

Process orchestration and control across Your Internet of Everything

Why connectivity is not enough

Your Internet of Everything (YlofE) Position Paper for **W3C Workshop on the Enablers and services for an open Web of Devices**

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Introduction

I see an incredible amount of discussion around making “things” smarter by enabling connectivity via protocols such as REST, JSON, SOAP, Z-WAVE, ZIGBEE, BLE, etc. This is only the first step towards becoming “smart”. With connectivity only these things, or touch points, will be connected but waiting for an event to initiate or invoke a process or group of processes. This is where the real power and intelligence of smart, connected touch points becomes relevant to every thing that is connected. The simple act of connecting things without contextual process orchestration and execution between these things is of minimal importance.

Based on 19 years of process automation experience across emerging and legacy systems, this experience will guide not just the connections and protocols of touch points across Your Internet of Everything , but the contextual execution of processes across your touch points in YlofE.

Connectivity

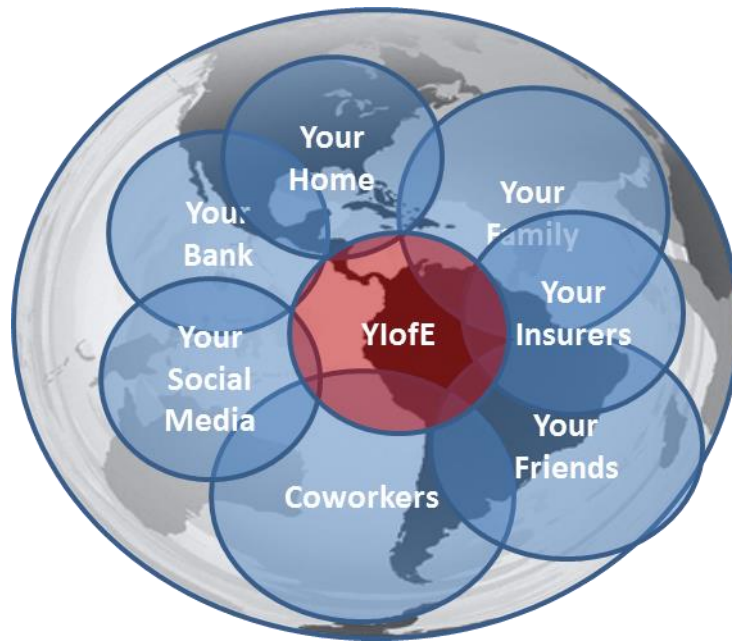
As hardware manufacturers rush to add connectivity to everything they build, we can learn from the past that having one standard communication protocol is a daunting task. The neural network that controls your internet of everything must be capable of communicating across what potentially will be dozens /hundreds of different protocols, seamlessly. As the computing industry has grown from Konrad Zuse’s Z1, we have seen that trying to establish one common protocol for data exchange is an admirable effort but will not happen any time soon. Your internet of everything must be able to accept, translate, process, and respond to touch points that all communicate differently via different protocols.

Contextual Data and Process Execution

Once a thing/touch point has been coupled with connectivity, we must consider its available functions. What is this touch point’s purpose in your eco system of connectivity enabled things? What thing will drive what thing that will drive what touch point to achieve the overall goal: a completed, resolved process? Smart refrigerators, smart ovens, smart light switches, smart cars; all smart products are only as smart as their place in the overall process that are contextual to the end user of these touch points/things. These things exist and are connected to make our lives easier and provide functions and data so we can execute life better. Better decision making, more efficient process execution and better

overall results. We should benefit from the decades of process execution and adaptive /predictive analytics being employed by every businesses in today's world.

Within the Internet of Everything / Internet of Things, there will be Your Internet of Everything that houses each of the touch points that are pertinent to you specifically. What we will find are things shared across each individual's Internet of Everything. Each individual's Internet of Everything has the potential to overlap another's creating shared things and processes.



