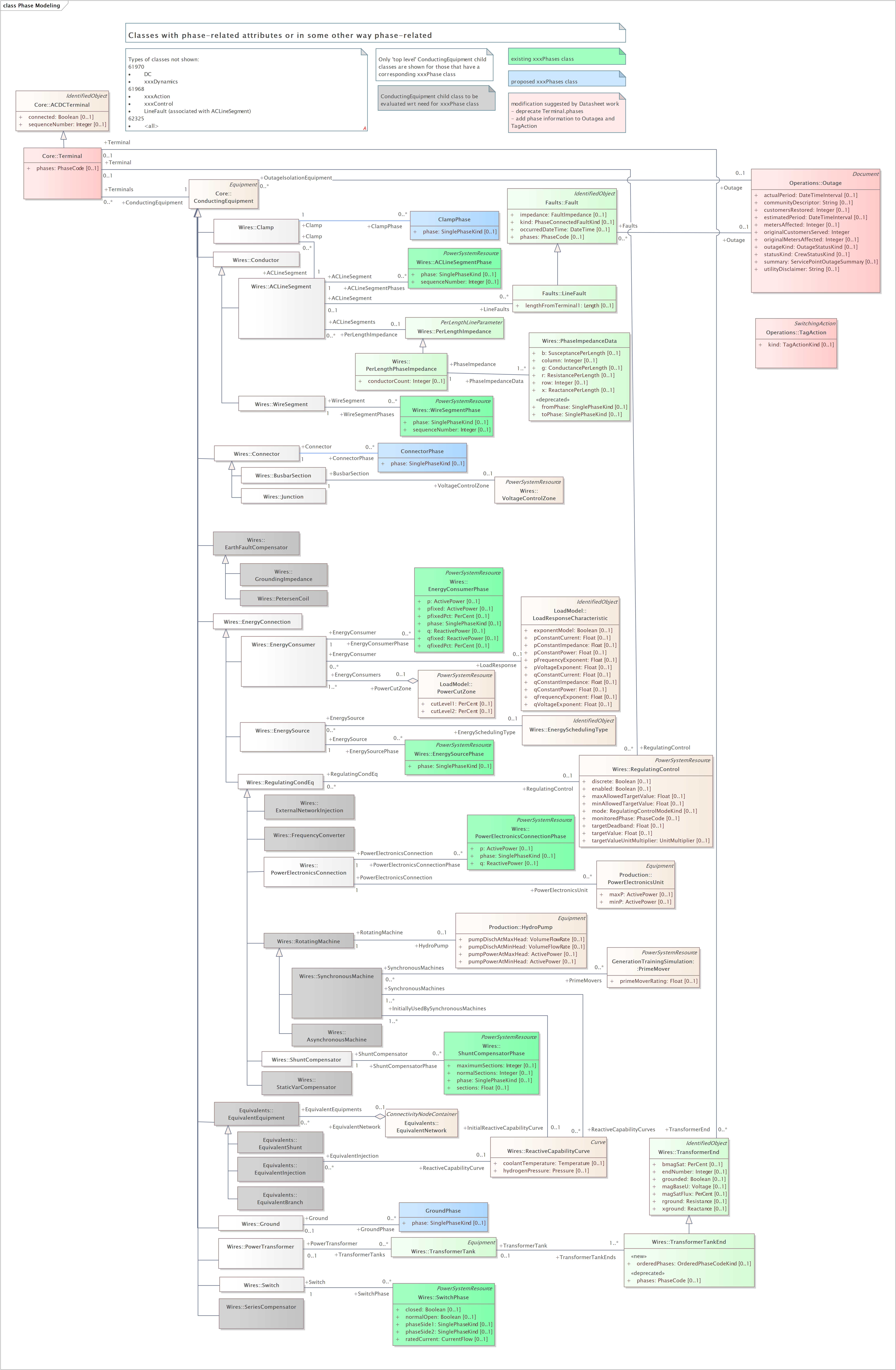
### Streamline approach to phase modeling

GMDM Issue #6

Currently, the CIM has 2 main (and largely redundant) approaches to designating phasing for unbalanced models. One uses the Terminal.phases attribute (with a datatype of PhaseCode with 25+ possible values representing various combinations of phases and neutral). The other approach relies on xxxPhase classes which are associated with many (but not all) of the ConductingEquipment child classes. xxxPhase classes typically have a .phase attribute (with a datatype of SinglePhaseKind which has possible values of A, B, C, N, s1, s2). Unbalanced impedance modeling relies on information in classes related to ConductingEquipment (the ACLineSegmentPhase class and the TransformerTank class), not on Terminal.phase.

The GMDM profiles did not use Terminal.phases and PNNL[[1]](#footnote-1) has indicated that they have not found a need for Terminal.phases. Preliminary WG13 discussions on 2021-11-03 uncovered a transmission use case or two where phase designations were useful in balanced modeling.

All-in-all, it seems likely that Terminal.phases could be deprecated.



WG13 should further explore balanced modeling use of Terminal.phases and ensure that those use cases can be satisfied by means other than Terminal.phases. It would also be good to confirm with other distribution power flow tool vendors that the xxxPhase class approach would work with their tools. Additionally, consideration should be given to requirements related to the expression of unbalanced power flow solutions (TP and SV profile data). The need to create unbalanced models from balanced models and vice versa, driven by the increasing number of studies done ‘across’ the T-to-D boundary, should also be considered.

Additional resources for the conversation: Jun Zhu, Martin Bass

1. See <https://cimhub.readthedocs.io/en/latest/CDPSM.html#interoperability-testing> for a more detailed summary of PNNL’s test experience. [↑](#footnote-ref-1)