



Health
Canada Santé
Canada

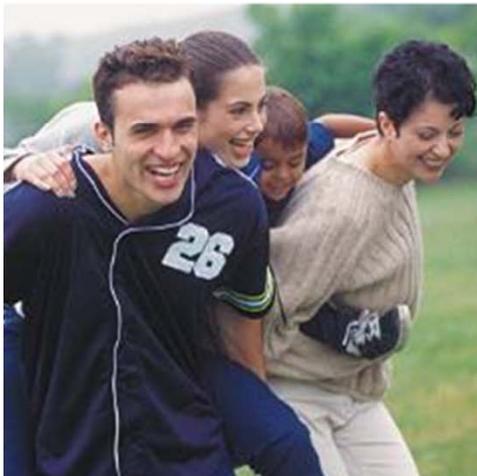
*Your health and
safety... our priority.*

*Votre santé et votre
sécurité... notre priorité.*

Content of Health Canada Regulatory Databases

February, 2013

Prepared by Health Products and Food Branch
Health Canada



Canada

Overview

- Background on Health Canada
- Health Canada Systems Context
- Database Synopsis – TPD, VDD, and BGTD
- Database Synopsis – NHPD
- Database Synopsis – HECSB and FD
- Database Synopsis – MHPD
- Moving Forward



BACKGROUND



HPFB is a trusted regulatory authority...

The Branch's over 2000 employees work to:

- minimize health risk factors to Canadians while maximizing the safety provided by the regulatory system for health products and food
- promote conditions that enable Canadians to make healthy choices
- provide information so that Canadians can make informed decisions about their health

...committed to protecting the health and safety of Canadians



HPFB's regulated health products

- **Pharmaceuticals and Medical Devices**

- includes over 13,000 pharmaceutical drugs (prescription and non-prescription, brands and generics, and disinfectants) on the market
- over 120,000 medical devices
- some non-marketed drugs for serious or life threatening conditions authorized through the Special Access Program

- **Biologics and Genetic Therapies**

- includes over 400 biologics and biotechnology products (e.g., vaccines, blood, cells, tissues and organs, gene therapies)
- transitioning the regulation of Assisted Human Reproduction to HPFB in September 2012

- **Veterinary Drugs**

- includes over 1,300 veterinary drugs administered to food-producing and companion animals

- **Natural Health Products (NHPs)**

- includes over 56,000 NHPs, which are regulated proportional to risk, while respecting the diversity of Canadians choices

