

An Overview or Illustration of Software Processes:

The following figures, based on “Software considerations in airborne systems ...” (RTCA/DO-178B) serve as a reminder of the various processes involved in the production of software. While some of the terminology may be specific to the aviation sector, the main ideas apply for all kinds of software.

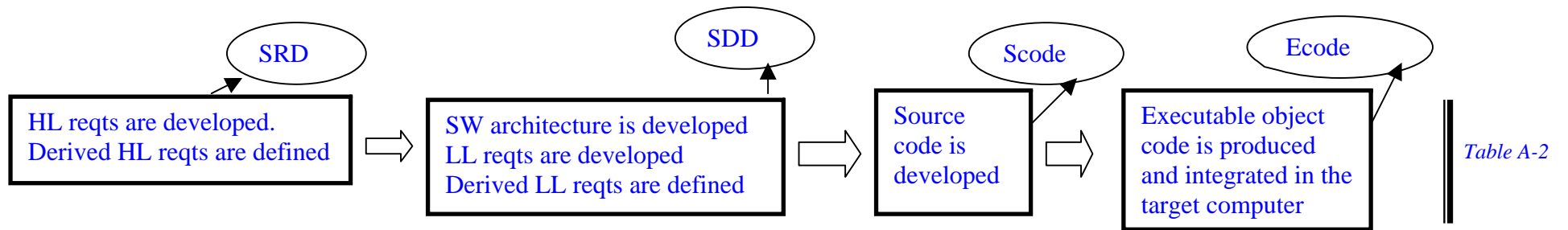
In the aviation area, as for many other industries, there are more or less stringent requirements on how software is produced depending on how critical it is. In aviation, the criticality levels range from E (in no way critical) to A (most critical).

The first series of diagrams depict the main constituent processes of Level D software (in civil aviation terms). The diagrams are “built up” to form a picture of the various processes involved. For contrast, the level D series is followed by a summary diagram for software of Level C criticality.

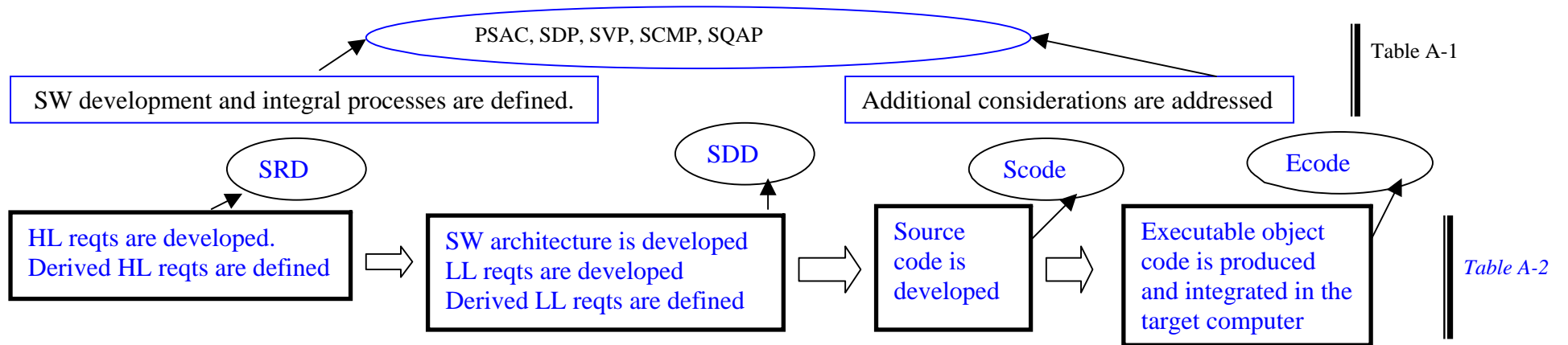
NB:

- In CA305, we are using these diagrams to get a high level picture so points of detail can be ignored.
- Ignore the references to "tables" (in fact, these are tables within document RTCA/DO-178B).
- The oval shapes depict documentation.
- There is some specialised terminology here (that can be largely ignored), especially regarding high-level (HL) and low-level (LL) requirements. Roughly, can regard HL as being "requirements proper" and LL as being part of software design.

