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um 2023

Digital Thread: Leveraging the power of API to connect your internal processes to VOLTA digital engineering platform

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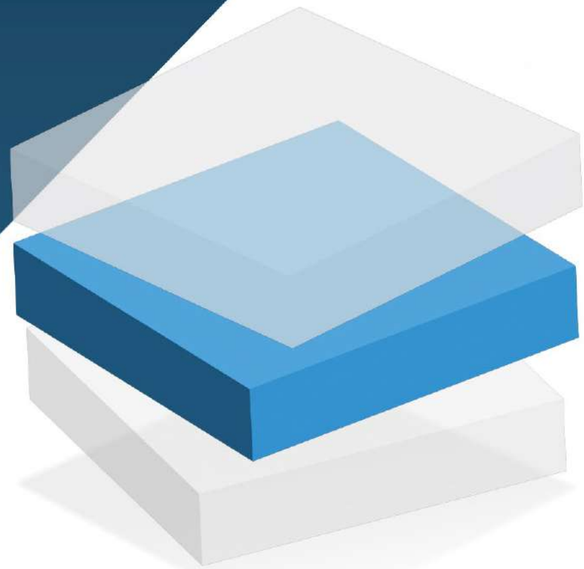
The Digital Thread
risks and opportunities

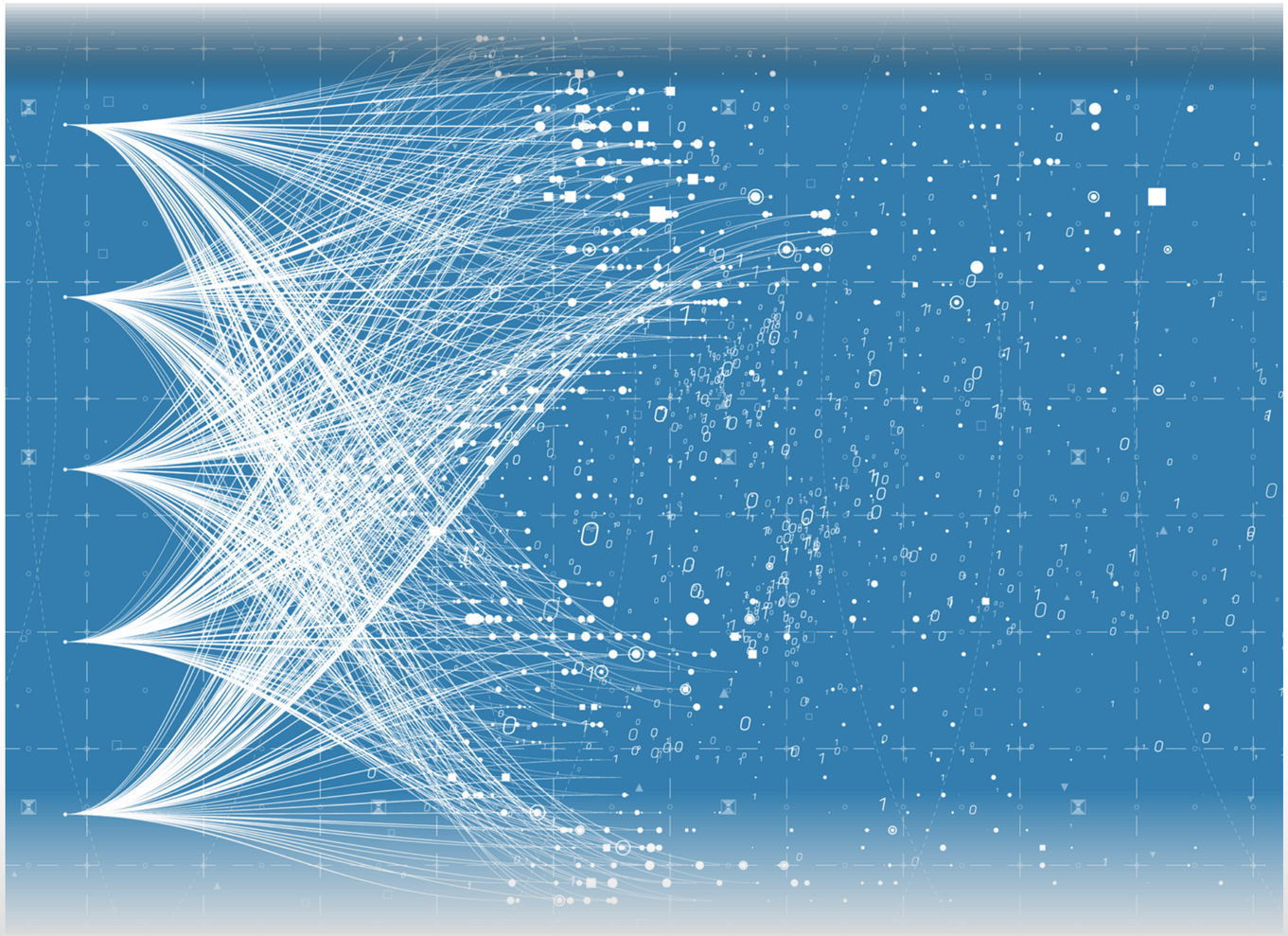
VOLTA Open Architecture
What's an API

Runbox
How to leverage APIs

Use Case
Cummins Emissions Solutions



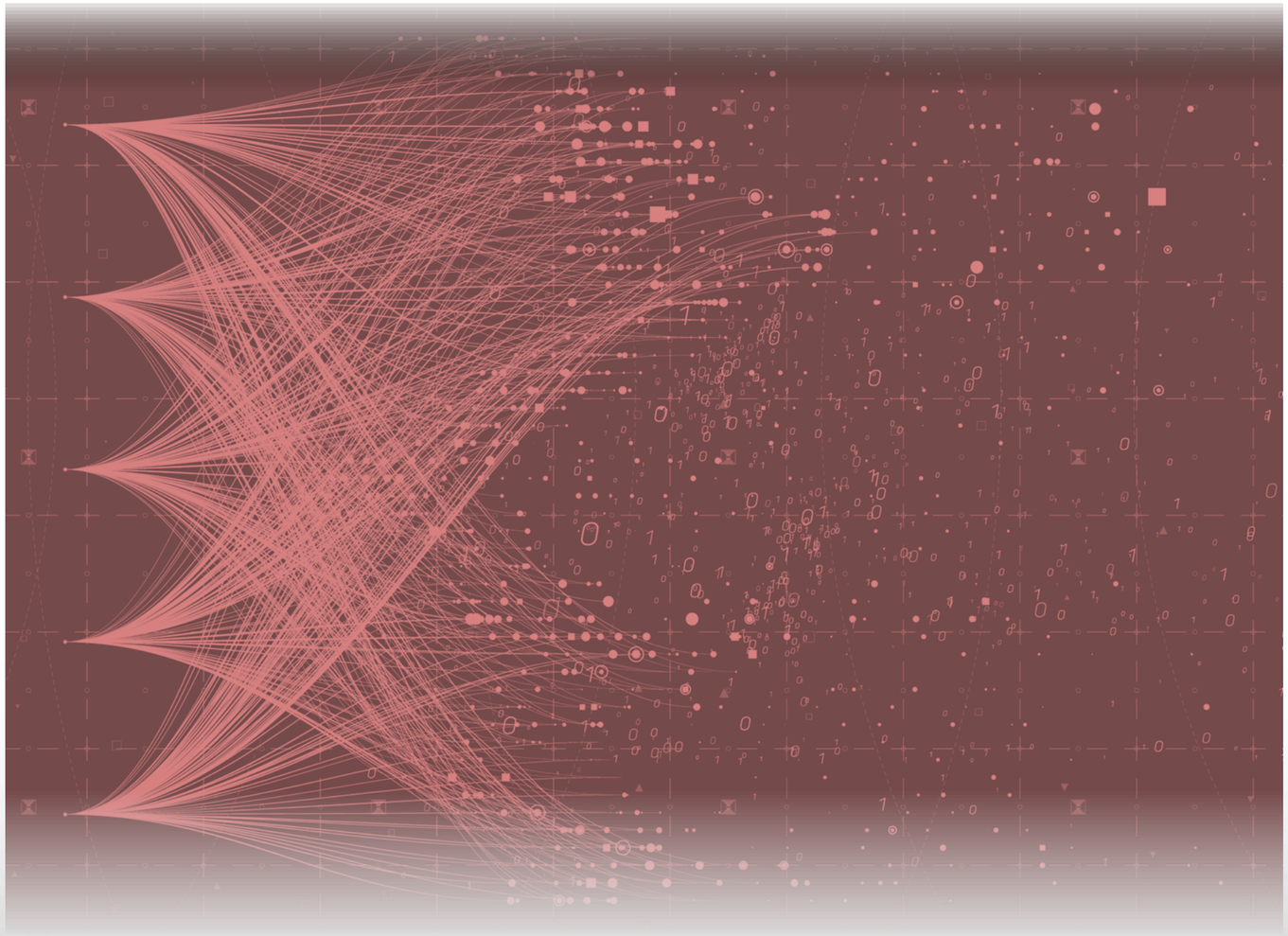
Digital Thread