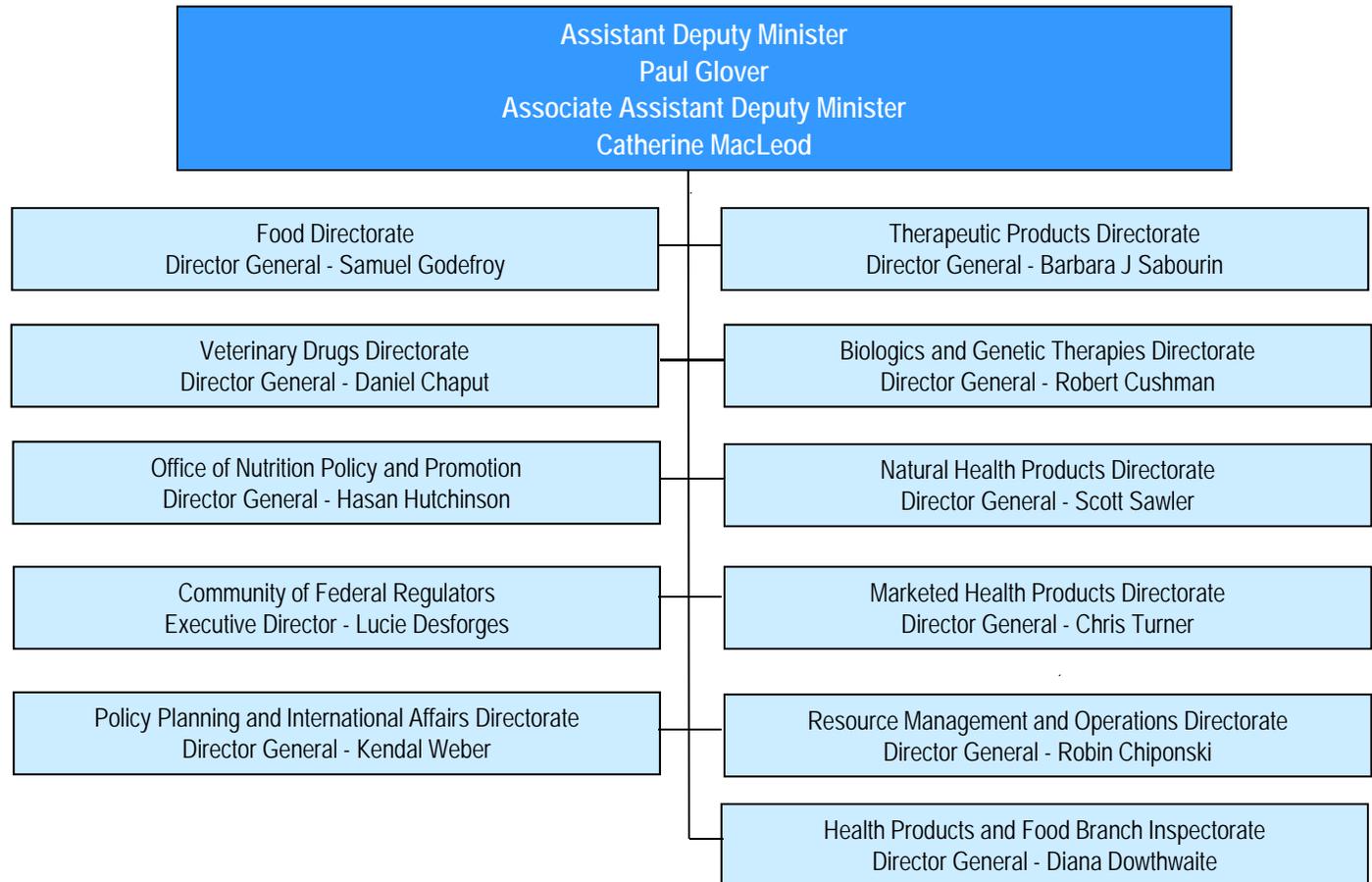


Our role in the regulation of health products

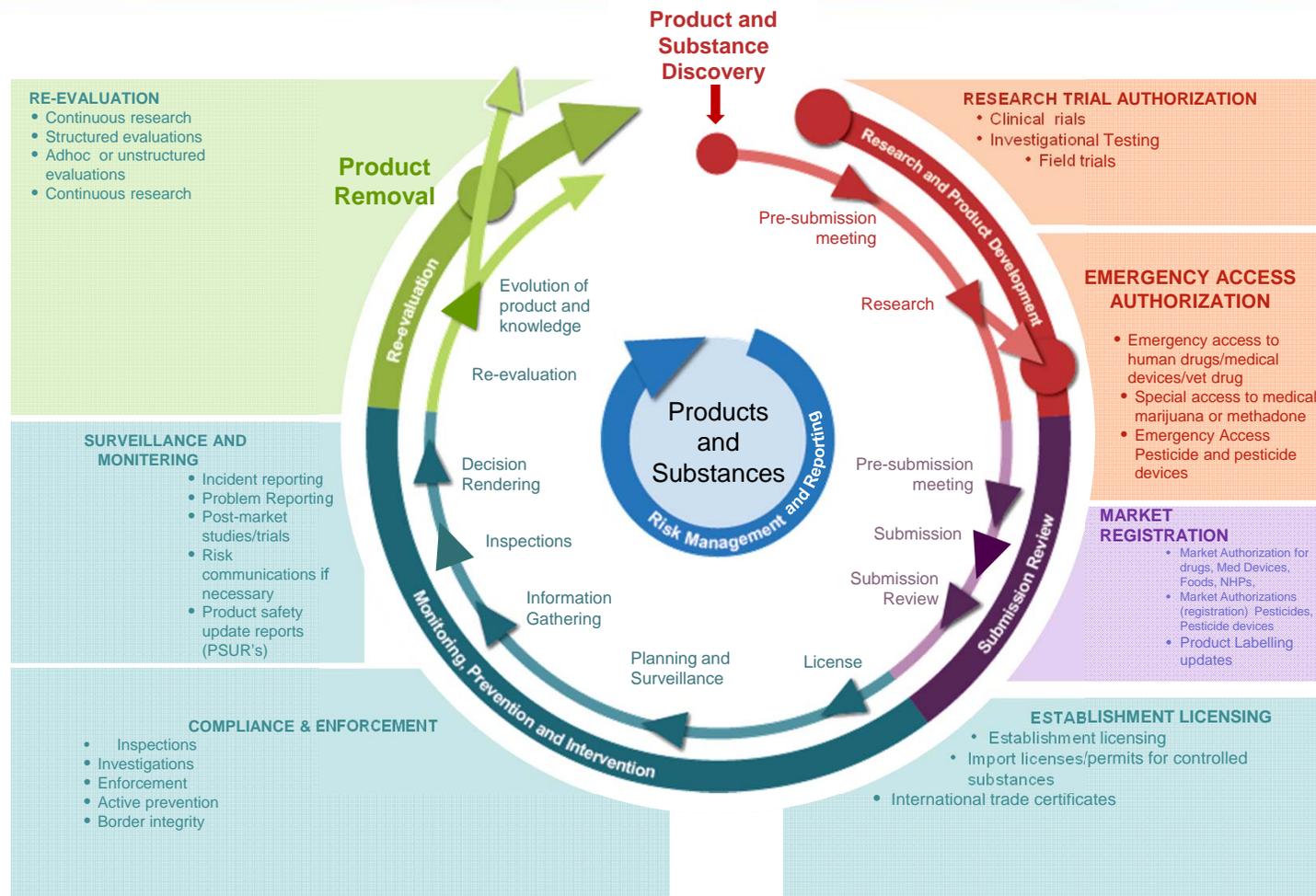
- Review health products (drugs, medical devices, natural health products) to **assess the risks and benefits** prior to market authorization
- Review **clinical trial applications** for drugs and natural health products, as well as investigational testing applications for medical devices, to ensure the studies are properly designed and that participants will not be exposed to undue health risks
- Manage a national **compliance and enforcement** program for all products under the mandate of the Branch, except food (for which CFIA performs compliance and enforcement activities)
- Coordinate **post-market surveillance** of health products and assessment of safety signals and trends
- Share **new safety information** about health products with Canadians



