



ADVANCED ELECTRONICS

BUSINESS CONNECTION
FORUM **WEBINAR 1**

JUNE 1, 2018 • 9AM-10AM

Presenters



Alyson Slack
alyson.slack@esd.ny.gov
FuzeHub - Host



David Rooney
davidr@ceg.org
Center for Economic Growth



LaMar Hill
lar.mar.hill@fusionmarketgroup.com
Fusion Market Group



Adam Stover
adam.stover@edwardsvacuum.com
Edwards Vacuum / Atlas Copco Group



Frank Bösenberg
frank.boesenberg@silicon-saxony.de
Silicon Europe Alliance



FUZEHUB'S MISSION

To drive New York State competitiveness in manufacturing by helping companies discover, navigate, and leverage the state's extensive innovation ecosystem.

- **FuzeHub is New York's Statewide Manufacturing Extension Partnership (NY MEP) Center**
- **Increase the awareness of expertise and capabilities** available to companies throughout the state
- **Leverage expertise in-house or through partnerships** to assess company needs, then connect them with capable resources and track/monitor follow up.
- **Use a unique mix** of technology, resources, manufacturing expertise and special events to assist manufacturers.
- **Coordinate statewide projects** and other strategic initiatives guided by NYS and the needs of small to medium-sized enterprises.

A Partnership to Support Cross Atlantic Industrial Ties



A Network to Support SMEs' Expansion in North America and Europe

Services Provided

- Make Intros to VS and Private Equity
- Introduce to Government Grants and Programs
- Connect to R&D Assets
- Facilitate Joint Ventures
- Help Establish Representatives
- Support Workforce Education
- Organize Workshops



Connections to Advanced Electronics Clusters in North America East to West

- Greater Boston
- Upstate New York
- Quebec
- Austin/Dallas Texas Cluster
- Phoenix Arizona
- Boise Idaho
- Silicon Valley California
- Portland Oregon



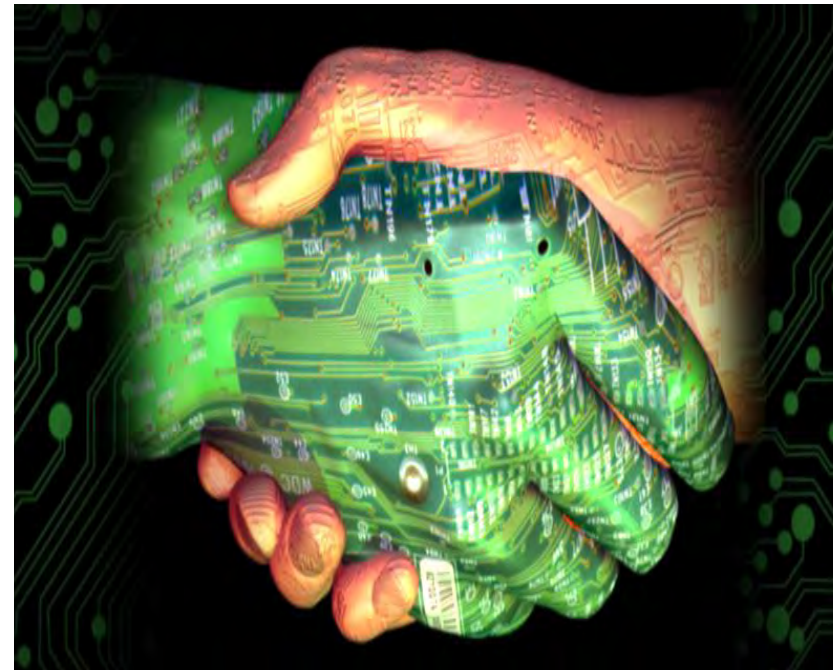
Focused Around Advanced Electronics

- Semiconductor Technology and Related Thin Film Industries
 - Traditional and New Emerging Applications for Example
 - Traditional Computing
 - Cloud Computing
 - Smart Cities
 - Autonomous Vehicles and Operations
 - New Computing Paradigms
 - Quantum/Cognitive Computing
 - Artificial Intelligence
 - Wearable Medical Devices



