

# IT Operations



**PiXELL River**  
Financial

## A Case Study

RRC Polytechnic, Applied Computer Education  
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# Overview

- PiXELL-River Financial is an Indigenous-owned banking service that is the parent company of multiple holdings has expanded its business operations to consolidate in-person and online service offerings through previous mergers and acquisitions.
- PiXELL-River Financial was founded in 1975 and designates its headquarters in Headingly, Manitoba. It provides coast-to-coast services throughout Canada and has in-person branches and ATMs located in every province and territory.
- PiXELL-River Financial's focus is on creating innovation in the banking sector and is actively expanding its service offering in a safe and secure way based on market demand.
- PiXELL-River Financial offers day-to-day banking and investment services and serves over two million customers through its more than 100 in person branches and 1,000 ATMs.
- Supported services/devices: PiXELL-River Financial currently supports 3000 end user devices with a combination of cloud and in house datacentre services. PRF is currently trialing a BYOD strategy with only around 5% organizational involvement/commitment currently.
- PiXELL-River Financial employs a total of 4,001 employees in 2021, which is a 3.4% increase from 2020. In addition, the organization supports its communities and is committed to providing opportunities to attract new talent work interested in entering the business, financial, and information technology fields.
- PiXELL-River Financial provides in-house business services including information technology and information security. Its IT Service Desk is the single point of contact of communication for all IT matters. The skilled team of 10 IT Service Desk analysts manage approximately 5000 service requests per annum and provides basic Tier 1 and Tier 2 break/fix help desk support. The IT Service Desk works closely with contracted IT vendors\*who provide Tier 3 and above expert specialist IT services.
- PiXELL-River Financial revenue for the fiscal year ending September 30, 2021, was \$25.02B, a 12.10% increase year-over-year.



Service Provider - Dagwaagin IT Consulting is an indigenous-owned Information Technology (IT) Consulting Service Firm founded in 2009. It is currently headquartered in Thompson, Manitoba. Its professional team specializes in expert level Tier 3 and Tier 4 IT escalation and resolutions services and provides server and network support including data backup. Dagwaagin provides consulting services, is a certified ServiceNow implementation partner, and provides

support for IT asset management, including hardware and software.

Tehknaa InfoSys Solutions is a leader in cybersecurity technology provider and specializes in cloud security technologies, fraud prevention, and digital recovery. Tehknaa's head office is in Scottsdale, Arizona and has offices in Canada, Europe, and South Asia including India, Philippines, and is currently expanding into South Africa.

## Strategy

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To execute a strategic growth plan that guides digital transformation while maximizing growth with cost minimization. Corporate strategies based on the company's business operating model include expansion of new digital products and services to meet consumer demand of accessing banking and investment tools through secure and innovative technology.

## Vision Statement

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To become a Canadian leader in the financial services industry by making banking and investment services accessible to all Indigenous and non-Indigenous people.

PIXELL-River Financial's vision statement sets the company's long-and short-term strategic plans by connecting consumers with financial resources while supporting investments in their local communities.

## Mission Statement

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To provide a superior suite of banking and investment services for personal and commercial members ranging from daily banking to wealth and investment management, and lending solutions that meet needs.

## Values

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PIXELL-River Financials' values reflect who they are and what they stand for. Our business strategies grow up and thrive from this foundation.

### **People Commitment**

We develop relationships and every interaction is service driven while being responsive to individual and community needs.

### **Trust and Accountability**

We nurture trust and accountability and exercise high customer service standards and deliver on our commitments.

### **Integrity & Honour**

We uphold the highest standards of integrity and treat people and resources with honesty, integrity, respect and equality in all our actions.

### **Quality**

We provide outstanding products and unsurpassed service that, together, deliver premium value to our customers.

### **Teamwork & Collaboration**

We work together, across boundaries, to meet the needs of our customers and ensure the best interests of customers are protected.

### **Good Citizenship**

We are good citizens and support the communities in which we live and work.

### **Innovation**

We are innovative and exhibit a strong will to transform our services to meet every aspect of our customers' banking and investment needs.

## **Business Goals**

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Becoming more customer-service-centric while delivering on commitments through teamwork and collaboration across all business lines.

Create a competitive streamlined organization while monitoring key performance results that meet stakeholder, market, and consumer demands.

Promote operational excellence and innovation while achieving a return on equity (ROE) of higher than 20 percent.

Ensure the best interests of our customers are protected and confidence and trust in our services is enhanced through effective, responsive, and secure risk oversight and controls.

Maximize productivity through employee engagement to maximize business and community growth.

## **Business Objectives**

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Re-price products to reflect the changing interest rate environment

Transform business processes with a focus on providing best-in-class service

Introduce mobile banking services to allow customers to bank whenever and wherever they want

Improved staff collaboration through improved productivity tools

Develop an enterprise security strategy, security architecture, and multi-year roadmap to improve the bank's security

Continue to adopt industry reference models, architectures, and standards



## Customers

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- PiXELL-River Financial has four business lines that serve different markets:

**Consumer Banking:** Consumer Banking is the largest division in the company and provides banking financial services to individual consumers and small businesses. Services include banking, investments, and lending products such as loans and mortgages. It also provides stockbroker services via an electronic trading platform through this division.

**Commercial Banking:** The Commercial Banking division provides banking services, including investment banking and lending to mid-to-large size businesses.

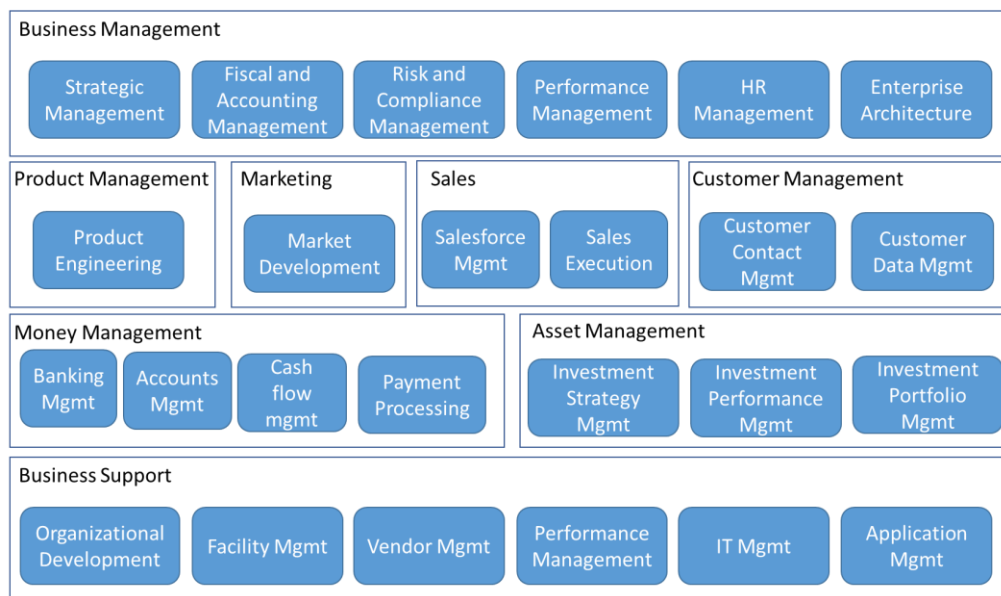
**Investment & Wealth Management (IWM):** The IWM division offers investment products through its subsidiaries, Baengk Premier, and IBhange Imali. This division manages investment assets of institutions and individuals that include Bangko Global Wealth Management and Trust.

**Global Banking & Markets:** PiXELL-River Financial's wholesale banking division offers various products and services to corporate, government, and institutional investor clients including trading in financial securities.

## Business Functions and Processes

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PiXELL-River's Primary business functions are:



PiXELL-River's is in the process of adopting IBM's Banking Reference Architecture. Primary business processes are:

	New business development	Branch & distribution Services	Banking Processing	Credit card processing	Securities processing	Customer servicing	Account development	Financial management	Business portfolio management	Business administration	
Direct	Segment analysis & planning	Channel distribution planning	Personal finance business planning	Credit card strategy	Securities strategy	Customer servicing strategy	Account development strategy	Finance policies	Asset & liability policy & planning	Business & resource planning	
	Sales & acquisition planning		Corporate finance business planning			Wealth management strategy	Customer portfolio and analysis			Business architecture	
	Product planning					Treasury strategy				Alliance & authority management	
Control	Acquisition administration	Branch administration	Banking oversight	Credit card oversight	Portfolio management	Service administration	Account development management	Financial control	Operational risk management	Business policies & procedures	
	Product administration		Credit risk management	Credit checking	Market risk management		Customer behavior & models	Treasury		Business unit tracking	
	Campaign management									Audit / assurance / legal	
Execute	Product development & deployment	Inventory management	Collateral handling	Merchant operations	Valuations	Application processing	Customer credit management	Collections & recovery	Consolidated book/position maintenance	Branch network operations	
		Account maintenance		Loan processing	Authorizations		Order management	Relationship management		Reconciliations	Human resource management
	Market research	Statement	Deposits & withdrawals		Billing		Trading (Front office)		Customer profile management		Securitization
		Information distribution		Payments	Trade execution (Back office)		Systems development & administration				
	Marketing	Teller services	LC Processing	Rewards management	Deal confirmation	Case handling	Correspondence	Financials consolidation	Alliance SLA administration		
		Document management		Retail Lending	Financial capture			Securities finance	Fixed asset register		
	Campaign execution	Settlements	Commercial lending	Product processing	Wire room		Contact / event history	Accounting general ledger	Loan syndication	Production assurance (help desk)	
		Card issuance									

## Business Information and Data

PiXELL-River Financial has a wide spectrum of business information assets and holdings. Information is considered in the broadest sense and includes:

