

# EICASLAB<sup>TM</sup> DEMO



*The Professional Software Suite  
for Automatic Control Design and Forecasting*

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## EICASLAB Demo RT-emb

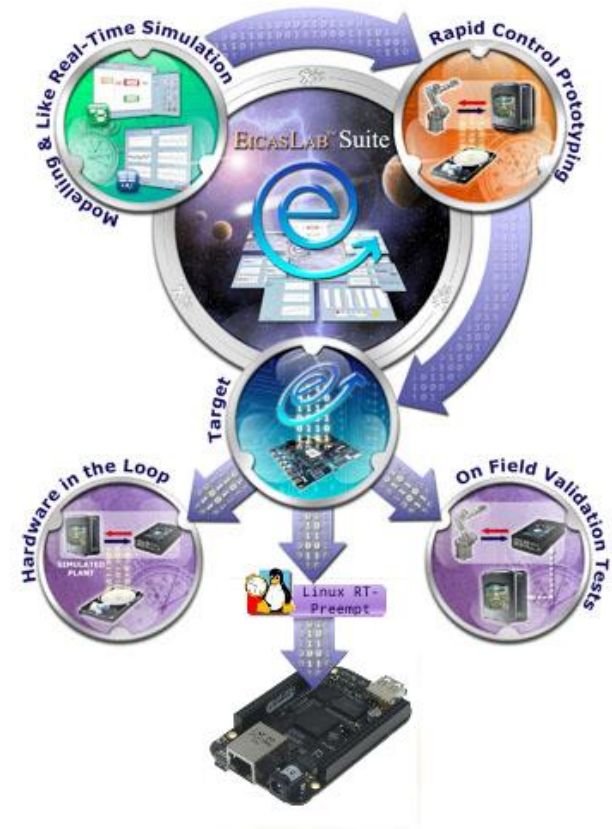
## RT-emb = Real-Time on an embedded system

- ❑ Demonstrate how **ALL the control design phases** are carried out with
  - **Just ONE Software Suite EICASLAB™**
  - **Just ONE Project**through a complete control design development
  
- ❑ Allow the user to experiment the Target mode on a popular embedded board (e.g. Beagle Bone Black board, Raspberry Pi)

All the control design phases are managed by the

**EICASLAB operative modes:**

- **Modelling and Like Real-time Simulation**
- **Rapid Control Prototyping (RCP)**
  - RCP On Field sub-mode
  - Slow Motion sub-mode
- **Target**
  - Hardware-in-the-loop (HIL) sub-mode
  - Final Validation Test (FVT) sub-mode



All the Control Design Phases are performed using:

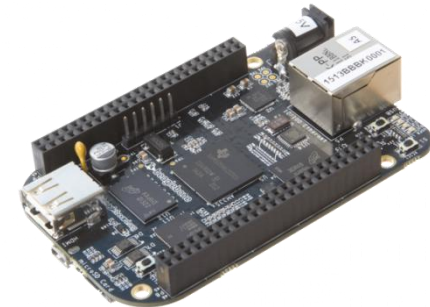
- The **EICASLAB RCP Platform** (Standard multi-core PC equipped with a Real-Time Operating System and suitable hardware interfaces, running EICASLAB suite)
- The **real plant**
- The **hardware target**



