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BACKGROUND AND MARKETPLACE PERSPECTIVES
SETTING THE STAGE: THE AUTOMATION SPECTRUM

Robotic and Cognitive Automation (R&CA) replicates human actions and judgement at tremendous speed, scale and quality, and lower cost.

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<thead>
<tr>
<th>Robotics</th>
<th>Cognitive Automation</th>
<th>Artificial Intelligence</th>
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<tbody>
<tr>
<td>“Mimics Human Actions”</td>
<td>“Mimics/Augments Quantitative Human Judgment”</td>
<td>“Mimics Human Intelligence”</td>
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<tr>
<td>• Used for rules based processes</td>
<td>• Used for judgement based processes</td>
<td>• Turing Test Definition - “A test for intelligence in a computer, requiring that a human being should be unable to distinguish the machine from another human being by using the replies to questions put to both”</td>
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<tr>
<td>• Enables</td>
<td>• Has machine learning capability</td>
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<td>– Faster processing time</td>
<td>• Capabilities include natural language processing, natural language generation, machine learning, cognitive analytics, sensing</td>
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<td>– Higher volumes</td>
<td>• Has dynamic self-adaptable and managing capabilities</td>
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<td>– Reduced errors</td>
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Sample Vendors

- blue prism
- UiPath
- Redwood
- AUTOMATION ANYWHERE
- Narrative Science
- chatterbox labs
- kira
- ARRIA
- Work Fusion
- AYASDI
- Sprout
- vegneuron
- IBM Watson
- MIT CSAIL
- IFTTT
- Fast Forward Labs
- Beyond Limits
- Google DeepMind
- vicali
- Alchemy API
- Digital Nerding
PROCESS INEFFECTIVENESS, ALONG WITH GROWTH IN UNSTRUCTURED DATA, ARE RAPIDLY DRIVING ADOPTION

- HP Autonomy, Transitioning to a new era of human information,
- Steve Hagan, Big data, cloud computing, spatial databases

**Annual growth in digital data volume**

**Annual growth in unstructured data**

$232$ billion

$\sim 9X$

of unstructured data

vs. structured data by 2020*

*Exponential Growth of Data

Smarter Algorithms

Faster Processing Speed

Big Data technologies enable us to extract insights from unstructured data that was previously unused

- Transaction & CRM data
- Research & market data
- Mainframe data
- Point-of-sale data
- Email & blog content
- Video & social media content
- Patient records
- 10-Ks & public filings
- Industry reports & research journals

40–50%

62%

$\sim 9X$

$\sim 9X$

$\sim 9X$

Annual growth in digital data volume

Annual growth in unstructured data

In IT spend in Big Data by 2020

of unstructured data vs. structured data by 2020**

**Steve Hagan, Big data, cloud computing, spatial databases

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THE FUTURE IS ARRIVING QUICKLY

PAST...

Segmentation

Analytics

Workflow Automation

... PRESENT...

Personalization

Insights

Robotic Automation

... FUTURE

Customer Empathy

Self Learning

Cognitive / Artificial Intelligence
R&A PENETRATION HAS VARIED ACROSS INDUSTRY SECTORS – INSURANCE AND ASSET MANAGEMENT ARE LAGGING BEHIND BANKING AND SECURITIES

While organizations initially showed restraint when embarking on their robotics journey, they are swiftly gaining momentum as they progress through the phases of maturity. Adoption has been a function of large scale operations in retail financial institutions.
GEOGRAPHICALLY, R&CA ADOPTION IS FOCUSED ON LOCATIONS HOSTING LARGE SCALE, MANUALLY INTENSIVE PROCESSES