Business Connection Forums

- First Cross Atlantic BCF October 2017 at SUNY Polytechnic, Albany, NY
- Second BCF Scheduled for Nov. 12, 2018 Munich Germany in Conjunction with Semicon Europa
- Additional BCS Advanced Electronics Webinars
 - BCF Webinar #2 Thursday July 26th Medical Devices
 - BCF Webinar #3 Thursday September 13th 2018 Smart Cities
 - BCF Webinar #4 Thursday October 18th 2018 Energy Systems



Accelerating New York's Capital Region

The heartbeat of Tech Valley




CEG Business Support/NY Loves Nano



David Rooney, *Strategic Advisor*

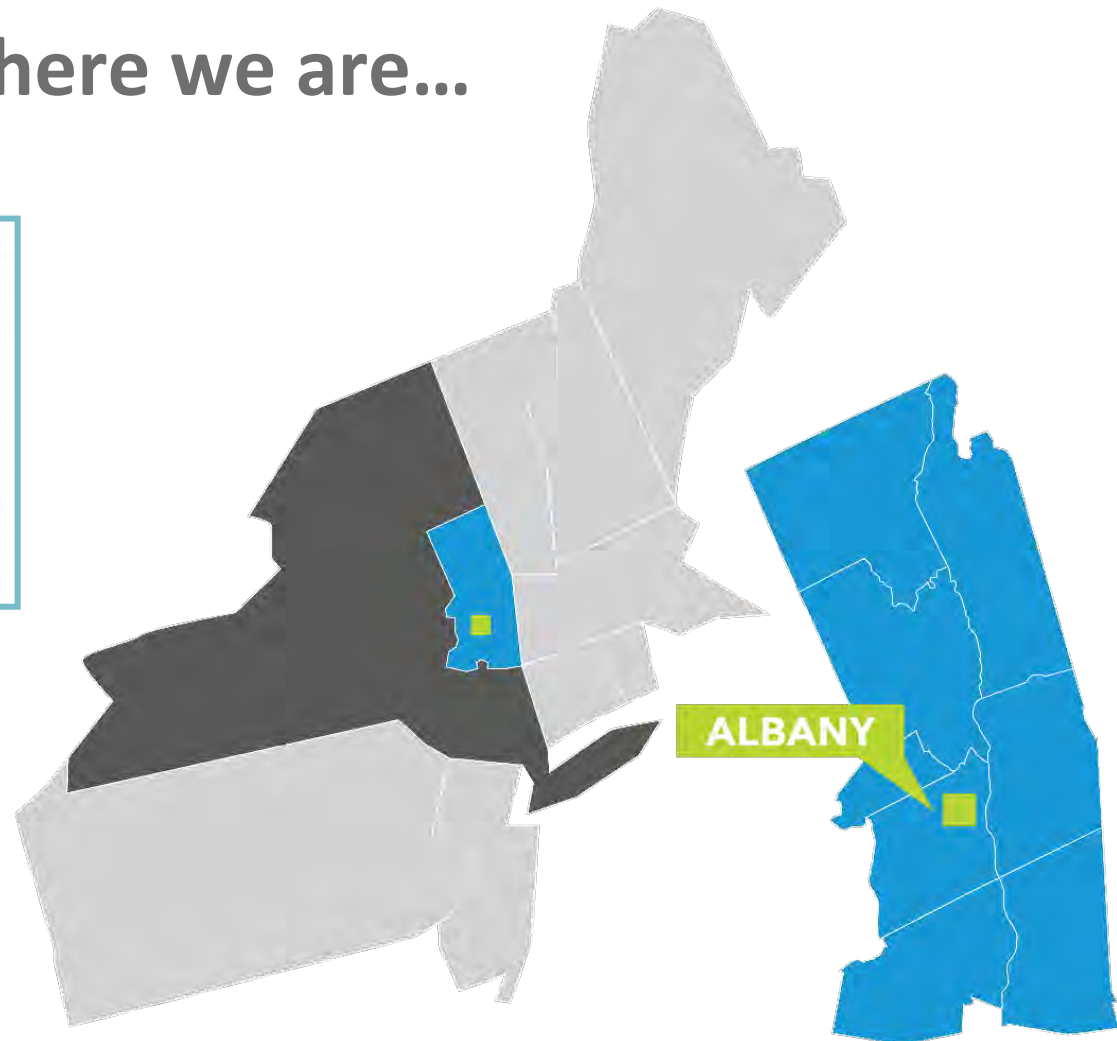
The heartbeat of Tech Valley

Where we are...

