Release 12 of 6SigmaDCX focuses on management and collaboration, creating a data center design and operations platform where you can predict the impact of change. Here’s what’s new:

1. **A Central Management Platform**
   - Manage IT assets via an integrated platform, and ensure your teams see the data they need. Share models via 6SigmaModelStore, and update them from your DCIM tools via 6SigmaGateway.

2. **Explore in VR**
   - See your 6SigmaRoom models in a new, immersive virtual reality experience. Showcase your solutions by putting clients inside your models, or help your team explore new facilities.

3. **Build Scalable Automation**
   - Test control logic schemes, and see the consequences of changing inputs instantly. Combine simulation and AI so control systems learn the best responses from the results.

4. **Cross-Platform Collaboration**
   - Let your 6SigmaAccess users make changes on the move. 6SigmaAccess’s cross-platform compatibility lets your team collaborate seamlessly to test and implement changes.

5. **User-Suggested Improvements**
   - Our agile development process lets us respond to user requests quickly. We’ve implemented over 200 user requests in Release 12.

**Features**
- 6SigmaModelStore connects 6SigmaRoom and 6SigmaAccess
- New DCIM integrations
- 6SigmaRoom integrated with Oculus Rift VR headset
- View models in virtual reality
- Connect controllers to your own DLL scripts
- Make changes to inputs during simulations
- Run 6SigmaAccess models via your web browser
- Access models anywhere with an internet connection
- New chiller and RPP objects
- Transparent materials for solar loading
- Liquid cooling for IT
What's New in Detail

Release 12 of the 6SigmaDCX suite contains a range of new and improved features, the most significant of which are listed below for your information.

User Interface

Release 12 of the 6SigmaDCX suite brings the following changes to the user interface.

6SigmaFM Replaced with 6SigmaRoom

We have retired the 6SigmaFM software, and merged its functionality with 6SigmaRoom.

Welcome Screen Improvements

We've made a range of improvements to the Welcome Screen - shown when you first open the software - to help you find what you need quickly.

The new Welcome Screen layout (left) is split into three tabs: Work, Learn and License. Work lets you begin or open a model, Learn shows you how to use 6SigmaDCX, and License helps you to request and add software licenses.

Import Live Data into 6SigmaRoom

You can now import live data into 6SigmaRoom from various protocols, such as exchange data (including from the web), SNMP or IPMI. You can also synchronize with 6SigmaGateway in 6SigmaRoom to import data from a wide range of DCIM tools.
Designer & Manager Modes

We have added a new user option - Application Mode - to allow you to switch between two new modes of the software: Designer and Manager. These modes change 6SigmaRoom’s functionality so that it becomes more suited for either a data center designer or an operator.

New Manage Ribbon

We’ve added a Manage ribbon to 6SigmaRoom, allowing you to manage installation and decommission planning. This also integrates with the new Model Store.

Model Store

We’ve added a Model Store that allows you to share models via a common database. This allows you to effectively collaborate with colleagues and manage projects by sharing models and simulation results.

The Model Store (right) works with a MongoDB database to store your model files. These can be checked out from the Model Store and worked on in 6SigmaRoom, then any changes checked back in to the Model Store. The Model Store also records version history for each model.

New Scheduler Service

We’ve added a Scheduler service to the 6Sigma Control Center. This allows you to create Model Store tasks, such as synchronizing libraries, exporting inventory and merging changes, and run these automatically at a scheduled time and date.

Loading Bay

We’ve added a new Loading Bay area to the Object Panel. The Loading Bay houses objects that will be added to the facility in future, and objects that have been decommissioned from it. For users of the Model Store, there are two Loading Bays available: the Room Loading Bay, which is specific to the current model; and the Global Loading Bay, which is shared across the network.
**Toggle Flow Arrows On or Off**

You can now toggle flow arrows on or off globally, via the Flow Arrows option on the View ribbon. This is useful for producing high quality images for presentations.

