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Healthy on the Blockchain

City of Roeselare & Howest University of Applied Sciences & Art

How using blockchain enables citizens to stay in control of their health and their health data

Introducing 'Healthy on the Blockchain'

'Healthy on the Blockchain' (HoB) is a partnership between the City of Roeselare and the Howest University of Applied Science and Arts. Healthy on the Blockchain (HoB) offers a preventive health program to organisations, with a user-friendly on-boarding process and a secure connection between trainer and trainee. Roeselare will be the first pilot organisation to test HoB.

Roeselare will add 20 new users (city employees) onto the HoB platform. The employee will be sent an email with practical information about the program, about the HoB application, and about the wearable device the program uses. The employee will install an application on their smartphone, and receives the wearable device.

The employee creates a user profile with information like their name, weight, and height. The employee also maps their current fitness level by answering some questions that analyse their fitness at work, their lifestyle, and their stress levels. Based on this information, a training program will be generated and linked to the various activity profiles according to the employee's fitness level.

The employee can then get started with the wearable and the training program, managing them via the application on their smartphone.

The programme's activities include walking, running, at home fitness exercises, and relaxation. The wearable tracks the users' steps and heart rate. The activity data goes to a coach, Ken, who can follow up and support the pilot users via a dashboard. The coach is supported by a virtual trainer, as feedback is automatically generated by the system. This feedback includes encouraging people to take more steps, rewarding them with badges for achieving particular goals, and inviting them to do meditation and relaxation exercises.

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Why a workplace health pilot?

The labour market is at a turning point. Workloads and stress levels are increasing, and it's not surprising that more and more organisations are taking action to try and improve their employees' physical and mental health. More than a third of Flemish workers struggle with stress or mental fatigue, and fewer and fewer employees think they'll be able to stay in their job until retirement.

There is an obvious need for employers to take this seriously and develop physical and mental health policies. A 2015 survey by the Flemish Institute of Healthy Living showed that employers generally performed poorly in this area, with smaller companies particularly underperforming. In fact, companies seemed to be doing even less to support exercise than they did in 2012, and important lifestyle issues such as a healthy diet, sufficient exercise, or limiting sedentary behaviour were rarely prioritised. It seems that companies only invest in services when they are forced to by workplace legislation. At the same time, extensive research shows that unhealthy employee lifestyles result in higher levels of absenteeism, lower productivity, lower employability, and less employee involvement.

In Roeselare, the level of absence due to illness was 6.55% in 2017. In response, the City has drawn up a health policy and started the Fit4Work Programme, which has been appreciated by employees. Roeselare's participation in the BLING project and the 'Healthy on the Blockchain' pilot will give the city's Fit4Work project an extra boost.

Introducing fit4work

Roeselare has a dynamic local government – but in order to deliver this, it's not only important to have the right people and skills, but the right environment as well. If people have a good work-life balance (i.e. they feel happy and healthy), then absence through illness goes down and workplace stability goes up. In order to support their staff, the city of Roeselare set up the Fit'R program. This focuses on delivering a good work-life balance, flexible and appropriate workplace procedures, and the Fit4Work project.

Fit4Work is a program to help employees become more active. Each semester, a calendar is filled with different types of activities: active sports (tennis, start to run), sports to get into balance (yoga), and some activities supporting healthy eating. Everyone who works in the local government of Roeselare can register for these activities.

Why use blockchain? *Blockchain brings data security and ownership to sensitive data*

Preventive health care is important, and it will become even more important over the next few

