29th ANNUAL
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STATE AND LOCAL TAX FORUM
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Practical Solutions Using Tax Data Management & Technology

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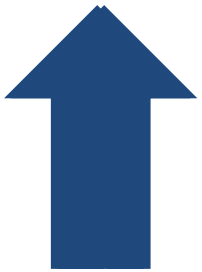
Agenda

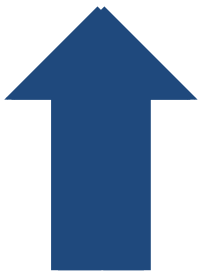
- Introductions
- Challenges with data and calculations / Case studies
  - Compliance
  - Reporting
  - Planning
  - Risk Management
- Intelligent automation and common tax technology tools
  - Data management and reporting tools
  - Robotics process automation
  - Artificial intelligence
- Questions

Identify the top two most challenging and time consuming areas for your tax department

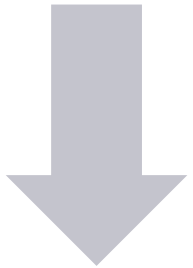
1. Collecting, mining and formatting data
2. Analyzing, forecasting and interpreting data
3. Preparing forms and returns
4. Approving forms and returns
5. Planning and audits



Increase in amount of data



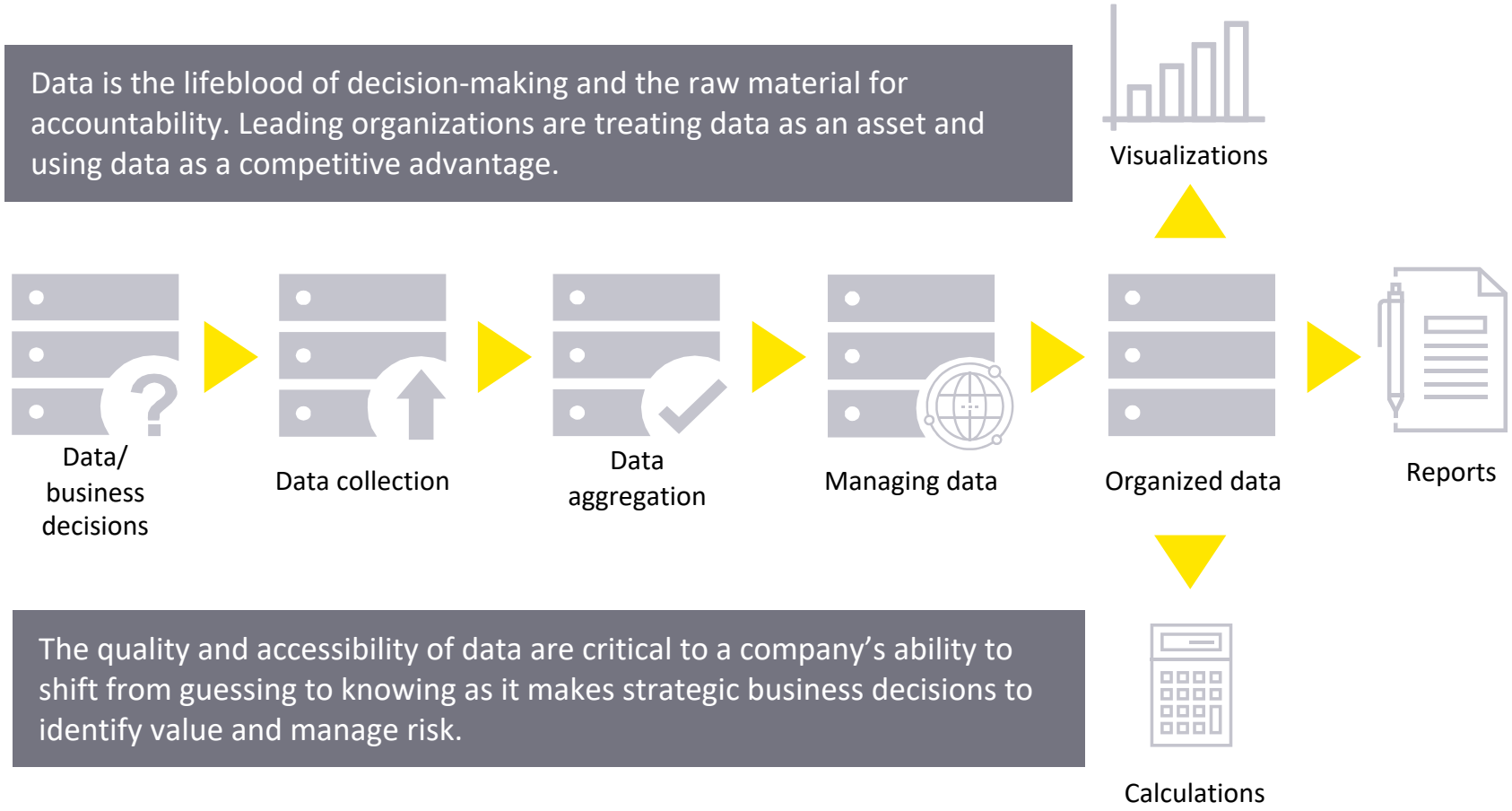
Increase in processing power



Decrease in cost of computing

Almost everything we do today generates data. Our systems are exponentially better and more efficient at processing those data. Cloud computing has commoditized data processing and driven down the price.

Data is the lifeblood of decision-making and the raw material for accountability. Leading organizations are treating data as an asset and using data as a competitive advantage.



