PLCnext Technology
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Platform for Limitless Automation

Enhance Your Automation Thinking

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enhance your automation thinking

Motive pentru o
Noua Platforma de Control

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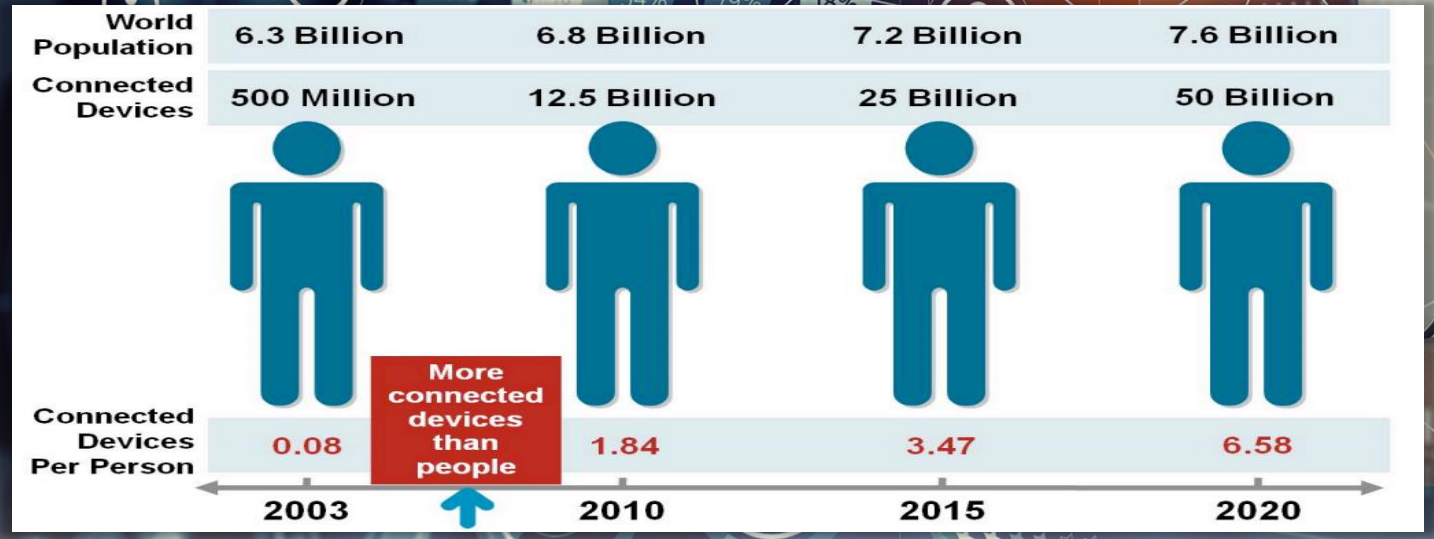
Procesul de Digitalizare conduce la schimbarea lumii

Interconectarea dispozitivelor si schimbul de informatii e la indemana tuturor

Schimbarea modului de comunicare a schimbat semnificativ viata cotidiana



Source: Cisco IBSG, April 2011

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Motive pentru o Noua Solutie de Automatizare

Smartphone parte dintr-o Solutie cu Valoare Adaugata

Stare initiala

Dispozitiv cu un set de functii si caracteristici de la furnizor

Personalizare

Wallpapers, apps, retele sociale, mail, date personale, links, utilitare

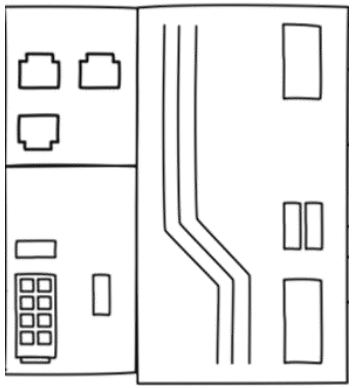
Smartphone este **open system**

Dispozitivul dv personal

Smartphone se transforma in dispozitiv personal avand un profil ce corespunde nevoilor din viata cotidiana

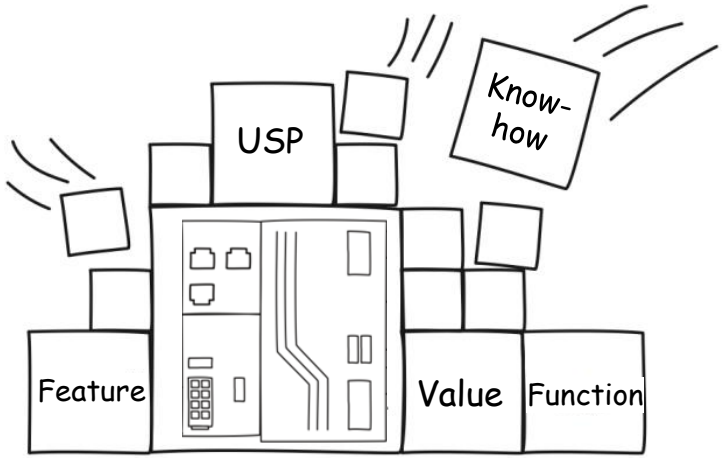
Motive pentru o Noua Solutie de Automatizare

Solutie de control industrial ca Valoare Adaugata



Phoenix Contact

Controller cu un set initial de functii / caracteristici



Dezvoltatori software, Integratori de Sistem, Utilizatori finali, …

Aplicatii specifice, algoritmi, procese speciale, retete, modelari matematice …

Utilizatori finali

Fiind un system deschis si versatil acest PLC va fi mai atractiv pentru partenerii Phoenix Contact!

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Digitalizarea se produce si in lumea Automatizarilor industriale

- Automatizarile industriale trec printr-un proces de schimbare fara precedent
- Connectivitatea, flexibilitatea, si scalabilitatea sunt cerinte cheie pe care facilitatile de productie si sitemele de automatizare trebuie sa le indeplineasca in viitor
- Noile tendinte sunt mentionate de **“Industry 4.0”** si **“Industrial Internet of Things (IIoT)”**

Enter the new era of automation

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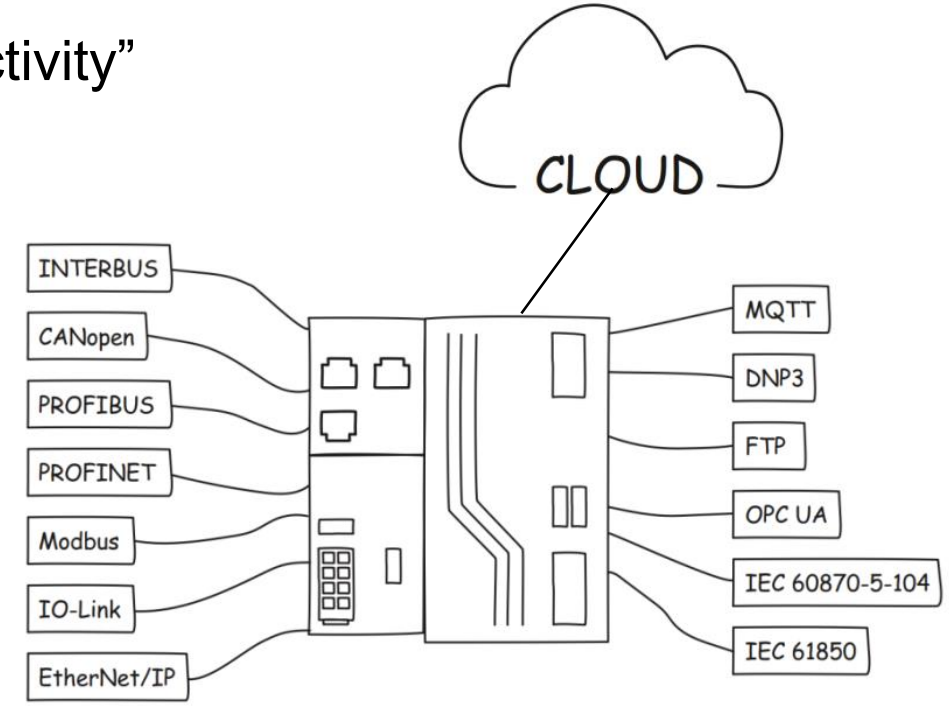
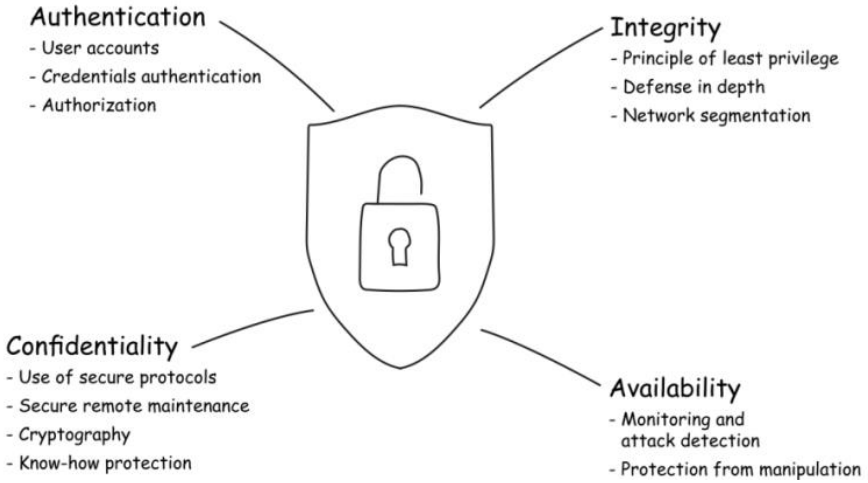
Ce este “Openness” in definitiv?

