

*MID-Software / WELMEC WG7*

# ***Report on the WELMEC Draft Guide 7.2 Software Requirements***

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*Meeting of EMATEM  
Berlin, 10-12 May 2005*

*Ulrich Grottker, PTB 8.53*

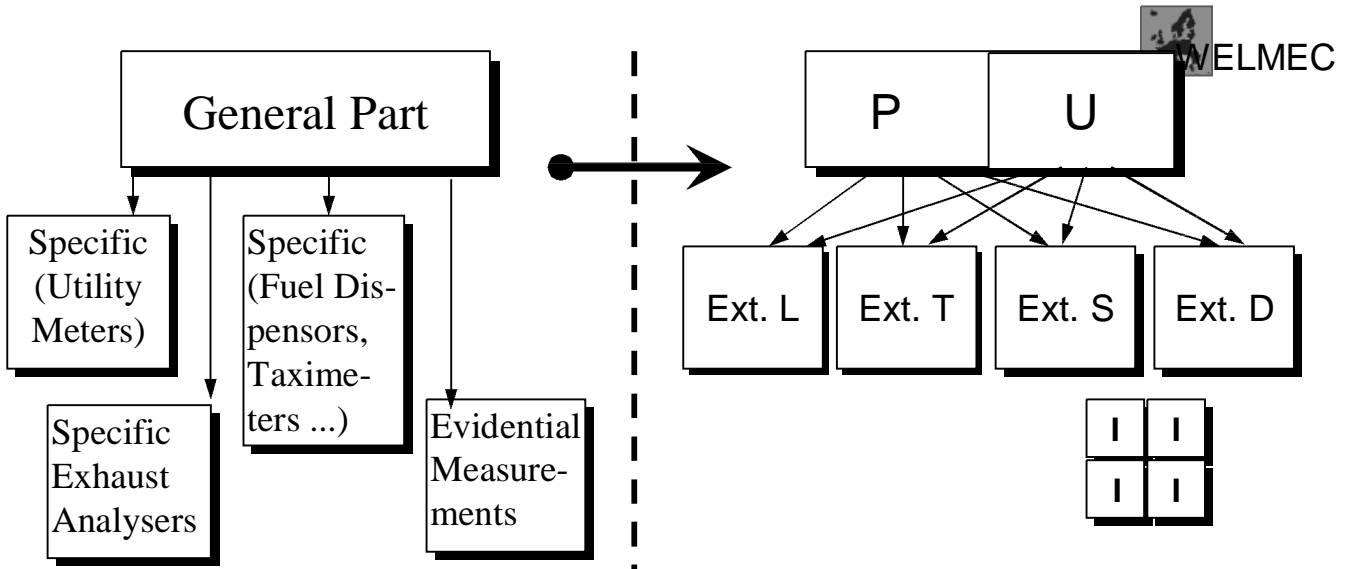
## *Objectives*

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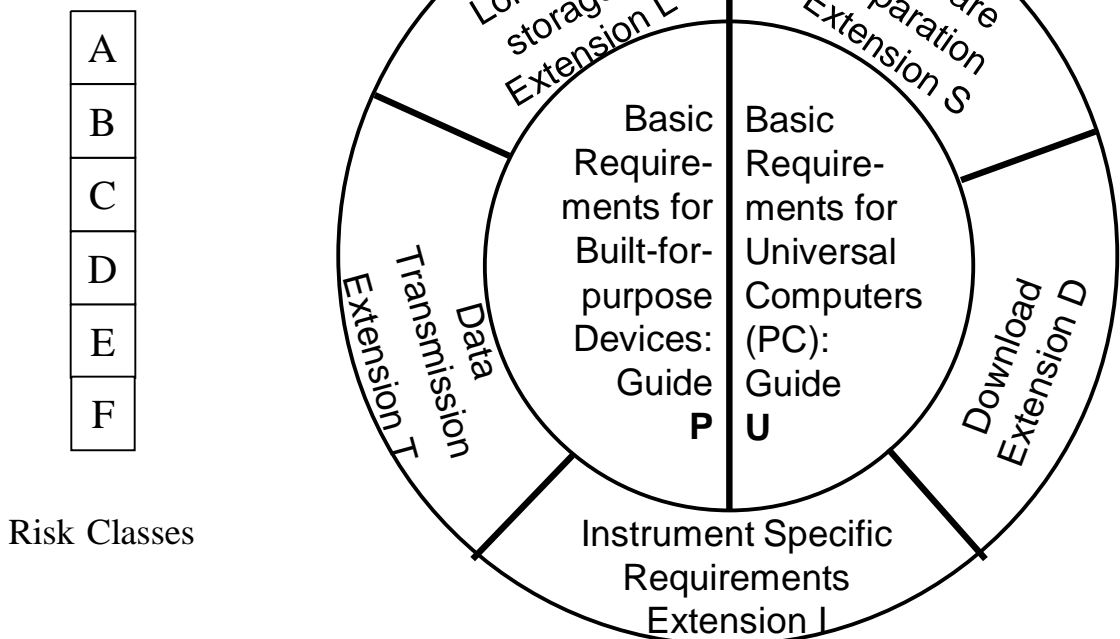
- **Objectives of the EU-Network MID-Software / WELMEC WG7**
  - Support implementation of MID
  - Harmonisation of software requirements
  - Give guidance for manufacturers and Notified Bodies

