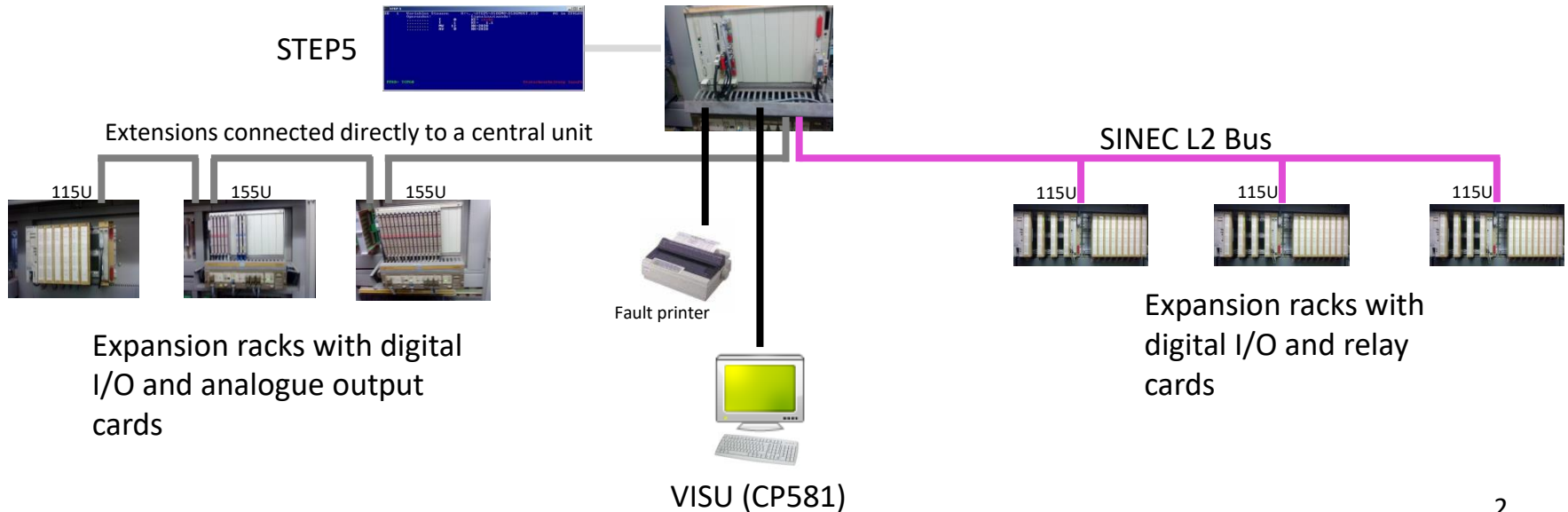


# Plant modernisation with ABC IT Systems Version 2

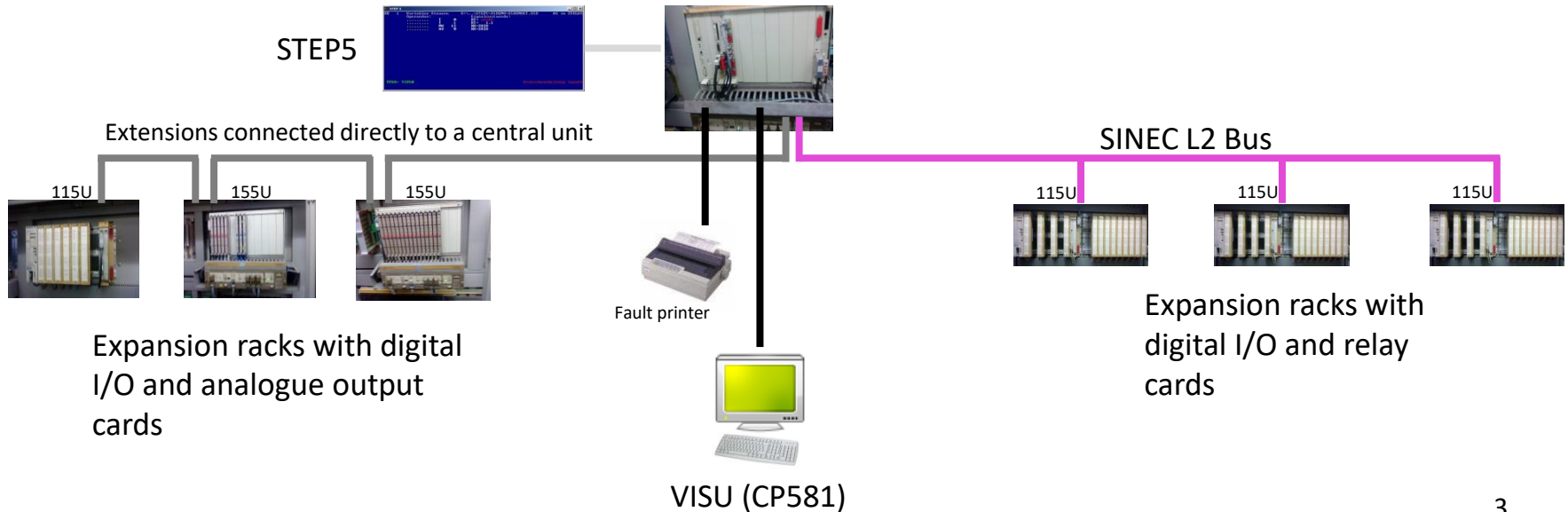
# Current Condition

- Simatic S5 PLC System 155U
  - CPU 948B
  - CP 581 – 0EB12 (basic component group)
  - CP 581 – 2LA11 (mass storage)
  - MONA C (screen, keyboard)
  - AS 304 (direct expansions)
  - IM 308 (L2 bus)
  - STEP 5 programming



