

**PDF/SOLUTIONS®**  
**2025 Users Conference**

# **PDF Solutions**

# **Equipment and Fab**

# **Integration Solutions**

*Secure, Remote Equipment Connectivity and Control*

**Bob Reback**

December 4, 2025



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## PDF Tech Strategy

Patrick Pannese

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# PDF SOLUTIONS®



# Over 400 Customers Using Cimetrix Software Including...



*With over 67,000 Equipment Installs!*

# Broad Market Adoption

Last year PDF Cimetrix equipment software was installed on **over 7,600 systems**

**This year over 8,000** semiconductor **systems** will ship with PDF equipment software including...

- Metrology
- ALD/EPI/Etch
- Pick & Place
- Cleaning/Strip
- Backend Test
- MOCVD & PVD
- Inspection
- Bonding
- Photovoltaic
- Electrochemical Deposition
- Ion Implant
- Lithography

**\*The largest OEM** in this industry shipped their software on approximately **6k pieces of equipment**



# Equipment Software Product Portfolio

Product Family		Product/Platform	Interface(s)
Equipment	Connectivity	EquipmentConnect	GEM
			GEM 300
			EDA
	Control	EquipmentControl Foundation (ECF)	GEM, GEM300, EDA
OEM/OSAT/Factory	Secure Connectivity	secureWISE Agent	IP-SEC VPN Double Encrypted
Applications		DEEP, Studio Twin, CIM142	gRPC

# Cutting-Edge Solutions for Semiconductor Innovation

Built on 25 years of proven connectivity and control experience

## secureWISE TCS Agent

- The Embedded Foundation for Cloud-Connected Diagnostics, Analytics, and Digital Twins
- Lightweight, equipment-side foundation installed alongside with secureWISE Agent
- Connects OEM equipment securely to PDF's or Customer's cloud-native products
  - AI/ML, Digital Twin, Exensio Manufacturing Analytics & FDC

## DΣΣP

- AI/ML to enhance equipment reliability and reduces downtime

## Studio Twin

- Patent pending throughput technology
- Real-time digital replica for predictive maintenance and optimization
- Improves operational efficiency through data-driven insights

# Cutting-Edge Solutions for Semiconductor Innovation

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Built on 25 years of proven connectivity and control experience

## **EquipmentConnect (GEM, GEM300 & EDA)**

- Latest Development Environment .NET 10 with gRPC API
- Linux & Windows Platforms
- One product with multiple, simultaneous protocols
- Enables high-performance secure data channels

## **EquipmentControl Foundation**

- Latest Development Environment .NET 10 with gRPC API
- Linux & Windows Platforms
- Reuses fully automated GEM/GEM300 EDA test environments

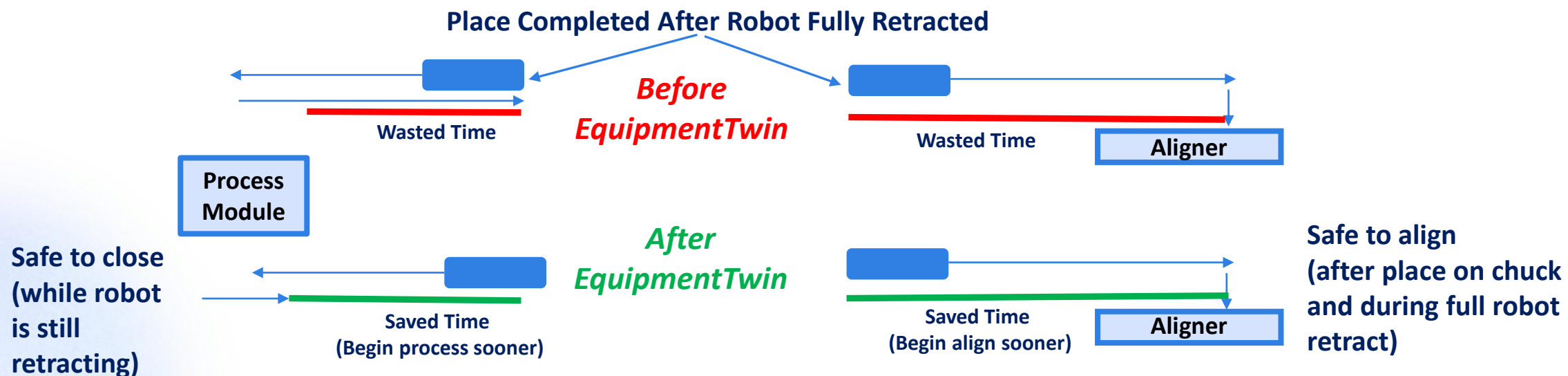


# Mechanical Throughput Improvement (Patent Pending)

Scenario	Time per Wafer (Seconds)	Throughput (Wafers/Hour)	% Improvement
Original Process	12	300	NA
First Optimization	11	327	9%
Second Optimization	10	360	20%
Significant ET Improvement	8	450	50%