Organizational Structure



Health Canada: Regulatory Business Reference Model



Current Strategic Drivers and Operational Goals

Strategic Drivers



Global Supply Chain Management



Product Safety



Cost Recovery



International Regulatory Practices



Transparency & Accountability

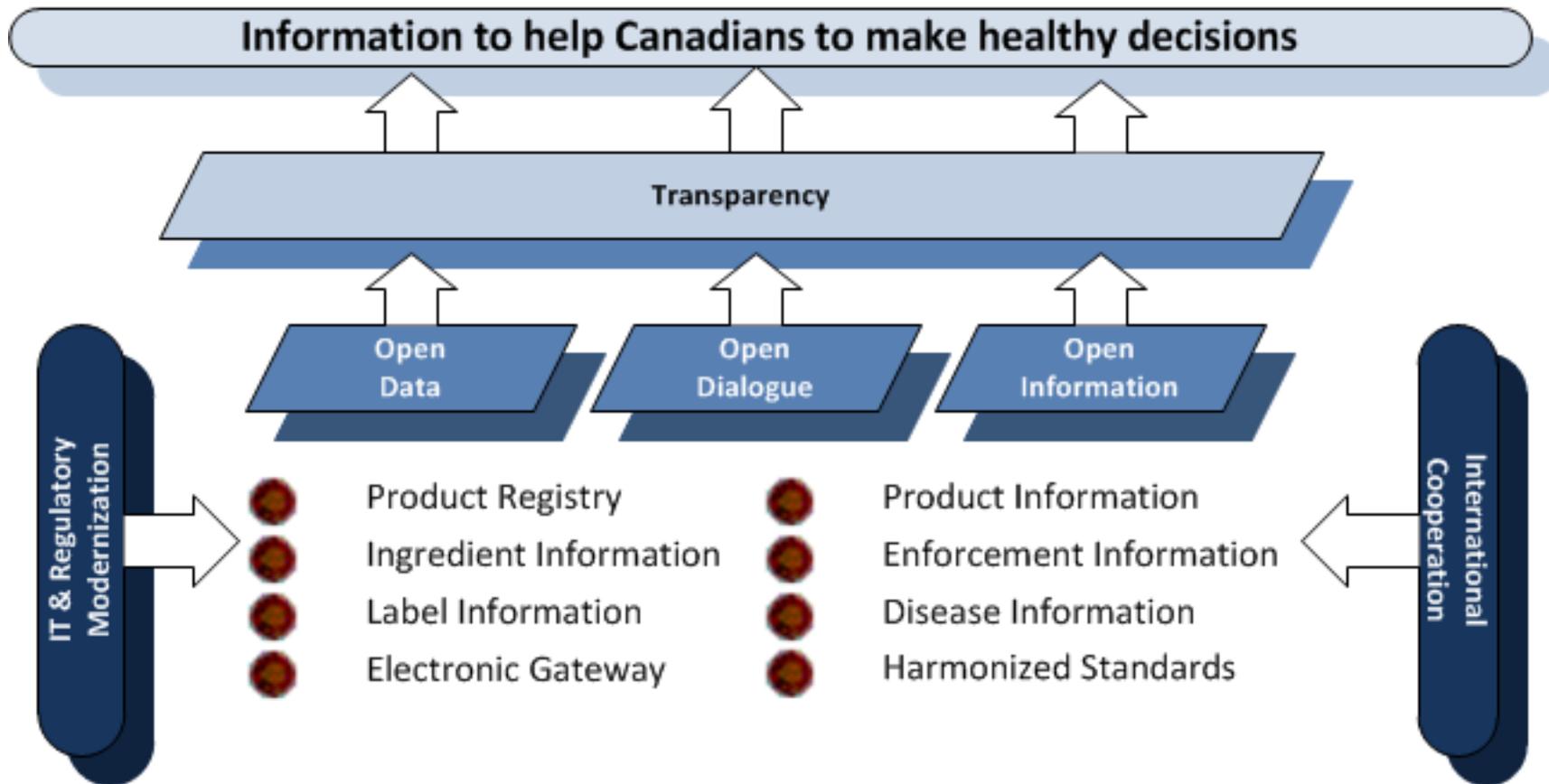
**Improvements
Regulatory Activities**

Operational Goals

- Risk-based regulatory framework
- Improved regulation of Health Products
- Better informed of scientific innovations
- Business Intelligence support for better decision making
- Improved Transparency
- Improved Operational Excellence
- Domestic and foreign partnerships
- Data standards, control vocabularies, and regulatory harmonisation)
- International Work sharing



IT Modernization in Support of Transparency and International Cooperation



HEALTH CANADA SYSTEMS CONTEXT



Substance and Data Management Owners

Health Products and Food Branch



Marketed Health Products Directorate



Natural Health Products Directorate



Biologics and Genetic Therapies Directorate



Therapeutic Products Directorate



Veterinary Drugs Directorate



Food Directorate



Inspectorate

Healthy Environments and Consumer Safety Branch



Consumer Product Safety Directorate



Controlled Substances And Tobacco Directorate



Environmental and Radiation Health Sciences



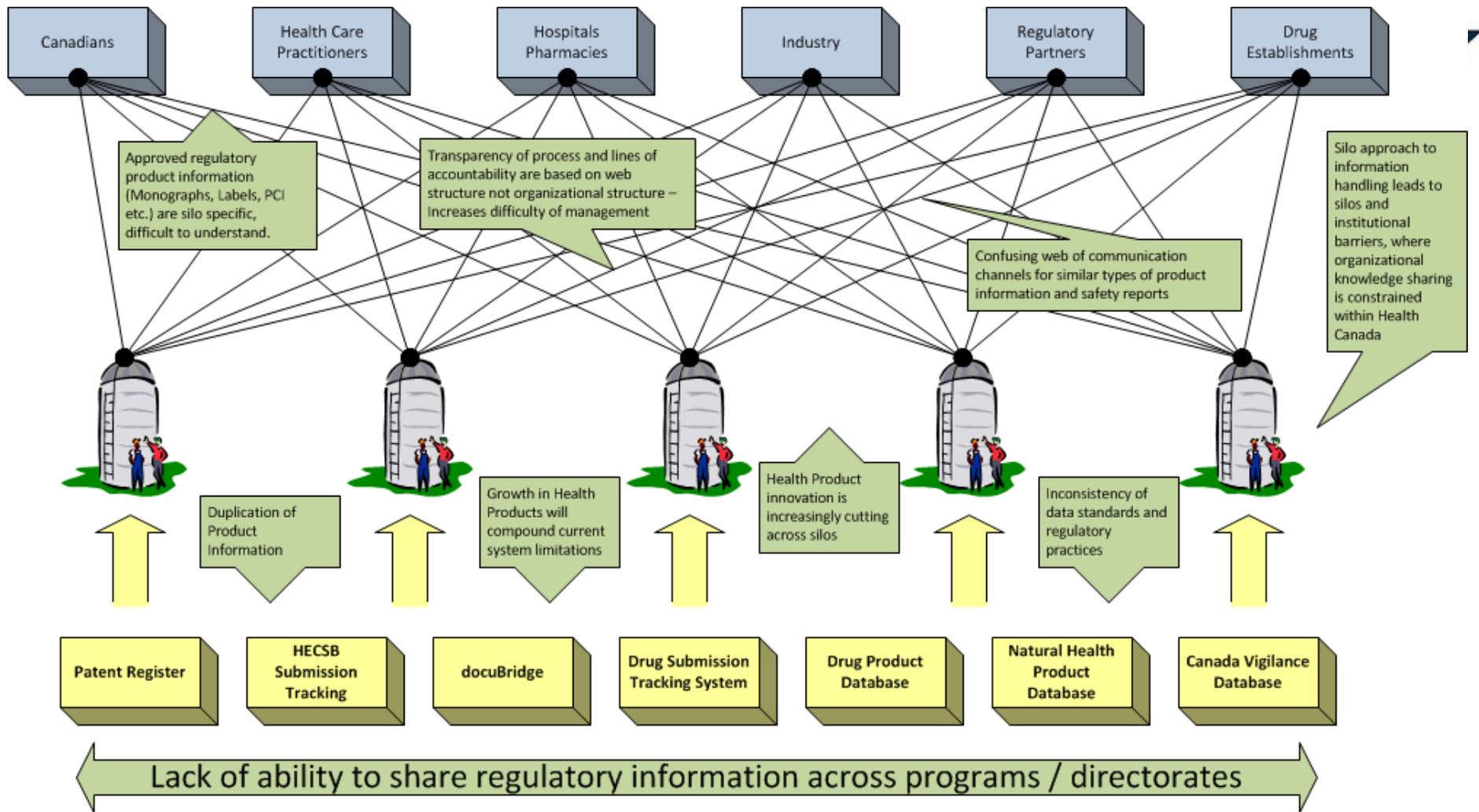
Safe Environments Directorate



Workplace Hazardous Materials Directorate



Current Relationship Diagram



REGULATORY DATABASES

TPD, VDD, BGTD



TPD, BGTD, VDD Database

- **Drug Product Database (DPD)**

- An internal master drug dictionary for marketed domestic health products which is maintained by Health Canada systems. The DPD is updated regularly and is the preferred source for the latest health product information for domestic marketed products relevant to HC.

