



Understanding Service Costs and Improving Service Delivery

FMI PD Week

Costing Stream – November 19, 2019

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Landmark Decisions Inc.

Agenda

- The importance, common applications and challenges in Public Sector operational service costing
- The evolution of cost management methodologies
- “The Operational Costing Spectrum” including the role of costing technology
- Costing Technology Illustrations
 - Federal: **SAS** at Immigration, Refugees and Citizenship Canada (IRCC)
 - Provincial: **CBP** at Nova Scotia Crown Lending Agencies
 - Municipal: **Decimal** for ABC/P at City of Montreal
- Q & A

Why is Service Costing Important?



Fee Proposal

The responsible authority with respect to a fee must develop a fee proposal that includes the following information:

- (d) ***the factors taken into account in determining the amount of the fee*** or the manner for determining its amount; and
- (e) any ***performance standard*** that will apply in respect of the fee

Performance Standards

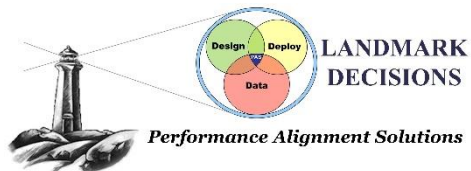
Obligation

4 The responsible authority with respect to a fee must ensure that a ***performance standard*** is established in respect of the fee, in accordance with Treasury Board policies or directives, if any.

Accessibility

6 The responsible authority with respect to a fee must ensure that the performance standard established in respect of the fee, or any amended standard, is ***accessible to the public***.

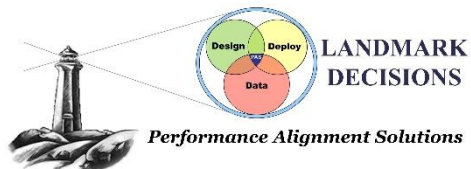
GC Service Fees Act S.C. 2017, c.20,2.451 (May 2019)



Common Applications of Costing

- Understanding the impact of legislative or policy changes
 - ✓ • **Decisions** about offering a new service or program
 - ✓ • Level of service **decisions**
 - Cost-recovery **decisions**
 - ✓ • Capital investment **decisions**
 - ✓ • Make-or-buy **decisions**
 - ✓ • **Decisions** about reorganizations
- ✓ **Operational Impact**

TBS Guide on Cost Estimating, June 2019



Common Challenges in Public Sector Costing

Current approaches to operational service costing have significant weaknesses that seriously handicap managers' effectiveness

Some of the perceived limitations of traditional costing approaches:

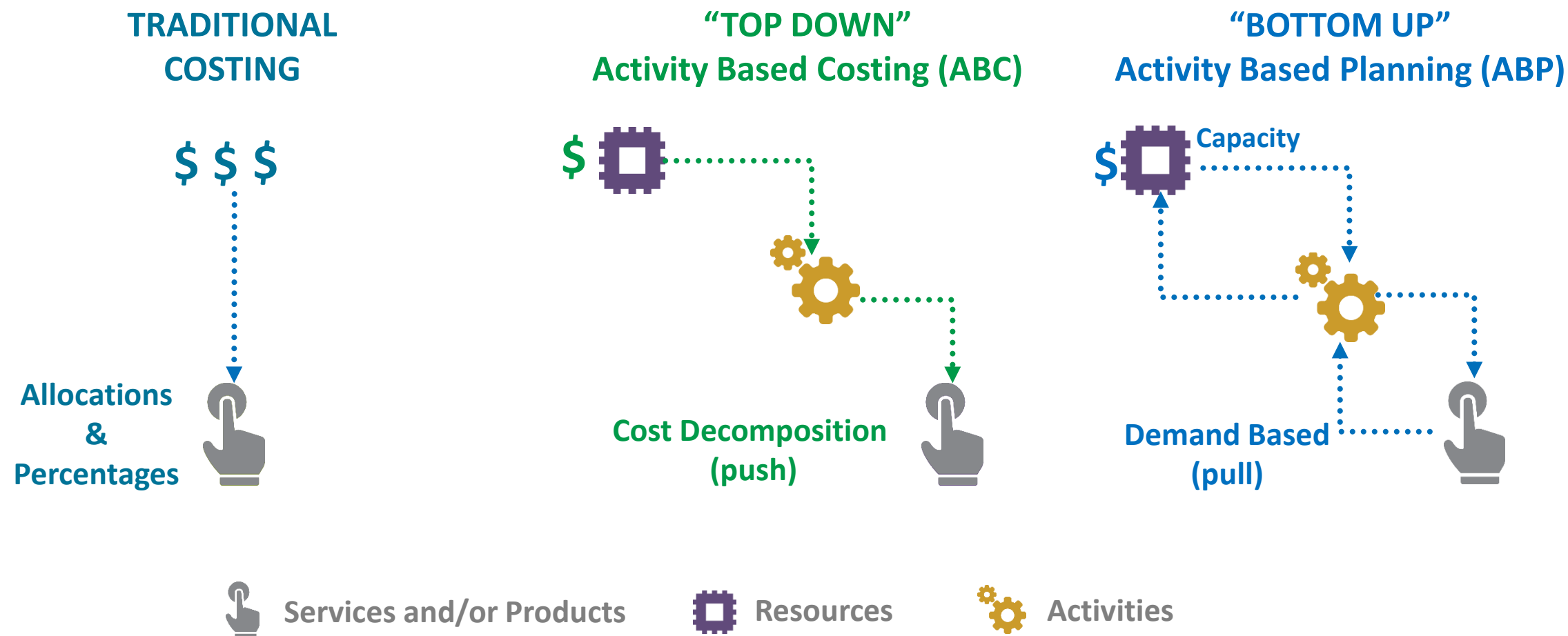
- Limited to a small number of specialized personnel
- Lack of confidence in the data used to generate accurate costs
- Too detailed/time consuming...too many iterations
- Lack of adaptability (flexibility to change)
- Lack of alignment with organizational performance
- Lack of buy-in from all areas of management

Various Techniques to Estimate Costs

- **Activity-based costing** – identification of direct and indirect costs and aligning these with the departmental categorization of costs by activity to determine program or project cost. **The cost allocations should be reasonable, consistent and documented**
- **Extrapolation from actuals** – use of actual cost experience or trends to estimate future costs for the same project
- **Analogous** – adjustments from a previously similar cost estimate using objective (vs. subjective) differences
- **Parametric** – statistical approach using regression analysis of historical cost data as it relates to key cost drivers
- **Bottom-up** – decomposing large programs/projects into components and then developing/summing component cost estimates

TBS Guide on Cost Estimating, June 2019

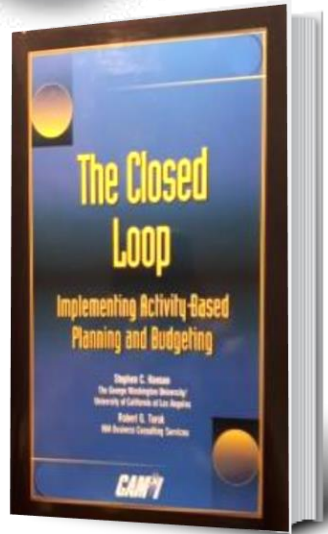
Evolution of Cost Management Methodologies



Activity-Based Planning (ABP)

