

# The History and Future of the integrated Public Health Information System (iPHIS):

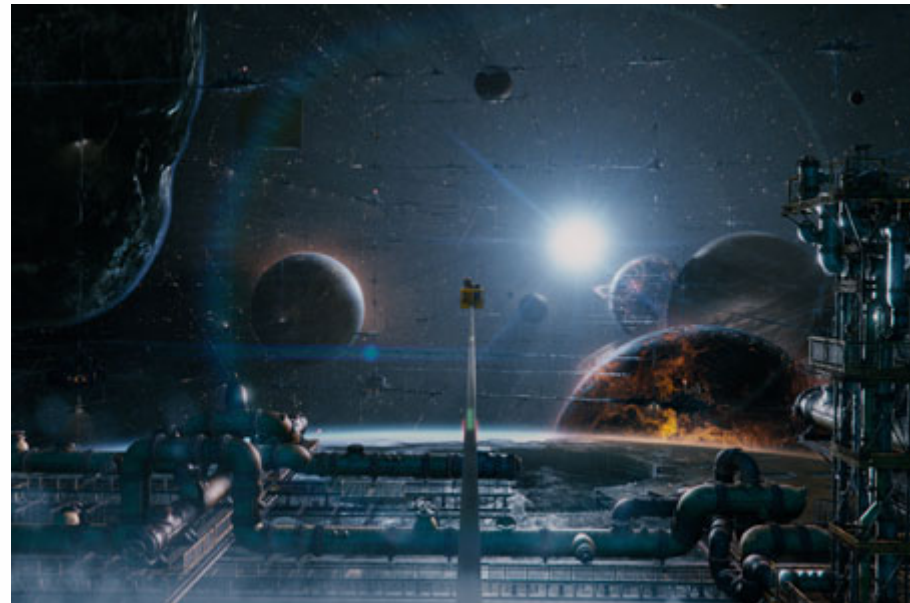
Don't  
Panic!



*The World is Changing,  
but Ontario's on Top of IT*

# It's a New World

- The universe has changed
- Sometimes you feel like you need a guidebook to tell you what's going on
- Public health is no exception



# You Need a Guide

- As many of you know, An Epi's Guide to the Galaxy is a takeoff on a book called The Hitch Hiker's Guide to the Galaxy, which just happens to be one of my favourite books.
- The cover of The Guide says Don't Panic: The idea is to be prepared. Anything can happen to you; things can change in the blink of an eye. If you can adapt to changing circumstances, things will be OK.

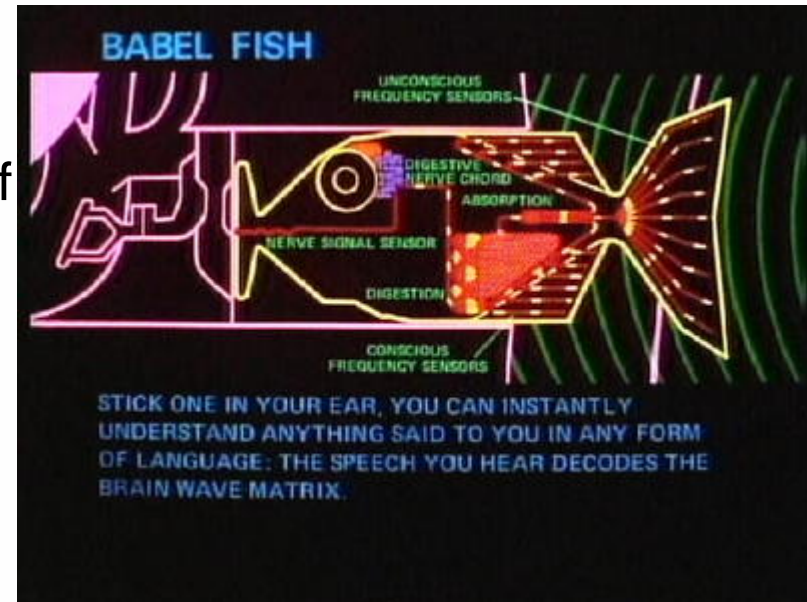
# Don't Leave Home Without It

- Never leave home without: Your Guide, a Towel because it is flexible and has many uses, and the Electric Thumb so you can keep moving on.
- In the book, the earth is demolished to make room for a hyperspatial expressway, and the protagonist Arthur Dent ends up hitch hiking in an exciting and bewildering universe.



