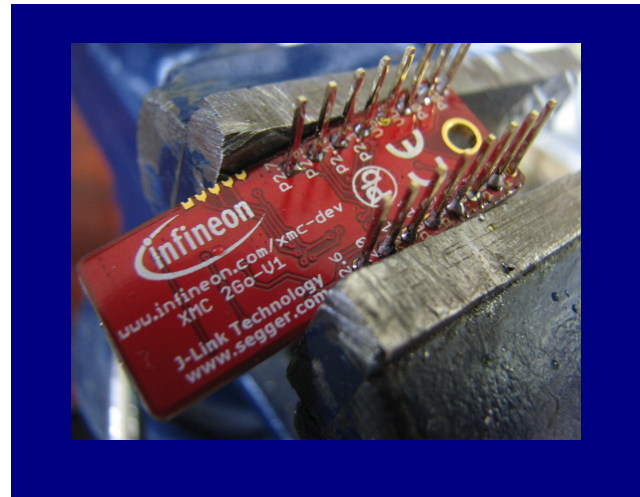
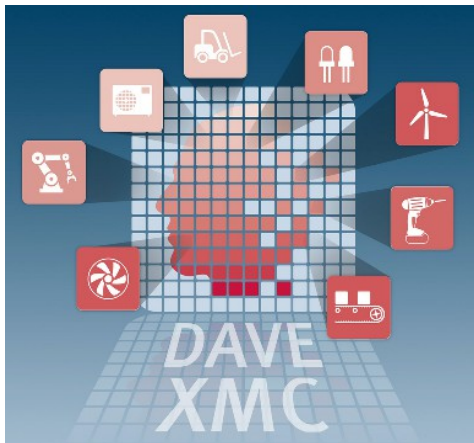




ARM XMC - experiment No. 1+



- **L1+.1 Name:**

XMC 2Go development platform

- **L1+.2 Overview and purpose:**

The experiment aims to realize an introduction to the world of ARM processors made by Infineon and DAVE development tools. It explores basics XMC2 GO development platform architecture and component-oriented programming using Infineon DAVE 4.0. At the end of the experiment will hold basic information about DAVE components used in managing I/O ports and detailed information about potential development of applications using low power Infineon XMC 2Go platform.

- **L1+.3 Resources**

Hardware: XMC 2Go development platforms, extensions pins & wires , Breadboard, oscilloscope;

Software: DAVE 4 .0.

