Best Practices for ECAD Library Development

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braries are not just a starting point

Not many get to start from scratch

Companies merge

Technology requires more information

Maintain Legacy Design

st Practices To Consider When Your Library Needs To Evolve

est Practices: Library Extended Organization

Master Librarian
- Has **decision authority** over library design, specification, integrations

Librarian
- Adds component properties, builds symbols and cells
- Locates existing 3D models (M3DL, STEP) and adds to library

★ Involve in libra
specification te

Production Engineer
- Approves land patterns and padstacks based on manufacturing processes

Component Engineer
- Approves new part requests for company use, assigns company PN
- Modifies part lifecycle when necessary (e.g. obsolescence)

Mechanical Engineer
- Builds custom 3D models in mechanical tools when necessary

Simulation Engineer
- Builds and/or approves simulation models for use in the library
- Spice, IBIS, thermal, etc.

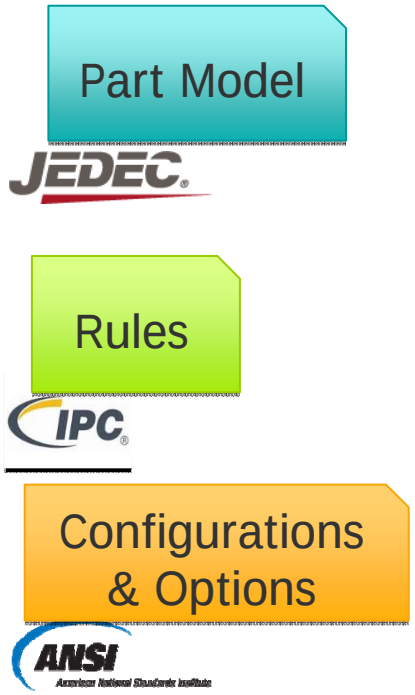
Data Management System Administrator
- Manages server hardware and software

est Practices: What Needs Support?

Design Capability	Tools to be supported
System simulation	SystemVision
Library part creation	xDM Library Tools, PartQuest
Part selection & placement	xDM Library Client
PCB schematic capture	xDX Designer
PCB layout	xPCB Layout
Variant management	Variant Manager
Fabrication drawing	xPCB Layout, Drawing Editor
EMI analysis	Hyperlynx DRC
Manufacturing preparation	Valor NPI
Mechanical design	Siemens NX
Signal integrity analysis	HyperLynx SI
3D PCB layout	xPCB 3D
3D model library	M3DL, STEP
Power integrity analysis	HyperLynx PI
Thermal analysis	floTHERM

Library infrastructure should support the tools for each phase of design

est Practices: Consider “Standards”