- “Communication diversity” – interfete si protocoale
- “Cloud connectivity”



- “Fully integrated industrial security”



“**open**” ≠ **vulnerabil!** . Necesitatea de a proteja sistemul impotriva atacurilor, hacking, etc.

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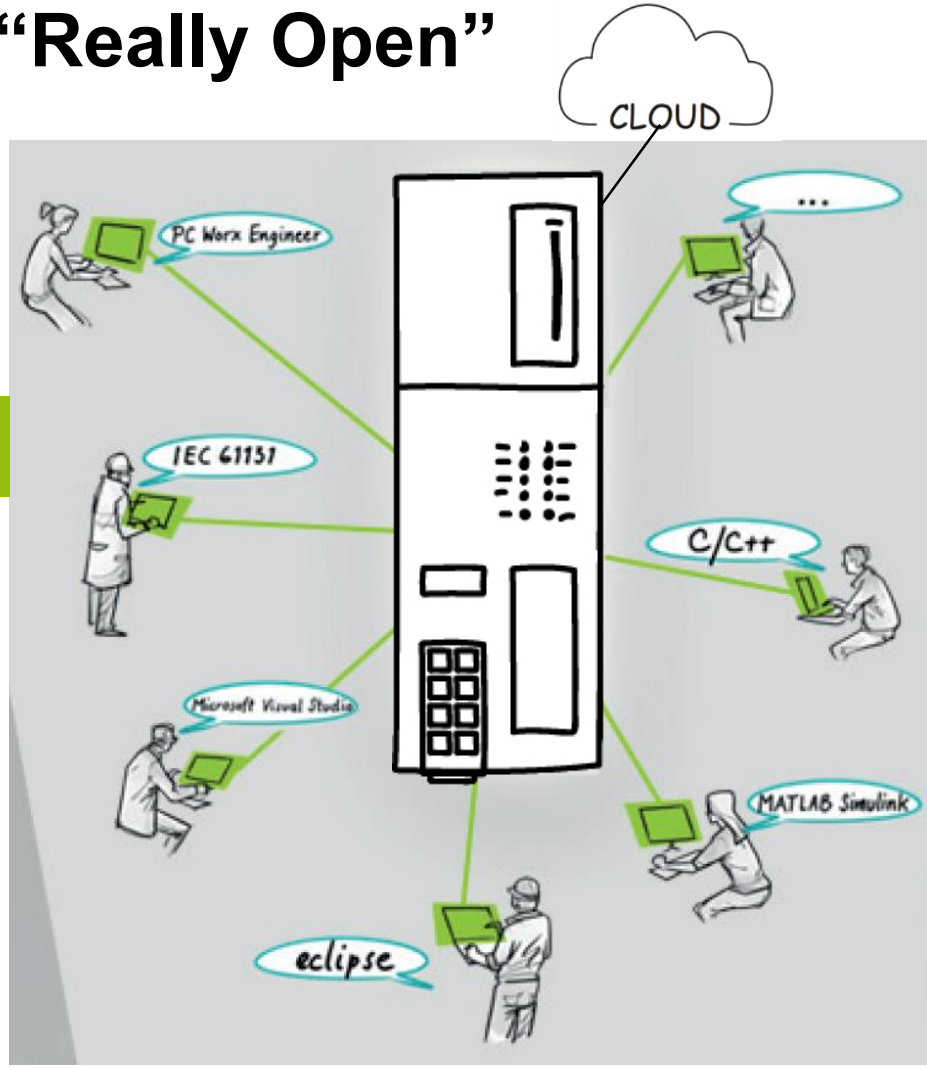
Viziunea Phoenix – o Platforma de control “Really Open”

- Un sistem de control deschis orientat spre viitor trebuie sa aiba in vedere mai mult decat “connectivity” si “industrial security”.

Trebuie sa deschida noi orizonturi pentru utilizatori

- Siteme de automatizare flexibile adaptabile la schimbarile dinamice ale pietei
- Diversi programatori lucreaza impreuna pe o unica platforma
- Mediul de programare diversificat – diverse generatii
- Utilizare componente Open source – eficientizeaza procesul
- Conectarea in Cloud creeaza noi modele de business



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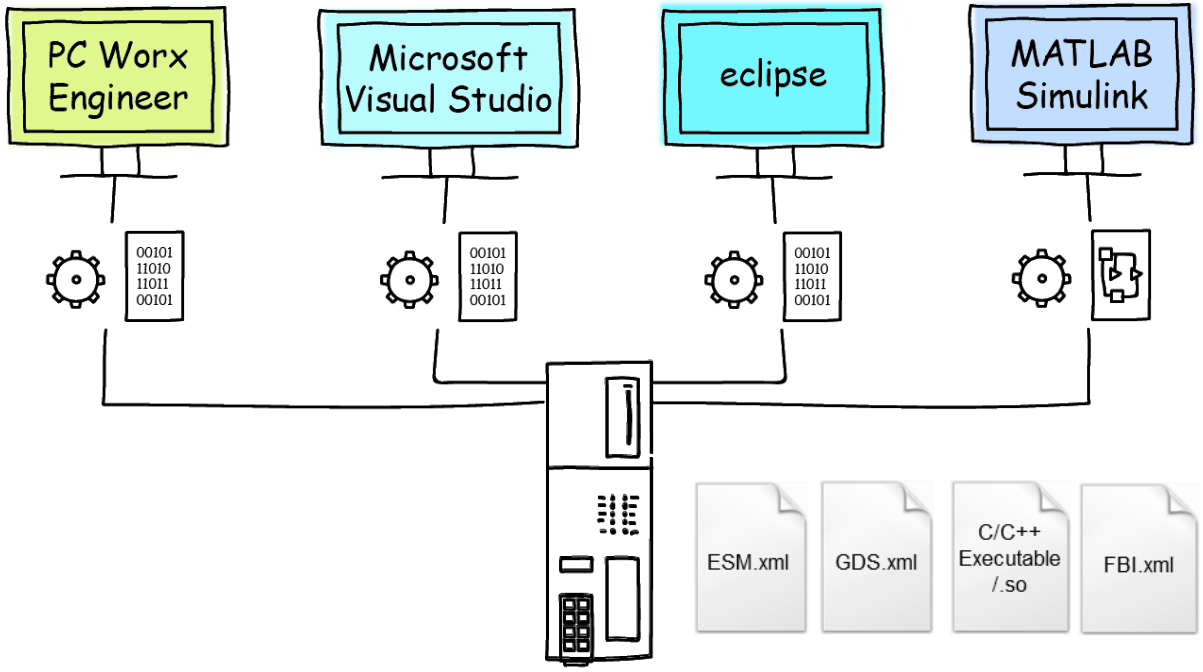
Motive pentru o Noua Solutie de Automatizare

“Openness”: Nu exista restrictii!

IEC 61131-3	C++ si C#	Matlab Simulink



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Soliditatea, determinismul unui PLC

+ deschiderea, flexibilitatea unui IPC / Smart devices

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deschide noi oportunitati – pentru automatizari

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Architectura & **Integrare**

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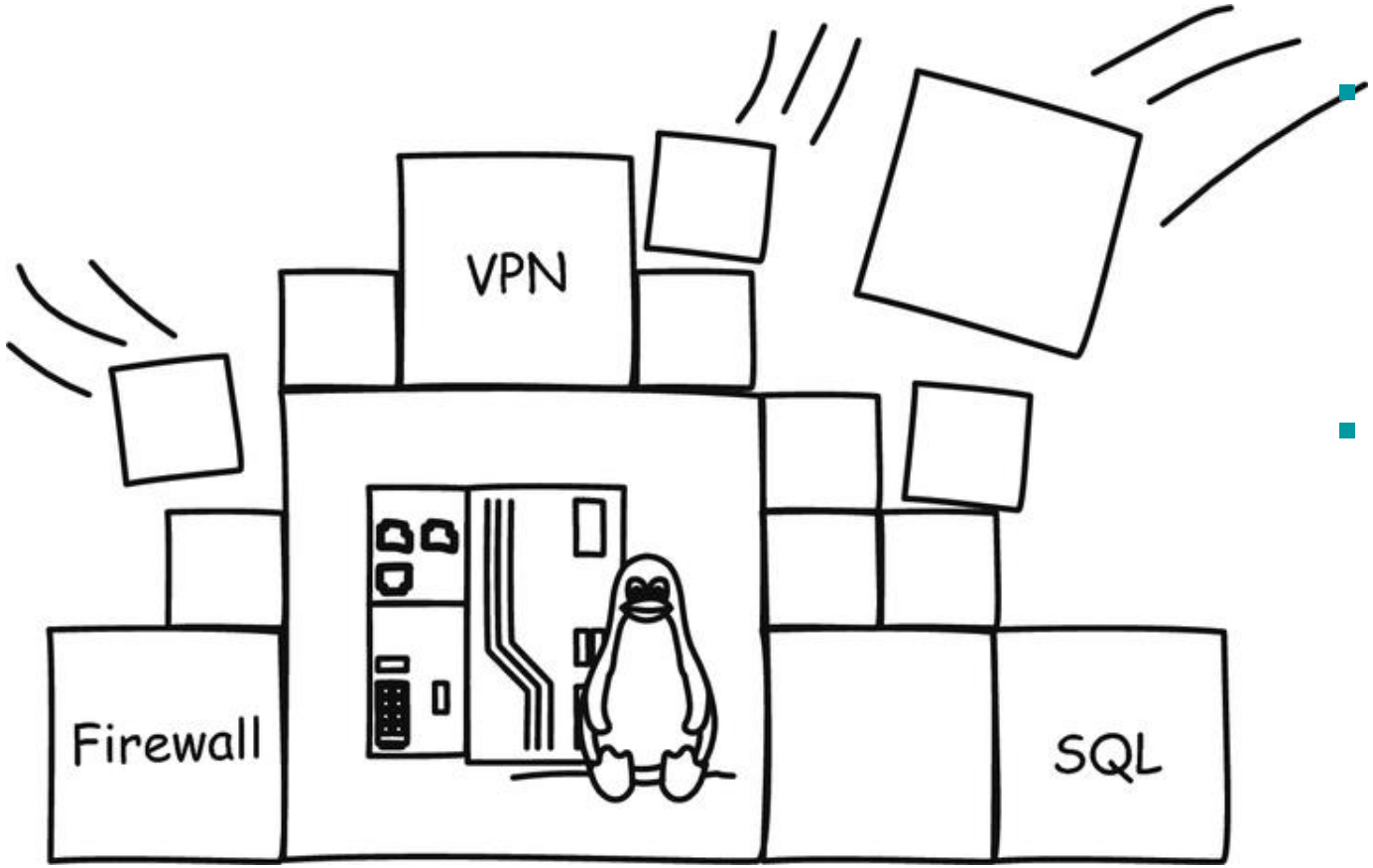
Flexibilitatea oferita de Linux plus stabilitatea unui sistem PLC



