



sensing the
FUTURE

InvenSense Developers Conference 2016

InvenSense
ICM-30670 SH



What's New in SensorStudio2.2.0

InvenSense
ICM-30670 SH

- Accelerate sensor based IOT development with new SensorStudio software!
 - Packaging and Distribution
 - Documentation, Samples & Tutorials
 - Code Editor & Update Service
 - Record & Replay
 - GSH



- What's in the SensorStudio2.2.0 Dev Kits?
 1. ICM30670 + Multisensor Daughterboard + Arduino
 2. ICM20690 + Multisensor Daughterboard + ST Nucleo ST411RE
- What's in the SensorStudio2.2.0 Software Package?
 1. ICM30670 SDK
 2. Generic Sensor Hub SDK w/ freeRTOS integration
 3. Linaro gcc toolchain
 4. Arduino & FTDI drivers
 5. Lots of documents and samples and tutorials



DOCS, SAMPLES & TUTORIALS

InvenSense
ICM-30670 SH

The screenshot shows the SensorStudio application interface. The top bar includes the menu (File, Edit, View, Organize, Tools, Run, Window, Device, Help), the version (2.2.0-SprintD-test3), and a 'Hide' button. The main area is divided into three columns: 'CREATE' (with 'Empty flow'), 'OPEN' (with 'Browse...'), and 'LEARN'. The 'LEARN' section is highlighted with a red box and contains an 'Interactive tutorial' link. Below this, there are two columns of 'SAMPLES & TUTORIALS' with various links and star ratings. The bottom bar contains social media links (Follow Us..., Developers forum, Contact support) and the text 'designed by InvenSense'.

SensorStudio
File Edit View Organize Tools Run Window Device Help
Sensor STUDIO
Version 2.2.0-SprintD-test3 Hide

Welcome to SensorStudio

CREATE
Empty flow

PROJECT TEMPLATES
GSH
ICM30670

OPEN
Browse...

RECENT FILES

LEARN
Interactive tutorial
Hardware quick start guide

SAMPLES & TUTORIALS

GSH basic ★ Discover SensorStudio and your GenericSensorHub evaluation board.	GSH orientation sensors ★★ Evaluate GenericSensorHub orientation sensors.
GSH physical sensors ★★ Evaluate GenericSensorHub physical sensors.	GSH auxilliary custom sensor ★★★ Create the driver for an auxilliary sensor on the GenericSensorHub board.
GSH with Sensirion RHT Sensor ★★★ Sensirion SHT3x RHT sensor driver on the GenericSensorHub board .	GSH custom sensor ★★★ Create your own sensor fusion algorithms and embed them on the GenericSensorHub firmware.
GSH Record & Replay ★★★ Discover how to record data from your device and replay them into your flow	GSH and sensor decimation ★★★★★ Illustrates how the "decimator" option behaves
GSH Door opening detection custom sen... ★★★★★ Complex example of a custom sensor implementation detecting opening/closing of a door.	GSH Lightsaber custom sensor ★★★★★ Complex example of a custom sensor implementation simulating lightsaber behavior.
ICM30670 basic ★ Discover SensorStudio and your ICM30670 evaluation board.	ICM30670 orientation sensors ★★ Evaluate ICM30670 orientation sensors.

Follow Us... Developers forum Contact support
designed by InvenSense

SAMPLES & DOCUMENTATION

sensing the
FUTURE

The screenshot shows the SensorStudio application window. The title bar includes 'SensorStudio' and standard window controls. The menu bar contains 'File', 'Edit', 'View', 'Organize', 'Tools', 'Run', 'Window', 'Device', and 'Help'. The main interface is divided into several sections:

- WELCOME TO SENSORSTUDIO**: A blue header bar with a version indicator '2.2.0-SprintD-test3' and a 'Hide' button.
- CREATE**: A section with an 'Empty flow' button.
- PROJECT TEMPLATES**: A list of templates including 'GSH' and 'ICM30670'.
- OPEN**: A section with a 'Browse...' button.
- RECENT FILES**: A section showing recently opened files.
- LEARN**: A section with links to 'Interactive tutorial', 'Hardware quick start guide', and 'SensorStudio user documentation'.
- SAMPLES & TUTORIALS**: A grid of sample projects, each with a title, description, and star rating. This section is highlighted with a red circle.

