AUTODESK UNIVERSITY

# Re-circuit the MEP Workflow

## Analytical Elements and BIM System Modeling

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Electrical Designer| www.linkedin.com/in/april-kane

# Meet the Speakers

## Nicole Boucher
Product Owner

Nicole is the Product Owner for Advanced Electrical Design for Autodesk Revit in the BIM-Electric team at Schneider Electric. She comes to this role after more than 10 years of experience working in the BIM industry, and nearly 5 years direct experience as an Electrical Designer. More recently she has achieved certification as a SAFe 5 Product Owner/Product Manager. Her role as Product Owner with SAFe-certification involves working directly with customers and development organizations to identify customer needs, writing requirements to clarify these needs, and prioritizing work in order to effectively deliver value.

Life Is On Schneider Electric

## April Kane
Electrical Designer

April is an Electrical Designer in Gresham Smith's Industrial Market. April has more than a decade of experience working in electrical design and BIM management. April is a key player in coordinating with electrical groups to improve workflow, quality and efficiencies by troubleshooting and utilizing best practices in Revit. Her impressive portfolio is highlighted by a variety of clients, including manufacturing facilities, hospital, labs and commercial projects. April specializes in Autodesk products and is passionate about leveraging new technologies to improve processes in electrical systems.

Gresham Smith

# Safe Harbor

Joint Value for Electrical Professionals

We may make statements regarding planned or future development efforts for our existing or new products and services. **These statements are not intended to be a promise or guarantee of future availability of products, services or features** but merely reflect our current plans based on factors currently knows to us. These planned and future development efforts may change without notice. **Purchasing decisions should not be made based upon reliance on these statements.**

We assume no obligation to update these forward-looking statements to reflect events that occur or circumstances that exist or change after the date on which they were made

# AGENDA

- Review Learning Objectives
- Collaboration with Gresham Smith
- Yesterday's Electrical Design Workflows
- Identify Opportunities to Improve
- Advanced Electrical Design for Autodesk Revit
- Today's Electrical Design Workflows
- Tomorrow's Electrical Design Workflows
- Summary & Conclusion

# Learning Objectives

# Learning Objectives

## Objective 1

Identify opportunities to improve the electrical design workflow

## Objective 2

Utilize Revit analytical elements to model and analyze an electrical distribution system

## Objective 3

Implement a range of calculations and analysis tools that comply with code standards for system design and equipment sizing

## Objective 4

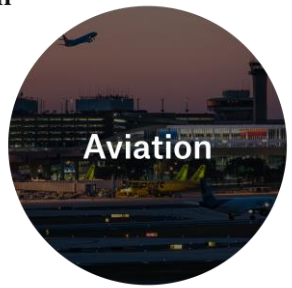
Apply the methods that one company used to evaluate and adopt a new modeling workflow that reduced time spent on data re-entry