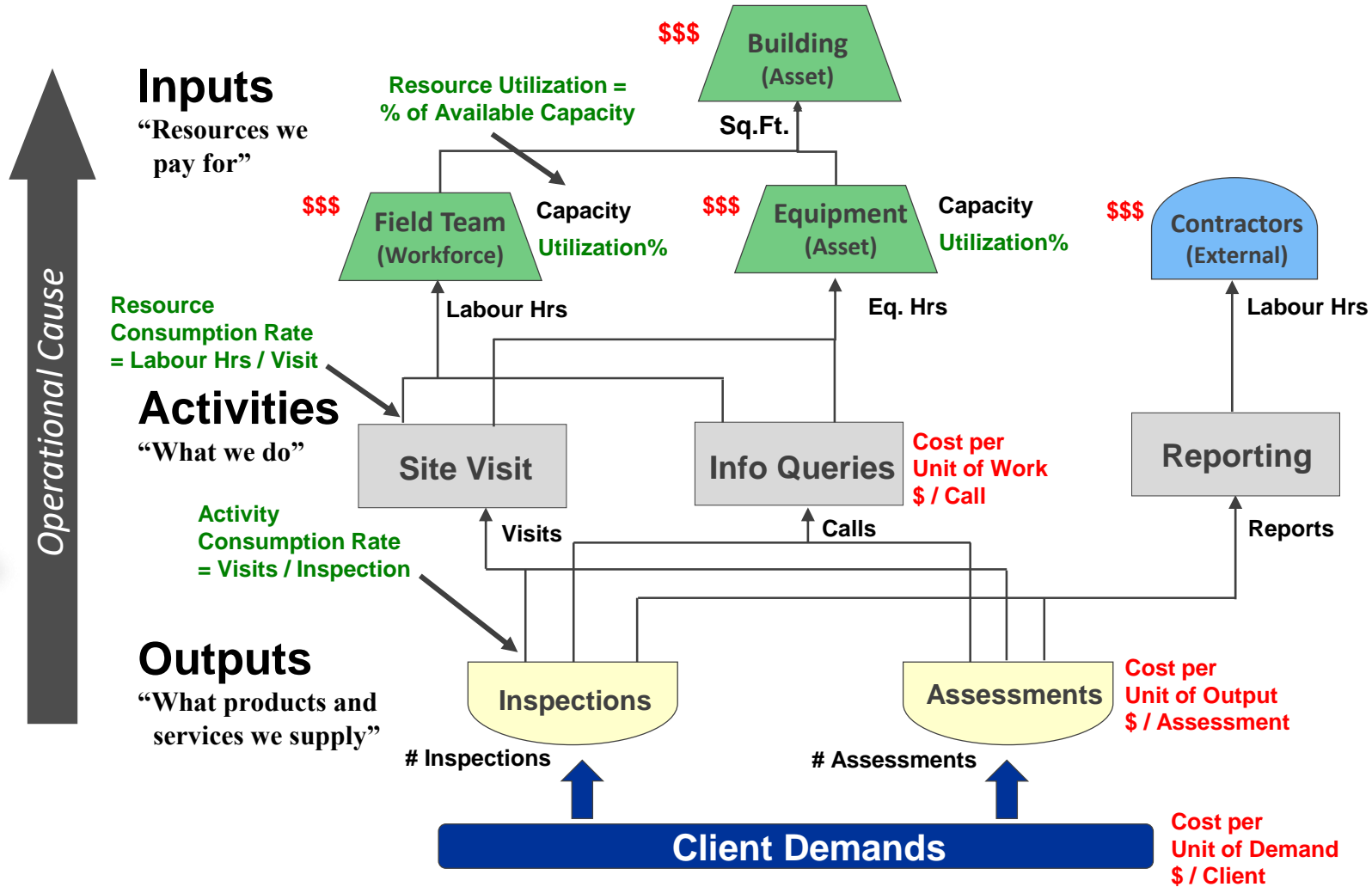
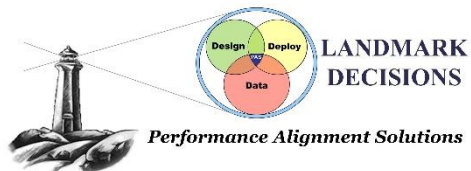
Using Business Process Modeling (BPM) and CAM-I's "Closed Loop" Approach

adapted from



Performance Indicators

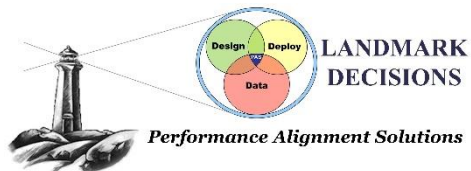
- Process-based Indicators
- Cost-based Indicators



Attributes of a Credible Cost Estimate

- ✓ • **Participative** - wide range of stakeholders and SMEs are engaged in developing/using
- ✓ • **Comprehensive** – clear boundaries in terms of time and scope
- ✓ • **Data driven** – recently obtained data from objective, primary sources
- ✓ • **Risk-assessed** – understanding, prioritization, and testing of uncertainties in cost drivers
- ✓ • **Accurate** – use of an appropriate technique and validation of cost estimates
- ✓ • **Relevant** – information to develop cost estimates is current and meaningful
- ✓ • **Documented** – development of a “cost estimate report” that details methodology so as to withstand scrutiny/audit and allow readers to assess the credibility and maturity of the estimates including the ability to reproduce results
- ✓ **All enhanced with ABP**

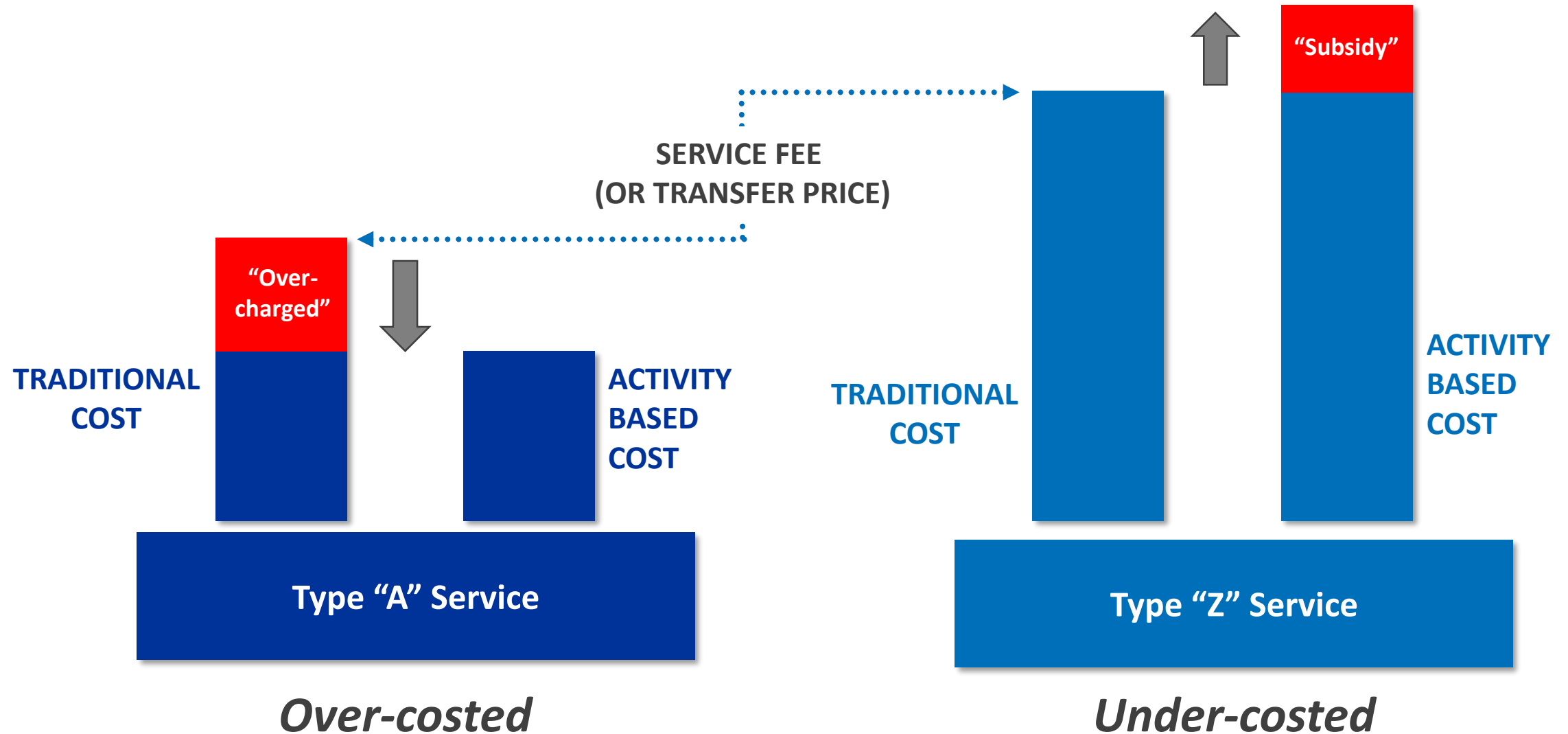
TBS Guide on Cost Estimating, June 2019



“The Operational Costing Spectrum”

