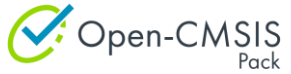
Open-CMSIS-Pack

Technical Project Meeting 2024-03-05

This meeting is recorded!



Agenda

- Welcome
- Project Boards
- Demo: Keil Studio Desktop - CMSIS-Toolbox integration
- Reference Applications: Distribution and Configuration
- Discussion
- Issues for Review
- Wrap Up

Boards:

- Open-CMSIS-Pack Specification Change Board
- CMSIS-Toolbox 2.3.0 Project Board
  - Targeting release for e/o March 2024
- CMSIS-Toolbox 2.4.0 Project Board
  - Please review and provide feedback in case you see topics missing
  - (Re-)Add issues or comment on existing issues that you think must be in 2.3.0

Demo

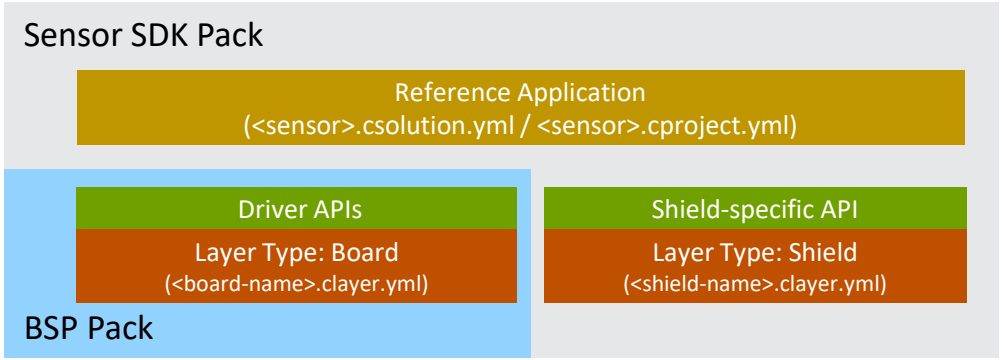
- Keil Studio Desktop: CMSIS-Toolbox integration (Arm: Joe)

Distribution of Reference Applications

Example: Sensor SDK Pack (github.com/RobertRostohar/NXP_Sensor_SDK) that contains:

- Agnostic middleware for a sensor that is configurable (part of the Reference Application)
- Board/Device agnostic examples that use this middleware (part of the Reference Application)
- One or more Shield layers that provides configuration settings for the agnostic middleware

Board Layers are provided by a Board Support BSP Pack that is board specific



Sensor SDK Pack PDSC:

<example> describes Reference Application

<clayer> describes <shield-name>.clayer.yml

BSP Pack PDSC:

<clayer> describes <board-name>.clayer.yml

Configuration of Reference Applications

Initially contains empty target-type setting

```
solution:
  cdefault:

  target-types:
# Step 1: Specify your board, for example with:
#   - type: LPCXpresso54114
#     board: NXP::LPCXpresso54114
# Step 2: Run `cbuild setup` and use cbuild-idx.yml to identify variables
#     variables:
#       - Board-Layer:  ./layer/board/frdmk22f/frdmk22f.clayer.yml
#       - Shield-Layer: ./layer/shield/agmp03/agmp03.clayer.yml

  build-types:
    - type: Debug
      :
    - type: Release
      :

  projects:
    - project: ./freefall/fxls8962_freefall.cproject.yml
    - project: ./freemaster_demo/fxls8962_freemaster_demo.cproject.yml
    - project: ./interrupt/fxls8962_interrupt.cproject.yml
    - project: ./normal/fxls8962_normal.cproject.yml
    - project: ./normal_spi/fxls8962_normal_spi.cproject.yml
```

Command-line workflow:

1. User enters target type and specifies board in `csolution.yml`
2. User runs `cbuild setup` command, this generates `cbuild-idx.yml` with variable settings
   - This command installs a potential missing BSP and DFP pack
   - It delivers one or more potential configurations with variable settings
3. User selects on configuration and copies variable settings in `csolution.yml` which adds the layers
   - Note: layers are not copied in this scenario and may be taken from pack location

IDE workflow:

1. **User selects a reference example and specifies a board**
2. IDE runs `cbuild setup` command, this generates `cbuild-idx.yml` with variable settings
   - This command installs a potential missing BSP and DFP pack
   - IDE shows one or more potential configurations
3. **User selects a configuration**
4. IDE copies variable settings from `cbuild-idx.yml` to `csolution.yml` which adds the layers
   - Note: layers may be copied to csolution workspace and paths adjusted
5. IDE runs again `cbuild setup` command which completes the example configuration
   - IDE shows the `settings` required for the example

cbuild-idx.yml – variable settings

Potential content of cbuild-idx.yml for user configuration

```yaml
build-idx:
  generated-by: csolution version 2.4.0
  cdefault: cdefault.yml
  csolution: fxls8962.csolution.yml
  configurations:
    - configuration:
      variables:
        - Board-Layer:  ./layer/board/frdmk22f/frdmk22f.clayer.yml
        - Shield-Layer: ./layer/shield/agmp03/agmp03.clayer.yml
      settings:
        - Board-Layer:
          - set: Bus.SPI (FXLS8962 SPI Bus - Jumper configuration: I2C/SPI=SPI)
          - set: Bus.SPI (FXAS21002 SPI Bus - Jumper configuration: I2C/SPI=SPI)

    - configuration:
      variables:
        - Board-Layer:  ./layer/board/frdmk22f/frdmk22f.clayer.yml
        - Shield-Layer: ./layer/shield/fxls8962/fxls8961.clayer.yml
```

Discussion

- Best way to handle components selection/removal in a project #466 -> closed
  - Identification of `unused packs`, `unused components` and implicit resolution of `trivial component dependencies` #1359
- Rework execution of programs during build #1358
- [SVD] optional peripherals #6

Issues for Review

- [CPRJ schema] Empty `groups` are not allowed #1345
  - Related: [CPRJ schema] Empty `components` is not allowed #1343
- [csolution]: unclear warning - required pack […] is not loaded #1356
- [cbuild] listen to signal and terminate appropriately when receiving `SIGTERM` #175
- [spec] Update Version 1.7.32
  - #293 feature NPU added
  - #292 category=header accepts public/private and select attribute
  - #291 pack description overview markdown file added
  - #275 brief description size max 256, recommended 128 (not enforced in schema)
  - #58 attr=copy is deprecated
  - #56 clarified usage of Cclass/Cgroup/Csub/Cvariant/Cbundle in conditions
- [csolution] Pack version is not correct in `cbuild*.yml` files #1339
  - Scheduled for 2.3.0 - assigned to Torbjorn
- [cbuild] unexpected: error cbuild: error in getting list of missing packs #1355

Wrap Up

Is anyone preparing a topic to present and discuss in the coming weeks?

- Please contact Joachim.Krech@arm.com ahead of the meeting

- CMSIS-Toolbox targeted release schedule:
  - Release candidate 2.3.0-dev0 on 25th Mar. 2024
  - Official release 2.3.0 on 4th Apr. 2024

Next Open-CMSIS-Pack meeting: 12th Mar. 2024 @ 16:00 CET (15:00 UK)

Linaro

Thank you