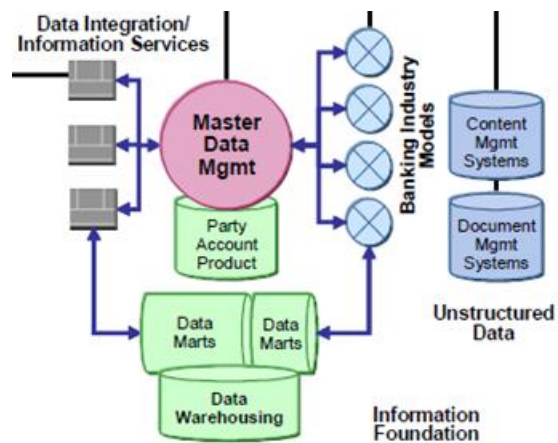
- Intellectual property
- Business and product development information
- Research and development data
- Sales, marketing and business plans
- Customer and supplier data
- Supply chain, and distribution data
- Financial data including Credit Card Data, personal and commercial mortgages, loans, investments
- Personnel and human resources data
- Consulting, partnerships, contracts, vendor management, or acquisitions data

PiXELL-River money and investment management data includes:

- Operational Data
  - Transactions
  - Accounts
  - Account Activity
  - Mails/Calls
  - Logs
  - Portfolios/positions

- Trades
- Market Data
  - Instruments
  - Quotes
  - Index Values
- Historical Market Data
  - Instruments
  - Quotes
  - Index Values
- Analytical Data
  - Fraud Detection
  - Customer Insights
- Metrics Data
  - Portfolio Performance
  - Risk Metrics
- Portfolio Management
  - Simulations
  - Optimizations
  - Rebalancing

PiXELL-River's Information and data management architecture is shown below:



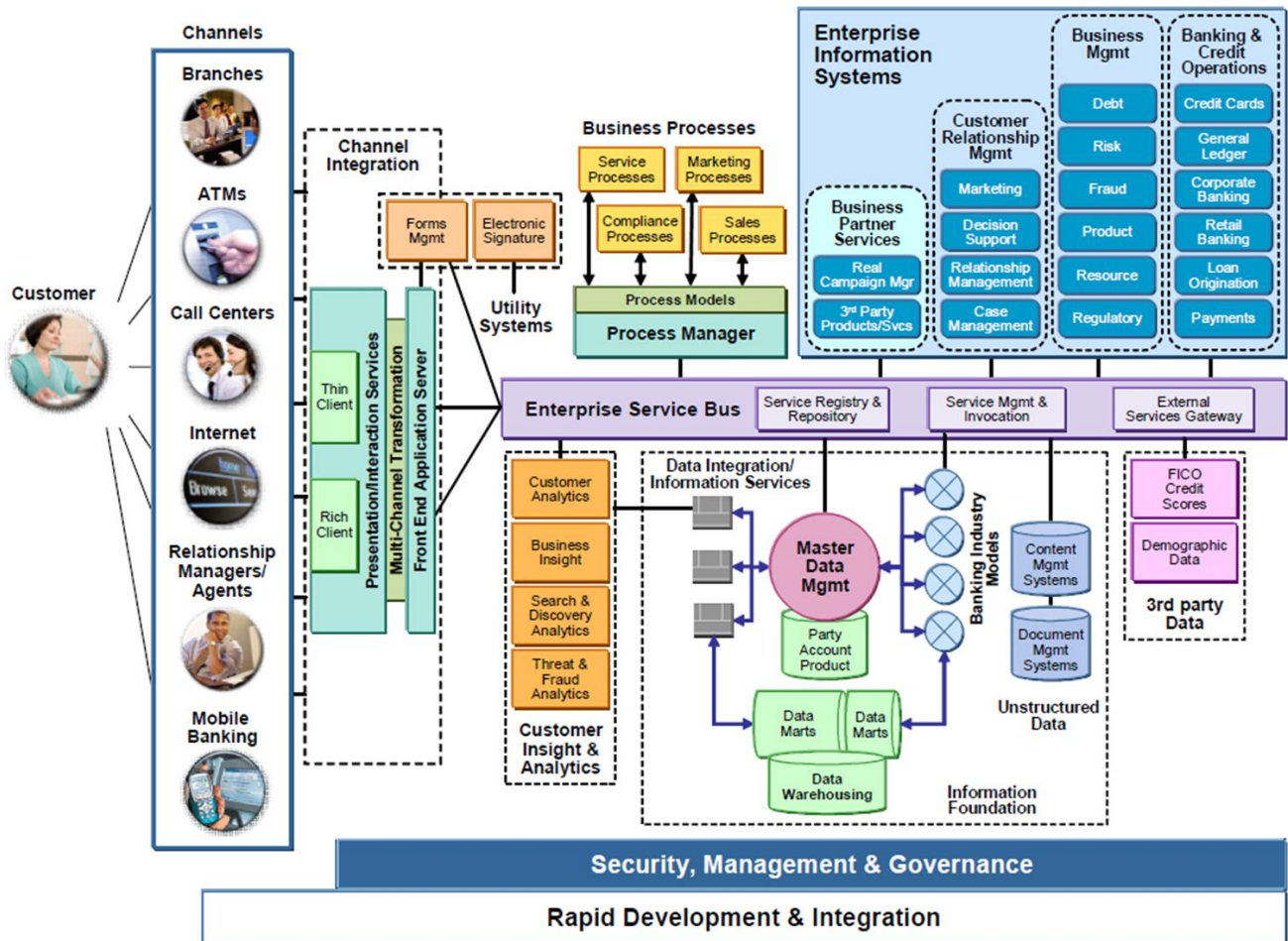
## Business Applications

PiXELL-River Financial's overall systems environment is depicted in the diagram below.

Key applications include:

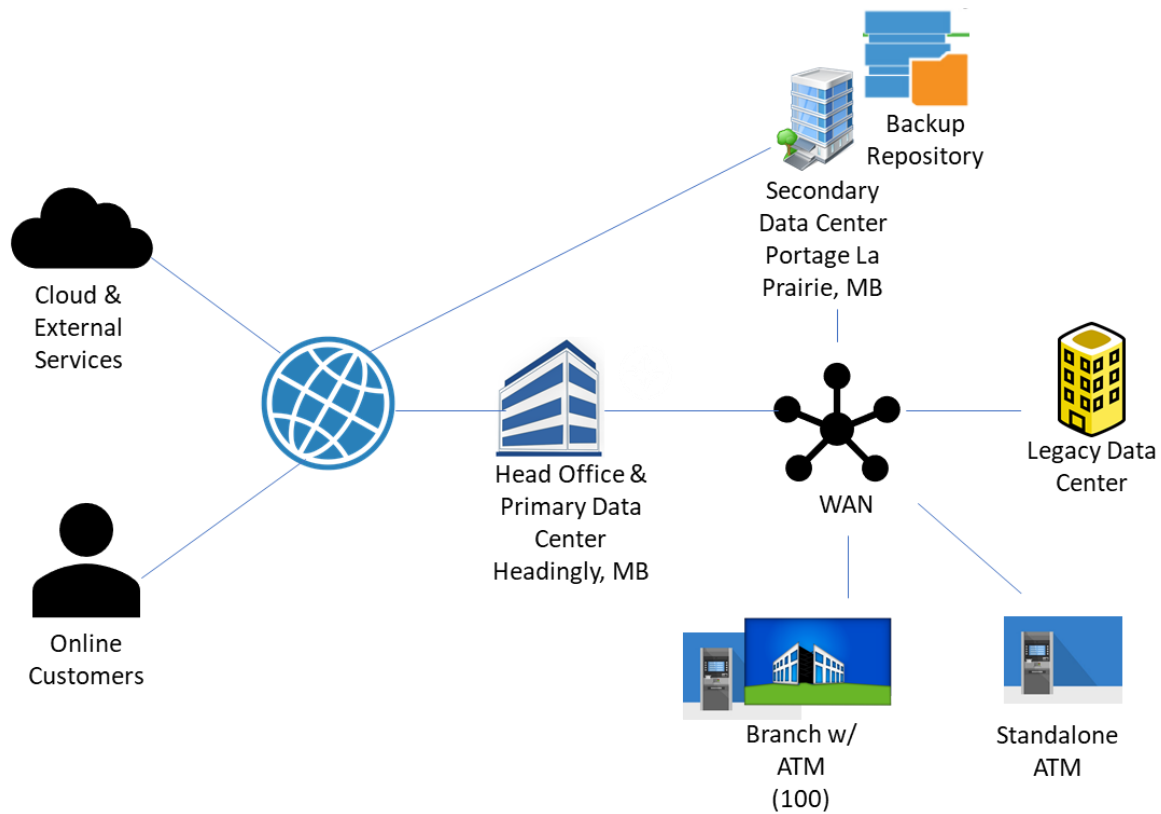
- POB – PiXELL online Banking – Customer portal
- CRM – Customer Relationship Management System
- Business management systems including:
  - Risk management system

- Fraud detection and management system
  - Product system
- Banking & credit operations
  - Retail banking system
  - Corporate banking system
  - Mortgages and Loan system



