SUMMARY MILESTONE TABLE: YEAR 1

Milestone[1]	**Details**	**Progress**
§2 - Finish SIMpliPy workflow management tool	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	Complete. Capable of managing automatic restarts, including job submission. Can configure large parameter studies and build custom job execution scripts.
§2 - Implement marching cubes for EOS and opacities	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	Complete. Substantial progress in improving efficiency in this part of the code through vectorization. Marching cube EOS and opacity tables did not, in the end, yield a substantial increase in performance. Other optimizations were made.
§2.2 - High-fidelity 3D Simulations of Magnetorotational CCSNe	Resource: *Mira* node-hours: 4.1M Online storage: 40 TB Archival storage: 80 TB Resource: *Theta* *Mira* node-hours: 141k Online storage: 20 TB Archival storage: 40 TB	Complete.
§2.3 - 3D Simulations of Iron Core Collapse in Rotating Stars	Resource: *Mira* node-hours: 1.25M Online storage: 10 TB Archival storage: more	Full 3D simulation in a non-rotating progenitor complete and publication in preparation.
§2.4 - High-resolution Simulation of Magnetorotational Turbulence in CCSNe	Resource: *Mira* node-hours: 3.75M Online storage: 50 TB Archival storage: 100 TB	Complete.
Total Request – *Mira*: 9.375M node-hours, 300 TB storage; *Theta*: 141k node-hours; 40 TB online storage		

[1]Yellow: code development milestone; Teal: simulation milestone.

SUMMARY MILESTONE TABLE: YEAR 2

Milestone[1]	**Details**	**Progress**
§2 - Implement TEAMS opacities and EOS and NES	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	Neutrino-electron scattering has been successfully implemented in our Spark-M1 application. Work on the TEAMS opacity and EOS framework continues.
§2.5 - Long time scale simulations	Resource: *Mira* node-hours: 4.1M Online storage: 40 TB Archival storage: 80 TB	These simulations are running in the Capability queue on *Mira* now.
§2.7 - High-res PNS dynamo simulation	Resource: *Mira* node-hours: 3.9M Online storage: 50 TB Archival storage: 100 TB	We are on track to start this simulation in the next couple weeks, consistent with the original plan.
§2.6 - MHD progenitor simulations for more masses	Resource: *Mira* node-hours: 1.375M Online storage: 10 TB Archival storage: 20 TB	We are behind schedule on this due to required improvements and development to the progenitor application. The first non-MHD 3D progenitor simulation is complete and we will still be able to complete the planned MHD progenitor simulations before the end of 2019.
§2.8 - CCSN sims with 3D progens from Year 1	Resource: *Theta* node-hours: 281k Online storage: 40 TB Archival storage: 80 TB	These simulations will commence shortly on *Theta*, consistent with our original schedule.
§2 - Implement high-order MHD based on differential transforms	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	We have finished on initial implementation of a truly high-order finite-volume MHD scheme in FLASH. Further development will be needed before it is ready for production simulations but we expect that to be the case for 2020.
Total Request on *Mira*: 9.375M node-hours, 300 TB storage; *Theta*: 281k node-hours, 40 TB online storage		

[1]Yellow: code development milestone; Teal: simulation milestone.

ORIGINAL MILESTONE TABLE: YEAR 3

Milestone[1]	**Details**	**Dates**
§2 - Implement simple task-based parallelism	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	Jan – Mar 2020
§2.9 - MHD CCSN Simulations Using 3D Progenitors	Resource: *Theta* node-hours: 16M Online storage: 40 TB Archival storage: 80 TB	Jan – June 2020
§2.10 - Late time sims in 3D progenitors	Resource: *Theta* Core-hours: 16M Online storage: 40 TB Archival storage: 80 TB	Jan – Jun 2020
§2.11 - Enhanced physics CCSN parameter study	Resource: *Aurora* Core-hours: 400M Online storage: 2 PB Archival storage: 4 PB	Feb – Dec 2020
Total Request on *Theta*: 32M SU, 100 TB storage; *Aurora:* 400M, 2 PB storage		

[1]Yellow: code development milestone; Teal: simulation milestone.

REVISED MILESTONE TABLE: YEAR 3

Milestone[1]	**Details**	**Dates**
Adapt Spark-M1 to AMReX-based FLASH5	Resource: *Mira* node-hours: – Online storage: – Archival storage: –	Jan – Mar 2020
MHD CCSN Simulations Using 3D Progenitors	Resource: *Theta* node-hours: 250k Online storage: 40 TB Archival storage: 80 TB	Mar – Oct 2020
Late time sims in 3D progenitors	Resource: *Theta* node-hours: 250k Online storage: 40 TB Archival storage: 80 TB	Jan – Jun 2020
Enhanced physics CCSN parameter study	Resource: *Theta* node-hours: 500k Online storage: 80 TB Archival storage: 160 TB	Jul – Dec 2020
Total Request on *Theta*: 1M node-hours, 300 TB storage		

[1]Yellow: code development milestone; Teal: simulation milestone.