Evidence that traditional computer architectures do not handle applications well when the data are not cache-friendly, such as sparse matrix operations, data analytics, machine learning, and graph analysis, continues to grow. In part, this stems from memory access characteristics and, to a degree, how accesses to remote memory are handled for many-core machine implementations. In his talk, Dr. Jacobsen will introduce a new, highly-scalable partitioned global address space (PGAS) architecture that can scale to very large sizes using a shared memory programming model that is relatively invisible to the programmer. In this architecture, the program thread migrates to the data, and data never move, which can result in dramatic performance improvements.