



MunEDA WiCkeD™ SPT - Schematic Porting Tool

MunEDA SPT Schematic Porting Tool - Highlights

- Industry's first commercially-available automated porting solution
- Automated schematic migration 10-100X faster than manual porting
- Improves designers' productivity and simplifies designers' jobs
- Consistently achieves repeatable and verified results
- Customer & silicon proven

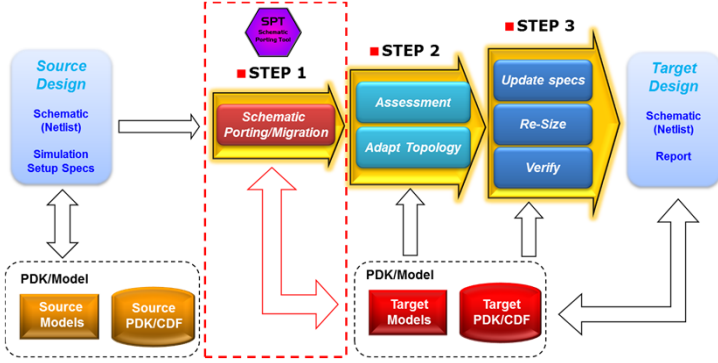
Schematic Porting between Different Processes

The migration of circuit schematics between different process technologies and process design kits (PDKs) can be a very time-consuming, uncomfortable and boring task for a circuit designer.

At the beginning of – or during – a new design project, it is often necessary to use and re-use available IP (intellectual property) and circuits from previous projects, instead of designing everything from scratch. Often a new design uses a new or different process technology. Thus, it is necessary to migrate and apply given circuit schematics for use with this new target technology. Consequently, circuit designers must adapt schematics to the new process by changing circuit symbols, default values, scaling and other characteristics – manually a time-consuming and tedious effort.

3-Step Schematic Porting, Assessment & Sizing Flow

When retargeting circuit designs from a given source process to a new process, the source design schematics are adapted primarily using a 3-step flow.

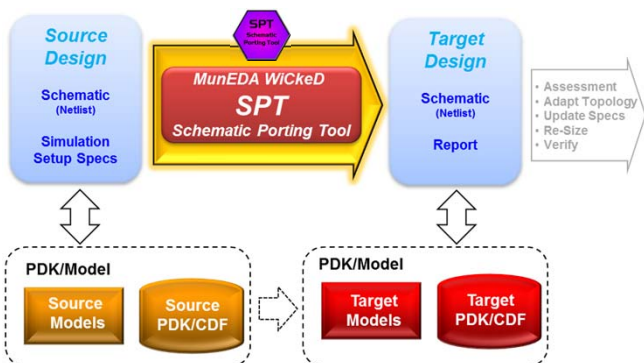


Picture: 3-Step Schematic Porting, Assessment & Sizing Flow

1. Schematics are ported and migrated to the new target process using the models and PDK/CDF from the target process technology. This task is very often done manually, but can be automated easily.
2. After migration of all such schematics, the circuit designer assesses the ported IP and adapts the circuit topologies – when necessary – in schematic view.
3. Based on updates of the circuit specifications, the designer analyzes and re-sizes the circuits (for example, with the MunEDA WiCkeD™ tool suite) and verifies results such as circuit functionality, performance, yield, and robustness (for example, with simulation such as SPICE).

These steps also can include iterations where necessary.

MunEDA – SPT Schematic Porting Tool



The task of schematic porting now can be automated and easily accelerated by using the SPT schematic porting tool, part of MunEDA's WiCkeD™ design tool suite.

MunEDA SPT supports designers with an automated schematic migration, replacing cells with corresponding cells in the new library. The tool:

- Replaces devices in the schematic with their counterpart (source PDK → target PDK)
- Provides flexible property mapping and automated shrinking, is configurable, and can handle MOS, R, C, and other properties
- Walks hierarchically through the schematics

Schematic & IP Migration – Challenges

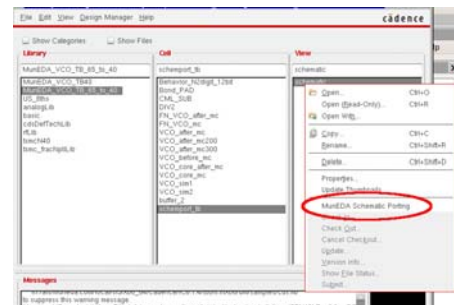
Migrating IP is a challenge because:

- Different device parameters (vth, etc.) require adjustment of biasing and small-signal parameters
- W, L shrinking is desirable, but not as simple as digital
- Some devices (mimcaps, inductors, etc.) may or may not be available, or may be of a quite different type
- Circuit topology may need modification
- Layout shrinking in integrated technologies is insufficient

MunEDA SPT Implementation & Interfaces

The MunEDA WiCkeD SPT Schematic Porting Tool:

- Is fully integrated into Cadence® Virtuoso® based unified custom/analog flow including SKILL context files, wrapper scripts and configuration scripts
- Includes user reference documentation for installation, configuration and usage
- SPT Input Files: Cell Mapping Table, Property Mapping Table, CDF dump file of the source PDK, Skill header text file

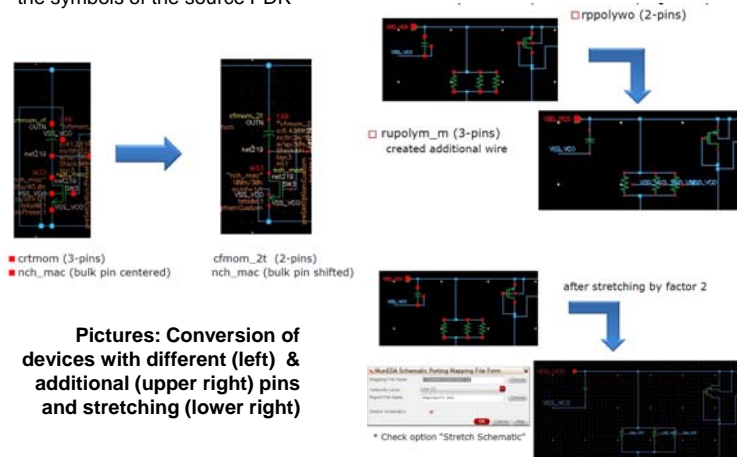


Picture: MunEDA SPT Schematic Porting Menu Item in Virtuoso® Library Manager

MunEDA SPT – Features & Benefits

MunEDA WiCkeD SPT performs automated schematic migration:

- replaces devices in the schematic with their counterparts (source → target PDK)
- recalculates the properties of target cells according simple rules
- performs mapping of terminals, if they have different positions
- provides wiring for additional pins per symbol to Power/Ground rail
- stretches the schematic by factors, if the symbols of the target PDK are larger than the symbols of the source PDK



Pictures: Conversion of devices with different (left) & additional (upper right) pins and stretching (lower right)

MunEDA SPT – User Benefits

- Correct and repeatable replacement of instances
- Guarantees database consistency
- Fast: Migrates 1000s of devices in seconds, hierarchically.
- Flexible property mapping, configurable, automated shrinking
- Can handle MOS, R, C, inductors, varactors, ...
- Generates conversion reports
- Shows every mapped instance, selected properties and values

MunEDA SPT Schematic Porting – Technology Support

- Configurable for many source/target process technologies
- Configurations available from MunEDA for many foundry processes
- Inhouse process technologies support
- For more information and support contact www.muneda.com