***à Produce a guide with Software Requirements***



- **Result**
  - More general guides
  - Current state of MID covered
  - Future concepts covered

- Structure of the Guide



# Definition of Risk Classes



**Conformity**  
 low: functions identical  
 middle: selected parts of the software identical  
 high: whole software identical

Software Protection  
 middle  
 high

		Conformity			
		low	middle	high	
		A	-	-	
middle		B	C		
high		-	D	E	F

**Protection against manipulation**  
 low: no specific protection means  
 middle: means against use of wide-spread simple tools (text editors, etc.)  
 high: state of the art in e-commerce.

Examination level

low
middle
high

## Risk Classes A - F

**Examination**  
 low: functional test of the instrument  
 middle: examination based on functional description of the software (documentation + selected practical tests)  
 high: examination based on the source code

# Requirements Part P



- Devices designed for the measuring purpose
- IT components only realise functions for measuring, indication and supporting tasks
- No option of loading software, programming or starting of other software when instrument is in use

### Built-for-Purpose Computer

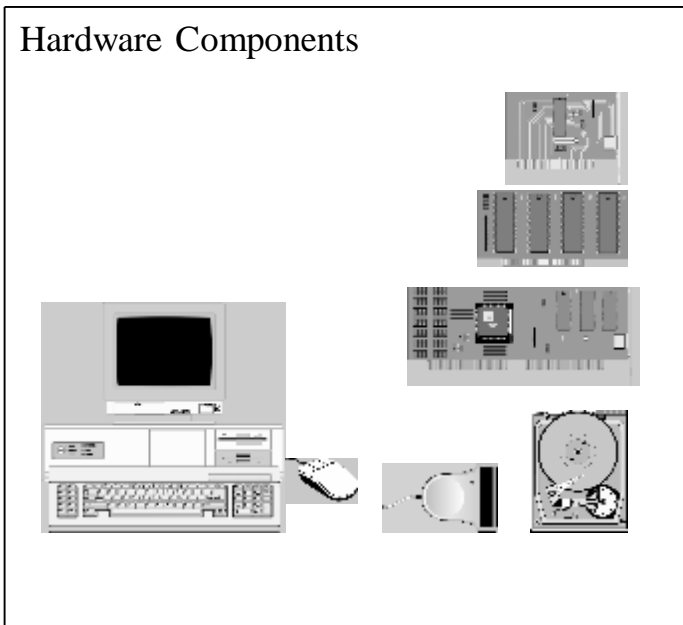
- P1 - Documentation
- P2 - Software identification
- P3 - Influence via user interfaces
- P4 - Influence via communication interface
- P5 - Protection against accidental or unintentional changes
- P6 - Program protection against intentional changes
- P7 - Parameter protection



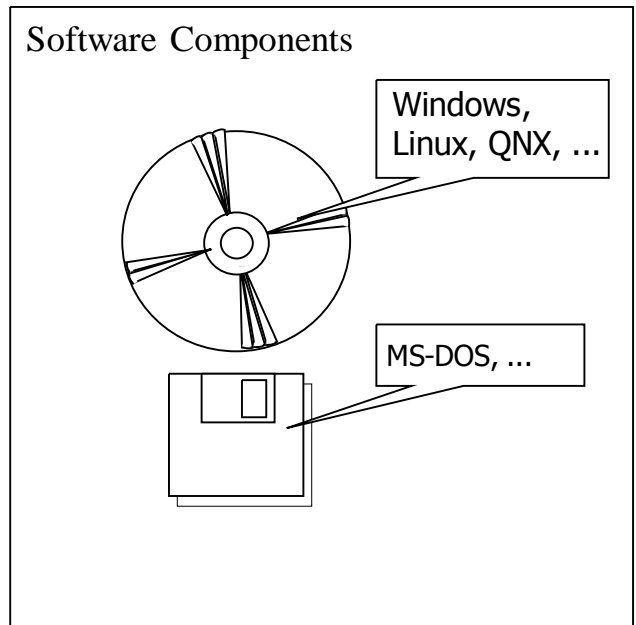
- Development purpose
- IT components only realise functions for measuring, indication and supporting tasks
- No option of loading software, programming or starting of other software when instrument is in use

