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THE EMERGING MATTER STANDARD

FISHER COLLEGE OF BUSINESS
CONSULTING INDUSTRY
IMMERSION PROGRAM

Prepared by:
Yash Desai, Molly Kappes, Andrew Montgomery, Megan Reinke, and Shreya Solai

Prepared for: Stephen J. Eddy
Sr. Consultant

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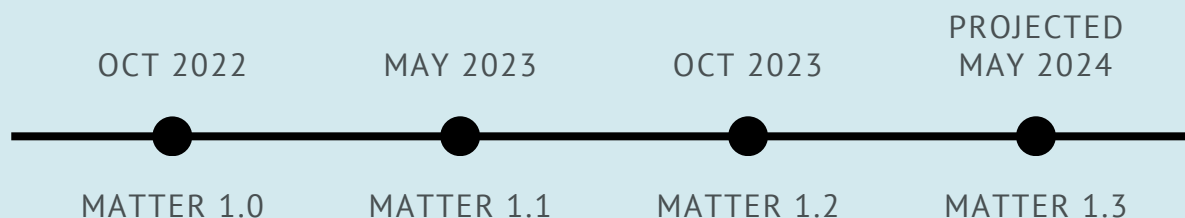
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BACKGROUND ON MATTER

Matter is a unified connectivity technology designed for the smart home, fostering compatibility among various devices and ecosystems. It serves as the conduit and common language through which devices communicate, irrespective of their brand or platform, facilitating seamless integration and interoperability.

Matter is not a smart home platform like Apple HomeKit, Google Home, and Amazon's Alexa.

MATTER UPDATES



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MATTER 1.0

Support for:

- Light bulbs and light switches
- Plugs and outlets
- Locks
- Thermostats and other HVAC controllers
- Blinds and shades
- Sensors (motion, contact)
- Televisions and streaming video players
- Bridges
- Wireless Access Points

MATTER 1.1

Did not include any new categories, only bug fixes and enhancements to existing SDK, API and devices.

MATTER 1.2

Nine New Device Types:

- Refrigerators
- Room Air Conditioners
- Dishwashers
- Laundry Washers
- Robotic Vacuums
- Smoke & Carbon Monoxide Alarms
- Air Quality Sensors
- Air Purifiers
- Fans

Core Improvements:

- Latch & Bolt Door Locks – Enhancements for European markets that capture the common configuration of a combined latch and bolt lock unit.
- Device Appearance – Added description of device appearance, so that devices can describe their colour and finish. This will enable helpful representations of devices across clients.
- Device & Endpoint Composition – Devices can now be hierarchically composed from complex endpoints allowing for accurate modelling of appliances, multi-unit switches, and multi-light fixtures.
- Semantic Tags – Provide an interoperable way to describe the location and semantic functions of generic Matter clusters and endpoints to enable consistent rendering and application across different clients. For example, semantic tags can be used to represent the location and function of each button on a multi-button remote control.
- Generic Descriptions of Device Operational States – Expressing the different operational modes of a device in a generic way will make it easier to generate new device types in future revisions of Matter and ensure their basic support across various clients.

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MATTER 1.3

WHEN IS WHAT IS EXPECTED OF THIS NEW UPDATE?

Matter is set to receive two updates this year as part of the bi-annual release cadence - the first (Matter 1.3) to be expected in May 2024.

The Connectivity Standards Alliance has announced plans to include support for a variety of devices:

- Security cameras
- Dryers
- Garage
- Door controllers
- EV chargers
- Ambient motion presence sensors

Development of additional features:

- Energy Management
- **Water Management**
- Advanced Lighting Capabilities

Although details are scarce regarding the specifics of the water management feature, it is anticipated to tackle both low and high-volume water leaks within a building while also monitoring overall water consumption. This is likely to involve the integration of leak sensors, shut-off valves, and water monitoring software to effectively address water-related issues and optimise usage.

This could be a benefit for Nationwide if they use Matter because data would only need to be pulled from one source rather than both Matter and Notion.

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BENEFITS OF MATTER

There are four main benefits of Matter that relate directly to Nationwide.

01 Simplifies Smart Home Integration

Matter provides a seamless connection across brands and platforms, which eliminates compatibility worries and allows diverse devices to work together seamlessly. This simplification can lead to increased adoption of smart home technologies among policyholders, potentially reducing risks associated with home incidents.