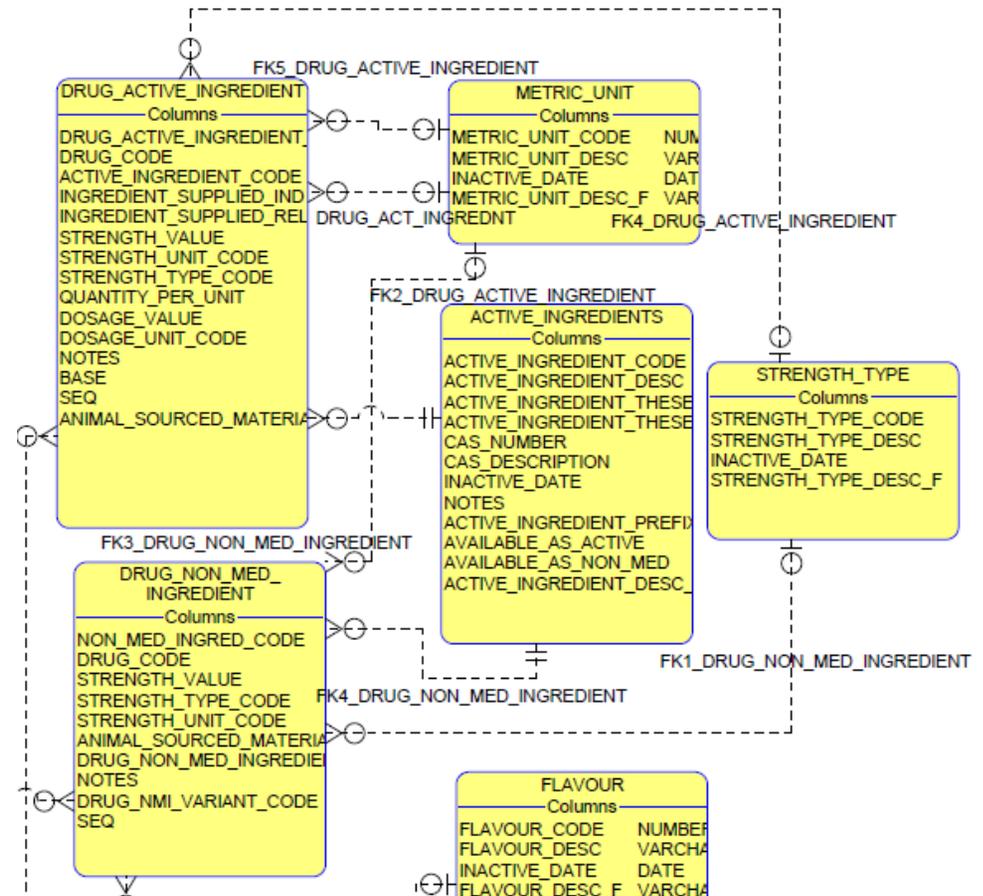
- **Drug Submission Tracking System (DSTS)**

- An internal database to capture submission and product-related meta-data that is used to track submission workflow. It includes information on substances, routes of administration and dosage forms.