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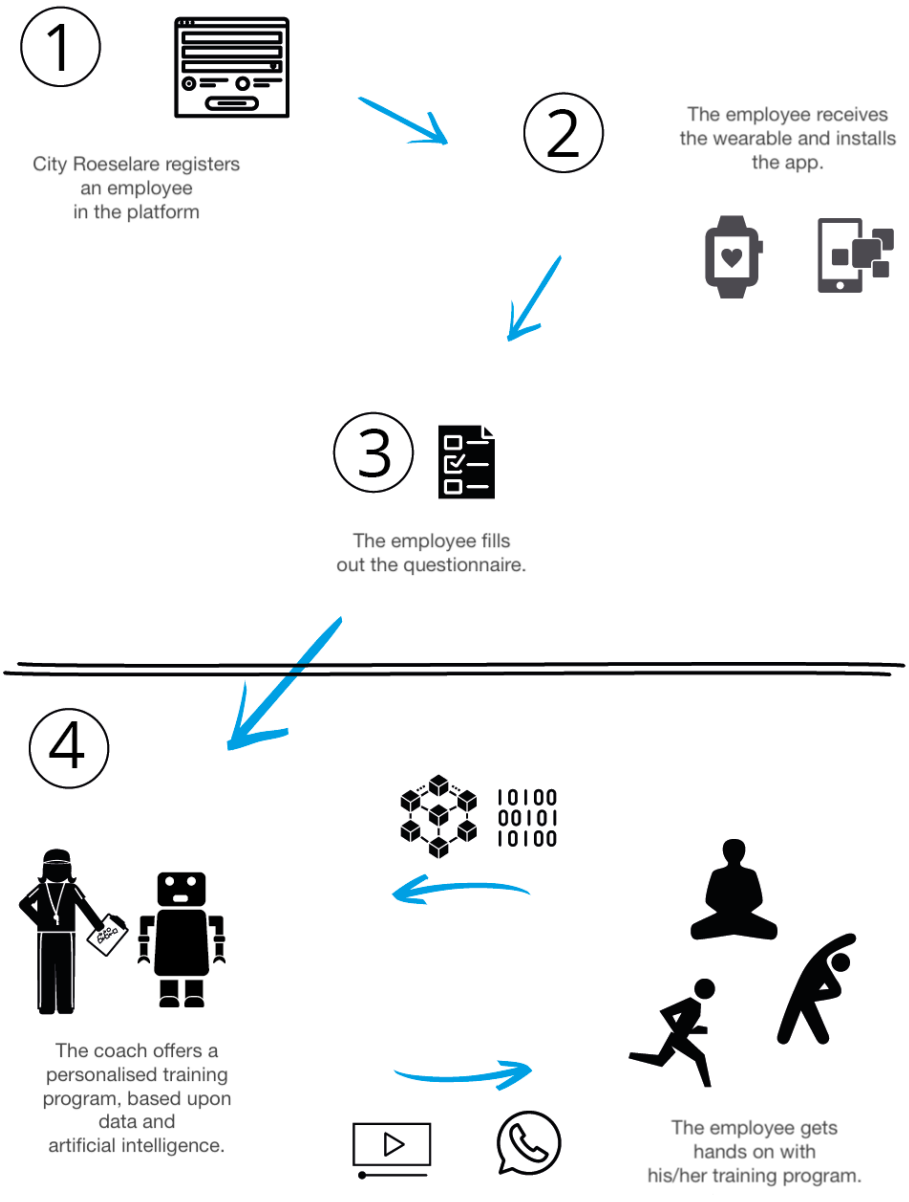
years. As employees will have to work longer, it is in every organization's best interests to improve the well-being of their employees. Offering personal coaching to guide health (covering both fitness and healthy lifestyles) is only economically feasible when the coaching can take place remotely and via digital means. Wearables are a hip and handy tool to help a coach deliver a personalised service. However, because these wearables also collect personal information about the "user", they are an interesting target for cyber criminals or for organisations that sell customer data. Wearables that use a central database pose a security risk for organisations and/or third parties with centralised storage solutions.

The solution to this is to set up an inherently secure private blockchain within an organisation, where each pilot user has a wearable and whose data is added to the blockchain in a form that can be analysed, which can then be used for personalised feedback. The remote e-health coach has access to the client's data and can provide the user with digital guidance and feedback. The solution is designed so that the client does not have to worry that their activity data will end up in the hands of the HR department or in an external database. This gives employees peace of mind that they will not be monitored or managed on the basis of their exercise data.



This is one of the pillars of this pilot: trust in blockchain, trust in their own data, and trust in their own privacy. By using blockchain, the data between the client and the coach remains in a self-contained loop in which the client owns their data but the coach is able to provide one-on-one communication and feedback based on the data. The system will also generate notifications and activity suggestions - if for example the user reports feeling down for 3 days in a row, the user will get a notification suggesting they go for a walk outside. Being able to do this digitally is more relevant than ever, as it meets users' expectations for how services should work.

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Who will benefit from this pilot?

1. Knowledge institutions doing blockchain research and implementation
Howest will expand their knowledge and experience developing blockchain-enabled solutions for health applications. Their work began with comparisons of different wearable devices, moving on to creating a blockchain for data from clients and coaches, translating raw data into aggregated data for analysis, and ultimately leading to client feedback via a coach/client platform. The project has produced a proof of concept for a business model that delivers preventive health care within organisations, offering a coherent and structured approach that stimulates a healthy lifestyle for employees. They will also produce an e-coaching manual for the business' coaches.

2. Employers - linking wellbeing & innovation
The City of Roeselare has two objectives for this pilot. By connecting sports with digital tools, they can introduce new technologies like Blockchain into their organisation in a fun way. Secondly, this provides an extra boost to Roeselare's ongoing work to help the staff with their physical and mental wellbeing. Without using these digital tools, the City would not be able to afford providing personal coaching - even to test as part of a pilot.

3. Employees
Participating employees will be supported in their efforts to adopt healthy and happy lifestyles, while remaining in control of their own health and fitness data. The test group of Roeselare employees will receive personalised guidance from their personal coach via remote feedback after analysis of aggregated data. Employees will handle their own health data, and be able to track their own progress, while being supported and motivated by their coach.

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Communicating and learning from the pilot

The pilot's test period will begin in March 2021. User tests with the pilot group and with the coaches will teach us a lot about the UX, about using blockchain in practice, about what makes a successful health application, about wearable devices, and about how we can best manage and develop the connections between all of the components parts of the system.

Roeselare is now setting up a communication program to promote this innovation project as part of their 'Fit4Work' programme. The fact that this initiative is linked to an existing and well-known programme makes communication and awareness-raising easier as they introduce new technologies to the Fit4Work program.

Preliminary work has shown that it's not that easy to explain the use of blockchain to the target audience with brochures and flyers. As a result, Roeselare has decided not to explicitly mention that they are using blockchain in the publicity materials for the 'recruiting phase' of the pilot. They will host information sessions for potential users which will explain the underlying technology, and which will give users an opportunity to ask questions.

Because of the COVID-19 outbreak, Roeselare will highlight the 'Corona proof' nature of this service. While the regular Fit4Work activities have had to be put on hold as they are unable to provide group sports activities for adults and teenagers, this new HoB platform is a welcome alternative which offers support and a more tailor-made approach than the previous Fit4Work@home approach.