02 More Options for Smart Home Hubs

By adopting Matter, consumers are not bound to a single supplier for all their smart home devices. Nationwide can encourage policyholders to choose devices that adhere to the Matter standard, knowing that they can integrate with various smart home hubs. This flexibility allows Nationwide to adapt its services to fit the preferences and needs of individual homeowners, potentially fostering stronger customer loyalty.

03 Improved Security

Enhanced encryption and protection against hacking mean that Nationwide can offer policies with greater confidence in the security of their policyholders' smart home networks. This can result in reduced risks associated with data breaches or unauthorized access to connected devices, ultimately lowering the likelihood of insurance claims related to cyber incidents.

04 Future-Proof

Nationwide can leverage the continuous evolution and improvement of Matter to stay ahead of emerging risks and offer innovative solutions to policyholders. Encouraging the adoption of smart home technologies that are future-proof allows Nationwide to establish itself as a progressive leader in the industry, appealing to customers who prioritize enduring security and dependability.

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DOWNFALLS OF MATTER

There are four main downfalls of Matter that relate directly to Nationwide.

01 Dependence on Industry Adoption

The success of Matter depends heavily on widespread adoption by manufacturers and developers. If major players in the industry do not embrace the Matter standard, its potential impact and effectiveness could be limited.

02 Limited Availability

The limited availability of Matter-compatible devices means there are fewer options for Nationwide to recommend or incentivize to policyholders. It could lead to delays in the implementation of new policies or updates, potentially impacting the competitiveness of Nationwide in the market.

03 Need for New Hardware

Transitioning to Matter-compatible devices may require homeowners to invest in new hardware, which can be costly and time-consuming. This may act as a barrier to adoption for some consumers, especially if they have already invested in non-Matter-compatible smart home devices. But again, Matter is still fairly new, and compatible devices are slowly being introduced. Some devices can be “bridged” into Matter to control their connected devices in a Matter smart home platform. These bridges can help combat the Issue of limited availability and the need for new hardware.

04 Competition with Existing Standards

Matter faces competition from other established smart home standards such as Z-Wave and Zigbee. The presence of these competing standards adds complexity to the smart home market. This fragmentation in the market can create confusion for consumers and manufacturers alike, making it challenging for Matter to gain widespread adoption.

COMPETITIVE ANALYSIS

Other insurance companies and their current partnerships

Currently, there is no standard or other technology that is similar to Matter's capabilities. That being said, it is important to take note of what competitors are doing to see how Nationwide can do better. This includes current partnerships and discounts for their clients. Some of these examples include:

- American Family Insurance and Liberty Mutual offer discounts for homeowners who have Nest Protect Smoke Detectors.
- State Farm offers discounts to consumers who purchase insurance products, as well as discounts on products from companies such as ADT Pulse and Canary (OEMs specialized in security).
- American Family Insurance has also partnered with Ring to decrease deductibles in the case of burglary or theft.

While these are just a few examples of partnerships that other insurance companies have, it shows these companies have taken the initiative to make homeowners' homes as protected as possible. This means these insurance companies will most likely jump on this technology when given the chance so they can improve their Smart Home programs.

COMPETITIVE ANALYSIS

Nationwide compared to their competitors

Compared to their competitors, we noticed three things that Nationwide has done to help them stand out:

