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INTRODUCTION

ABOUT DHIT

The Digital Health Institute for Transformation (DHIT) is a 501(c)(3) non-profit education and research institute supporting communities through the process of digital health transformation. We collaborate with leading academic institutions, associations, and industry to cultivate talent and ecosystems with our immersive learning platform, harnessing real-world experiences that drive the adoption of next-generation skills, emerging technologies, and mindsets needed to foster the digital health leaders and innovators of the future, today. For more information, visit dhitglobal.org.

DHIT would like to thank its 2019 Summit Fellows for their contributions during the Summit and to this document: Aayushi Patel, Catherine McRimmon, Colleen Ferlotti, Cybele Wu, Farrah Hermes, Shayan Sarmadi, and Teresa Phan.
Greetings Ecosystem Colleagues,

2019 was a pivotal year for DHIT and the North Carolina digital health ecosystem. We instructed the first cohort for our next-generation curriculum at the UNC Graduate School; we launched a collaboration with the Government of Quebec; and fostered partnerships across academia, research, clinical services, and industry to deploy the operating model of the future. Other accomplishments include:

» Launched the DHIT Fellowship Program with Duke University’s MMCi Program and held educational Lunch + Learns
» Created architecture and assembled key partnerships for the Community HUG
» Held a Policy Lunch + Learn, inviting all members of the North Carolina General Assembly to learn more about digital health and its potential to impact North Carolina
» Expanded monthly Digital Health Happy Hours into Charlotte
» Executed a successful DHIT Summit with international attendance from Quebec and a matchmaking session held for North Carolina and Quebec companies.

As a result of our 2019 activities and the outputs of this Summit, we have launched an aggressive fundraising campaign for our Community HUG model, to be deployed in 2020.

Health inequities are a problem for all of us — the burden of disparities in health adversely affects our nation’s children, our economic development, our national character and commitment to justice and fairness of opportunity. The time is now to STOP doing the same thing over and over and expecting different results. START 2020 right by supporting DHIT in laying the critical infrastructure that can drive community transformation and reduce health inequities.

Without you, DHIT does not exist. Without the energy and motivation of our entire community believing there should be a better way, we do not exist. Without the belief that together, we can transform the antiquated models of care that serve us today, we do not exist. And without your commitment to a world without health inequities, we do not exist.

Visit our landing page to learn about the three ways the DHIT Community HUG supports under-resourced communities (by training and deploying Health Architects, building a Health Utility Grid, and convening community stakeholders around Open Innovation), and learn how your organization can support our efforts to reduce health inequities.

Best regards,

Michael Levy
President + Co-founder, DHIT Global
On November 13, 2019, more than 175 healthcare transformers, game-changers, and status-quo challengers convened in Durham, North Carolina to dig deep into how Digital Health can be widely used to transform how healthcare is designed, delivered and experienced. The second annual DHIT Summit kicked off with a VIP Supper Club on Tuesday, followed by a full-day conference at American Tobacco Campus, a special edition Digital Health Happy Hour on Wednesday evening, and wrapped up with a special matchmaking event in collaboration with a delegation from the Government of Quebec on Thursday.

A key enhancement this year was hosting the Government of Quebec, the largest Canadian province, who led a delegation which was comprised of 11 digital health start-ups as well as The University of Montreal Health Center (CHUM). CHUM is considered one of the most progressive health systems in the world and a leader in leveraging Artificial Intelligence to improve patient care. The audience was inspired by the keynote address which featured real-world examples from Dr. Fabrice Brunet, President and CEO of CHUM, on how health systems and communities can leverage AI for better healthcare delivery.

Following Dr. Brunet’s remarks, the focus of the Summit shifted to the first of several panels which were centered around major industry themes: Education, Research, Quality Improvement, Commercialization, and Community.

First, experts explored the opportunities to frame the mindset for digital transformation through a panel on education.

Next, participants heard from leaders in the clinical research space, focusing on the shift towards real-world evidence and digital trials.

Following the first two panels, DHIT President Michael Levy engaged in a fireside chat about the digital transformation of North Carolina’s rural areas by exploring the incredible work of Dr. Todd Telemeco, Dean of the College of Health Sciences at UNC Pembroke, and his team in impacting the health of their community.

Next, attendees were given an opportunity to engage in a facilitated Design Thinking workshop that took them through a series of exercises comprised of problem identification, solution design, and storyboarding aimed at co-creating solutions to unmet needs for selected patient personas.

Finally, the afternoon session culminated with two more panels aimed at making it all happen, as participants were guided in quality improvement techniques and operating models to drive transformation, followed by the final panel describing the pitfalls to avoid to ensure successful commercialization.

The accompanying sections below summarize the panels, workshops, and outputs of the Summit, as well as DHIT’s go-forward plans for 2020.

Let’s impact the world together, one community at a time!
Panel Discussion #1: Education
“EXPLORING THE MINDSET REQUIRED TO ENABLE DIGITAL TRANSFORMATION”

Moderator:
**Michael Ruhlen, MD, MHCM, FAAP**
Director of Charlotte AHEC and VP of Medical Education at Atrium Health

Panellists:
**Ian Chuang, MD, MS, CCFP**
Chief Medical Officer of EMEALA and APAC, Elsevier Health, International

**Kelly Bean**
Senior Associate Dean, Olin Business School, Washington University in St. Louis

**Yonnie Butler, MBA**
Executive Director, Biotechnology Center of Excellence at Alamance Community College

**Leah Townsend, PhD**
Director of Professional Programs at the UNC Graduate School and CEO of Pulvinar Neuro

INTEGRATIVE KNOWLEDGE AND CRITICAL THINKING:
Dr. Ruhlen began by setting the stage, commenting that with the rapid change of innovation comes an accelerated learning curve that institutions need to be mindful of when preparing students for a future where 65% of jobs do not yet exist. Ruhlen added that “the field of innovation changes every 73 days” and followed up by asking the panel, “How do we adequately prepare our students in such a rapidly changing environment?”

Kelly Bean emphasized the need for integrative knowledge – that is, for students to learn the process of asking the right questions and to think critically about their knowledge. This practice frames students for lifelong learning and develops leadership skills that are deep-seated, allowing these professionals to lead healthcare to the next level. When integrative knowledge is put into action through the right questions being asked, it allows for the desire to learn and develop, which sets the stage for the proper leadership skills to materialize.

In its January 2016 report titled The Future of Jobs, the World Economic Forum began with this preface: “In many industries and countries, the most in-demand occupations or specialties did not exist 10 or even five years ago, and the pace of change is set to accelerate. By one popular estimate, 65% of children entering primary school today will ultimately end up working in completely new job types that don’t yet exist.” The Education panel explored the impact of the rapidly accelerating health technology curve on our workforce; how data, AI, predictive analytics, machine learning and profound innovation will shape our future at an ever-increasing pace; and how, as educators, we need to prepare the health workforce of the future, starting today.
Dr. Chuang added that mere knowledge is acquired by memorization; however, working with digital data requires more than memorization, and involves searching and seeking. Leah Townsend added that critical thinking skills are essential for our future and current clinicians to pivot to the new roles that Dr. Ruhlen referred to earlier. In addition to critical thinking skills, industry partners are needed to innovate. Alumni from health science professional programs are also integral to moving forward, as they can include current and future trends that could impact healthcare in this changing world. Yonnie Butler referenced Design Thinking as another way knowledge can be acquired in this changing environment. Students can apply Design Thinking by creating user/consumer stories, challenging assumptions, and developing new solutions to problems from the end-user/consumer perspective.