| | Cost Allocations | Activity-Based Costing (ABC) | Activity-Based Planning (ABP) |
|--------------------------|--|---|---|
| Basic Concepts | <ul style="list-style-type: none"> • Direct costs attribution where available • Pooling and allocation of in-direct/overhead costs using high-level assumptions (i.e. FTE, output volumes) | <ul style="list-style-type: none"> • “Top Down” 2-stage push of resource costs through activities to cost objects • Introduction of more elaborate “cost drivers” to manage allocations | <ul style="list-style-type: none"> • “Bottom Up” operational flow calculation to establish “Top Down” financial flow • Capacity utilization determines resource requirements • Identification of fixed, step-fixed and variable resources |
| Focus | <ul style="list-style-type: none"> • Reporting of high-level program output/service costs | <ul style="list-style-type: none"> • More accurate program output/service costing • Identification of activity costs | <ul style="list-style-type: none"> • Operational improvement impacts on program output and service costs • Developing future plans/budgets |
| Data Requirements | <ul style="list-style-type: none"> • Bill of material costs • Direct labour tracked costs • Overhead costs from financials | <ul style="list-style-type: none"> • Resource costs from financials • Activity driver quantities • Revenue (as appropriate) | <ul style="list-style-type: none"> • Resource consumption rates • Activity quantities and consumption rates • Operational capacity levels |
| Typical Users | <ul style="list-style-type: none"> • Cost Accountants | <ul style="list-style-type: none"> • Finance | <ul style="list-style-type: none"> • Multi-functional managers |
| Benefits | <ul style="list-style-type: none"> • Quick • Easily understood • No software investment | <ul style="list-style-type: none"> • Inclusion of operational data that act as “cost drivers” • Multi-stage allocations for improved indirect cost attributions (i.e. overhead) | <ul style="list-style-type: none"> • Understanding resource constraints/utilizations • Dynamic scenario-playing • Collaborative approach with non-financial managers |
| Challenges | <ul style="list-style-type: none"> • High-level assumptions • Snapshot in time • Frequent disagreements on allocation approaches | <ul style="list-style-type: none"> • “Owned” by finance • Misleading extrapolations using unit cost information • Limited scenario-playing | <ul style="list-style-type: none"> • Gathering reliable operational data • Specialized operational modeling skills |
| Supporting Tools | <ul style="list-style-type: none"> • Excel • ERP Systems | <ul style="list-style-type: none"> • Excel • ERP Systems • ABC Software | <ul style="list-style-type: none"> • Some ABC Software – SAS, Decimal • Specialized Business Process Modeling (BPM) Software – Collaborative Business Planning (CBP) |

Why is Service Costing Important?





Immigration, Refugees and Citizenship Canada

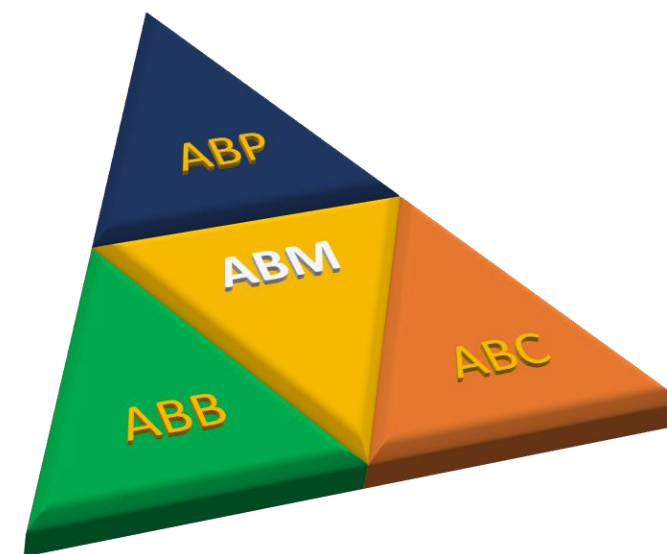
Passport Canada

Activity-Based Management (ABM) at Passport Canada, is a continuous improvement tool that provides information to facilitate strategic and management decisions by gaining insight about :

- Profitability and cost of business activities, access channels and products/services;
- Capacity and resource requirements;
- Pricing strategies; and
- Ad-hoc analysis

ABM Components

- Activity-Based Planning (ABP)
- Activity-Based Budgeting (ABB)
- Activity-Based Costing (ABC)





Immigration, Refugees and Citizenship Canada

Key Business Challenges

Understanding the impacts of business changes and enhancements related to:

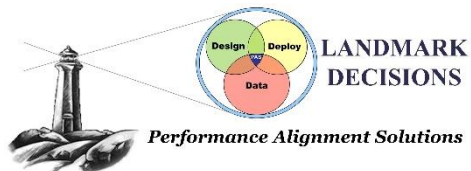
- Simplified renewal process
- Distribution (shipping rates and processes)
- Introduction of lean methodology in the mail-in and print centres environments
- Workload management

Predicting the financial and/or capacity requirements for new initiatives such as:

- 10-year validity ePassport
- Remote entitlement

Determining reliable pricing strategies for:

- New products and/or services (i.e. ePassport, Official Travel)
- Working with client partners (i.e. Service Canada)



Immigration, Refugees and Citizenship Canada

SAS Cost & Profitability Management

PPTC 2017-18 and 2018-19 - FINAL : Activity

| IntsctnName | Display Name | Display Reference | IntsctnName | Reference |
|---------------------------------------|---|---------------------------------------|---|---------------------------|
| 3 96102_Operations x FTE_Driven Costs | Activity (Primary Pane) | | 4 A_Corp Serv Cost by Regions x 96526 | A_Corp Serv Cost by Re |
| | Operations | Operations | 4 A_Corp Serv Cost by Regions x 96704 | A_Corp Serv Cost by Re |
| | Corporate | Corporate | 4 A_Corp Serv Cost by Regions x 96705 | A_Corp Serv Cost by Re |
| | Legal Services | Legal Services | 4 A_Corp Serv Cost by Regions x 96813 | A_Corp Serv Cost by Re |
| | Business Information Technology | Business Information Technology | 4 A_Corp Serv Cost by Regions x 97202 | A_Corp Serv Cost by Re |
| | Administrative Services | Administrative Services | 4 A_Corp Serv Cost by Regions x 96514 | A_Corp Serv Cost by Re |
| | Financial Services | Financial Services | 3 95005_Policy Training & Awareness x | 95005_Policy Training & |
| | 96114_Corporate Reporting | 96114_Corporate Reporting | 3 95003_Inventory Management x FTE_ | 95003_Inventory Manag |
| | 96115_Revenues & Receivables | 96115_Revenues & Receivables | 3 95004_Forms Management x FTE_Driv | 95004_Forms Managem |
| | 96112_Financial Assessment | 96112_Financial Assessment | 3 96401_Director x FTE_Driven Costs | 96401_Director x FTE_D |
| | 96113_Mgt Practices and Pol | 96113_Mgt Practices and Pol | 3 98301_Adjudications and conflict mana | 98301_Adjudications an |
| | 95101_Director Resource Management and C | 95101_Director Resource Management | 3 97307_Corporate Mail x FTE_Driven C | 97307_Corporate Mail x |
| | 95103_Ressource Management & Budgeting | 95103_Ressource Management & Budg | 4 A_Corp Serv Cost by Regions x 96601 | A_Corp Serv Cost by Re |
| | 95104_Compliance | 95104_Compliance | 4 A_Corp Serv Cost by Regions x 96703 | A_Corp Serv Cost by Re |
| | 95102_Financial Assessment & Depart Liaison | 95102_Financial Assessment & Depart | 4 A_Corp Serv Cost by Regions x 96613 | A_Corp Serv Cost by Re |
| | 96101_Director (Financial Serv) | 96101_Director (Financial Serv) | 3 96309_Dir Operational Services x FTE_ | 96309_Dir Operational S |
| | 96102_Operations | 96102_Operations | 4 A_Corp Serv Cost by Regions x 96527 | A_Corp Serv Cost by Re |
| | Revenues and receivables | Revenues and receivables | 3 95001_Dir Material Management x FTE_ | 95001_Dir Material Mana |
| | Payables | Payables | 3 95002_Procurement x FTE_Driven Cos | 95002_Procurement x F |
| | FTE_Driven Costs | FTE_Driven Costs | 3 99602_Strategy & Integration x FTE_ | 99602_Strategy & Integ |
| | 96103_Planning and analysis | 96103_Planning and analysis | 3 99611_Intelligence x FTE_Driven Cost | 99611_Intelligence x FT |
| | 96107_Policy and Systems | 96107_Policy and Systems | 3 95301_Enterprise Alignment & Innov | 95301_Enterprise Aligne |
| | CEO | CEO | 3 96310_Classification Division x FTE_Dri | 96310_Classification Divi |
| | Human Resources | Human Resources | 4 A_Corp Serv Cost by Regions x 96501 | A_Corp Serv Cost by Re |
| | Reserves | Reserves | 3 98802_Facilities and Telecom x FTE_Dr | 98802_Facilities and Tel |
| | Overhead | Overhead | 4 A_Corp Serv Cost by Regions x 96714 | A_Corp Serv Cost by Re |
| | Executive Services | Executive Services | 4 A_Corp Serv Cost by Regions x 96715 | A_Corp Serv Cost by Re |
| | Communications | Communications | 4 A_Corp Serv Cost by Regions x 97612 | A_Corp Serv Cost by Re |
| | Ombudsman | Ombudsman | 4 A_Corp Serv Cost by Regions x 97801 | A_Corp Serv Cost by Re |
| | Information Center Services | Information Center Services | 3 98919_PPBS Project Management x FT | 98919_PPBS Project Ma |
| | Legislation & International Relations | Legislation & International Relations | 3 96115_Revenues & Receivables x FTE_ | 96115_Revenues & Rec |
| | Enterprise Alignment & Innovation | Enterprise Alignment & Innovation | 3 98907_Bus Arch & Planning x FTE_Driv | 98907_Bus Arch & Planni |
| | E-Passport Initiative | E-Passport Initiative | 4 A_Corp Serv Cost by Regions x 96807 | A_Corp Serv Cost by Re |
| | Material Management | Material Management | 3 96315_PPHI_HRIS x FTE_Driven Costs | 96315_PPHI_HRIS x FTE |
| | Policy Bureau | Policy Bureau | 3 97305_Passport Material x FTE_Driven | 97305_Passport Material |
| | Security | Security | 3 97306_Application Forms x FTE_Driven | 97306_Application Form |
| | Program Redesign Task Force | Program Redesign Task Force | 3 99205_Business Development x FTE_D | 99205_Business Develop |
| | Strategic Initiatives | Strategic Initiatives | 3 99202_Policy_Planning x FTE_Driven | 99202_Policy_Planning |

