



CLINICAL AND SURVEILLANCE INFORMATICS FOR PUBLIC HEALTH TRANSFORMATION: A PAN-CANADIAN VIEW

Current and Future Technologies – Supporting Public Health
Concurrent Session, e-Health 2015
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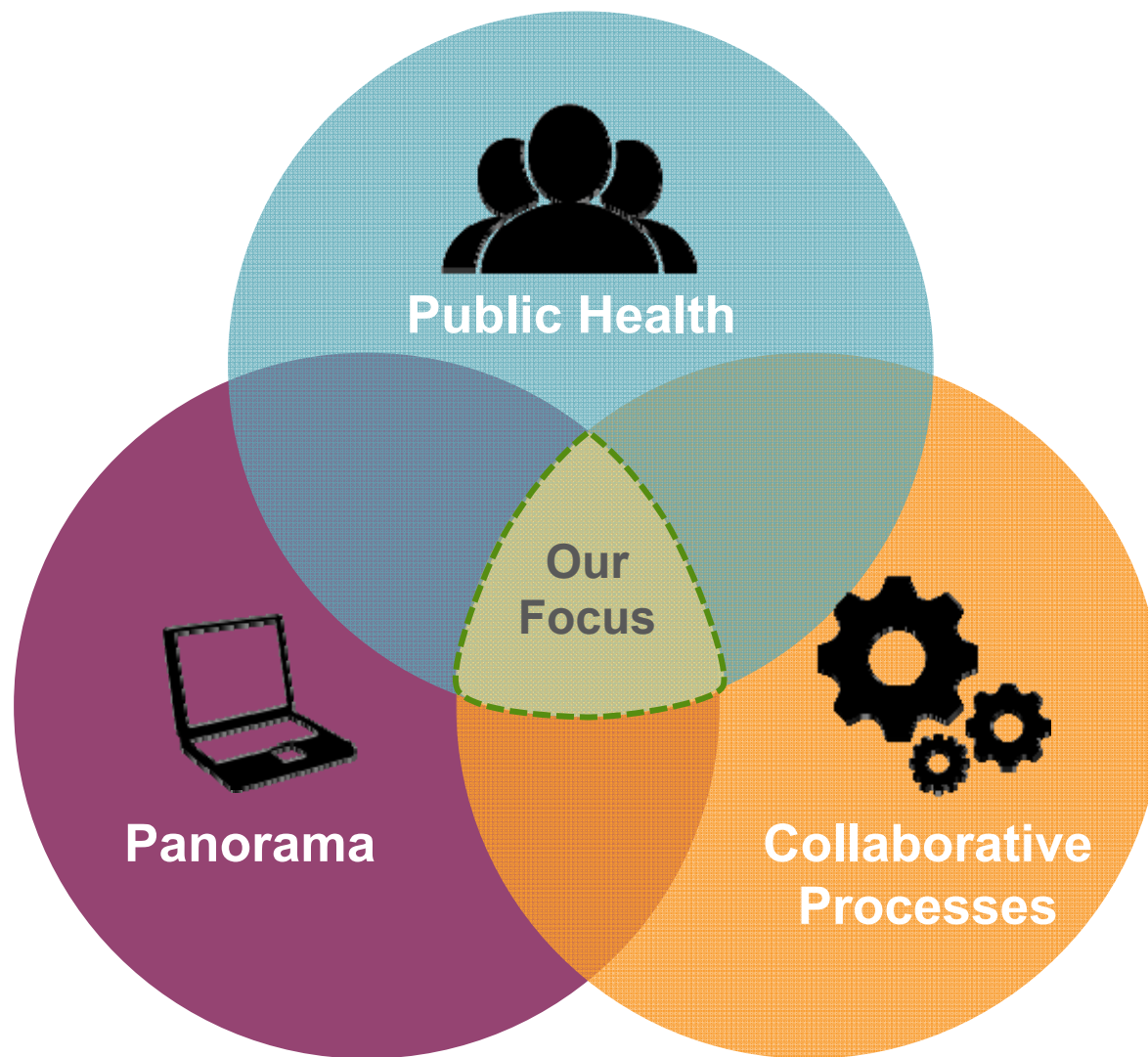
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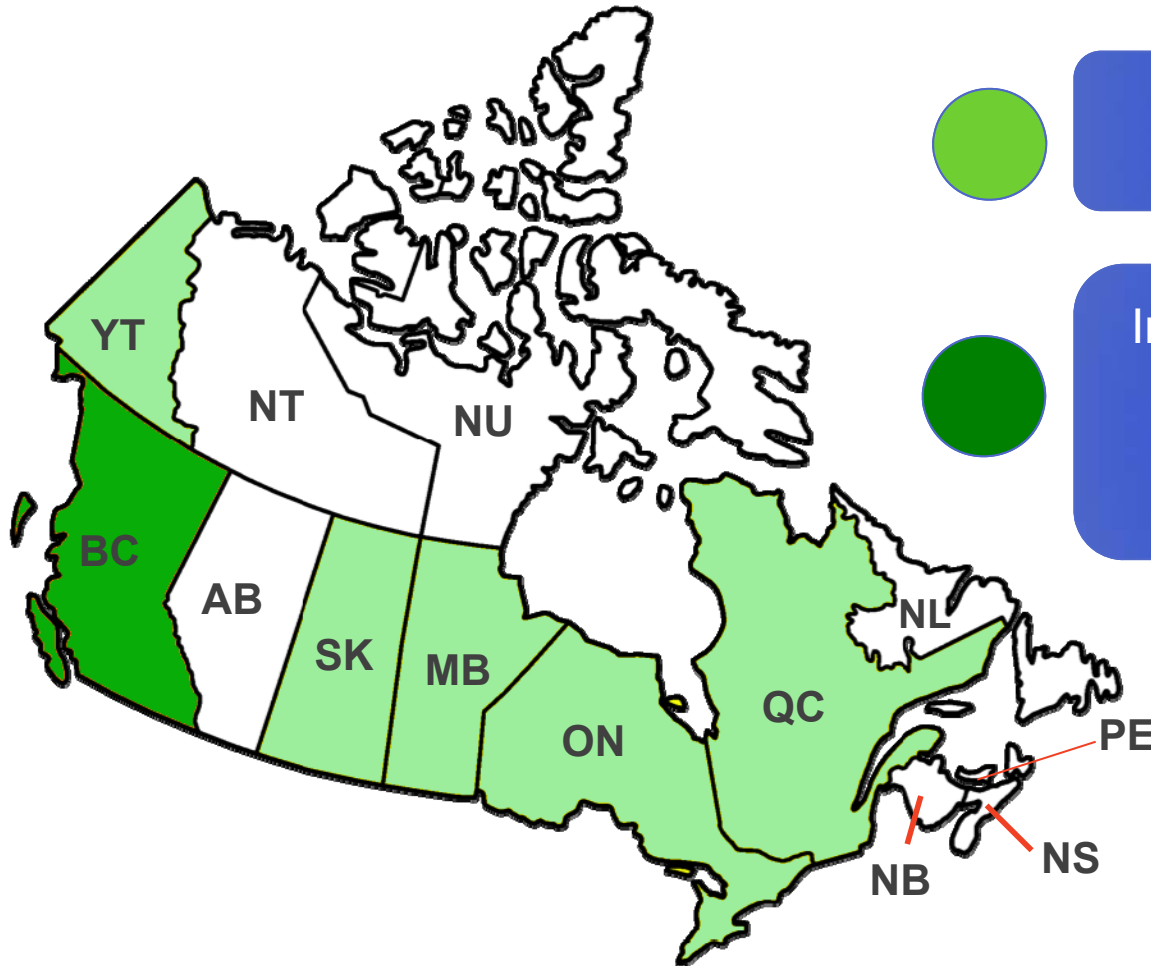
Context



