IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, April 2022
Impact Factor: 6.252

# Middleware to Address Heterogeneity Problem in IoT

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**Abstract:** *The Internet of Things (IoT) envisions a future in which digital and physical things or products (e.g., smartphones, TVs, cars) can be linked through the use of appropriate data. to enable a variety of applications using information and communication technology as well as products and services The characteristics of the Internet of Things include an ultra-large scale network of things, as well as device and network-level heterogeneity and a high number of unintentionally created occurrences things like this will make developing a wide range of applications and services a difficult endeavor. In general, middleware can make a process easier. Integration of heterogeneous computing and development process promoting interoperability within telecommunication equipment a wide range of applications and services. In this paper, we will discuss Smart System for Device Interoperability was offered as a solution. It serves as a hub, allowing disparate devices to communicate with one another. Regardless of their differences, they can communicate through it. Protocols and other forms of communication Detailed. The proposed system's architecture is presented, as well as each of its component is well explored.*

**Keywords:** Heterogeneity Problem.

## REFERENCES

**[1].** R.A. Ramlee, M.A. Othman, M.H. Leong, M.M. Ismail, S.S.S. Ranjit, "Smart home system using android application," International Conference of Information and Communication Technology (ICoICT), August 2013
**[2].** Colin Dixon, Ratul Mahajan, "An Operating System for the Home", International Research Journal of Engineering and Technology ISSN:2395, Volume-5
**[3].** M.M. Moazzami, G. Xing; D. Mashima; W.P. Chen, U. Herberg, "SPOT: A smartphone-based platform to tackle heterogeneity in smart-home IoT systems", 2016 IEEE 3rd World Forum on Internet of Things (WF-IoT), Volume-116, February 2017
**[4].** R. Gosalia, D. Gala, Ami Munshi, "Android Based Home Automation System", International Journal of Scientific & Engineering Research Volume 9, Issue 11, November 2018
**[5].** H.B.Shinde, Abhay C., P. Chaure, Mayur C., P Waghmare, "Smart Home Automation System using Android Application", International Research Journal of Engineering and Technology, Volume 4 - Issue 4, April 2017
**[6].** https://gizmodo.com/are-smart-locks-secure-or-just-dumb-511093690
**[7].** https://www.myq.com/smart-lock
**[8].** F. Marino, L. Maggiani, L. Nao, P. Pagano, M. Petracca Towards softwarization in the IoT: Integration and evaluation of t-res in the oneM2M architecture Presented at the Proceedings of The 3rd IEEE Conference on Network Softwarization (NetSoft), IEEE5 (2017)
**[9].** Rahmani, A.-M., Thanigaivelan, N.K., Gia, T.N., Granados, J., Negash, B., Liljeberg, P., Tenhunen, H.: Smart e-health gateway: Bringing intelligence to internet-of-things based ubiquitous healthcare systems. In: Consumer Communications and Networking Conference (CCNC), 2015 12th Annual IEEE, pp. 826-834. IEEE, (2015).
**[10].** Kim, J.E., Boulos, G., Yackovich, J., Barth, T., Beckel, C., Mosse, D.: Seamless integration of heterogeneous devices and access control in smart homes. In: Intelligent Environments (IE), 2012 8th International Conference on, pp. 206-213. IEEE, (2012).
**[11].** Razzaque, M.A., Milojevic-Jevric, M., Palade, A., Clarke, S.: Middleware for internet of things: a survey. IEEE Internet of Things Journal 3, 70-95 (2016).
**[12].** Fortino, Giancarlo, Claudio Savaglio, Carlos E. Palau, Jara Puga, Maria Ganzha, Marcin Paprzycki, Miguel Montesinos, Antonio Liotta, and Miguel Llop. "Towards multi-layer interoperability of heterogeneous IoT

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platforms: the INTER-IoT approach." In Integration, Interoperability of IoT Systems, pp. 199-232.Springer, Cham, (2017