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Public Health Surveillance and Data

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North Star Architecture

While the specifics of the North Star Architecture are still in development, this page aims to provide you with a basic overview of what it means and where we are now.

Quick Facts

What is it?

- The North Star Architecture is how we will make data available for decision-makers when they need it, not days or weeks later.

- As we move together to modernize, we need a common framework for providing data – and the access to that data – in ways that work for all of public health.

- The North Star Architecture is a "blueprint" to guide the decisions we make around the technologies and processes we'll all use. When we have common technologies in place, CDC and our state and local partners will spend less time managing data, and more time doing the lifesaving work of public health.

- Overall, the North Star Architecture is a critical puzzle piece in our work to advance interoperability for public health.

What's different?

1. **Meets people where they are:** It offers different options and levels of support, depending on the needs and abilities of our partners.

2. **Developed by everyone together:** It reflects the collective contributions of thought leaders from CDC programs, STLTs, ONC, national public health associations, healthcare technology vendors, and the healthcare industry.

3. **Flexible for different needs:** It makes use of different "building blocks," which are tools that can be repurposed instead of having to build from scratch.

A vision for how public health data can work better

What is the public health ecosystem?

It describes public health's connectivity between a multitude of people and systems across the nation that depend on, influence, and interact with each other. It also includes workforce, policies, and technologies used to collect, manage, access, share, analyze, and disseminate the most relevant data.

The North Star Architecture is a core component of CDC's approach for making public health data work better. It will be made of flexible, interoperable, and secure digital tools that can be used by CDC and public health partners at state, tribal, local, and territorial (STLT) levels. These digital tools will provide different levels of support, from guidance to complete solutions, to meet STLTs and CDC programs where they are today and help support them in their modernization journey of getting to where they want to be. **Together, the tools will form the "blueprint" for a sustainable, response-ready public health ecosystem.**

The North Star Architecture is being developed on the principles of iterative development ⧉ and human-centered design ⧉ , where data flows and information systems are coordinated and interoperable across healthcare and public health at all levels of government.

How the North Star Architecture can help public health

The North Star Architecture aims to support partners that generate data for public health use (e.g., healthcare, labs) and public health authorities at all levels of government in translating the vision of data modernization into sustainable solutions. Here are some ways in which it will help.

- ### Streamlining reporting

  As part of the vision for the North Star Architecture, we are creating a single-entry point for data to come into the agency, called the "CDC Front Door."

  [Learn More]

  Helping systems "speak the same language"
  CDC, STLTs, and other data providers (e.g., labs) often use different formats, standards, and procedures for their health data. These differences keep data from flowing smoothly across public health. The North Star Architecture will offer a common framework for accessing and sharing health data that will make it easier for everyone to exchange data and collaborate, making our day-to-day work more efficient and effective.

- **Reducing the burden for reporting data to CDC**
  When STLTs and public health partners want to send data to CDC, there are many points of entry. It's complex, and we want to distill the process so that our partners can solve a problem once and send data once. The North Star Architecture is guiding the development of a "common front door" for data being sent to CDC.

- **Increasing efficiency and reducing manual burden of public health surveillance and response**
  The North Star Architecture will take advantage of cloud services, open-source software, and open standards to make data processes faster and require less effort. It will also shift our approach towards the support of shared services with low cost, ability to scale quickly when needed, and automatic updates.

Overall, the North Star Architecture will help streamline activities and solve problems our partners often face, such as

- integrating data coming from various data streams,

- linking person, place, and time across data streams,

- getting a more complete picture of patient health, including cross-cutting analytics on important topics like social determinants of health and climate change, and

- sharing data and information with healthcare and the broader public health community.

How the North Star Architecture can help specific groups

The tools and resources that make up the North Star Architecture will improve access to curated, high-quality data to better serve public health directly and through research. Benefits for specific groups include the following.

STLTs

- Easier collection and sharing of data with public health partners and CDC
- Easier and faster processes to use data for public health action
- Faster response time using fewer resources and less intensity

Data providers (e.g., hospitals, healthcare providers, labs)

- Easier data sharing with STLTs and CDC, including simpler more automated methods to comply with regulations

CDC programs

- Better tools to collect data efficiently from STLTs and public health partners
- More reusable technological components (e.g., building blocks) to enable consistent data processing and analytics, reduced data duplication, and more time to serve public health needs
- Clear guidance to help direct decisions about IT and data systems and processes

Who's working on this?

Input from CDC programs and external partners is vital to the success of the North Star Architecture development. These efforts are led by CDC and the Office of the National Coordinator for Health IT (ONC) ⬈ and reflect the collective contributions of thought leaders from STLTs, CDC, ONC, national public health associations, healthcare technology vendors, and the healthcare industry.

In addition, CDC is committed to putting the user at the center of the design work, taking an iterative, stepwise approach to progress. We aim to collect feedback from CDC programs and STLT public health departments throughout development. This will happen through three main avenues: pilot partnerships, focus groups, and regular community updates. Results will feed into the design and ongoing implementation of the North Star Architecture.

What we're doing next

We are currently piloting two use cases, one from our infectious disease programs and one from non-infectious diseases, to help figure out how certain parts of the North Star Architecture work in practice.

We can then take the lessons learned and apply them more broadly. The two use cases we are starting with are viral hepatitis and the Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET).

The use case approach is important because it:

- Ensures that technology development meets the needs of its users and is tied to measurable public health outcomes
- Has broad applicability to other infectious and non-infectious disease use cases
- Supports CDC's 2022-27 Strategic Plan success metrics

Success with these use cases will streamline public health reporting and information sharing back to STLT partners.

Development Timeline: Connecting every step of the way

- **August 2021:** CDC and ONC brainstormed on early iterations during the process of establishing joint priorities
- **September 2021:** CDC began meeting with CSTE and member states to share ideas and further develop concepts
- **December 2021:** CDC and ONC presented an early set of concepts to thought leaders in healthcare technology and public health and incorporated feedback
- **February 2022:** ONC presented an initial overview at the CDC Foundation Summit to share these ideas more broadly with our partners
- **November 2022:** CDC's IT Data and Governance Executive Committee is set to vote on endorsement of the North Star Architecture.
- **Ongoing:** We continue to gather input as we develop the architecture and improve our data pipelines.

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Source: Centers for Disease Control and Prevention, Office of Public Health Data, Surveillance, and Technology