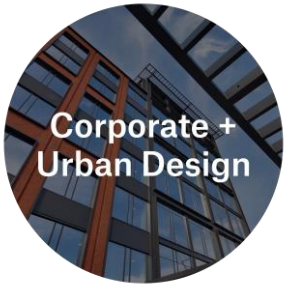
# Collaborating with Gresham Smith

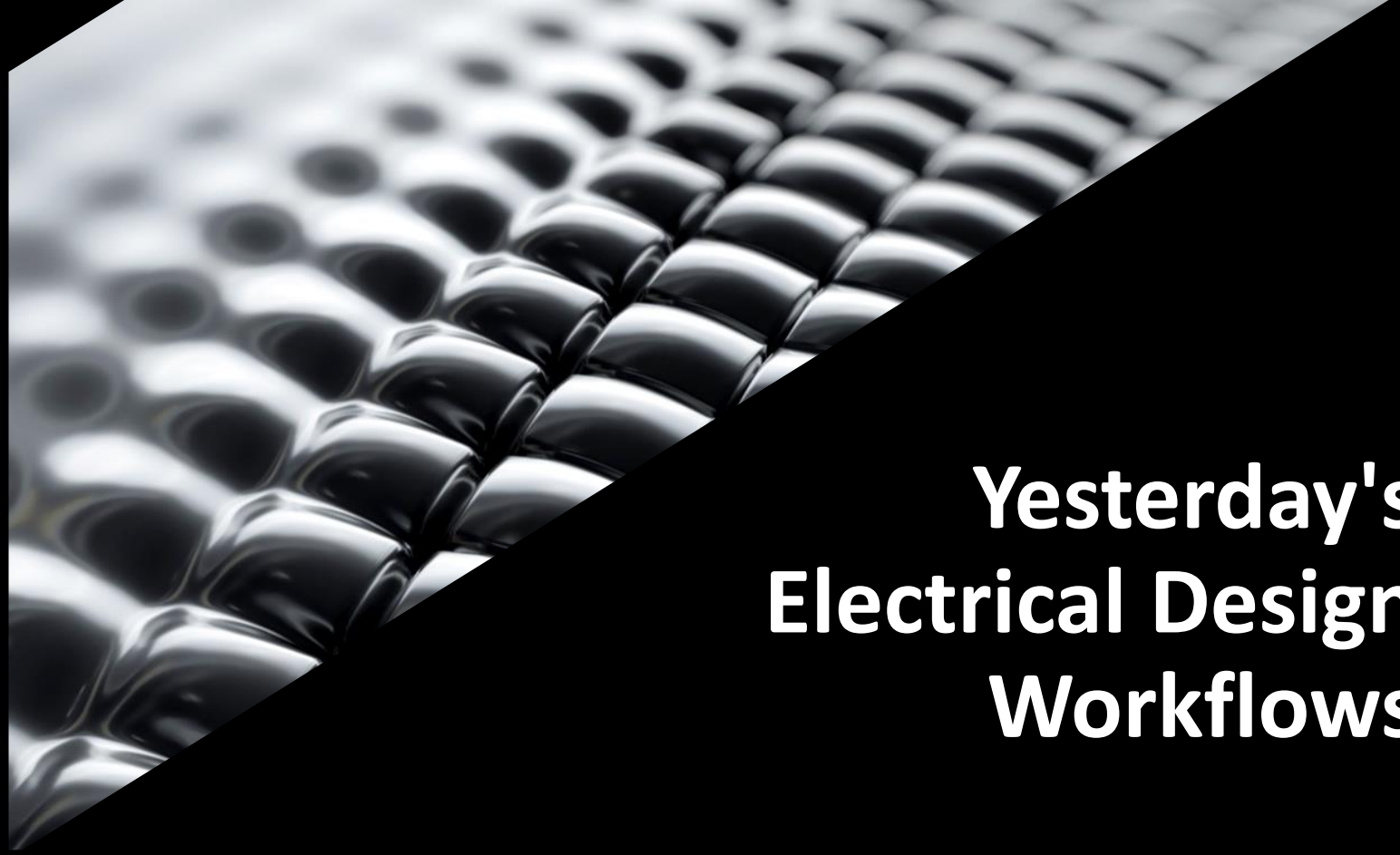
# Gresham Smith

Gresham Smith is an architecture, engineering and design practice that provides creative solutions while genuinely caring for each other, our clients and our communities.