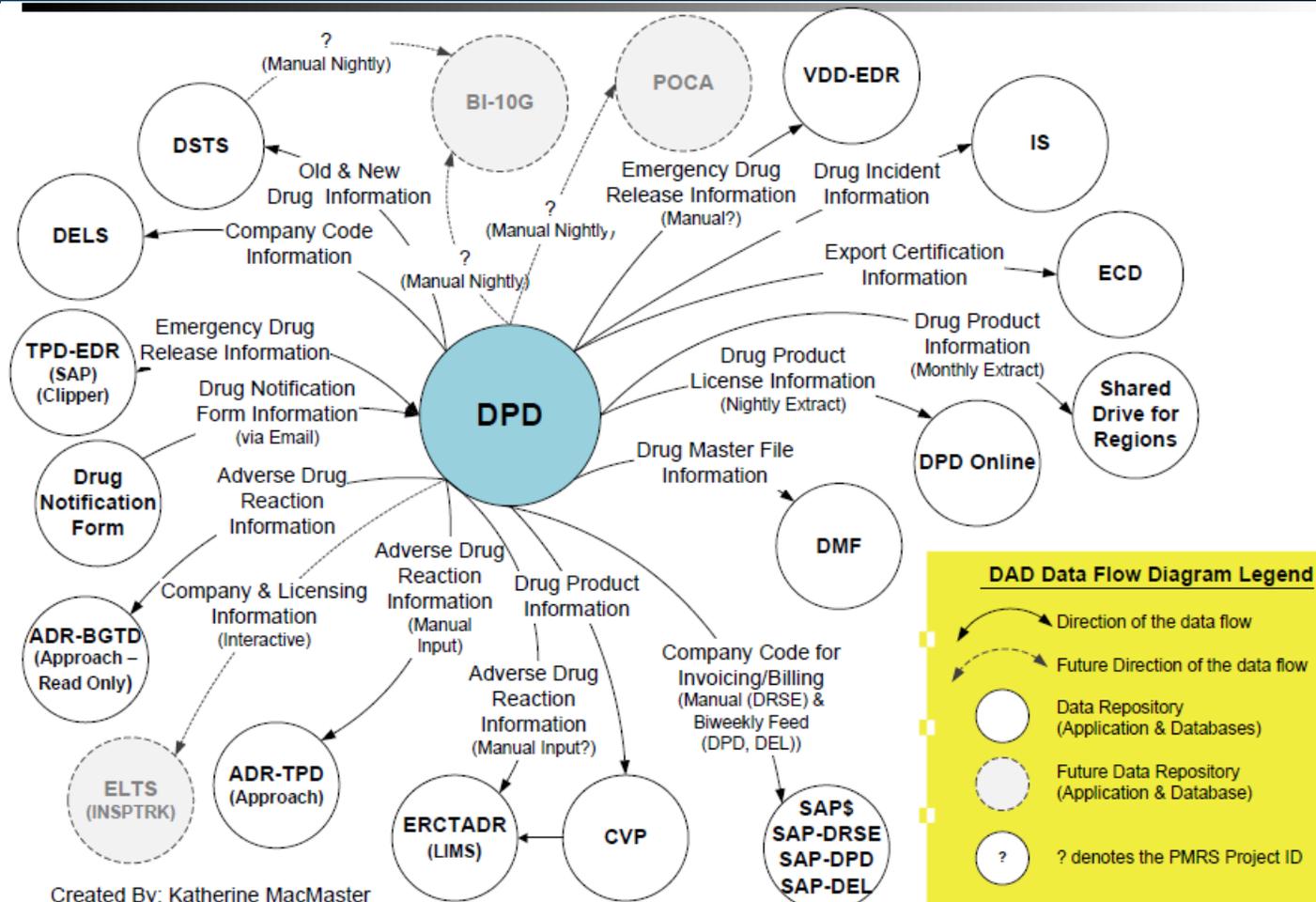


Benefits and Limitations to Health Canada

- One substance list for TPD, BGTD and VDD
- This list has been carefully and meticulously managed in its current format since 1996 (Single Table)
- It includes a preferred name as well as synonyms for each substance
- Validation may reference several dictionaries including INN, USAN, Martindale, Merck Index however these references are not maintained as part of the database



DPD System Relationship



REGULATORY DATABASES

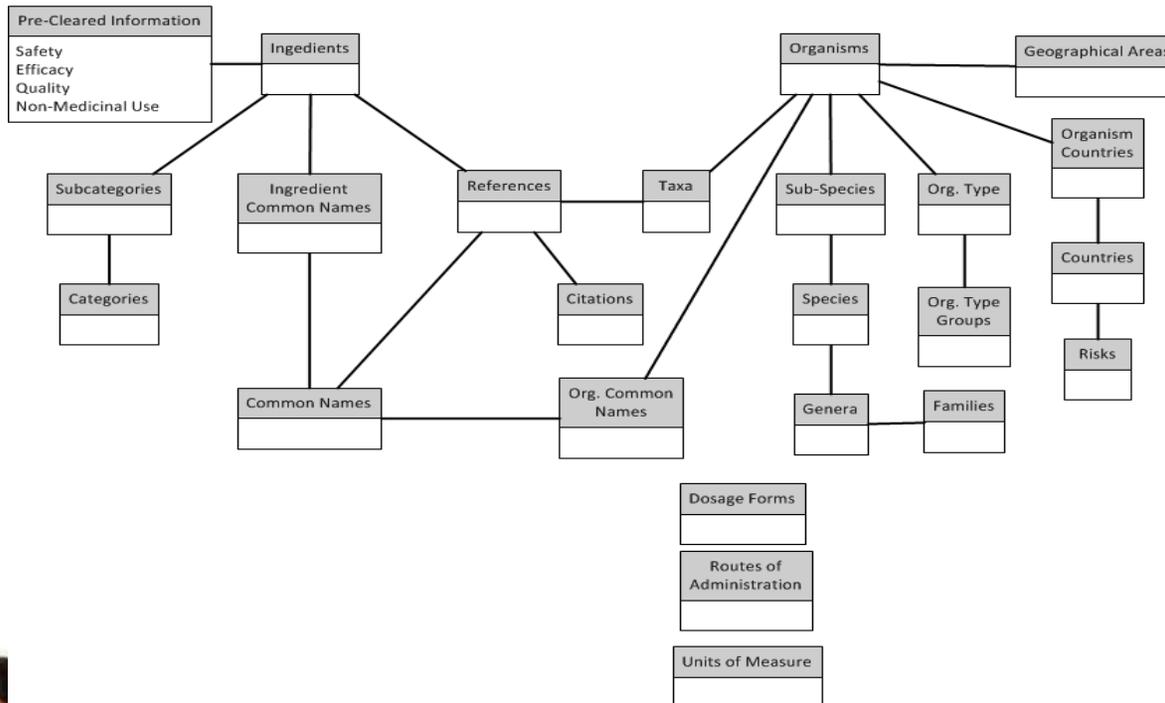
NHPD



NHP Substance Data Model – High Level

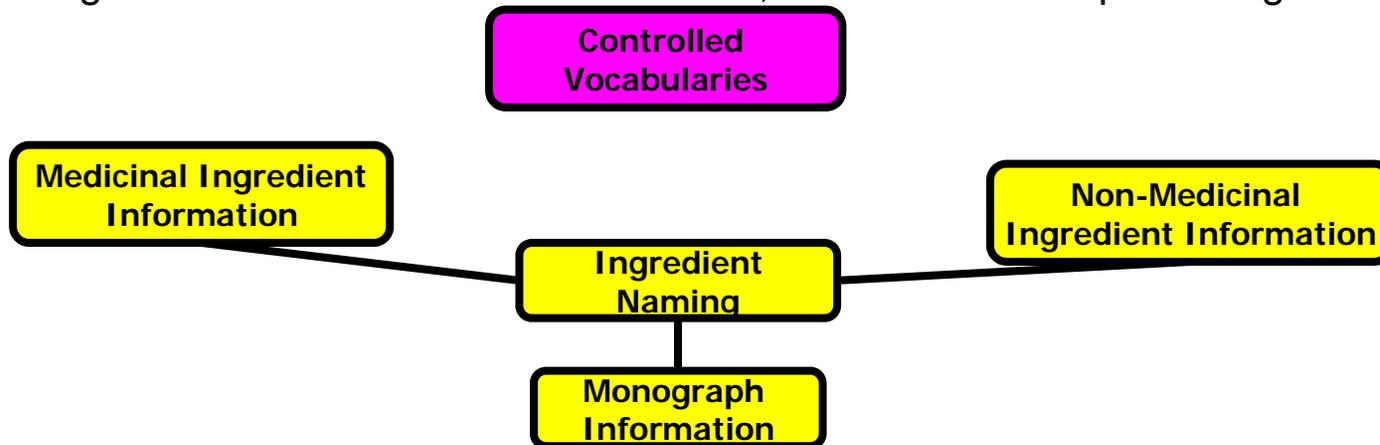
Conceptual: NHP Ingredients Database

- Complex Schema based on cross reference of ingredient information combined with essential meta-data that more fully and accurately describes the chemical, protein, or organism substance.
- Captures relationships to regulatory Pre-Cleared Information used for publication and complex form validations for market authorization requests.
- Preferred (Approved Names) linked to product information



NHPD Dictionaries

- NHP – Data Maintained and managed by Health Canada and supplemented via standard databases
- Three groups of NHP ingredients
 - **Chemical Substances**
 - **Protein Substances**
 - **Organism Substances** (i.e. a plant or a plant material, an alga, a bacterium, a fungus or a non-human animal material, an extract of the preceding or a probiotic).