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<tr>
<th>Country</th>
<th>R&amp;CA Adoption</th>
<th>Considerations</th>
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| UK      | • Adoption across FSI sectors – Regulatory remediation, Cost Reduction  
          • BP and AA have opened Delivery or Managed Services Center | ❑ Adoption focused on Large Global Banking Centers and related back office locations |
| Eastern Europe | • Adoption in HF Processors, Asset Management back offices  
                     • BP and AA have opened Delivery or Managed Services Center | ❑ Tool providers have developed local delivery and managed services centers to support growing R&CA market |
| India / APAC | • Adoption in GICs (global in-house centers) and Captives  
                      • BP and AA have opened Delivery or Managed Services Center | ❑ Geographical breadth has strained automation tool providers’ capacity to support clients in local markets and provide adequate training |
| NAM   | • Adoption across FSI sectors – Regulatory remediation, Cost Reduction  
             • BP and AA have opened Delivery or Managed Services Center | ❑ Clients are increasingly looking for managed services for bot / solution development, deployment and maintenance |
| South Africa | • Retail Banking R&CA Adoption  
                     • BP and AA have opened Delivery or Managed Services Center | |
| Australia | • Retail Banking R&CA Adoption | |
R&CA DEPLOYMENT ACROSS OTHER INDUSTRIES HAS LESSONS FOR FSI

Large Health Plan and Provider

• Strategic Objective: Re-purpose a third of the workforce using R&CA to address cost pressures (60,000 out of 180,000 employees)
• Plan:
  − 7 bots currently deployed
  − 40 processes identified for automation in current year
  − Plan to scale to 500 Bots in 3 years

Large Industrial Manufacturer

• Strategic Objective: Reduce FTE count over 3 years by use of R&CA
• Plan:
  − 39 processes identified for automation
  − $3MM savings targeted over 3 year period

☐ CoE Set up is crucial for automation program success
☐ Funding - Ensure appropriate funding of program to support adoption speed
☐ Change Management is critical – struggled with impact on labor unions
☐ Process selection, adequate documentation is critical for business case viability
☐ Skill Sets – struggled with bringing a mix of Operations and Technology resources
☐ Path to production and maintenance of bots post production cannot be underestimated
OVER THE COURSE OF ADOPTING R&CA, CLIENTS HAVE ENCOUNTERED CONSISTENT SUCCESSES AND CHALLENGES

 Successes

- **Capacity Creation**
  Successful implementation has led to creation of additional capacity allowing staff to focus on more value-added tasks.

- **Better Stakeholder Experience**
  As RPA is rule-based, error rates are substantially reduced, resulting in a better experience for both internal and external stakeholders.

- **More Meaningful Jobs / Empowerment**
  Reduction / elimination of mundane and repetitive jobs is resulting in higher job satisfaction.

- **Positioning for the Future**
  Successful implementation of Robotic automation is creating a momentum for future exploratory efforts towards Cognitive automation.

- **Total Process Transformation**
  During the RPA process, traditional methods of performing certain activities are being overhauled resulting in total process transformation as opposed to incremental improvements.

 Challenges

- **Estimation of Expected Benefits**
  Accurate benefit estimation during business case creation has been a challenge due to lack of available capacity metrics.

- **Fragmentation of Processes**
  RPA benefits are maximized when processes are consolidated i.e. hand-offs across multiple groups are minimized, otherwise, only parts of the processes get automated resulting in limited benefits.

- **Governance**
  Lack of structured approach to automation, including organizational structure and controls to coordinate / manage it; a COE is critical for successful R&CA programs.

- **Adhoc Approaches**
  Multiple, uncoordinated automation ventures across functional groups result in adhoc processes / methods of automation. Initial failures could cause resistance for adoption.

- **Limited Availability of Skills**
  Limited availability of skilled resources to manage an automated process (involving humans and bots); limited focus on Bot design, deployment and maintenance.
SCALABILITY AND MODULARIZATION OF AUTOMATION SOLUTIONS - COGNITIVE SOLUTIONS CAN COMPLEMENT AND ENHANCE EXISTING INVESTMENTS

Sample Cognitive Services
- NLP / NLG
- Speech Recognition
- Machine Learning
- Inference
- OCR

Cognitive Graph
- Actors
- Entities
- Relationships

Big Data & Traditional BI Infrastructure
- Data Lakes
- Distributed Computing Environment
- Traditional BI Environment