# An Epi's Guide

- Epidemiologists live in a galaxy of their own
- You are dependent on information systems like iPHIS for data, so you can do important work to help protect the health of Ontarians
- Our environment is constantly changing, and there are a lot of hostile aliens to challenge us: SARS, West Nile virus, Salmonella, e-Coli, Legionella
- Like the e-Hitch Hiker's Guide, iPHIS is constantly changing to reflect the past and be prepared for the future



# The Origins of iPHIS

- The world as we knew it: Prior to SARS
  - Our epidemiological earth was a little old-fashioned, with a lot of manual input required, but we got along just fine, thank you.
- The destruction of that world: SARS
  - Suddenly, the old ways no longer worked – as the impacts mounted, our ability to do our jobs crashed.
- The new world order: Post SARS
  - We were in uncharted territories, and a revised Guide was needed
  - The new Guide was e-Health and the iPHIS Communicable Disease and Outbreak Management Module... and we're still improving on it

# SARS: An Upside Down World

- *“SARS showed that Ontario’s public health system is broken and needs to be fixed.” Dr. David Naylor*  
*First Interim Report - SARS and Public Health Legislation: Summary of Recommendations*
- *“...lack of coordinated business processes across institutions and jurisdictions for outbreak management and emergency response...”*  
*Justice Archie Campbell*  
*Renewal of Public Health in Canada*
- *The lack of federal-provincial cooperation was a serious problem during SARS.” Naylor*  
*First Interim Report - SARS and Public Health Legislation: Summary of Recommendations*

# Prior to SARS

- 37 stand alone systems and 37 different implementations
- One reporting tool
- 50/50 provincial/municipal funding
- Informal relationships
- Limited support for legacy system
- One I&IT support staff, one business resource
- No training or continual learning
- No common data dictionary or sharing of best practices
- No real-time disease data or effective data sharing





# SARS a Catalyst for Change

*“long before SARS, evidence of actual and potential harm to the health of Canadians from weaknesses in public health infrastructure had been mounting but had not catalyzed a comprehensive and multi-level governmental response” – Naylor*

- SARS killed 44 Canadians
- Caused illness in hundreds more; approx. 25,000 Greater Toronto Area (GTA) residents were quarantined
- Paralyzed a major segment of Ontario’s health care system for weeks; major psycho-social effects
- Economic shock across the country, especially in the GTA



# Lost in Space

- *“Without fast access to detailed information ... public health cannot investigate, or even be aware of impending danger and therefore cannot protect the public.” Naylor*

*“...there was no coordinated effort ...to facilitate the SARS response at the local level.” Naylor*

*First Interim Report - SARS and Public Health Legislation: Summary of Recommendations*



# SARS Without iPHIS

- No case or contact management
- Limited active surveillance
- Lack of human resources
- Limited access to timely data
- Lack of clear leadership
- Impossible to change a system in midst of a crisis
  - As the Vogons said two minutes before they would demolish earth: It's far too late to start making a fuss about it now.
- Federal assistance was given to develop a reporting system
  - There was hope for the future. A character in the book said to Arthur: You must come with me. Great things are afoot.



# Public Health Revolution

- *“ Ontario [needs] a public health system with the necessary resources, expertise and capabilities ... ”*
- *“Public health requires strong links with hospitals and other health care facilities .... Nurses, doctors and other health care workers ....”*
- *“Ontario and Canada must ...create strong public health links ...”*

*Naylor*

*First Interim Report - SARS and Public Health Legislation: Summary of Recommendations*

# Rebuilding Post SARS

- Immediate response to funding requests
- Walker, Naylor, Campbell Reports
- **Integrated Public Health Information System (iPHIS) Project launched**
- Operation Health Protection
- Public Health Capacity Review
- Agency Implementation Task Force (AITF)



