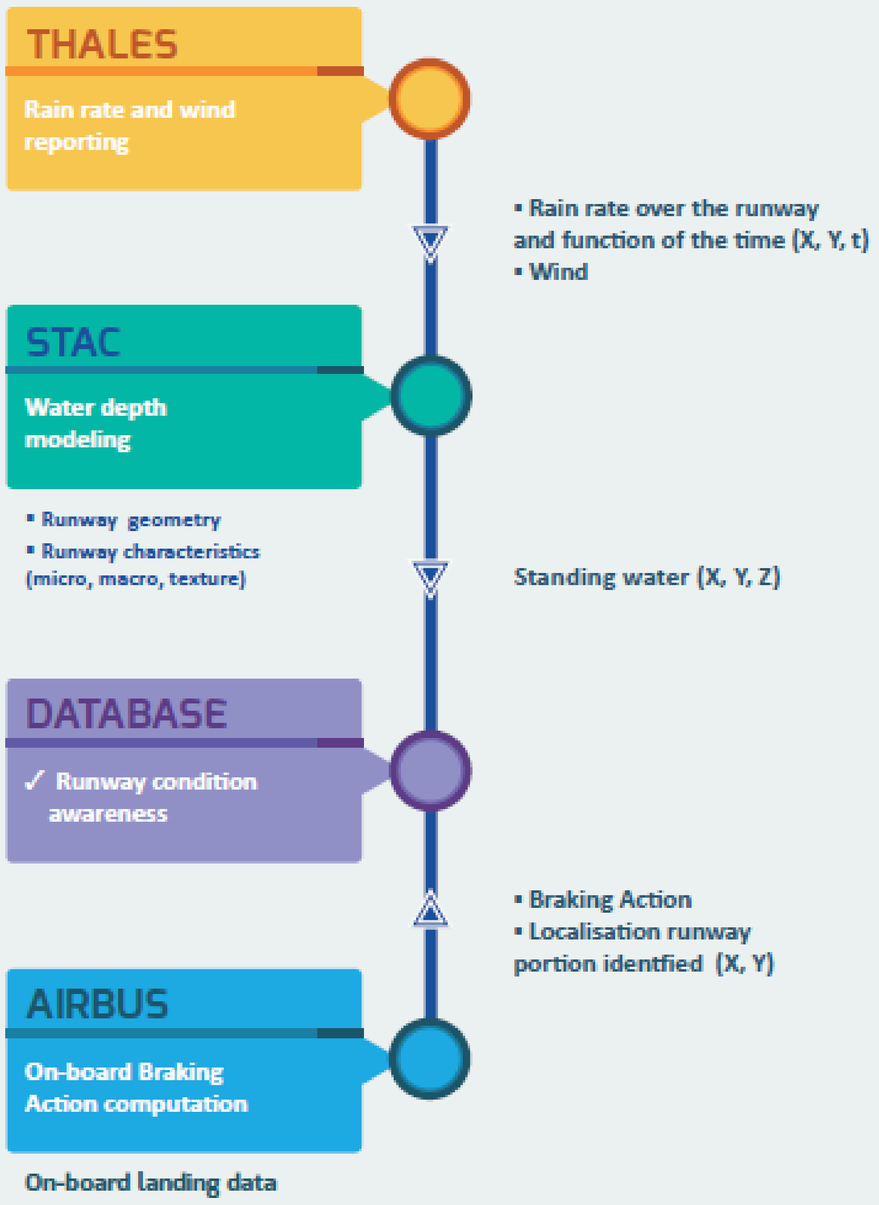
FUTURE SKY SAFETY

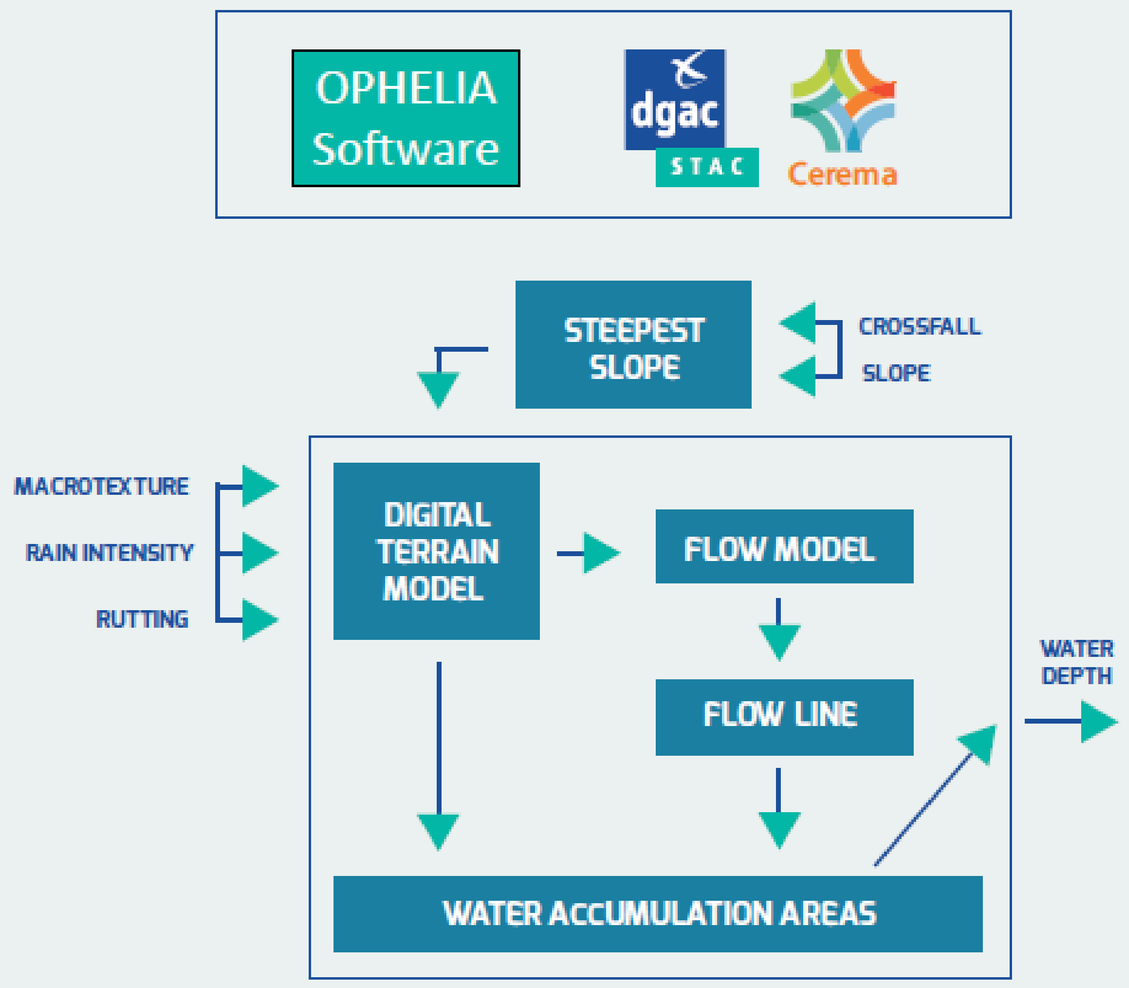
Project #3
SPECIFIC SOLUTIONS FOR RUNWAY EXCURSION ACCIDENTS

OPHELIA: a new tool to predict runway water contamination

Various concepts and initiatives to prevent runway excursions have been studied within Future Sky Safety project P3. Because inaccurate knowledge of the runway contamination status ranks among the main factors contributing to runway overruns, a concept combination for the assessment and prediction of water depth on runway surface has been produced. In this concept, weather (rain, wind...) forecast at the airfield, water flows modelling on the runway surface and aircraft braking action computation are combined, in order to reach better runway condition awareness within the next 30 minutes.

Among these components, OPHELIA has been developed by the French Civil Aviation Technical Center (STAC) and the French Center for Studies and Expertise on Risks, Environment, Mobility and Planning (Cerema) to enable the modelling of water flows and the prediction of water accumulation areas. First, runway surface characteristics (curvature, slopes, texture) are collected by a specific monitoring device called VANI. Then, a numerical mapping of the runway surface is generated for the computation of water paths along steepest slope vectors. Finally, local rain intensity predictions are used to predict water depth over the runway surface. OPHELIA is currently under experimental validation at two French airports. Further improvements could be made by implementing new phenomena, such as drying or wind effects, into the model.





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