The quality and accessibility of data are critical to a company's ability to shift from guessing to knowing as it makes strategic business decisions to identify value and manage risk.

Key value-adds: data insights, cash tax savings

- Analyzing data allows for the identification of opportunities to defer income and accelerate deductions to improve cash flow
- An automated process allows for the reduction/deferral of estimated tax payments while complying with return requirements
- By modeling tax structuring/operational changes, tax attributes may be utilized for cash tax savings
- Meaningful insights/analytics provide for more agile and timely results
- Modernizing state tax calculations improves output quality and drives value for the organization

Challenges and Practical Solutions

- Compliance
- Reporting
- Planning
- Risk Management

What is intelligent automation?

Process improvement through redesigning, enhancing underlying data system capabilities leveraging technology solutions that increase efficiency and consistency and reduce manual effort.

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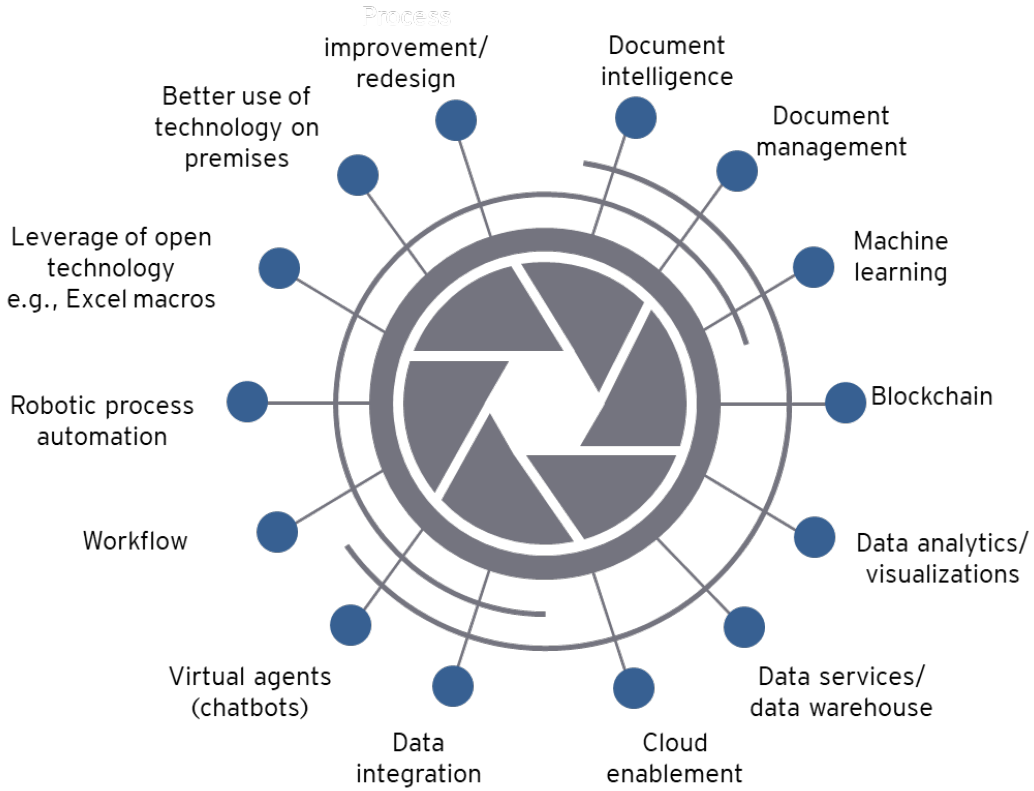


Tax Data and Analytics

Data integration in Microsoft Excel

Microsoft Power Query for Excel is an Excel add-in that enhances the self-service Business Intelligence experience in Excel by simplifying data discovery, access and collaboration.