## Studio Twin's slot valve / aligner optimizations

- Even 2 seconds per move improvement results in significant throughput improvement (20%)
- increased production capacity
- reduced cost of ownership



# Throughput Optimization - “Dual Align” Process data utilizing Studio Twin



Scenario	Throughput (Wafers/Hour)
Original Process 10.5s Process Dual Align No Optimization	191.83
With EquipmentTwin Technology (Safe To Operate)	204.12
Throughput Improvement	<b>12.29</b>

Potential Fab ROI	
\$6,000 / wafer	<b>\$1.77M / Day</b>
\$12,000 / wafer	<b>\$3.54M / Day</b>



OEM Equipment Sales  
Advantage – Displace  
competition through  
higher throughput  
improvements

Throughput Gain Impact: **+12.29 wafers/hour**

**\$6,000 per wafer → \$74K/hour | \$1.8M/day | \$657M/year**

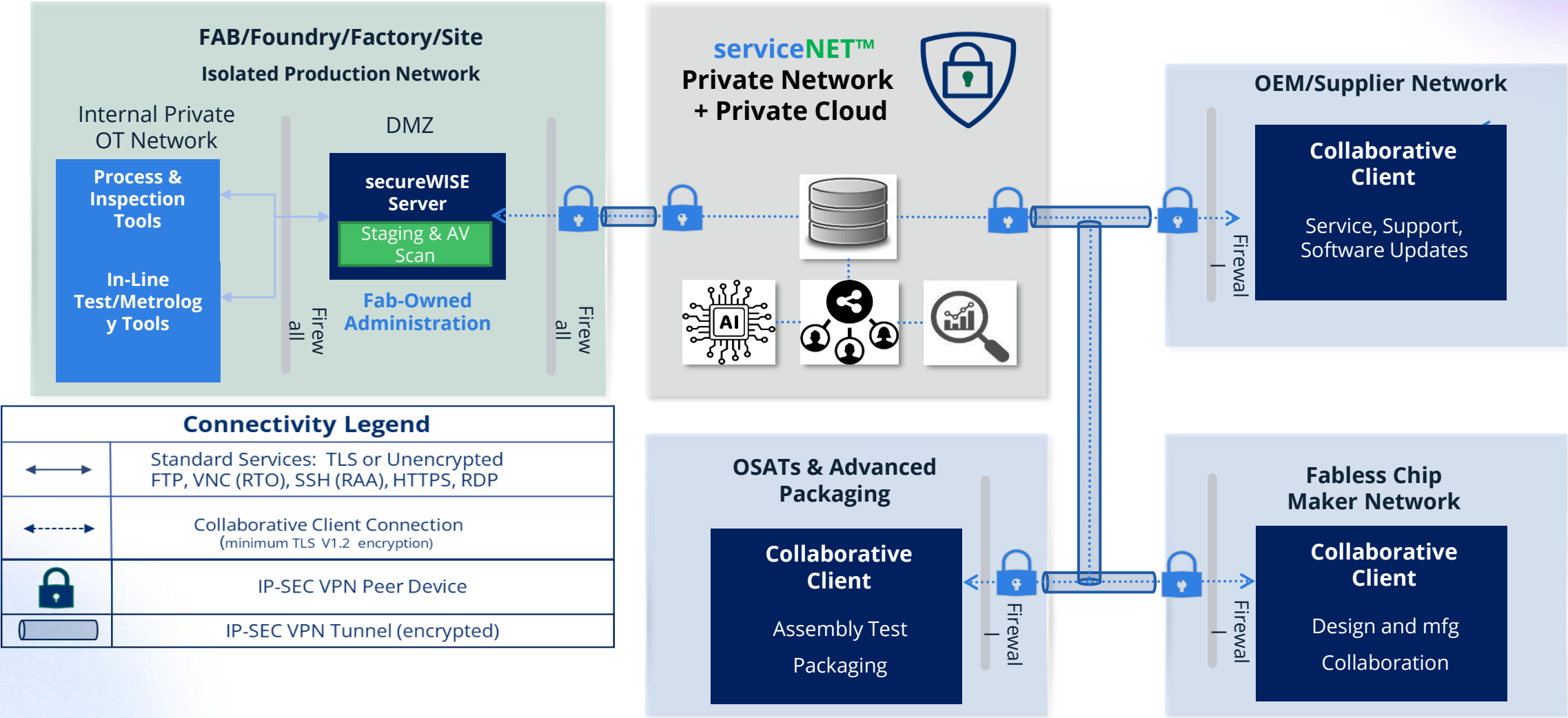
*Per tool. Continuous operation. Massive ROI.*