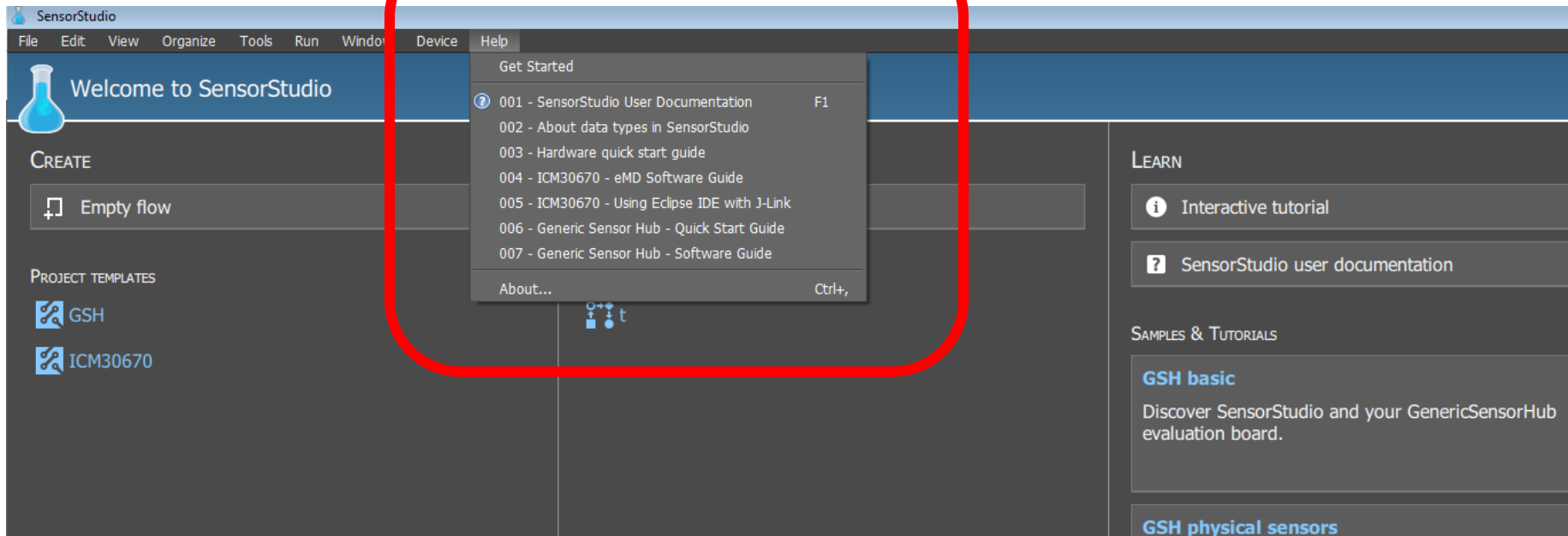
The 'SAMPLES & TUTORIALS' section contains the following items:

Sample Title	Description	Rating
GSH basic	Discover SensorStudio and your GenericSensorHub evaluation board.	★
GSH orientation sensors	Evaluate GenericSensorHub orientation sensors.	★★
GSH physical sensors	Evaluate GenericSensorHub physical sensors.	★★
GSH auxilliary custom sensor	Create the driver for an auxilliary sensor on the GenericSensorHub board.	★★★
GSH with Sensirion RHT Sensor	Sensirion SHT3x RHT sensor driver on the GenericSensorHub board .	★★★
GSH custom sensor	Create your own sensor fusion algorithms and embed them on the GenericSensorHub firmware.	★★★
GSH Record & Replay	Discover how to record data from your device and replay them into your flow	★★★
GSH and sensor decimation	Illustrates how the "decimator" option behaves	★★★★
GSH Door opening detection custom sen...	Complex example of a custom sensor implementation detecting opening/closing of a door.	★★★★★
GSH Lightsaber custom sensor	Complex example of a custom sensor implementation simulating lightsaber behavior.	★★★★★
ICM30670 basic	Discover SensorStudio and your ICM30670 evaluation board.	★
ICM30670 orientation sensors	Evaluate ICM30670 orientation sensors.	★★

At the bottom of the window, there are social media links for 'Follow Us...', 'Developers forum', and 'Contact support', along with the text 'designed by InvenSense'.

