

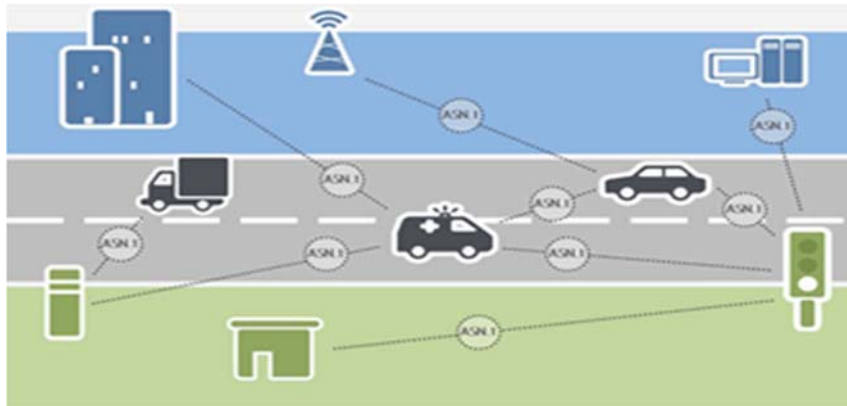
# Time to Get “Smart” with IoT

IoT is a vast landscape of many interaction-intensive environments connecting a huge number of smart things. A smart thing can be as simple as a device that collects and transmits sensor data to a Cloud-based repository for analysis, or as complex as a system to monitor and manage a smart factory.

Common to all of these environments are the primary need to exchange data and the complementary need to understand/process data. Interoperability is a vital element of IoT. How do we obtain information, exchange information, and ultimately understand/process the information? Meeting these challenges requires security, reliability, scalability, and high performance across heterogeneous platforms and systems.

	<b>Security</b>	<b>Reliability</b>	<b>Scalability</b>	<b>Performance</b>	<b>Across Heterogeneous Platforms</b>
<b>IoT Requirements Exchange Data</b>	√	√	√	√	√
<b>Understand/Process Data</b>	√	√	√	√	√

ASN.1, a standardized and proven notation for describing interfaces between heterogeneous platforms and systems, is already used in many aspects of the IoT landscape to satisfy these requirements.



- Protocols used in radio technologies such as NB-IoT and eMTC are defined in ASN.1
- Applications protocols such as J2735, CAM, and DENM are defined in ASN.1
- Secure message protocols such as 1609.2 and X.509 are defined in ASN.1
- ASN.1 codecs deliver high performance and highly accurate data processing

Since 1988 OSS Nokalva has been a leading provider of ASN.1, 4G, and XML toolkits worldwide. OSS offers solutions for every phase of IoT solution development – from the development of well-defined interfaces, through solution development and verification, all the way to the ongoing monitoring and data analysis of deployed solutions.

Architect Environment	
Develop Standards to prevent different interpretations and interoperability issues	Develop test specifications & methodologies to ensure validation & conformity to standards

Participants in this phase of IoT solution development define protocols/specifications meant to ensure interoperability and conformance. Often this phase includes the need for reference implementations to assess the feasibility of the protocols/specifications proposed for adoption.

Solution Development/Testing		
Prototype/Develop	Maintain/Support/Upgrade	Test/Simulation/Conformance Verification

Participants in this phase of IoT solution include those who

- develop/support device based applications, as well as server/Cloud based applications;
- develop/support the stack layers supporting the infrastructure components needed to support communication between devices and server/Cloud based applications; and
- test/verify the performance and conformance of components being deployed in the IoT environment.

Deployment	
Monitor – Network Analysis	Data Analysis

Participants in this ongoing phase of IoT solution include those who

- monitor/optimize the performance of the IoT environment;
- act upon the information/analytics produced by server/Cloud based applications that rapidly and efficiently consume and analyze the huge volumes of data generated by the IoT environments

OSS ASN.1 Offerings	IoT Solution Phase		
	Architect	Develop/Test	Deploy
<b>ASN.1 Studio</b> - A powerful IDE including an ASN.1 editor and message editor/view. No coding needed.	√	√	
<b>ASN.1 development toolkits</b> for rapidly building applications. Available for C, C++, C# and Java. Includes high performance codecs ported to 500+ platforms, and partial/selective decoding - which is ideally suited for application that receive large messages, but only need to access one or two fields.	√	√	√
<b>ASN.1 consulting</b> to organizations/companies regarding their use of ASN.1 notation and its encoding rules.	√	√	√

**To learn more about OSS' products and services, and how we can support your IoT requirements email us: [info@oss.com](mailto:info@oss.com), call us: +1-732-302-9669, or visit: [www.oss.com](http://www.oss.com).**