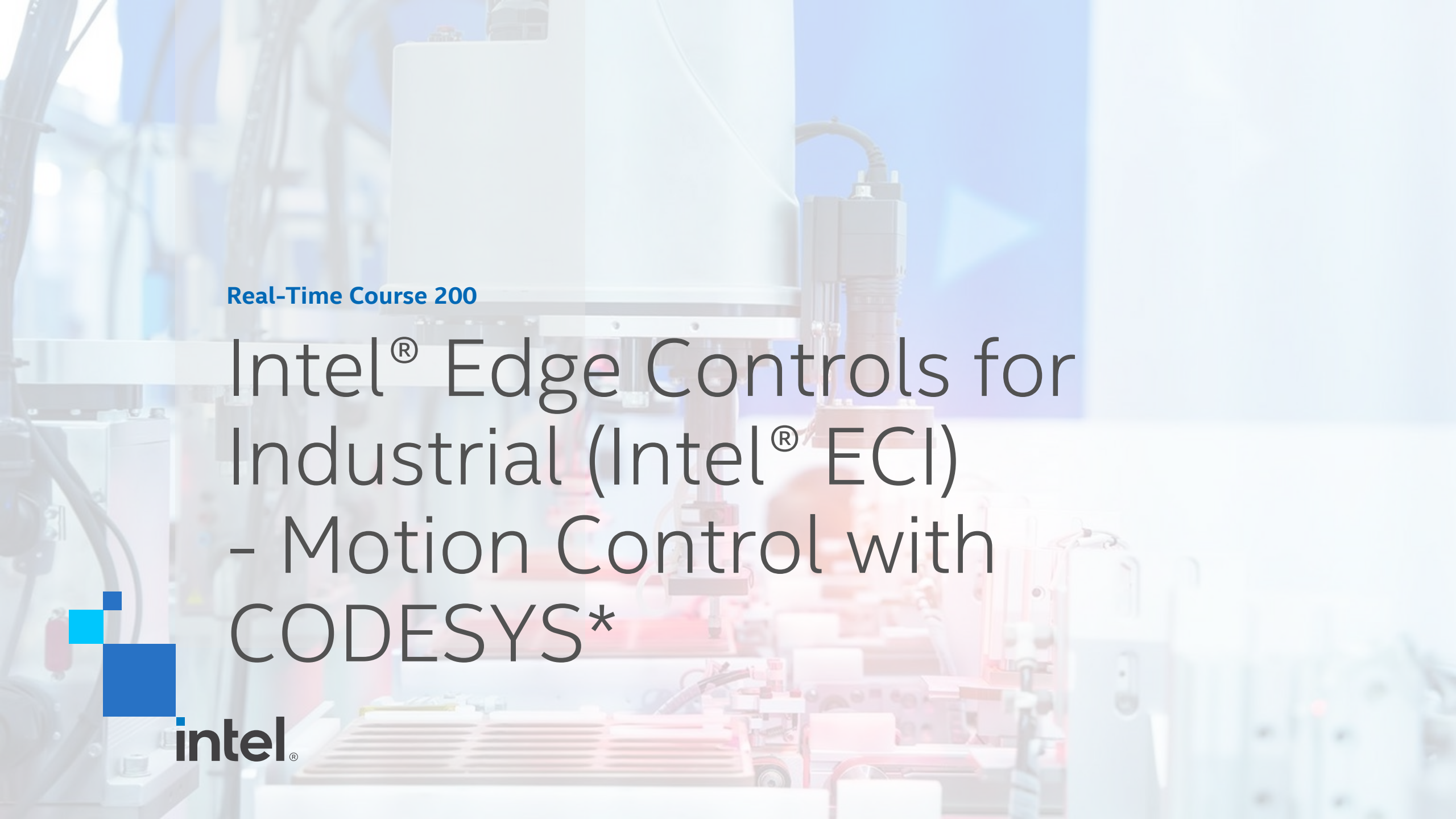

Real-Time Course 200

Intel® Edge Controls for Industrial (Intel® ECI) – Motion Control with CODESYS*

