



## Data-driven Discovery: Knowledge Management for Drug Delivery Technologies

Jeffrey Schacherl, Amgen, Device Technologies Innovation Center

Christian Marc Schmidt, Schema Design, [schemadesign.com](http://schemadesign.com)

The drug delivery and device technology landscape is rapidly evolving to meet the needs of a large portfolio and increasingly complex pipeline.

New modalities

Biosimilar Competition



Increasing options from  
CDOs and CMOs

Changing expectations from  
patients and HCPs



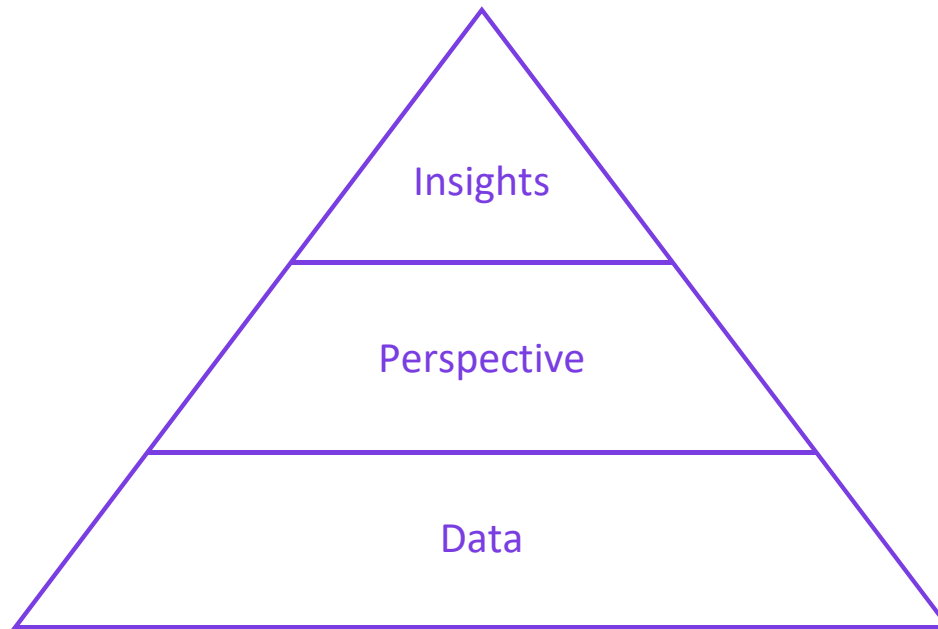
New routes of  
administration

Formulation Constraints: Higher  
Volumes and Viscosities

Emerging challenges

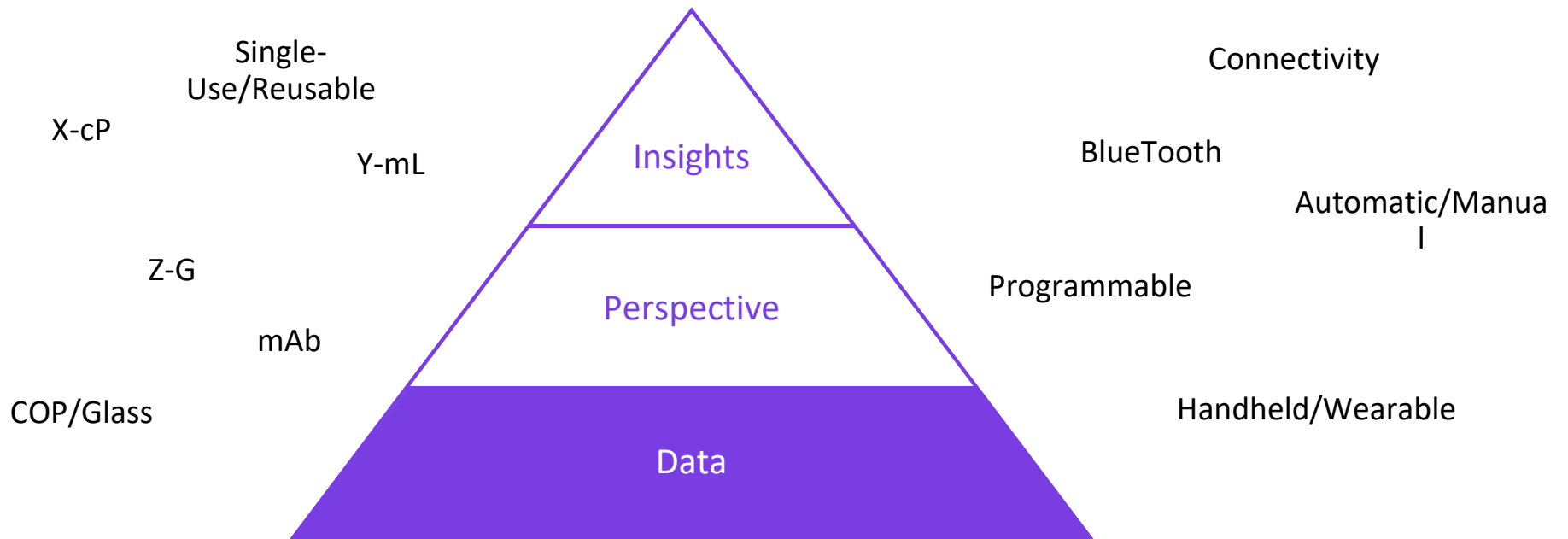
How can we better leverage technology information to identify key insights to inform teams and business strategy?

The **value of data** increases when effectively managed.



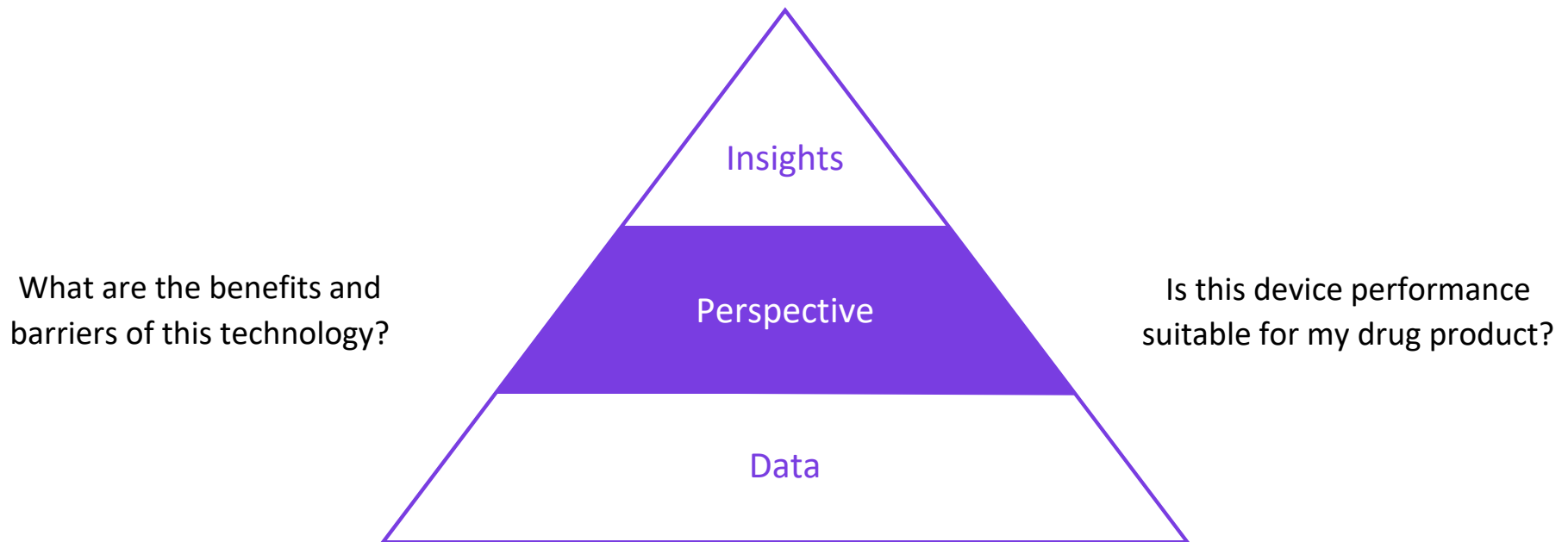
From data to insights

Developers are inundated with catalog specs and options.



From data to insights

Teams require **common understanding** of technology.

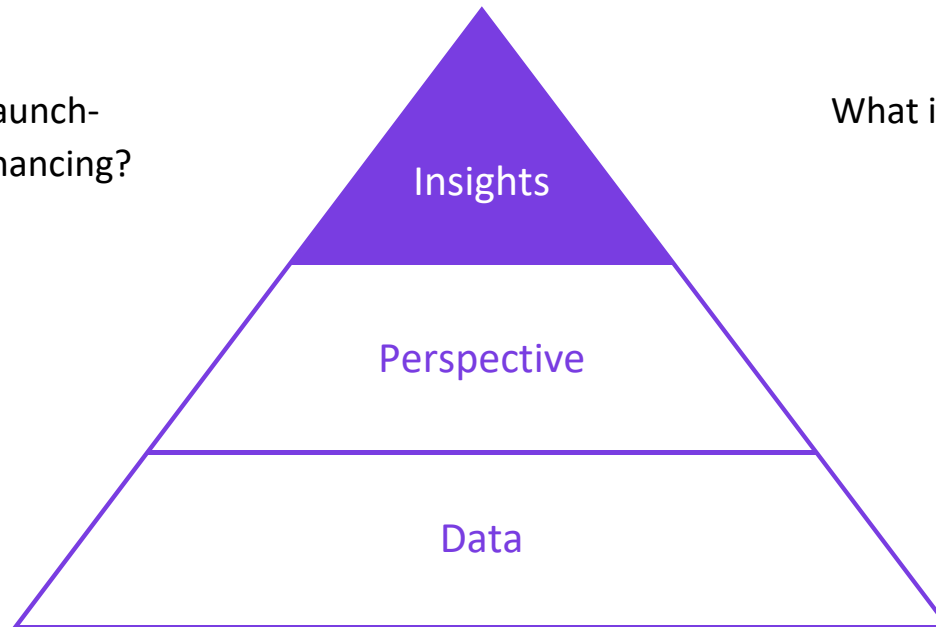


From data to insights

Executives need **insights**, not just more data.

Is this technology launch-enabling or value-enhancing?

What is the core value of this technology?

