

Used Fuel Disposition Campaign

Waste Package and Waste Form Degradation and Implementation in PFLOTRAN

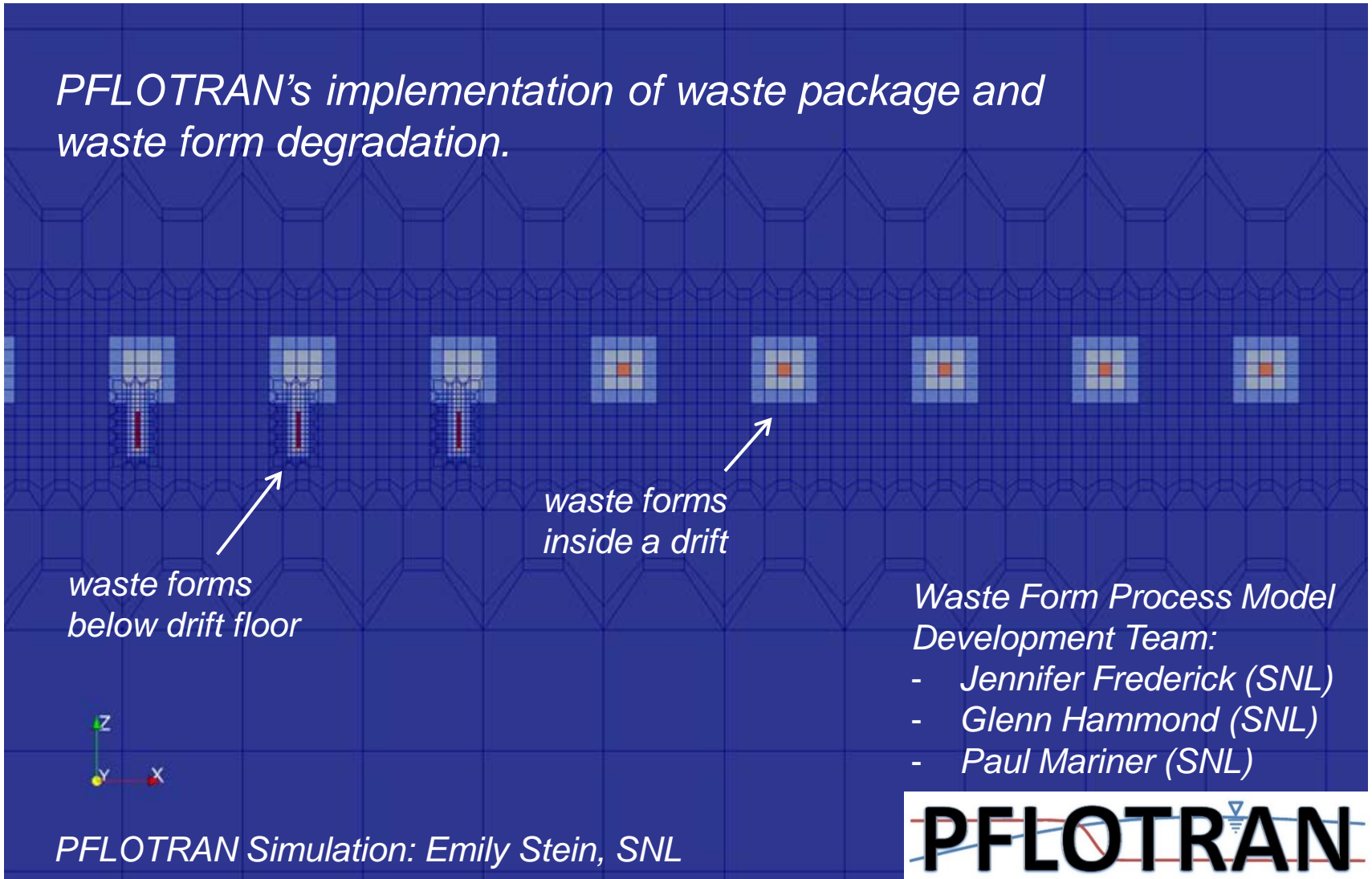
Jennifer M. Frederick
Glenn E. Hammond and Paul Mariner
Sandia National Laboratories