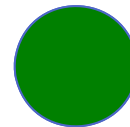
Pan-Canadian Public Health Collaboration



Program Areas

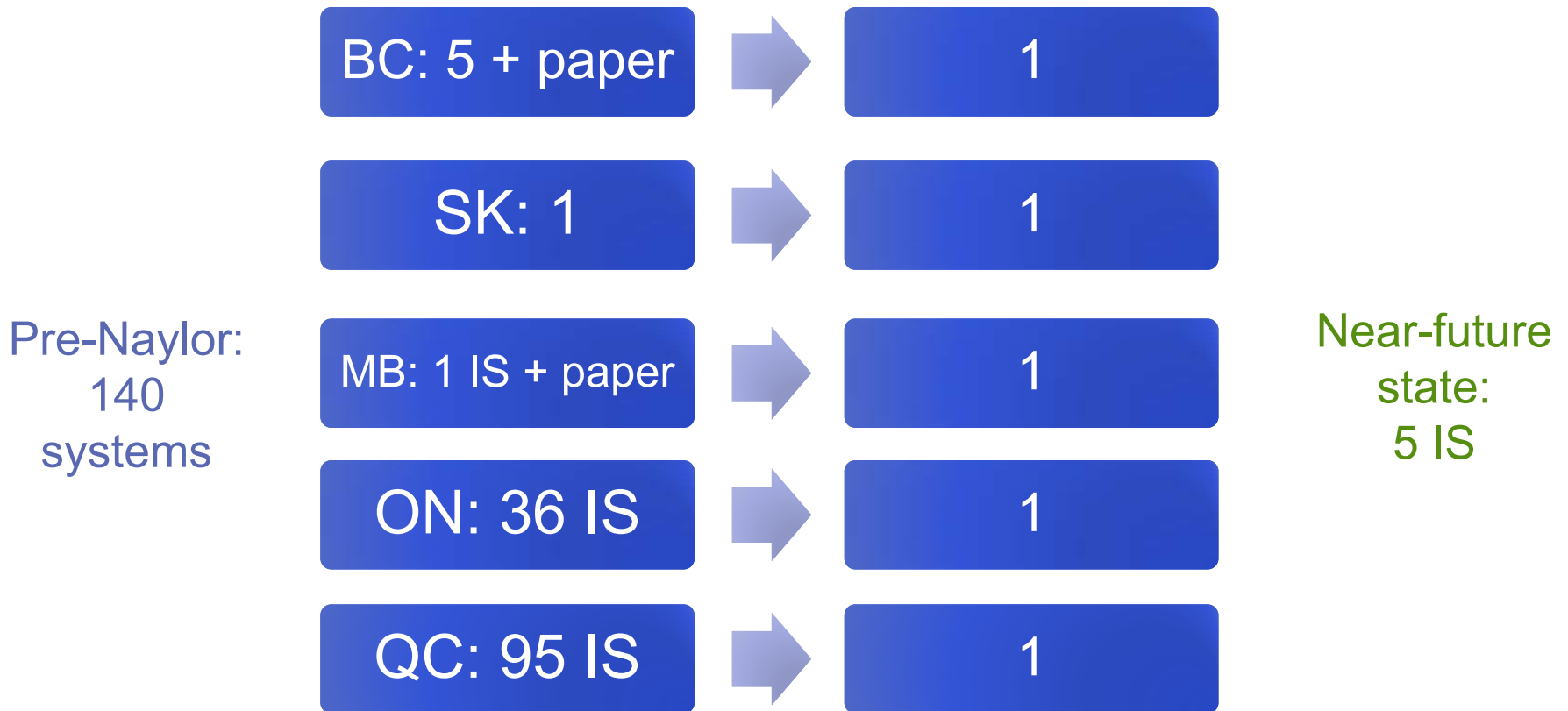


Immunization and
Inventory



Immunization, Inventory,
Family Health
Investigation/Outbreak
Management (partial)

Transformation of Legacy PH Systems



Note: Functional scope of systems varies by jurisdiction; transformation ongoing in some jurisdictions and numbers are subject to change
IS = Information System