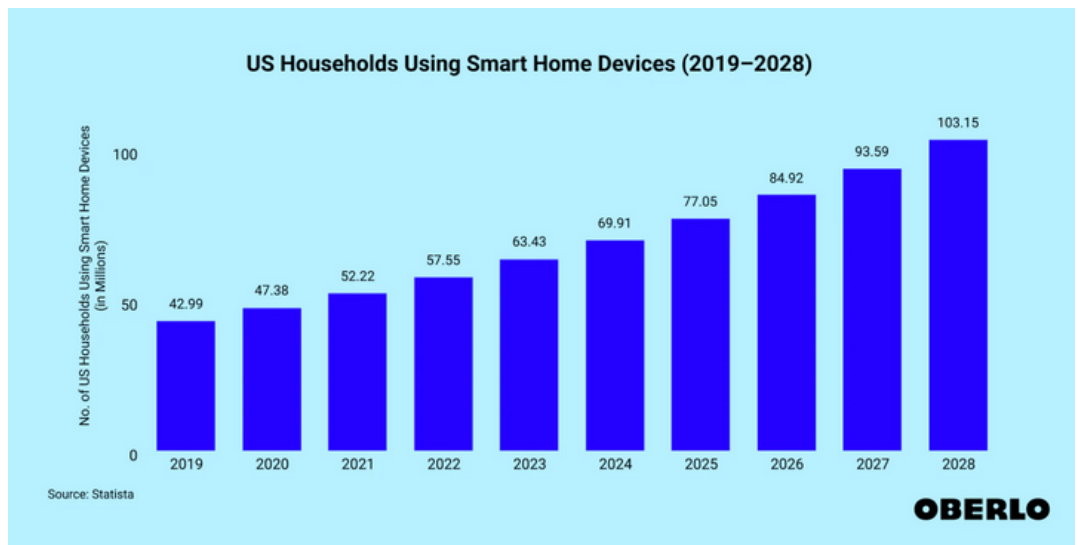
- Water Protection
- Insurance Coverage Descriptions
- Cyber Security Coverage

Nationwide has implemented excellent water protection in addition to its Smart Home program with Notion. In terms of other protections, Nationwide explains the different types of insurance coverage on its website in a way that anyone can understand. This breaks down a knowledge barrier for potential new customers who are looking into insurance for the first time. Nationwide also offers Cyber Liability and Data Breach Insurance for businesses, which appears to be unique to Nationwide. We have not found other companies who offer something similar. While Nationwide currently works with Notion for their Smart Home program, it is important to continue looking into ways to optimize this program. Utilizing Matter would be a great way to do this.

COMPETITIVE ANALYSIS

According to the image below, there will be significant increases in the number of U.S. households using Smart Home Devices. Improving this area of insurance coverage utilizing the growing technology available will be a valuable asset for Nationwide and can change the way home insurance is covered in the future.

One important aspect to note is that Matter does not currently have an insurance partner. That being said, they did just start a new Health and Wellness Working Group, wanting to help incorporate technology with healthcare. This proves that Matter wants to start incorporating their technology into other sectors, which opens up the opportunity for Nationwide to step in as an insurance partner with Matter.



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DATA COLLECTION

As we know, the Matter Standard is not fully developed yet. This results in our team making inferences about how they will collect data from Matter. We can make educated guesses based on our research for how Nationwide will gather the data from Matter. We believe there will be a few steps to take for Nationwide to collect the data. These include:

1. Matter will have a terms and conditions page for the user in order to use their product, knowing the devices are set up correctly and turned on
2. Once they have accepted the terms and conditions, there will be a second terms and conditions page asking if the user would like to share their data with Nationwide
3. Matter may then require Nationwide to purchase this data from them
4. After purchasing the data, Nationwide will know the consumers they are getting data from set up their devices correctly and be able to subsidize premiums for their customers

While this may change in the future, this is an example of one way the process of collecting data may occur. Since we are also aware that Matter has a great encryption system, security with this data would not be a concern, which could prompt more customers to be willing to share their data with Nationwide.

IMPLEMENTING MATTER

“This market will generate \$154.4 billion in 2024. Of that, around \$60 billion will be spent on smart appliances.”

Matter’s growth started off slow due to challenges with which smart home ecosystem to adopt. However, these major manufacturers recognized the challenges and have come together under the Connectivity Standards Alliance (CSA), resulting in a feasible, communicative Matter system for the shelves.

Matter-compatible devices have strict security requirements, which help maintain the security and privacy of user data. With growing concerns of security and data breaches, Matter can help to ensure that these issues are averted.

However, implementing the Matter certification to smart devices can be more expensive than a device with just a single global IoT ecosystem (Boetius). This means that any partnerships Nationwide partakes in to provide insureds with Matter-certified smart devices may bear a slightly higher cost than single-IoT



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HOW NATIONWIDE CAN PROFIT AND ATTRACT CUSTOMERS

MATTER IS ABLE TO HELP NATIONWIDE
THROUGH THE DATA IT CAN COLLECT



Safety



Protection



Convenience



Awareness

Matter can significantly aid Nationwide through the collection and utilization of data. This data encompasses various facets such as safety, habits, and location, which in turn can enable Nationwide to determine appropriate premium prices for its customers. By assessing the risk factors associated with individuals, Nationwide can adjust premium rates accordingly. Matter's data collection capabilities are instrumental in this process, helping to ensure that premiums accurately reflect the level of risk each customer poses, thus preventing undue financial strain on Nationwide and its policyholders.