2016 UFDC Annual Working Group Meeting
GDSA Session, June 8, 2016
Las Vegas, NV

Used
Fuel
Disposition

PFLOTRAN's Waste Form Process Model

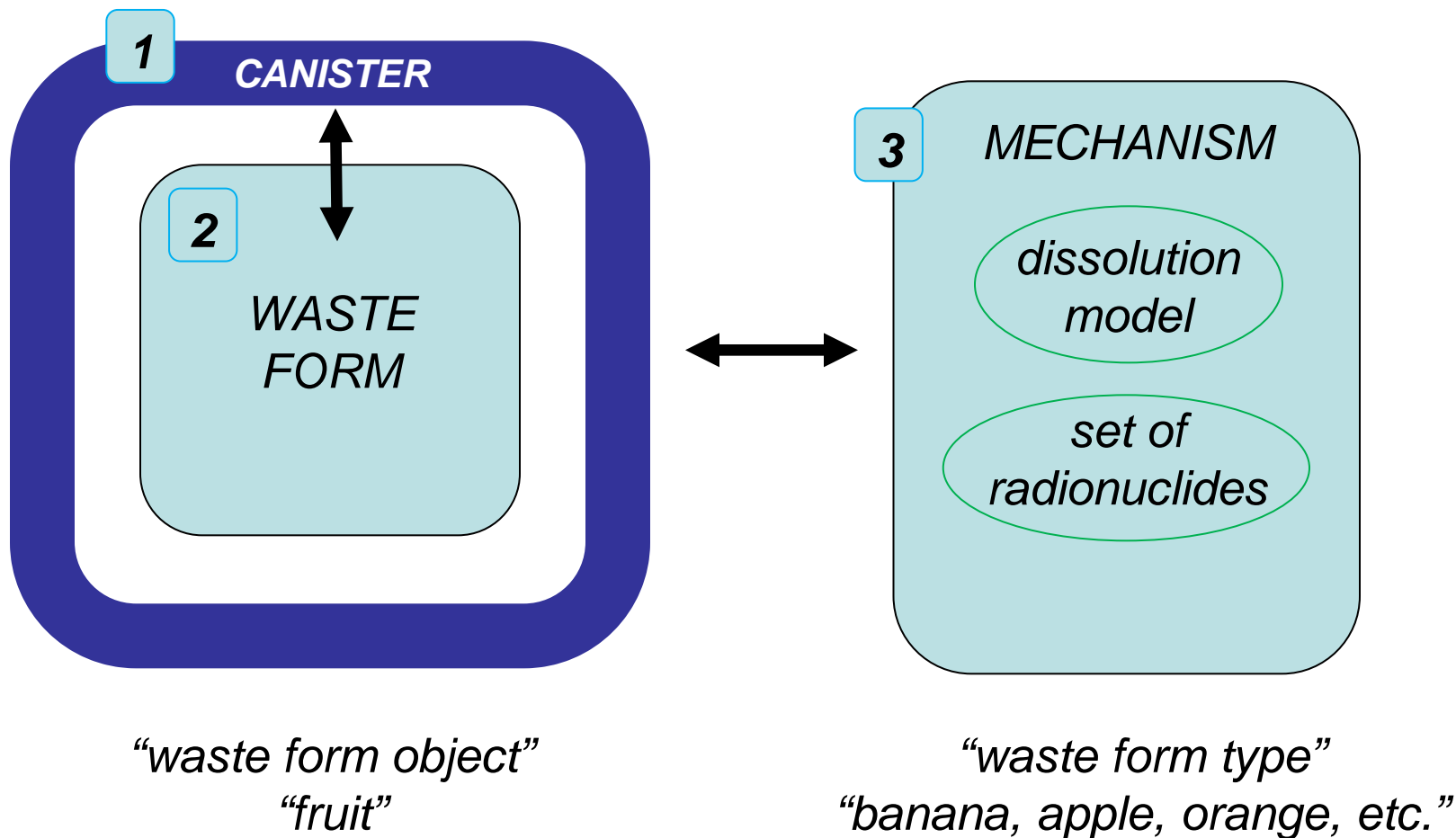
PFLOTRAN's implementation of waste package and waste form degradation.



