

*Learning.
Excellence.
Sharing.*



Silicon Valley Chapter

Advancing Intellectual Capital Management

Perspectives on Patent Licensing in the Semiconductor Ecosystem

June 21, 2023 | 11:00am - 1:30pm PT

Plug and Play, Sunnyvale, CA

Thanks to our host:

IPVALUE

Speakers & Agenda

Introductions
Panel Discussion
Q&A



Amit Garg

VP, Partnerships and Acquisitions,
IPValue Management



Adam Khan

Founder,
AKHAN Semiconductor



Subroto Bose

AGC, IP Strategy and Dev.,
Marvell Technology



Kerry Kimes

Sr. Bus. Dev. Director,
Rambus



Michael Pierantozzi

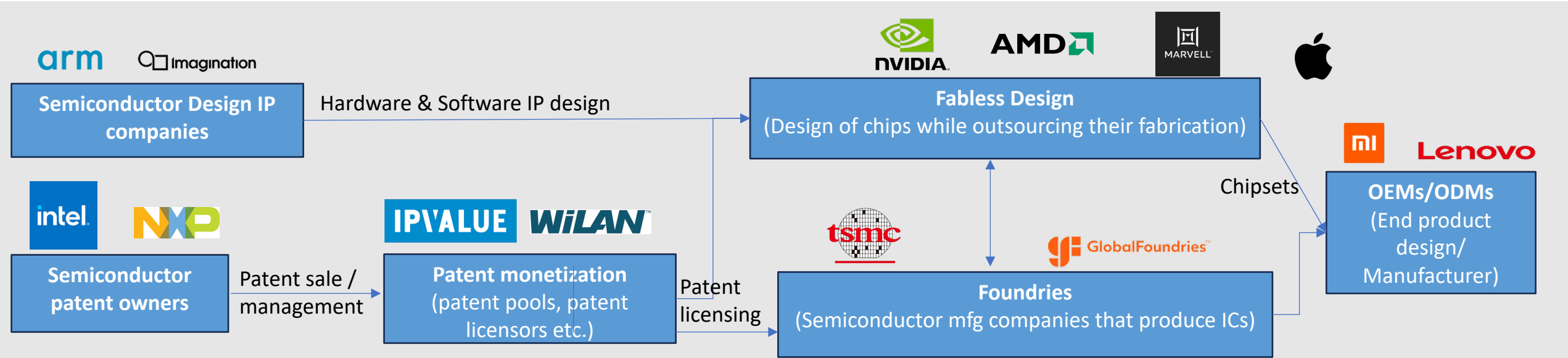
Moderator, LES-SVC Board Member



Silicon Valley Chapter

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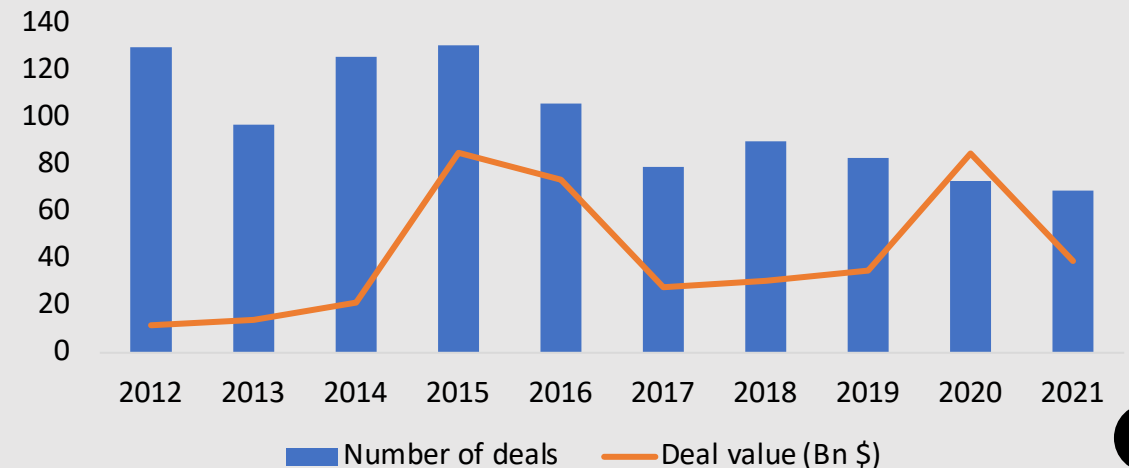
Semiconductor IP – Ecosystem



Patent transactions-Semiconductor IP

Semiconductor M&A activity

- 422 Bn \$ value of M&A deals are signed in the last decade
- 60% increase in US patent transfers in the 5-year period
- Increase in partnerships and collaborations



Sources: Dolcera (June 2023)
<https://anysilicon.com/ip-business-model/> and https://twitter.com/Quartr_App/status/1615048481525354496