ON BEING CULTURALLY COMPETENT:
Kelly Bean shared a personal story of her father who had kidney cancer. When she asked her father’s physician questions to connect his kidney cancer to other health ailments he was experiencing, they could not find answers. After she made a few Google searches, she was able to make these connections. Although not all of his care physicians were this unsympathetic, his oncologist exemplified the reaction that she needed. He was empathetic of her struggles for answers and together they were able to come to the right conclusion. It often falls on the patients and their caretakers to explore the solutions that the physicians may not have arrived at yet. In other words, it is teamwork between the patient, the caretaker, the patient’s family, and the physicians.

INTEGRATE TECHNOLOGY WITH HUMAN EMPATHY:
Although many are fearful in this day and age that technology will be taking away jobs, Yonnie Butler believes that there will be a balance between technology and the human element. Relying on data and technology alone will not only be impersonal to the patient and caretakers, but may also be inaccurate. By including the human element, it serves as error checking, as well as demonstrating empathy to the patient and their family. Kelly Bean suggested that designers ask the question: “What is the ideal human experience, and how can technology be integrated to include this experience?”

Digital fluency was also emphasized as an important skill for the future, as it pertains to an individual’s ability to absorb data and information quickly, then use it to make informed decisions. The volume of data and information is increasingly growing, so those who know how to prioritize it and quickly react in agile situations are at a distinct advantage.

Dr. Ruhlen brought up the subject of Telehealth education. It was relayed that there are a few programs that implement it with consistency in the US and in France. The use of telehealth and virtual care is expected to increase dramatically as digital transformation continues in the healthcare industry.

The concluding remark for this panel was that if value is emphasized alongside ethics and data, clinicians can provide better healthcare.
Panel Discussion #2: Research

“ACCELERATING DRUG DEVELOPMENT + CARE DELIVERY THROUGH REAL-WORLD EVIDENCE”

Moderator:
Susan Craft, MMCi
Senior Associate, Patient Solutions, Pfizer

Panellists:
Tim Wiltshire, PhD
Associate Professor, Division of Pharmacotherapy and Experience Therapeutics, Eshelman School of Pharmacy, UNC

Joy Bhosai, MD
Chief of Digital Health & Strategy, Duke Clinical Research Institute

Jonathan Thornhill, MHA
Health Systems Innovation Lead, John Hopkins University

Karen Kesler, PhD
Senior Statistical Scientist, Rho, Inc.

The discussion was focused on the acceleration of drug development and care delivery through real-world evidence. Technology has enabled large and continuous streams of data collection, which has led to organizations in the healthcare and biotechnology industries to be overwhelmed with data.

Real-world Data (RWD), as defined by the FDA is, “data relating to patient health status and/or the delivery of healthcare routinely collected from a variety of sources,” which would include data from wearables, EHRs, claims data, etc. Real-world Evidence (RWE) is simply the insights gained through the analysis and processing of RWD. The panel was unanimous in acknowledging the significant potential that real-world evidence can have for leading breakthroughs in patient care delivery and pharmaceutical research. However, they agreed that the true task at hand is how to effectively harness RWD to deliver actionable insights. The reality is that healthcare and biotechnology industries are becoming rapidly overwhelmed with enormous amounts of data that they are struggling to extract meaning from.

CONTEXT IS KEY:

When Susan Craft asked the panel to discuss the challenges with real-world data, Tim Wiltshire and Joy Bhosai both agreed the main question was “Can we trust the data?” With significant variability in data capture and accuracy, RWD sets could be unviable in answering certain research questions. Bhosai provided practical examples of how common vital signs, such as blood pressure, may change throughout the day based on the patient’s behavior which means that it is important to understand the context in which the data is being captured and how it relates to the patient. Karen Kesler shared her concerns around real-
world data sources being “sources of convenience” which highlights the need to be deliberate in the representation of test populations to ensure the resulting conclusions are representational and relevant to a broader population.

Tim Wiltshire identified safety as another major challenge with respect to safely and efficiently implementing the knowledge gained from RWE into clinical practice. To address this, Jonathan Thornhill argued for the establishment of processes within a broad healthcare system that enable it to continuously provide the highest quality of care using the latest evidence. Kesler also labeled interoperability to be a significant barrier and fundamental in linking datasets to use RWE effectively. She acknowledged that certain barriers exist due to the real concern for privacy and security, but are largely due to a lack of standardization in data capture.

PEOPLE NOT TECHNOLOGY: THE ANSWER:

All panelists agreed that the key to addressing many of these barriers and challenges comes down to people and relationships. Tim Wiltshire discussed how important cultural change is to transforming a healthcare system in order to make a paradigm shift in focus from sickness to prevention. He called on healthcare systems to acknowledge that digital health will serve an integral role in making this shift possible, and that partnerships will allow traditional healthcare systems to keep up with a rapidly changing industry. Bhosai agreed and discussed how the Duke Clinical Research Institute has been co-leading the Apple Heart Study with Stanford, which has allowed thousands of patients to be enrolled over a large geographic area since the Apple Watch made a decentralized clinical trial possible. Thornhill and Kesler both focused on the importance of identifying and actively engaging stakeholders when addressing implementation challenges, such as interoperability and change management. They also agreed on the importance of having champions that can facilitate cross-departmental collaboration by understanding organizational needs and working to change stakeholder attitudes in favor of advocating on behalf of technological initiatives that will drive digital transformation and innovation.

All panelists agreed that it was too early to tell if RWE had provided tangible value back to the patient or community, but that it was making significant strides. From a practical view, Bhosai discussed how wearables can now alert patients to certain abnormal diagnostic values, which might lead a patient to go and seek medical attention, which they might not have done without the alert. Thornhill discussed the potential for Health Information Exchanges to provide insight into communities across the state, but as Kesler had mentioned before, foundational systems and infrastructure did not exist for this data to be captured for research purposes.

In discussing an ecosystem of stakeholders (patients, providers, payers, etc.) that harness RWE, Craft acknowledged that trust played an inherent role, in both the validation of the data and its stewardship, and posed a question to the panel of how a system of trust can be built. All panelists agreed on the importance of patient centricity and transparency in how data is used. Improving transparency and sharing insights gained from patient data would undoubtedly help clinical trial participants to feel more engaged in the process.
Panel Discussion #3: Quality Improvement
“DEPLOYING NEXT GENERATION OPERATING MODELS FOR TRANSFORMATION”

Moderator:
Corey Mercy
Deputy CTO,
North Carolina
Department of
Health and Human
Services

Panellists:
Anne Bailey, PharmD,
BCPS
Innovation Specialist,
Veterans Health
Administration,
Asheville

Anika Gardenhire, RN,
CPHIMS, MMCi
AVP Digital
Transformation,
Intermountain
Healthcare

Rich Kenny, MMCi, RN
CIO, Bluedoor Group

Marc Saab, MEng
Founder & Managing
Director,
BML Technology

Digital Health has an immediate opportunity to transform models of care, engage patients in their health, and build communities focused on wellness, but over the next century, what are the critical attributes that need to be progressed continuously? How do we lead the charge to deploy next generation operating models in our lives, our communities, and our institutions? What do those models look like? Who needs to be involved? And what drives what? In this panel, an immersive discussion took place between international, national and state clinical informatics leaders who are responsible for integrating digital health solutions into integrated care models supporting health system and care transformation in real time and over time.

