

ThingWorx

*Powering the Connected World™*

# Short Speaker Biography

John Canosa

- **Late 1980's** – University of Rochester, Laboratory for Laser Energetics. Developed one of World's Largest System of Networked Microcontrollers. 10,000+ points of sensing & control.
- **Late 1990's** – Qestra Corporation CTO. Pioneer in Web secure based remote monitoring / remote services application.
- **Present** - ThingWorx. The first true application platform for rapidly developing and deploying for M2M/IoT applications.

# ThingWorx

Founded 2009, Successful Software Entrepreneurs

Venture Backed (SFE)

Disruptive, Successful & Growing Rapidly

Recognized Leader

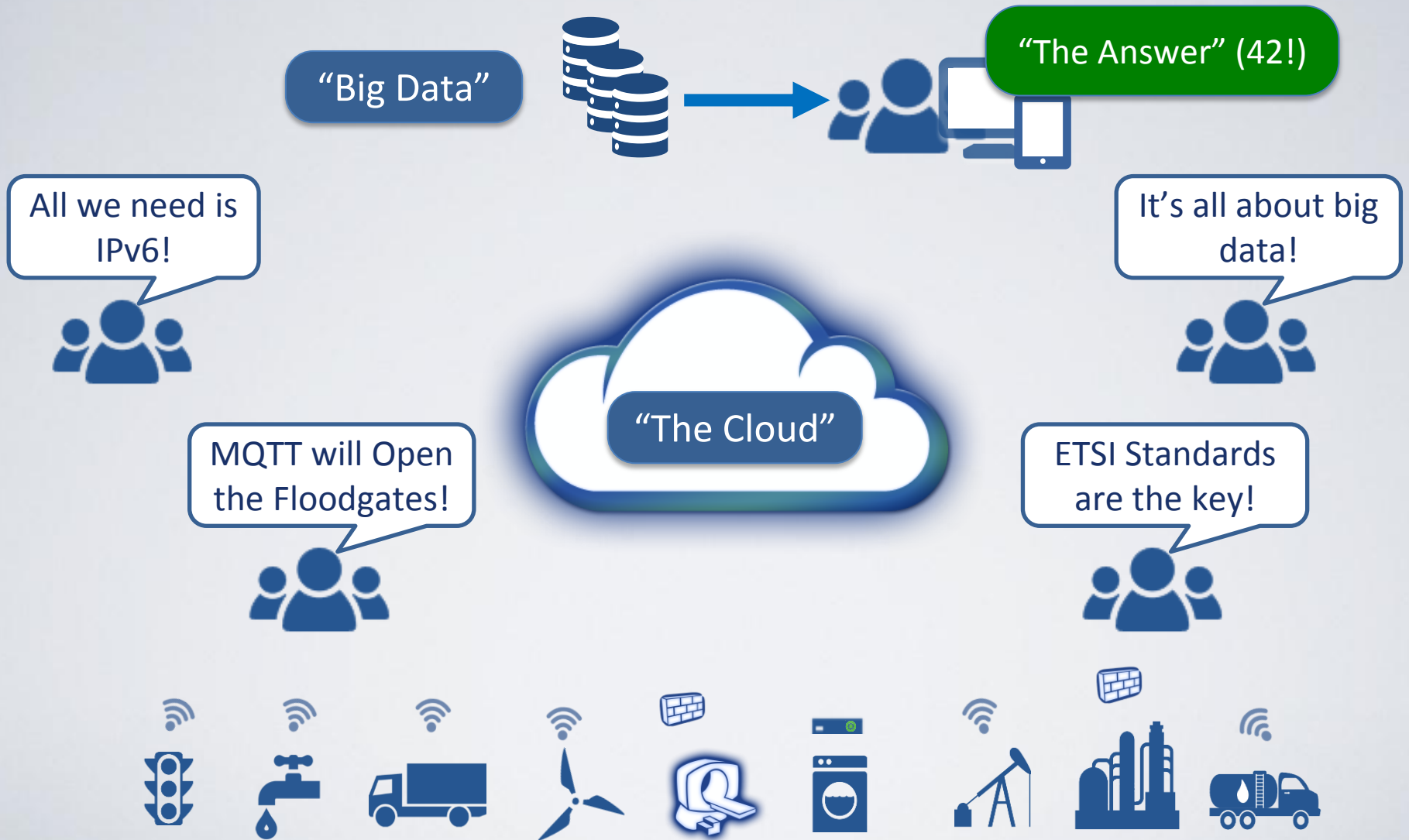


*"ThingWorx is re-defining the concept of connected platforms and creating a new market meta-category"*