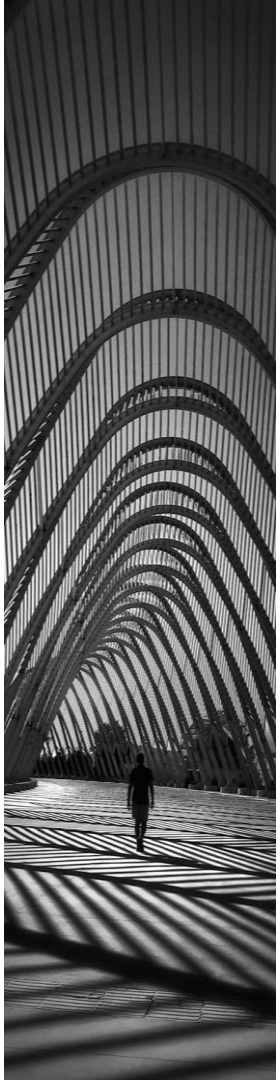
Gresham Smith





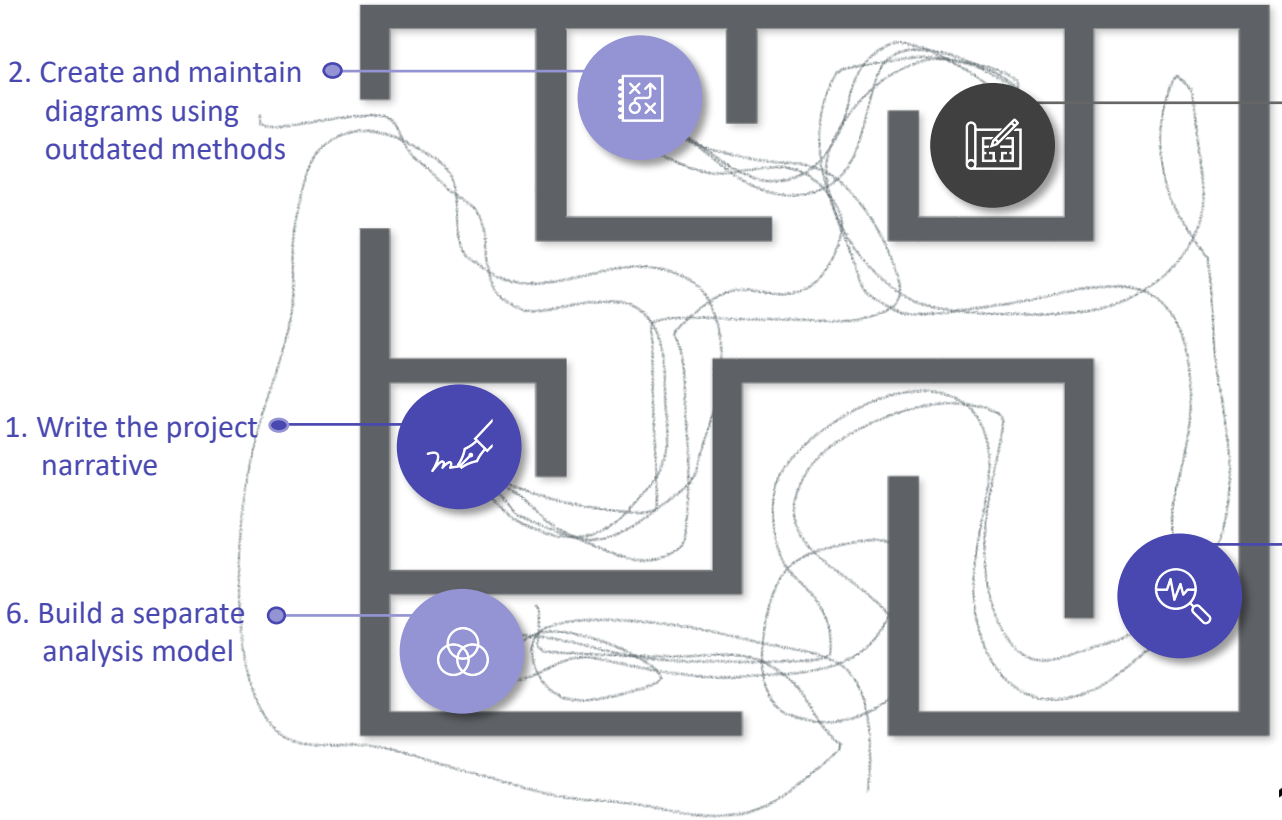


# Yesterday's Electrical Design Workflows



# Escaping yesterday's workflows

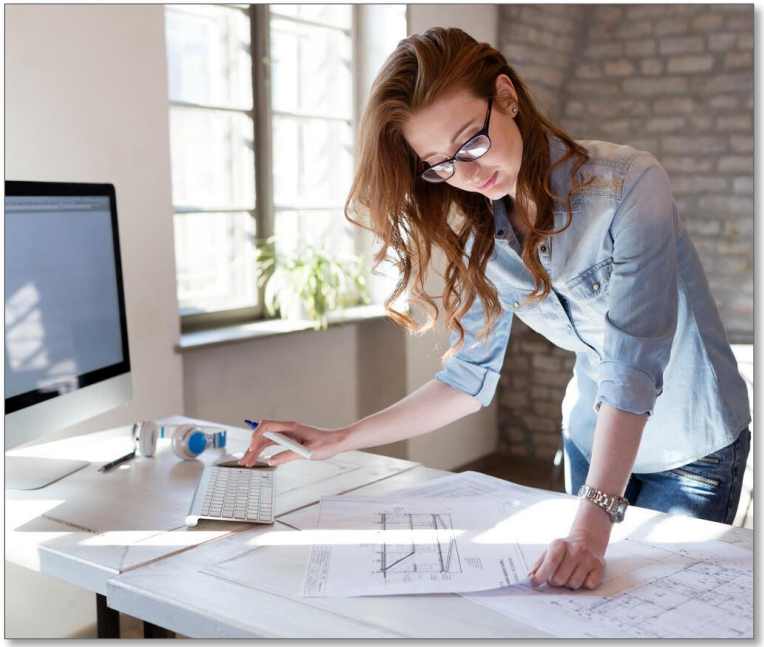