- **PLCnext Technology** ruleaza pe o distributie Linux Debian cu capabilitate real-time creata de Phoenix Contact
- **… dar este la fel de performant precum un PLC "classic" !**
  - Managementul task-urilor facil
  - Sincronizarea precisa
  - Schimb de date Cycle-consistent

Totusi NU sunt necesare conostinte Linux pentru a folosi PLCnext Technology

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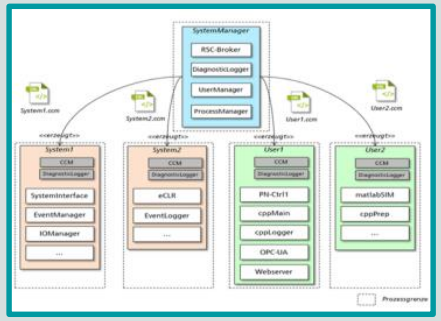
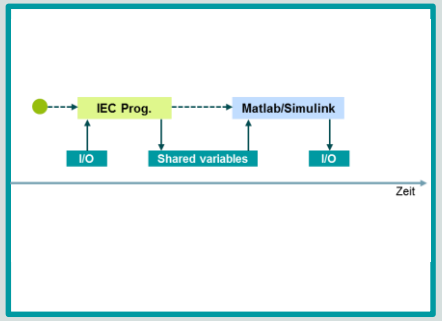
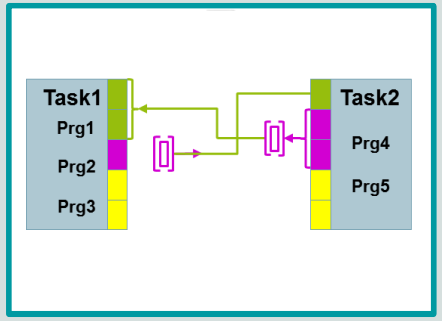
Componentele PLCnext Technology Versiune 1.0



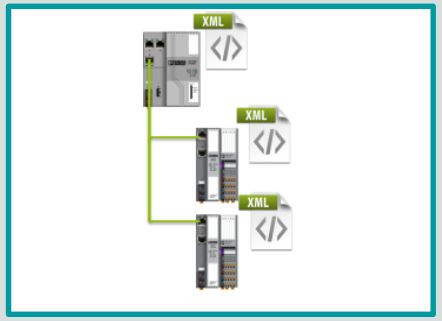
1. System Manager



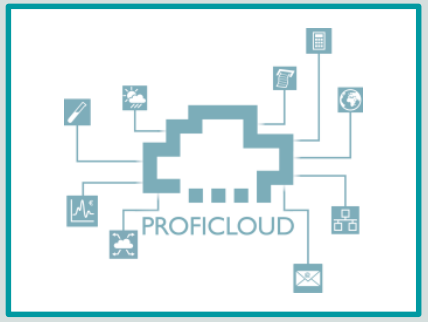
2. Exec. & Sync. Manager



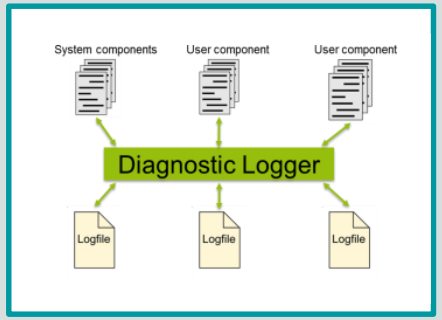
3. Global Data Space



4. Fieldbus Manager



5. PROFICLOUD



6. Diagnostic Logger

7. User Manager

8. OPC UA Server

9. PC Worx Engineer HMI

10. Trace Controller

Security

Setul de componente si functii incluse in versiunea actuala AXC F 2152

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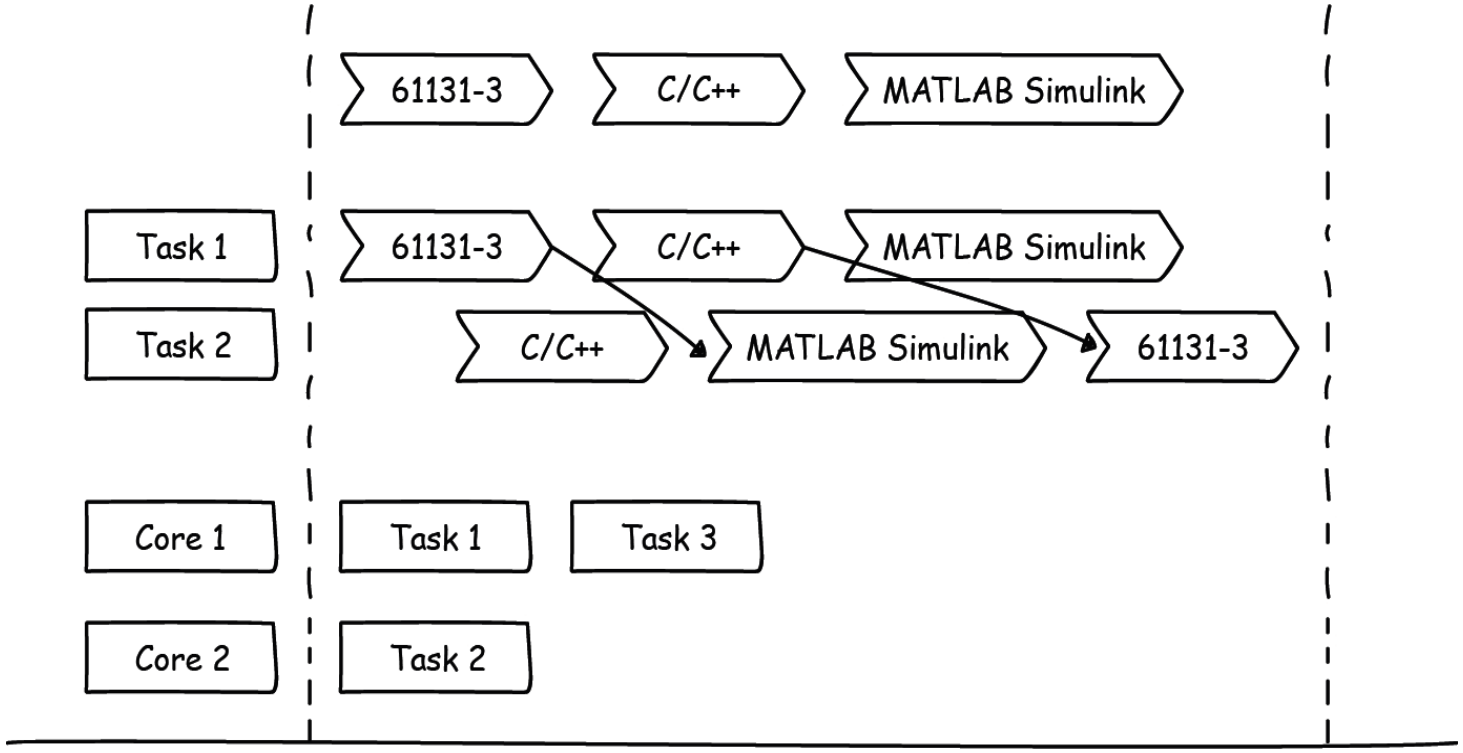
Execution & Synchronization Manager

- Combina secventele de program create in diverse limbaje integrandu-le in task-uri
- Gestionarea task-urilor PLCnext Technology face ca rutinele scrise in diferite limbaje sa ruleze precum un cod de PLC clasic conform IEC-61131
- Programele create intr-un limbaj de nivel inalt devin automat deterministe
- PLCnext Technology asigura schimbul de date consistent si executia sincrona a codului de program