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HOW NATIONWIDE CAN PROFIT AND ATTRACT CUSTOMERS

MATTER IS ABLE TO HELP NATIONWIDE
THROUGH THE DATA IT CAN COLLECT



Safety

One of Matter's primary advantages lies in its ability to bolster home security measures by enhancing the compatibility and autonomy of household appliances. For instance, in the event of a home invasion, Matter can activate features such as opening blinds and powering lights to draw attention to the scene, provided that all components are compatible with Matter's platform. Moreover, Matter can activate additional devices like televisions and speakers to further deter intruders, thereby potentially reducing the frequency of insurance claims for Nationwide. Additionally, Matter's data tracking capabilities enable it to alert Nationwide to clients at heightened risk of criminal activity, further enhancing security measures.

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HOW NATIONWIDE CAN PROFIT AND ATTRACT CUSTOMERS

MATTER IS ABLE TO HELP NATIONWIDE
THROUGH THE DATA IT CAN COLLECT



Protection

Furthermore, Matter facilitates the tracking and prevention of unforeseen events through its integration with devices such as smart smoke detectors, faucets, and breaker panels. By gathering data from these devices, Matter can notify Nationwide of potential risks such as fire or water damage, allowing for timely intervention to mitigate damages. For instance, Matter can automatically shut off the HVAC system in response to a smoke alarm, thereby preventing the spread of smoke throughout the house. Similarly, in the event of abnormal water flow or freezing temperatures, Matter can initiate actions such as turning off water valves to prevent damage, thereby reducing the likelihood of insurance claims.

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HOW NATIONWIDE CAN PROFIT AND ATTRACT CUSTOMERS

MATTER IS ABLE TO HELP NATIONWIDE
THROUGH THE DATA IT CAN COLLECT



Convenience

Matter's role in improving product compatibility through partnerships further enhances Nationwide's competitive edge in the insurance market. By centralizing device connectivity, Matter streamlines the integration of smart technologies within homes, thereby increasing the appeal of Nationwide's offerings. Additionally, Matter's provision of convenience and safety aligns with the evolving consumer reliance on technology, potentially incentivizing individuals to share data with Nationwide in exchange for these benefits. This innovative approach not only distinguishes Nationwide as an insurance provider but also facilitates the collection of valuable client data.

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HOW NATIONWIDE CAN PROFIT AND ATTRACT CUSTOMERS

MATTER IS ABLE TO HELP NATIONWIDE
THROUGH THE DATA IT CAN COLLECT



Awareness

Lastly, Matter contributes to sustainability efforts by promoting awareness of potential risks within homes and encouraging responsible consumption practices. By empowering users with knowledge about unused appliances or excessive utility usage, Matter enables them to take proactive measures to reduce risks and conserve resources. For example, Matter can enable users to set consumption limits to prevent overuse of utilities, thereby mitigating potential hazards such as electrical overload.

MATTER-COMPATIBLE SMART DEVICES FOR PRIVATE PROPERTY USE

Looking Forward: Climate Change and Matter

In general, homes located near coastlines and in areas prone to natural disasters like tornadoes, hurricanes, and earthquakes have higher insurance premiums due to the financial risk that insurance companies take. Climate change has created more unstable weather conditions in the past few decades, and this trend is expected to grow exponentially in the coming years. This will cause even more consumers to file claims, and cost Nationwide more money. Implementing matter technology can protect homes from natural disasters and make Nationwide more profitable.

Wildfire Protection

Home insurance rates increase by roughly 25% when the property is destroyed by wildfires and the customer files a claim, which reveals a large loss taken by the insurance company. In order to protect homes from wildfire damage, Nationwide should encourage consumers to use [Torch Sensors](#) (click on “Torch Sensors” for the link) in areas with high wildfire rates in exchange for a reduced premium.

