter. Driving volumes was its Gear S2, which caught attention for its bezel-based user interface and its optional cellular connectivity. Beyond the Gear S2 were legacy devices including the year-old Gear S and the two-year old Gear Fit. The company recently began experimenting with other form factors, including a smart belt, NFC-connected suit, and footwear.

Garmin's long history with wearable fitness translated well for the company to remain among the top five vendors worldwide. Garmin has a well-segmented device portfolio, with devices that specifically address runners, golfers, swimmers, citizen athletes, and followers of other activities. Recently the company announced Varia Vision, an augmented reality display that mounts to a pair of sunglasses for cyclists.

Table 6 shows a relative score of some of the most important Fitness&Lifestyle wrist wearables:

Table 6. Relative score of relevant Fitness&Lifestyle wrist wearables:

APPLE WATCH (Price: $349,00 USD)	**SAMSUNG GEAR S2 (Price: $299,00 USD)**	**MICROSOFT BAND (Price: $199,99 USD)**
		
FITBIT BLAZE (Price: $199,95 USD)	**FITBIT CHARGE HR (Price: $149,95 USD)**	**GARMIN VIVOACTIVE (Price: $149,95 USD)**
		
GARMIN VIVOSMART HR (Price: $149,95 USD)	**EMPATICA EMBRACE WATCH (Price: $199,00 USD)**	**JAWBONE UP3 (Price: $179,99 USD)**
		

7. SWOT Analysis

STRENGTHS	WEAKNESSES
• **Physical and mental stress management**. • **Custom recommendation system** that takes into account user's personal context and situational data. • Focused and adapted to 55+ user's needs, but easily adaptable to all ages of workers. • **Training plan.** • **Human-centered design approach.** • **Strong technical solution**. • **Modularity of the system**.	• **Established & Credible Brand**. • **Brand Awareness**. • First prototype will be **expensive** in comparison with average selling price (109$ ASP in 2015 (NPD Group, 2016). We must consider inexpensive Chinese vendors, e.g. Xiaomi, which are progressing in western markets.
OPPORTUNITIES	**THREATS**
• People still don't see the point of wearables and don't yet understand what is the core benefit of having them. One of the barriers of wearables adoption is the lack of a "killer app", and just the creation of a **robust wearable app ecosystem** will be a great challenge and a great opportunity. • Today's wearables gather users information and turn it into insights, but don't have a consistent recommendation system that helps users	• **Privacy concerns**. Enterprises will need to be consistently transparent with data and how to use it. • **Smartwatches** will be the leading product category and take an increasingly large share of wearable shipments. • New Tech **Start-ups**. • Established & Credible **Brands**.

8. Conclusions

The current document contains an initial analysis of the market related to the commercialization of the solution developed by the Fit4Work project. Based on both the growth of the wearables market and the projected development of the target group, as well as the increasing awareness of the importance of a healthy life, we see a huge and increasing market for the Fit4Work product.

Some key points of the performed market analysis leading to this conclusion as well as those important for further development of the solution and the business model for the derived product, are summarized below:

- It is estimated the global wearables market will grow at a compound rate of 35% and hit 148 million units shipped in 2019.
- Despite the smartwatch being the leading product category, other wearables like fitness bands will continue to cater to niche audiences and their share of the wearable market is expected to be a 20% share by 2019.
- Enterprises are beginning to see the business value proposition of wearable devices, and these devices are going to be used in the workplace.
- Despite the growing interest in wearables and the positive overall predictions of the wearables market, most of these devices fail to achieve long-term utilization, not driving long term sustained engagement for the majority of users.
- Barriers of adoption to wearables include price, style, lack of a killer app ecosystem and limited functionality. Employers also have to consider privacy, BYOD rules and technology costs.
- EU's working population is ageing, as the proportion of older workers in employment increases in comparison with the cohorts of younger workers. Prolonging working careers strongly depends on the adaptation of workplaces, and work organization and enabling an 'active life in old age' will become one of the major challenges in Europe and other highly industrialized world regions in future years.
- Cost–benefit analysis of employees' work ability promotion programs shows that the return on investment (ROI) can be very good: the return on €1 amounts to €3–5 after a few years.
- People of different generations have different expectations and they are used to sharing certain preferences and have common values. It is important when considering attitudes about and expectations of work, attitudes toward authority, methods of communication and approaches to learning.

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