**Request a RoomKey in 6SigmaRoom**

6SigmaRoom can now be licensed using a RoomKey. This will allow a licensed model to be opened in 6SigmaRoom without requiring a full 6SigmaRoom license. If you currently have a 6SigmaFM model with a valid RoomKey, this will allow you to open it in 6SigmaRoom. The RoomKey also ensures that a 6SigmaAccess user can load the model to make appropriate changes.

**New Shortcut for Isometric View**

You can now switch to an isometric view by pressing the I key.

![Isometric View](image.png)

*The new isometric view (left) displays the 3D model in 2D perspective.*

**Email Support and Run Diagnostics from License Error Window**

We’ve added an Email Support button to the error window shown when the software can’t find licenses. You can run diagnostics from here (provided you have administrative permissions), and email the reports directly to us. This will help us to resolve your issue faster.

**Add Background Colour and Transparency to Text Boxes**

You can now adjust the background colour and transparency of overlay text boxes.
New & Updated Model Objects

In response to customer feedback, we’ve added some new objects and updated some existing ones.

RPP Objects

You can now create Remote Power Panel (RPP) Cabinet objects. These are cabinets containing a specified number of RPPs.

New Power Options for PDUs and RPPs

You can now specify the max distribution amperage of PDU and RPP objects. The distribution voltage is now reported in the property sheet; this is determined by the upstream power supply and can be modified by an internal transformer. These are used to calculate the kVa rating.

New Chiller Object

We’ve created a new chiller object, which can be used with the External Environment template to model an external chiller unit.

Add Cluster to External Model

You can now add a cluster object to the ground in the External Environment template.

New Generator Options

We’ve added new functionality to the generator object for Release 12. You can now add streamlines to the generator object directly (this will add streamlines to all of its inflows, outflows and exhausts), add generators to a cluster, and turn generators on or off via the context-sensitive Object ribbon.

Dual Inlet Radial Fans

You can now model radial fans with a choice of one or two inlets. Use the Number of inlets property in the Construction node of the property sheet to specify multiple inlets.

Radial fans can now be modeled with two inlets (left). This allows you to represent a wider range of fan configurations.
Dual Outlet Blowers

You can now model blowers with a choice of one or two outlets. Use the Number of Outlets property in the Construction node of the property sheet to specify multiple outlets, then configure each outlet’s case geometry in the Geometry node.

Blowers can now be modeled with two outlets (right). This allows you to represent a wider range of blower configurations.

Varying ACU Input Power

You can now set Fan power to either fixed, curve or power law options. The power of the auxiliary electronics can now be set independently.

Liquid Cooling of IT Equipment

You can now add liquid cooling to IT equipment, and specify the percentage of the IT power absorbed by the liquid cooling system. You can also attach liquid-cooled IT equipment to heat exchanger objects, allowing you to model the heat exchange between liquid cooled IT and the room environment.

New Construction Options for Floor Jacks

Floor jacks can now be rectangular as well as circular.

New Geometry Options for Perforated Obstructions

You can now create circular perforated obstructions, in addition to rectangular and polyline obstructions.

Add Grid Control to Floor Grilles

You can now add grid control objects to floor grilles.

Add Lights to Open Ceilings

You can now add lights to ceilings when Ceiling Type is set to Open.

Add Volume Flow Sensors

You can now use sensors to measure the average volumetric flow rate through objects. We've also made it possible to add sensors to perforated obstructions and obstruction holes.
Model Creation & Manipulation

We’ve worked on the following features to provide you with enhanced or improved model creation and manipulation capabilities.

3D Mouse Support

You can now connect a 3D mouse to control the orientation of models in the graphical view. We support 3D connexion mice using their official API, which allows for user-configured controls.

Plan Object Installation at Specified Time

You can now set the status of objects to planned, installed or planned decommission, and specify a date to make these changes. When you open a model, 6SigmaRoom will prompt you to confirm or ignore updates planned for dates earlier than the current date.