PFLOTRAN Simulation: Emily Stein, SNL

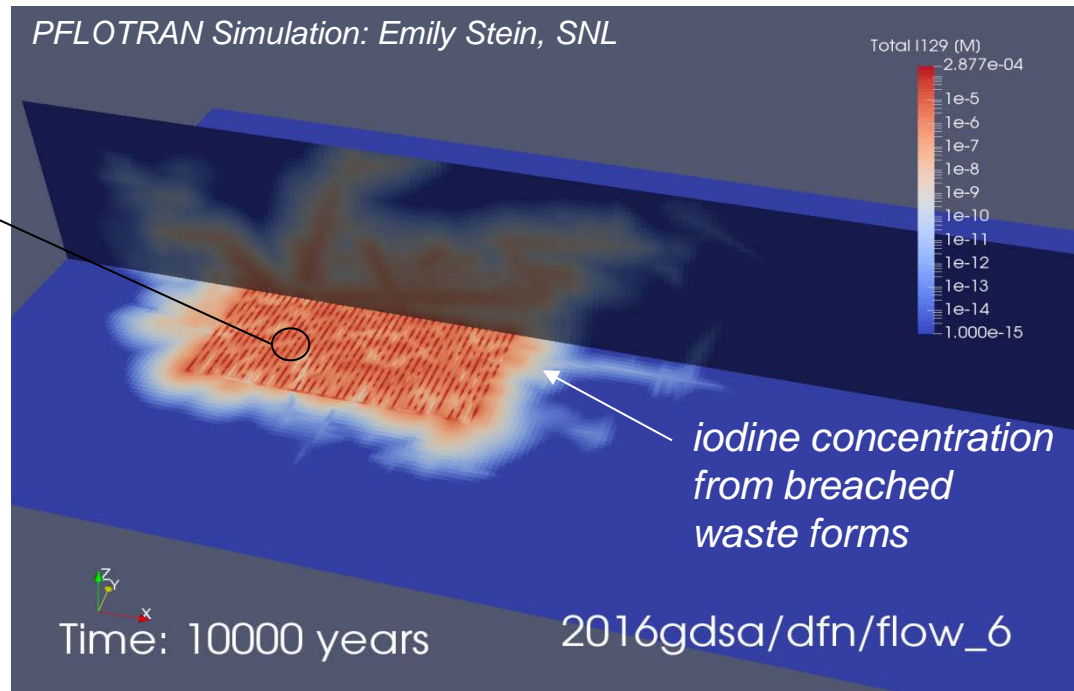
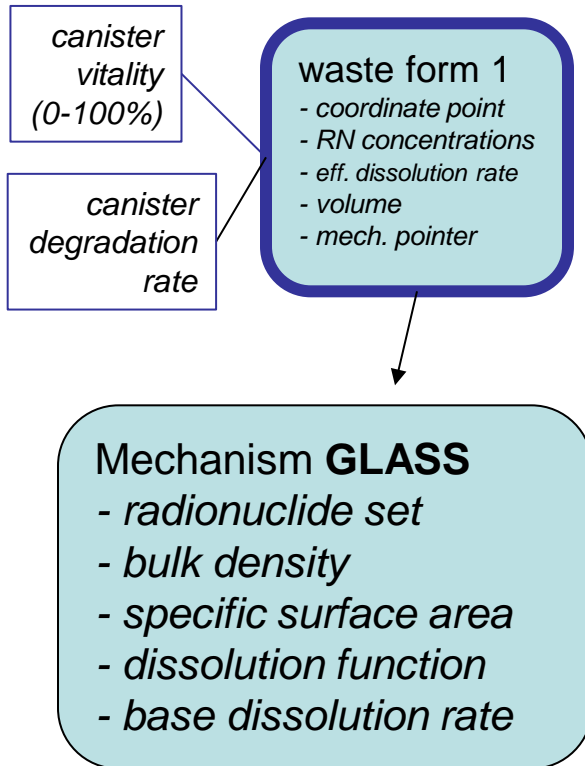
PFLOTRAN's Waste Form Process Model

