

Geologic Disposal Safety Assessment (GDSA) Framework Development

(WBS No. 1.08.01.03.04.05)

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Spent Fuel and Waste Disposition
Annual Workshop Group Meeting
May 17, 2021

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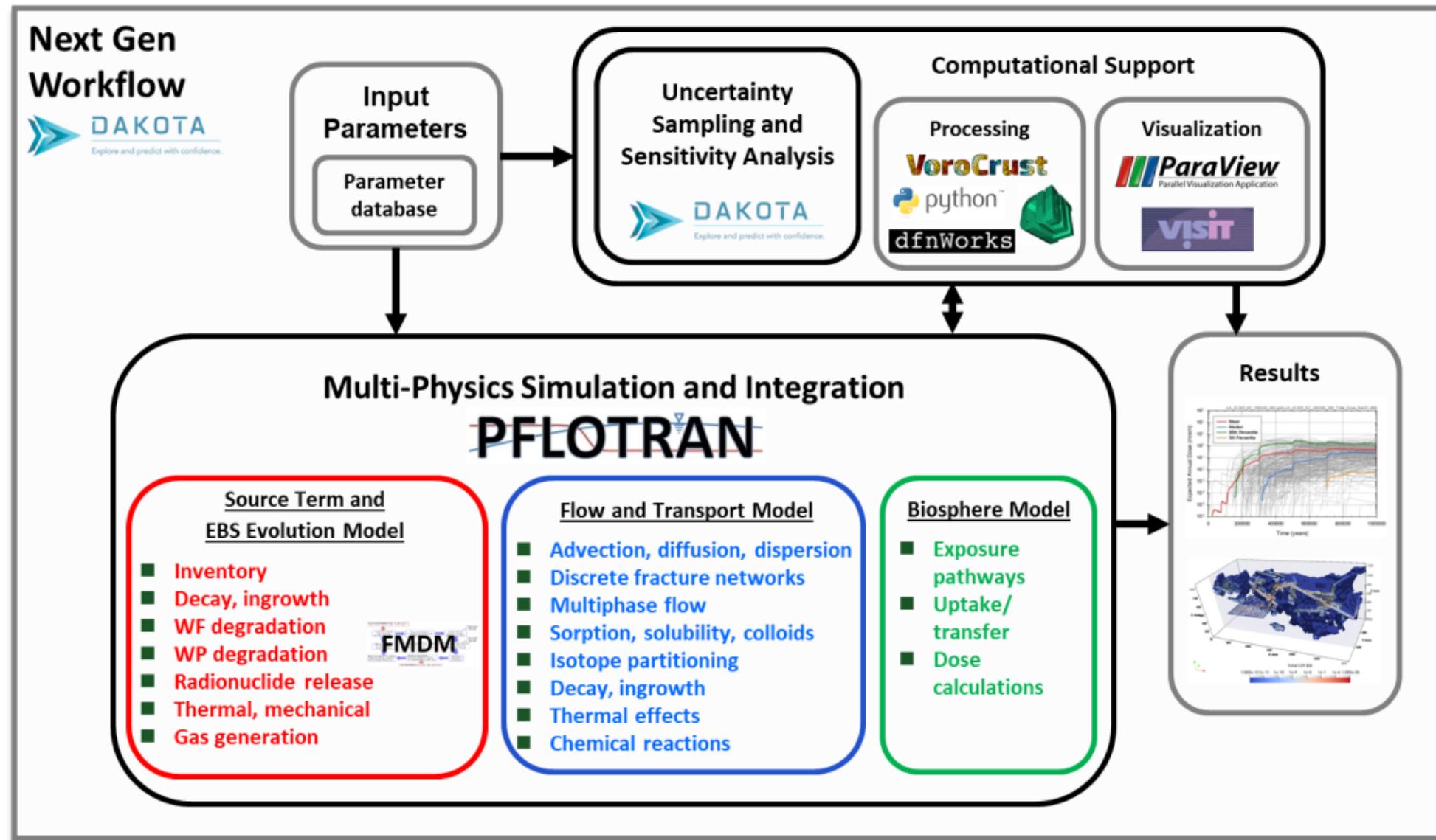
SFWST GDSA Work Packages