Limited abilities to conceptualize and execute the electrical system design



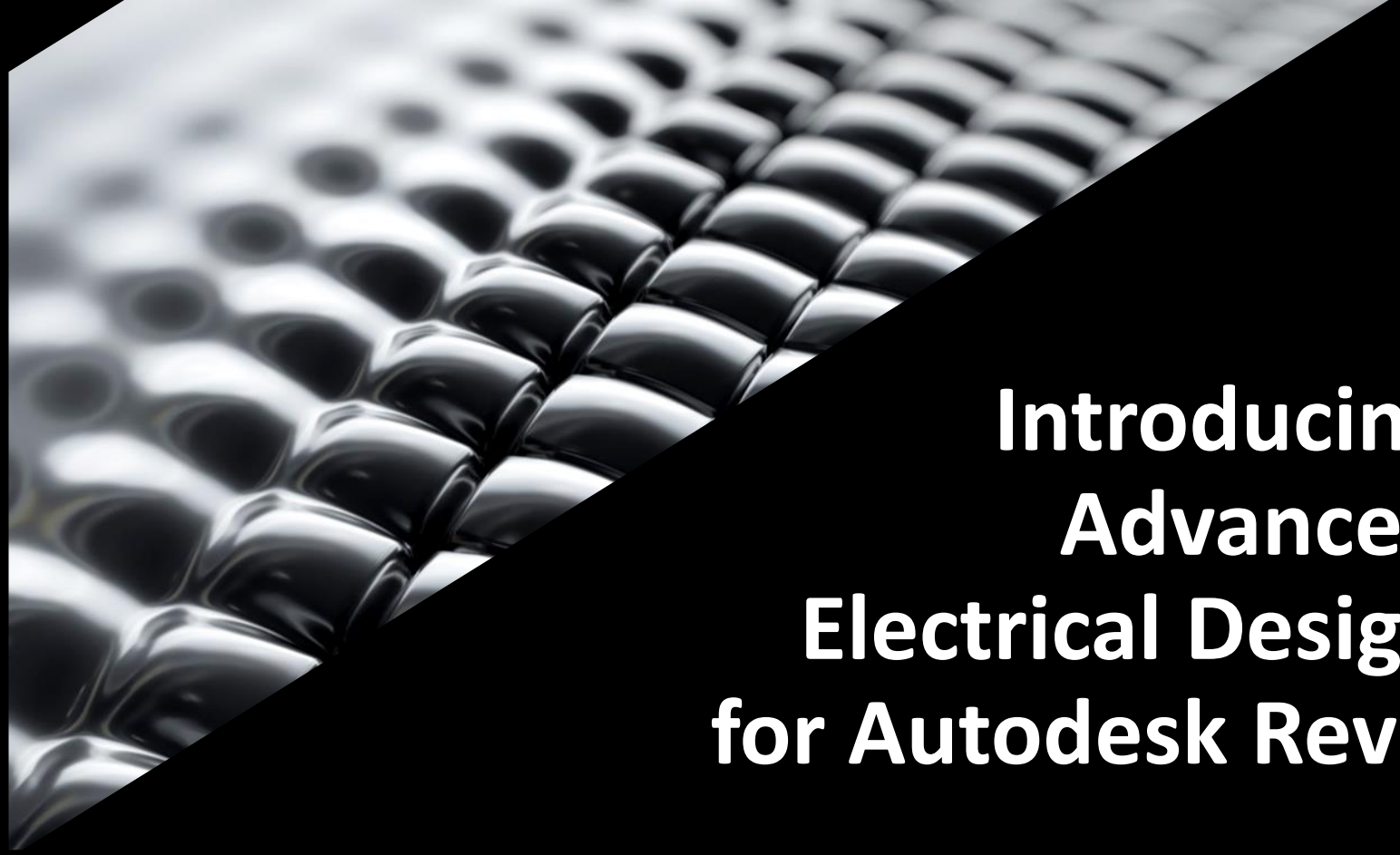
# Identify Opportunities to Improve Workflows