Manufacturer / Service Provider Functions

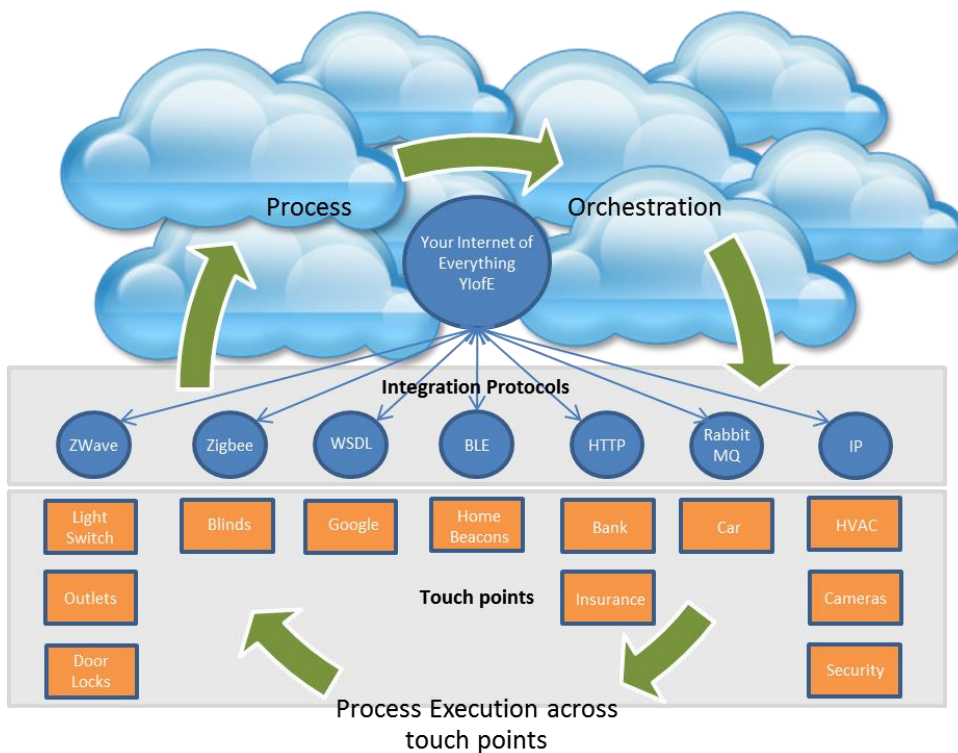
Both manufacturers and service providers will need to include open standards based functions that can be accessed and executed from external process engine(s) within YlofE. Many manufacturers are building their own apps that are then used to control their products, but this leads to a disjointed user experience since this is only one touch point across YlofE. In the near future we will see manufacturers of any connected touch point advertising their control capability via an open standard communication protocol and the pre-built services to execute processes with their product(s). The key is that these executables must be at an atomic level so individuals can tailor their processes as they see fit and not be constrained in any way. Banks, insurance companies, and the like will also begin to provide some of the same connections and services they use internally to execute functions such as an address change, lost/stolen info, funds hold, and FNOL – First Notice of Loss.

Security

Just as security is top of mind for all users of connected things today, the need for standards and interoperability is just as significant regarding security between your connected life. Some common shared form of single sign-on (SSO) must be established so that security is strong but easy to manage across all protocols and all things. Cisco states, "The IoT cannot be successful in any organization without integrated security for both the physical and network infrastructure." I would suggest that this applies to any human, thing, and touch point in your internet of everything. This unified security will need to apply to hardware components and software applications managing the touch point itself as well as application(s) executing processes across your internet of things.

Scalable architecture to orchestrate Your Internet of Everything's contextual processing

Architecture to support your internet of everything will grow organically just as the architecture of the World Wide Web has grown for decades. YlofE will authenticate and authorize each touch point and orchestrate each contextual process.