 Buffalo to Albany	257 miles	414 km
 Rochester to Albany	198 miles	318 km
 Syracuse to Albany	123 miles	198 km
 Utica/Rome to Albany	92 miles	149 km

Other Cities of Interest:

New York City to Albany	136 miles	219 km
Boston to Albany	140 miles	225 km
Montreal to Albany	196 miles	315 km



The heartbeat of Tech Valley

Who we are...

- **CEG** – Professional economic & business development organization in the Capital Region
- 250+ investors – Public, private, NFP
 - Their success impacted by success of region
- **Four Focus Areas:**
 - Attract technology-based industry investment
 - Assist existing companies with global competitiveness
 - Support startup and entrepreneurial ecosystem
 - Ensure a competitive, skilled and ready workforce

The heartbeat of Tech Valley

Where we focus...

- **Five Cluster Areas:**
 - Advanced Electronics and Advanced Mfr.
 - Clean Tech and Renewables
 - Biotechnology and Life Sciences
 - Logistics
 - IT and Gaming

The heartbeat of Tech Valley

How we do it...

- **CEG – Industry Attraction in the Capital Region**
 - NY Loves Nanotech
- **Outreach and Marketing:**
 - Leading Industry Tradeshows and Conferences
 - Site Selection and Corporate Real Estate Executives
 - Fam Tours
 - Targeted Sales Calls
 - Targeted social media, web and advertising
 - Industry and NYS Collaborations and Partnerships

The heartbeat of Tech Valley

How we do it...

- **CEG** – Business Growth Services in the Capital Region
- **Regional Services**
 - MEP center for 8 county region
 - Support local companies to reach new markets
 - Support commercialization of new technology
 - New venture support for sites, incubators, funding
 - Collaborations, Resources and Partnerships
 - NYSERDA, NYPA, CATS

Unmatched Capacity for Research

- Numerous established and emerging R&D facilities:
 - SUNY Polytechnic Institute
 - GLOBALFOUNDRIES Mfr and Technology Dev. Center
 - GE Global Research, GE Healthcare & GE Renewable Energy
 - Regeneron Pharmaceuticals, Inc.
 - AMRI
 - AngioDynamics



NY LOVES NANOTECH

New York's Tech Corridor is the premier location for innovative, high tech companies. As a global leader in R&D, the state produces a world-class workforce, shovel ready sites and competitive incentives to ensure a company's success.

www.NYLOVESNANO.com

ACADEMIC / R&D Assets

Sponsored by
nationalgrid
HERE WITH YOU. HERE FOR YOU.



Alfred University



Cornell University

R.I.T



Rensselaer



SUNY POLYTECHNIC INSTITUTE

UNIVERSITY OF ROCHESTER



UNION COLLEGE

NY LOVES NANOTECH

New York's Tech Corridor is the premier location for innovative, high tech companies. As a global leader in R&D, the state produces a world-class workforce, shovel ready sites and competitive incentives to ensure a company's success.

www.NYLOVESNANO.com

INDUSTRY Assets

Sponsored by
nationalgrid
HERE WITH YOU. HERE FOR YOU.



SHOVEL READY SITES

Luther Forest Technology Campus

1,414 acres



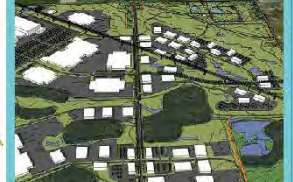
Marcy Nanocenter at SUNY Polytechnic Institute

338 acres



Western NY Science, Technology, Advanced Manufacturing Park (WNY STAMP)