![Image of model with planning status indicator]

When you specify an object’s planning status, this will be reflected in the model. Planned objects installed before the selected date will be highlighted purple (shown left), while planned objects that are not yet installed will remain as purple outlines. Objects planned for decommission after the selected date will be highlighted red.

New Include Plans Options

We’ve created the ‘Include Plans’ functionality so that you can view and solve the facility’s plans at a specific point in time. You can choose to include the plans for the current day only; for 30, 60 or 90 days in advance; or for a specific date.

Control IT Airflow Based on Sensors

You can now set a temperature dependent flow rate on IT equipment outflows using temperature data from a sensor.
Arrows to Indicate Flow Directionality

We’ve added arrows to show the directionality of flow on vents and vent openings. This is especially useful when the object’s *Width* or *Length Directionality* is set to *Angled*.

(Left) *The arrow indicates flow in one direction through a vent on the room’s wall.* (Right) A vent on a partition wall has flow in both directions, as indicated by the arrows. The arrows are especially useful when flow is not perpendicular to the vent.

New Phase Labels

We’ve added the option to set your *Phase Labels* to A, B and C, which helps you map 6SigmaRoom’s nomenclature with your existing power map.

Include Breaker Panel ID in Breaker Slot Unique ID

A breaker slot’s *Unique ID* now includes its parent breaker panel’s *Unique ID*, allowing you to visualize the relationships in your power network.

Scale to Multiple Power Network Inputs

You can now scale multiple parts of the power network at once, using the new Scale to Multiple Inputs option on the Scale Powers menu. This allows you to use your existing power network data to calculate the correct values for areas in the network where data is missing or inaccurate.
Model Integration

Future Facilities continues to make 6SigmaDCX even more inter-operable by introducing the following new integrations.

Explore Models in VR with Oculus Rift

We've integrated 6SigmaDCX with the Oculus Rift VR headset, allowing you to view and explore your models in virtual reality.

The new VR view (right) lets you walk around your models in virtual reality. Use it to showcase solutions to your clients by putting them inside your models, or to get up close with design issues.

Import and Export Data Separately in 6SigmaGateway

We have separated the Synchronize with 6SigmaGateway functionality, allowing data imports and data exports to be performed separately.

Handle Multiple Sensor Children for SNMP Data Sources

You can now add multiple sensors as children of a parent device for SNMP data sources in 6SigmaGateway.
Solution

We've improved the level of control you have over the solving process. Here's what's new:

Re-Assembly Speed Up

The re-assembly process is now up to 10 times faster for unstructured grids. This is useful when solving models with large numbers of grid cells.

Runtime CPU Statistics

You can now view a detailed breakdown of the latest solver runtime from the Results tab of the Solution Control property sheet. This is useful for debugging and performance optimization.

![Solution Control Property Sheet](image)

The new Results tab in Solution Control (left) shows start and end times for the last solve, the time taken for grid generation, CFD generation and solving, and other runtime information. This can help you to identify where improvements can be made.

Solve on Linux CFD Server from Windows

You can now install a CFD Server and Batch Server on a CentOS 7 or Red Hat 7 Linux system and submit batch jobs from a Windows device.

Transparency to Heat Radiation

You can now specify that materials are transparent to heat radiation. This is useful when modeling glass obstructions and some types of enclosures.

Transparency to Solar Radiation

You can now specify that materials are transparent to solar radiation, and set the values of solar reflectance and absorptance.

Transient Power on IT

You can now add heat power factor curves, which vary in time, to individual IT objects. This is useful when performing transient solutions.
Results

The way in which your solved model appears, and the options that you have to display the results and create new views and reports, have all been enhanced in Release 12.

Show Heat Fluxes on Objects

The Results tab of the property sheet can now show the conduction, convection and radiation heat fluxes through some objects. Ensure Record Thermal Data is checked in the Solid Objects node of Solution Control to see this results data.

