

# Innovation in the Public Service

September 21, 2016





Dr. Markus Sharaput  
Dalhousie University



# The theory of innovation and its practical challenges.

Dr. Markus Sharaput  
School of Public Administration  
Dalhousie University





# What are we talking about?

- Defining innovation
- Innovation in government
- Government stimulating innovation in others

# Definitions and ideas

- Innovation: Innovation as a goal or outcome
- Being Innovative: Innovation as a course of action
- Innovativeness: Innovation as a quality or characteristic





(c) Getty Images | Published in AvaxiNews.com

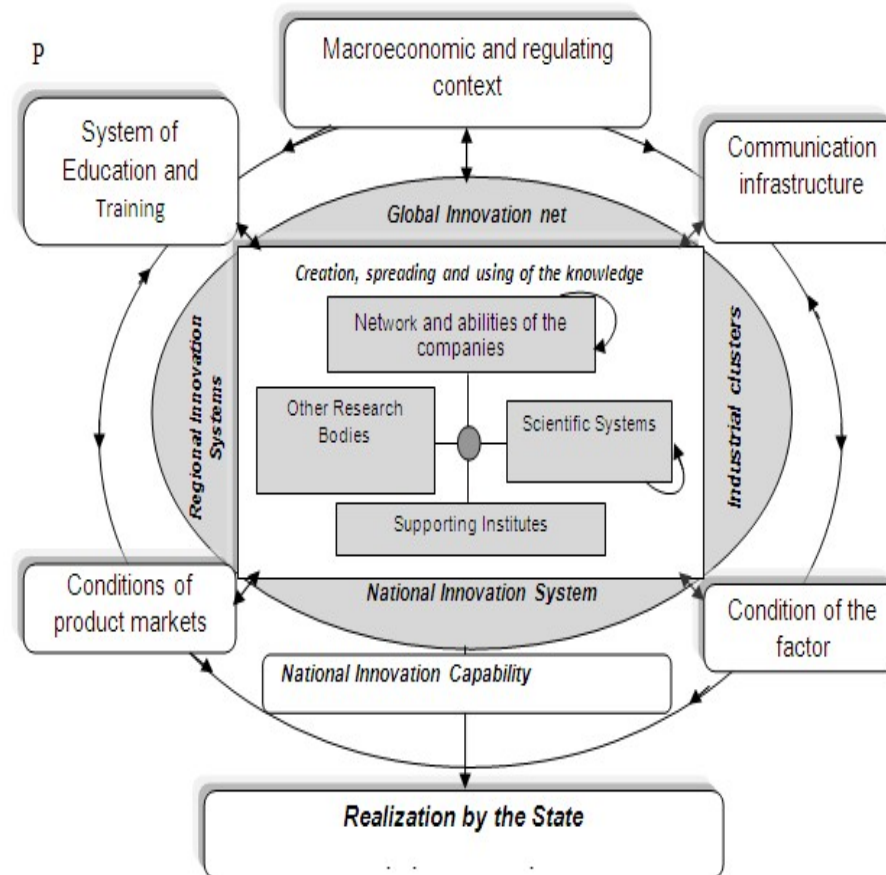
# What do we need? How do we do it?

- Need, goal, purpose, path
  - The power of necessity
- Leadership, risk acceptance, “value visibility”
  - People are often forced to innovate, but it’s hard to force innovation

# Innovation in Government

- At first glance, a little counter-intuitive (9 times out of 10)
- Scale and scope
- Clear goals, persistence, flexibility, collaboration, and coordination – the belief in government as a solution

# Stimulating Innovation



Source: Managing National Innovation Systems. OECD, 1999.

# Government and Innovation Systems

- It's complex
- Context matters – there's innovation, and then there's innovation here
- There is a role for government
  - It connects more than pretty much any other actor
  - Historically, it has a track record of pursuing social and technological change with examples of significant success





Dr. Chris Dambrowitz  
Associate VP –  
Research &  
Innovation  
NAIT





# **Innovation DNA:**

*Engineering an Innovative  
Organizational Culture*

Chris Dambrowitz  
*AVP – Research & Innovation*

- ACTIVE DEVELOPMENT THIS PHASE
- DEMOLITION IN THIS PHASE
- FUTURE NAIT BUILDING
- EXISTING NAIT BUILDING
- POTENTIAL CCR BUILDING
- EXISTING NEIGHBOURHOOD BUILDING



# NAIT Centre for Applied Technologies



**OPENED AUGUST 2016**

**WE ARE ESSENTIAL TO ALBERTA**





School of Applied Sciences & Technology

Skilled Trades

Sectors we work with

JR Shaw School

Health & Life Sci

Our Sectors... Pillars...  
... *SCHOOLS!!*

WE ARE ESSENTIAL TO ALBERTA



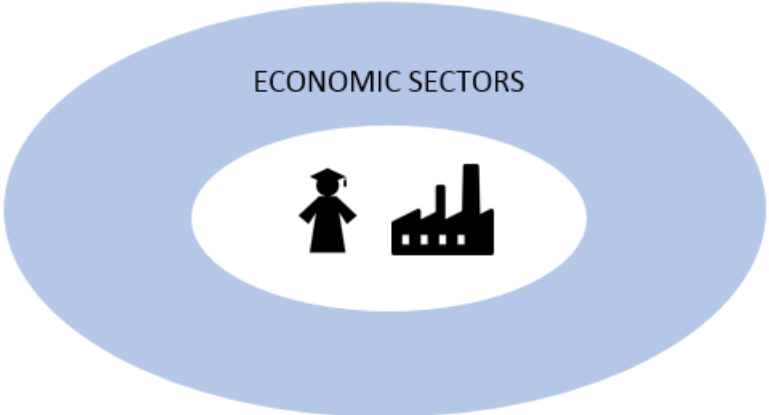
**Every organization should obsess about customer experience the way Apple does *(did...)***



