IoT-enabled services for home care providers

How to enable residents to live at home safely and independently and add new revenue streams to your business.

onics.

IoT-enabled services for home care

1.0 Introduction

The care industry is challenged by changing demographics which are leading to a higher number of elderly people in need of care and a lower number of available care professionals.

The World Health Organization estimates a healthcare workforce gap of 14.5 million people by 2030. Already today, the lack of care professionals is resulting in constant pressure in their work lives and little time spent with patients. And according to the WHO's estimates, this is only going to get worse.

Estimated healthcare workforce gap by 2030:

14.5 million

To close this gap, it is essential to make use of technology to enable people to continue living at home safely and independently.

Technology-enabled care solutions assist with monitoring activity, sleep, and more, recognizing irregularities and emergencies (e.g. falls), and ensuring the residents get the help they need.

Features of IoT-enabled care:

- Activity monitoring
- Sleep monitoring
- Fall detection
- Emergency detection
- ….

At the same time, the system gives peace of mind to relatives who can check up on their loved one's activities and ensure they are well.

With the growing need for care, offering intelligent home care solutions presents a remarkable business opportunity for companies providing care solutions.

In addition to the care-related services, an IoT system enables you to offer additional features such as intruder detection, fire detection, as well as remote control and automation of lighting and appliances.

In this guide, we will give an overview of some of the services that can be included in a care solution based on IoT technology as well as the technical elements to consider during development.

2.0 The right foundation for your home care solution

Before we dive into the different features an intelligent home care solution can include, let us discuss a few key elements to consider during the development process to ensure your TEC solution will be a success.

Prioritize maximum flexibility with an open platform

Flexibility is key when it comes to IoT solutions. The technology landscape is evolving quickly, and the only way to get a future-proof solution is to ensure it is open for future updates (e.g. new software features or devices).

Keeping your solution flexible also allows you to adapt it to your customers' preferences and changing care needs. For instance, some people feel more comfortable with wearable panic buttons, while others will forget to wear them, necessitating other means of calling for help in case of emergencies (e.g. radar-based fall detection and/or 2-way audio devices connecting to Alarm Receiving Centers).

Integrate established cloud services for easy scalability

IoT-enabled care solutions often rely on a cloud connection to transfer and process collected data. To ensure a future-proof solution it is crucial that your cloud is scalable. Cloud providers such as AWS or Microsoft Azure provide a tried and tested platform that enables you to scale your solution as you grow.

At the same time, relying on an established cloud provider saves you time and money during the development of your solution.

Keep user data private

Technology-enabled care solutions gather and process large amounts of personal data that need to be protected. During the development of your solution, it is therefore important to opt for a platform with multi-layered data security and regular maintenance.

Enable 3rd party device integration with standard protocols

When it comes to connecting the devices to your gateway, you have the option to use either proprietary or standard communication protocols.

When using a proprietary protocol, your system will be locked to your products, and you will only be able to include those products in your solution.

By basing your solution on standard protocols (e.g. Zigbee, Bluetooth, or the 869 MHz social alarm network) you can choose between many different device manufacturers transmitting a variety of activity data and medical sensors such as blood pressure trackers or oximeters.

Provide alarm validation through Alarm Receiving Centers

To provide a full-service home care solution, consider adding alarm validation to your services. Existing ARC providers such as Skyresponse make it easy to integrate their services into your solution.

Many ARCs communicate via the protocol SCAIP (Social Care Alarms over IP). By including this protocol in your solution, you can easily connect to most existing ARCs.

Combined with two-way digital audio devices in the home, these integrations enable you to validate emergency calls and evaluate what kind of help is needed.

Choose unobtrusive products

People with increased care needs do usually not want to draw attention to this by placing bulky and highly visible products in their homes.

To increase the adoption and acceptance of your care solution, base your solution on products with an elegant design that do not look out of place in your customers' homes.

Prioritize easy usage and maintenance

Home care solutions are typically used by vulnerable individuals, seniors, and care personnel, not IoT experts. To ensure the solution is running properly, it's thus important that it doesn't require complicated installation or maintenance.

By choosing easy-to-use products with a long battery life, you can make it easy for your customers and employees to utilize the home care system and ensure care personnel are spending their time caring for people, not for technology.

