

Work-from-Home Synchrotron Science – How we Enabled Remote Operations at NSLS-II

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The COVID-19 pandemic forced large scale user facilities, like NSLS-II, to greatly reduce on-site staffing and user access. To continue fulfilling our essential scientific mission, we rapidly developed and adopted the technologies required to enable both safe and secure remote operations. While many of the improvements put into place at NSLS-II were already considered in the long-term facility vision, the pandemic forced acceleration of these plans. As the world adapted to become much more digitally interfaced, we sought to integrate into that new world. More than simply being a stopgap, enabling successful remote operations offers the opportunity for an improved user experience either on- or off-site. These capabilities offer increased access to our facilities from new and traditionally underserved user communities while simultaneously increasing our scientific output and decreasing the facility's net carbon footprint.

In this contribution, I will detail both the strategy and enabling technologies adopted at NSLS-II to facilitate successful remote operations. These include developments in the areas of sample management, expanded data access, improved analysis capabilities, and increased reliance on automation and artificial intelligence. Additionally, the shift to expanded remote operations requires significant consideration of measures to ensure continually safe and secure work, both for our users, staff, systems, and data. Examples of these enabling technologies will be detailed, as well as several examples of recent research successfully accomplished using remote operations at NSLS-II.