



SIPROTEC 5 7SX82

New universal protection device

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Agenda

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| Introduction

Motivation for a universal protection relay

**Optimization of investment and operating costs
(spare parts inventory, engineering)**

**Full flexibility until shortly before commissioning
(simple function adjustment via software)**

**Easy adaptation when grid conditions change
(e.g., use as line differential protection instead of distance protection)**



SIPROTEC 5 Compact
7SX800



SIPROTEC 5 Modular
7SX85



NEW

SIPROTEC 5
7SX82

| Main Features

Main Features 7SX82

- Non-expandable Universal Device
- Multifunctional protection
- All network types
- **60-110 V, 110-250 V power supply**
- Up to 2 plug-in modules
- **Large display***
- Standard and US Front design
- 16 LEDs

** Small display option for a better price position foreseen with V9.40.
Large display enablement via function points*



Only 2 standard variants:

U1: 1/3 19", 4 I, 4 V,

11 BI, 9 BO

U2: 1/3 19", 4 I, 4 V,

23 BI, 16 BO

Main Features 7SX82

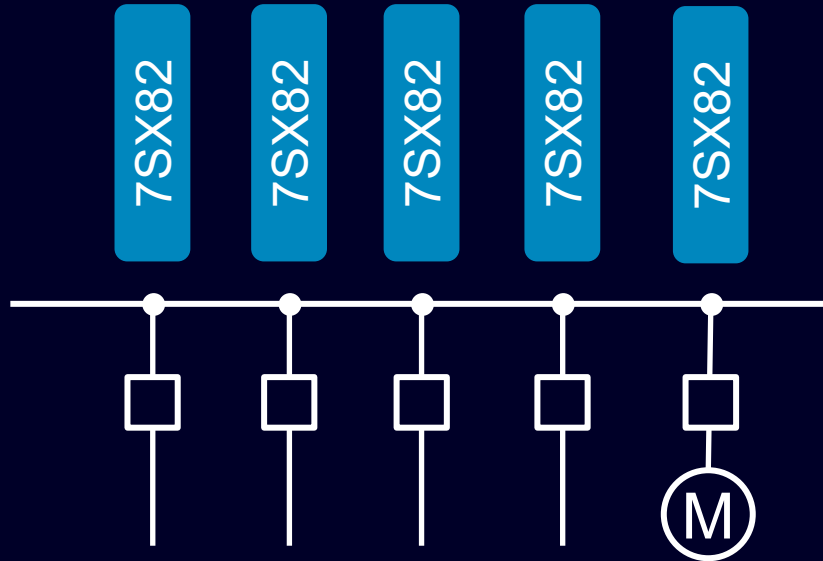
- Flush mounting
- Surface mounting via mounting rack possible
- Modular functionality
- IEC 61850 (Edition 1 and 2)
- Multiple & redundant communication
- Protection Interface
- SIPROTEC 5 standard functions for control and monitoring
- Plug-in modules for all communication properties, Arc-Protection, battery VDC monitoring and transducers



Only 2 standard variants:

U1: 1/3 19", 4 I, 4 V,	11 BI,	9 BO
U2: 1/3 19", 4 I, 4 V,	23 BI,	16 BO

Device Functions– Universal Relay

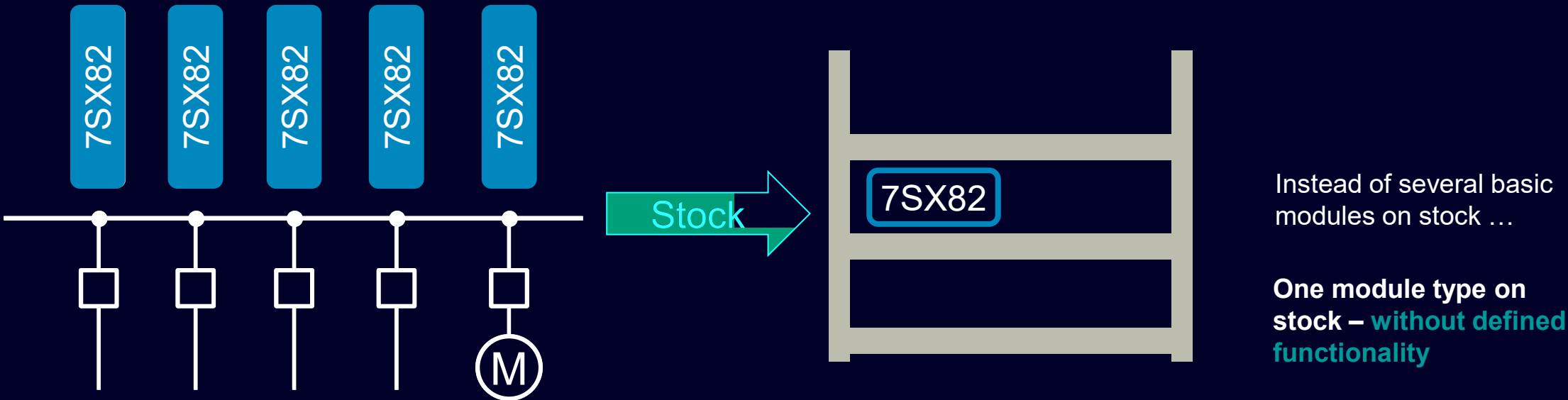


Functions from 3-pole tripping non-modular devices covered by the SIPROTEC 7SX82:

- Distance protection (**7SA82**)
- Feeder and capacitor bank protection (**7SJ81/7SJ82**)
- Line differential protection (**7SD82**)
- Line differential and distance protection (**7SL82**)
- Motor protection (**7SK82** without internal RTDs)

Covers 6 type-specific device functionalities !

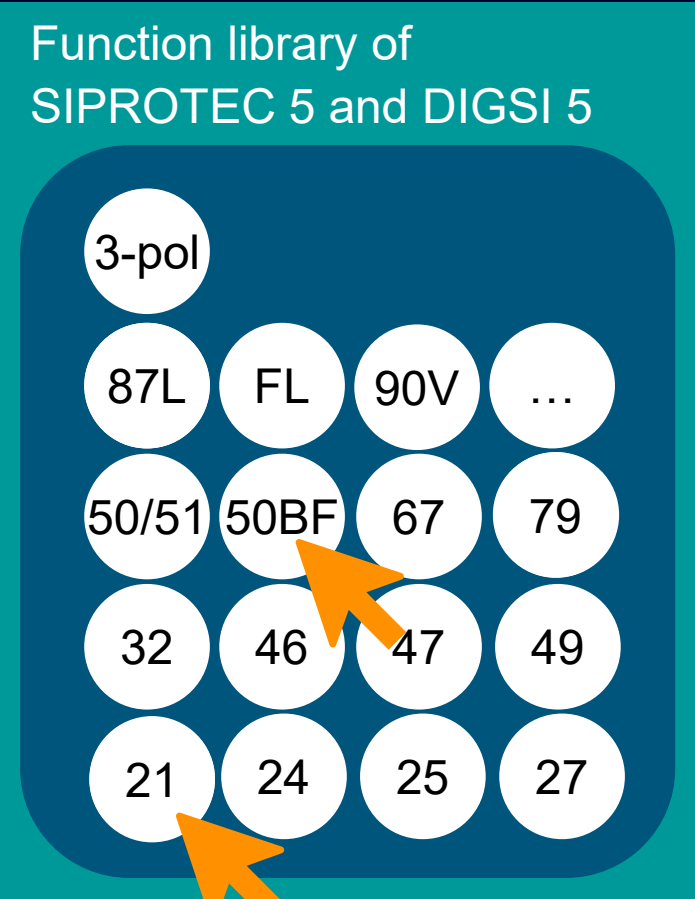
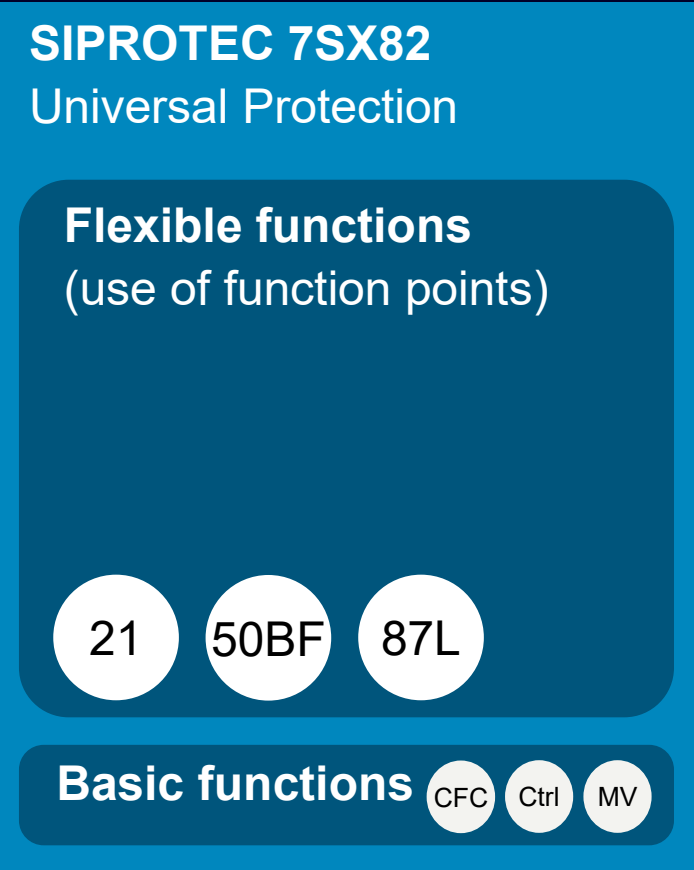
Benefits – Spare parts
Costs for stock will go down even more!





