

# Revisit Cruise Climb Modeling

<b>CR Number (ID): 149</b>		<b>Submission Date: 3/24/2022</b>	
<b>GENERAL INFORMATION (AUTHOR TO COMPLETE)</b>			
Author	FAA FIXM Development Team		
Brief Description (Subject)	CruiseClimbStart provides adequate representation of the needed fields but also allows nonsensical data combinations.		
Priority*	<input type="checkbox"/> Immediate	<input type="checkbox"/> High	<input type="checkbox"/> Medium <input checked="" type="checkbox"/> Low
Scale*	<input type="checkbox"/> Major	<input type="checkbox"/> Medium	<input checked="" type="checkbox"/> Minor
Expected Impact to Implementers*	<input type="checkbox"/> High	<input type="checkbox"/> Medium	<input checked="" type="checkbox"/> Low <input type="checkbox"/> None
Target FIXM Component(s)	<input checked="" type="checkbox"/> FIXM Logical Model <input type="checkbox"/> FIXM Application <input checked="" type="checkbox"/> FIXM XML Schemas <input type="checkbox"/> Other Specify...		
Target FIXM Release	<input checked="" type="checkbox"/> FIXM Core Version 4.3.0 <input type="checkbox"/> Application Version		
Related FIXM CRs			
Motivation / Change Reason	<input type="checkbox"/> Requirement <input checked="" type="checkbox"/> Functionality/Operability <input type="checkbox"/> Maintenance <input type="checkbox"/> Defect <input type="checkbox"/> Other Specify ...		

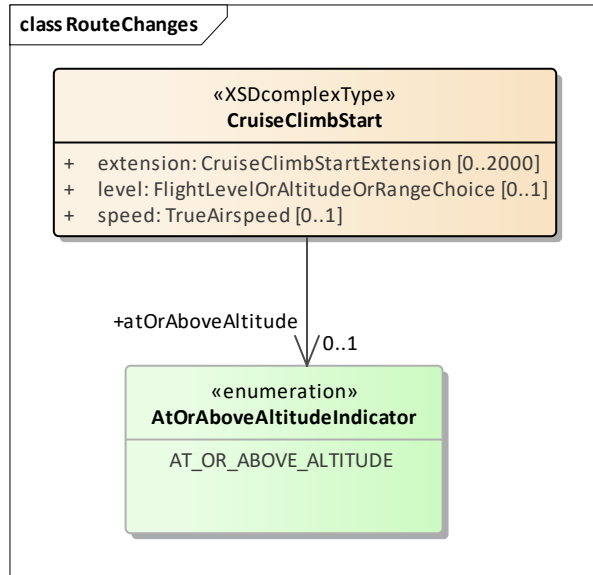
\* Optional fields; FIXM Secretariat may update during review

## MOTIVATION / CHANGE REASON DESCRIPTION (AUTHOR TO COMPLETE)

One of the goals of FIXM is to not just provide a way to communicate flight data but to also provide built-in structure and validation to help ensure the data is high quality. One area where this second goal could be improved is our representation for cruise climbs. While the structure provides a way to represent all the data needed, it does so in a way that allows nonsensical data combinations (for example, providing both an altitude range and an “at or above” indicator). With a minor restructuring, the quality of cruise climbs could be greatly improved.

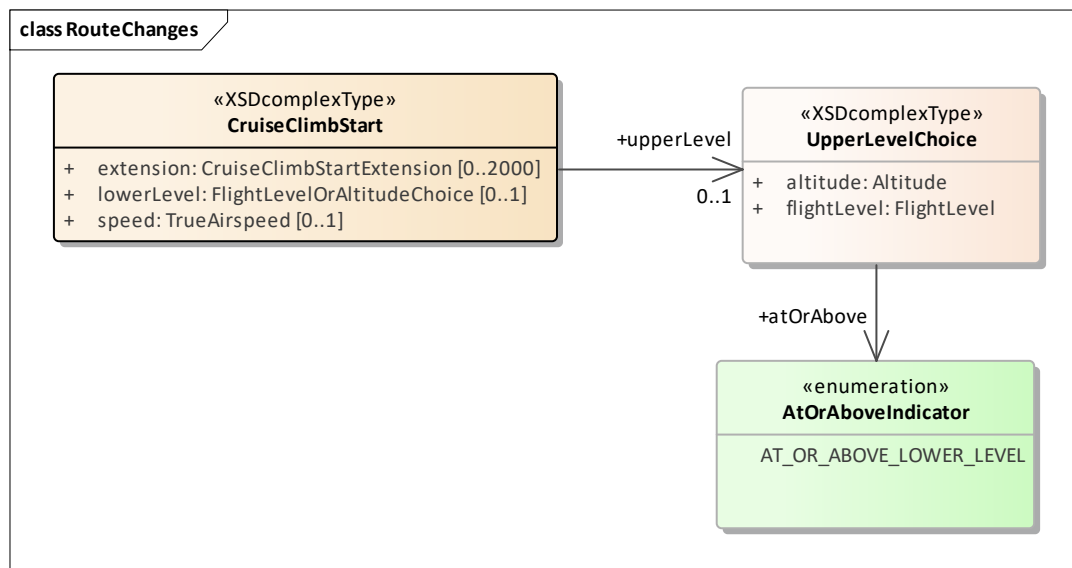
## PROPOSED CHANGE (AUTHOR TO COMPLETE)

FIXM currently models a cruise climb as follows:



The level attribute expands to a structure that allows for a single level or a level range. The “at or above” indicator is completely separate from this structure (allowing it to be used at times it should not be).

The proposed change looks like this:



We now have explicit fields for the lower level and upper level and the upper level is a clear choice between an actual upper bound or an “at or above” indicator. This minor change prevents a user from supplying most of the nonsensical representations previously available.

Some of the field names and definitions have been cleaned up as part of this process as well. Changes include:

- Rename “level” to “lowerLevel”, make it a FlightLevelOrAltitudeChoice (rather than FlightLevelOrAltitudeOrRangeChoice), and update the definition to: “Either the lower of the two levels to be occupied during cruise climb, or the level at or above which cruise climb is planned.”
- Rename “AtOrAboveAltitudeIndicator” to “AtOrAboveIndicator”, rename its enumerated value to “AT\_OR\_ABOVE\_LOWER\_LEVEL”, and change its definition to: “Indicates the cruise climb will be to an unspecified level at or above the lower level.”
- Create a new class called UpperLevelChoice that can contain an altitude, flightLevel, or atOrAbove indicator with the definition of: “Either the upper of the two levels to be occupied during cruise climb, or an indicator that the cruise climb will be to an unspecified level at or above the lower level.”
- Create a new association between CruiseClimbStart and UpperLevelChoice called “upperLevel” with a definition of: “Either the upper of the two levels to be occupied during cruise climb, or an indicator that the cruise climb will be to an unspecified level at or above the lower level.”

CCB SECRETARIAT	
External Standard Consistency Checked	<input type="checkbox"/> AIDX <input type="checkbox"/> AIRM
CR Status	<input checked="" type="checkbox"/> Proposed <input type="checkbox"/> Implemented <input type="checkbox"/> Withdrawn <input type="checkbox"/> Rejected
Decision Date	Click or tap to enter a date
Implemented In	X.X.X
Comments	Click or tap here to add any additional information or comments.

#### IMPLEMENTATION NOTES (CCB SECRETARIAT TO COMPLETE)

CCB Secretariat notes on any deviations that were required during implementation.