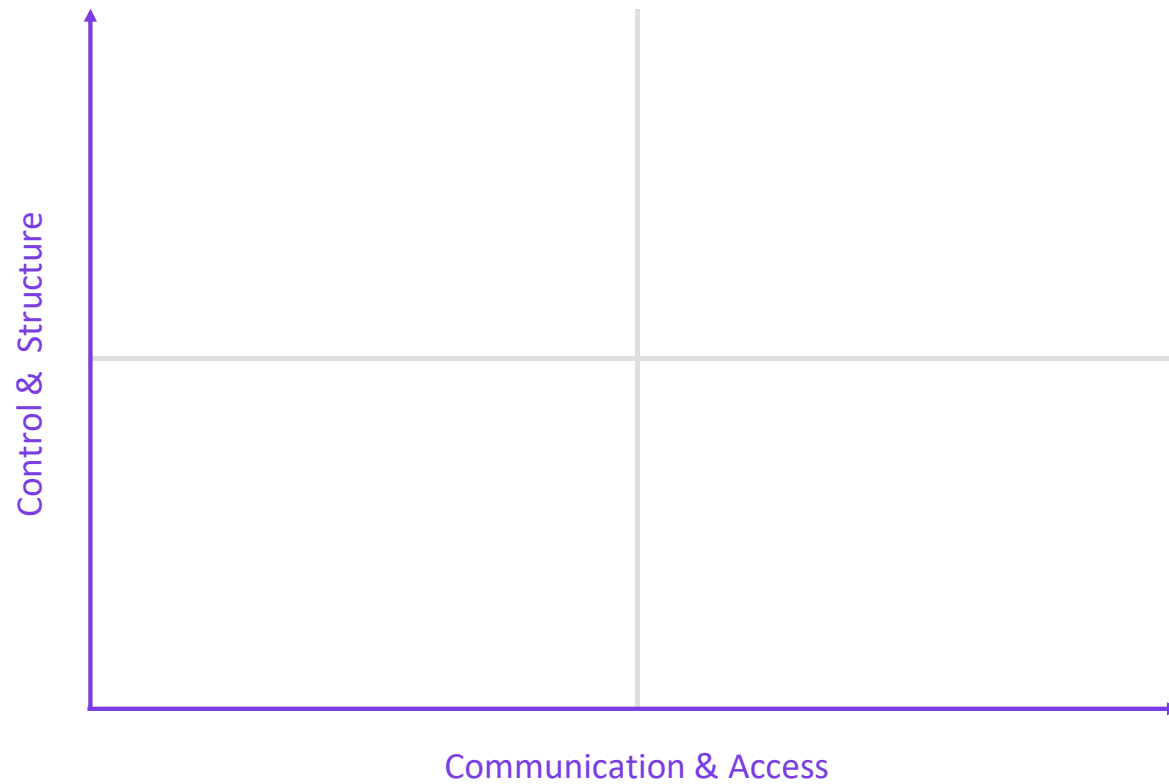


From data to insights



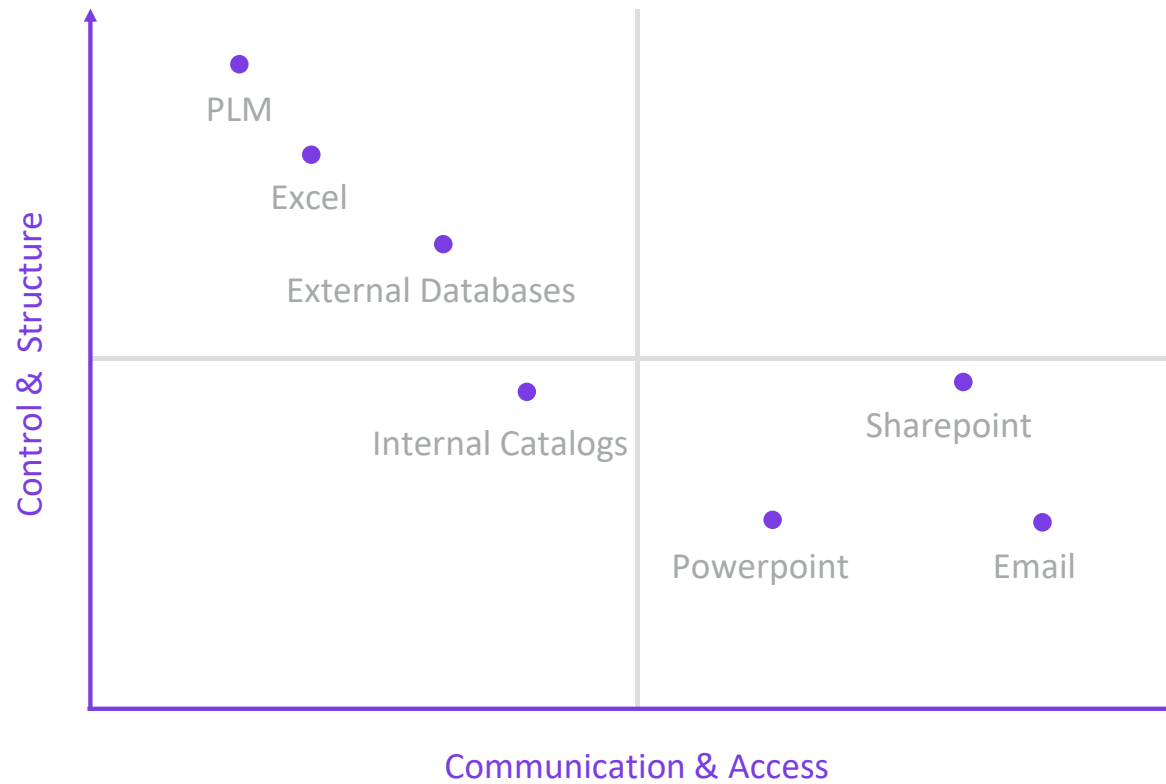
Device technology developers, drug formulators, and LCM teams **lack common perspective** on existing and emerging technologies.

Existing enterprise tools and methods serve other needs.



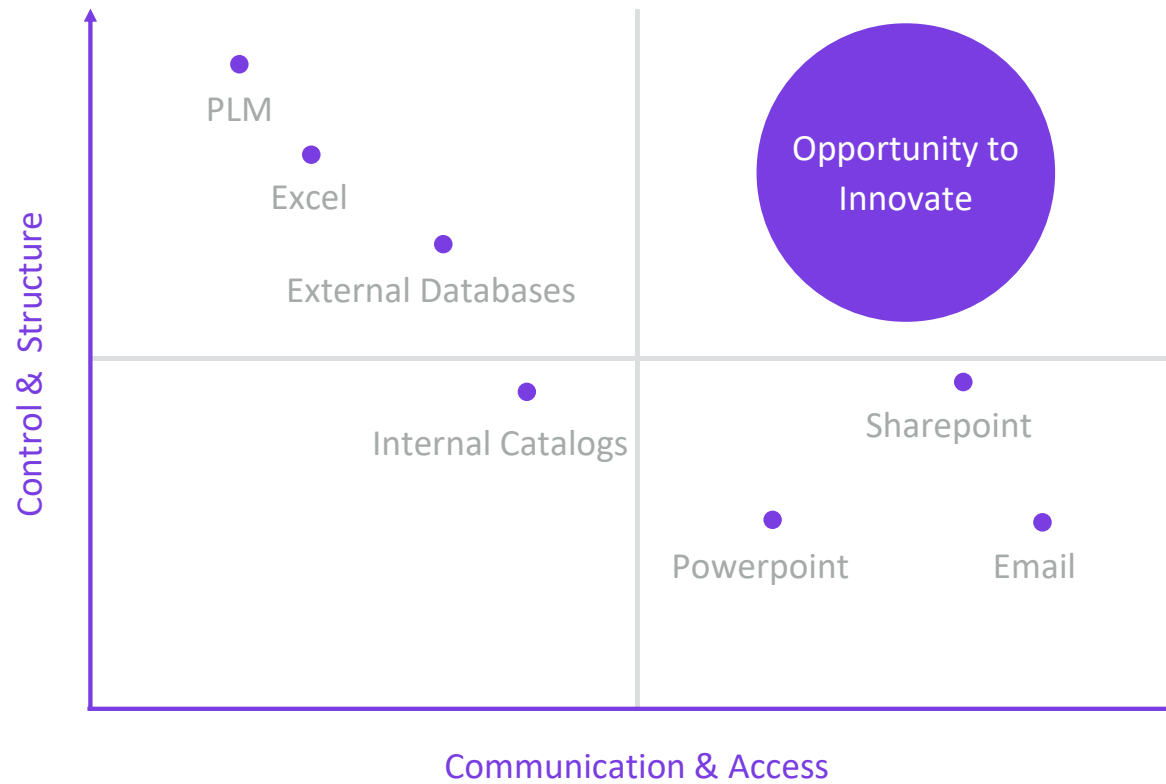
Ecosystem of tools and methods

Existing enterprise tools and methods serve other needs.



Ecosystem of tools and methods

Existing enterprise tools and methods serve other needs.



Ecosystem of tools and methods

Tapping into this opportunity space will ultimately improve decision-making and preserve institutional knowledge.

Amgen + Schema

Amgen + Schema  
Knowledge Assets      Data Visualization

# Amgen

Knowledge  
Assets

+

Design  
Thinking

# Schema

Data  
Visualization



Design Thinking is about  
creating opportunities.

Design Thinking and  
Data Visualization turn  
information into action.

1. Defining the opportunity
2. Finding the solution
3. Designing the outcome

# 1. Defining the opportunity

SEEING THE BIG PICTURE

Spotfire... for real?  
WE LACK EFFECTIVE VISUALIZATION TOOLS TO CONVEY COMPLEX KNOWLEDGE  
Cultural Shift - comfortable with visualizing data

LEARNING + FRAMING CULTURE

Informal learning workflow  
Training is intimidating  
**TIME COMMITMENT**  
MAYBE IT ISN'T - MAKES ME DEFENSIBLE  
MANAGEMENT EXPECTATIONS  
Synthesizing Understanding from Data requires Effort/Time  
conveying foundational knowledge  
How do we share lessons learned in a quick/effective way  
No metrics (usually) for synthesizing data to insights + document

TECHNOLOGY ISSUES

SOFTWARE UPDATES WIPING OUT WORK DONE ON KM  
Version Control! (which is the least)  
DIFFERENT FORMATS  
LEGACY SYSTEMS  
So many new systems - increasingly complex  
Historical Data not in accessible systems  
Systems / Databases that contain information not intuitive, eg. ERMS, EPIC, SAP

INFORMATION ACCESS

HOW DO I KNOW WHAT I DON'T KNOW?  
REDUNDANCY OF INFORMATION  
We don't know where all the data is - especially legacy data -> double check  
**WHERE DO YOU FIND DATA**  
Lost Amounts of data on some things; less so on others  
Lots of information sharing via email  
how to find basic info about products, sites, teams  
**PLM**  
Box is difficult storage search in box challenging  
Battle Royale  
Flat database vs Hierarchical (navigable)

CAPTURING INFORMATION

DIFFERENT APPROACHES TO DATA MANAGEMENT  
Different teams have different data mgmt. approaches  
Key words for searching  
Relying on manual data entry  
Consistency of performing tasks within groups  
The Process of Organizing the Data is not an interest of most Scientists  
DOCUMENTATION UNENJOYABLE

INFORMATION CONTEXT

Single source of Truth  
One place, central center, with links to all documents for a given product. Organized  
Lacking a single-source of truth  
FINDING INFO. ACROSS THE ORGANIZATION  
FINDING SEEMINGLY CONFLICTING DATA  
Finding objective info about a problem  
PERSISTENCE / UNRELIABILITY OF DATA

DATA QUALITY

NOT KNOWING THE CONTEXT OF DATA THAT LAYS TO KNOWLEDGE IMPLICATIONS  
HOW CAN WE ENSURE QUALITY OF DATA (TRUSTING THE DATA)  
Quality of data?  
Verified / annotated?  
Verification of data for GMP investigation?