Function Point Manager

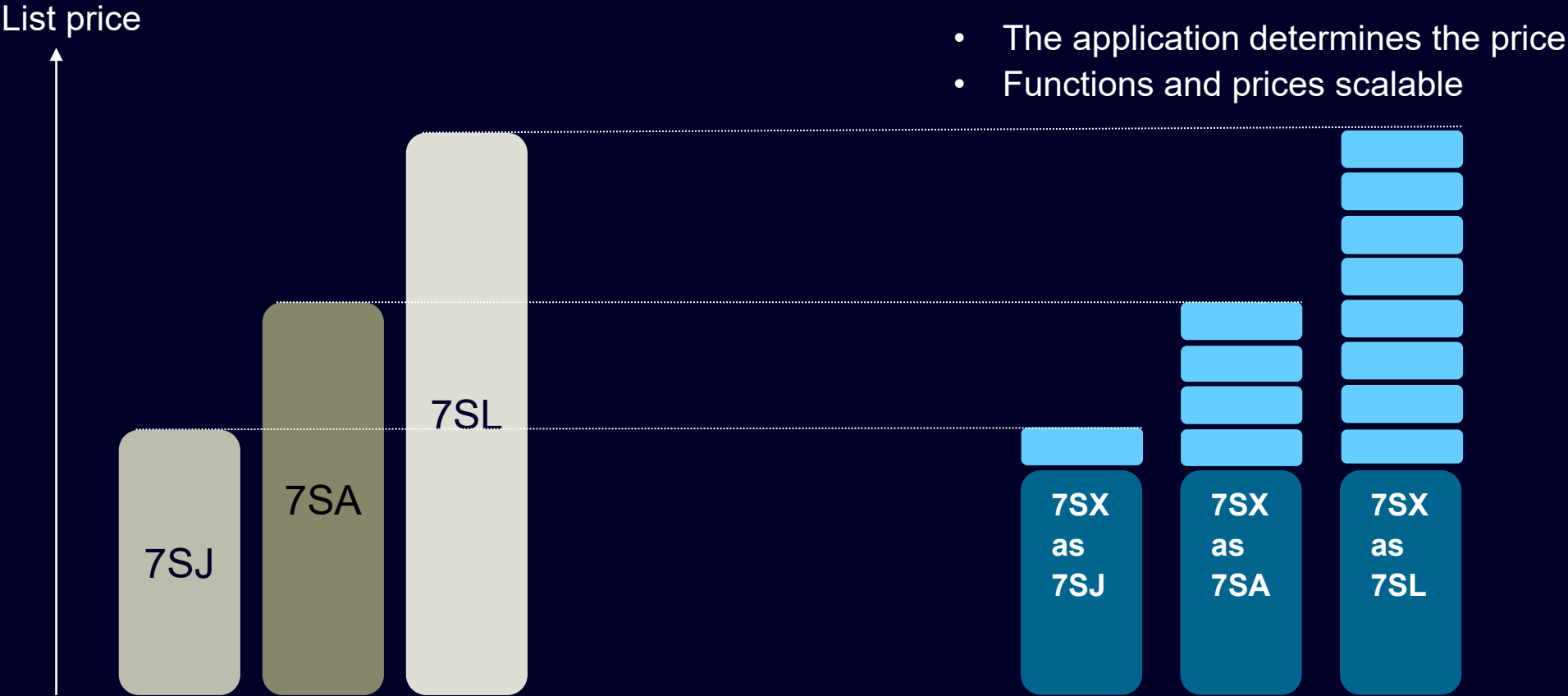
Main protection functions are flexible functions