Ensure your solution functions reliably

In the medical sector, it is especially important that a solution functions reliably and that residents get help when they need it. If your solution drops out and is not reliable, you might miss important information or emergency alerts.

Reliability is a fundamental consideration during the development process of a TEC solution. By basing your solution on a proven platform with regular maintenance, you can ensure you are getting a reliable TEC solution.

Shorten time to market with a white label platform

You can choose to develop the solution from scratch, giving you maximum flexibility and control during the development process.

Alternatively, you can work with a 3rd party provider of white label IoT platforms that can be adapted to your requirements. This allows you to base your system on a proven IoT platform, skip a lengthy development process, avoid costly maintenance, and focus on your core competencies.

At the same time, using a mature platform ensures high levels of reliability and privacy, as they are tested and validated in large volumes and have achieved various certification standards.

3.1 Activity monitoring without cameras

Studies have shown that people are hesitant to accept a care solution that includes the installation of cameras in their homes as they feel watched upon by the cameras.

IoT devices enable secure and reliable monitoring of residents without the use of security cameras. Different sensors and alarms combined with intelligent software ensure that vulnerable people get the care they need without feeling spied upon.

Monitor activity with IoT sensors

Different IoT sensors enable various aspects of activity monitoring in a home. Include motion sensors in your TEC system to track movement inside a home (e.g. nighttime walking and bathroom visits). Smart plugs can deliver information about the usage of different household items such as kettles, TV, and other appliances.

Vibration sensors can be attached to beds, fridges, medicine cabinets, walking frames, or chairs to observe the usage of different furniture around the home. Mounted on doors, entry sensors can be used to recognize when a resident leaves their home and enable wandering alerts.

Give peace of mind to relatives and professionals

With intelligent monitoring solutions, you can not only make it safer for people to live independently at home, you can also give peace of mind to their friends and relatives.

By giving them access to the monitoring system via an app, relatives can check up on their loved ones and ensure they are well. Carers and medical professionals can also check in on residents without disturbing them, which is especially helpful during the night.

3.2 Medical device monitoring

Nowadays, wireless technology is included in countless appliances used in everyday life, including medical devices such as activity trackers, blood pressure meters, glucose monitors, and more.

Many of these communicate via Bluetooth – a standard protocol that you can easily integrate into your home care solution.

By including these devices, you can provide continuous health monitoring and collect valuable data that can indicate early signs of diseases or monitor existing ones.

Available devices include:

Blood pressure and pulse monitors: These devices provide fast and reliable blood pressure and heart rate readings and allow the patient to carry out these examinations from home.

Glucose monitors: Smart glucose monitors offer continuous tracking of glucose levels and, in contrast to periodic testing, can give alerts as soon as a person's blood glucose reaches pre-problematic levels to enable preventative action.

Pulse oximeters: Automatically collect readings of blood oxygen saturation.

Diagnostic scales: Enable measurements of body weight, body fat, body water, muscle tissue, and more.

3.3 Emergency alerts

A home care solution can provide different ways in which the residents can get help in emergencies. This includes both long-term patterns in behavior that can indicate conditions such as diabetes or dementia and short-term deviations from activity habits that point to falls, dehydration, UTIs, or other acute situations.

Identify emergencies

Through intelligent software, you can identify irregularities in activity that can indicate the residents need help.

This could be for instance a lack of activity in the morning that deviates from a resident's usual schedules, indicating that they were not able to get out of bed. Similarly, frequent usage of the bathroom could be grounded in an untreated UTI.

To identify falls, consider radar-based fall detectors for your solution. These fall detectors reliably detect falls while offering a high level of privacy.

Enable residents to call for help

In addition to recognizing emergencies through the IoT system, you can also include mounted and/or wearable alarm buttons in your care solution. These enable the wearer to call for help when they need it and provide an extra layer of safety and reassurance.

Care-related services

3.4 Emergency validation

When an alarm is raised by the TEC system, it needs to be followed up on by care personnel to ensure residents get help if they need it.

But without a way to validate the nature of the alarms, care professionals have no way of knowing what kind of help is needed before they arrive at the resident's home. This may result in losing valuable time if emergency services are needed, or spending unnecessary time visiting a resident in case of a false alarm.

Validate alarms through Alarm Receiving Centers

To ensure that alarms raised in your home care solution are valid, you can include a two-way audio device in the home and connect your system to Alarm Receiving Centers (ARC).