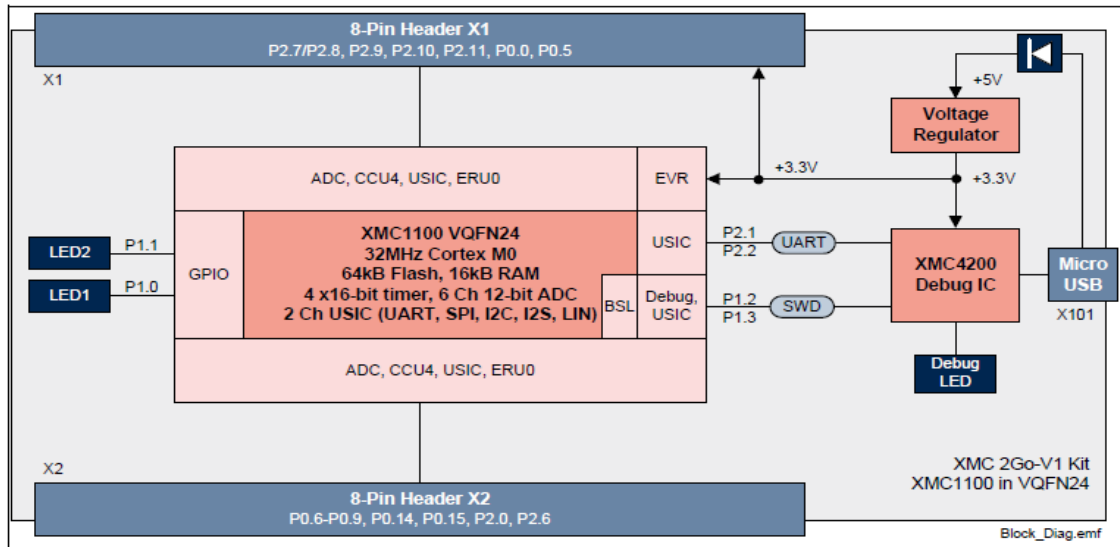


Fig.1.1 XMC2Go Architecture

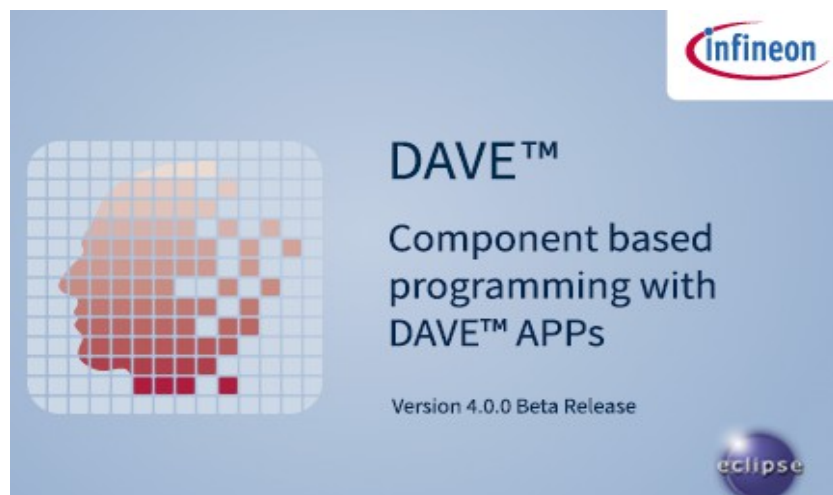


Fig. 1.2 Infineon DAVE

- **L1+.4 Software example**

```

/* L1+ - First DAVE XMC 2Go program

* Use XMC 2Go LEDs as I/O

* LED is connected at P1.0

*/

```



```
#include <XMC1100.h>

#include <DAVE.h>          //Declarations from DAVE Code
                           Generation (includes SFR declaration)

uint32_t t;

int main(void)

{

    DAVE_STATUS_t status;

    status = DAVE_Init();    /* Initialization of DAVE Apps
*/

    while(1U)

    {

        DIGITAL_IO_SetOutputLow(&led1);

        for(t = 0; t<0xffff;t++);    // delay for
visualisation

        DIGITAL_IO_SetOutputHigh(&led1);

        for(t = 0; t<0xffff;t++);    // delay for visualisation

    }

}
```

• **L4+.5 Method of running the experiment:**

- Examine XMC 2 Go platform user manual at web adress:
<https://www.google.ro/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=infineon%20xmc%202%20go%20user%20manual>
- Identify on XMC 2Go scematics supply circuits and signals at extension connectors ;
- Explore DAVE components for I/O port used in software example.



Fig. 1.3 DAVE main components

- Compile the project to obtain executable files;
- Configure DEBUG and execute/trace code on XMC 2Go platform ;
- Solve proposed problems.

L1+.6 Problems proposed:

1. Develop a program that allows you to control the LED connected at P1.1 port bit;

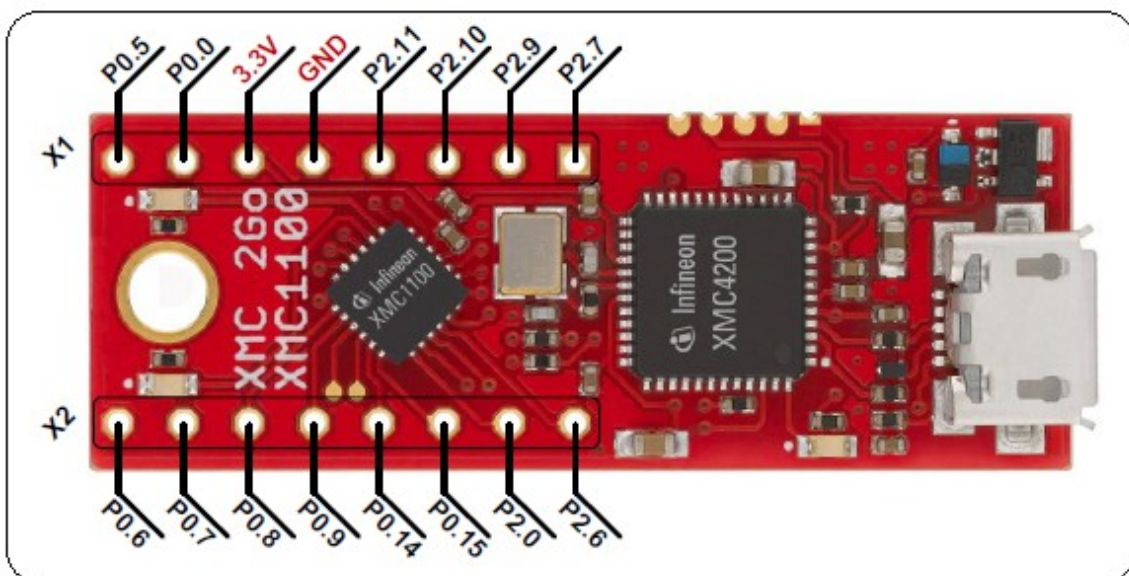


Fig.1.4 XMC 2Go I/O pins

2. Develop a program that will generate a rectangular signal to port P1.5 with maximum frequency and highlights it using oscilloscope ;
3. Using DAVE suitable change CPU clock signal frequency and reassess problem number two.
4. Insert XMC 2Go platform in breadboard, connect an RGB LED and develop a program that will allow the generation of colored spotlights;



DAVE_APP_VERSION_t	DIGITAL_IO_GetAppVersion (void) Get DIGITAL_IO APP version.
DIGITAL_IO_STATUS_t	DIGITAL_IO_Init (const DIGITAL_IO_t *const handler) Function to initialize the port pin as per UI settings.
__STATIC_INLINE void	DIGITAL_IO_SetOutputHigh (const DIGITAL_IO_t *const handler) Function to set port pin high.
__STATIC_INLINE void	DIGITAL_IO_SetOutputLow (const DIGITAL_IO_t *const handler) Function to reset port pin.
__STATIC_INLINE void	DIGITAL_IO_ToggleOutput (const DIGITAL_IO_t *const handler) Function to Toggle port pin.
__STATIC_INLINE uint32_t	DIGITAL_IO_GetInput (const DIGITAL_IO_t *const handler) Function to read input level of port pin.

Fig. 1.5 DAVE I/O port functions -1

5. Attach a microswitch to XMC 2Go and realize a program for activating the LEDs by pressing it;

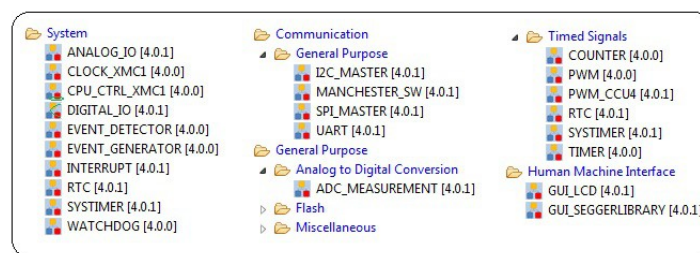


Fig. 1.6 DAVE I/O port functions -2

6. Identify how the power supply of the platform and feasibility of extensions;
7. Identify sequences in assembly language that runs in the prototype program.