"A linked set of digital artifacts whose consistency is actively managed over the life cycle of a product, process, or system"

- Data Integration
- Traceability
- Process Automation

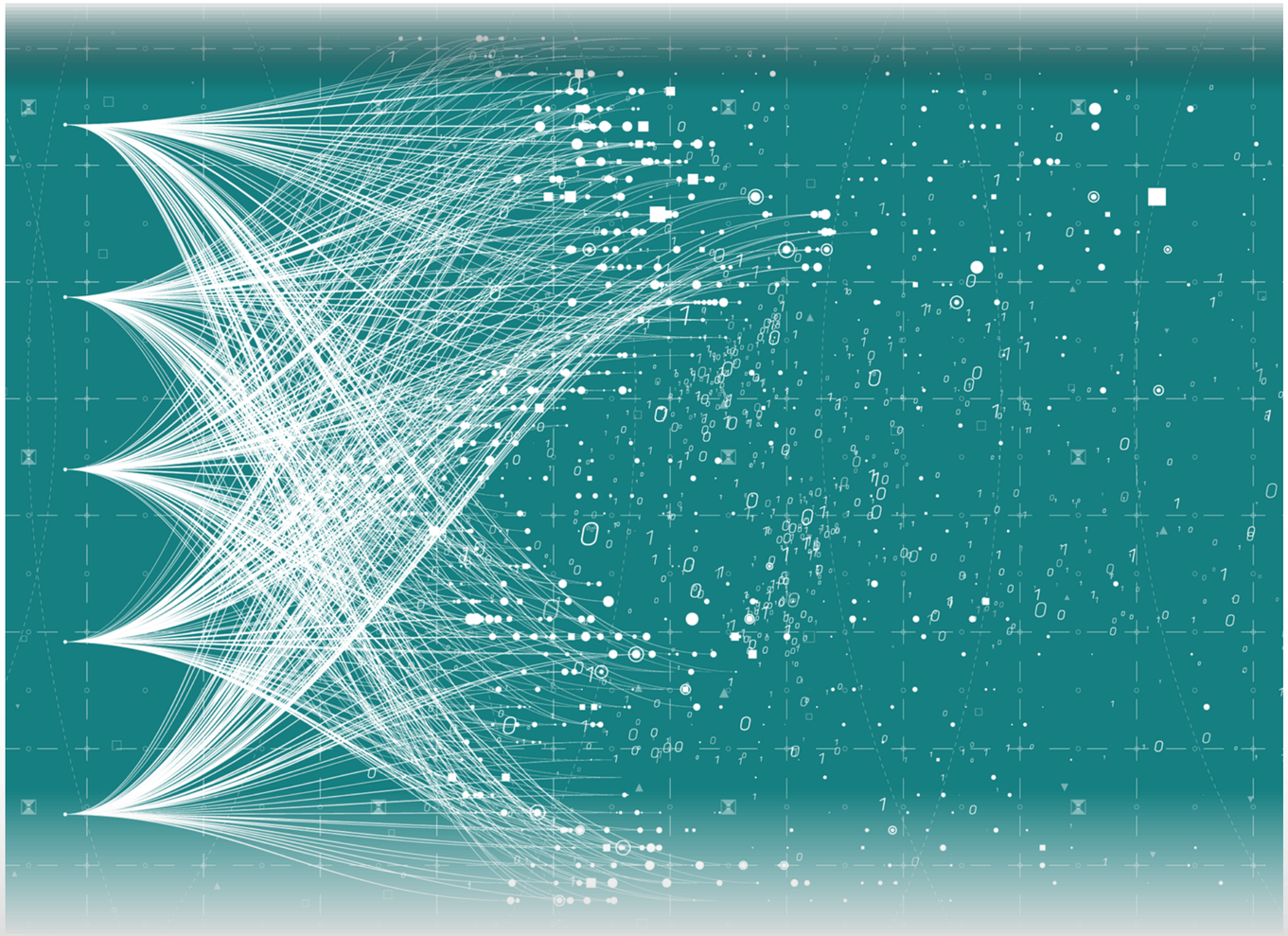
Digital Threat



- Leveraging collective knowledge
- Information reuse
- Management, not just information
- ~~Change Management~~

"We've Always Done It This Way"

Digital Thread - opportunities



- Data-Driven Decision-Making
- Digital Continuity
- Consistency Management

What's an API

~~A definition~~ An example

What happens when you book a flight?