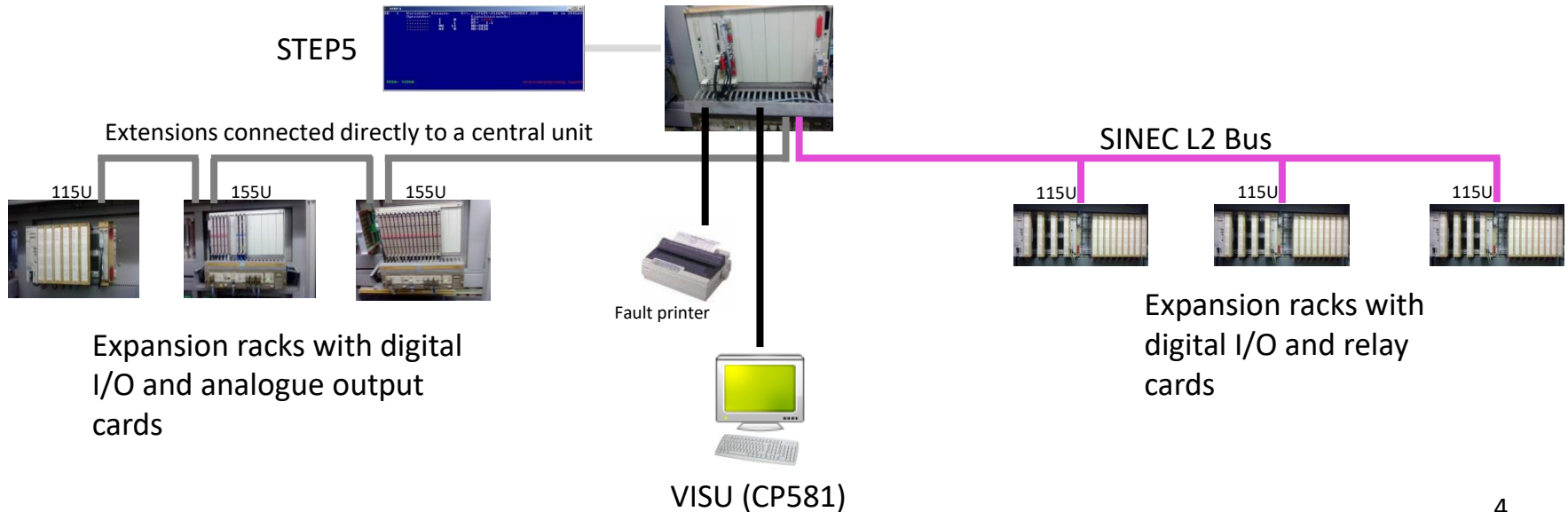
# Current Condition - Assessment

- VISU
  - CP581 possess limited lifespans (component discontinued)
  - Customisation of the VISU (CP581) very complicated
- Relay cards
  - Spare parts procurement difficult, repairs expensive
- Siemens CPU948 with 1.6MB (large version) program and data
  - Porting the existing STEP5 program code to STEP7 is very complex.
  - The program structure does not permit simple porting and taking (back) into operation on the basis of the S7-400, for example.



# Modernisation targets

- Replacement of CPU948 with X-CPU (STEP5 and STEP7 programmable).
- Connection of the new VISU WinCC.
- Deactivation of the old VISU (CP581) and malfunction alert printer.
- Replacement of expansion racks with modern field-bus components (e.g. Profibus, Profinet, Ethercat).
  - Replacement of digital I/O, relay and analogue cards with, for example, Siemens ET200 modules.
- Deactivation of the SINEC L2 bus and direct expansion bus.
- Modernisation of the system to make it future-proof.