Stream / Batch Inputs

Semi-structured data
- Wearables data

Unstructured data
- Social Media / Blogs
- Images / Videos
- Web Data
- Documents

Structured data
- ERP / CRM
- 3rd Party Data
SOME R&CA USE CASES ARE COMMON ACROSS FSI CLIENTS

REPORTING

- **Client Reporting** - Standard client reports / template population (bolt on commentary generation)
- **Regulatory Reporting** - Automated data gathering and template population w/ software logs for reference

ACCOUNTING AND ADMINISTRATION

- **Asset and Cash Reconciliations** - Custodian / counterparties / prime broker vs. asset manager
- **Client Onboarding and Fund Setup** - Automated bots to set up client information in different systems
- **Fund Accounting / NAV Calculation** - Automating daily NAV checks

COMPLIANCE

- **AML / KYC** - Transaction Monitoring, Due Diligence
- **Rule Monitoring** - Automated checks for various internal / external thresholds
- **Compliance Reporting** - Rapid data extraction and generation (bolt on generation of narratives)

SEcurities OPERATIONS

- **Securities Pricing** - Aggregating securities pricing approvals
- **Vendor Management** - NLP-based contract reviews to extract terms to feed vendor risk analysis, contract remediation
- **Trade Processing** - Trade Capture, Allocations, New Issue Setup
- **Corporate Actions** - Event setup, processing, client notifications
- **Settlements** - Instructing DvP / FoP settlements, Deliveries
SELECT AUTOMATION USE CASES

1. E-statement Check
   - RPA
   - Data Extraction and Analysis

2. Retirement Plan Set up
   - RPA
   - Data Extraction and Form Fulfilment

3. Finance helpdesk
   - Chat Bot
   - Natural Language Processing

4. Contract Invoice Reconciliation
   - Natural Language Processing
   - Data Extraction
PERSPECTIVES ON VENDOR CAPABILITIES
The vendor landscape is highly fragmented with no clear market leader; some are focused only on R&CA, while others have a diverse portfolio.
PARTNERSHIP MODELS

**In-House**
- Partner engaged to re-sell automation tool licenses, technical support and training
- Client has full control of delivery, and execution remains in-house
- Suitable when strong experience and resourcing depth exist in-house

**Joint Implementation**
- Partner integrated into the Client environment to accelerate initial implementation, then hands over to in-house capability
- Key Benefits:
  - Automation partner is engaged in any of the following (in addition to being license reseller)
    - One-time automation solution build
    - Designing and setting up automation program, business case, process selection, Automation Control Center
    - Production deployment support and ongoing maintenance
  - Joint model can be established in collaboration with in-house

**SaaS / Licensing**
- Partner to deploy technology / solution on Client’s platform and charges an annual fee for the solution / technology
- Key Benefits:
  - Expert partner with demonstrated experience engaged via a Software-as-a-Service model
  - Partner brings tools, methodology and management models to lead implementation
  - Software is licensed to client typically behind their firewalls
  - Potential for client to select a prime contractor to interact with and manage other vendors

**Managed Services**
- Partner owns the platform and Client pays for volume of services rather than a yearly subscription fee
- Key Benefits:
  - Partner fully responsible for managing and delivering services to the business
  - Partner responsible for installation, maintenance, and upgrades associated with the solution
  - Solution sits within Partner’s firewall; batch interactions with client systems
  - Frees up client resources to focus on core competencies
  - Partner charges a consumption fee (e.g. per contract reviewed)

**Hybrid Partnership Models**
- Partner engaged to re-sell automation license only; no partnership support sought for delivery, execution and maintenance
- Client has full control of delivery, and execution remains in-house
- Suitable when strong experience and resourcing depth exist in-house

**Joint Implementation**
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  - Partner charges a consumption fee (e.g. per contract reviewed)
BUILD VS BUY – WHAT’S RIGHT FOR YOU?

Key considerations for decision making:

**Partnerships**
- Leverage learnings from other similar projects
- Availability of and access to Automation talent
- Design the automation program correctly the first time (coding standards, best practices, governance)
- Careful and practical evaluation of vendor tools to address organizational requirement and economics
- Leveraging accelerators – Templates and Methodologies for assessing opportunities, Process standardization, Compatibility checks etc.

