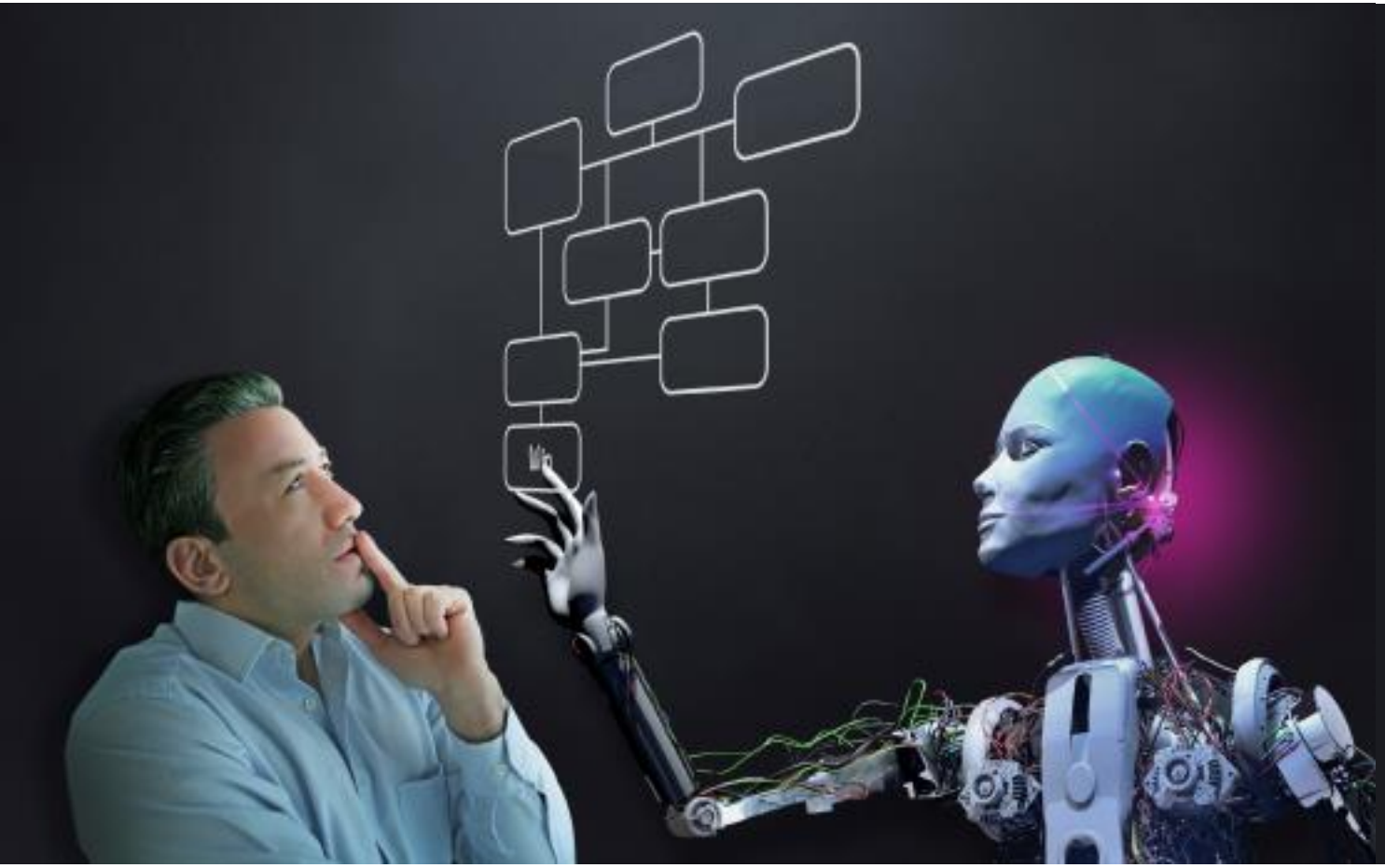


Practical Implementation of Process Mining at Large North American Financial Services Enterprises

Successful Business Cases

About David Whyte

Dave is a senior technology executive who has enjoyed a 30+ year career leading teams and delivering strategic solutions in the Financial Services industry to improve customer and employee experience. He has a strong foundation in technology and financial services and was recently SVP of Corporate Centre Technology at Canadian Imperial Bank of Commerce, leading teams accountable for Big Data, Agile@Scale, Robotic Process Automation and large scale business transformations in Finance, HR and Procurement.

