

## US CMS Contingency Analysis

**Contingency = (Design Maturity) \* (Judgment)**

### Design Maturity

- DM = 1.5: There is only a conceptual design.**
- DM = 1.4: There is a RFI or request for vendor information, with engineering sketches.**
- DM = 1.3: There is a TDR with an engineering design.**
- DM = 1.2: There is a bid package ready to go out, or a quote.**
- DM = 1.1: The bid is awarded, or a purchase order is written, or the item is from a catalogue.**
- DM = 1.0: The item is invoiced/completed.**

### Judgment

**There are other factors which should be taken into account. The schedule risk if the item is on or influences the critical path items should be taken into account. The technical risk is crucial. Is the item new design (e.g. pixel readout) or a small modification (e.g. tile/fiber optics) or is it a standard design (e.g. the CSC gas system)? The range for judgment might typically go from 0.6 to 1.4 depending on the schedule and technical risk factors or on other considerations. This factor should be uniformly applied at L7.**

**Note that, other HEP experience is relevant in making an informed judgment as to the level of contingency. However, we should also keep in mind that US CMS is different in that the TPC is capped, and we are without scope creep by definition. In addition, we are partially insulated from the overruns associated with infrastructure and installation, as they are assumed by the CMS host laboratory, CERN.**

**Our collective judgment will be reviewed in the near future by the FNAL US CMS PMG.**