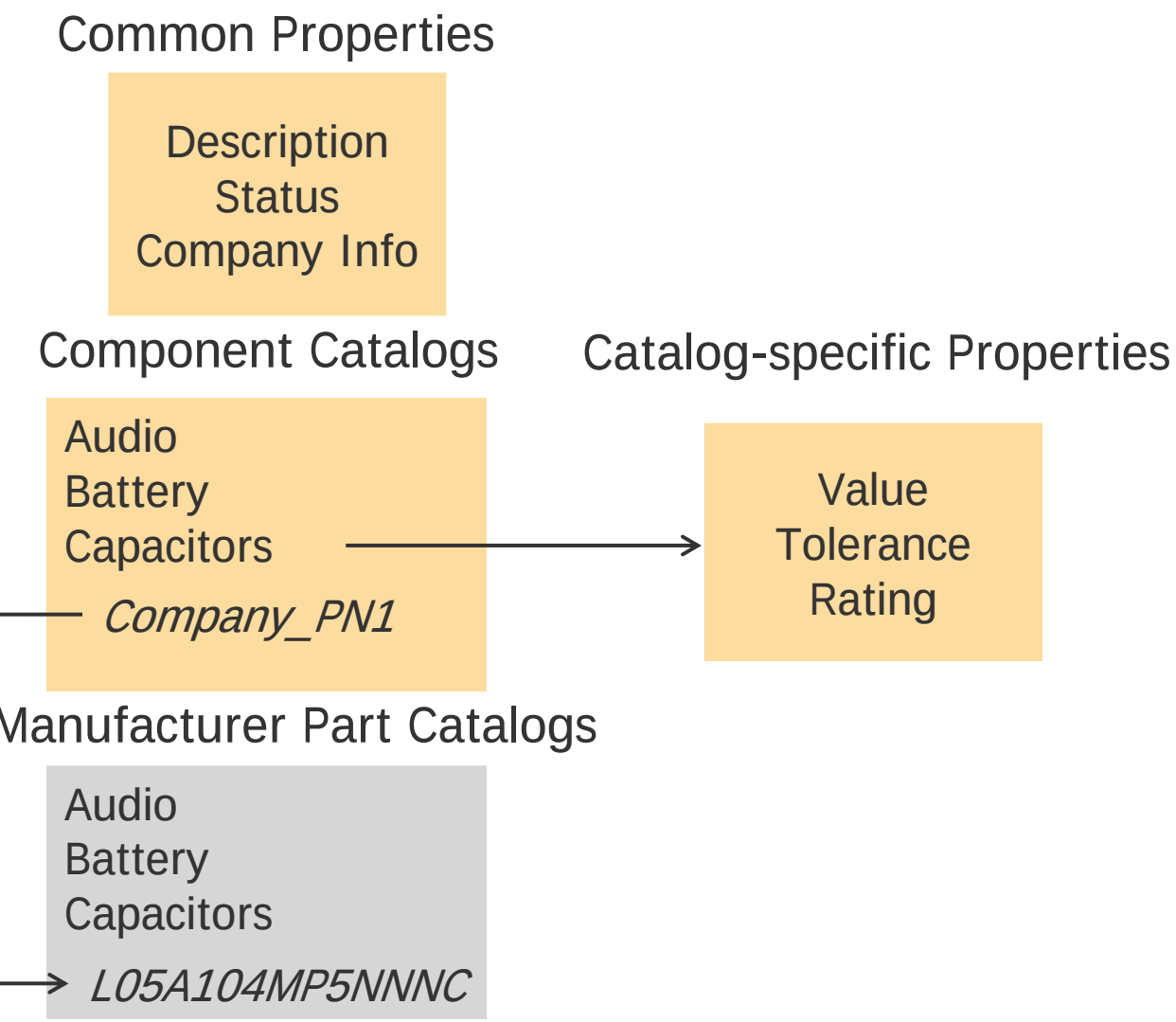
Part Model
- Body shape and dimensions
- Lead form and dimensions
- Pin list and pin properties

Rules include (but are not limited to)
- Manufacturing Process definitions
- Process-specific land-pattern calculations (based on IPC 7351 standard)

Tool Configurations include (but not limited to)
- Symbol pin spacing
- Symbol pin graphical indicators (clocks,inversion,etc.)
- Manufacturing Processes desired
- Design densities desired (min, nominal, max)

Models include (but are not limited to)
- IBIS, SPICE
- Thermal
- STEP, ProStep, EDX, IDF

est Practices: Component Taxonomy



Component Taxonomy is commo
to all parts regardless of Library
Specification

Defining the taxonomy should b
the first task of the library
specification team

est Practices: Where Best to Assign?