Objectives of Session

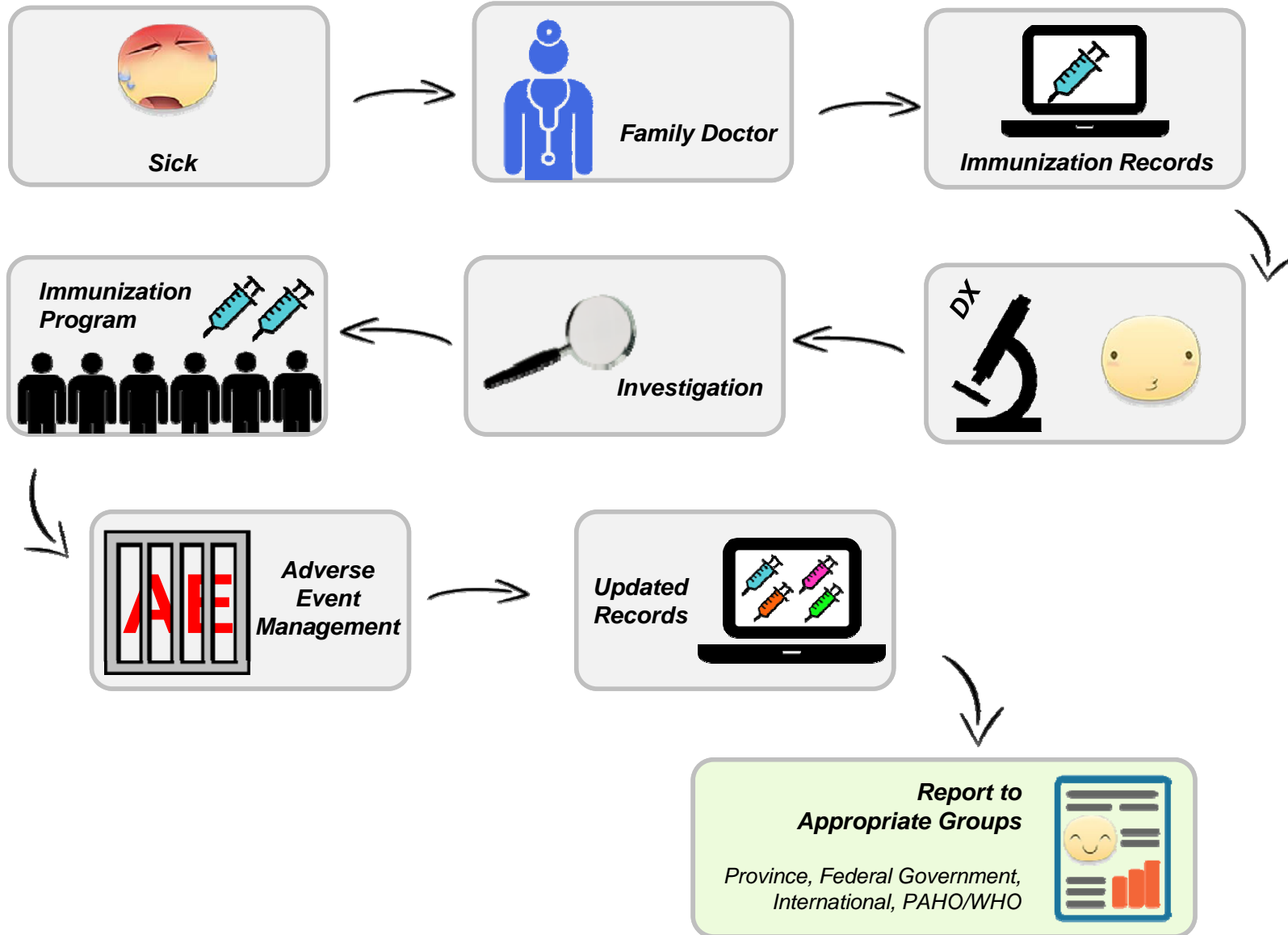


1. Describe the scope of public health functions (clinical and surveillance)
2. Describe the Panorama system and collaborative model
3. Discuss the benefits and challenges of transforming public health business practices as part of deploying a Pan-Canadian application
4. Identify future directions for ongoing public health transformation

