

UUMILC 2017
9TH UUM INTERNATIONAL LEGAL CONFERENCE

**ASSIGNING LEGAL PERSONHOOD TO SMART HOME IN
MALAYSIA: AN EXPLORATION**

Nazli Mahdzir (a)*, Asmah Laili Yeon (b), Zuryati Mohamed Yusoff (c), Nuarrual Hilal Md
Dahlan (d)

*Corresponding author

(a) School of Law, Universiti Utara Malaysia, Malaysia, mnazli@uum.edu.my

(b) School of Law, Universiti Utara Malaysia, Sintok, Kedah, Malaysia, asmah485@uum.edu.my

(c) School of Law, Universiti Utara Malaysia, Sintok, Kedah, Malaysia; zuryati@uum.edu.my

(d) School of Law, Universiti Utara Malaysia, Sintok, Kedah, Malaysia; nuarrualhilal@uum.edu.my

Abstract

In a Smart House or Smart Home, products and services are capable of working together through a hybrid of network and functions without conscious human intervention. The absence of conscious intention, decision and action by a specific person therefore create legal problems especially in respect of determination of legal personhood. It is difficult to determine the right and liability involved when the act is a series of actions prompted by a network of intelligent appliances and applications. This article aims at analysing the possibility of attributing legal personhood status to Smart House or Smart Home in Malaysia. It is based on a legal doctrinal and qualitative research. Mixed methods were used in analysing the data. The legal doctrinal analysis was used to analyse the literature regarding the matter especially from jurisprudential point of view. Thematic analysis was used to analyse the data gathered from the interviews with 13 experts in the area of smart home. The experts are officers and professionals from different organization both in public and private sector. Having considered the issue, it is suggested that at the moment, attributing legal personality to Smart House or Smart Home in Malaysia similar to a person (full or quasi) or corporation is not possible

© 2018 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Smart House, Smart home, liability, legal personhood.



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

Picture the Jetson, where a house is fully automated and the household gadgets are working in harmony. This is the future that the millennials and generation X-er is gearing up to, the era of Smart House or Smart Home. Looking at the amalgamation of technology and property development nowadays, the notion that we may one day live in an environment where our daily domestic needs will be met by interconnected technology in a Smart House or Smart Home seems increasingly plausible (Edwards & Grinter, 2001).

Smart House or Smart Home is part of the Internet of Things concept. The houses are equipped with intelligent devices which operate using highly advanced automatic systems, technology of sensors, wired and wireless convergence of network to serve many aspects of daily living. Initially, home devices are merely used as tools. Later they evolved into automated devices (machines that were programmed to perform defined thought processes/computing) such as thermostat (a device that automatically regulates temperature), an automated light (the type that sense human presence and switch on or off accordingly) or a vacuum cleaner that operates without having anybody to wave it around. Nowadays, the devices evolved from automated devices into 'thinking' devices which turn the house into a Smart House or Smart Home.

According to the Smart House Code of Practice (n.d.) the term Smart House and Smart Home are sometimes used interchangeably. For the purpose of this paper, the term Smart Home (SH) will be used to indicate a convergence of intelligent devices and entertainment systems in the house with highly advanced automatic systems for diverse functions which can monitor many aspects of daily living. Important addition is that not only the technology is part of this research area but also the services that can be offered using the technology. It uses the concept of networking devices and equipment in a house which integrates technology and services through home networking for better quality of living (Bierhoff et al., 2007). It allows the technology and equipment in the house to respond and modify the house environment or act in certain way to suit the needs of the residents. In a SH, products and services generally work together through a hybrid of network and functions. The 'intelligence' of SH is usually imbedded in the network system that it does not require conscious human input. Instead of intentional programming of specific task, function and action by the users, the smart technologies and equipment in SH create an intelligent environment which is capable of anticipating user's need and preference and act to cater for these needs and preferences on its own even before the user becomes aware of them (Hildebrandt, 2007). The purpose of SH is to give convenience and support to the occupiers. It emphasizes safety, security and comfort to its users with modern technology integrated in it via 5 main elements i.e., personal computing, home automation, entertainment, telecommunication and security (Smart Home Concept, 2003).