manage IBIS
Library

Library Server

701V.IBS

Library
Cache

properties

symbols

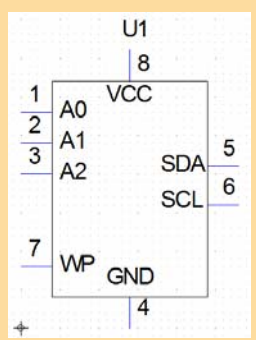
ary Client

Search &
Place

add IBIS model
tic

Company_PN1
Value: 0.1 pf
Rating: 10V
Tolerance: 20%

Company_PN2
IBIS:701V.IBS

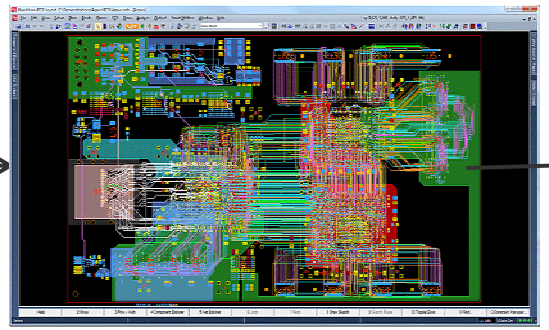


Schematic

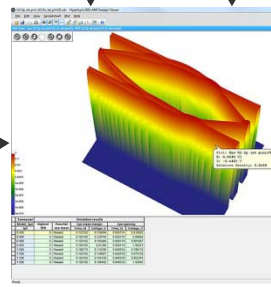
Option 1: add IBIS model
to QPL File

701V.IBS,
Company_PN2

QPL File

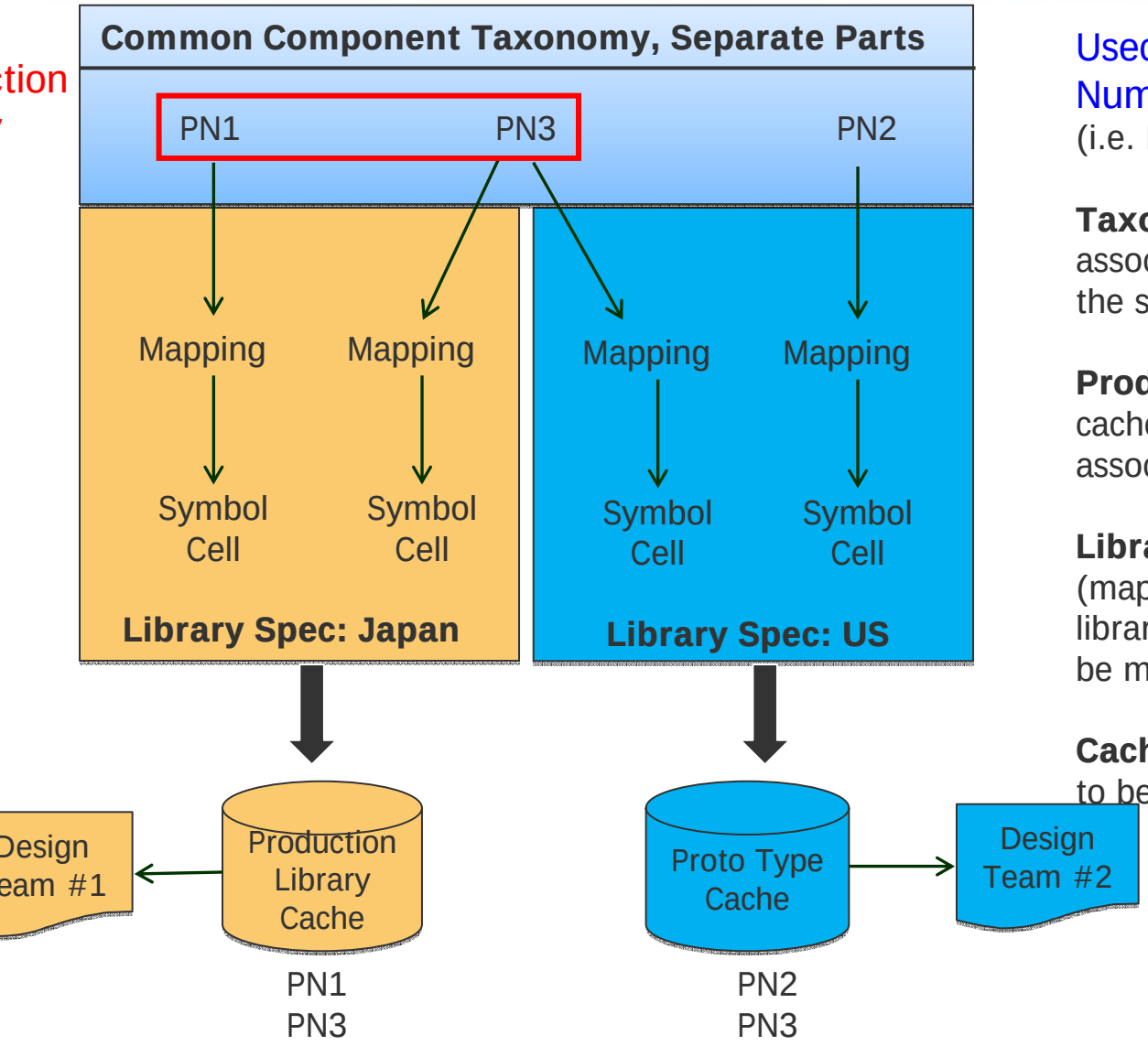


Layout



Board
Simula

est Practices: How used?



