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# LSM6DSRX iNEMO™ inertial module

## Tools and GUI for Machine Learning Core

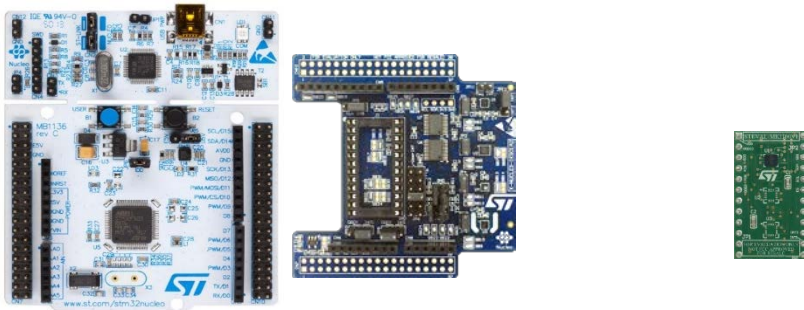


# LSM6DSRX form factor tool & GUI Capture and process data

## Two solutions for LSM6DSRX Machine Learning Core

### Quick Prototyping

Nucleo with Expansion board Tool & Unicleo GUI



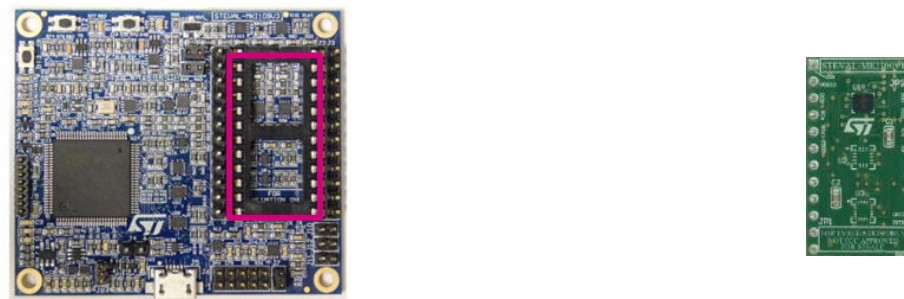
**STM32 NUCLEO with  
EXPANSION**  
X-NUCLEO-IKS01A3