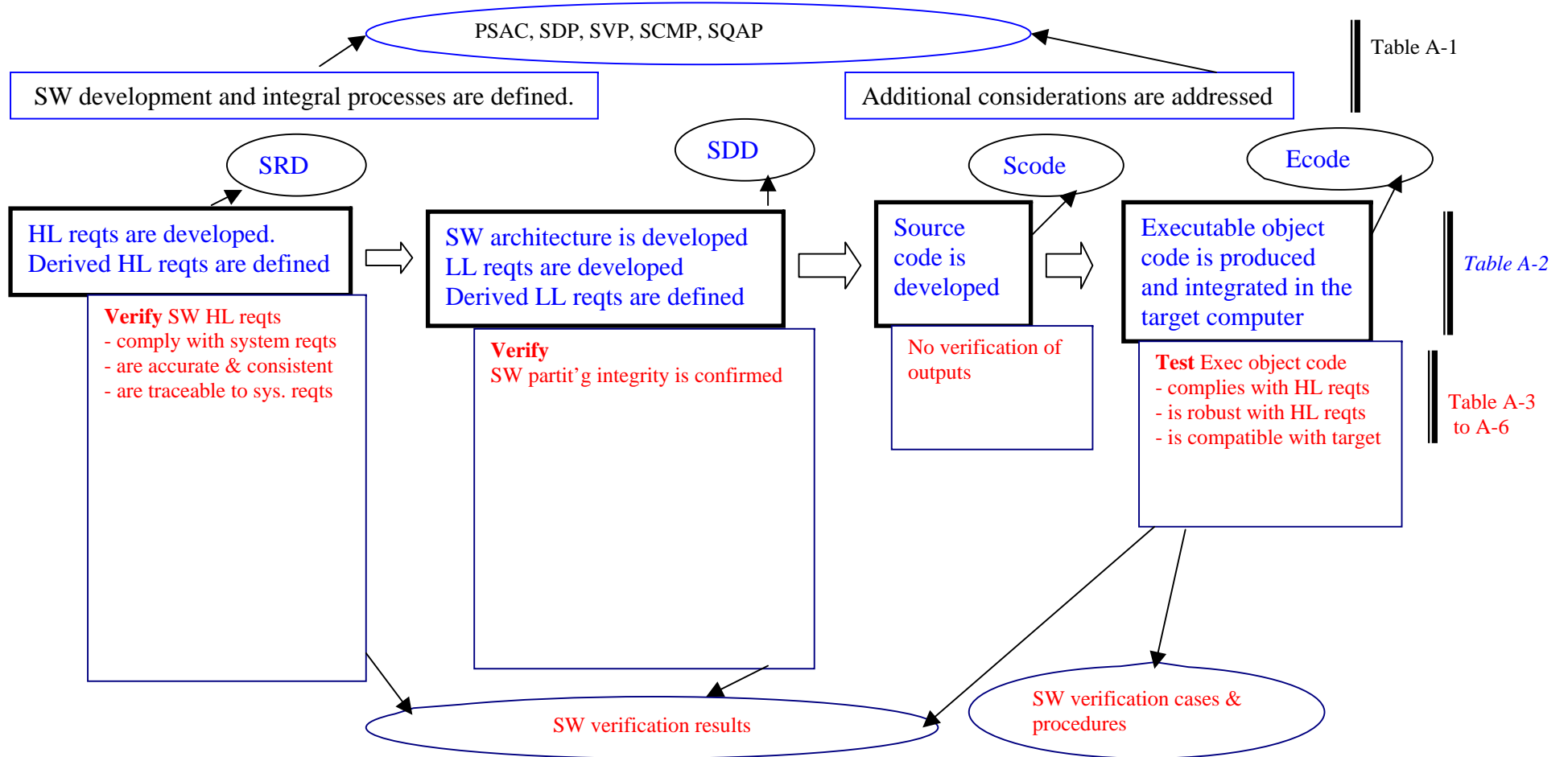
LEVEL D SUMMARY-1 (SW "development process" only):