**2013 Winner:  
Best Platform for Enabling Third Party Developers**

# Some Misguided Thinking About Mass Adoption of M2M/IoT



# Mass Adoption is Driven by Value Creation, not Technology

The Value of M2M/IoT Can Only Be Realized Through Applications and Interactions

10K

2010

5M  
Apps

2020



100M  
Apps

2035

# Applications are the Key to Value Creation

Rapid Application Development is  
the Bottleneck Holding Back Mass  
Deployment of M2M

*Big Data Analytics*



Consumer Sentiment

*Optimized Operations*



# Applications are the Key to Value Creation



Real-time Demand Production Scheduling



Temperature Forecasting



Traffic

Smart Vending



Replenish



Repair



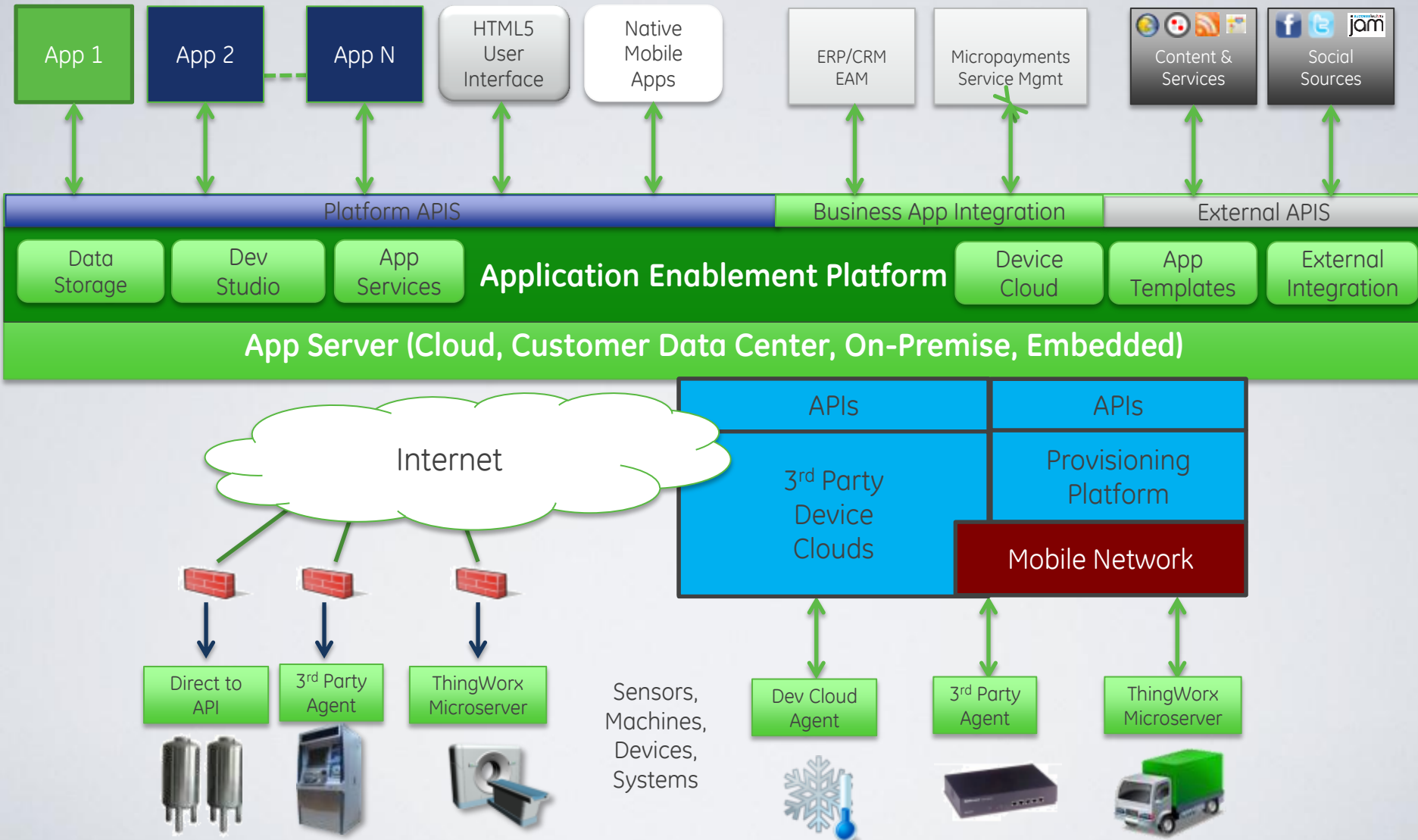
# Connected Applications are the Key to Value Creation