Naming Standard: Approach

Conceptual: NHP Ingredients Database

Chemical/Protein Substances:

Approved Name

+

Reference

↓
CODED

Ref. Code	Reference
BP	British Pharmacopoeia
USP	United States Pharmacopoeia
...	...
MI	Merck Index



Chemical Substance: an example (web-view)

Conceptual: NHP Ingredients Database

Chemical Substance

Approved Name:	Calcium Carbonate	← Unique identifier
Proper Name:	Calcium	
Category:	Approved Chemical Name	
Monographs:	 Antacid	
Schedule 1:	Mineral	
Synonyms:	<ul style="list-style-type: none">• Calcium carbonate• Carbonic acid calcium salt (1:1)	} Additional information
SubIngredients:	Calcium	
CAS Registry Number:	471-34-1	
Other Registry Numbers:	114453-69-9 , 137803-94-2 , 146358-95-4 , 166516-01-4 , 172307-27-6 , 180616-31-3 , 251358-28-8 , 39454-55-2 , 60083-79-6 , 63660-97-9 , 71060-88-3 , 72608-12-9	
Reference:	BP	



Protein Substance: an example (web-view)

Conceptual: NHP Ingredients Database

Protein Substance

Approved Name: whey protein ← Unique identifier
Proper Name: whey protein
Category: Approved Protein Name
Schedule 1: Isolate
CAS Registry Number: 84082-51-9
Source Organism Parts: • Bos taurus
(Parts: Milk) } Additional information
Reference: ICID

Roles

Medicinal

Rationale: Classified as an NHP under Schedule 1, item 2 (an isolate) of the Natural Health Products Regulations

Reference: NHPD



Naming Standard: Approach

Conceptual: NHP Ingredients Database

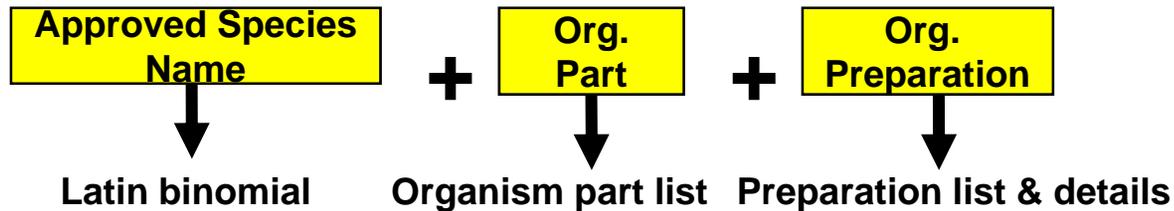
Organism Substances:

i) Predefined Organism Substance



=Approved Species Name
+ Org. Part + Org.Preparation

ii) Custom Organism Substance



e.g. Extract liquid standardized

Ext. Ratio + Solvent(s) (strength)
+ Equiv.dry/fresh + Equiv Component)



Organism Substance : an example (web-view)

Conceptual: NHP Ingredients Database

Defined Organism Substance

Approved Name: [Orange Oil](#)
Proper Name: [Citrus sinensis](#)
Category: [Approved Herbal Substance Name](#)
Schedule 1: [Extract](#)
Synonyms:

- [Citrus Aurantium Dulcis \(Orange\) Peel Oil](#)
- [sweet orange](#)

Organism(s):

- [Citrus sinensis](#)
(Parts: [Fruit peel](#))

Preparations: [Oil essential](#)
Reference: [BP](#)

Approved Organism substance name

Source organism (Approved Binomial Name)

Organism Part

Preparation

Roles

Medicinal

Rationale: Considered NHP under Schedule 1 item 2, extract, of the NHP Regulations.
Reference: [NHPD](#)

Non-medicinal

Purposes: [Flavor enhancer](#) , [Fragrance ingredient](#) , [Skin-conditioning agent - miscellaneous](#)

Restrictions:
General



Organism Substance : source organism

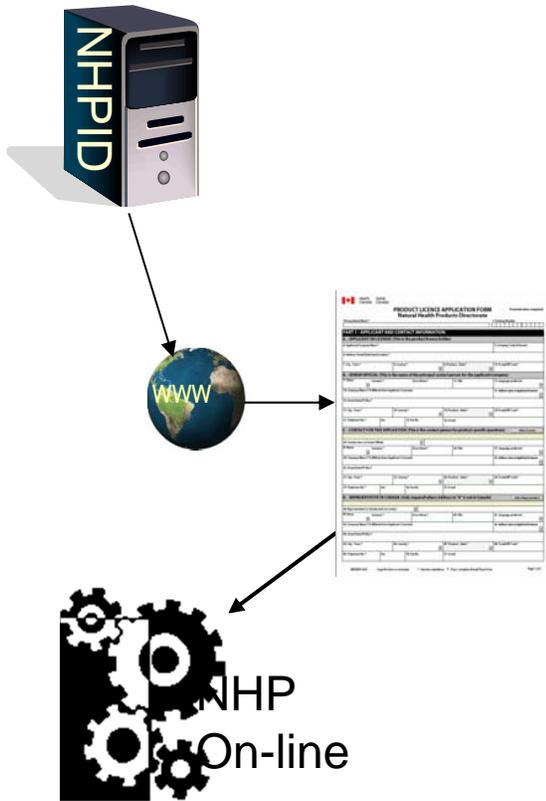
Conceptual: NHP Ingredients Database

Organism	
Family:	Rutaceae
Genus:	Citrus
Species:	sinensis
Organism:	Citrus sinensis
Type:	Plant
Taxa:	Citrus aurantium var. sinensis , Citrus macracantha
Common Name(s):	<ul style="list-style-type: none">• blood orange• Immature orange• navel orange• orange• sweet orange• tian cheng• Valencia orange
Reference:	GRIN
Organism Part Constituent(s):	<ul style="list-style-type: none">• Flower• Flower bud• Fruit• Fruit peel• Fruit pericarp• Leaf• Leaf bud

Synonymous Taxa



Benefits to Health Canada



- Specific to HC NHP (Regional) requirements
- Allows for validation of ingredients and pre-cleared information against e-Form submissions (smart-forms)
- Reduction of substance and licence application errors in submissions