## PiXELL-River Locations and Network

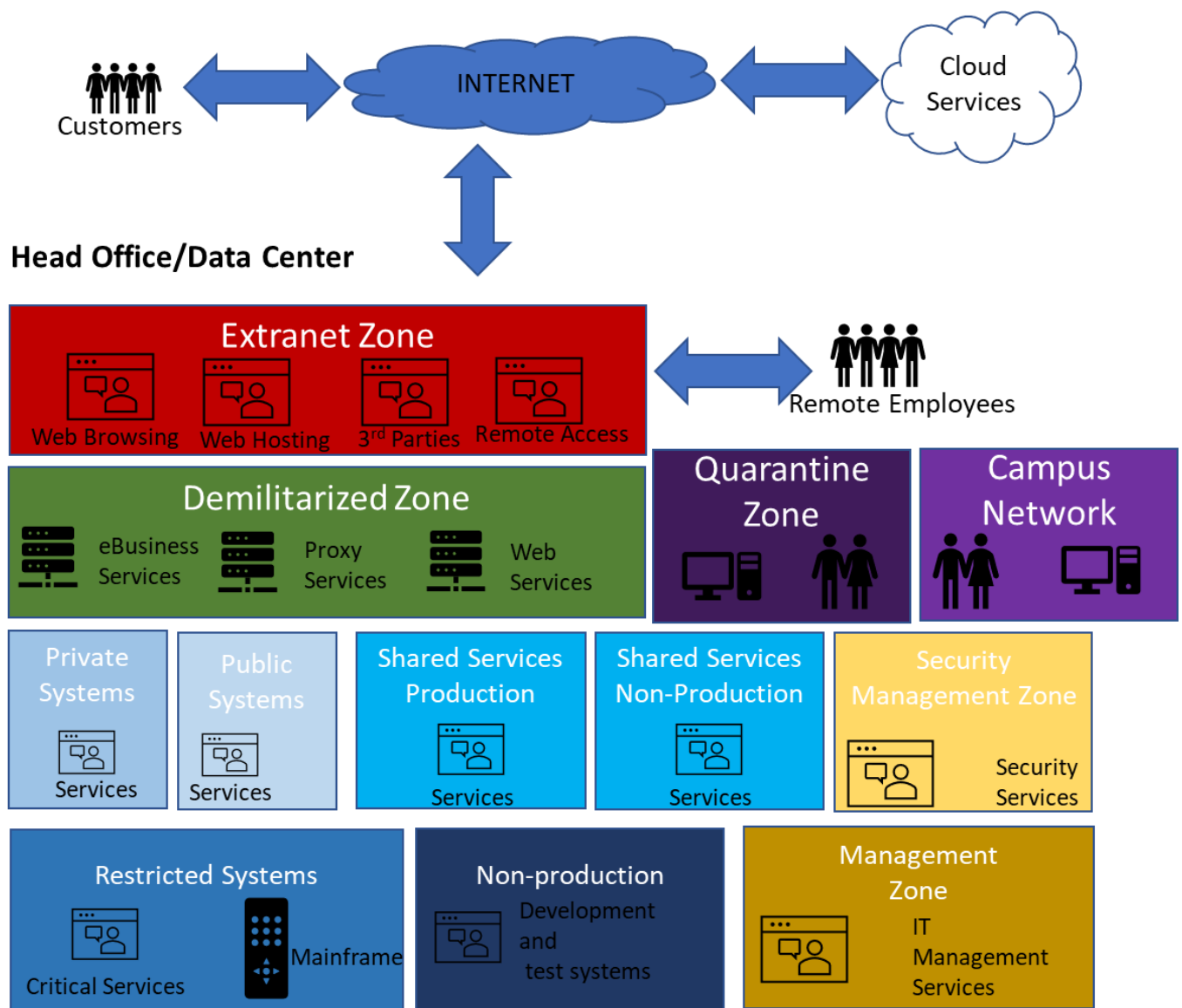
The following diagram shows PiXELL-Rivers primary locations and Wide area network connecting these locations. The primary data center controls Internet/remote access (backup in secondary data center). Branches are distributed across Canada:



## Technology Services

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A high-level view of technology services is shown in the network domain model below. The table describes in more detail the services including in each domain.



The network domain model of the primary data center will be mirrored in the secondary data center (not shown in diagram). For hosting services in the cloud, mirror a scaled down version of the network domain model in the cloud network (Not reflected in the diagram)

Zone	Description
<b>Internet zone</b>	This zone is composed of all external cyber zones, including the internet cyber space starting from the Enterprise internet service providers, public internet services, cloud zones, and external public and private zones.
<b>Extranet zone</b>	This zone shapes the outer border of the network, interfacing with different internet service providers. This zone is critical from internet connectivity and availability perspective. It

	contains services such as load balancing, Distributed Denial of Service, IP filtering, Routing Security, Intrusion Detection Services, Honeypots.
<b>Demilitarized zone (DMZ)</b>	This zone represents a partially trusted zone, where the Enterprise publishes services to the untrusted internet. All services that are consumed by the internet are published in the DMZ, including DNS, Email, Websites, e-Business...etc.
<b>Campus zone</b>	This zone includes mainly the Enterprise campus, including staff endpoints, printers, camera's...etc. This zone also includes the Wide Area Network including branches and regional offices. It also includes the Campus Core, which connects the DMZ, Datacenter and Campus together.
<b>Public Systems Zone (Production by LOB)</b>	This zone includes all public services supporting the business including corporate websites
<b>Private Systems Zone (Production by LOB)</b>	This zone includes all private services supporting the business including office automation services, directory services, and some business services that are not mission critical.
<b>Restricted Systems Zone (Production by LOB)</b>	This zone hosts all restricted mission critical services that are extremely important to the Enterprise business. This zone has the highest security requirements, and access is extremely restricted. Enterprise systems are hosted here (banking systems, CRM system)
<b>Management Zone</b>	This zone hosts all systems used to manage the infrastructure and the applications. Systems that control and manage the network, endpoints, applications, databases, and storage systems are hosted in this zone. Strict policies need to be applied on this zone as it provides management access to all infrastructure. It is the home for network and systems operation center. The scope of management includes all zones.
<b>Security Management Zone</b>	This zone hosts all systems needed to provide security monitoring and management. It is the home for the security operation center. The scope of security includes all zones.
<b>Non-production (by LOB)</b>	This zone includes non-production systems
<b>Quarantine Zone</b>	This zone contains services and components to assist non-compliant systems to become compliant.
<b>Shared Services Zone (production)</b>	This zone includes shared services that are used by all LOBs (E.g., Enterprise Service Bus)



and non-production)	
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## Financials

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PiXELL-River Financial's profile is typical of a mid-sized banking institution. PiXELL-River generates income through:

1. Interest income through lending (leveraging depositors' money)
2. Capital Markets income through sales and trading services, underwriting services, and merger/acquisition services
3. Fee-based income through credit card fees, bank account fees, investment fees

Its total annual revenue of \$25.02 billion is reflective of:

- Non-interest income is 21.4% of total revenue
- 89.3% loan-to-deposit ratio
- Customers include both individual consumers and regionally established businesses.
- Largest business customers average revenues in excess of \$50- \$61 million per year
- Processes approximately \$8 million in transactions on a given day
- Leading Online (desktop-download, web-browser, and mobile-app) Investment Platform.

## Organizational Structure

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- Pixel-River Financial's board of directors has five directors in place with the Chief Executive Officer (CEO) as the executive chairperson. Board members must represent the communities that PiXELL-River Financial serves.
- The CEO has five direct reports: the Chief Operating Officer/VP Operations; Chief Financial Officer/VP Administration; VP Client Services; and VP Marketing. Technology Operations and Information Security report to the COO through the chief information officer (CIO).
- Facilities and Physical Security report to the Chief Financial Officer/VP, Administration through Human Resources.
- Operational Risk; Internal Audit; Procurement oversees contractors and reports to the Chief Financial Officer/VP Administration



## Organizational Chart

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Please see the organizational chart attached in LEARN.

## Leadership and Management

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*Note: See Appendix B for Role Descriptions ([insert hyperlink to appendix](#))*

Role	Name
CEO/Chair of Board	Jo-Anne Sinclair
COO/VP Operations	Jackson Smith
CFO/VP Administration	Susan Thomas
VP Client Services	Richa Kaur
CIO	Josee Benjamin
VP Sales & Marketing	Vincent Grey
Director Financial and Audit Svcs	Rupa Kharki (she/her/hers)
Director Human Resources	Xun Kuang
Director Legal Services/General Counsel	Stien Pedersen
Director Information Technology	Sandra Bear
Director Information Security and CISSO	Gus Blue
Director Accounting	Sam Kong
Director Physical Security	Valentine Smith
Director Facilities	Mariya Kaperski
Manager, Business Continuity and Disaster Recovery	Abd al-Hamid Alami
Manager, Internal Audit	Victoria Gray
Chief Architect	Cheryl Guru
Manager, Security Architecture	Jean Ngoy
Solution Architect, Online Banking	Kris Gold
Manager, Application Solutions	Isaac Smith
Lead Developer, Online Banking	Payton Frost

Manager, Operational Risk	<b>Samantha Nettle</b>
Manager, Vendor Relations	<b>Yolanda Ferreira</b>
Manager, Purchasing	<b>Samir Hassan</b>
Manager, Communications	<b>Yuna Aikawa</b>
Manager Customer Experience and Community Eng.	<b>Jonathan Carberry</b>
Manager of Sales	<b>Roland Wei</b>
Manager, Marketing	<b>Pran Singh</b>
Business Analyst, Online Banking	<b>Linda Analyst</b>
Manager, Contract Management	<b>Esra Sedge</b>
Manager, Compliance Management	<b>Pranee Tan</b>
Manager IT End User Service Desk	<b>Karmen Spruce</b>
Manager IT End User Computing	<b>Haydar Katirci</b>
Manager IT Telecom and Infrastructure	<b>Jill Harkness</b>
Manager, Data Center and Hosting Services	<b>Tim Morrison</b>
Manager of IT Risk Management	<b>Aleksandr Milosevic</b>
Manager IT, project management office	<b>Jim Wingnut</b>
Left Vacant for future expansion	
Left Vacant for future expansion	
Left Vacant for future expansion	
Left Vacant for future expansion	
Left Vacant for future expansion	

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Left Vacant for future expansion

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## Employees

Name	Department
Zoë Robins	Administration
Madeleine Madden	Administration
Joshua Sadowski	Audit
Kate Fleetwood	Audit
Priyanka Bose	Banking Operations
Hammed Animashaun	Banking Operations
Álvaro Morte	Banking Operations
Taylor Napier	Banking Operations
Alan Simmonds	Banking Operations
Gil Cardinal	Communications
Richard J. Lewis	Communications
Randy Bradshaw	Corporate Services
Tracey Cook	Corporate Services
Lubomir Mykytiuk	Corporate Services
Dakota House	Facilities
Lori Lea Okemah	Facilities
Renae Morrisseau	Facilities
Rick Belcourt	Facilities
Selina Hanusa	Financial Services
Buffy Gaudry	Financial Services
Shaneen Ann Fox	Financial Services
Allan Little	Financial Services

Danny Rabbit	<b>Financial Services</b>
Jesse Ed Azure	<b>Human Resources</b>
Stacy Da Silva	<b>Human Resources</b>
Vladimír Valenta	<b>Human Resources</b>
Samone Sayeses-Whitney	<b>Human Resources</b>
Paul Coeur	<b>Human Resources</b>
Graham Greene	<b>Information Technology</b>
Sandika Evergreen	<b>Information Technology</b>
2	<b>Information Technology</b>

## External Parties

Listed are the most critical vendors and services of Pixell-River; but it is not all-inclusive.