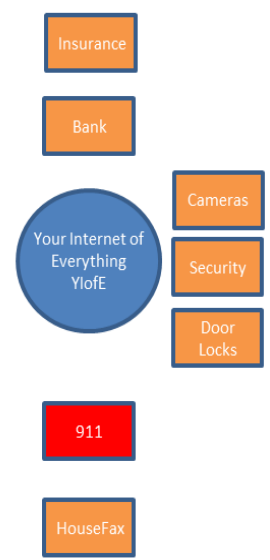
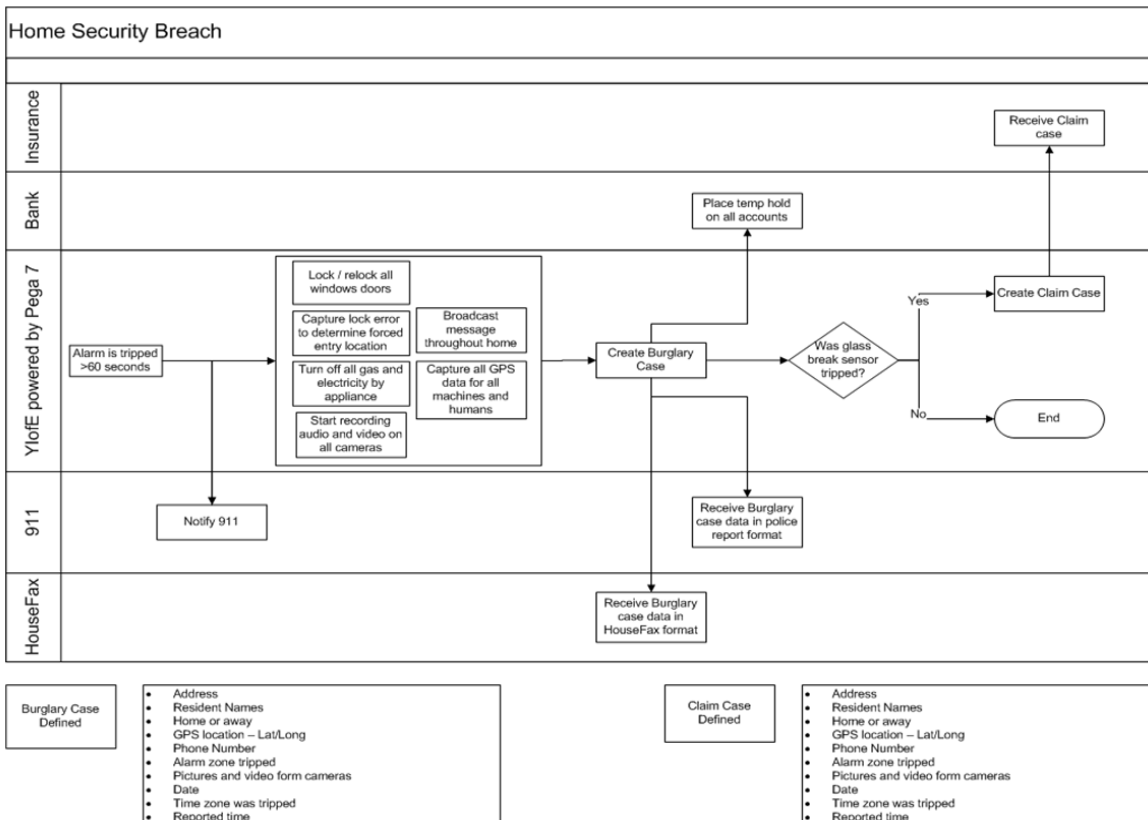


Personal Case Management – Everything is a Process

YlofE must also capture process information. The human mind does have a finite capacity, and each of us use our brains in different ways - not always optimally. YlofE will use Personal Case Management (PCM) to capture the outcomes of the processes you execute. As YlofE grows to include new things and processes, tracking and monitoring these things and processes will become a necessity. Whether checking to see if your child performed her/his chores or checking the status of each family member's location, a case will be created that captures all pertinent data to that request. These cases will be created whenever a process is executed, with the potential for the existence of parent child case relationships to show the full context of the situation itself. The results of these cases can be used to assist with future decisions in efforts to increase the chance for a more positive outcome as future cases are created and resolved.

Process Orchestration and Execution Example including PCM

Exhibit A :: Sample process – Home Security Breach



Conclusion

While the connectivity between your things is foundational, contextual process is paramount.

References

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