SMART INTERNET OF THINGS SERVICES

Smart Internet of things services may be important to move away from the current focus of the Internet on data collection and towards more advanced techniques as the Internet develops and as users come to demand and expect better Internet services also improves user experience. Additionally, new technologies like sensors, RFID, and near-field communications (NFC) enable the creation of an Internet of Things that connects all physical objects and things (IoT). So, having intelligent IoT services is desirable. It is also used to create smart IoT services, it is desirable for Machine-to-Machine (M2M) or IoT architectures to be content-centric, context-aware, cloud-based, collaborative, and cognitive. A technique and apparatus integrate connectivity, content, cognition, context, cloud, and collaboration to provide Internet of Things (IoT) services based on a SMART IoT architecture. Any of connectivity, content, cognition, context, cloud, or collaboration may be combined for joint optimization. Additionally in the technique and apparatus, any of cloud computing, cognitive \sand collaborative networking, content- centered networking, or context-awareness be simultaneously exploited. An informational element, an interface, a protocol stack, a system-level structure, and a service-level structure are all possible components of a SMART IoT design.

IoT services could be housed in the distributed IoT architecture known as SMART. at and requested from different organizations inside the network. A flexible IoT architecture called SMART may allow an IoT entity, such as a server, gateway, or device, to host and use various combinations of IoT services. depending on its context. Information about IoT is very diverse. Information can be categorized by any entity, service, capability, application, content, context, policy, decision, or event informative elements in the SMART IoT architecture. The SMART IoT design may also include methods for creating and modifying each informational component. The Connectivity, Content, Context, Cloud, Collaboration, and Cognition (C6) capabilities, which are the cornerstones of the SMART IoT architecture, may be included. The SMART IoT architecture may include mechanisms for jointly leveraging the C6 capabilities and in a high level of scalability, manageability, adaptability, reliability, and trustworthiness is then achieved by the SMART architecture. Additionally, the core C6 capabilities can be exploited to produce more complex C6-enabled IoT services. Technology such as the European Telecommunications Standards Institute (ETSI) M2M service layer, oneM2M service layer, Internet Engineering Task Force (IETF) IoT protocols, Third Generation Partnership Project (3GPP) networks, and Institute of Electrical and Electronics Engineers (IEEE) protocols such as IEEE 802.15.8 for p could all benefit from SMART IoT architecture mechanisms.

Reservation of IoT cloud resources and services may be supported by the C6-Enabled Publishing, Discovery, and Negotiation Service. As interface may be utilized to support IoT cloud resources & services APIs such as, for example, cloud client-side API and cloud server-side API. A way for expressing IoT cloud resources and services may be supported by the Service format of the C6 architecture. The analytics and administration of IoT cloud resources and services can be supported by the C6-Enabled Device Management capability. The IoT inter-cloud resource and service spanning various providers, and/or management domains, may be supported by the C6-Enabled Service Mobility Management capability. By adding the functionality of to IETF protocols (such as networking, routing, transport, and application protocols), IoT Content Awareness may be implemented. IoT content model, hybrid host and content-based routing, cognition-based content services, context-based content services, content collaboration, cloud-based content services, and dynamic content adaptation & enrichment. In order to add further value-added features, C6-enabled IoT content-based services may be layered on top of C6-enabled IETF protocols. Data gathering/caching, semantic data modelling, data mining & analytics, and data fusion/aggregation services are a few examples.

A C6-enabled IoT architecture 3002 may interact with the 3GPP C6- enabled IoT architecture 3000. The C6-enabled IoT Architecture 3002 may include things 3030 (e.g. traffic lights, temperature sensors), access networks\s3032 such as wired or wireless networks 3032, IoT Gateways 3034 connecting access networks 3032 to core networks 3036. IoT routers 3038 that connect core networks 3036 to clouds 3040 may be a part of core networks 3036. Applications and users 3050 may interact with clouds 3040, and clouds 3050 may include. In a CDN-based C6-enabled IoT architecture 3100, different context information may be maintained and accessed, such as device context (for example, configuration, capability, and environment), user context (for example, user profile, and environment), network context (for example network condition, and performance), and service context. service profile, service performance, and service environment). Modeling, acquisition, and access of context information are also possible. Context information may be leveraged for content storage, replication, discovery, delivery, and adaptation. Contextual information can also be used to choose the "best" collaboration to maximize content storage, replication, discovery, delivery, and adaption, potential partnerships.

An informational element, an interface, a protocol stack, a system-level structure, and a service-level structure are all possible components of a SMART IoT design. SMART may be a distributed IoT architecture where IoT services may be located\sat and requested from multiple entities inside the network. An IoT entity, such as a server, gateway, or device, may use and host various combinations of IoT services depending on its context under the flexible IoT architecture known as SMART. Information about IoT is very diverse. Information can be categorized by any entity, service, capability, application, content, context, policy, decision, or event informative elements in the SMART IoT architecture. The SMART IoT design may also include methods for creating and modifying each informational component. Hence we can conclude that the SMART IOT architecture is useful to build a good automatic model using C6 capabilities of it for achieving a highly scalable, manageable, adaptive, reliable product.

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