1,250 acres



The heartbeat of Tech Valley

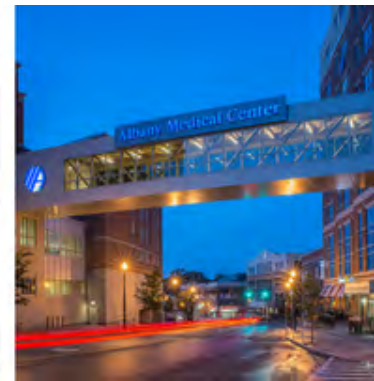
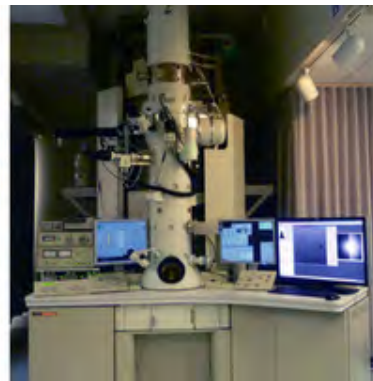
Infrastructure

- Strategically located at high tech crossroads
 - Attractive 4 season meteorological climate
- 2 major interstate corridors – I-87/I-90
- Albany International Airport
- Unparalleled water access through Hudson River, NYS Canal System, Port of Albany, Port of Coeymans
- Unique rail access for both passenger & freight
- Strategic market proximity gives Capital Region based businesses access to major markets



Emerging Opportunities in Capital Region

- R&D, Commercialization and Recruitment
 - Medical devices and delivery systems
 - Pharma discovery / contract manufacturing
 - Data analytics and population health
 - Materials research at SUNY Poly
 - Process and mfr improvements, supply chain
 - Renewable energy ventures –NY BEST, NYSERDA, NYPA





Silicon Europe

- your connection to
innovative European SMEs!



Silicon Europe Alliance: Our ambition

In the context of the European Commission actions towards the digital single market, our ambition is to **foster cooperation and innovation across all Europe**, helping our members to accelerate **their R&D and business connections** thanks to the cross-fertilization of our ecosystems.

The Silicon Europe Alliance strives be the **spokesperson representing the European digital and micro-nanoelectronics industry** in and outside Europe.

>>Our ultimate goal: **act as one-stop-shop** for non-European partners aiming to cooperate with our members.

The European cluster alliance for innovative electronics & software technologies

- 12 cluster partners
- brings together the technological expertise of Europe's leading research institutes & companies in digital technologies and IoT areas such as **micro and nanoelectronics, photonics, ICT and software.**

Cluster partners:



Associated partners:





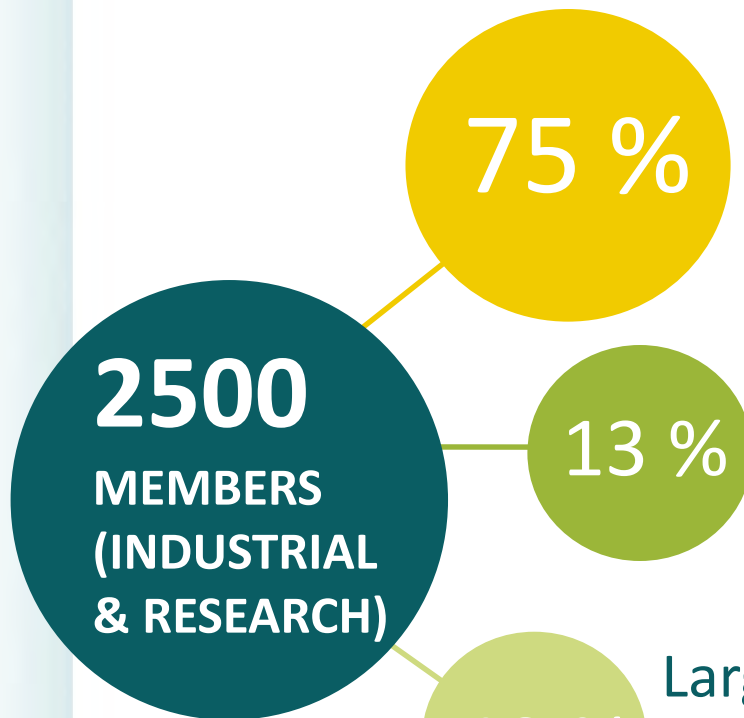
12 CLUSTER PARTNERS

WITH 2500 INNOVATIVE MEMBERS
FROM 9 COUNTRIES
MORE THAN 400,000 JOBS



Want to learn more about our partners?
Visit our website www.silicon-europe.eu/partners

A voice for the SMEs, at the heart of innovation



SMEs

>> more than 75 % of the players account for innovative and agile SMEs active in digital, mixed signal or analog electronics

Research Centres, e.g.

