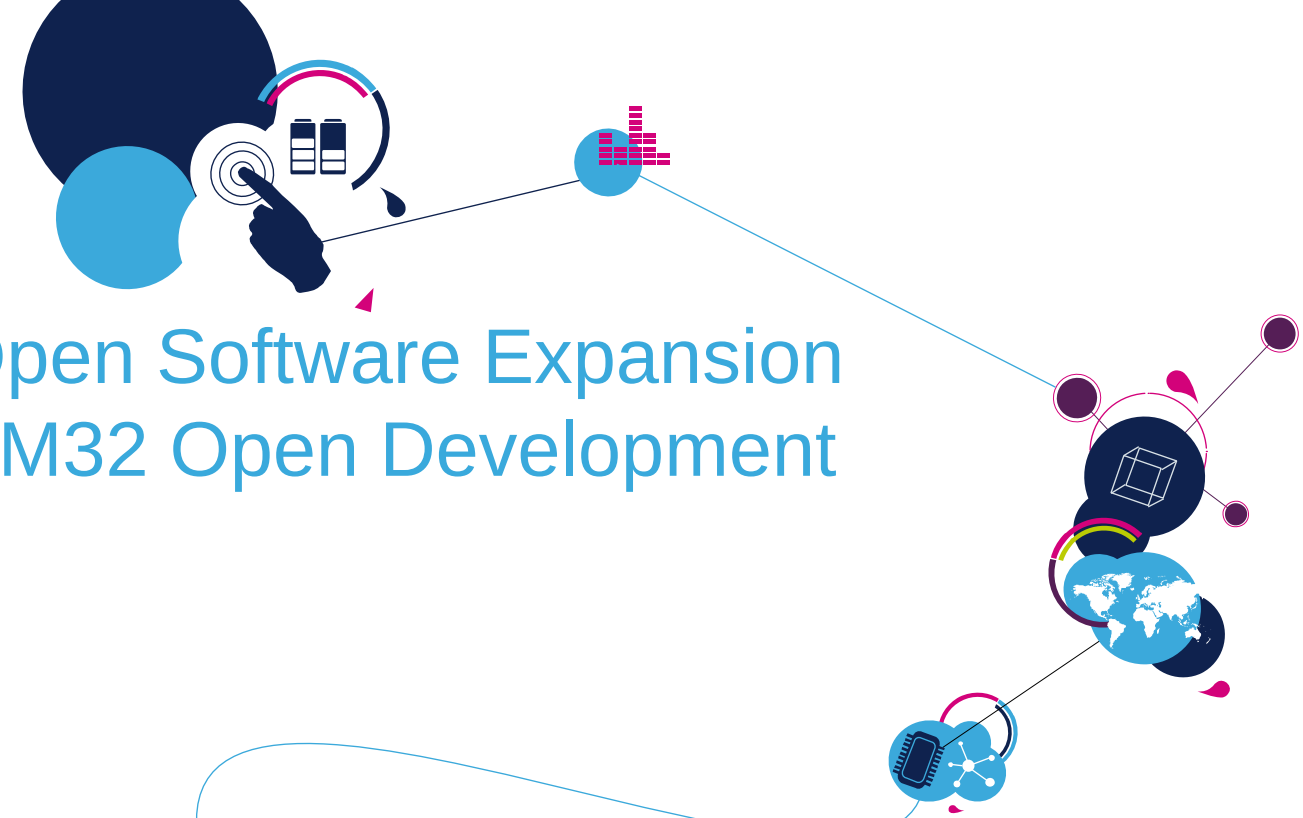

Migration of Open Software Expansion libraries to STM32 Open Development Environment
Overview

June 2017

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Introduction

- The Open Software Expansion development suite offers drivers, middleware and application software to jump start your STM32 design with ST products including MEMS motion sensors, BLE and Sub-1GHz RF connectivity, environmental sensors, and MEMS microphones.