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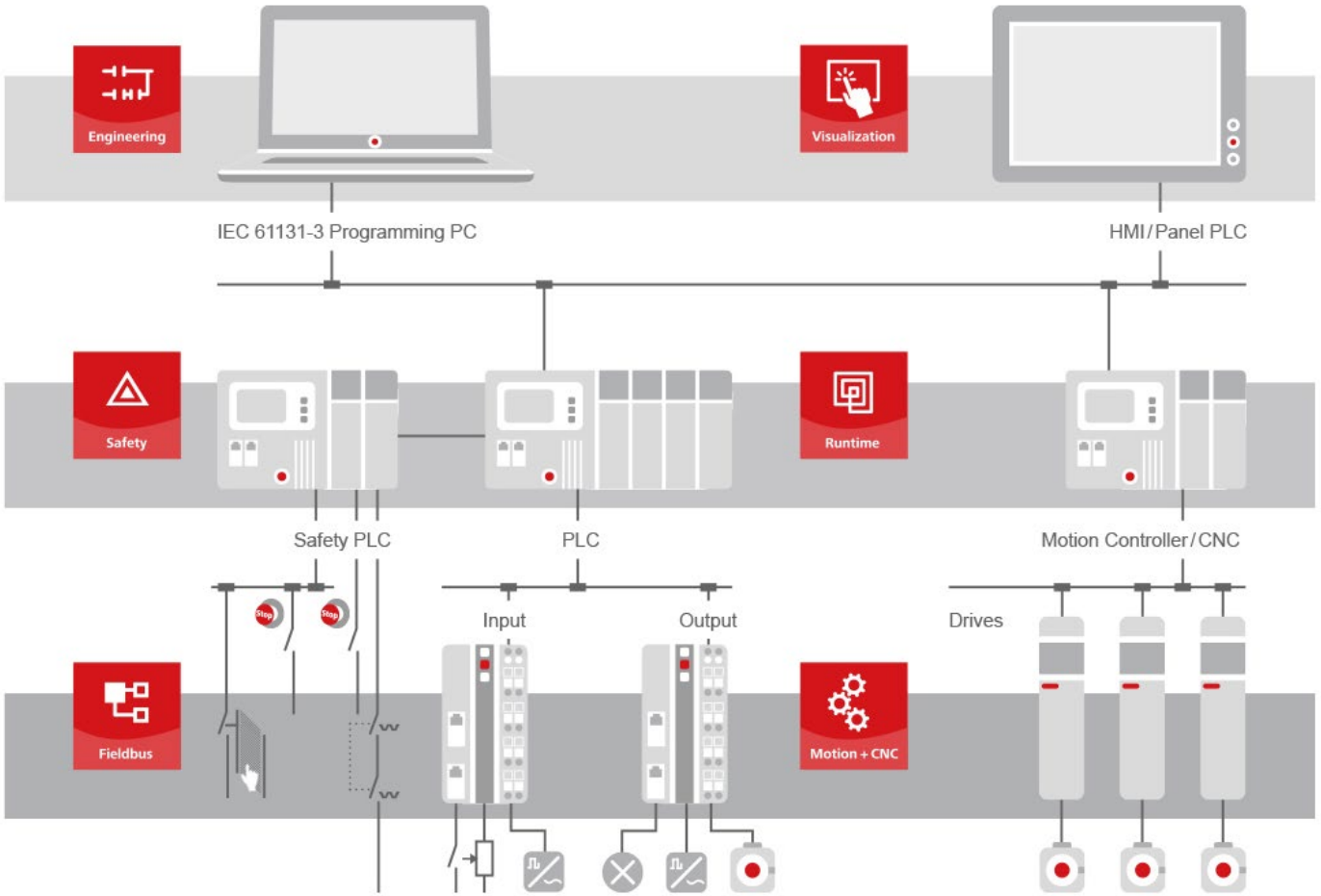
CODESYS* Introduction