REGULATORY DATABASES

HPFB – MHPD



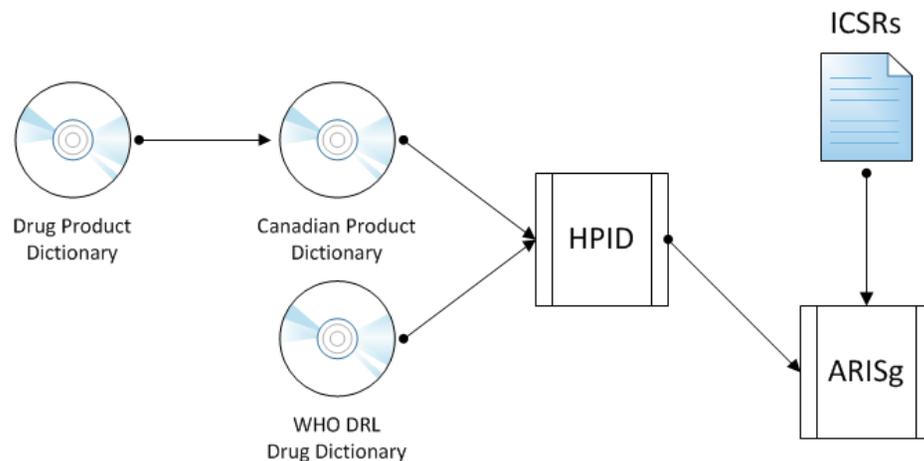
MHPD Dictionaries

- Drug Product Dictionary (DPD)
 - An internal master drug dictionary for marketed domestic health products which is maintained by other Health Canada systems. The DPD is updated regularly and is the preferred source for the latest health product information for domestic marketed products relevant to HC.
- Canadian Product Dictionary (CPD)
 - The CPD is the main drug dictionary that is part of the current ARISg safety system. It is used to code the health product information for all suspect products and most concomitant products. The dictionary stores all the domestic health products and is primarily populated by the DPD.
- WHO DDE (DRL Drug Dictionary)
 - WHO DRL Drug dictionary is the world's most comprehensive dictionary of medicinal product information. The WHO drug dictionary contains all types of drugs from all the countries including the ones that are domestic to Health Canada. The majority of entries in WHO refer to prescription-only products, but also includes over-the-counter (OTC), biotech and blood products, diagnostic substances and contrast media.



HC HPID (Health Product Identification Database)

- HPID will be used by Health Canada for Electronic Adverse Event Reporting
- HPID is populated with Product and Ingredient information from:
 - DPD (domestic product information),
 - WHO DDE (foreign product information)
- HPID validates information in the `<drug>` Field of the electronic adverse reaction message and matches the information to a record in the Canada Vigilance Product Dictionary (CPD)
- Ingredient terms
 - `<activesubstancename>` must match exactly CPD (Suspect/Interacting)



Benefits and Limitations to Health Canada

- DPD / CPD focus on Canadian Drugs only
- HPID driven by necessity to address lack of common product standard required in order effectively process foreign ICSR reports (e.g. US Domestic).
- HPID Facilitates statistical analysis on both foreign and domestic data.



REGULATORY DATABASES

FD, HECSB



Food Directorate and HECS Branch

- **Food Directorate** is the federal health authority responsible for establishing policies, setting standards and providing advice and information on the safety and nutritional value of food. Focus is in the following areas:
 - chemical and microbiological contaminants of foods, such as heavy metals or E. coli
 - food additives, novel foods, food processes, and nutrition
- HECSB's Programmes touches on many aspects of day-to-day living in Canada; issues like drinking water, air quality, alcohol and drug use, toy safety, smoke detectors, the safety of cosmetics and personal care products, and second-hand smoke, as well as how new products of biotechnology and new chemicals may affect Canadians



Dictionaries and COTS Substance Management

- **IUCLID** = International **U**niform **C**hemical **I**nformation **D**atabase
- A free database application managed by the Organisation for Economic Co-operation and Development (OECD) and the European Chemicals Agency (ECHA)
- Facilitates capture, maintenance and exchange of health and environmental data in a standard format (OECD Harmonized Templates).
- Provides a standardized “database and interface” to maintain data, but you capture “your” data (which can be shared because of common data and file format).
- Used by companies and regulatory authorities around the world.
- Benefits include: ease of use, rich data capture capacity, structured data capture, standardized picklists, cost (free), built in audit, access control interface, stand-alone and distributed versions, built in querying and reporting functionality, proven track record, regular software update cycle.