- The STM32 Open Development Environment (STM32 ODE) is an open, flexible, easy and affordable way to develop innovative devices and applications based on the STM32 32-bit microcontroller family combined with other state-of-the-art ST components connected via expansion boards.

- In order to simplify the user experience and accelerate the path from evaluation to production, as of June 2017 all the software components from Open Software Expansion are integrated in the STM32 Open Development Environment (mentioned as “the transition” hereafter).

- This presentation provides information on the transition and outlines the new STM32 ODE offer.

Software License Agreements (SLA) (1/2)

- SLA0077 (new) is associated to all the STM32 ODE packages that include software formerly released as part of Open Software Expansion suite
- SLA0055 is associated to the other STM32 ODE packages
- **Both licenses are click-through licenses, allowing customers to go in production without further requests**

Software License Agreements (SLA) (2/2)

- Differences between SLA0055 and SLA0077 (new): the two licenses are identical, except for the definition of what an “ST Device” is:

  “Product: means Your and Your end-users’ product or system, and all the related documentation, that includes or incorporates the Licensed Software in Compiled Code and the ST Device and provided further that such Licensed Software or derivative works of the Licensed Software execute solely and exclusively on ST Device.”

- In SLA0055, an “ST Device” is defined as follows:

  ST Device: means the combination of: a) one ST microcontroller and b) one ST integrated circuit chosen by You provided that a) and b) are manufactured and sold by or for ST.

- In SLA0077, an “ST Device” is defined as follows:

  ST Device: means the combination of at least: a) one ST microcontroller and b) one device chosen by You between a ST radio frequency connectivity device and a ST MEMS sensor integrated circuit; a) and b) manufactured and sold by or for ST.

Software Re-Packaging and Documentation

- Former deliverables (libraries and frameworks) from the Open Software Expansion suite will be distributed in the same form:
  - Binary libraries remain binary
  - Open-source libraries remain open source
- All “OSX” references have been removed from the code
- Apart from removing the prefix, library naming conventions have been maintained
  - For example, “osxMotionFX” has become “MotionFX”
- Each library now comes with a user manual or an application note

Summary of Implementation

Source in OSX		Destination in STM32 ODE
Open.MEMS libraries	osxMotionXX	X-CUBE-MEMS1
Open.Audio libraries	osxAcousticBF	X-CUBE-MEMSMIC1
	osxAcousticEC	FP-AUD-SMARTMIC1 (*)
	osxAcousticSL	X-CUBE-MEMSMIC1
	osxBluevoice	FP-AUD-BVLINK1 (*)
Open.RF	osxContiki6LP	X-CUBE-SUBG1
	osxSmartConnPS	X-CUBE-BLE1
Open.Frameworks	BLUEMICROSYSTEM1	FP-SNS-MOTENV1
	BLUEMICROSYSTEM2	FP-SNS-ALLMEMS1
	BLUEMICROSYSTEM3	FP-SNS-FLIGHT1
	BLUEVOICELINK1	FP-AUD-BVLINK1 (*)
	SmartAcoustic1	FP-AUD-SMARTMIC1 (*)

(*) New STM32 ODE Function Pack

List of libraries integrated in STM32 ODE

- Motion Libraries (13)
  - MotionAC (Accelerometer calibration)
  - MotionAR (Activity recognition)
  - MotionAW (Activity recognition for wrists)
  - MotionCP (Carry position)
  - MotionEC (eCompass) (*)
  - MotionFA (Fitness activity) (*)
  - MotionFX (Sensor fusion)
  - MotionGC (Gyroscope calibration)
  - MotionGR (Gesture recognition)
  - MotionID (Intensity detection)
  - MotionMC (Magnetometer calibration)
  - MotionPE (Pose estimation)
  - MotionPM (Pedometer)
- Audio Libraries (4)
  - AcousticBF (Real-time beam forming)
  - AcousticEC (Real-time echo cancellation)
  - AcousticSL (Source localization)
  - BlueVoice (Voice over BLE profile)
- RF Libraries (2)
  - Contiki6LP (Contiki OS/6LoWPAN)
  - SmartConnPS (BLE profiles)