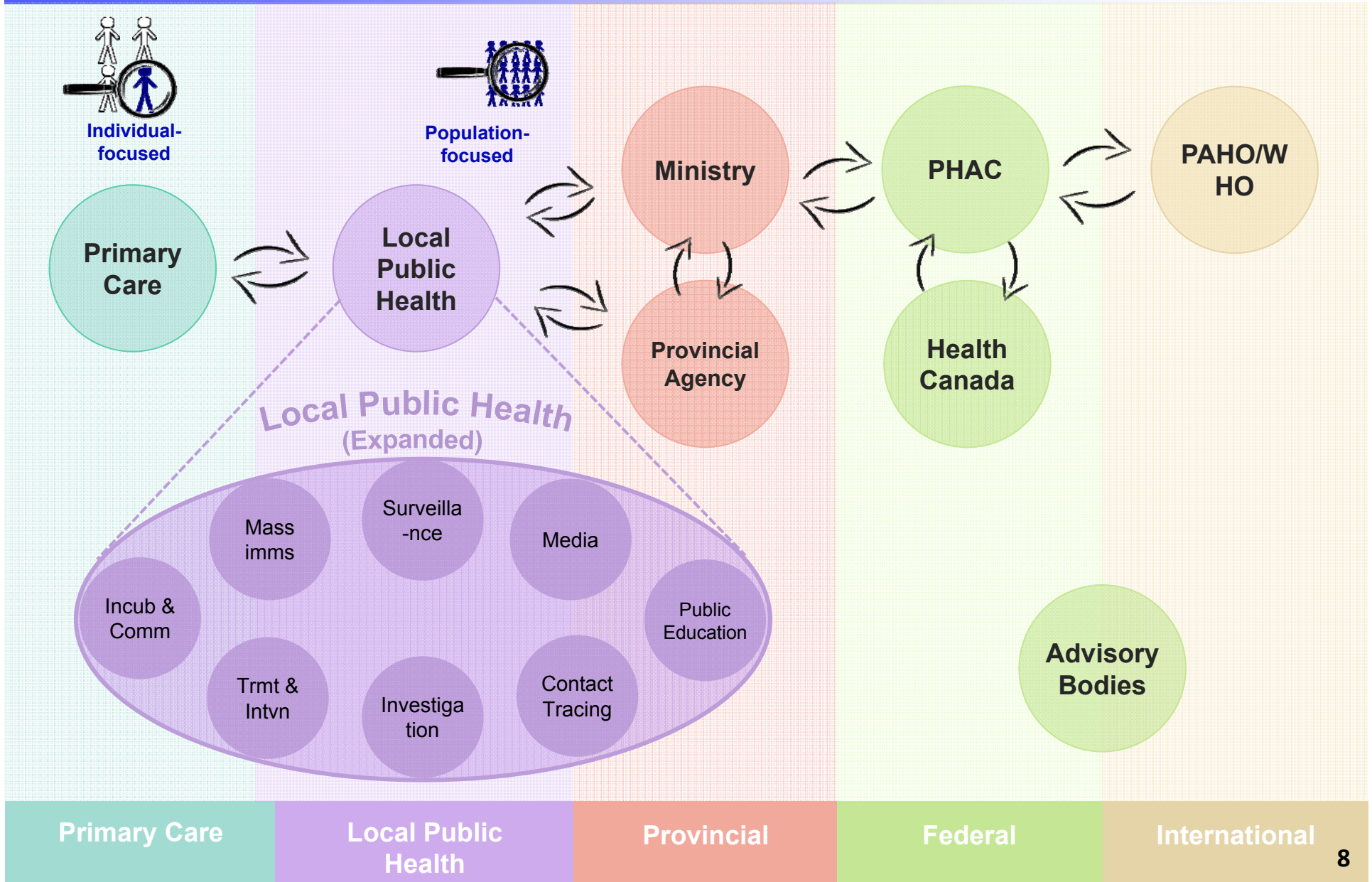


PUBLIC HEALTH FUNCTIONS

A Public Health Investigation



Simplified Public Health Ecosystem





PANORAMA AND COLLABORATION MODEL



Shared Services

Essential Public Health Business Applications

Investigations

Outbreak
Management

Immunization

Family Health

Work
Management

Notifications

Inventory

System encompasses both clinical and surveillance functions to support public health

Variations across Provinces/Territories



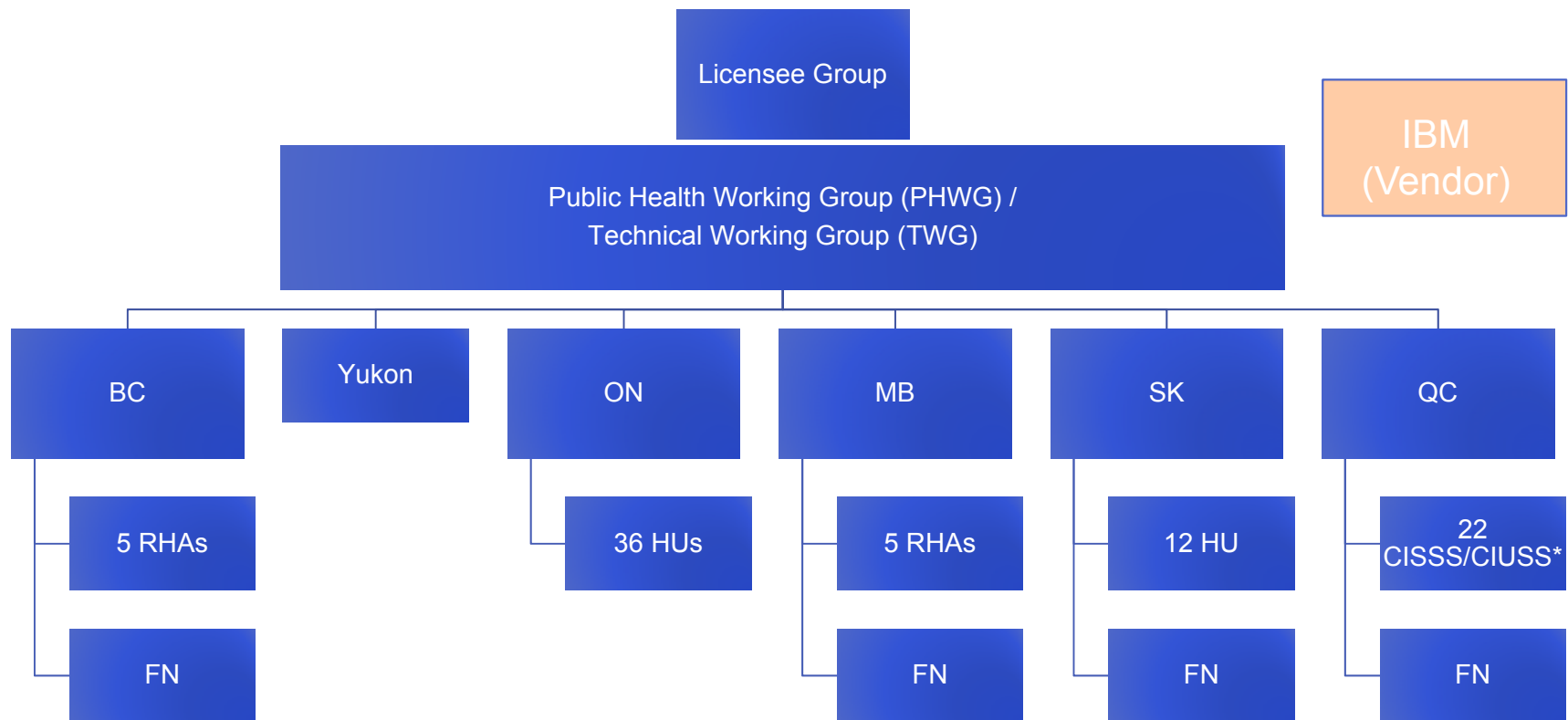
- Panorama is not used the same way across jurisdictions
- Jurisdictions are funding and setting implementation timelines to meet their objectives
- All jurisdictions use Panorama for public health surveillance; clinical use varies
 - BC uses as point-of-care public health clinical system for immunization as well as a source of data for surveillance
 - Quebec considers Panorama as a support for the provincial registry
 - Drives different requirements and use of the functionality
- Panorama is connected to other systems within jurisdictions: changes have downstream costs