Usecase: Common Component Taxonomy, Differe
Numbers, Different CAD Data
(i.e. Production and ProtoType)

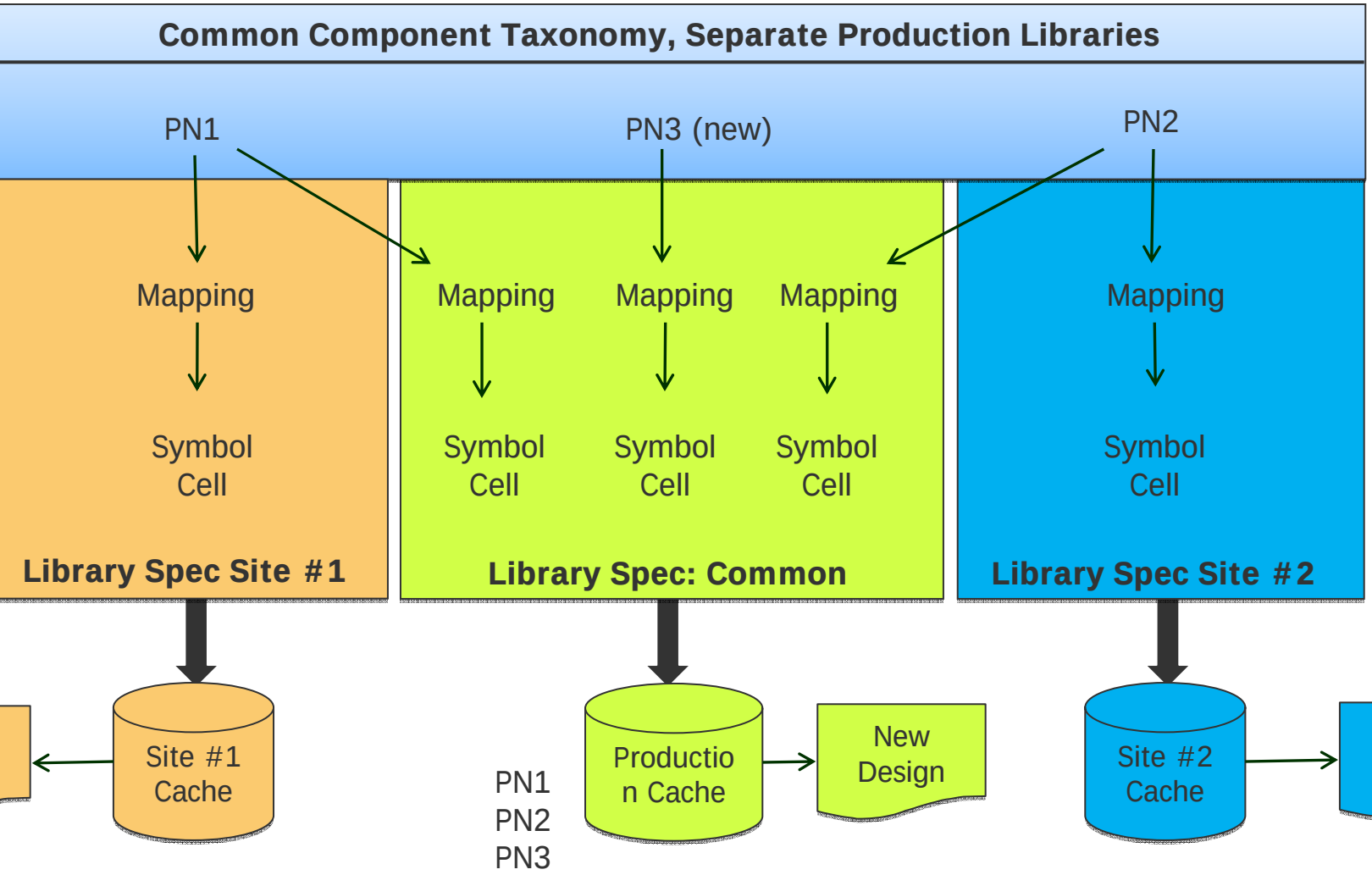
Taxonomy : a set of component catalog groups and pro
associated with each group. All components in the librar
the same taxonomy.