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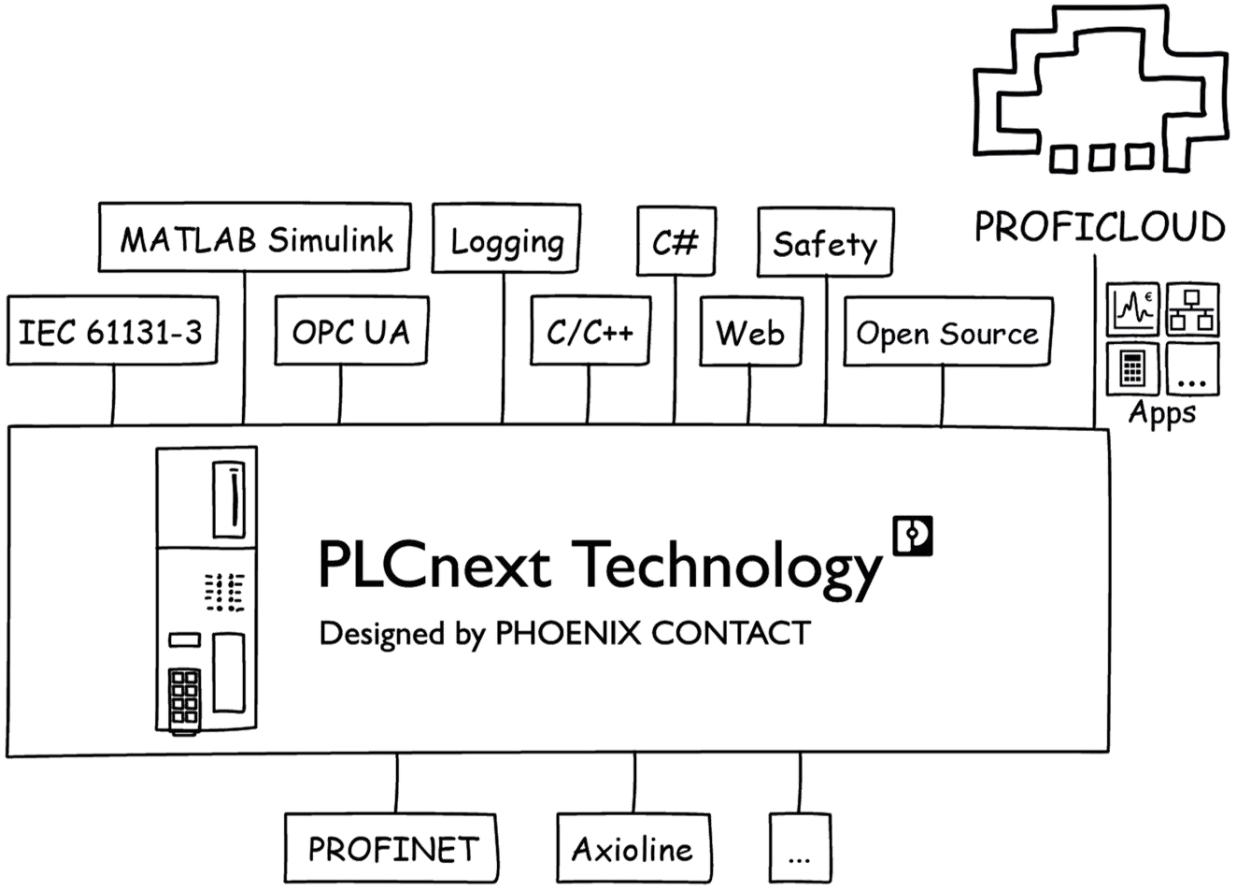
Global Data Space

- Asigura schimbul de date rapid si consistent intre programul user-ului, fieldbus si sistem
- Selectare variabilele din program (IEC, C++, MATLAB)
- Consistenta task-urilor ciclice
- Acces via Data Logger, HMI si OPC UA
- Aspecte de Securitate pentru user management



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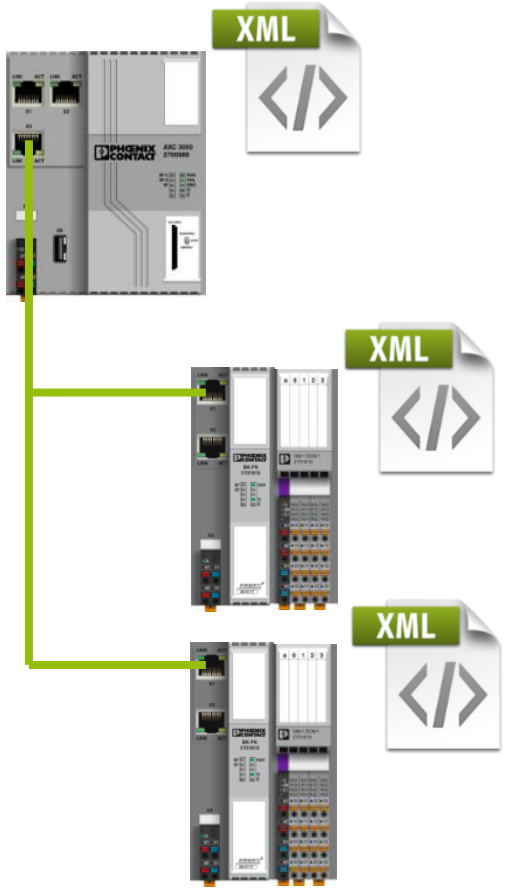
Fieldbus Manager (FBM)



- **Interfata Generica Fieldbus** pentru diferite protocoale
  - Conexiunea este implementata independent de fieldbus stack
  - Armonizarea conectarii variabilelor de la diverse fieldbus la Global Data Space
- **Technology Independent Configuration** (TIC) concept
  - Un fisier per componenta (device, module, sub module), unul per PLC definind instantele componentelor
  - Format compact XML asigura independenta configurarii retelei/dispozitivelor
  - Suporta adaugarea/scoaterea dinamica a dispozitivelor si sub elementelor

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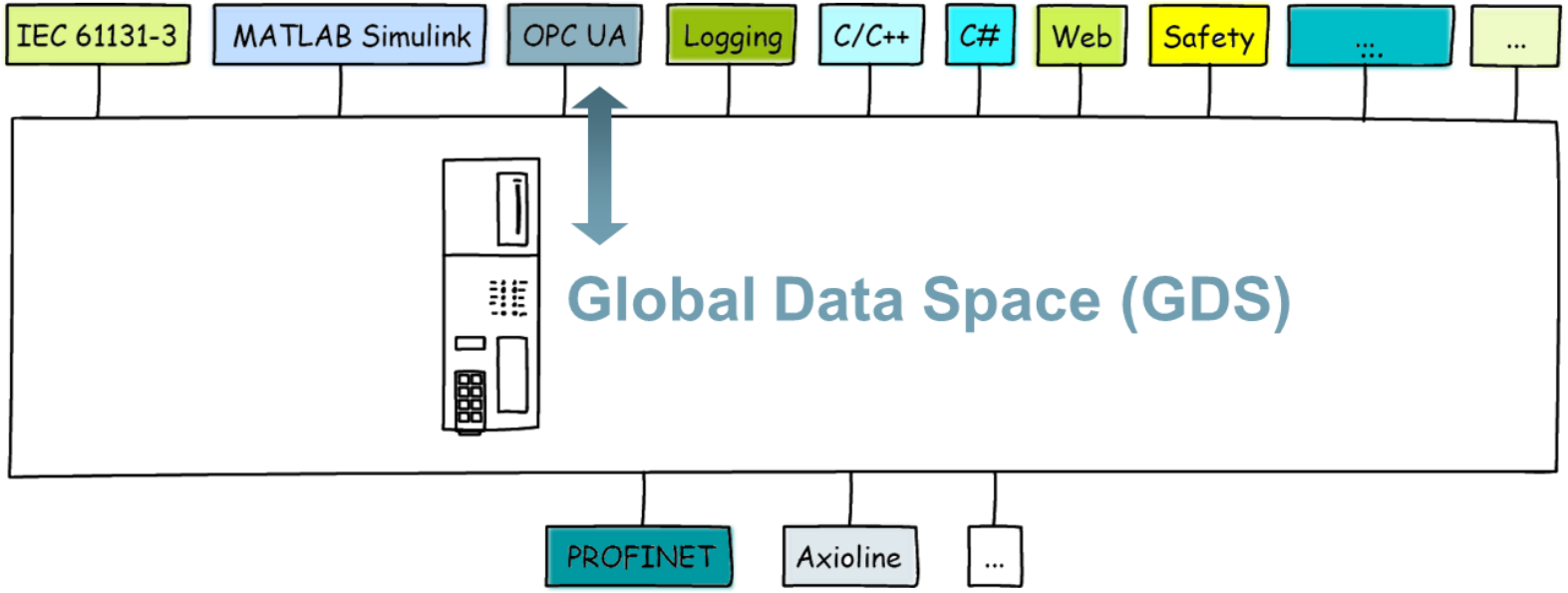
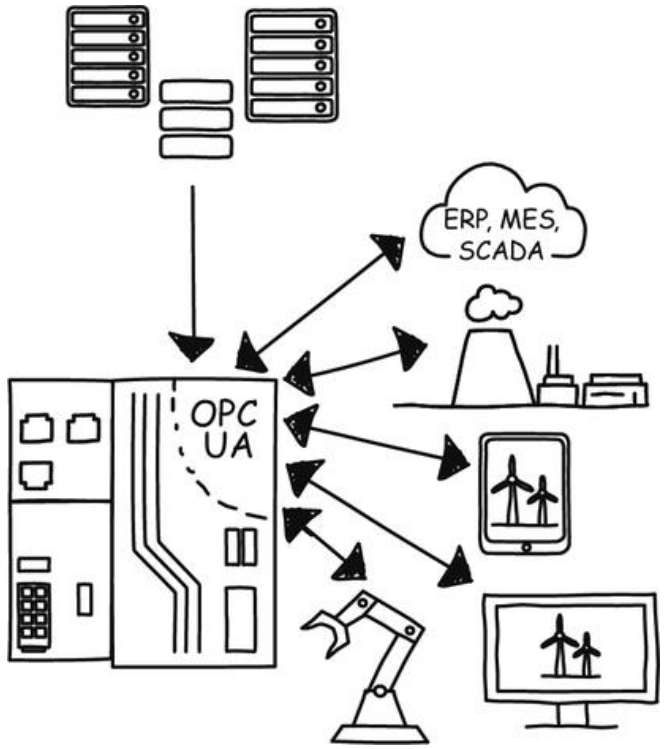
Server OPC UA integrat Spec 1.02





