DIGITAL TWIN FIRST USE CASE: With an estimated 1 in 20 COVID-19 survivors experiencing long-term symptoms such as profound fatigue, brain fog, headaches, cardiac arrhythmia, fevers and shortness of breath, Post-Acute Sequelae of SARS-CoV-2 (PASC) is the next public health crisis. The COVID-19 Long-Hauler Project, a partnership between Dell Technologies and i2b2 tranSMART is applying the power of research—accelerated by AI and other advanced technologies—to understand the causes of PASC and develop effective treatments. The Digital Twin effort has the potential to expand with data for up to two million digital twins in the next four years.

THE LEARNING HEALTH SYSTEM: Leveraging the Power of Collective Data and AI-driven Research for Individual Impact

DATA COLLECTION AND DE-IDENTIFICATION: The Data Enclave collects Ms. Cacelli’s existing health data in all forms and organizes it into a single record to create a de-identified digital twin that replicates Ms. Cacelli’s health status.

CONTINUOUS UPDATES REFINES THE DIGITAL TWIN: Ms. Cacelli monitors her symptoms with at home and mobile devices and continues to visit her doctors. The data from the devices, diagnostics, etc. are captured and de-identified by the Data Enclave, and the population level data is updated.

CONTINUOUS DATA ANALYSIS AND FEEDBACK: As the Data Enclave continues to evaluate digital twins for similarities, the analysis reveals a drug that has been highly effective in patients who resemble Ms. Cacelli. A new pharmaceutical trial with a protocol linked to genetics is announced and Ms. Cacelli is recruited to participate. She opts in.

OUTCOME: As a result of the new clinical research and new therapies, long haulers such as Ms. Cacelli have a shot at better health and quality of life while also contributing to the health of others.

FOLLOW-UP: De-identified data from follow-up visits to monitor Ms. Cacelli’s additional symptoms will be used to further refine and shape the population-based statistical and mechanistic models.