SAMPLES & DOCUMENTATION

sensing the
FUTURE

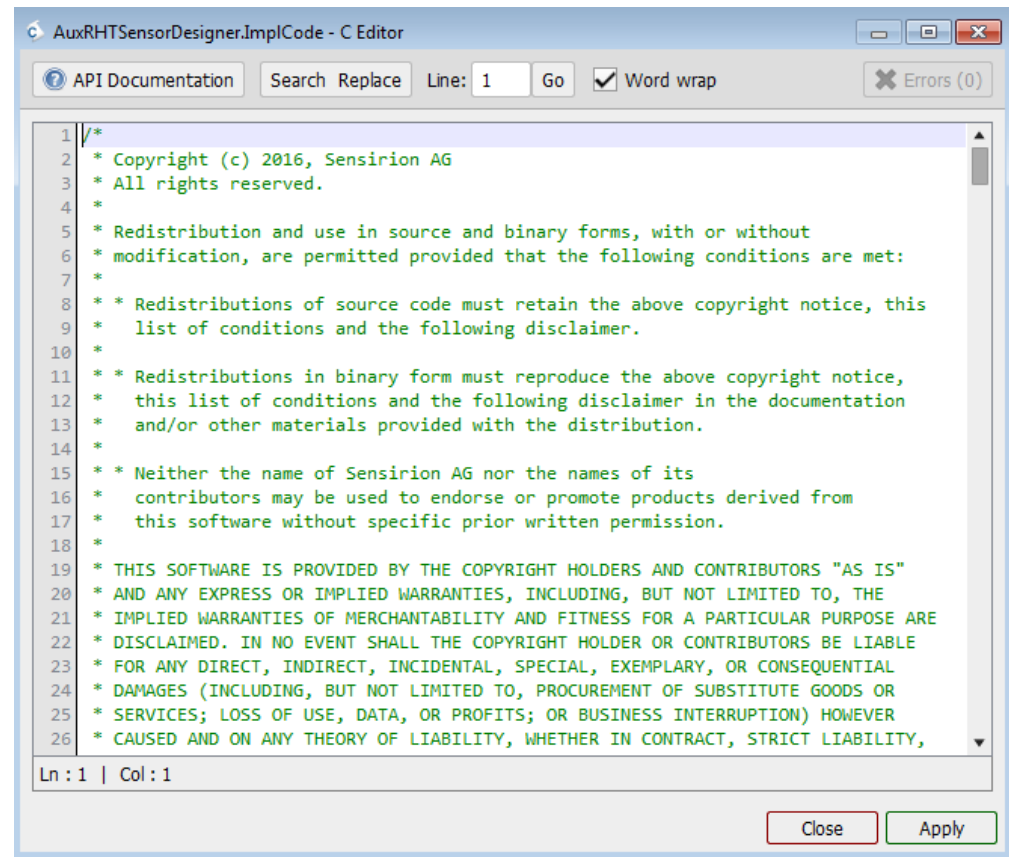




CODE EDITOR, UPDATE SERVICE

InvenSense
ICM-30670 SH

- Improved C Code editor with basic development features
 - search/replace
 - goto
 - word wrap
 - line numbering
 - syntax highlighting

