

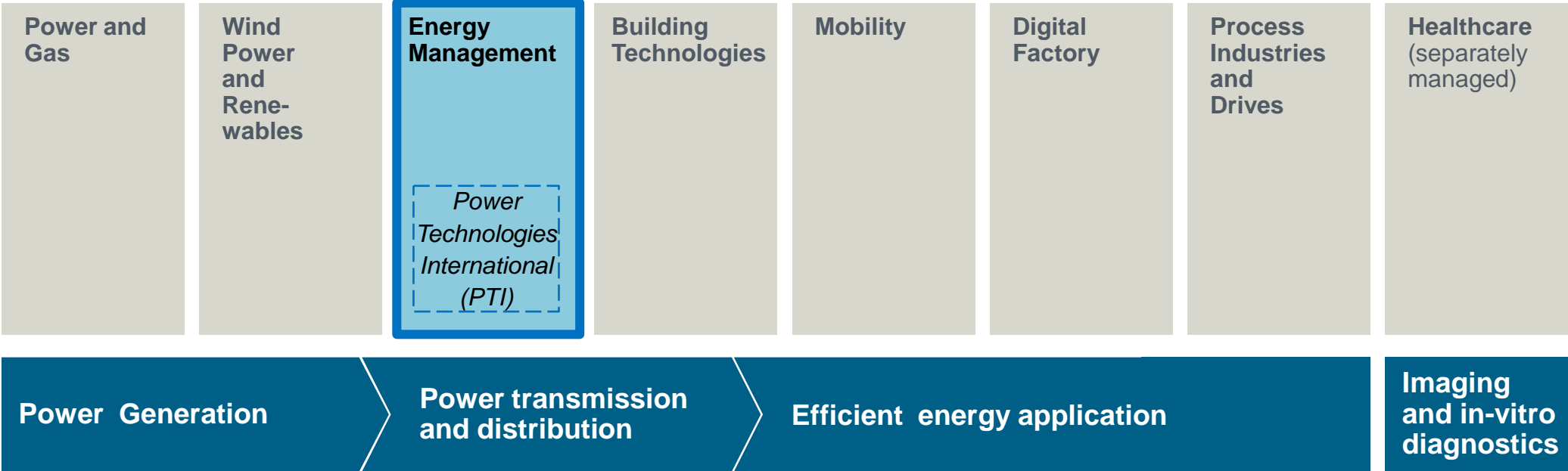
# PSS® Portfolio

High-performance Power System Simulation and Modeling Software

# Siemens: Focus on Electrification, Automation & Digitalization



Divisions



Core strategy

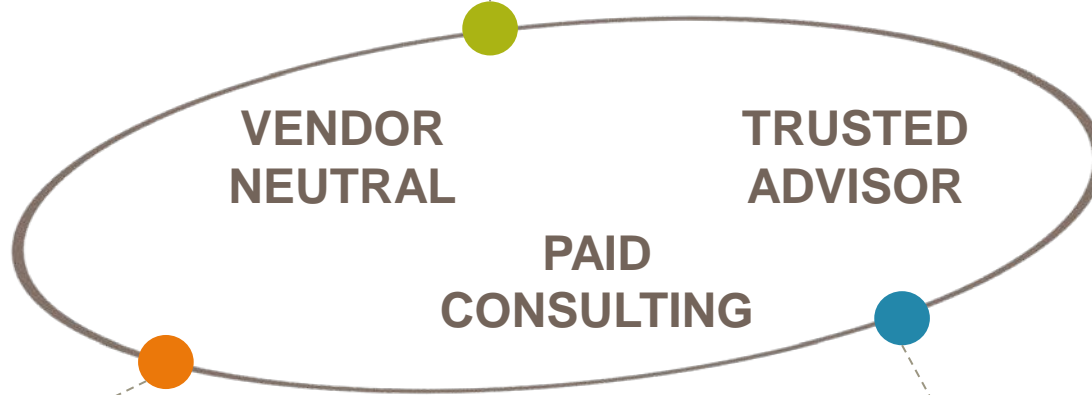


# Siemens Power Technologies International - Overview



## Power System Consulting

Grid design, planning, optimization and operational support



## Energy Business Advisory

Energy infrastructure strategy and process consulting

## Simulation Software

Best-in class tools for grid planning and simulation

### Key Facts:

- founded in 1956
- 30+ offices
- ~400 employees
- ~250 consultants
- 2,000+ customers
- 1,000+ projects p.a.
- across all verticals

