

**Innovate
Cities.**

CityShield | Innovate Cities' Data Trust

AUGUST 2022

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**CityShield –
The Data Trust**



A data trust is a foundational piece of innovation infrastructure. The next stage of innovation will require data that is easily accessible and available at cost.

In order to ensure that the ecosystem is ready for the next stage of innovation, a not-for-profit data trust like **CityShield** is needed.



CityShield is an important and necessary evolution of the data trust model because it:

- is a not-for-profit that will act as a public utility
- uses leading governance practices and advanced technology to protect personally identifiable information (PII)
- gives data providers control over who can use their data
- involves the community and experts through its advisory board
- uses the leading data trust and privacy technologies created by Canadian innovators
- uses a Canadian cloud provider
- gains the trust of the public
- is not defined by a single purpose or specific neighbourhood, municipal area or other geographic location
- has the ability to earn the trust of those who live, work and play in cities



Innovation infrastructure is critically important, as is the ability to mobilize data for good.

CityShield – our technologically advanced and well governed data trust built by Canadian company Sightline Innovation – has privacy, transparency, diversity, equity & inclusion embedded into its core.

It is designed to mobilize data for good and can help to overcome the digital divide, accelerate climate adaptation, and assist disadvantaged communities as well as people with disabilities. CityShield will serve citizens, innovators and municipalities, while safeguarding the privacy of each.



Protecting privacy rights at both the individual and aggregate levels, **CityShield** will act as an 'honest broker' of data, rather than an owner.

CityShield is supported by an advisory board that offers advice, guidance, and expertise on technology, privacy, and community concerns.

We will apply this proven expertise to mitigate risks and build capacity while ensuring that our initiatives on building technology, and access to technology for disadvantaged communities, are grounded in the lived realities of those populations.

Bound by both fiduciary and privacy responsibilities, and focussed on social outcomes, **CityShield** offers a clear advantage, creating a better future for all.



CityShield will not retain or provide access to personally identifiable information.

CityShield will abide by GDPR.

CityShield data will be stored in Canada by ThinkON.

CityShield enables data governance, Privacy-by-Design and interoperability to unlock the value of data to enhance civic services, promote knowledge sharing and drive economic development.

CityShield has built in Cybersecurity features where:

- Sharing occurs over an encrypted, managed SD-WAN (VPN).
- Original data remains in place behind existing firewalls, on the same internal networks.
- Assets never need to be exposed to the internet.

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CityShield Privacy Provisions: Tech + Governance



Core Principles



- **CityShield** will abide by Privacy-by-Design and GDPR standards.
- **CityShield** will not allow PII to enter the system.
- **CityShield** allows organizations to “outsource” the burdens of data governance to a trusted third party - Innovate Cities.
- “Trust but verify.”



CityShield Privacy Protection: Technology



Organizations control who is permitted to access their (non-identifiable) data.

Innovate Cities controls who is permitted access to the **CityShield** platform.



The CityShield Privacy Workflow



1. Before uploading their data, each organization will need to assess the datasets they want to share.
2. If the data *does contain PII*, Innovate Cities will work with the organization to generate a *synthetic version free of PII* that can be shared.
3. If the data *does not contain PII*, the organization can upload their datasets directly to CityShield; however each uploaded dataset will be run through a *PII detection algorithm* to verify its contents. Datasets that do contain PII will be prevented from being uploaded.



CityShield Privacy Protection: Governance



Innovate Cities has created a strong governance structure for **CityShield**:

It includes:

- An independent Chief Privacy Officer, who has the power to investigate complaints.
- an advisory board, designed to keeps Innovate Cities apprised of privacy developments.
- An annual privacy audit, which will be disclosed to Innovate Cities' CPO, Board of Directors, Advisory Board and the general public.

Innovate Cities is committed to a process of continuous improvement and will always seek to improve our privacy controls and protections.