- Microsoft Power Query for Excel 2010 or 2013
  - Download and install add-in from https://www.microsoft.com/en-us/download/details.aspx?id=39379
- Get & Transform is embedded in Excel 2016 on the Data ribbon

What is it?

Microsoft Power Query is a self-service data integration tool that is part of MS Excel[1] and MS Power BI.

Example of data sources

- Websites
- Excel files
- CSV files
- Folders
- SQL Server and many other databases
- SharePoint

Microsoft Power Query

Power Query provides many ways to clean, parse and normalize different types of data – a few examples:

- Remove duplicates
- Keep duplicates
- Set data type (text, number)
- Remove columns
- Remove top rows
- Keep range of rows
- Aggregating/grouping rows
- Split by delimiter
- Lowercase
- Uppercase
- Trim leading and trailing blank spaces
- Clean non-printable characters
- Add prefix or suffix
- Extract beginning or ending characters
- Extract length of characters

Alteryx

What is it?

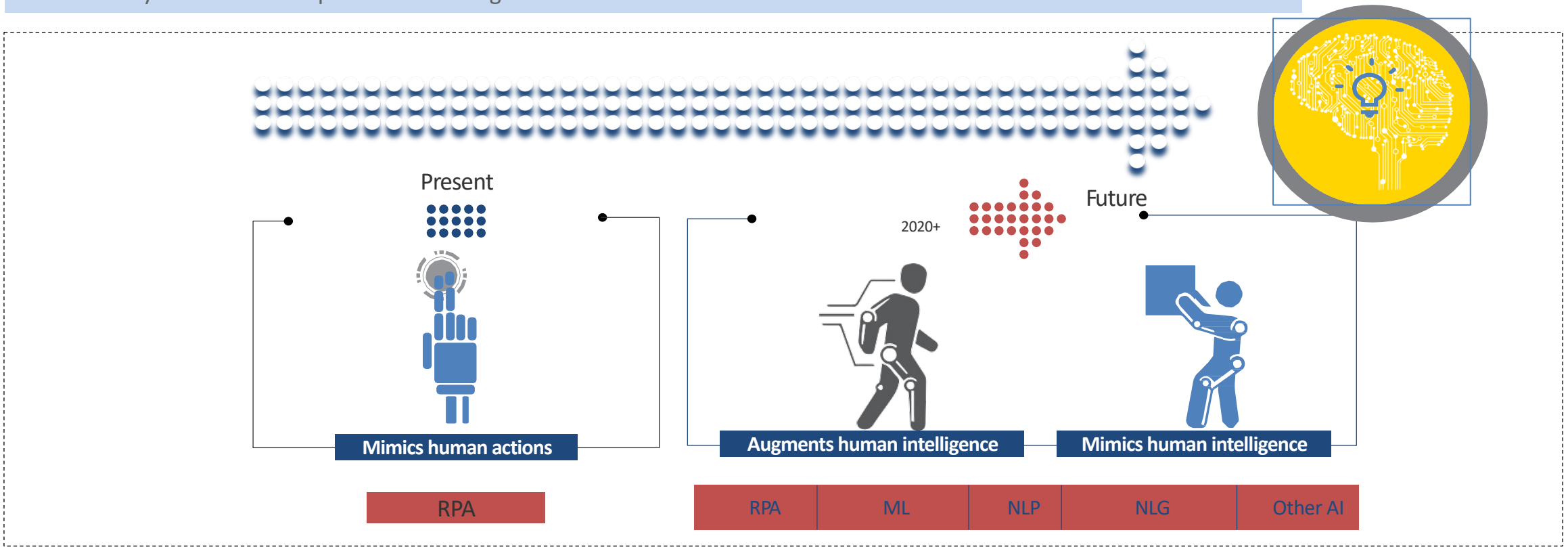
Alteryx is a self-service data integration and advanced data analytics tool with a visual workflow.