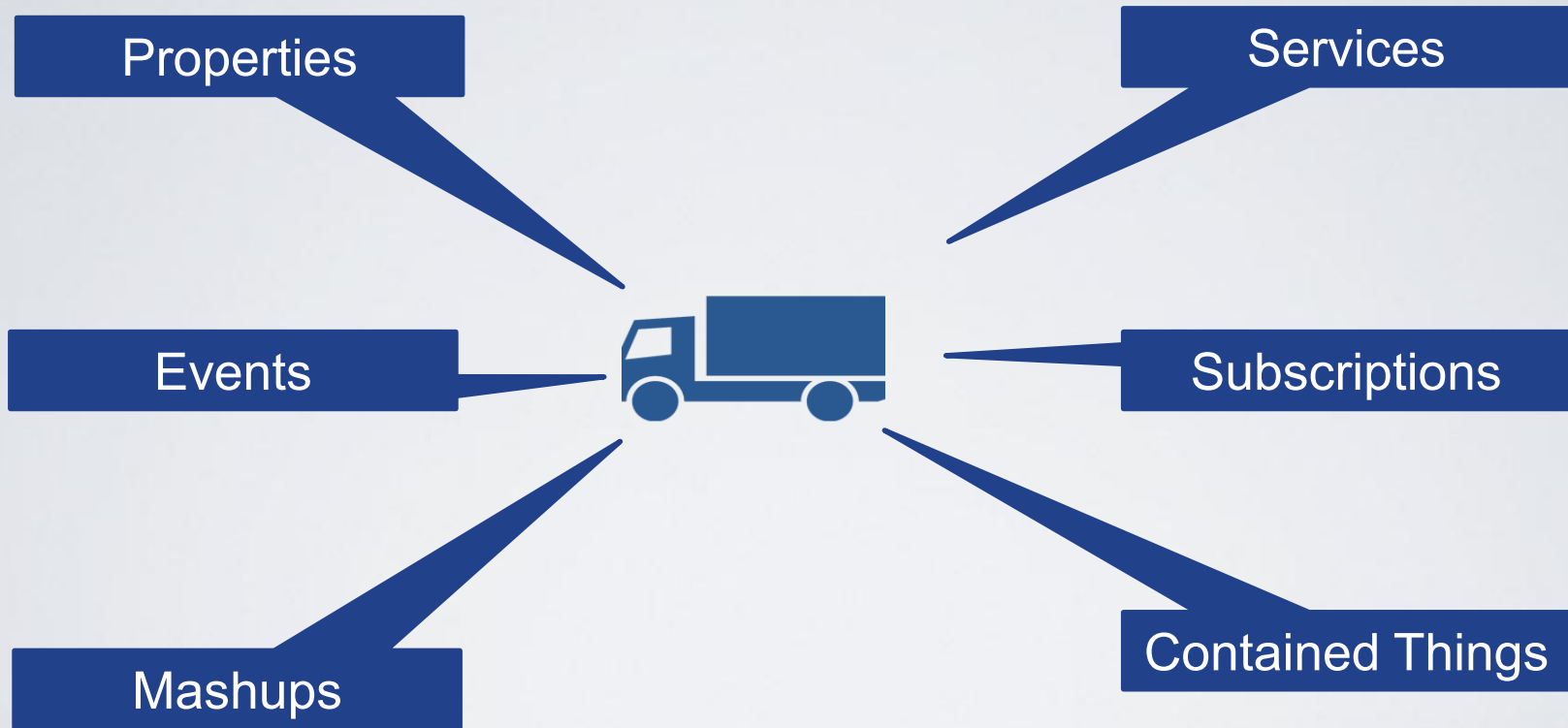
# What is Required to Remove the Application Bottleneck?

