

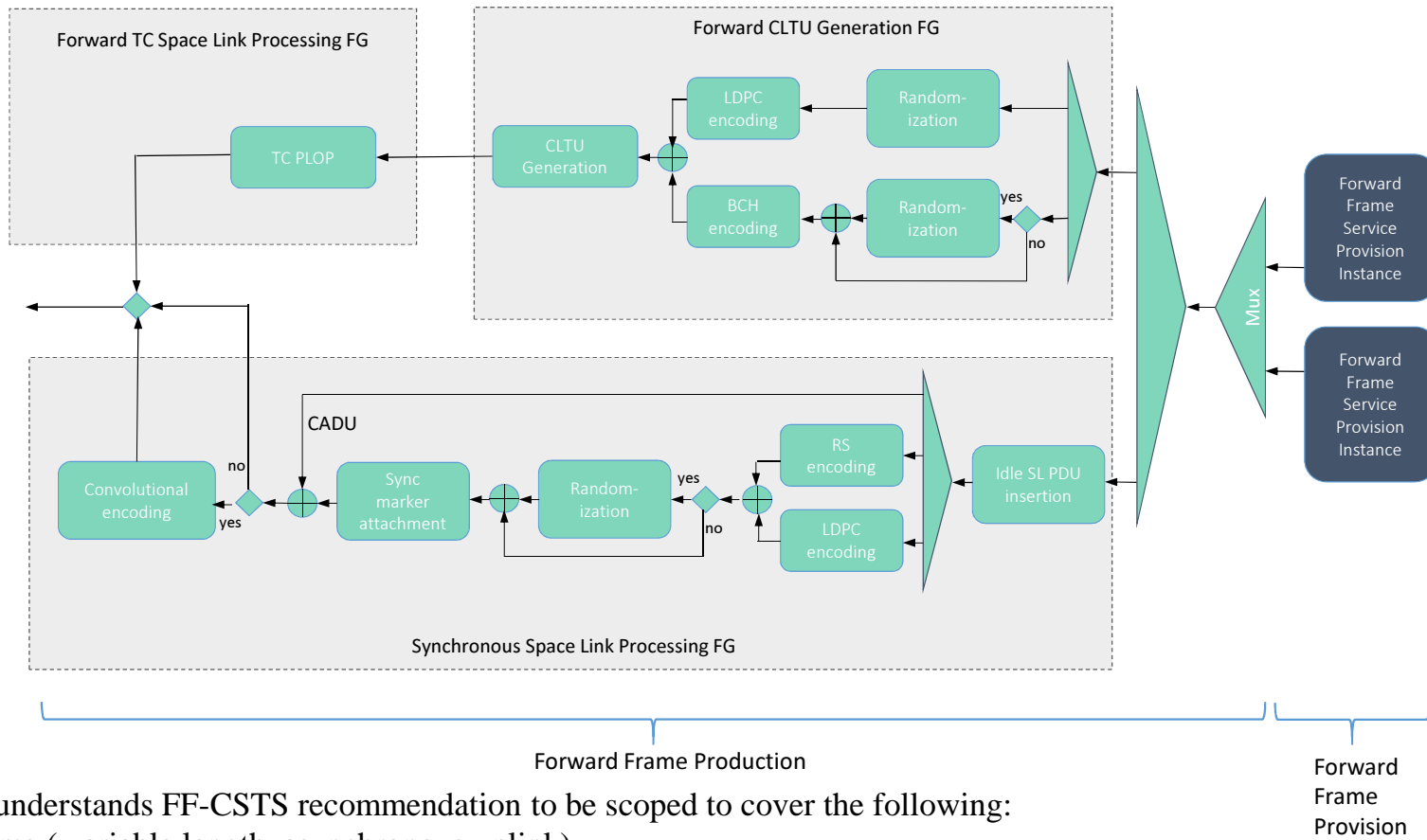
FF-CSTS + AOS Uplink; Input to CESG

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with input from CSTS WG
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Background

- During CSTSWG meetings at San Antonio meetings, a question of what are the normative modulations options for uplink via AOS was brought up
- Subsequently at CESG the discussion it was noted that there is a perceived “gap” in CCSDS standards in that there is no normative treatment of AOS for uplink
 - CSS AD Notes:
 - In CCSDS 732.0-B-3, the introduction says: “The purpose of this Recommended Standard is to specify the Advanced Orbiting Systems (AOS) Space Data Link Protocol. This protocol is a Data Link Layer protocol (see reference [1]) **to be used over space-to-ground, ground-to-space, or space-to-space communications links by space missions.**”
 - The only reference to a modulation scheme is “Flexible Advanced Coding and Modulation Scheme for High Rate Telemetry Applications. Issue 1. Recommendation for Space Data System Standards (Blue Book), CCSDS 131.2-B-1. Washington, D.C.: CCSDS, March 2012.” which is clearly for return link only.
 - This presentation goes with the assumption that normative statements (that do not exist) are needed for AOS uplink.
 - If that is not the case and a reference to a definitive set normative statements can be provided then the rest of this presentation is essentially rendered mute
- Following is more context for reference and preliminary analysis of alternatives