# Identify opportunities

What are the areas that need improvement within the electrical design workflow



- ☑ Are you re-entering data across multiple analysis applications?
- ☑ Do your electrical diagrams and 3D models live in different, disconnected platforms?
- ☑ Is it difficult for you to use and maintain calculation templates?
- ☑ Is it time consuming to track and implement NEC code provisions as they relate to calculations?



# Introducing Advanced Electrical Design for Autodesk Revit

# Alliance Partnership

Together **Autodesk and Schneider Electric** are driving long-term transformation in the construction industry, providing greater value to each user and contributing to solve the energy challenge.

## A focus on efficiency, integration, and compliance…

### THE PROBLEM

### THE SOLUTION

Electrical lags mechanical in BIM adoption due to **incomprehensive offerings, regional standardization fragmentation** and **disconnected processes**

Advanced Electrical Design is a **complete electrical design in Revit** supporting **regional codes** and **standards**

**40%** of energy use will come **from renewables by 2040**. The new energy landscape, including renewables, require new digital design tools

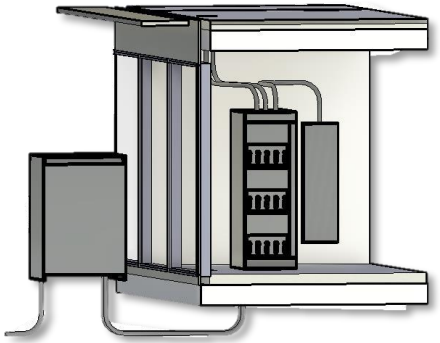
The new solution provides **conceptual and detailed design and analysis tools, generative design capabilities** and **new energy landscape solutions**

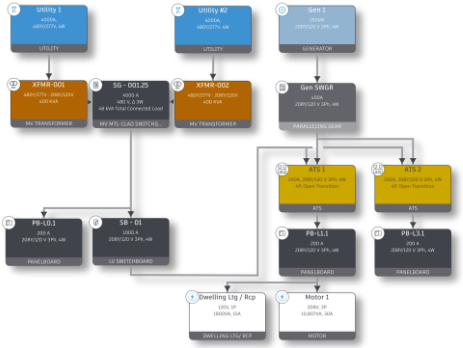
# Opportunities from Partnership

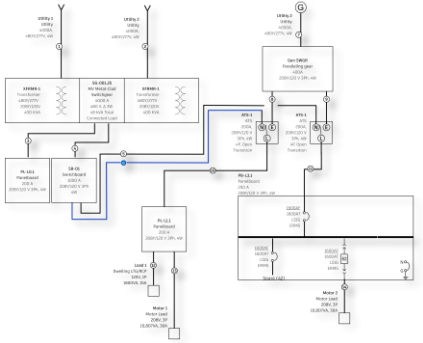
- ❑ Innovative solutions through partnership
- ❑ Developed in lock-step with Autodesk to provide an integrated, seamless experience
- ❑ A workflow defined by electrical engineers for electrical engineers

