INTEL EMBEDDED SYSTEMS COMPETITION 2016

More info about the competition and the Intel® Galileo Gen 2

In this webinar

- A few details about the competition
  - Regulation overview
- Technical overview of the Intel™ Galileo Gen 2 board
  - Software & hardware overview
  - Internet connectivity
- Q&A

About the competition

General Information:

- Open to undergraduate and graduate students
- Opportunity to develop intelligent and innovative Systems
- Work with Intel® technology
- Teams up to 3 students and 1 teacher
- Contact: submissaocompeticaointel@gmail.com

About the competition

Create an Embedded System contained in at least one of the following areas:

- Smart cars / home / cities
- Health
- Industrial Automation
- Wearables
- Security
- Retail
- Robotics

About the competition

Action Plan:

- Phase 1 : submission and evaluation
- Phase 2 : board delivery / first report submission (in Portuguese)
- Phase 3 : final report submission (in English) / presentation at VI Brazilian Symposium on Computing Systems Engineering

* For more instructions go to the competition's website

About the competition

- Local Competition*
  - Available only for a few UFRN / UFOP / UFPE campuses
  - Local contact
    - UFRN – Prof. Monica Magalhães
    - UFOP – Prof. Saul Delabrida
    - UFPE – Prof. Edna Barros

* For more instructions contact your local teacher

About the competition

Schedule National Competition:

- April 4th: Deadline for submissions
- April 30th: Submission results
- March 7th to August 24th: Webinars*
- May 20th: Deadline for board delivery
- September 20th: First project reports delivery
- September 30th: Approved groups for phase 3
- October 30th: Competitors should deliver the final project report - directly at JEMS
- November 1st to November 4th: SBESC Event / Final Results

* Check the website for date, time and theme of webinar

About the competition

Next important dates:

- March 7th to August 24th: Webinars*
- April 4th: Deadline for submissions
- April 30th: Submission results

* Check the website for date, time and theme of webinar

About the competition

Submission Model Overview

Proposta de Participação

Competição Intel de Sistemas Embarcados

SBESC 2016

Dados da Proposta

Nome do Projeto:	
Continuação do projeto 2015?	( ) Sim ( ) Não
Professor responsável: **E-mail:**	
Instituição:	
Data:	

Equipe

(listar alunos e professores que participarão do desenvolvimento do sistema)

Nome:	Formação	E-Mail

Áreas do Concurso (escolha a que se aplica ao seu projeto)

( ) Carros/casas/tabelas/cidades inteligentes
( ) Saúde
( ) Automação industrial
( ) Wearables (Inspiração: makeit.intel.com/)
( ) Segurança
( ) Varejo
( ) Robótica

Identificação e histórico da equipe (máximo de 1 página)

Descreva de forma clara a experiência da equipe e do professor responsável na área de sistemas embarcados

Descrição do sistema embarcado a ser desenvolvido. (máximo de 2 páginas)

Descreva as principais funcionalidades do sistema a ser desenvolvido

Justificativa e áreas de aplicação (máximo de 1 página)

Descreva as razões que definiram a escolha do sistema, bem como as áreas de aplicação do sistema.

Cronograma de implementação do sistema embarcado a ser desenvolvido. (máximo de 1 página)

Descreva as etapas do projeto e a datas de conclusão de cada uma das etapas

Exemplo de cronograma:

1. (15/04) Envio da proposta
2. (20/05) Recebimento da placa
3. (20/05) Início da documentação
4. (20/05 – 20/06) Estudo das capacidades da placa
5. (20/06 – 25/06) Adaptação das necessidades do projeto
6. (08/06) Webinário sobre a placa e competição
7. (04/07) Recebimento de materiais adicionais
8. (04/07 – 01/08) Desenvolvimento de protótipos para funcionalidades A, B e C
9. (01/08) Início do desenvolvimento
10. (23/08) Tirar dúdivas no webinário técnico
11. (01/09) Conclusão da funcionalidade A
12. (20/09) Entrega da documentação “parcial”
13. (27/09) Conclusão da funcionalidade B
14. (16/10) Conclusão da funcionalidade C
15. (16/10 – 30/10) Correção de bugs
16. (20/10) preparo da apresentação
17. (20/10) Finalização da documentação
18. (30/10) Entrega da documentação “final”
19. (03/11 – 06/11) Apresentação

End of document

JEMS and You

Don’t forget:

You need to use the same email address you used in JEMS to talk to us or we might not recognize you!

https://submissoes.sbc.org.br/Paper.cgi?c=2522&track=5770

Awards

1st Place -> A trip for all members of the team to visit Intel Corporation installations in the United States.