Skyscanner

Google Flights

KAYAK

API
API
API
API
API
API
API

BRITISH AIRWAYS
KLM
Emirates
AIRFRANCE
AIR CANADA
DELTA
American Airlines
Lufthansa
QANTAS

Open Architecture

- Since 2018

VOLTA API endpoints

Digital Continuity

VOLTA API endpoints

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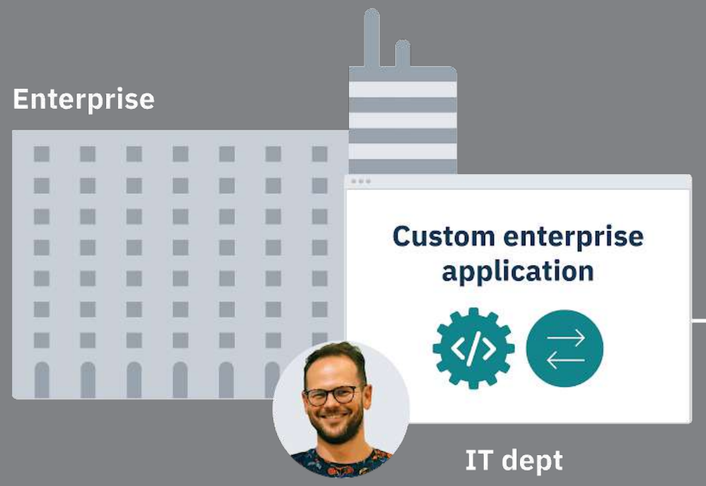
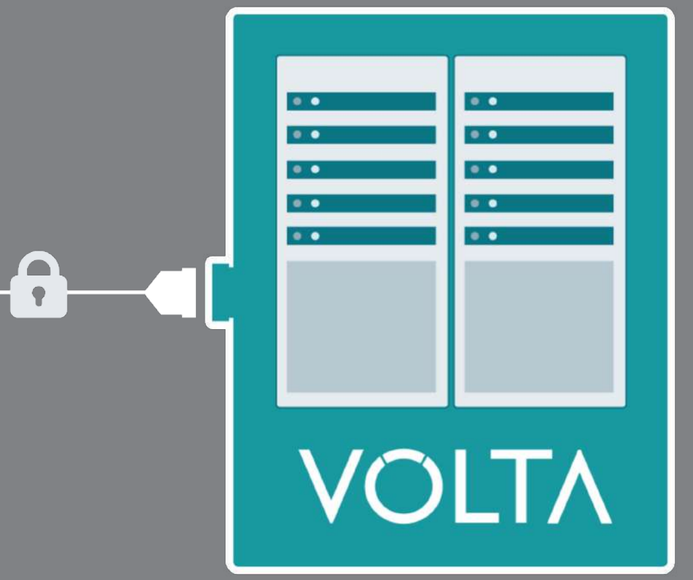


VOLTA API Documentation

API Reference

1. Assign Metadata Options
2. Assign Tags
3. Create Binary
4. Create File
5. Create File Version
6. Create Folder
7. Create Project Plan
8. Create Release
9. Delete Item
10. Download File Version
11. Download Folder
12. Download Item
13. Download Release
14. Download Session
15. Edit Project Plan
16. Get Access Token
17. Get Folder Items
18. Get Groups
19. Get Item
20. Get Item Link
21. Get Item Path
22. Get Item Versions
23. Get Metadata
24. Get My Files Items
26. Get Project Models
27. Get Project Plan
28. Get Project Plans
29. Get Project Sessions
30. Get Queues
31. Get Release Names
32. Get Session Plan Configuration
33. Get Shared Items
34. Get Team Items
35. Get Teams
36. Get User Profile
37. Get Users
38. Move Item
39. Rename Item
40. Run Model as DOE
41. Run Model as Optimization
42. Run Model as Single Design
43. Run Model Version as DOE
44. Run Model Version as Optimization
45. Run Model Version as Single Design
46. Search
47. Share Item
48. Stop Session
49. Trash Item



