

P-NET

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Remote Access to P-NET Systems

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Overview

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What's "Remote Access to P-NET" ?

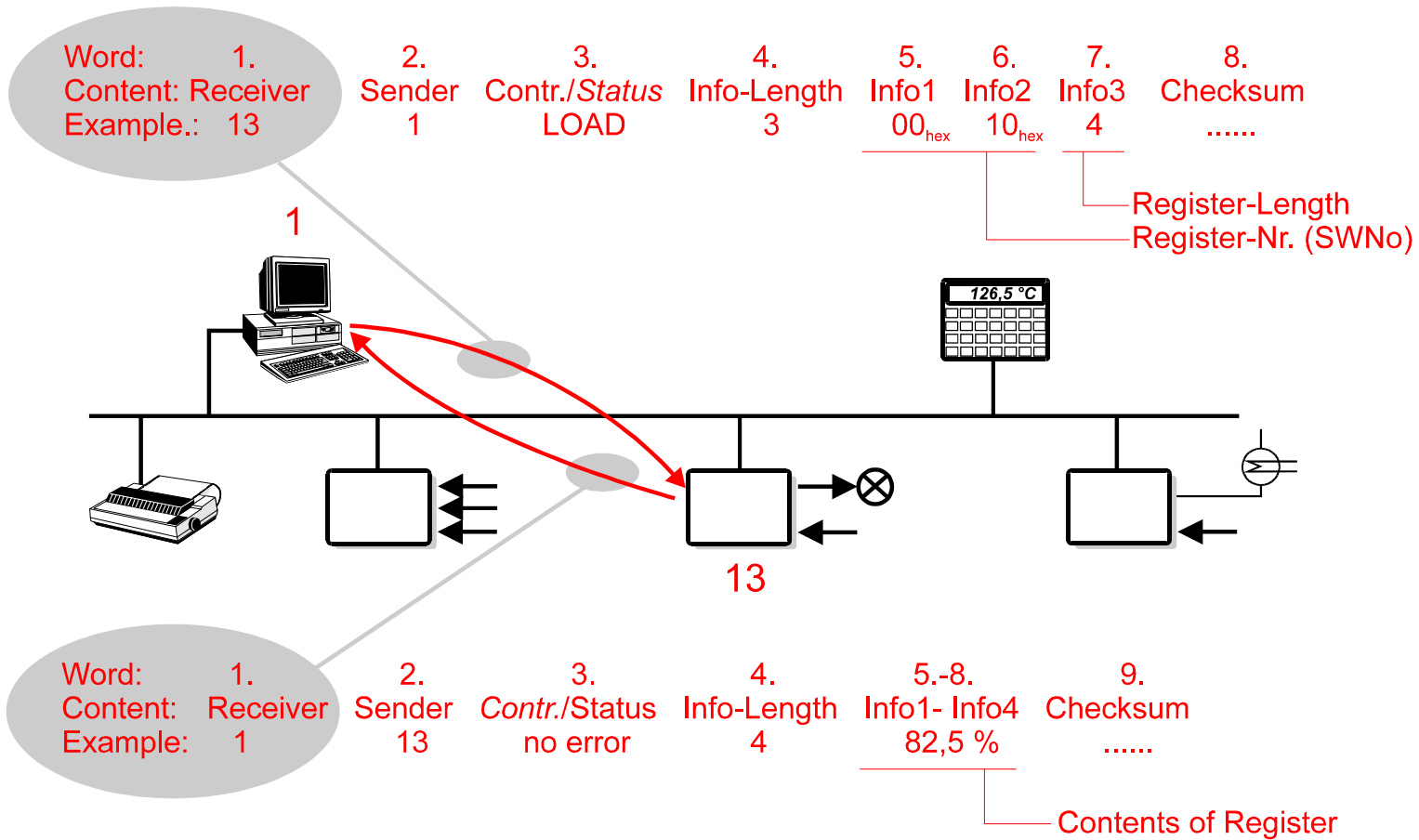
Access by a host system (typically PC) which is not coupled directly to the relevant P-NET segment as P-NET master.