- Ubiquitous Connectivity
- Easily Extensible, Business Oriented Semantic Models and the Tools to Create Them
- Remove the Dependency on the Programmer or IT Specialist for Generating Interactive Applications

# Ubiquitous Connectivity



# Extensible, Business Oriented Semantic Modeling



# Removing The Programmer / IT Specialist From the Equation

The screenshot displays the ThingWorx Mashup Builder interface. The browser address bar shows `localhost/Thingworx/IDE/Builder/index.html`. The top menu includes Mashups, Edit, View, Window, and Help. The toolbar contains various actions like New Mashup, Open Mashup, Save, Cut, Copy, Paste, and alignment/spacing tools.

The main workspace shows a 'Tree' widget being selected. A tooltip points to the widget with the text: "Displays a tree using a dataset containing nested infotables".

The left sidebar shows the 'WIDGETS' panel with a list of widget categories. The 'Tree' widget is highlighted. Below it is the 'WIDGET PROPERTIES' panel for the selected widget, showing fields for Id, Type, Description, Target, Tags, and Style.

The right sidebar shows the 'DATA' panel, which includes a list of data sources and their properties. The selected data source is 'Things\_AcmeMedical: GetNetworkObjectsWithData'. Below it is the 'DATA PROPERTIES' panel, which shows a table of data properties.

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

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The screenshot displays the ThingWorx Mashup Builder interface. The browser address bar shows the URL `localhost/Thingworx/IDE/Builder/index.html`. The application has a menu bar with options: Mashups, Edit, View, Window, and Help. Below the menu is a toolbar with icons for New Mashup, Open Mashup, Save, Cut, Copy, Paste, Align Lefts, Same Size, Vert Horz, Expand Full, States, Styles, Media, and View Mashup.

The main workspace is divided into several panels:

- WIDGETS:** A panel on the left with tabs for WIDGETS, MASHUPS, and WORKSPACE. It includes a Category dropdown set to 'All', a Filter input field, and a list of widget types: Textbox, Time Selector, Time Series Chart, Tree, User Contact List, User Status, Value Display, and Vertical Slider.
- WIDGET PROPERTIES:** A panel below the widgets list showing properties for a selected widget (Tree-74). The properties include Id (Tree-74), Type (Tree), Description, AutoSelectFirstRow (checkbox), LabelField, and TooltipField.
- Workspace:** The central area where a mashup is being built. It shows a red header bar with the widget name `GetNetworkObjectsWithData` and a blue tree widget below it.
- DATA:** A panel on the right showing data sources and properties. It includes a tree view for `Things_AcmeMedical` with a sub-entry for `GetNetworkObjectsWithData`. Below this, there are sections for Parameters and Returned Data for two different data sources.
- DATA PROPERTIES:** A panel at the bottom right showing a table of data properties for the selected widget.

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

At the bottom of the interface, there is a **CONNECTIONS** panel with a **TO-DO** list containing one item.

# Removing The Programmer / IT Specialist From the Equation

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The main workspace is titled "example" and contains a blue rectangular widget labeled "Tree" with a dashed border. A tooltip over the "Google Map" widget in the left-hand "WIDGETS" panel reads: "Displays a series of location data points on a map".

The "WIDGET PROPERTIES" panel for the selected "Tree-74" widget shows the following details:

Property	Value
Id	Tree-74
Type	Tree
Description	
AutoSelectFirstRow	<input type="checkbox"/>
LabelField	SiteName
TooltipField	

The right-hand "DATA" panel shows two data services:

- Things\_AcmeMedical**
  - GetNetworkObjectsWithData** (highlighted in red)
  - Parameters
  - Returned Data
    - All Data
    - Selected Row(s)
- GetServiceRequestData** (highlighted in red)
- Parameters
- Returned Data

The "DATA PROPERTIES" panel for the selected service shows the following events:

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

At the bottom, the "CONNECTIONS" and "TO-DO" panels are visible.