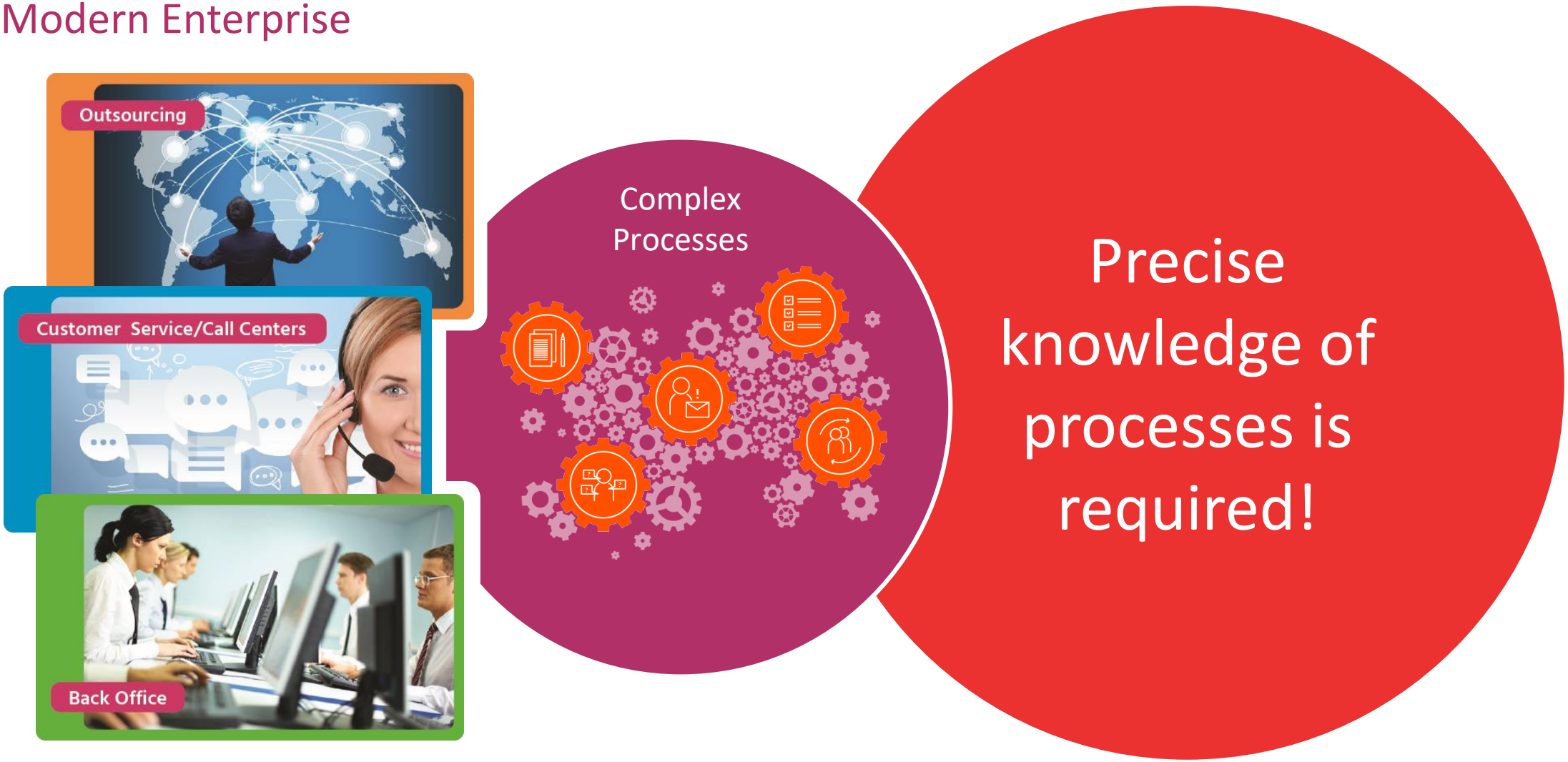
Dave's teams have leveraged StereoLOGIC Process Mining and Diagnostics tool for several large scale business process transformations including a Retail Product Origination re-write across the entire branch network and several Robotic Process Automation initiatives.

Agenda

- ✓ Automated Process Mining vs Manual Discovery
- ✓ How to practically implement Process Mining in a short time
- ✓ Successful case studies: *Process Mining at a Major Canadian Bank*

What is common between BPM, Transformation, RPA & Outsourcing?