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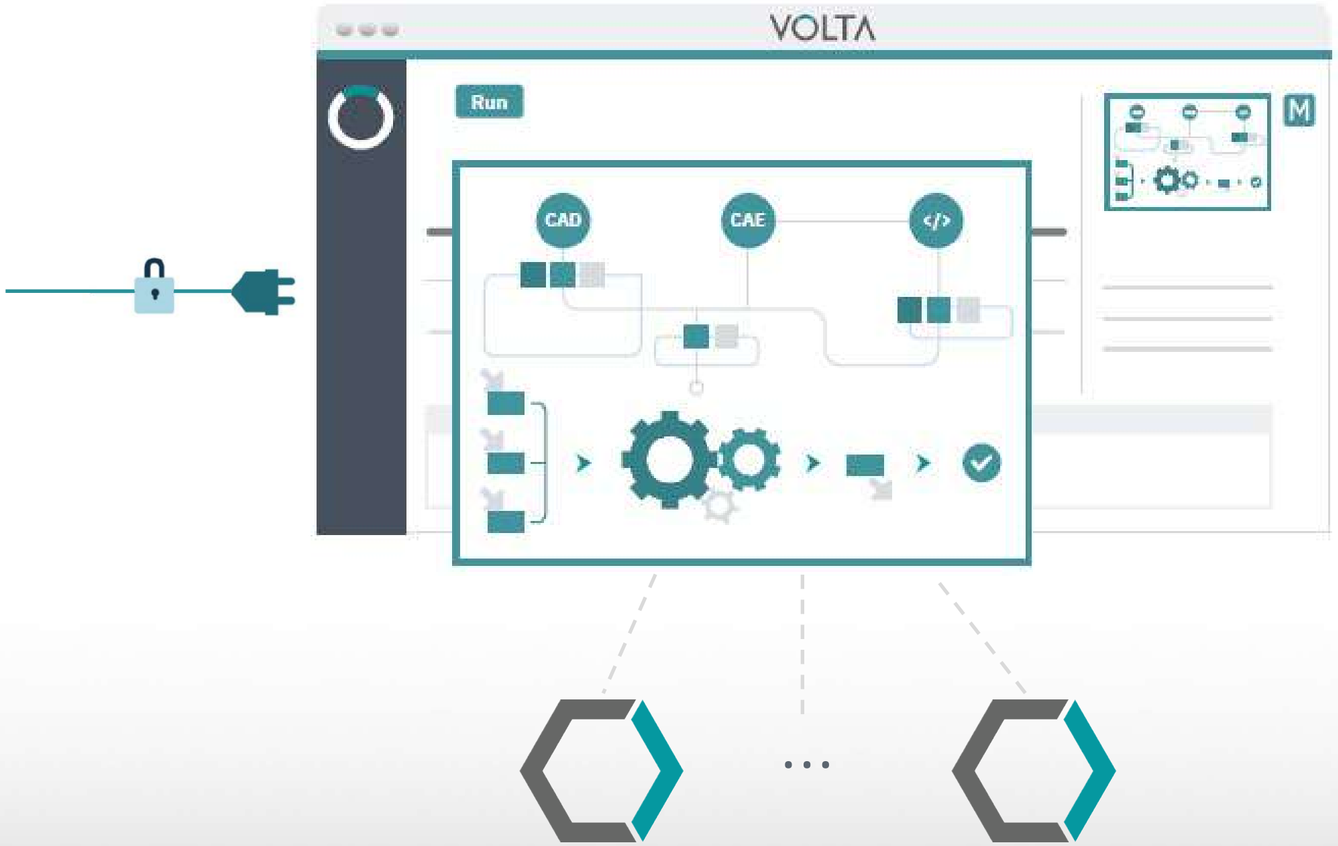
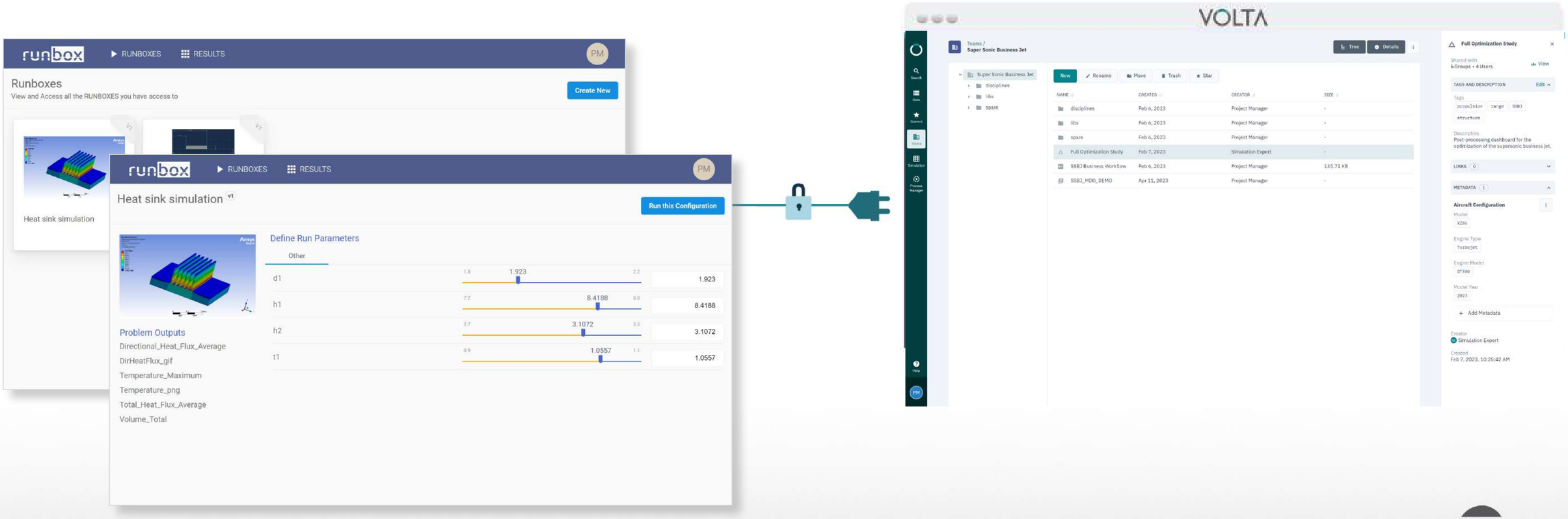
runbox

How to leverage VOLTA API

Runbox - The Architecture



Runbox - An alternative frontend



Use case:

Democratization of Simulation-Based
Swirl Atomizer Development Processes

Cummins UL2.2 SCR-Dosing System

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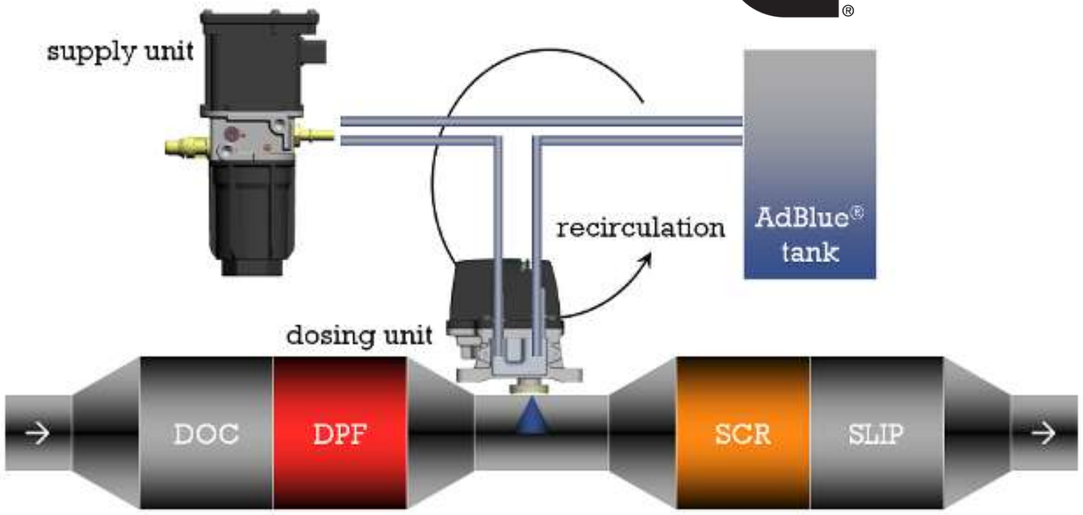
Basic Principle

Cummins Emission Solutions



DEF: Diesel Exhaust Fluid
DOC: Diesel Oxidation Catalyst
DPF: Diesel Particle Filter