CATAPULT



Fraunhofer

JOANNEUM
RESEARCH



TNO innovation
for life



Large Companies, e.g.

arm

ASML



ASM
INTERNATIONAL

Atos

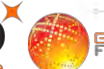


AT&T

BOSCH



gemalto
security to be free



GLOBAL
FOUNDRIES

Hewlett Packard
Enterprise

Infineon

intel nexperia



PHILIPS



Schneider
Electric



T-Systems
THALES

Other kind of members: Local authorities, Incubators, Economic Development Agencies, etc.

Silicon Europe Alliance: Main Actions

Foster cross-fertilization actions between our ecosystems

Networking Events @Europe level

- clusters major flagship events open to Alliance cluster members
- common Alliance flagship event: Open Innovation Day Thales Oct 19th 2017

Forming of R&D consortium (cluster and member level)

- “Call for partners requests” for H2020/Eureka calls



Business
Meetings



16 MARCH 2017 / EINDHOVEN

SMART PRODUCTS AND MANUFACTURING 2017

6th, 7th July 2017

Centro Congressi Unione Industriale di Torino
Via Vincenzo Vela 17, Torino, Italy

Open Innovation Day with Thales



>>Thales was looking for partnerships with start-ups and SMEs for innovative solutions in different technology fields



Thales gave us their requirements, we searched for companies & communicated the request to our networks. We took care of the whole organization.



Thales received the applications and selected companies they wanted to talk to.



19.10.2017: Open Innovation Day with presentation of Thales, pitches of the companies and individual B2B meetings



Open Innovation Day in numbers

- > **100** applications
- 55** B2B meetings
- 19** pitches
- 9** clusters
- > **20** Thales representatives

THALES

Silicon Europe Alliance: Main Actions

Support International Business Development

- capitalized on the Silicon Europe Worldwide project
- joint booths on international fairs:



>> SEMICON Taiwan (Sep 5-7th 2018)



>> SEMICON Europa (Nov 13-16th 2018)

What can Silicon Europe do for you?

Silicon Europe offers

- >> access to **Europe's top public and private research institutes and companies in innovative electronics**, top-class expertise & the most advanced technologies at all stages of the electronics and software value chain.
- >> a **Europe-wide network** allowing access to leading industrial players, dynamic small and medium-sized enterprises and cutting-edge start-ups.

Potential for cooperation

- >> Find technological partnerships
 - Organization of B2B Matchmaking Events
 - Organization of Open Innovation Days
 - Organization of joint booths at fairs (SEMICON Europa, SEMICON Taiwan etc.)
- >> Forming of (R&D) consortia



Contact



Chair
Frank Bösenberg
Silicon Saxony (Germany)



Vice-Chair
Günther Lackner
Silicon Alps (Austria)



Vice-Chair
Georges Falesi
Pôle SCS (France)

info@silicon-europe.eu

 @Silicon_Europe

Edwards NY Operations and Global Strategy

1 June 2018



Confidentiality Statement

This presentation has been prepared exclusively for the benefit and use of Edwards and is confidential in all respects. This presentation does not carry any right of publication or disclosure, in whole or in part, to any other party. This presentation is the property of Edwards. Neither this presentation nor any of its contents may be used for any purpose without the prior written consent of Edwards. This presentation includes certain statements, estimates, targets and projections as to anticipated future business performance. Such statements may reflect significant assumptions and subjective judgements by Edwards which may or may not prove to be correct. Edwards makes no representations as to the accuracy, completeness or fairness of this presentation and so far as is permitted by law, no responsibility or liability whatsoever is accepted by Edwards for the accuracy or sufficiency thereof or for any errors, omissions, or misstatements relating thereto. The contents of this presentation are confidential and should not be distributed.