Modern Enterprise



Manual Process Analysis

Modern Enterprise

Complex Processes

ERP

BPM

Manual Analysis

Automated Process Mining & Diagnostics

Monitors Operations

1

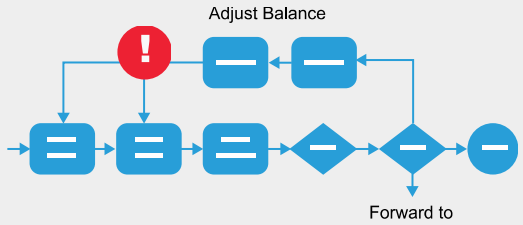
2

stereo logic

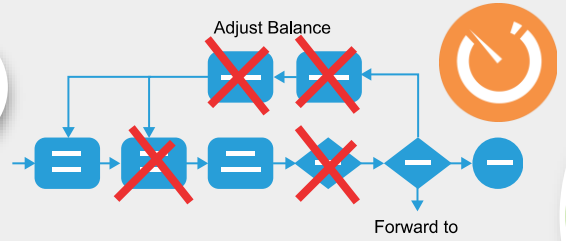
3

4

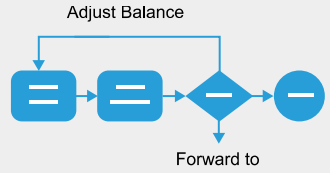
Extracts Processes and Detects Errors



Measures & Streamlines



Accelerated Processes for RPA & Transformation



5X Acceleration

100% Accuracy

Case Study: Practical Implementation of Process Mining at Major Canadian Bank

Replacement of multiple legacy origination systems with one consolidated system

Post-Transformation Stabilization

Challenge

- Despite intensive testing and Branch Piloting of new Origination Platform, a number of errors and system delays arise in production
- Processes are not stabilized and employees waste time on workarounds and waiting for systems response - this **negatively impacts customers experience**.

Solution

- In 2016 the Bank has introduced a new approach to improving customer and employee experience by implementing StereoLOGIC Process Analytics ®
- StereoLOGIC has allowed to define standard processes and to detect process deviations and errors at branches in real time.

Results

- **Accelerated Customer Services by 22.5% and Reduced Errors and Delays by 95% in less than 6 months**
- **$15MM operational savings across all branches**

Senior Director, Technology and Operations:

"StereoLOGIC enables us to see what's actually going on in production"

The Challenge – What's going on?

Challenge

Post-Transformation Stabilization

- Despite intensive testing and Branch Piloting of new Origination Platform, a number of errors and system delays arise in production
- Processes are not stabilized and employees waste time on workarounds and waiting for systems response - this **negatively impacts customers experience**.

What Project Leaders Say:

"Every FI is competing and needs to reduce cost at every opportunity"

"There are always differences between test and production, some real scenarios are hard to predict"

"The financial advisor is focused on the client interaction and may not remember exactly what happened with the system"

"User's perception of the problem is often wrong, we need to prove / disprove user complaints – do we need to fix them?"

"It is always great to know exactly what is going on."

Solution

Solution

In 2016 the Bank introduced **StereoLOGIC Process Analytics**, which provided the ability to:

- Proactively and precisely detect problems (errors, delays and usability issues) in production, when new releases come out
- Improve the quality of what's being implemented by identifying issues early
- Accelerate national implementation
- Significantly improve and accelerate customer services
- Improve employee satisfaction

Results

- **Accelerated Customer Services by 22.5% and Reduced Errors and Delays by 95% in less than 6 months**
- **$15MM operational savings across all branches**

The Approach

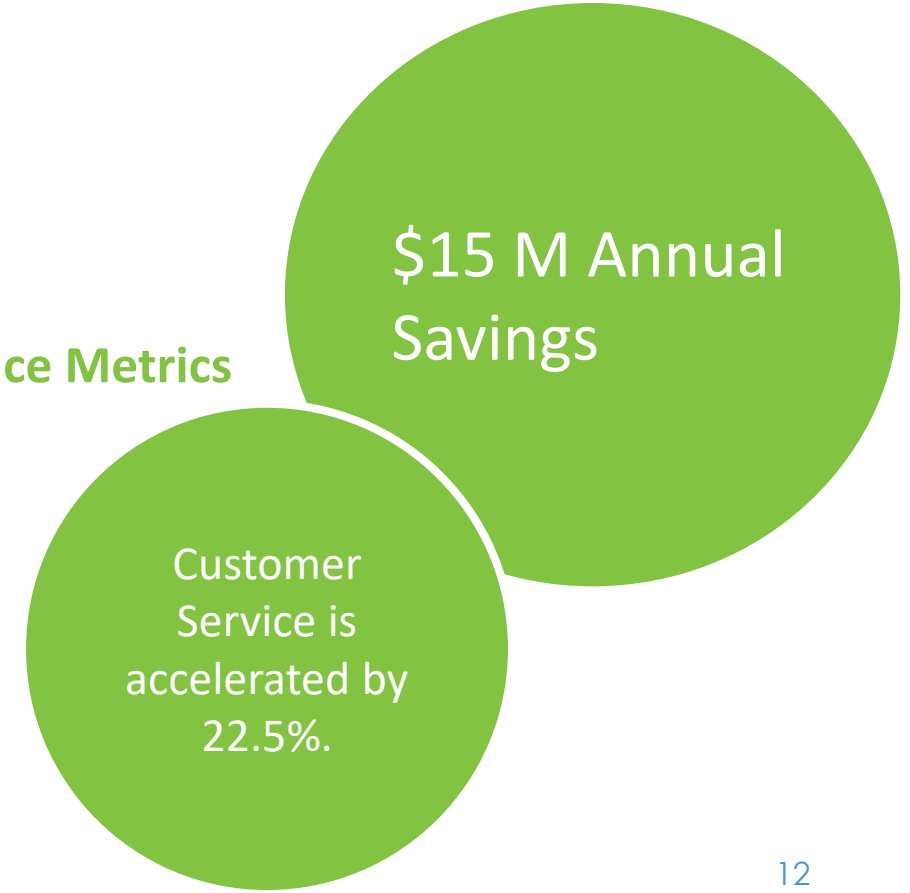
- Each new release of the Platform is piloted in a small number of selected branches (5 – 10) with using **StereoLOGIC Process Analytics ®**
- Selected users (10 - 20 per branch) working on actual Client Cases are monitored and the time spent on specific process activities is measured
- All Errors and Delays that have occurred are automatically detected and reported
- Error and Delay Reproduction Scenarios are documented automatically
- Root cause analysis is performed by recreating the Reproduction Scenarios in the test environment
- The detailed information for the problem correction is provided, such as:
    - ✓ Detailed Process Flow
    - ✓ User Activity where the Error / Delay occurred
    - ✓ Time when it occurred
    - ✓ Screen transition response times
    - ✓ The step sequence between errors and process activities causing them
    - ✓ Screen for each User Activity
- The progress is reflected in daily reports and baselined for future use