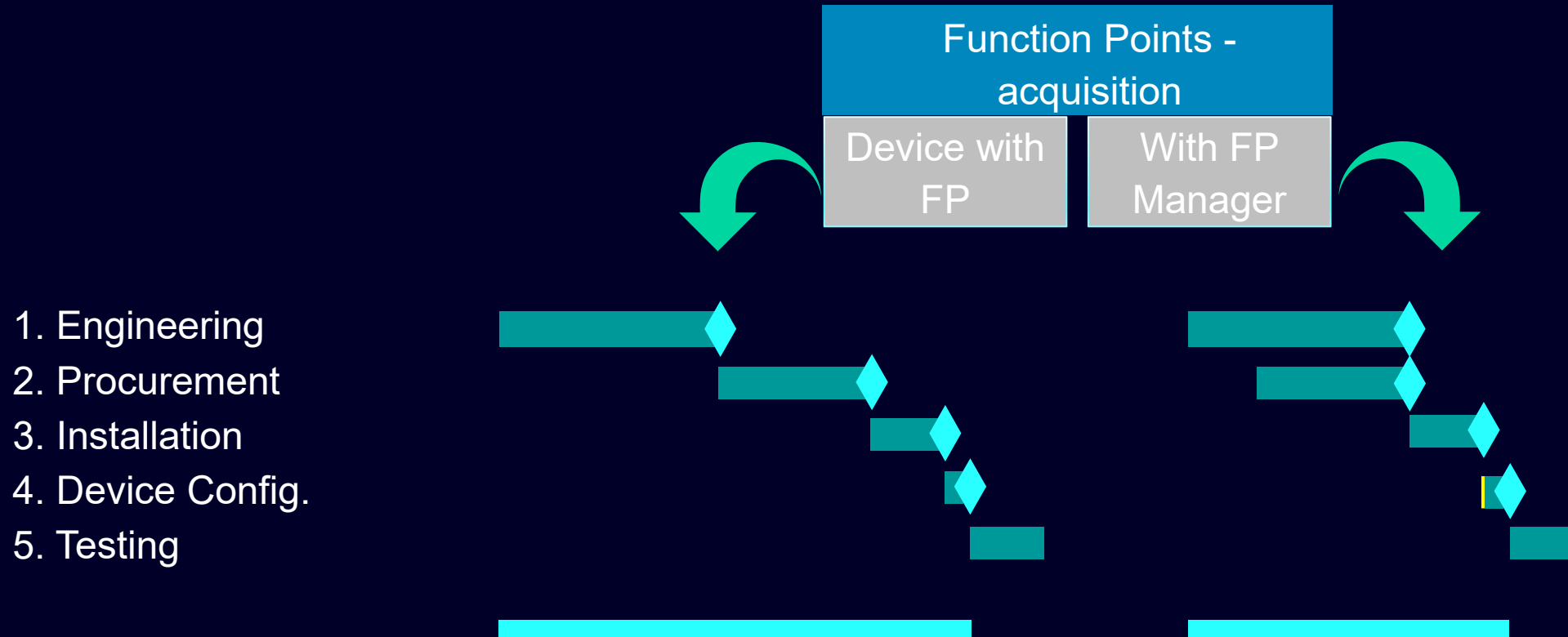
Protection functions are available using function points

Type specific devices versus universal device

How function and price model work



How to handle functionality?



- Time of project development is reduced
- Fast reaction time for changes occurring short before testing or commissioning
- Easy adaption of functionality during the complete lifecycle

Basic Workflow

Prepare in advance and react within seconds

Get Ready

- **One time**
Create Function Point Manager account
(Prerequisite for orders)
- **Once a year or a project, as necessary**
Order function point budget to be
allocated in your account

Separation

Use it

- **On demand, within seconds:**
Create and download license file (DAF)
and upload it to the SIPROTEC 5 device