Explore Options Based On Organizational Maturity:

**Robotics – Center of Excellence**
- The CoE helps manage the automation program and drives collaboration across the organization
- Enables strong control and governance over the program

**Robotics – Managed Services**
- Maintenance and future automation developments will be managed by the service provider
- Enables the institution to reduce infrastructure and resource spend (especially for smaller automation programs)

**Cognitive – Software as a Service**
- Allows the institution to access services on demand
- Allows distribution of services with limited upfront cost
- Allows the institution to benefit from usage based pricing
AUTOMATION TOOLS

Organizations are using single RPA tool to scale but multiple RPA and Cognitive tools to experiment; to solve large scale business problems end to end, firms are looking to stitch together multiple tools.

Sample Use Cases

1. **Reporting**: Data Extraction from SAP and publishing internal updates (via email)
   - Single RPA Tool

2. **Expense Statement**: Check against scanned receipts to approve expenses
   - Required combination of RPA Tool and Third Party OCR tool

3. **Payment Dispute Resolution**: Review manual customer letters and capture data to support dispute resolution
   - Natural Language Processing tool and RPA Tool

4. **Payment Repairs**: Correct payment information based on specific error code
   - Required machine learning tool and RPA tool
FUNCTIONAL AREA PERSPECTIVES
R&CA IN SECURITIES / INVESTMENT BANKING OPERATIONS

Channels & Marketing
- Branch
- Call Center
- Self-Service
- Internet
- Brand Management
- Business Development

Administration & IT Services
- Management Reporting
- Change the Bank Projects
- IT Policies & Plan
- Business Continuity
- Customer Analytics
- System & IT Service Desks

Sales & Trading
- Trade Capture
- Trade Enrichment
- Order Management & Pricing
- Allocations
- Confirmation/Affirmation
- Sales

Data
- Market Data
- Reference Data Mgmt.
- Static Data Mgmt.

Clearing & Settlement
- Receives & Deliveries
- Margin & Collateral
- Reconciliations & Fails
- Stock loan
- Corporate Actions
- Position Management

Risk & Compliance
- Market Risk & Valuation Models
- Credit & Liquidity Risk Mgmt.
- Audit & Compliance Guideline
- Fraud / Surveillance / AML
- Intraday Monitoring
- Reg. Compliance

Treasury & Finance
- ALM
- Treasury Administration & Mgmt.
- Asset Securitization
- Accounting
- Regulatory Reporting
- MIS / HR

Client Service
- Tax Processing
- Client Reporting
- Document Mgmt.
- Regulatory Reporting
- Onboarding
- MIS / HR

Opportunities for Automation: low medium high
**R&CA in IB Operations – Select Use Cases**

### Challenge
- Many clients with limited STP send allocation instructions via email; given the multitude of systems involved (per client domicile and trading jurisdiction), teams spent a considerable amount of time performing manual allocations.

### Solution Description
- A standardized template was constructed to capture the necessary attributes.
- Automation involved extracting the block trade ID, sub accounts, and quantities to perform allocations in appropriate systems.

### Benefits & Impact
- Saves 3 FTE hours of work in Equities and 4 hours in FI.
- Instantaneous allocations leading to a better client experience.

### Challenge
- Trade failures were observed due to missing accounts or static data. Teams had to manually look up the missing data and repair the trade.

### Solution Description
- Most institutional clients subscribe to Omgeo Alert utility and voluntarily update their funds and static data.
- Bot was designed to automatically login to Omgeo Alert and extract the missing information and resubmit the trade.

### Benefits & Impact
- Over 2 FTEs worth of savings achieved via automatic break fix.
- Reduced settlement failures by over 30%.

### Challenge
- Instructing settlements currently involves a manual verification of current inventory and delivering in a predefined priority order.