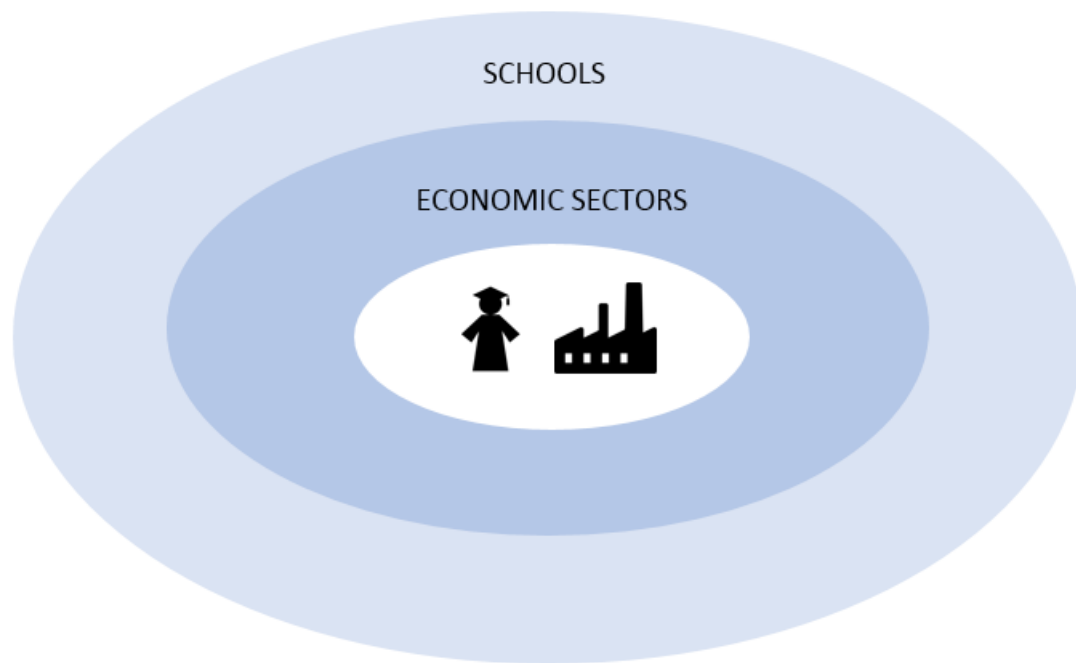


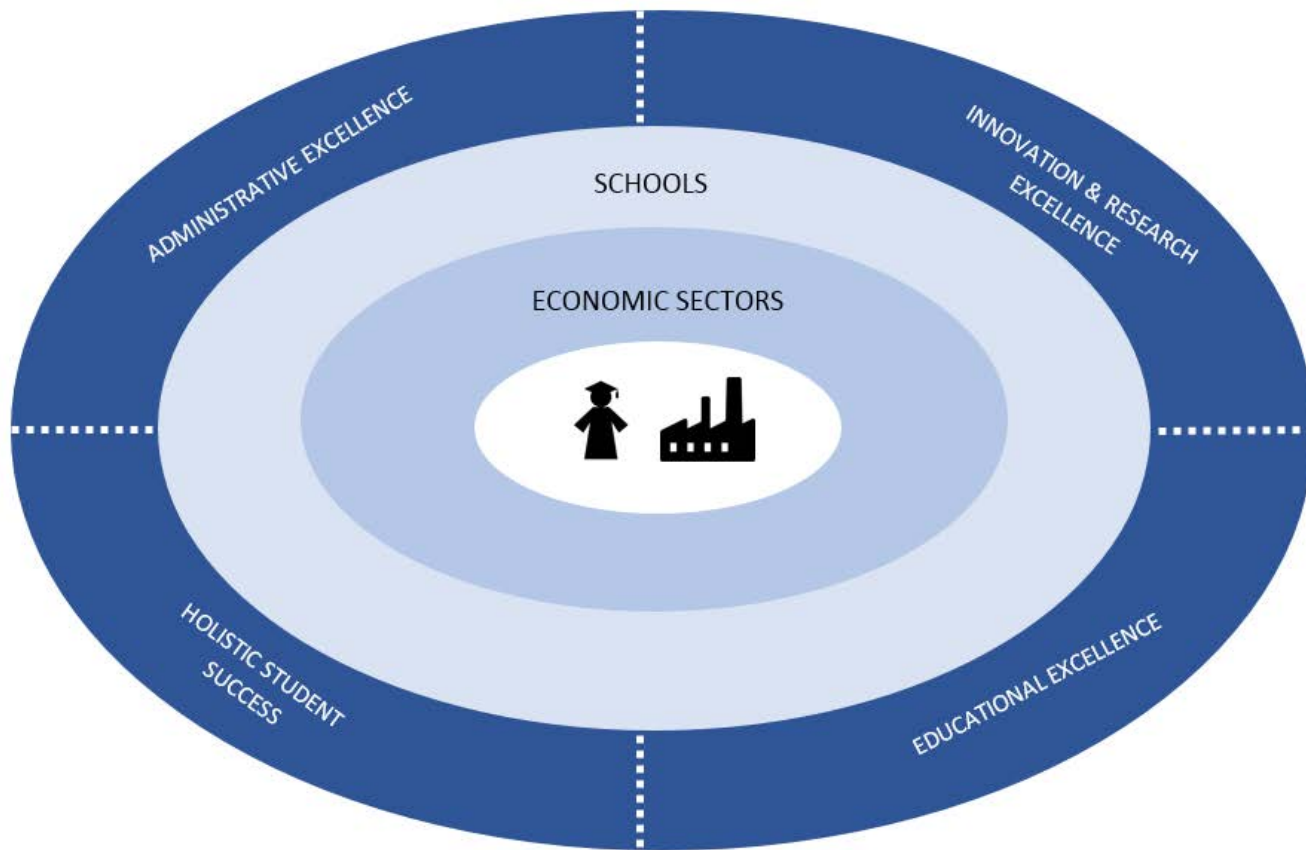
**WE ARE ESSENTIAL TO ALBERTA**



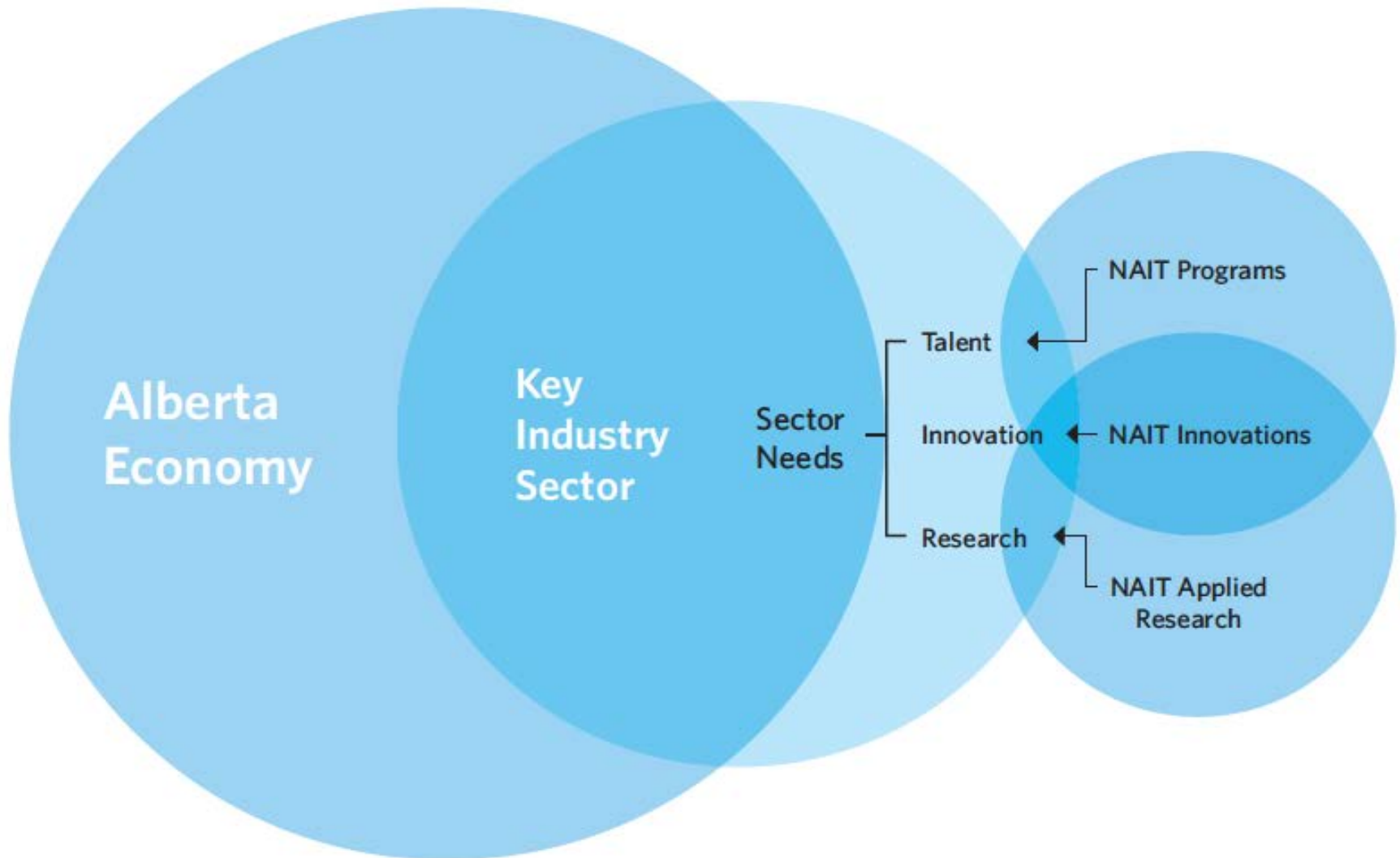








# NAIT's Alignment to Alberta Economy

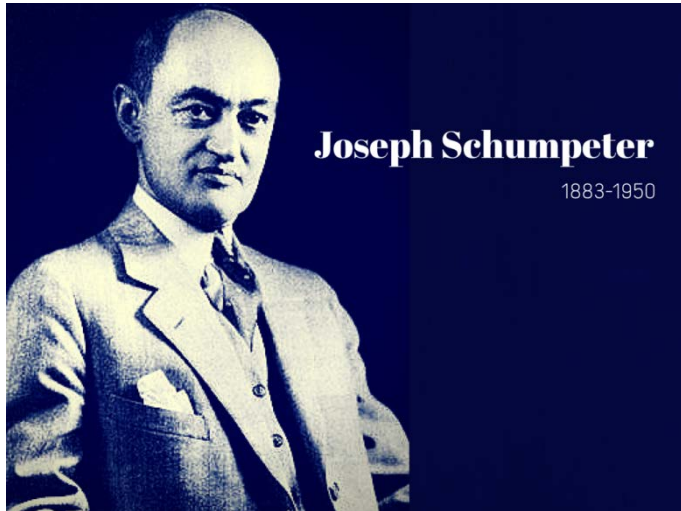


- ***Can innovation be learned***, and made part of a large organization's DNA?
- What are the ***hallmarks of an innovative organization*** – and what pitfalls must it avoid?
- Can we navigate the relationship between ***innovation and organizational change management?***  
*...especially in a \$\$-constrained public-service context?*

# Three Vital Questions

The **IDEA** of an “innovative organization” sure sounds cool...

*Are you SURE innovation is what you want?*



### **Schumpeter’s “Creative Destruction”:**

“... The same process of industrial mutation — *if I may use that biological term* — that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of **creative destruction** is the essential fact about capitalism.”

*“The Process of Creative Destruction” in **Capitalism, Socialism & Democracy**. 1942.*

**A Question to Tackle First**

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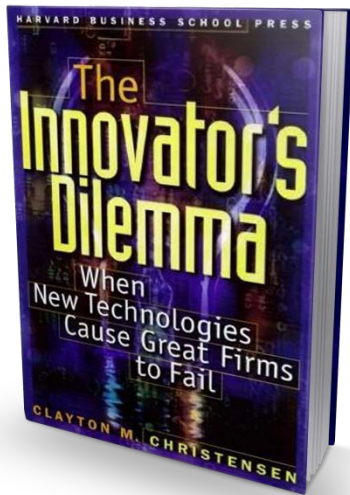


**Innovation Is Risky**

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TO ALBERTA**



# Can innovation be learned, made part of organizational DNA?



*Tweet from a frustrated consultant to clients: "You're not as disruptive as you think you are."*

**Innovation Culture** starts at the level of the **Innovative Individual**.

## Can Innovation Be Learned?

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# Can innovation be learned, made part of organizational DNA?

## The Innovator's DNA

HBR Dec '09

Five “Discovery Skills” = Traits of innovative behaviour

(Good news – they're learnable!!)

- **Associating**

Steve Jobs: “Creativity is connecting things”

- **Questioning**

Ratan Tata: “Question the unquestionable”

- **Observing**

Akio Toyoda: *genchi genbutsu* (“going to the spot and seeing for yourself”)

- **Experimenting**

Edison: “I haven't failed. I've simply found 10,000 ways that do not work.”

- **Networking**

Kent Bowen: “aggressively & proudly incorporate advances not invented here”



# Can Innovation Be Learned?

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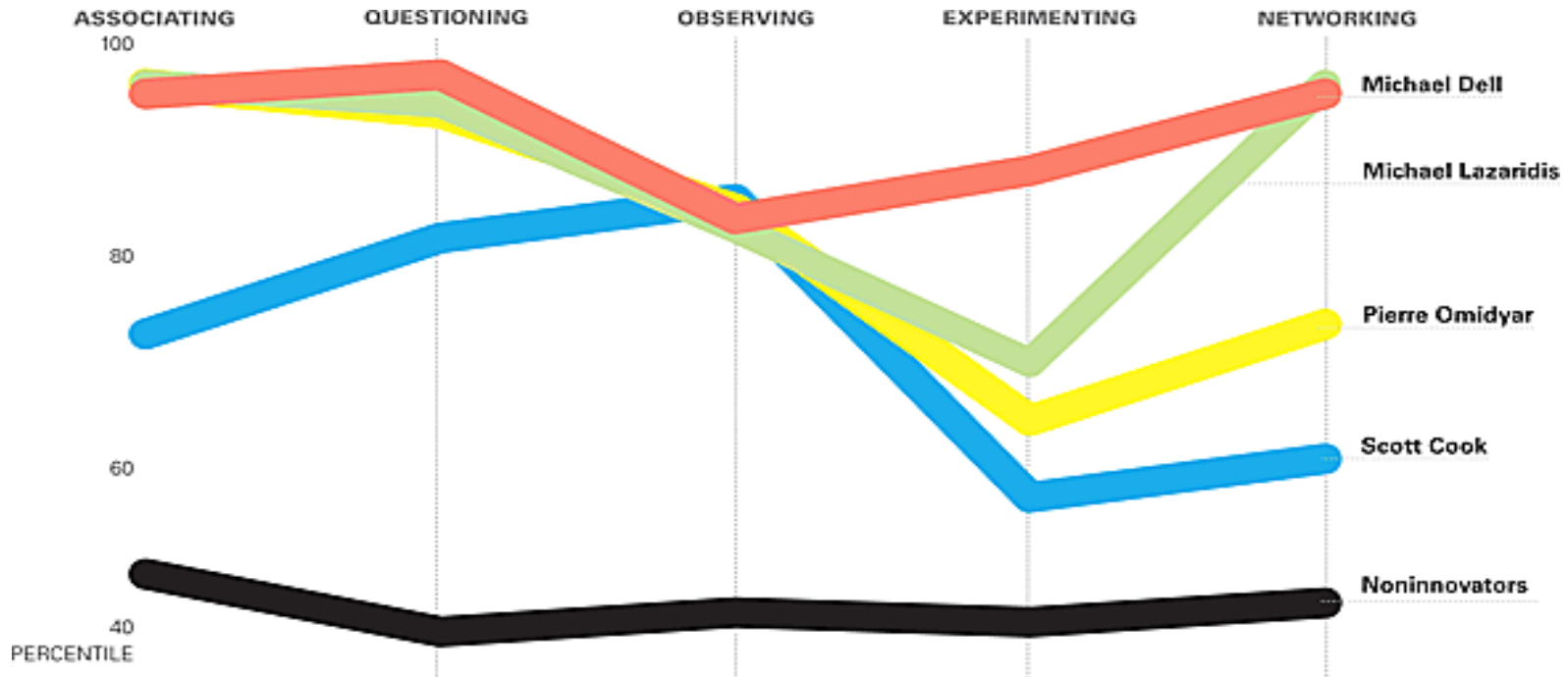




