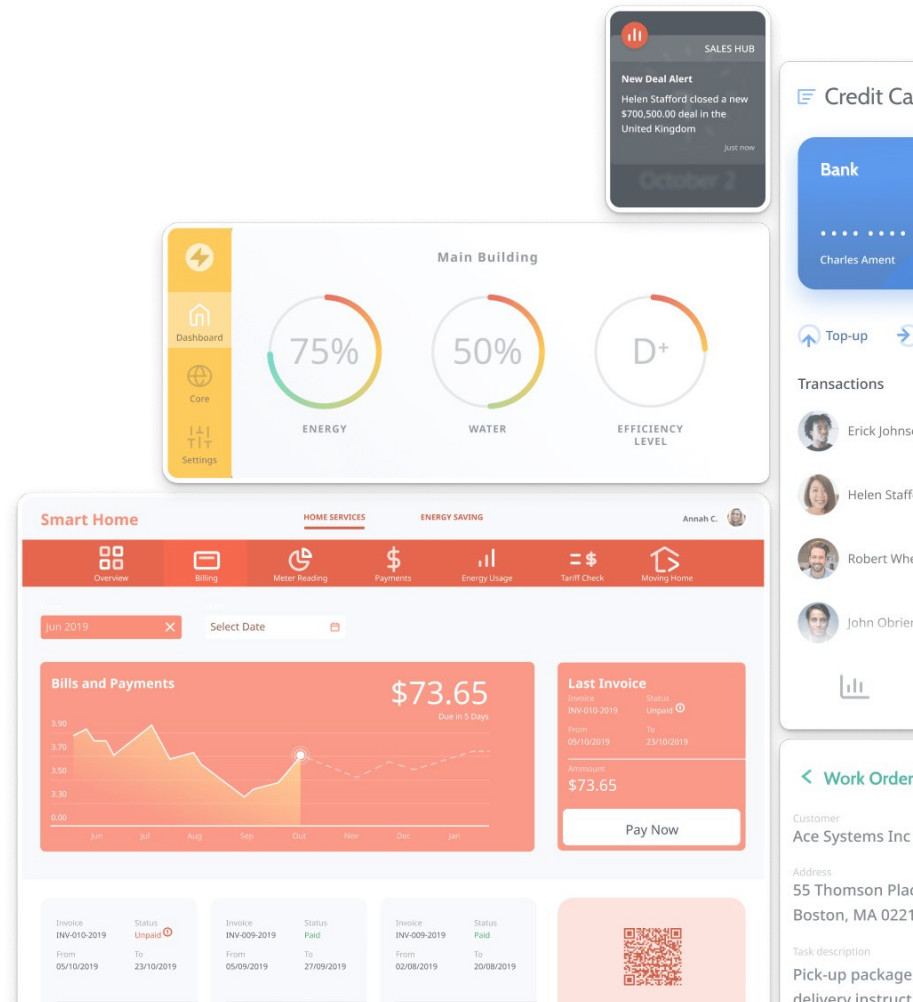




# Aggregates 101

Reactive Developer Boot Camp



# What you will learn here

- What is an Aggregate?
- Sources
- Filter
- Sorting
- Test Values
- Output

# What is an Aggregate?

An Aggregate is a **visual** element that visually defines a **query to fetch data** from Entities with sources, filters and sorting



# Aggregates

GetCustomers

1 Source 2 Filters 1 Sorting 1 Test Value

Sources

Customer

ADD SOURCE

Customer Name	Customer Email	Customer Address	Customer ZIPCode	NEW ATTRIBUTE
Anthony Howell	AnthonyPHowell@fleckens.hu	Obere Bahnhofstrasse 148	1268	
Bradley Murray	BradleyJMurray@armyspy.com	276 Vassileos Alexandrou Avenue	8100	
Brian Fallon	BrianJFallon@superrito.com	Příční 1029	756 43	
Brigid Heavner	BrigidSHeavner@jourrapide.com	1719 Devenish St	1378	
Charlene Strang	CharleneTStrang@einrot.com	Hantverkarg 95	134 00	
Donald Cummings	DonaldKCummings@teleworm.us	Avenida João C. Real 96	3850-562	
Faith White	FaithHWhite@rhyta.com	Ποσειδώνος 138	8027	
Gerald Bell	GeraldSBell@fleckens.hu	Copacabana 7902	12500	
Heather Dejesus	HeatherDDejesus@gustr.com	Λήτους 162	2237	
Jason Slack	JasonKSlack@cuvox.de	Wegedoorn 166	9461 KJ	

- Most applications need to fetch data from database
- Aggregates allow us to define database queries in a visual way
  - Add Sources
  - Create Filters
  - Define Sorting
- Aggregates are easy to maintain
  - Excel-like display of real data
  - SQL knowledge NOT required

