

A P1500 Activity (CTL) Defining a Core Test Language

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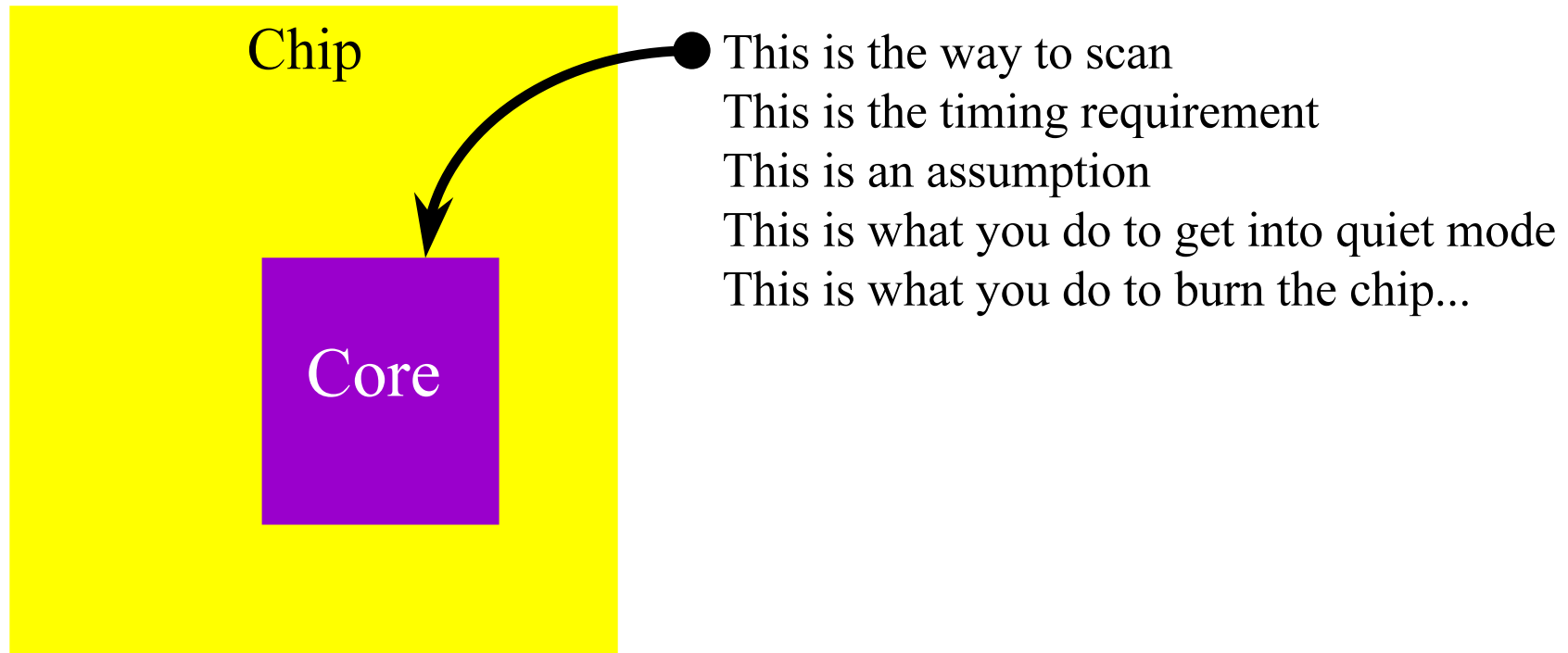