# Can innovation be learned, made part of organizational DNA?

## The Innovator's DNA

HBR Dec '09



# Can Innovation Be Learned?

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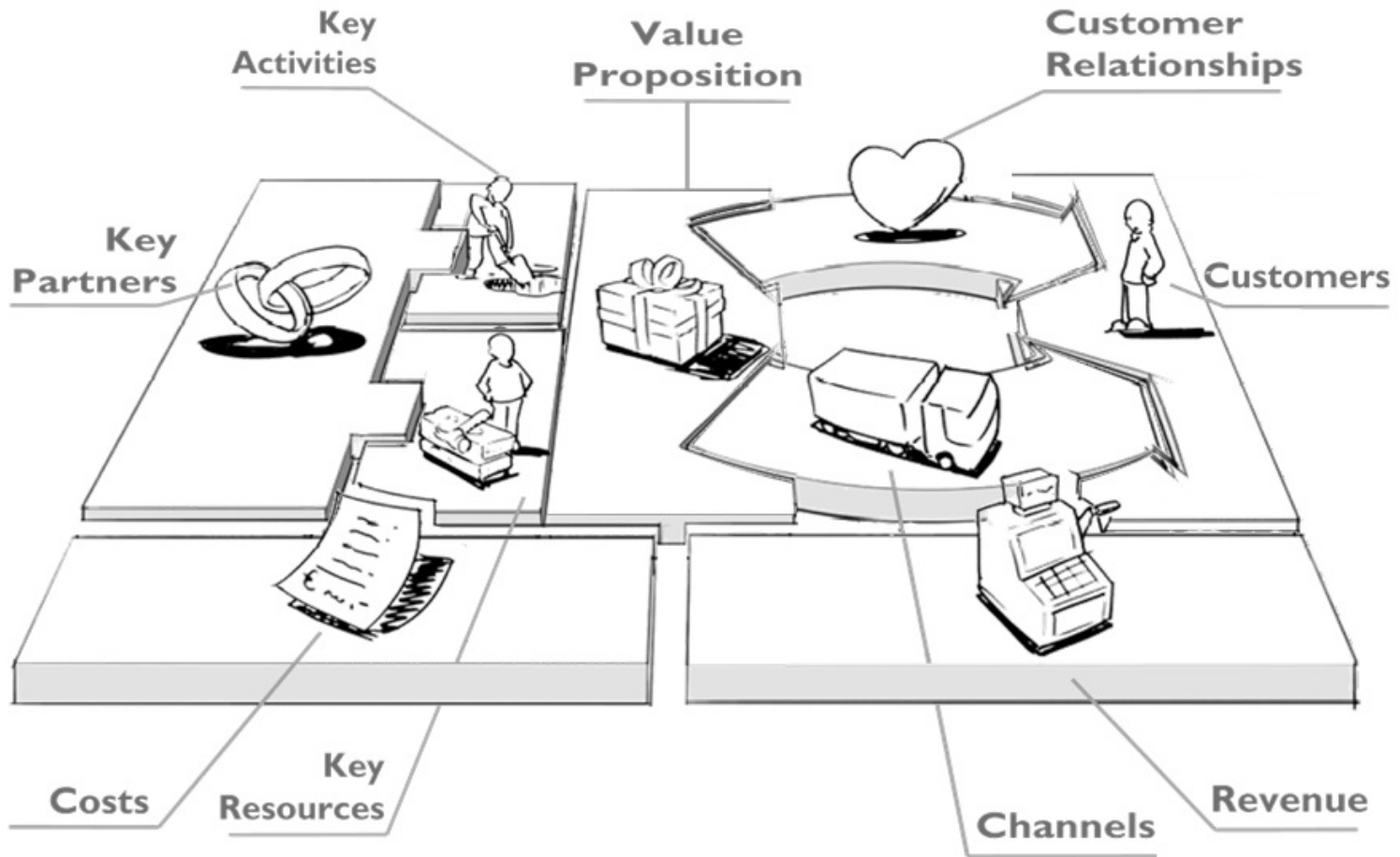


*Unrelenting customer-centric focus.*

**Hallmarks of Innovative  
Organizations**

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ARE** ESSENTIAL  
TO ALBERTA





***Unbeatable integrated value proposition.***

Alex Osterwalder. *Business Model Ontology* (2004) and *Business Model Generation* (2007). [strategyzer.com](http://strategyzer.com)

**Hallmarks of Innovative Organizations**

**WE ARE ESSENTIAL TO ALBERTA**



# It's Not All Clear Sailing...

# Enemies of Innovation:

IBM Executive Business Institute



*“Recognizing the enemies of innovation can be an important step toward preparing a defense. It can also help you avoid becoming one.”*

## Peter Andrews’ Top Four:

- **Bureaucrat:** *seeks to ensure consistency, set limits and reduce risk*
  - killing the innovation with imaginary downsides
- **Gatekeeper:** *blocks access to resources, power and decision-makers*
  - frittering away all early-mover advantage by stalling
- **Deadbeat Sponsor:** *“...a champion of innovators must have an attention span greater than that of a gnat”*
  - hollowing out the project or culture, then replacing the staff
- **Wimp:** *team members who are negative, inept or unreliable*
  - disrupting or maligning the team

Peter Andrews. “Enemies of Innovation” in *IBM Executive Technology Report* (October 2005)

# Enemies of Innovation

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TO ALBERTA





\$2.95

# POGGO

WE HAVE MET  
THE ENEMY  
AND HE IS US



Walt Kelly

# Challenges & Opportunities for Alberta *Reimagining Canada's Industrial Culture of Innovation through Organizational Transformation*

**Gary Bunio**

Senior Director,  
Technology Development



## ***Innovation, Motivation and Fear: A Novel Perspective for Unconventional Oil***

- “Industry is facing a critical point where it is imperative to find new technologies. It has been a significant challenge to find new processes with large reductions of water and CO<sub>2</sub> emissions. ... ***It does not appear to be only a technical issue but also a social one.***”
- “The objective ... is to recommend strategies to enable and stimulate non-incremental innovation. ... ***The single greatest inhibitor of action is fear.***”
- “Creation and innovation requires change and an absence of fear of change. ***Creative belonging should replace fear as the guiding force*** for ... individuals, groups, and beyond.”



# Challenges & Opportunities for Alberta

## *CHANGE: Certain, Pervasive & Accelerating*

- Western Canada's **Industrial Value Chains** and the Global Economy
- **Demographic Changes** within Industries and across Regions
- **Political Change** at the Local, Regional, National and Global Levels
- Increasing Impact of **Exponential Technologies** Across Multiple Sectors
- Changes in Areas Identified as Applied Research & Innovation Priorities:
  - *Sustainability & Climate Change Responses*
  - *Prototyping & Manufacturing*
  - *Entrepreneurship & New Venture Creation*
  - *Simulation*
  - *Bio/Nanotechnologies & Advanced Materials*



# Growth & Leadership through Collaboration

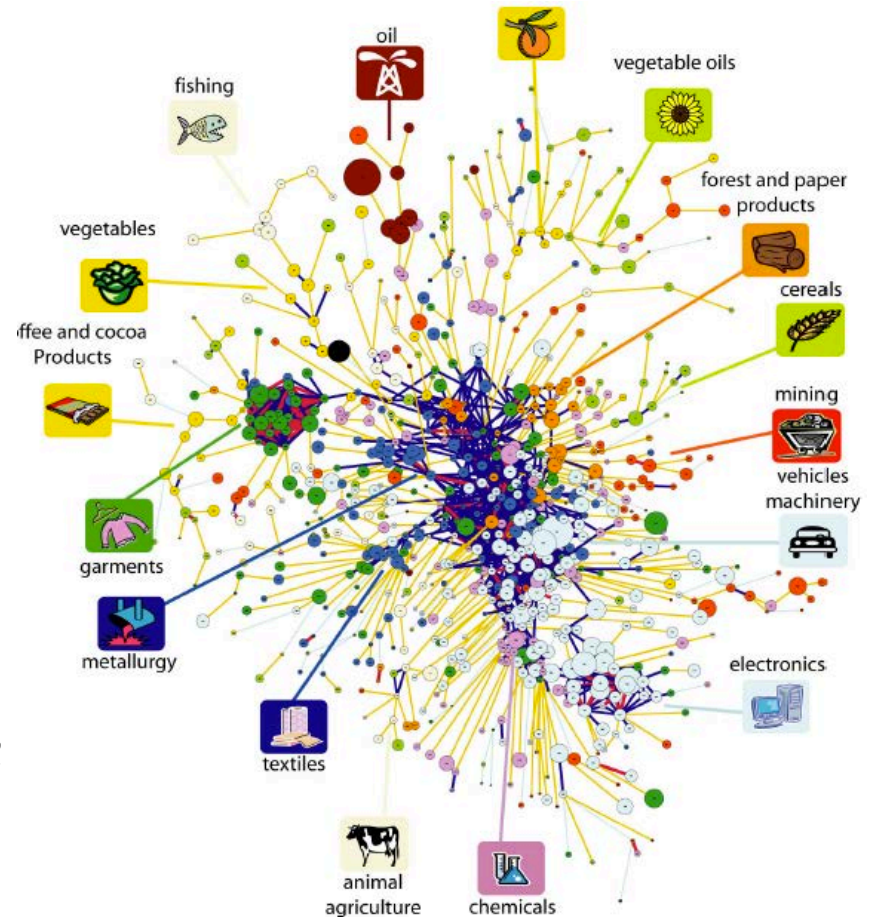
## Industry Roadmaps & Cross-Sectoral Innovation

Alberta's industrial leaders are increasingly focused on exploiting cross-sectoral opportunities for value creation & enhanced environmental performance.

Building new businesses that link value chains opens potential for “*diversifying from within*”.