Production Library : a set of part numbers to be expor
cache for a specific set of users. Each Production Library
associated with a single Library Specification.

Library Specification : a sub-container of ECAD data
(mapping, symbol, footprint). Typically parts with differe
library specifications and built to different standards shou
be mixed in a cache.

Cache : a set of CAD data (parts, symbols, footprints, pa
to be used by a group of designers.

est Practices: How Used?



Usecase: Common Librar
New Designs, Legacy Lib
Still Maintained
(i.e. merge of design tea

The Common Library Specifi
has only CAD data matching
common standard.

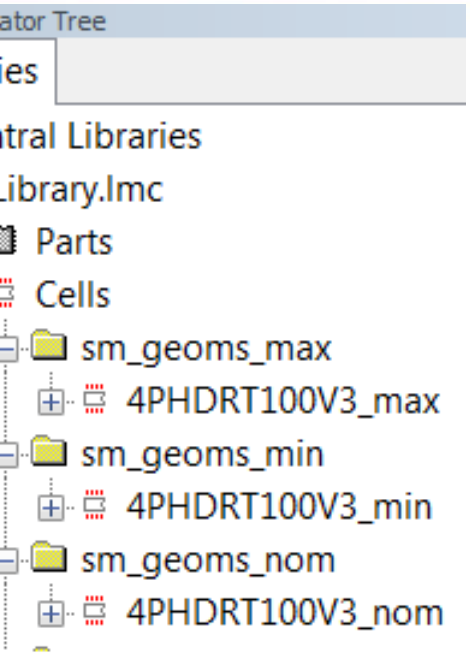
Existing part numbers can b
associated to different CAD
legacy library and in Commo

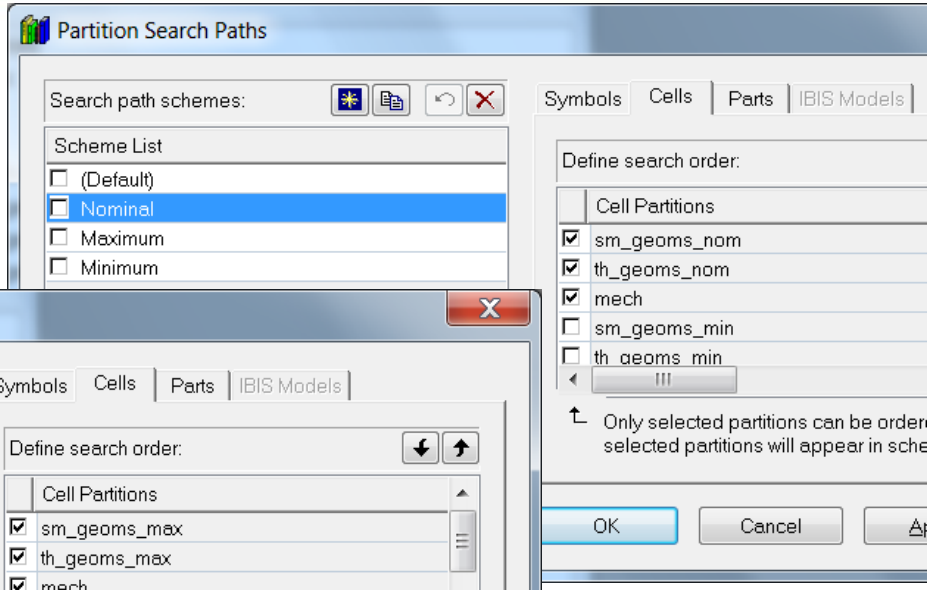
Caches for each site are still
unique Production Library pa