SCR: Selective Catalytic Reduction
SLIP: Ammonia Slip

Dosing Unit

- Mounts to the Decomposition Reactor
- Cooled by urea recirculation (no additional coolant); heated by electricity
- Contains pressure-swirl atomizer
- Enhanced freeze-resistant components
- Contains injector, temperature and pressure sensors

Supply Unit

- Mounts to the chassis
- Heated by engine coolant
- Enhanced freeze-resistant components
- Contains optional integrated dosing controls to monitor injector, temperature and pressure sensors

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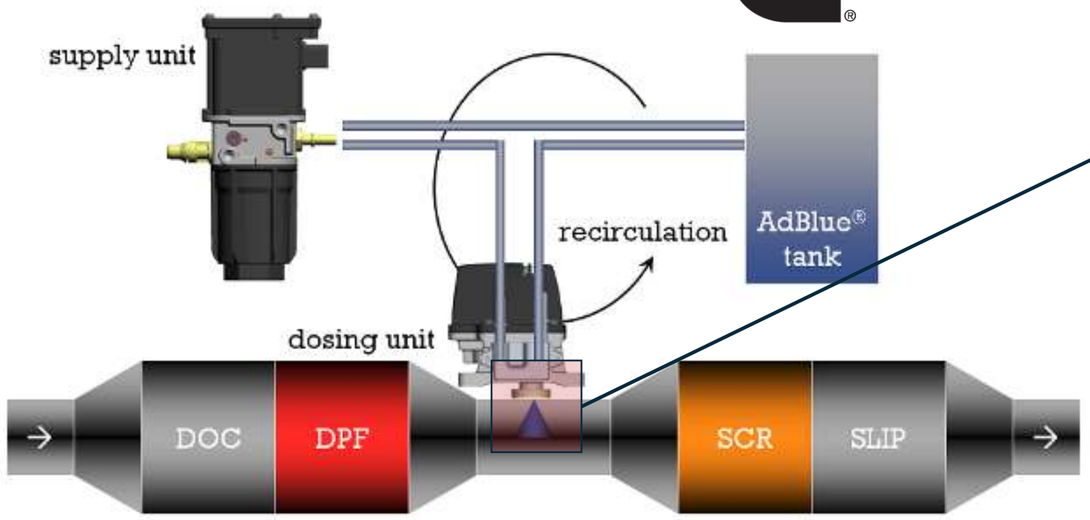

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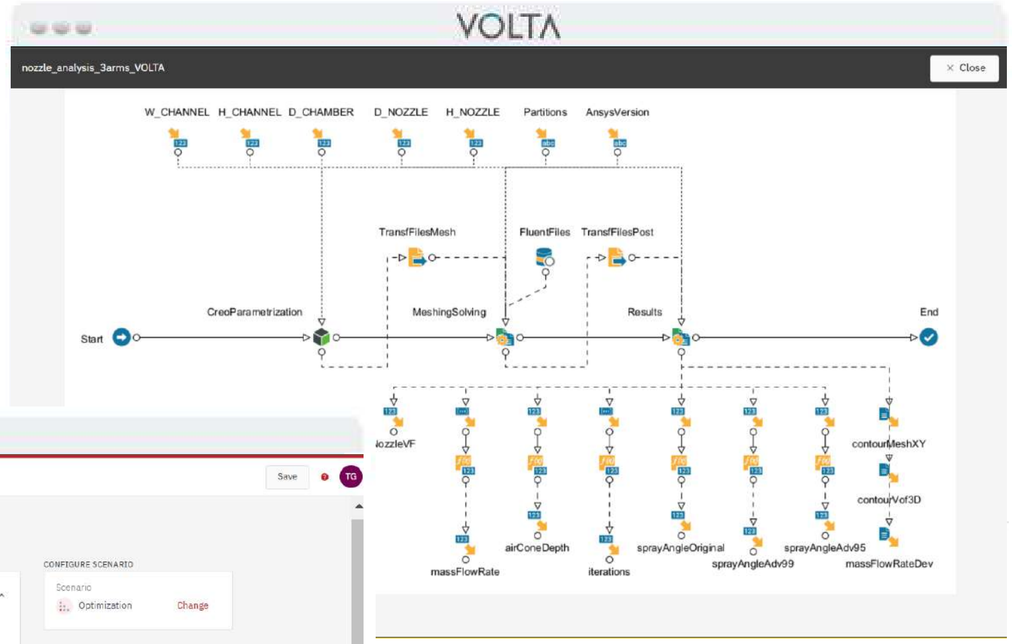
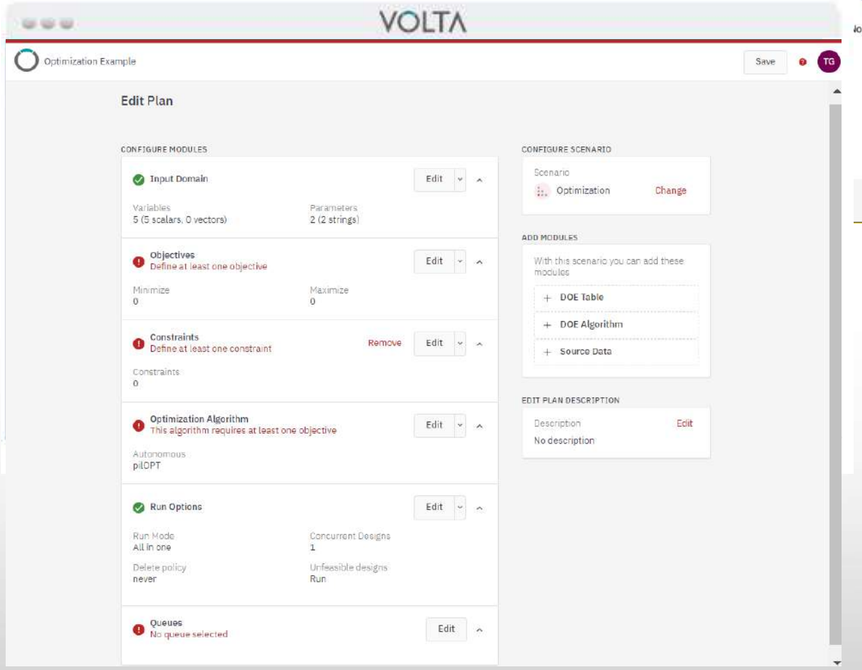
SPDM ...

