

BY RAIMOND PIGAN AUTOMATING WITH PROFINET INDUSTRIAL COMMUNICATION BASED ON I

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What is PROFINET in industrial automation? Profinet (usually styled as PROFINET, as a portmanteau for Process Field Network) is an industry technical standard for data communication over Industrial Ethernet, designed for collecting data from, and controlling equipment in industrial systems, with a particular strength in delivering data under tight time ...

What is the difference between PROFINET and Industrial Ethernet? Key Takeaway. PROFINET and Industrial Ethernet are both used in industrial environments, but they serve different purposes. PROFINET is a specific industrial Ethernet protocol designed for real-time data exchange between devices and controllers. It offers precise timing and synchronization needed for automation tasks.

What is the PROFINET communication method? PROFINET is a communication protocol that lives at layer seven of the ISO/OSI model, the seven-layer model that generically describes the abstraction layers of a communication system. To ensure appropriate performance, PROFINET delivers data through the following communication channels: TCP/IP (or UDP/IP)

Which of the following technologies is PROFINET in industrial communication based on? PROFINET (Process Field Network) is a data transmission standard based on the Industrial Ethernet protocol.

Does PROFINET require an IP address? The correct information is that PROFINET does use TCP/IP and devices do have IP addresses! So, the short

answer to that oft-heard question: PROFINET uses TCP/IP and therefore needs an IP address.

What is the difference between PROFINET and Ethernet APL? Ethernet-APL is a physical layer that will also support OPC-UA or any other higher-level protocol. PROFINET over APL includes additional attributes required by process applications. These features derive from the requirements of outdoor installations and hazardous area protection.

Can I use normal Ethernet cable for PROFINET? Can PROFINET networks use standard Ethernet cables? You can employ standard Ethernet cables to build a PROFINET network. There is no need for specialized hardware or vendor-specific products. You can utilize standard copper or fiber optic Ethernet cables.

What are the advantages of PROFINET over Ethernet?

Is PROFINET a PLC? PROFINET is a mechanism to exchange data between controllers and devices. Controllers could be PLCs, DCSs, or PACs (Programmable Logic Controllers, Distributed Control Systems, or Programmable Automation Controllers.).

What are the disadvantages of PROFINET? Disadvantages of Profinet Communication Real-Time Communication Limitations: Although Profinet supports real-time communication, there can still be latency issues due to the nature of Ethernet. It may not be suitable for extremely time-critical applications.

How many devices can be connected to PROFINET? For PROFINET the S7-1200 CPU supports a maximum of 8 PROFINET IO devices and 128 submodules, whichever is reached first. PROFIBUS supports a maximum of 16 DP slaves on one DP master with a maximum of 256 submodules per DP slave. A maximum of 16 DP slaves and IO devices altogether is supported.

Does PROFINET require special switches? PROFINET Switch Minimum Requirements PROFINET does not require specialized switches. Ethernet switches on a PROFINET network only need to satisfy the minimum requirements of 100 Mbit/s IEEE 802.3u and full-duplex transmission. 100 Mbit/s IEEE 802.3u: Standard for fast Ethernet.

What is PROFINET real time protocol? Profinet RT is one of the protocols of the Profinet family. It is used for real time cyclic data transfer with Industrial Programmable Logic Controllers. Communications using PN-RT bypass the standard TCP/IP interface provided by Profinet to provide high speed communications of up to 12MBd.

What is PROFINET based on? PROFINET is a fieldbus system which is based on Ethernet.

What are the applications of PROFINET? It is a valuable technology for a wide range of industrial applications, including factory automation, process control, motion control, robotics, and more. Its versatility makes it a popular choice across different industries.

Can you ping a PROFINET device? Profinet IO can be pinged but cannot be detected in TIA Portal - 306576 - Industry Support Siemens.

What are the requirements for PROFINET network? You can buy unmanaged switches from many vendors that meet the minimum requirements for PROFINET: a 100 Mbps full-duplex Industrial Ethernet switch. Also, the Quality of Service (QoS) feature is recommended, since PROFINET frames are set automatically with a priority higher than TCP/IP frames.

What port is used by PROFINET?

Is PROFINET faster than Ethernet? Ethernet/IP vs Profinet – the Conclusion More importantly, they are backed by the two largest automation companies in the world today. There are a couple notable differences: Profinet is faster, and built on a proven Profibus standard (though it is NOT Profibus).

Does PROFINET use TCP? The long answer is pretty simple: PROFINET uses TCP/IP where it makes sense (that is, where the data is not time critical). For example: Configuration. Parameterization.

Is PROFINET the same as Modbus? Modbus TCP is a programmed communication which has to be set up in the PLC code via programming function, block, or tool. PROFINET is a configured communication, and only in special cases

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would require programming in code (e.g. isochronous motion control).

What is the PROFINET protocol for PLC? PROFINET is an Industrial Ethernet network protocol that allows controllers such as PLCs to communicate with sensors. Sensors are PROFINET IO devices with Conformance Class A.