# Siemens Power Technologies International – Global Reach



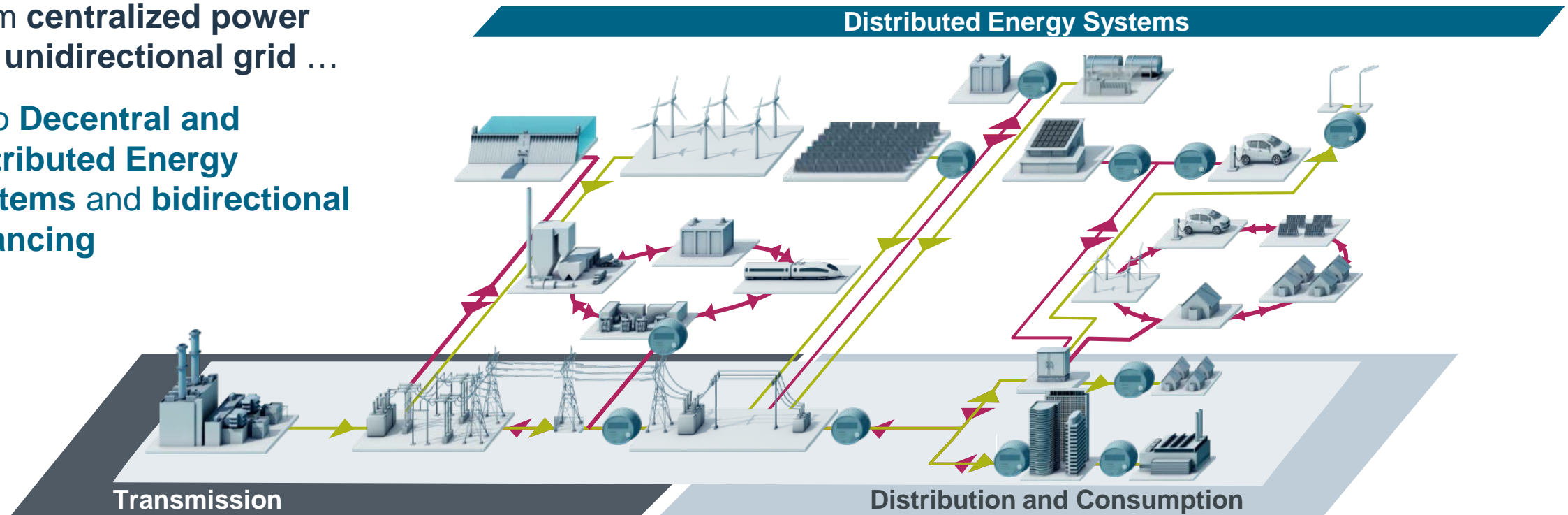
World-wide presence with offices  
in over 200 countries/regions



# The Energy Revolution: Big Picture

From **centralized power**  
and **unidirectional grid** ...

... to **Decentral and  
Distributed Energy  
Systems** and **bidirectional  
balancing**