*EICASLAB RCP Platform*



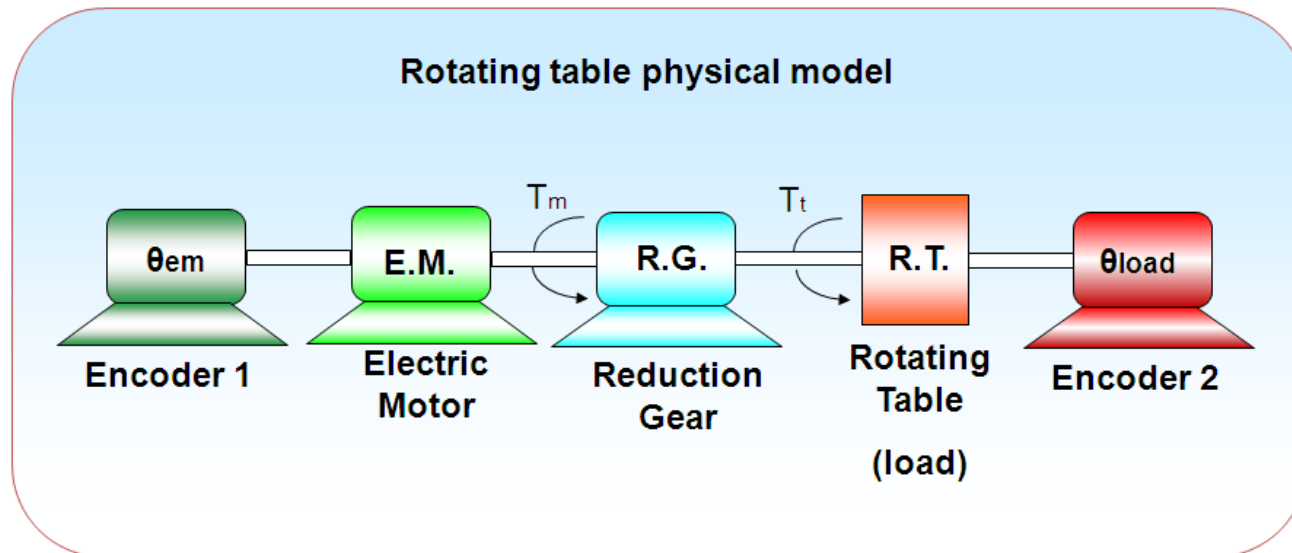
*Real plant*



*Hardware target*

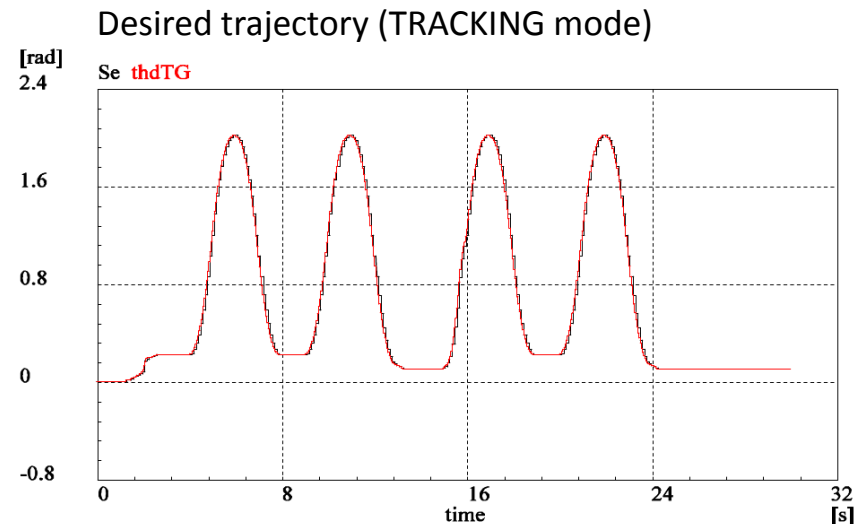
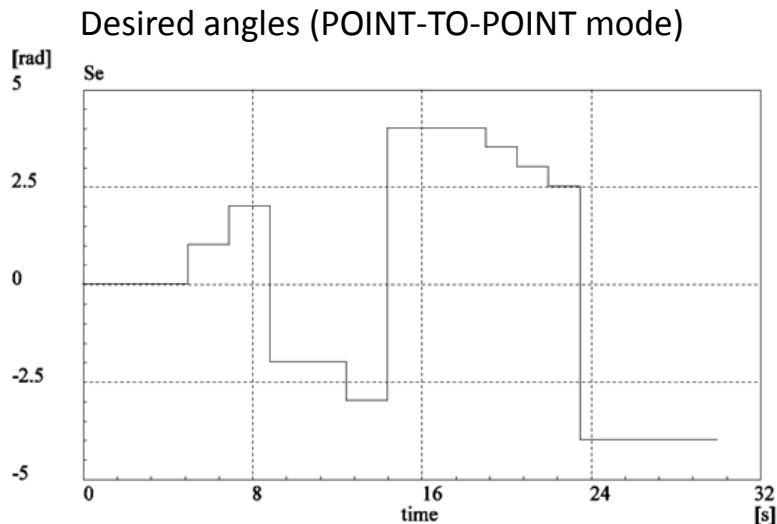
# The Rotating Table

The EICASLAB Demo RT-emb provides a **complete control design** of a **rotating table**, from the Simulation to the download to Final Target.