**DIL24 adapter board**  
LSM6DSRX STEVAL-MKI195V1

**Software packages:**  
UNICLEO GUI with X-CUBE-MEMS1  
UNICO GUI for MLC development

### Performance Evaluation

Professional MEMS motherboard & Unico GUI

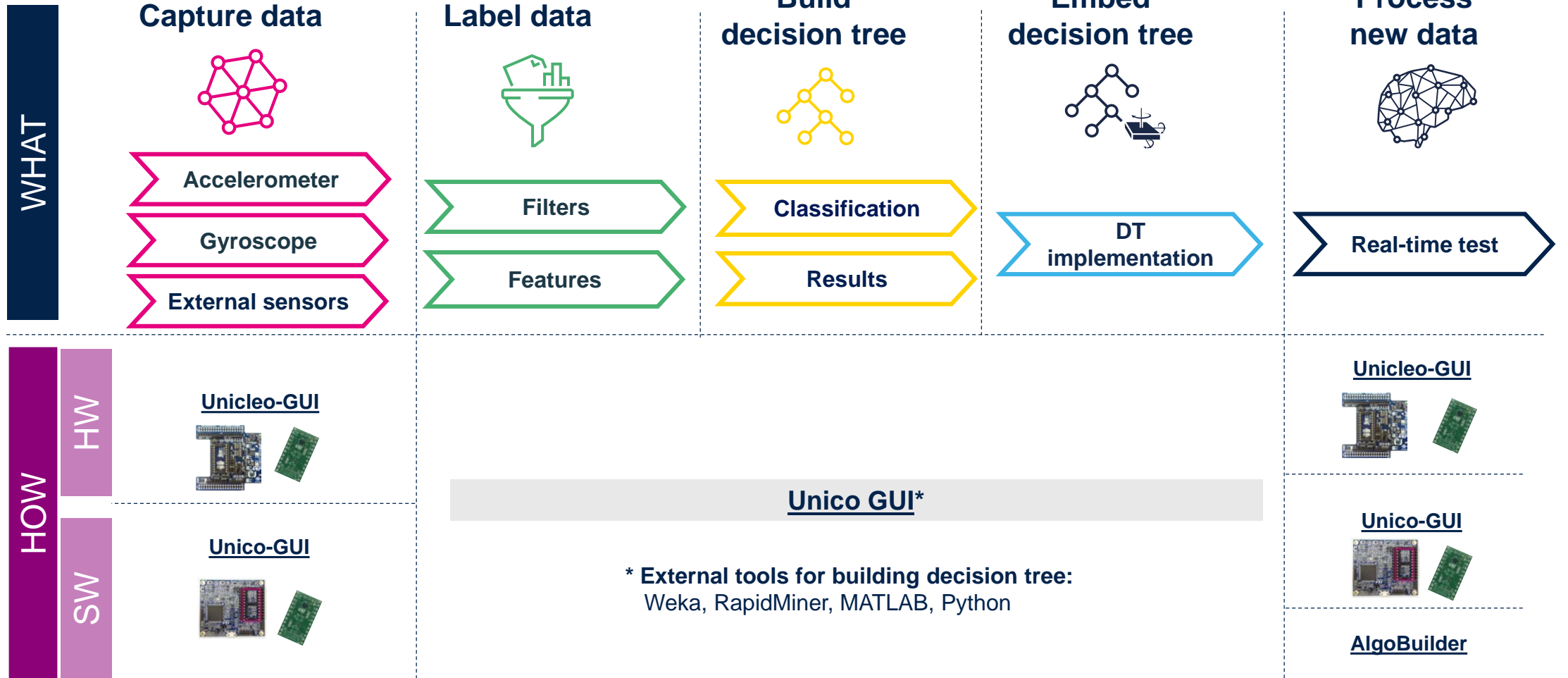


**Professional MEMS  
motherboard**  
STEVAL-MKI109V3

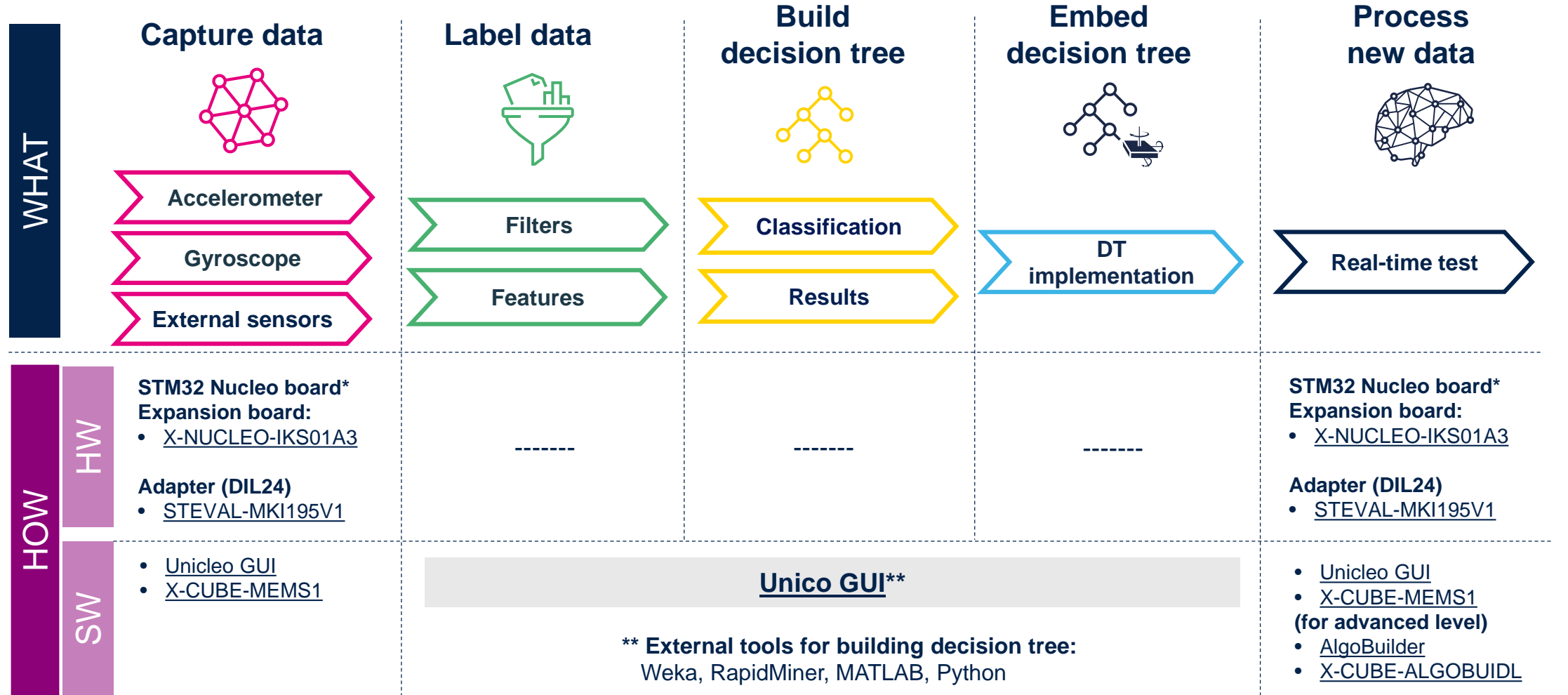
**DIL24 adapter board**  
LSM6DSRX STEVAL-MKI195V1

