

## CST MWS &amp; CST PCBS를 이용한 SI/PI/EMI/EMC/ESD 해석실습

일시 : 2019년 1월 17일(목) ~ 18일(금) | 장소 : 경기도 분당 'CST 한국지사'

## 교육 프로그램

시간	교육내용
제 1 일 (2019 년 1 월 17 일, 목요일) – CST 한국지사 Application Engineer	
09:30~10:30	<ul style="list-style-type: none"> <li>□ Introduction of CST products and Applications</li> </ul>
10:30~12:00	<ul style="list-style-type: none"> <li>□ Handling of CST PCB STUDIO® GUI</li> <li>□ Fast and Efficient Verifying the Layout Design for PCB Structure Using CST BOARDCHECK™               <ul style="list-style-type: none"> <li>- Automatic Report and Display of Certain Violation</li> </ul> </li> <li>• General Workflow               <ul style="list-style-type: none"> <li>- Importing Various PCB Layout Format</li> <li>- Define Stack-up, Net-Class (Single, Differential, Power, GND), Component (RLC and IBIS)</li> </ul> </li> <li>• SI Rule Check - Net Integrity, Via Integrity, Power Integrity</li> <li>• EMC Rule Check - Signal Reference, Wiring/Crosstalk Decoupling and Stitching Capacitor Placement</li> </ul>
12:00~13:00	<ul style="list-style-type: none"> <li>□ Lunch</li> </ul>
13:00~14:30	<ul style="list-style-type: none"> <li>□ Fast 2D Signal Integrity Analysis Using SI-TD and SI-FD Solver of CST PCB STUDIO®               <ul style="list-style-type: none"> <li>- Single-Ended, Differential Pair, SPICE Model and Net List Extraction</li> </ul> </li> <li>• SI-FD Analysis - S-Parameter, Cross-Talk</li> <li>• SI-TD Analysis - Transient/Timing Analysis, Signal Delay, EYE Diagram, Cross-Talk</li> </ul>
14:30~16:00	<ul style="list-style-type: none"> <li>□ Fast 2D Power Integrity Analysis using IR-drop and PI solver of CST PCB STUDIO®               <ul style="list-style-type: none"> <li>- Power Delivery Network (PDN) Extraction, DC Power Integrity, AC Power Integrity, Transient Power Integrity, Decoupling Capacitor Placement and Property</li> </ul> </li> <li>• IR-Drop Analysis - Voltage Drop at Specific Pin, Spatial Current Density and Voltage Drop Plot</li> <li>• HF PI Solver - Impedance Profile for Target Impedance Analysis, Spatial Impedance Plot</li> </ul>
16:00~17:00	<ul style="list-style-type: none"> <li>□ Decoupling Capacitor Analysis               <ul style="list-style-type: none"> <li>- Decoupling Capacitor Optimization using De-cap Tool</li> </ul> </li> <li>□ Full 3D EMC/EMI Analysis using Transient Solver of CST MICROWAVE STUDIO®               <ul style="list-style-type: none"> <li>- Convert 2D PCB Layout to 3D Structure for EMI/C Analysis</li> <li>- Evaluation of EMI/EMC for Common Mode Noise from Differential Signaling</li> <li>- Common Mode Noise Filtering Using CM Filter</li> <li>- 3D Field Distribution (Electric and Magnetic Field)</li> <li>- Calculation of EMC Value at 3m and 10m</li> </ul> </li> </ul>

CST joins SIMULIA

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시간	교육내용
제 2 일 (2019 년 1 월 18 일, 금요일) - CST 한국지사 Application Engineer	
09:30~10:30	□ <b>PCB Import to 3D Model from 2D Data</b> - EDA Import : Stack Up, Component and Parts Import, Customize Selection, Automatic Port Definition or Manual Ports Definition in 2D Layout Viewer, Automatic Mesh Settings for Hexahedral Mesh
10:30~12:00	□ <b>Full 3D EMC Analysis</b> <ul style="list-style-type: none"> <li>• <b>Modeling, Simulation Setting</b></li> <li>• <b>Result Overview</b> <ul style="list-style-type: none"> <li>- EMC Norm, Probe Results (E-Field, H-Field, RCS)</li> </ul> </li> </ul>
12:00~13:00	□ <b>Lunch</b>
13:00~14:00	□ <b>Radiated Emission Simulation in CST DESIGN STUDIO™</b> <ul style="list-style-type: none"> <li>• <b>Modeling</b> <ul style="list-style-type: none"> <li>- Block Overview, Data Import(Touchstone, Spice, IBIS, etc.), Task Setting (S-Parameter, Transient, AC, Combine Results, Spectrum Line, Mixer, Amplifier)</li> </ul> </li> <li>• <b>Result Overview</b> <ul style="list-style-type: none"> <li>- Port Signal, S-Parameter, Voltage and Current in Time and Frequency Domain, Field Results</li> </ul> </li> <li>• <b>Post Processing</b> <ul style="list-style-type: none"> <li>- Radiated Spectrum</li> </ul> </li> </ul>
14:00~15:30	□ <b>Full 3D ESD Analysis with 3D ESD Gun Model &amp; 3D PCB Data</b> <ul style="list-style-type: none"> <li>• <b>Modeling, Simulation Setting</b> <ul style="list-style-type: none"> <li>- Import the ESD Gun Model</li> <li>- Ideal Current and Voltage Source</li> </ul> </li> <li>• <b>IEC 61000-4-2 Standard ESD Gun Model Simulation with Metallic Wall</b></li> <li>• <b>Result Overview</b> <ul style="list-style-type: none"> <li>- Surface Current, E/H-Field Result</li> </ul> </li> </ul>
15:30~17:00	□ <b>Shielding Effectiveness Simulation</b> <ul style="list-style-type: none"> <li>• <b>Panel Shielding Effectiveness</b> <ul style="list-style-type: none"> <li>- Define Slot, Vent, Wire</li> <li>- TLM Solver Setting</li> <li>- Calculation of Shielding Effectiveness Using SAM (System Assembly and Modeling)</li> </ul> </li> <li>• <b>Full 3D Shielding Effectiveness</b> <ul style="list-style-type: none"> <li>- Calculation of Shielding Effectiveness (Inside Stimulate, Outside Stimulate)</li> </ul> </li> </ul>

상기일정은 변경될 수 있습니다

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