### ***Industrial Strategic Intelligence (ISI):***

- *Complement our industry-led program review process with **engagement of executive & strategic levels** across industry sectors to emerging areas of industrial investment & activity.*



# Relevant & Responsive Through Innovation





Karen Parker  
Business Solutions  
Analyst  
City of Edmonton





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# The History, Successes and Challenges of Creating an Open City

Karen Parker





# OPEN CITY & INNOVATION

## Overview

# Defining Innovation at the City of Edmonton

Innovation is, at its root:

*“Improving the way we deliver services to our citizens”*

This can be done many ways, by:

- Developing new services or new ways of delivering services to City staff or citizens;
- Improving current processes or practices to be more effective or efficient; or
- Transforming the services we deliver to be responsive to changes in the preferences of our citizens.

# ICE

## Innovation Centre of Excellence

Fostering innovation in order to aid continuous improvement at the City of Edmonton



# Innovation at the City





# ACE

## **Analytics Centre of Excellence**

Improving data-driven decision making at the  
City of Edmonton

# ACE Team



**Analytics**

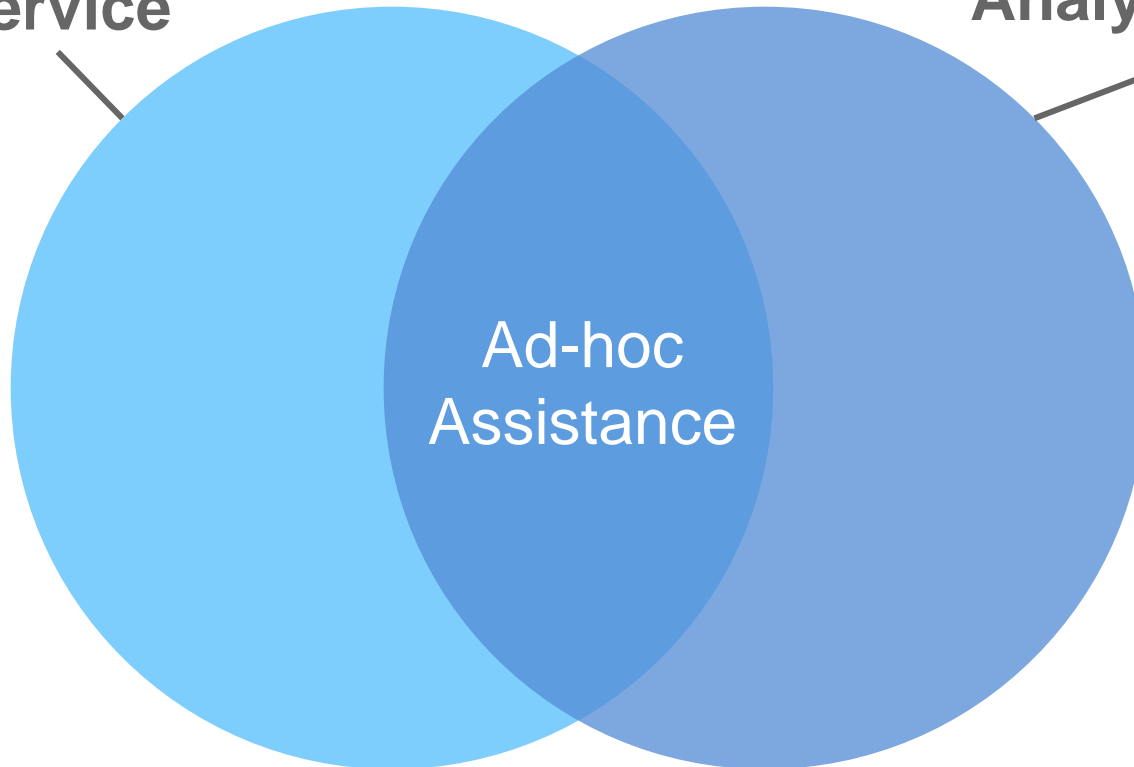
**Business  
Intelligence**

**Data**

# ACE Mandate

**Consultation  
Service**

**Building an  
Analytics Culture**



# OPEN DATA

**Providing openness and transparency to citizens  
through information**

# Open Data Journey

the City of Edmonton way



**2010**  
Open Data  
Catalogue  
Launched



**2010**  
1st Open Data  
Competition



**2013**  
Citizen  
Dashboard  
Launched



**2014**  
National Public-  
sector Leadership  
Award



**2015**  
800+ Open Data  
sets available



**2015**  
Canada Open  
Data Award



**2015**  
Open Lab  
Lunched



**2014**  
1st Hackathon





## Welcome to Edmonton's Open Data Portal

We maintain a wide range of data, charts, maps and APIs from various City departments utilized by our residents, the general public, governmental and private agencies as well as online GIS user communities.



Catalogue



Citizen Dashboard



EPS Dashboard



Open Analytics



311 Explorer (web)



Open Budget



Maps



Open Data Toolkit





# ANALYTICS CONSULTATION SERVICE

**Solving real-world problems with Data & Analytics**



# Alarm Anomalies

Focusing on the problem areas

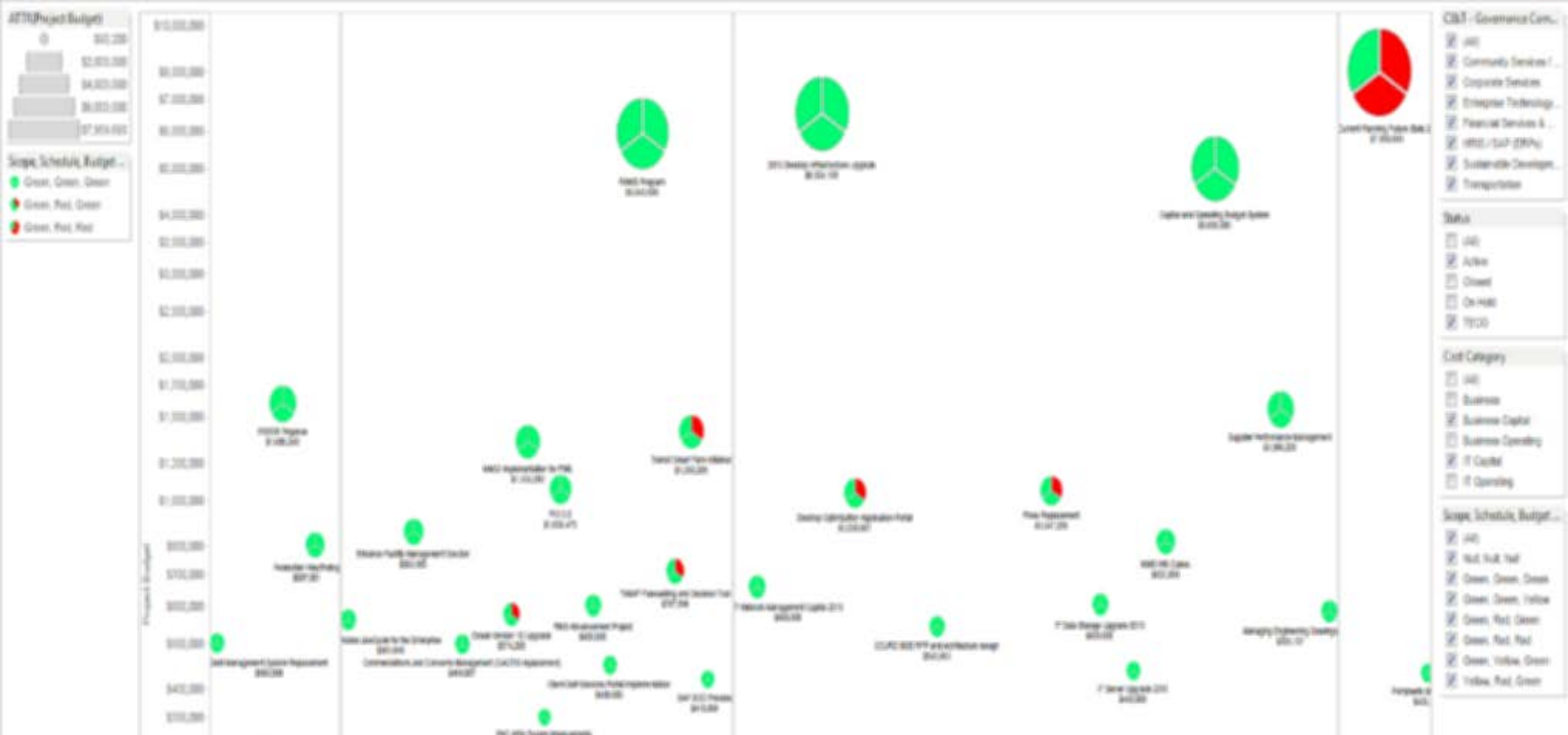


➔ **52% reduction**

In human-error alarms saving 60K in the first year

## Alarm Anomalies

Focusing on the problem areas



# IT PMO

From 6 to 0.5 man days a month

# CHALLENGES & SOLUTIONS

**Becoming an Open City &  
Building an Analytics Culture**





# Becoming an Open City

**Open Data Edmonton** @OpenDataEdm · Aug 24  
What a great way to use data to illuminate an important story: stay away from the river banks for a while

**timbulger** @timbulger  
A visualization of what his happening  
public.tableau.com/views/NSRiverF...

In reply to Troy Pavlek  
**Open Data Edmonton** @OpenDataEdm  
@troypavlek EPS  
the data exists. T

**Open Data Edmon**  
Want to know how  
since we publishe

Check out data.edm  
the new REALTIME  
#opendata #newdat

**Open Data Edmonton** @OpenDataEdm  
#YEG #CrimeData is #opendata! C  
made tinyurl.com/zathh2e @opennd

## Edmonton

Home Catalogue User's guide Developer About Applications Open Data Blog

### Open Data Blog

Guest Blog Post #1 – Matthew Dance

Search

**Recent Posts**

- Guest Blog Post #1 – Matthew Dance
- Engagement is key
- Welcome to the ODPI

**Recent Comments**

- kate murie on Guest Blog Post #1 – Matthew Dance
- Lilian on Guest Blog Post #1 – Matthew Dance
- Bruce Tindall on Welcome to the ODPI
- Jordan on Engagement is key