2. Problem Statement

According to Datuk Ismail Ibrahim, Chief Executive Officer of Iskandar Regional Development Authority (IRDA), Johor, countries like South Korea and Japan are aggressively promoting the 'smart' concepts (Zazali, 2012). Their focus is establishing smart cities through the application of ICT. Malaysia

is catching on with the concept of SH with the setting up of various projects having the characteristic of smart home, smart office and smart city such as in Iskandar Johor, Cyberjaya, Melaka, Putrajaya and Pulau Pinang. Many products using SH technology have been developed in Malaysia. Examples of SH products in Malaysia are Intel energy saving equipment, Osim automated cleaning equipment, I-Berhad's security and home automation and Hugewin's wireless switch (Smart Home Concept, 2003).

In a SH, products and services generally work together through a hybrid of network and functions. The 'intelligence' of SH is usually imbedded in the computing and network system that it does not require human input. Instead of intentional programming of specific task, function and action by the users, the smart technologies and equipment in SH create an intelligent environment which is capable of anticipating user's need and preference and act to cater for these needs and preferences on its own even before the user becomes aware of them (Hildebrandt, 2007).

The integration of human and non-human intelligence however raises a host of questions on its implication on legal personhood especially on the question of criminal liability and liability under tort (Hildebrandt, 2011). The absence of conscious intention, decision and action by a specific person create the question of who is to be held liable for the house's action. Since criminal and tort law was formulated to address criminal and tortious conduct committed by human, can the same law be applied to SH? Whether the Malaysian law might decide extend legal personhood to artificial agents in the form of home network is a question which is no longer theoretical. There is a need to determine SH as a legal person as it can act as a proxy for its human patron.

3. Research Questions

Whether SH can be attributed with legal personhood status?

4. Purpose of the Study

The objective of the paper is to discuss the possibility and the need of attributing legal personality to SH.

5. Research Methods

Mixed methods were used in analysing the data. The legal doctrinal analysis was used to analyse the literature regarding the matter especially from jurisprudential point of view. Thematic analysis was used to analyse the data gathered from the interviews with 13 experts in the area of smart home. The experts are officers and professionals from different organization both in public and private sector. The experts are officers and professionals from different organization both in public and private sector as shown in Table 1 below.

Table 01. List of Respondents

No	Department
R1	Ministry of Urban Wellbeing, Housing and Local Government
R2	Ministry of Energy, Green Technology and Water
R3	Putrajaya Corporation
R4	Construction Industry Development Board
R5	Board of Quantity Surveyor
R6	Malaysian Communications and Multimedia Commission
R7	Board of Engineers
R8	Malaysian Industry-Government High Technology
R9	Iskandar Regional Development Authority
R10	Melaka Green Technology Council
R11	Intelligent Home Systems (MY) Sdn Bhd
R12	Chairman of Joint Management Body of Symphony Hills (Residential Place)
R13	Country Garden Sdn Bhd, Developer of Forest City (Smart City Project)

6. Findings

As mentioned earlier, the task of allocating liability only becomes a complex issue if and when the SH becomes fully autonomous. The more autonomous the network and device in a SH are, the less they can be considered simple tools in the hands of the user, proprietor, programmer or manufacturer. A distinction should be made between cases where there is a deficiency in the manufacturing, programming, installation, usage or maintenance and ones where there is not. In the first case, the wrongdoing or damage can be traced back to human and not due to SH independent action. The SH is not programmed to act in such a way which give raise to liability, instead, the act was due to defect caused by human. The second case, deals with liability for actions that a SH take, not related to manufacturing, programming, installation, usage or maintenance deficiencies but to the house's ability to evolving conduct.