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How they work:

- Detects fires on property as small as 2x2 feet by using infrared sensors, cameras, and gas detectors
- Battery charges through solar panels on top of the machine and can last days without access to sunlight
- Senses fires thermally, visibly, and chemically to remove issues like human error and false fire alerts to ensure accuracy
- Placed every 10 acres
- Only one device needs to be connected to wifi. The other devices communicate locally via radio, which the company calls a “mesh system”
- All connect to a smartphone app that gives immediate alerts when a fire is detected

Matter compatibility:

- Since the devices connect via Wifi, they can be connected to a Matter smart home system
- Torch sensors could be connected to smart exterior sprinkler systems and automatically trigger them when a fire is detected to greatly reduce the damage to property from wildfires
- Torch sensors could also be connected to smart home devices like a Google Home or Amazon Alexa to give an audible alert to homeowners if they are asleep or not near their cell phone when a fire is detected

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Why Torch Sensors?

- A startup company founded by an entrepreneur with previous successful businesses, a physicist, and a student at the University of Pennsylvania, which shows its credibility
- The company is in its initial stages, the first 100,000 devices are currently available for preorder
- Great time for nationwide to contact about a possible partnership
- The founders have a goal for their product to be affordable and accessible to as many people as possible, and Nationwide can help make this happen

Hurricane Protection

According to the Environmental Defense Fund, researchers suggest that the most damaging U.S. hurricanes are three times more frequent than 100 years ago and that the proportion of major hurricanes (Category 3 or above) in the Atlantic Ocean has doubled since 1980. In order to protect homes from hurricane damage, Nationwide should encourage their customers to protect their homes with smart hurricane screens to reduce filed claims and make Nationwide more profitable.

How they work:

- Heavy screens that stop heavy winds and debris from hurricanes from destroying windows and impacting the interior of your home
- They are discrete and permanently installed, so they can be utilized at a moment's notice, unlike other forms of hurricane protection

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Matter compatibility:

- Smart screens operate through wifi and a connected app, which means that many of them would be compatible with matter
- Could be connected to smart weather detectors or have access to a weather app that will trigger them to shut at a moment's notice
- The quickness and thoughtlessness of this process could potentially protect homes from severe damage, avoid claims, and save nationwide money.

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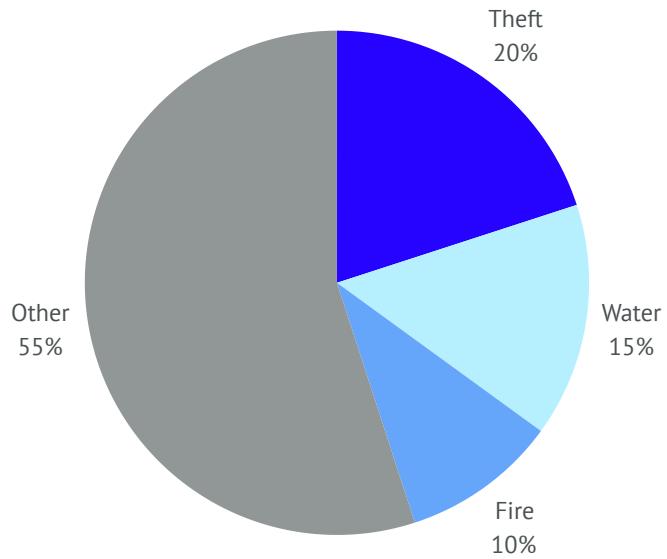
MATTER-COMPATIBLE SMART DEVICES FOR BUSINESS AND COMMERCIAL INSURANCE

Nationwide's insurance coverage extends beyond homeowner properties to businesses and commercial properties as well. The policy for businesses covers everything from properties, workers compensation, farm and ranch, commercial agribusiness, etc. However, zoning in on business properties and the capital within, Nationwide offers basic property coverage on losses caused by fire, lightning, wind, hail, or acts of vandalism/theft.

As such, the most common types of insurance claims regarding commercial properties involve damage that can be attributed to burglary, theft, vandalism, water damage, fires, worker or customer injury, and finally, weather. About 20% of commercial claims are due to burglary and theft; while these claims are generally the lowest in cost (averaging \$8,000), it is the most common among claims filed by businesses (Mercado). Similarly, 15% of business owners file claims against water and freezing damage with the average claim amounting to \$17,000 (The most common commercial property insurance claims).

