

# Process Fieldbus (Profibus) Integration/ FDT/DTM Overview

*EPICS Meeting – Industrial Integration*

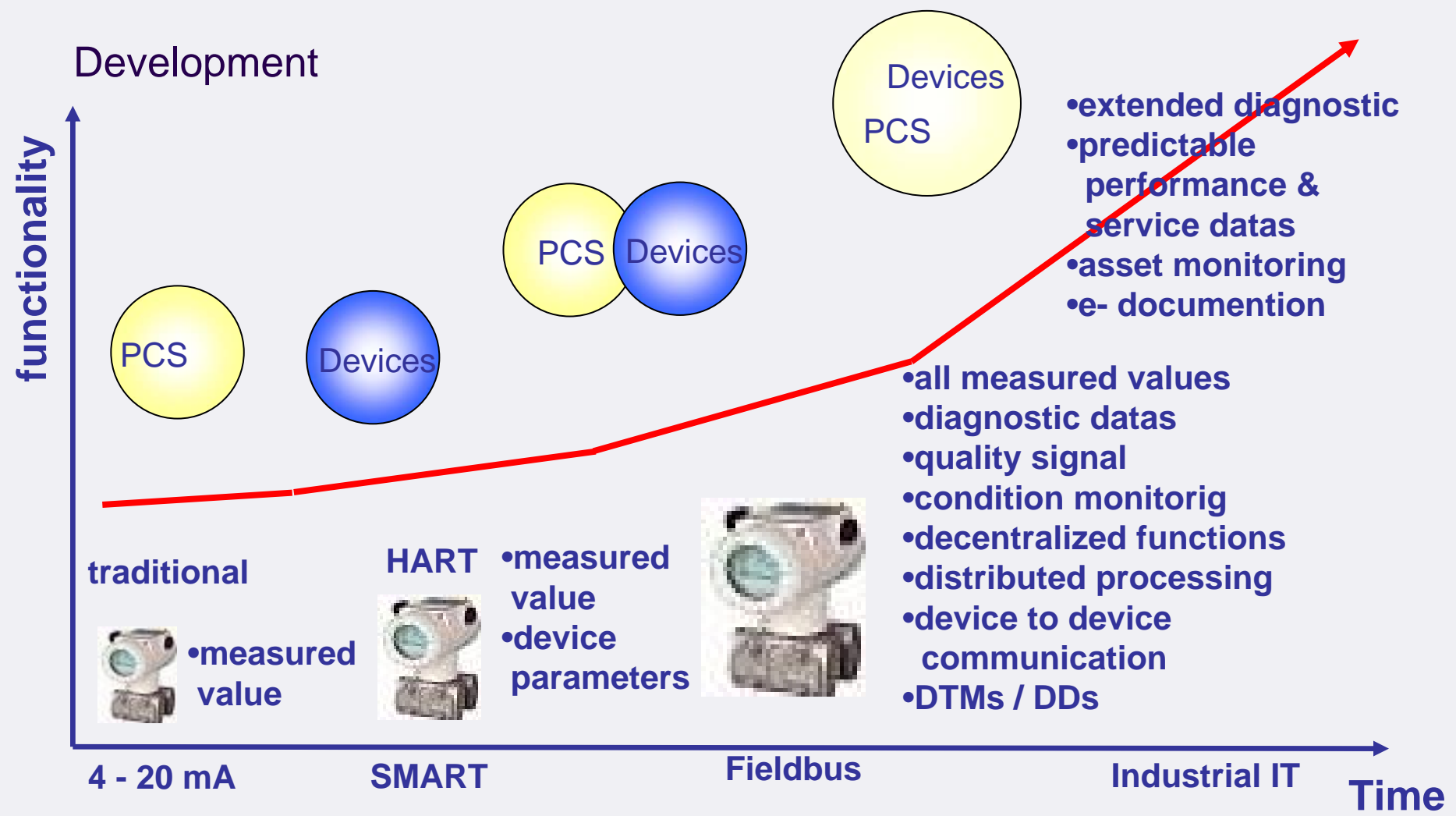
DESY, April 25th, 2007

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# Overview

- Introduction
- Why the reasons to decided for Profibus?
- Wiring topology for Profibus
- Model of Profibus communication
  - Master Class 1
  - Master Class 2
- Profibus integration in EPICS
  - Array Address Mode
  - Compact Address Mode
- Profibus configuration with EPICS
- Outlook – what is in the pipe / Future Plans
- Profibus Installation by DESY Cryogenic plants