Run CODESYS* on Intel® ECI

01

Install Intel® ECI CODESYS* -SoftPLC Lib

02

Launch CODESYS* runtime in Intel® ECI

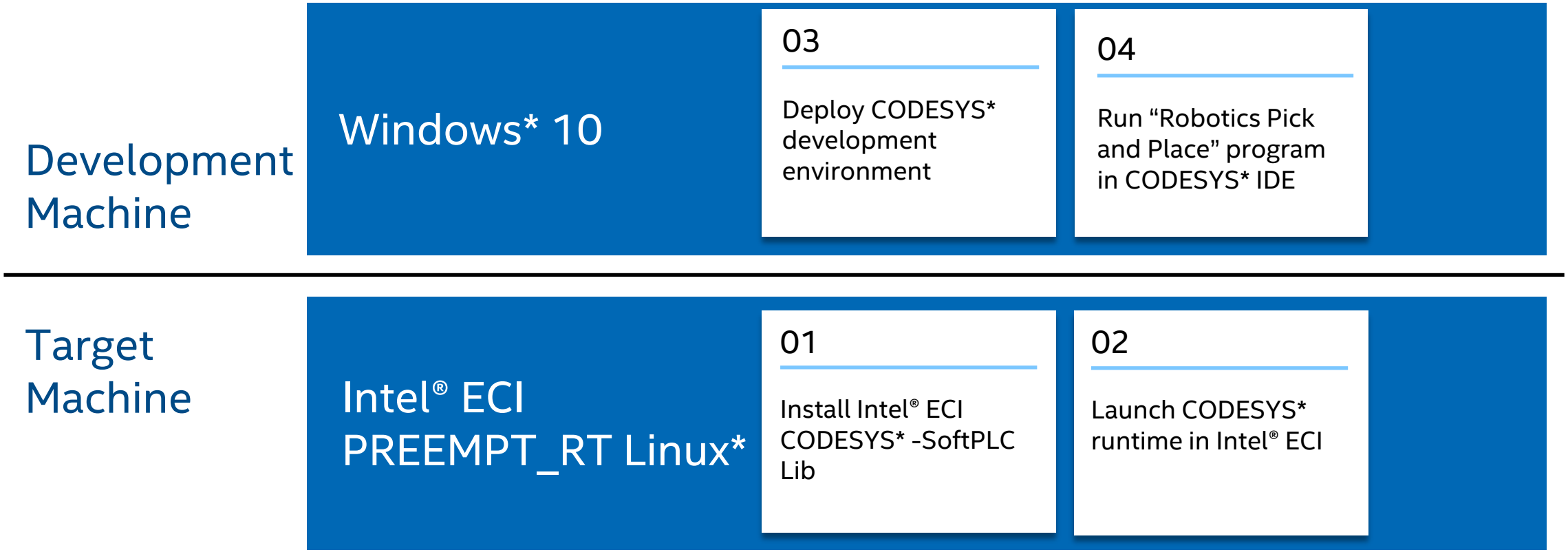
03

Deploy CODESYS* development environment

04

Run “Robotics Pick and Place” program in CODESYS* IDE

Operation Architecture Diagram



Install Intel® ECI CODESYS*-SoftPLC Lib 01

Note: It is assumed that you already set up the Intel® ECI APT Repository through the Intel® ECI Getting Started course. If not, refer to the Intel® ECI Getting Started Guide to set it up.

```
$ sudo apt update
```

Tip

If the APT package manager is unable to connect to the repositories, follow these APT troubleshooting tips:

- Make sure that the system has network connectivity.
- Make sure that the ports `80` and `8080` are not blocked by a firewall.
- Configure an APT proxy (if network traffic routes through a proxy server). To configure an APT proxy, add the following lines to a file at `/etc/apt/apt.conf.d/proxy.conf` (replace the placeholders as per your specific user and proxy server):

```
Acquire::http::Proxy "http://user:password@proxy.server:port/";
Acquire::https::Proxy "http://user:password@proxy.server:port/";
```

```
$ sudo apt install -y eci-softplc-codesys
```

Install Intel® ECI CODESYS*-SoftPLC Lib

Launch CODESYS* runtime in Intel® ECI

02

1. Check currently installed CODESYS* version:

$ apt show codesyscontrol

```
root@eci-intel-9c2c:~# apt show codesyscontrol
Package: codesyscontrol
Version: 4.5.0.0
Priority: optional
Section: base
Source: codesyscontrol
Maintainer: CODESYS GmbH
Installed-Size: unknown
Depends: codemeter | codemeter-lite
Download-Size: 5314 kB
APT-Manual-Installed: no
APT-Sources: file:/eci-bullseye isar/main amd64 Packages
Description: codesyscontrol based on SDK 3.5.18.20 , from Mon 27 Jun 2022 03:38:39 PM CEST [154], Release build

root@eci-intel-9c2c:~#
```