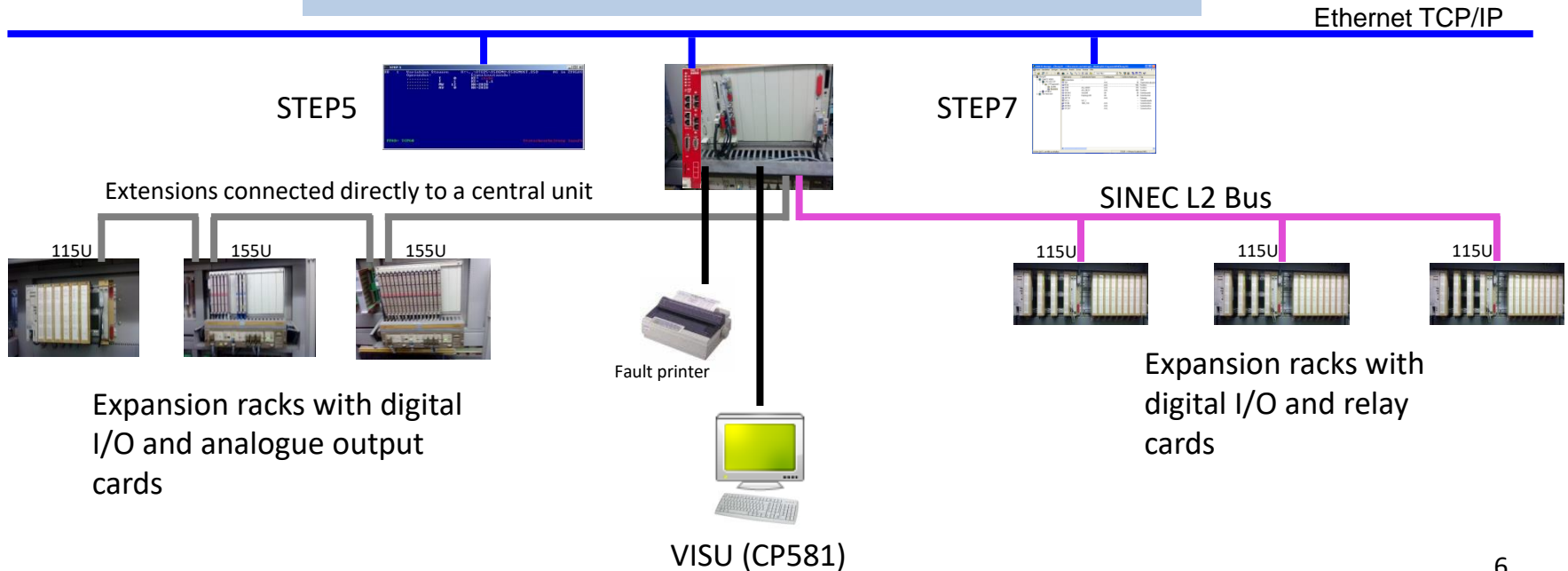


# ABC retrofit - concept

- ✓ The ABC retrofit concept constitutes the basis for the expansion and modernisation of Simatic S5 system controls.
- ✓ The costs for the individual modernisation and conversion phases may be precisely specified (cost control).
- ✓ Systems will be modernised according to the state-of-the-art over a planned period of time (planning reliability).
- ✓ No additional system downtimes during the individual phases of modernisation.

# 1. Replacement of CPU944B with X-CPU

- Free review of the S5 software.
- Software customisations for mixed operations (optional).
- Program pulled from existing CPU948.
- The power to the existing control will be switched off, the CPU944B will be replaced with ABC X-CPU.
- Ethernet connection to ABC X-CPU.
- Loading of the S5/S7 program with STEP5/7.
- Test run / production with ABC X-CPU.
- Only the CPU948 component group needs to be refitted if taking into operation is interrupted; the system will then be ready for production.



# 2. Connection of the new VISU

WinCC



- WinCC will be set up in parallel to the existing VISU (from CP 581).
- WinCC is able to directly access ABC X-CPU via Ethernet.
- WinCC Runtime will be installed on existing computers.
- No production downtimes, implementation may be realised while operations are on-going.
- The old VISU may be deactivated when all functions have been integrated into the new VISU.
- New VISU can be customized by the person responsible for maintenance.
- Implementation may be realised by the customer.

Ethernet TCP/IP

STEP5



STEP7



Extensions connected directly to a central unit

115U



155U



155U



Expansion racks with digital I/O and analogue output cards

Fault printer



VISU (CP581)