**Archives**

- September 2016
- January 2016

**Categories**

- collaboration
- engagement
- information

## Open Analytics

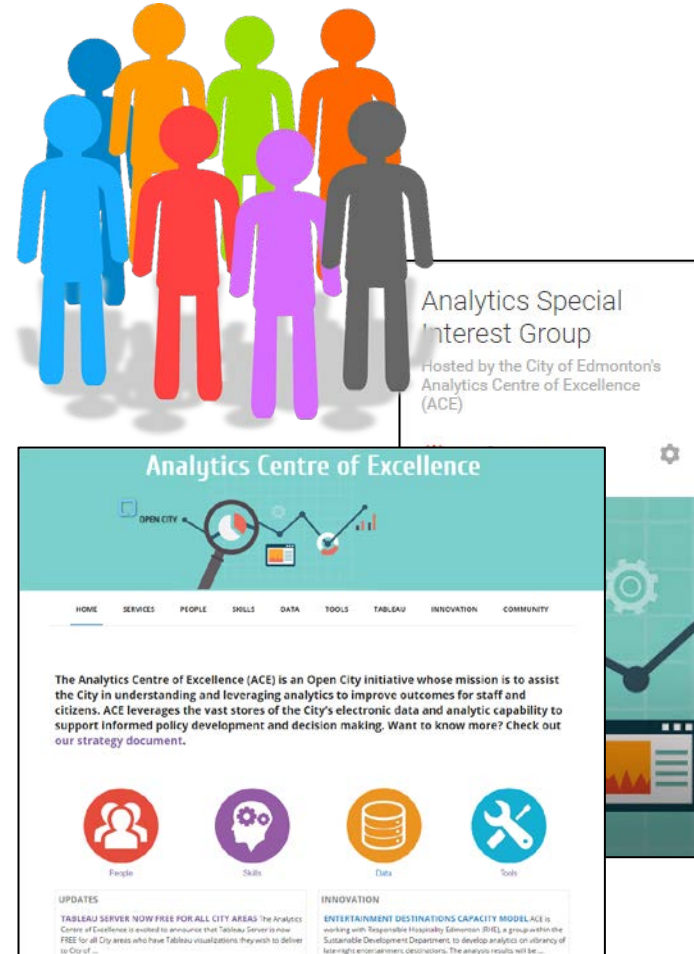
About Projects Resources Outreach

Edmonton Crime Analytics

# Building an Analytics Culture

Fostering  
collaboration and  
connection

Analytics Special  
Interest Group  
Employee  
Collaboration Portal

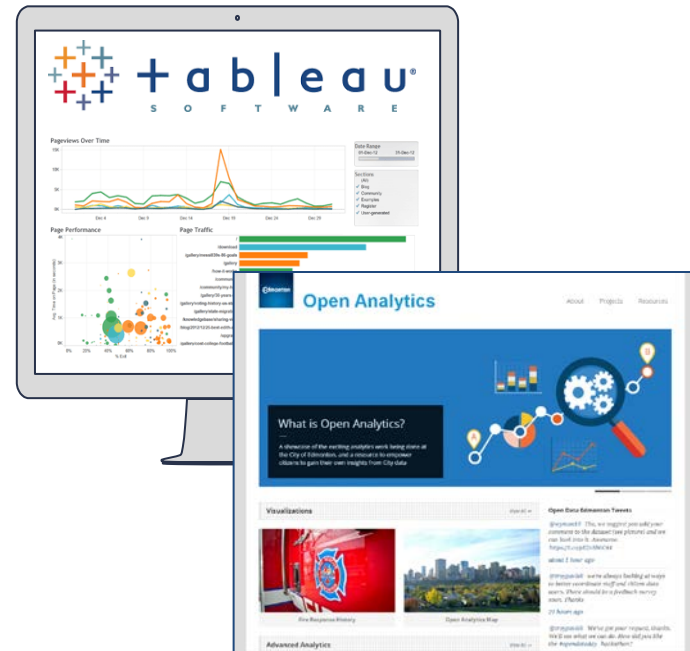


# Building an Analytics Culture

Providing support,  
training, and  
resources

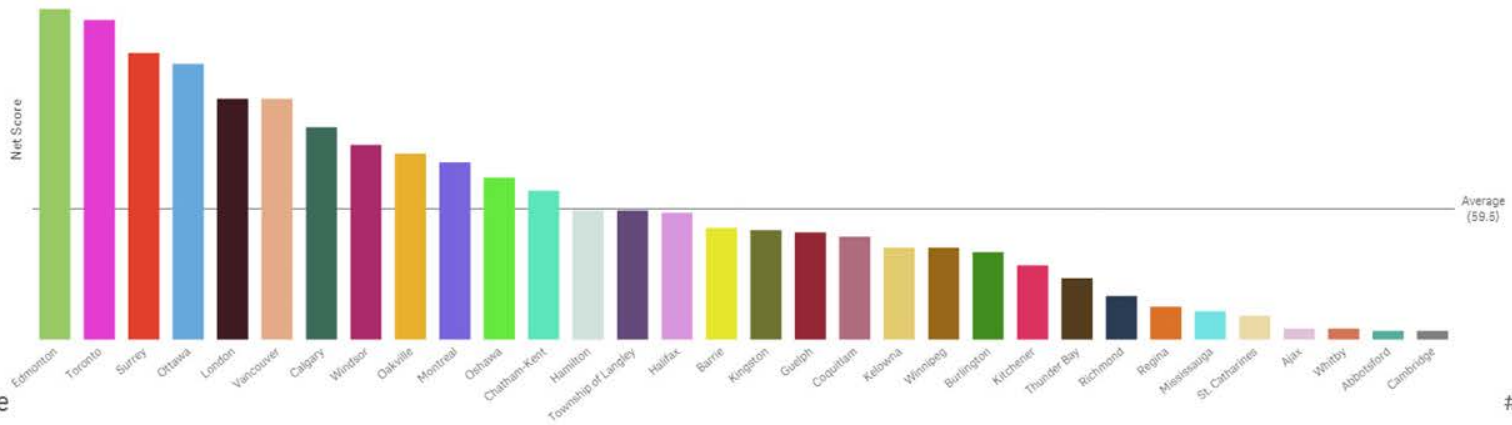
Development of in-  
person training on  
key tools for  
innovation

Citizen resource portal



# SUCCESSSES

# Public Sector Digest Open Cities Index 2015



# of Municipalities

32

Low Score

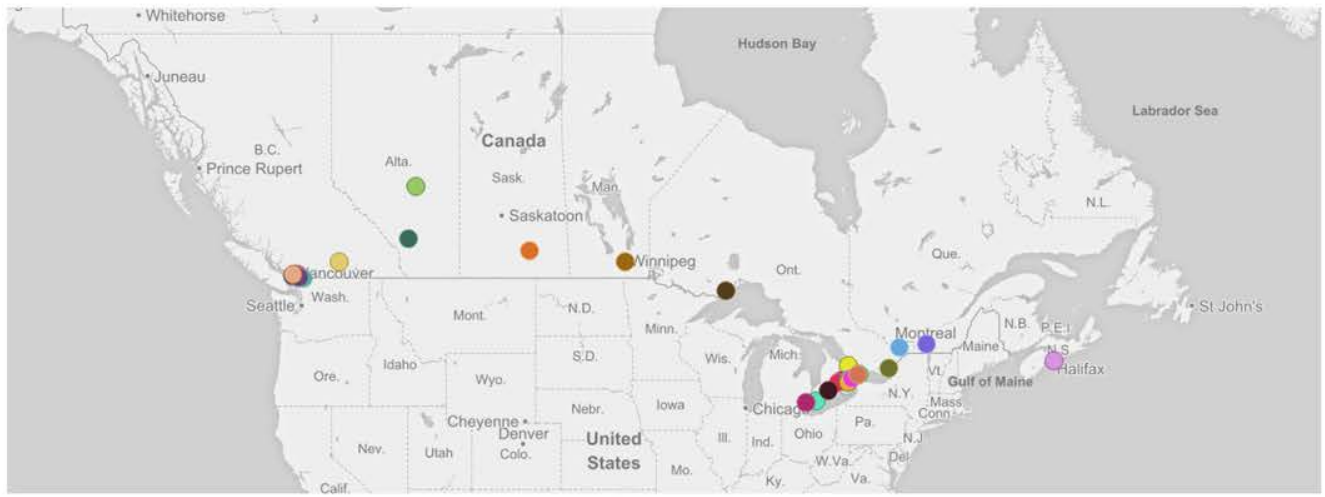
4

Average Score

60

High Score

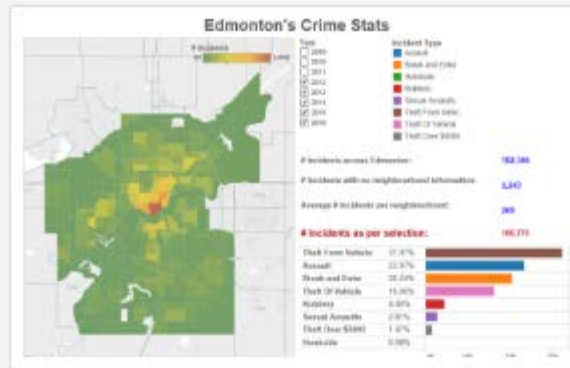
151



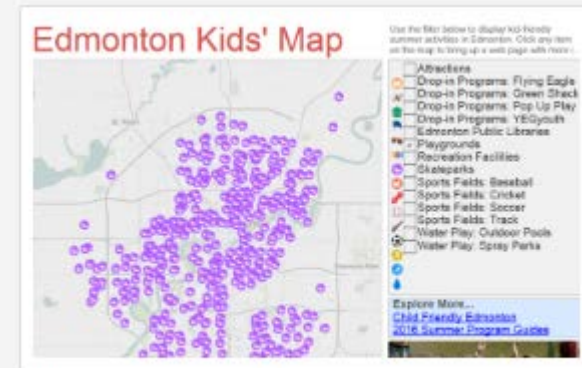
# Open Data Visualizations



Census 2016 Neighbourhood Profiles  
181 views



Edmonton's Crime Stats  
310 views



Edmonton Kids' Map - Summer 2016  
2150 views



# Awards

**2016** Ranked #1 in Canada among 34 cities for Open City Initiative  
Canadian Open Data Award Recipient for Accessibility  
GTEC Award Honouree for Outstanding Service in the Public Sector

**2015** Overall winner of the Canadian Open Data Award for our contribution to Open Data

Best of Show Winner of Community  
iPerformance awards for Contextual  
Analysis of Crime analytics project



# OPEN CITY AND INNOVATION BRANCH 2016 YEAR TO DATE IMPACT

LAUNCHED OPEN DATA  
PROMO VIDEO

 **300**

Views in the first week



Awarded Host City for  
the 2017 Canadian  
Open Data Summit

 **400** New  
Twitter  
Followers

**360**

Attendees for the  
analytics Special Interest  
Group sessions



Recipient of  
Canadian  
Open Data  
Award for  
Accessibility

**80** 

City employees trained  
in Tableau Public

Over  
**4 Million  
Dollars**

of savings identified for 2017



**72**

Projects in progress



Tableau Public  
Visualizations  
Created

**11**



**188**

Post Secondary  
students who were  
engaged through the  
Open Science Program



**30**

Members from around the  
Edmonton area have joined  
the Metro Edmonton Open  
Data (MEOD) Group