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The main workspace shows a map widget titled "example" with a "WIDGETS" panel on the left. The "WIDGETS" panel has a "Category" dropdown set to "All" and a "Filter" input field. Below the filter is a list of widget categories: Google Location Picker, Google Map, Grid, Html TextArea, Image, Label, Label Chart, and Link. The "WIDGET PROPERTIES" panel for "GoogleMap-75" shows the following properties:

Property	Value
Id	GoogleMap-7
Type	Google Map
Description	
MapType	Roads
LocationField	location
TooltipField1	

The map widget displays a map of North America with state abbreviations. The "DATA" panel on the right shows the configuration for the "Things\_AcmeMedical" widget. It includes a "GetNetworkObjectsWithData" widget with the following configuration:

- Parameters: All Data, Selected Row(s)
- Returned Data: GetNetworkObjectsWithData

The "DATA PROPERTIES" panel shows the following data properties for "Things\_AcmeMedical: GetNetworkObjectsWithData":

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

The "CONNECTIONS" panel at the bottom shows a "TO-DO" list with one item.



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The main workspace is divided into several panels:

- WIDGETS:** A list of available widgets with a filter and a search bar. The "Label Chart" widget is highlighted.
- WIDGET PROPERTIES:** A panel for configuring the selected widget. The "LabelChart-76" widget is selected, showing properties like Id, Type, Description, SingleDataSource (checked), Data, and LabelField.
- DATA:** A panel showing the data sources and properties for the mashup. It includes sections for "Things\_AcmeMedical", "GetNetworkObjectsWithData", and "GetServiceRequestData".
- DATA PROPERTIES:** A table showing the data properties for the selected widget.

The central workspace displays a map of the United States with state abbreviations and labels. The "CONNECTIONS" and "TO-DO" panels are visible at the bottom.

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

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The workspace is divided into several panels:

- WIDGETS:** A list of widgets including Google Location Picker, Google Map, Grid, Html TextArea, Image, Label, Label Chart, and Link. The "Label Chart" widget is selected.
- WIDGET PROPERTIES:** A table showing properties for the selected "LabelChart-76" widget.
- DATA:** A panel showing data sources and operations. The "Things\_AcmeMedical" data source is selected, and the "GetNetworkObjectsWithData" operation is highlighted.
- DATA PROPERTIES:** A table showing properties for the selected data source and operation.

The main workspace area shows a map of the United States with state abbreviations and a "Label Chart" widget placed to its right. The "Label Chart" widget is currently empty, displaying only a small bar chart icon.

WIDGET PROPERTIES	
LabelChart-76	
Id	LabelChart-76
Type	Label Chart
Description	
SingleDataSource	<input checked="" type="checkbox"/>
Data	↔
LabelField	↔

DATA PROPERTIES	
Things_AcmeMedical: GetNetworkObjectsWithData	
Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

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The main workspace is divided into several panels:

- WIDGETS:** A list of available widgets including Google Location Picker, Google Map, Grid, Html TextArea, Image, Label, Label Chart, and Link. The "Grid" widget is currently selected.
- WIDGET PROPERTIES:** A panel for configuring the selected widget. For the "LabelChart-76", properties include Y-Axis Autoscale (checked), Allow Y-Axis Zoom (checked), DataField1 (Total), DataLabel1 (Total), SeriesStyle1 (DefaultChartStyle1), SeriesType1 (Use Chart Settings), and SeriesDataStyle1 (State Formatting).
- DATA:** A panel showing data sources and operations. It includes "Selected Row(s)", "GetDailyTestCountStreamData", "Parameters", "Returned Data", "All Data", and "Selected Row(s)".
- DATA PROPERTIES:** A panel showing data properties for "Things\_AcmeMedical.GetNetworkObjectsWith". It includes a table with Name and Value columns, and events like ServiceInvokeCompleted, AllDataChanged, and SelectedRowsChanged.

The central workspace shows a map of North America with state abbreviations. A "Label Chart" widget is positioned to the right of the map. A "Grid" widget is visible at the bottom of the workspace.

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The screenshot displays the ThingWorx Mashup Builder interface. The browser address bar shows the URL `localhost/Thingworx/IDE/Builder/index.html`. The application has a menu bar with options: Mashups, Edit, View, Window, and Help. Below the menu is a toolbar with icons for New Mashup, Open Mashup, Save, Cut, Copy, Paste, Alignment (Align Lefts), Sizing (Same Size), Spacing (Vert, Horz), Expand Full, States, Styles, Media, and View Mashup.