Cummins Emission Solutions



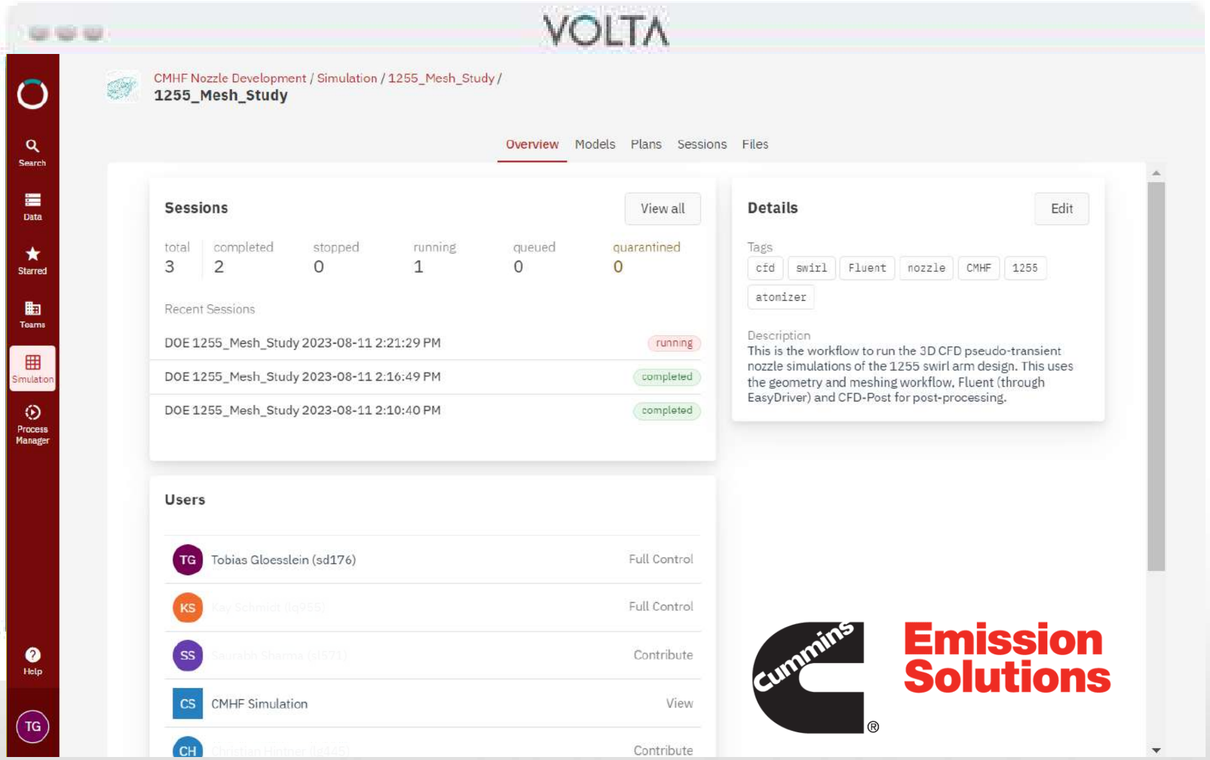


- Versioning
- Traceability
- Model Management

- Collaboration
- Access and permission management
- Ease computing resources use

SPDM ...