This way, employees in the ARC can get in contact with the residents when an alarm is raised and evaluate how urgently help is needed.

Enable employees to use their time effectively

By validating alarms before sending care professionals to a resident's home, you can ensure that the visit is actually necessary and enable them to spend their time where it's needed the most.

3.5 Indoor climate control

In 2023, a UK study found that 61 percent of people monitored by care technology provider Lilli were exposed to low temperatures in their homes – putting them at risk of various diseases, including hypothermia, cardiovascular and respiratory problems, and sleep disruption.

By installing sensors that measure temperature, humidity, and air quality, a TEC solution can help prevent these issues and keep residents healthy, reducing hospital visits and care expenses.

Ensure a healthy temperature

If the temperature drops too low, a notification can be sent to family or other caregivers who can then adjust the temperature. By including smart thermostats in the solution, indoor temperature can also be automated and controlled remotely.

Keep humidity at a safe level

To prevent mold, humidity sensors can detect humidity in the air and indicate when a window should be opened.

Reduce toxic components in indoor air

VOCs are organic chemicals present in indoor air that can cause short-term and long-term health effects. Sources of VOCs include paint, building materials, furniture, tobacco smoke, cleaning products, and more.

With a sensor detecting VOCs, you can monitor the levels in indoor air and prompt residents to open a window (or use an air purifier) when levels get too high, avoiding negative impacts on their health.

4.1 Intruder detection

People living at home alone can be perceived as an easy target for burglary. With only a few tweaks, your home care solution can double as a security system, identifying break-ins, notifying alarm services, and giving peace of mind to residents and relatives.

One sensor, multiple use cases

Most technology-enabled care solutions already include sensors such as motion sensors and entry sensors. They can be used to monitor a resident's activity, but they can also double as alarm sensors.

When activity is detected even though no one is supposed to be at home, the IoT system can send an alert to specified parties so that the intruders can be stopped.

Similarly, the system can give an alert if windows are opened at night, or if movement is detected in rooms the residents would not usually use at specific times of day.

Easily add security devices to the solution

One gateway can support multiple IoT use cases, making it easy to add security devices to a home care solution.

These can include security cameras to spot intruders, sirens to scare them away, and vibration sensors that can detect if a window is broken.

Additional IoT services

4.2 Access control

IoT devices can assist residents, relatives, and care professional in monitoring who enters a person's home and when. Intelligent keypads and door locks enable users to give access to specific people at specific times without having to give out physical keys.

Give easy access to care personnel and emergency services

With smart access control, you can easily give care professionals, cleaning personnel, or emergency services access to a residents' home using pin codes and/or RFID tags.

By using pin codes for access control, emergency services alerted through an alarm receiving center can receive a one-time code enabling them to quickly get access to the home. As an added benefit, carers will not have to carry keys to each house they are visiting.

Residents themselves can use RFID tags to access their home instead of keys or pin codes.

Increase security and peace of mind

Personalized pin codes and RFID tags make it possible to monitor who enters a home at what time. This gives friends and relatives the possibility to assure themselves their loved ones are receiving the care they need.

It also allows carers or relatives to verify a resident has returned home after a walk.

Additional IoT services

4.3 Automation and remote control

Elderly and vulnerable people may not be the typical smart home users, but there are many features that can provide value as add-ons to a care solution.

Turn off background noises during emergency calls

With a two-way audio device, you can enable emergency calls and validate them through an Alarm Receiving Center. However, if the TV or music is playing during a call, it can be difficult to hear what is going on in the home and evaluate the situation.

By connecting appliances like the TV to the smart system via a smart plug, emergency personnel can turn off the TV remotely and provide better help to the residents.

Prevent accidents in the dark

By using smart lights in your solution and automating them in line with a resident's activities at home, you can make sure that it's always bright enough to see and reduce accidents that might occur if they are moving around in their dark home.

Remote control of electrical appliances

Connect electrical appliances to the TEC system to enable relatives and caregivers to check up on the resident's activity and enable turning appliances off remotely and/or automatically. This way, if a resident forgot to turn off the electric hob or iron, they can be turned off through the smart system, reducing electricity usage and preventing fires.

If a resident is disabled or has poor mobility and strength, they may not be able to open or close curtains and blinds. These can be brought online with electrical kits and an I/O module device giving more independence and normality to their daily living.

