**Check One:** [ ] **Project** [ ] **Review** [ ] **Collaboration**

[ ] **Workshop** [x] **Other**

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| **Descriptive Title** | Implementation powder rheology in grid-free methods and testing on Industrial challenges – continuation 2024 collaboration |
| **Working Title[[1]](#footnote-1)** | Industrial implementation powder flow continuous models |
| **Technical Area[[2]](#footnote-2)** | Dry Powder Flow / Systems |
| **Date** | June 17th, 2025 |
| **Short Description** | **Goal**Enable industry to simulate large-scale solid flows in a reliable, easy-to-use open-source software package that is hosted and maintained by a reliable partner.**Achievements*** Hosted by Sandia National Laboratories as open source
* Industry standard input (STL files)
* Accurate rheology with input from shear tests
* Mu-f(I) rheology with separation and reconsolidation
* Updated to the latest LAMMPS edition (code rebase)
* *New* method for boundary conditions with SPH (for STL)
* Optimized code for boundary conditions
* Implementation of cones and cylinder primitives

**To do*** Dilatancy
* Cohesion
* Add fluid (gas) phase
* Moving walls.

Involve IFPRI membersPut into mainstream LAMMPS (with documentation) Add sample geometriesMaster student project with TU-Delft for Granudrum simulation(Johan Padding, Gabrie Meesters, Ruud van Ommen)Required – 20k$ for coding support by former MIT PhD  |
| **Recommended Contractors (2 or 3)** |
| **Name** | **Institution** | **Email Address** |
| Ken Kamrin  | MIT, Cambridge, MA, USA  | kkamrin@mit.edu  |

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| **Submitted By:** |
| **Name** | **Organization** |
| Eric Grolman, Pieter Vonk | Envalior |
| Jeremy Leachman | Sandia National Laboratories |
| Alex Fry | P&G |
| Subash Thakur | Vertex Pharmaceuticals |

1. Title used in meeting agendas and file archives [↑](#footnote-ref-1)
2. One or more from the following list: W = wet systems; D = dry systems; F = particle formation; SR = size reduction; M = modeling; SE = systems engineering [↑](#footnote-ref-2)