# Introduction



## Why the cryogenic control group decided for Profibus?

- 1. Profibus is a industrial standard**
- 2. Profibus is more then 20 years on the market**
- 3. Many Know – How available (inside and outside of DESY)**
- 4. Easy to wiring**
- 5. Easy to initial startup**
- 6. Excellent run-time realiability**

# Wiring topology for

Customer reports

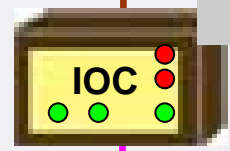


Ethernet TCP / IP

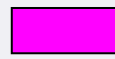


Subscriber: max 126  
Max. 32 Segment  
Max. 5 Segment

Master Class 1

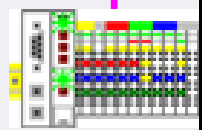


Profibus - DP



400 mA  
12V

DP/PA Gateway



Profibus - PA



baud rate: 31,25 kBit/s  
length max. 1900m

Remote IO

Parameter Wert Einheit Status  
Druckmeßeinrichtung  
TA  
Bes  
Na  
He  
Ge  
So  
Ha  
Ein  
Sta  
Me  
6DP  
Ausg  
Ant  
En  
Ein  
Ant  
Endwert  
Einheit (Ausgang)  
Filterzeitkonstant  
Alarmgrenze Unten  
Warngrenze Unten