The main workspace is titled "example" and contains a map widget. The map shows a geographical area including Mexico, Central America, and parts of the Caribbean. A grey bar with the text "Must Be Bound To Data" is overlaid on the map. The left sidebar shows a "WIDGETS" panel with a "Category" dropdown set to "All" and a "Filter" input field. Below the filter is a list of widget categories: Google Location Picker, Google Map, Grid, Html TextArea, Image, Label, Label Chart, and Link. The "WIDGET PROPERTIES" panel for the selected "Grid-77" widget is visible, showing properties like "MultiSelect", "AutoSelectFirstRow", "Data", "RowHeight" (set to 30), "ShowAllColumns", "Top" (set to 300), and "Left" (set to 0).

The right sidebar contains a "DATA" panel with a "Selected Row(s)" dropdown. Below it is a red button labeled "GetDailyTestCountStreamData" with a right-pointing arrow. Underneath are sections for "Parameters" and "Returned Data". The "Returned Data" section has a "Selected Row(s)" dropdown. Below that is a "DATA PROPERTIES" panel with a table of properties:

Name	Value
ServiceInvokeCompleted	↔
AllDataChanged	↔
SelectedRowsChanged	→

At the bottom of the interface, there is a "CONNECTIONS" panel and a "TO-DO" list with one item.

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The main workspace is titled "example" and contains a map widget and a data table. The map widget shows a map of North America with labels for "North Pacific Ocean", "Gulf of California", "Mexico", "Gulf of Mexico", "Caribbean Sea", and "North Atlantic Ocean". Below the map is a table with the following columns:

SiteName	SerialNumber	State	Last_Maintenance
----------	--------------	-------	------------------

The left sidebar shows the "WIDGETS" panel with a "Category" dropdown set to "All" and a "Filter" input field. The widget list includes: Google Location Picker, Google Map, Grid, Html TextArea, Image, Label, Label Chart, and Link. The "WIDGET PROPERTIES" panel for the selected "Grid-77" widget shows the following settings:

Property	Value
MultiSelect	<input type="checkbox"/>
AutoSelectFirstRow	<input type="checkbox"/>
Data	←
RowHeight	30
ShowAllColumns	<input type="checkbox"/>
Top	300
Left	0

The right sidebar shows the "DATA" panel with a "Selected Row(s)" widget. The "GetDailyTestCountStreamData" widget is selected, and its "Returned Data" is set to "Selected Row(s)". The "DATA PROPERTIES" panel shows the following properties:

Name	Value
ServiceInvokeCompleted	⇒
AllDataChanged	⇒
SelectedRowsChanged	→

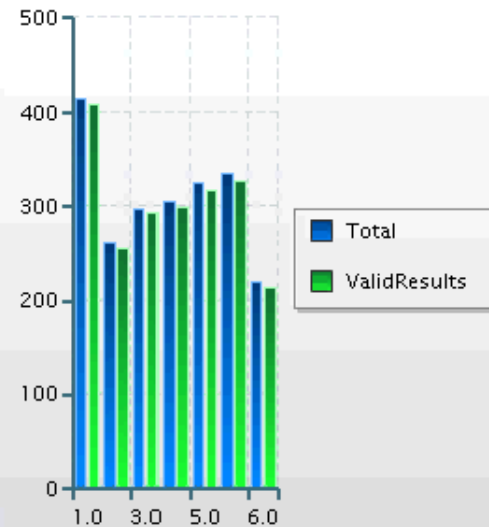
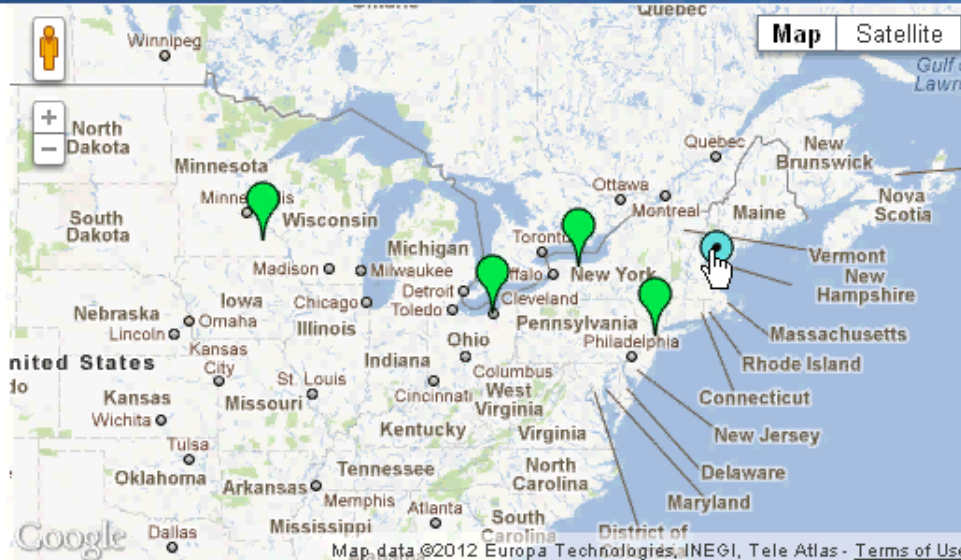
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**ThingWorx**  
The 1st Application Platform for the Connected World™