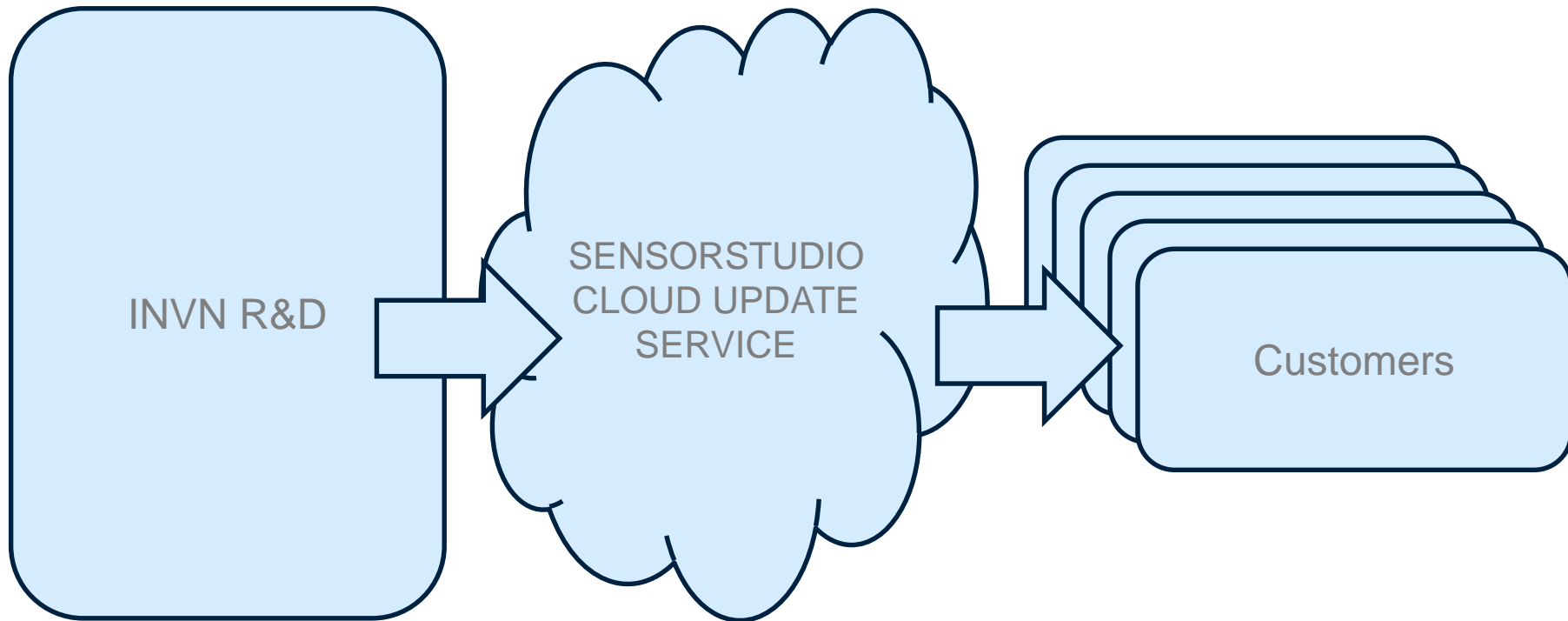


The screenshot shows a window titled "AuxRHTSensorDesigner.ImplCode - C Editor". The window has a menu bar with "API Documentation", "Search Replace", "Line: 1", "Go", and "Word wrap" (checked). There is also an "Errors (0)" button. The main text area contains a multi-line comment in C style, starting with "/*" and ending with "*/". The comment text is as follows:

```
1 /*
2  * Copyright (c) 2016, Sensirion AG
3  * All rights reserved.
4  *
5  * Redistribution and use in source and binary forms, with or without
6  * modification, are permitted provided that the following conditions are met:
7  *
8  * * Redistributions of source code must retain the above copyright notice, this
9  *   list of conditions and the following disclaimer.
10 *
11 * * Redistributions in binary form must reproduce the above copyright notice,
12 *   this list of conditions and the following disclaimer in the documentation
13 *   and/or other materials provided with the distribution.
14 *
15 * * Neither the name of Sensirion AG nor the names of its
16 *   contributors may be used to endorse or promote products derived from
17 *   this software without specific prior written permission.
18 *
19 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
20 * AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
21 * IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
22 * DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
23 * FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
24 * DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
25 * SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
26 * CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
```

At the bottom of the window, there is a status bar showing "Ln : 1 | Col : 1" and two buttons: "Close" and "Apply".