**1** Changing  
generation mix

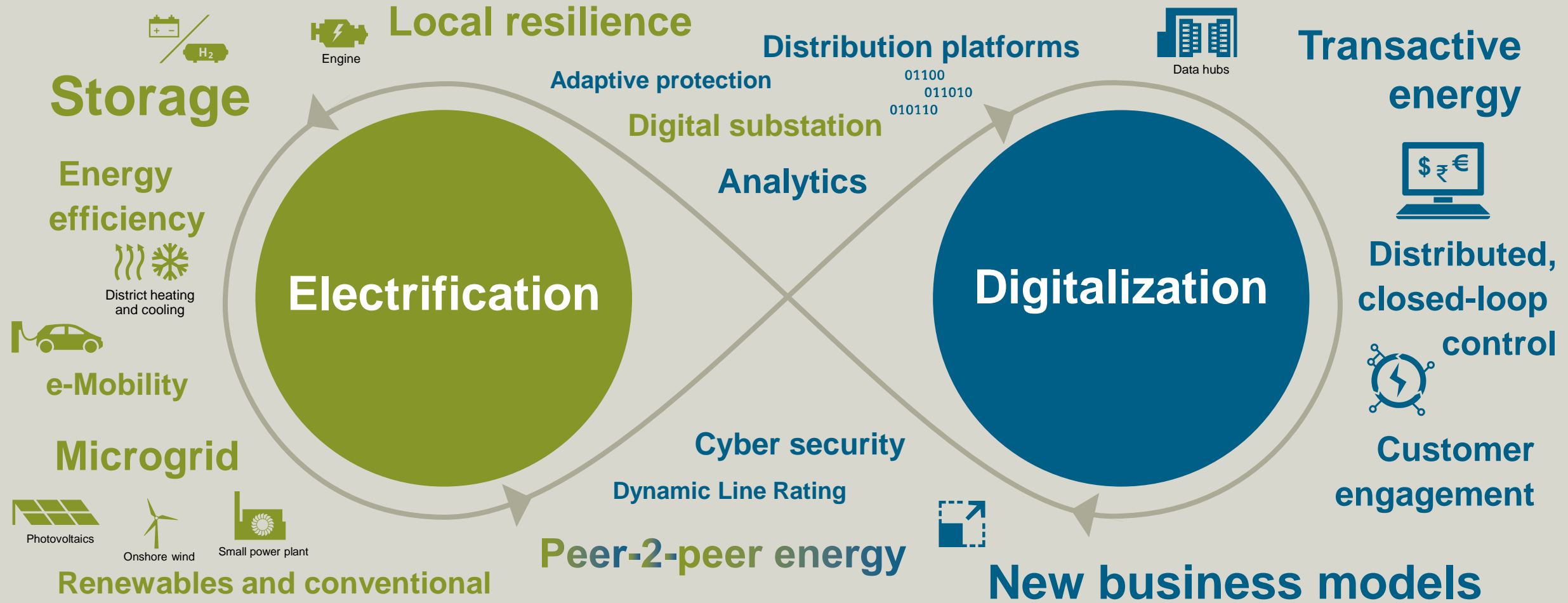
**2** Generation  
capacity  
additions

**3** Distance from  
source to load

**4** Decentralization  
(public/private)

**5** Refurbishment/  
upgrades

# Two major trends are driving the energy transformation

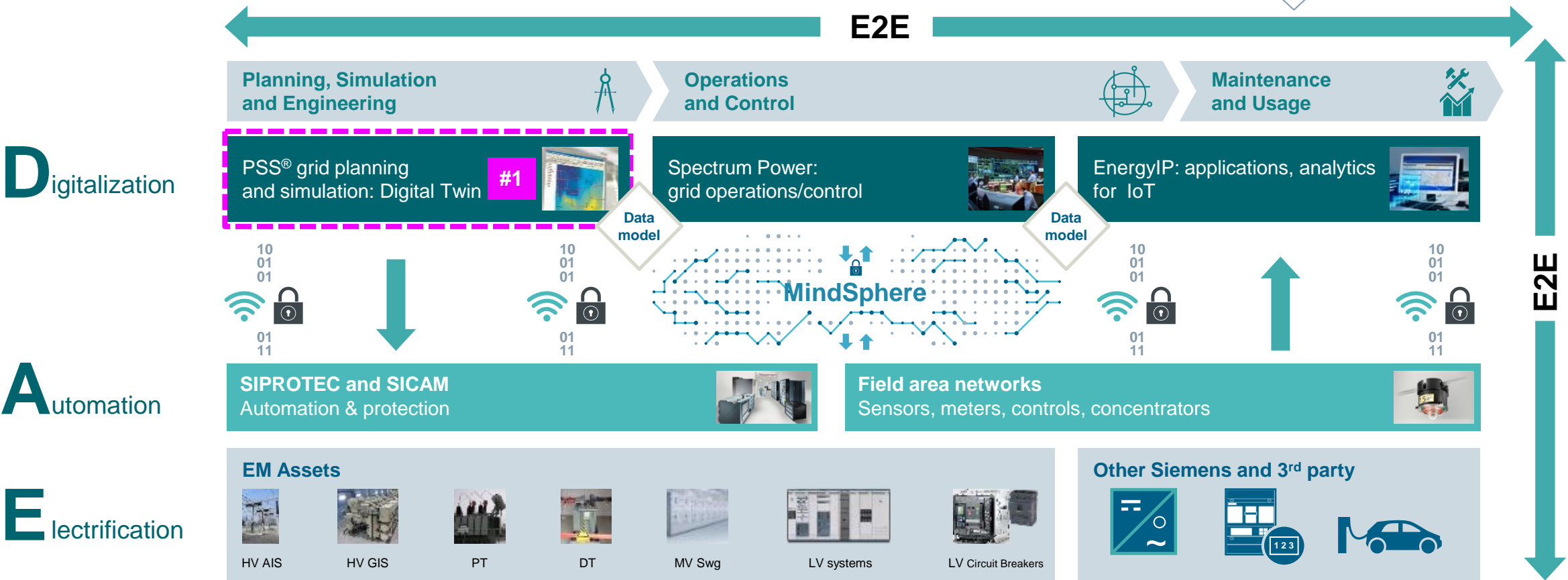