WBS Number	Title	CAM: Emily Stein FY21: \$6.9M
1.08.01.03.04.01	GDSA - Geologic Modeling - INL	Glenn Russell
1.08.01.03.04.02	GDSA - Geologic Modeling - LANL	Michael Gross
1.08.01.03.04.03	GDSA - Modeling and Integration - LANL	Jeffrey Hyman
1.08.01.03.04.04	GDSA - Uncertainty and Sensitivity Analysis Methods - SNL	Laura Swiler
1.08.01.03.04.05	GDSA - Framework Development - SNL	Paul Mariner
1.08.01.03.04.06	GDSA - Repository Systems Analysis - SNL	Tara LaForce
1.08.01.03.04.07	GDSA PFLOTTRAN Development – SNL	Michael Nole
1.08.01.03.04.08	GDSA - Modeling and Integration - ORNL	Rose Montgomery
1.08.01.03.04.09	GDSA Modeling and Integration - LBNL	Liange Zheng
1.08.01.03.04.10	GDSA - Modeling and Integration - PNNL	Mark Nutt
1.08.01.03.04.11	GDSA - FEPs Reevaluation for ABD Glass - SNL	Laura Price
1.08.01.03.04.12	GDSA - FEPs Reevaluation for ABD Glass - ANL	Bill Ebert

GDSA Session – Monday, May 17, 11:00 to 12:30 MT

- 11:00 – GDSA Framework Development, [Paul Mariner](#)
- 11:05 – On-Going Efforts to Increase the Efficiency of the FMD Process Model with Fortran, [Jacob Harvey](#)
- 11:10 – PFLOTRAN Development, [Michael Nole](#)
- 11:15 – Expansion of Thermal Modeling Capabilities in PFLOTRAN, [Alex Salazar](#)
- 11:20 – Repository Systems Analysis, [Tara LaForce](#)
- 11:25 – DECOVALEX Crystalline Case Development, [Rosie Leone](#)
- 11:30 – Sensitivity Analysis for the Latest Crystalline Reference Case, [Laura Swiler](#)
- 11:40 – dfnWorks: A Discrete Fracture Network Modeling Suite, [Jeffrey Hyman](#)
- 11:50 – Development of a PFLOTRAN Compatible Biosphere Model, [Caitlin Condon](#)
- 12:00 – Geologic Modeling of a Generic Alluvial Basin, [Michael Gross](#)
- 12:10 – Geologic Modeling – INL, [Glenn Russell](#)
- 12:20 – Conceptual Model of Interactions between Shallow Geosphere and Biosphere in Crystalline Rock Environments, [Frank Perry](#)

GDSA Framework



GDSA Framework Development

- **Integration**
 - Communication / collaboration
 - DOE, SFWST Disposal Research, international
 - Five-year plan, roadmap, gaps, coupling new models
 - Resources: SFWD Document Archive, external collaborative SharePoint site, GDSA calculation archive
- **Development**
 - GDSA Framework Next Gen Workflow (user interface)
 - Geologic Framework Model (Perry, later this session)
 - Fuel matrix degradation
 - Surrogate models (Berg, Machine Learning session)
 - Fortran process model (Harvey, later this session)
 - Waste package corrosion
 - Buffer erosion / copper corrosion



Two milestones for FY21

Future Work (GDSA Framework)

- Continued development of GDSA Framework
 - Implementation of process model surrogates
 - Waste package corrosion, buffer erosion, fuel matrix degradation, dynamic adsorption
 - Code/model integration/coupling
 - Biosphere, dfnWorks
 - Next Gen Workflow
 - Enhanced processing / post-processing options
- Subsystem performance metrics
 - EBS, natural barrier system