The host system can be located

- within another P-NET segment (P-NET multinet)
- within another fieldbus system (e.g. Profibus, CAN, WorldFIP, DeviceNet)
- within a LAN system (e.g. Ethernet)
- on a site with ISDN, Internet or GSM access
- or within a system being a mix of those

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Basis: Addressing Concept of P-NET



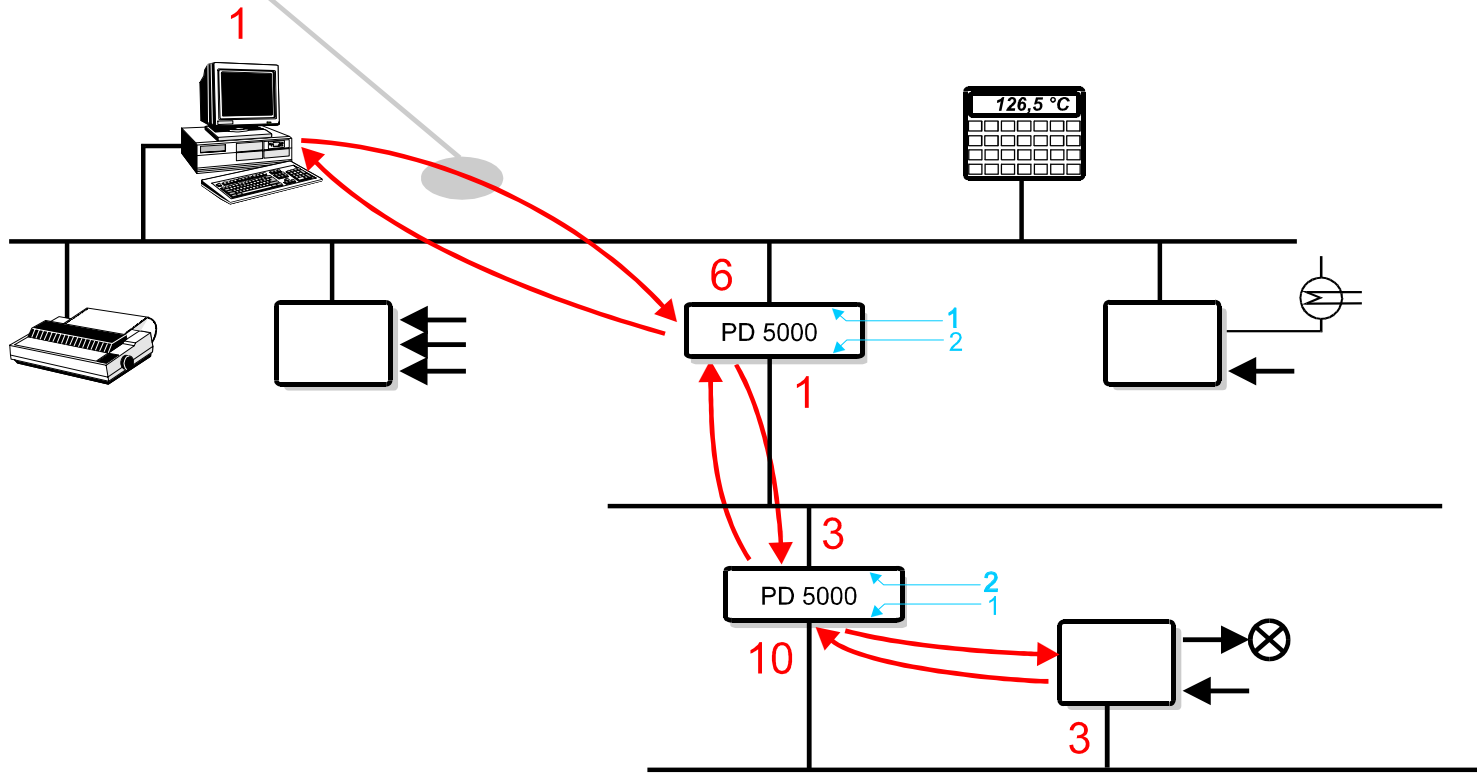
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P-NET Multinet

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Word: 1.
 Content: Receiver
 Example: 6 2 3 1 3

| | | | | | | |
|--------|---------------|-------------|-------------------|-------------------|-------|----------|
| 6. | 7. | 8. | 9. | 10. | 11. | 12. |
| Sender | Contr./Status | Info-Length | Info1 | Info2 | Info3 | Checksum |
| 1 | LOAD | 3 | 00 _{hex} | 10 _{hex} | 4 | |