Additional IoT services

4.4 Energy optimization

In the last few years, energy prices have increased to a degree where parts of the population are lowering or completely turning off their heating to save money. This is especially critical for less mobile and older residents who are at increased risk of diseases caused by inadequate indoor temperatures.

By including energy monitoring and control features in your care solution, you can enable residents to optimize their consumption and ensure they are using the energy they need – but not more than that.

Optimize indoor temperature

With smart thermostats, indoor temperatures can be automated to fit the needs of the resident. For instance, temperatures can be reduced at night to reduce energy spending. If nobody is at home, heating can be turned off or to very low to protect from frost, saving money and preventing flood damage from frozen and burst pipes.

At the same time, an automated heating system ensures that residents do not forget to turn the heating up or down, providing healthy temperatures at minimal energy usage.

By integrating weather forecasts in the solution, you can further adjust the heating to weather changes.

Reduce electricity consumption

By enabling electricity monitoring of appliances in the home, you can help residents and relatives identify where the most electricity is being used. With this information, they can then take steps to reduce standby consumption, replace old, electricity-thirsty appliances, and optimize consumption.

4.5 Fire detection

In case of a fire, a traditional fire alarm only gives off a loud sound. If a resident has reduced hearing, they might not hear such an alarm, especially if they are sleeping and/or the alarm occurs in a different part of the building.

Intelligent fire alarms

Intelligent fire alarms can be connected to the care system and – in case of fire – send a notification to relatives, caregivers, or an Alarm Receiving Center.

If a resident does not hear an alarm or is unable to act on it, other parties can notify emergency services and take action to ensure the fire is extinguished as fast as possible and the resident is rescued to safety if needed.

Connecting alarms throughout the home

Intelligent fire alarms can be interconnected via the IoT gateway, meaning that if one alarm goes off, the others do too. This way, the alarm is audible in the whole home, increasing the likelihood that it is heard.

Smart battery testing

As an added benefit, intelligent fire sensors also simplify battery testing and maintenance.

Instead of someone going into the home to manually test the alarms, the battery status can be checked remotely, and low-battery notifications can be enabled, ensuring the alarms are always functional.

Additional IoT services

4.6 Water leakage detection

Water damage to buildings is costly. To minimize damage, it is crucial that any water leak is discovered as soon as possible.

Quickly identify leakages & prevent further damage

IoT technology can help detect water leakages quickly, for instance in the basement or other rooms that are not regularly used by the residents.

Intelligent leak sensors can inform relevant people instantly when water is detected. This way, damage control can be initiated immediately.

By connecting the water leakage sensors to electrical water valves, users can quickly turn off the water supply in case of leakages and prevent further damage.

Monitor pipe blockages

IoT technology can also be used to prevent water damage from leaking pipes. Through sensors detecting vibration in the pipes, it is possible to quickly identify blockages that could end up causing leakages and critical damage to the building.

5.0 The next steps for your care solution

As described in this guide, IoT technology offers many possibilities for the home care sector and can enable people with increased care needs to live at home safely and independently.

With the demographic changes leading to more people in need of care but less care personnel, the IoT presents huge business opportunities for companies offering digital solutions.

Do you want to develop an IoT-based care solution or add services to your existing system, but do not know where to start?

Onics provides a mature white label product platform that is ideal for care solutions and can also support additional use cases like burglar detection and fire alarms.

The platform enables you to quickly and easily build a customized solution for your own brand. You will get high-quality white label products and a software platform that simplifies the development of your software as well as easy connection to cloud services and Alarm Receiving Centers.

Are you interested in using a white label platform for your care solution?

Contact us at info@onics.com to book a meeting and discuss how you can move forward with your care solution.

Connecting technology with life

Onics is the merger of the Scandinavian IoT companies Develco Products and Datek Smart Home.

We empower solution providers in care with a market-ready white label IoT platform and best-of-breed hardware and software for seamless connectivity and a future-proof solution.

We provide you with secure and reliable devices for your care solution as well as a range of software services to simplify application development.

Benefit from our extensive experience in hardware and software development and focus on your core competencies when working with our wireless platform.

Want to know how we can help you expand your business?

We are always ready to help you reach the next step and bring the future of IoT to your customers. Contact us today, and let us get started.

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