What is PROFINET in Scada? PROFINET is typically used for real-time data communication between field devices and local controllers. Conversely, OPC UA is usually used to communicate between those controllers and higher-level historians, MES, and SCADA systems.

What is the difference between PROFINET and Modbus? Modbus has two data types for data representation: a coil (bit) or a register (word). PROFINET has many forms of data representation including bits, bytes, words, doublewords, real numbers, strings, and more.

What is the difference between TCP/IP and PROFINET? TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet. TCP/IP is also used as a communications protocol in a private computer network. Profinet is a protocol that is based on Ethernet.

What is meant by open economy, macroeconomics, and international finance? International Finance and Open-Economy Macroeconomics provides a complete theoretical, historical, and policy-focused account of the international financial system that covers all of the standard topics, such as foreign exchange markets, balance of payments accounting, macroeconomic policy in an open economy, exchange ...

What is open economy macroeconomics summary? An open economy is one that interacts freely with other economies around the world. An open economy interacts with other countries in two ways. It buys and sells goods and services in world product markets. It buys and sells capital assets in world financial markets.

What does open economy macroeconomics deals with? In open economy macroeconomics the focus is on the behavioural mechanisms that are specifically and most directly related to international trade in goods, services and financial

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assets.

The Calligraphic State: Textual Domination and History in Muslim Societies

What is the "Calligraphic State"?

The "Calligraphic State" is a concept coined by historian Marshall Hodgson to describe Muslim societies in which the written word played a central role in shaping political, social, and religious life. In these societies, calligraphy was not merely an art form but also a symbol of power and authority.

How Did the Calligraphic State Emerge in Muslim Societies?

The rise of the Calligraphic State in Muslim societies was closely tied to the importance placed on religious texts in Islam. The Quran was seen as the ultimate authority on all matters of faith and practice, and its written form was considered sacred. As a result, literacy and the ability to read and interpret religious texts became highly valued.

How Did the Calligraphic State Function?

In Calligraphic States, written texts played a crucial role in all aspects of society. Laws, decrees, and administrative documents were written and circulated in a calligraphic script, and these texts were used to assert power and control. The ability to produce and interpret these texts became a source of privilege and status for the literate elite.

What Were the Comparative Features of Calligraphic States in Muslim Societies?

While Calligraphic States emerged in various Muslim societies, they exhibited certain common characteristics. These included:

- A high level of literacy and emphasis on education
- A bureaucracy based on written communication
- A centralized religious authority that used written texts to propagate its doctrines

What Was the Impact of the Calligraphic State on Muslim Societies?

The Calligraphic State had a profound impact on the development of Muslim societies. It fostered a culture of literacy and intellectualism, promoting the preservation and transmission of knowledge. However, it also reinforced social hierarchies and created a gap between the literate elite and the masses, who often remained largely illiterate.

The Blockchain Revolution: Transforming E-commerce and E-Government

What is Blockchain?

Blockchain is a decentralized, secure digital ledger that records transactions across a network of computers. Each block in the chain contains a record of multiple transactions, which are linked together through cryptographic proofs.

How is Blockchain Impacting E-commerce?

Blockchain provides several benefits for e-commerce, including:

- **Enhanced Security:** Blockchain's decentralized nature makes it extremely difficult to hack or manipulate, protecting customer data and transactions.
- **Increased Transparency:** Blockchain records all transactions publicly, providing a verifiable history of purchases and payments.
- **Improved Supply Chain Management:** Blockchain can track goods from production to delivery, ensuring authenticity and transparency.

How is Blockchain Transforming E-Government?

Blockchain is also revolutionizing e-government by enabling:

- **Secure and Transparent Elections:** Blockchain can provide voting systems with increased security and transparency, preventing voter fraud and ensuring the accuracy of election results.
- **Efficient Public Services:** Blockchain can streamline government processes such as tax collection, land registry, and healthcare data

management, reducing bureaucracy and improving efficiency.
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- **Enhanced Citizen Empowerment:** Blockchain can empower citizens by giving them access to their own data and enabling them to participate in decision-making processes.

What are the Challenges to Blockchain Adoption?

While blockchain has significant potential, there are still some challenges to its widespread adoption, including:

- **Scalability and Processing Costs:** Blockchain networks can be slow and expensive to process transactions.
- **Regulatory Uncertainty:** The regulatory landscape for blockchain is still evolving, which can create uncertainty for businesses and governments.
- **Lack of Interoperability:** Different blockchain platforms use different protocols, making it difficult to integrate them into existing systems.

Conclusion

Blockchain technology holds immense promise for transforming e-commerce and e-government. Its ability to enhance security, transparency, and efficiency has the potential to revolutionize the way we conduct business and interact with government. However, addressing the challenges to blockchain adoption is crucial to unlock its full potential.

[*by hendrik van den berg international finance and open economy
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