



Setting the Standard for Automation™

ISA100

Developing a Reliable and Universal Family of Wireless Standards

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Standards
Certification
Education & Training
Publishing
Conferences & Exhibits

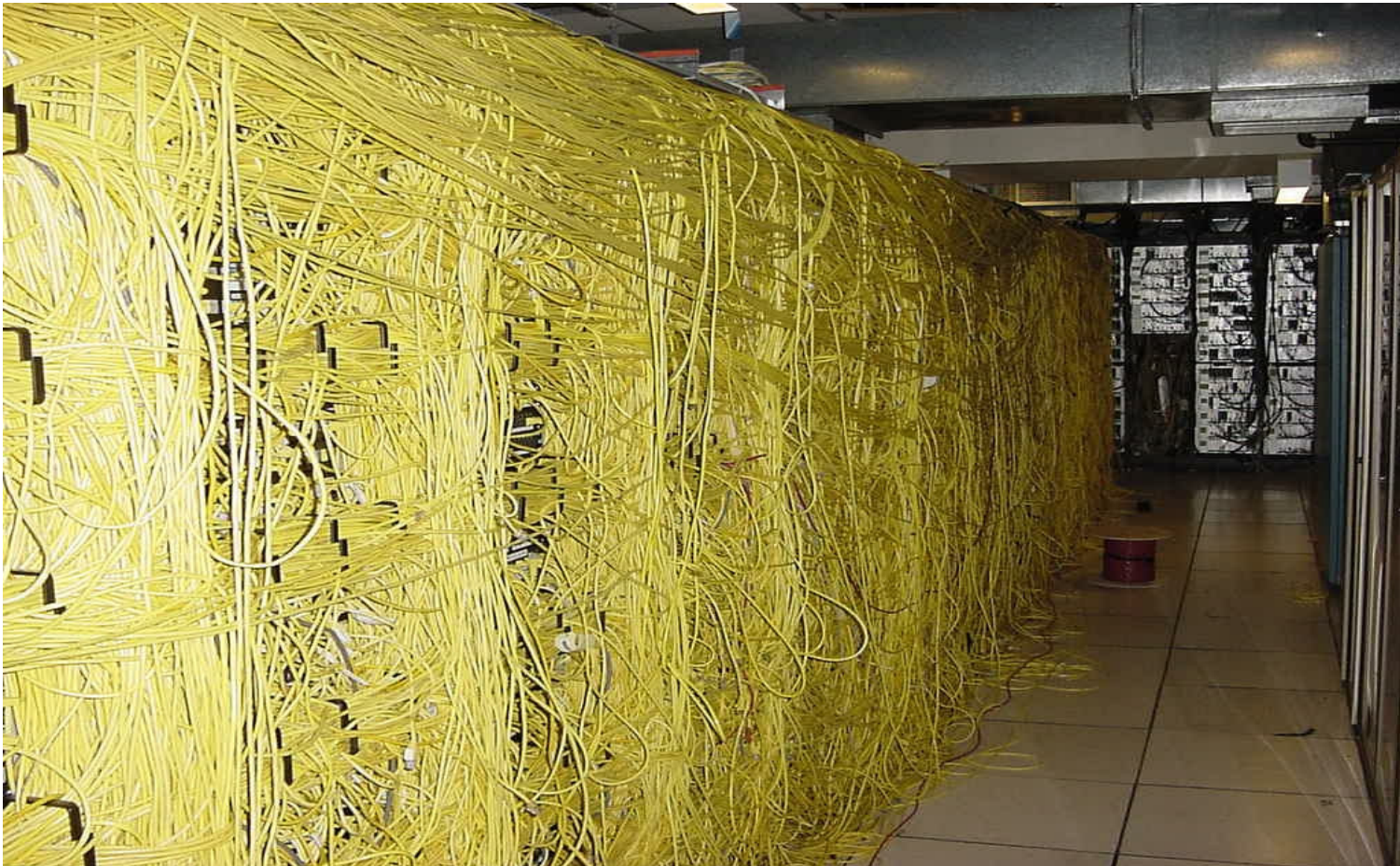


ISA100 Wireless Systems for Industrial Automation

- The “BIG” Question – Why do we need a global standard for wireless?
- What did standards do for me in the wired world?
- Will a global standard hamper new development?
- How can you cover every type of environment in one global standard?
- Will it meet the ever changing environment of security and availability?