SINEC L2 Bus

115U



115U

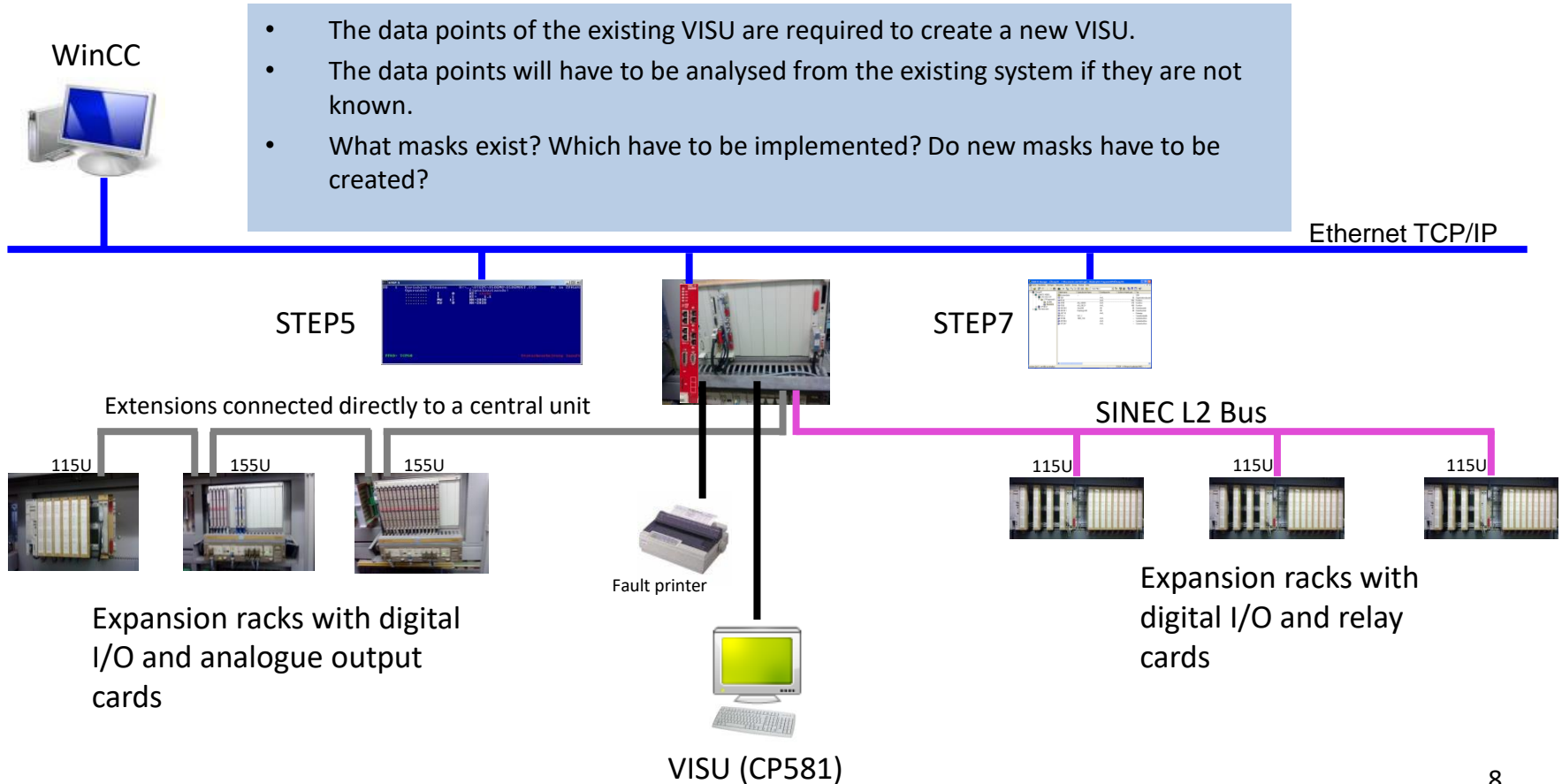


115U



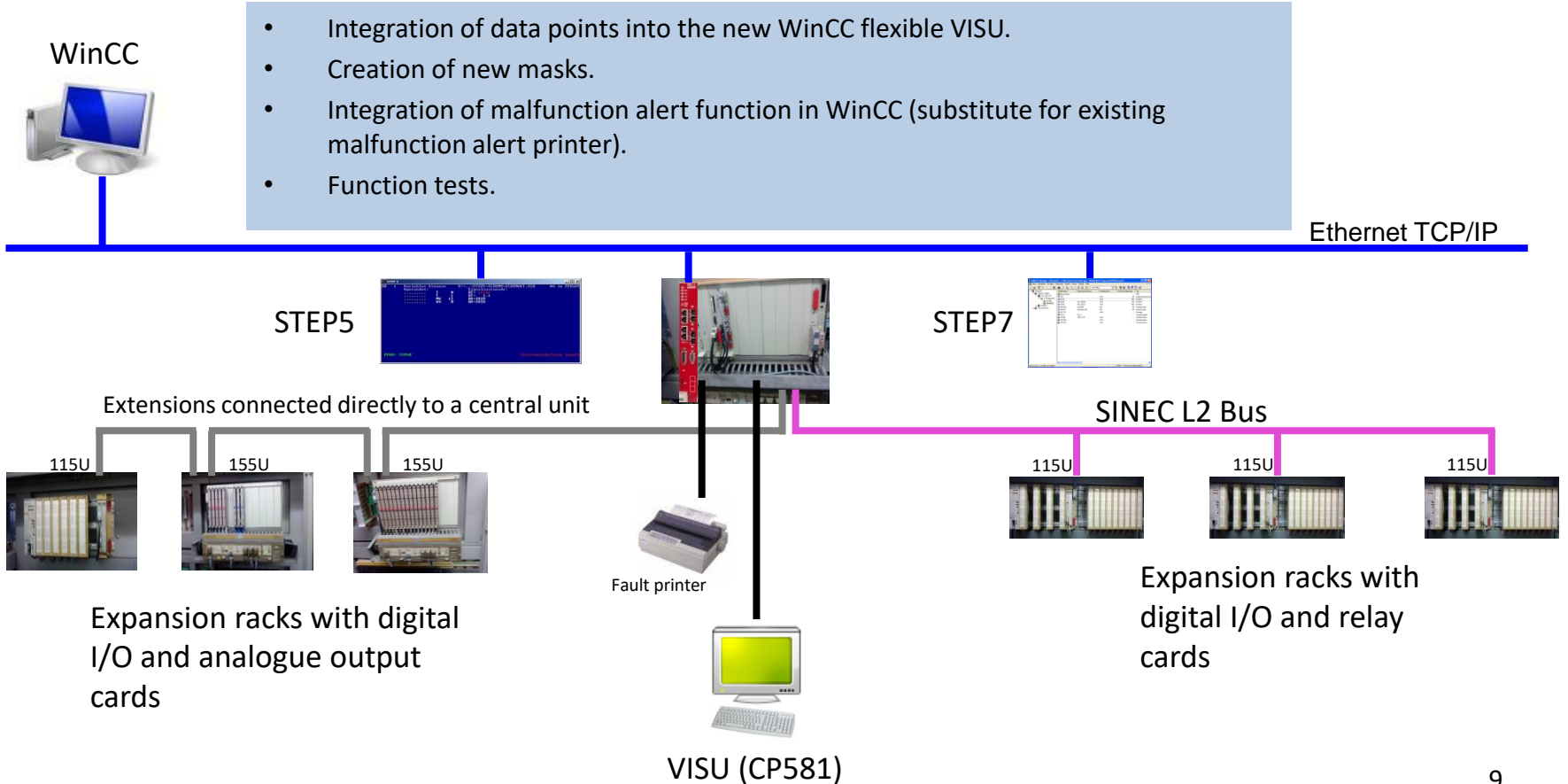
Expansion racks with digital I/O and relay cards