(*) New middleware library, not available in the Open Software Expansion suite

Benefits for users

- Simplified offer
  - Single ecosystem of tools and software
- Simplified licensing
  - Once the click-through agreement is accepted, users are allowed to go to production without the need for further agreements with ST
- Simplified use
  - No more licenses to install in order to evaluate the libraries
  - No more node-locking means that users can now install the binaries on any number of devices without restrictions
  - All middleware libraries and their examples are provided together with the drivers and utilities in a single package

Overview of new X-Cube software releases

X-CUBE-BLE1 Software

- RPN
  - **X-CUBE-BLE1**
- Version:
  - 3.0.0
- Description:
  - Bluetooth Low Energy software expansion for STM32Cube
- Main changes
  - Integration of all BLE profiles (SmartConnPS library)
- Core products:
  - STM32 F401RE, F411RE, L476RG, L053R8
  - SPBTLE-RF

X-CUBE-BLE1
Collaterals (new revisions)

Doc ID and Revision	Title
DB2461 Rev 6 (Link)	Bluetooth Low Energy software expansion for STM32Cube
UM1873 Rev 3 (Link)	Getting started with the X-CUBE-BLE1 Bluetooth Low Energy software expansion for STM32Cube
AN4642 Rev 3 (Link)	Overview of the BLE profile applications for X-CUBE-BLE1, expansion for STM32Cube

X-CUBE-MEMS1 Software

- RPN
  - **X-CUBE-MEMS1**
- Version:
  - 4.0.0
- Description:
  - Motion MEMS and environmental sensor software expansion for STM32Cube
- Main changes
  - Integration of all the available MEMS motion libraries (11 libraries previously released in OSX + 2 new libraries)
- Core products:
  - STM32 F401RE, F411RE, L053R8, L152RE, L476RG
  - LSM6DS0, LIS3MDL, LPS25HB LSM6DS3, HTS221
  - LSM6DSL, LSM303AGR, LPS22HB

X-CUBE-MEMS1 Collaterals (new revisions)

Doc ID and Revision	Title
DB2442 Rev 8 (Link)	Motion MEMS and Environmental Sensor Software Expansion for STM32Cube
UM1859 Rev 7 (Link)	Getting started with the X-CUBE-MEMS1 Motion MEMS and Environmental Sensor Software Expansion for STM32Cube
UM2182 Rev 1 (Link)	Getting Started with MotionAC Accelerometer Calibration Library in X-CUBE-MEMS1
UM2193 Rev 1 (Link)	Getting Started with MotionAR Activity Recognition Library in X-CUBE-MEMS1
UM2194 Rev 1 (Link)	Getting Started with MotionAW Activity Recognition for Wrist Library in X-CUBE-MEMS1
UM2224 Rev 1 (Link)	Getting Started with MotionCP Carry Position Library in X-CUBE-MEMS1
UM2225 Rev 1 (Link)	Getting Started with MotionEC eCompass Library in X-CUBE-MEMS1
UM2216 Rev 1 (Link)	Getting Started with MotionFA Fitness Activity Library in X-CUBE-MEMS1
UM2220 Rev 1 (Link)	Getting Started with MotionFX Sensor Fusion Library in X-CUBE-MEMS1
UM2181 Rev 1 (Link)	Getting Started with MotionGC Gyroscope Calibration Library in X-CUBE-MEMS1
UM2201 Rev 1 (Link)	Getting Started with MotionGR Gesture Recognition Library in X-CUBE-MEMS1
UM2215 Rev 1 (Link)	Getting Started with MotionID Intensity Detection Library in X-CUBE-MEMS1
UM2192 Rev 1 (Link)	Getting Started with MotionMC Magnetometer Calibration Library in X-CUBE-MEMS1
UM2223 Rev 1 (Link)	Getting Started with MotionPE Pose Estimation Library in X-CUBE-MEMS1
UM2207 Rev 1 (Link)	Getting Started with MotionPM Pedometer Library in X-CUBE-MEMS1