# iPHIS: Strong Partnerships

## MOHLTC – Public Health Division

- Executive sponsorship and business leadership
- Health Services I&IT Cluster
  - I&IT leadership and deployment
- Public Health Units
  - Project champions, key stakeholders
- Public Health Agency of Canada
  - Provided initial instance of iPHIS
- Smart Systems for Health Agency
  - Secure hosting and networks for PHD and PHUs



# The iPHIS Project

## SARS Outbreak in 2003

- iPHIS Phase 0: SARS - Attempt to implement a custom module for SARS reporting during the outbreak
- iPHIS Project Launched: Steering Committee formed in Fall 2003
- iPHIS Phase 1: Pilot - Spring 2004
- iPHIS Phase 2: Outbreak Management Module Development - Began Fall 2003
- iPHIS Phase 3: Development and Implementation - December 2004 to December 2005 (final implementation)
- 2006-2007 Ongoing enhancements

# iPHIS: The Present

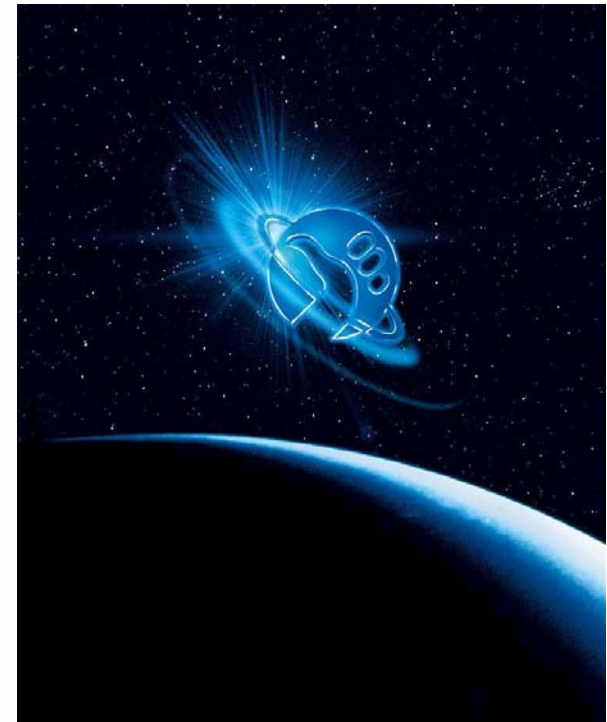
- Case, contact and outbreak management for reportable and communicable diseases
- Quarantine and contact tracking; materials and supply management
- Real-time data entry and retrieval
- Data sharing based on roles and responsibilities
- Provincial “view” of disease and outbreak activity
- Central web-enabled database and application with common policies and procedures
- Real-time standard and ad-hoc reporting
- Secure case transfer
- Management of outbreaks at a local, inter-jurisdictional or provincial level
- Ability to link cases to exposures or outbreaks