**45** Local hackers  
participated in



International  
Hackathon  
Day



**150**



Business stakeholders  
consulted on P2P Project

**13**



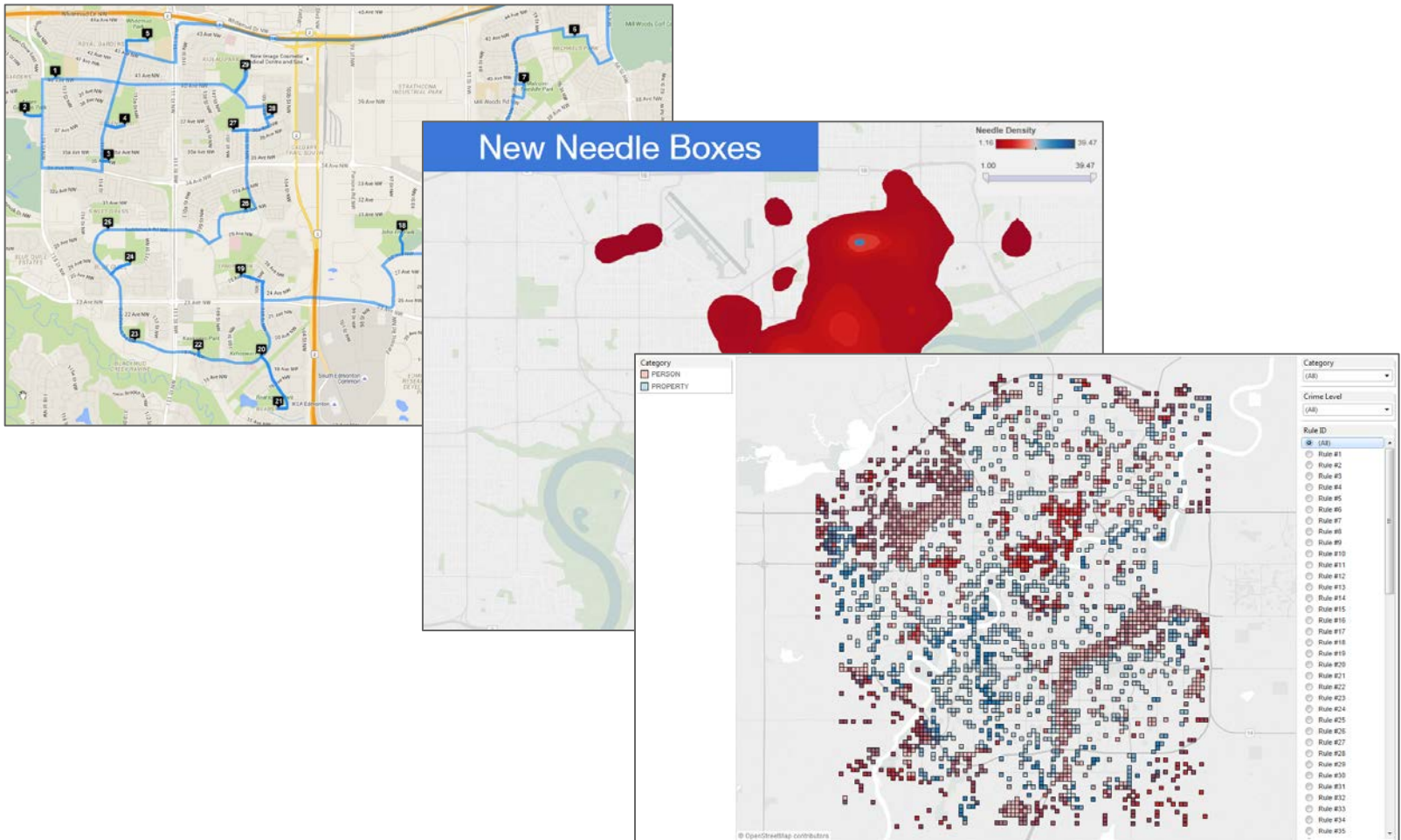
PUBLIC PRESENTATIONS

Ranked #1  
in Canada  
among 34  
cities for  
our Open  
City  
Initiative



WHAT'S NEXT?

# More Advanced Analytics



# More Open Data

- ▷ More “high impact” City datasets
- ▷ Partnering with other levels of government and organizations to host their data

The logo for CODS17 features a stylized triangle on the left, filled with a vertical rainbow gradient from orange at the bottom to blue at the top. To the right of the triangle, the text "CODS17" is displayed in a large, grey, sans-serif font. The "17" is rendered in a blue, stylized font where the numbers are connected. Below this, the words "CANADIAN OPEN DATA SUMMIT" are written in a smaller, grey, all-caps, sans-serif font.

CODS17  
CANADIAN OPEN DATA SUMMIT

May 30 - 31, 2017



# Thanks!

Karen Parker, Business Solutions Analyst  
Analytics Centre of Excellence  
Open City & Innovation, City of Edmonton

[karen.parker@edmonton.ca](mailto:karen.parker@edmonton.ca)  
<http://ace.edmonton.ca>



Dr. Christian Felske  
General Supervisor –  
Engineering  
Innovation  
City of Edmonton



# Turning Your Trash Into Treasure

## Applied Innovation at the City of Edmonton

Christian Felske Ph.D. P.Eng.  
General Supervisor – Engineering Innovation  
Utility Services

fmi-igf Edmonton Chapter

Utility Services  
City Operations

Edmonton



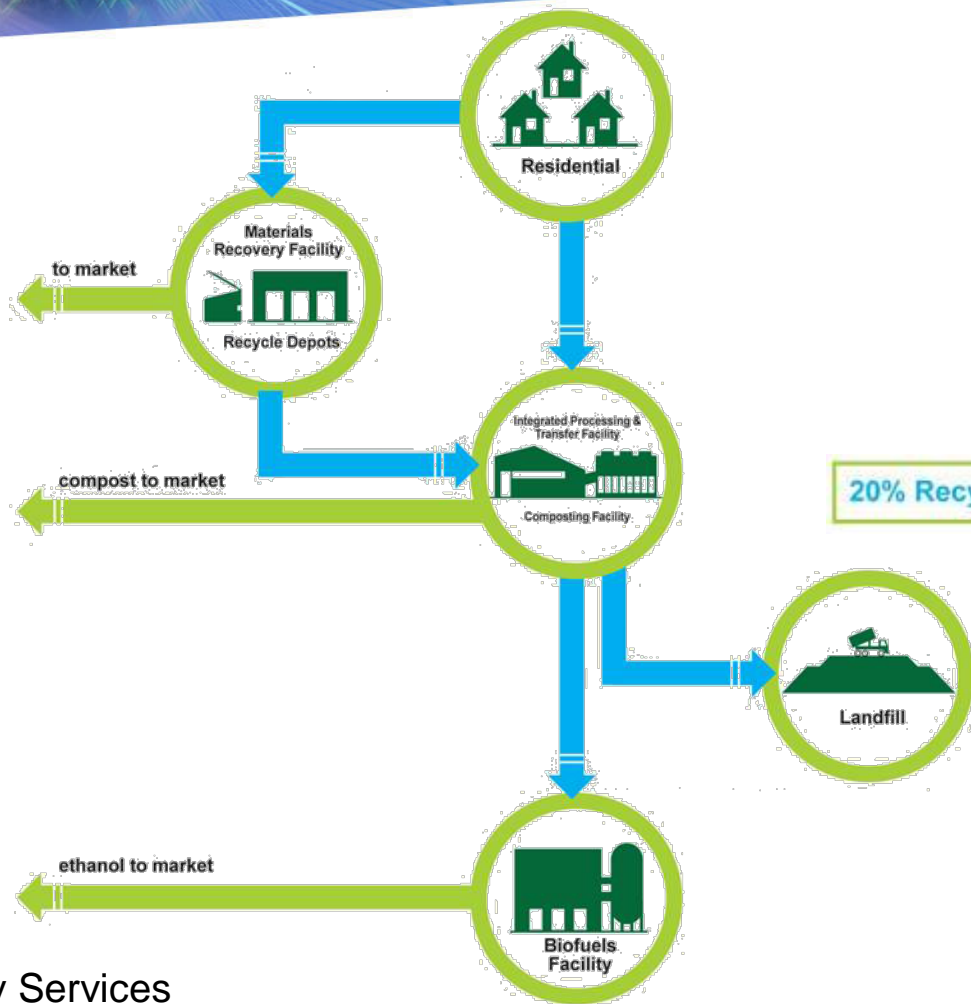
# 10 Year Search for New Landfill



Utility Services  
City Operations

Edmonton

# Our Vision - Our Goal



90% residential  
waste diversion  
from landfill

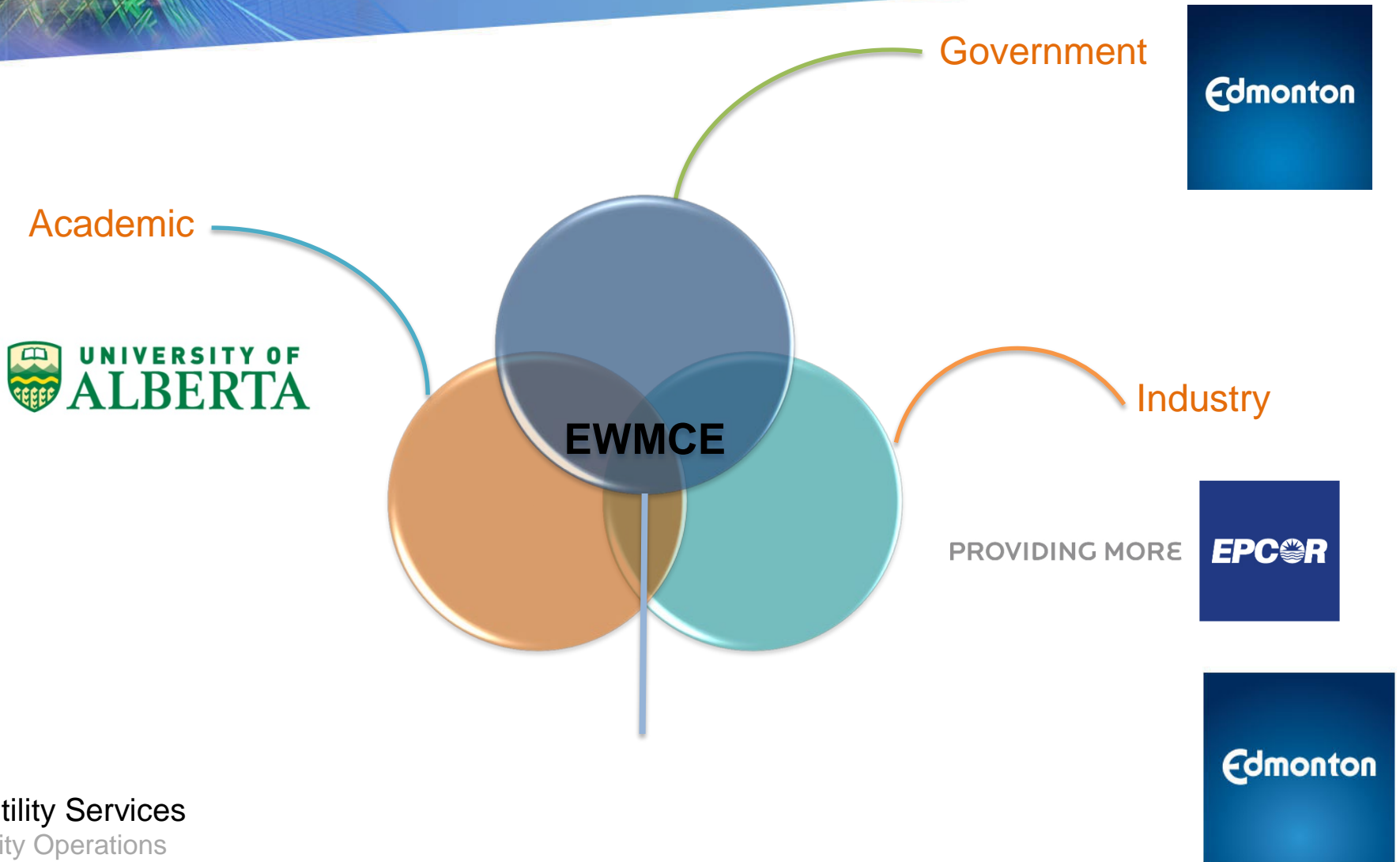
20% Recycled; 40% Composted; 30% Biofuels; 10% Landfill