2nd Place -> A tablet with Intel© technology for each member of the team.

3rd Place -> One Intel© Galileo Gen 2 board for each member of the team and 10 Intel© Galileo Gen 2 for the University represented by the students.

Special Awards

Best engineering team with female majority

- One table with Intel© technology for each member of the team.
- A trip for the team's teacher to attend Intel Embedded Summit 2017 or equivalent event.

Best undergraduation team

- A trip for the team's teacher to attend Intel Embedded Summit 2017 or equivalent event.
- A trip for all members of the team to visit Intel Corporation installations in the United States.

About the competition

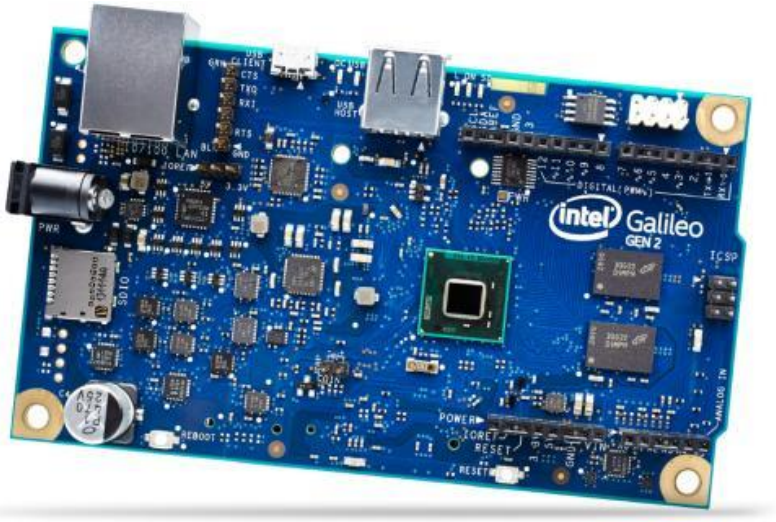
What we expect from you:

- Creativity
- Innovation
- Dedication

Technology overview

Intel® Galileo (Gen 2)

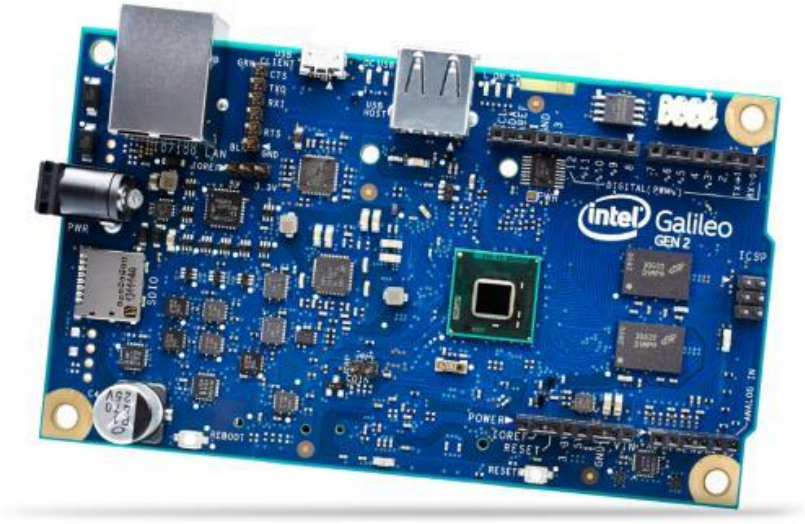
- 10/100 Mbps Ethernet* RJ45 port.
  - 12 V Power-over-Ethernet capable.
- Serial console UART header is compatible with FTDI USB converters.
  - Console UART1 can be redirected to Arduino* headers in sketches.
- Full-sized mini-PCI Express* 1x slot.
- Accepts power suppliers from 7V to 15V.