# Siemens Digital Grid – End-to-end architecture for a digital energy system



Customer Value

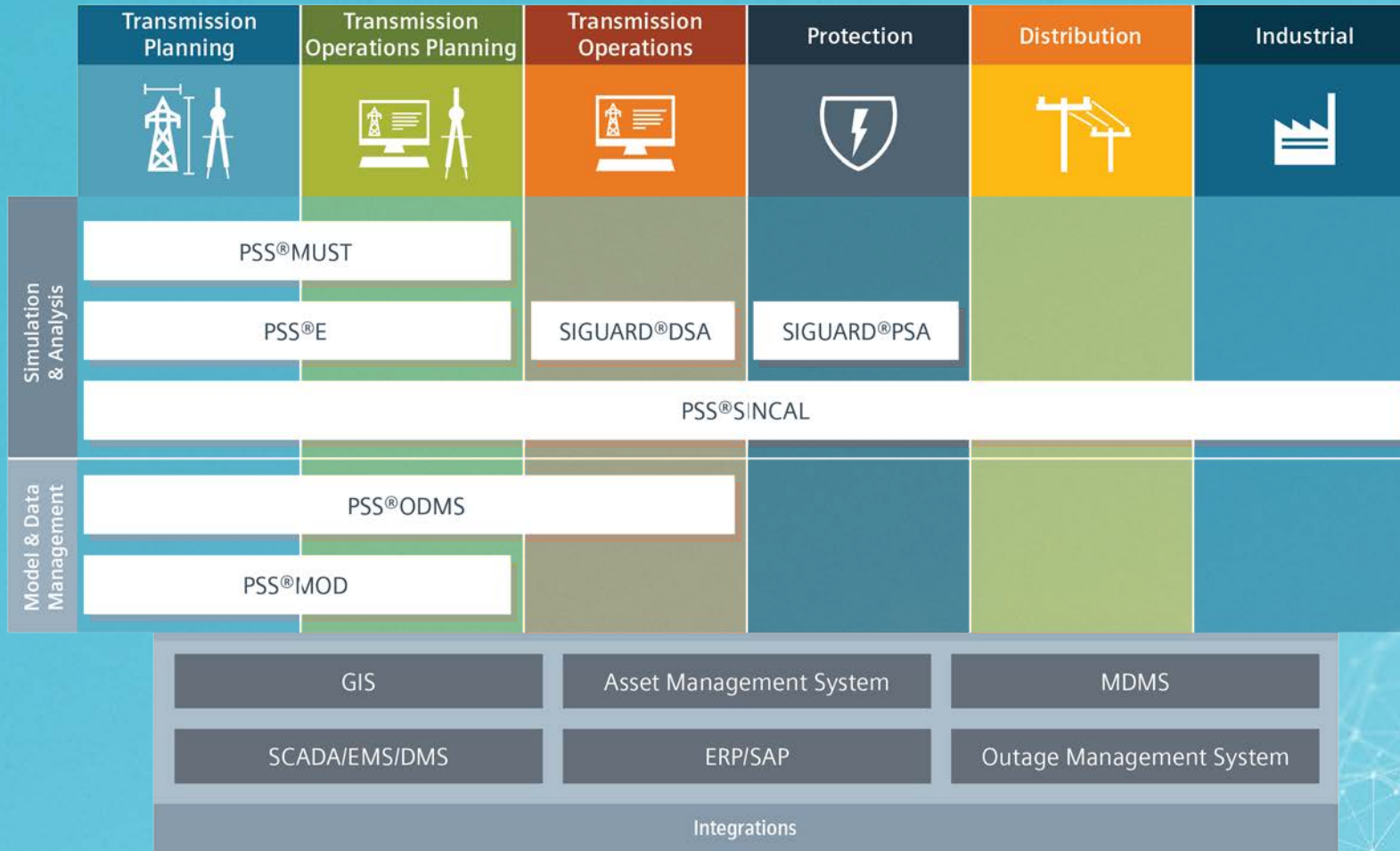
“Manage complexity of decentralized world, productivity through automation and SW, enable new business models and end customer solutions”