# Edmonton Waste Management Centre

- 550 acres
  - Twelve waste processing facilities
  - Two major research facilities
  - Closed Landfill
  - Sewage biosolids storage/recycling lagoons
- Nine contractors, partners, tenants
- Over 500 employed today



# The Edmonton Waste Management Centre of Excellence



# R&D and Training Infrastructure

## Embedded in \$1.5B of World Class Operating Facilities



Gold Bar  
Wastewater Treatment Plant



Clover Bar  
Solid Waste Management Facilities

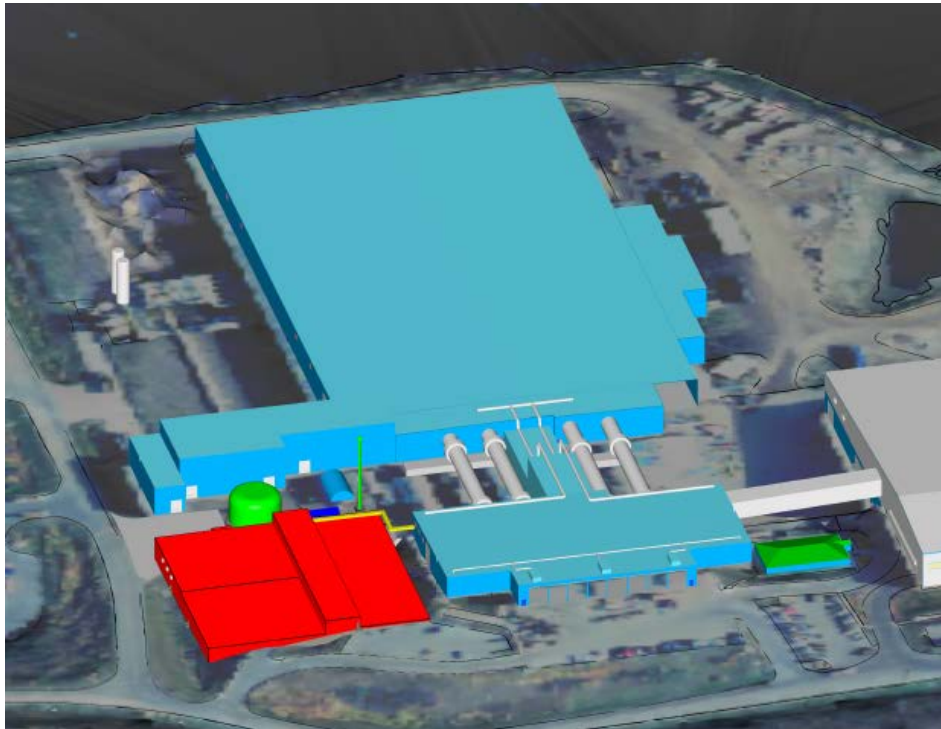


# Research

Type	Characteristics
Mission-oriented	<ul style="list-style-type: none"><li>• Long-range goals of organization rather than specific technical objective.</li><li>• Basic &amp; applied research applied to planning &amp; operations.</li><li>• Provide technical support for operations, including marketing.</li><li>• Pull R&amp;D solutions from traditional research institutions, such as Universities &amp; Scientific Institutions.</li></ul>



# Anaerobic Digestion Facility



Utility Services  
City Operations



# Three Elements of the Waste to Biofuel Project

An aerial photograph of a large industrial facility, likely a waste-to-biofuel plant. The facility is situated in a green, hilly area with several large rectangular ponds or lagoons. In the foreground, there are several large industrial buildings and a parking lot. Three specific areas are circled with black ovals: a large white-roofed building, a central processing area with various structures and equipment, and a smaller building to the right. Labels in white boxes point to these circled areas. The background shows more of the facility and surrounding greenery.

Waste to Biofuels

Research and  
Innovation

RDF processing



# Refuse Derived Fuel (RDF) Process for Waste to Biofuel



Utility Services  
City Operations



# Need for On-going Innovation Advanced Energy Research Facility

- Established with Alberta Innovates and City of Edmonton investment
  - Plug-and-play facility to encourage technical innovation
  - Attracting investment new R&D and piloting projects
  - Accelerates development of new technologies
- **R&D Bench Scale Laboratory**
  - **Advanced Energy Research Facility**




Utility Services  
City Operations





# AERF Research

- Eight key research projects ongoing at AERF
- Research work is focussed on converting waste/ biomass feedstocks into higher value fuels and chemicals
- Research projects are along the R&D path: from laboratory scale, over pilot scale work to long term testing opportunities
- Project partners include academic institutions, private industry and start-ups and industry associations
- Project funding is provided by Alberta Innovates, NSERC, CCEMC and private industry



World's first commercial  
MSW-to-biofuels and  
chemicals facility

## ENERKEM ALBERTA BIOFUELS

- Capacity: 38 million litres per year  
(i.e. 1 X standard Enerkem system)
- Feedstock: 25-year agreement with City of Edmonton  
for 100,000 dry tonnes of MSW per year
- Products: Biomethanol, cellulosic ethanol



# Community Relations & Education

## Tours at the Edmonton Waste Management Centre

- Grade 4 – Curriculum
- Post Secondary Institutions
- Public

Presentation to over 13,000 students and adults per year



Utility Services  
City Operations





**Thank you**

**Contact: Christian Felske Ph.D. P.Eng.**  
**[christian.felske@edmonton.ca](mailto:christian.felske@edmonton.ca)**  
**tel: 780-495-9869**



Edmonton



Jean McClellan  
Partner  
Price Waterhouse  
Coopers





# Systematic Innovation Strategy through Execution

*Making Enterprise Innovation Real*

PwC Innovation

*Jean McClellan*  
*[jean.a.mcclellan@pwc.com](mailto:jean.a.mcclellan@pwc.com)*

*September 2016*





Across the board, leaders are focused on innovation initiatives. However, sustained innovation remains elusive for most organizations.

**97%**

97% of leaders list innovation as a key priority for growth

**67%**

67% of leaders believe market changes will disrupt their sectors during the next five years

**10%**

Only 10% Of leaders see their organizations as innovation leaders

Innovation remains a frustrating pursuit in many organizations. Innovation initiatives frequently fail, and successful innovators have a hard time sustaining performance.

Even with a clear business strategy, without a coherent ***innovation strategy and execution plan*** most innovation initiatives are doomed to failure.



**Idea**



**Execution**

1

# Align

Have a need to change but no clear strategy for innovation's role in getting there?

Clarify the role of innovation in your business strategy and align the organization on where and why to innovate.

2

# Actualize

Have a vision but lack the concrete operating model to drive it?

Use benchmarks and best practice frameworks to create innovation models that work for your organization, from phase gates to agile development to corporate venturing.