SAP
Cost Centre

Operational &
Corporate Activities
(Financial Services Drill Down)

Pooling of
corporate costs to
allocate to outputs
(Processing
activities and
passport document)

Immigration, Refugees and Citizenship Canada

SAS Cost & Profitability Management

Pooling of
corporate costs to
allocate to outputs
(Processing
activities and
passport document)

PPTC 2017-18 and 2018-19 - FINAL : Cost Object

| IntsctnName | Display Name | Display Reference |
|---|-----------------------------|--------------------------------------|
| 4 A_Corp Serv Cost by Regions x 96527_ Quart de soir x No <OPSActi> | Cost Object (Primary Pane) | |
| 4 A_Corp Serv Cost by Regions x 96525_MSS- MP/NPS x No <OPSActi> | A_Corp Serv Cost by Regions | A_Corp Serv Cost by Regions |
| 4 A_Corp Serv Cost by Regions x 96518_MP - MINA x No <OPSActi> | Operations | Operations |
| 4 A_Corp Serv Cost by Regions x 96517_IPS x No <OPSActi> x No | Business Sustaining | Business Sustaining |
| 4 A_Corp Serv Cost by Regions x 96516_NPS x No <OPSActi> x No | No <OPSActi> | No <OPSActi> |
| 4 A_Corp Serv Cost by Regions x 96514_Receiving Agents x No <OPSActi> | Recp Fix | Recp Fix |
| 4 A_Corp Serv Cost by Regions x 96514_Receiving Agents x No <OPSActi> | B_Operational Activity Cost | B_Operational Activity Cost |
| 4 A_Corp Serv Cost by Regions x 96528_RA - Service Canada Fees x I | No <CostCentre> | No <CostCentre> |
| 4 A_Corp Serv Cost by Regions x 96528_RA - Service Canada Fees x I | Client Service Points | Client Service Points |
| 4 A_Corp Serv Cost by Regions x 96528_RA - Service Canada Fees x I | Pre Screening | Pre Screening |
| 4 A_Corp Serv Cost by Regions x 96504_MSS - TNT/RA/IPS x No <OPSActi> | Drop Box | Drop Box |
| 3 Mail-in (excluding TNT) x NPS Channel | Returns_Rejects | Returns_Rejects |
| | Mail Receiving | Mail Receiving |
| | Mail Tracking | Mail Tracking |
| | Process Mail | Process Mail |
| | Checklist | Checklist |
| | Process Fees | Process Fees |
| | No <PassportType> | No <PassportType> |
| | Mail In | Mail In |
| | NPS | NPS |
| | MP | MP |
| | IPS | IPS |
| | RA | RA |
| | Others | Others |
| | Walk In | Walk In |
| | Process Official Trav | Process Official Travel Application |
| | Mission Passports | Mission Passports |
| | Triage | Triage |
| | Scanning | Scanning |
| | Clients Questions | Clients Questions |
| | Security and Identity Au | Security and Identity Authentication |
| | Production & Distribution | Production & Distribution |
| | Business Sustaining | Business Sustaining |
| | C_Cost of Passport | C_Cost of Passport |

Organizational
Outputs
(Cost Objects)

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Immigration, Refugees and Citizenship Canada

Key Benefits Realized

FTE requirements

- Establish an FTE requirement baseline based on forecast volume to support the budgeting process

Quarterly reports

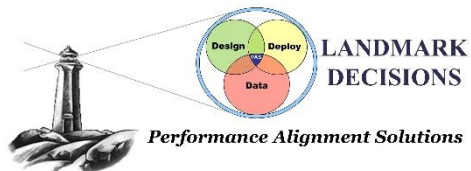
- Capacity and Productivity segments are presented quarterly to Senior Management.

Ad-hoc analysis

- Requested by both senior and first level management, such as:
 - Walk-in office actual group and level composition compared to ABP recommended composition
 - Impact of central index replacement
- ABP models allows for what-if scenarios on business process changes and provide quantitative information to support decision making.

Saving initiatives

- Periodic saving analysis done for the organization, ideas are raised by various sections and evaluated by the ABM team. Findings are presented to Senior Management for decision.



Nova Scotia Crown Lending Agencies

Organizational Overview 2018-19

Number of Offices: 3

Number of Staff: 26

Operating Expenses: \$2.5 M



Number of Clients:

~500

~600

Total Loans in Service:

~800

~750

**Approx. Value of
Portfolio (\$M):**

\$164 M

\$124 M

Nova Scotia Crown Lending Agencies

Key Business Challenges

- Legacy Acts and Regulations coming from 2 different provincial departments (Agriculture and Fisheries & Aquaculture)
- Historical business processes with many unique characteristics/steps
- Outdated Loan Administration systems
- Labour capacity issues (staffing, roles and responsibilities)
- Competitive pressures from commercial banks

Nova Scotia Crown Lending Agencies

Collaborative Business Planning (CBP) Technology

- Employed an Activity-based Planning (ABP) via Business Process Modeling (BPM)
- Leveraged Lean Kaizen initiative to document/understand business process flows and develop initial operational data
- Conducted more detailed activity analysis at all levels for enhanced operational data and full workload allocations
- Built a costed Business Process Model (BPM) using Collaborative Business Planning (CBP)
- Validated the model results against 2018-19 fiscals
- Developed detailed operational and financial analysis reports for key activities and outputs
- Evaluated various Lean initiatives (via scenario-playing) in terms of potential resource capacity and cost savings

Nova Scotia Crown Lending Agencies

Workload Analysis (Operational Data)