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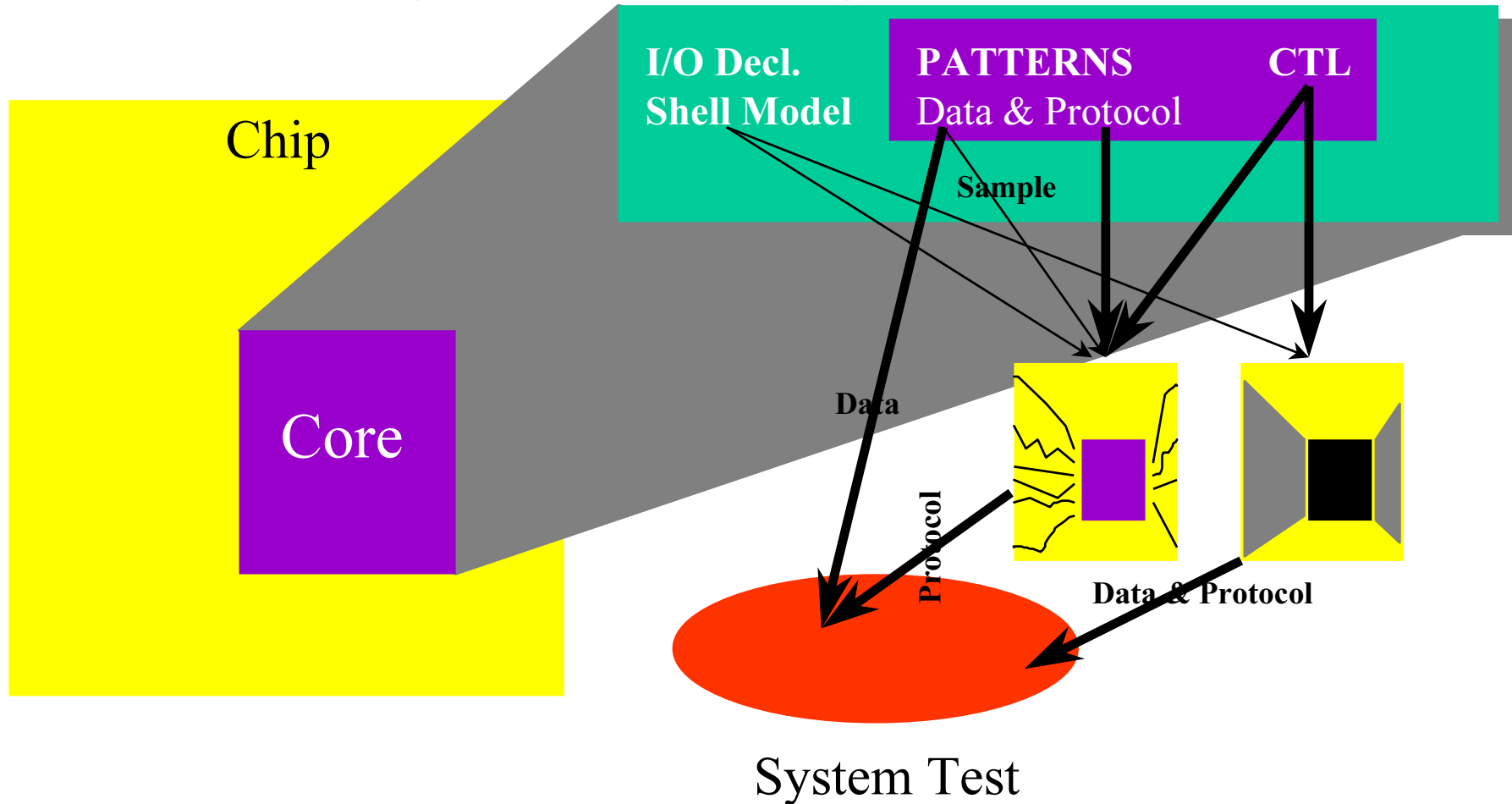
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A Core Test Language