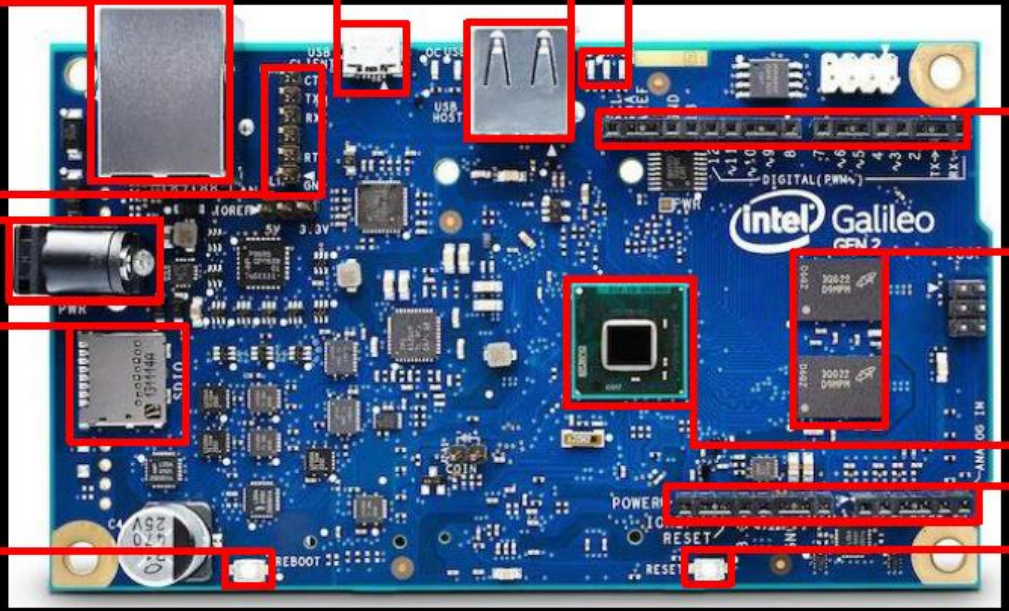
*Other names and brands may be claimed as the property of others.

Intel® Galileo (Gen 2)

- Intel® Quark™ SoC X1000 @ 400MHz
  - 32-bit Intel® Pentium® processor-compatible ISA.
  - 16KB L1 cache, 512KB SRAM.
  - ACPI-compatible with CPU sleep states.
  - RTC with optional 3V coin cell battery.
- 256MB DDR3 DRAM.
- SD Card up to 32GB.
- USB 2.0 host and client ports.



Intel® Galileo (Gen 2)



Intel® Galileo (Gen 2) – Software

- Supported IDEs
  - Arduino*
  - Eclipse*
  - Intel® XDK IoT Edition
    - C/C++
    - JavaScript*
    - Node.js*
    - Python*
- Supported OS
  - Yocto
  - Windows 8*
  - FreeRTOS

*Other names and brands may be claimed as the property of others.

Soletta Project - solettaproject.org

Soletta is a **framework for making IoT devices.**
It is **cross-platform**, works with **Linux and small OSes, like Zephyr**, over **different boards.**
Portable, abstracts information specific to determined HW and OS, requiring **minimum changes to code when flashed to different targets.**

Available now on **github.com/solettaproject**

- multi OS: Zephyr, Riot, Contiki, Linux
- platform abstraction
- uniform event loop
- uniform basic I/O primitives
- used as dynamic library, static library or interpreter runtime
- high level programming apis (C/C++, FBP)
- FBP - flow-based programming (optional)
- supports OIC, CoAP, MQTT, Bluetooth and HTTP (client and server)
- lightweight (f=flash or disk, r=ram):
  - RIOT on Arduino Due f=76Kb, r=8.8Kb
  - Contiki on Intel Curie (CTB) f=65Kb, r=1.8Kb
  - Linux on Minnow (userspace/PID1) f=88Kb, r=38Kb
- easy to use development system

Soletta Framework *github.com/solettaproject/soletta*

The framework itself and core components.

Soletta Machine Learning

github.com/solettaproject/soletta-machine-learning

Provides APIs to deal with client side AI and an easy to use flow-based Soletta module. Initially supporting neural networks and fuzzy logic learning.