Quality in Digital Health is rapidly advancing beyond mere usage metrics. The groundwork for growth has been laid with (moderately) integrated Electronic Health Records, billing, and administrative systems. The Internet of Things is now being incorporated and the digital landscape is evolving at an ever more rapid pace. Quality of the user experience must evolve as well.

The panel consensus was that engagement of patients, providers, and corporate entities necessitates expanded definitions of quality when working towards transformation. Provider usage metrics are not enough; quality systems will not work without holistic adoption by all clinicians and ancillary staff. Kenny emphasized the importance of the human factor by taking the time to understand what patients, providers, and clinicians need. There is an opportunity to pull the non-physician clinicians in more. Evolving the patient experience should also involve the caregivers that spend the majority of time with patients.

Healthcare delivery is shifting to alternate locations. Virtual visits can be more convenient and fiscally prudent. Telehealth can be used to close access gaps by digitally bridging distances between patients and clinicians. Managing these processes to ensure quality remains uniform between terrestrial and virtual visits will require quality measures beyond volume capture.

Bailey discussed the focus of healthcare shifting toward more virtual care in general, and specifically, the opportunity

“The pace of change has never been this fast, yet it will never be this slow again.”
— Canadian Prime Minister Justin Trudeau
of connected care for rural health. She highlighted how the VA has used these modalities in innovative ways to facilitate rural population outreach. They were given money to treat Hepatitis C but they didn’t know how to best get medications to patients. Their solution was to use the Cardiac mobile medical unit that was empty on Fridays. A Pharmacist and an RN went out together to the rural locations. Patients came in and they knew what they had in common – being Veterans and Hepatitis C. Bailey shared that the outcomes were inspiring and are a great model for care. Health Systems and clinicians can meet patients literally where they are by going out into the community and reaching out to people who can’t come to them.

Saab thinks the digital health community is beginning to understand these challenges. “The world’s head has turned a little bit. We had to bang on doors at first, but now people are inviting us in.” The community is recognizing the value proposition. Private industry is helping the digital health space with those perception changes. The Apple Watch was registered by the FDA for one specific use case and it was a key moment where pessimists and doubters saw that some of those barriers disappear. We can count ourselves as successful if those

**CALM TECHNOLOGY:**

Gardenhire challenged the room to design Calm Technology, which is ancillary without being front-and-center. “Innovation is traditionally big and shiny, what about making something quiet? The Dyson hair dryer is super-fast and super quiet, people will pay $400 for a hair dryer that calmly and quietly does a great job. What are the conveniences that we don’t think about that are the real friction points from a healthcare perspective?” Calm Technology and design could be further integrated into existing systems to make processes more functional and less intrusive.

The clinical space now wants to know what else is out there to help plug clinical gaps. In the past, clinical gaps were accepted as part of the nature of the healthcare beast. Can we bring digital measures of health into the clinical discussion? Technology hasn’t traditionally been trusted as much as providers are. Bringing affordable and reliable tech into a long-term monitoring scenario at home to provide consistent, objective measures is one of the largest opportunities to improve the trust gap and has a lot of interest from all sides of the table. Huge administrative and regulatory challenges, coupled with behavioral change is overwhelming. Technology then becomes the least difficult hurdle. Increased stakeholder collaboration during development is spurring evolution by increasing the usability of emerging digital health technology.

**DIGITAL LITERACY:**

Kenny asserted that digital health technology should have the same, if not more, research rigor as we would ask for any other type of treatment. We are not yet demanding that of ourselves as an industry. If clinicians are going to start prescribing digital apps, medicine will need to understand the infrastructure behind them. We will make mistakes. How does Medicine prepare for that? Digital health is scary because it has scale and reach. How do we ensure that we create the type of literacy in our communities required for digital health?

There is a minimum level of digital literacy that we need to think about, according to Saab. Other countries are treating digital literacy like a public health issue. Expanded technological infrastructure and digital literacy become increasingly essential in the transformation of quality. Systems are useless if patients and staff cannot use them effectively. Currently, clinical gaps between care episodes and follow-ups lead to adverse outcomes and poor patient satisfaction. Taking the “I” focus out of models of care, with the “I” being systems focused on the needs of billing, clinicians, and administration, and putting the patient at the center of the care experience with their needs first makes it easier to recognize and eliminate those gaps. Kenny challenged the room: “The impetus is on us as technologists to make sure we are designing so that some of those barriers disappear. We can count ourselves as successful if those barriers are designed away.”

“Sensor technology, contextual information, and precision health are all important because the model we are using is different. We are now making money based on how healthy someone is. We need to know the difference in quality and convenience. In order to compete, we have work to do defining quality,” said Gardenhire.

**NEXT-GEN OPERATING MODELS:**

Kenny asked, “What is a next generation operating model and what does that mean? Thinking about health across people, process, and technology; people and the process are the things we’ve got to spend money and time to elevate. There is a low tolerance for risk and failure. We need to learn how to ask the right questions and do more discovery upfront.” Bailey added that, “Iteration cannot be underestimated.”

Saab clearly enumerated the problem: “Tech people solve problems with more tech. What we are hearing is the exact opposite. The way we define tech is not just tech
any more. Think about Apple and seamless use. Apple perfected the concept of UX and ease of use. iPhone designers are designing consumer products for consumers and they are consumers themselves. In healthcare tech, there are people developing things for a customer that they themselves cannot identify with directly. That is complex. The person who may identify is not the decision maker, the decision maker is not the purchaser, the purchaser is not the user, the user might be a technician, nurse, or doctor and then the person who benefits is the patient. It’s an extremely complex use case for developers. Stop thinking about tech. Talk about solutions. And if the solution doesn’t include the clinical case – what problem are you trying to solve? You need to have clinical people helping with that. Solutions must also have regulatory support. Clinical, tech, and regulatory strategy all need to be wrapped up into one. Finally, make sure the solution actually solves the problem.”

DUAL TRANSFORMATION:

Gardenhire added, “We do a lot of dual transformation. Business A is traditional care. Business B is hospital at home. Turn the model on its head. One of the biggest challenges to getting to Business B is to stop iterating on Business A because we don’t have resources to do them both. The reality is that at Intermountain we purposefully say we are in two businesses. Business A has a purpose and metrics. AND we are in Business B. Business B is a separate arm of the organization that is not judged by Business A standards. Each has different needs and different success measures. How do we get to the place where we are spending the appropriate amount of funding and resources in Business B? It takes honesty, resources, and imagination to make that leap. Competitors in the digital health space are entering as Business B. If we are still around, we will be Business B at some point. The question is when? What does it take to make that type of leap? Who are those leaders and are they in the appropriate space? Do the criteria make sense? If you make Business B and judge it the same as Business A then you’ve just recreated Business A.”

According to Bailey, the Veterans Health Administration (VHA) is Business A. The Innovators Network (within the VHA) is Business B. The VHA is creating a space where they work together. VHA and the Innovators Network are defining the core values and figuring out what chains hold them in Business A, and do not allow them to transform into Business B. Profitability as an organization looks different as well. A dollar made becomes a dollar saved with capitation. Business B saves money by keeping you healthy, and spends the dollars in a different way. It completely changes the landscape around technology, monitoring, and data across the lifespan. Business B looks totally different to traditional bricks and mortar healthcare where we make sure there is a building in your area that you will come to.