Edwards – Position in the Marketplace

- A leading provider of subfab vacuum, abatement and thermal management solutions to HVM and R+D logic, memory and DSL customers
 - Estimated 60% share of U.S. semiconductor 300mm fab pump and abatement market
- Established position in the market through technically sophisticated product lines, an extensive field service/support organization and clear understanding of customer needs
- Product range meets varied customer demands while focusing on the chemistry of the processes to be managed
- World-class applications team are the in-house process experts to reduce TCoO, maximise uptime and deliver maximum value



SUNY Poly CNSE

- Public private partnership that provides technological incubation for both OEMs and end-users
 - Applied Materials
 - Tokyo Electron
 - Lam
 - PEMC
 - Edwards/AMP Centre

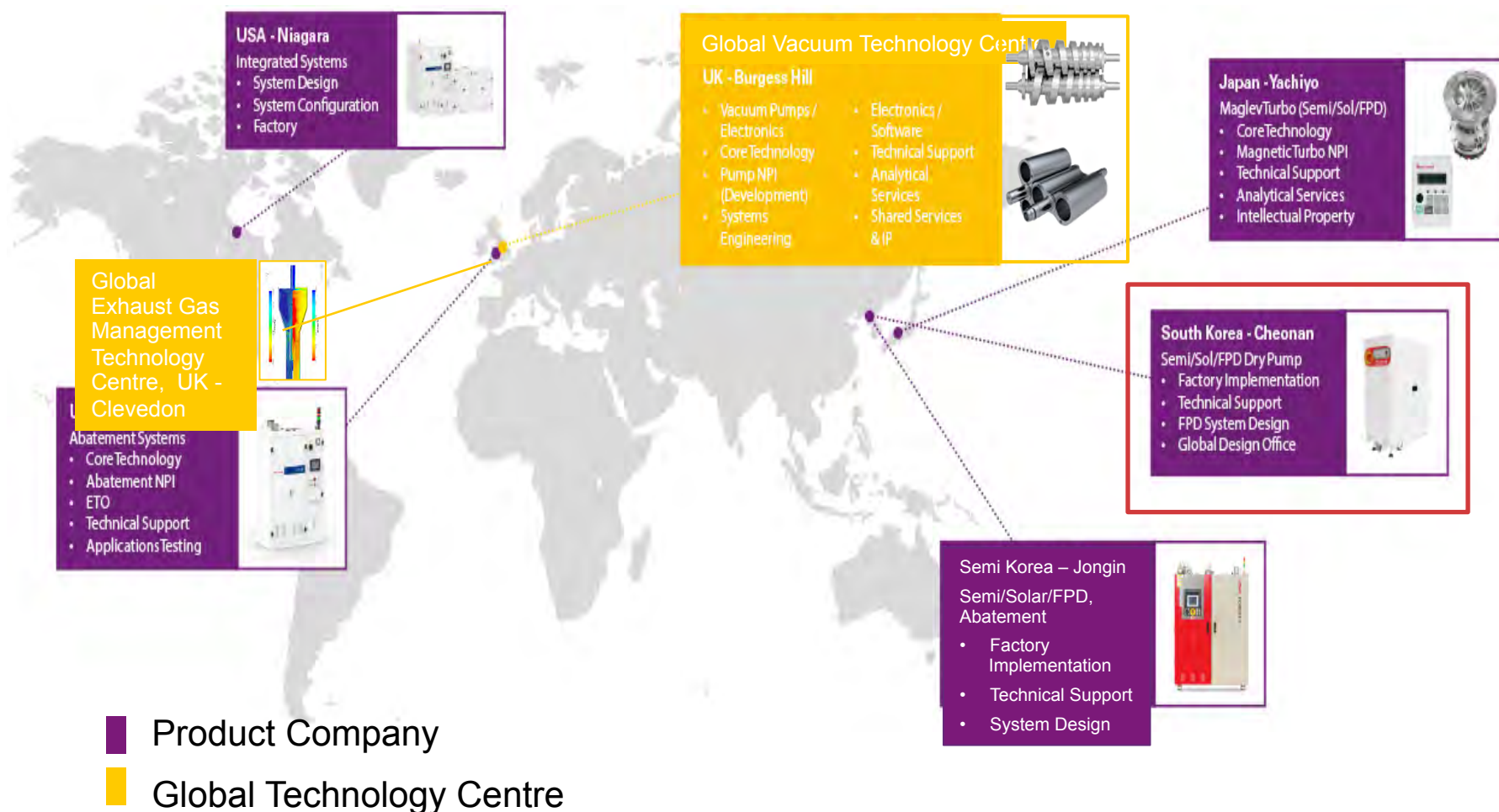


AMP Centre at SUNY Poly CNSE

- Support defect reduction in advanced semiconductor manufacturing in the New York high-tech corridor between Albany and Utica
 - Supported by a \$1.25m grant from the US Department of Commerce Economic Development Administration and a \$500k grant from New York Empire State Development