X-CUBE-MEMSMIC1 Software

- RPN
  - **X-CUBE-MEMSMIC1**
- Version:
  - 2.0.0
- Description:
  - Digital MEMS microphone acquisition and processing software expansion for STM32Cube
- Main changes
  - Integration of AcousticBF and AcousticSL libraries
- Core products:
  - STM32 F401RE, F072RB, L476RG, L053R8, F746ZG
  - MP34DT01-M

X-CUBE-MEMSMIC1 Collaterals (new revisions)

Doc ID and Revision	Title
DB2599 Rev 5 (Link)	Digital MEMS microphone acquisition and processing software expansion for STM32Cube
UM1901 Rev 4 (Link)	Getting started with the software package for digital MEMS microphones in X-CUBE-MEMSMIC1 expansion for STM32Cube
UM2214 Rev 1 (Link)	Getting started with AcousticBF real-time beam forming middleware
UM2212 Rev 1 (Link)	Getting started with AcousticSL real-time sound source localization middleware

X-CUBE-SUBG1
Software

- RPN
  - **X-CUBE-SUBG1**
- Version:
  - 2.0.0
- Description:
  - Sub-1 GHz RF communication software expansion for STM32Cube
- Main changes
  - Integration of Contiki6LP library (ContikiOS + 6LoWPAN)
- Core products:
  - STM32 F401RE, L053R8, L152RE
  - SPSGRF-868, SPSGRF-915

X-CUBE-SUBG1
Collaterals (new revisions)

Doc ID and Revision	Title
DB2556 Rev 3 (Link)	Sub-1 GHz RF communication software expansion for STM32Cube
UM1904 Rev 2 (Link)	Getting started with X-CUBE-SUBG1, Sub-1GHz RF software expansion for STM32Cube
UM2040 Rev 3 (Link)	Getting started with Contiki6LP, Contiki OS and 6LowPAN sub-1GHz RF software expansion for STM32Cube
QSG Rev 1.1 (Link)	Contiki6LP quick start guide

Overview of new STM32 ODE Function Pack software releases

FP-AUD-BVLINK1 Software

- RPN
  - **FP-AUD-BVLINK1**
- Version:
  - 1.0.0
- Description:
  - STM32 ODE Function Pack for half-duplex voice streaming over Bluetooth Low Energy
- Main changes
  - New Function Pack, same functionality as in the BLUEVOICELINK1, Open.Frameworks from OSX
  - This Function Pack integrates the BlueVoiceADPCM half-duplex voiceoverBluetooth Low Energy communication profile
- Core products:
  - STM32 F401RE, L476RG, L053R8, F446RE
  - SPBTLE-RF, MP34DT01-M

FP-AUD-BVLINK1 Collaterals (new revisions)

Doc ID and Revision	Title
DB3255 Rev 1 (Link)	STM32 ODE Function Pack for half-duplex voice streaming over Bluetooth Low Energy
UM2196 Rev 1 (Link)	Getting started with the FP-AUD-BVLINK1 STM32 ODE function pack based on half-duplex voice streaming over BLE
QSG Rev 1.0 (Link)	Quick Start Guide

FP-AUD-SMARTMIC1 Software

- RPN
  - **FP-AUD-SMARTMIC1**
- Version:
  - 1.0.0
- Description:
  - STM32 ODE Function Pack for MEMS microphones acquisition, advanced audio processing and audio output
- Main changes
  - New Function Pack, same functionality as the SmartAcoustic1, Open.Frameworks from OSX
  - This Function Pack integrates the AcousticBF and AcousticSL libraries
- Core products:
  - STM32 F446RE
  - STA350BW
  - MP34DT01-M

FP-AUD-SMARTMIC1
Collaterals (new revisions)