- Track all future, past, and present designs
- Capture and builds know how



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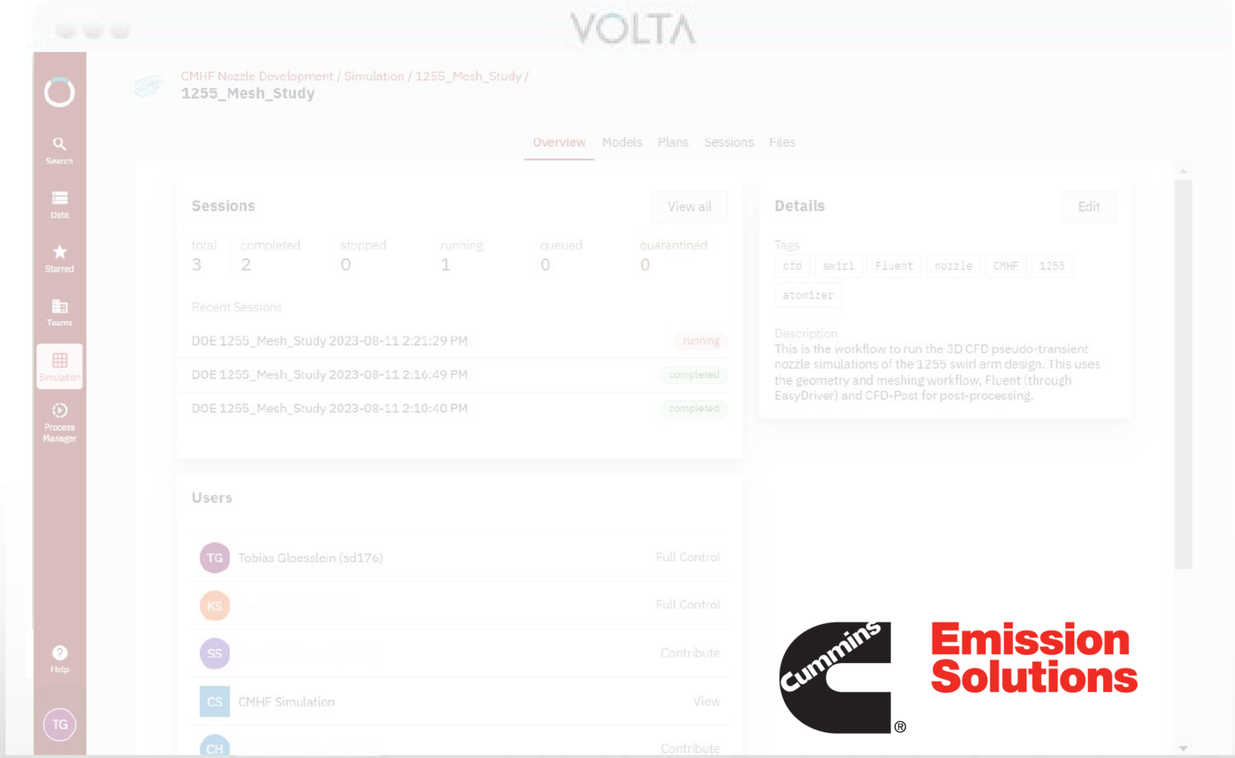
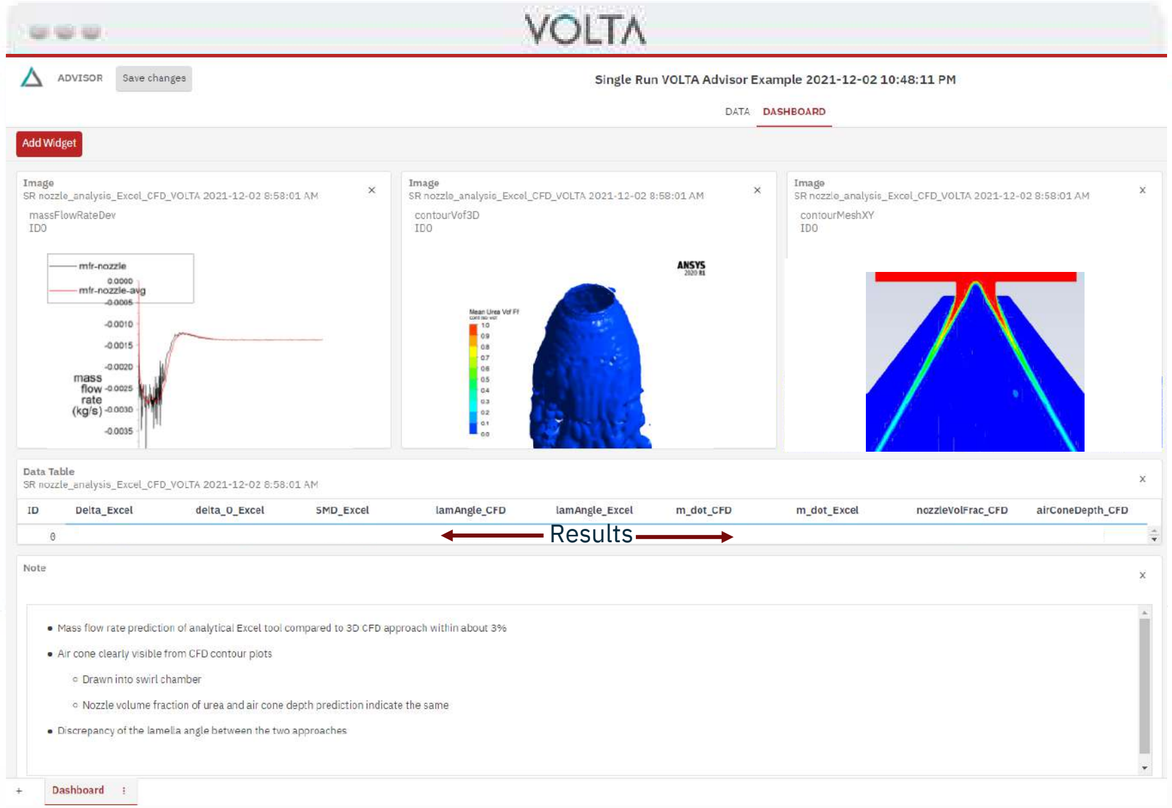
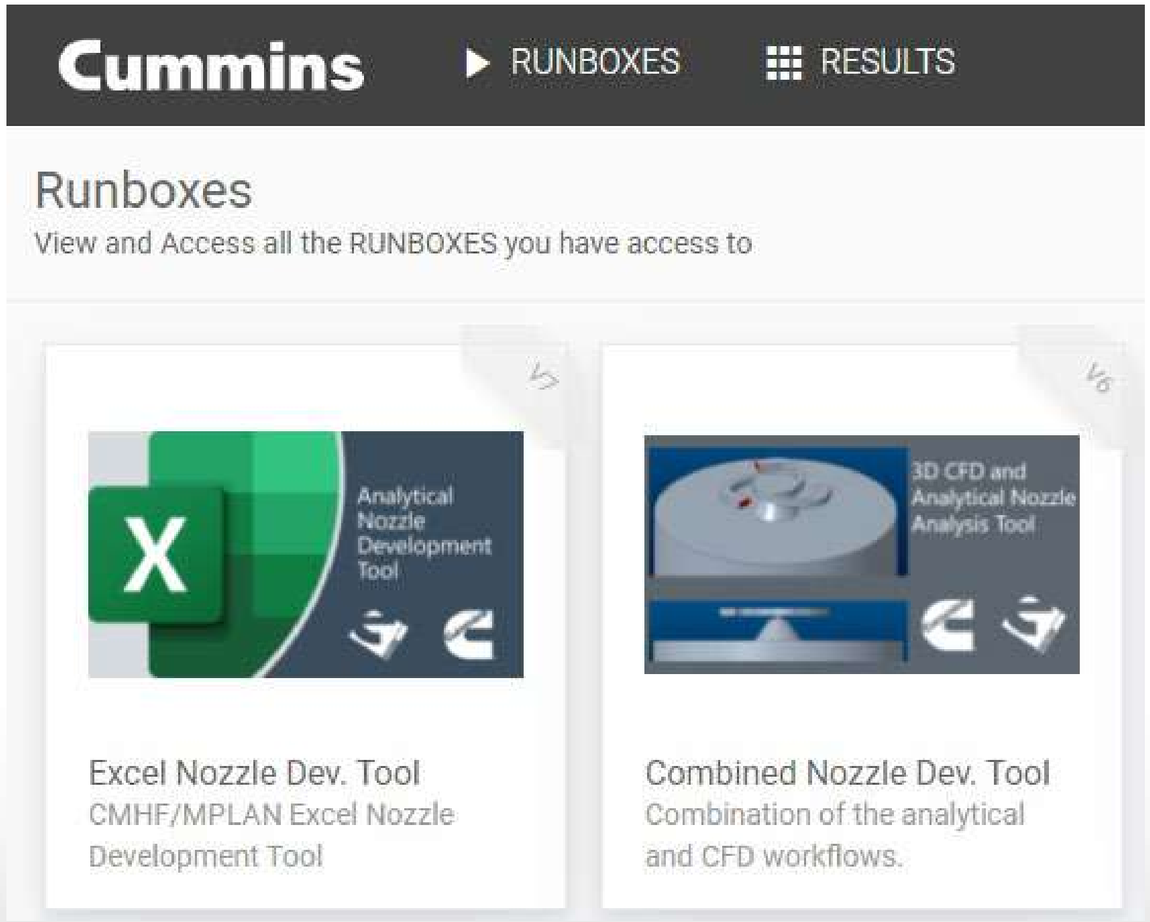