Dispelling common myths:

- Does not store any data
- Is not just a data manipulation tool; can automate end-to-end processes and complex modeling
- You do NOT need a bot – it can connect to databases directly
- It is not hard to learn – no coding, drag-and-drop UI; process orientation enables all tax and business users to learn fast

Robotic Process Automation (RPA)

Beginning their intelligent automation journey with RPA is a widely seen approach among organizations. RPA can help deliver business value in a short period of time and make this journey potentially a "self-funded" one. RPA-led transformation can also remove many obstacles in the path ahead for organizations.



SDI – structured data interaction | RPA – robotic process automation | NLP – natural language processing | ML – machine learning | NLG – natural language generation

Process triggers that signal where RPA could be beneficial and typical areas of application within various functions?

Key Process Triggers

- **Data-intensive**
- **Repetitive in nature**
- **Rule-driven**
- **Electronic trigger to the process**
- **Has electronic start points and endpoints**
- **Involves manual calculation**
- **High error rates**
- **Sensitive content**
- **Can be performed out of office hours**
- **Complex IT landscape**

Typical Areas where RPA adds efficiency

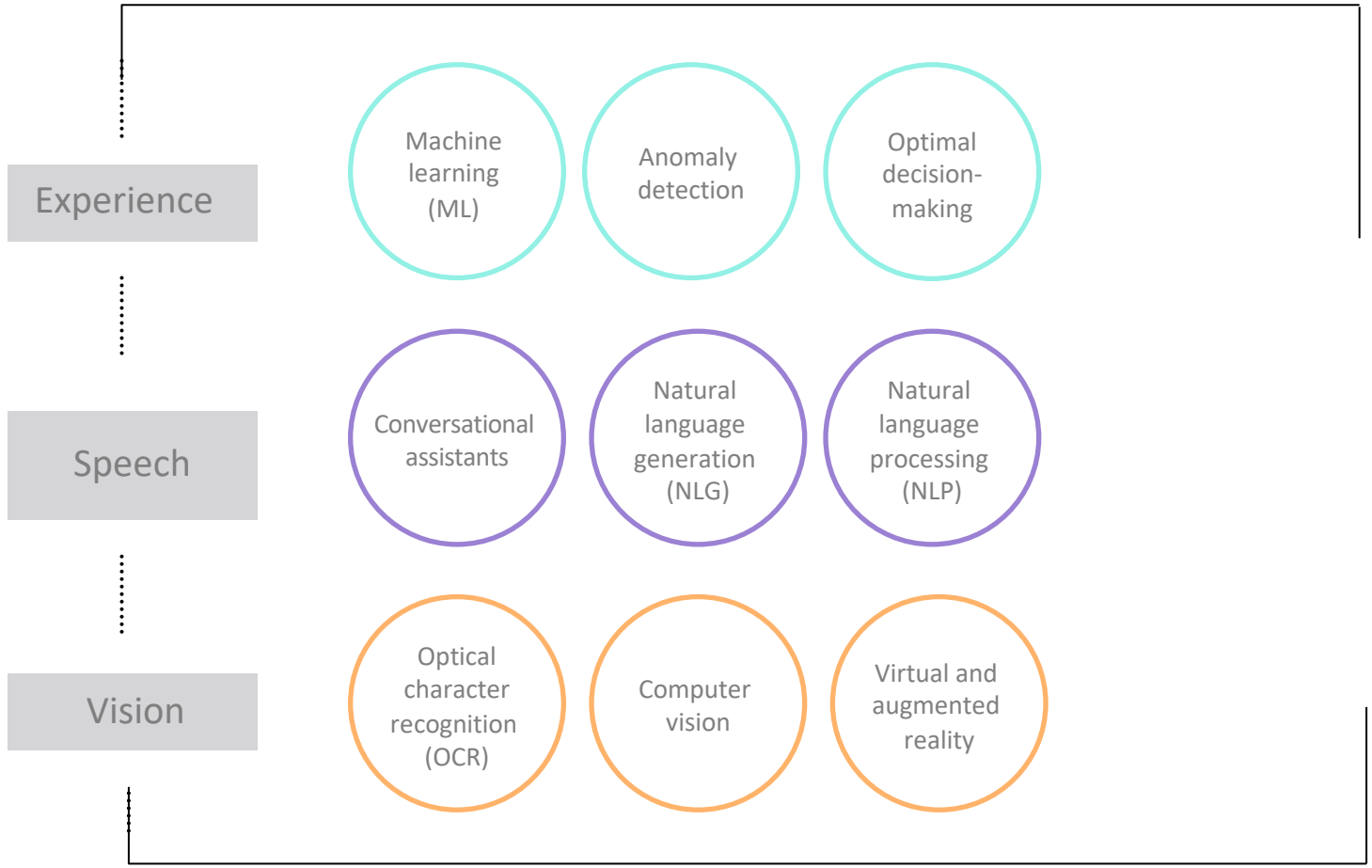
- Data extraction for compliance
- Invoice extraction for audits
- Completing exemption certificates and updating vendor tables
- Tax coding verification and updating tax determination software
- Reconciliation of data sources
- Filling out forms and templates
- Sharing and storing of the data files