[SIPROTEC-Function-Point-Manager](#)



| Efficient Engineering

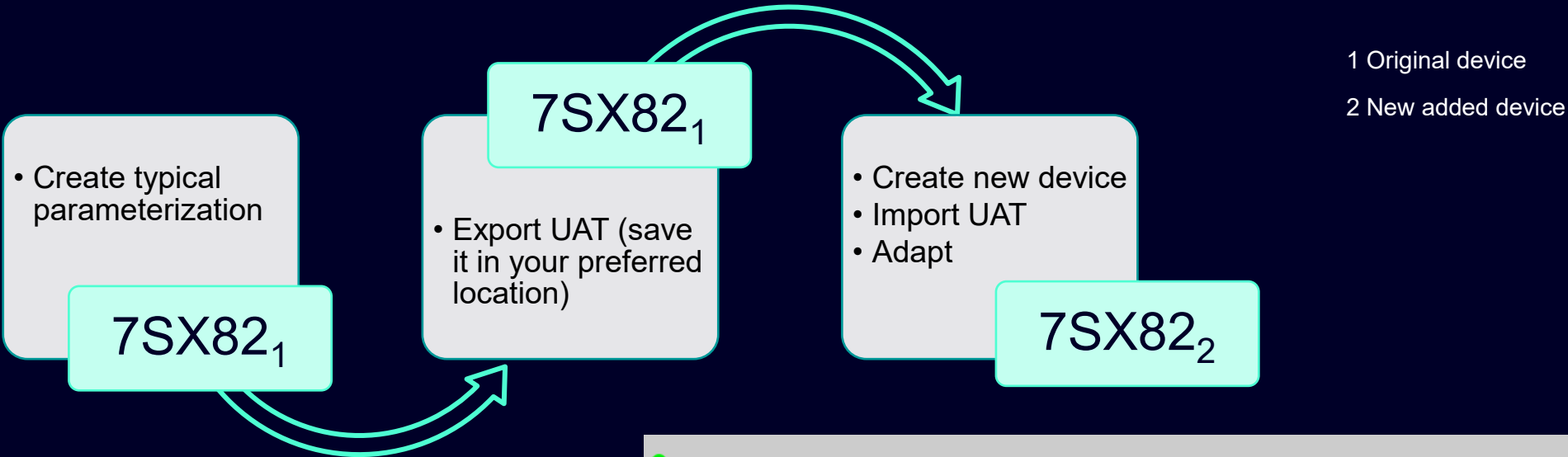
Efficient Engineering

Take advantage of the features offered by DIGSI 5
and optimize your parameterization process:

- User Application template UAT
- Data exchange format TEA-X
- Favorite settings

Identical parameters are created only once. Similar parameters are created once.
Basic parameterization is saved in a User Application template UAT
UAT is used to create a typical per bay type. This typical will be completed and duplicated.
Favorite settings can give a clear view of the settings to be modified per bay

User Application template UAT



Data formats:

- XRIO - Settings of single device for use in testing equipment (OMICRON)
- RIO - Distance protection settings of a single device for use in testing equipment (OMICRON)
- SEQ5 - Test sequences of single device
- UAT - User-defined application template**
- PEX5 - Data exchange format with complete information of all devices in project
- IEC 61850 data formats:
 - ICD - IED Capability Description
 - IID - Instantiated IED Description

This format can be exported from the device level.