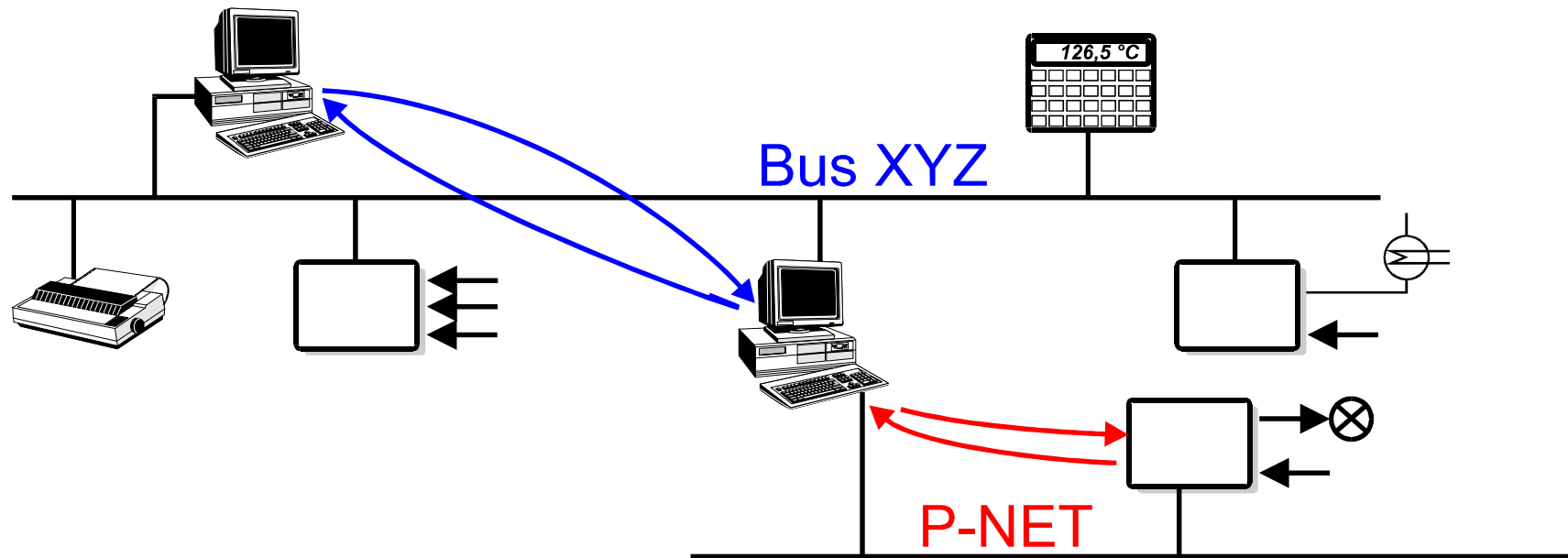


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Access via Other Fieldbus

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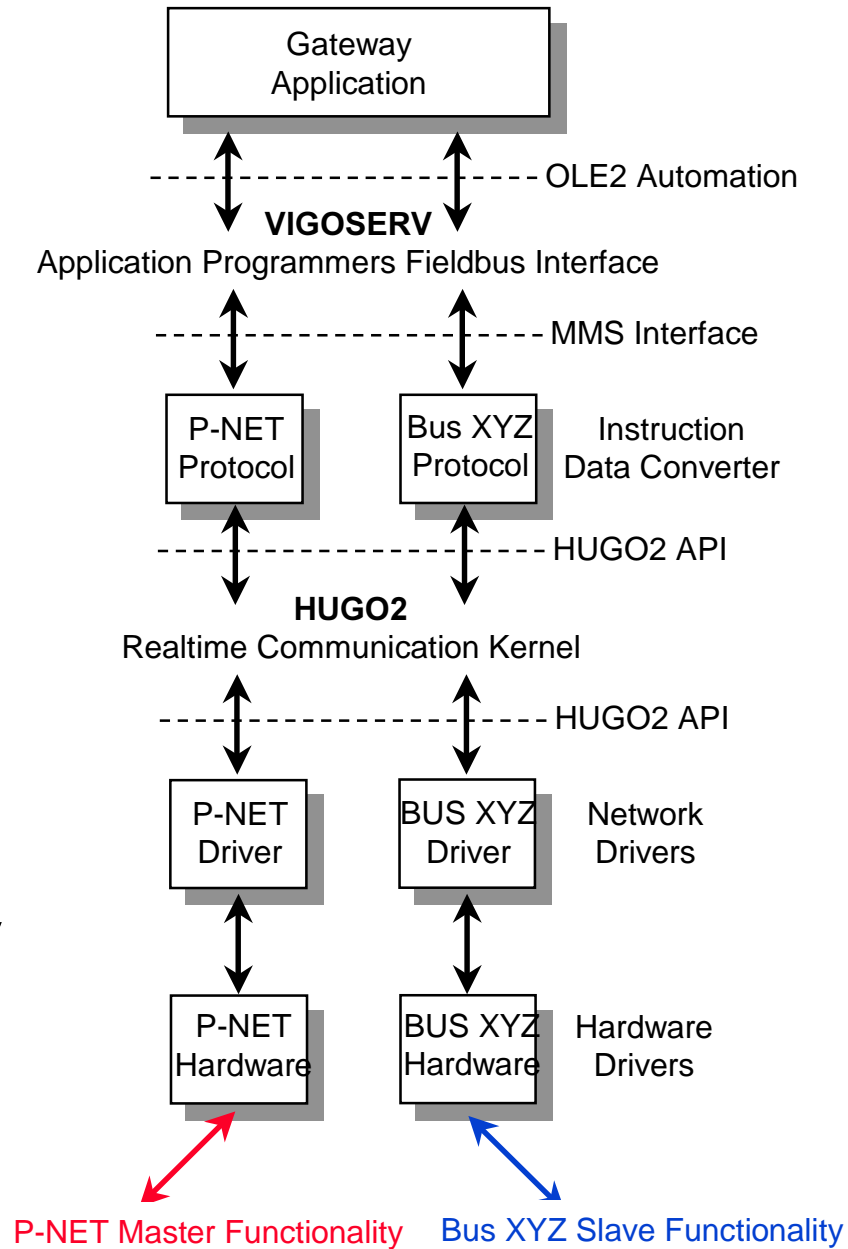
A gateway transferring on layer 7 (application layer) is needed ...