### Tier 1 Vendors

Service Provider	Software / Hardware Application Provided	Location
Closed Office	Office Suite	Cerro Gordo, California , USA
PandaProtect	Endpoint Security Suite- i.e. Anti-virus, Web Application Firewall	Toronto, Ontario, Canada
Microsoft Azure Cloud	Cloud Storage	Redmond, Washington, USA
Green-Is-People! People Powered Services	Human Resources Cloud Application	Seattle, Washington, USA
In-Secure Consulting	Iron Clad Intrusion Detection Systems, Intrusion Prevention Systems, DDoS, Threat Intelligence, SIEM, Web Content Filtering	Kenora, Ontario, Canada
On the Internet! Network Services	Routers, Firewalls, Switches, Gateway Appliances	Brokenhead, Manitoba, Canada
Skynet 2.0 INC	Relational and Non-Relational Databases	Cold Lake, Alberta, Canada
Microsoft Azure Identity Management	Identity and Access Management Application, Multi-Factor Authentication, Vulnerability and Assessment	Redmond, Washington, USA
Operational Objectives Protection Services (OOPS!)	Data Loss Prevention	Pine Falls, Manitoba, Canada
IBN	Mainframe Systems and Servers	Florenceville-Bristol, New Brunswick, Canada
JAAH ACE Solutions	Contracting Services	Winnipeg, Manitoba, Canada
Matrix. Print Solutions	Printer Supplies and Service	Saskatoon, Saskatchewan, Canada

### Tier 3 and 4 Vendors

Service Provider	Services Provided	Location
Dagwaagin IT Consulting	Specializes in expert level Tier 3 and Tier 4 IT escalation and resolutions services and provides server and network support including data backup. Dagwaagin provides consulting services, is a certified ServiceNow implementation partner, and provides support for IT asset management, including hardware and software.	Thompson, Manitoba
Tekhnaa InfoSys Solutions	Cybersecurity technology provider and specializes in cloud security technologies, fraud prevention, and digital recovery	Scottsdale, Arizona and global

### Third Party Services

Service Provider	Software / Hardware Application Provided	Location
Bank of Canada	Cheque Processing Services	Ottawa, Ontario
Royal Canadian Mint	Currency Services	Winnipeg, Manitoba
Master Card and VISA	Credit Card Processing Services	Dallas, Texas, USA
Salesforce Cloud Service	Client Management and analytical reporting	Santa Clara, California, USA
Ace Marketing	Marketing Services	Winnipeg, Manitoba
Copper Hill	Data Back-up Services	Winnipeg, Manitoba
XY Printing	Customer Cheque Printing Services	Brandon, Manitoba



Great Expectations Mortgage Brokers	<b>Mortgage Broker Services</b>	<b>Calgary, Alberta</b>
Busy Bee Cleaning	<b>Office Cleaning Services</b>	<b>Winnipeg, Manitoba</b>
Super Guard	<b>Security Guard Services</b>	<b>Winnipeg, Manitoba</b>
Stop Fraud Now	<b>Fraud Monitoring Service</b>	<b>Toronto, Ontario</b>
Slack Back Check	<b>Back Ground Check Service</b>	<b>Regina, Saskatchewan</b>

## Key Clients

The top 10 clients that PiXELL-River Financial provides services to are:

- Local Municipal Governments and Councils
- On the Internet! Network Services
- Maurice's Cleaning Services
- Paul's Craftworks and Custom Furniture
- A2Y Logistics
- Kan\*Best Consulting
- Personal Space Interior Design
- SoBright Renewable Energy
- Warp 9.9 Entertainment
- Sam's Wise Jewelers

## PiXELL-River Financial Competition

PiXELL-River Financial's largest competition is PridePoint Financial, an online investments platform that has already successfully gone public and has now launched their latest platform for investing in unsecured crypto currencies. There are numerous other banks ranging from the "Big 5" to smaller credit unions, however the services in comparison do not align with PiXELL-River's in direct competition.

## Emergency Services

Local emergency services are outlined below.

## Police

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The Police Department provides crime prevention and emergency response services to PiXELL-River Financial. The Police interface with the following teams or organizational units, relative to security and safety requirements:

- Human Resources
- Manager of the Data Centre
- Information Security Services
- Bank's Fraud department
- Medical Services
- Other appropriate departments as required

## Fire Department

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The Fire & Protective Services include:

- Fire suppression
- Technical rescue
- Hazardous material (hazmat)
- Emergency medical services (EMS)

Other key services are fire prevention, public education and information, and emergency preparedness and awareness.

## Local Emergency Preparedness Centre

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This office is responsible for coordinating and supporting overall emergency preparedness activities including research, training and education, disaster exercises, and the response to an emergency event in Manitoba. The type of emergency dealt with by this service is one that is major or unusual in nature and requires the coordination of several departments and/or outside services. The Emergency Manitoba Preparedness Coordinator maintains the readiness and operation of the Emergency Operations Center, a facility that serves as a focal point for the coordination of response activities during an emergency. The Alert Ready system use to send emergency alerts across Canada. The Alert Ready test message will be broadcast out to compatible cellphones and smartphones on LTE networks in the Manitoba province annually every May as part of the National Emergency Preparedness week.

The Alert Ready system notifies Canadians of potentially life-threatening events. With the recent inclusion of wireless public alerting, these alert messages are able to reach more Manitobans when an emergency arises.

## PiXELL-River Financial Insurance

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PiXELL-River Financial has \$10M insurance for Business Continuity Planning and Disaster Recovery coverage for response, salvage, and recovery efforts. The manager of Data Centre is assigned to manage the insurance and is accountable for PiXELL-River's BCP and DR Insurance activities.

The manager for BCP/DR is responsible for managing the following BCP and DR Tasks related to insurance and include the following:

- Contact appropriate Insurance people upon first advice of disaster.
- Meet with damage assessment/disaster recovery team at site and communicate to the Data Centre manager.
- Go through disaster scene with damage assessment/disaster recovery team and advice on matters relating to insurance and claims. Ensure that nothing is done to compromise recovery from insurance carrier. Photographs are required for all incidents and insurance claims.
- File all appropriate claims forms with all involved insurance carriers.
- Report status of claims activity to the executives.

## CIO Perspective

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**PiXELL-River Financial** is representative of several acquisitions, with a goal of a smooth transition to one service environment as soon as possible with all technology and staff.

- The CIO is under pressure from the CFO and Board to reduce IT Costs while Improving Overall Service to the business
- The CIO is dedicated to providing a consistent service as identified in consulting with ITIL best practices
- The CIO has been directed by the COO to “do whatever it takes” to meet the commitment to 99.99 percent uptime for PiXELL-River's Financial Services.
- The CIO has had a concern voiced from ITS Management regarding some of the delays in contracting new Hardware and Services and have suggested we do a make or buy analysis to determine if the current contracted model still meets the needs of ITS while the CFO is in favour of moving to more contracted services to mitigate further hardware and support costs.
- The CIO was recently introduced to LEAN methodologies and is looking to see where they can implement some of these practices – Dagwaagwin consulting has been contracted to do a review of operations and provide a report within the next year.

## Enterprise Architecture Practice

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PiXELL-River Financial is in the process of maturing their enterprise architecture practices. The practices' primary goal is to align the technology strategy with the business strategy. This area is charged with understanding current state, defining target state, and laying out a roadmap for how PiXELL-River will get to target state. In addition, this practice is responsible for

- Defining technology standards and governing to these standards
- Putting in place the means to maintain an inventory of applications and supporting infrastructure
- Executing the processes for managing technology risk (e.g., technology lifecycle management).
- Providing architectural oversight

The practice is led by an Enterprise Architect (Chief Architect) but is supported by solution, technical, and application architects that are responsible for specific areas of PiXELL-River's architecture and delivering on the primary service of this team – System and application design services.

The artifacts produced by this team are located in the EA knowledge base and include:

- Architecture principles
- Reference models, reference architectures and patterns
- Technology Strategies and recommendations
- Current and Target state architectures and roadmaps
- Technical Standards
- Delivery project templates (e.g. solution architecture, Architecture decision request)
- Deliver project artifacts

## Project Management Office (PMO)

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PiXELL-River Financial's project management office is responsible for defining and maintaining standards for the delivery and management PiXELL projects. This includes:

- Project delivery processes
- Project delivery tools and templates
- Project management practices

## IT Operations and Services

### Information Technology Services Vision

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To provide efficient and knowledgeable service and ensure the continued support of day-to-day operations of PiXELL-River Financial.

## Information Technology Services Mission Statement

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### ITS Objectives

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{list objectives}

### ITS Goals

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{list target goals with target metrics}

### ITS Structure

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PiXELL-River's Main Operations are located in Headingly MB, the new head office and datacentre was built shortly after merger with River Financial Services Group Inc. (RFSGI) Originally, the former PiXELL side of the company was only responsible for Online Banking, providing most of the control and configuration for their online banking application, as well as local databases. RFSGI on the other hand was primarily an in-person bank with many of their IT services contracted or leased. The first official PiXELL-River Financial branch expected to open in Headingly soon.

Now with one fully integrated domain, the former River Financial Services Group Inc. still maintains much of the in-person services, but PiXELL-River has taken ownership of all networked resources. While some River branches as still using the old branding and front end, they have been successfully moved to PiXELL's proprietary software becoming the primary backend for River FS in person services and ATMs.