✓ Step 3: Select application template

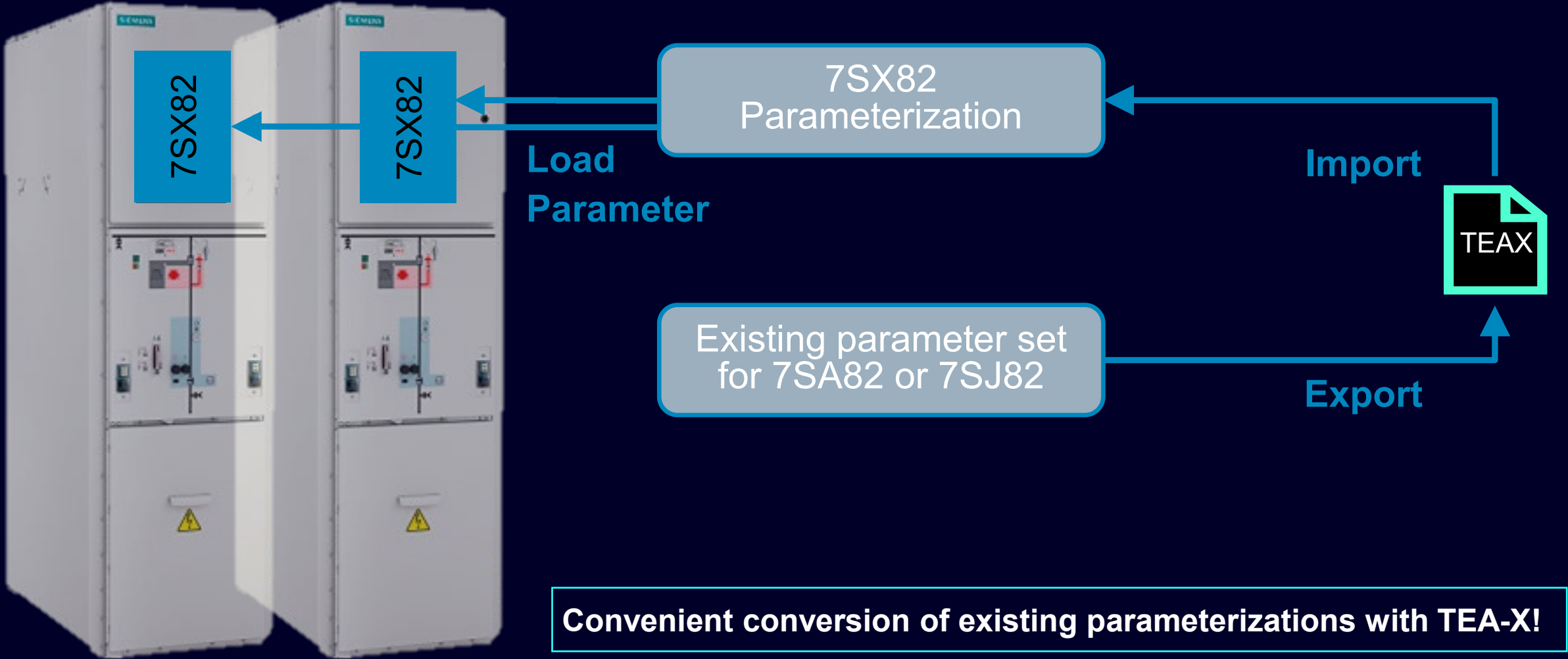
Template location: D:\UserData\Inb244040\OneDrive - Siemens AG\Documents\Automatisierung

Application-template selection: Standard **User-defined**

Application templates	Configuration	Status
7SX85 4I4V	V09.20	●
Universal 7SX85 4U4I	V08.83	●

UAT can be used even when the target device has a different hardware as the original device Inconsistencies will be shown in DIGSI (for example: Measuring Point missing)

TEA-X format to use existing parameterization



Favorite settings

Measuring-points routing

Information routing

Settings

Device settings

Favorite settings

Time settings

Power system

Recording

VI 3ph 1

General

Process monitor

50/51 OC-3ph-B1

50N/51N OC-gnd-B1

67 Dir.OC-3ph-B1

67N Dir.OC-gnd-B1

Switch onto fault 1

Inrush detect.

Mes.v.fail.det

Definite-T 1

821.1971.8131.1	Mode:	on	★
821.1971.8131.2	Operate & flt.rec. blocked:	no	★
821.1971.8131.105	Directional mode:	forward	★
821.1971.8131.8	Method of measurement:	fundamental comp.	★
821.1971.8131.10	Blk. by meas.-volt. failure:	yes	★
821.1971.8131.27	Blk. w. inrush curr. detect.:	no	★
821.1971.8131.3	Threshold:	1.500 A	★
821.1971.8131.6	Operate delay:	0.30 s	★

Add new stage

Delete stage

Settings

Device settings

Favorite settings

Time settings

Power system

Recording

VI 3ph 1

Circuit breaker 1

Charts

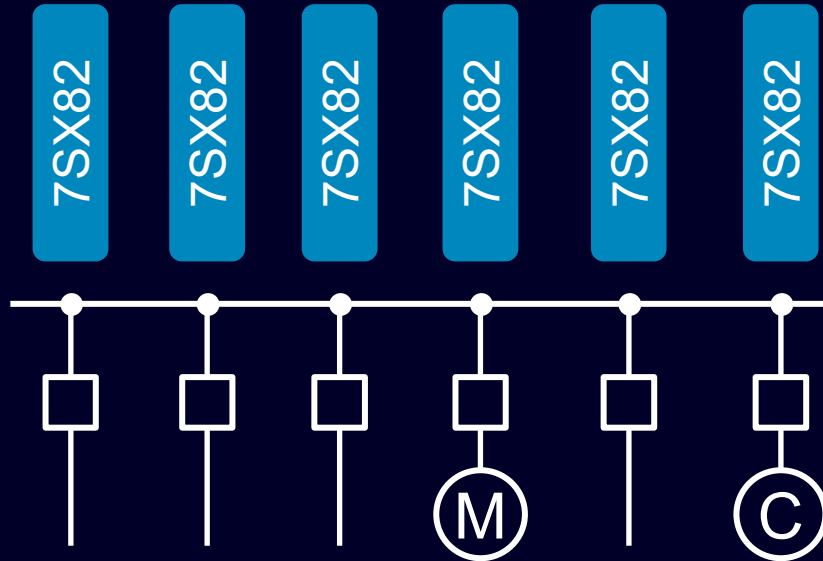
VI 3ph 1->67 Dir.OC-3ph-B1->Definite-T 2