### Parts of a Universal Computer

#### Hardware Components



#### Software Components

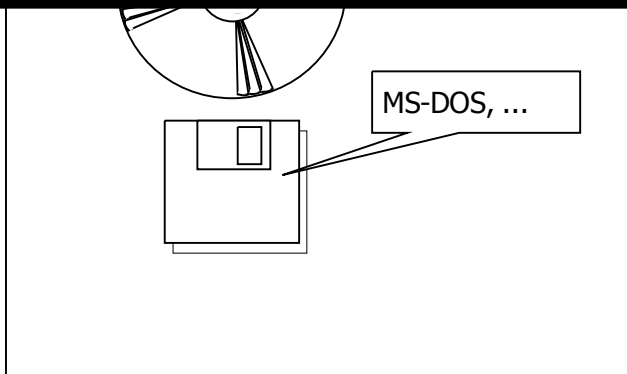
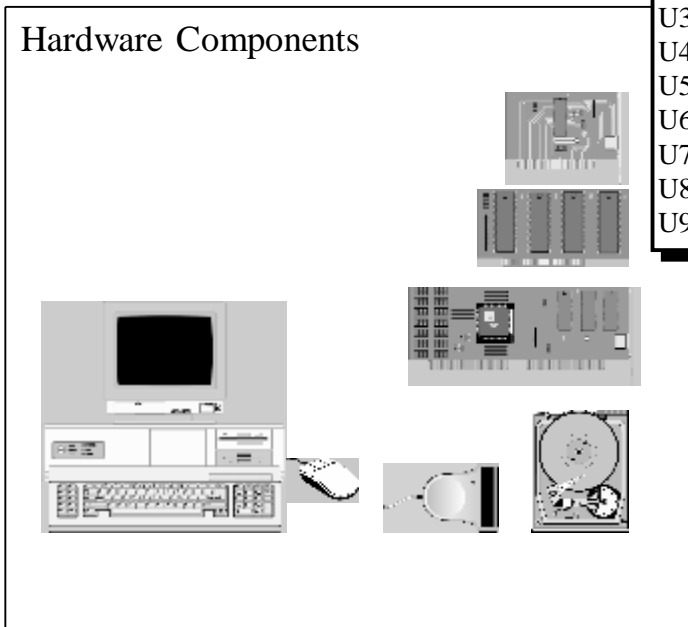


Parts of a Universal Computer

**Universal Computer**

- U1 - Documentation
- U2 - Software identification
- U3 - Influence via user interfaces
- U4 - Influence via Electronic interface
- U5 - Protection against accidental or unintentional changes
- U6 - Protection against intentional changes
- U7 - Parameter protection
- U8 - Software authenticity and presentation of results
- U9 - Influence of other software