Rather than being mere tools 'used', the house becomes something 'deployed' by user, proprietor, programmer or manufacturer that will act independently based on information the house itself acquires and analyses and will often make highly consequential decisions in circumstances that may not be anticipated by let alone directly addressed by either these people (Vladeck, 2014). Further to this, the mechanism in a SH consists of a network and many different intelligent devices. The decision making and action of a SH is usually distributed across different computing platforms (Hildebrandt, 2011). Therefore, establishing fault will be difficult and could span across from user, proprietor, programmer or manufacturer, all of which could be seen as being at fault (Asaro, 2007). For example the manufacturer of a specific device could be at fault for the malfunctions of the device, the installer could be at fault for faulty installation of the device whereas the user could be at fault for being 'reckless' as to the use of the device. When this happened, the traditional rules on liability is no longer sufficient. There is a need for new legal consideration which focus on how the SH itself can be held partly or entirely responsible for its acts or omissions.

At the moment, SH is not considered as a subject of the law (Solum, 1992). However, the issue of legal personality must be considered before liability can be attributed to SH, i.e. whether a SH (being a network of technologies and devices in a home instead of an actual person) can be accorded with a legal personhood status and attributed with criminal and civil liability.

Legal personality is often related to the acquisition of legal capacity by human. Kelsen's theory of legal personality refers a status awarded by the law as opposed to legal capacity being the natural trait of human being (Hartini, Nurus & Sheela, 2016). The notion that a non-human being attributed with legal liability and becomes a legal or juristic person is not new. The legal entity of beings other than human had been established since the early Roman law (Friedman, 1967). A legal person is any an entity that is the subject of legal rights and obligations. This rights and obligation differs according to the types and nature of the entity (Solum, 1992). In the old days such entity is represented by the state, ecclesiastical bodies and education institutions . These entities had long been recognized as having legal entity distinct from their members. The modern legal system accorded the same legal personhood status to corporation and ship (Solum, 1992). It can be concluded that a legal person is any entity that has the capacity to sue and be sued, to hold property and to enter into contract all under its own name (Chopra & White, 2004). An English jurist, Fitzgerald (1966) states;

“a person is any being whom the Law regards as capable of rights or duties. Any being that is so capable is a person, whether a human being or not and no being that is not so capable is a person, even though he may be a man. People are the substances of which rights and duties are the attributes. It is only in this respect that person possesses juridical significance and this is the exclusive point of view from which personality receives legal recognition.”

Many has explored the possibility of attributing legal personality to artificial intelligence (SH utilizes artificially intelligence in order to make the home automated). Some suggested that the legal personality of artificial intelligence can be similar to certain category of 'quasi-person' such as minors, the mentally incapacitated and comatose person (Stradella et al., 2012). These persons, although the legal system recognizes them as a legal subject, their rights and liabilities are limited compared to other fully-fledged legal person (Asaro, 2012). Hence, the 'quasi' status. This argument however is faulty on the ground that it denies the possibility that SH is capable of exhibiting higher intelligence as well as the ability of reasoning and decision making compared to a quasi-person. A SH, with its smart network and devices is capable of autonomous and cognitive function. Therefore, its decision and action cannot be considered as similar to a minor who (in the eyes of the law) is yet have a sufficient understanding between right and wrong.

Another possibility is to attribute SH with the legal personhood similar to a company or a ship. A company in breach of any law have the ability to be sued either in criminal or civil jurisdiction (*Tan Lai v. Mohamed Bin Mahmud* [1982] 1 MLJ 338 and *Lee Eng Eow (as director of Lee Guat Cheow & Co Sdn Bhd) v Mary Lee (as executrix of the estate of Low Ai Lian) & Ors* [1999] 3 MLJ 481). Section 20 of the Malaysian Companies Act 2016 states that a company, upon incorporation will become a body corporate and shall have legal personality separate from that of its members. It have the capacity to sue and be sued as other legally recognized person. In admiralty law, a ship becomes a subject of a proceeding in rem and can be found guilty of an offence (Solum, 1992). However, unlike a company or a ship (where although a non-human entity, it still consciously controlled by a human being through its directors and captains. Humans sit on the boards or the helm and their actions are attributed to the company or the ship), a SH is a home equipped with intelligent devices which operate using highly advanced automatic systems,