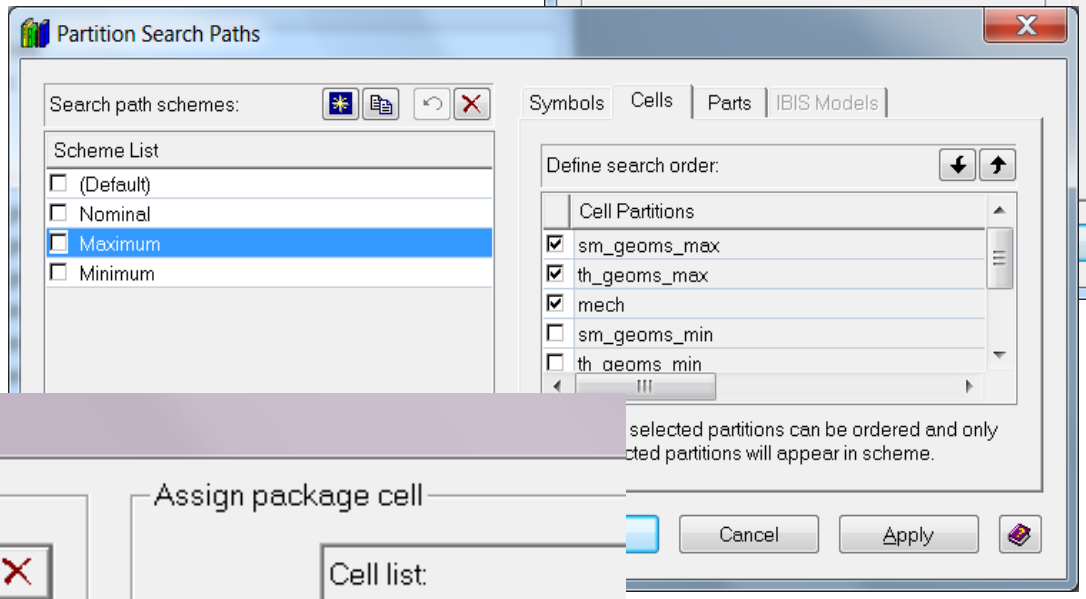
If the company standardizes
numbers, there could be jus
common Production Library.

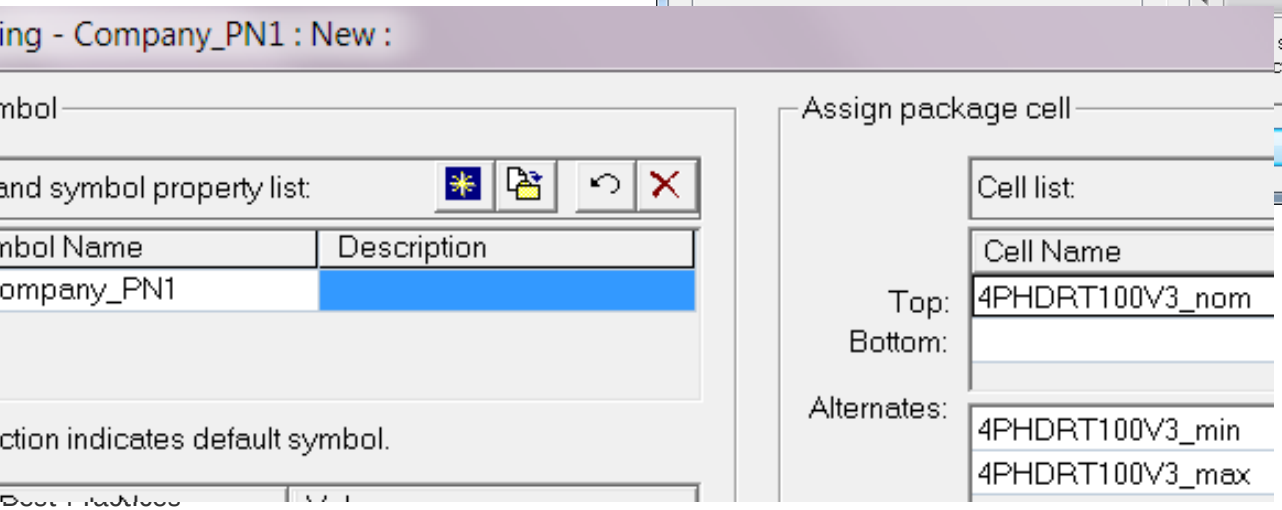
est Practices: Managing Alternates

Catalog by parts or footprints.
A Part can references multiple footprint names.