Hardware Components

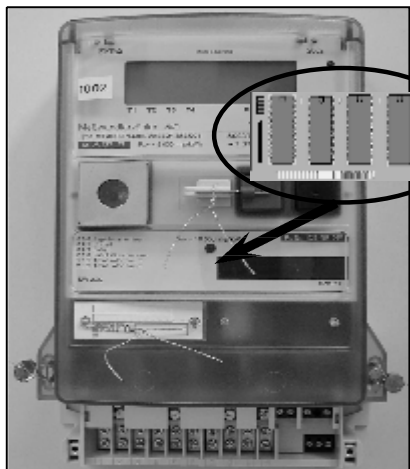


Requirements, Extension L

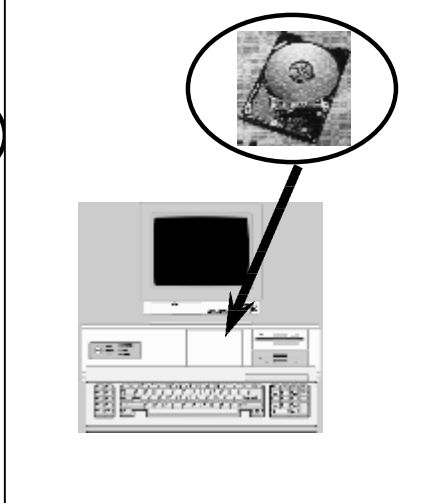
Long-term storages



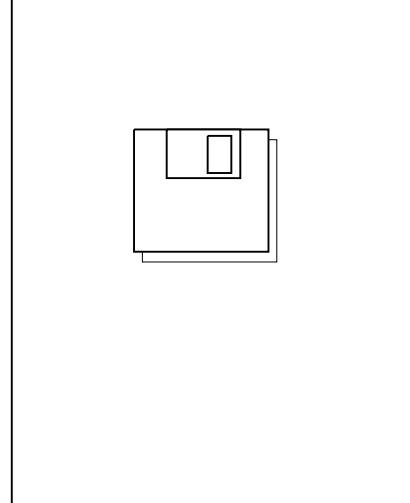
Integrated storage



Storages in universal computers



Removable or remote storage

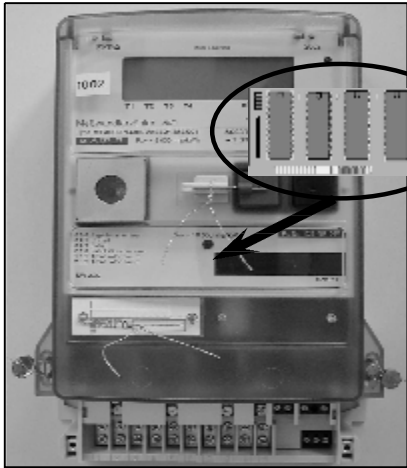


Long-term storages

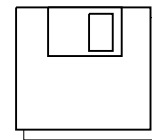
**Long-term Storage**

- L1 - Completeness of stored data
- L2 - Protection against accidental or unintentional changes
- L3 - Integrity of data
- L4 - Authenticity of stored data
- L5 - Confidentiality of keys
- L6 - Retrieval of stored data
- L7 - Automatic storing
- L8 - Storage capacity and continuity