THE CONVENIENCE VS QUALITY CONUNDRUM:

Kenny believes patients don’t care about the model of healthcare, they just want the cost to come down and to be healthy.

Gardenhire says “When we look at the consumer market, we aren’t doing a good job of distinguishing between quality and convenience. We are probably just confusing the consumer. When we think about how we are approaching that person, everybody is focused on their digital front door strategy – they want portals to be updated, etc. because new entrants are coming in with those things. Big health giants are figuring it out but if you are new to healthcare, you entered with that. That is clearly convenience. If you are looking at quality, I don’t know that we are doing as well at telling the quality story and what that should actually mean to our patients. We have to figure out how to do that because those are the differentiators. That will be the difference if Walmart delivers a $40 physician annual exam. I want to know the difference in quality between that and something that costs me $100. That’s the story we have to tell. It is our job to educate consumers because they probably don’t know. Quality is assumed until proven otherwise.”

Saab believes regulation is the double-edged sword. “In health innovation we talk about adherence and adoption. It’s very hard to reach those things quickly and inexpensively. If we want the patient to do something which they otherwise wouldn’t, it’s extremely challenging to expect them to do that. In this context to achieve stickiness, it has to work, it has to be easy, it has to be sticky, and it has to actually lead to a healthier behavioral change within that time you’ve left me at home with it. In a regulated environment, how do we rely on quality? We want to make sure it works so we have to regulate it. We have to innovate quickly to make it sticky. Germany just passed the Digital Care Act, which for the first time is covered by the country. Apps on the list are being prescribed and covered by insurance/the state and after a year they will look at the results. I haven’t heard of a pilot that immense – the entire country and all the doctors prescribing apps.”
Panel Discussion #4 :: Commercialization

“COMMERCIALIZING YOUR DIGITAL HEALTH PRODUCT AND THE PITFALLS TO AVOID”

Moderator:
Glenn Pearson, MHA, FACHE
Founder & Principal, Pearson Health Tech Insights; Former EVP, Georgia Hospital Association

Panellists:
Cindy Hallberlin
Former COO, American Diabetes Association and Easterseals

Alice Miller
Senior Strategy Consultant, Humana Medicaid Managed Care

Greg Moon, MD
Strategic Consultant, Blue Cross Blue Shield of North Carolina

Gregory Weidner, MD, FACP
Chief Medical Officer, Carium

WHO’S PAYING?

Commercialization of digital health products can have a positive impact on the advancement of healthcare, but when it comes to footing the bill, the onus can land on the shoulder of any stakeholder. Alice Miller discussed how the investment for these digital health tools depends on the stakeholder’s perspective of opportunity. Between Medicaid and the insurance company, if the tool is cost-effective, it can be covered by the former, while the latter will want to invest in tools that are used for preventative measures. Greg Moon echoed the same sentiment that any one of the stakeholders could end up paying for digital health products. He notes that the strategy for Blue Cross Blue Shield of North Carolina (BCBSNC) is transitioning to value and patient experience-based systems. This means that payers are responsible for setting up the ecosystem and providing the tools to exchange required information, whereas providers would be responsible for care coordination and care delivery.

OVERCOMING RESISTANCE:

Acceptance of digital tools can be a bit of a struggle when it comes to getting stakeholders on-board. The panel went on to discuss what techniques can be used to gain stakeholder support, such as showing what value this new tool will bring and addressing any concerns those at the table may have upfront. Gregory Weidner noted that to have stakeholder buy-in, understanding how your organization creates value and having that clinical champion who can offer unwavering support will bring others around to the idea. Cindy Hallberlin emphasized the importance of having an open discussion – addressing the fear behind the resistance. Those who are middle-
ground resistors can question and undermine any change that may be upon them, but by providing an open forum for discussion, those questions and concerns can be addressed and alleviated head-on.

Hallberlin also addressed the question of how internal commercialization could work nationwide, emphasizing the word “incentives”. In complicated institutions, aligning incentives with well-designed researched outcomes is a win-win. Companies need to communicate and incentivize people to adopt it by giving awards based on outcomes or highlighting the successes and people will want to join in.

**AVOID SKINNY STACKS:**

Aside from stakeholder buy-in, there are many other factors that can impede the commercialization process. Some barriers include “skinny stacks” or 100 single solutions, and determining the definition of scale. Moon remarked: “Some products are skinny stacks, which are many single solutions, rather than a few approaches that can tackle a multitude of problems. For commercialization, people are looking for comprehensive solutions, so the idea is to have a product that is broad enough such that it can stand alone.”

In terms of scale, Weidner noted the importance of how companies determine what their definition of scale is, especially in the field of healthcare where attempting to scale within a certain period of time may not always be realistic when factoring in change management. Other factors to consider are the level of readiness that is required for companies to prepare to scale, such as data infrastructure, and adoption before scaling, because selecting initial partners is an integral part of the process. Supporting Weidner’s point, Miller discussed the metrics for technology and organizational readiness, and explained that the process is not as formalized: “Rather than focusing on the product, it is more important to focus on the company itself and its transformative potential, and to partner with companies who have a shared vision, not just the solution.”

Giving more insight into the process of how large healthcare systems make decisions when it comes to considering a digital health tool, Weidner explained that it can be challenging to figure out the problem that needs to be solved, the stakeholders involved, and competing products on the market. Organizations are so large and complex that attuning one part may not be aligned to the needs of another. Weidner emphasized the importance of cultivating relationships, regardless of the acceptance of a proposition on that occasion. “To create a relationship in the moment can lead to a champion for the future if your paths ever cross again.”
To build relationships that can move innovation to impact, participants at the DHIT Summit broke out into multidisciplinary teams to work collaboratively in a human-centered design thinking workshop. They studied patient personas and proceeded to create feasible, desirable solutions which involved implementing the first two phases of human-centered design: (1) discovery and (2) ideation.

Design thinking is a human-centered approach to innovation that leverages tools like journey mapping, user experience, visualization, and analogous thinking. DHIT believes that design thinking approaches can catalyze creativity in healthcare, challenge the status quo, and reimagine how healthcare can be designed, delivered and experienced while ensuring that the services offered to the community are rooted in their needs, values, and motivations.

The workshop was facilitated by Sherri Austin, a design thinking facilitator with 15 years of professional experience in healthcare, who has been focused on planning, design, and implementation of key initiatives to improve institutional healthcare quality overall.

In Phase 1 of the workshop, each team was given a patient persona with a specific problem, and each participant was asked to perform a “silent brainstorm” to formulate ideas on how to address their problem. In Phase 2, the team narrowed down their ideas by selecting those that were both feasible and desirable for the patient. Finally, the teams generated a prototype using a storyboard to describe how their idea could solve the problem for their specific persona. The storyboard needed to have the following elements:

- The patient encountering a problem
- The patient experiencing the solution
- The end result of the patient experience and the impact of the prototype on healthcare outcomes

The output from the workshop was collected, curated and analyzed to generate key focus areas for DHIT’s 2020 Roadmap to Impact. The details about the novel prototypes generated during the workshop were recorded and listed in the next section. The workshop confirmed that there is a strong demand for digital models of care. Thus, the goal of the 2020 DHIT Summit was to inspire key stakeholders in the community to start a conversation on fulfilling the last phase of design thinking: (3) implementation.
The following use cases and personas were used:

**PREGNANCY & INFANT MORTALITY**

Maria is pregnant with her first child. She has always been concerned about her weight and this pregnancy has compounded the issue. Maria does not live near a grocery store and buys most of her food at a nearby gas station or dollar store which has limited options for healthy foods and fresh fruits and vegetables. At her last appointment, she learned her BMI was over the desired pregnancy weight. She has found that she is tired and has not had much energy for exercise. She was told that her weight will have an impact on her baby’s health.