RESULTS

- ✓ **Reduced Errors and Delays from 95% to 0%**

Errors and Delays:	Client Time Saved (%)
User Errors	6.81 %
System Errors	2.02 %
Screen Delays	7.03 %
Canceled Cases	6.68 %
TOTAL:	**22.5%**

- ✓ **Generated Standard Operating Procedures and Performance Metrics**
- ✓ **Accelerated Customer Services by 22.5%**
- ✓ **$ 15 M Annual FTE Savings**



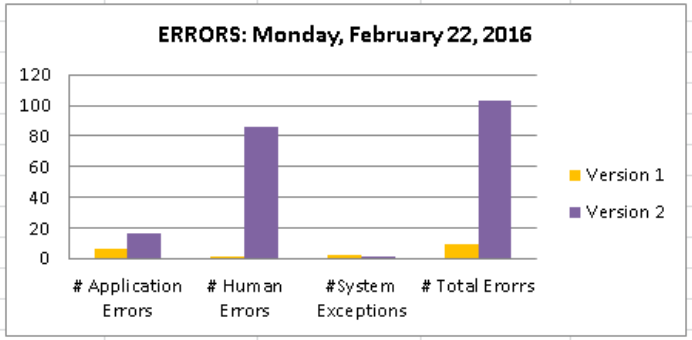
APPENDIX

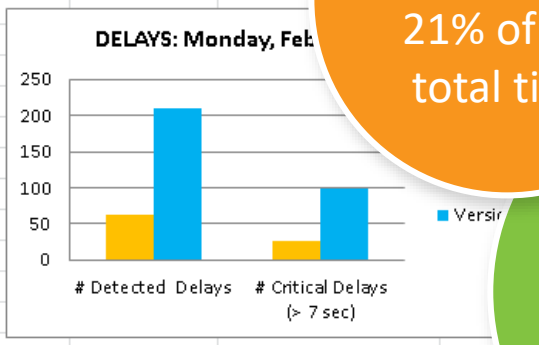
Report Example: Number of Defects and Delays in Production

Quality Management and Diagnostics

Report Date: February 23, 2016

From: February 19, 2016
To: February 22, 2016





Delays represent 21% of the total time

These errors and delays can be reproduced and sent to developers for correction

Errors and Delays - Details

Branch # Test Branch

				ERRORS				DELAYS			
Date:	Platform Version:	Monitoring Duration (hh:mm:ss)	Hands-On Time (hh:mm:ss)	# Application Errors	# Human Errors	#System Exceptions	# Total Erorrs	# Detected Delays	# Critical Delays (> 7 sec)	Total Wasted Time due to Delays (hh:mm:ss)	Total Wasted Tim due to Delays (%)
Friday, February, 19 2016	Version 1	02:28:55	01:19:58	3	4	0	7	45	23	00:12:59	16%
Monday, February, 22 2016	Version 1	00:56:57	00:55:07	6	1	2	9	62	26	00:14:12	26%
Monday, February, 22 2016	Version 2	02:51:50	02:51:42	16	86	1	103	211	100	00:36:15	21%
Total (Version 1):				*9*	*5*	*2*	*16*	*107*	*49*	*00:27:10*	*21%*
Total (Version 2):				*16*	*86*	*1*	*103*	*211*	*100*	*00:36:15*	*21%*
			TOTAL	25	91	3	119	318	149	01:03:26	21%

R2 Delays - Monday | R1 Errors - Friday | R1 Errors - Monday | R2 Errors - Monday | **Quality Mgmnt & Diagnostics** | Quality Management