DEALING WITH TACTIC KNOWLEDGE

How do we bring new people into old/existing systems?  
RETAINING KNOWLEDGE WHEN SOMEONE LEAVES AMGEN  
CAPTURING TACTIC KNOWLEDGE FROM ELDERLY SAGES BEFORE THEY DIE  
Need facilitate to find colleagues with certain expertise & skills only in a system or other.

Capturing Information

Creating a Learning +  
Sharing Culture

Seeing the Big Picture

Existing Software

Ensuring Data Quality

Capturing Information

Creating a Learning +  
Sharing Culture

Seeing the Big Picture

software complexity

Existing Software

version control

software updates

Ensuring Data Quality

documentation

Capturing Information

standardization

Creating a Learning +  
Sharing Culture

Seeing the Big Picture

software complexity

Existing Software

version control

software updates

Ensuring Data Quality



documentation

Capturing Information

standardization

Creating a Learning +  
Sharing Culture

Seeing the Big Picture

software complexity

Existing Software

version control

software updates

context

Ensuring Data Quality

data verification

documentation

Capturing Information

standardization

software complexity

Existing Software

version control

software updates

Creating a Learning +  
Sharing Culture

conveying complex knowledge  
Seeing the Big Picture

data visualization

context  
Ensuring Data Quality

data verification



**STRATEGIC OBJECTIVE**  
Effectively communicate and  
share information about device technologies.

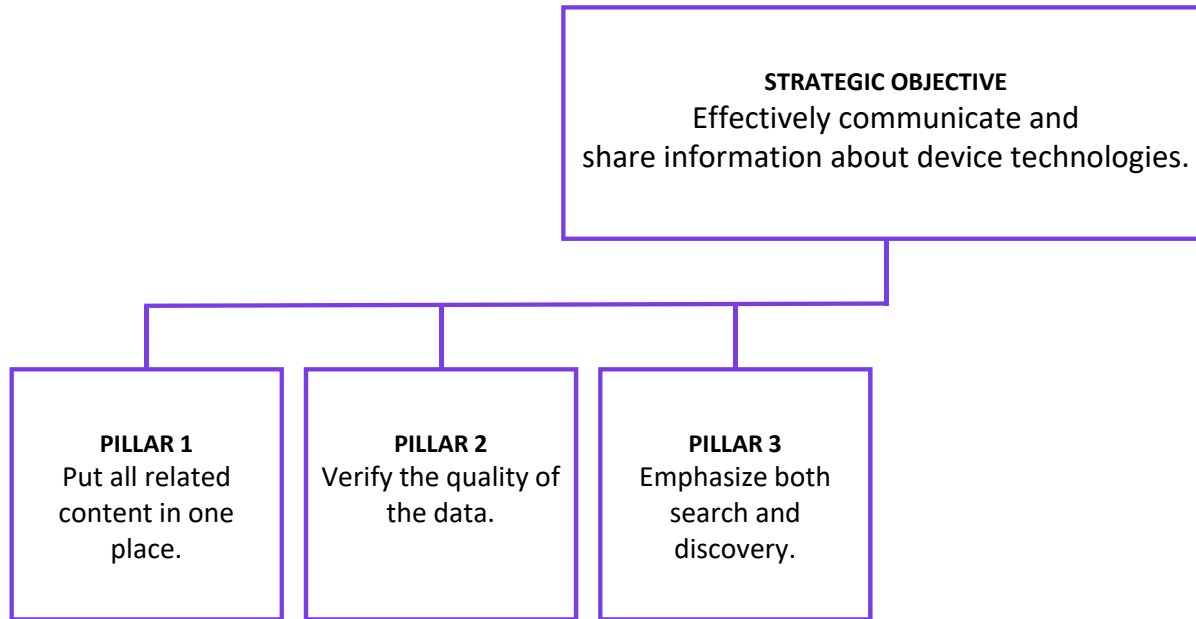
**STRATEGIC OBJECTIVE**  
Effectively communicate and  
share information about device technologies.

**PILLAR 1**  
Put all related  
content in one  
place.

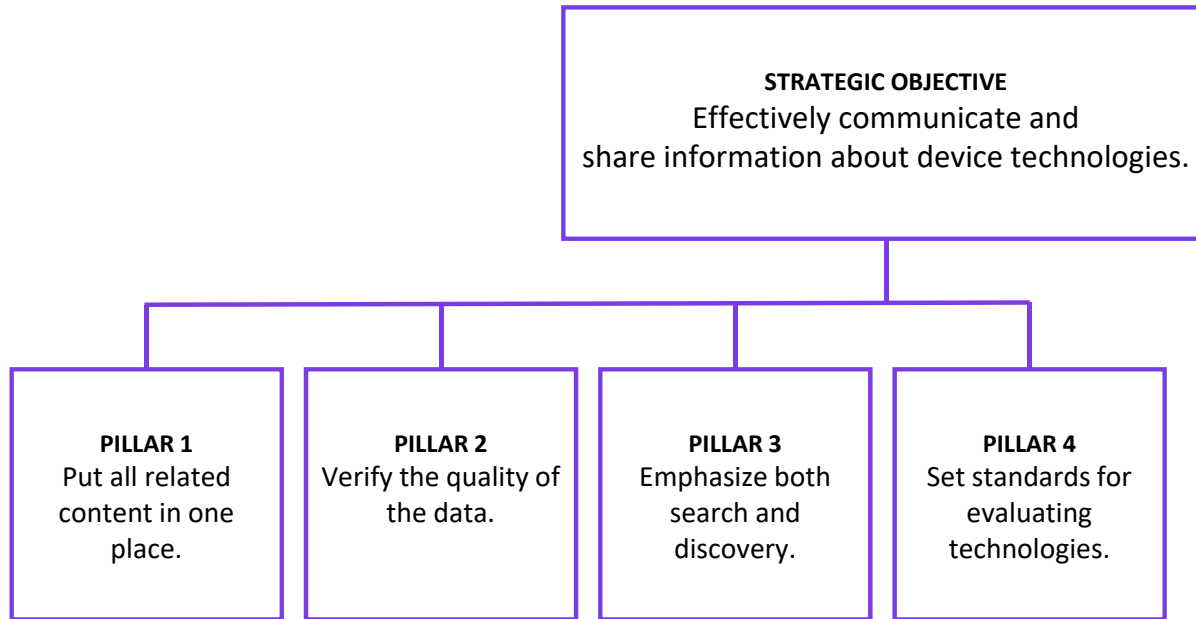
**STRATEGIC OBJECTIVE**  
Effectively communicate and share information about device technologies.