# Solutions for Electrical Professionals

Three primary areas were identified based on feedback from electrical engineers







## Completing the Workflow

- BIM-based electrical engineering
- Revit as the platform for design
- Generative design and layout *

## Providing Essential Tools

- Load analysis and load letter
- Cable sizing and scheduling
- Intelligent diagramming
- Equipment sizing and selection *
- New Energy Landscape workflow *
- Short circuit, coordination, and arc flash *

## Integrating Code Compliance

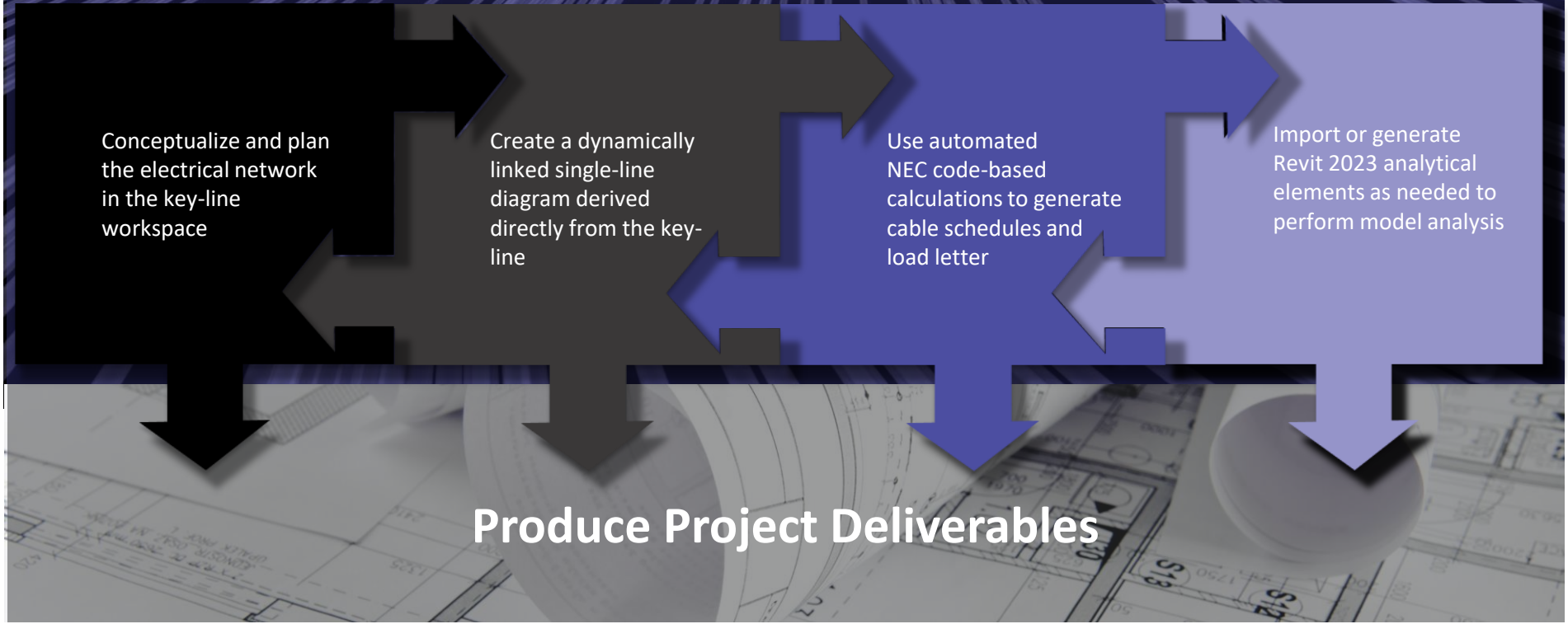
- Apply demand factors
- Automatically size cables
- Automatically size OCPD *
- View warnings and advisements *
- ….All per the selected NEC version

*** = Future functionality**

# Today's Electrical Design Workflows

# Adopting today's electrical design workflow

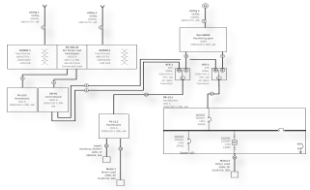
Connected workflow that supports the electrical engineer