Directional mode:	forward	★
Threshold:	2.000 A	★
Operate delay:	0.10 s	★

Most important settings at one glance help to set up quickly device configuration

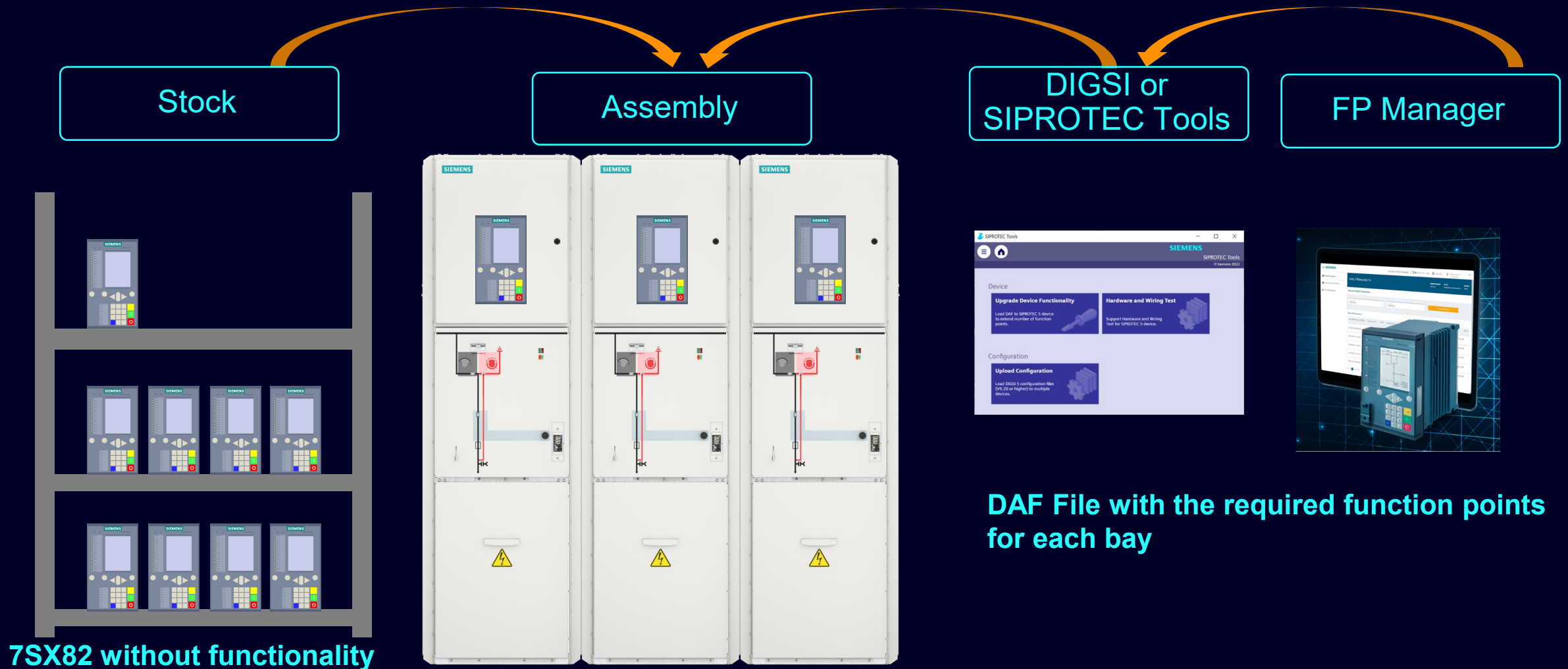
| Use Cases

Case 1. New installations: one device for all applications in distribution networks