**PILLAR 1**  
Put all related content in one place.

**PILLAR 2**  
Verify the quality of the data.

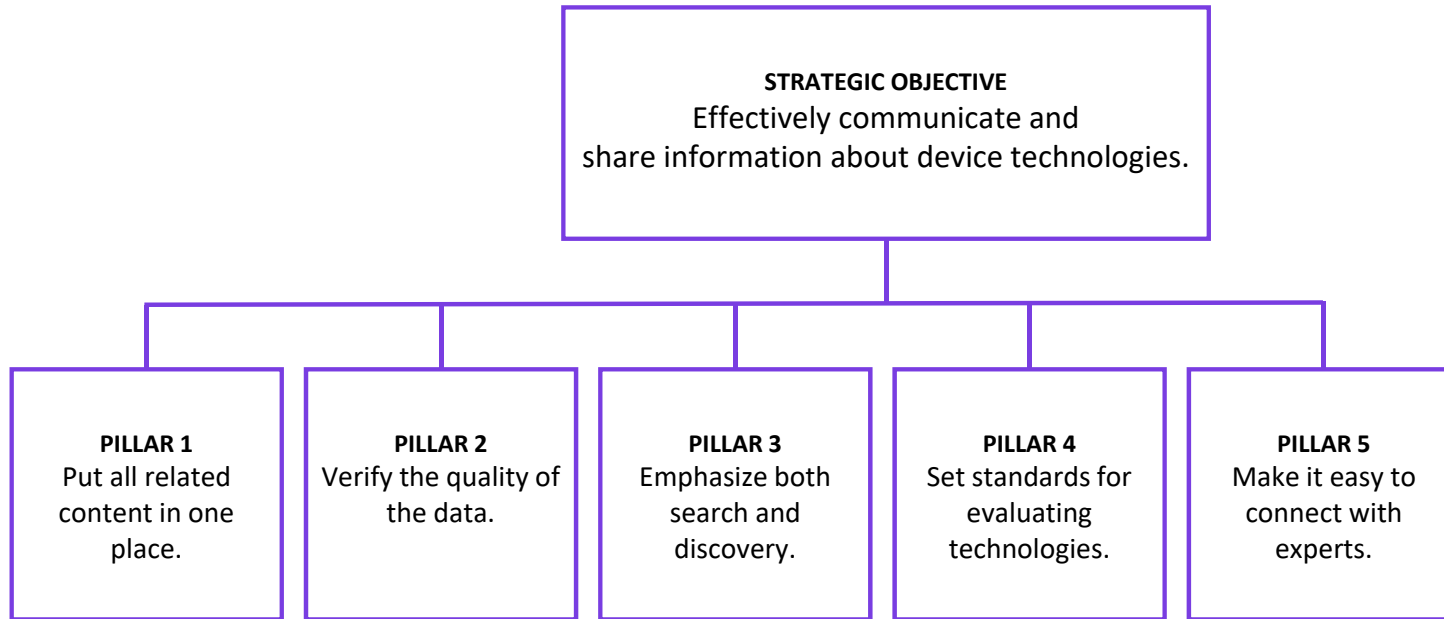


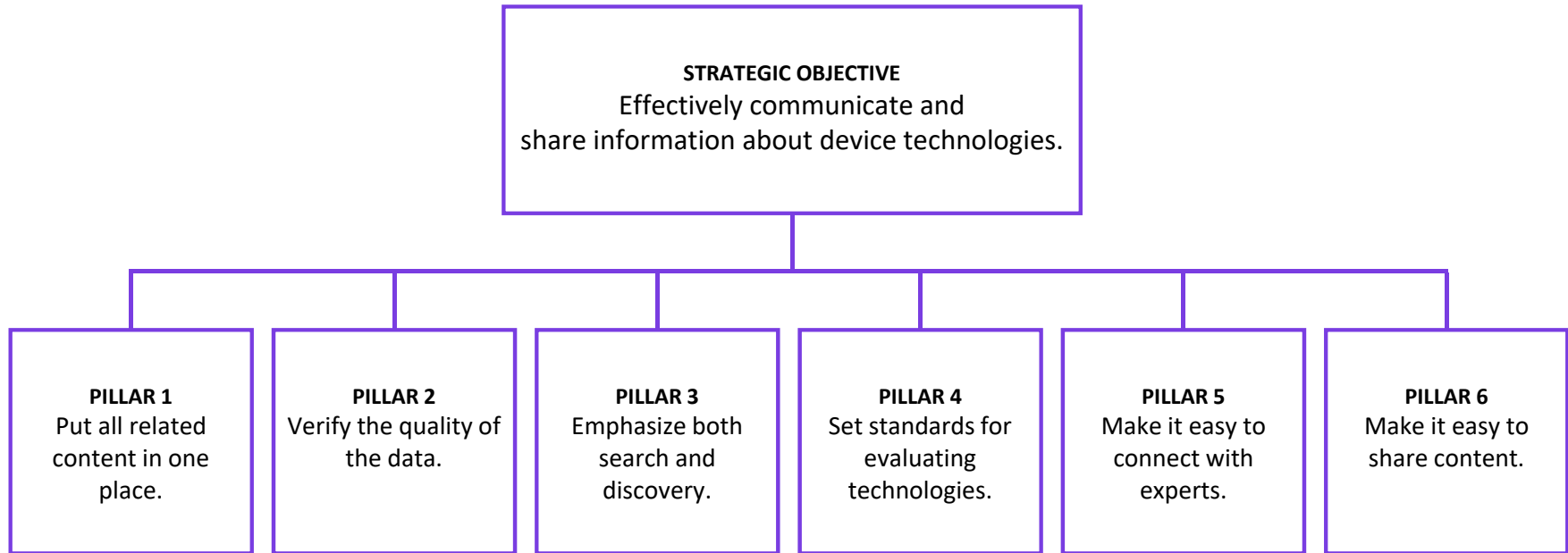
Experience Framework



Experience Framework































## 2. Finding the solution

Version 1.1 AMGEN ATLAS Sort by Product Number Search all fields

### All molecules

44 results Sorbitol

					
AMG 001	AMG 002	AMG 003	AMG 004	AMG 005	AMG 006
					
AMG 007	AMG 008	AMG 009	AMG 010	AMG 011	AMG 012
					
AMG 013	AMG 014	AMG 015	AMG 016	AMG 017	AMG 018
					
AMG 019	AMG 020	AMG 021	AMG 022	AMG 023	AMG 024

vw.com

SEARCH USED

# Find a Match

HELP SHARE



1 MODELS 2 FEATURES 3 COLORS 4 ENGINE 5 BUDGET

Pick models: All Sedans SUVs & Wagons Compacts Convertibles

Jetta Starting at \$18,645 1  
 Passat Starting at \$22,995 2  
 CC Starting at \$34,475 3  
 Golf Alltrack Starting at \$25,850 4  
 Golf SportWagen Starting at \$21,580 5

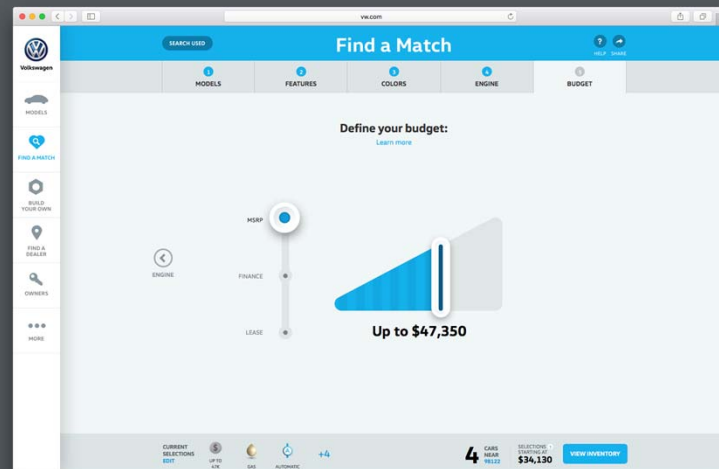
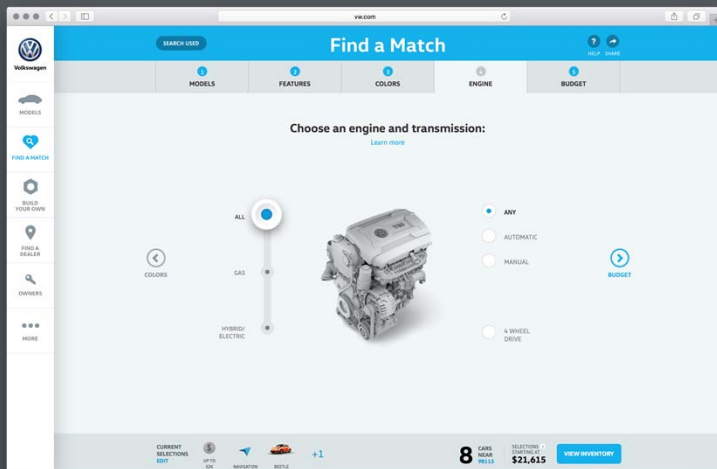
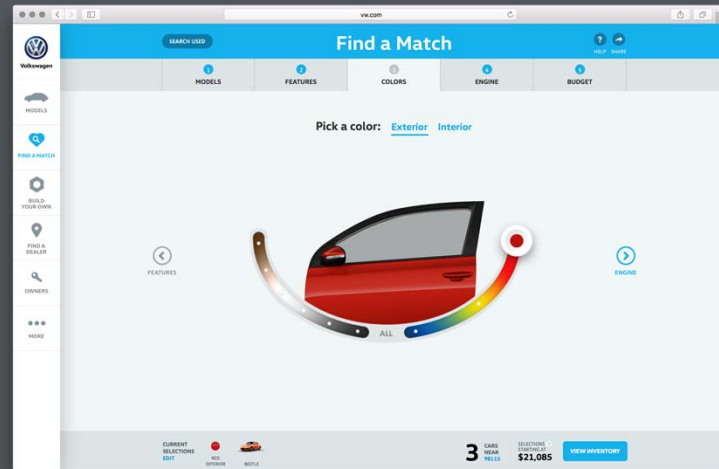
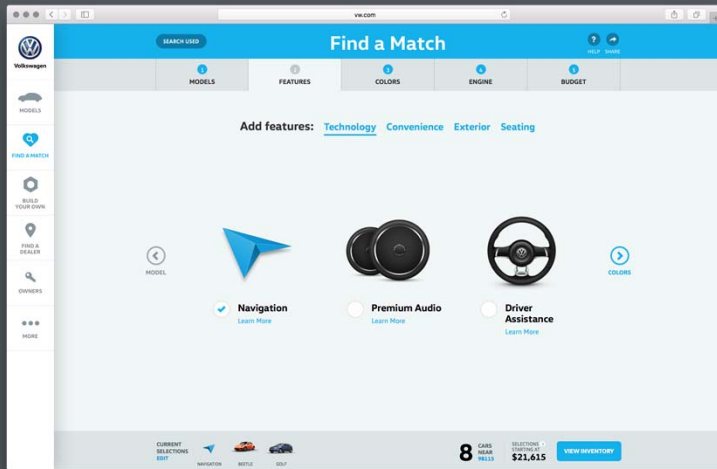
Tiguan Limited Starting at \$21,995 6  
 Tiguan Starting at \$25,195 7  
 Atlas Starting at \$30,500 8  
 Touareg Starting at \$49,495 9  
 Beetle Starting at \$20,220 10

Golf Starting at \$19,895 11  
 Golf GTI Starting at \$25,595 12  
 Golf R Starting at \$39,375 14  
 Beetle Convertible Starting at \$25,440 15  
 Any

CURRENT SELECTIONS EDIT  

73 CARS NEAR 98115 SELECTIONS STARTING AT \$21,085 VIEW INVENTORY

Volkswagen "Find a Match" Tool



Volkswagen "Find a Match" Tool

Volkswagen

MODELS

FIND A MATCH

BUILD YOUR OWN

FIND A DEALER

OWNERS

MORE

COMPARE NOW

Beetle 2017 Classic

Beetle 2017 S

Model	Year	VIN	Price	Miles Away	Interior	Get a Quote	View Details	Dealer
Beetle	2017 S	3VWVF17AT0HM616943	\$21,165	25	Interior	Get a Quote	View Details	Pignataro Volkswagen
Beetle	2017 Classic	3VWVF17AT2HM630679	\$21,615	25	Interior	Get a Quote	View Details	Pignataro Volkswagen
Beetle	2017 SE	3VWJ17AT2HM624519	\$24,040	25	Interior	Get a Quote	View Details	Pignataro Volkswagen
Beetle	2017 S	3VWVF17AT6HM614792	\$21,085	40	Interior	Get a Quote	View Details	Auburn Volkswagen