Context Diagram

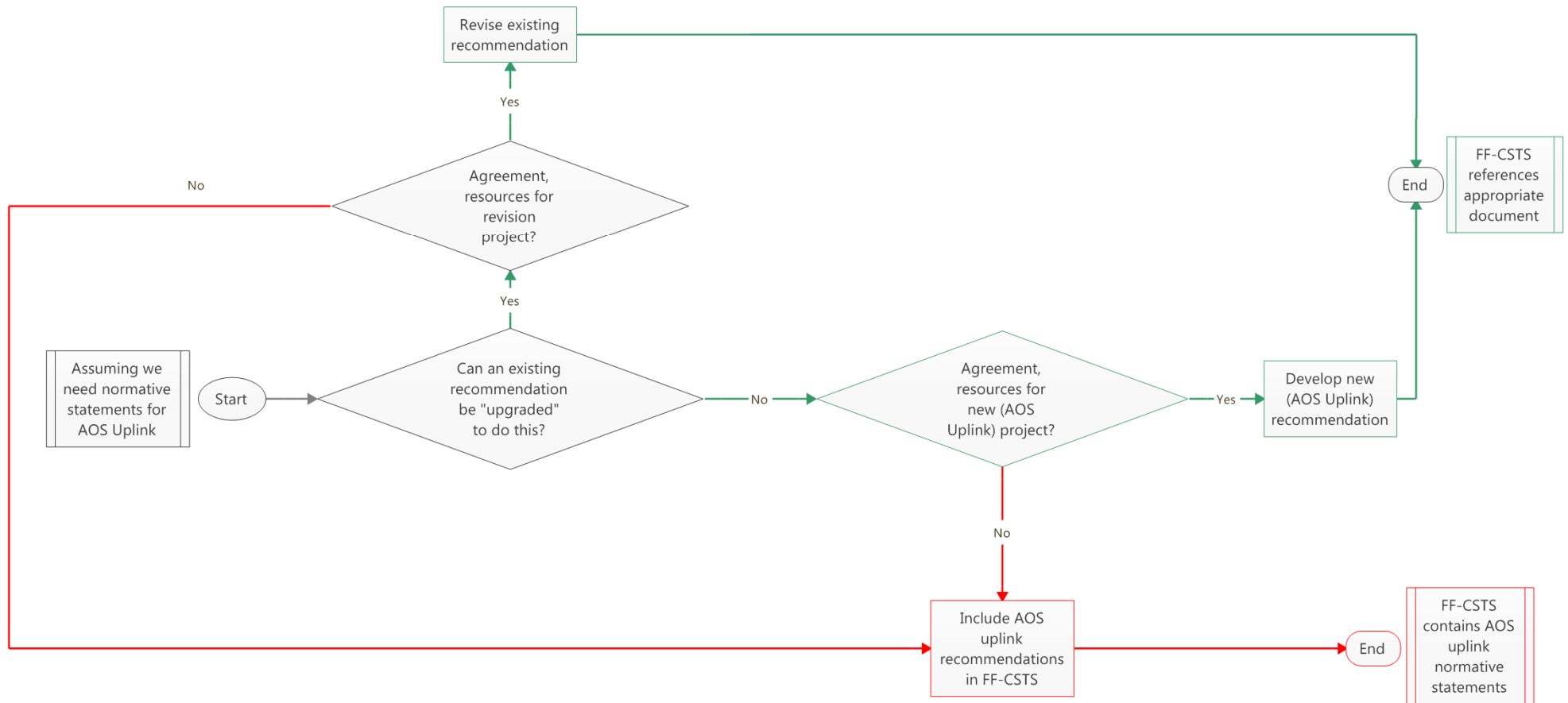


CSS Area understands FF-CSTS recommendation to be scoped to cover the following:

- TC Frame (variable length, asynchronous uplink)
- AOS Frames (fixed length, synchronous uplink)
- CADUs (fixed length, synchronous uplink)

Note that USLP is not represented in above diagram; coding is presumably independent of framing in this case

Preliminary Analysis of Alternatives



- Green Paths represent better solution – “stand-alone” FWD AOS Uplink recommendation, independent of FF-CSTS
- Red Paths represent worse solution – “all-in-one” capability; rather illogical placement of capabilities given existing set of coding recommendations and cross support service recommendations and CCSDS Area organizations/charters.

Preliminary Conclusion

- From the CSS Area perspective, update of 732 seems like the most expeditious manner in which to proceed
 - Least amount of resources for the best solution
- Of course, other areas with SLS in particular, may have another view