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Navigating the evolving path to exascale with NCAR's Derecho

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In 2018, NCAR began its efforts to design and procure the successor to its current 5.34-petaflops Cheyenne system. More challenging that past procurements, the effort faced a dynamic landscape in terms of application evolution, including GPU-ready models and machine learning; scientific demands, including convection-permitting Earth system modeling and subseasonal to decadal Earth system prediction; and a more diverse range of feasible technology options than had been available in nearly a decade. With scientific and computational advice from the user community and co-design efforts with vendors, NCAR navigated this complex landscape to design and procure the Derecho system and drive its next steps on the path to exascale Earth systems science.

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