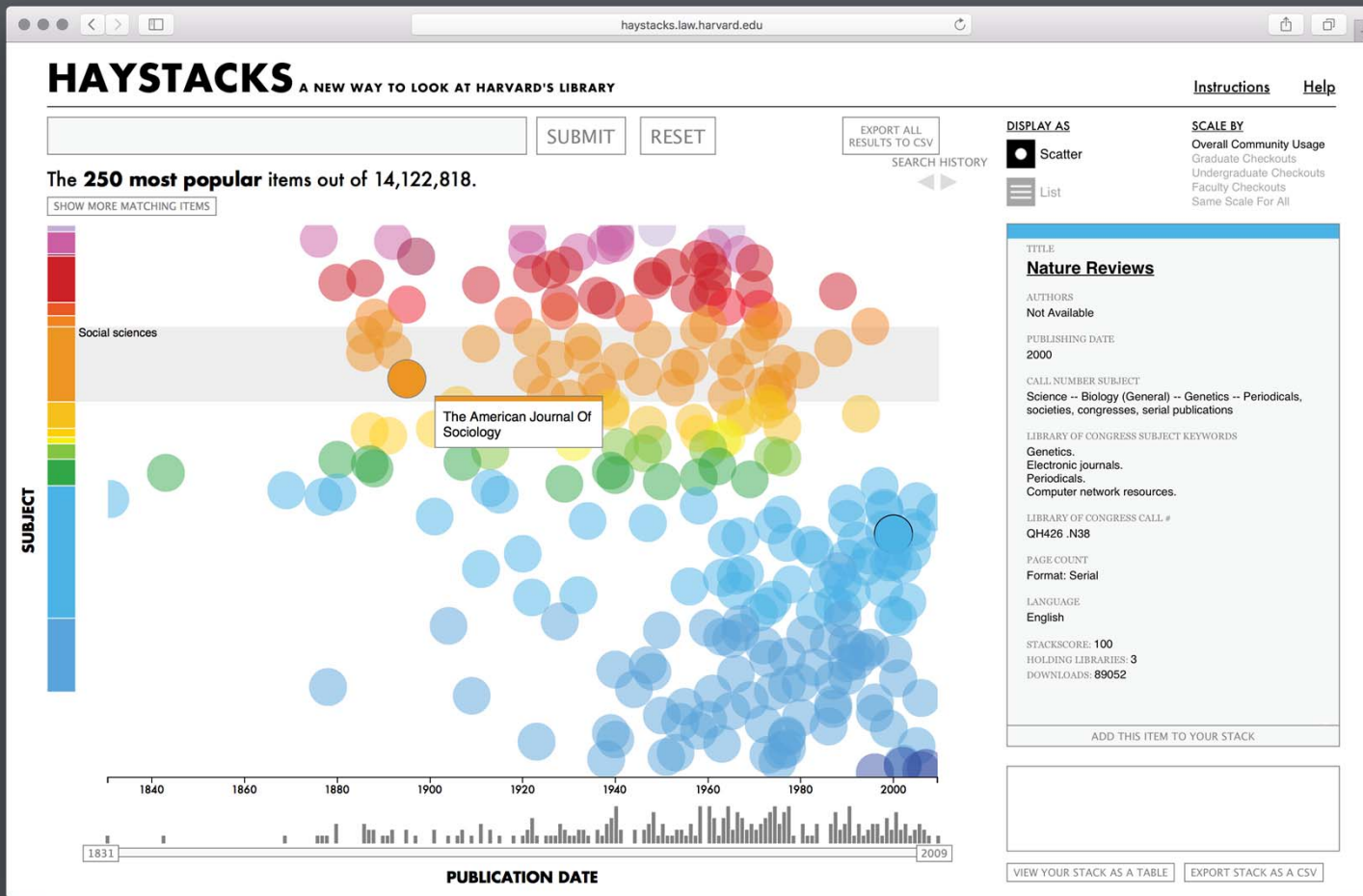
Volkswagen "Find a Match" Tool

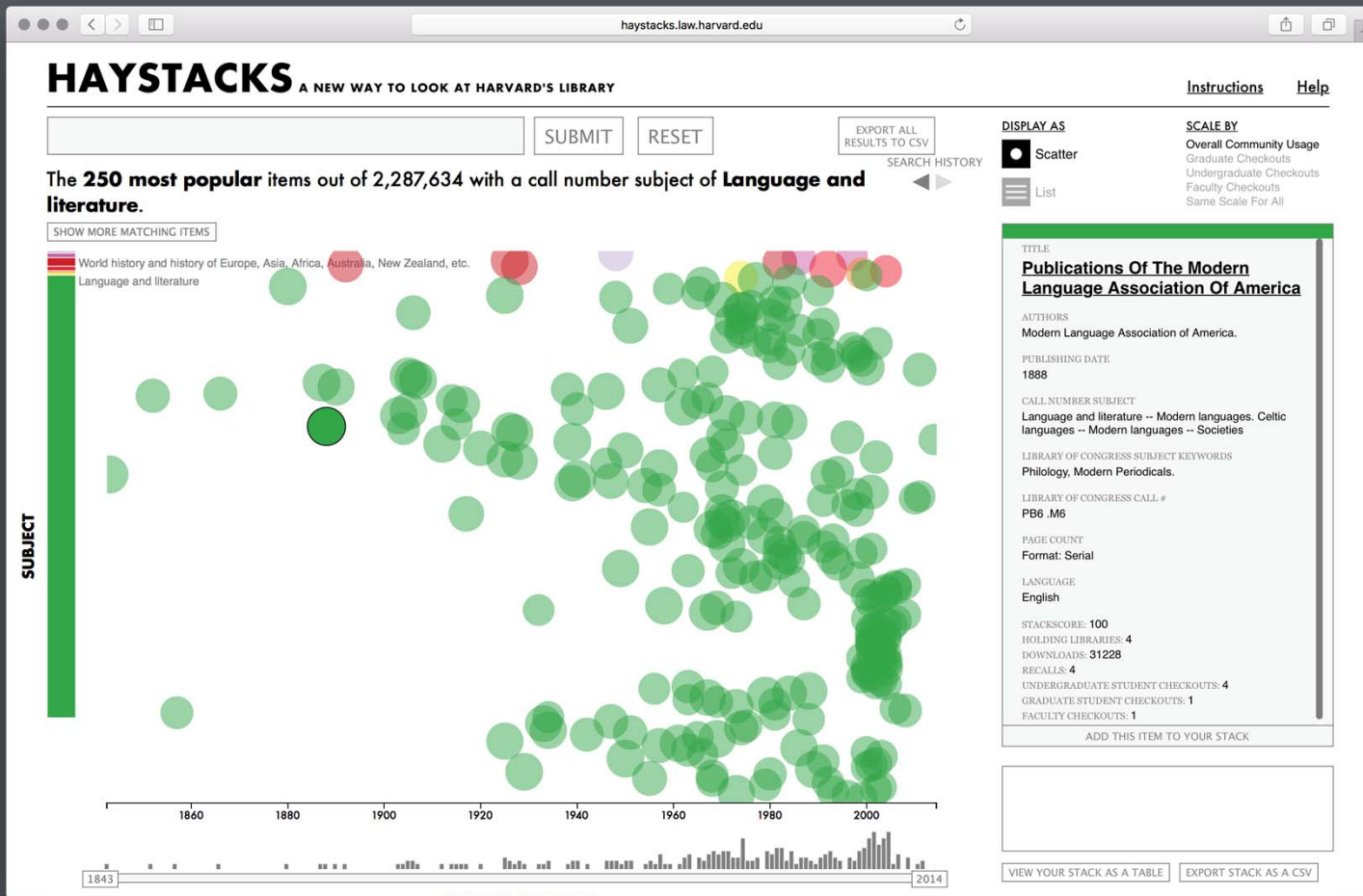
The screenshot displays the Volkswagen 'Find a Match' tool interface. It compares two Beetle models: the 2017 Classic and the 2017 S. The 2017 Classic is priced at \$21,615 and is 16 miles away with a 1.8L gas engine. The 2017 S is priced at \$21,085 and is 39 miles away with a 1.8L gas engine. The interface also shows MSRP, mileage (City/Highway), and transmission options.

Model	Price	Distance	Engine	Mileage (City/Highway)
Beetle 2017 Classic	\$21,615	16 Miles Away	1.8L Gas	24 City / 33 Hwy
Beetle 2017 S	\$21,085	39 Miles Away	1.8L Gas	24 City / 33 Hwy

Volkswagen "Find a Match" Tool







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### Trending Queries

- semiconductor
- HALLE BERRY
- Schools
- School safety
- IBM
- ANSYS
- Aviragen
- Revolutionary

### Trending Connections

- Donald Trump + ● Vladimir Putin
- IBM + ○ Apple
- genomics + ○ Switzerland
- Stephen Hawking + ● NASA
- IBM + ● Watson
- Angela Merkel + ● IBM
- Geneva + ○ genomics
- Dick Advocaat + ● Arjen Robben

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### Breaking News

<p><b>Current Events:</b></p> <p><b>Art and Entertainment:</b></p> <p><b>Business and Industrial:</b></p> <p><b>Education:</b></p> <p><b>Finance:</b></p> <p><b>Health and Fitness:</b></p> <p><b>Law, Government and Politics:</b></p> <p><b>Religion and Spirituality:</b></p> <p><b>Science:</b></p> <p><b>Sports:</b></p> <p><b>Technology and Computing:</b></p>	<p><b>Trump Donald Trump</b> <small>Hillary Rodham Clinton Republican Party United States Congress Barack Obama Shinzo Abe White House</small></p> <p><b>Hillary Rodham Clinton Donald Trump Trump</b> <small>Harvey Weinstein</small></p> <p><b>Petroleum</b> <small>Reuters OPEC Donald Trump West Texas Intermediate Saudi Aramco Sprint GOP Khalid al-Falih United States Congress Brent Central bank Federal Reserve System SoftBank</small></p> <p><b>High school American football Education University</b> <small>School Dartmouth College Bears East Bay Athletic League</small></p> <p><b>Bank of England Federal Reserve System</b></p> <p><b>Medicine Cancer Health care Food and Drug Administration</b></p> <p><b>Astros Michael Tilson Thomas Leah Garchik Donald Trump Hebrew numerals</b></p> <p><b>Ezekiel Elliott American football Arthur Balfour Knesset</b></p> <p><b>AccuWeather National Weather Service</b> <small>Weather Water Rain Ribosomal RNA Tropical cyclone Drew Peterson Donald Trump Wind J. Ortiz J. Rosario</small></p> <p><b>American football</b> <small>National Football League Ice hockey National Hockey League Texas Tech University Jimmy Garoppolo Warriors Major League Baseball</small></p> <p><b>Facebook Twitter LinkedIn Boston Globe Media Partners</b></p>
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100 articles loaded

**Details**

- Poll: Trump's performance lags behind even tepid public expectations
- Growth Without Scale: Deutsche Telekom's T-Mobile Headache
- Brussels prosecutor: Ousted Catalan president, 4 ex-ministers taken into custody to start extradition process
- Belgium's state broadcaster: Catalan ex-president Puigdemont, 4 former ministers have turned themselves in to police
- George H.W. Bush said to have called Trump a 'blowhard'
- Saudi Arabia detains famed billionaire amid investment push
- As crisis looms, Trump, Abe strengthen bond on the links
- Grim cost predicted in effort to destroy North Korea's nukes

**News Network** show/hide:  companies,  organizations,  people

Investigation stats:  
 articles: 100  
 companies: 44  
 organizations: 44  
 people: 139

**Locations** 100 found, view in  map  list

**Topics** People Companies Organizations

Guantanamo Bay detention camp, California wine, Affordable housing, War in Afghanistan, Military tribunal, Trump Entertainment Resorts, Peter Gammmons, Daylight saving time, Customer service, Terrorism, Iraq War, UBS AG, Business, Criminal justice, Pearl, Daylight saving time, Criminal law, iPhone, Arabian Peninsula, Nuclear weapon, Korean Demilitarized Zone, Guam, Primary dealers, Islam, Punk rock, Taj Mahal, New York Stock Exchange, USS Arizona Memorial, Nationalism, Human rights abuses, Steve Jobs, Project management, Carbon dioxide, Finance, Conference USA, Coal, Global warming, Extinction, Herdore punk, Science, Horse racing, Kim Il-sung, Greenhouse gas, Attack, World War II, Hebrew numerals, Tax exemption, Central bank, Economics, Petroleum, Law, Pearls, Crime, Asia, Debt, High school, Government of Japan, Social network service, Prepaid mobile phone, Climate change, Boston Red Sox, Strike action, United States House Committee on Ways and Means