**TÜV**

**SIEMENS**

MF SERIES  
MODELS MF50S-MF64S  
BROOKS MF SERIES SMART MASS FLOW METERS AND CONTROLLERS

**FDT Group**

**DTM**

Asset Monitoring

Certifications

Manuals

Datasheets

Device Driver

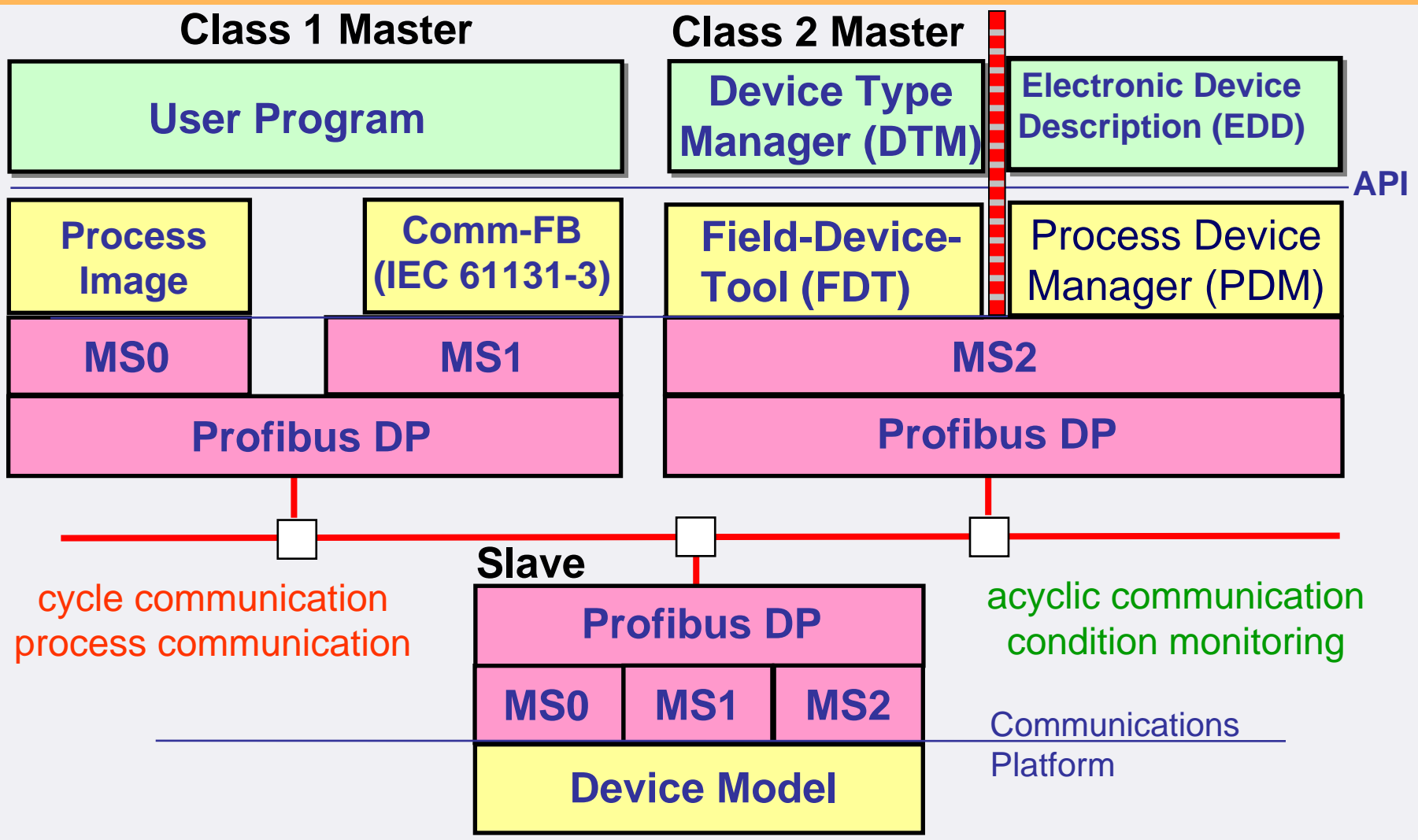
**Ex**

length max. 1000m