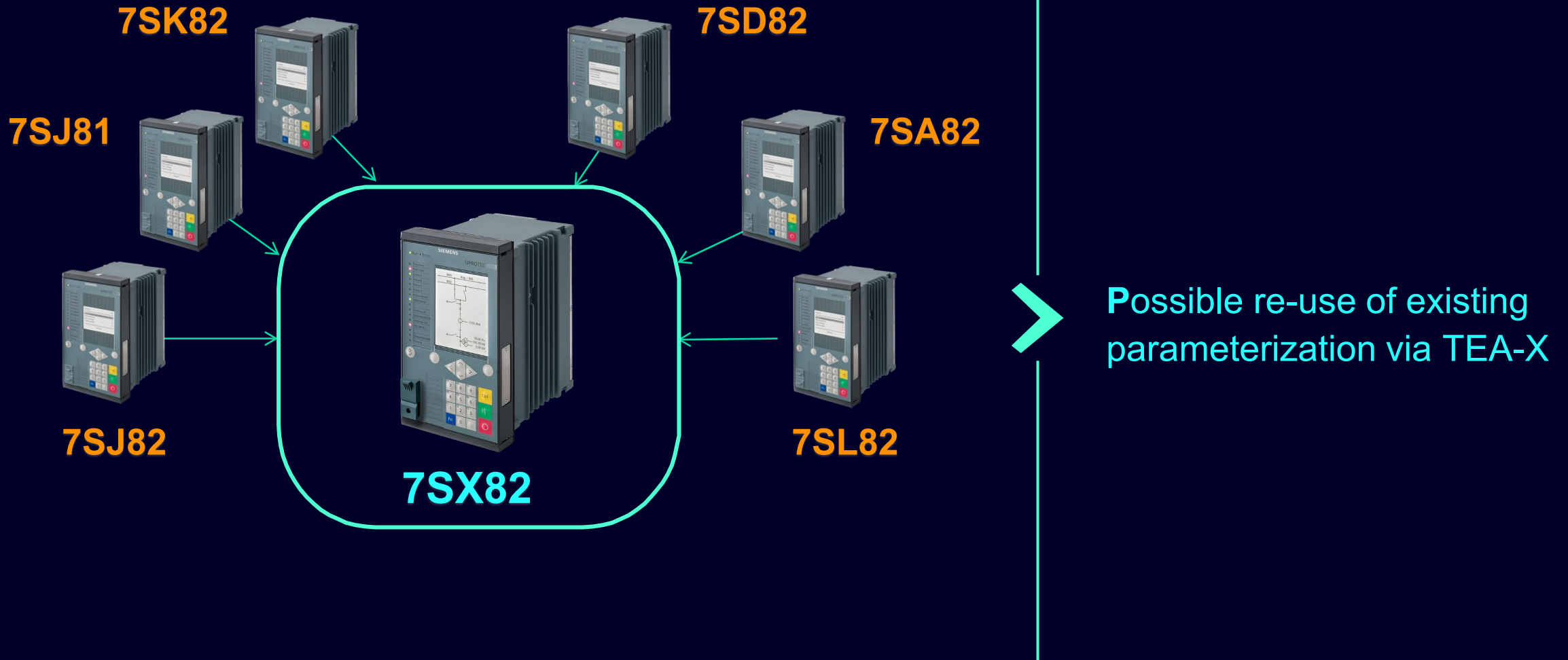


- One device type for all feeders
- In-feeder, line, capacitor, motor, feeder
- SIPROTEC 7SX82 covers functionality of SIPROTEC 7SJ82, 7SJ81, 7SA82, 7SL82, 7SD82, 7SK82
- Efficient engineering with UAT and favorite settings

Case 2. Agility in panel building



Case 3. Retrofit of existing installations



Case 4. Covering Changes in the Grid

7SA82



Distance



7SD82



Line differential

- Exchange device
- Reuse parameterization with TEA-X

7SX82



Distance



7SX82



Line differential

- Add Function Points
- Adapt parameterization

| Summary



Benefit: Optimization of investment (CAPEX) and operational (OPEX) cost.

Full flexibility

- until start of commissioning and during the complete lifecycle
- uncomplicated changes in functionality at any time

Efficient

- parameterization process
- project implementation time

Reduction

- of stock costs

Simplified

- patch management with easy integration of new security features
- single device driver handling

Universal protection

- can replace type-specific relays

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