



Project Showcase

## Health | Life Sciences

### Data-Driven Workflow Efficiency Tools

*“TEKStack Health’s mission towards enabling critical data has led to several successful projects increasing organization of administrative and clinical health information, as well as bridging gaps in interconnectivity and increasing ease of use at the same time.”*

**Robert Golabek, CEO of Translucent**

## Overview

TEKStack Health (est. 2010) is the health IT division of Translucent, working in partnership with health care institutions towards the common goal of improving health care delivery. TEKStack Health leverages the company’s core competencies in developing intuitive human centric data-driven cloud-native applications. Our expertise is industry-leading from security and privacy technologies, to insightful data enabling solutions that better healthcare & life sciences outcomes. This document highlights key projects intended to showcase both features and capabilities that were successfully implemented using elements of TEKStack Health’s modular software platform and industry-leading knowledge.

### Project Synopses:

**Brain:** A cloud-native registry allowing for instantaneous searching within the tumour sample repository, incorporating efficient inventory controls while enabling user access across participating partner institutions.

**NextUp Care:** A smart booking platform for diagnostic imaging streamlining the patient booking process. Key features include e-referrals, algorithmic screening of patient priority and schedule optimization, and SMS messaging for immediate booking confirmation and changes. Designed with a focus on interoperability, integration is possible across leading EHR systems.

**SPARK:** A web and mobile application combining two different products, a symptoms questionnaire for children and a database holding national Clinical Practice Guidelines for interpreting symptomology. The result is an application that enables higher patient compliance alongside a comprehensive resource for clinicians to execute more objective treatment plans incorporating personalized information.

**CALIPER:** Focused primarily around an intuitive user experience, the CALIPER app and website expands the reach of important clinical tools nationwide, specifically increasing the utilization of healthy pediatric reference intervals in clinical decision making.

**IDA 2.0:** From an outdated hospital administrative platform, the rebuilt IDA incorporates key features such as user-friendliness, platform responsiveness, and HIS interoperability to aid in administrative workflows. Designed around the healthcare-focused TEKStack platform, a robust security system and privacy compliance was easily included with minimal consultation.

**PIDA:** Building an administration platform from several legacy databases, a single dashboard enabled increased accessibility to disparate sources of information as well as simpler and more effective reporting tools. Integrating state-of-the-art search functionality further enhanced usability of previously difficult to access information, while also empowering decades-old data.

## Project 1: BRAIN

Client: The Brain Tumour Bank Network

### The Company

The Brain Tumour Bank Network is a multi-institutional tumour, blood, and cell biobank initiative, where a central virtual registry was created to facilitate the posting and annotation of available samples from all CNS tumour cases across four University Hospitals located in Toronto, Ontario.

### The Challenge

The deliverables requested by The Brain Tumour Bank Network included the creation of a database for tumour samples, a dynamic dashboard that automatically updated after inputting relevant search parameters, an inventory control system for all samples within the registry, and an inter-hospital sample request system which was accessible by participating institutions. Additionally, the resultant system would need to be both responsive and user-friendly to enable clinician adoption.

### The Solution

The registry created by Translucent is a cloud-native searchable database, currently accessible by 4 major hospitals, enabling the management of medical sample inventories across different institutions. Critical medical sample inventories are monitored with patient assignment, cross-institutional optimization of inventories is executed with ease, precious samples are effectively utilized, and a reduction in excessive inventory stores is a result of moving away from individually-managed sample databases.

### The Benefits

The unification of resources through the creation of a centralized biobank has led to an advancement in research and an acceleration in the development towards more effective treatment of patients with brain and spinal cord tumours. This is accomplished while also encouraging collaborations between university hospitals, academic institutions, and industry partners.

## Project 2: NextUp Care

Client: NextUp Care

### The Company

Nextup Care is a start-up founded by Wayne Li, who identified a key frustration within the Canadian healthcare system related to obtaining urgent diagnostic imaging services in a timely manner. His frustration was confounded by the fact that diagnostic imaging equipment is chronically under-utilized across all healthcare institutions, inevitably leading to the creation of the diagnostic imaging algorithmic booking platform, Nextup Care.