Integrated storage



Storages  
compute

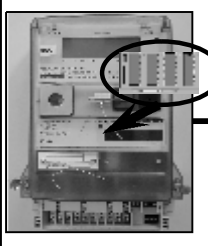


*Purpose of long-term storage*

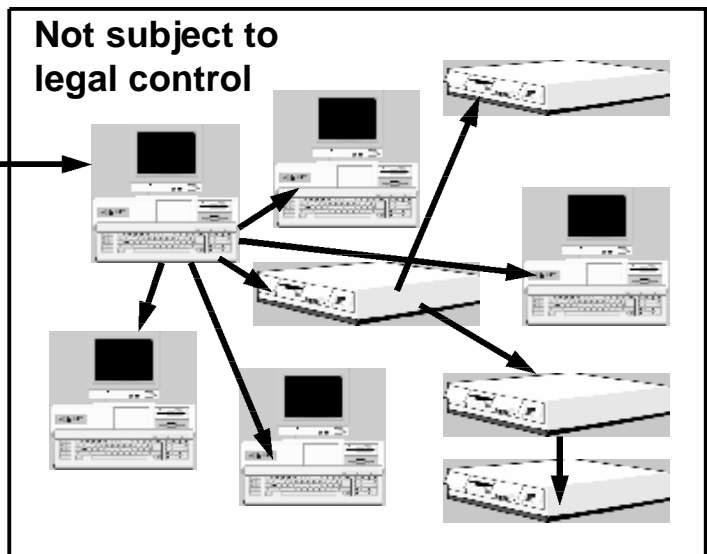
- System configuration



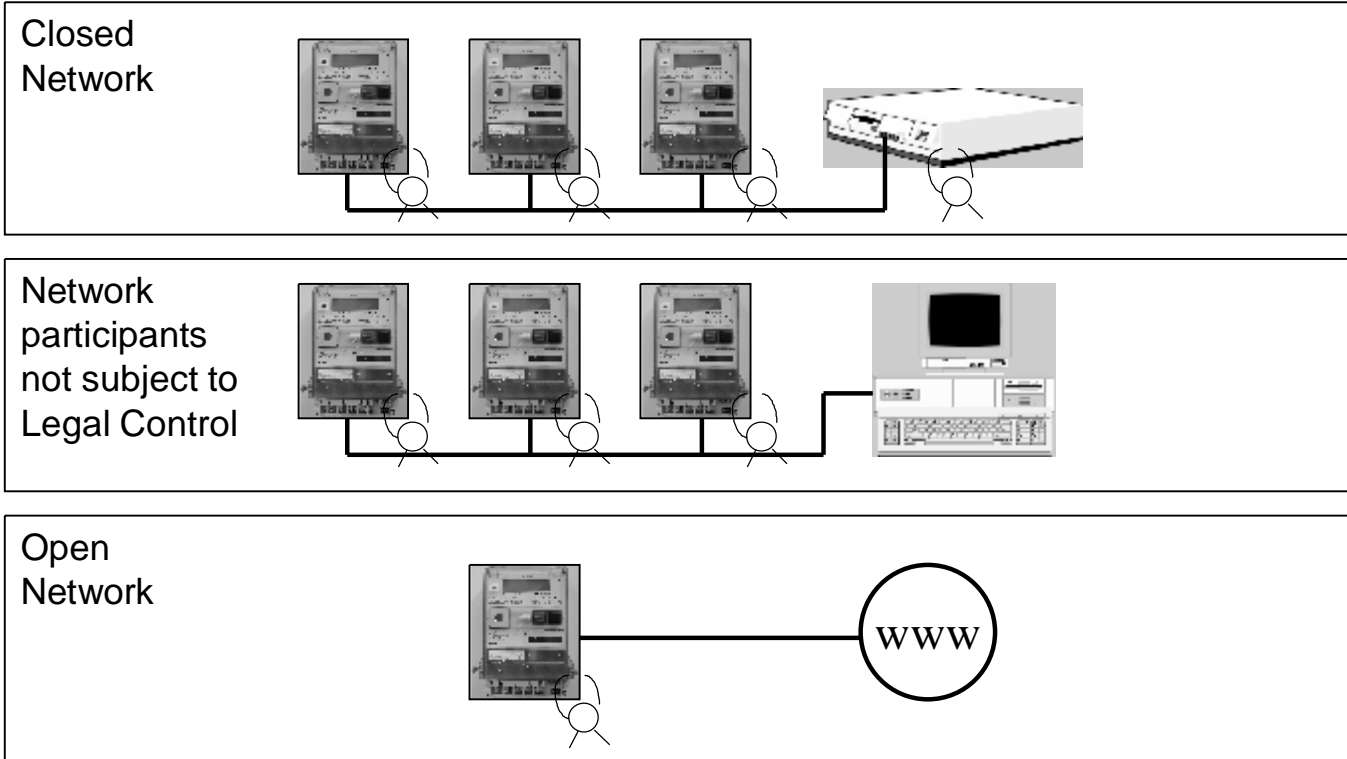
Instrument



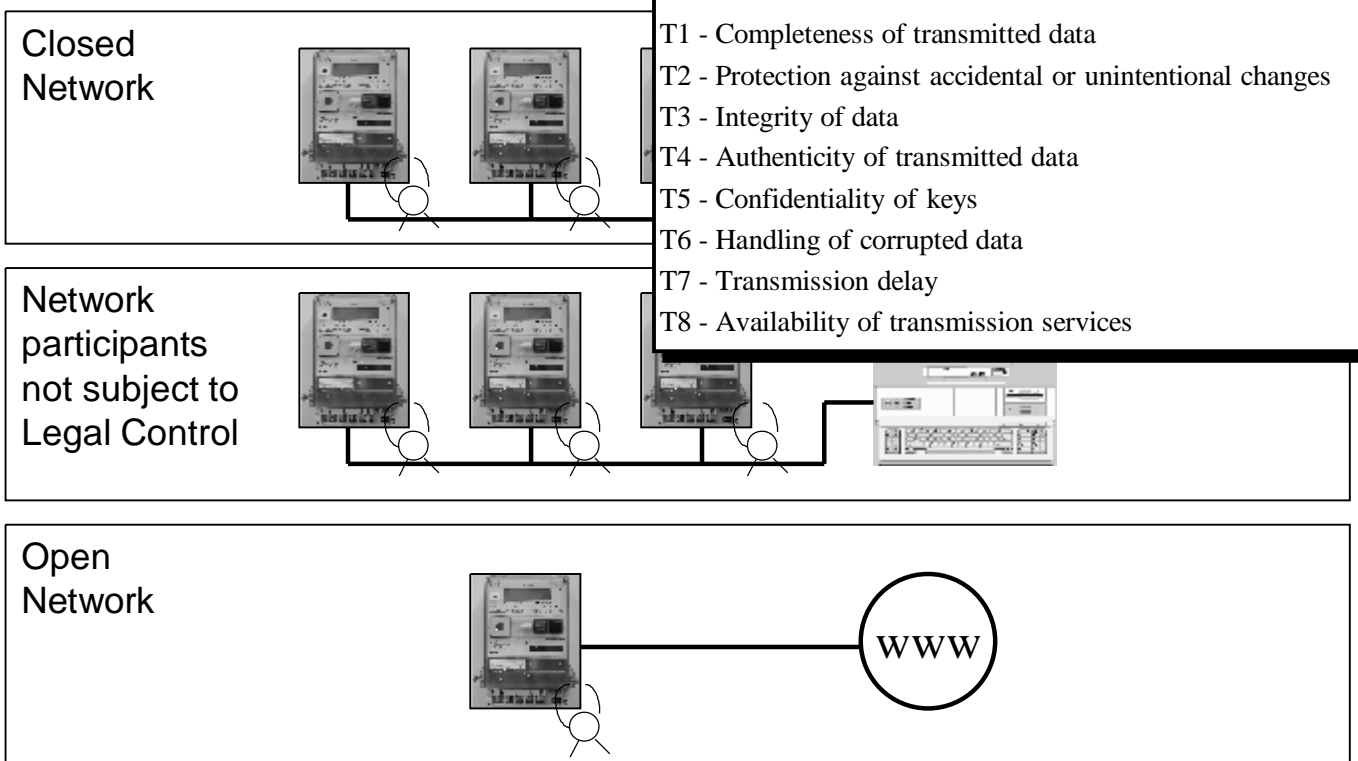
