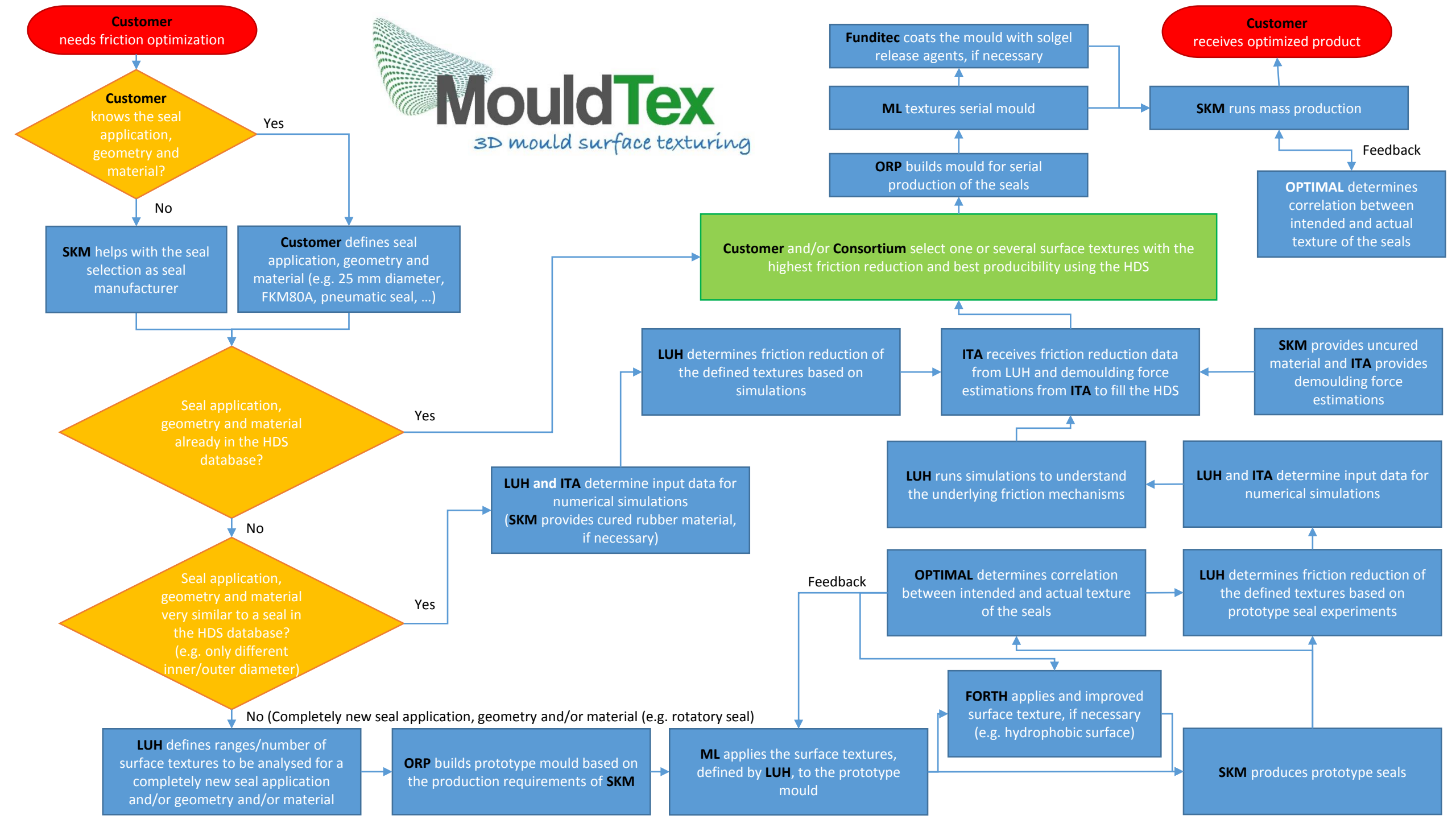
Customer needs friction optimization
Customer knows the seal application, geometry and material?
Yes
No
SKM helps with the seal selection as seal manufacturer
Customer defines seal application, geometry and material (e.g. 25 mm diameter, FKM80A, pneumatic seal, …)
Seal application, geometry and material already in the HDS database?
Yes
No
Seal application, geometry and material very similar to a seal in the HDS database? (e.g. only different inner/outer diameter)
Yes
No (Completely new seal application, geometry and/or material (e.g. rotatory seal)
LUH and ITA determine input data for numerical simulations (SKM provides cured rubber material, if necessary)
LUH defines ranges/number of surface textures to be analysed for a completely new seal application and/or geometry and/or material
ORP builds prototype mould based on the production requirements of SKM
ML applies the surface textures, defined by LUH, to the prototype mould
FORTH applies and improved surface texture, if necessary (e.g. hydrophobic surface)
SKM produces prototype seals
Feedback
OPTIMAL determines correlation between intended and actual texture of the seals
LUH determines friction reduction of the defined textures based on prototype seal experiments
LUH and ITA determine input data for numerical simulations
LUH runs simulations to understand the underlying friction mechanisms
SKM provides uncured material and ITA provides demoulding force estimations
ITA receives friction reduction data from LUH and demoulding force estimations from ITA to fill the HDS
LUH determines friction reduction of the defined textures based on simulations
Customer and/or Consortium select one or several surface textures with the highest friction reduction and best producibility using the HDS
ORP builds mould for serial production of the seals
ML textures serial mould
Funditec coats the mould with solgel release agents, if necessary
SKM runs mass production
Feedback
OPTIMAL determines correlation between intended and actual texture of the seals
Customer receives optimized product

Flow chart to define the initial methodology for texture selection and manufacture

- Symbols:

I. Flowline: Shows the process‘s order of operation

II. Terminal: Indicates the beginning or ending of a program

III. Process: Represents a set of operations

IV. Decision: Shows a conditional operation