### Solution Description
- The bot aggregates all receives and delivers, nets it, and then compares against available securities in the inventory.
- Based on a set of prioritization rules, it sequences instructions and updates appropriate codes in delivery systems.

### Benefits & Impact
- Saves 2 FTEs worth of effort in the particular group.
- Avoids the need for extensive recon and four eye checks.

### Challenge
- Every new structured products issue that the clients subscribe to need to be setup in the Product database and the New Issue database; this is a manual task that involves extracting the information from term sheet and setting up.

### Solution Description
- A bot was designed to automatically extract the details of the issue from prospectus and term sheet.

### Benefits & Impact
- The bot automatically sets up over 1400 new issuances requiring 30 mins for each setup.
- Instantaneous setup allows for greater reference data integrity and higher STP.
## R&CA IN ASSET MANAGEMENT (PAGE 1 OF 2)

### Opportunities for Automation:
- Low
- Medium
- High

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<th>Business Management and Governance</th>
<th>Risk Management</th>
<th>Data Management and Business Intelligence</th>
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<td>Policies</td>
<td>Market Risk</td>
<td>Data Architecture</td>
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<td>Credit Risk</td>
<td>Data Admin</td>
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<td>Operational Risk</td>
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<th>Investor and Intermediary Services</th>
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<td>Margin Calculation</td>
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<td>SMA and Sponsor Support</td>
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<td>Intermediary Services</td>
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<td>Order Creation</td>
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### Governance

- Policies
- Strategy & Planning
- General Mgmt.
- Market Risk
- Credit Risk
- Operational Risk
- Data Architecture
- Data Admin
- Database Admin

### Investment Operations

- Trade processing
- Confirmation
- Post-Trade Compliance
- Cash Forecasting
- Front to Back Recon
- Clearing/ Settlement

### Accounting and Admin

- Accounting
- Administration
- Postings
- Fund Distributions
- Corporate Actions
- Fund Accounting / NAV Calculation
- Proxy Voting
- Books and Records
- Counterparty Management
- Pre/ Post-Close Analysis
- Bank Relations
- Valuation and Pricing
- Custodial Mgmt
- Institutional Accounting
- Fee Billing

### Opportunities for Automation: (Low, Medium, High)
### Opportunities for Automation:

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<th>Service</th>
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R&CA IN ASSET MANAGEMENT – SELECT USE CASES

**1 Reconciliations**

**Challenge**
- Significant amount of manual effort invested in reviewing reconciliation rule results, creation of custodian-specific outputs, and updating accounting records

**Solution Description**
- Automated the custodial reconciliation data review, creation of upload files, and update to accounting systems using bots to execute tasks to complete the process

**Benefits & Impact**
- Significant reduction in time, 100% accuracy, process timeline earlier in day
- Zero manual-decision making, limited reviews, and ease in scaling
- Easy to manage peaks and troughs

**2 KYC Client Refresh**

**Challenge**
- As part of KYC - Periodic Review (PR) and Client Refresh (CR), the investigating analyst must identify missing client information and manually update in various systems upon receiving, which taking significant time (about 25 mins per customer)

**Solution Description**
- The automation enabled logging in, searching for customer record, identifying missing data, emailing the Relationship Manager, and then subsequently updating the information received

**Benefits & Impact**
- Elimination of manual tasks reducing the effort required to complete periodic reviews and refresh, including audit trails on data changes

**3 Portfolio Commentary**

**Challenge**
- Process is time and resource-intensive, ever-expanding scope of required commentary necessitates new strategies and separately managed accounts (SMAs)

**Solution Description**
- Automated the portfolio commentary creation process using Natural Language Generation (NLG) platforms in conjunction with portfolio analytics software

**Benefits & Impact**
- Improved client communication due to high quality, consistent commentary
- Improved time, effort to produce commentary, better reporting coverage and frequency
- Compliance requirements were met by delivering timely, accurate and consistent regulatory reports

**4 Retirals Plan Setup**

**Challenge**
- When a new retiral plan is won, and initial plan information is received from the plan sponsor, required information needs to be pulled from multiple artifacts (e.g., sales questionnaire) and updated into the recordkeeping system