Install Intel® ECI CODESYS*-SoftPLC Lib

Launch CODESYS* runtime in Intel® ECI

02

2. Activate the CODESYS* runtime:

```
$ systemctl restart codesyscontrol.service
```

3. Check CODESYS* runtime status:

```
$ systemctl status codesyscontrol.service
```

```
root@eci-intel-9c2c:~# systemctl status codesyscontrol.service
● codesyscontrol.service - LSB: Prepares and starts codesyscontrol
     Loaded: loaded (/etc/init.d/codesyscontrol; generated)
    Drop-In: /usr/lib/systemd/system/service.d
             └─10-override-protect-proc.conf
     Active: active (running) since Thu 2023-06-29 15:45:51 CST; 3 days ago
       Docs: man:systemd-sysv-generator(8)
    Process: 18566 ExecStart=/etc/init.d/codesyscontrol start (code=exited, status=0/SUCCESS)
      Tasks: 26 (limit: 9345)
     Memory: 142.8M
        CPU: 4h 44min 15.185s
     CGroup: /system.slice/codesyscontrol.service
             └─18570 /opt/codesys/bin/codesyscontrol.bin /etc/CODESYSControl.cfg
root@eci-intel-9c2c:~#
```

Install Intel® ECI CODESYS*-SoftPLC Lib

Launch CODESYS* runtime in Intel® ECI

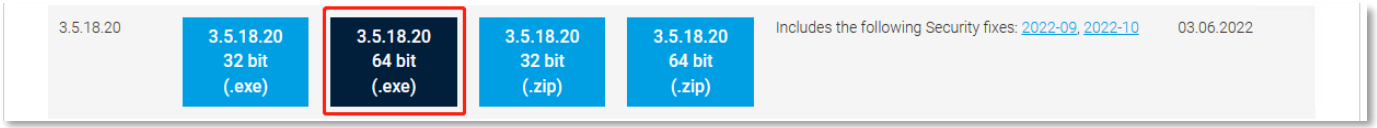
Deploy CODESYS* development environment

03

1. Download CODESYS* IDE compatible with eci-softplc-codesys

   a) Download from [CODESYS* Development System V3 | CODESYS Store International]