Doc ID and Revision	Title
DB3275 Rev 1 (Link)	STM32 ODE Function Pack for MEMS microphones acquisition, advanced audio processing and audio output
UM2219 Rev 1 (Link)	Getting started with the STM32 ODE Function Pack for MEMS microphones acquisition, advanced audio processing and audio output
UM2213 Rev 1 (Link)	Getting started with AcousticEC real-time echo cancellation middleware
QSG Rev 1.0 (Link)	Quick Start Guide

FP-SNS-MOTENV1 Software

- RPN
  - **FP-SNS-MOTENV1**
- Version:
  - 3.0.0
- Description:
  - STM32 ODE Function Pack for IoT node with BLE connectivity and environmental and motion sensors
  - It now provides all the features previously included in BLUEMICROSYSTEM1
- Main changes
  - Integration of MotionFX, MotionAR, MotionCP, MotionGR, MotionPM, MotionID, and eCompass libraries
- Core products:
  - STM32 F401RE, L476RG, L053R8
  - SPBTLE-RF
  - LSM6DS0, LIS3MDL, LSP25HB, LSM6DSL, LSM303AGR, LPS22HB, HTS221

FP-SNS-MOTENV1
Collaterals (new revisions)

Doc ID and Revision	Title
DB2852 Rev 5 (Link)	STM32 ODE Function Pack for IoT node with BLE connectivity and environmental and motion sensors
UM2016 Rev 6 (Link)	Getting started with the FP-SNS-MOTENV1 Bluetooth Low Energy and sensor software expansion library for STM32Cube
QSG Rev 2.4 (Link)	Quick Start Guide

FP-SNS-ALLMEMS1 Software

- RPN
  - **FP-SNS-ALLMEMS1**
- Version:
  - 3.0.0
- Description:
  - STM32 ODE Function Pack for IoT node with BLE connectivity, digital microphone, environmental and motion sensors
  - It now provides all the features previously included in BLUEMICROSYSTEM2
- Main changes
  - Integration of MotionFX, MotionAR, MotionCP, MotionGR libraries
  - Integration of AcousticSL and BlueVoiceADPCM half-duplex voiceoverBluetooth Low Energy communication profile
- Core products:
  - STM32 F401RE, L476RG, F446RE
  - SPBTLE-RF
  - LSM6DS0, LIS3MDL, LSP25HB, LSM6DSL, LSM303AGR, LPS22HB, HTS221
  - MP34DT01-M

FP-SNS-ALLMEMS1 Collaterals (new revisions)

Doc ID and Revision	Title
DB2915 Rev 5 (Link)	STM32 ODE Function Pack for IoT node with BLE connectivity, digital microphone, environmental and motion sensors
UM2059 Rev 5 (Link)	Getting started with the FP-SNS-ALLMEMS1 Bluetooth Low Energy and sensor software expansion library for STM32Cube
QSG Rev 2.2 (Link)	Quick Start Guide

FP-SNS-FLIGHT1 Software

- RPN
  - **FP-SNS-FLIGHT1**
- Version:
  - 3.0.0
- Description:
  - STM32 ODE Function Pack for IoT node with NFC, BLE connectivity, and environmental, motion and time-of-flight sensors
  - It now provides all the features previously included in BLUEMICROSYSTEM3
- Main changes
  - Integration of MotionFX, MotionAR, MotionCP, MotionGR libraries
  - Added support for VL53L0X sensor
- Core products:
  - STM32 F401RE, L476RG
  - SPBTLE-RF
  - LSM6DS0, LIS3MDL, LSP25HB, LSM6DSL, LSM303AGR, LPS22HB, HTS221
  - VL6180X, VL53L0X
  - M24SR

FP-SNS-FLIGHT1
Collaterals (new revisions)

Doc ID and Revision	Title
DB2862 Rev 4 (Link)	STM32 ODE Function Pack for IoT node with NFC, BLE connectivity, and environmental, motion and time-of-flight sensors
UM2026 Rev 4 (Link)	Getting started with the software package for Bluetooth Low Energy, sensors and NFC tag software in FP-SNS-FLIGHT1
QSG Rev 2.3 (Link)	Quick Start Guide

THANK YOU

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