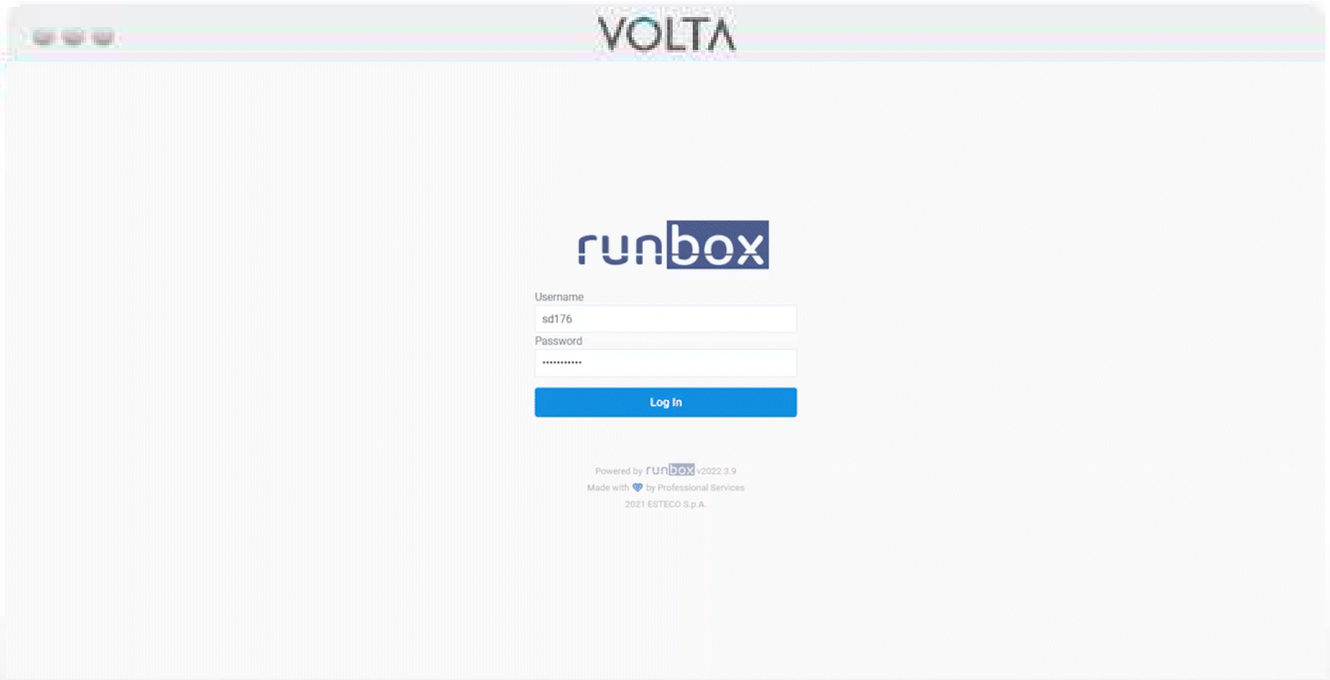
- Post-process result
- Share results analysis

runbox - Leveraging VOLTA API ...

- Custom API-based web application
- Exploits existing processes and infrastructure



runbox - Democratization



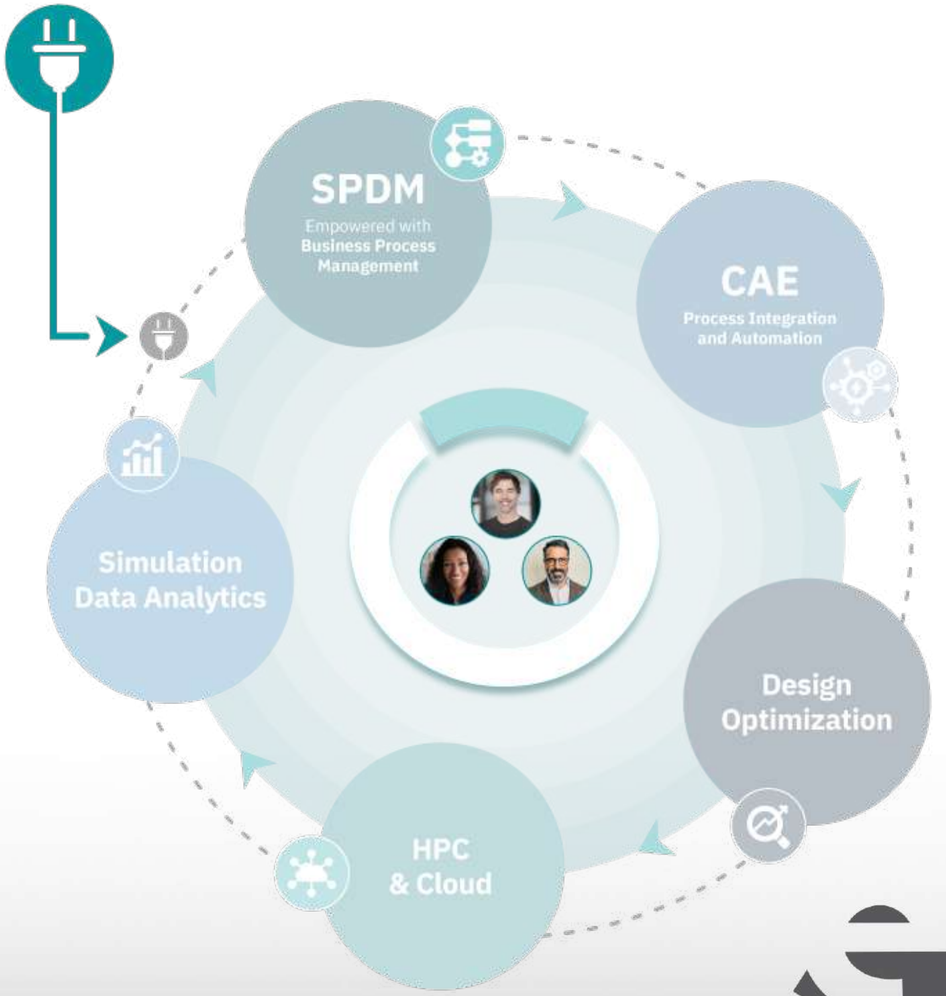
- Process Democratization
- Lowers the entry barrier for swirl atomizer model use
- Involve non-expert users

runbox - A safe playground

- Spreading and developing methodologies across the company
- Control over how models are used
- More independence for non-expert users

Take Away

- tool for user-tailored verticalization
- base for more advanced capabilities
- technical enabler for workflow automation
- turn processes and automations into VOLTA pluggable applications



VOLTA hands-on training - Business Process Modeling and no-code democratization

Don't miss tomorrow's workshops and hands-on sessions!

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Thank you!

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