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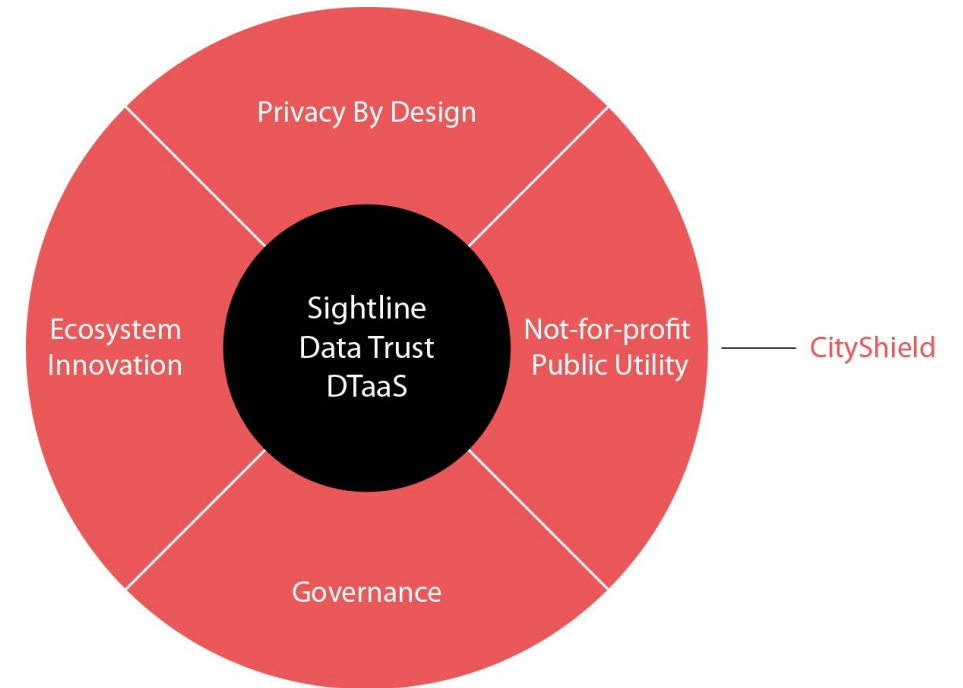
CityShield Technology



Sightline DTaaS is a multi-purpose enterprise data security software platform.

CityShield uses DTaaS to deliver the Innovate Cities governance & privacy framework.

CityShield is a unique data trust offering designed to be a not-for-profit, public utility.





Meeting Data Challenges



1. The explosion and distribution of data is **challenging to secure**.
Enterprise Security departments are under pressure to manage the ever expansive threat landscape.

2. Hybrid and multi-cloud data architectures are at odds with the **need for data sovereignty**.

Organizations need to protect the ownership and control of data assets to ensure its value does not leak out.

3. Multi-jurisdictional data governance is an **increasing legal burden** to navigate.

Collaborating with data in any meaningful way is risky due to different data regulations across data silos.

4. Data is an asset on which enterprises are **struggling to capitalize**.

Enterprise data assets have financial value that CFOs and CDOs want to recognize.



Creating Data Ecosystems

Collaboration across multiple stakeholders



CityShield functions as a Data Mesh: an evolving collection of independent datasets and applications from many data providers with built-in governance policies.

Together, data providers and consumers form an ecosystem based on responsible and secure data sharing.



Creating Data Pipelines

Share more than datasets



The **CityShield** platform is a zero-copy system.

Original source data remains on the provider's system. Web applications deployed on CityShield are used to access provider data via API.

Data shared within **CityShield** cannot leave **CityShield**; shared data can only be accessed by consumer applications (i.e. dashboards, machine learning models, data science notebooks) on the platform.

The screenshot shows the CityShield Asset Catalog interface. On the left is a navigation sidebar with a user profile for Rachel and a list of menu items: API Access Key, Applications, Asset Catalog (highlighted), Local Data, Prototypes, Trusts, Request Management, and Usage. At the bottom of the sidebar are three stacked red rounded rectangles and a settings icon with a toggle switch. The main content area is titled 'Asset Catalog' and features a search bar. Below the search bar, three dataset entries are listed:

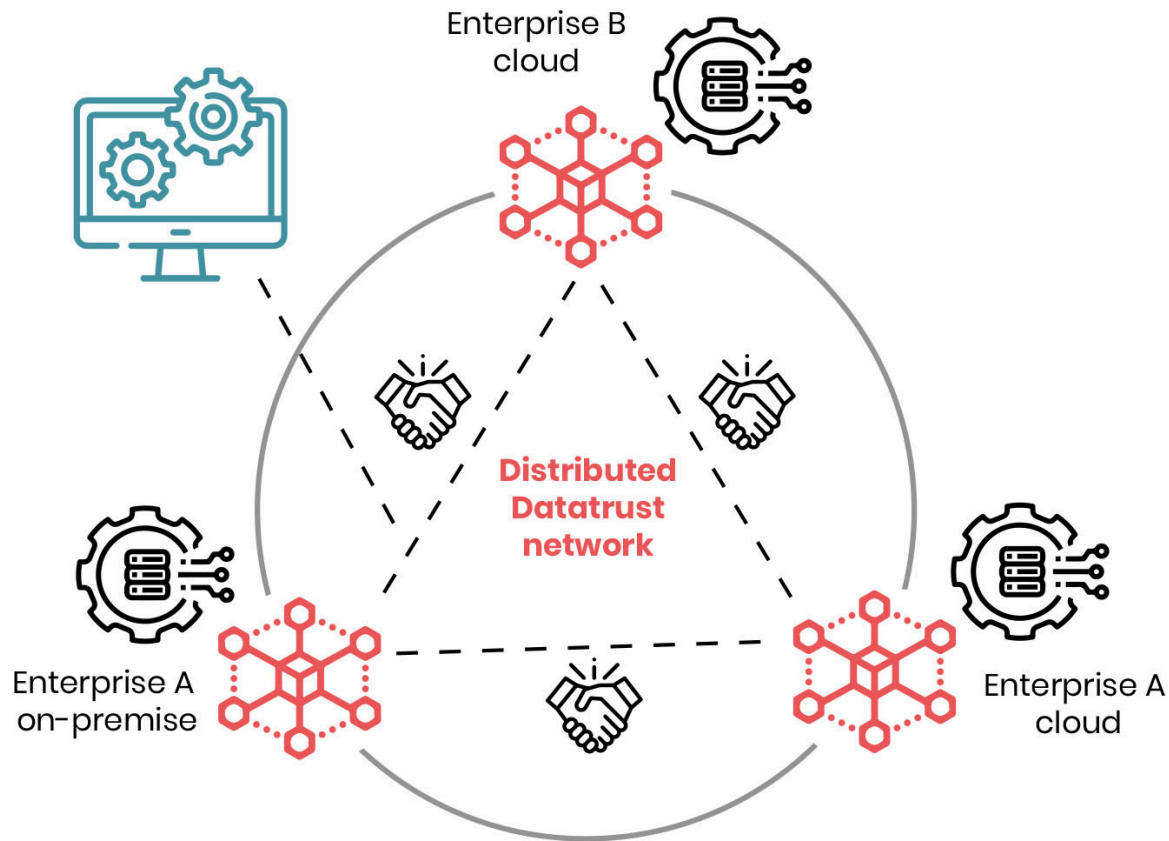
- City of Windsor Fire Management Dataset**: Fire Management Dataset from City of Windsor. CSV data. View Asset Details
- Uber Traffic Dataset City of Toronto**: Uber Traffic Dataset from City of Toronto. CSV data. View Asset Details
- Rogers Cell Tower Dataset City of Toronto**: Rogers Cell Tower Dataset from City of Toronto. JSON data. View Asset Details

At the bottom of the main area, the start of another entry is visible: **University of Toronto CO2 Emissions Prediction Algorithm**.



Ensuring Trust

Securing data and enabling value creation in the Data Economy



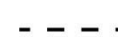
dtNode
Licensed installations of DTaaS. K8s cluster



dtDomain
A Datatrust domain that contains a grouping of Datatrust participants



dtApp
Applications deployed into the Datatrust. Built using the DTaaS SDK.



dtPath
Inter-dtNode communication pathway



Policies
Access Control or Smart Contracts governing assets and transactions



Assets
Data within the dtDomain

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Why Use CityShield?



Reduce your liability on data operations

Data Privacy and Compliance

- Reduce the attack surface by eliminating the need for data copies.
- Remain compliant with data regulations.
- Define and enforce precision access rights on data.

Save money on data operations

Data Operations Optimization

- Eliminate cumbersome, expensive custom data workflows for each project with a standardized, privacy compliant system.
- Work seamlessly with internal or external data collaborators.

Generate money on data operations

Data Monetization

- Build Datatrust applications for your customers with privacy, consent and built in Digital Rights management.

Realize the long-term value of data assets

Data Asset Transactions

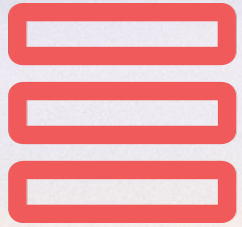
- Make data and derivative data tangible and controllable for financial transactions.

Zero Copy

Multi Cloud &
on-premise

Privacy by Design

Multi-partner
collaboration &
governance



Innovate
Cities.

Thank you.

Got questions?

Email hello@cityshield.ca