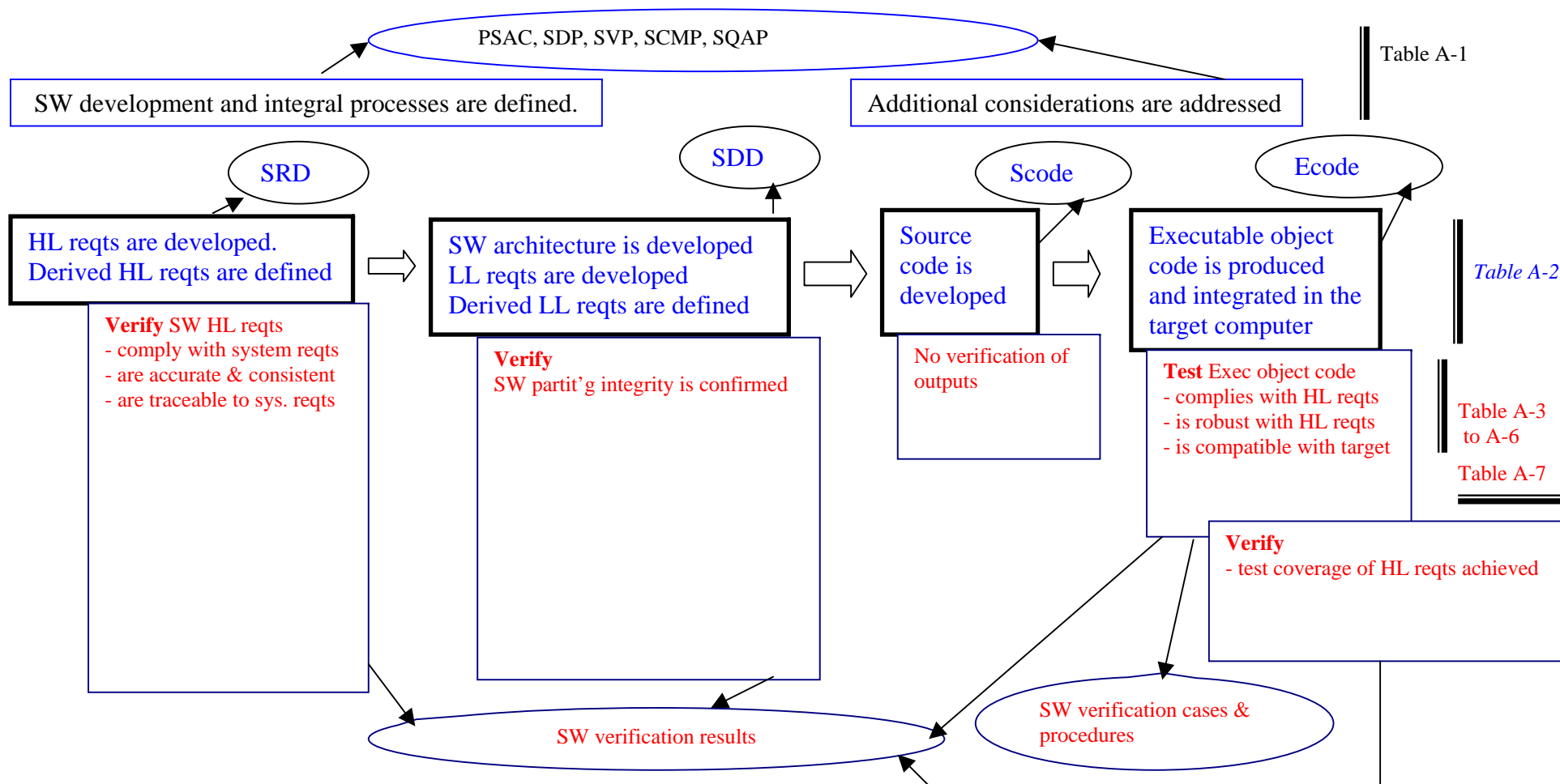
LEVEL D SUMMARY-2 (SW "planning process" added):