The majority of devices are housed in PRF's home office in Headingly MB, with individual branches from River Financial migrating to PRF managed devices as hardware is identified and processed as obsolete through PRF's asset management policies.

The transition has not been smooth as smooth as it sounds. Both sides still run several legacy applications, requiring local admin credentials in some cases, and have very minimal established support due to the age of the applications and the servers they reside on. Shortly after the merger of PiXELL-River the former CEO of River Financial Services Group Inc. became the CFO for PiXELL-River Financial and made immediate cuts to the IT Services budget in terms of staffing and resources, looking for more value in services. PiXELL-River's IT Services are now trying to determine the best route of action and have requested a number of different analysis on their current operations and how they can improve service to the business.

## ITS Staffing

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- PiXELL-River Financial Employs over 3000 employees with an IT department consisting of:
- 10 Service Desk Analysts – SDAs are planned to move to provide 24/7 Incident Intake with Tier 1 and limited capability for Tier 2 Support in the near future, but SLAs will need to be updated to reflect this
- 2 Incident Coordinators
- 3 Tier 2 Deskside and Application Support Specialists – T2 technicians are on site in Headingly to provide in person support for critical incidents, they participate in an informal on-call currently
- 4 Information Security Specialists
- 2 Network Infrastructure Technicians
- 2 Network Administrators
- Contracted staff through Dawaagin Consulting for additional resources outside of basic operational requirements

## End User Devices

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- 3000 End users for PiXELL River Financial – in house users
- External Customers are currently handled by external customer support call centre
- 3000 Managed Workstations (Desktops, Laptops, Hybrids), the majority of devices are managed through PiXELL-River Financial (PRF) domain, however many from River Financial Services Group Inc have not reported for an extended period of time and many are obsolete and only identified when an end user has a problem
- Cellular devices requested through Manager Desktop, requested through Dawaagin for contracting and sales
- 200 Kiosk Style Devices from River Financial Bank locations (Very dated, running on Windows XP intended for use by customers for Self Service)
- Currently trialing a BYOD strategy approximately 100 devices mostly senior level managers currently enrolled.
- Print Services and Scanning all provided by contracted services. Devices are on contract for service and support, however current SLAs are not meeting business requirements as there is no evening or weekend support and it can sometimes take up to 1 week from reported incident to response and resolution
- A heavy constraint on the current PiXELL-River T2 team is many of the physical bank locations are not anywhere near the centralized office of PiXELL-River Financial in Headingly spanning across the Country. Finding contracted support in other provinces for In-Person support has been challenging.

## Datacentre and Hosting

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- Redundant UPS on all critical infrastructure in PiXELL-River datacentre with capacity to expand by approximately 30%
- Primary SAN on site
- Cloud Backup of Critical Databases only
- Backup hot site in Portage La Prairie
- Hybrid of Physical, Virtual and Cloud based servers
- Application Servers
- Centralized Identity and Access Management
- Legacy River Financial Services Group Inc. datacentre still active with several physical servers in some cases only in place to host a single legacy database or application
- Trying to move over all services to the central site in Headingly but there are some challenges in migrating applications, as some of the legacy applications did not have any owners listed

## IT Infrastructure and Telecom

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- PiXELL-River's core network devices were replaced when the new datacentre was built in Headingly approximately 3 years ago
- Routers, Switches, and Wireless Infrastructure in the Datacentre on contract with support for hardware failure
- Many of the devices in existing closets much more dated throughout the rest of the head office, these have been identified as a risk to continued operations for the business however there are some challenges with getting new equipment
- The former River branches were done by contracting companies at response of "the lowest bidder" there is no consistency between platforms and sites and most sites are no longer supported either due to contracting company being sold or going out of business. In these cases, the routing and switching infrastructure has likely to not have been patched since install approximately 10 years ago.
- Telecom is primarily a VOIP based system, however some smaller sites with bandwidth issues are still running using analog PBX systems

## Service Desk

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PiXELL-River Financial currently operates with a small team of dedicated Service Desk Analysts who act as the first point of contact and the technical support for T1 resolutions. The Service Desk only provides technical support, as client operations and support are handled through PiXELL-River's customer contact center. This marks a change from previous operations where the Customer Contact Centre previously acted as an Incident Intake, however as PiXELL-River Financial expanded, the need for faster client resolutions became apparent.

The entry paths for the Service Desk and into the Incident Management process are:

1. Calls to the service desk either by 1-800 line or local service desk number
2. Voicemails/eMails to the Service Desk
3. Event Management Notifications and Responses
4. Internal Service Requests

Please note these are the only accepted pathways into the Incident Management Process, direct calls to managers and IT Services staff are not an accepted method of communicating a request into the incident management process. As part of a continual improvement process, with the assistance of Dagwaagin consulting it was determined one of the largest impacts to business services was the failure to follow appropriate intake processes which resulted in Incidents not being correctly reported, and service requests not being addressed in a timely manner, again impacting overall team and client satisfaction.

## POLICIES

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### Acceptable Use Policy

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#### Overview

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Infosec's intentions for publishing an Acceptable Use Policy are not to impose restrictions that are contrary to PiXELL-River Financial's established culture of openness, trust and integrity. Infosec is committed to protecting PiXELL-River Financial's employees, partners and the company from illegal or damaging actions by individuals, either knowingly or unknowingly.

Internet/Intranet/Extranet-related systems, including but not limited to computer equipment, software, operating systems, storage media, network accounts providing electronic mail, WWW browsing, and FTP,



are the property of PiXELL-River Financial. These systems are to be used for business purposes in By doing this c and of our clients and customers in the course of normal operations. Please review Human Resources policies for further details.

Effective security is a team effort involving the participation and support of every PiXELL-River Financial employee and affiliate who deals with information and/or information systems. It is the responsibility of every computer user to know these guidelines, and to conduct their activities accordingly.

## Purpose

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The purpose of this policy is to outline the acceptable use of computer equipment at PiXELL-River Financial. These rules are in place to protect the employees and PiXELL-River Financial. Inappropriate use exposes PiXELL-River Financial to risks including virus attacks, compromise of network systems and services, and legal issues.

## Scope

This policy applies to the use of information, electronic and computing devices, and network resources to conduct PiXELL-River Financial business or interact with internal networks and business systems, whether owned or leased by PiXELL-River Financial, the employee, or a third party. All employees, contractors, consultants, temporary, and other workers at PiXELL-River Financial and its subsidiaries are responsible for exercising good judgment regarding appropriate use of information, electronic devices, and network resources in accordance with PiXELL-River Financial policies and standards, and local laws and regulation. Exceptions to this policy are documented in section 5.2

This policy applies to employees, contractors, consultants, temporary workers, and other types of workers at PiXELL-River Financial, including all personnel affiliated with third parties. This policy applies to all equipment that is owned or leased by PiXELL-River Financial.

## Policy

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### General Use and Ownership

PiXELL-River Financial proprietary information stored on electronic and computing devices whether owned or leased by PiXELL-River Financial the employee or a third party, remains the sole property of PiXELL-River Financial. You must ensure through legal or technical means that proprietary information is protected in accordance with the *Data Protection Standard*.

You have a responsibility to promptly report the theft, loss, or unauthorized disclosure of PiXELL-River Financial proprietary information.

You may access, use, or share PiXELL-River Financial proprietary information only to the extent it is authorized and necessary to fulfill your assigned job duties.

Employees are responsible for exercising good judgment regarding the reasonableness of personal use. Individual departments are responsible for creating guidelines concerning personal use of Internet/Intranet/Extranet systems. In the absence of such policies, employees should be guided by departmental policies on personal use, and if there is any uncertainty, employees should consult their supervisor or manager.

For security and network maintenance purposes, authorized individuals within PiXELL-River Financial may monitor equipment, systems and network traffic at any time, per Infosec's *Audit Policy*.

PiXELL-River Financial reserves the right to audit networks and systems on a periodic basis to ensure compliance with this policy.

## **Security and Proprietary Information**

- All mobile and computing devices that connect to the internal network must comply with the *Minimum Access Policy*.
- System level and user level passwords must comply with the *Password Policy*. Providing access to another individual, either deliberately or through failure to secure its access, is prohibited.
- All computing devices must be secured with a password-protected screensaver with the automatic activation feature set to 10 minutes or less. You must lock the screen or log off when the device is unattended.
- Postings by employees from a PiXELL-River Financial email address to newsgroups should contain a disclaimer stating that the opinions expressed are strictly their own and not necessarily those of PiXELL-River Financial, unless posting is in the course of business duties.
- Employees must use extreme caution when opening e-mail attachments received from unknown senders, which may contain malware.

## **Unacceptable Use**

The following activities are, in general, prohibited. Employees may be exempted from these restrictions during the course of their legitimate job responsibilities (e.g., systems administration staff may have a need to disable the network access of a host if that host is disrupting production services).

Under no circumstances is an employee of PiXELL-River Financial authorized to engage in any activity that is illegal under local, state, federal or international law while utilizing PiXELL-River Financial -owned resources.

The lists below are by no means exhaustive but they attempt to provide a framework for activities which fall into the category of unacceptable use.