Consists of 3 Main Components:



PFLOTRAN's Waste Form Process Model

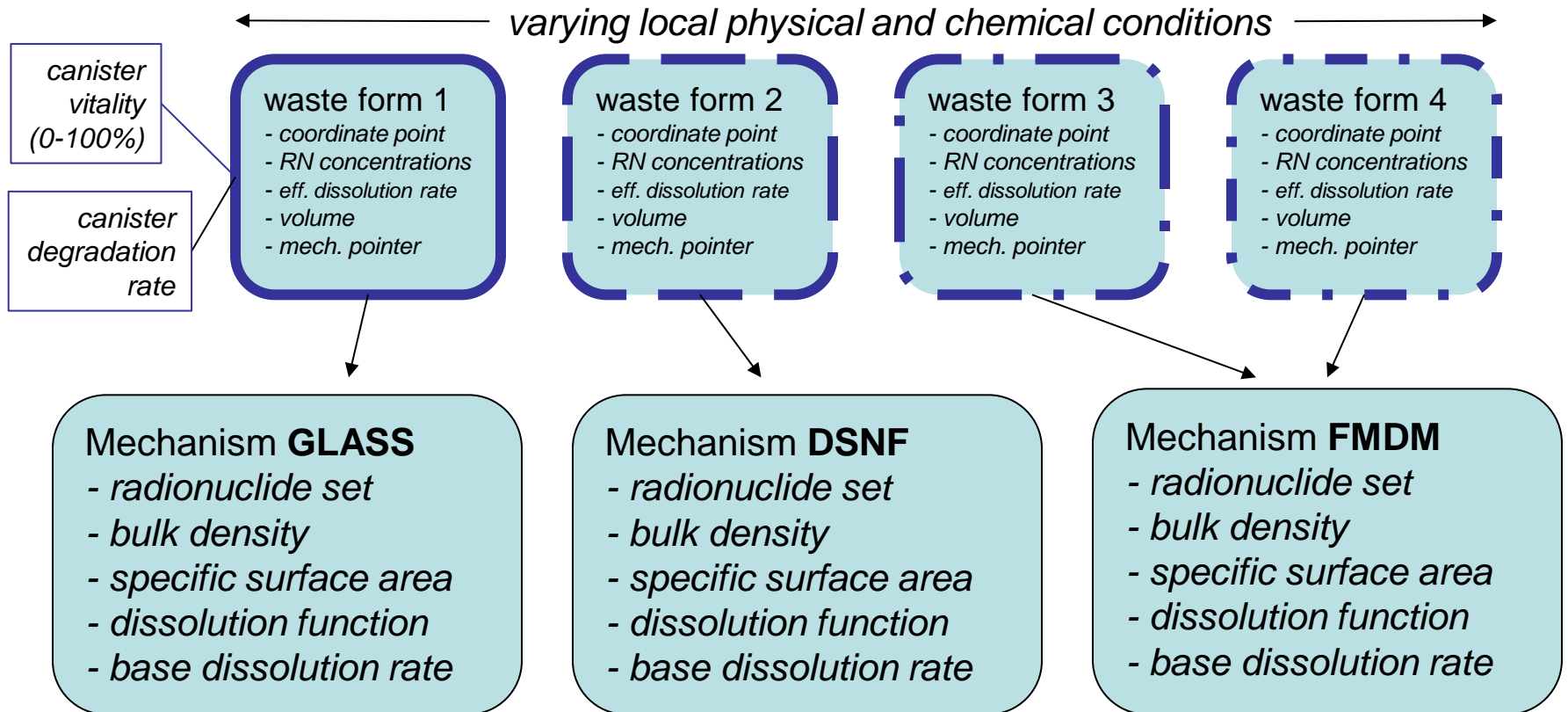
Major restructuring in FY16 improves modularity.