•L1+.7 The experiment can be extended to be used for:

- The design of low power smart objects;
- Motor Control & Drives;
- Motorcycles, E-Bikes & Small Electric Vehicles;
- Renewable Energy;

•L1+.8 More helpful information:

1. Infineon Industrial microcontrollers -



- [http://www.infineon.com/cms/en/product/channel.html?
channel=db3a30433c1a8752013c3e221b9d004f](http://www.infineon.com/cms/en/product/channel.html?channel=db3a30433c1a8752013c3e221b9d004f)
2. [ARM microcontrollers](http://www.infineon.com/dgdl/Infineon-XMC_32-Bit-Industrial-Microcontrollers-Brochure_2015-BC-v00_00-EN.pdf?fileId=db3a30434441da190144442189d3003c) - [http://www.infineon.com/dgdl/Infineon-XMC_32-Bit-Industrial-Microcontrollers-Brochure_2015-BC-v00_00-EN.pdf?
fileId=db3a30434441da190144442189d3003c](http://www.infineon.com/dgdl/Infineon-XMC_32-Bit-Industrial-Microcontrollers-Brochure_2015-BC-v00_00-EN.pdf?fileId=db3a30434441da190144442189d3003c)
 3. [Infineon motor control apps](http://www.infineon.com/dgdl/Infineon-Motor_Control_Drives-ABR-v01_00-EN.pdf?fileId=db3a30433580b3710135a5d96bda6cfe) - [http://www.infineon.com/dgdl/Infineon-
Motor_Control_Drives-ABR-v01_00-EN.pdf?
fileId=db3a30433580b3710135a5d96bda6cfe](http://www.infineon.com/dgdl/Infineon-Motor_Control_Drives-ABR-v01_00-EN.pdf?fileId=db3a30433580b3710135a5d96bda6cfe)
 4. [Infineon Intelligent light apps](http://www.infineon.com/dgdl/Infineon_General_Lighting_Brochure_2014_v1.pdf?fileId=db3a304327b897500127f76de0b2654b) -
[http://www.infineon.com/dgdl/Infineon_General_Lighting_Brochure_2014_v1.pdf
?fileId=db3a304327b897500127f76de0b2654b](http://www.infineon.com/dgdl/Infineon_General_Lighting_Brochure_2014_v1.pdf?fileId=db3a304327b897500127f76de0b2654b)
 5. [XMC development platforms-](http://www.infineon.com/cms/en/product/microcontroller/32-bit-industrial-microcontroller-based-on-arm-registered-cortex-registered-m/32-bit-xmc1000-industrial-microcontroller-arm-registered-cortex-registered-m0/xmc-development-tools-kits-and-boards/channel.html?channel=db3a30433d5e5530013d64397b0c2043)
[http://www.infineon.com/cms/en/product/microcontroller/32-bit-industrial-
microcontroller-based-on-arm-registered-cortex-registered-m/32-bit-xmc1000-
industrial-microcontroller-arm-registered-cortex-registered-m0/xmc-development-
tools-kits-and-boards/channel.html?
channel=db3a30433d5e5530013d64397b0c2043](http://www.infineon.com/cms/en/product/microcontroller/32-bit-industrial-microcontroller-based-on-arm-registered-cortex-registered-m/32-bit-xmc1000-industrial-microcontroller-arm-registered-cortex-registered-m0/xmc-development-tools-kits-and-boards/channel.html?channel=db3a30433d5e5530013d64397b0c2043)
 6. [Infineon DAVE](http://www.infineon.com/cms/en/product/channel.html?channel=db3a30433580b37101359f8ee6963814) - [http://www.infineon.com/cms/en/product/channel.html?
channel=db3a30433580b37101359f8ee6963814](http://www.infineon.com/cms/en/product/channel.html?channel=db3a30433580b37101359f8ee6963814)
 7. [Infineon XMC2GO first presentation-](https://www.youtube.com/watch?v=gvsR-10HP6o) [https://www.youtube.com/watch?v=gvsR-
10HP6o](https://www.youtube.com/watch?v=gvsR-10HP6o)
 8. [ARM Keil for Infineon XMC](http://www.infineon.com/cms/en/product/promopages/aim-mc/Keil-MDK.html) -
<http://www.infineon.com/cms/en/product/promopages/aim-mc/Keil-MDK.html>