**Not subject to legal control**



Data transmission

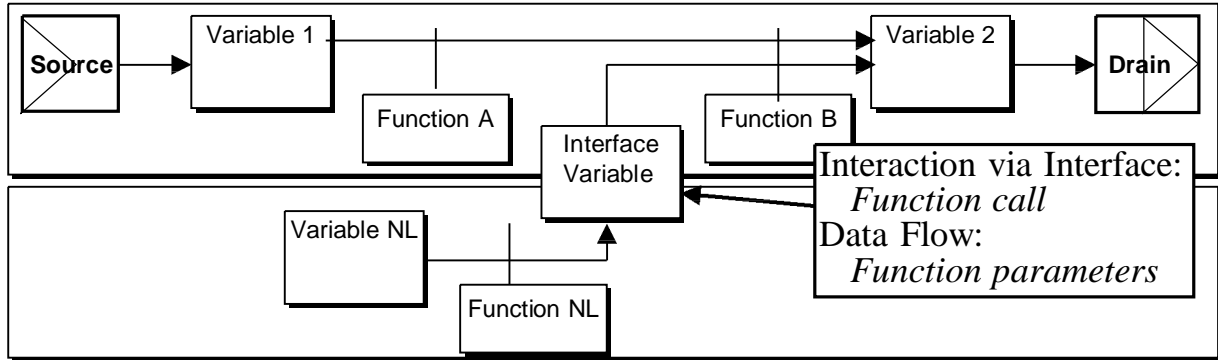


Data transmission

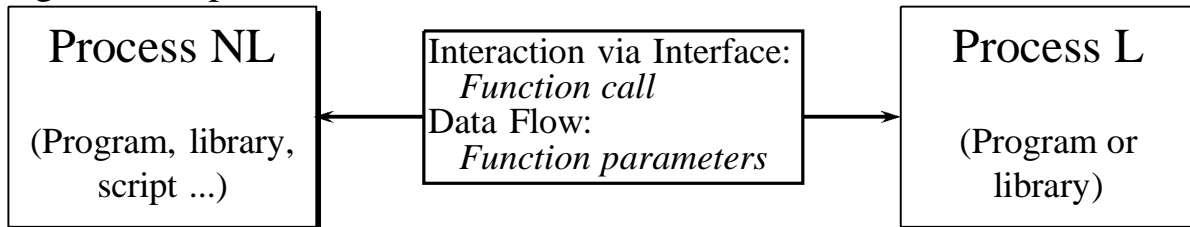


Software separation

Low level separation

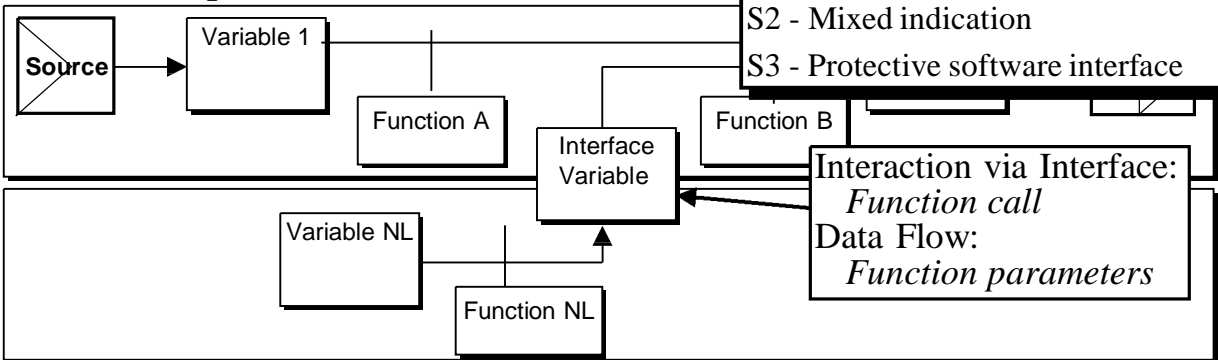