Artificial Intelligence

Artificial Intelligence refers to the shift of cognitive tasks from a human to a computer.

At first, the tasks were **computational** (i.e., complex calculations) and driven by pre-programmed rules, but in recent years the focus has shifted to tackling **perceptive** and **sensory** tasks (e.g., language recognition, vision).

AI today is largely expected to **learn and improve through experience** without following explicit rules (i.e., machine learning)



Four key subdomains of artificial intelligence for tax

Machine learning

- Analyzes historical information where human judgment was applied and replicates that judgment on future data sets based on the historical information analyzed
- *Example: classify a desk into the correct fixed asset classification by reviewing existing fixed asset registers*

Natural language processing

- Reviews documents, analyzes language for its meanings and identifies the subject matter within the document
- *Example: review a lease contract, identify specific relevant clauses (such as clauses addressing key dates), and then highlight and extract relevant details for further use*

Natural language generation

- Reviews data, analyzes it for the insights it contains and turns it into written language, thereby having data become actionable analytics
- *Example: provide a summary paragraph report about specific tax clauses contained within a lease agreement; can also draft factual and tax technical memorandum once trained*

Question and answer pairing

- Enables individuals to interact with technology using “their own words”
- *Example: individual can obtain information (ask a question) or trigger an action (request a service) using natural language through a portal. Enables professionals to perform tasks (tax research) or drive users towards a specific solution via back and forth chat*

Self Service vs IT (Enterprise) Solutions

Category	IT Solution	Self Service Solution	Comments
Data Storage	• SQL Server database • Oracle database	• Excel Files • Access Databases	Database tools are powerful but require a lot of setup and maintenance
Data Visualization / Reporting	• Custom Web Pages • Server side Data Visualizations	• Desktop Tableau • Desktop Power BI	Self service options can be converted to Server solutions with IT help
Extract, Transform and Load	• SQL Server Integration Services • Alteryx Server	• Desktop Alteryx • Power Query	Self service options are easier to use with less lead time
Process Automation	• Custom Software • Server Side Robotics	• Desktop Robotics Software	Self service options are easier but more “brittle”
Calculations	• Custom Software	• Excel Files • Desktop Alteryx	Custom software is time consuming and expensive to build/maintain

SALT Compliance - case study

Issue	Traditional approach	Improved approach	Leading approach
Data gathering	• Manual collection • Copy/paste into workpapers	• Use of ETL tools to manipulate data extracts	• Direct feeds from the ERP system
Compliance data import	• Manual entry into compliance workpapers	• Partial apportionment data import • Partial State Modifications import • Manual NOL/Credit entry	• Complete Apportionment/State Modifications/NOL/Credit imports
Analysis	• Offline workpapers • Data hand gathered from returns • Tedious compare process	• Visualization tools to analyze data workpaper data • Manual extracts from the compliance software	• Visualization tools to analyze workpaper/return/XML data • Automated generation of analytics
Review	• Little emphasis on materiality • Too much time spent reviewing calculations that might or might not have an impact	• Independent assessment of materiality by concept • Time spent reviewing concepts but not able to see the big picture of which returns are important	• Assign a risk factor to each return and focus on the import filings • Risk based review of the filings that matter most

Summary

- Technology has and continues to change how State and Local Tax(SALT) compliance and reporting is managed.
- SALT professionals don't have to be technology experts but need to be informed and open to change in a technology-driven tax world.
- Technology will enhance growth and development opportunities for tax professionals.
- Technology can create confidence in an ever-changing compliance and reporting environment.