**Timeline** news articles across 2 days, 0 hrs, 0 min, 0 sec up to the current date: 11/5/2017

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IBM Watson News Explorer recent news about **Current Events** investigate advanced [ + ]

**Details** 100 articles loaded



location

("United States of America", "America", "US", "U.S.", "USA", and "U.S.A." redirect here. For the landmass encompassing North and South America, see Americas. For other uses, see America (disambiguation), US (disambiguation), USA (disambiguation), and United States (disambiguation).) The United States of America (USA), commonly referred to


**As crisis looms, Trump, Abe strengthen bond on the links**

japan  
Sun Nov 05 2017 01:00:00 GMT+0100 (CET)

Prime Minister Shinzo Abe welcomed Trump to Japan Sunday with an effusive display of friendship that, in the days ahead, will give way to high-stakes diplomacy. The two leaders, who have struck up an unlikely but easy rapport, shared a casual lunch and played nine holes at the Kasumigaseki Country Club,

**News Network** show/hide:  companies,  organizations,  people

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people: 139



Kim Jong-un

President Trump stops in Hawaii, eagerly awaits Pearl Harbor visit


George W. B

Melania Trump


Judy Woodruff

White House

**Locations** 100 found, view in  map  list



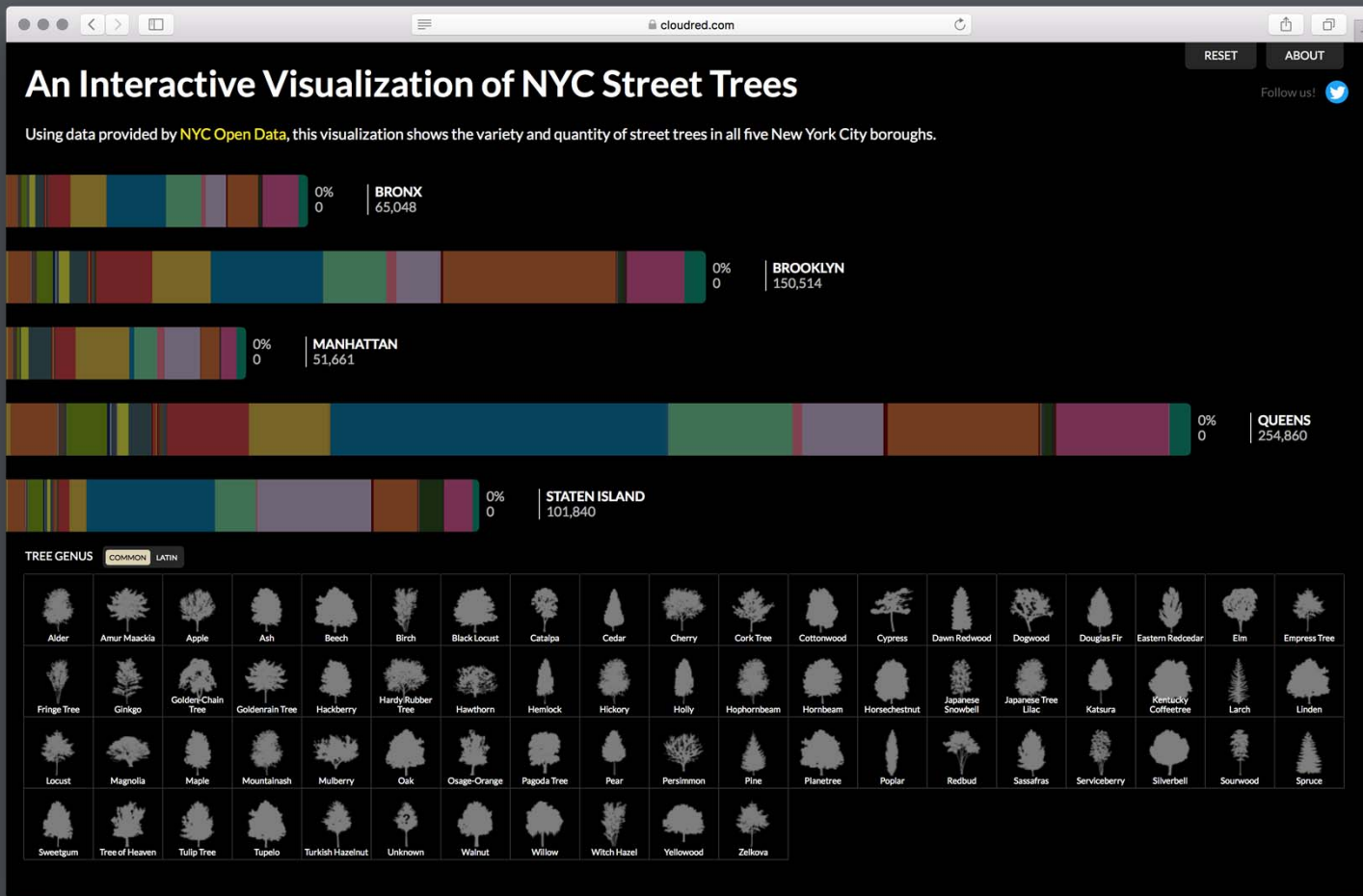
**Topics** People Companies Organizations



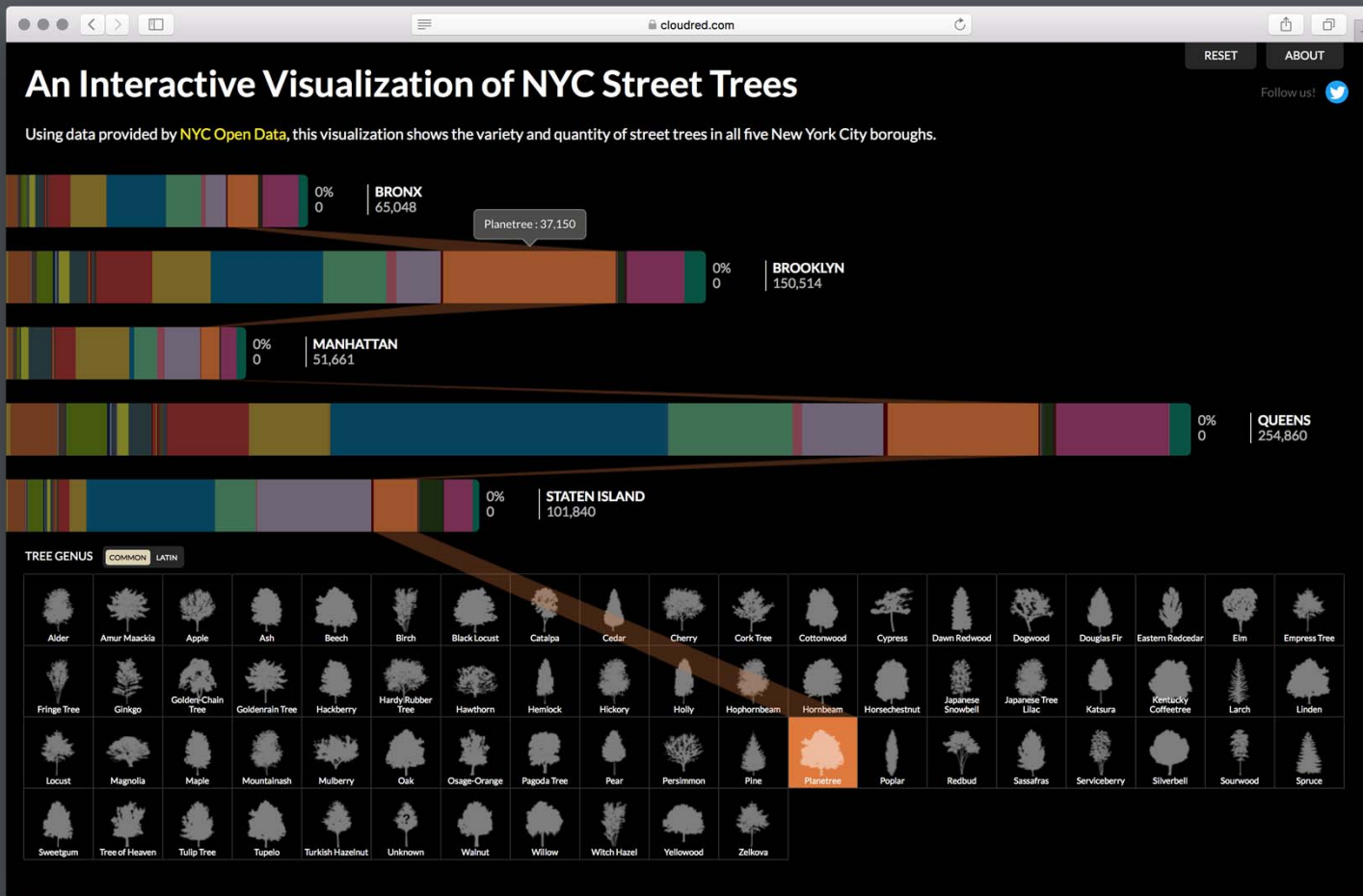
**Timeline** news articles across 2 days, 0 hrs, 0 min, 0 sec up to the current date: 11/5/2017