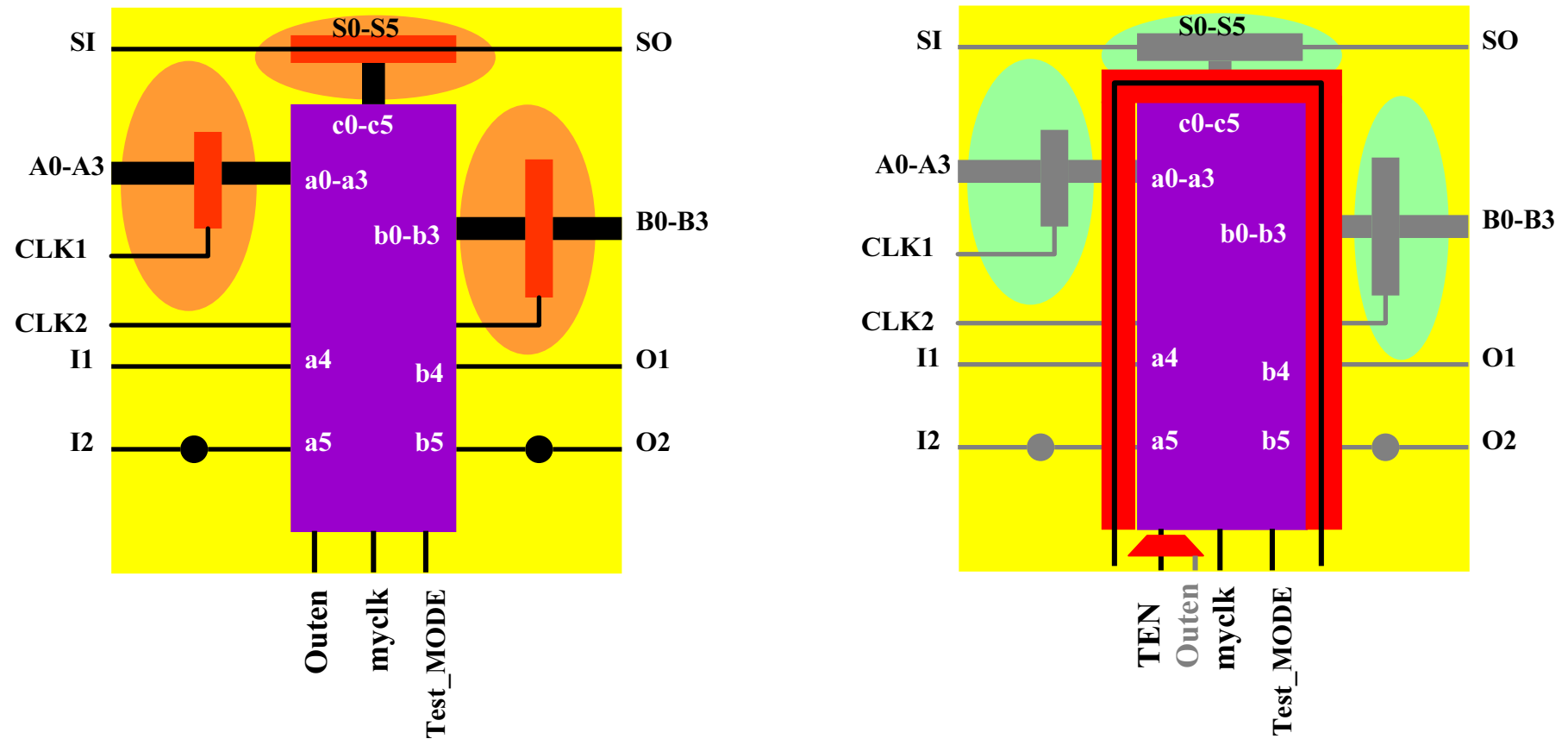


CTL Usage Model

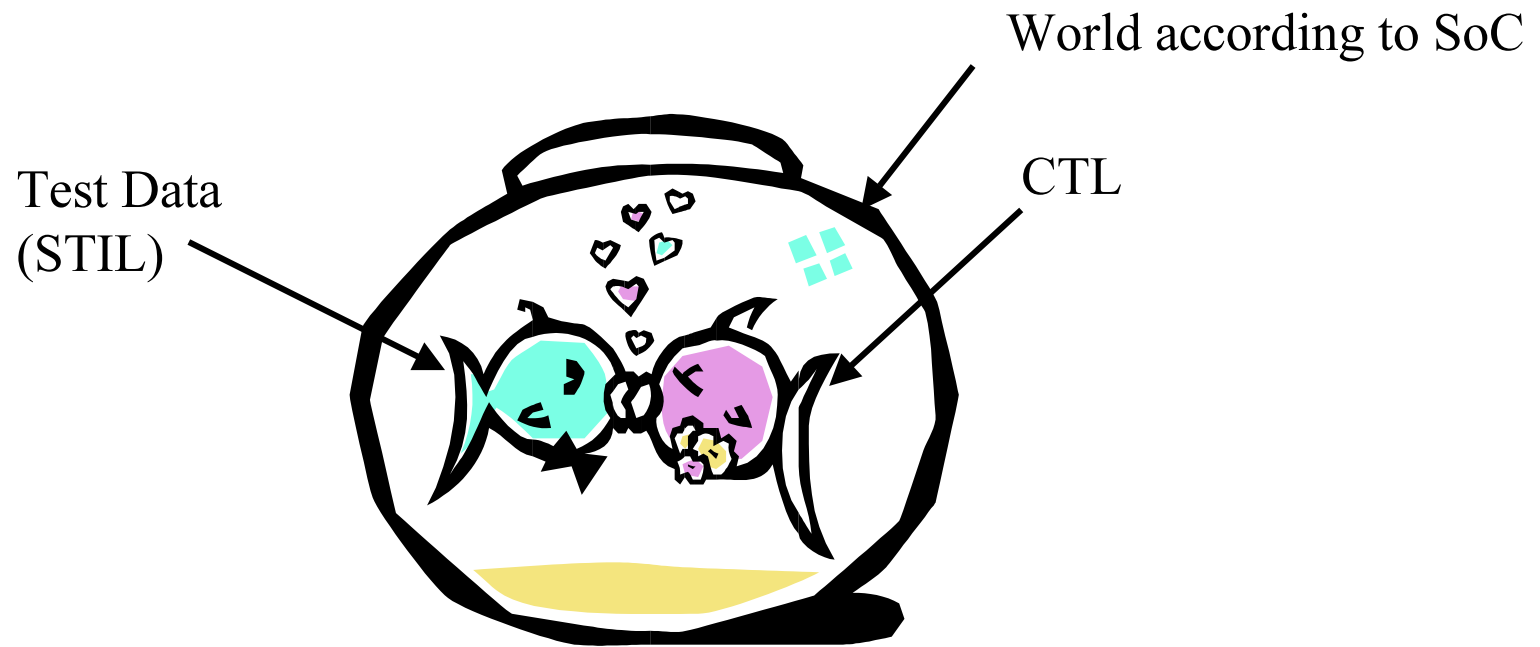
System Integration



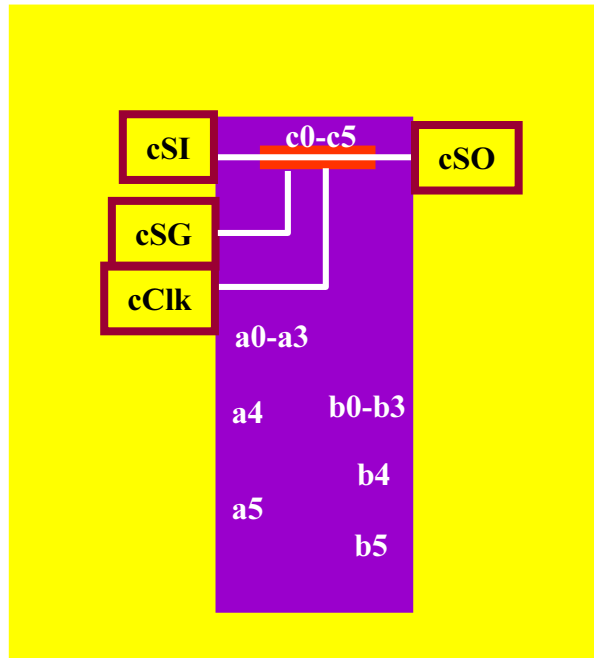
Information in CTL can be used for different SoC solutions



CTL and the Test Data



CTL by Example (Scan Chain)



```

Environment {
  CTL {
    Internal {
      cSI+cSO { DataType Scan;}
      cSG { DataType ScanEnable;}
      cClk { DataType Clock;}
    }
    Purpose MacroDefs ControlObserve cChainOperation;