- Data Access
- Alarms and Conditions
- Historical Access

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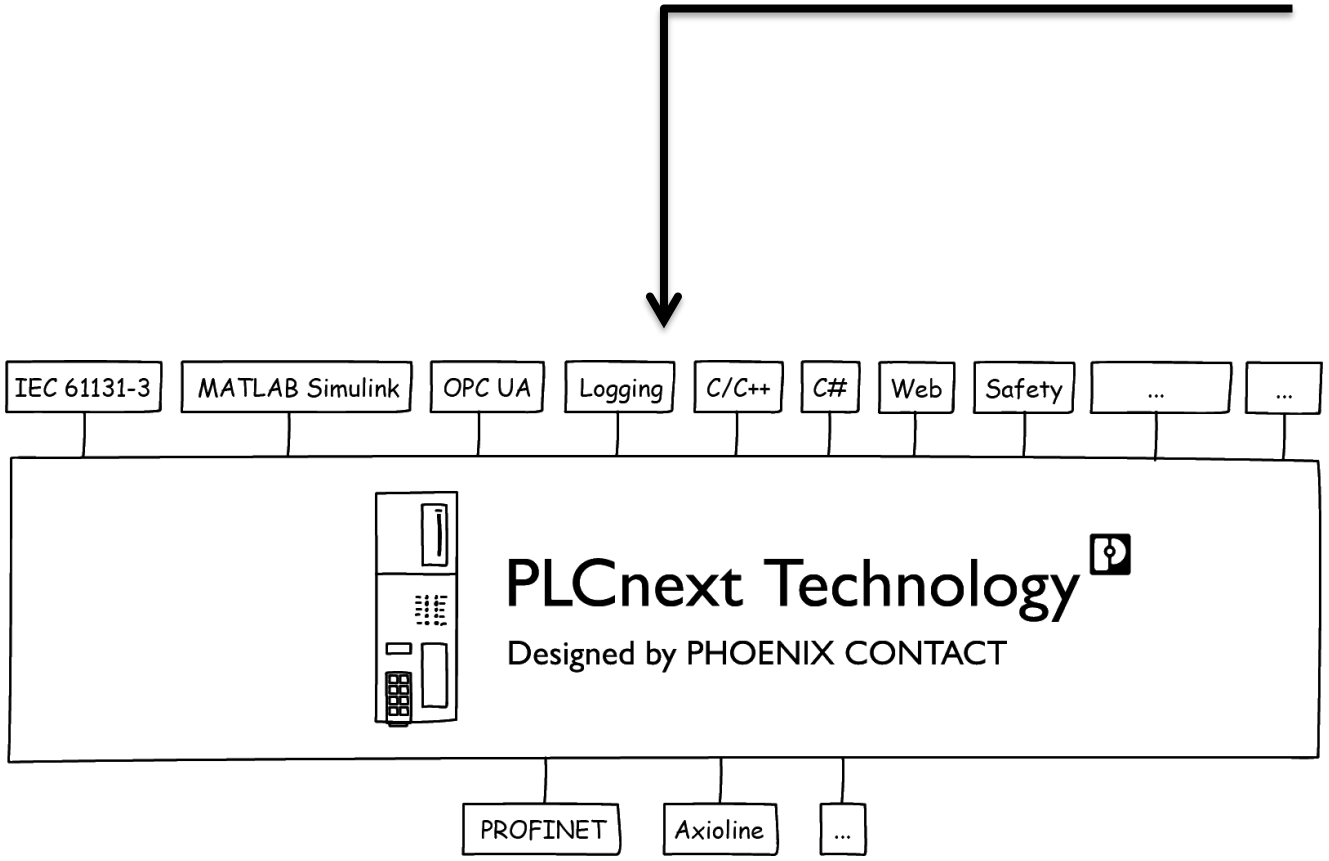
PLCnext Technology este pregatit pentru IoT



App Store ce tine de PROFICLOUD permite adaugarea unor functii aditionale la PLC

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Mediul de dezvoltare flexibil si facil

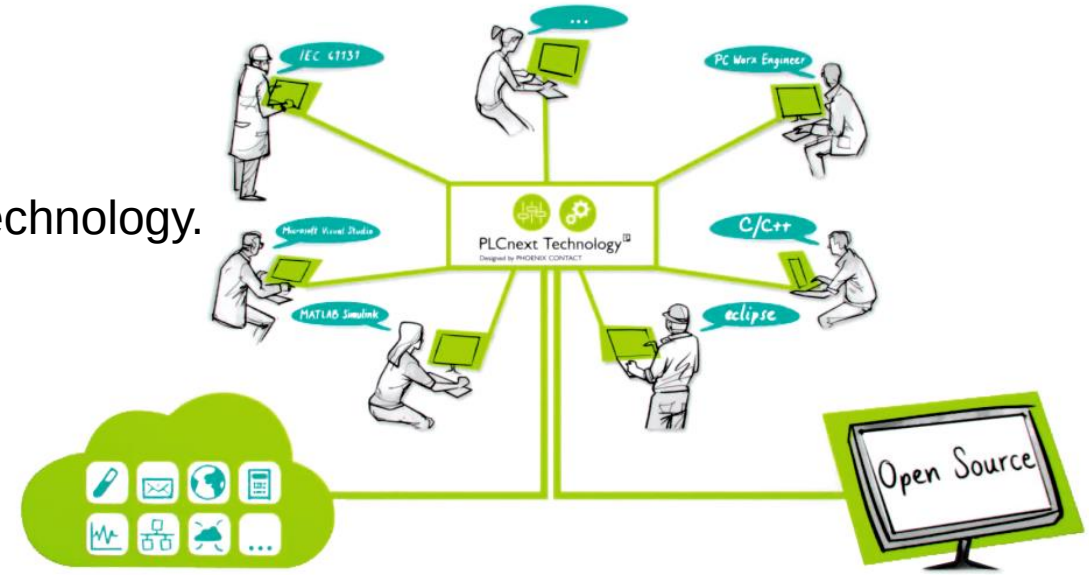
- Folosind PLCnext Technology, diversi programatori din diverse generatii pot sa lucreze pe un singur controller, in paralel, folosind diferite limbaje de programare.

- Dezvoltarea rapida a unor aplicatii complexe folosind avantajele unui PLC clasic + flexibilitatea PLCnext Technology.

-

- PLCnext Technology ofera posibilitatea de a folosi programarea in IEC 61131 sau limbaj de nivel inalt.

- Dezvoltarea aplicatiei intr-un mediu familiar cum ar fi PC Worx, Matlab Simulink, Eclipse, or Visual Studio.



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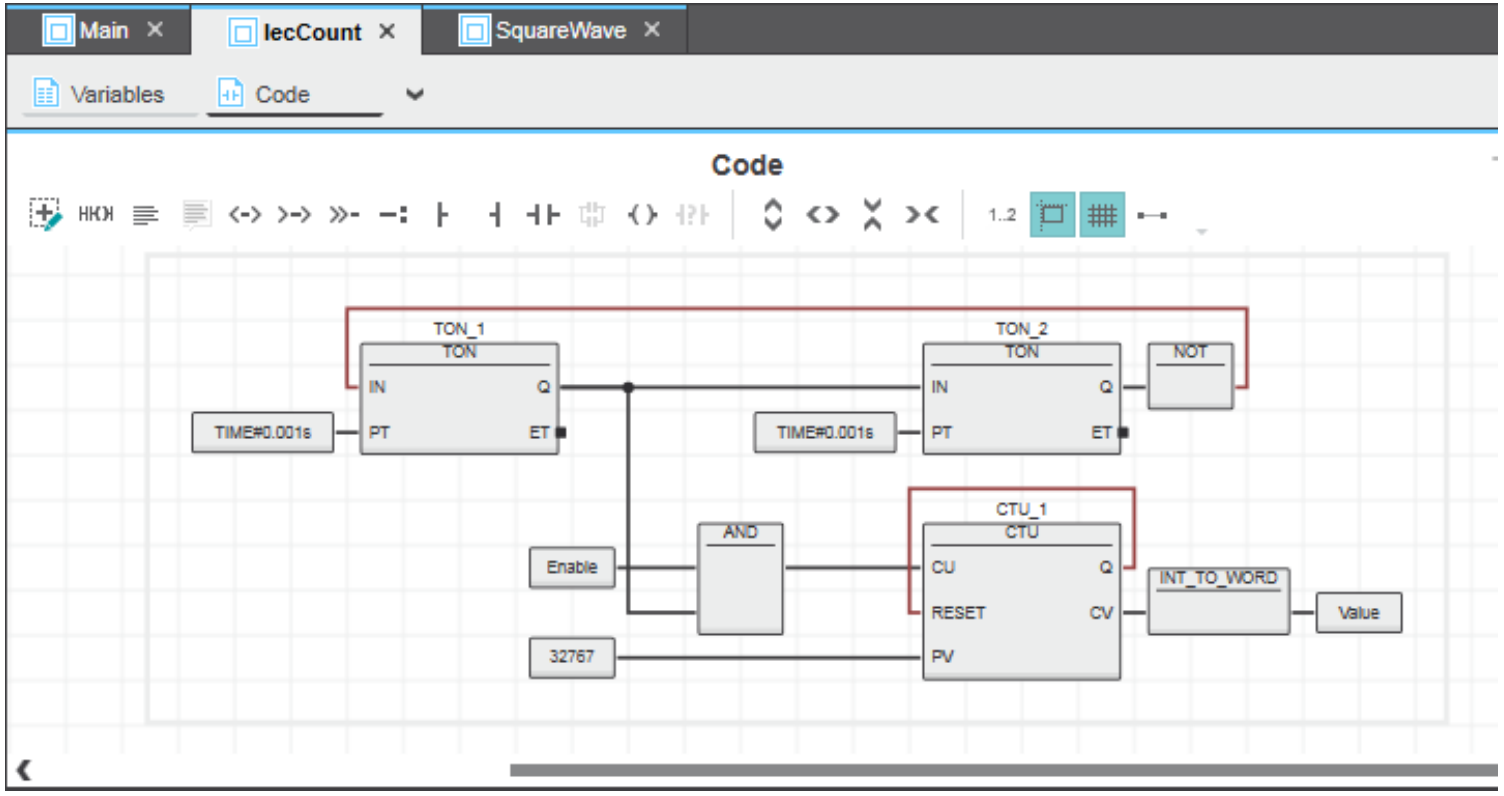
Programare – IEC 61131-3