# Aggregate Sources

GetCustomers

1 Source 2 Filters 1 Sorting 1 Test Value

Sources

Customer

ADD SOURCE

Customer	Customer	Customer	Customer	
Name	Email	Address	ZIPCode	NEW ATTRIBUTE
Anthony Howell	AnthonyPHowell@fleckens.hu	Obere Bahnhofstrasse 148	1268	
Bradley Murray	BradleyJMurray@armyspy.com	276 Vassileos Alexandrou Avenue	8100	
Brian Fallon	BrianJFallon@superrito.com	Příční 1029	756 43	
Brigid Heavner	BrigidSHeavner@jourrapide.com	1719 Devenish St	1378	
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- Aggregates support one or more source Entities
- Data is retrieved from Entities

# Aggregate Filters

GetCustomers

1 Source 2 Filters 1 Sorting 1 Test Value

1 Length(Customer.Name) > MinLength

2 Customer.Email <> ""

ADD FILTER

1

Customer	Customer	Customer	Customer	NEW ATTRIBUTE
Name	Email	Address	ZIPCode	
Anthony Howell	AnthonyPHowell@fleckens.hu	Obere Bahnhofstrasse 148	1268	
Bradley Murray	BradleyJMurray@armyspy.com	276 Vassileos Alexandrou Avenue	8100	
Brian Fallon	BrianJFallon@superrito.com	Příční 1029	756 43	
Brigid Heavner	BrigidSHeavner@jourrapide.com	1719 Devenish St	1378	
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- Adds one or more conditions to the query to filter the output records
  - Support for multiple filters
  - Support logical operators
    - =, <>, and, or, ...
  - Support for some built-in functions
    - CurrDateTime()
    - If(Condition, True, False)

# Aggregate Sorting

1 Source 2 Filters 1 Sorting 1 Test Value

1 Customer.Name ↓ Ascending

ADD SORT ADD DYNAMIC SORT

Customer Name	Customer Email	Customer Address	Customer ZIPCode	NEW ATTRIBUTE
Anthony Howell	AnthonyPHowell@fleckens.hu	Obere Bahnhofstrasse 148	1268	
Bradley Murray	BradleyJMurray@armyspy.com	276 Vassileos Alexandrou Avenue	8100	
Brian Fallon	BrianJFallon@superrito.com	Příční 1029	756 43	
Brigid Heavner	BrigidSHeavner@jourrapide.com	1719 Devenish St	1378	
Charlene Strang	CharleneTStrang@einrot.com	Hantverkarg 95	134 00	
Donald Cummings	DonaldKCummings@teleworm.us	Avenida João C Real 96	3850-562	
Faith White	FaithHWhite@rhyta.com	Ποσειδώνος 138	8027	
Gerald Bell	GeraldSBell@fleckens.hu	Copacabana 7902	12500	

- Defines the Entities attribute to sort by and which direction
  - Ascending
  - Descending
- When defining multiple sorts the order is relevant to the result