Typically this is a PC (office PC, industrial PC, black box PC) with two fieldbus cards.

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In order to optimize realtime behaviour VIGO can be used. Because of different application layers a simple gateway application program must be written. It may contain additional functions like temporary storage of P-NET process data.



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Very important is the right mapping between the specific addressing structures used in P-NET and in the other fieldbus.

E.g. DeviceNet - P-NET gateway:

DeviceNet

<object for measurement values>

<instance 0, 1, 2, ...>

<attribute 1, 2, 3, ...>

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<one P-NET device>

<channel 0, 1, 2, ... of the P-NET device>

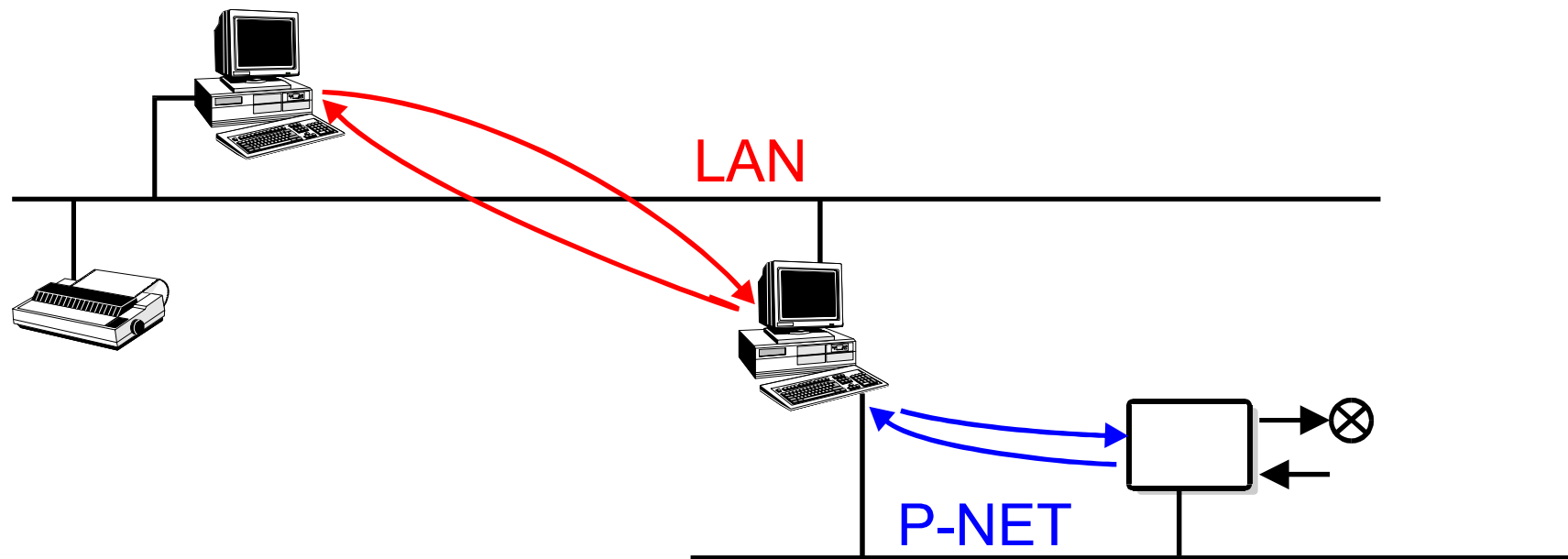
<process value of one P-NET channel = reg. X0>