PC WORX Engineer

Programming Software



- Simplu IEC 61131-3
- Folosirea functiilor PC Worx Engineer

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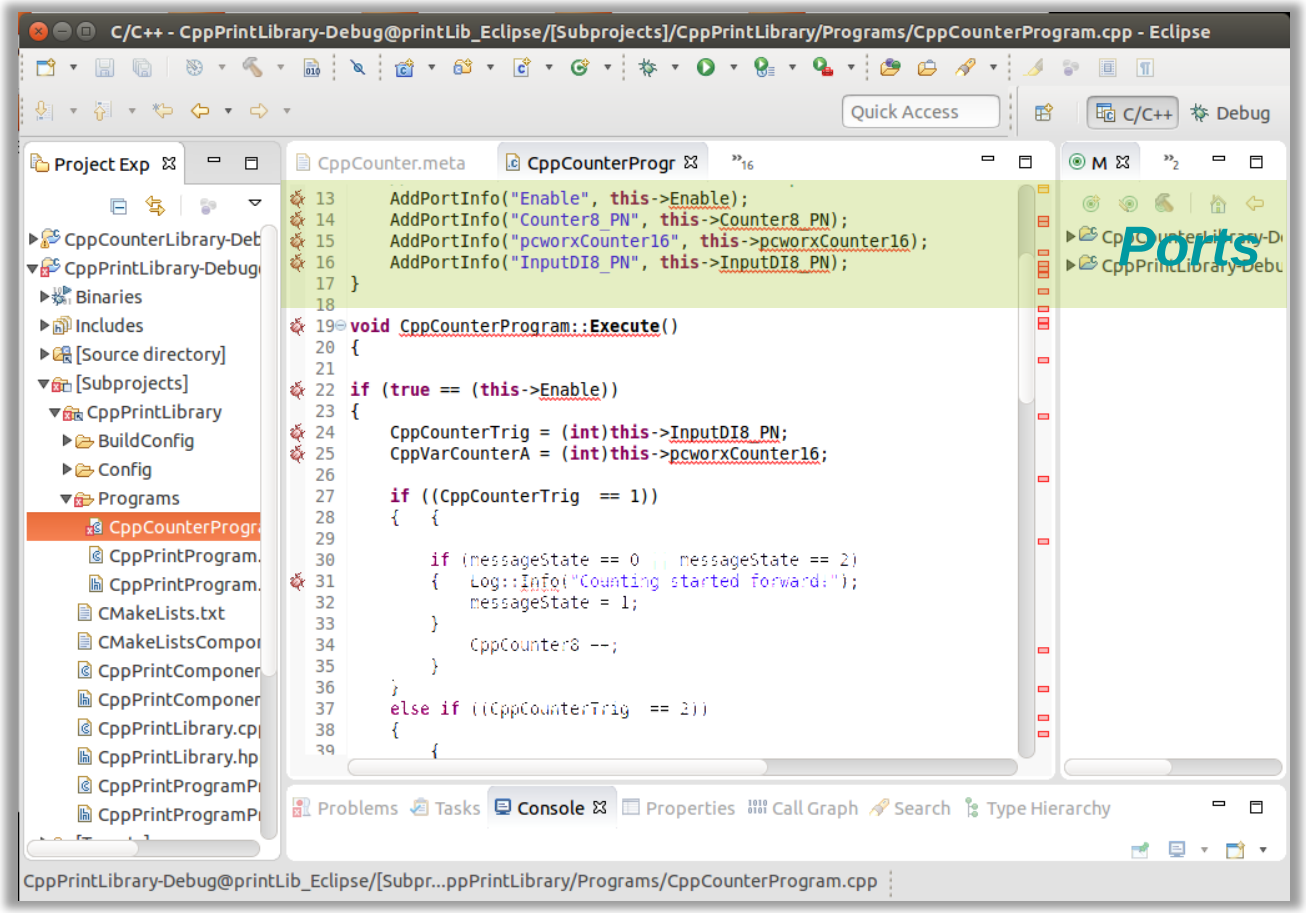
Programare – C/C++



- C/C++ conform standardului
- Interfatare usoara cu platforma PLCnext Technology
- Suporta depanare externa

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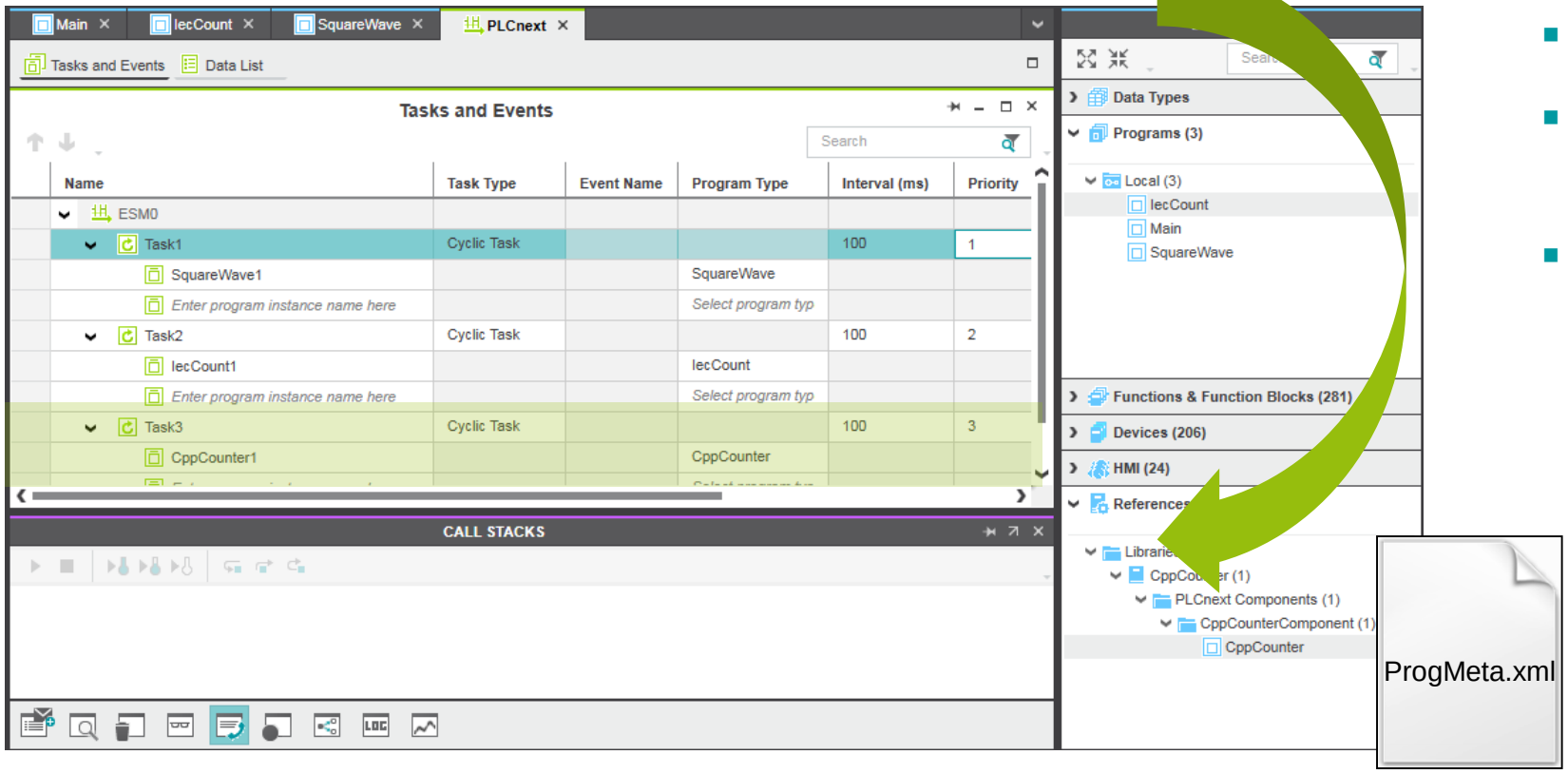
Configurare simpla

