

General Design Procedure for Digital Systems

The Basic Design Procedure

1. Micro-architect the datapath (DP) based on the given task/algorithm
2. Plot the system model (CU-DP) with all signals explicitly shown
3. Plot the CU (FSM) structural model with all relevant signals explicitly shown
4. Use an ASM chart to describe the system's cycle-by-cycle operations
5. Extract control information needed to design the CU (FSM) a) state transition information (bubble diagram) for the "Next State" logic b) output information (output table) for the "Output" logic
6. Integrate the system (connecting the CU and DP)

Note: This procedure is iterative and verification is required throughout the procedure.