- Notifies users of new software
- User can decide to upgrade or not



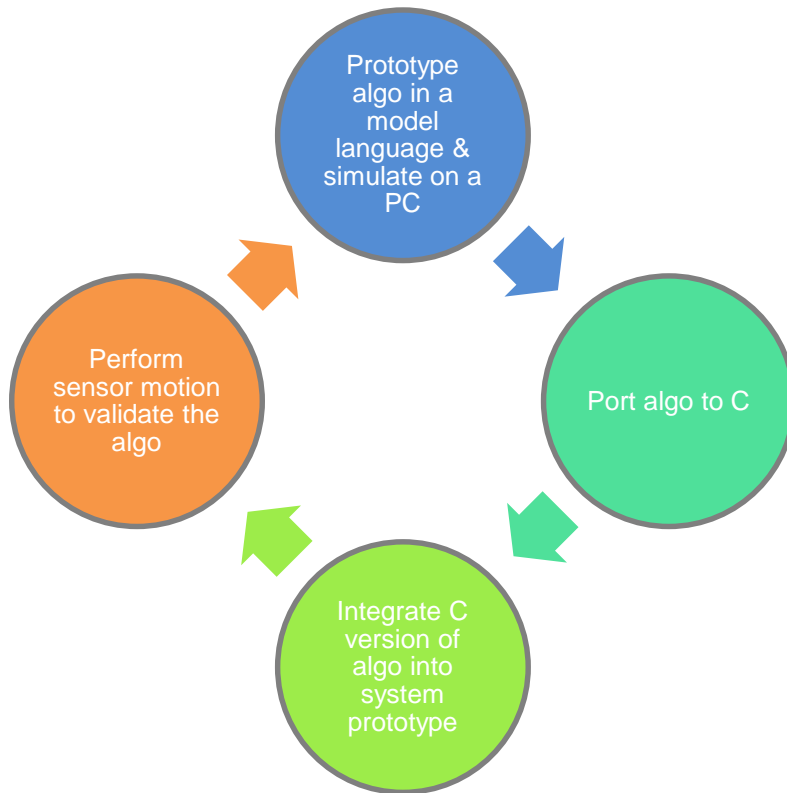


RECORD & REPLAY

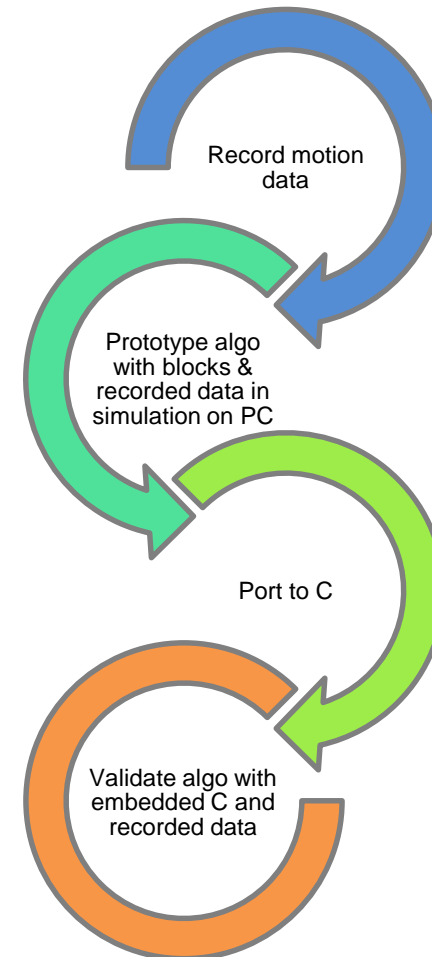
InvenSense
ICM-30670 SH

- Record motion events and data from the dev kit
- Replay the motion to iterate on your development and product designs faster!
 - Eliminates iterative complex integrations
- Enables repeatable test scenarios for algorithm validation
- Great for your limited budget and headcount

WITHOUT SENSORSTUDIO



WITH SENSORSTUDIO





RECORD & REPLAY DEMONSTRATION

InvenSense
ICM-30670 SH



GSH



InvenSense
ICM-30670 SHIM

- A complete Sensor Framework for you
- Allows you to focus on your applications instead of spending your limited resources on Sensor platform development
- Provides out of the box RTOS, if you need it
 - RTOS is configurable and/or removable
- Can be ported to any MCU and continues to work with SensorStudio



GSH on ATMEL DEMONSTRATION

InvenSense
ICM-30670 SH



ATMEL DEMO

InvenSense
ICM-30670 SH



Thank You