NS-CLA Workload Template

| NS-CLA Workload Template | | | | Optional Fields | | Blue = Selection/Data Entry Fields | | | Purple = Calculated Fields (Locked) | | | | |
|--------------------------|--|---|-------------------------|---|--|---|------------------|-----------------|-------------------------------------|---------------------------|-------------------------|-----------------|--|
| Role: | Loan Officer - Farm Loan Board | People in Roles: | | FTEs: (Total FTEs for this Role) | 3.5 | Step 2 | Step 3 | | Step 4 | | | | Step 5 |
| Step 1 | | | | | | Est. % of Total Time by Activity (Apr 1/18 - Mar 31/19) | Volume Estimates | | Unit Level of Effort (in Hrs) | Total Annual Volume Calc. | Total Annual Time Calc. | % of Time Calc. | % Time Difference (Green is within 3%) |
| # | Key Activities | Activity Description | Unit of measure | Triggers (what drives this activity) | Next Step (what this activity supports) | | Number | per Time Period | | | | | |
| 1 | General Loan Inquiries | Review potential loan request on the phone initially and documenting with a call note | # of calls | Client Initiated. They call the Farm Loan Board | Potential new loan application | 15% | 3.5 | per day | 1.17 | 756.0 | 884.5 | 16.3% | 1.3% |
| 2 | Meeting Clients | In the office but most likely at the farm to pick up loan application and relevant information this may take a few meetings and may not result in a | # of meetings | Initial call and a loan seems plausible | Write up loan summary | 17% | 7 | per week | 2.67 | 329.0 | 878.4 | 16.2% | -0.8% |
| 3 | Writing Loan Summary | Write up loan summary for review by Risk Manager. Call and meet with clients again to clarify questions and finalize loan summaries | # of applications/ loan | The number of loan applications | Review by Risk Manager | 25% | 7.5 | per month | 13.50 | 90.0 | 1215.0 | 22.4% | -2.6% |
| 4 | Concurrence obtained | Review Concurrence and write/review the Commitment Letter | # of Concurrences | The amount of Concurrences | Provide Commitment Letter to Client | 4% | 7.5 | per month | 1.80 | 90.0 | 162.0 | 3.0% | -1.0% |
| 5 | Get Client to sign Commitment letter | Meeting with client/ phone call/ email to review and sign. Usually at their farm | # of commitment letters | the need to present the terms of the loan to the client | Have Admin Staff send to legal counsel for documentation | 2% | 7.5 | per month | 1.35 | 90.0 | 121.5 | 2.2% | 0.2% |
| 6 | Inquires for legal consel | Deal with legal counsel and admin on documentation questions and other general | # of loans | the commitment letter | the funding of the loan | 4% | 7.5 | per month | 1.80 | 90.0 | 162.0 | 3.0% | -1.0% |
| 7 | Security Releases | Prepare Security Release (Lilac Sheet) for review by Risk Manager and Credit Manager | # of releases | Client request security be released | Release of security | 5% | 7 | per month | 4.00 | 84.0 | 336.0 | 6.2% | 1.2% |
| 8 | Annual Reviews | Prepare Annual reviews of selected accountns | # of annual reviews | Internal driven by FLB's Accounting Department | to obtain an overall annual loan loss | 4% | 28 | per year | 7.00 | 28.0 | 196.0 | 3.6% | -0.4% |
| 9 | Arrears Management | Follow with clients to get them to pay their loan arrears or develop a plan to getthem back ontrack | # of arrears accounts | Client has not paid their loans as agreed | Get loans back in good standing | 4% | 17 | per month | 1.00 | 204.0 | 204.0 | 3.8% | -0.2% |
| 10 | Special Projects/ Commities | Internal and outside commitments | # of projects | Request by Management | Networking/ Public Relations | 6% | 30 | per year | 10.00 | 30.0 | 300.0 | 5.5% | -0.5% |
| 17 | Travel Time | Any time required to travel to meet with a client, attend a workshop (receiving or delivering), or other NS-CLA required event. The time would be | # of travel events | Requested attendance at a meeting/event | Information deliver/receipt | 7% | 7 | per week | 1.50 | 329.0 | 493.5 | 9.1% | 2.1% |
| 18 | All Other Activities | List smaller activities that collectively take more than 5% of your time here | Estimated Hrs/week | Left inintentionally blank | Left inintentionally blank | 3% | Total Time | per week | 4.50 | N/A | 211.5 | 3.9% | 0.9% |
| 19 | Research, professional development and | Activities related to receiving educational training, updating skills, and conducting personal research (vs. project related research). | Estimated Hrs/year | Left inintentionally blank | Left inintentionally blank | 2% | Total Time | per year | 70.00 | N/A | 70.0 | 1.3% | -0.7% |
| 20 | General administration and support | A collection of administrative activities such as mandatory department training, management meetings/telecons, IT issues, e-mail management, | Estimated Hrs/week | Left inintentionally blank | Left inintentionally blank | 2% | Total Time | per week | 4.00 | N/A | 188.0 | 3.5% | 1.5% |