**Software package: UNICO GUI**  
Linux → STSW-MKI109L ,  
Mac OS X → STSW-MKI109M  
Windows → STSW-MKI109W

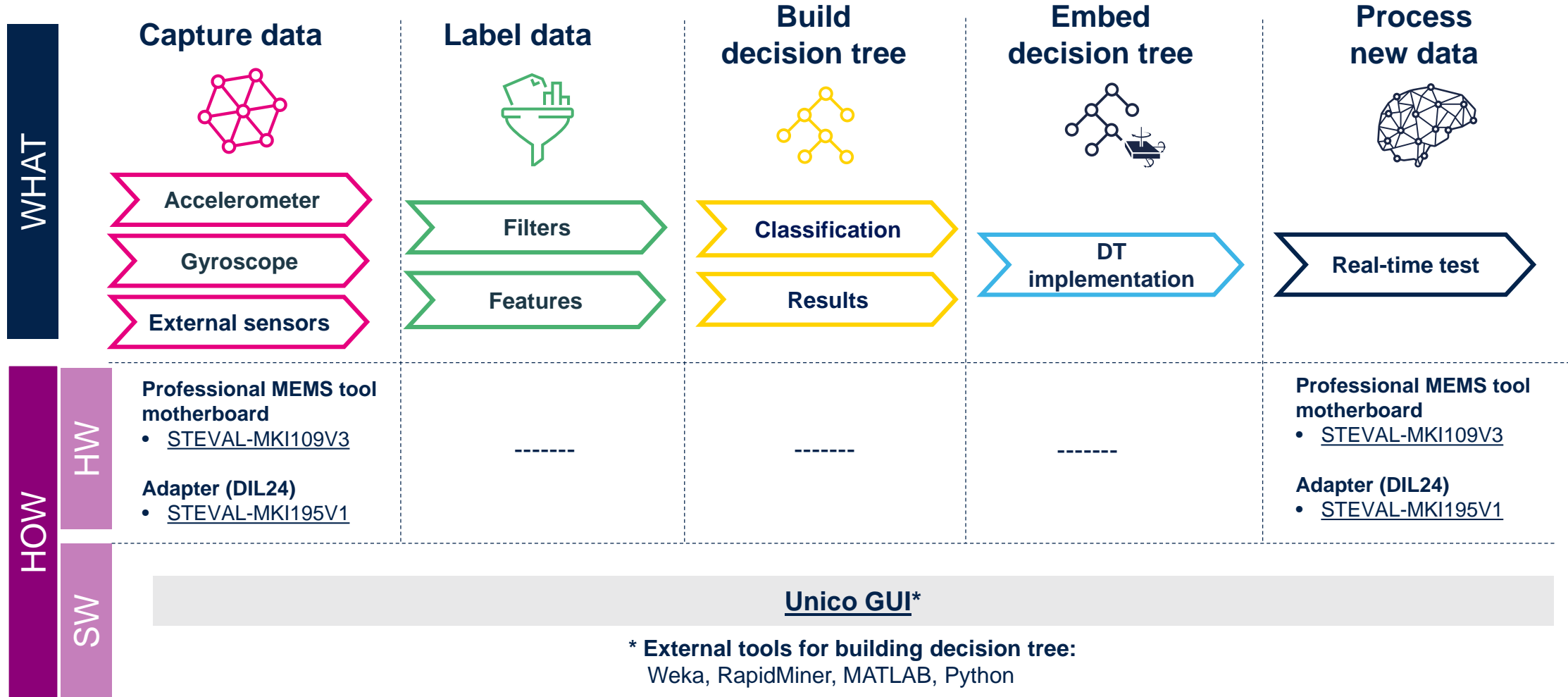
# LSM6DSRX form factors & GUI Decision tree creation process