**ACCESS TO CARE**

Penelope, a 72-year-old grandmother, has had a difficult time making it to her medical appointments due to transportation issues. She relies on a friend to take her, and lives far out in the country where mass transportation and national ridesharing services (e.g. Uber) are not in service. A bus ride takes over an hour and does not stop near her home. While she has a non-healing sore on her foot, she has missed so many appointments, she is now too embarrassed to contact her doctor.
DRUG OVERDOSE & SPORTS

Trevor is a high school senior who has just suffered a football injury on the field. It will take two months to heal, and he has been prescribed a strong medication to manage his pain. Trevor is excited about his admission to Methodist University this coming Fall. He finds he is taking way more pain pills than prescribed to manage his pain and is hiding this from his coach and his mother.

MENTAL HEALTH

The summer after Anthony graduated from high school, he started thinking that people were out to get him. He was spending the night over at his brother’s house and felt like the TV was talking to him. He felt this pull to go outside. It was raining. There was a church that was across the lake and he felt like God was calling him. The best way to get there was to swim. The next thing he remembers, the EMTs were pulling him up on a boat. He was put into the psych ward and things continued to get worse. Living in a cemented room with nothing but a pad on the floor, there was absolutely no hope. He felt worthless and like a burden on everyone around him.

“DHIT believes that design thinking approaches can catalyze creativity in healthcare, and challenge the status quo by ensuring that the services offered to the community are rooted in their needs, values, and motivations.”
## Outputs and Takeaways

Workshop discussions were rich with identification of unmet needs and opportunities for digital health to make an impact. The table below displays patient personas that were categorized by type of problem, and the general theme of each solution the Summit attendees thought would create desirable outcomes for the patient.

<table>
<thead>
<tr>
<th>Problem</th>
<th>General Themes for Solution</th>
<th>Desired Outcomes for Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy &amp; Infant Mortality</td>
<td>Community Center for Pregnant Women</td>
<td>Online access to nutrition education, peer-to-peer support, mentorship and guidance</td>
</tr>
<tr>
<td></td>
<td>Meal Subscription Service prescribed by physician to meet the needs of pregnant mothers based on abnormal labs</td>
<td>Healthy BMI, low HbA1C, healthy delivery, access to healthy food options, and increased patient monitoring</td>
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<tr>
<td></td>
<td>All-in-one smartphone application that provides meal services, pregnancy education, healthy recipes, and online community</td>
<td>Healthy delivery, community, access to nutrition education, healthier food options and decisions</td>
</tr>
<tr>
<td>Mental Health</td>
<td>All-in-one smartphone application that syncs with primary care provider's EMR, where patient tracks mood changes and medication</td>
<td>Suicide prevention and better medication adherence</td>
</tr>
<tr>
<td></td>
<td>Societal awareness on mental health to urge caregivers and peers to be more sensitive to those with mental health conditions</td>
<td>Suicide prevention, mental health education</td>
</tr>
<tr>
<td>Access to Care</td>
<td>Telemedicine clinics set-up in churches and public libraries</td>
<td>Better access to healthcare in rural areas, better health outcomes for community and patient</td>
</tr>
<tr>
<td></td>
<td>Physician’s EMR is alerted if a patient misses several appointments; the doctor makes house calls for handicapped patients or those living in rural communities</td>
<td>Access to healthcare in rural communities, alternative options to ensure patients receive care, better health outcomes for patients, and more convenient for patients</td>
</tr>
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<td></td>
<td>The physician makes house calls and works closely with home-health nurses and caretakers to ensure that the patient is being treated properly. The physician creates a digital care plan for home-health nurses and caretakers to follow</td>
<td>Access to healthcare in rural communities, contingency plans for patients if immediate medical providers are not available via care plan, and better health outcomes for patients</td>
</tr>
<tr>
<td>Drug Overdose &amp; Sports</td>
<td>Alternative homeopathic medical treatments are prescribed for pain management; opioids should only be used if all other treatment options have failed</td>
<td>Reduction in opioid addiction, more focus on holistic alternatives, better patient outcomes</td>
</tr>
</tbody>
</table>
Prototype Ideas from the Design Challenge

PREGNANCY AND INFANT MORTALITY

TEAM 1 An application called Baby Blocks provides meal services, nutrition education, and a social media community for pregnant women struggling with pregnancy-related complications. There is also a 3-6 month post-partum support service to help women navigate motherhood and post-partum depression. The application incentivizes good behavior if a patient reaches health outcome milestones such as normal blood test results, exercise, and/or number of subscription meals ordered.

TEAM 2 A Home Food Delivery prescription service that is administered by the physician and covered by insurance to provide at-risk mothers with proper food to bring the baby to term and avoid pregnancy/delivery complications. The patient just has to eat the food via the home food meal service, and at the end of each meal, send back a card that lists the food items they liked and disliked during that delivery, so that the meals are customized to their taste and maintenance of a healthy diet can be sustained post-partum. The goal of the prototype is to make eating healthy while pregnant accessible, convenient, and tasty.

TEAM 3 Physicians will have an application they recommend for patients who live with low security and healthy food options nearby. This app is an all-in-one resource for healthy meal delivery options, healthy recipes, and exercise recommendations. It generates rewards points to incentivize tracking habits, such as health foods ordered/made, and the amount of steps tracked per day.

TEAM 4 Creating community centers for pregnant women in rural or under-resourced areas, to provide nutrition education and create an environment for healthy eating, so that women who are pregnant are empowered with the knowledge on what they should be consuming to have a healthy delivery, as well as find a support group that will reinforce a healthy lifestyle. Nutritionists can be available at the center for education, and a healthy food buffet is available during the center’s group meetings.

MENTAL HEALTH

TEAM 5 Patients with depression can be surrounded by supportive friends and family, by increasing marketing on awareness of mental health issues via social media outlets, broadcast news, and celebrity endorsement deals. Also, the creation of a mental health application can be useful to improve and monitor symptoms.

TEAM 6 To include a mental health screening during the patient’s annual physical will help with flagging depression early on. A primary care provider (PCP) then uses a smartphone application to monitor a patient’s mental health status. The app also notifies loved ones of the patient’s symptoms and provides them with educational information on how to empathize with someone dealing with mental health issues. The app has daily mental health reminders as well as mood screenings. If a patient consistently scores low for mood, the patient profile will be flagged on the provider’s version of the mental health app. This will result in the patient being contacted by the PCP via a doctor’s visit or virtual check-in to see if medications need to be changed or other interventions need to be implemented to effectively treat the patient’s symptoms.
ACCESS TO CARE

TEAM 7 To help serve the rural community, doctors in neighboring districts should form a mobile clinic that visits the area’s churches, community centers, and public libraries to service local residents. This will provide better health outcomes for patients, especially if they are elderly, handicapped, and do not have access to ride-sharing services. Telemedicine can be used in conjunction with mobile clinics to provide patient access to physicians when they are not in town.