# 2.1 Evaluation of the existing VISU

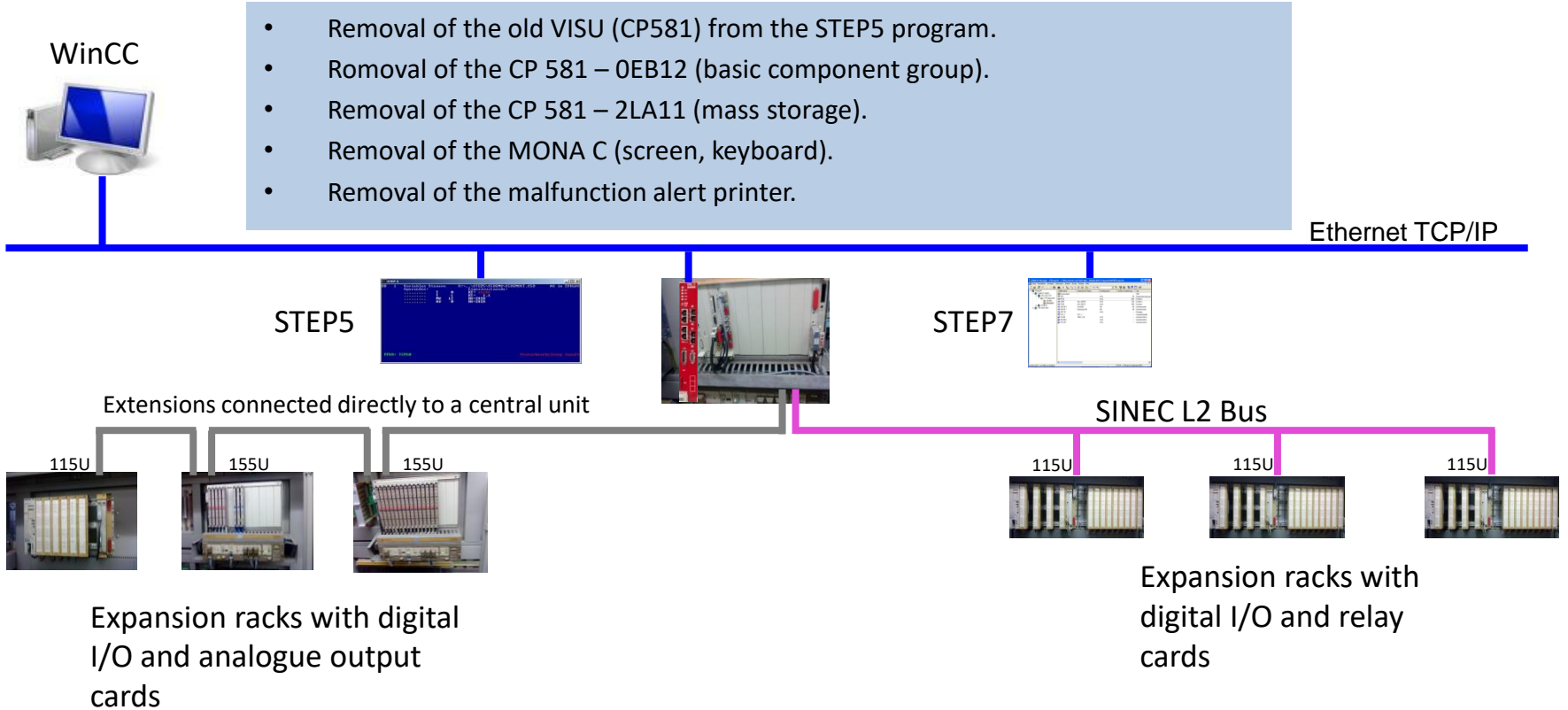




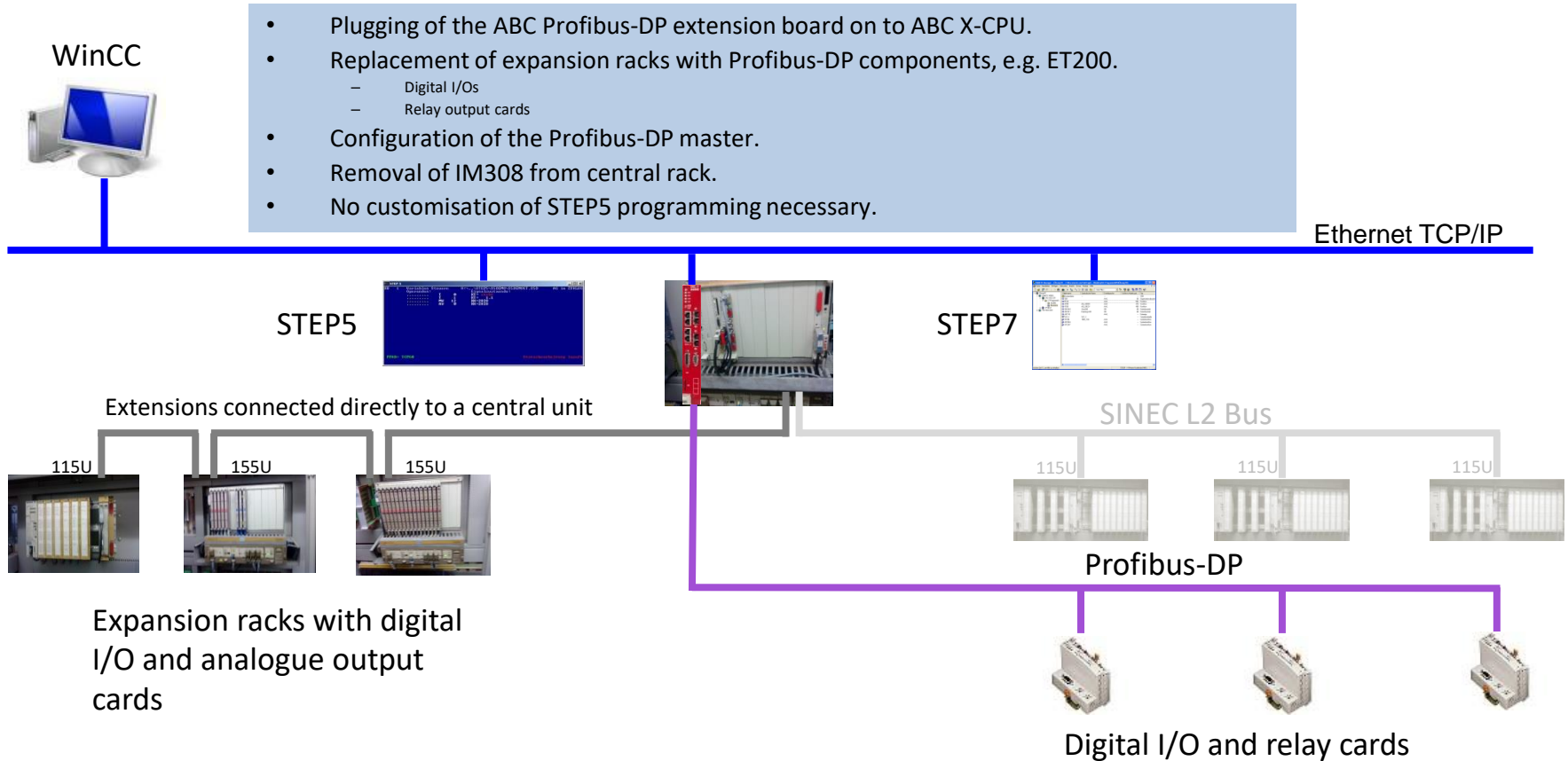
# 2.2 Create of a new VISU



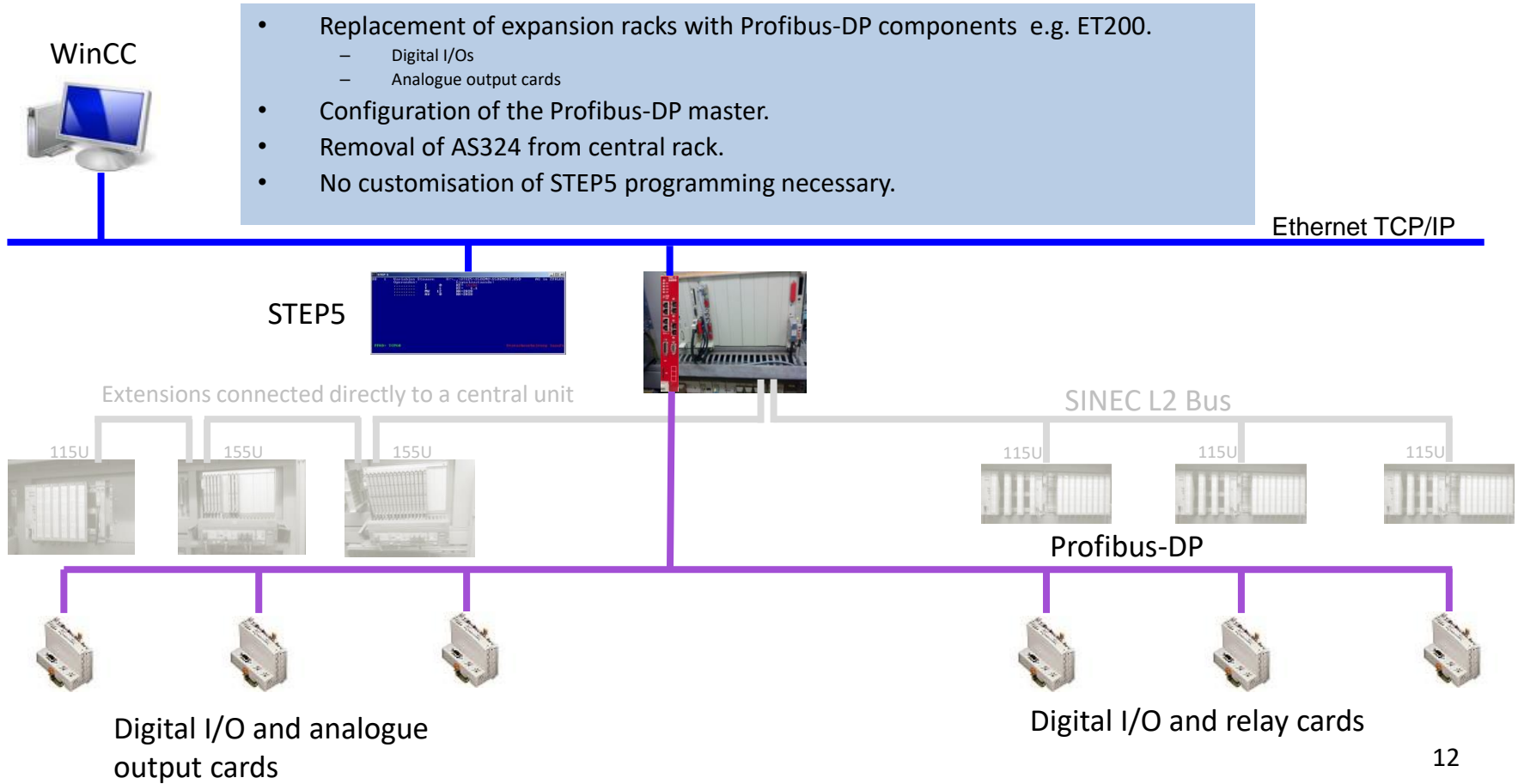
# 2.3 Removal of the old VISU



# 3.1 Replacement