### **1.System and Network Activities**

The following activities are strictly prohibited, with no exceptions:

- Violations of the rights of any person or company protected by copyright, trade secret, patent or other intellectual property, or similar laws or regulations, including, but not limited to, the installation or distribution of "pirated" or other software products that are not appropriately licensed for use by PiXELL-River Financial.
- Unauthorized copying of copyrighted material including, but not limited to, digitization and distribution of photographs from magazines, books or other copyrighted sources, copyrighted music, and the installation of any copyrighted software for which PiXELL-River Financial or the end user does not have an active license is strictly prohibited.
- Accessing data, a server or an account for any purpose other than conducting PiXELL-River Financial business, even if you have authorized access, is prohibited.
- Exporting software, technical information, encryption software or technology, in violation of international or regional export control laws, is illegal. The appropriate management should be consulted prior to export of any material that is in question.
- Introduction of malicious programs into the network or server (e.g., viruses, worms, Trojan horses, e-mail bombs, etc.).
- Revealing your account password to others or allowing use of your account by others. This includes family and other household members when work is being done at home.
- Using a PiXELL-River Financial computing asset to actively engage in procuring or transmitting material that is in violation of sexual harassment or hostile workplace laws in the user's local jurisdiction.
- Making fraudulent offers of products, items, or services originating from any PiXELL-River Financial account.
- Making statements about warranty, expressly or implied, unless it is a part of normal job duties.
- Effecting security breaches or disruptions of network communication. Security breaches include, but are not limited to, accessing data of which the employee is not an intended recipient or logging into a server or account that the employee is not expressly authorized to access, unless these duties are within the scope of regular duties. For purposes of this section, "disruption" includes, but is not limited to, network sniffing, pinged floods, packet spoofing, denial of service, and forged routing information for malicious purposes.
- Port scanning or security scanning is expressly prohibited unless prior notification to Infosec is made.
- Executing any form of network monitoring which will intercept data not intended for the employee's host, unless this activity is a part of the employee's normal job/duty.
- Circumventing user authentication or security of any host, network or account.
- Introducing honeypots, honeynets, or similar technology on the PiXELL-River Financial network.
- Interfering with or denying service to any user other than the employee's host (for example, denial of service attack).
- Using any program/script/command, or sending messages of any kind, with the intent to interfere with, or disable, a user's terminal session, via any means, locally or via the Internet/Intranet/Extranet.

- Providing information about, or lists of, PiXELL-River Financial employees to parties outside <Company Name>.

## 2. Email and Communication Activities

When using company resources to access and use the Internet, users must realize they represent the company. Whenever employees state an affiliation to the company, they must also clearly indicate that "the opinions expressed are my own and not necessarily those of the company". Questions may be addressed to the IT Department

- Sending unsolicited email messages, including the sending of "junk mail" or other advertising material to individuals who did not specifically request such material (email spam).
- Any form of harassment via email, telephone or paging, whether through language, frequency, or size of messages.
- Unauthorized use, or forging, of email header information.
- Solicitation of email for any other email address, other than that of the poster's account, with the intent to harass or to collect replies.
- Creating or forwarding "chain letters", "Ponzi" or other "pyramid" schemes of any type.
- Use of unsolicited email originating from within PiXELL-River Financial's networks or other Internet/Intranet/Extranet service providers on behalf of, or to advertise, any service hosted by PiXELL-River Financial or connected via <Company Name>'s network.
- Posting the same or similar non-business-related messages to large numbers of Usenet newsgroups (newsgroup spam).

## 3. Blogging and Social Media

- Blogging by employees, whether using PiXELL-River Financial's property and systems or personal computer systems, is also subject to the terms and restrictions set forth in this Policy. Limited and occasional use of <Company Name>'s systems to engage in blogging is acceptable, provided that it is done in a professional and responsible manner, does not otherwise violate PiXELL-River Financial's policy, is not detrimental to <Company Name>'s best interests, and does not interfere with an employee's regular work duties. Blogging from PiXELL-River Financial's systems is also subject to monitoring.
- PiXELL-River Financial's Confidential Information policy also applies to blogging. As such, Employees are prohibited from revealing any <Company> confidential or proprietary information, trade secrets or any other material covered by <Company>'s Confidential Information policy when engaged in blogging.
- Employees shall not engage in any blogging that may harm or tarnish the image, reputation and/or goodwill of PiXELL-River Financial and/or any of its employees. Employees are also prohibited from making any discriminatory, disparaging, defamatory or harassing comments when blogging or otherwise engaging in any conduct prohibited by <Company Name>'s *Non-Discrimination and Anti-Harassment* policy.

- Employees may also not attribute personal statements, opinions or beliefs to PiXELL-River Financial when engaged in blogging. If an employee is expressing his or her beliefs and/or opinions in blogs, the employee may not, expressly or implicitly, represent themselves as an employee or representative of PiXELL-River Financial. Employees assume any and all risk associated with blogging.
- Apart from following all laws pertaining to the handling and disclosure of copyrighted or export controlled materials, PiXELL-River Financial's trademarks, logos and any other <Company Name> intellectual property may also not be used in connection with any blogging activity

## Policy Compliance

### Compliance Measurement

The Infosec team will verify compliance to this policy through various methods, including but not limited to, business tool reports, internal and external audits, and feedback to the policy owner.

### Exceptions

Any exception to the policy must be approved by the Infosec team in advance.

### Non-Compliance

An employee found to have violated this policy may be subject to disciplinary action, up to and including termination of employment.

## Related Standards, Policies and Processes

- Data Classification Policy
- Data Protection Standard
- Social Media Policy
- Minimum Access Policy
- Password Policy

## Definitions and Terms

The following definitions and terms can be found in Appendix A:

- Blogging
- Honeypot
- Proprietary Information
- Spam

# Asset Management Policy

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## Overview

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At PiXELL-River Financial the Asset management Policy is focused on the act of configuration, implementation, and maintenance of its information assets.

## Purpose

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To ensure all PiXELL-River Financial's information assets are managed, tracked, identified, classified, stored, secured and disposed of throughout the lifecycle of the assets.

## Scope

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All PiXELL-River Financial information assets including

- Hardware and software (application) assets
- Assets at all branches, Interac stations, and data centers
- All Business Data (see Business Data section)

are included in the scope of this policy.

## Policy

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Management of PiXELL-River Financial's assets is accomplished through joint cooperation of the asset manager and other process owners and actors (Change Management, Configuration Management, Incident Management, etc). New assets are inventoried, classified and configured then introduced to the environment via a controlled Change process. Existing assets are maintained and kept up-to-date via existing repair and upgrade procedures.

PiXELL-River Financial is committed to

Taking steps to connect the appropriate departments, functions, and support activities in order to build effective working relationships and encourage information-sharing.

Using asset management decision-making to drive optimum value for customers.

Ensuring decisions are made collaboratively. Ensure decisions consider all life-cycle stages and interrelationships between asset, operational and service performance.

Focusing on decision-making that recognizes the interconnected nature of asset systems and how decisions about one set of assets may potentially interact with or affect assets controlled by other departments and functions.

([Asset Management Policy Guide + Free Template | Fiix \(fiixsoftware.com\)](#))

## Risk Management Policy

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### Purpose

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To empower Infosec to perform periodic information security risk assessments (RAs) for the purpose of determining areas of vulnerability, and to initiate appropriate remediation.

### Scope

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Risk assessments can be conducted on any entity within PiXELL-River Financial or any outside entity that has signed a *Third Party Agreement* with PiXELL-River Financial. RAs can be conducted on any information system, to include applications, servers, and networks, and any process or procedure by which these systems are administered and/or maintained.

### Policy

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The execution, development and implementation of remediation programs is the joint responsibility of Infosec and the department responsible for the system area being assessed. Employees are expected to cooperate fully with any RA being conducted on systems for which they are held accountable. Employees are further expected to work with the Infosec Risk Assessment Team in the development of a remediation plan.

### Policy Compliance

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- Compliance Measurement

The Infosec team will verify compliance to this policy through various methods, including but not limited to, business tool reports, internal and external audits, and feedback to the policy owner.

- Exceptions

Any exception to the policy must be approved by the Infosec team in advance.

- Non-Compliance

An employee found to have violated this policy may be subject to disciplinary action, up to and including termination of employment.

## Ethics Policy

### Overview

---

PIXELL-River Financial is committed to protecting employees, partners, vendors and the company from illegal or damaging actions by individuals, either knowingly or unknowingly. When PIXELL-River Financial addresses issues proactively and uses correct judgment, it will help set us apart from competitors.

PIXELL-River Financial will not tolerate any wrongdoing or impropriety at any time. PIXELL-River Financial will take the appropriate measures act quickly in correcting the issue if the ethical code is broken.

### Purpose

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The purpose of this policy is to establish a culture of openness, trust and to emphasize the employee's and consumer's expectation to be treated to fair business practices. This policy will serve to guide business behavior to ensure ethical conduct. Effective ethics is a team effort involving the participation and support of every PIXELL River Financial employee. All employees should familiarize themselves with the ethics guidelines that follow this introduction.

### Scope

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This policy applies to employees, contractors, consultants, temporary workers, and other workers at PIXEL-River Financial, including all personnel affiliated with third parties.

### Policy

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1. Executive Commitment to Ethics
  1. Senior leaders and executives within PIXELL-River Financial must set a prime example. In any business practice, honesty and integrity must be top priority for executives.



2. Executives must have an open-door policy and welcome suggestions and concerns from employees. This will allow employees to feel comfortable discussing any issues and will alert executives to concerns within the work force.
  3. Executives must disclose any conflict of interests regarding their position within PiXELL-River Financial.
2. Employee Commitment to Ethics
  1. PiXELL-River Financial employees will treat everyone fairly, have mutual respect, promote a team environment, and avoid the intent and appearance of unethical or compromising practices.
  2. Every employee needs to apply effort and intelligence in maintaining ethical value.
  3. Employees must disclose any conflict of interest regarding their position within PiXELL-River Financial.
  4. Employees will help PiXELL-River Financial to increase customer and vendor satisfaction by providing quality products and timely response to inquiries.
  5. Employees should consider the following questions to themselves when any behavior is questionable:
    - Is the behavior legal?
    - Does the behavior comply with all appropriate PiXELL-River Financial policies?
    - Does the behavior reflect PiXELL-River Financial values and culture?
    - Could the behavior adversely affect company stakeholders?
    - Would you feel personally concerned if the behavior appeared in a news headline?
    - Could the behavior adversely affect PiXELL-River Financial if all employees did it?
    -
3. Company Awareness
  1. Promotion of ethical conduct within interpersonal communications of employees will be rewarded.
  2. PiXELL-River Financial will promote a trustworthy and honest atmosphere to reinforce the vision of ethics within the company.
4. Maintaining Ethical Practices
  1. PiXELL-River Financial will reinforce the importance of the integrity message and the tone will start at the top. Every employee, manager, director needs consistently maintain an ethical stance and support ethical behavior.
  2. Employees at PiXELL-River Financial should encourage open dialogue, get honest feedback and treat everyone fairly, with honesty and objectivity.
  3. PiXELL-River Financial has established a best practice disclosure committee to make sure the ethical code is delivered to all employees and that concerns regarding the code can be addressed.
  4. Employees are required to recertify their compliance to the Ethics Policy on an annual basis.

