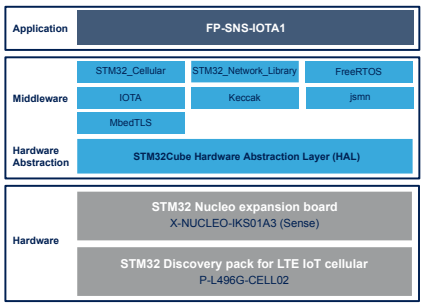
FP-SNS-IOTA1

Data brief

STM32Cube function pack for IoT sensor node with cellular connectivity enabling Distributed Ledger Technology (DLT) functions



STM32 Open Development Environment

Features

- Complete firmware to build IOTA DLT applications for STM32-based boards
- Middleware libraries featuring cellular management, transport-level security (MbedTLS) and IOTA cryptography management
- Ready-to-use binary to build IOTA transactions including sensor data and to send them to the Tangle via LTE connectivity
- Sample implementation available for 32L496GDISCOVERY Discovery board equipped with the P-L496G-CELL02 STMod+ cellular expansion board with antenna and the X-NUCLEO-IKS01A3 sensor expansion board
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

FP-SNS-IOTA1 is an STM32Cube function pack which lets you enable IOTA DLT functions on an IoT sensor node with cellular connectivity.

The function pack implements and demonstrates IOTA DLT use cases for the STM32 MCUs.

The IOTA DLT is a transaction settlement and data transfer layer for the Internet of Things (IoT) IOTA for money and/or data transfer without any transaction fees in a trustless, permissionless and decentralized environment.

The featured use cases acquire sensor data and send them to the IOTA Ledger (also called Tangle) via LTE cellular connectivity.

Product summary	
STM32Cube function pack for IoT sensor node with cellular connectivity enabling Distributed Ledger Technology (DLT) functions	FP-SNS-IOTA1
Motion MEMS and environmental sensor expansion board for STM32 Nucleo	X-NUCLEO-IKS01A3
Discovery kit with STM32L496AG MCU	32L496GDISCOVERY
LTE Cellular to Cloud Pack with STM32L496AG MCU	P-L496G-CELL02
Applications	Goods Guarantee IoT for Smart Industry Secure Transactions Tracking

1 Detailed description

1.1 What can you do with STM32Cube function packs?

STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards together with STM32Cube and X-CUBE software to create function examples for some of the most common use cases of different application technologies.

These software function packs are designed to exploit the underlying STM32 ODE hardware and software components as much as possible to best satisfy the requirements of final user applications.

Moreover, function packs may include additional libraries and frameworks that are not present in the original X-CUBE packages, thus enabling new functionalities allowing real and usable system for developers.

1.2 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- STM32CubeMX configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- STM32CubeIDE integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- STM32CubeProgrammer programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools (STM32CubeMonRF, STM32CubeMonUCPD, STM32CubeMonPwr) to help developers customize their applications in real-time
- STM32Cube MCU and MPU packages specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- STM32Cube expansion packages for application-oriented solutions

1.3 How does this function pack complement STM32Cube?

This software is based on the STM32CubeHAL. It extends STM32Cube by providing a board support package (BSP) for the LTE IoT cellular communication expansion board and the motion and environmental sensor expansion board.

The drivers abstract low-level details of the hardware and allow the middleware components and applications to access data in a hardware-independent manner.

The package includes some middleware libraries to enable IOTA DLT use cases. Developers can prototype an IOTA Sensor Node running on an STM32 microcontroller to acquire sensor data, build an IOTA transaction and send it to the Tangle (the IOTA Ledger) via LTE connectivity.

Revision history

Table 1. Document revision history

Date	Version	Changes
18-Jun-2020	1	Initial release.
16-Nov-2020	2	Updated cover page image and Section 1.3 How does this function pack complement STM32Cube?.