- Three main foci:
 - Research to identify and control causes of contamination – Edwards is industry anchor
 - Edwards will provide equipment for testing as well as technical expertise to guide research
 - Experimental developed with CNSE SUNY Poly faculty
 - Edwards is actively engaged in discussions with other companies for collaboration
 - Development of continuous sensing and data analytics for real-time process control – Inficon is industry anchor
 - Workforce development to promote needed knowledge and skills to support advanced manufacturing

Edwards Global Footprint

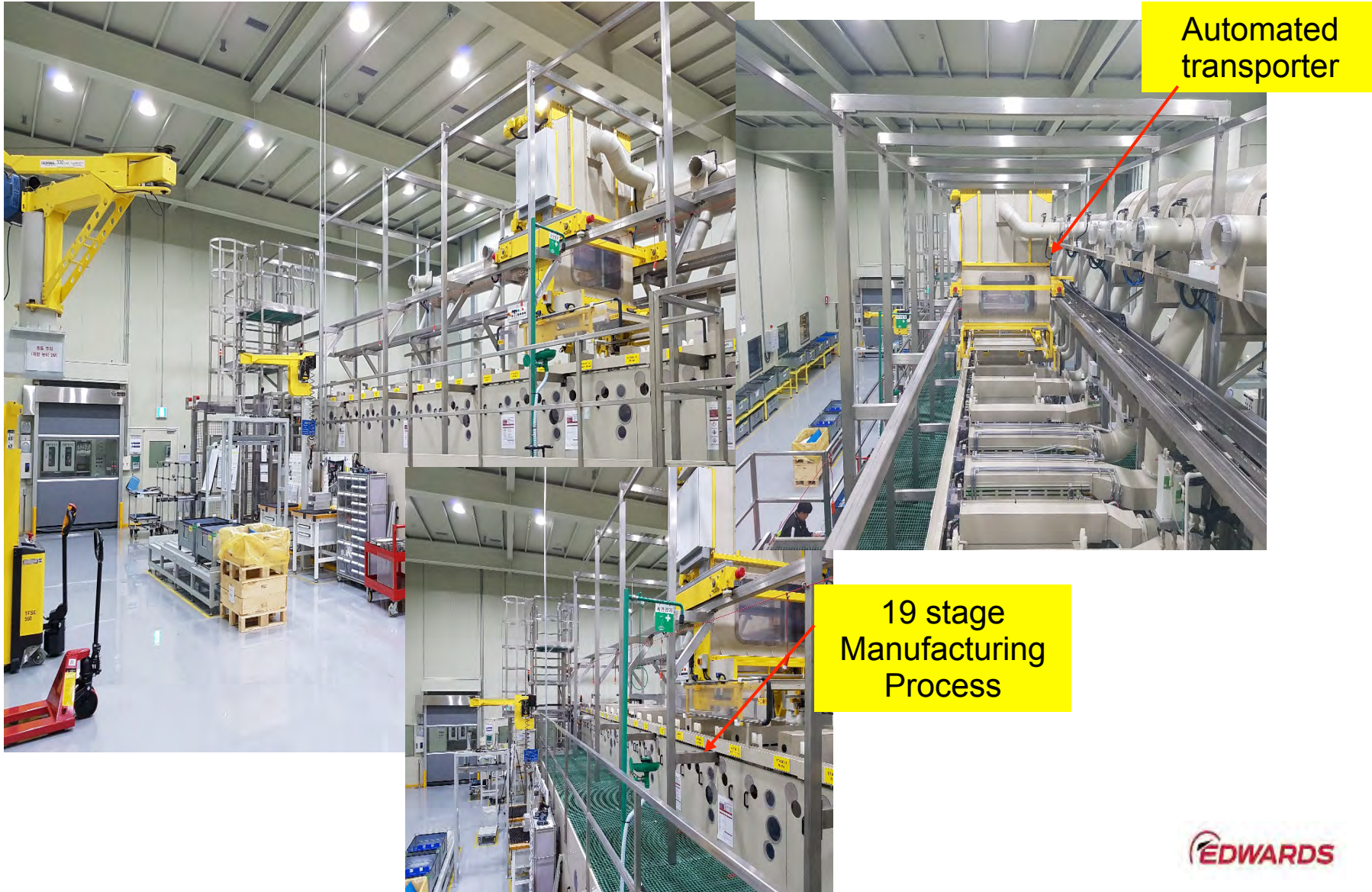




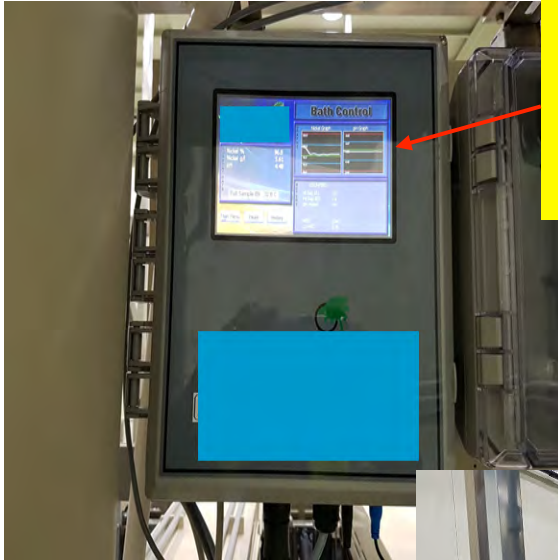
MANUFACTURING PROCESS

- Edwards has developed a new high performance multi-layer corrosion protection technology called Xcede for pump rotors, shafts and, where necessary, stators
- Manufacturing Process
 - Xcede deposition onto the component substrate, consists of a 19 stage manufacturing process, each stage making the component progressively cleaner, prior to material deposition
 - Quality control is best in class, employing X Ray and ICP-OES measurement techniques
 - Process capability is typically >1.33 Cpk for key process control parameters

EDWARDS XCEDE MANUFACTURING CELL



EDWARDS XCEDE MANUFACTURING CELL



Automated
Bath control
Cpk analysis
used



Automated load/
unload and