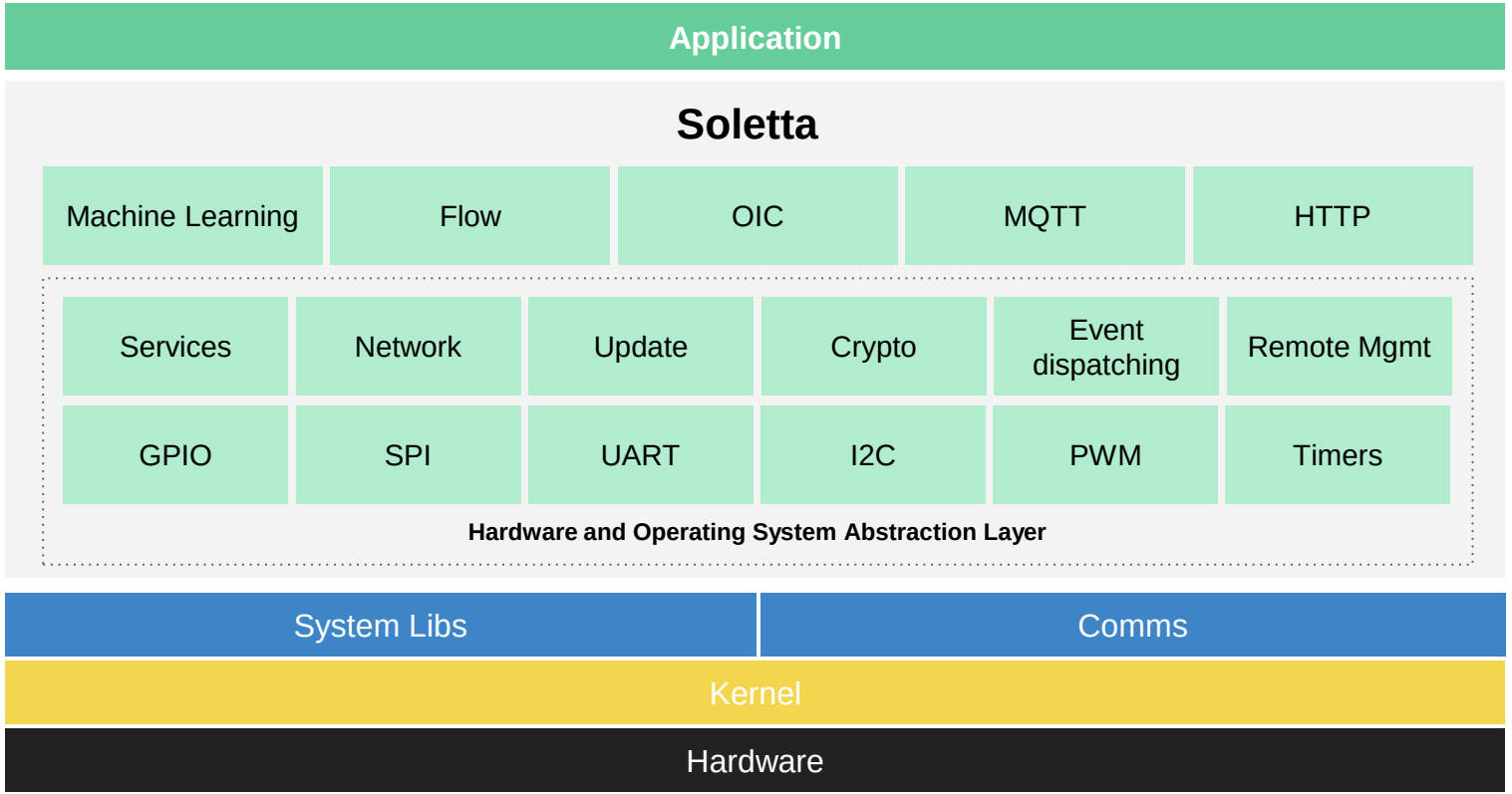
(Linux-only)

Soletta Development Application

github.com/solettaproject/soletta-dev-app

Web-based environment running on target board where developers can write, visualize, modify, run, test and debug their Soletta FBP programs.

Soletta Project – Architecture

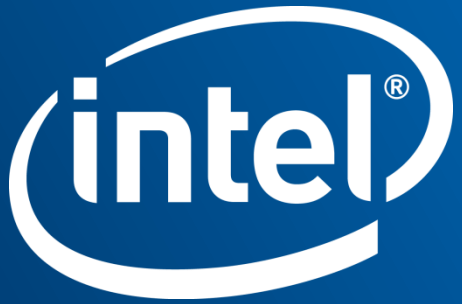


Intel® Galileo (Gen 2) – Network Connectivity

- While the Galileo board doesn't come with Wi-Fi connectivity, you can add to it.
- Any Linux-supported Wi-Fi card should work.
- Both wired and wireless connectivity settings can also be managed through the `connmanctl` tool.

Intel® Galileo – Useful links

- Galileo downloads: https://software.intel.com/en-us/iot/hardware/galileo/downloads
- Galileo IDE downloads: https://software.intel.com/en-us/iot/software/ide
- Yocto Project – Default Linux distro's build system: https://www.yoctoproject.org/tools-resources/projects/poky
- Videos Competition - Intel Embedded Systems 2015: https://www.youtube.com/playlist?list=PLdv8QZ_rwBOdwKX-LVTrv62MQfYiJ2XTk
- Our website: http://sbesc.lisha.ufsc.br/sbesc2016/Intel+Embedded+Systems+Competition


intel®