# Aggregate Test Values

1 Source

2 Filters

1 Sorting

1 Test Value

➡ MinLength

5

1

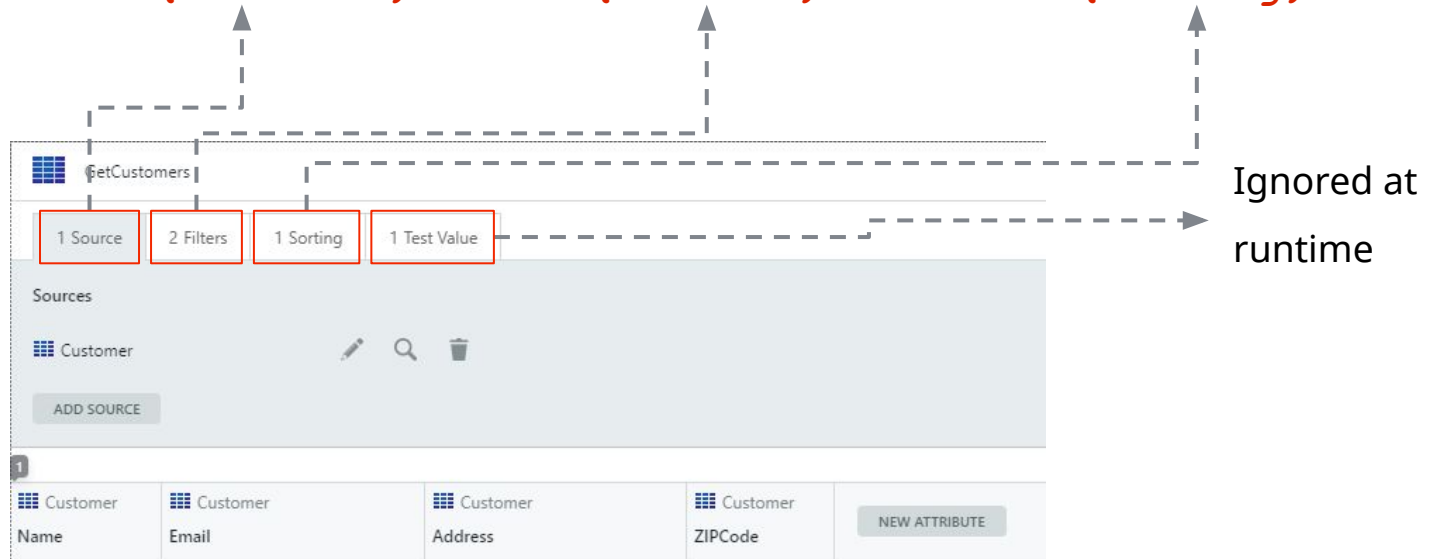
<div>Customer</div> <div>Name</div>	<div>Customer</div> <div>Email</div>	<div>Customer</div> <div>Address</div>	<div>Customer</div> <div>ZIPCode</div>	NEW ATTRIBUTE
Anthony Howell	AnthonyPHowell@fleckens.hu	Obere Bahnhofstrasse 148	1268	
Bradley Murray	BradleyJMurray@armyspy.com	276 Vassileos Alexandrou Avenue	8100	
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- Allows specifying values for external variables used in the filter or sort conditions
  - Has as many inputs as external variables
- Used to test the Aggregate and preview the output records
  - Does not have any influence at runtime



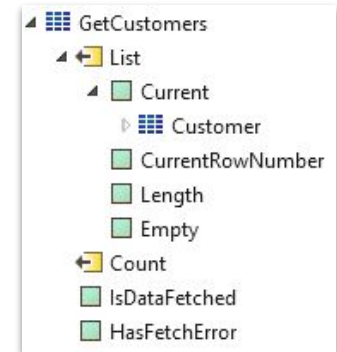
# Aggregates as SQL

```
SELECT ... FROM {Entities} WHERE {Filters} ORDER BY {Sorting}
```



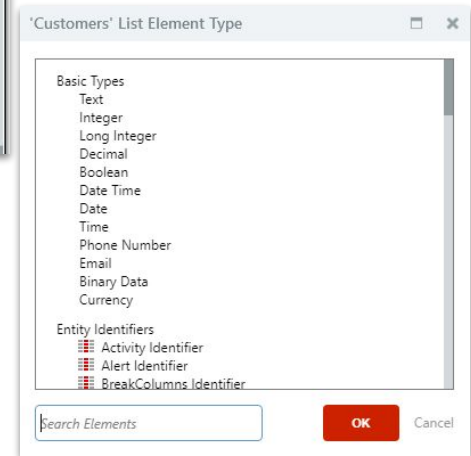
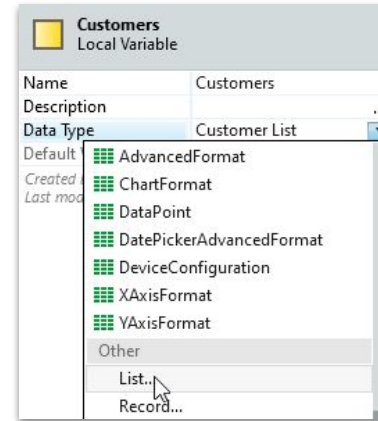
# Aggregates Output

- List of Records returned:
  - Iterator: Current, CurrentRowNumber
    - Current cursor moves through the List when iterating
    - Type matches the definition in the query
    - Current points at first row by default
  - Length: number of elements returned
  - Empty: True if no records were returned
- Count has the total number of records that match the criterias defined in the Aggregate



# Lists

- List is an OutSystems Data Type
  - Basic Data Types
  - Compound Types
- Lists can be used in
  - Input / Output Parameters
  - Local Variables
  - (and more...)
- Current can be used in an iteration to get the next element of the List



# Aggregate Properties

- It is possible to limit the Aggregate's output to a maximum number of records
  - Max. Record property
  - Does not impact the Count output
- Aggregate Editor is a SQL-dialect agnostic
  - Executed SQL property shows the SQL statement generated from the Aggregate
  - SQL is generated according to the DBMS used

GetCustomers Aggregate	
Name	GetCustomers ...
Description	...
Timeout	(Module Default Timeout)
Cache in Minutes	
Max. Records	10 ▼
Executed SQL	SELECT TOP (10) [ENCUSTOMER].[I]C ...
Sources	
Customer	...
Sorting	
Customer.Name (ASC)	...

# Questions?



Thank You!