## Two desired trajectories:

- **POINT-TO-POINT:** the trajectory is obtained through a sequence of angles
- **TRACKING:** the trajectory is obtained by an interpolation - performed at the control sampling rate - of angle samples given at the frequency of 10 Hz.



# The Rotating Table Emulator

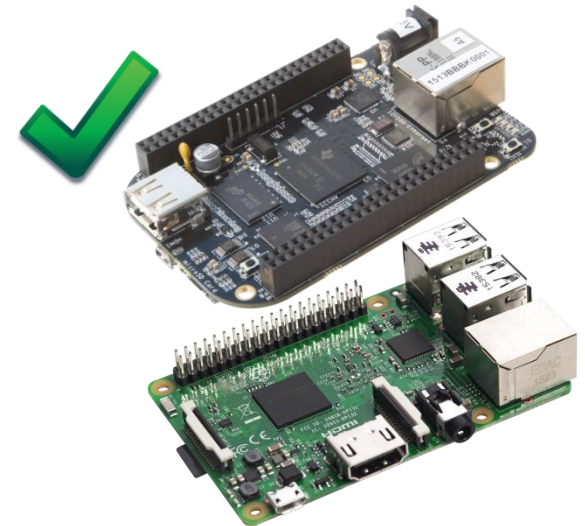
**Rapid Control Prototyping and Final Validation Test** should be carried out working with the real plant but to enable the user to work without the need of the real plant this demo provides a **Rotating table Emulator** which replaces the real plant.



*Not required*



*EICASLAB RCP Platform*

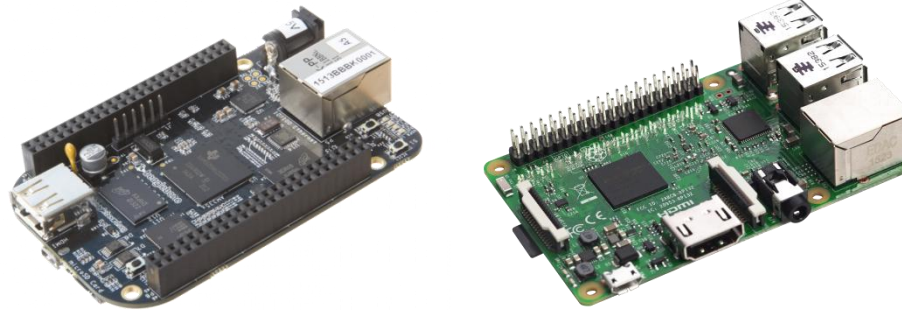


*Hardware target*



There are two versions of the RT-emb demo for different hardware devices:

- BeagleBone Black board (BBB) version ,
- Any Target with a Linux OS (e.g. Raspberry Pi).



The BeagleBone Black board version is here presented.



This demo requires real-time performance, therefore it is only available in Linux version.

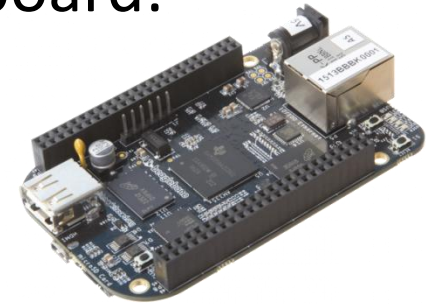
- Dual core CPU
- 2 GB of RAM
- 1 GB of disk space
- GNU/Linux operative system
- PREEMPT\_RT kernel configuration (recommended)
- Networking interface to connect to the target (USB2.0, Ethernet)



*rt.wiki.kernel.org*

Requirements for the **Beagle Bone Black** board:

- 512 MB of RAM
- 100 MB of storage space
- GNU/Linux operative system with GCC
- PREEMPT\_RT kernel configuration (mandatory)
- Networking interface to connect to PC, SSH server



For further information and how-to: read [RT-emb Demo User Manual](#) or mail to [support@eicaslab.com](mailto:support@eicaslab.com)