TEAM 8 Patients can call the doctor’s office if they are unable to make it to the clinic, and the doctor can make a house visit on demand. Furthermore, the doctor can leave a care plan, so that caregivers (i.e. family members) or a hired home-health aide can treat the patient when the doctor is not there. Telemedicine conference calls to check-up on patients are required monthly.

TEAM 9 To ensure patients receive care if they are unable to make it to their appointments, the EMR is prompted about patients not being able to make several appointments, and a home visit is scheduled by the doctor to help treat the patient, especially if they are incapacitated. Then the doctor leaves instructions for the home health aide, to ensure that the patient is treated properly after he/she leaves. This is a great method to help patients who are old, immobile, or have a debilitating mental health disease which causes them to miss appointments. EMR keeps records of the amount of appointments missed, and flags the patient. Having a doctor visit at home will be a great way to help patients like this. Leaving instructions for a caretaker or home health nurse is the last method to ensure proper recovery for patients.

DRUG OVERDOSE & SPORTS

TEAM 10 To help provide an alternative to addictive pharmaceutical drugs to manage pain, physicians should be required to provide non-opioid options for pain relief such as acupuncture, yoga, and physical therapy, before prescribing pain medications. This prototype will create an online website for physicians to access when they want to seek ideas on how to holistically treat various symptoms backed by scientific research.

MISCELLANEOUS IDEA

TEAM 11 The development of a Digital Chip that has a patient’s medical history, such as blood type, medication, medical history, and allergies listed, so that any ER department can just scan the patient’s chip to obtain the individual’s medical records, instead of having to risk not knowing anything about the patient and the patient being given a drug that they are allergic to or unwittingly counteracting a medication they are on. This is especially an issue when patients are traveling.
CURRENT STATE

Following the first set of panels, DHIT President Michael Levy conducted a fireside chat with Todd Telemeco, founding Dean of UNC Pembroke College of Life Sciences. Telemeco’s career began as a practicing physical therapist, but his passion for serving the community of Robeson County has led to his added role as founding Dean. Throughout his commute, he often wonders why in an hour-long drive there are few healthcare resources between Moore and Robeson County. This is reflected in the statistics. People born in Robeson County have an average life expectancy of seven years less than the rest of North Carolina. Out of 100 counties, Robeson County was ranked 100th in health outcomes for seven out of the last 11 years. Telemeco is not only passionate, but steadfast in his work towards improving the health of the area with an authentic, ground-up mentality.

Levy and Telemeco engaged in a deep discussion surrounding the healthcare industry as a whole – how it is taught, implemented, and how it is changing. To illustrate the anticipated shift that digital health transformation could bring, Levy drew on a metaphor from the US and its transportation history. He said, “Current healthcare transformation efforts are like the people in 1919 trying to make horses faster while the car was quickly gaining adoption.” Levy illustrated that as a society, we are facing similar issues today. Back then, major cities had roadways ready to use, but rural areas had no infrastructure in place for the automobile. Today, digital health tools are similar to the innovation of the automobile. Inequity in healthcare between North Carolina’s urban and rural communities could not be more disparate, and people like Todd are working to change that.

COMMUNITY ARCHITECTURE

Both Levy and Telemeco have taken a critical look at the curriculum that is being taught to our students and agreed that there is a lack of information technology integrated into the curriculum. It is obvious to them that there is a mismatch with respect to how we educate and what we expect students entering the workforce to be able to use every day. With accrediting bodies in the process of deciding on the content to be taught, there is an opportunity to adapt the curricula to future needs to ensure that information technology plays a bigger role in education.
Focusing this conversation on the field of medicine is critical as technology can assist the medical workforce to serve patients more efficiently and effectively by capturing data more easily while augmenting workflows. The conversation of information technology is not just limited to the healthcare field. The World Economic Forum estimated that 99% of the investment going into digital transformation across the globe is going to fail to reach the expectations of that investment. This means that there is a need for a cultural shift to adapt to the digital transformation where work culture, training, and skills are the core determinants of digital transformation success. The goal is to begin educating both students and the current workforce so they can better understand technology and return to their communities and utilize it in a way that aligns with that community’s values.

Healthcare is most successful when a patient is treated by someone they can connect with. Thus, there is a need for homegrown advocates who can speak on behalf of the community and is able to deliver solutions in a way that makes sense to them. Together, Levy and Telemeco are focused on putting the community needs at the center, first through companionship and then through stewardship. Companionship needs to be based on compassion that comes from suffering with the community in order to understand their needs. After proper discovery and relationship building, resources can then be identified that best suit the community’s needs. Whether regional or global, Levy and Telemeco will leverage the resources within the community to address its pain points.

CALL TO ACTION

With a discover-first mentality, Levy is focused on identifying the right questions to ask rather than finding the right answers to start transforming communities into a healthier state. The definition of value in the digital age will be based on the trust of individuals and their community. Once the trust is there, it will drive new revenue streams. Bringing the focus back to Robeson, Scotland, and Cumberland Counties is the objective. As Levy stated, “Once we work within the communities to find out what their needs are and what infrastructure is available, we can start by focusing on one issue and going from there so we can start small and grow bigger.”
Roadmap + Next Steps

**DHIT’S STRATEGY:**
- Focus on the most costly and impairing health issues in under-resourced communities;
- Diffuse human-centered design and agile methodologies;
- Utilize public libraries and community centers as “place of service” for health engagement and education;
- Build a culture of innovation and digital transformation within organizations and communities;
- Amplify the opportunities for cross-collaboration amongst global industry partners and under-resourced communities; and
- Leverage a global supply chain of talent and technologies to service community transformation.

**DHIT’S APPROACH:**

Community. It is a notion that binds us all together as humans. Members of a community have a shared sense of trust, belonging, safety and empathy. They have an individual and collective sense that they can positively influence and impact their environment and each other.

At DHIT, we embrace the values of community. We exist to serve the disenfranchised, to bring hope where there is despair, to bring compassion where there is suffering and pain.

We do this by bringing together 21st century resources, experts and passionate entrepreneurs to address some of the biggest health problems and disparities affecting our communities today. The result is to accelerate the pace of change and to drive health equity for individuals and their communities.

It starts with training Health Architects, a next-generation workforce supporting individuals and communities in achieving personalized health. They are experts in human-centered design and in building trusted relationships with individuals and communities, which lead to the collection of critical data and insights that drive optimal health.

To augment the Health Architect, DHIT deploys a cloud data infrastructure called the Health Utility Grid (HUG), that houses and protects the data and insights collected, creating a rich database for research understanding and clinical delivery leading to continuous health improvement. The Health Utility Grid is powered by machine learning and artificial intelligence to enable personalized public health interventions across each individual and community.

At a community level, the Health Architect and HUG collect as much data on the community as possible including demographic, environmental, socioeconomic, and health-related data. At an individual level, they collect data for individuals who reside within a given community, including demographic, psychographic, genomic, in addition to health-related data.

This rich database will power a global marketplace of validated solutions that map to individuals, households and communities. An eHarmony for Health, where global supply meets local need.