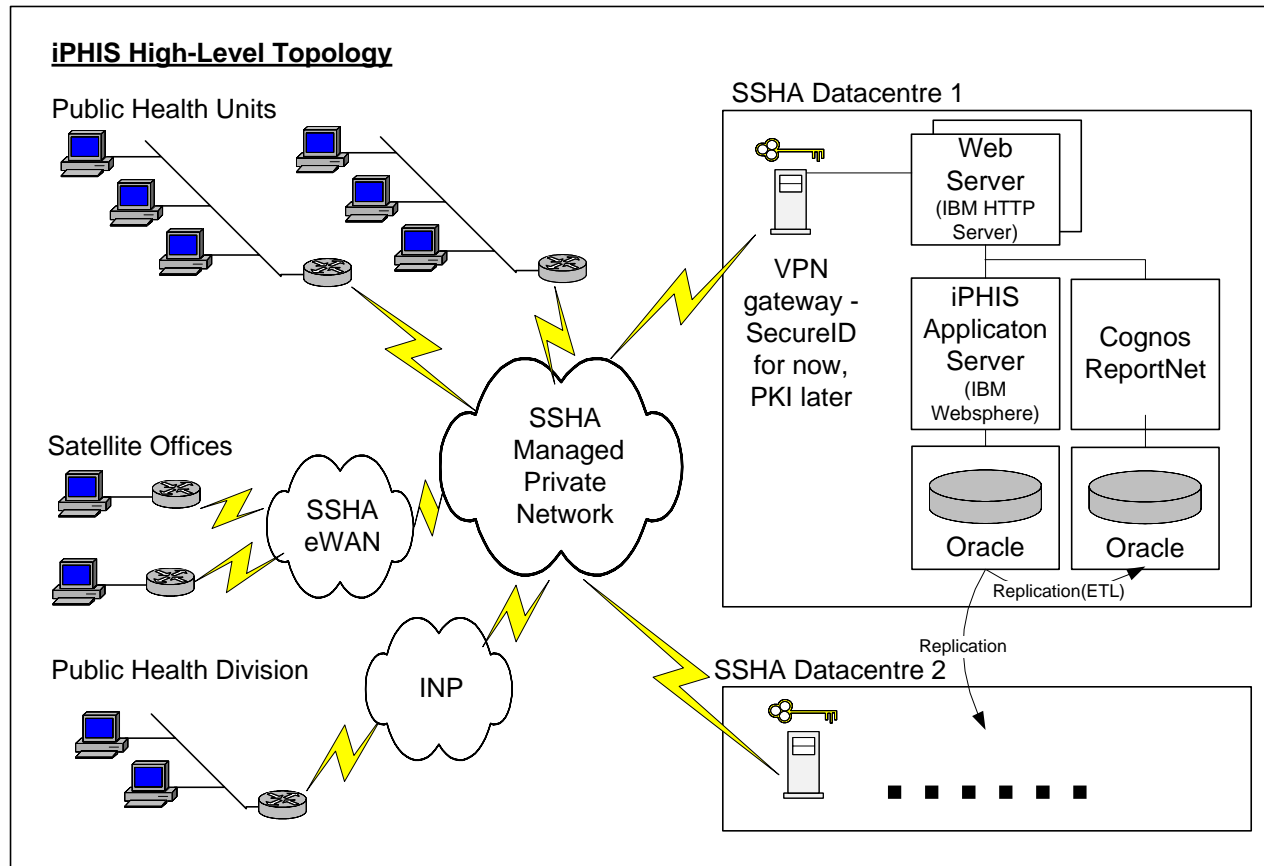


# iPHIS: Down the Intergalactic Highway

- A step towards the development of the Pan-Canadian Public Health Surveillance Solution and the Electronic Health Record (EHR)
- A key component in the development of further e-Health infrastructure, e.g. registries, lab systems
- An effective tool for public health practitioners in Ontario. Infectious disease requires an integrated approach to disease management.
- A model for the Pan-Canadian Public Health Surveillance Solution: Communicable Disease/Outbreak Management Module



# iPHIS High-Level Topology



# What Makes iPHIS Work?

- Partnerships with Public Health Units and Smart Systems for Health Agency
- Government commitment: a key deliverable in Operation Health Protection
- Part of a provincial e-Health Strategy
- Motivation of all players to improve public health infrastructure for the next challenge. Since implementation began, we have managed Salmonella, Legionnaire's, Rubella ...

# What Messages Would We Put in Our Guide?

- It takes effective, ongoing partnerships to make a public health strategy work
- Change management means change, for people and process
- The integrated Public Health Information System will only work for everyone if everyone participates in it
- PHUs are the key to the start of the journey

# Benefits of iPHIS

- Immediate, essential information for public health care providers
- Access to real-time reporting data
- One centralized system that all Public Health Units access
- Case, contact and outbreak management for reportable and communicable diseases, e.g. TB and STDs
- Provincial view of reportable and communicable disease activity

# The Future

- A new age of collaboration with different levels of government: Federal, Provincial, Municipal (PHUs)
- We are moving towards an EHR
- iPHIS is one part of Ontario's Public Health Information and Information Technology (PHIIT) Project, which comprises:  
Public Health Communications Portals including exciting Collaboration Tools, a Publication Facility, Immunization Management, Inspections for a SmokeFree Ontario, and Chronic Disease Surveillance.
- Our goal: Better health for the people of Ontario, part of a Canadian health care system of which we can all be proud.
- What's next?