**Solution Description**
- Automated the steps to compile plan information, identify additional information requirements and automatically trigger notifications, compare an incumbent plan’s fund line up to determine whether all investments currently exist on platform’s master fund list to finally generate formal document (e.g., adoption agreement)

**Benefits & Impact**
- Results in cost reduction, lower processing time, and eliminates human error due to elimination of manual steps
SAMPLE AUTOMATION PROCESS – DEEP DIVE

Screening and Record Review – Client Information Aggregation Task

Task Overview

- The analyst aggregates missing client information as part of the Periodic Review process and writes an email to the Relationship Manager (RM). The RM collects this information through various outreach methods and sends it to the analyst who updates the record.

- Only items shown in blue boxes can be automated as they are rule based, repeatable and involve human actions (not judgement).

Task Overview

1. Search for customer record
2. Identify missing customer data
3. Email client outreach team
4. Client Outreach to collect missing info
5. Email info to Analyst
6. Receive email and update customer record

Manual Process

- 25 mins per Customer record

Post Automation

- Step 1-3 : 2 Mins
- Step 5 – 0.5 Mins
OPERATING MODEL
## R&CA Lifecycle ("WHAT")

The robotics journey is spread across 3 key phases with 9 sub-activities; governance and execution responsibilities will vary depending on the phase of the journey.

### Opportunity Phase
- Explore
- Assess
- Estimate

- Identify automation opportunities
- Evaluate opportunities, shared by business, for viability and prioritize opportunities for automation
- Obtain alignment on prioritized list
- Obtain approval from Steering Committee on the prioritized list of automation opportunities

### Development Phase
- Solution
- Build
- Test

- Coordinate with business functions to develop automation solution
- Configure / Develop automation solution using automation tool in the development environment
- Test the automation solution (Integration and User Acceptance Testing) in the test environment
- Ensure approval from Information security teams and alignment with Business Continuity Plans (BCP) and Disaster Recovery (DR) policies
- Obtain sign-off for production deployment

### Production Phase
- Deploy
- Monitor
- Improve

- Deploy automation solution in production, following the firm’s change management procedures and approval requirements
- Monitor automation solution performance against agreed upon KPIs
- Maintain automation solution to address any technical environment changes
- Maintain and improve (as automation skills build up) automation solution(s), as necessary
OPERATING MODEL (“HOW”)

As organizations mature in their robotics capabilities, the operating model is likely to evolve from Centralized to Decentralized.

Centralized Model

Control Center owns and manages the entire process for Automation Opportunity Assessment; Build, Test, & Deploy and Operate for all BUs, in coordination with business area process owners.

Hybrid Model

Business units with significant automation demand manage their own Opportunity Assessment; Build, Test & Deploy and Operations, while others with less demand, or complex automation needs, work under the Control Center.

Decentralized Model

Business process areas own and manage the entirety of the process for Governance, Opportunity Assessment; Build, Test & Deploy and Operate with ad-hoc coordination between process owners.

‘Automation’ operating model features

- RPA capabilities are not mature across Business Units
- Availability of resources with requisite RPA skill sets is limited
- Proliferation of RPA capabilities and tools across Business Units is limited
- Platforms and systems across Business Units are common

- RPA is a mature capability in one or more Business Units
- Some Business Units have resources with the requisite RPA skill set
- Some Business Units have RPA tool needs that are not applicable to others
- Business Unit platforms and technologies are siloed

- RPA is a mature capability across many Business Units
- Many Business Units have resources with the requisite RPA skill set
- RPA capabilities and tool needs are business specific with limited overlap
- Business Area platforms and technologies are siloed
KEY ELEMENTS

The operating model is anchored by key elements that allow the successful completion of tasks by the key stakeholders; these elements are critical in designing a flexible, yet robust automation program.