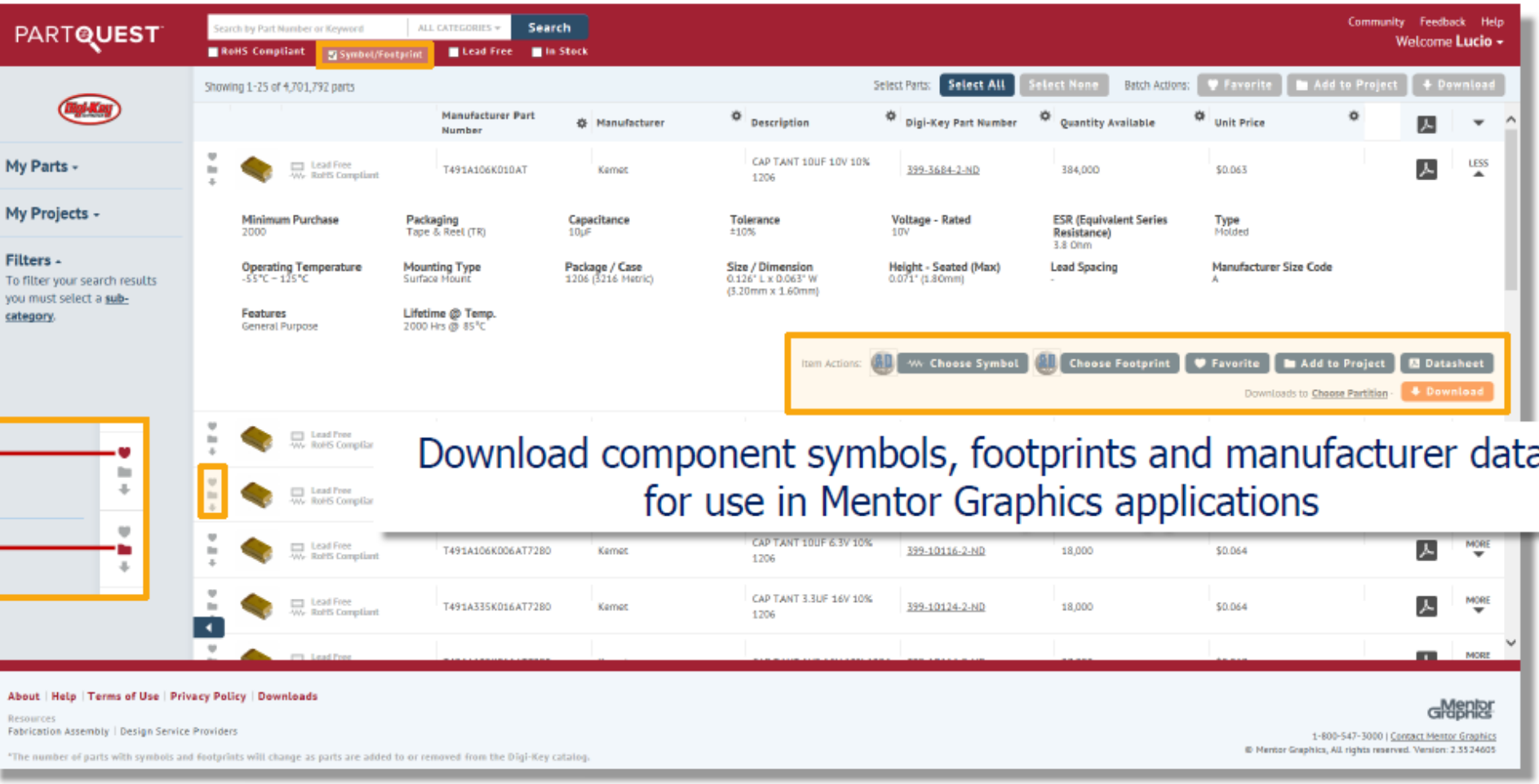






Catalogs can deter
for the user which
footprints can be u
design
(i.e. Class 2 vs Clas
approved designs)

