Inserting Heterogeneities:
Heterogenities are inserted using parametric functions of the (x, y, z) coordinates of the nodes or the center of the elements to which a given StGermain Variable Condition apply (As for regular BC and IC the latest may be defined either as a constant value set in the input file or as one of the function from the condition function register).

The geometrical parameters of the heterogeneity are defined in the .xml input file following the general syntax provided in:
"Snac/plugins/heterogeneity/Hetero.meta"
Heterogeneity are inserted in the model in the same order you enter them in the xml file so ..
if the second heterogeneity over lap the space of the first heterogeneity for the same variable ... the variable will be set to the value provaided by the second variable condition.

Units are assumed to be meters
Default value of a_shape is set to 1
Default values for b to e_shape are set to 0.0.
Default geometry is FrontLimit
This means that by default the program will set all the point behind 0 to the Variable condition provided.
For normally set model nothing is going to happened.

There are currently eight shape functions in the heterogeneity plugin :
"Dyke" $2(Ax + By + Cz + D)^2/(A^2 + B^2 + C^2) \leqslant t$
"Sphere" $(x - Xc)^2 + (y - Yc)^2 + (z - Zc)^2 \leqslant r^2$
"Cylinder" $x = C_x z + p; y = C_y z + q; [(x - Az - p)^2 + (y - Cz - q)^2 + (C[x - p] + A[y - q])^2]/(A^2 + C^2 + 1) \leqslant r^2$
"Cylinder_V" $(x - Xc)^2 + (z - Zc)^2 \leqslant r^2$
"Cylinder_H" $(x - Az - B)^2 \leqslant r^2$
"UpperLimit" $yp = -(Ax + Cz + D)/B \leqslant y$
"RightLimit" $xp = -(By + Cz + D)/A \leqslant x$
"FrontLimit" $zp = -(Ax + By - D)/C \leqslant x$

	"a_shape"	"b_shape"	"c_shape"	"d_shape"	"e_shape"
"Dyke"	A	B	C	D	thickness (t)
"Sphere"	Xc	Yc	Zc	not used	radius(r)
"Cylinder"*	C_x	Cy	p	q	radius(r)
"Cylinder_V"	Xc	not used	Zc	not used	radius (r)
"Cylinder_H"	Cx	not used	p	not used	radius (r)
"UpperLimit"*	A	B	C	D	not used
"RightLimit"**	A	B	C	D	not used
"FrontLimit"***	A	B	C	D	not used

* will not work for vertical
** will not work for x=const vertical plan
***will not work for z=const vertical plan

for programers: Creating new shapes :

add the geometric function in TestCondFunc.c and declare it SnacHeterogeneity.h
define the name at the end of enum structure .h
and call it within Is_coord_Inside by creating a new case.
also define the .xml name of the geometry in the SnacHeterogeneity_InitialConditions.c.. and please update this file for the options ;-)