  }
}
  
```

```

Header { Title "scan example"; Date "Mar 2000"}
  
```

```

Signals { cSI In {ScanIn 6;}
            cSG In;
            cSO Out {ScanOut 6;}
            cClk In; }
  
```

```

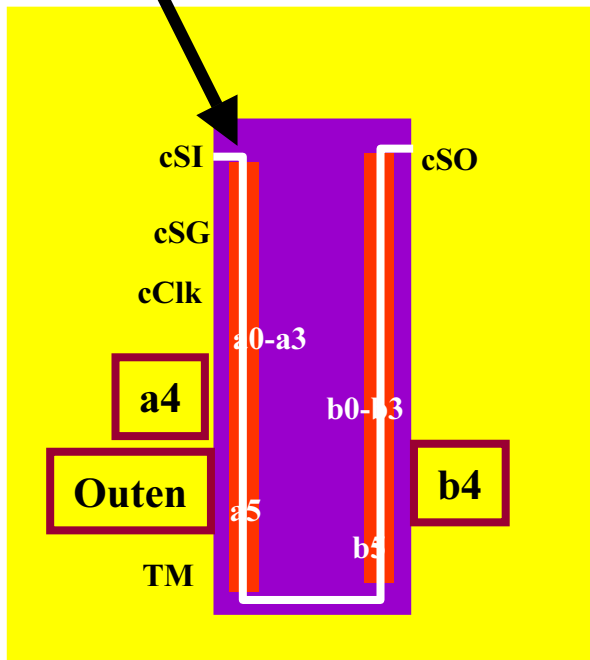
ScanStructures {
  ScanChain internalScanChainC {
    ScanLength 6;
    ScanInversion 0;
    ScanCells {c0 c1 c2 c3 c4 c5;}
    ScanIn cSI;
    ScanOut cSO;
    ScanMasterClock cClk;}}
  