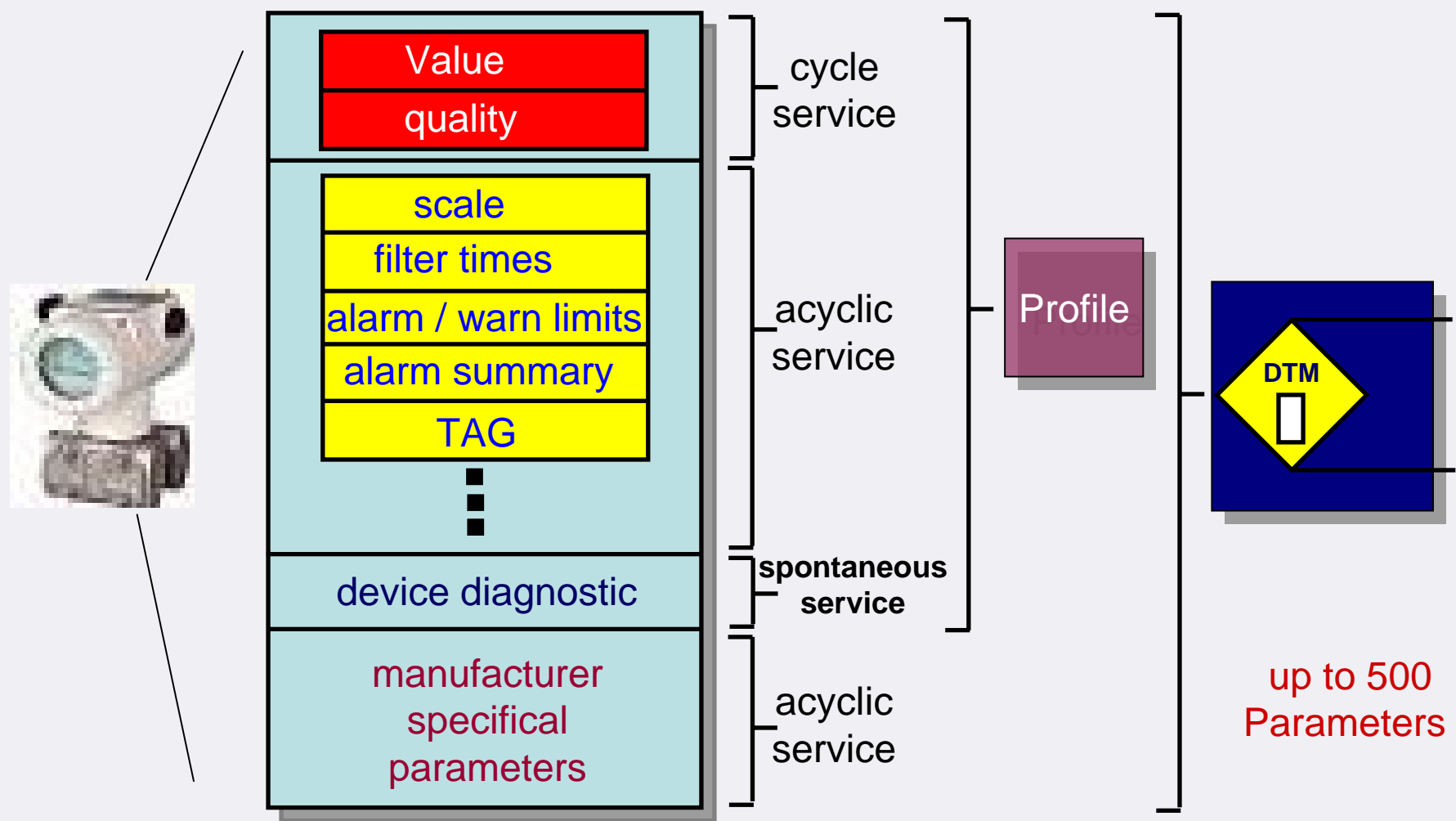
baud rate: 31,25 kBit/s



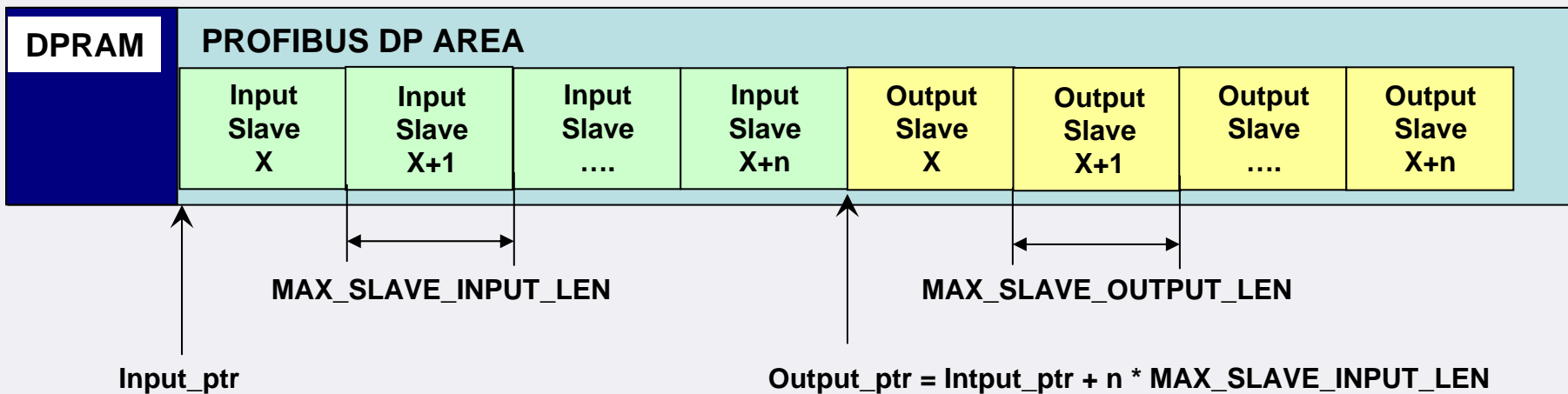
# Model of Profibus communication



# Model of Profibus communication



# PROFIBUS integration in EPICS (Array Address Mode)

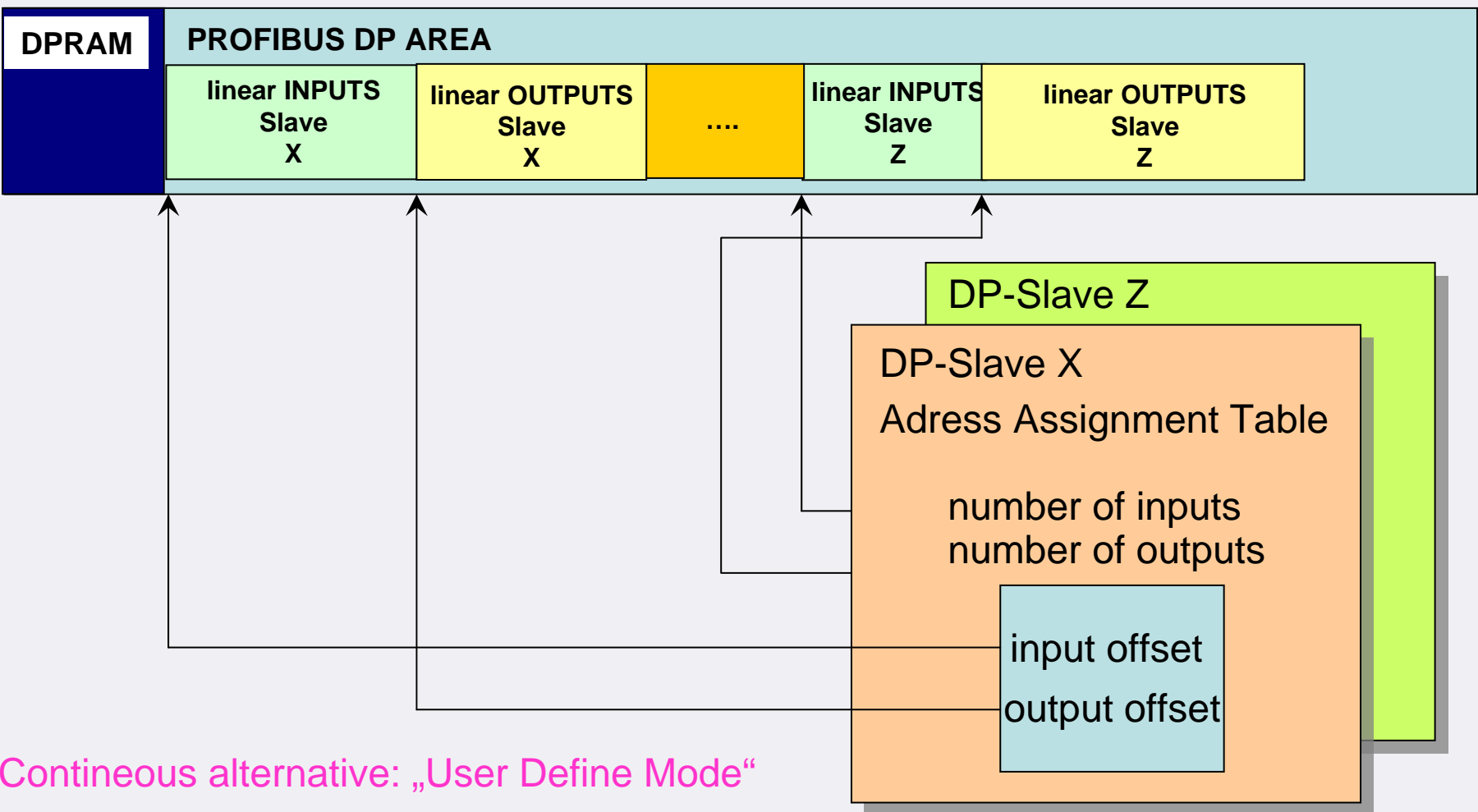


```
Record(ai,"PROFI_ai") {
    field(DTYP,"PBDP")
    field(INP,"PBDP1 @SlaveAddr/Offset 'T=float' )
}
```

**Problem: (244input bytes + 244 output bytes) \* 126 Subscriber = 64kBytes DPRAM**  
**How many DPRAM has the interface adapter? Our has 13000 bytes!**