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% Breakdown of most common claims filed by Businesses



NATIONWIDE'S SMART HOME PROGRAM FOR BUSINESSES

Luckily for worried business owners and insurers alike, Matter-compatible devices can help prevent these risks and, in turn, the corresponding claims that insurers like Nationwide are responsible for covering. Similar to its uses in homes, the interoperability of Matter-compatible devices, such as sensors, cameras, and other sensors, allows for a more connected- and therefore accurate- way to assess and predict risk in larger spaces. Safety, protection, convenience, and awareness are all positives that come from installing Matter-compatible smart devices. It can alert and employ appropriate defense mechanisms to stop an intruder, prevent a water leak, and much more.

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However, how does implementing this standard differ on a larger corporation/business level? For one, scaling is different for commercial properties compared to what smart devices do for the home. Nationwide currently partners with Notion Smart Home Sensors to provide a three-pack smart home starter kit at no charge, as well as a discount on insurance premiums of up to 10%. Notion also offers its devices to small businesses and the associated spaces. For larger spaces, as seen in industrial and commercial landscapes, multiple Notion devices will need to be installed, which has the potential consequences of diminishing accuracy in sensing things like water leaks from multiple areas (Gebhart). This can also lead to an overwhelm of information and notifications sent through the app. Barring these difficulties, the cost of installing a vast amount of smart devices is substantial in commercial and larger spaces. Because of this, continuing with Notion as a partner for a Nationwide Smart Home Program on a commercial level is not an advisable option.

Nationwide must also consider the complexity of capital equipment when dealing with smart home sensors for machine- and process-intensive industries. For example, water leakage in a homeowner's pipe is different from that of a complex pipe hooked to a series of larger machines. Building off this example, downstream damages for businesses operating with machinery will vary and require a different process for risk assessment than that of homeowner equipment. In other words, a water pipe leak for a piece of a machine can affect connected equipment downstream. This poses a heavier capital and financial liability for businesses and insurers.

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While these concerns can affect the utility of traditional smart home devices, there are Matter-based solutions to prevent risk and protect businesses and insurers from carrying the burden of the cost of damages. The challenges businesses face can still be solved with the core principles of Matter-based smart devices: connectivity, detection, and response. Adjusting for scalability and machinery considerations, business owners can still enjoy the benefits of Nationwide's Smart Home Program.

MATTER-ENABLED CAPACITIVE SENSING AND INFINEON

CAPACITIVE SENSING

One such solution involves capacitive sensing. This method replaces optical sensing and is able to provide proximity and gesture detection, material analysis, and liquid-level sensing (Wang). In other words, they do not need physical contact to be able to detect solid or liquid targets. They do this by emitting an electrical field from the sensing end of the sensor, and any disruptions to this are caught and analyzed by the capacitive sensor. Capacitive sensing is able to detect a variety of materials from paper, plastic, wood, glass, and cloth as well as liquids like water, oil, and paint. They are also capable of detecting materials inside nonmetallic containers and incorporate an adjustable sensing range (Stykemain).

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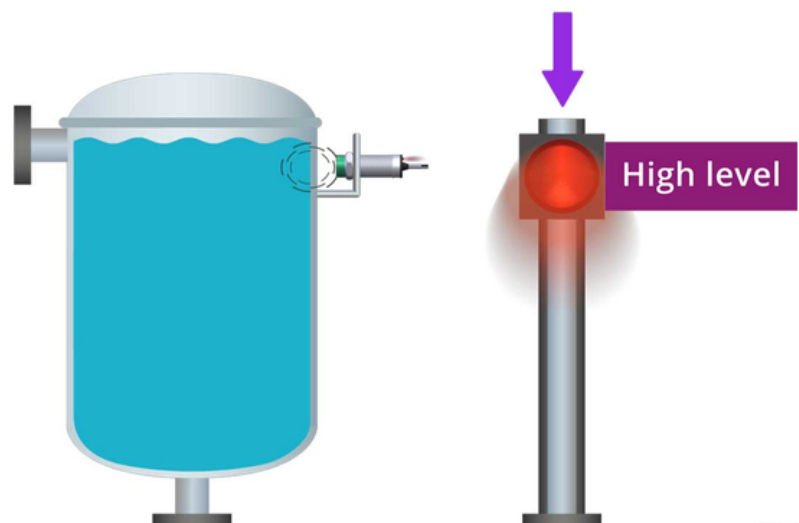
INFINEON: MATTER-ENABLED CAPACITIVE SENSING FOR COMMERCIAL USAGE AND COVERAGE

Evidently, if the technology from Capacitive Sensors is combined with the Matter standard, the end product is an innovative and groundbreaking way to prevent a variety of risks in larger properties and equipment. Detection can be brought to another level with this advanced materials sensing, and risks ranging from water damage to theft can be mitigated or averted altogether. This is exactly what the company Infineon's products do. Their Matter-enabled capacitive sensors have the ability to alert operators and managers of various risks and even stop them so that damage is minimized.

