Process **Fi**eld **Bus**

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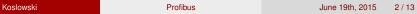June 19th, 2015

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1 Introduction

Timeline

- Master development plan "fieldbus" created 1986 in Germany
- 21 companies, including Siemens, involved
- First promoted in 1989 by BMBF *(Bundesministerium für Bildung und Forschung)*
- Goal: implement a bit-serial field bus for factory and process automation
  - send one data bit at a time
  - single wire
  - opposed to bit-parallel word architectures
- Published openly as part of IEC 61158 *Digital data communication for measurement and control - Fieldbus for use in industrial control systems*

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System Structure - Introduction

- Profibus is a multi-master system
- Operation of multiple systems over a single bus
- Three protocols available
    - FMS *(field-bus message specification)*
    - DP *(decentralized peripheral)*
    - PA *(process automation)*
- Devices are categorized in different types
    - Masters
    - Slaves

System Structure - Layer

Layer	Name	Content
Layer 8	User Layer	Profiles
Layer 7	Application Layer	DP / FMS protocol
Layer 2	Data Link Layer	FDL protocol
Layer 1	Physical Layer	Transmission Technology

Profibus following the OSI reference model[1]

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Protocol: FMS

- FMS

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Protocol: DP

- DP

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Protocol: PA

- PA

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Device Type: Master

Masters

- described as *active stations*
- control the data traffic on the bus
- when having the *bus access token*:
  send messages without external requests

Device Type: Master

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Device Type: Slave

- foo

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Bus Access

- via bus access token

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References I

📓 Max Felser
Profibus Manual: A collection of information explaining PROFIBUS networks
http://www.profibus.felser.ch