   b) Choose version 3.5.18.20 64 bit

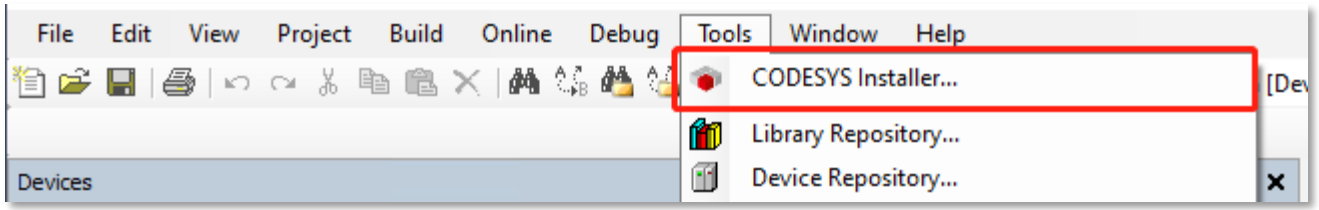


2. Follow the guidance to install CODESYS* IDE.

3. Install CODESYS* Control for Linux* SL

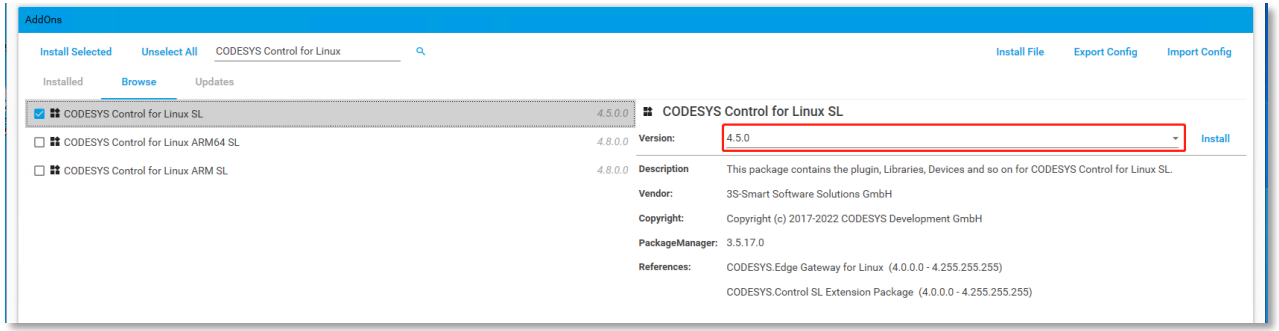
a) Select “Tools” and “CODESYS Installer”

b) Choose version 3.5.18.20 64bit



c) Search “CODESYS Control for Linux SL” and choose version “4.5.0”

d) Click “Install” to install “CODESYS Control for Linux SL 4.5.0”



Install Intel® ECI CODESYS*-SoftPLC Lib → Launch CODESYS* runtime in Intel® ECI → Deploy CODESYS* development environment → Run “Robotics Pick and Place” program in CODESYS* IDE

04

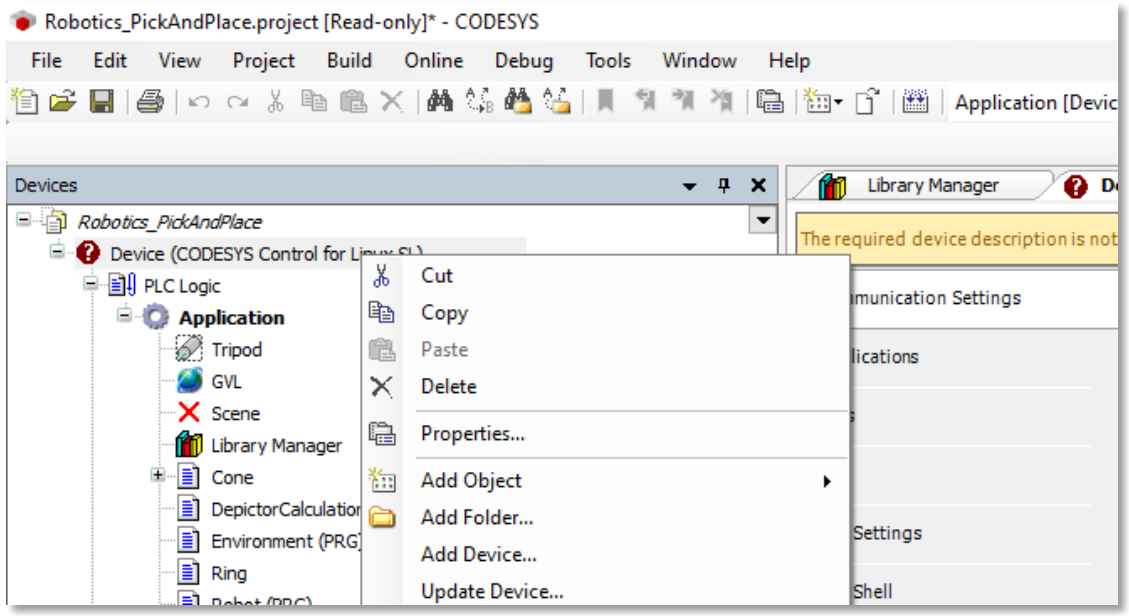
1. The sample application path is as shown below:

- C:\Program Files\CODESYS 3.5.18.20\CODESYS\CODESYS SoftMotion\Examples\Tutorial\Robotics_PickAndPlace.project