Acme Medical Devices

- AcmeMedical
  - Cleveland Clinic
  - Beth Israel
  - Strong Memorial
  - Mass. General
  - Mayo Clinic



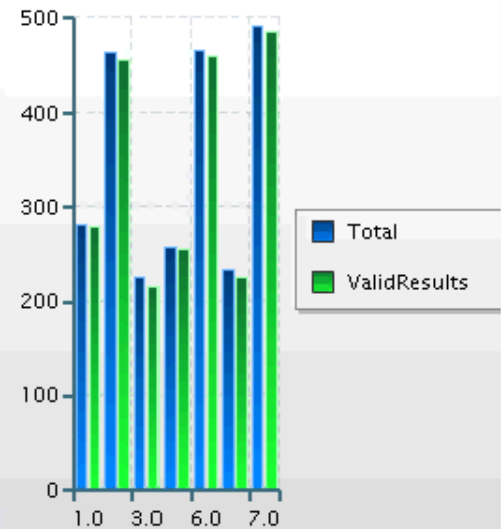
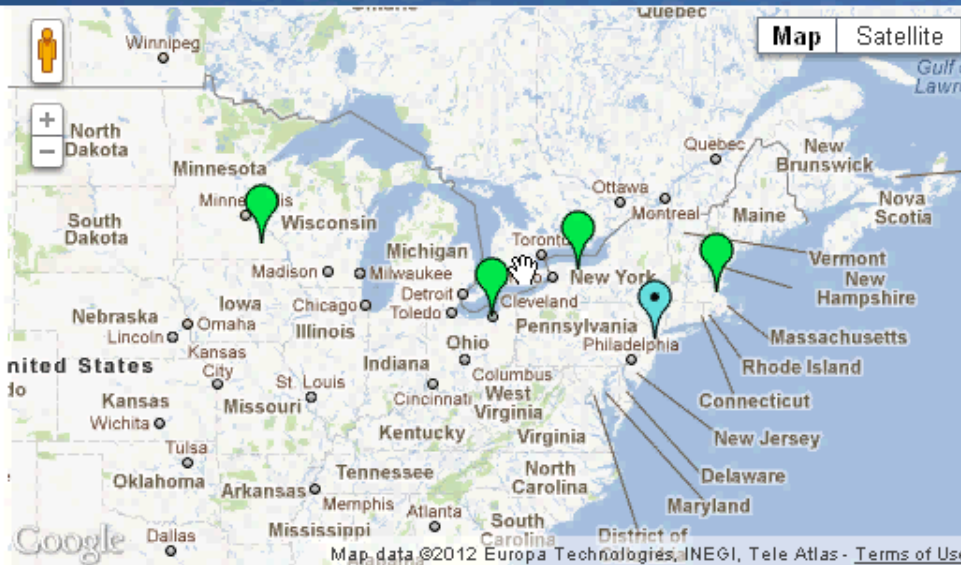
Sitellname	Seriallumber	State	Last_Maintenance	LinkStatus	LastError
Cleveland Clinic	102938	ONLINE	2011-07-11 22:08:26	Idle	Sequential_Flags
Beth Israel	576903	OFFLINE	2011-05-02 22:08:26	Could Not Establish Link	Sequential_Flags
Strong Memorial	837509	ONLINE	2011-09-09 22:08:26	Idle	Sequential_Flags
Mass. General	935482	ONLINE	2011-09-09 22:08:26	Idle	Sequential_Flags
Mayo Clinic	793549	ONLINE	2011-09-09 22:08:26	Idle	Sequential_Flags