Connected Systems	
BC-Y	8
SK	2
MB	7
ON	6
QC	8

Collaboration Model



Panorama product changes are led by a jurisdiction who identifies a need and can fund the change, while causing no harm to other users



*18 RHAs and 95 CSSS are abolished as of April 1 2015

FN = First Nations Partners



PUBLIC HEALTH TRANSFORMATION: BENEFITS AND CHALLENGES

Immunization Decision Support



Immunization Forecaster



Mass Immunization



Lab

Immunization Schedule: Provincial or National

NACI Recommendations:	Recommandations du CCM:
<p>1. Healthy infants: Rotavirus vaccines are recommended for infants starting at 6 weeks (6 weeks and 0 days) and up to 15 weeks (14 weeks plus 6 days). The vaccination series should be completed by 8 months (8 months plus 0 days). (Recommendation – Grade A – good evidence to recommend immunization)</p>	<p>1. Nourissons en santé : Les vaccins antirotavirus sont recommandés pour les nourissons âgés de 6 semaines (6 semaines et 0 jours) à 15 semaines (14 semaines et 6 jours). La série vaccinale devrait se terminer à 8 mois (8 mois et 0 jour). (Recommandation – Catégorie A – données probantes suffisantes pour recommander l’immunisation)</p>
<p>2. Preterm infants: Infants who are between 6 weeks (6 weeks and 0 days) and 8 months (8 months plus 0 days) of chronological age who are healthy and not hospitalized, can receive RotaTaq® or Rotarix™. The first dose should be given between 6 weeks (6 weeks and 0 days) and up to 15 weeks (14 weeks plus 6 days). The vaccination series should be completed by 8 months (8 months plus 0 days).</p>	<p>2. Nourissons prématurés : Les nourissons qui sont âgés entre 6 semaines (6 semaines plus 0 jours) et 8 mois (8 mois plus 0 jours) d’âge chronologique et qui sont en santé et non hospitalisés peuvent recevoir RotaTaq® ou Rotarix™. La première dose devrait être administrée entre l’âge de 6 semaines (6 semaines et 0 jours) et de 15 semaines (14 semaines et 6 jours). La série vaccinale devrait se terminer à 8 mois (8 mois et 0 jours). (Recommandation – Catégorie A – données probantes suffisantes pour recommander l’immunisation)</p>
<p>3. Immunocompromised infants: Based on the theoretical risk of live attenuated viral vaccines in immunocompromised infants, and very limited data, the use of rotavirus vaccines in these children is not recommended without consultation with a physician specialist or expert in these conditions. (Recommendation – Grade E – Good evidence to recommend against immunization)</p>	<p>3. Nourissons immunodéprimés : D’après le risque théorique associé aux vaccins à virus vivants atténués chez les nourissons immunodéprimés, et les données très limitées relatives à ces enfants, l’utilisation de vaccins antirotavirus chez ces enfants n’est pas recommandée sans consultation préalable auprès d’un médecin spécialiste ou d’un expert dans ce domaine. (Recommandation – Catégorie E – données probantes suffisantes pour dissuader l’immunisation)</p>
<p>4. Infants with a history of intussusception: NACI recommends, based on current evidence, that infants with a history of intussusception should not be given rotavirus vaccines. (Recommendation – Grade E – good evidence to recommend against immunization)</p>	<p>4. Nourissons ayant des antécédents d’intussusception : En s’appuyant sur des données récentes, le CCM recommande que les nourissons ayant des antécédents d’intussusception ne reçoivent pas de vaccins antirotavirus. (Recommandation – Catégorie E – données probantes suffisantes pour dissuader l’immunisation)</p>