**Click image to view PSS® Portfolio overview video (04:23)**

# Siemens PTI PSS® Portfolio



## PSS® Portfolio

- Software for power system
  - ✓ Simulation & analysis
  - ✓ Digital model & data management
- Spanning all types of networks
  - ✓ Transmission
  - ✓ Distribution
  - ✓ Generation & renewables
  - ✓ Industrial
  - ✓ Rail
- Leading (>40%) global market share
- #1 in the world: PSS®E
- Trusted partner since 1960's

**70% of the world's electricity  
consumption flows through infrastructure  
planned or analyzed by the PSS®  
Portfolio**

**Network Planning &  
Operations**

*Global  
Leader*

Situational  
Awareness

**Dominant**

**#1**

**Trusted**

Grid Data Management

*Gold Standard*

**Advanced**

Operations  
Planning

Digital  
Twin

**Protection**

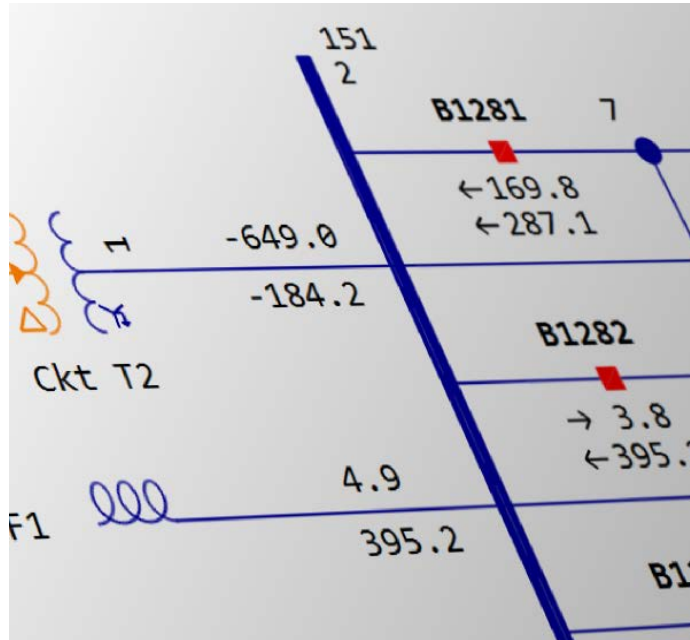
**Power Grid  
Simulation**





# PSS® Portfolio for Transmission Planning

**SIEMENS**  
*Ingenuity for life*



**"PSS® software helps engineers design & maintain the backbone of the entire energy grid"**

## Use cases:

- Power system simulation & analysis
- Infrastructure expansion planning
- Generation interconnection studies
- Integrated T&D planning

## Benefits to the customer:

- Cost-effective long-term network planning
- Trusted results from "gold standard" tool for utilities
- Supports regulatory compliance
- Consistent generation interconnection evaluation

## Relevant Products:



PSS®E



PSS®SINCAL



PSS®MUST

## Typical customers:

- TSOs – Transmission Planning
- IPPs – Planning Engineers
- Consultants
- Universities / Researchers



# PSS® Portfolio for Transmission Operations Planning



PSS®ODMS Automated Case Creation v2.2.8

**General**

PSS®ODMS directory: D:\programs\PTI Software\ODMS

Database: SQL Server Server: \sql2014 Model: Nordic44\_CGM\_07

GeographicalRegion: NO (export the associated ModelingAuthoritySet only)

Initial base model export: ☒ EQ ☐ SSH ☐ TP ☐ SV

Start time: ☒ 4/ 8/2015 23:00 201504082330Z\_1D\_NO UTC offset: 0

End time: ☒ 4/ 9/2015 23:00 201504092330Z\_1D\_NO

Increment: 1 hour Cases to build: 25

Time horizon: 1D Model part: NO Version: 001

Subprocess: None

☒ Use case build options from settings file

☒ Reuse initial base case

☒ Enable Contingency Analysis

☒ Enable post-processing

☒ Enable multiprocessing Process limit: 8

Logging level: 2 - Verbose ☒ Create XML log ☐ Information-level exceptions

☐ Create input summary log

Upon completion, display: ☐ Message box ☒ Output directory ☐ Process run log

Current settings

Save Reload Import... Export... ☐ Auto-save settings on Finish

< Back Next > Cancel

**“The PSS® Portfolio helps engineers plan for next-day operations”**

## Use cases:

- Automatic case creation for operations planning studies
- Simulation & analysis for next-day studies
- For Europe: ENTSO-E CGMES regulation compliance