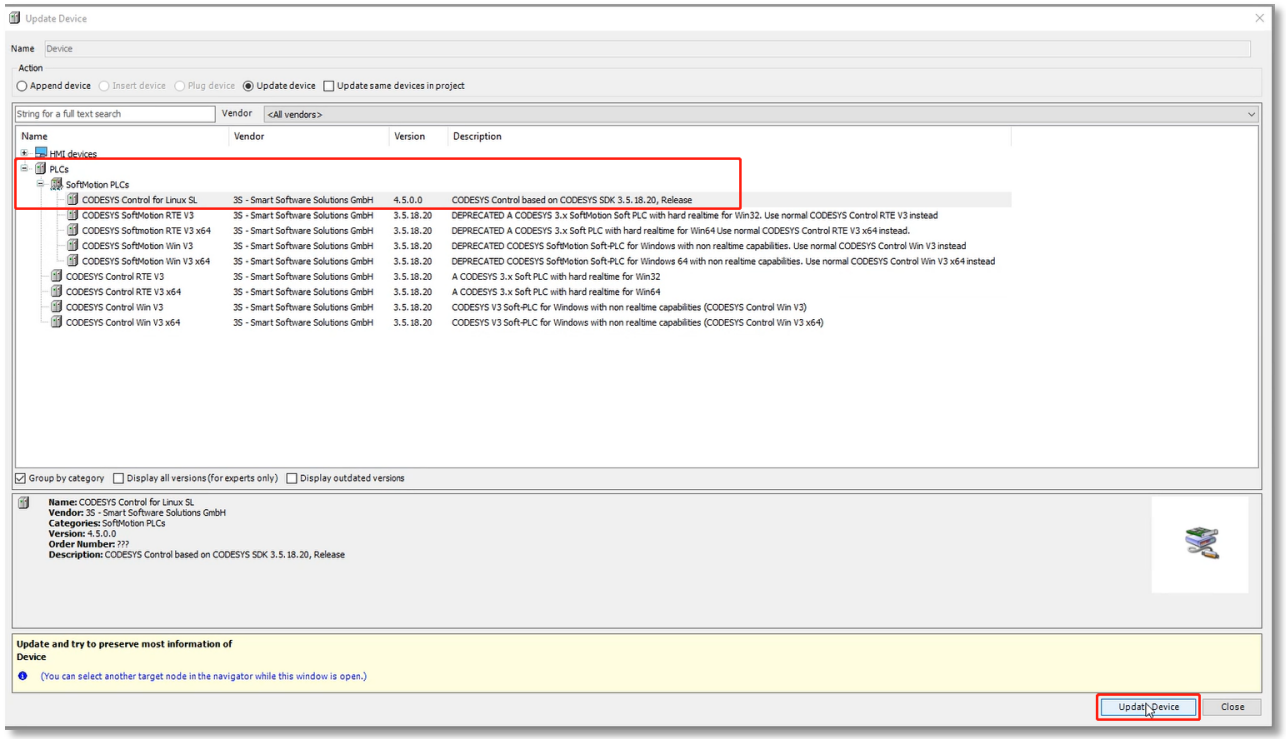
2. Open the project file with CODESYS* IDE.

1. Update the device when you finish loading the project.

- Right-click the “Device” item and choose “Update Device”.



4. Choose “CODESYS Control for Linux SL” 4.5.0.0 version, which is compatible with “eci-softplc-codesys” lib in Intel® ECI.