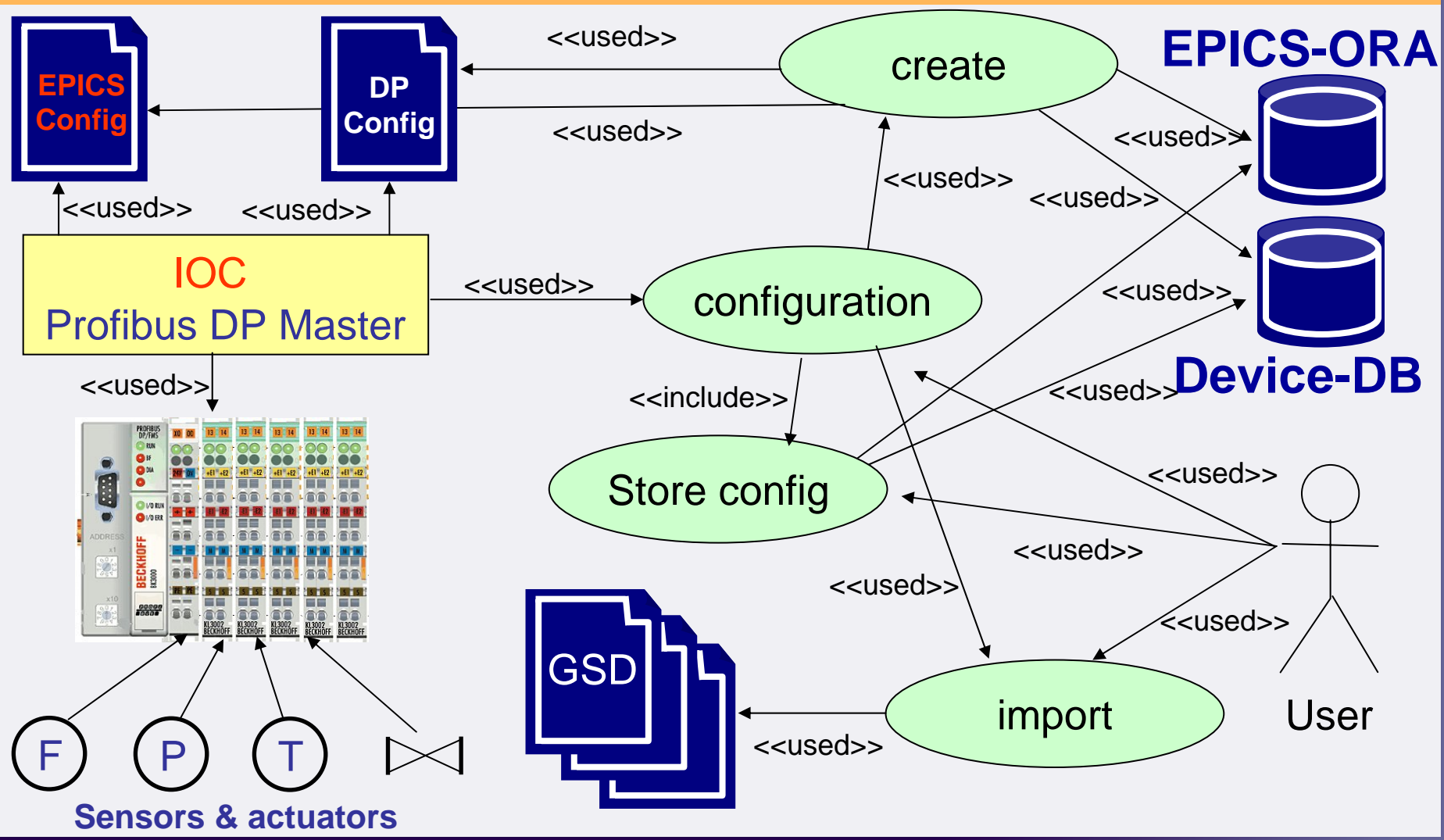


# PROFIBUS integration in EPICS (Compact Address Mode)

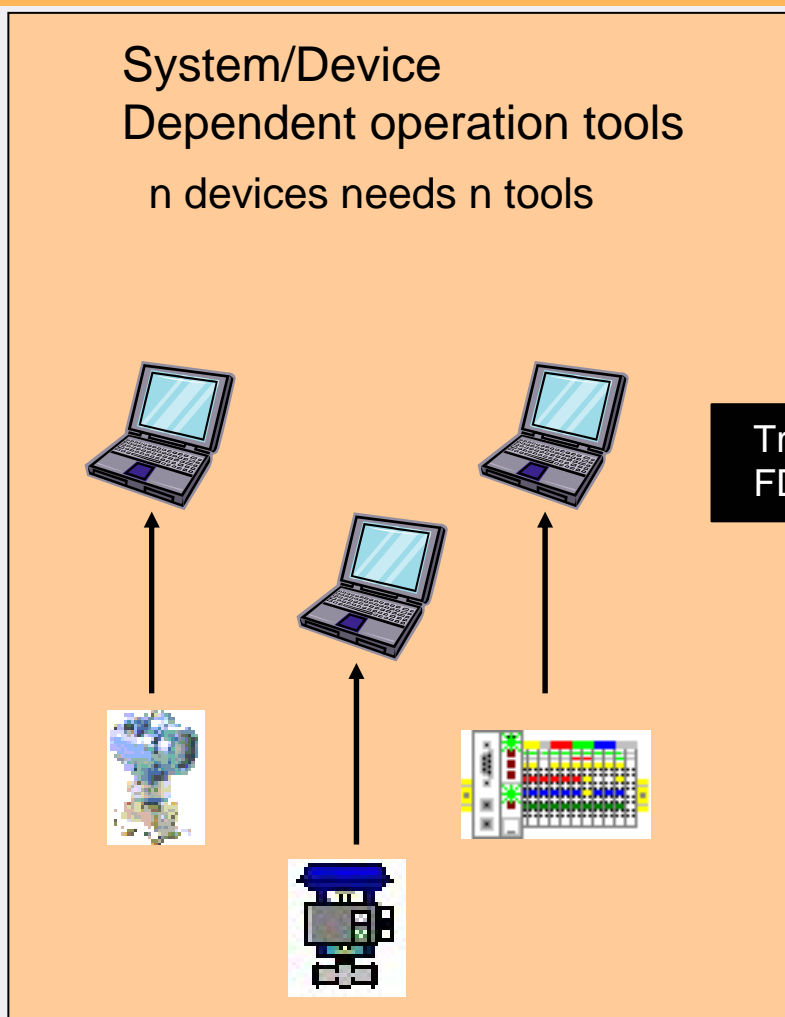