Schedule / Cohort	Dose 1			Dose 2			Dose 3					
	Min Age	Due	Overdue	Min Age	Due	Overdue	Min Age	Due	Overdue	Min Age		
Schedule 1 - Basic schedule - infants starting at 14 wks + 6 d of age and not immunized for Rotavirus												
Forecast/Validate - Rot 1 (Rotarix)	42 d	2 mos of age	2 mos + 1 d	14 wks + 6 d	4 wks from last valid or invalid dose (both doses see Rot 1)	4 mos of age	Max of min interval AND Due Date + 1 d	8 mos	END OF SERIES			
Infant must be < 15 wks to be forecasted for dose 1; if dose 1 given > 15 wks, still forecast dose 2 if child is < 8 mos of age												
Validation-only - Rot 1 (Rotarix)	15 wks	15 wks	15 wks	forever	last dose (will be a forecasting dose 1 + 6 mos)							
Infant can still receive Dose 1 of Rot 1 if < 15 wks of age for Dose 1 - no end date as doses should not be evaluated if given < 8 mos of age												
Validation-only - Rot 1 (Rotarix)				4 wks from last valid or invalid dose AND 8 mos + 1 d of age	Dose 1 + 4 wks from last valid or invalid dose	Due Date + 1 d	forever	END OF SERIES	8 wks from last valid or invalid dose AND 8 mos + 1 d of age	Dose 2 + 4 wks from last valid or invalid dose	Due Date + 1 d	forever
Additional Validation-only doses for Dose 2 and 3 (Dose 3 is for additional dose required if at least one dose in history is Rot-5 or unknown) to account for doses given < 8 mos of age												
Forecast/Validate - Rot 1 (Rotarix)				8 wks from last valid or invalid dose (Dose 1 of Rot-5 or Unknown received)	4 mos of age	Max of min interval AND Due Date + 1 d	8 mos	8 wks from last valid or invalid dose (Dose 1 or 2 of Rot-5 or Unknown received)	Dose 2 + 4 wks from last valid or invalid dose	Due Date + 1 d	8 mos	
If any dose received in history is Rot-5 (RotaTaq) OR Unknown, forecast 2nd dose of Rot-1 (Rotarix)												
Validation-only - Rot-5 (RotaTaq) or Unknown	42 d	2 mos of age	2 mos + 1 d	forever	8 wks from last valid or invalid dose (Dose 1 of Rot-5 or Unknown received)	Dose 1 + 4 wks from last valid or invalid dose	Due Date + 1 d	forever	8 wks from last valid or invalid dose (Dose 1 of Rot-5 or Unknown received)	Dose 2 + 4 wks from last valid or invalid dose	Due Date + 1 d	forever
Notes to account for Dose 2 and 3 being given < 8 mos of age												

Benefits and Challenges



Benefits

- Allows for accurate evaluation of a client's immunization record, even when they are off-schedule
- Jurisdictions who implemented earlier were able to share business rules
- Process revealed inconsistencies in practice due to user interpretation of schedules

Challenges

- All jurisdictions had to engage in significant effort to code scheduler
- Updating is still required by each jurisdiction; can be as frequent as 3 times a year

Mass Immunization



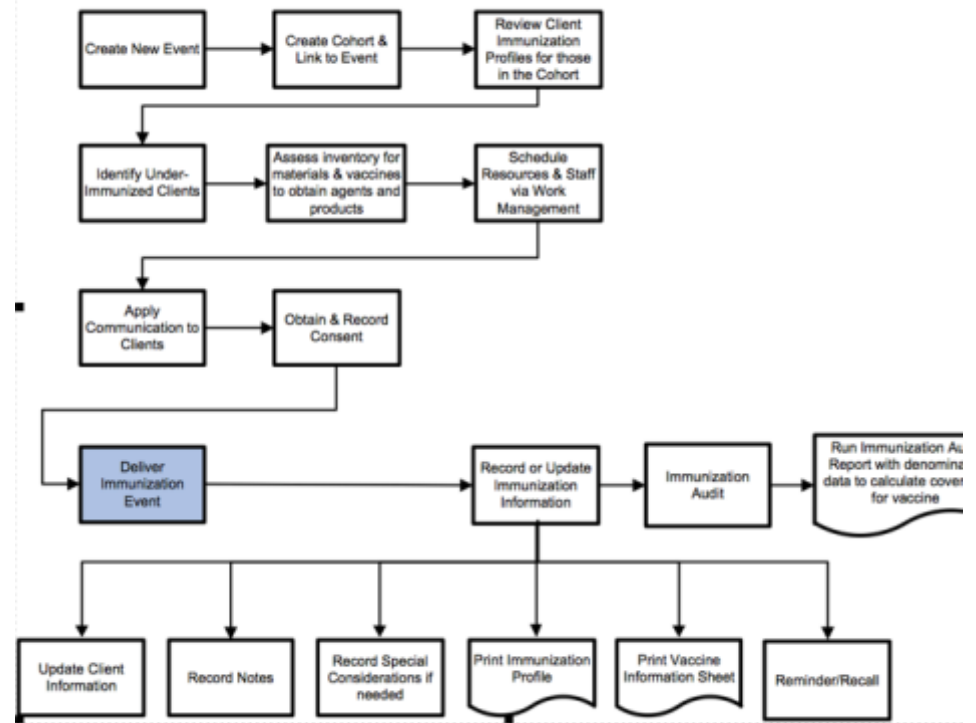
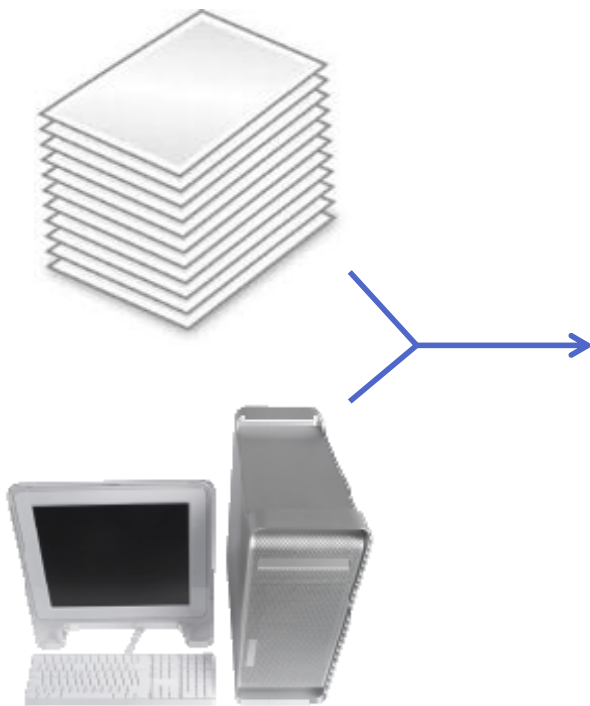
Immunization Forecaster