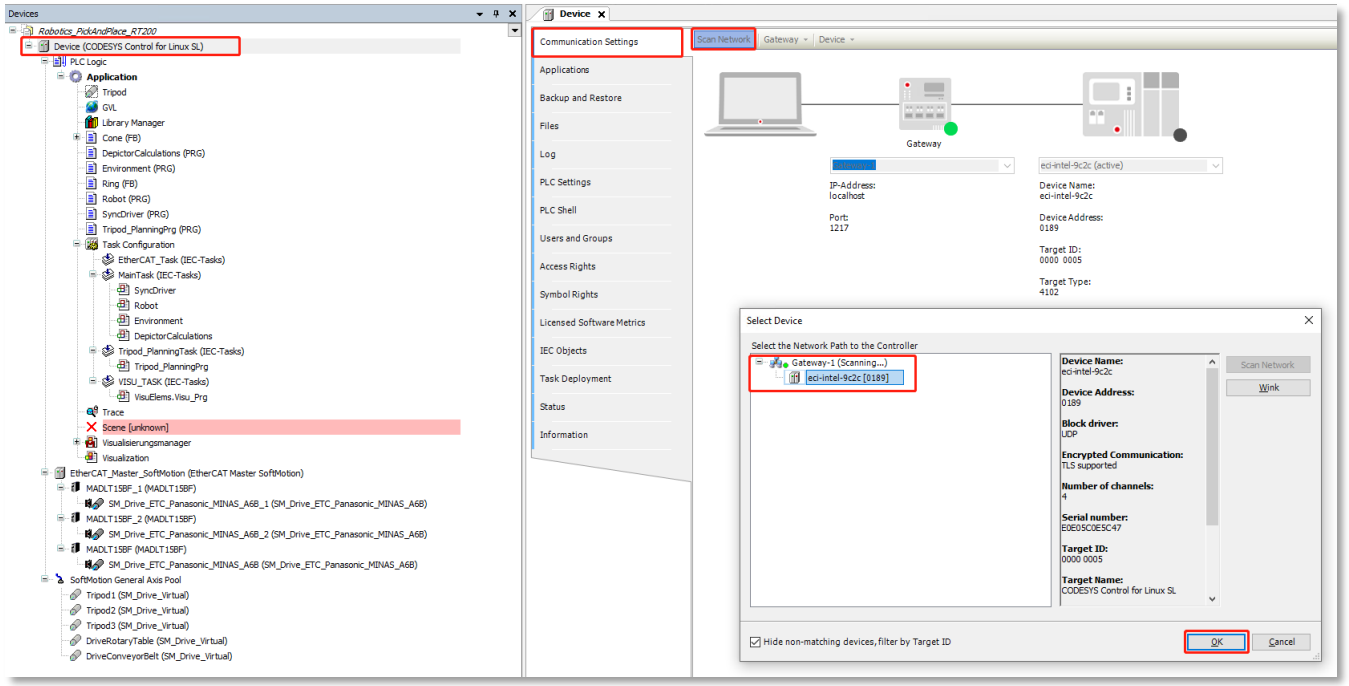
5. Configure “Device” network to connect the device to CODESYS* IDE.

a) Double-click “Device”, choose “Communication Settings”

b) Click “Scan Network”

c) Choose the device

d) Click “OK” to confirm the selection



Install Intel® ECI CODESYS*-SoftPLC Lib

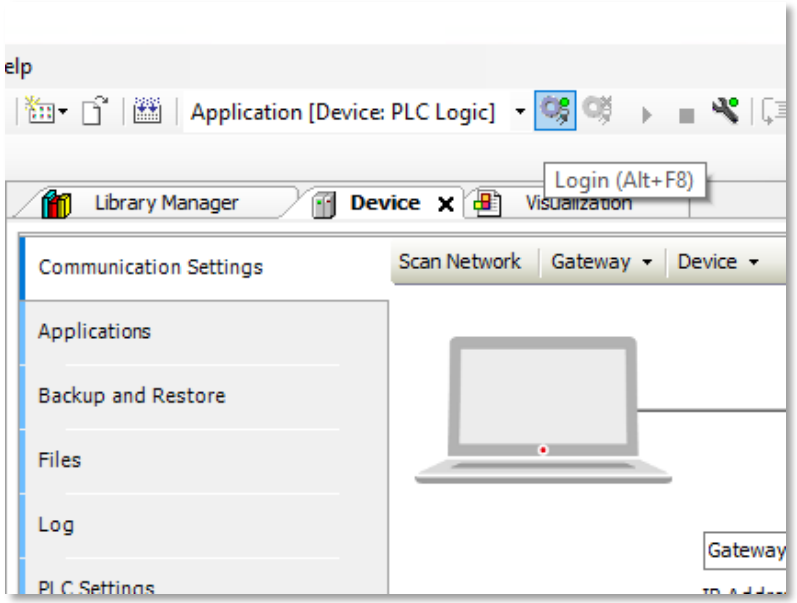
Launch CODESYS* runtime in Intel® ECI

Deploy CODESYS* development environment

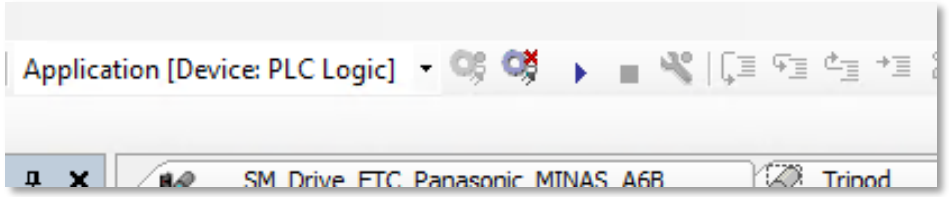
Run “Robotics Pick and Place” program in CODESYS* IDE