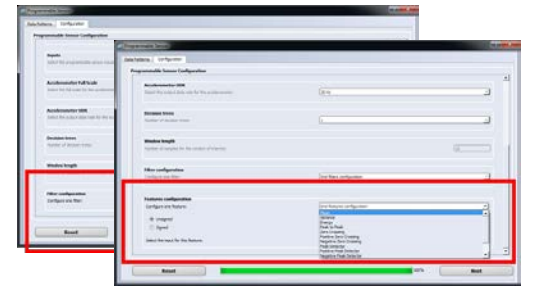
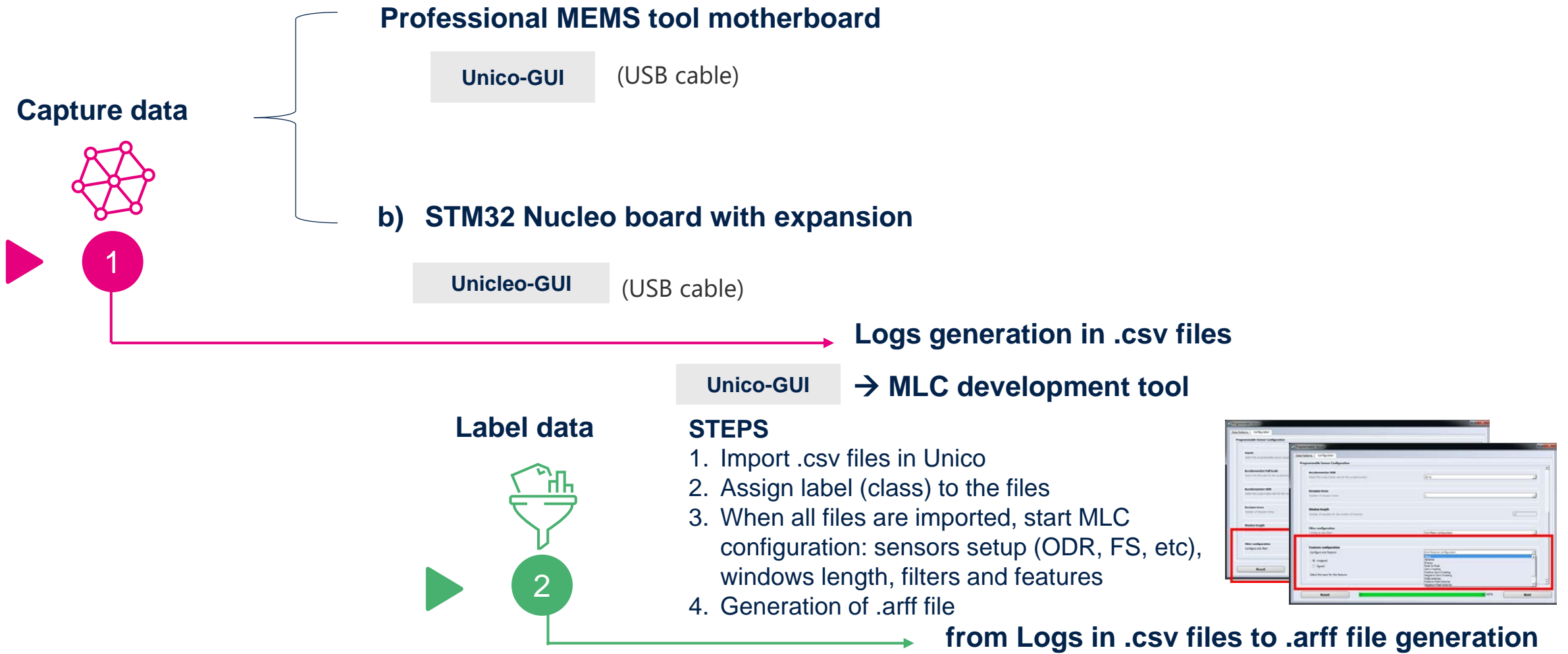
## STM32 Nucleo with expansion board



## Professional MEMS tool motherboard



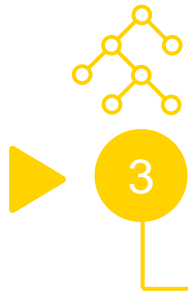
## Decision tree creation process – Dataset & label



