



# GRATEFUL Tradeoffs

- **Advantages**

- **Simple PSM “template” masks**
- **Template re-use: Cost Amortization**
- **Improved resolution and process latitude**
  - Critical features are all dense, MEEF minimized
- **Minimal OPC required**
  - No local corrections required
- **RET compliance ensured from the start of design process**
- **Minimizes polarization effects in hyper-NA regime**

- **Issues**

- **All critical features must fall “on grid”**
  - New design rules
- **Cell density implications ?**
  - Needs detailed study of typical library.
  - Major issue is minimizing contacted pitch
- **Multiple exposures and resist layers required**
  - Still cost effective for moderate/low volumes