## Relevant Products:



PSS®E



PSS®SINCAL



PSS®MUST



PSS®ODMS

## Benefits to the customer:

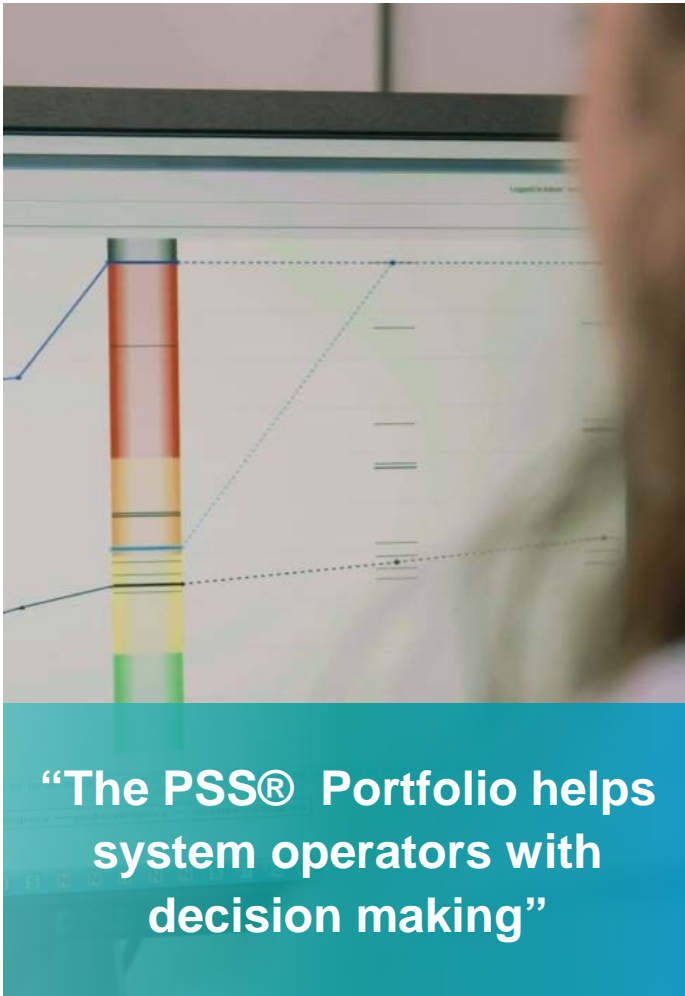
- Reduce time required to build forecast cases & perform studies
- Improved accuracy in case creation
- Easy to integrate data from other systems (outage schedules, load profiles, dispatch, topology, etc.)
- Regulatory support (e.g. CGMES (EU), NERC-TOP-002 (NA))

## Typical customers:

- TSOs – Transmission Operations Planning Department



# PSS® Portfolio for Transmission Operations



**“The PSS® Portfolio helps system operators with decision making”**

## Use cases:

- Situational awareness in the control room
- Stability cockpit

## Relevant Products:



PSS®SINCAL



SIGUARD®DSA



PSS®ODMS

## Benefits to the customer:

- Predict problems and determine best course of action in real-time
- Increase situational awareness at a fraction of the cost & complexity of a full EMS
- Works alongside existing SCADA (vendor-neutral)
- Lightweight & easy to deploy

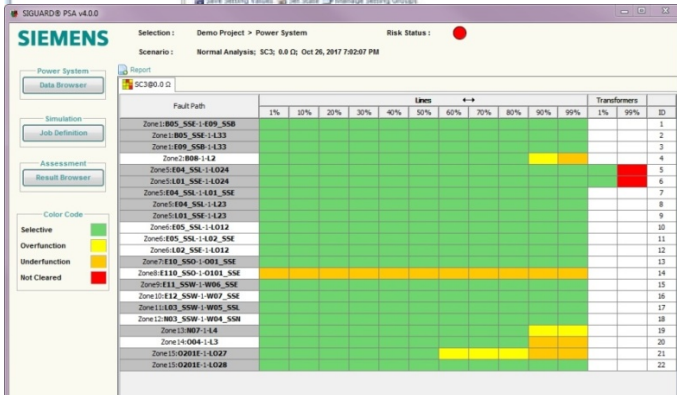
## Typical customers:

- TSO – Transmission Operations Department



# PSS® Portfolio for Protection

**SIEMENS**  
*Ingenuity for life*



**“All the functions needed  
to manage and assess  
protection systems are at  
your fingertips”**

## Use cases:

- Power system protection analysis / audits
- Protection setting calculation
- Protection setting database & data exchange

## Benefits to the customer:

- Reveal weak spots and hidden errors of protection system
- Time savings through automatic simulation and assessment
- Prevent blackouts
- Establish a process for continuous protection system improvement

## Relevant Products:



PSS®SINCAL



SIGUARD®PSA

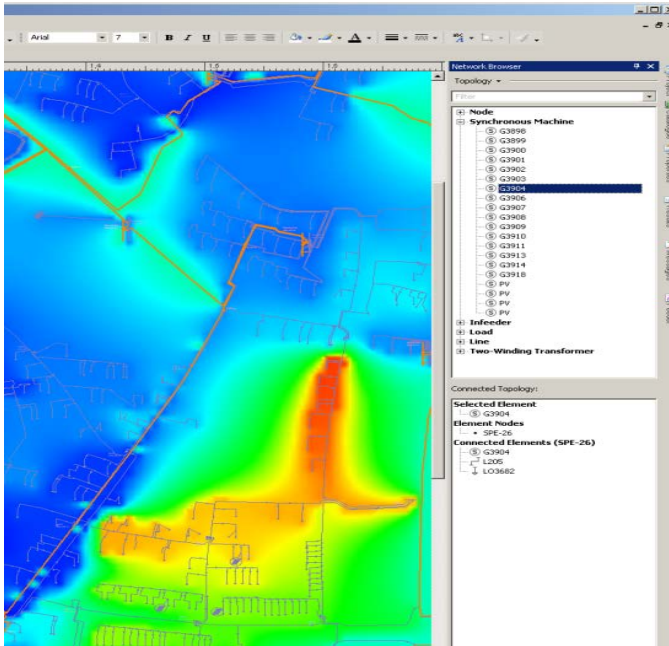
## Typical customers:

- TSOs – Protection Department
- DSOs
- Consultants



## PSS® Portfolio for Distribution

**SIEMENS**  
*Ingenuity for life*



**“Siemens software helps engineers design, maintain, and operate power distribution networks”**

### Use cases:

- Distribution network planning
- Integrated T&D planning
- Renewable interconnection studies

### Relevant Products:



PSS®SINCAL

### Benefits to the customer:

- Design grids that accommodate renewable & distributed energy resources in an economical way, without sacrificing reliability
- Maximize utilization of existing infrastructure
- High visibility, efficiency, and agility in distribution planning & operation

### Typical customers:

- DSOs – medium and large size
- Consultants
- Universities / Researchers



## PSS® Portfolio for Industrial

**SIEMENS**  
*Ingenuity for life*



**“By simulating industrial power networks, we help achieve a safe working environment, avoid process interruption, and downtime”**

### Use cases:

- Planning, design, and operation of industrial power networks

### Relevant Products:



PSS®SINCAL

### Benefits to the customer:

- Plan & operate reliable networks for power-intensive industries
- Achieve safe working environment
- Avoid process interruption & downtime

### Typical customers:

- Industrial facility operators & designers
- Refineries, chemical plants, oil platforms, mining, manufacturing, etc.



# PSS® Portfolio for Digital Twins: Modeling & Data Management

**SIEMENS**  
*Ingenuity for life*



“With real and virtual worlds tightly aligned, utilities get a single source of truth for managing, validating, and exchanging network models across their entire IT landscape”

## Use cases:

- Management of the data/models that are used as input for studies across the utility IT landscape (e.g. for planning, operation, protection, etc.)
- Central “single source of truth” database for utility grid models
- Exchange network model data within own company & across other utilities