- Each canister & waste form is independent and can fetch the local conditions
- Canister breach times and dissolution rates now vary
- Multiple waste form types in a single simulation (mechanism pointer)

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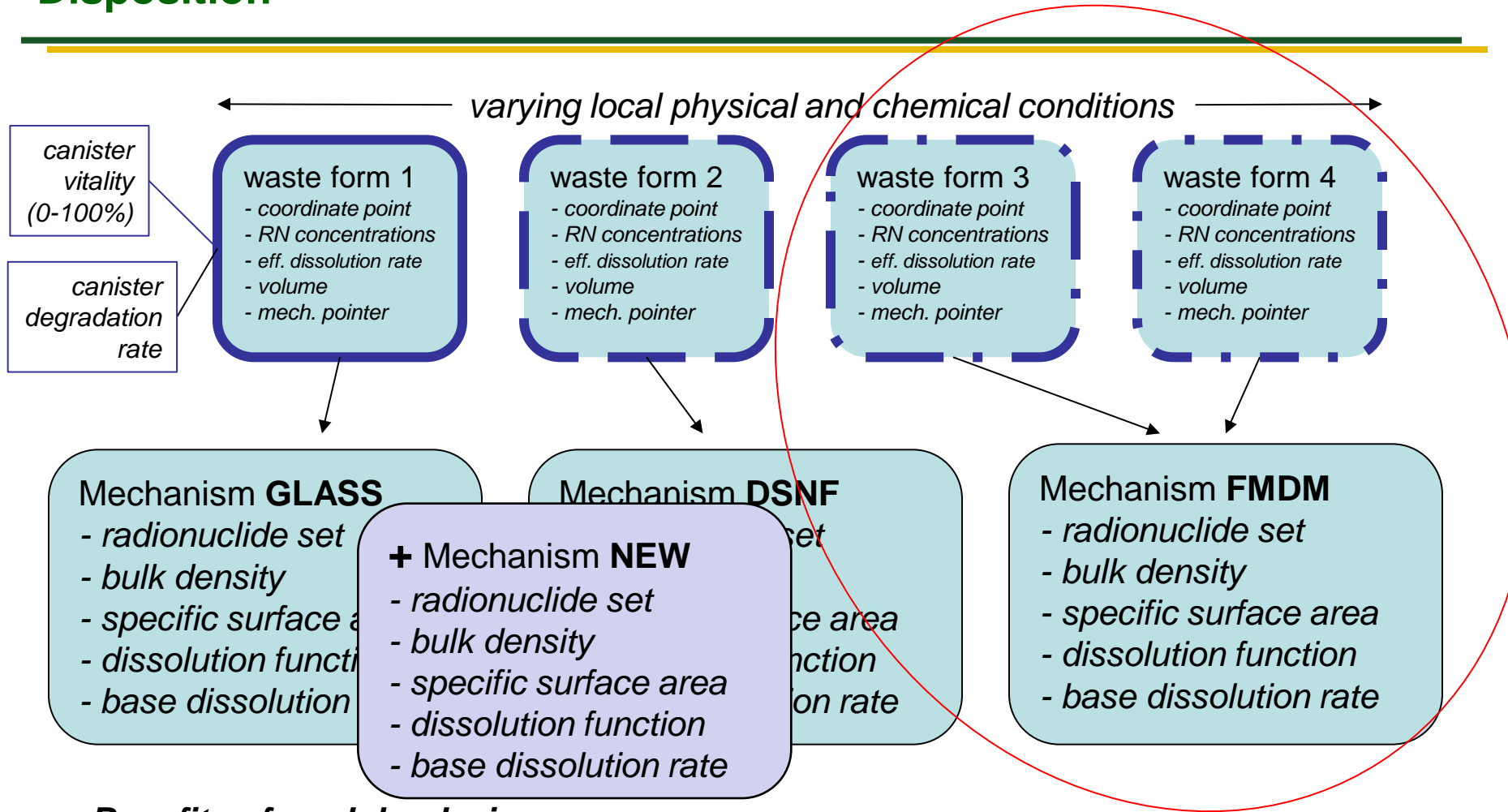


Benefits of modular design:

- Modularity increases the numerical efficiency (lots of waste forms, few mechanisms)