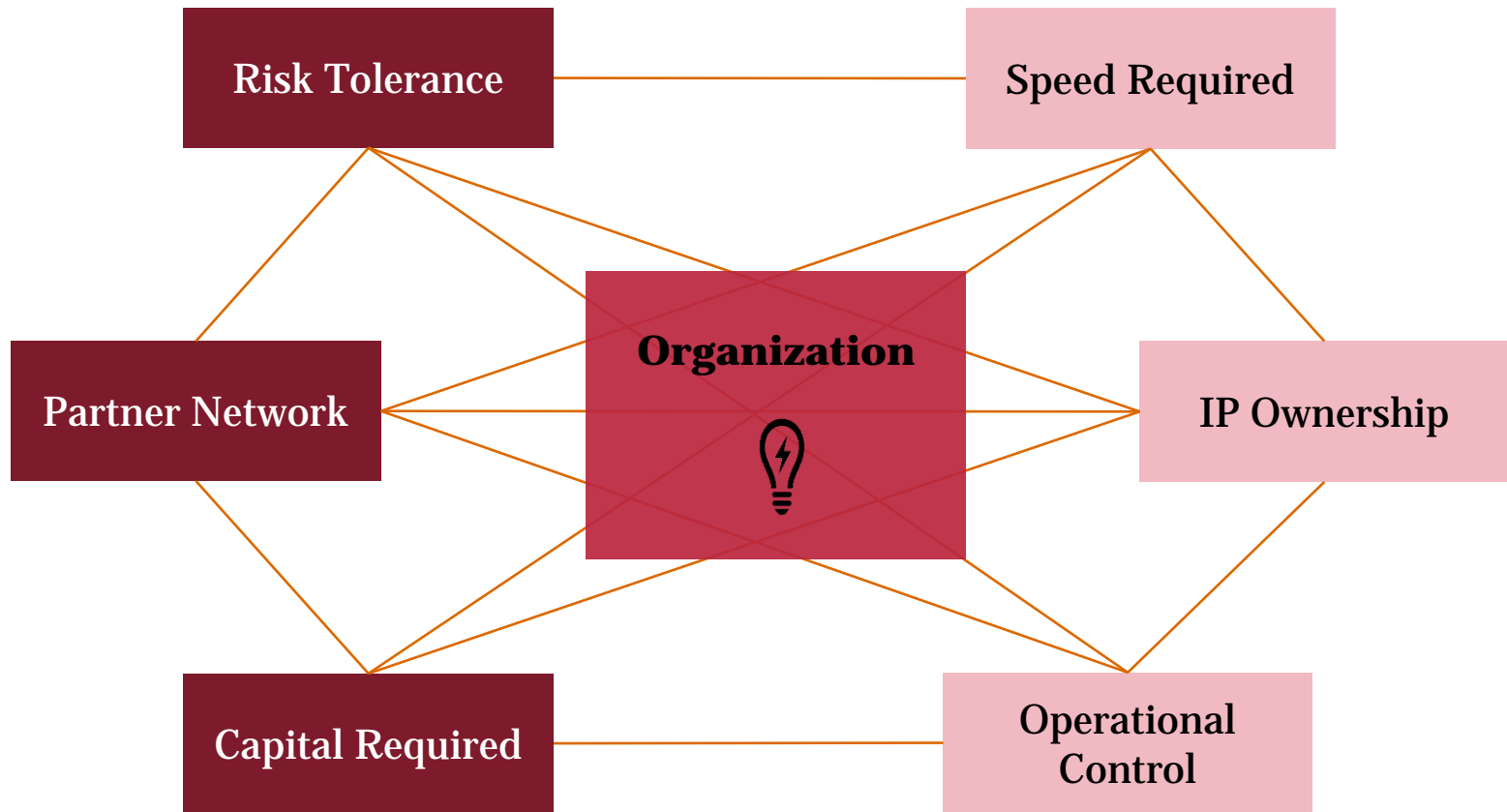
3

# Achieve

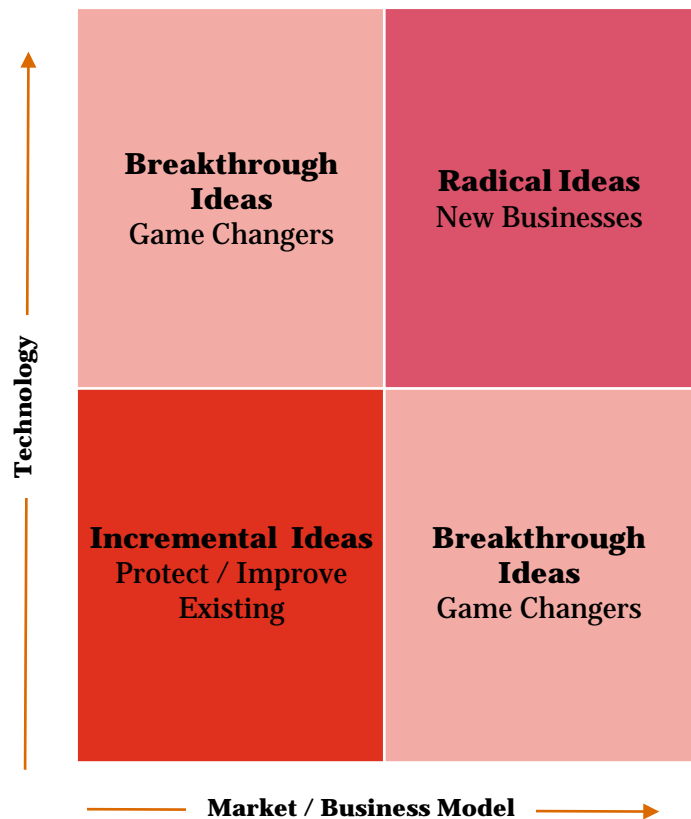
Have a model for innovation but aren't seeing new ideas reliably translate to market success?

Drive change in organization, processes, and infrastructure to build an engine for repeatable innovation.

# ***ALIGN: The innovation strategy must operate within innovation boundaries***



# *ALIGN: Innovation leaders find the right mix of incremental and radical ideas to fuel desired growth*



## *What is the right innovation mix?*

The right mix is dependent on sector dynamics, organization strategy, and risk profile - but a good rule of thumb for established sectors is 60-30-10



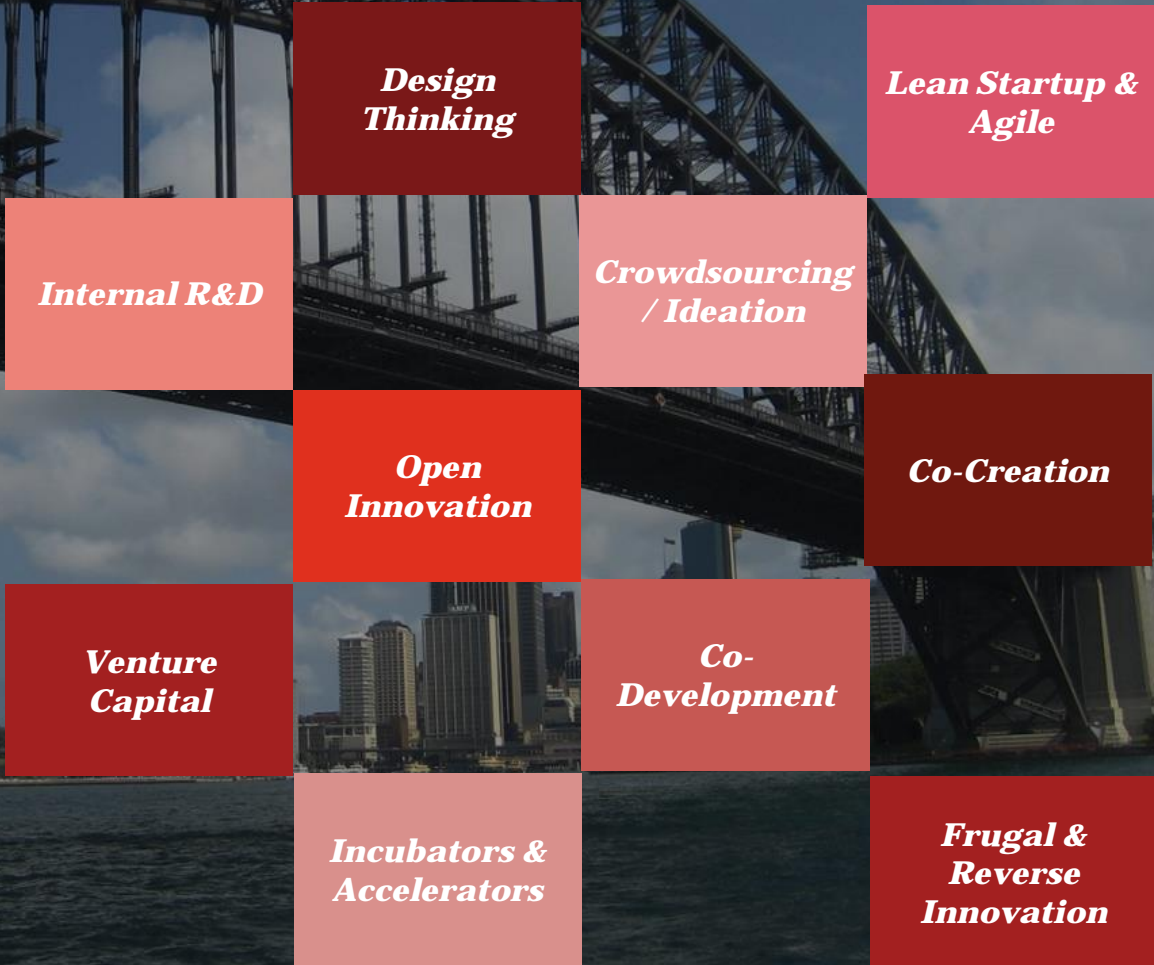


# **ACTUALIZE: Types of Innovation Operating Models**

**Innovation operating models are the bridge between business strategy and the innovation engine**

**They define where and how the innovation work gets done**

No one operating model fits all organizations or works under all circumstances

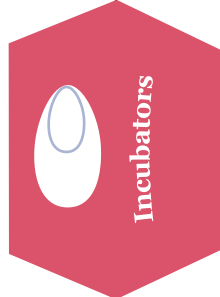


# Innovation Operating Models



## Traditional R&D

- Includes phase gate product and technology development, but also includes more innovative R&D efforts, including:
  - Innovation Tournaments
  - Partner Collaboration
  - Clean Sheet Design
  - Data Mining and Analytics



## Incubators

- Small startups inside an organization that provide entrepreneurial zeal and speed
- Iterative development process that emphasizes user validation, risk management and value creation



## Venture Capital

- Investment of organizational funds and assets directly in external startups to gain a specific advantage



## Open Innovation

- “Opening up” the innovation funnel to extend beyond traditional development inputs (i.e., internal development) and outputs (i.e., current market)

# Innovation Operating Models (continued)

## Design Thinking

- Collaborative process that carefully examines user needs, considers many options, and refines selected directions based on rapid prototypes and develops new offerings

Design  
Thinking



## Reverse Innovation / Frugal Innovation

- Development of new products or services in an emerging market first then exporting the idea to developed markets
- Economical use of resources and use of strong constraints (e.g., removal of nonessential features) to stimulate breakthrough innovation (e.g., dramatically reduced cost)

Reverse  
Innovation  
Frugal  
Innovation



## Lean Startup / Agile

- Rapid iterative testing of product releases and validated cycles of learning
- Iterative and incremental process for developing any product or managing any work where solutions evolve through the collaboration between self-organizing and cross-functional teams to focus on delivering the highest business value in the shortest time

Lean Startup  
Agile



## Co-Creation

- Systematic development of networks of individuals, stakeholders, and enterprises to create value together through engagement platforms

Co-Creation



# ACTUALIZE: Innovation Blueprint

## Portfolio

1



Ability to ideate, develop mix of solutions and sufficiency of pipeline

## Funding

2



Sufficiency of funding and effectiveness of funding process

## Organization

3



Appropriate structure for innovation (centralized, decentralized or hybrid)

## Team/resources

4



Right skillsets, functions & team size

## Ecosystem

5



Ability to leverage and incorporate partners/clients/ others into solutions

## Governance

6



Appropriate parties as decision-makers; executive sponsorship

## Process

7



Efficiency and effectiveness of end-to-end system

## Culture

8



Level of entrepreneurship, openness and level of commitment to new ideas

## Metrics & Motivators

9



Appropriate measurement criteria. Appropriate incentives for team

## Leadership

10



Strong senior executive support and strong innovation management team

*Each element of the innovation blueprint is critical to innovation success*

1

# Align

Have a need to change but no clear strategy for innovation's role in getting there?

Clarify the role of innovation in your business strategy and align the organization on where and why to innovate.

2

# Actualize

Have a vision but lack the concrete operating model to drive it?

Use benchmarks and best practice frameworks to create innovation models that work for your organization, from phase gates to agile development to corporate venturing.

3

# Achieve

Have a model for innovation but aren't seeing new ideas reliably translate to market success?

Drive change in organization, processes, and infrastructure to build an engine for repeatable innovation.

# Thank you

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# Question and Answer Session



Thank You!

Next Event Nov. 17, 2016

Topic – After the Smoke Clears  
CPAs and the Public Service