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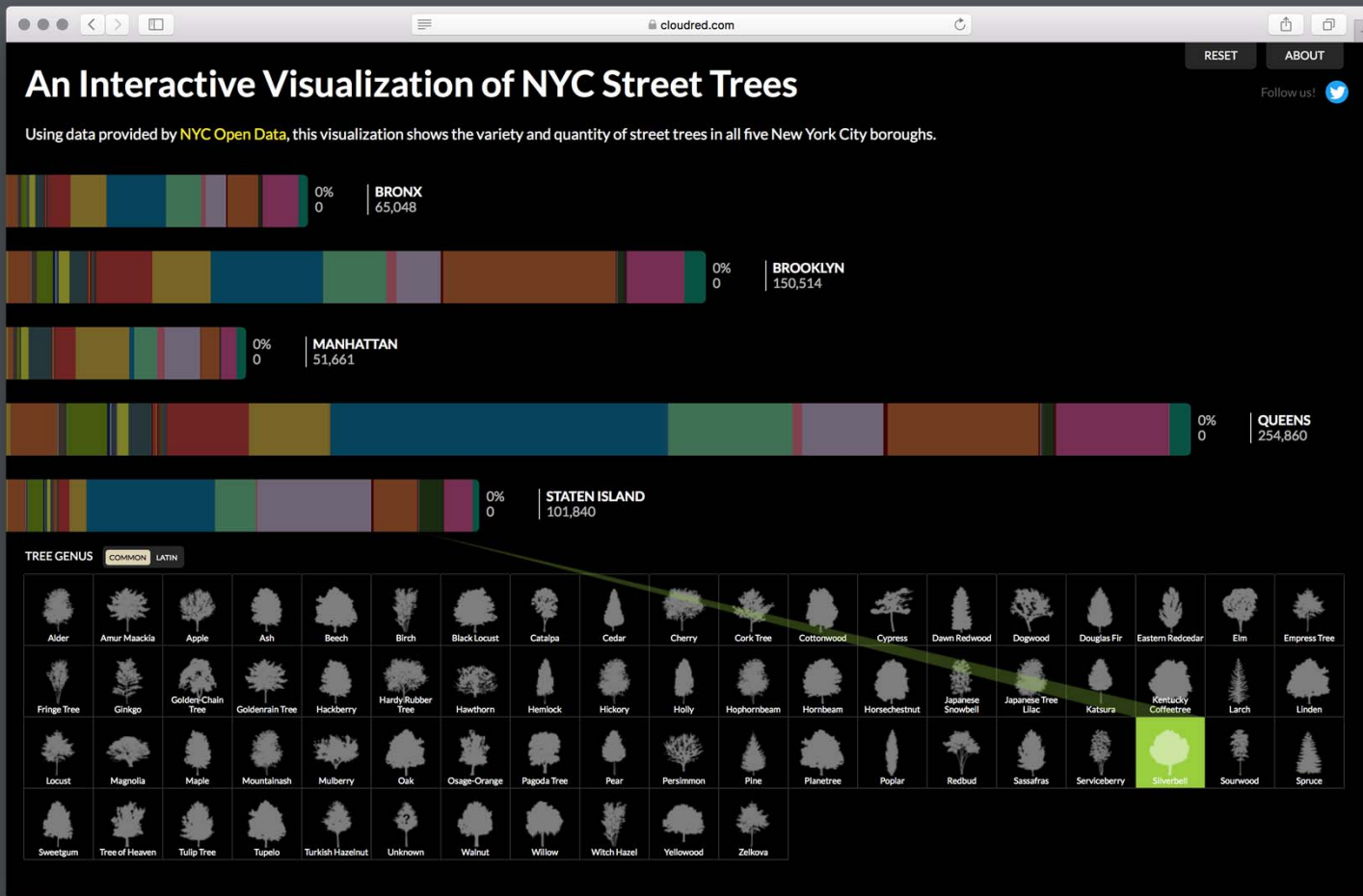
IBM Watson News Explorer



NYC Street Trees Visualization, CloudRed



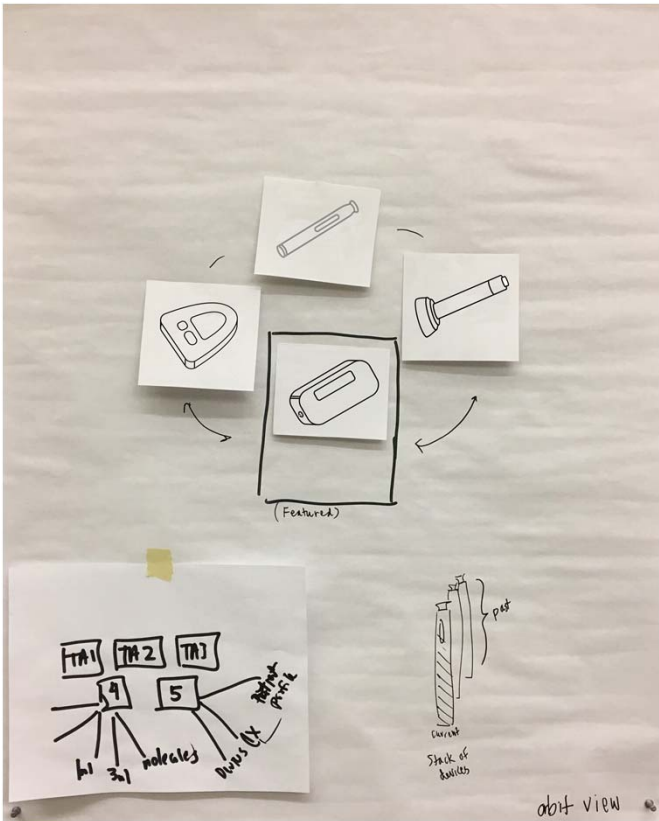
NYC Street Trees Visualization, CloudRed



NYC Street Trees Visualization, CloudRed



# 3. Designing the outcome



This section contains several sticky notes and diagrams. At the top left is a diagram of a person with a device on their back. To its right is a circular note labeled 'Group A - Detail View'. Below the person diagram is a yellow note: '(Compatibility) Add Component to Human Device'. To the right is a large note titled 'OPERATIONS' with sub-sections: 'Technical Design' (Delivery Capabilities, Detail Design, Service Plan), 'MATERIALITY' (on Platform vs app, Scale of Development, Design/Manufacture, Planning / Future Development), and 'Evolution' (Future Plans / Changes). A pink note labeled 'Exploded View' is also present. Below the operations note is a note about 'Complex Boxes' with a diagram of a device and a red circle with a slash. At the bottom is a note titled 'Yammer integration' with 'Date Entry' written above it.

This section features a matrix diagram. The vertical axis is labeled 'Facet of Comparison' and includes 'Patient Pop.', 'Cost', and 'Maturity'. The horizontal axis is labeled 'Patient Pop.' and includes 'COMPLIANCE/ADOPTION SUCCESS'. Above the matrix, there are checkboxes for 'GRID VIEW' and 'MATRIX VIEW', a circled note 'Group A - Compare View', and a 'SECURE' label with an arrow. To the right is a note 'TECHNOLOGIES' with two device icons. Below the matrix is a section titled 'MATRIX VIEW OPTIONS' with three icons: a scatter plot, a 'Timeline' graph, and a box labeled 'A/B'.

### Atlas Devices

Overview Specifications Evaluations Similar Devices Contacts

#### Device Technology 1 Overview

NEW **Device Technology 1**

Maturity: \_\_\_\_\_ Viscosity/BLE: \_\_\_\_\_  
 Vendor(s): \_\_\_\_\_ Deliverable Volume: \_\_\_\_\_  
 Value Driver: \_\_\_\_\_ Activation: \_\_\_\_\_  
 Product Life: \_\_\_\_\_ Insertion/Retraction: \_\_\_\_\_  
 Drug Delivery: \_\_\_\_\_

### Atlas Devices

Save these results

<input checked="" type="checkbox"/> <b>NEW TmL SureClick</b>	<input checked="" type="checkbox"/> <b>Neulasta OBI</b>	<b>Device Technology</b>	<b>Neulasta OBI</b>	<input checked="" type="checkbox"/> <b>NEW TmL SureClick</b>	<b>Device Technology</b>	<b>Neulasta OBI</b>
Maturity: _____	Maturity: _____	Maturity: _____	Maturity: _____	Maturity: _____	Maturity: _____	Maturity: _____
Vendor(s): _____	Vendor(s): _____	Vendor(s): _____	Vendor(s): _____	Vendor(s): _____	Vendor(s): _____	Vendor(s): _____
Value Driver: _____	Value Driver: _____	Value Driver: _____	Value Driver: _____	Value Driver: _____	Value Driver: _____	Value Driver: _____
Product Life: _____	Product Life: _____	Product Life: _____	Product Life: _____	Product Life: _____	Product Life: _____	Product Life: _____
Drug Delivery: _____	Drug Delivery: _____	Drug Delivery: _____	Drug Delivery: _____	Drug Delivery: _____	Drug Delivery: _____	Drug Delivery: _____
Viscosity/BLE: _____	Viscosity/BLE: _____	Viscosity/BLE: _____	Viscosity/BLE: _____	Viscosity/BLE: _____	Viscosity/BLE: _____	Viscosity/BLE: _____
Deliverable Volume: _____	Deliverable Volume: _____	Deliverable Volume: _____	Deliverable Volume: _____	Deliverable Volume: _____	Deliverable Volume: _____	Deliverable Volume: _____
Activation: _____	Activation: _____	Activation: _____	Activation: _____	Activation: _____	Activation: _____	Activation: _____
Insertion/Retraction: _____	Insertion/Retraction: _____	Insertion/Retraction: _____	Insertion/Retraction: _____	Insertion/Retraction: _____	Insertion/Retraction: _____	Insertion/Retraction: _____
Container, Needle: _____	Container, Needle: _____	Container, Needle: _____	Container, Needle: _____	Container, Needle: _____	Container, Needle: _____	Container, Needle: _____

### Atlas Devices

Save these results

**News** Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit. [Read more](#)

All Manufacturers 1 - Amgen Tested - Filter Dropdown 3 - More Options Sort by - ↓↑

<input checked="" type="checkbox"/> <b>NEW Device Technology 1</b>	<input checked="" type="checkbox"/> <b>Amgen Device Technology 2</b>	<b>Amgen Device Technology 3</b>	<b>Amgen Device Technology 4</b>	<input checked="" type="checkbox"/> <b>NEW Device Technology 5</b>
<b>Amgen Device Technology 6</b>	<input checked="" type="checkbox"/> <b>NEW Device Technology 7</b>	<input checked="" type="checkbox"/> <b>NEW Device Technology 8</b>	<b>Device Technology 9</b>	<b>Device Technology 10</b>
<input checked="" type="checkbox"/> <b>NEW Device Technology 11</b>	<b>Device Technology 12</b>	<b>Device Technology 13</b>	<b>Device Technology 14</b>	<b>Device Technology 15</b>

- All Viscosities**  
Viscosity A  
Viscosity B  
Viscosity C
- All Volumes**  
Volume A  
Volume B  
Volume C
- All Maturities**  
**Maturity A**  
Maturity B  
Maturity C
- All Locations**  
Location A  
**Location B**  
Location C
- All Indications**  
Indication A  
Indication B  
Indication C
- All stages**  
Stage A  
Stage B  
Stage C
- All types**  
**Active**  
Inactive

### Atlas Devices

#### Device Technology 1

Mechanical Handheld Injector  
1mL / 1.17mL 3.2cP / 13N

Maturity	Viscosity/BLE
Vendor(s)	Deliverable Volume
Valve Driver	Activation
Product Life	Injection/Retraction
Drug Delivery	

