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NANOSOLVEIT

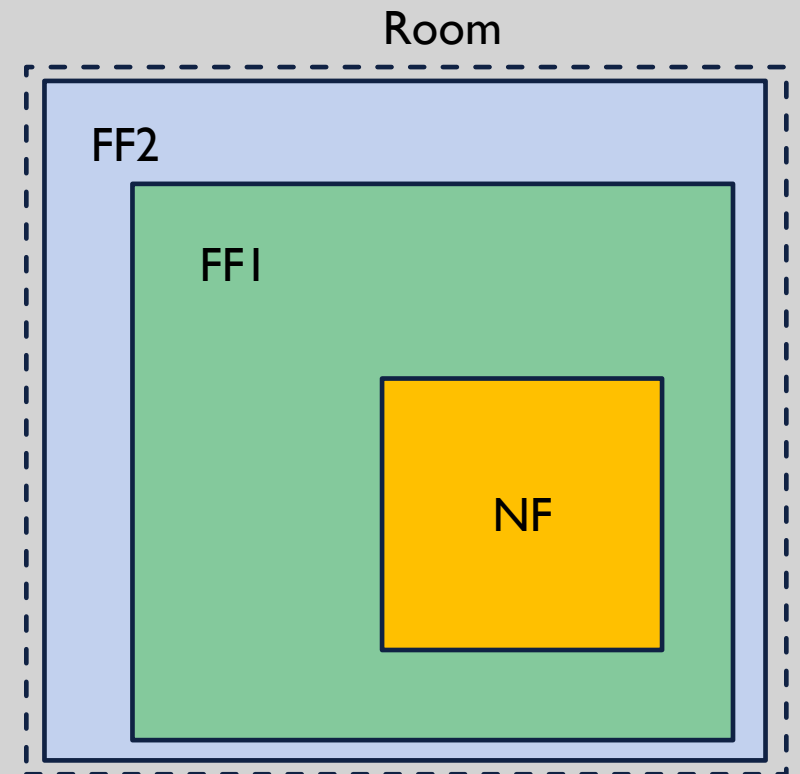
SHOWCASING HUMAN EXPOSURE
ASSESSMENT USING

[https://aerosol.cloud.nanosolveit.eu/ | /](https://aerosol.cloud.nanosolveit.eu/)

HUMAN EXPOSURE ASSESSMENT

Create an easy to use software/web application for the assessment of the human exposure in nanomaterials

- Evaluate the concentration of nanomaterials in indoor environments
- A geometrical region where the nanomaterials are released: **Room**
 - The location of the source generator: **Near field (NF)**
 - Every other area of the Room: **Far field (FF_x)**, $x=1,2,\dots,N$
 - Every area of the Room must be embedded to the larger area.
 - Cuboid or Cylindrical.
- Source
 - Diameters (D_p) size distribution that characterizes the source: **Bins**
- Nanomaterials
 - Black Tonner, TiO_2 , TiO_2 ; AgX
 - User defined distributions of bins
- Output: The concentration of nanomaterial per bin per box



THE MULTI-BOX MODEL

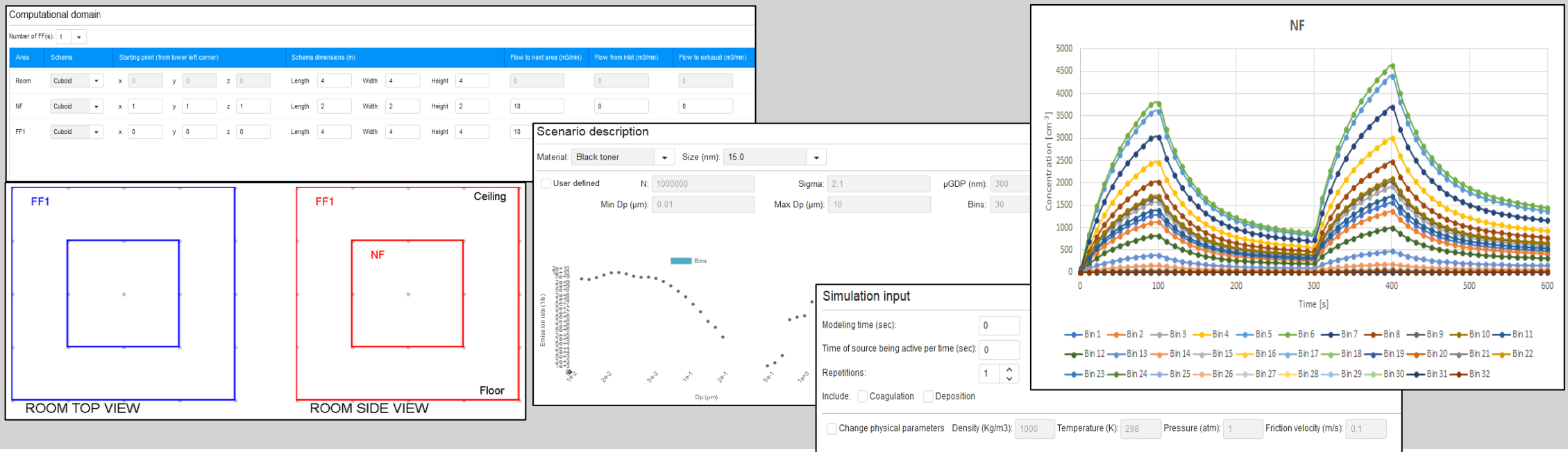
- Aerosol dynamics particle population balance equation:

$$dN_{k,i}/dt = J_{source,k,i} + J_{exchange,k,i} + J_{coagulation,k,i} + J_{deposition,k,i}$$

- $dN_{k,i}/dt$ ($m^{-3}s^{-1}$): Number concentration over time
- $J_{source,k,i}$: Single point particle generation term
- $J_{exchange,k,i}$: Transport between the k th box and its connected boxes.
- $J_{coagulation,k,i}$: Coagulation due to Brownian diffusion and the number concentration change rate.
- $J_{deposition,k,i}$: Removal of aerosol particles that adhere to surfaces
- k runs over boxes and i over size bins

SOFTWARE APPLICATION @ <https://aerosol.cloud.nanosolveit.eu/>

- Java
- Time integration: Apache common math3 - Dormand Prince
- Web interface: zk framework



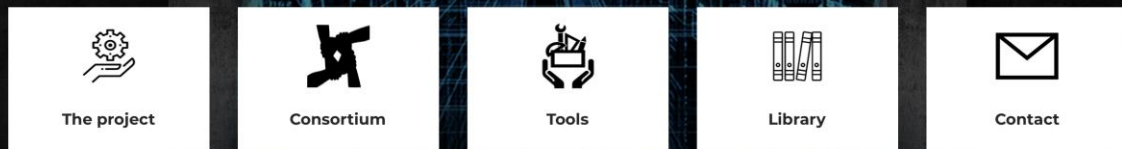


Training

NSC Training Day @ NANOSAFE Digital Conference
Nov., 23rd 12:00-13:30



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Project
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