```

```

MacroDefs {
  "cChainOperation" {
    W cChainTiming;
    ScanChain internalScanChainC;
    C { cSG = 1;}
    Shift { V { cSI=#; cSO=#; cClk=P;}}}}
  
```

Wrapper Inside

Wrapper Cells



Environment {

CTL ExTest myExttestMode {

Internal {

a4 {

IsConnected In internalScanChainC, c4;

}

b4 {

IsConnected Out internalScanChainC, c7;

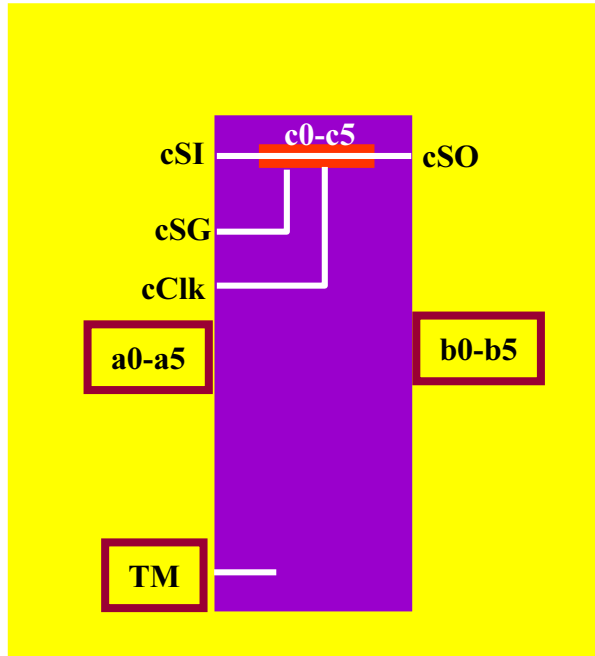
IsEnabledBy Out Signal Outen, ForceUp;

}

}

}

Describing Characteristics of the Test Data



```

Header {
  Title "Test Data Char"; Date "Mar 2000"
}
Signals {
  a[0..5] In; b[0..5] Out; TM In;
}

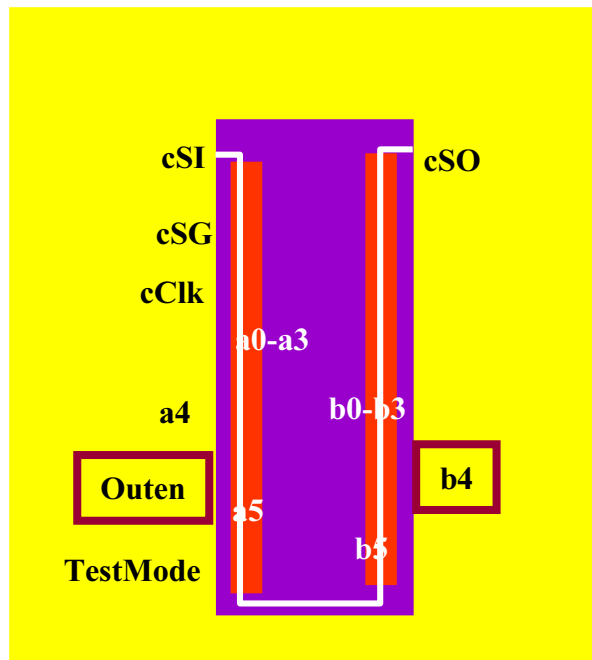
```

```

environment {
  CTL {
    Internal {
      a[0..5] {
        DriveAccuracy NonCritical;
        DataRate Events 1
        Vectors 10000 Patterns 1; }
      b[0..5] {
        StrobeChar ScanStable;
        StrobeAccuracy NonCritical; }
      TM { DataType TestMode;}
    }
    External {
      TM { ConnectTo PI; }
    }
  }
}

```

CTL Example (Isolate Mode)



Environment {

```
CTL Isolate mySafeModeExample {  
    Purpose EstablishMode {configCore -1;}  
}  
}
```

Pattern configCore {

```
F { Outen = \eD; b4 = \eQ; }  
}
```

Tying the Information Together

```
Environment {  
  CTL {  
    // Describe Common Info  
  }  
  CTL modeType modeName {  
    // Describe Mode Specific Info  
  }  
  CTL modeType modeName {  
    // Describe Mode Specific Info  
    Parent modeName;  
  }  
}
```

Status

- Working on LBIST
- MBIST to follow.
- Testing CTL on some real designs.
- Cleanup terminology and syntax.
- Determine Mandatory and Optional Info.
- Documentation & Ballot.