# Analytical Power Distribution

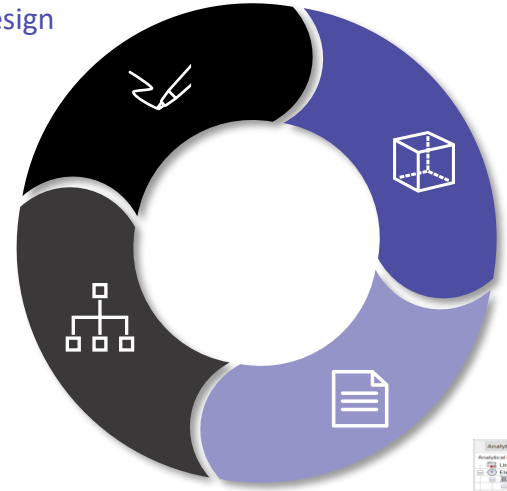
Utilize the new analytical workflow for electrical conceptual design by modeling an electrical distribution system in Revit

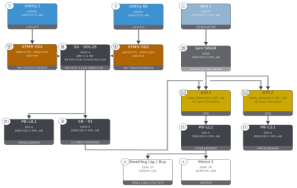
Working with analytical distribution elements within Revit is a first step to electrical system modelling



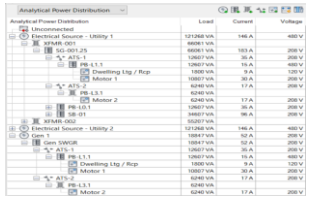
Detailed Design

System Analysis





Conceptual Design



Analytical Elements

# Performing Analysis

System design and equipment sizing with integrated code standards

**How can Advanced Electrical Design and analytical elements facilitate electrical calculations and sizing without having to leave Revit? –** Danielle the Designer

## Intelligent Diagramming

As you build the diagram and supply key parameters, real-time calculations are triggered and updated

## Code-based Calculations

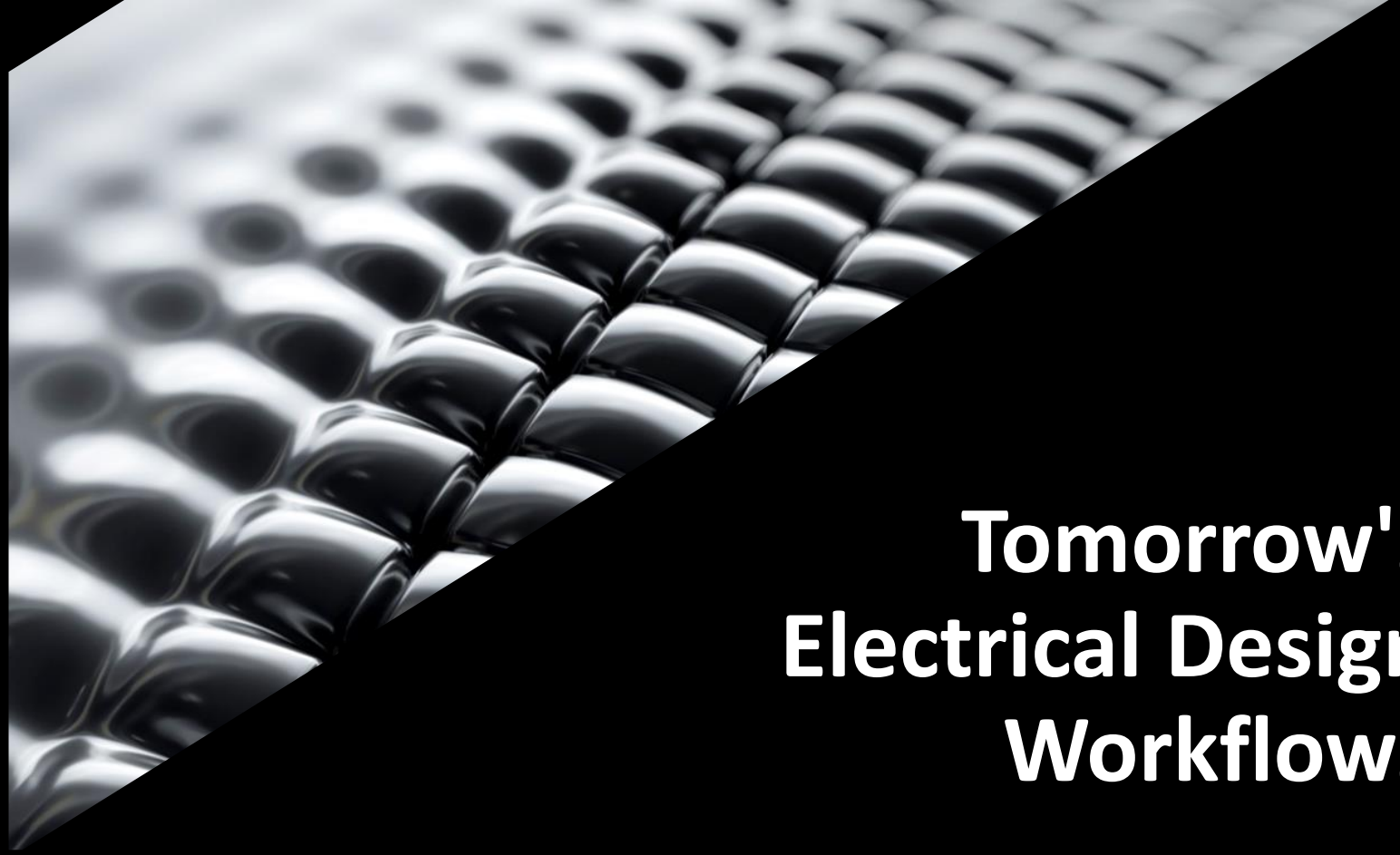
NEC code selection drives analysis, calculations, and sizing, to simplify compliance