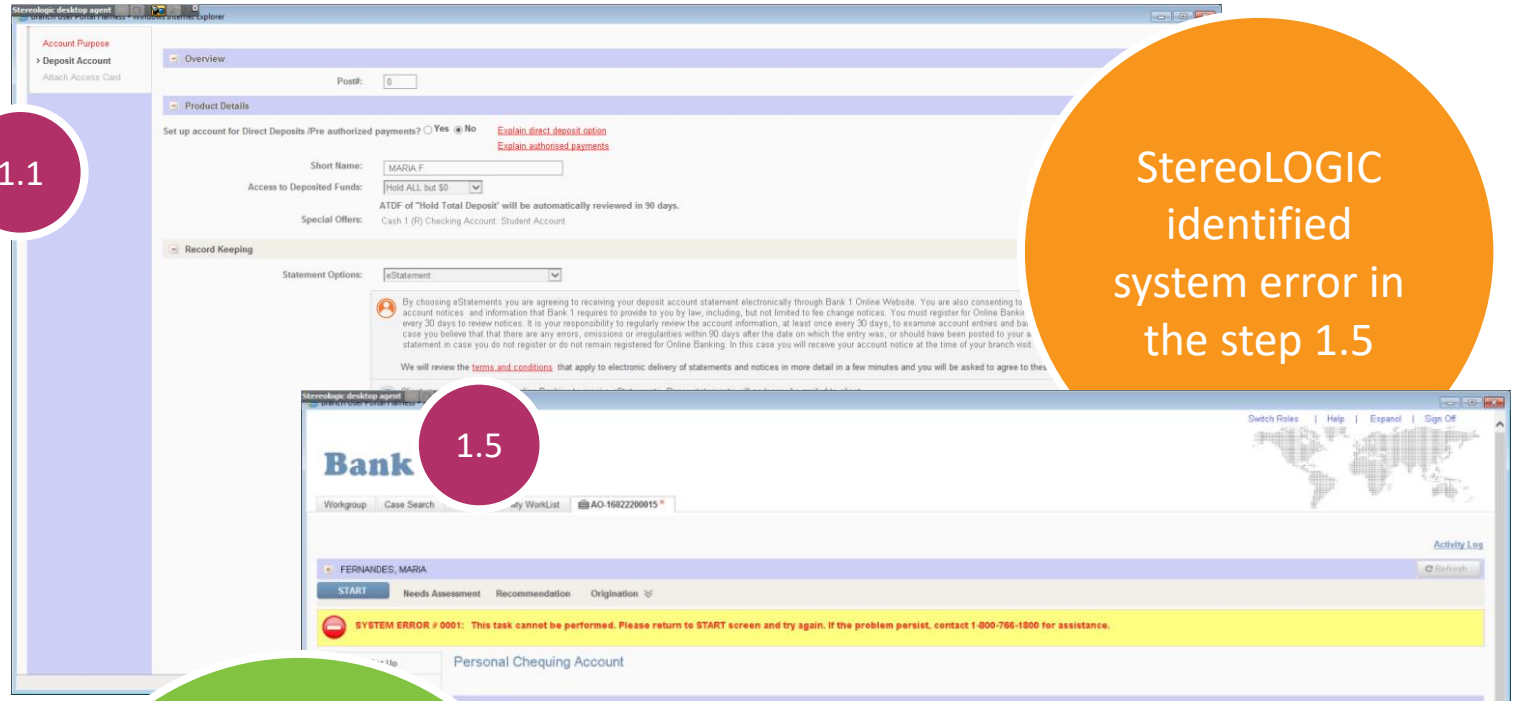
Report Example: Defect Reproduction and Root Cause Analysis

eFA6 First System Error.
Basic Flow:

1.1 In Checking account click on Statement Options (see screen)
1.2 Select eStatement
1.3 Check Client Agreement Checkbox
1.4 Click Next (Complete Agreement)
1.5 SYSTEM ERROR (see screen)

Detailed error replay - flow with links to the screens to assist error reproduction

Additional technical info available: page URLs, session IDs, user events, etc.



StereoLOGIC identified system error in the step 1.5

The step sequence between errors and process activities causing them can be automatically reproduced (steps 1.1 – 1.5)

REPORTS and INSIGHTS (examples of deliverables)

SCENARIO	Ontario								British Columbia				Total		
	Agent 1		Agent 2		Agent 3		Agent 4		Agent 5		Agent 6				
	Q	Time	Q	Time	Q	Time	Q	Time	Q	Time	Q	Time	Q	Time	% of time
CLEAN: DISCHARGE	50	3:35:11			25	2:23:38	48	4:55:17					123	10:54:05	43.58%
CLEAN: REFINANCE			39	2:56:04									39	2:56:04	11.73%
CLEAN: TRANSFERS	1	0:05:17					22	1:03:17					23	1:08:34	4.57%
EXCEPTION: CLOSED as HPP	8	0:08:18	20	0:21:22	27	0:23:58	32	0:29:02	38	0:30:08	9	0:17:36	134	2:10:24	8.69%
EXCEPTION: DISCHARGE already done	8	0:04:52			2	0:01:09	3	0:00:39			1	0:00:36	14	0:07:16	0.48%
EXCEPTION: No Action on Case	41	0:02:32	1	0:00:02	3	0:01:47	2	0:03:10	1	0:01:19	1	0:00:20	49	0:09:11	0.61%
EXCEPTION: DISCHARGE - ID not taken	1	0:04:34			1	0:03:24							2	0:07:58	0.53%
EXCEPTION: REFINANCE - ID not taken			6	0:33:10											2.21%
EXCEPTION: TRANSFER - ID not taken							3	0:04:27							
EXCEPTION: TRANSFERS ended with ERROR							1	0:00:50							
OTHER: PREP for EREG									38	2:29:20					
OTHER: PDF Signing									1	0:14:25					
OTHER: LTSA Submissions															
OTHER: Unhold with EREG ID input															
OTHER: unclassified			1	0:05:04	7	0:56:36	6	0:19:35	2	0:08:06					
Total	109	4:00:44	67	3:55:42	65	3:50:32	117	6:56:17	80	3:23:18					