technology of sensors, wired and wireless convergence of network intelligent devices designed to operate without much human intervention (Edwards & Grinter, 2001). It strive to create an environment that monitors and anticipates human behaviour with the aim of customizing the house's environment to a person's inferred preferences (Hildebrandt, 2007). Hence, the element human being as active controller is lacking in a SH. Therefore, if a device in a SH malfunction and causes hurt or damage to others, it will be difficult to attribute the criminal or civil liability considering that although a SH may have the 'intelligence' of a human, it lacks the 'conscious will' which characterized a human. To make matter worse, SH rely on a complex chain of connected devices which makes it much harder to establish who is the wrongdoer or tortfeasor when something goes wrong.

The research found that At the moment, SH in Malaysia is perceived as tools (Nurus, Hartini & Sheela, 2016) and user, proprietor, programmer or manufacturer is responsible for any wrongful act or damage caused as the result of SH's action (Bayamlioglu, 2008). This is due to the fact that today's SH is yet to be fully autonomous. It still need some form of human intervention. The house's network and devices makes decisions and act in ways that can be traced directly back to the design, programming and installation by the user, proprietor, programmer or manufacturer. The human hand defines, guides, and ultimately controls the network and devices, either directly or because of the capacity to override the system and seize control. As sophisticated as the network and devices are, they are, at most, semi-autonomous. They are tools, albeit remarkably sophisticated tools, used by humans (Vladeck, 2014).

Because of the existence of human involvement in SH's decision-making and action is evident, the existing law legal framework either in criminal or civil law is still applicable. Although there is a lacunae of specific law which cater for the possibility of civil and criminal issues caused by the use of SH technology, two (2) of the Respondent said that at the moment, the existing law is sufficient to cater for problem (either crime or tort) which may arise out of SH usage. In cases where there is infringement of law or other people civil right, the authority or the aggrieved party can rely on provisions in statutes which can be adopted into the case for example the Penal Code and the Computer Crimes Act 1997. The user, proprietor, programmer or manufacturer (human or corporate entity) that has a role in the development of the network or device and helps map out its decision-making is potentially responsible for wrongful acts committed by or involving the smart home. R6 while explaining about the possible risk that a home network can be used as Botnet said that currently there is not specific law on SH network or appliances being used as Botnet "we have some of our computers (inside our home) being Bot. We have no laws that make him a crime. There is no such law." However he commented that although there is no specific law to prevent or punish owner of network or appliances used as Botnet, the Computer Crimes Act 1997 has provision which can be utilized in cases of DoS attack (one of the most common usage of Botnet) "there is no law, Botnet effect he has multiple DoS, DoS has a cover under us have a law." He further elaborated "for example the kind of computer you have to botnet, you are wrong but the wrong one is the one who is spreading. So, the law is there to catch people who do, not arrest you. In this case the house owner was not wrong, because the law that caught the person who did it was there".

Many still believe that at the moment the SH (including the SH in Malaysia) have yet to reach the level of sophistication and autonomy which require it to have legal personhood status. The houses are still regarded as agents or instruments of other entities that have legal capacity as individuals, corporations, or

other legal “persons” that may be held accountable under the law for their actions (Vladeck, 2014). There had been several cases litigated in the United States of America, regarding device and machines having artificial intelligence capacity for example in *O'Brien v. Intuitive Surgical, Inc.*, No. 10 C 3005, 2011 WL 304079, at *1 (N.D. Ill. Jul. 25, 2011). The cases proceed agency theory where the robots were considered as mere agent to the user and manufacturer.

7. Conclusion

As of today, this question on the possibility of attaching legal liability to SH is only theoretical. No existing SH currently possesses the sort of capacities that would justify serious judicial inquiry into the question of legal liability. The law may presume that the house’s network and device are no different than toasters or cars (Asaro, 2007). Therefore, the existing theories of liability is sufficient to address the issue of legal liability relating to the use of SH. The application of SH concept in Malaysia at this point of time is not advanced enough that it requires specific law on it. The existing law contain enough provision to cater for any crime or tort which might be committed.