PC WORX Engineer
Programming Software



- Import aplicatie C++
- “Drag & Drop” task si configurare port
- Functionarea precum un PLC “clasic”

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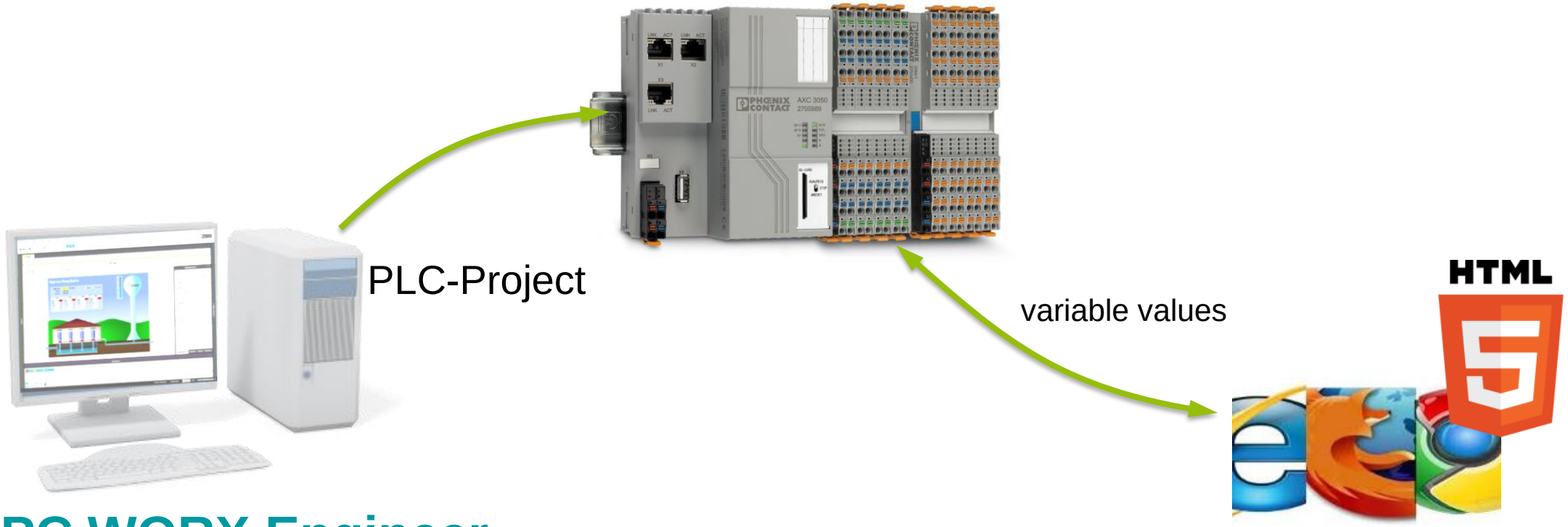
Data Logger

- Variabilele selectate pot fi stocate pe o durata de timp predefinita
- Inregistrarea datelor se face sincron cu task-ul
- Aceeasi baza de date si pentru OPC-UA Historical Data

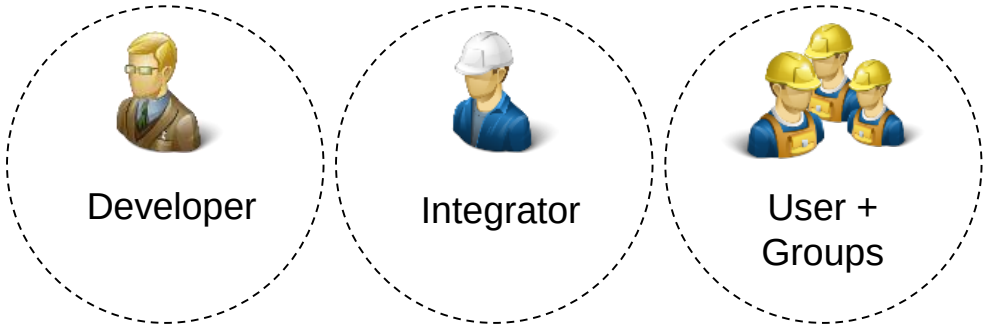
Web-server integrat pentru vizualizare HMI

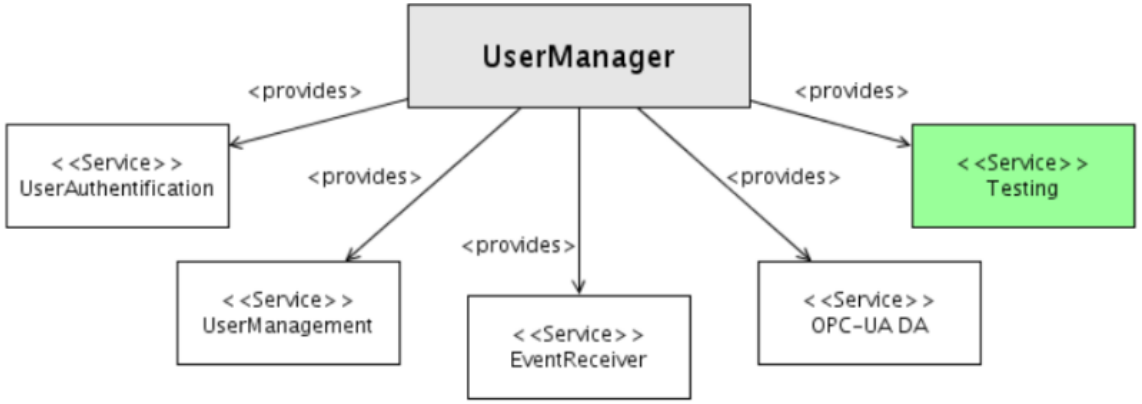


PC WORX Engineer

Securitate

- Concept de Securitate Integrat
- Acces la sistem protejat, program know how
- Conectare folosind parola
- Autorizare User pe variabile si servicii
- Suporta servicii:
  (sftp, https, ssh, VPN…)
- Optional Firewall (e.g. iptables)





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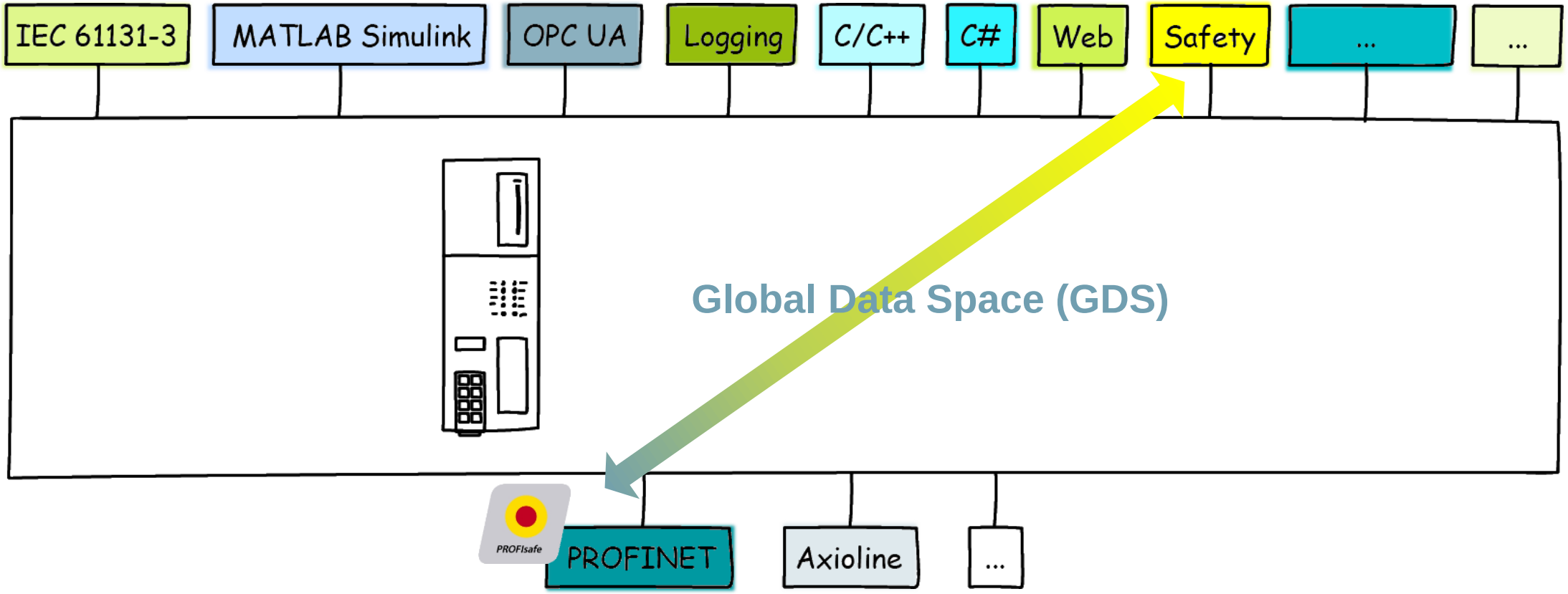
Outlook: 2019

Safety integrat



Din 2019 un system SAFETY complet integrat in PLCnext Technology

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AXC F 2152

PLCnext Control

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Primul PLCnext Control: AXC F 2152