est Practices: Make Use of Industry Providers

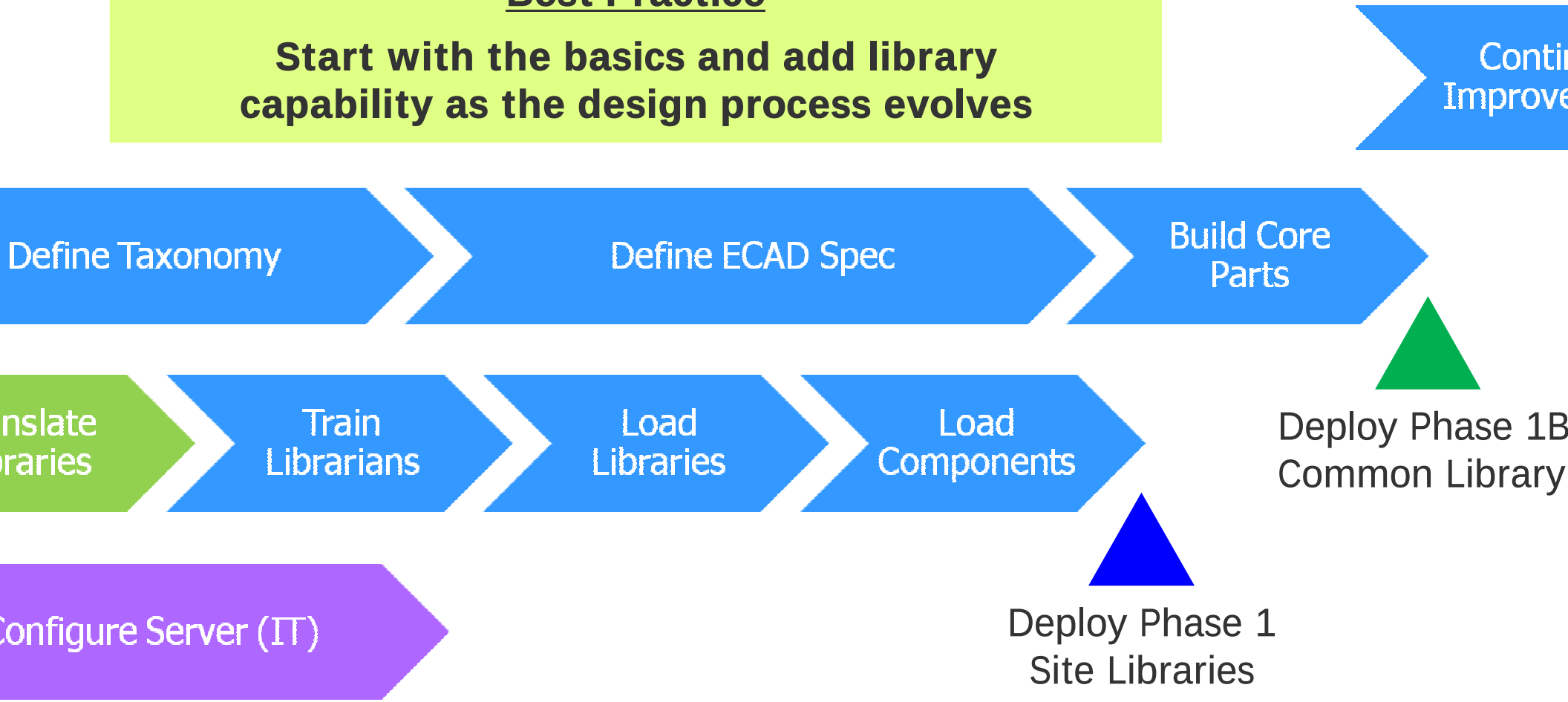


Downloads includes manufacturer part number, properties, and CAD data.
Rename downloaded components to company part numbers in Production Library.

est Practices: High Level Project Tasks

Best Practice

Start with the basics and add library capability as the design process evolves



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