of the expansion rack via SINEC L2 bus with Profibus (Profinet) components

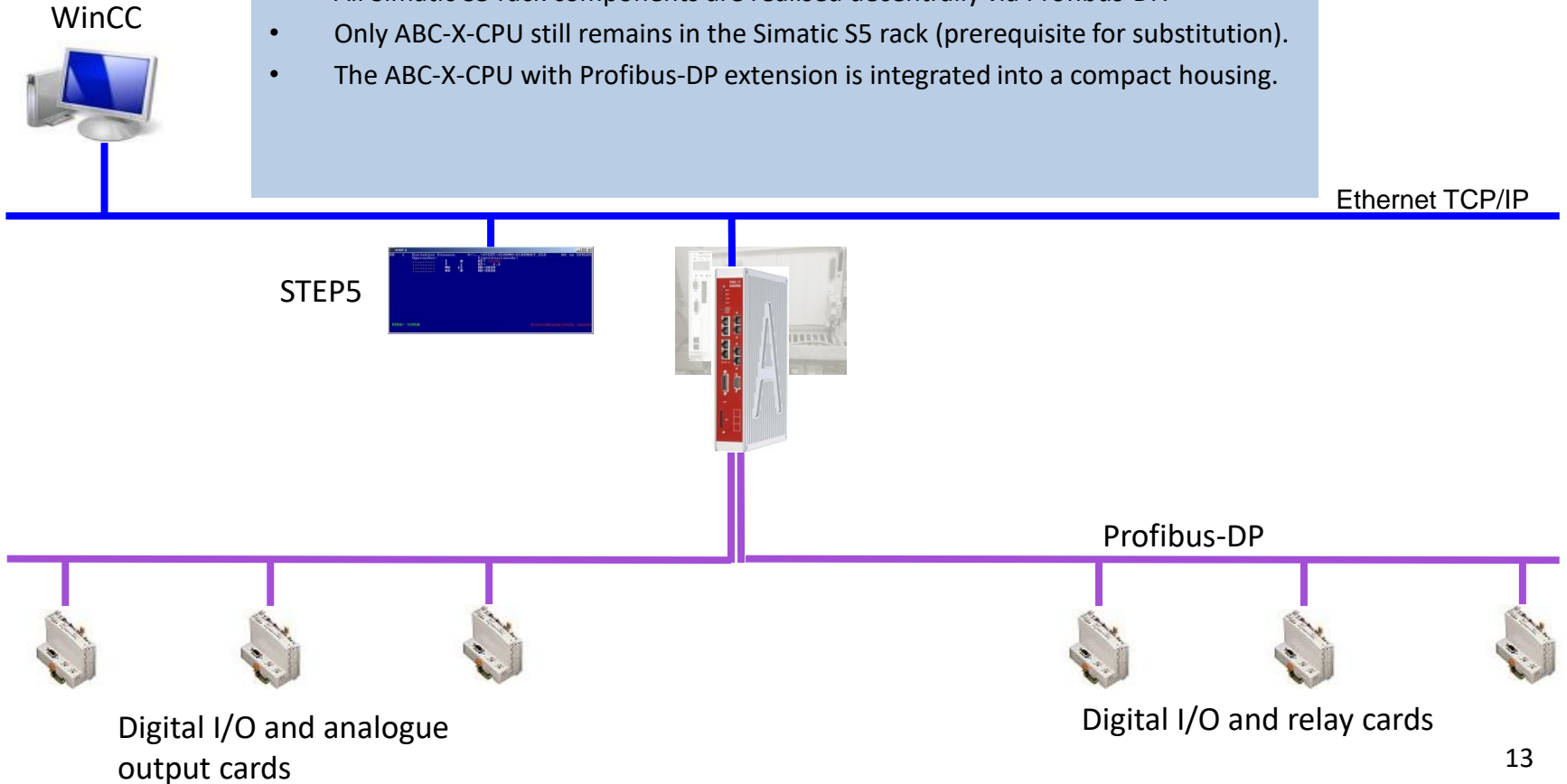


# 3.2 Replacement of directly connected expansion rack with Profibus (Profinet) components



# 3.3 Removal of the central rack

- All Simatic S5 rack components are realised decentrally via Profibus-DP.
- Only ABC-X-CPU still remains in the Simatic S5 rack (prerequisite for substitution).
- The ABC-X-CPU with Profibus-DP extension is integrated into a compact housing.