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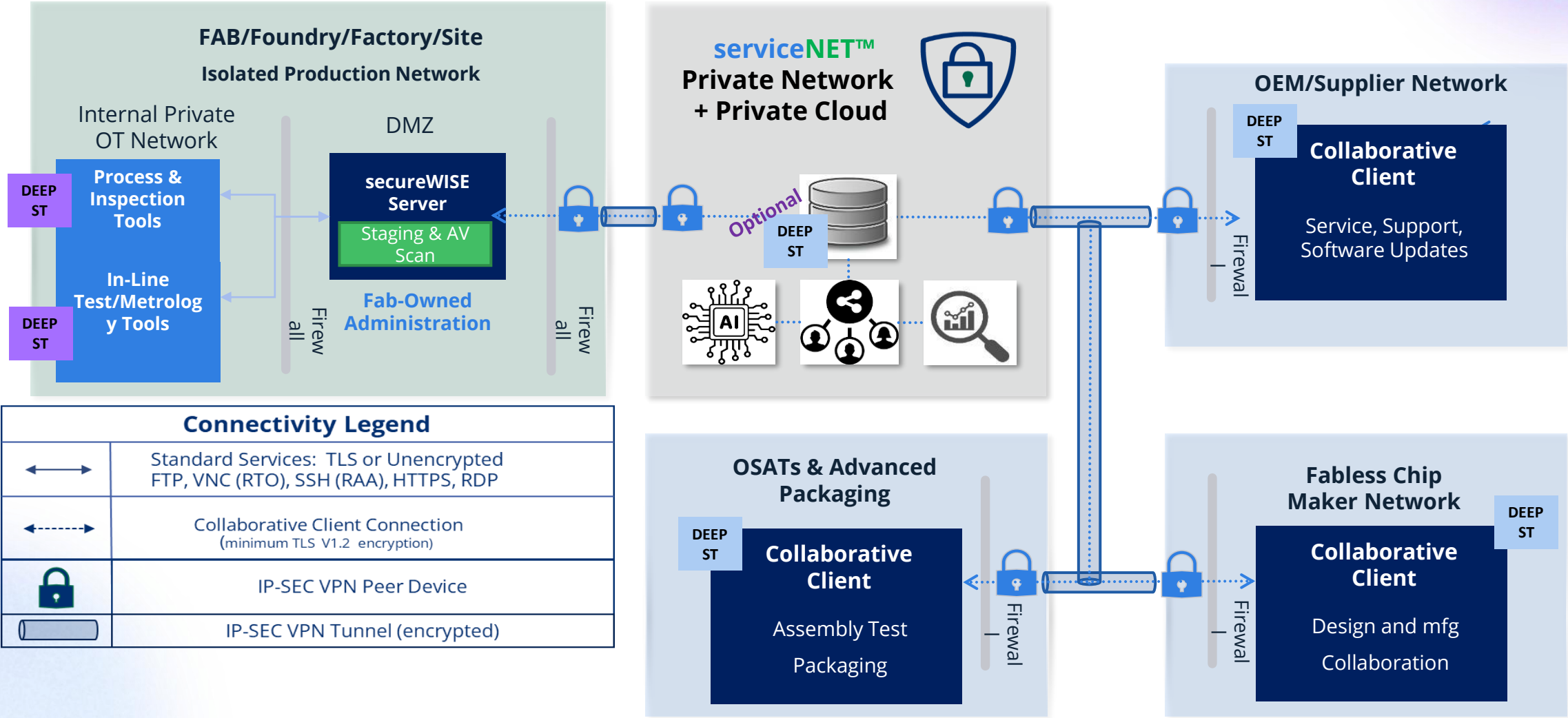


# Secure Private Cloud – Empowered with DEEP & EquipmentTwin





# Secure Private Cloud – Empowered with DEEP & EquipmentTwin





# PDF Equipment Software – Value By Customer Type

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## **Tier 1 OEMs (AMAT, LAM, TEL, KLA, ASML)**

- secureWISE TCS Agent works with internal control software
- Secure, vendor-neutral path into internal AI & Digital Twins or PDF's DEEP + Studio Twin
- TCS Agent roadmap for enhanced cloud analytics

## **Tier 2 /3 OEMs & Emerging Suppliers**

- secureWISE TCS Agent Integrated with Cimetrix Connectivity & Control Products
- Instant PDF enhanced analytics with DEEP + Studio Twin capability

## **Fabs & OSATS**

- Trusted access to equipment intelligence
- Better collaboration with OEMs
- Improved equipment maintenance, yield, and ramp timelines

# The Equipment Software Stack for the Intelligent Software



Secure Connectivity  
with Enhanced Insight



Automation  
Connectivity & Control

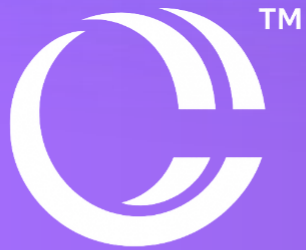


Digital Intelligence



AI/ML-driven  
Resilience

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**cimetrix**  
**StudioTwin™**

Demo



# Thank You

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