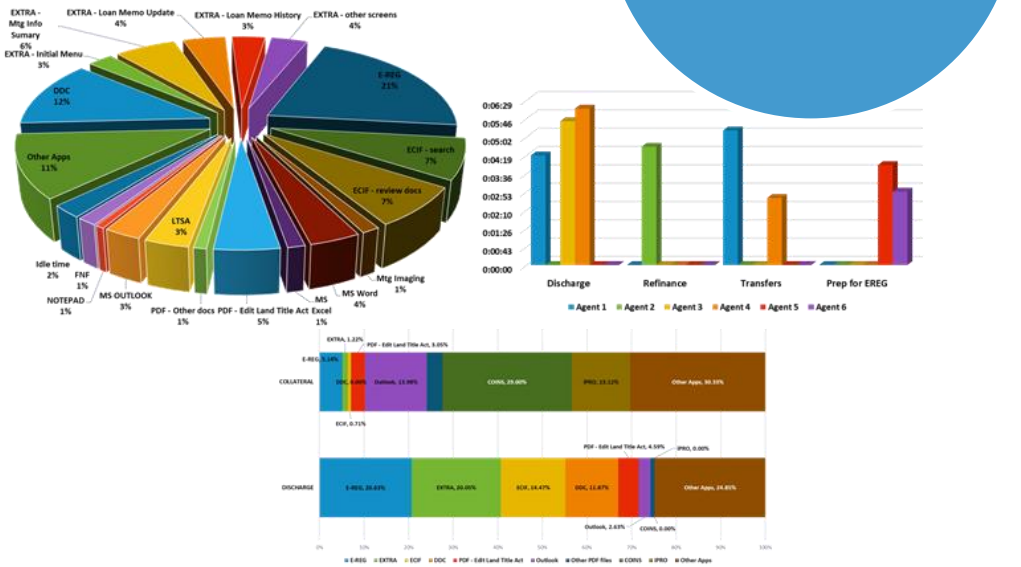
**time is shown in hh:mm:ss format*

Plain Excel extracts

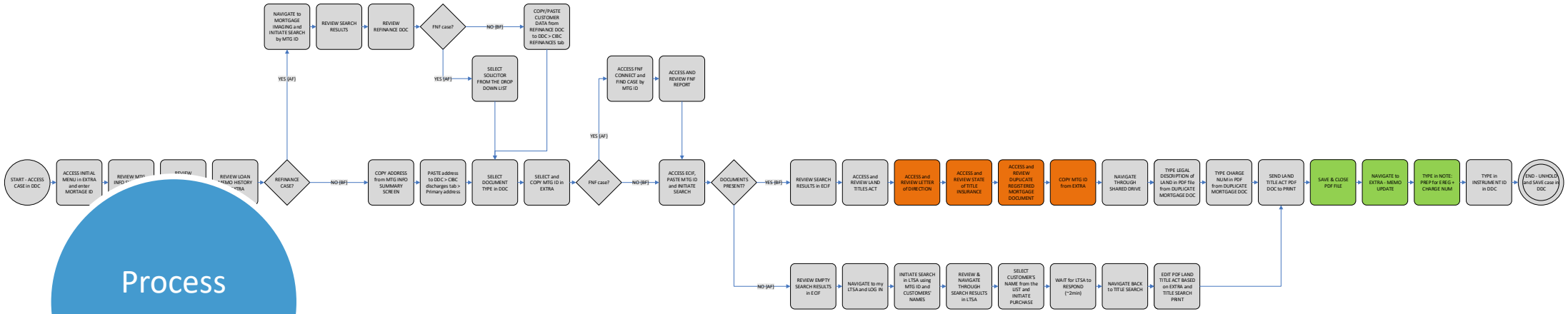
#	AUTOMATION CANDIDATE DESCRIPTION	% within net working time	% of time that could be saved (up to...)	Automation Complexity	Full vs. partial automation	Potential Solution	Eventual total saving
	Mapping file server access (all sub-scenarios, excluding "other")						
1	**General Overview:** Users of Bank apps require frequent re-mapping of file access drives. This occurs due to a number of different events such as moving to a different office or need of getting another level of acccess. Agent uses Employee ID as an input and loops through NOVELL and/or ACTIVE directory in order to update file access of a particular user according to the request in a ticket/email/skype message/excel file attachment **Process Highlights:** - process is rather structured with concrete rules to be followed. Main inputs of the process are Employee ID and a collection of drives/access rights a user should possess - sometimes the whole batch of users is processed at once, as in "Regional Credit Review Batch" scenario. Agent loops through the list of required users in xls spreadsheet and grants all of them appropriate access	45.28%	90%	Low-Medium	Partial	- a work queue should be enhanced and structured in a definite form, so that the robot gets all the required parameteres for processing - based in the parameteres defined in the work queue, RPA solution should loop through the list(s) of users whose file access should be modified - due to presence of certain "unexpectancies" in the process, it is not set at 100% potential savings. Such things relate to some unexpected errors reported by users. In this case, a custom investigation would have to be delivered.	40.75%
	Remove users from systems						
2	**General Overview:** Removing all access to users upon ticket request in ServiceNow **Process Highlights:** - process is rather structured with concrete rules to be followed within every single application. It does not require any judgement on the agent's side. - when removing a batch of users from different systems - agent does not know which users have access to which systems, therefore has to loop through all of them within each application	6.21%	100%	Low-Medium	Full	- each user should have an "access profile" (sim directory) defining all applicationions he/she h and access level/type - auto-loop through the batch of users mark - visit each application in interest, search a automatically - auto-maintain audit log of the jobs done	
	Add/updated/delete access of users to various systems						
3	This category of processes includes structured flows for granting specific access rights to users: - FIS access add/modify/delete - CMSe access add/delete - Moody's access add/modify/delete - Modifying access for Pay Plus - Intranet access add/modify/delete - Identifying available FIS IDs	22.88%	50%	Medium	Full	- development of electronic queue with s properly classified requests that are furthe automatically	
						TOTAL POTENTIAL SAVINGS	
	Other Observations						
4	37% of ALL agents' recorded work is spent in SERVICE NOW. Automation of any of the potential processes will have a significant saving effect here as well.	*Further investigation would be required to conclude on volume of potential savings*					