transporter
system



Auto
Chemical
control
system

WEBINAR #2
**ADVANCED ELECTRONICS & MEDICAL
DEVICES**

Thursday, July 26th
9:00-10:00am EST / 3:00-4:00pm CEST

WEBINAR #3
**ADVANCED ELECTRONICS & SMART
CITIES**

Thursday, September 13th
9:00-10:00am EST / 3:00-4:00pm CEST

WEBINAR #4
**ADVANCED ELECTRONICS & ENERGY
SYSTEMS**

Thursday, October 18th
9:00-10:00am EST / 3:00-4:00pm CEST



www.fuzehub.com/webinar-electronicsb2b



Presenters



Alyson Slack
alyson.slack@esd.ny.gov
FuzeHub - Host



David Rooney
davidr@ceg.org
Center for Economic Growth



LaMar Hill
larimar.hill@fusionmarketgroup.com
Fusion Market Group



Adam Stover
adam.stover@edwardsvacuum.com
Edwards Vacuum / Atlas Copco Group



Frank Bösenberg
frank.boesenberg@silicon-saxony.de
Silicon Europe Alliance



View the Presentation

This presentation recording and PDF will be available tomorrow at:

www.fuzehub.com/webinar-electronicsb2b





For assistance visit www.fuzehub.com and make a request; one of our specialists will respond to your request in 24 to 48 hours.

Keep the conversation going

FuzeHub is on LinkedIn, Twitter, Google+ , Facebook
info@fuzehub.com

**Get the latest NYS manufacturing
news delivered directly to your inbox.**

Sign Up Here: fuzehub.com/fuzehub-email-notification-signup



Linkedin.com/company/fuzehub



Twitter.com/fuzehub



Facebook.com/fuzehub