Mass Immunization



Lab



Benefits and Challenges



Benefits

- Overall changes in workflow and screens streamlined process for all jurisdictions, reducing time to manage mass imms events in some jurisdictions
- Allows public health to quickly scan immunization coverage for a defined cohort, and target and prioritize public health actions accordingly.

Challenges

- Functionality requires robust cohort data
 - Ontario created a separate tool to import client school/grade data

Lab Entry and Terminology



Immunization
Forecaster



Mass
Immunization



Lab

Disease Event History

*Disease:

Causative Agent:

Site(s): Hold Ctrl and click

Available	
<input type="checkbox"/>	Neisseria gonorrhoeae
<input type="checkbox"/>	Cephalosporin-resistant Neisseria gonorrhoeae
<input type="checkbox"/>	Fluoroquinolone-resistant Neisseria gonorrhoeae
<input type="checkbox"/>	Neisseria gonorrhoeae, beta lactamase negative
<input type="checkbox"/>	Penicillinase-producing Neisseria gonorrhoeae
<input type="checkbox"/>	Spectinomycin-resistant Neisseria gonorrhoeae
<input type="checkbox"/>	Tetracycline-resistant Neisseria gonorrhoeae

Benefits and Challenges



Benefits

- Designed collaboratively with a lead jurisdiction
- Accessed experts in jurisdictions

Challenges

- Time consuming
- Required a shift in processes
- Timing of delivery creates challenges for jurisdictions already in production

Overall Benefits



- **Pan-Canadian collaboration minimizes duplication of efforts and expense**
- National collaborative lab project has benefit of moving jurisdictions toward standardized nomenclature and standardized documentation
- Maximizes investments by increased access to product changes
- Reduces duplication of effort across Licensees
- Far larger, more complex system than some jurisdictions could afford on their own
- Provides a forum for better understanding of different models of practice and adopt practice changes where aligned with user needs
- Identify challenges through others' experiences; easier given the different timelines for implementation

Overall Challenges



- Time consuming to achieve consensus
- Staggered deployment timelines mean potential rework for early adopters
- Sufficient difference in workflows that straight adoption/re-use isn't possible
- Need to meet intra-jurisdictional mandate may result in inflexible requirements
- Fundamental differences in strategies and approaches sometimes create different needs amongst jurisdictions (e.g., product enhancement versus stability)
- Tension created by the often conflicting requirements of clinical versus surveillance requirements
- Run the risk of meeting no one's needs and created more complicated code through configuration



FUTURE DIRECTIONS

The Road Ahead



- The road is getting easier to travel
- Shorter term plans:
 - Deploy additional functionality like Adverse Events Following Immunization, Family Health, Investigation and Outbreak Management
 - Integrate with other immunization providers (e.g. through EMRs) to support seamless client care
- Longer term plans:
 - Identify leadership in the development of standards for Clinical Information Systems that are aligned with best practices
 - Determine how to measure and evaluate ‘better’ workflows



Past



Future

Conclusion



“Canada’s ability to contain an outbreak is only as strong as the weakest jurisdiction in the chain of provincial and territorial public health systems”

- Naylor Report

- This forum creates a useful feedback loop between policy and practice across jurisdictions
- ‘Bottom-up’ collaboration focussed on a tool requires a process, investment of resource time, and funding – and isn’t without costs
- Successful because model recognizes regional uniqueness and necessary variations in practice, but embraces the opportunity to standardize public health practice where appropriate

Acknowledgements



- Local public health staff
- Jurisdictional implementation teams
- National Public Health Working Group representatives
- Panorama Coordination Office
- Licensee Group members
- Canada Health Infoway



THANK YOU
QUESTIONS ?