## 5. Unethical Behavior

1. PiXELL-River Financial will avoid the intent and appearance of unethical or compromising practice in relationships, actions and communications.
2. PiXELL-River Financial will not tolerate harassment or discrimination.
3. Unauthorized use of company trade secrets & marketing, operational, personnel, financial, source code, & technical information integral to the success of our company will not be tolerated.
4. PiXELL-River Financial will not permit impropriety at any time and we will act ethically and responsibly in accordance with laws.
5. PiXELL-River Financial employees will not use corporate assets or business relationships for personal use or gain.

## Policy Compliance

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### Compliance Measurement

The Human Resources team will verify compliance to this policy through various methods, including but not limited to, business tool reports, internal and external audits, and feedback.

### Exceptions

None.

### Non-Compliance

An employee found to have violated this policy may be subject to disciplinary action, up to and including termination of employment.

## Service Management Policy

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Service Management is defined in ITIL (Information Technology Information Library) v4 as “A set of organizational capabilities for enabling value to customers in the form of services”. PiXELL-River Financial strives to deliver sustainable value in the form of IT (Information Technology) services and capabilities both internally within all the organizations buildings and facilities as well as externally to its customers. Functions such as a Service desk are key to Service Management and PiXELL-River Financial has been significant improvements here, see ‘Service Desk’.

PiXELL-River’s strategic direction is to create value by delivering and measuring the services it provides. This can be accomplished by meeting business and customer expectations.

The practices below make up the core of the services currently being delivered by PiXELL-River Financial.

### Incident Management

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PiXELL-River Financial has implemented a more robust Incident Management practice with the changes introduced at the Service Desk.

Incident Management minimizes impact to the business through the practice of the detection of service interruptions, assessment of criticality, and restoration of services within established response and resolution objectives. The ITIL v4 definition of Incident Management is “the practice of restoring services that have failed or been interrupted from normal operations, ideally done as quickly as possible and in line with business priorities.”

The key elements of our Incident Management practice include Detection, Reporting, Response, Remediation and Resolution, Closure, and Review

Incident Response SLAs

PiXELL-River’s Information Service Level Agreement; is based on providing 24x 7 IT services to the business and customers. Incident remediation timelines are outlined below. The CIO has promised the business that the IT services would have a 99.99% uptime by the end of the year.

Priority	Severity	Time to Respond to Incident	Time to Restore Service
P1	Critical	90% in .5 business hours	90% in 4 business hours
P2	High	80% in 2 business hours	80% in 8 business hours
P3	Medium	80% in 8 business hours	80% in 24 business hours
P4	Low	80% in 24 business hours	80% in 36 business hours

## Change Management

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PIXELL-River Financial recently adopted policies and practices based on Best Practice and ITIL Process and Principles and is working to integrate ITILV4 changes in their activities, processes, and principles.

PIXELL-River Financial's Change Management processes will provide an effective and controlled strategy for the introduction of new changes to production environments without negatively impacting day to day operations of our business and client services. We have implemented these change processes and policies to allow for the following steps to be taken in the event of a change.

1. Inform and identify changes to impacted stakeholders effectively
2. Ensure all changes are pre-approved and maintain an effective level of documentation
3. Follow a documented standard for ITS Changes utilizing existing templates
4. Conduct a risk assessment
5. Follow a change approval process
6. Emergency Change Requests

For the purpose of this strategy, a change will be considered to be the modification or change in state to any element that an IT Service Provides. This list is an example of IT Services that are managed by our change management process, but not limited to:

Operating Systems and Versions

Applications, new and version updates

Network and Hosting Environments

Major Changes to Operational items during business hours

Any and all hardware and software in the IT Services Catalog that are utilized in the day-to-day operations of PIXELL-River Financial.

## Problem Management

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Problem Management is the process and practice of reducing the likelihood and impact of incidents by identifying actual and potential causes of incidents and managing workarounds and known errors.

Problem Management helps to ensure service availability and quality where problems are defined as "A cause, or potential cause, of one or more Incidents." The key elements of the Problem Management practice are Identification and Control.

While incident management has been identified earlier in this document as the intent to resolve the issue to the point of normal service as quickly as possible, problem management requires the investigation into the problem and finding the root cause to stop it from happening again.

Problem management has been an area of constraint for PIXELL-River Financial and their IT and Security Staff. Since their last merger with River Financial Services Group Incorporated, they have adopted new

strategies to improve this, but the work is ongoing. The CIO has appointed the roles of Problem Director, Manager, and Coordinator to their leadership team within their organization noted below.

Presently the Manager IT End User Computing is acting in the role of Problem Manager, with the IT Director as Problem Director and recently appointed Manager, Data Center and Hosting Services as a Problem Coordinator to assist with the increasing workload and relevance of problems. The CIO is currently investigating if they should create a separate service management team with increasing workloads limiting the current Manager roles.

### Service Request Management

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PiXELL-River Financial has a process for supporting and managing the life span of Service Requests. Service Requests can be used for requesting Service Delivery, Information, Provisioning, or Access. The ability to access standard services via a fulfillment process that includes a standardized 'request' for a planned action on the service is still a work-in-progress at PiXELL-River. Requests are being managed in a manual fashion therefore standardization of requests and the workflow for each type of request is desired so that handling of requests can become more streamlined.

### Configuration Management

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This practice deals with asset inventory and identifiers. Much of this practice is covered under the Asset Management Policy however of note is the desire to have a record of all the organizations assets as well as Configuration Items (CI's) for all PiXELL-River Financials' information assets. Currently records are not accurate and detail is lacking.

### Service Level Management

Service Level Management consists of Service Level Agreements (SLA's) between organizations and Operational Level Agreements (OLA's) between internal support teams.

PiXELL –River Financial has Service Level Agreements (SLA'S) and contracts with the majority of its vendors as well as Third Party services. These SLA's require a review to ensure up-to-date and relevant terms are in place for each vendor or service. Clear targets must be established to create trusted service relationships.

Operational Level Agreements between internal support teams at PiXELL–River are not well defined. Levels of support, when handoffs occur, and roles and responsibilities require clarity and formal documentation.

### Continual Service Improvement

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Continual Service Improvement requires consistent and regularly reported measurements as a mechanism to institute incremental improvements and changes. To see improvements mature Problem

and Knowledge Management capabilities and processes are required to improve resolution times and reduce re-work.

PiXELL-River Financial is working to implement sound Continual Service Improvement practices throughout its internal business as well as with Customer facing portals. As an organization they have yet to mature their Problem and Knowledge Management capabilities and processes.

## Information Security

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### Information Security Vision

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Provide advanced information security services, expert guidance and ensure confidentiality, integrity and availability of the corporate information assets and resources.

### Information Security Mission Statement

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PiXELL-River Financial considers information security a high priority an integral function of its business. Significant effort is constantly put forth to maintain confidentiality, integrity and availability of sensitive data.

### Security Objectives

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- Maintain Information Security Policies
- Build and maintain a secure network
- Protect customer and organizational data
- Enable innovation

### Security Goals

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- Reduce the number of security incident caused by employees by 50% by Q4- 2023
- Audit 25% of compliance of security policies annually
- Reduce security incidents 50% by Q2- 2023
- Maintain 90% compliance for all infrastructure by Q1-2023
- 75% of infrastructure has a quarterly health assessment by Q1 -2024
- 95% of infrastructure have monthly access recertification to all IT systems by Q3- 2024

- Reduce time to investigate security incidents to 15 minutes by Q4 -2023
- Maintain 80% coverage of critical security patches within 20 days of release on all IT systems by Q3 - 2023

## Information Security Structure

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Below is the list of the information security technologies and processes in place.

- Perimeter security suites configured for redundancy with robust capabilities:
- Web Application-layer firewall (capacity scaled for 30% higher than typical usage)
- Network proxy server for outbound traffic
- Intrusion detection system (IDS) and Intrusion prevention systems (IPS)with external logging
- Firewalls lack processes and procedures
- Encryption software on laptops
- Vulnerability assessment service which is done when time permits.
- DDoS is currently end-of-life
- Security Information and Event Management (SIEM) System has limited technology integration
- Remote access capability for connectivity with bank branch locations
- Multi-factor authentication service for VPN
- Inside the perimeter, the flow of traffic between the two sub-networks is unrestricted, and there is no monitoring or logging of internal traffic.
- Software firewalls on Endpoint systems currently allow all traffic.
- Identity and Access Management has limited integration
- Fraud monitoring service with 8x5 monitoring only
- Servers are optimised for performance with unnecessary applications removed.
- Endpoint antivirus and data loss prevention (DLP) software is maintained by a central management server.
- Security awareness training has been cancelled.
- Several security staff were cut, leaving the bank with 8-staff.
- The Security team provide 24x7 on call support

- The latest security control health assessment provides the details and gaps on the existing security technologies.

## Security Incident Response SLAs

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Security in PiXELL-River has become a point of interest from both industry and shareholders as to date we have yet to have any breaches, and our C-Level executives intend to keep it that way. One of our challenges is the recent Phishing and social engineering attempts which have been more adaptive and will require future end user education.