Inefficiencies & automation opportunities

Charts and graphs with insights

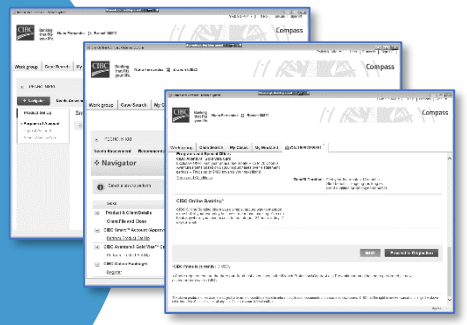


REPORTS and INSIGHTS (examples of deliverables)



Process maps

Step-by-step reproductions

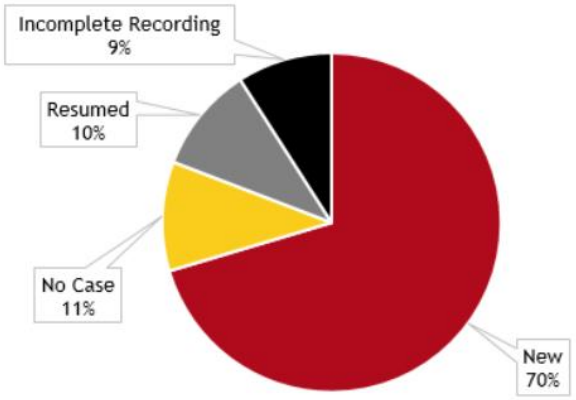


REPORTS and INSIGHTS

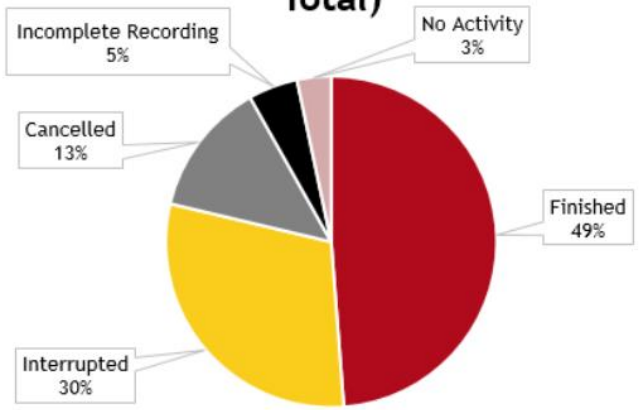
Sales Case Findings

662 Banking Centre Compass cases were analyzed to understand start and end types

Start Types of Sales Cases (662 Total)



End Types of Sales Cases (662 Total)



Case Start Type	Definition
New	New case was initiated from the Launch Now button and a primary purpose was selected
Resumed	Case was resumed in any way - through case list, my cases, task list , any other screen
No Case	The User doesn't click Launch now to proceed past the Landing Page for numerous reasons
Incomplete Recording	User started recording in the middle of the case