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Access via LAN

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Again, a PC based solution is the alternative with the smallest development time.



The PC has to be equipped with one P-NET card and with one LAN card.

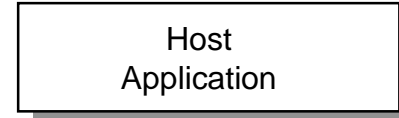
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LANs (and WANs) are only transporting amounts of data. Therefore the realtime kernel HUGO2 of VIGO can be used to built very fast LAN - P-NET- bridges.

Whereas within the gateway only HUGO2 without any additional application program is needed in the host PC one complete "VIGO stack" including the P-NET Instruction Data Converter resides.

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Host site

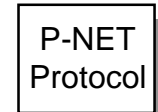


----- OLE2 Automation

VIGOSERV

Application Programmers Fieldbus Interface

----- MMS Interface



Instruction Data Converter

----- HUGO2 API

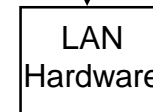
HUGO2

Realtime Communication Kernel

----- HUGO2 API



Network Drivers



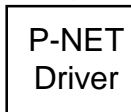
Hardware Drivers

P-NET site

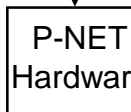
HUGO2

Realtime Communication Kernel

----- HUGO2 API



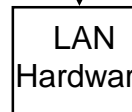
Network Drivers



Hardware Drivers



Network Drivers



Hardware Drivers

P-NET Master Functionality

LAN "Slave" Functionality

LAN "Master" Functionality

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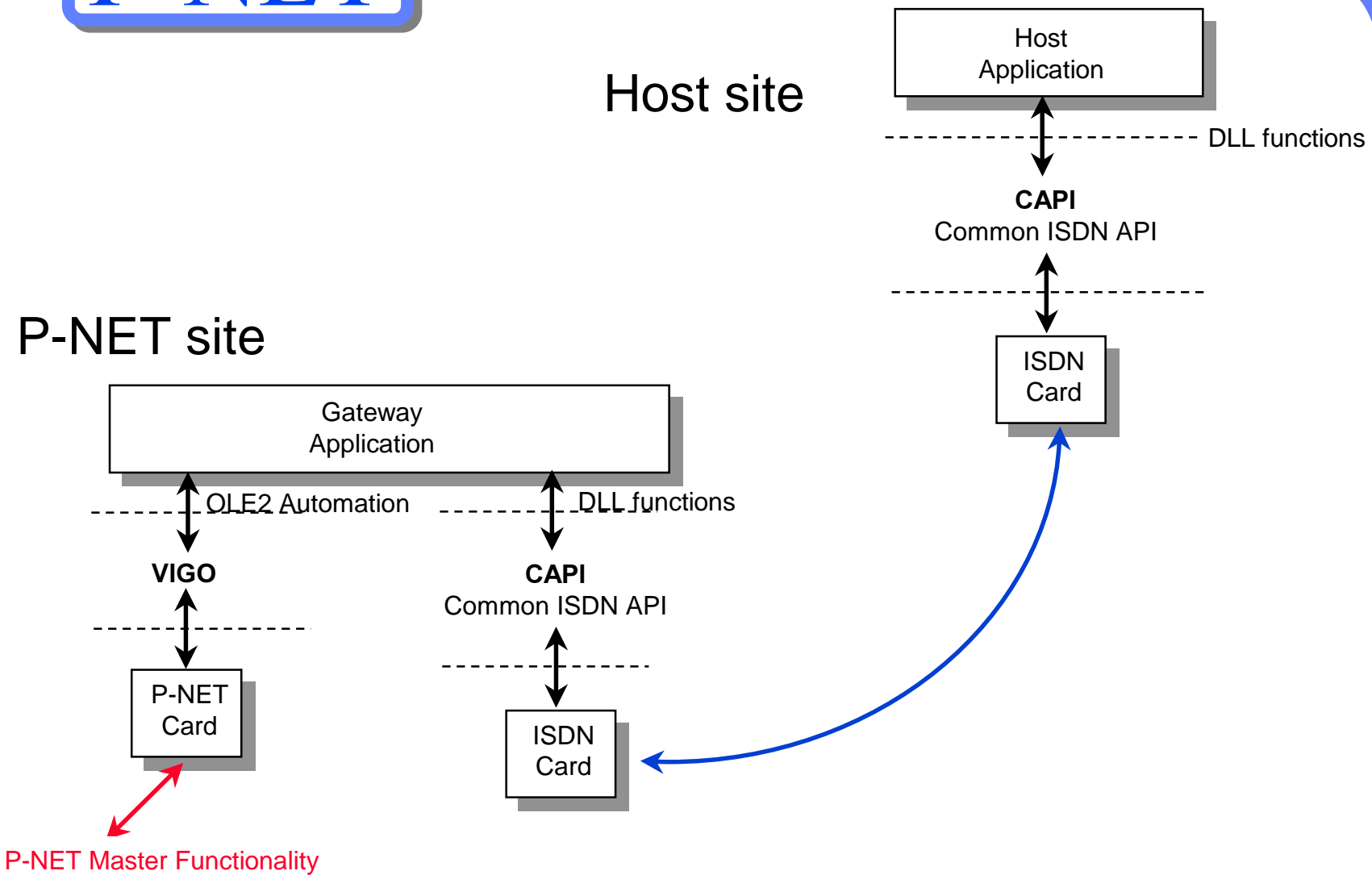
Access via ISDN