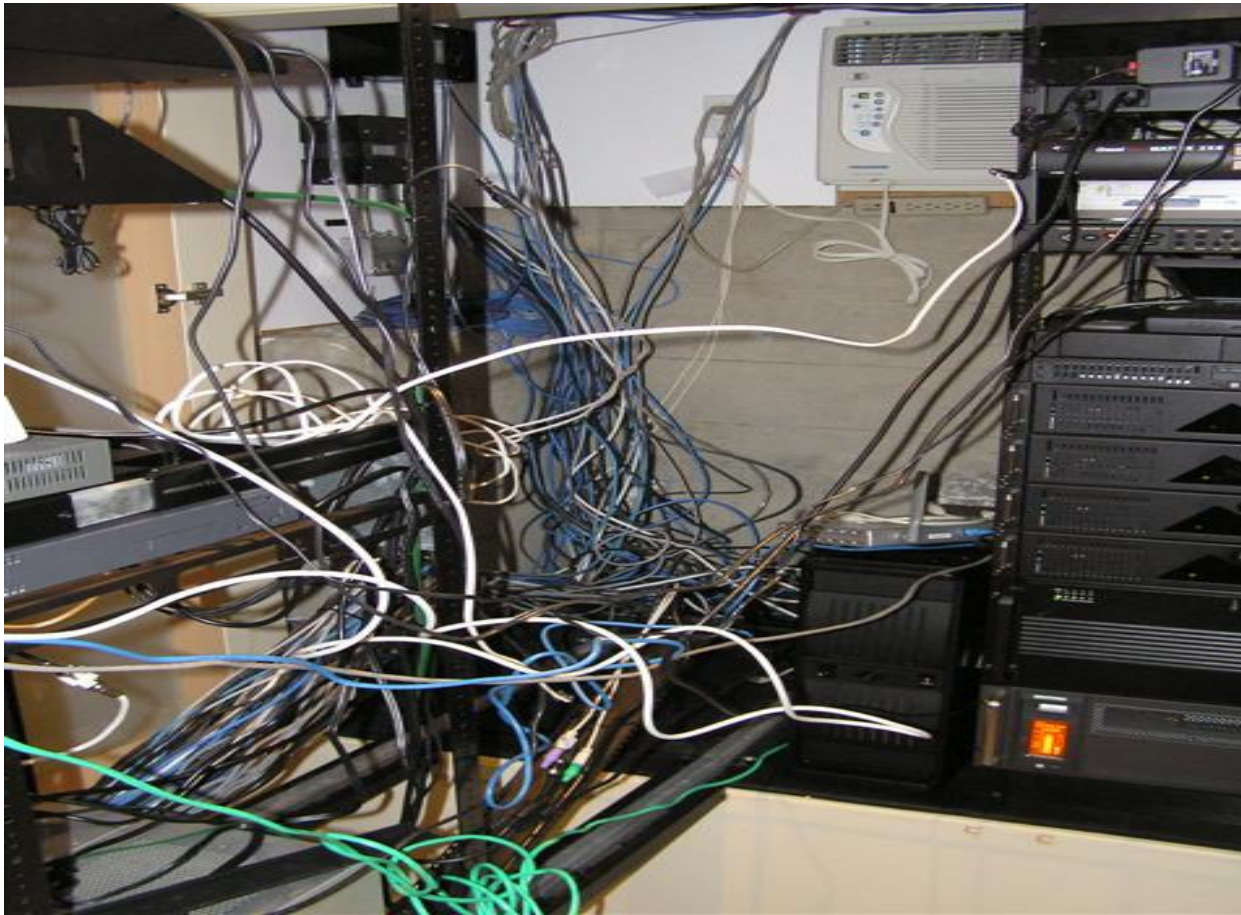
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- I always know where my signals are going?



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- ...and routing is never an issue?



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- There is always an overlaying solution to the problem?