Priority	Severity	Time to Respond to Incident	Time to Restore Service
P1	Critical	90% in .25 business hours	95% in 2 business hours
P2	High	90% in .50 business hours	95% in 4 business hours
P3	Medium	90% in 4 business hours	95% in 8 business hours
P4	Low	90% in 12 business hours	95% in 36 business hours

## Disaster Recovery Plan (DRP)

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Former River Financial Services Group Inc. (Regina, Saskatchewan) (Zone B)

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- Can overcome hardware losses within its data centre through movement of servers to new physical platforms. The River Financial Services Group Inc data centre maintains a number of cold spares for this purpose. The cold spares typically consist of old hardware and are not intended to be used long term.
- The former River Financial disaster recovery plan (DRP) requires:
  - Recovery of physical servers from backup media
  - Recovery of data from backup media
  - Establishment of a link back to the PiXELL-River data centre in Headingly via virtual private network (vpn)
- Full operating capacity should be available no more than 12 hours after activation of the DRP.
- Third-party contractors at the recovery site are trained to complete the process without assistance from the PiXELL-River Financial data centre staff.
- PiXELL-River's CIO has provided a directive to migrate this datacenter to PiXELL-River Financial's Headquarters in Headingly as the datacenter is looked at for renewal and application migrations occur



## PiXELL-River (Headingly, Manitoba) (Zone A)

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- Uses a hot-site dual data centre architecture in which each system has a redundant counterpart at the secondary data centre in Portage la Prairie, located 60 kilometers from the primary site.
- Has high-speed fibre connectivity between the primary and secondary sites.
- Completes automatic failover of systems in no more than 15 minutes.
- Redundancy between the two data centres extends to the perimeter suites, so traffic from the public Internet can reach either data centre.

## Appendix A

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### Glossary

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**Blogging** - Blogging refers to writing, photography, and other media that's self-published online.

**HoneyPot** - Programs that simulate one or more network services that you designate on your computer's ports. An attacker assumes you're running vulnerable services that can be used to break into the machine. A honey pot can be used to log access attempts to those ports including the attacker's keystrokes. This could give you advanced warning of a more concerted attack.

**Proprietary Information** - Proprietary information is that information unique to a company and its ability to compete, such as customer lists, technical data, product costs, and trade secrets.

**Spam** - Electronic junk mail or junk newsgroup postings

## Appendix B

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### Role Job Descriptions

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**CEO/Chair of Board** - a chief executive officer, the highest-ranking person in a company or other institution, ultimately responsible for making managerial decisions.

**COO/VP Operations** -The chief operating officer (COO) is responsible for executing and implementing the operational directives set by the CEO and the board of directors.

**CFO/VP Administration**- a chief financial officer, a senior executive with responsibility for the financial affairs of a corporation or other institution. The vice president of administration position is responsible for directing all of the administrative functions of the corporation in accordance with industry standards, where applicable, regulatory agencies, as appropriate and company objectives and policies.

**CIO** - Chief Information Officer (CIO), chief digital information officer (CDIO) or information technology (IT) director is a job title commonly given to the most senior executive in an bank responsible for the traditional information technology and computer systems that support bank goals.

**VP Client Services** - responsible for the Consumer Banking division performing a variety of roles including lending, investing, risk management, marketing, and technology. Their team provides a suite of solutions to help our retail customers meet their financial goals. Also responsible for the Commercial Banking Division performing a variety of roles including lending, investing, risk management, marketing, and technology. Their team provides a suite of solutions to help our retail customers meet their financial goals.

**VP Marketing** – are responsible for the overall strategic marketing plans for an entire organization (or lines of business and brands within an organization) in order to attract potential customers and retain existing ones.

**Director Human Resources** - or HR may be responsible for a number of job duties related to organizational development, recruitment and staffing, employment law, performance management, employee relations, and compensation and benefits.

**Director Financial and Audit Services** - sometimes called a compliance manager is to make sure that a company is conducting its business in full compliance with all national and international laws and regulations that pertain to its particular industry, as well as professional standards, accepted business practices.

**Director Legal Services/General Counsel** - is the senior executive managing legal affairs for the company.

**Director Information Technology** - manages the IT infrastructure, operations, and services; and how it enables businesses/individuals to access and make use of data and services.

**Director Information Security and CISO**- A chief information security officer (CISO) is the senior-level executive within an organization responsible for establishing and maintaining the bank security vision, strategy, and program to ensure information assets and technologies are adequately protected.

**Director Accounting** -is responsible for in analysis and reconciliation of accounts and in development and implementation of accounting policies, procedures and controls.

**Director Physical Security** - The Director of Physical Security is responsible for identifying, assessing, and integrating physical security operations, technology, and policy solutions at the organization.

**Manager, Business Continuity and Disaster Recovery** - Develop, maintain, or implement business continuity and disaster recovery strategies and solutions, including risk assessments, business impact analyses, strategy selection, and documentation of business continuity and disaster recovery procedures.

**Manager, Internal Audit** - A key part of this role is performing full audits, including risk management, control management, and assessing financial reliability. The audit processes ensure that compliance is met within all the company's systems.

#### **Manager, Security Architecture**

**Manager, Operational Risk** - is responsible for monitoring, handling, and measuring operational and economic risk exposures in order to minimize risk and place appropriate controls in place.

**Manager Purchasing** - is responsible for leading all global procurement efforts to efficiently and effectively enable spend owners such as business units and functional partners to maximize the value they receive from suppliers to meet their objectives.

**Manager, Customer Experience and Community Engagement** - The major goal of CEM is to foster customer loyalty through high-quality interactions at each step. Customer experience managers are the people responsible for improving the experiences customers have with organizations, with the goal of increasing customer satisfaction.

**Manager of Sales** - lead a sales team by providing guidance, training, and mentorship, setting sales quotas and goals, creating sales plans, analyzing data, assigning sales territories and building their team.

**Manager of Marketing** - are responsible for developing, implementing and executing strategic marketing plans for an entire organization (or lines of business and brands within an organization) in order to attract potential customers and retain existing ones.

**Manager, IT End User Service Desk** - is responsible for managing daily operations of the service desk, managing the service desk team, representing the team to other elements of the organization, and helping to ensure that the service desk is constantly developing and improving.

**Manager, End User Computing** - delivers operational day-to-day support for the operations of end-user computing services organization wide, in collaboration with third-party vendors.

**Manager, IT Telecom, and Infrastructure** – Responsible for the daily operations of infrastructure, telecom, and infrastructure support staff. Works with other business and IT teams to ensure that services and infrastructure needs are met.

**Manager, Data Center and Hosting Services** – responsible for the day to day operations of the datacenter, contracting cloud services, and ensuring the high availability of data to the stakeholders.

**Manager, Risk Management**

## ITS and Security Roles Job Descriptions

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**Incident Coordinator** - works to manage the lifecycle of all unplanned interruptions, malfunctions, and quality reductions of provided IT services. Their main goals are to follow incident management protocols and restore provided IT services to normal operation as quickly as possible. They also report major system issues to upper management.

**Service Desk Analyst** – acts as the first point of contact for customers that are experiencing technical issues using any PiXELL technology. Troubleshoots ATM machines, end-user software and hardware compatibility issues, PiXELL mobile applications, and supports the website. Must have superior communication and problem-solving skills to retain customers that are experiencing difficulties using PiXELL technology and accessing its services. Reports to the Incident Coordinator and follows proper documentation steps and escalation procedures.

**Deskside and Application Support** – provides expert IT advice and support to internal employees. Responsible for incident and change management processes as well as the escalation procedures for troubleshooting technical issues. Provides onsite technical support for all PiXELL locations. Reports to the Incident Coordinator.

**Network Administrator** – Maintains, troubleshoots and administers the use of local area networks (LANs), wide area networks (WANs), mainframe networks and computer workstations and peripheral equipment. Leads and supports a group of Network Infrastructure Technicians and Junior Network Architects. Works alongside the Information Security Analyst/Specialist for security issues and the investigation of proactive security upgrades to prevent malicious outside technological attacks.

**Network Infrastructure Technician** - monitors all aspects of the network infrastructure using various analytical tools. Applies change management process that have been approved by the Network Administrator, documenting the procedures/steps followed and outcomes. Provides technical support to the Service Desk Analyst and Deskside and Application Support for tier 2 and tier 3 network related incidents or issues. Reports to the Network Administrator.

**Information Security Analyst/Specialist** - protects IT infrastructure (including networks, hardware and software) from a range of intentional or unintentional breaches. This person will detect threats and

security events, and then proceed to report on them and take necessary actions to assess and resolve them. Tests and evaluates security systems on a regular basis, recommending changes and processes to reinforce overall IT security.

**Junior Network Architect** - assists the Network Administrator in implementing and testing network solutions based on business requirements. Builds and tests updates to network devices while following proper documentation and reporting procedures. Reports to the Network Administrator.

## Appendix C

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### Branch Locations

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<b>Headingley Branch</b>	<b>Winnipeg Branch</b>
500 McIntosh RD	1 Portage Ave
Headingley, MB, Canada	Winnipeg, Manitoba
R4H 0A5	R3K 0Z1
(204)-999-5555	(204)-988-2402
<b>Vancouver Branch</b>	<b>Steinbach Branch</b>
1300 BURRARD ST	330 Main St.
Vancouver, BC, Canada	Steinbach, Manitoba
V6Z 2C7	R5G 1B1
(604)-456-0022	(204)-326-3495
<b>Edmonton Branch</b>	<b>Montréal Branch</b>
7250 82 AVE NW	511 Rue Jean-Talon O,
Edmonton, AB, Canada	Montréal, Quebec
V6Z 2C7	H3N 1R5
(780)-468-6800	(514)-277-5511
<b>Arborg Branch</b>	<b>Toronto Branch</b>
317-A Fisher Road	440 Queen St W.
Arborg, Manitoba	Toronto, Ontario
R0C 0A0	M5V 2B1
(204)-555-3461	(416)-980-2500
<b>Regina Branch</b>	<b>Saint John Branch</b>
(Former) Regina Head Office	500 Fairville Blvd.
3085 Albert, Regina SK.	Saint John, New Brunswick
S4S0B1	E2M 4X5
(206)-640-2877	(506)-632-0225