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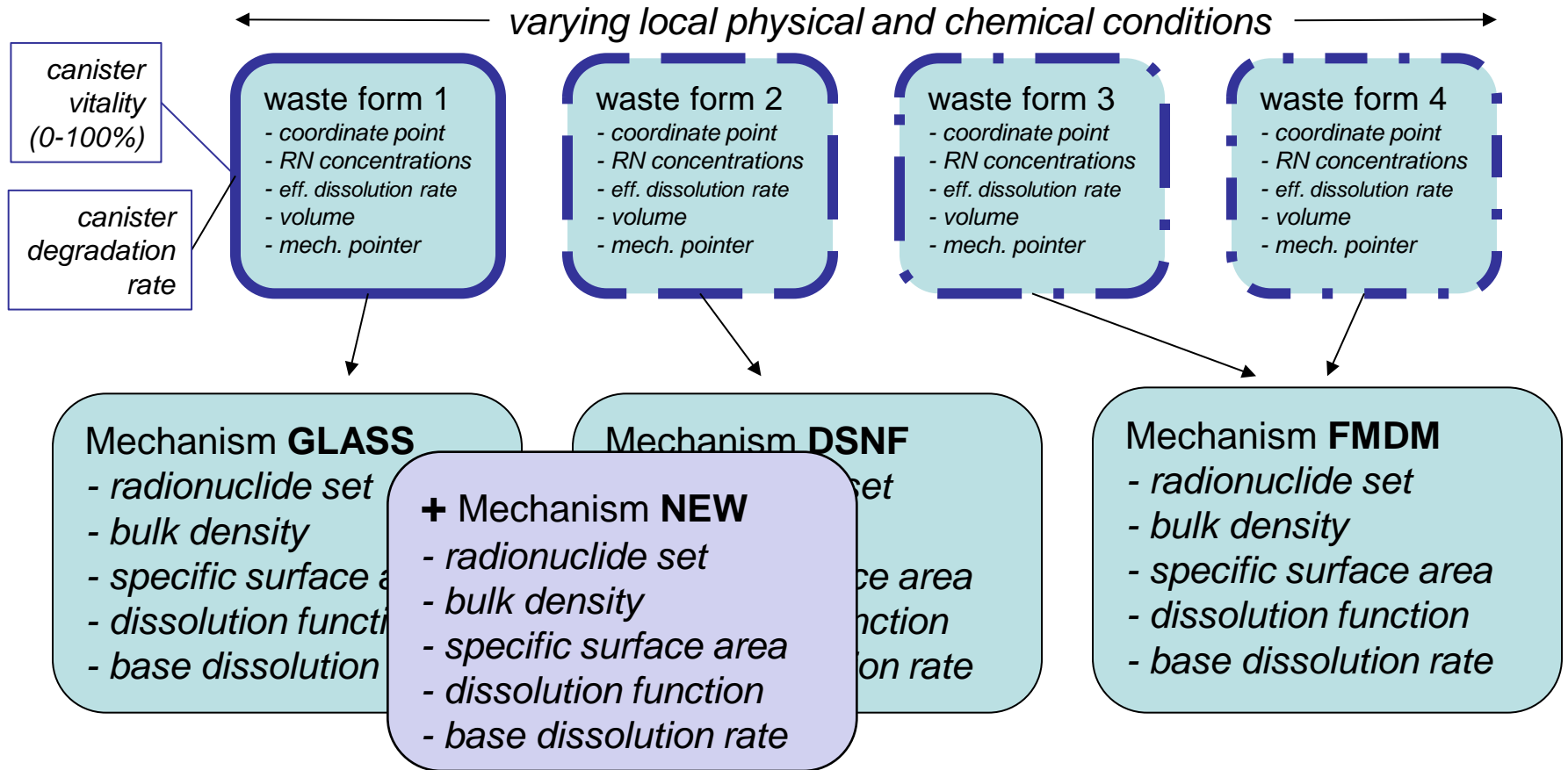


Benefits of modular design:

- Modularity increases the numerical efficiency (lots of waste forms, few mechanisms)
- New functionality can be easily integrated (without messing with existing infrastructure)

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We invite you to collaborate on this process model

We can help you implement the new waste form you envision