24.1 FTE across 13 Roles

Practical Capacity Calculations

Paid Working Days (less Stats) 251

Avg. Annual Vacation 20

Avg. Sick Leave 4

Avg. Other Leave 4

Net Working Days 223

Hours/Day 7

Breaks 0.5

Net Working Hrs/Day 6.5

Annual Practical Capacity (Hrs) per FTE 1450

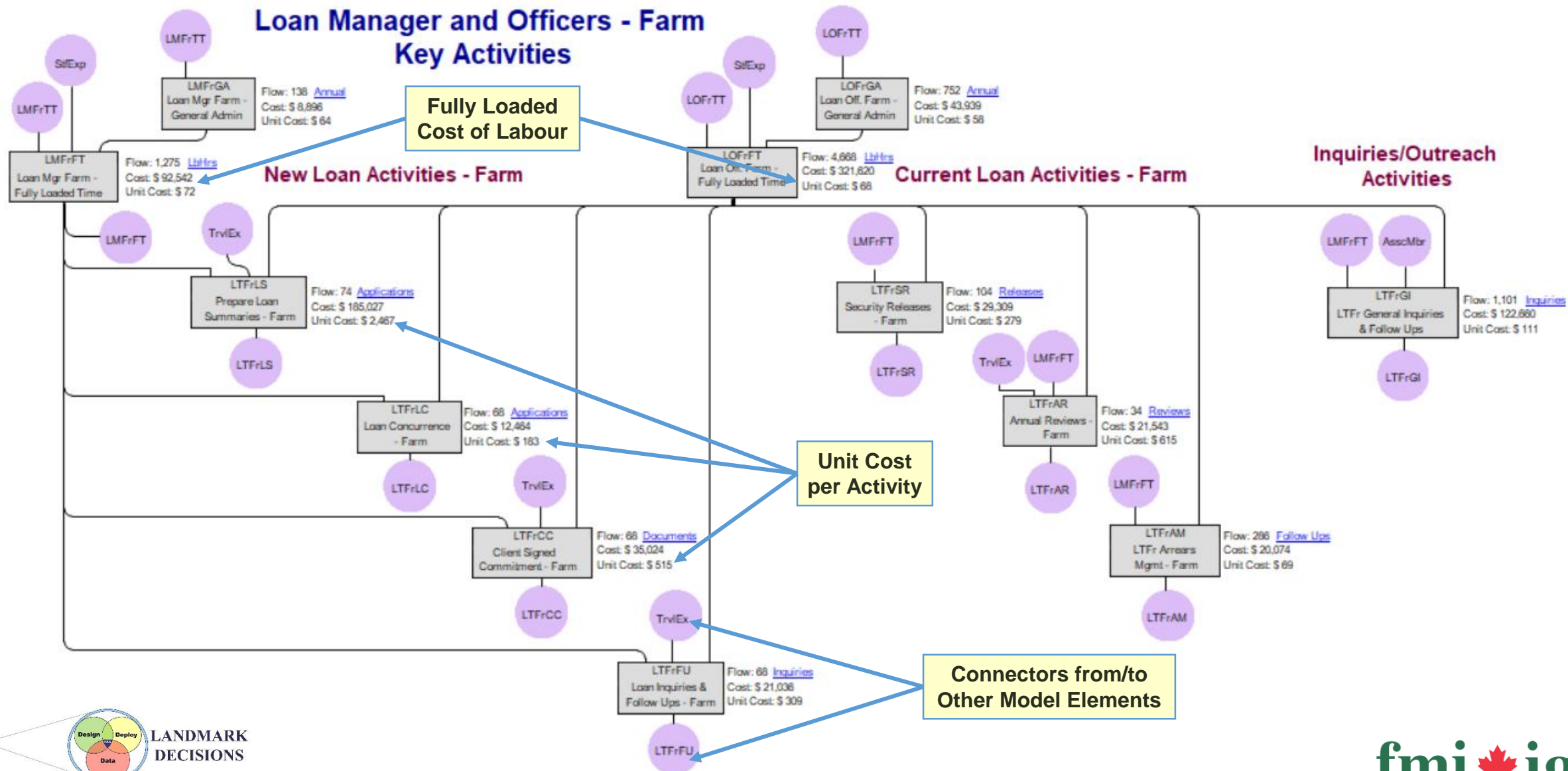
Should Equal 100% >>>

100%

Total Time Calc. (Hrs) 5422
FTE Calc. 3.74
FTE Difference + 0.24

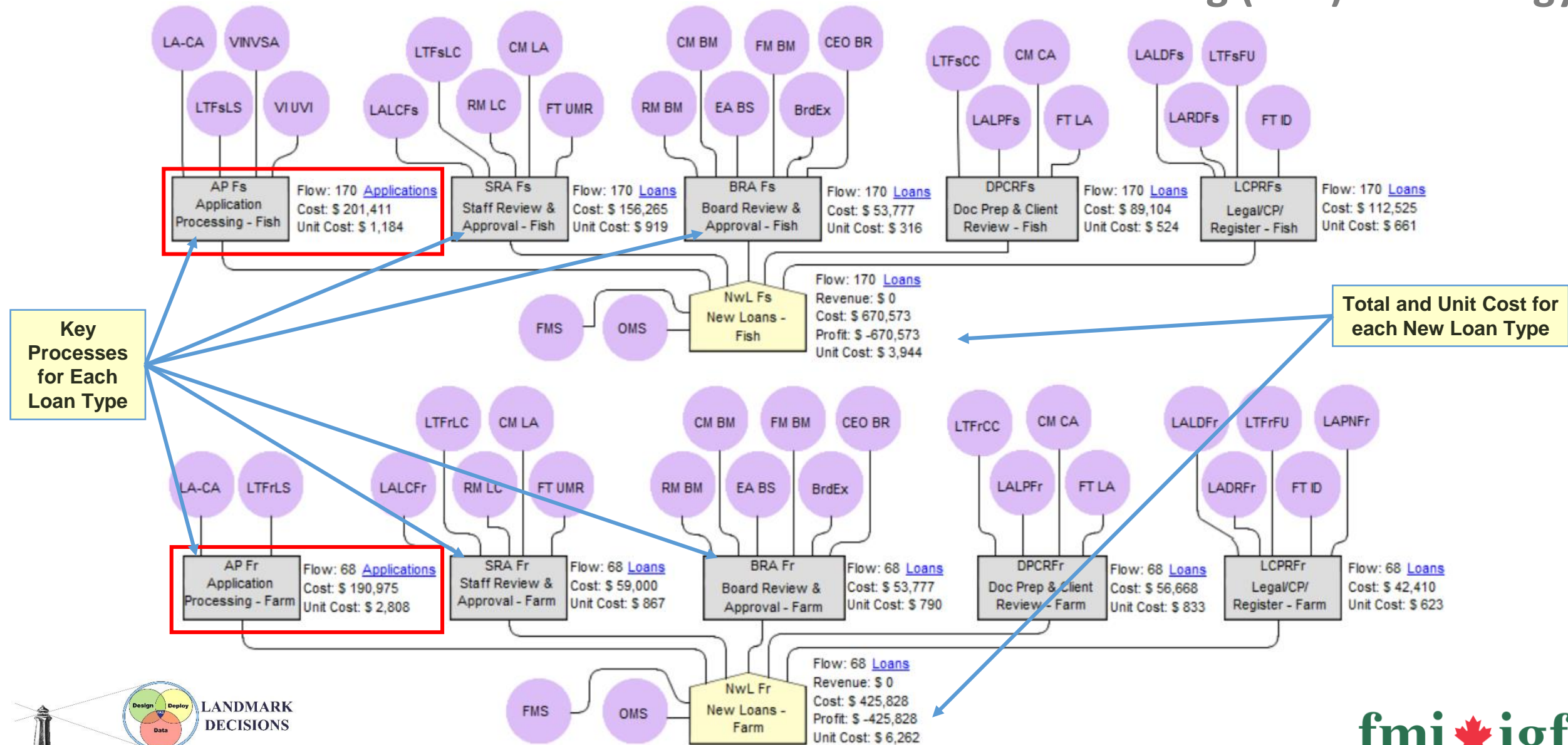
Nova Scotia Crown Lending Agencies

Collaborative Business Planning (CBP) Technology



Nova Scotia Crown Lending Agencies

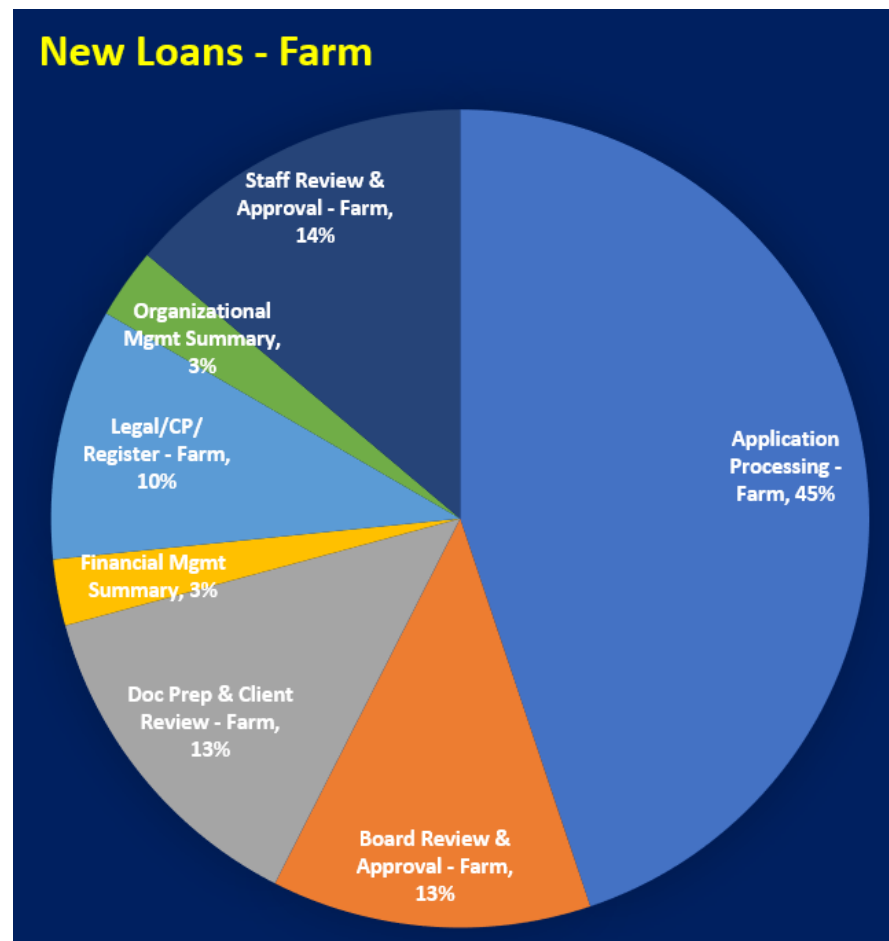
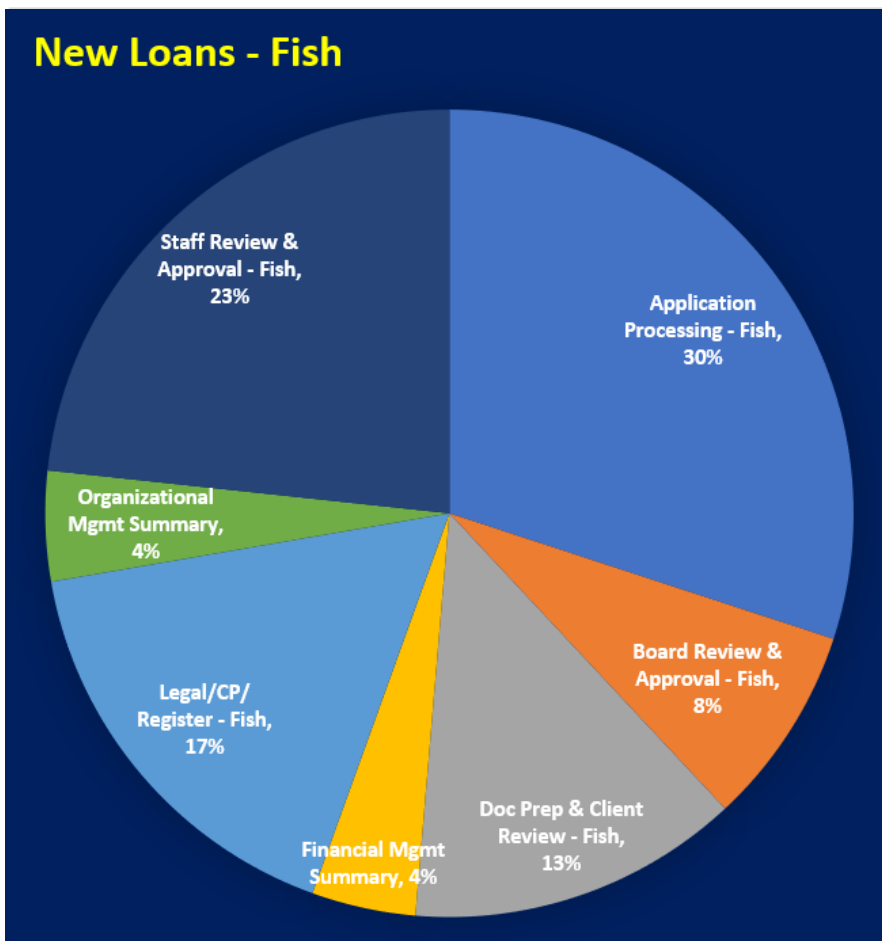
Collaborative Business Planning (CBP) Technology



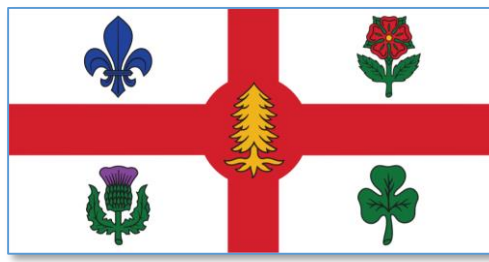
Nova Scotia Crown Lending Agencies

Illustrative Results

| | A | B | D | E | F | G | H |
|----|---|------------------------|---|---|---|---|---|
| 1 | Major Process Splits by Type of Loan | | | | | | |
| 2 | | Loan Type in B3 | | | | | |
| 3 | Sum of Financial | Column Labels | | | | | |
| 4 | Row Labels | New Loans - Fish | | | | | |
| 5 | Application Processing - Fish | 30% | | | | | |
| 6 | Board Review & Approval - Fish | 8% | | | | | |
| 7 | Doc Prep & Client Review - Fish | 13% | | | | | |
| 8 | Financial Mgmt Summary | 4% | | | | | |
| 9 | Legal/CP/ Register - Fish | 17% | | | | | |
| 10 | Organizational Mgmt Summary | 4% | | | | | |
| 11 | Staff Review & Approval - Fish | 23% | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
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| 27 | | | | | | | |