Case End Type	Definition
Finished	Wrap Up and Exit occurred after printing at least some of the forms. The case must be in Product Origination stage
Cancelled	User explicitly selected to cancel a case
Interrupted	Case Flow was interrupted by any of the following: - Closing the case or signing off without wrap up and exit - Doing wrap up and exit in the middle of the case (not in Product Origination stage or without printing any forms) - Idling the case and switching to some other unrelated work
No Activity	The case was opened or started, but closed in any way without ANY activity
Incomplete Recording	User stopped recording in the middle of the case - we do not know case outcome

Insights

- 15% of cases are ended due to a system error, user error, or failure to create a new Case tab (not displayed here)
- 11% of the time no case is created, a case is not selected, or no work was done on the case (i.e., no Case)
- 30% of cases are ended by closing, signing off, or wrapping up in the middle of the case, or even switching to unrelated work (i.e., interrupted)
- 3% of cases are opened but closed without any work being done (i.e., no activity)

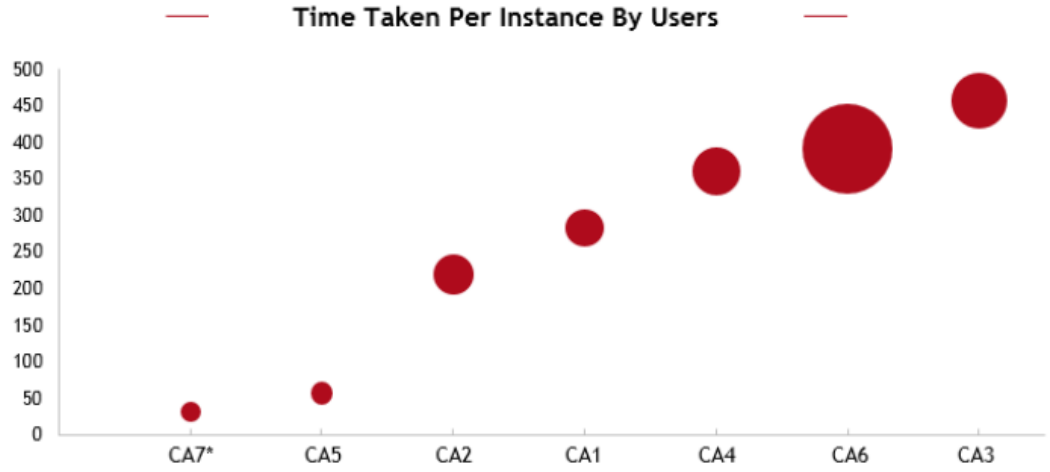
Recommended Action Items:

1. Provide users with the ability to launch a case each time 'Launch Now' is selected (regardless of whether the case was closed or signed off)
2. Address system and user errors which caused a case to end

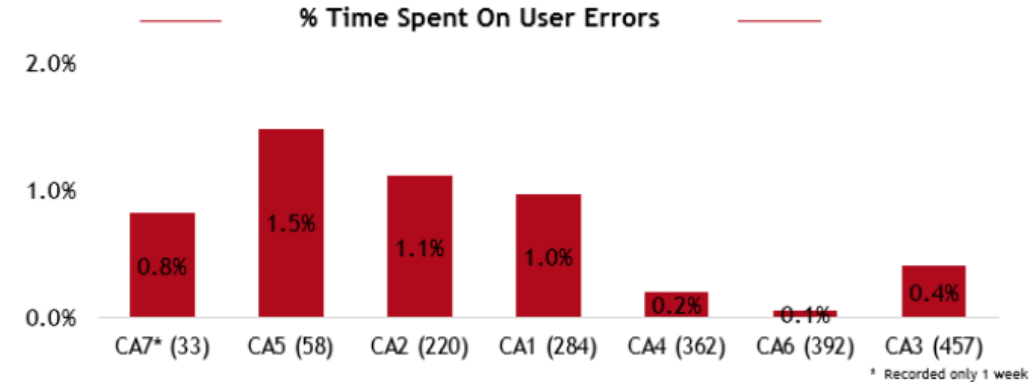
REPORTS and INSIGHTS

Credit Adjudication Total Times Per User

CAs average 10 minutes to process a sales case of which 6 seconds is spent resolving errors



**The Y-Axis indicates the error count and size represents total time resolving



Key Findings

User	Total Case Instances	Total Unique Sales Cases	Recording Time	Time Per Sales Case
CA7*	33	26	~6 hours	~14 min
CA5	58	46	~7.5 hours	~9.5 min
CA2	220	115	~25 hours	~13 min
CA1	284	220	~21 hours	~6 min
CA4	362	273	~34.5 hours	~7.5 min
CA6	392	259	~121.5 hours	~28 min
CA3	457	277	~47.5 hours	~10 min
Total	**1806**	**1216**	**~263 hours**	**n/a**

- The time spent resolving user errors is approximately 1% of the total time spent on cases
- Assuming 8 hour work days with lunch, CAs can process ~42 sales cases daily

Recommended Action Items:

- Further investigate why some individuals seem to take longer going through cases than others

Thank you!