- ☑ Cyclone 5 cu ARM Cortex-A9 CPU 2 x 800 MHz
- ☑ 512 Mbytes RAM
- ☑ SD Flash card slot
- ☑ 1 x ETH-MAC interface (2 x 10/100 Mbit) switched
- ☑ Micro-USB type C
- ☑ Real-time clock
- ☑ Axio field bus pentru maxim 63 module
- ☑ Trusted platform module (TPM) pentru security
- ☑ Gama Temperatura: -25°C … 60°C

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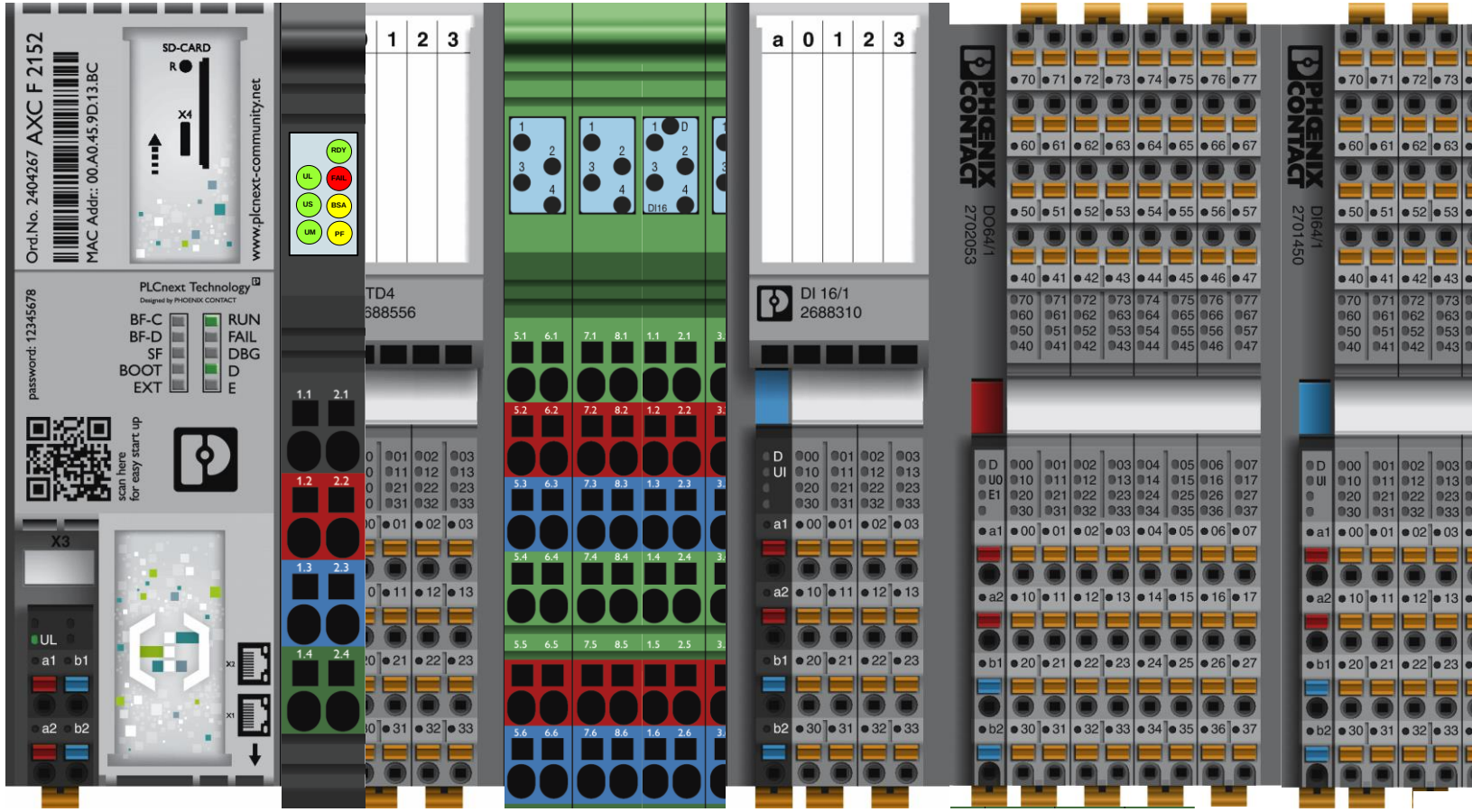
Outlook: 2018

PLCnext Technology cu sistemul Inline I/O

- PLCnext functioneaza standard cu module AXIOLINE I/O
- Sistemul Inline I/O vine completat cu caracteristicile si performantele PLCnext Technology + Cloud
- Gama larga de module datorita diversitatii portofoliului Inline I/O
- Un PLC performant pentru sistemul Inline I/O
- Combinatie economica dintre Inline I/O si PLCnext Control



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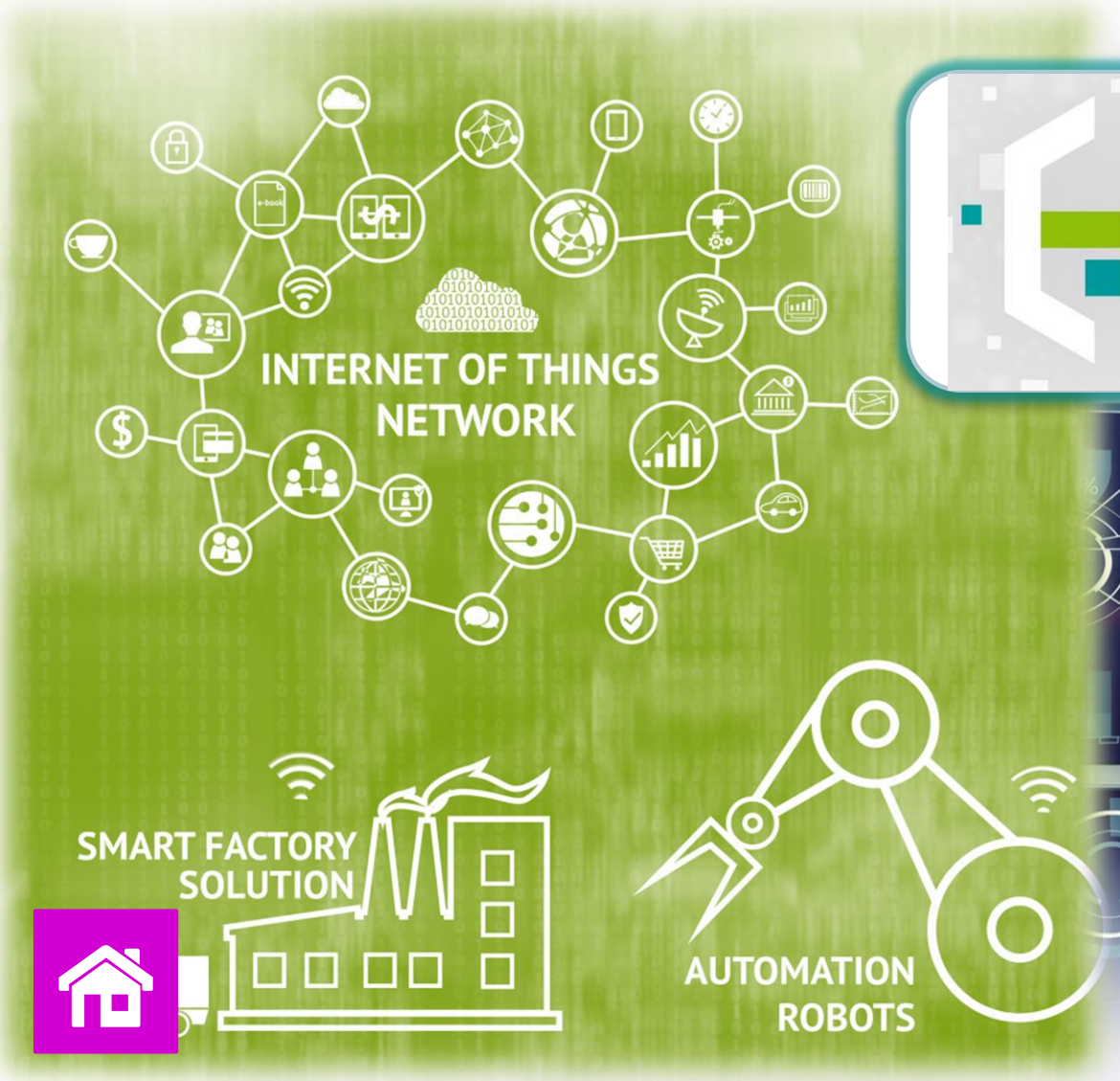
Outlook: PLCnext Platform & Market Place

Outlook: 2020+



available with
PLCnext

Download on the
App Store

GET IT ON
Google play

PHOENIX CONTACT
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PLCnext Technology enhances

IEC 61131 &

C / C++

C#

MATLAB Simulink

Microsoft Visual Studio

Eclipse

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High level language programmers

for

IEC 61131 experts

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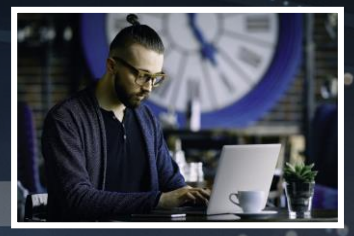
enhanced freedom

Flexible integration of open source software and apps

enhanced development

Connected coworking



enhanced convenience

Using your favorite programming tool

enhanced connectivity

Open interfaces and cloud integration

enhanced performance

Real-time execution across different programming languages

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Value Propositions Summary: Imagine…

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