### The Challenge

Starting with Wayne's described need for a better booking platform, Translucent consultants fully guided Nextup Care through the platform feasibility and implementation process. This began with the creation of an initial concept, followed by the facilitation of the iterative design process, to the finalization of a working product which is now known as Nextup Care.

### The Solution

NextUp Care is divided into three distinct modules: e-referrals, algorithmic screening, and SMS messaging. These modules work together by allowing clinicians to quickly create new e-referrals which are sent to the NextUp Care platform, are assigned the fastest booking time (based on clinical priority), and immediately message the patient with their booking information. If the scheduled time is not to the patient's satisfaction, a simple SMS reply would prompt the platform to create a new booking opportunity that would best suit the patient's schedule. NextUp Care can integrate with leading EHR systems (i.e. Cerner, Epic, Meditech), and bookings can be optimized for utilizing diagnostic resources at the regional level, reducing the inefficiencies related to under-utilized diagnostic imaging equipment at specific hospitals.

### The Benefits

When implementing Nextup Care as the primary scheduling tool, there is a clear reduction in patient wait times (up to 60% faster) for high-demand medical procedures when compared to manual scheduling practices, dramatically improving patient access for diagnostic imaging services such as MRI and CT. Additionally, Nextup Care can be easily implemented into leading EHR systems across individual hospitals, resulting in an algorithmic scheduling platform that can optimize the bookings of diagnostic imaging services at a regional level, thereby further increasing the optimization of equipment usage that may otherwise be not be possible.

## Project 3: SPARK

Client: The Hospital for Sick Children - Dr. Lillian Sung Lab

### The Company

Dr. Lillian Sung and her research team created a symptom tracking tool geared towards children that might otherwise have difficulty in describing how they feel during cancer treatment. The tool is called Symptom Screening in Pediatrics Tool (SSpedi), and is a self-report questionnaire asking its recipients to rate their level of discomfort on 15 items.

### The Challenge

This questionnaire was a paper-based screening tool, but research has shown that for an 8 to 18-year-old demographic, electronic reporting tools had better compliance as well as recording accuracy. Electronic tools also made data easier to collect, visualize and analyze.

### The Solution

Translucent provided a solution in the name of SPARK (aka: Supportive Care Prioritization: Assessment and Recommendations for Kids), a web and mobile application linking the detection of symptoms related to cancer treatment with best supportive care for children.

Comprised of two components, SSPedi (Symptom Screening in Pediatrics) and Clinical Practice Guidelines, SPARK allows for an easy way to have children engage in self-report surveys to track important information related to their symptomatology.

### The Benefits

These surveys, coupled with the nationally-recognized Clinical Practice Guidelines, provides clinicians with the best information related to recommendations on how to treat symptoms related to children's cancer treatments. Since children generally have a difficult time expressing the extent of their symptoms, SPARK provides a quantitative assessment strategy backed by empirically-validated guidelines to improve the standard of care to a vulnerable demographic.

## Project 4: CALIPER

Client: The Hospital for Sick Children

### The Company

Led by SickKids, The CALIPER (Canadian Laboratory Initiative on Pediatric Reference Intervals) Project is a multi-centre, nation-wide initiative aimed at developing a comprehensive blood test database of healthy reference intervals to improve the diagnosis and treatment of sick children. CALIPER effectively fills a large gap that currently exists in pediatric reference intervals.

### The Challenge

Often, when your doctor wants to diagnose an illness or needs to perform a routine check-up, they will ask to take a blood sample for testing. Those results can be used to determine a wide range of conditions, including determining the way an individual's health changes over time, how one compares to others of a similar age, and possible treatments plans.

### The Solution

Translucent led the creation of a mobile app for CALIPER, expanding its accessibility to clinicians nationwide, bringing the project closer in its goal of establishing a database of "normal" test values—a guide that can be used to compare your test results to the test results of other healthy people of your age and gender.