Export Zone of Influence Data

You can now export the calculated values from a Zone of Influence analysis as a CSV file. This will allow you to find the Zone of Influence data for specific cabinets quickly.

Update Potential Cooling

You can now view potential cooling and available cooling of a cabinet based on the total amount of cooling entering the parent cold aisle. This feature is extremely useful in models that have no raised floor design when a cabinet has no floor grille in front of it.

RPP Percentage Power Usage Plot

The percentage power usage plot now shows the load on RPP Cabinets.

The Percentage Power Used plot (left) shows how loaded each PDU and RPP is relative to its capacity. This is calculated as the ratio of the power drawn by connected equipment to the kW rating of the object.
New RPP Panel Schedule

You can now generate a RPP panel schedule report, which shows the loading information for each breaker panel in the selected RPP(s).

<table>
<thead>
<tr>
<th>RPP</th>
<th>Panel</th>
<th>Circuit</th>
<th>Phase Type</th>
<th>Phase Type</th>
<th>Status</th>
<th>Size (A)</th>
<th>Load (A)</th>
<th>Transferred Load (A)</th>
<th>Socket</th>
<th>Cable Size (mm)</th>
<th>Cabinet(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPP01 1 L1</td>
<td>RPP01</td>
<td>Panel 1 1</td>
<td>Single</td>
<td>L1</td>
<td>C</td>
<td>On</td>
<td>30</td>
<td>6.59</td>
<td>13.2</td>
<td>No</td>
<td>10</td>
</tr>
<tr>
<td>RPP01 1 L2</td>
<td>RPP01</td>
<td>Panel 1 1</td>
<td>Single</td>
<td>L2</td>
<td>C</td>
<td>On</td>
<td>30</td>
<td>6.59</td>
<td>13.2</td>
<td>No</td>
<td>10</td>
</tr>
<tr>
<td>RPP01 1 L3</td>
<td>RPP01</td>
<td>Panel 1 1</td>
<td>Single</td>
<td>L3</td>
<td>C</td>
<td>On</td>
<td>30</td>
<td>6.59</td>
<td>13.2</td>
<td>No</td>
<td>10</td>
</tr>
<tr>
<td>RPP01 2 L1</td>
<td>RPP01</td>
<td>Panel 1 2</td>
<td>Single</td>
<td>L1</td>
<td>C</td>
<td>On</td>
<td>30</td>
<td>6.59</td>
<td>13.2</td>
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<td>RPP01 2 L2</td>
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</tbody>
</table>

*The RPP panel schedule report (above) shows detailed loading information for each of the RPP's breaker panels. If the load on any of the breakers exceeds the threshold set in the Power Module Control, the affected column in the table will display a yellow, orange or red warning.*

RPP Connections Shown in PDU Panel Schedule

The PDU panel schedule now shows the RPP objects connected to each breaker in the selected PDU(s), and the Cabinet(s) connected to each RPP.

Mean Values on Result Plane

In addition to minimum and maximum values, you can now view the mean value of a result plane's displayed variable.

Surface Temperature on Overlapping Solids

We've updated the Surface Temperature plots to show the contact temperature where overlapping solids intersect.
About Future Facilities

We set Future Facilities up to deliver the power of engineering simulation into the hands of an emerging data center industry. We created a tool optimized for data centers, designed to be used by the DC professional, and made it powerful, intelligent, automated and connected.

Five years later, we tuned our technology to deliver the same benefits to the thermal management of electronics and provide an integrated toolset for these two converging industries. In 2015 we were awarded Product of the Year at the Engineering Simulation Show.

Our client base has grown to include not only design consultants, but also electronics and semiconductor manufacturers, investment banking, social media, automotive, aerospace, oil & gas, and government sectors.

Our contribution extends to helping define and improve industry standards by participating in activities organized by leading institutions, professional bodies and academia.

Learn More

For more information about the 6SigmaDCX suite and our other products, contact your local Future Facilities representative or visit our site at www.futurefacilities.com.