At DHIT, we are driven to transform communities by supporting individuals to reach and maintain a healthy life.
THE PROBLEM

The $3.2 trillion US healthcare system fails to provide an easy-to-understand, easy-to-use, and unbiased model to serve all people based on the attributes and characteristics of who they are and not what condition they have, as defined by the current commercially oriented payment system. The World Health Organization (WHO) estimates that only 11% of a patient’s health can be attributed to the healthcare services they receive, but these services have been the primary focus of policy legislation, such as the Affordable Care Act, and recent payment changes by the Centers for Medicare-Medicaid Services, as the healthcare system has shifted from a volume-based payment model to incorporate value-based payments.

As indicated by the chart on the right, who a person is drives 89% of the determinants of their health, but focusing on what conditions they have can only drive 11% value to the individual. This means that we are spending our resources and our attention on a system that currently only impacts our lives in very limited ways, hence the common description of our healthcare system as a “sickness” system.

To truly transform the healthcare system and focus on improving all the determinants of an individual’s health, we must establish an operating model that creates the necessary resources and systems around an individual to support them in living their best lives – to support their who and not their what.

The World Health Organization estimates that only 11% of a patient’s health can be attributed to the healthcare services they receive.

89% of health occurs outside of the clinical space through our genetics, behavior, environment and social circumstances.

The US spends over $3 trillion annually on medical care, which is more than the other four categories combined ($2 trillion) despite the fact that it only accounts for 11% of impact.

The US spends 12 times more to address medical care than we do to address individual behavior, even though it has only quarter of the impact.
Summary of Implications:

- Many factors combine to affect the health of individuals and communities. Whether people are healthy or not is determined by their circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health, whereas the more commonly considered factors such as access and use of healthcare services, often have less of an impact.

- We are spending our resources and our attention on a system that currently only impacts our lives in very limited ways.

- To truly transform the healthcare system and focus on improving all the determinants of an individual’s health, we must establish an operating model that creates the necessary resources and systems around an individual to support them in living their best lives — to support their who and not just their what.

- Using our immersive innovation and transformative approach, we will help solve for real health determinants by engaging in problem blueprinting to answer the following questions prior to solution matching or creating more technology for commercial sake versus actual need:

  1. Where is the problem?
  2. Who is suffering from the problem?
  3. What is causing the problem?
  4. What are the barriers to solving the problem?
  5. What are the gaps and opportunities?

The Theory of Change

DHIT’s theory of change is based on the premise that to democratize and improve access and affordability to healthcare, a new model of companionship and stewardship is necessary.

In accordance with the World Health Organization, DHIT will create a model that utilizes a steward who takes the lead in identifying needs and constraints within a system, creates a specific plan to overcome challenges, then delegates responsibility to lower levels and finally follows through to ensure that each service reaches its intended audience.

Specifically, this model involves the implementation of the following strategies:

**COMPANIONSHIP** involves a trained and certified Health Architect who will be available to assist individuals within the population with their specific health needs. By forming and nurturing relationships on an individual basis, we will build the trust necessary to rapidly diffuse our operating model.

**STEWARDSHIP** involves understanding the needs of each population and then delivering the right service at the right time appropriate for that local culture. In the latest World Health Report, WHO called stewardship one of the four key functions of a health system – one that has a profound effect on the other three (service provision, resource generation, and financing) which is the reason we are making it, along with human companionship, the core of our diffusion strategy.


Roadmap + Next Steps . . .

The Solution

The **DHIT Community HUG** is a first-of-its-kind 21st century infrastructure servicing disenfranchised communities through an immersive operating model that utilizes the public library and community centers. This model will provide new insights that will drive improved health outcomes for individuals in the communities in which they live.

In January 2020, in partnership with UNC Pembroke College of Health Sciences and the Center for Applied Genomics and Precision Medicine at Duke University, DHIT will launch its social innovation operating model in the most underserved counties in North Carolina.

DHIT’s Goals:

- **Cultivate trust throughout the community through engagement events:** Conduct discovery sessions with community representatives to define and prioritize the public health issues to address first; establish trust in the community through DHIT engagement events housed in the public libraries and community centers across each county. For example, DHIT will partner with local organizations like The Robeson County Arts Council and Lumberton High School Chorus to bring arts, music and families together to introduce Health Architects and drive awareness and understanding of the DHIT Community HUG.

- **Provide education and training through the local college system:** Build a certified talent stream of DHIT Health Architects out of UNC Pembroke College of Health Sciences who can service each county to collect social, environmental and behavioral determinants of health at an individual and household level.

- **Deploy an evidenced-based clinical decision program:** Utilizing a state-of-the-art clinical decision support platform out of Duke’s Center for Applied Genomics and Precision Health called MeTree, Health Architects will be able to analyze personal history on diet, exercise, smoking, and other clinical data to provide support to patients and care providers for a wide variety of conditions and diseases.

- **Conduct an Innovation Sprint to co-develop solutions:** DHIT Health Architects will facilitate purposeful collaborations throughout each community leading to co-development opportunities through DHIT’s Digital Health Innovation Sprint, a standardized and facilitated innovation framework to test, implement, monitor/evaluate and then iterate public health campaigns and interventions.

DHIT’s Outputs:

- **48 DHIT Health Architects** trained at UNC-Pembroke and deployed through the Public Library.

- **3 Health Utility Grids** deployed, managed and governed across public libraries within Robeson, Cumberland, and Scotland counties.

- **1,050 community participants** onboarded onto the HUG and their family health history mapped using MeTree.

- **300 researchers, public health officials, and care providers** leveraging data and insights from the HUG.

- **5 multidisciplinary teams of entrepreneurs, innovators and industry partners** to participate in an Innovation Sprint.
DHIT’s Outcomes:

► EDUCATION - DHIT’s Health Architects will increase awareness and understanding of the determinants of health that affect an individual’s health, driving a high level of self-accountability and actionable insights to support individual change.

► RESEARCH - DHIT’s Health Utility Grid will increase access to real-world data for public health officials and researchers that drives a greater understanding of who an individual is and thus allows for more effective testing and validation of new care models and interventions.

► QUALITY - DHIT’s MeTree platform will improve health outcomes by directing the appropriate resources to individuals, thereby reducing overutilization and prompting guideline-driven follow-ups and clinically-actionable orders.

► COMMERCIAL - DHIT’s Innovation Sprints will increase understanding and alignment from suppliers as to what solutions are needed and what service gaps exist, ensuring solutions are fit-for-purpose.

Conclusion

In order to implement, test and validate our model of change, DHIT is seeking $2.5 Million in funding to execute a two-year operating plan* supporting:

► The promotion and hosting of engagement events to secure community trust across three North Carolina counties.

► The creation and operation of educational courses to produce Health Architects out of UNC Pembroke’s College of Health Sciences.

► The development of the Health Utility Grid to drive a 21st century public health program out of Robinson, Scotland and Cumberland public libraries.

► The facilitation of innovation sprints to co-develop solutions driven by an individual’s determinants of health.