- Workload analysis – “who’s on first”?
- Operational modeling/costing
 - visual map of business and cost flows including resource utilization/constraints
 - comparative analysis of different work streams towards unified process
 - identification of “big hitter” costs for “explanation” and as targets for optimization
- “Lean Experiments” testing – determination of potential impact on resource capacity and costs to aid in prioritization of experiments
- Future state scenario playing – simulate expected service demand changes and their impact on operations and costs including staffing requirements



Case Study – City of Montreal

Organization Overview 2018

19 Boroughs

Population: 1.8 Million

Operating Expenses: \$5.7 B

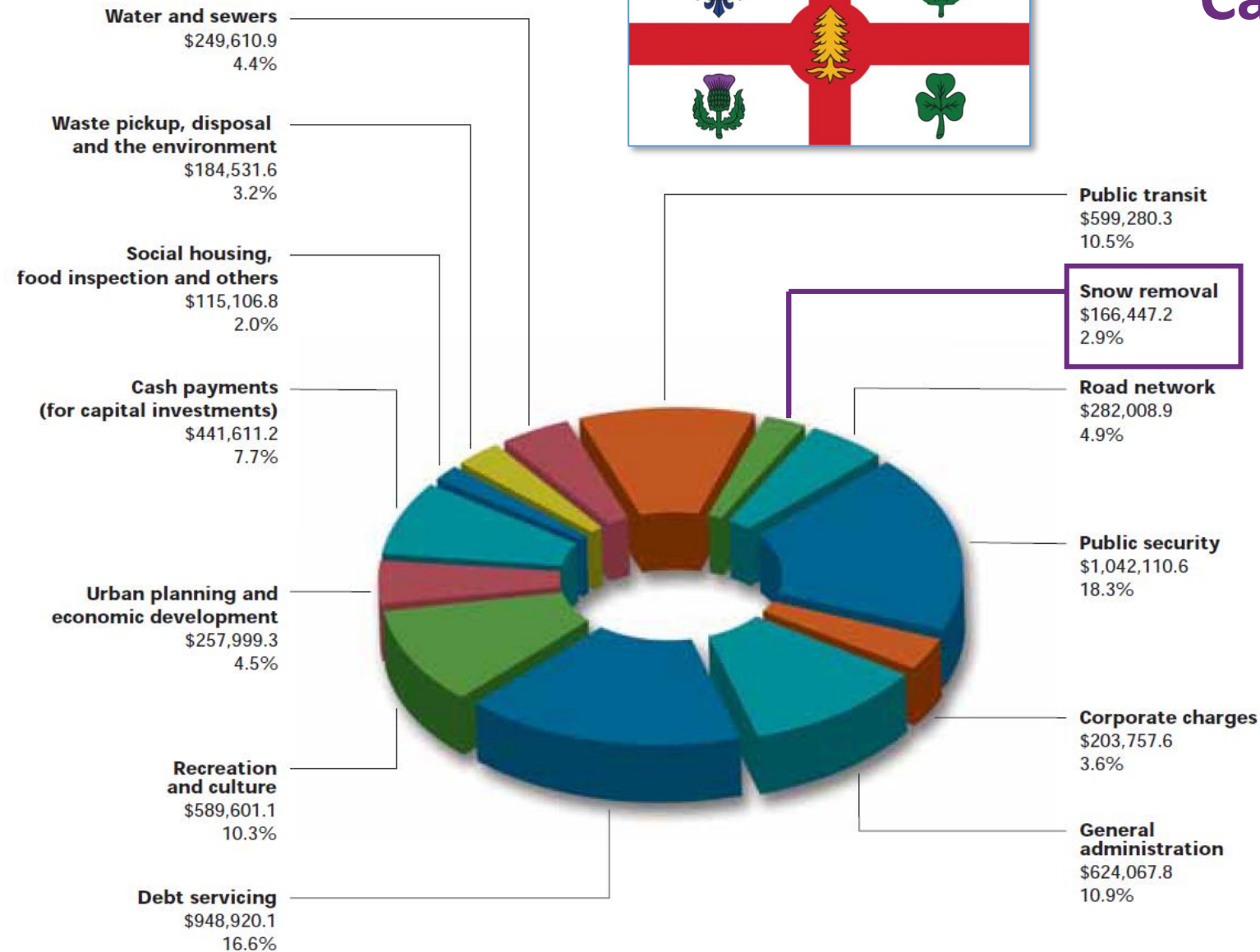
4000 km of Streets

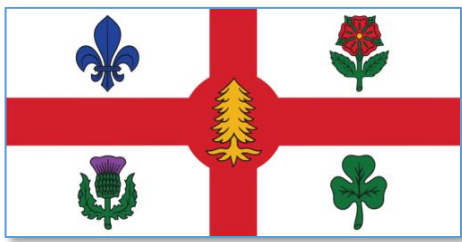
1000 Snowplows

400 Salt/Abrasive Vehicles

140,000 tonne of Salt/Abrasives

300,000 truckloads dumped





Case Study – City of Montreal

Key Business Challenges

Snow removal is a challenge for every city with many unique characteristics (aka cost drivers) that must be considered:

- Mix of road / sidewalk / alley is different in each borough
- Mix of snow plowing, blowing, and snow loading (removal)
- The use of different abrasive recipes for different conditions/priorities
- Amount of snowfall and snowfall type (Normal, Snowstorm, Freezing rain...)
- Internal removal vs. external contracts
- The level of service from one area to another is different, and the decision to change a priority level has a direct impact on the internal operational cost and contracting costs

Case Study – City of Montreal

Cost Breakdown by Activity and Borough

DECIMAL Modeler / 2019 Budget (168)

File Parameters Modeling Actual Labour Tools Diagnosis Help

Resource Mi. x

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| Resource Type | Amount | Level | Relative Pourcentage | Quantity | Unit Cost |
|--|----------------|-------|----------------------|----------|-----------|
| OC1-Snow Removal - Borough A | 3 410 558,89 0 | | 100,00 | 1,00 | 1 705,28 |
| Activity Allocation Received | 3 410 558,89 1 | | 100,00 | 1,00 | 1 705,28 |
| 1479531-ALLA-Domestic Waste and Related Byproduct | 458 757,24 1 | | 13,45 | 1,00 | 229,38 |
| 1473812-ALLA-Abrasives Spreading | 412 418,13 1 | | 12,09 | 1,00 | 206,21 |
| 1479999-ALLA-Dry Material | 393 882,48 1 | | 11,55 | 1,00 | 196,94 |
| 1473020-ALLA-Snow Removal - Roads and Alley | 347 543,36 1 | | 10,19 | 1,00 | 173,77 |
| 1479571-ALLA-Recyclable Material | 315 105,98 1 | | 9,24 | 1,00 | 157,55 |
| 1473050-ALLA-Snow Removal - Sidewalk | 301 204,25 1 | | 8,83 | 1,00 | 150,60 |
| Other Expenses | 301 204,25 2 | | 8,83 | | |
| 9999-2000004-500020-931-21031-1000000-100000000-Fringe Benefits | 31 902,09 2 | | 0,94 | | |
| 9999-3000004-500020-931-21031-1000000-100000000-Fringe Benefits | 29 448,08 2 | | 0,86 | | |
| 9999-4000004-500020-931-21031-1000000-100000000-Fringe Benefits | 17 178,05 2 | | 0,50 | | |
| 9999-5000000-612500-931-21031-1000000-100000000-Rolling stock depreciation | 15 680,24 2 | | 0,46 | | |
| 9999-1000009-524990-931-21031-1000000-100000000-ONB - Maintenance and Repairs | 6 287,71 2 | | 0,18 | | |
| 9999-1000011-524990-931-21031-1000000-100000000-ONB - Maintenance and Repairs | 6 268,06 2 | | 0,18 | | |
| 9999-1000005-524990-931-21031-1000000-100000000-ONB - Maintenance and Repairs | 4 739,55 2 | | 0,14 | | |
| 9999-1000010-500009-931-21031-1000000-100000000-Counterpart - Salary Transfert | 4 072,79 2 | | 0,12 | | |
| 9999-3000000-570015-931-21031-1000000-100000000-Purshasing - Gas | 3 288,50 2 | | 0,10 | | |
| 9999-3000000-510880-931-21031-1000000-100000000-Publicity and Promotion | 3 132,50 2 | | 0,09 | | |
| 9999-1000000-500020-931-21031-1000000-100000000-Fringe Benefits | 2 877,91 2 | | 0,08 | | |
| 9999-1000010-500020-931-21031-1000000-100000000-Fringe Benefits | 2 718,66 2 | | 0,08 | | |
| 9999-3000000-524990-931-21031-1000000-100000000-ONB - Maintenance and Repairs | 2 616,39 2 | | 0,08 | | |
| 9999-1000002-500020-931-21031-1000000-100000000-Fringe Benefits | 2 572,81 2 | | 0,08 | | |
| 9999-1000008-500020-931-21031-1000000-100000000-Fringe Benefits | 2 436,20 2 | | 0,07 | | |
| 9999-1000004-500020-931-21031-1000000-100000000-Fringe Benefits | 2 347,30 2 | | 0,07 | | |
| 9999-1000003-524990-931-21031-1000000-100000000-ONB - Maintenance and Repairs | 2 322,38 2 | | 0,07 | | |
| 9999-1000003-500020-931-21031-1000000-100000000-Fringe Benefits | 2 277,89 2 | | 0,07 | | |
| 9999-1000006-500020-931-21031-1000000-100000000-Fringe Benefits | 2 111,98 2 | | 0,06 | | |
| 9999-1000007-500020-931-21031-1000000-100000000-Fringe Benefits | 2 077,49 2 | | 0,06 | | |
| 9999-1000009-500020-931-21031-1000000-100000000-Fringe Benefits | 1 978,50 2 | | 0,06 | | |
| 9999-2000004-501110-931-21031-1000000-100000000-Employee Contribution - RREGOP - Ef... | 1 961,98 2 | | 0,06 | | |