High level separation



Software separation

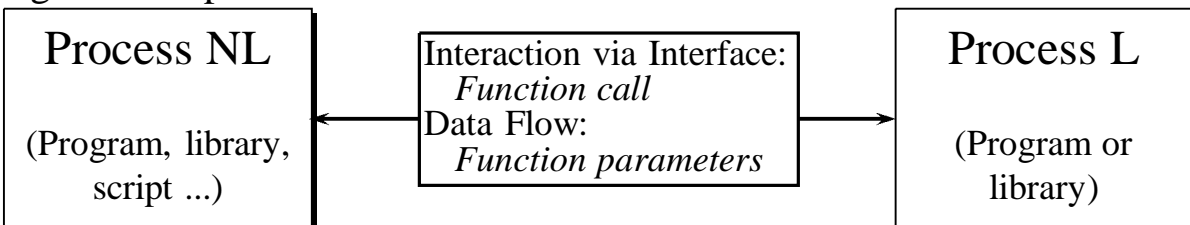
Low level separation



**Software Separation**

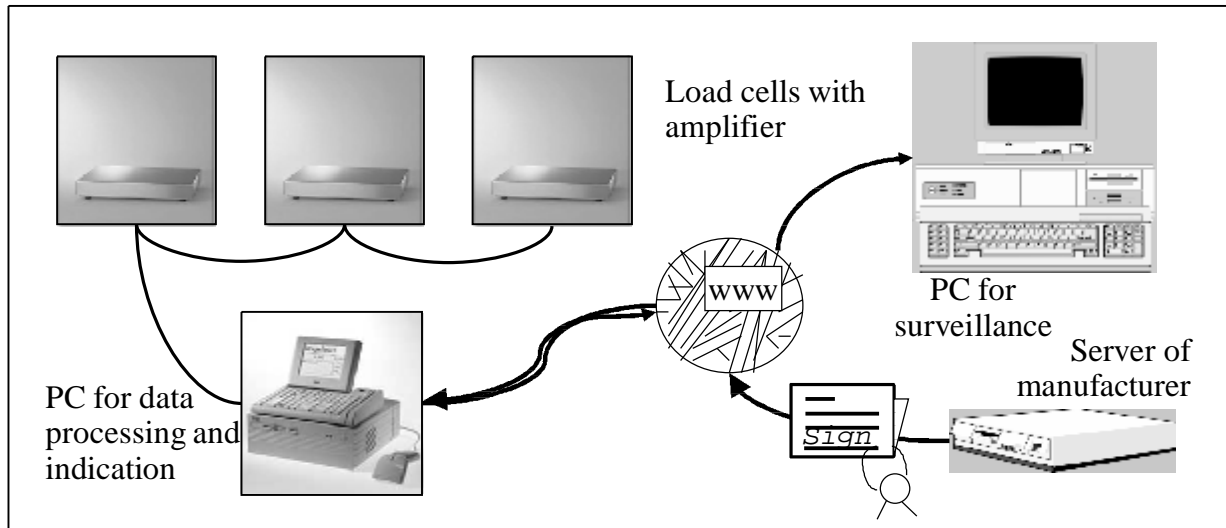
- S1 - Realisation of software separation
- S2 - Mixed indication
- S3 - Protective software interface