Acknowledgments

This paper is based on the findings of the research project under the Trans-Disciplinary Research Grant Scheme (TRGS), Ministry of Higher Education Malaysia.

References

- Asaro, P. M. (2007, April). Robots and responsibility from a legal perspective. *Proceedings of the IEEE*. pp. 20-24. Retrieved from <http://www.peterasaro.org/writing/asaro%20legal%20perspective.pdf>.
- Asaro, P. M. (2012). A body to kick, but still no soul to damn: Legal perspectives on robotics. In Lin, P. Abney, K. & Bekey, G. A. (Eds.), *Robot ethics: The ethical and social implications of robotics*. Cambridge, Massachusetts: MIT Press.
- Bayamlioğlu, E. (2008, January). Intelligent agent and their legal status. *Ankarabarreview*. Retrieved from <http://www.ankarabaru.org.tr/siteiler/AnkaraBarReview/tekmakale/2008-1/8.pdf>
- Bierhoff, I., Van Berlo, A., Abascal, J., Allen, B., Civit, A., Fellbaum, K., Kemppainen, E., Bitterman, N., Freitas, D & Kristiansson, K., (2007). Smart home environment. In Roe, P.R.W. (Ed.), *Towards an inclusive future: Impact and wider potential of information and communication technologies*. (pp. 110-156), Brussels: COST.
- Chopra, S. & White, L. (2004, August). Artificial agent – Personhood in law and philosophy.” *16th European Conference on Artificial Intelligence ECAI 2004*. 635-640.
- Edwards, W. K., & Grinter, R. E. (2001). At home with ubiquitous computing: Seven challenges. *Ubicomp 2001: Ubiquitous Computing Lecture Notes in Computer Science*. (pp. 256-272.)
- Fitzgerald, P.J. (1966). *Salmon on Jurisprudence*. London: Sweet and Maxwell.
- Friedman, W. (1967). *Legal Theory*. New York : Columbia University Press.
- Hartini, S., Nurus, S. F. M. S. P. & Sheela, J. K. (2016). Are robots human? A review of the legal personality model. *World Applied Sciences Journal*. 34 (6). 824-831.
- Hildebrandt, M. (2007). Ambient intelligence, criminal liability and democracy. *Criminal Law and Philosophy*, 2(2), 163–180.
- Hildebrandt, M. (2011). Criminal liability and ‘smart’ environments. In Duff. R.A & Green, S. (Eds.) *Philosophical Foundations of Criminal Law*. (pp. 507–532).
- Nurus, S. F. M. S. P., Hartini, S. & Sheela, J. K. (2016). Artificial intelligence governance: A heads up from driverless cars. *World Applied Science Journal*, 34 (3), 376-382.

- Smart Home Concept. (2003). Retrieved from <http://www.allseeks.com/smarthome/intro.htm>
- Smart House. (n.d.). Retrieved from <https://www.cencenelec.eu/standards/Sectors/SmartLiving/House/Pages/default.aspx>
- Solum, L. B. (1992). Legal personhood for artificial intelligences. *North Carolina Law Review*, 70 (4), 1231-1287.
- Stradella, E., Salvini, P., Pirni, A., Carlo, A., Di Oddo, C. M., Dario P. & Palmerini, E. (2012, August) Robot companions as case-scenario for assessing the “subjectivity” of autonomous agents. Some philosophical and legal remarks. *First Workshop on Rights and Duties of Autonomous Agents*, Montpellier, France.
- Vladeck, D.C. (2014, March). Machines without principals: Liability rules and artificial intelligence. *Washington Law Review*, 89(1), 117-150.
- Zazali Musa. (2012, November 4). Iskandar Malaysia: City of the future. *The Star Online*. Retrieved from Read more at <https://www.thestar.com.my/news/community/2012/11/10/iskandar-malaysia-to-be-a-model-for-other-cities/#zfGzAyRMge08umr3.99>