# The Pan-Canadian Solution

- *“Surveillance is the ongoing systematic collection, collation, analysis and interpretation of data: and the dissemination of information to those who need to know in order that action may be taken. World Health Organization*
- The Government of Canada recognized that a nationwide plan for public health surveillance was required.
- The provincial, federal and territorial governments have been working together to develop an integrated Public Health Surveillance Solution.
- Ontario is playing a leadership role in the detailed design.

# Goals of the Pan-Canadian Solution

- To reduce morbidity and mortality from communicable diseases by investing in a new generation of surveillance systems
- Improved collaboration among public health stakeholders
- More efficient implementation of public health mandate
- Improved information available for clinical decision making



# Integrated Modules

- The Pan-Canadian Solution is an interoperable, cross-jurisdictional, multi-faceted system comprised of modules:
  - Immunization, which is comprised of an Immunization Registry, Immunization Management, and Vaccine Order and Distribution (VOD) Modules
  - Communicable Disease/Outbreak Management (which used iPHIS as a model)
  - Central Analytics
  - Alerting

# Pan-Canadian Solution: Outbreak Management

**Ontario** PublicHealthOntario.ca  
Ontario's Public Health Information Exchange

Home | FAQ | Help | Site Map | Contact Us | About Us | Français

Patient: Bill Evans  
HN: 1234 123 123 RH **English / French** User: Tom Jenkins **Logoff**

**Case Management** | **Outbreak Management** | Immunization | Vaccine Supply | Publication Facility

**Outbreak Management**

- Burden
- Cases
- Evidence
- Factors
- Illness
- OB Description
- Reporting Source
- Health Area
- Setting
- Short Outbreak
- Symptoms
- Transmission

**Recent Visits**

Immuniz	Mumps	2006/02/01
Case M	T. Jones	2006/03/01
OB	J. Benny	2006/04/01

**Contacts**

Mary Evans	Mother
Harry Evans	Father
Barry Evans	Brother

**Outbreak Summary** [Create New](#)

Agent	Subtype	Source	Status
Brucella	Canis	Other	Posted
Brucella	Nelintsnis	P2P	Draft
Campylobacter	Coli	Lab Confirmed	Posted
Campylobacter	Jejuni	Foodborne	Draft

**Case Summary** [Create New](#)

Date	Case	Status	Area
2006-04-20	Legionellosis	Investigating	Toronto
2006-04-15	Genococcal	Confirmed	Peel
2006-03-28	Legionellosis	Clinical	Durham
2006-03-12	Legionellosis	Suspect Case	York

**Case Details** [Create New](#)

**Work / Information Area**

**PHSMS Modules**

**PH Alerts**

**Decision Support**

**Important Health Notices**

- December 6 2005: [Influenza Update and Test](#)
- November 07, 2005: [Measles Cases in Ontario](#)

**Influenza 2005/2006**

Other public health applications available [here](#).

**Links**

- [Ontario Public Health Association](#)
- [eHealthOntario.ca](#)
- [OntarioMD.ca](#)
- [ALPHA](#)
- [Smart Systems for Health Agency](#)
- [APHEO](#)

# The Guidebook Changes

- The Pan-Canadian integrated outbreak module is the only thing of its kind in the entire software world
- The British Columbia government has just announced that it will implement the Pan-Canadian Solution
- The modules will be available for jurisdictional implementation in 2007
- Canada Health Infoway is providing funding to develop and deploy an integrated solution with the intent to implement the system in all jurisdictions by December 2009
- We are involved in Pan-Canadian planning

# In a Perfect Universe

- Ontario would implement the Pan-Canadian Solution
- Data standards will help all the Health Units and the Ministry speak the same language
- Epidemiologists will have all the right data at the right time
- I just want to leave you with two final thoughts from the Hitch Hiker's Guide:
  1. Do you have your towel with you?
  2. Would you like a hug?



# More information

For more information, please contact:

Marie Muir, Manager, Surveillance and Knowledge Management, Public Health Information and Information Technology Office and Infectious Diseases Branch, Public Health Division, Ministry of Health and Long-Term Care

[marie.muir@moh.gov.on.ca](mailto:marie.muir@moh.gov.on.ca)