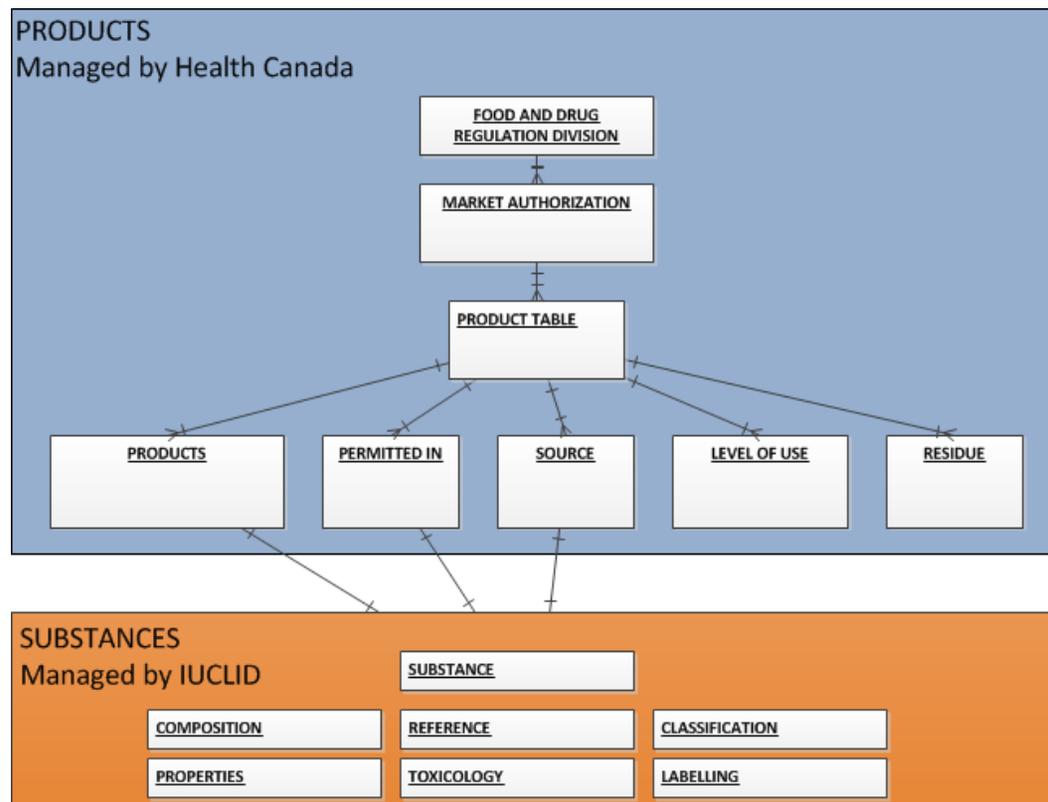
How HC is managing data within IUCLID

- Substance records
 - Legal entity to indicate ownership; also relying on business rules & training
 - Managing information for several HECSB programs in a common database, maintaining ownership using business rules and training
- Data entry
 - Detailed written instructions for some endpoints, more in development
 - In-class, hands-on training for users
- Confidential information
 - information on identity, structure, and endpoints can be flagged as confidential; users select if reports include or exclude CBI
- Reporting
 - Repurposing an ECHA plug-in for tabular summary reports
 - Pushing for greater flexibility in dossier reports in later version
 - Intend to use Cognos to create custom reports from back-end



Benefits and Limitations to Health Canada

- IUCLID has extensive meta-data structure for substance definition
- Limited “Single Substance” Data model to Chemicals
- Does not handle complex substance combinations
- HC has implemented a “products” data structure layered over IUCLID
- Maintains the integrity of the IUCLID model while addressing HC Regional / Regulatory specific requirements.

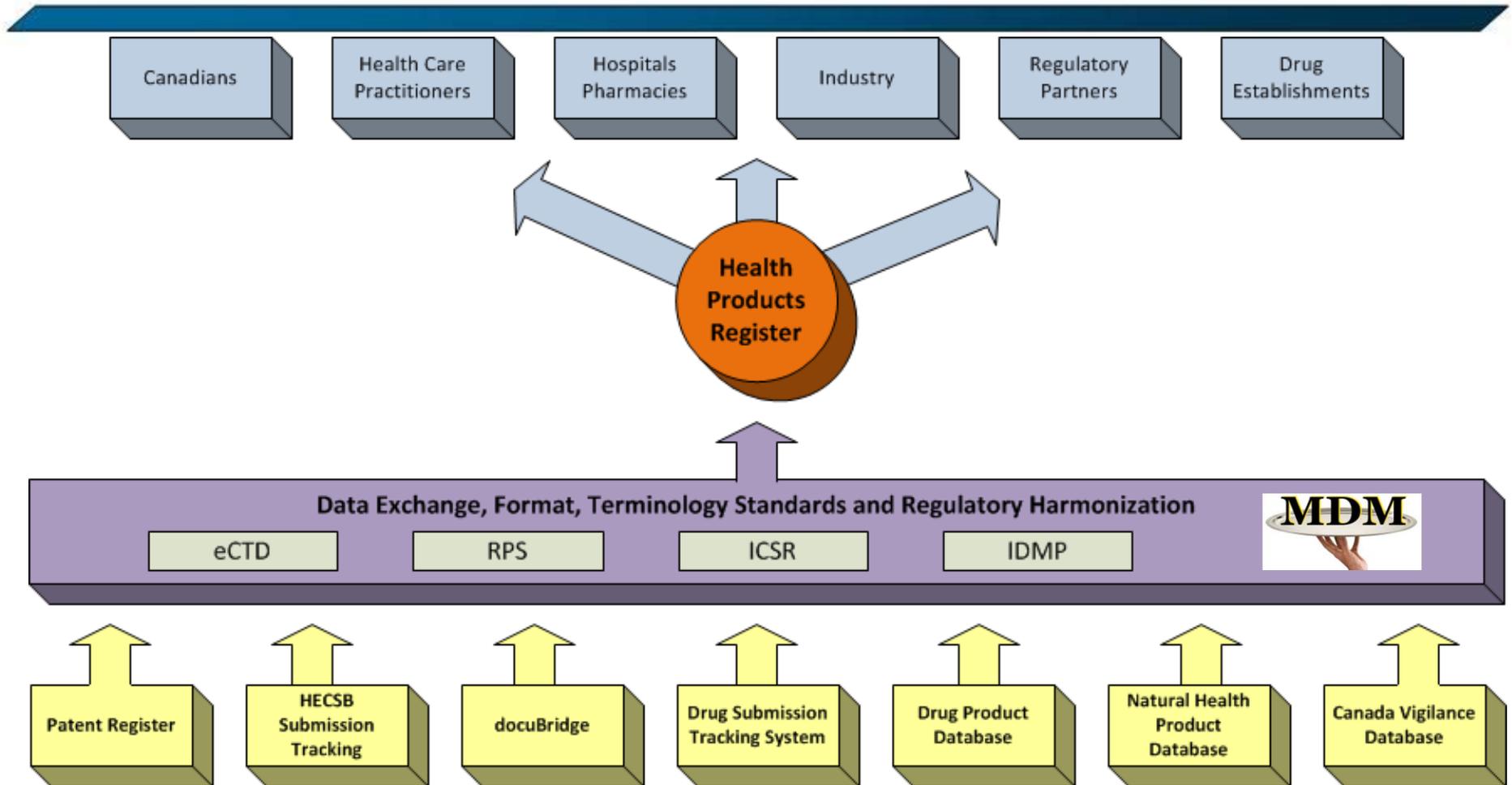


Moving forward ... Changes in HC IT Investment Management

- Prior to 2011
 - Software developed as a series of *silos*
 - Data architecture has been driven by specific scientific and policy requirements
 - Very narrow definitions
 - No holistic approach to data management
 - No common infrastructure or tools
- Since 2011
 - Move towards a unified model of business architecture IT Investment portfolio management
 - Development of common infrastructure , common tools, and standards
 - Increased stakeholder engagement – industry cooperation. e.g. Group on Electronic Regulatory Activities (GERA)
 - Movement towards international cooperation



To Be System Relationship Diagram



Next Steps

- Develop a communication plan for management, working staff and impacted stakeholders.
- Conduct a “Fit analysis”, on systems, data sources, and standards which manage product and substance information in priority sequence
- Develop a plan for the implementation of an HC environment which supports the adoption of 11238.



END



For more information

Vikesh Srivastava

Associate Director

Business Informatics

Resource Management and Operations Directorate

Health Products and Food Branch

Health Canada

Tel: 613-941-9379



APPENDIX



How HC is managing data within IUCLID

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