Continuous alternative: „User Define Mode“

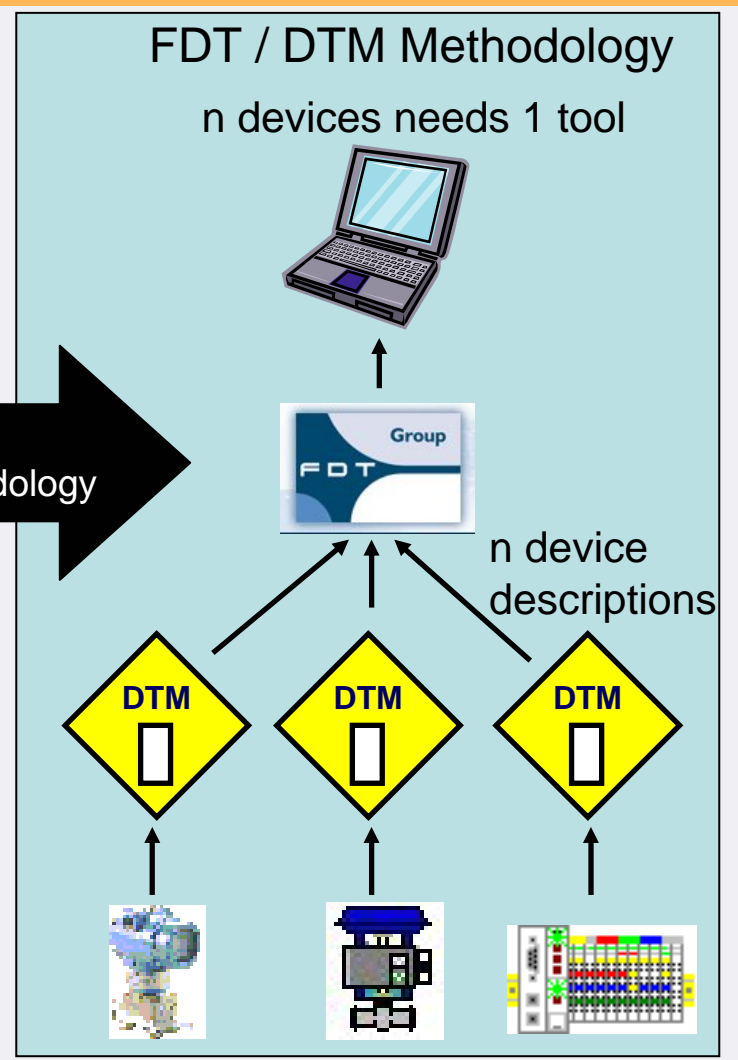
# Configuration of Profibus with EPICS (in work)