Guidelines and policies required to control the activities across the automation lifecycle; existing enterprise guidelines and policies will be updated to reflect newly added guidelines for automation solution:

- Business Continuity Plan
- Data Security and Compliance
- Release Management

Standards and practices to consistently manage automation activities:

- Exception Management and Logging
- Coding standards
- Documentation Standards
- Deployment and Readiness Checklist

Measures to cover different aspects of the automation solution:

- Process Performance metrics / dashboards
- Productivity metrics / dashboards

Frameworks/approach to ensure consistency of approach across functions:

- Process Evaluation Framework
- Process Prioritization Framework
- Business Case Framework
- Change Request Framework
- Exception Management

Tools to ensure right decision making by the right people at the right time:

- Decision Matrix/RACI Framework
- Meeting and Reporting Cadence

Standards

Methods

Governance

KPIs / Metrics

Controls
SCALING CHALLENGES

Scaling represents a key element to a successful RPA Program, providing the ability to build from a foundation and develop insight and value.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Stakeholder Involvement</th>
<th>Maturity Implications</th>
<th>Typical Bots</th>
<th>Value to Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Integrate &amp; evolve</td>
<td>Maintain, operate, and continuously improve robotic automation solutions. Maintain automation updates through coordination with IT function and system upgrade cadences</td>
<td>Revised organization design to capture automation benefit; RPA as a shared value across the organization</td>
<td>Cognitive + RPA implemented</td>
<td>&gt;100</td>
</tr>
<tr>
<td>3</td>
<td>Deploy strategically</td>
<td>Coordinate relevant IT build, configuration and testing of all automated process solutions, enable business acceptance and handle change management</td>
<td>Formulation of a Governance committee and broader organization involvement for opportunity identification; greater involvement of IT to enable access to systems</td>
<td>Consideration for Cognitive to co-exist with RPA</td>
<td>50-75</td>
</tr>
<tr>
<td>2</td>
<td>Develop approach</td>
<td>Identify and prioritize potential opportunities based on impact assessment; quickly automate simple processes, and address pain points for more complex ones</td>
<td>Opportunity assessment and business case; limited to business / function in scope for automation and benefit case socialized with adjacent areas</td>
<td>Initial partnership with the selected vendor. Organizational level licenses secured</td>
<td>20-30</td>
</tr>
<tr>
<td>1</td>
<td>Prove the concept through the POC</td>
<td>Completion of the POC and Business Case will lay the foundation for the Operating Model and allow for rapid scaling</td>
<td>Stakeholders involved to understand the process and appreciate value</td>
<td>Evaluation of RPA vendors. PoC executed with one or two vendors under trial license</td>
<td>3-4</td>
</tr>
</tbody>
</table>
CREATING A ROBOTICS AND COGNITIVE AUTOMATION STRATEGY

Competitors are aggressively moving to adopt robotics and cognitive automation enterprise-wide; to maintain your competitive advantage, we recommend adopting an enterprise-wide view on automation:

- Develop a strategy that aligns global and local requirements
- Design an Operating Model to implement automation strategy
- Identify two processes to review for the initial pilot, one each for robotic process automaton and cognitive automation
- Finalize automation tool and initiate PoC
DELOITTE’S MARKET PLACE CAPABILITIES

Though our capabilities & in-house expertise in most global locations, we are uniquely positioned and best qualified to partner with you to adopt RPA

UNRIVALED RPA EXPERIENCE
Engaged in delivering Robotic projects across most major US Universal and Regional Banks
- 800+ Processes Automated
- 500+ bots deployed in production
- Working with 8 out of top 10 US / Global Banks on RPA

PROVEN EXECUTION WITH MULTIPLE VENDORS
Deep vendor alliances with leading RPA vendors, with multiple complex global implementations across industries

DEEP EXPERTISE
Application of a consistent core methodology and customizing it to avoid a “one size fits all” approach across client’s functions and processes
- 160+ RPA Projects
- 1500+ RPA Practitioners

RECOGNIZED THOUGHT LEADER
Deloitte’s published eminence provides a comprehensive outlook on automation and the significant benefits that organizations can derive from it

STRONG GLOBAL PRESENCE
Strong international presence across the globe reflecting your Businesses – NAM, EMEA and APAC
- Dedicated ‘Bot’ factory in Orlando (100+ resources)

Deloitte is the only partner that can understand and execute the Processes, Technology, Culture and Global Complexity across your organization into a successful RPA solution with a flexible offering

Over 30 vendors / tools included as part of Deloitte innovation ecosystem

Deloitte published eminence on RPA and its applications
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APPENDIX
LESSONS LEARNED

1. Right Process or Activity
   Ensure that the business process is well defined to ensure automation can be implemented. The process must be able to fulfill the business case for automation.