Model Output
(Cost Object)

Unit Cost
Detail

Line Item Cost
Allocations to
Activities

Distribution
of Costs

Case Study – City of Montreal

Unit Activity Costs by Borough

DECIMAL Modeler / 2019 Budget (168)

File Parameters Modeling Actual Labour Tools Diagnosis Help

Cost Obj.. x

Nodes Cost Objects Cost Object Statistics BOA Recovery Values BOA Pivot Layout Analysis: Productivity Analysis: .. Detailed BOA BOA by Level Analysis: I

Query : Total cost analysis-Total cost anal... Disposition : Benchmark

Queries Pivot Ta.. Data

Drop Filter Fields Here

Unit Cost Cost Object Descr. ↑ ↓

Activity Descr. Allowed ↑ ↓

| | Snow Removal - Borough A | Snow Removal - Borough B | Snow Removal - Borough C |
|---|--------------------------|--------------------------|--------------------------|
| Abrasives Spreading | 206,21 | 117,33 | 1 169,72 |
| Adm. And Tech. Support | 6,95 | 3,95 | 39,43 |
| Adm. And Tech. Support - Residual Materials | 115,85 | 65,92 | 657,15 |
| Adm. And Tech. Support - Water Management | 81,09 | 46,14 | 460,00 |
| Blowing | 41,71 | 23,73 | 236,57 |
| Domestic Waste and Related Byproduct | 229,38 | 130,51 | 1 301,15 |
| Dry Material | 196,94 | 112,06 | 1 117,15 |
| Loading | 145,97 | 83,05 | 828,01 |
| Other Residual Material | 62,56 | 35,59 | 354,86 |
| Recyclable Material | 157,55 | 89,65 | 893,72 |
| Snow Disposal Site Exploitation | 62,56 | 35,59 | 354,86 |
| Snow Removal - General | 4,63 | 2,64 | 26,29 |
| Snow Removal - Roads and Alley | 173,77 | 98,87 | 985,72 |
| Snow Removal - Sidewalk | 150,60 | 85,69 | 854,29 |
| Transport | 69,51 | 39,55 | 394,29 |
| Grand Total | 1 705,28 | 970,29 | 9 673,22 |

**Activity Unit Costs
by Borough**

**Key Snow
Removal
Activities**

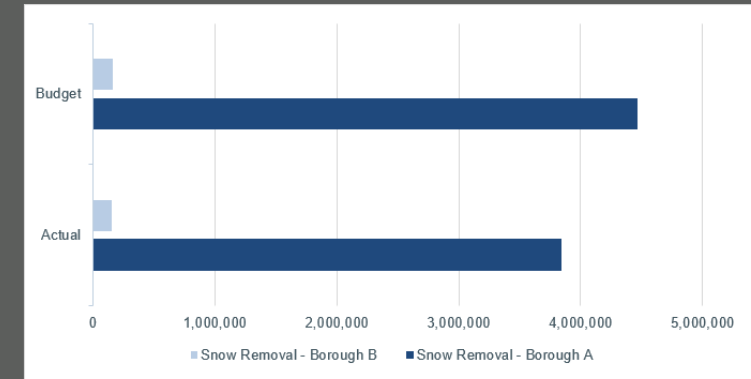
Case Study – City of Montreal

Illustrative Results

Actual vs. Budget Variance Analysis for Key Services to Boroughs

| Executive Dashboard Total Costs per Services per Borough | | | | | | | |
|---|-------------------|---------------|-------------------|---------------|----------|---------|--|
| Costs objects | Actual | | Budget | | Variance | | |
| | Cost | % | Cost | % | \$ | % | |
| Snow Removal - Borough A | 3,846,743 | 5.4% | 4,467,711 | 6.1% | -620,968 | -16.1% | |
| Snow Removal - Borough B | 156,938 | 0.2% | 165,663 | 0.2% | -8,725 | -5.6% | |
| Snow Removal - Borough C | 31,165,664 | 43.5% | 31,319,504 | 42.5% | -153,840 | -0.5% | |
| Residual Material Management - Borough A | 5,925,922 | 8.3% | 6,254,796 | 8.5% | -328,874 | -5.5% | |
| Residual Material Management - Borough B | 6,210,246 | 8.7% | 6,682,177 | 9.1% | -471,931 | -7.6% | |
| Residual Material Management - Borough C | 2,197,133 | 3.1% | 2,094,106 | 2.8% | 103,028 | 4.7% | |
| Adm. And Tech. Support - Borough A | 405,423 | 0.6% | 893,542 | 1.2% | -488,119 | -120.4% | |
| Adm. And Tech. Support - Borough B | 21,618,220 | 30.2% | 21,712,272 | 29.5% | -94,051 | -0.4% | |
| Adm. And Tech. Support - Borough C | 67,571 | 0.1% | 63,017 | 0.1% | 4,553 | 6.7% | |
| Total | 71,593,861 | 100.0% | 73,652,786 | 100.0% | | | |

Show data



| Executive Dashboard Snow Removal Service | | | | | | | |
|---|-------------------|----------------|---------------|-------------------|----------------|---------------|-------------------|
| Budget: Budget demandé 2018 | | | | | | | |
| Actual: Réel + Engagements 2018 | | | | | | | |
| Borough | Actual | | | Budget | | | Variance |
| | Amount | Unit Cost / km | % | Amount | Unit Cost / km | % | |
| BOROUGH A | 10,178,088 | 1,485 | 14.2% | 11,616,049 | 1,695 | 15.8% | -1,437,961 -14.1% |
| BOROUGH B | 27,985,404 | 3,911 | 39.1% | 28,560,111 | 3,992 | 38.8% | -574,707 -2.1% |
| BOROUGH C | 33,430,368 | 4,666 | 46.7% | 33,476,626 | 4,672 | 45.5% | -46,258 -0.1% |
| Total | 71,593,861 | | 100.0% | 73,652,786 | | 100.0% | |

Detail

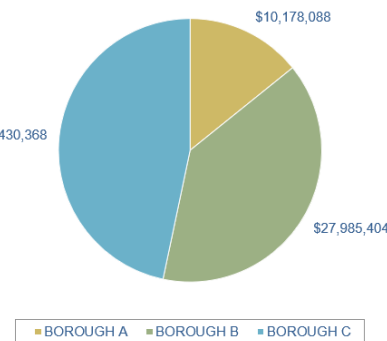
Analysis :

Borough costs per cost objects

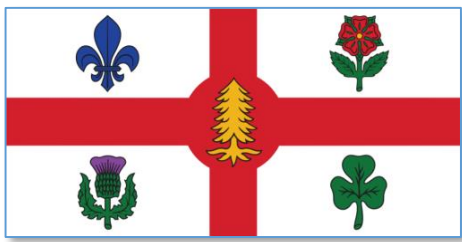
Services costs per activity

Show data : Réel + Engagements 2018

Snow Removal Costs



Detailed Variance Analysis for Snow Removal across Boroughs



Case Study – City of Montreal

Key Benefits Realized

- Identified the operational leaders across the Boroughs to establish “best practices” in snow removal activities and contract management
- Cross-examined the contracting costs per Km of street in the different Boroughs to generate guidelines on what should the correct contract price should be
- Established a better overall city budget for snow removal with priority level changes and expected snowfall forecast scenarios
- Analyzed the Borough’s performance in time to ensure they are improving the efficiency of limited resources.



**For additional
information**

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