

## Product Test Review Summary

### FX – Functional eXperience test.

#### *The Nobi Smart Lamp*

Smart lamp packed with cameras and sensors.

The vendor website can be found [here](#).



## Product Review Summary

Updated May 2023

The Nobi Lamp represents the modern collision of aesthetic product design and technology. It is a sophisticated fall detection and prevention system, powered by artificial intelligence (AI), housed in an everyday object, namely a ceiling mounted pendant lamp.

With it's updated look, the Nobi has a modern, lighter aesthetic. This version is available for delivery in North America starting in October 2023 (planned).

The lamp tracks activities such as sleeping, lying in bed, and moving around, has 2-way communication during a fall event, and connects to peripherals such as scales, blood pressure cuffs, and panic biting via bluetooth.

The lamp is installed by an electrician, requires a WiFi connection, and does not require calibration.

A mobile app is used to set up the lamp and view alerts, activities, images, etc. A web app is also available as a dashboard and to set up system parameters, view alerts, activities, images, and history.

The individual can be represented as a stick figure for privacy.

## Target Market

The product targets 3 markets:

- 1) Retirement Home market - operators can deploy this selectively or community-wide as a technological complement to the care they provide.
- 2) The Consumer market - intended for use by the adult child or designated caregiver to monitor the senior for falls and activity.
- 3) The Home Care market - operators can use this as a technological aid that complements care being provided to seniors in their communities.

## Test Results

The first thing we noticed was that the lamp looks good, and is fairly light weight. In fact, Nobi has won acclaimed design awards in both Germany and Belgium, in 2022 and 2021 respectively. It really represents the fusion of form and function, where the technology dissolves into the fabric of daily life - it is in fact hidden in plain sight.

Getting the lamp up and running was quick and simple. After the lamp is installed by an electrician and connected to WiFi, the mobile app is used to claim the lamp and enter some information about where it's installed. The lamp then runs through a configuration sequence, and it's ready to use.

This version 1 hardware has 4 cameras in the lamp, covering 4 quadrants of vision, which are used to detect falls. All the AI processing is done on the lamp ("at the edge"), so that falls can be detected even if an internet connection is not available.

If the lamp detects a fall, it verbally checks with the individual to confirm that a fall has happened, and if so, it alerts a caregiver via an autogenerated phone call. The

caregiver can initiate a 2-way audio conversation from the received phone call, thereby being able to speak with the individual. Once help has arrived and the needed support provided, the caregiver can close the event using the app. All incident information is available through the mobile and web apps, including camera images showing what led to the fall. The individual can be shown as is, or represented as a stick figure for privacy. Images can also be turned off completely, though this negates the benefit of seeing the fall sequence timeline (i.e. the events leading up to the fall). A timeline feature allows the caregiver to “see” the individual remotely in real-time (again as full images or as a stick figure representation), which is useful to see current state.

Fall prevention is achieved by the lamp turning on its up-lighting when the individual sits up in bed, and then illuminating the full down-lighting when the individual stands up. This feature can optionally be disabled.

This functionality works in reverse also - the lamp gradually turns itself off if it detects the individual lie down in bed for a period of time.

Setting up integrations to peripherals such as a scale, and panic button was easy. The mobile app guides you through the pairing process clearly. All the data gathered by the scale, or blood pressure cuff, etc, is automatically transmitted to Nobi and stored in the individual’s profile, viewable in the app.

Nobi has several rebuilt integrations to nurse call systems, so operators can maintain the simplicity of a common user interface for staff, while reaping the benefits of Nobi’s functionality. These integrations to date are with European systems, so we would like to see Nobi also build integrations with North America systems.

Overall, the Nobi lamp is an impressive device both aesthetically and functionality. The fall detection worked reliably, to a range of 4-5 meters radius in our test suite. The additional features all work well and are useful. The user experience is excellent, which is consistent with the focus on user-centric design throughout the product.

### **Commercial Readiness**

Nobi has made it easy for operators to adopt and onboard this product through ease of installation, setup, form factor, and usefulness. They have two versions of the mobile and web apps: one for the retail consumer (single room), and one for multi-

unit enterprise customers with full hierarchies for suite, neighbourhood, building, etc. Both make managing the lamps simple and straightforward. Nobi has done well thinking through the user experience both for the individual and for the operator, so the barriers to entry are minimized.

Though the product originates in Europe, and is in fact assembled in Belgium, Nobi has obtained the necessary certifications for the product to be sold in North America (CSA, UL, FCC).

We believe there is strong product-market fit for Retirement Home operators, Home Care operators, and also the retail Consumer market.

Operators may express concern with the unit price of a lamp, at roughly \$2,000 CAD each (normalized for currency fluctuations). However, that lamp is guaranteed for 7 years, which makes it \$286/year, or \$0.78/day. Operators simply need to ask themselves if fall prevention and detection is an important focus area.

For larger suites, more than one Nobi might be needed, or a Nobi and a Nobita. The Nobita is a flush mount version with a smaller radius of coverage of 2.5m but the same functionality (\$1,000 CAD). We did not test the Nobita, but given it's a similar technology package, would expect similar performance. Multiple lamps work in unison in a single suite, ensuring a consist user experience and performance.

In addition to prebuilt integrations with several systems, Nobi has well documented APIs online, enabling it to be integrated into other nurse call systems, for example.

### **Product Roadmap**

We see this product as ready for market right now.

Nobi's new hardware version simplifies some of the camera technology they use, based on their in-market learnings over the last few years.

New functionality in development includes breathing and coughing monitoring. This represents their entry into ambient detection of vital signs and similar parameters, using radar technology.

To accommodate lower ceiling heights (e.g. in North America), Nobi has a non-  
pendant version of the Nobi Lamp, referred to as Nobi Ceiling which mounts directly  
to the ceiling.

Based on their learnings, Nobi has also transitioned the Nobita from using radar  
technology to camera technology to reliably identify falls. (Side note: within the  
industry, we are seeing camera technology emerge as the winner for fall detection -  
it seems radar is simply not working well enough.)

Essentially, Nobi has built a hardware platform on which to iterate their software  
offering, and this first version of software is impressive. They will continue to refine  
the hardware, but the primary area of focus and evolution will be in the software,  
where they are experimenting with measuring an individual's vitals such as heart  
rate, temperature, etc, passively using the camera technology.

From an enterprise perspective, the only thing missing are performance  
dashboards. These are currently in development, though the utility of these is  
questionable if Nobi is integrated into a nurse call system (e.g. Notify).