2. Testing
   Business process testing is required to ensure as many issues as the automated solution can encounter. This is to ensure robustness and efficiency of the automated solution.

3. Stable not Broken Processes
   Processes should be amended and made as efficient as possible before implementing automation to enable most desirable outcomes.

4. Quality and Exceptions Management
   The quality of the outputs from the automation must be continuously monitored to ensure they are trustworthy. It is important to invest heavily in exception management for quality purposes.

5. Approach to Measure and Track Benefits
   Strong focus should be afforded to ensure benefits of automation are tracked and understood, with a detailed approach to measurement agreed prior to implementation.

6. Adequate Education and User Adoption
   There is a great need to ensure that automation is adopted into business and the need and result of integrations should be explained thoroughly.

7. Checklist for Requirements
   Ensure that the correct infrastructure is in place and compliance requirements have been met early on in the project.

8. Stakeholder Management
   Stakeholders need to be engaged from the programme’s outset to ensure effective buy-in, collaboration and adoption of changes.

9. Vendor and Business Vision Alignment
   The chosen automation vendor should meet the long term process automation requirements of the business.

10. Wider Strategic Technology Initiatives
    Selected automation investments should align with broader technological investment in the client’s overall IT strategy.
**Transformers: How Machines are Changing every Sector of the UK Economy**
Explains the impact of automation and robotics on work and employment focusing on the sector outlook of robotics

**Connectors: Robotic Process Automation**
A quick-reference guide to how R&CA plays out in global business services, shared services, and outsourcing

**Cognitive Technologies: The Real Opportunities for Business**
Examines the evolution of cognitive technologies and how it is being used in organizations today

**Redesigning Work in an Era of Cognitive Technologies**
Analyzes the impact of disruptive technologies and how new possibilities for work redesign can provide greater value to business and customers

**The Robots are Coming**
Examines the increasing appetite for robotics leadership and discusses how implementing robotics can improve the Finance functions

**Show me the Money: Autonomics in Business Process Outsourcing**
Examines how autonomies has the potential to be a disruptor in the outsourcing industry

**Automate This: The Business Leader’s Guide to Robotic Process Automation and Intelligent Automation**
Explains the basics of enterprise automation using RPA and introduces the capabilities behind Intelligent Automation

**Redesigning Work in an Era of Cognitive Technologies**
Analyzes the impact of disruptive technologies and how new possibilities for work redesign can provide greater value to business and customers
Crunch Time: Finance in a digital world
Explains the impact of digital disruption on business, the various digital tools, from cloud computing and robotics to analytics, artificial intelligence and automation, for the CFOs and the talent essentials.

Next generation automation: Transform you business process with robotic and intelligent automation
Provides an overview of RPA vs AI, automation benefits to small scale processes, and popular myths.

The robots are here: Meet your digital workforce
2016 Deloitte report examines Robotic Process Automation (RPA) and its role in shared services and Global Business Services (GBS).

DUP: A path to cognitive enterprise
Talks about how developers are incorporating cognitive technologies, including machine learning and speech recognition, into robotic process automation—and giving bots new power.

Cognitive Analytics: Augmenting and amplifying human intelligence
Brief overview of Cognitive Analytics

Intelligent automation entering the business world
Explains how automation using AI might be the next game changer in terms of process efficiency in financial industry. Also contains brief case studies.

Contract Integration: D - ICE
Use case for Deloitte’s Intelligent Content Extraction (ICE)

Deloitte’s Cognitive Advantage
Brief summary of Deloitte’s offering in Cognitive automation.