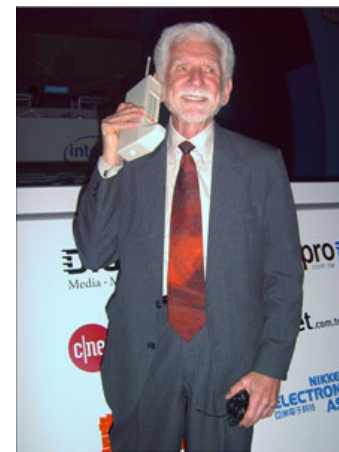
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- Somebody will invent an adapter



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- **Wireless is not new, but it has developed in many different paths and at a pace equal to Moore's Law.**
- 1945 – First public mobile phone (Bell Labs)
- 1971 - First wireless LAN (F.R. Gfeller and U. Bapst paper in IEEE)
- 1973 - First cellular phone system (Motorola)
- 1985 - Commercial cellular service (Japan, NTT)
- 1990's - era of PDA's and laptops
- 1997 – IEEE 802.11 standard





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- **IEEE 802.11 Standards**
- 802.11a – 5GHz – ratified in 1999
- 802.11b – 11 Mbps, 2.4 GHz, ratified in 1999
- 802.11d – World Mode and additional regulatory domains – ratified
- 802.11e – Quality of Service – voice, video
- 802.11f – Inter-Access Point Protocol – interoperability among different vendors
- 802.11g – Higher Data rate (>20 Mbps) 2.4GHz – approved in July 2003
- 802.11h – Dynamic Frequency Selection and Transmit Power Control mechanisms
- 802.11i – Authentication and security (draft Jan 2004)
- 802.11n - >54 Mbps (draft)

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- IEEE 802.15.1 Bluetooth – 2.4GHz, lwPAN, range of about 30 feet, focus on personal space networking of peripherals
- IEEE 802.16 – WiMax (Draft) last mile backhaul networks, designed to implement WiFi in municipalities
- IEEE 802.15.4/Zigbee
 - 802.15.4 describes the PHY and MAC layers
 - Zigbee standard defines the higher level network and App layer plus the security services

Without a common and scalable wireless management infrastructure, most industrial plants will find it difficult, or even impossible, to deploy, manage, and maintain more than one or two wireless applications.



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ISA100 – WHAT WE ARE

- ISA100 is a **family** of standards that will cover many different applications and business areas
- ISA100 will be developed in an ANSI-accredited open process by Industry leaders
- The standards development are highly influenced by users
- It will define a complete architecture and be an open standard that will foster new development
- It will level the playing field and give other developing protocols a platform to access many applications and systems (WiHART, Zigbee, Foundation Fieldbus, Profibus, ...)



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- ISA100.11a – the first standard (4th QTR 2008)
 - provide reliable and secure operation for non-critical monitoring, alerting, supervisory control, open loop control, and closed loop control applications.
 - Addresses wireless sensor networks in the operating plant environment
- More to come
 - ISA100.21 – People and Asset Tracking and Identification
 - New Study Groups Forming
 - Discrete Manufacturing
 - Trustworthy Wireless (alignment with ISA99)
 - Transmission and Distribution

“The future of wireless in process automation could well turn out to be a battle between those who use it ‘incrementally’ – in effect to replace copper in conventional applications – and those who use it imaginatively to reshape the applications themselves.” Andrew Bond – Industrial Automation Insiders



Overview

ISA100: Wireless Systems for Industrial Automation

Developing a Reliable, Universal Family of Wireless Standards

- **Backed by ISA Expertise, Heritage and History**
 - Nearly 30,000 Members with 140 Standards Committees using an Open Standards Development Process **Accredited by ANSI**
 - Estimated at **~1 Billion Products** Using ISA Standards Technologies
 - ISA 100 **Designed by Experts** in Wireless, Security, and Instrumentation Technologies with Direct End Users Involvement on Committee
- **Family of Standards: One-Stop Standardization**
 - Designed to **Accommodate all your Plant Needs**
 - Areas of Coverage Identified to Date; Process Automation (Process Focus), Factory Automation (Discrete Focus), Transmission and Distribution (Long Distance Focus), RFID (Industrial Tagging Focus)
- **Universality: The Power of One**
 - Allows **Deployment of a Single, Integrated Wireless Network**
 - Bring Simplicity to your Work with:
 - One Technology to Learn, Maintain and Operate
 - One Security System to Manage
 - One Set of Infrastructures
- **Co-Existence: Providing Peace of Mind**
 - Designed with Co-existence features
 - **Ensures Best Possible Performance**