## Customization

Define load calculation, demand factors, and override as needed

## Automated Reporting

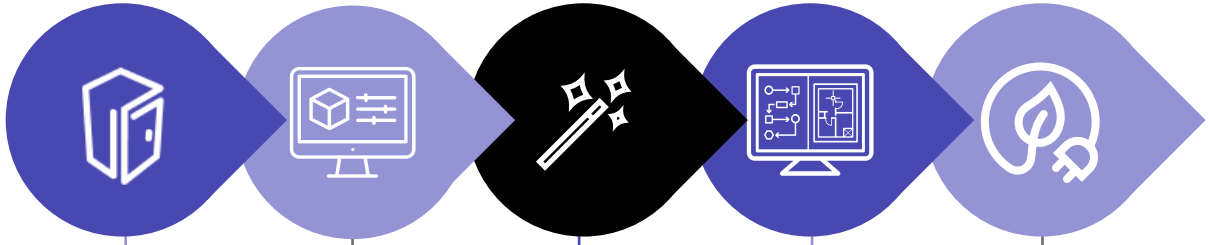
Reports and schedules include system analysis, to serve both as deliverables and means of verification



# Tomorrow's Electrical Design Workflows

# Advancing towards tomorrow’s electrical design workflow

Collaboration with electrical design professionals is driving more innovation



Tools that make equipment sizing easier

Deeper integration with current and upcoming Revit features

Generate diagram drawings derived from modeled Revit electrical distribution systems

More analysis, such as short circuit, arc flash, and coordination

Optimized design discovery for energy efficient and sustainable solutions

# Summary

# Summary

Paving the way for a **new way of accomplishing** electrical distribution design and analysis process.

### Alliance Partnership

- A well-planned extension of Revit capabilities
- Driving long-term digital transformation in the industry

### New Ways of Working

- Better collaboration and cross-platform capabilities
- Automated calculations and analysis
- Sustainable designs across the full building lifecycle

### Better Project Execution

- Win more business and shorten project timelines
- Reduce risk and errors
- Design and cost optimization
- Integrated code-based calculations

# Learn more about Advanced Electrical Design™ for Autodesk® Revit® by visiting AU2022 Exhibit Hall booth CON150

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