High level separation

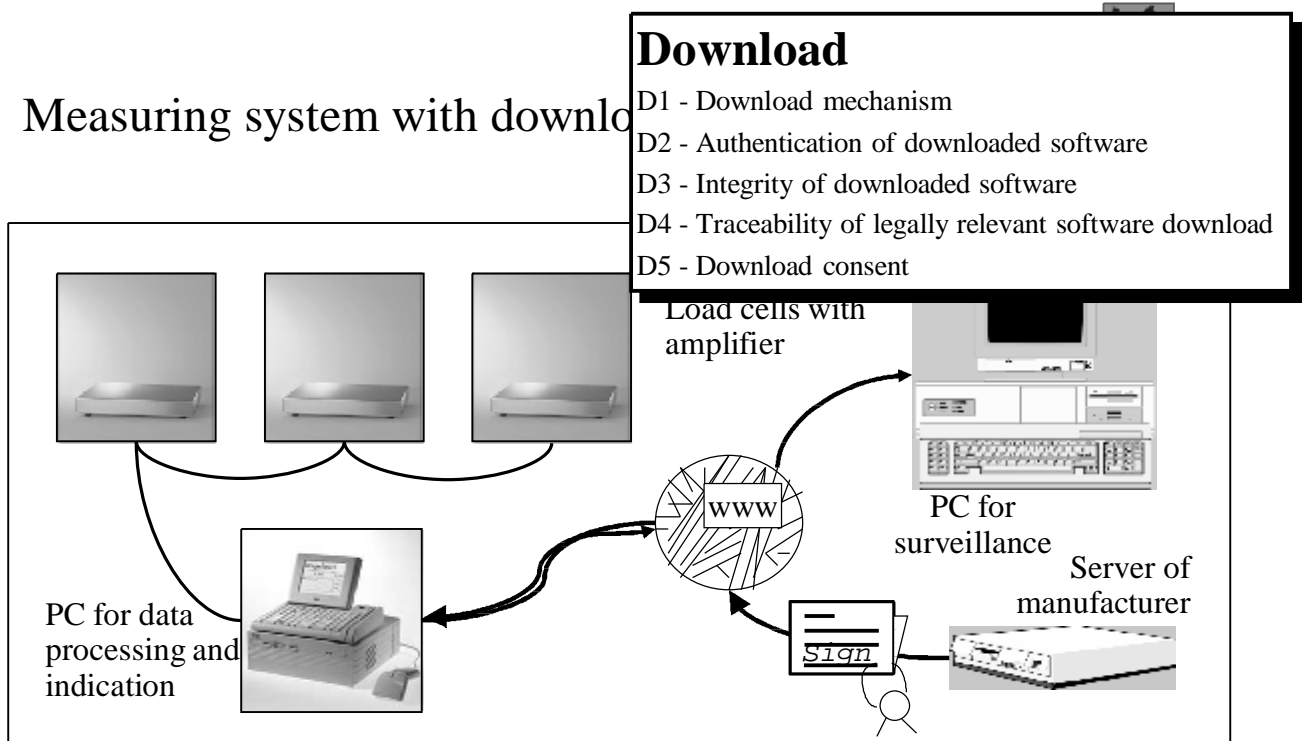




### Measuring system with download via open networks



### Measuring system with downlo



## Attendance List

Name	Organisation, Country	Signature
DICK Alan	EURELECTRIC, UK	<i>Alan Dick</i>
FORTUNE Mike	NWML, UK	<i>M Fortune</i>
FOWLES Graham	OFGEM, UK	<i>Graham Fowles</i>
COLLEIDGE Ian	SENSUS, UK	
GROTTKER Ulrich	PTB, Germany	<i>Ulrich Grottker</i>
KINGSTON Geoff	FACOGAZ, UK	<i>Geoff Kingston</i>
KÄMMEK Rainer	WG11, PTB, Germany	<i>Rainer Kämmek</i>
MARCOVA Vani	NCM, Bulgaria	<i>Vani Markova</i>
RAHM Christoph	CITEH, Switzerland	<i>Christoph Rahm</i>
RUDD Adrian	OFGEM, UK	

## WG7 Subgroup „Utility Meters“: Tasks and Results

### • Tasks:

- Interpret MID, MI-001 to MI-004 with respect to Software, define requirements fitting to the MID-Software Guide Part I
- Combine and incorporate the following material:
  - Draft for Part I in Version 0.055 of MID-Software Guide
  - Various comments to this draft
  - New proposal for Part I from OFGEM
  - Draft WELMEC Guide for Software requirements for Utility Meters from 2001
- Task of the Subgroup was NOT to discuss the main part of the Software guide and assignment of Risk Classes

### • Results:

- New draft for Software Requirements Part I, specific for Gas and Electricity Meters; agreed upon by all participants
- Proposed also for Water and Heat Meters
- All former comments and specific Guide of 2001 considered
- Additional requirement on the dynamic behaviour in case of software separation

- **Water Meters, Heat Meters**

- Fault Recovery
- Back-up Facilities
- Inhibit resetting of cumulative measurement values
- Dynamic Behaviour

- **Active Electrical Energy Meters**

Additional to above:

- Indication Suitability

- **Gas Meters and Volume Conversion Devices**

Additional to above:

- Power Source Lifetime
- Electronic Conversion Devices: Operation outside operating limits
- Test Element

## WELMEC WG 11

- **Items to be discussed in WG 11**

- Final decision on the risk class to be applied:  
*Risk class C for instruments of type P*
- Completion of the lists of typical parameters to be protected: *Deferred*
- Adoption of chapters 10.1 to 10.4 of draft WELMEC Guide 7.2: *OK*

- **Planned schedule for Guide 7.2**

- Comments of WG11 members until week 11 (18 March) to Roman Schwartz: *OK*
- Submission of the final draft document to the WELMEC Committee in April 2005: *OK*
- Approval at the 21st Committee Meeting 11/12 May 2005
- Instrument specific improvements / enhancements possible afterwards

# Risk Class for Utility Meter Type P

(Result of WG7 Questionnaire)



low: **Conformity:** functions identical

middle: **Protection against manipulation:** means against use of wide-spread simple tools

middle: **Examination:** examination based on functional description of the software (documentation + selected practical tests)

	Conformity			
	low	middle	high	
low	A	-	-	
middle	B	C	-	
high	-	D	E	F

Risk Classes A - F

low
middle
high

# Result WG11:

## Risk Class C for Utility Meters with complex Software



middle: **Conformity:** selected parts of the software identical

middle: **Protection against manipulation:** means against use of wide-spread simple tools

middle: **Examination:** examination based on functional description of the software (documentation + selected practical tests)

	Conformity			
	low	middle	high	
low	A	-	-	
middle	B	C	-	
high	-	D	E	F

Risk Classes A - F

low
middle
high

*Proposal:*

*Risk Class D for Utility Meters for critical Applications*



middle:	<b>Conformity:</b> selected parts of the software identical
high:	<b>Protection against manipulation:</b> state of the art in e-commerce
middle:	<b>Examination:</b> examination based on functional description of the software (documentation + selected practical tests)

	Conformity		
	low	middle	high
A		-	-
B		C	-
-		<b>D</b>	E
			F

Risk Classes A - F

Examination level

low
middle
high