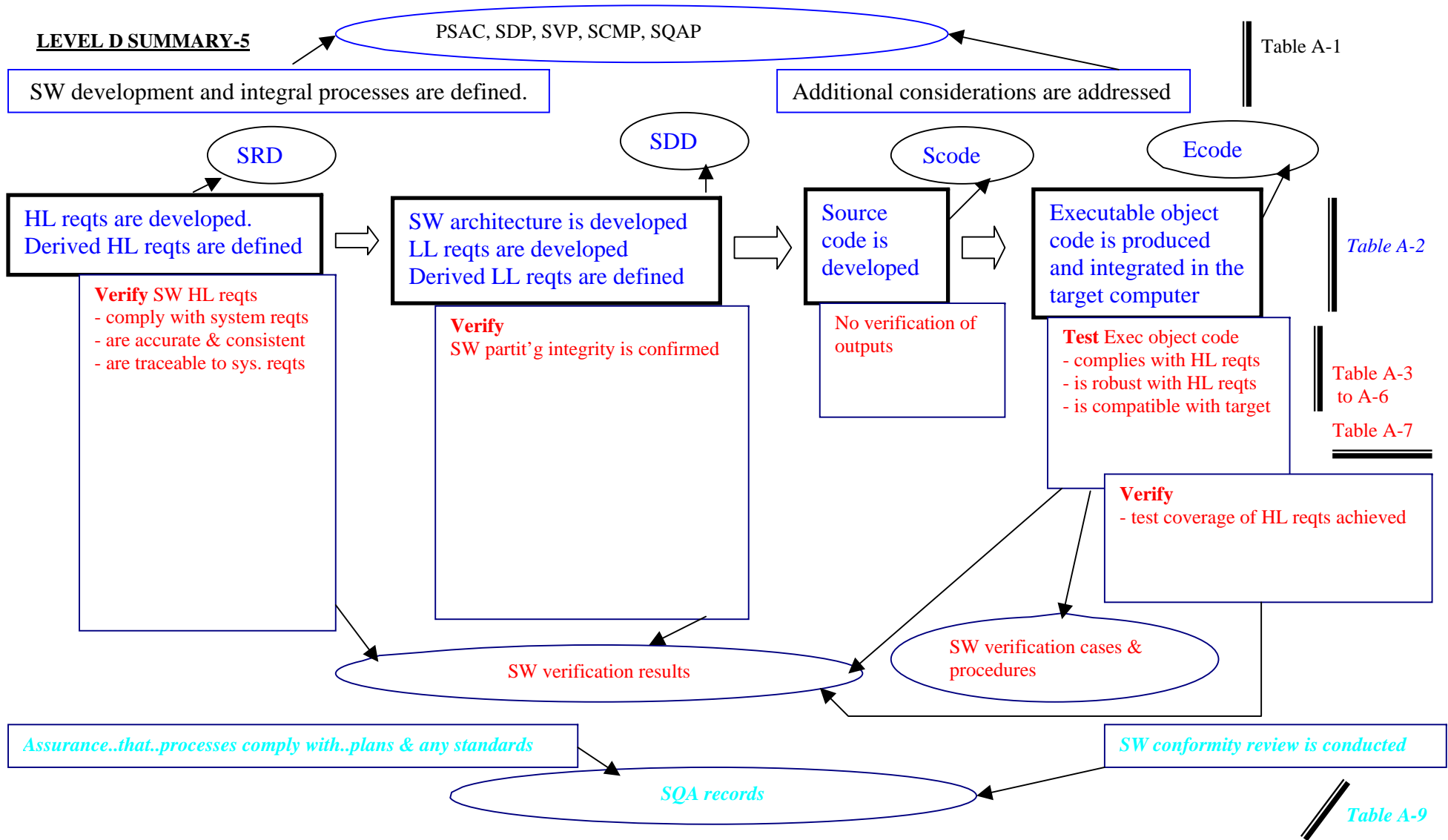


LEVEL D SUMMARY-3 (SW "verification process" added):



LEVEL D SUMMARY-4 (Verification of verification!!!):

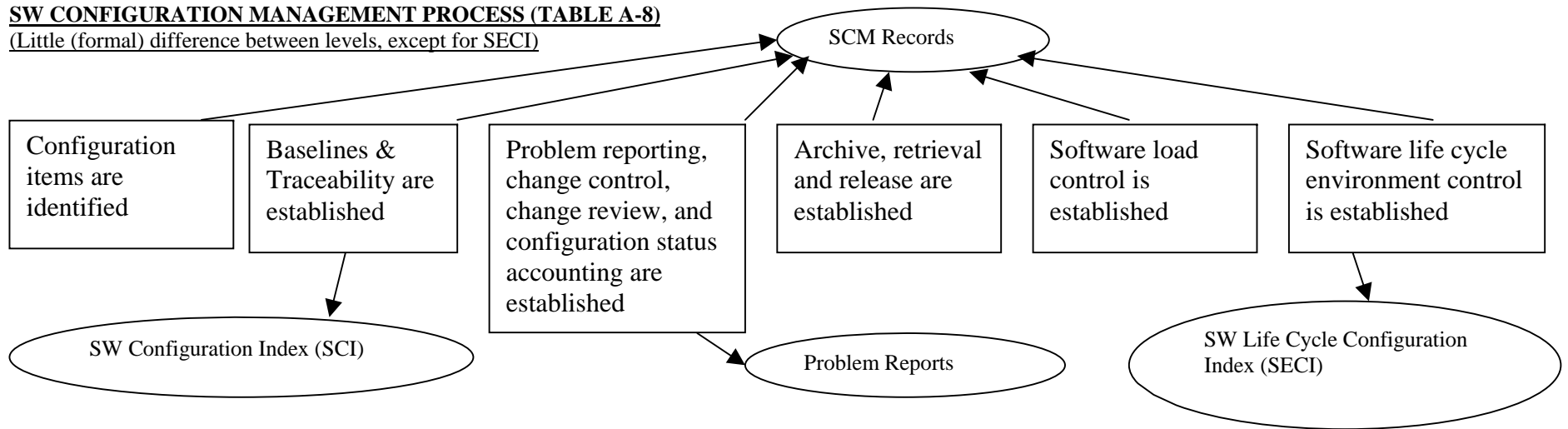




The next diagram depicts the level D software "*configuration management*" process. (In fact, there is another process also called "certification liaison" but we can ignore this as being quite specialised). On the other hand, the elements of software configuration management are very important at all levels; the only distinction is that more rigorous controls are introduced for more critical software.

SW CONFIGURATION MANAGEMENT PROCESS (TABLE A-8)

(Little (formal) difference between levels, except for SECI)



Finally, to show the more demanding requirements for a Level C development - especially in terms of verification though there are also more stringent requirements in configuration control and other areas - we have