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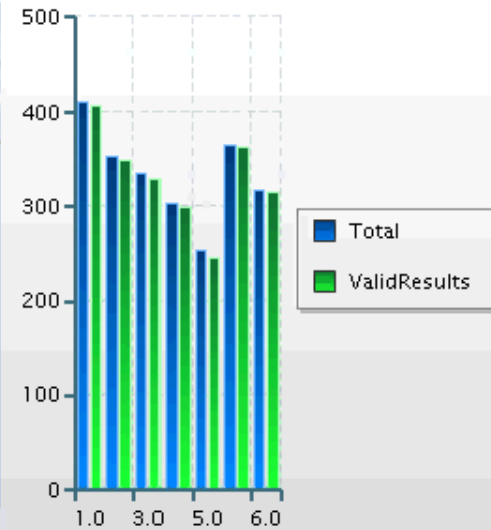
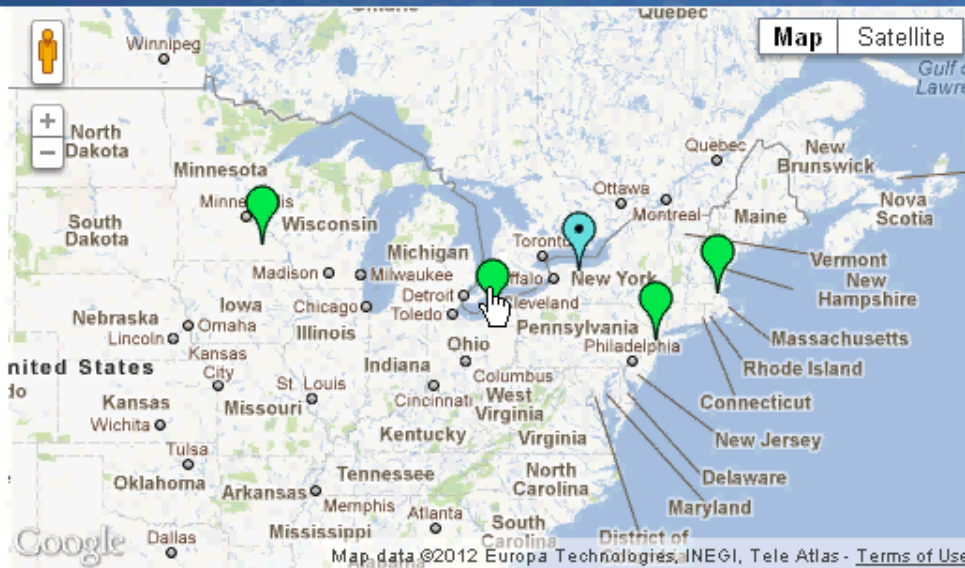
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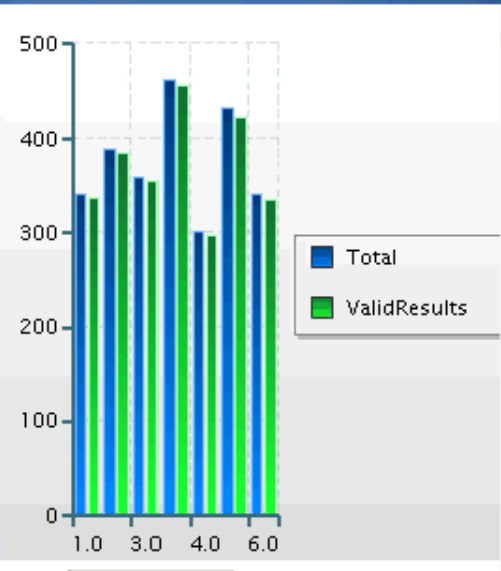
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Index	Total	ValidResults
1.0	260	410
2.0	300	260
3.0	310	290
4.0	330	320
5.0	220	330
6.0	210	210

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# Summary: Mass Deployment of M2M Requires a Major Shift



10X Faster

Only Complete Platform Designed to Build & Run Applications Connecting  
Build and Run Applications Connecting

PEOPLE • SYSTEMS • THINGS

# Vielen Dank für Ihre Zeit und Aufmerksamkeit



# ThingWorx

THE 1<sup>ST</sup> APPLICATION PLATFORM FOR  
THE CONNECTED WORLD