## Relevant Products:



PSS@MOD



PSS@ODMS

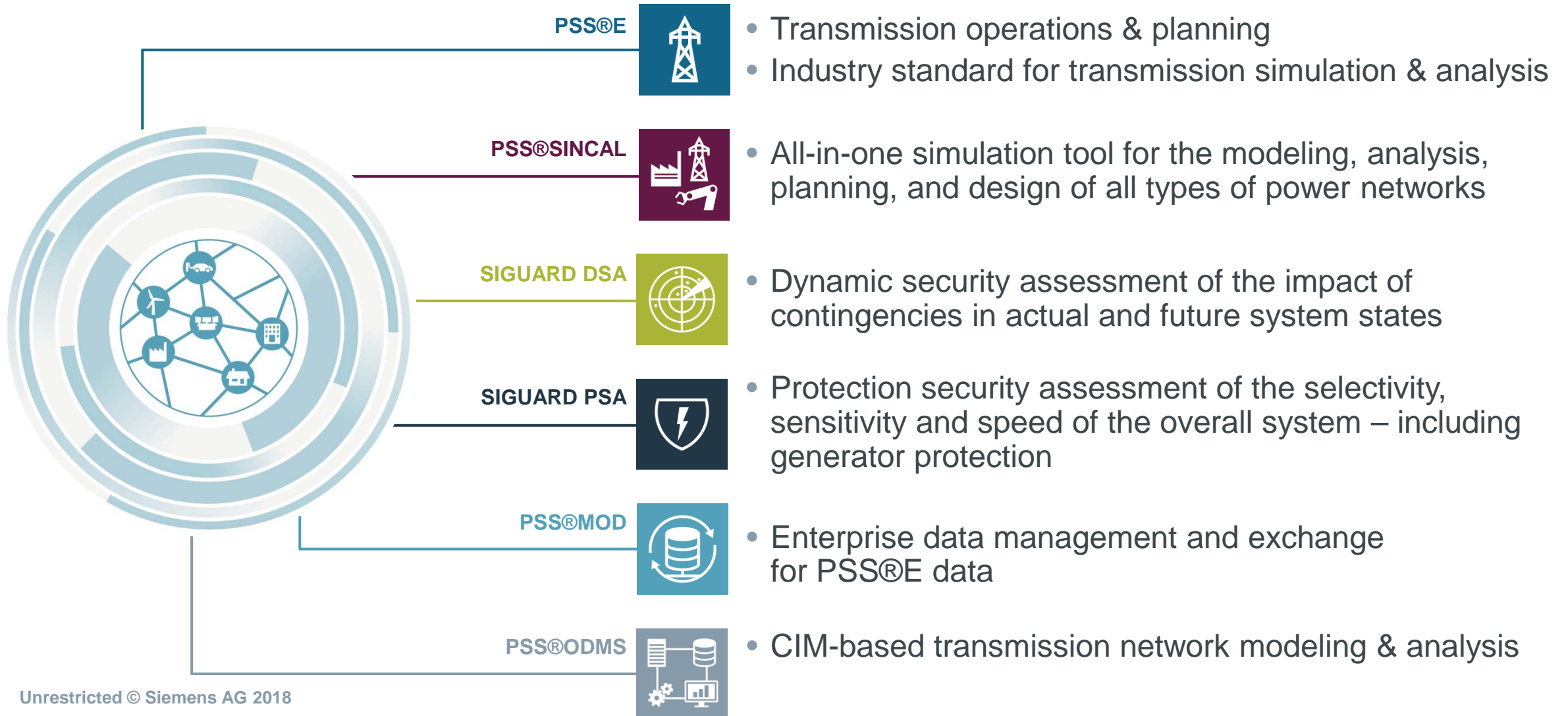
## Benefits to the customer:

- Improved business process efficiency (data maintenance, automation, labor)
- IT integration cost reduction
- Eliminate duplicate modeling effort
- Improve model accuracy / reduce modeling errors

## Typical customers:

- TSO/RTO\*/ISO\* – Network Modeling, Planning, Operations, IT

# The PSS® Portfolio – More than the sum of its parts



# Resources

- Email [pti-software-sales.ptd@siemens.com](mailto:pti-software-sales.ptd@siemens.com)
- YouTube [siemens.com/pss-videos](https://www.siemens.com/pss-videos)
- Website [siemens.com/pss-portfolio](https://www.siemens.com/pss-portfolio)
- Store [siemens.com/pss-store](https://www.siemens.com/pss-store)
- License Activation [siemens.com/pss-licenses](https://www.siemens.com/pss-licenses)
- LinkedIn [linkedin.com/groups/8513462](https://www.linkedin.com/groups/8513462)
- Ideas Portal [siemens.com/pss-ideas](https://www.siemens.com/pss-ideas)
- Sales & Marketing Portal [siemens.com/pss-library](https://www.siemens.com/pss-library)