#### Data Visualization

#### Exploded Device View

#### Device View

### Atlas Devices

< Device Technology 1 >
< Device Technology 1 > 2-Up View ▾

#### Device Technology 2

Mechanical Handheld Injector  
1mL / 1.17mL 3.2cP / 13N

Maturity	Product Life
Vendor(s)	Drug Delivery
Valve Driver	Viscosity/BLE

### Atlas Devices

News Article 1	News Article 2	News Article 3
View All Devices	 Device Technology 10	 Device Technology 3
 Device Technology 64	 Device Technology 11	 Device Technology 7
 Device Technology 17	 Device Technology 4	 Device Technology 2
Teams	Updates	Device News

### Atlas Devices

Save these results 🔍

NEW Device Technology 1

NEW Device Technology 2

Device Technology 3

Device Technology 4

Device Technology 5

Device Technology 6

Device Technology 7



NEW

## Device Technology 3

1mL / 1.17mL 3.2cP / 13N

Maturity

Vendor(s)

Value Driver

Activation

Insertion/Retraction

### Atlas Devices

Save these results

Device Name	Maturity	Vendor	Drug Delivery	Volume	Viscosity	Insertion	Column 9	Column 10
NEW Device Technology 1	Commercial	Amgen	Automatic	1mL	3.2cP	Automatic	Column 9 Info	Column 10 Info
NEW Device Technology 2	Commercial	Company B	Automatic	1mL	200cP	Manual	Column 9 Info	Column 10 Info
Device Technology 3	Commercial	Amgen	Manual	3mL	100cP	Manual	Column 9 Info	Column 10 Info
Device Technology 4	Marketed	Amgen	Automatic	0.5mL	90cP	Automatic	Column 9 Info	Column 10 Info
Device Technology 5	Marketed	Company B	Manual	1mL	3.2cP	Manual	Column 9 Info	Column 10 Info
					1.2cP	Manual	Column 9 Info	Column 10 Info
				1mL	2cP		Column 10 Info	
				1mL	3.2cP	Manual	Column 9 Info	Column 10 Info

### Atlas Devices

User ID #126662

Home

Messages

Saved Searches

Dashboard Link 4

Dashboard Link 5

Dashboard Link 6

#### Your Stats

Device Viewed

**18/82**

Contributions

**8**

Messages

**8 sent**

**14 responses**

Stats Metric 3

Stats Metric 4

Stats Metric 5

Stats Metric 6

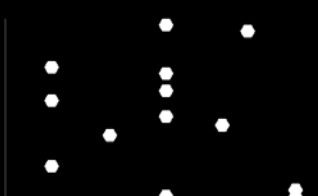
Stats Metric 7

Stats Metric 8

Stats Metric 9

Stats Metric 10

#### Saved Device Metrics



Metric 2 Dropdown

Metric 1 Dropdown

#### Saved Devices

Device Technology 1

Device Technology 2

Device Technology 3

Device Technology 4

Device Technology 5

Device Technology 6

Device Technology 7

Module A

Module B

Module C

# Atlas Drug Delivery Demo

Search all technologies

AMGEN COMMERCIALIZED (4)

25 Results

 <b>Neulasta OBI</b> Amgen	 <b>Pushtronex</b> Amgen	 <b>SureClick 1.0</b> Amgen	 <b>SureClick 1.5</b> Amgen
--	---	--	---

AMGEN MATURITY

- Feasibility
- Development
- Commercialization

EXTERNAL TECHNOLOGIES

- Competitor Technology
- Vendor Technology

This application is in demo mode. Data is simulated for demonstration purposes only.

COMPETITOR COMMERCIALIZED (7)

 <b>Yen</b> Company C	 <b>Agarwal</b> Company D	 <b>Roche</b> Company C	 <b>Kleemann</b> Company D	 <b>Gross</b> Company D	 <b>Gibson</b> Company C	 <b>McBreen</b> Company C
---	--	--	--	--	---	--

COMPETITOR DEVELOPMENT (4)

 <b>Teske</b> Company D	 <b>Letts</b> Company C	 <b>Augustine</b> Company D	 <b>Home</b> Company D
---	--	--	--

COMPARE

# Neulasta OBI

Amgen

SHARE →



ALIASES	N/A
COMPANY	Amgen
TECHNOLOGY TYPE	On Body Injector
USABILITY TYPE	Wearable Device
ROUTE OF ADMINISTRATION	Subcutaneous
TECHNOLOGY MATURITY	Amgen Commercialized
DRUG PRODUCT(S) DELIVERED	Commercial Combinations: NEULASTA (Pegfilgrastim) Active Projects: N/A
DRUG PRODUCT(S) IN ACTIVE PROJECTS	N/A
TYPE OF USE	Single-use
UNIT COST	N/A
TRADEMARK INFORMATION	Onpro® kit (Amgen-owned trademark)

EVALUATION	DESIGN	PATIENT CENTRICITY	FAQ & RESOURCES	SIMILAR TECHNOLOGIES
------------	--------	--------------------	-----------------	----------------------

## Technological Barriers

- Lorem ipsum dolor sit amet
- Consectetur adipiscing elit
- Sed do eiusmod tempor incididunt

## Technological Benefits

- Ut enim ad minim veniam
- Quis nostrud exercitation ullamco laboris nisi ut
- Aliquip ex ea commodo consequat.



Search all technologies

AMGEN COMMERCIALIZED (4)

25 Results

<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	<b>Neulasta OBI</b> Amgen		<b>Pushtronex</b> Amgen		<b>SureClick 1.0</b> Amgen		<b>SureClick 1.5</b> Amgen

**AMGEN MATURITY**

- Feasibility
- Development
- Commercialization

---

**EXTERNAL TECHNOLOGIES**

- Competitor Technology
- Vendor Technology

This application is in demo mode. Data is simulated for demonstration purposes only.

COMPETITOR COMMERCIALIZED (7)

<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	<b>Yen</b> Company C		<b>Agarwal</b> Company D		<b>Roche</b> Company C		<b>Kleemann</b> Company D		<b>Gross</b> Company D		<b>Gibson</b> Company C		<b>McBreen</b> Company C

COMPETITOR DEVELOPMENT (4)

<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	<b>Teske</b> Company D		<b>Letts</b> Company C		<b>Augustine</b> Company D		<b>Home</b> Company D

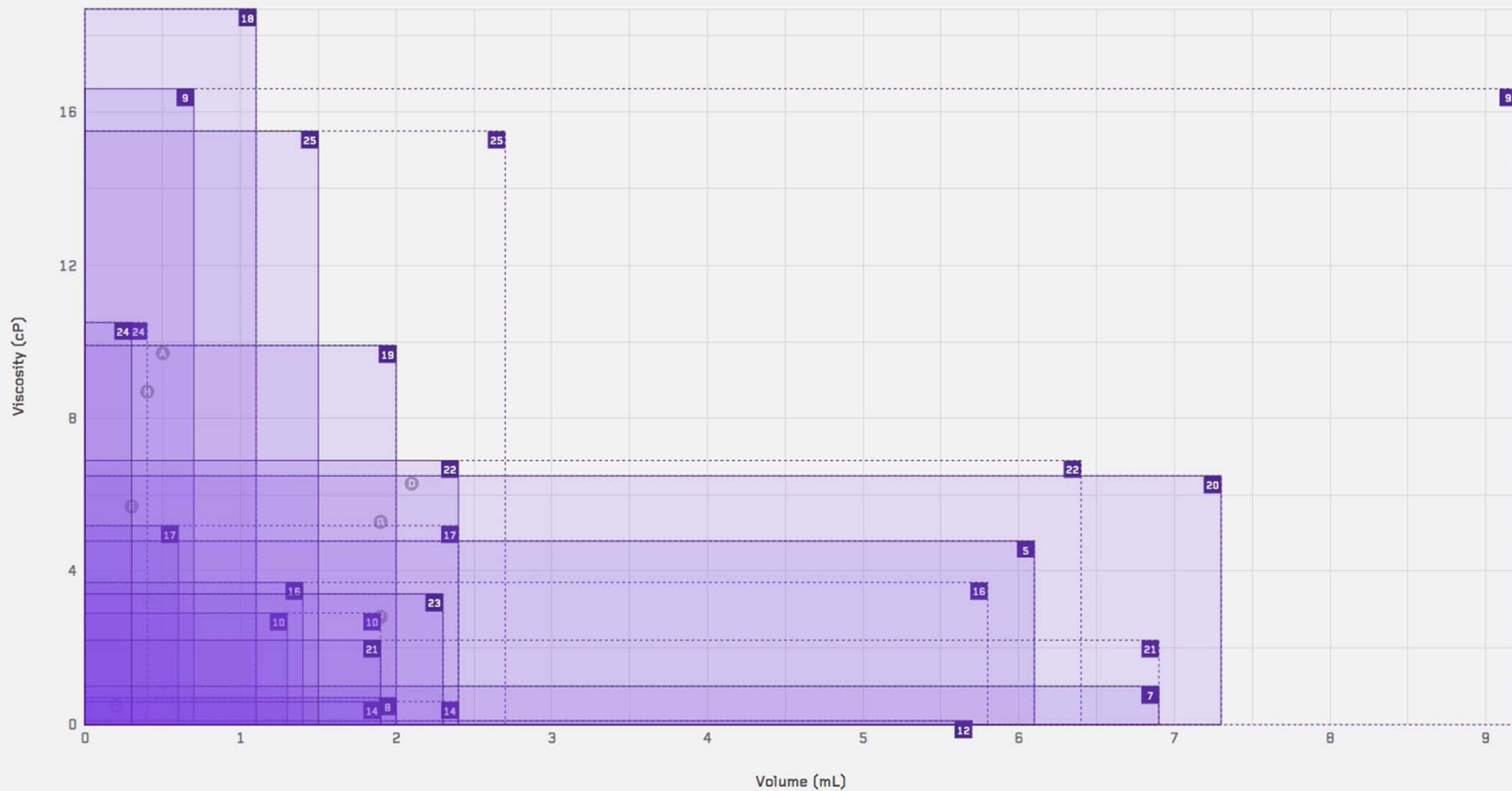
CANCEL CLEAR ALL SELECT ALL COMPARE (0)

### Technology Capability Comparison

Technology Ranges  Drug Products

Amgen-tested  Potential Zoom  1x  2x  4x

22 Items



- 1 Neulasta OBI Amgen ●
- 2 Pushtronex Amgen ●
- 3 SureClick 1.0 Amgen ●
- 4 SureClick 1.5 Amgen ●
- 5 Yen Company C [C]
- 7 Olbriach Company B [V]
- 8 Teske Company D [C]
- 9 Landry Company A [V]
- 10 Roche Company C [C]
- 11 Letts Company C [C]
- 12 Kleemann Company D [C]
- 14 Schacherl Company A [V]
- 16 Moberg Company A [V]

Knowledge management presents a real opportunity, and requires a team effort.



Thank you.

Jeffrey Schacherl, Amgen, Device Technologies Innovation Center  
Christian Marc Schmidt, Schema Design, [schemadesign.com](http://schemadesign.com)