# Why FDT and DTM?



Transition to the FDT/DTM Methodology



# Outlook

Integrated Engineering Tool



## Field Device Tool FDT

## Device Tool Manager DTM

DTM

Configuration

Asset-Management

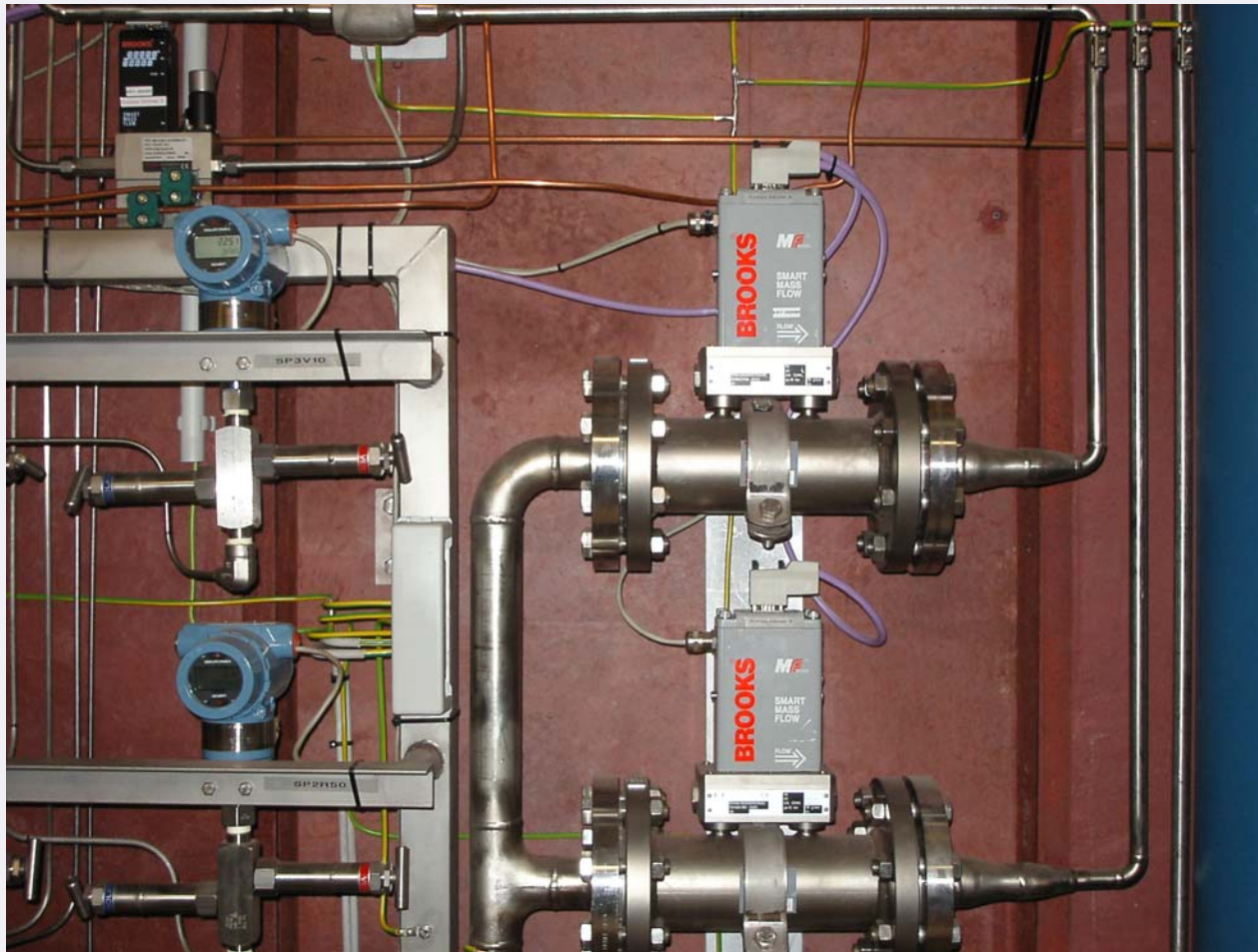
Signal Conditioning

Diagnose

# DESY Cryogenic plants with Profibus

- CMTB
  - 27 Stations Profibus PA Devices
  - 3 Stations Profibus DP Process Devices
  - 2 Stations Profibus DP Remote IO
- 900W Coldbox
  - 37 Stations Profibus PA Devices
  - 1 Station Profibus DP Remote IO
- Main plant
  - 2 Stations Profibus DP Motion Drive

# CMTB a view of a part of the plant



# CMTB a view of a part of the plant





# CMTB a view of a part of the plant





# The End