# Retrofit with ABC X-CPU

## Benefits:

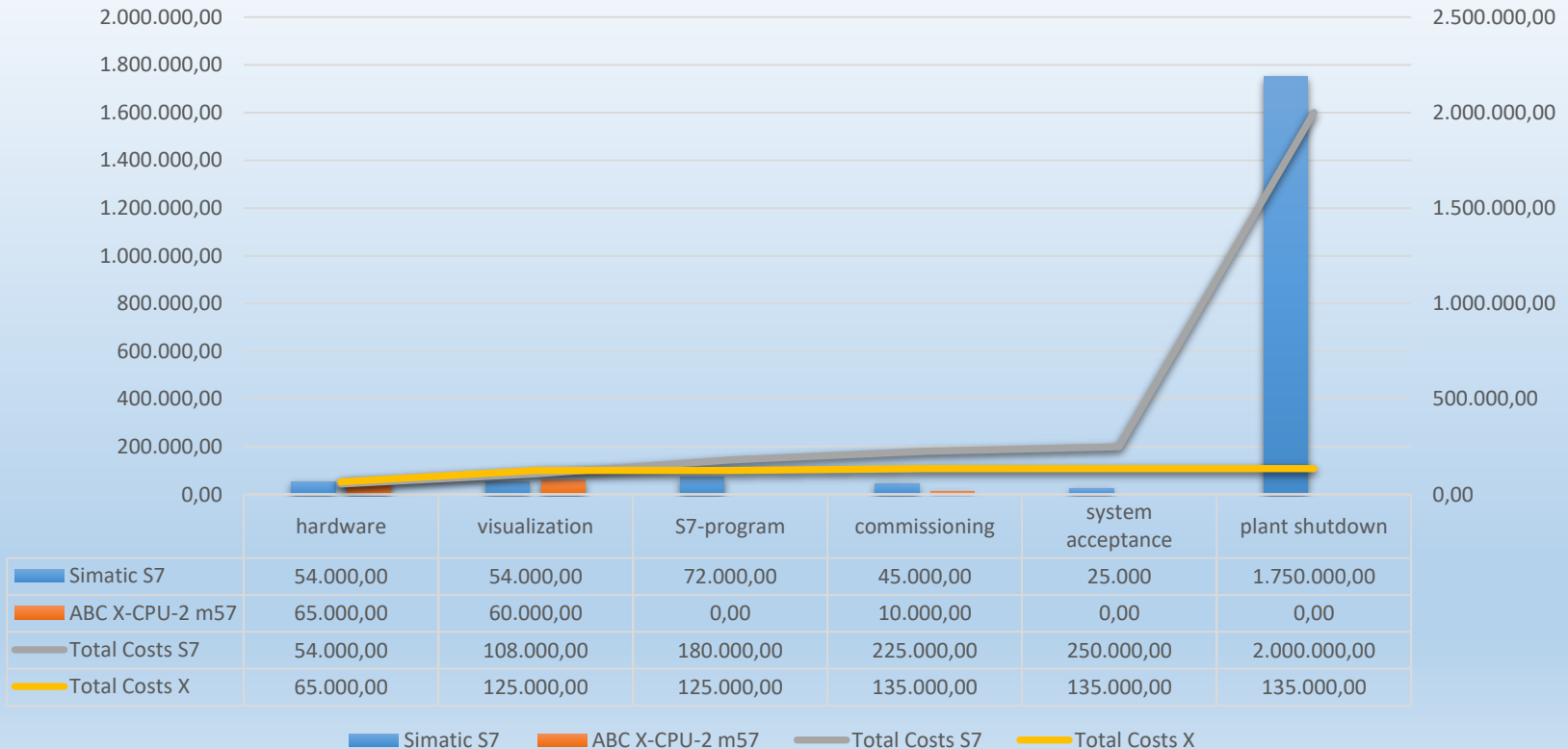
- Short changeover times.
- Existing and production-reliable S5 program may be kept and even extended.
- Shorter cycle times.
- Ethernet interface on board.
- Replacements and customisations may be implemented in STEP7.
- New visualisation system, e.g. WinCC flexible, may be connected in parallel to the existing VISU.

# Services

- Creation of modernisation concepts for old system controls.
- Support with the implementation of retrofit.
- Consulting and implementation in the fields of software development, network engineering and databases.
- We are able to offer industrial seminars, e.g. component group training for X-CPU.

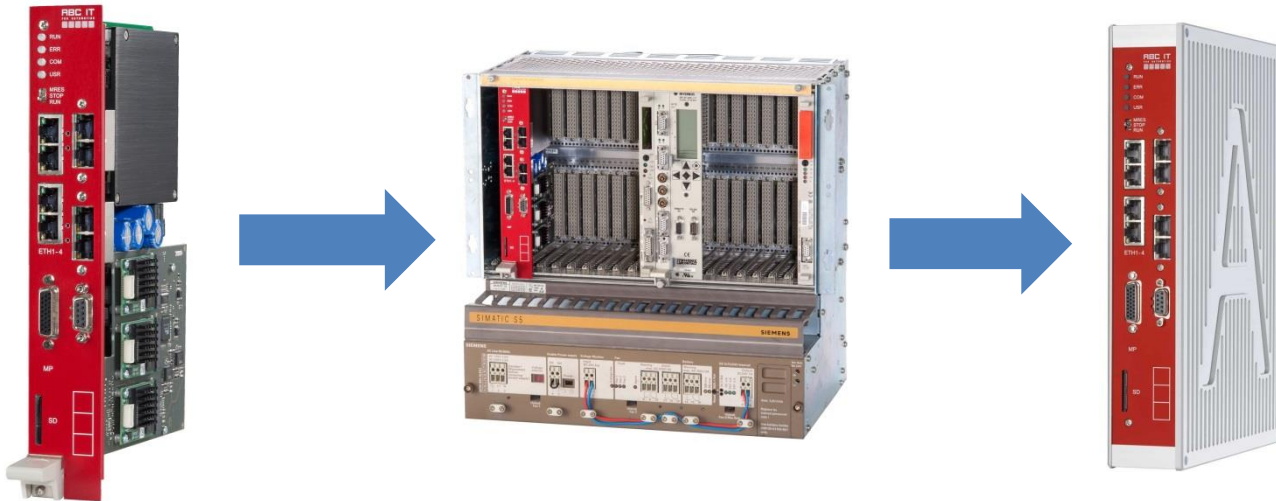
# Cost example

## Retrofit variant 2





# ABC components



[www.abcit.eu](http://www.abcit.eu)