For example, an installed sensor in water-based industrial equipment can detect rising water levels before they reach critical levels and shut them off to prevent a flood before it happens. For this instance, the technology's capacitive sensing capabilities will be able to sense and collect data on the water flow, direction, amount of time to reach a certain threshold, components in the water (such as if the water is contaminated by a certain substance), and more.

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Additionally, this technology is capable of detecting burglary to prevent and deter thieves from stealing and vandalizing insured property. Due to capacitive sensing's proximity sensing abilities, it is capable of scanning for unusual activity in advance to deploy the appropriate series of defense mechanisms to preclude burglars. This can include sending notifications to appropriate personnel, sounding alarms, locking doors, and more. What's more is since capacitive sensing can detect various materials, the type of clothing or equipment that the intruder is associating with, this can be leveraged to both daunt and better pinpoint them. Pairing all of this with the capability for these types of sensors to collect and communicate data through their Matter-enabled properties, the accuracy and efficiency of Nationwide's underwriting policies can be greatly augmented.



(Stykemain)

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RECOMMENDATIONS:**INFINEON PARTNERSHIP**

“Nationwide should partner with Infineon and their Matter-enabled capacitive sensing technology to provide a discount for commercial coverage.”

As such, a potential recommendation for Nationwide to enhance both underwriting accuracy and risk prevention and mitigation is to pair with Infineon’s Matter-compatible line of sensors to offer a discount of up to 10% to business insureds on their premiums. This discount matches the current offering of the Nationwide Smart Home Program in partnership with Notion offered for homeowner underwriting purposes. Furthermore, an example of a specific line is Infineon’s PSoC™ 6 MCU line of microcontrollers for the IoT which enables the Matter 1.2 specification and capacitive sensing to provide the highest level, low power protection (AG Matter: The bridge connecting different products, protocols and ecosystems). This technology integrates and performs the mechanisms described earlier (32-bit PSoC™ ARM® cortex® microcontroller).

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To better assess the savings value of this partnership for Nationwide, it is important to recall the most common claims and their cost mentioned earlier. For example, fires in the commercial setting are most commonly caused by electrical and heating malfunctions, such as faulty and worn wiring, much of which can be attributed to the changing climatic landscape (Why fires start in commercial buildings). Infineon's sensors are capable of measuring the electrical voltage within their range and adjusting the flow of electricity to prevent things like electrical surges. This is done by communicating this information between sensors as well as to management through the Matter 1.2 specification. This can save on average \$44,164.25 worth of property damage from a fire (Understanding the true cost of a fire to your business). Similar to instances like this, Nationwide can tackle and prevent risks from its most common and most expensive claims.

In all, Nationwide will be able to reap the benefits of incorporating Matter-enabled sensors with capacitive sensing through cost-cutting and saving, as well as strengthened underwriting procedures. Damages from fire to water to theft are at the forefront of concern regarding Nationwide's cost coverage for insureds that classify as businesses. Interoperability plays a big role in how data from various aspects of business properties interact, making Matter-enabled devices an innovative mitigator for insurers like Nationwide. Thus, if Nationwide subsumes such technology, it can stand as a competitive candidate against other insurers as well as optimize its own capabilities in the business and commercial insurance sector.

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MORE RECOMMENDATIONS:

MATTER PARTNERSHIP

“Nationwide SHOULD partner with Matter once they have solidified their water management system to continue optimizing their Smart Home Program.”

As we can see from their start in 2022 to now, Matter has been moving forward with updates very quickly. Because of this, we believe that it is important for Nationwide to start working on a partnership with Matter because this technology will put Nationwide at a competitive advantage compared to other insurance companies. In addition to these competitive advantage benefits, there are cost-saving benefits to partnering with Matter. This benefit is a cost-saving benefit because Nationwide would only need to collect data from Matter instead of attempting to collect data from multiple other sources.

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