### The Benefits

The mobile application allowed for the database to be more easily shared with health care centres and children's hospitals across Canada and worldwide, ensuring that laboratory test results are better understood, regardless of the region in which patients are receiving their medical care.

## Project 5: IDA 2.0

Client: The SickKids Research Institute

### The Company

The SickKids Research Institute is Canada's largest, hospital-based child health research institute. Committed to improving the health of children, here in Canada and in the global community, the institute is highly devoted to innovation as a critical driver in improving child health.

### The Challenge

The Hospital for Sick Children Research Institute required a comprehensive update of their existing integrated database application (IDA 1.0), rebuilding everything with the exception of the underlying database layer. The upgrade required among other things increased user-friendliness, as well as the incorporation of scalability into the architecture and related technology that was required by the amount of data and new users being accumulated by the system.

### The Solution

Translucent successfully updated the hospital's IDA platform, increasing user-friendliness, platform responsiveness, and interoperability as outlined in the project scope. This was done while maintaining the original database, eliminating the need for unnecessary costs that would normally be related to grooming the files within these systems.

### The Benefits

The interoperability that resulted from the implementation of IDA 2.0 provided the hospital with additional cost savings by reducing the dependence on existing, now-redundant infrastructure. Translucent also provided comprehensive consulting services, reviewing and confirming all client requirements, leading to a new centralized platform which enabled information that both clinicians and administrators had previous difficulty accessing. Therefore, the new platform resulted in providing the level of administrative support that the initial scope set out to achieve, as well as created new areas of value to administrators across the institute. In addition to leveraging the existing libraries and components of the TEKStack platform, building a flexible, and robust web application, dedicated security modules also enabled the new platform the ability to govern user account administration functions, in accordance with industry privacy standards. This provided the basis for an incredibly flexible role and permission-based security system.

## Project: PIDA

Client: The Hospital for Sick Children - Department of Pediatrics

### The Company

Affiliated with the University of Toronto, The Hospital for Sick Children (SickKids) is Canada's most research-intensive hospital and largest centre dedicated to the improvement of children's health in the country. The department of Pediatrics consists of multifaceted programs of national and international significance, all supporting the core mission and goals of the hospital.

### The Challenge

Seeing the results of IDA 2.0 at the SickKids Research Institute, the Department of Paediatrics requested a system to be built that would effectively centralize various disparate data sources siloed across their legacy databases into a single administrative platform. Much time had been noted as wasted by administrative staff dealing with the various out-of-date systems spread across the department. Many of these files were very large in size, and contained historical data that were upwards of 15 years old. The creation of data feeds from other systems was a key requirement, that would be both internal and external to the hospital network.

### The Solution

TEKStack Health's platform was used to build an administrative system for the Department of Paediatrics at SickKids. The system is a database-driven web-application. The Department secured permission from the IDA owners to reuse some of the IDA framework and UI look and feel. Translucent worked closely with the PIDA project team to build a system that integrated several data sources, including FileMaker Pro databases as well as excel files. Translucent provided full project development lifecycle support through designing and building the system, to a comprehensive data migration from their legacy systems to the new system. To increase the usability of the migrated data by the department's administrators, PIDA also featured dynamically generated reports and analytics tools.

A query tool was also built as an add-on module, allowing users to dynamically and in real-time query a database and export the results. The user can now in essence build a grid-style report and then review the data as well as export it to excel if needed. The tables and views a user may access are based on a user's permissions (governed by Translucent's Security Tool).

### The Benefits

The new, centralized system was effectively tailored to fit the department's unique needs. The resultant product excelled in its integration, facilitated process automation, and incorporated a suite of security measures protecting the system's sensitive data. Overall, the workflows around the tasks managed by the system were streamlined with the implementation of the new system, enabling more efficient administrator workflows and significantly reducing time spent on previously difficult and redundant activities.