# ST sensor tools

## Decision tree creation process – build & embed

Build  
decision tree



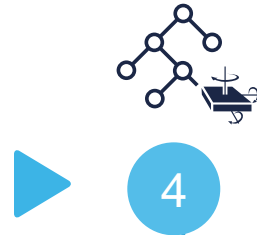
Unico-GUI

→ ST MLC development tool



From .arff file to Decision Tree generation in .txt file  
(only for Weka/RapidMiner copy the content in .txt file)

Embed  
decision tree



Unico-GUI

→ MLC development tool

STEPS:

1. Import .txt file in Unico
2. Assign values to the classes
3. Meta-classifier configuration (if needed)
4. Generation of .ucf/.h file

From .txt file to .ucf/.h file generation

# ST sensor tools

## Real-time test with trained decision tree

Process  
new data



Unicleo-GUI

- Test the Decision Tree on STM32 Nucleo board with expansion using USB cable

Unico-GUI

- Test the Decision Tree on Professional MEMS board using USB cable

Algobuilder

- PC application for advanced development level

5

Import .ucf file to configure the device



# AlgoBuilder GUI PC application



- AlgoBuilder is a graphical design tool to build and use algorithms
- AlgoBuilder GUI uses outputs from MLC and FSM to allow you to build more complex projects
- An existing MLC / FSM configuration (.ucf file) can be used

# Explore MLC examples and resources

- Decision tree examples are available online at the dedicated **GitHub project for Machine Learning Core**



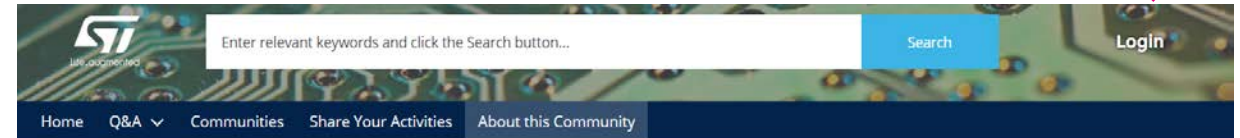
[https://github.com/STMicroelectronics/STMems\\_Machine\\_Learning\\_Core](https://github.com/STMicroelectronics/STMems_Machine_Learning_Core)



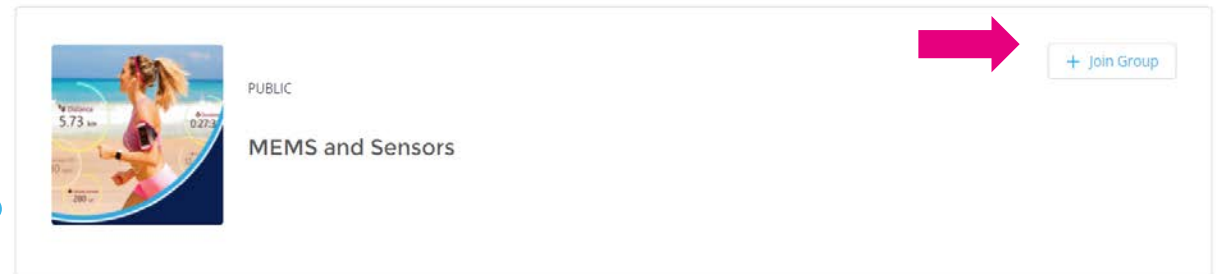
# MEMS and sensors Community and Q&A

- MEMS and sensors Community

- The latest information on MEMS product (HW, SW, tools) and reference designs
- Join the community to...
  - ...share ideas and find sparks!
  - ...find potential customers



- Q&A: Do you have a technical question?  
Ask here!



This Community Group is for additional interaction, news and discussion.  
**If you have a specific technical question, please use Q&A in the navigation bar above.**

## Group Details

### Group Details

Description  
Everyone can access MEMS and Sensors  
Community posts, search and view discussions.

# MEMS and sensors Community and Q&A

- Join us in 3 steps!

1. Register (if you do not already own an account)

[https://my.st.com/cas/login?service=https://my.st.com/content/my\\_st\\_com/en.html](https://my.st.com/cas/login?service=https://my.st.com/content/my_st_com/en.html)



2. Join MEMS and Sensor community becoming a follower

<https://community.st.com/s/group/0F90X000000AXsjSAG/mems-and-sensors>



3. Post your company competence / competitive advantage!

Refer to the MEMS and Sensor community or Q&A section for questions and updates. Our experts are there to help you!

# Thank you

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