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Possibility I: PC to PC

- Host PC with ISDN card and CAPI interface
- Remote PC with
 - ISDN card and CAPI
 - P-NET card and VIGO

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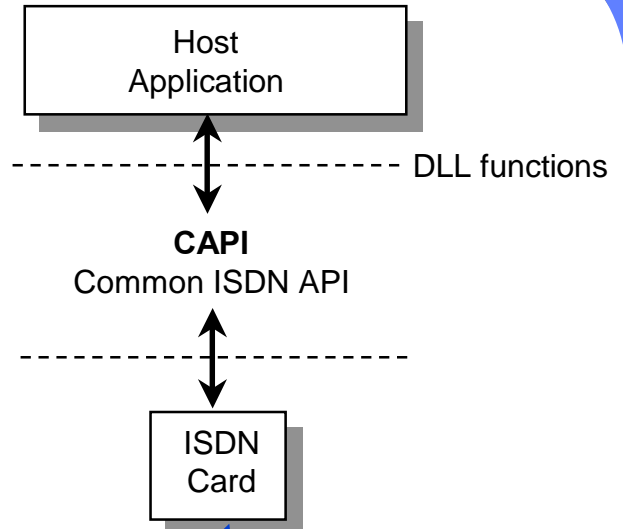
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Possibility II: PC to Terminal Adapter

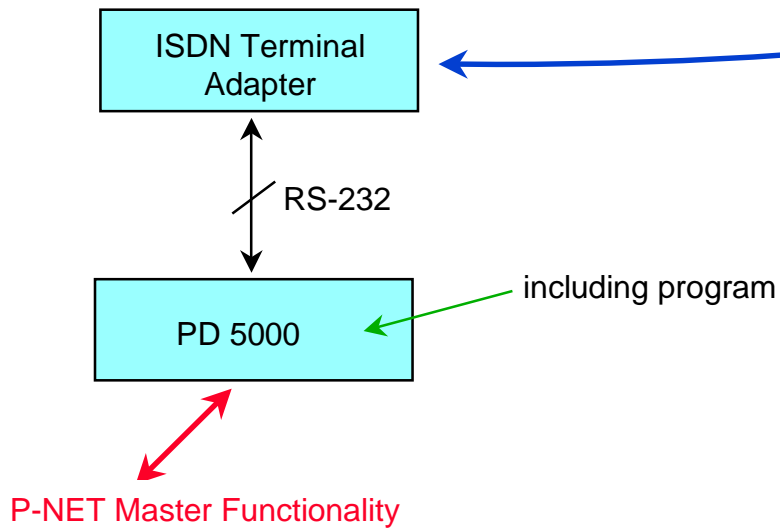
- Host PC with ISDN card and CAPI interface
(or with terminal adapter, too)
- P-NET site with
 - ISDN terminal adapter
 - PD 5000