04

6. Click login button to download the project to your device.

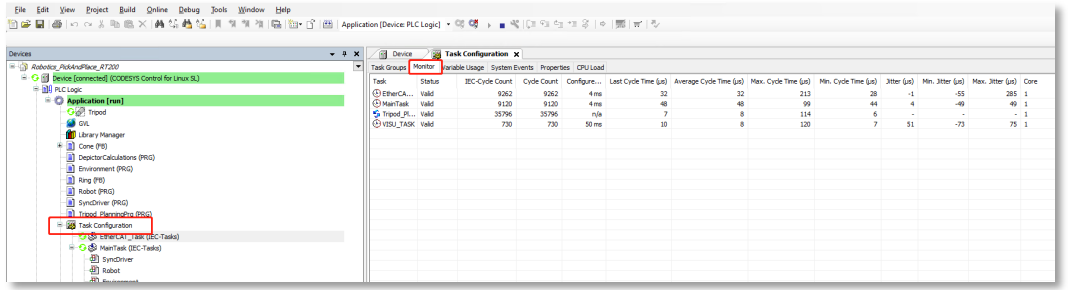


7. When login completes, the two buttons will appear active.
8. Press to run the “Robotics Pick And Place” project.

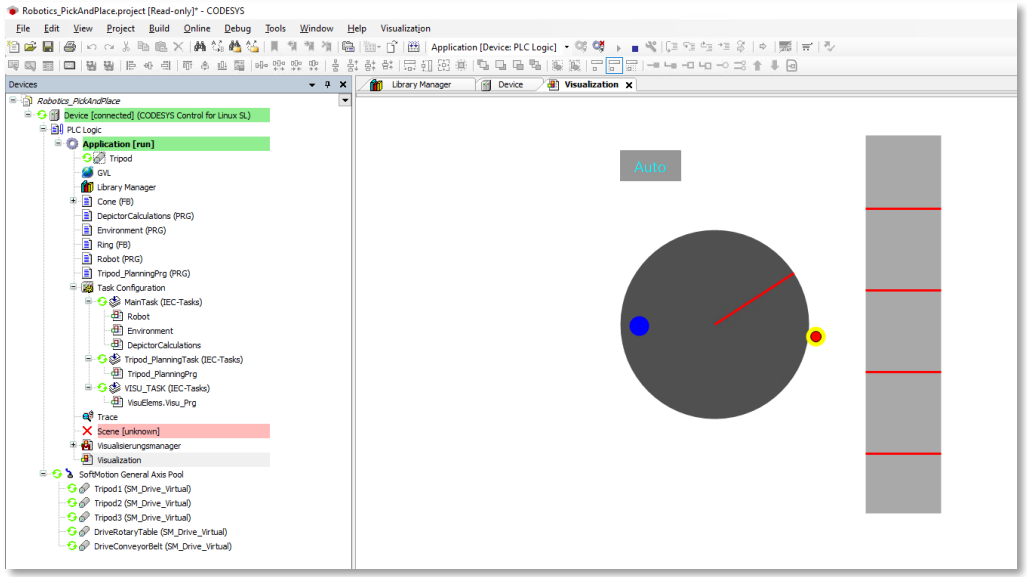


9. Observe the running status.

a) Open the monitor panel to check the current Project running statistics



b) Open the “Visualization” panel to see the currently running animated simulation



Summary

This course introduces how to use the Debian* installation package to install the CODESYS* Software PLC runtime environment on Intel® ECI.

After installing the CODESYS* operating environment, this tutorial explains how to build the CODESYS* development environment on the development machine and download the CODESYS* Software PLC program to the target machine in four steps.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