*See operating timeline on the next page
### Year 1 Timeline (January–December 2020)

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<thead>
<tr>
<th>Goal 1: Cultivate trust throughout the community through engagement events</th>
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### Goal 2: Provide education and training throughout local college system

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### Goal 3: Establish a Community Cloud

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### Goal 4: Conduct Innovation Sprints to co-develop solutions

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<tr>
<td>“Design and Develop solutions” phase</td>
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### Year 2 Timeline (January–December 2021)

<table>
<thead>
<tr>
<th>Goal 1: Cultivate trust throughout the community through engagement events</th>
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<td>Pop-up speaking events in the Triangle, Charlotte, and the under-resourced tri-county region</td>
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<td>Social media outreach</td>
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<td>Newsletter outreach</td>
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<tr>
<td>Convene Digital Health Summits</td>
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### Goal 2: Provide education and training throughout local college system

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<tbody>
<tr>
<td>Deliver Health Architect course #3</td>
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### Goal 3: Establish a Community Cloud

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<tr>
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### Goal 4: Conduct Innovation Sprints to co-develop solutions

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**For further information, contact Michael Levy:** michael@dhitglobal.org
The NC Department of Health and Human Services manages the delivery of health and human-related services for all North Carolinians, especially our most vulnerable citizens—children, elderly, disabled and low-income families. The Department, which is divided into 30 divisions and offices, works closely with healthcare professionals, community leaders and advocacy groups; local, state and federal entities; and many other stakeholders to make this happen.

Bluedoor is a digital health agency located in Chapel Hill, NC. Our mission is to optimize people’s health and life by accelerating the digital transformation of healthcare organizations and systems to drive innovation to impact. At Bluedoor, we are reimagining the way healthcare can be designed, delivered and experienced from the ground up. We work with organizations large and small to cultivate relationships and talent across the healthcare ecosystem, drive consumer engagement through digital models of care, and accelerate growth by leveraging human-centered strategy, design, and execution. Bluedoor is a founding member and operating partner of DHIT.

The UNC Eshelman School of Pharmacy is an internationally recognized leader in pharmacy practice, education, and research. We develop leaders in pharmacy education, pharmacy practice, and pharmaceutical sciences who make a difference on human health worldwide. The School is part of the University of North Carolina at Chapel Hill, a major research university with a large teaching hospital and schools of medicine, public health, nursing, and dentistry. The School has specialized research centers pursuing advances in drug discovery, nanotechnology in drug delivery and cancer treatment, pharmacogenomics, and medication optimization.

Life science is transforming the world. Vaccines prevent disease. Gene therapies and precision health data cure them. Advances in agriculture feed the planet. Here in North Carolina, NCBiotech catalyzes the many different transformations that are improving the quality of life around the world. We connect companies with university researchers and introduce entrepreneurs to potential funders. Transformation even happens on an individual level as job seekers find their dream opportunity in the life science field. North Carolina is leading the push toward better healthcare, faster diagnostics and more sustainable food production all the while, creating jobs right here in our state. This economic transformation is why the General Assembly has funded us for three decades, and continues its commitment today. NC Biotech is a strategic partner of DHIT.

The Québec Government Office in Atlanta opened its doors in 1978 to take advantage of the strong growth of the southern United States. In addition to defending and advancing Québec’s interests, the mandate of the Québec Government Office in Atlanta is to develop and promote economic, political and institutional ties with the seven states in the region: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee, as well as the US Virgin Islands and Puerto Rico. It also contributes to the activities of the Southeastern United States – Canadian Provinces Alliance (SEUS-CP), of which Québec is a founding member.
TERAZO :: TERAZO.COM
Terazo is a solutions-oriented, platform-centric software and managed services firm based in Richmond, Virginia offering integration and automation services that enable clients large and small to run more efficiently and realize new business value. The growing company, founded in 2016, supports mission-critical platforms, applications, and online services for customers in a wide variety of fields. We are a strategic partner to our clients, a builder of great teams and an agent of positive change in the communities in which we work and live. Great companies are revolutions with organization. We see the power of harnessing integration and automation as ways to unlock human potential while understanding that the journey is not simple or self-evident for ourselves or our clients.

TANJO :: TANJO.NET
Tanjo is an award-winning artificial intelligence and machine learning company dedicated to achieving balance between human and machine interaction to optimize outcomes. Serving multiple industries from healthcare and education to financial and consumer market research, Tanjo helps customers gain greater business insight and drive actionable innovation. With the Tanjo Enterprise Brain, customers can better harness and maintain organizational knowledge to prepare for digital transformation. With Tanjo Animated Personas (TAP) marketers can test product concepts and messaging to an unbiased group of digital stand-ins that represent their customers' true values and interests. Tanjo prides itself on delivering attainable machine learning-based platforms that offer customers a 10x or more return-on-investment. Tanjo is a strategic partner on DHIT's Industry Council.

DUKE MASTERS OF MANAGEMENT IN CLINICAL INFORMATICS :: MMCI.DUKE.EDU
Cutting-edge healthcare is more than simply employing state-of-the-art clinical care, facilities and equipment. It’s an evolution that relies upon new technologies and skills like data collection and analytics, predictive medicine and health IT to improve access to quality care at high speeds and low costs. As the industry continues to evolve, there is an overwhelming need for healthcare professionals who have the multidisciplinary expertise to manage and lead data-driven innovation in institutions around the world. Duke University’s MMCi program is specifically designed to impart this expertise to individuals interested in a variety of healthcare disciplines. The program is an innovative extension of the Duke University School of Medicine, the world-class higher learning university renowned for its expertise in business, medical research, and clinical care. MMCi is part of the DHIT Fellowship Program.

GLOBENET :: GLOBENETLLC.COM
At GlobeNet, we deliver peace of mind as well as industry-leading customer service, charting new frontiers in next-generation technology and managed services for healthcare companies, from health tech startups to major health systems. We are a responsive, full-service IT solutions integrator with an expert staff of certified IT professionals and strategists for everything you need to maximize performance, increase security, meet compliance regulations and reduce costs. GlobeNet is a technology infrastructure partner of DHIT.

This material is based upon work supported in whole or part by the North Carolina Biotechnology Center. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views and policies of the North Carolina Biotechnology Center.
THOUGHTS FROM OUR ATTENDEES

“Thank you for an excellent 2 days. The content and interactions, the spirit and people...everything exceeded my expectations. You guys really do a great job with this. I am looking forward to staying in touch and to coming back in 2020, definitely.”
Marc Saab, Founder & Managing Director, BML Technology

“Thanks for inviting me to your amazing DHIT summit! I didn’t know what to expect and am so glad I was able to experience it in person. Congrats on assembling such a diverse and insightful group, willing to look at problems together and accept the challenge of co-creating solutions. You’re breaking down the invisible barriers (mostly mindsets), illuminating paths forward, and activating the change agent in all of us. I am learning from you every time we intersect. Thank you for bringing me into your community and practice. I am early in my Jedi journey and look forward to the road ahead.”
Alice Pomponio, Mass Bio

“It was fantastic sharing with you and your colleagues during this Summit. I learned a lot and I am grateful you invited me. We are waiting for you for continuing our collaboration here in Montreal.”
Dr. Fabrice Brunet, President & CEO, University of Montreal Health System

“I wanted to take a moment to congratulate you and the entire team for having pulled off such an awesome event last week. I met many highly motivated and talented people over the course of the two days. You put together a very strong line-up, and from a participant’s perspective, everything came off very well. As I mentioned, I especially appreciate the very attractive visuals you had around the room. It shows a real pride and attention to detail. Congrats on a roaring success!”
Glenn Pearson, Founder & Principal, Pearson Health Tech Insights; Former EVP, Georgia Hospital Association

“The level of experience and insight from international healthcare leaders was absolutely key in delivering actionable insights and shared learning, keeping the attendees engaged and inspired.”
Dr. Michael Ruhlen, VP of Medical Education, Atrium Health

97% thought the experience was Brilliant or Good

53% made 5+ high-value connections

100% would recommend the event to others – and plan on attending next year!