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Host site



P-NET site



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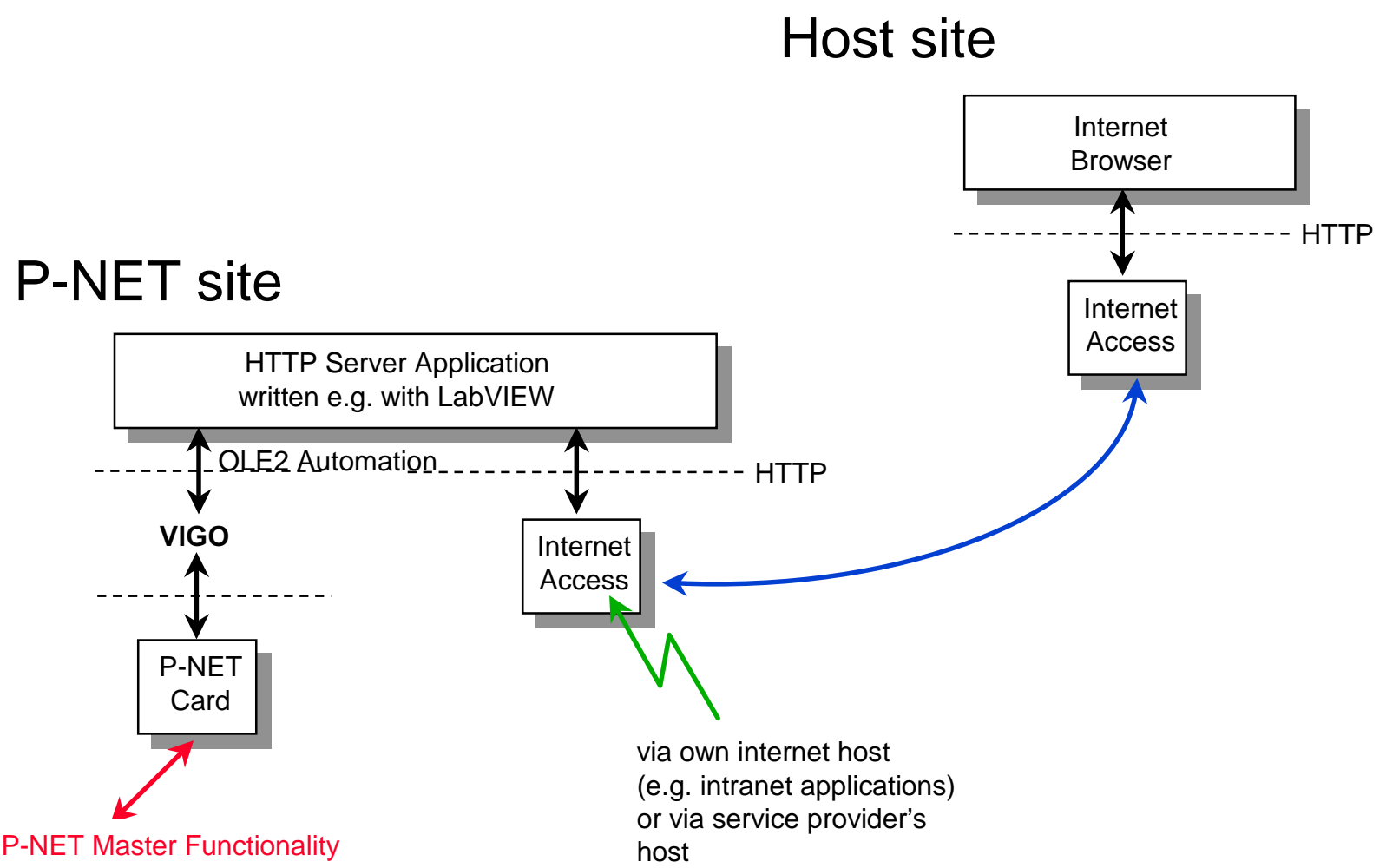
Access via Internet

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Example: Building HTTP Server for P-NET with LabVIEW

- Host PC: Internet Browser like Netscape, Microsoft Explorer etc. and Internet access
- Remote PC:
 - P-NET card with VIGO
 - http server program written with LabVIEW including Internet Developers Toolkit

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Functionality of HTTP Server:

- can handle multiple connections
- transfer of “virtual instruments” by HTML format
(static snapshot or animated with specified update rates)
- control access to “virtual instruments” by mouse clicks

LabVIEW elements to be used:

- VIs (= LabVIEW functions)

The server application is a CGI (Common Gateway Interface) program and supports security mechanism like login passwords.

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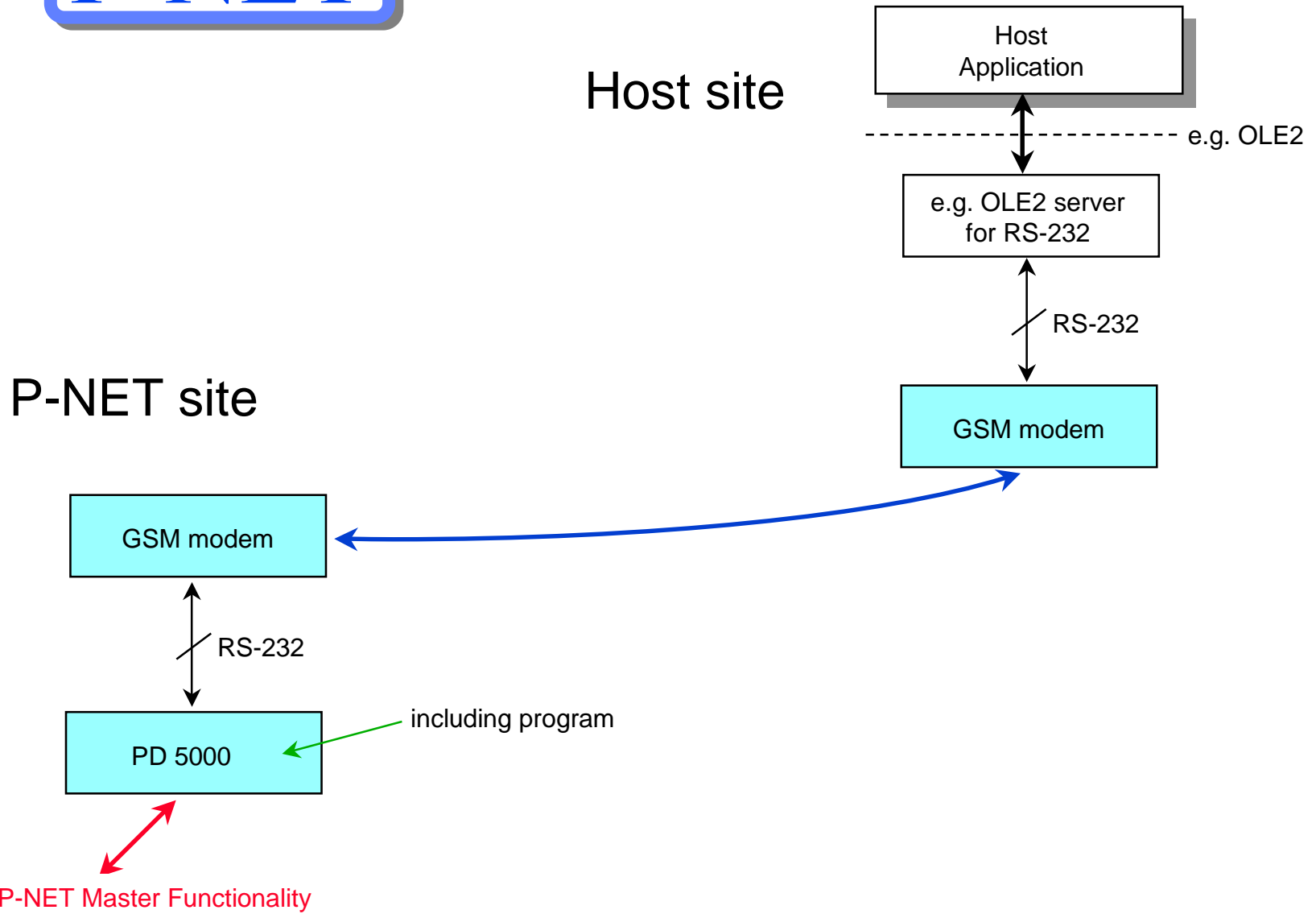
Access via GSM

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Global structure:

- Host PC with GSM modem via RS-232 and monitoring program
- Remote PC with GSM modem coupled via PD 5000

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The End

In case of interest please contact the German Local Society of the International P-NET User Organization at b-plus Meßsysteme GmbH, Deggendorf:

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