Semiconductor IP – IP Monetization

Success stories in monetization

\$1.5+ billion in returns to patent owners from IPValue

5,000 patents acquired from Intel to IPValue in 2022

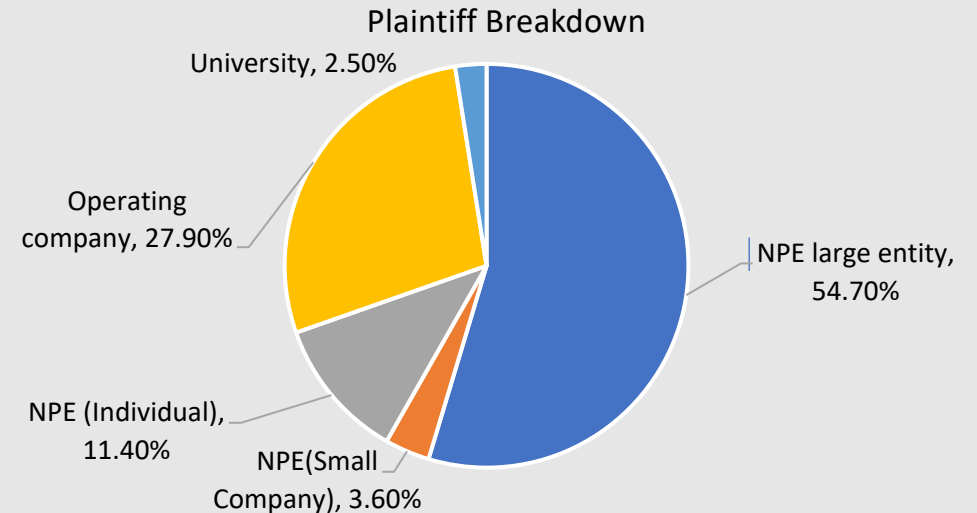
\$3 billion damages are won by VLSI against Intel with NXP semiconductors patents



SIA members that have sold patents to IP licensing firms:



Litigations - Semiconductor IP



- More than 1,500 litigations were filed in the period of five years (2016-2021); a significant jump seen in the last 3 years
- 75% of the patent litigations are filed by NPEs; mainly driven by large NPE entities

Sources: Dolcera (June 2023), Darts-IP, RPX analysis, [Unified Patents \(2021\)](#)

Semiconductor IP – CHIPS Act

CHIPS Act

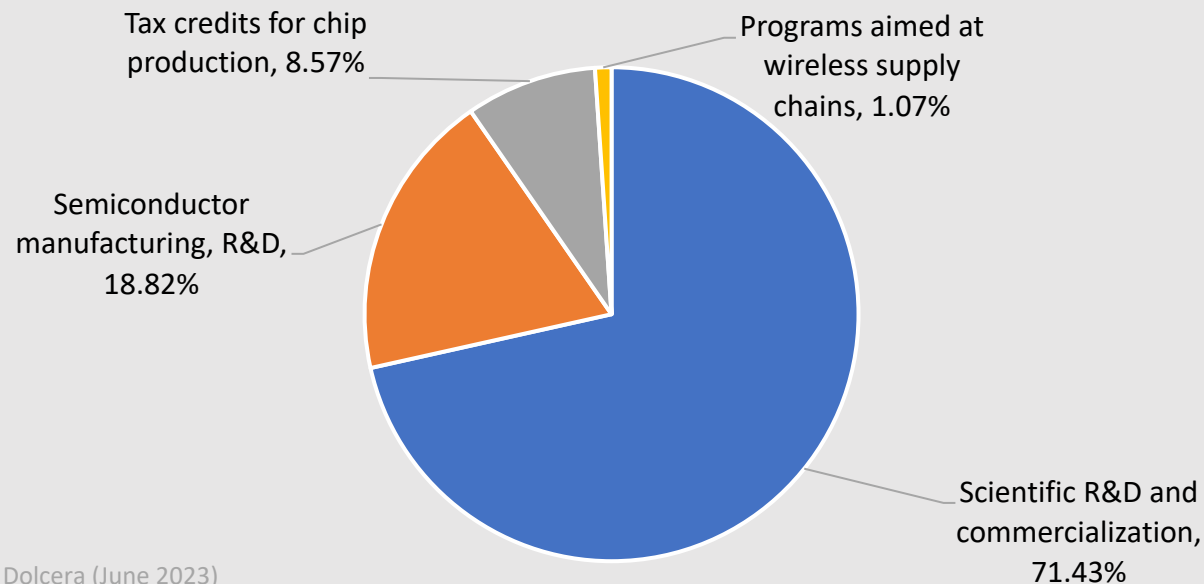
- The Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 (CHIPS Act) is designed to boost US competitiveness, innovation, and national security by spending more than **\$280 billion** in next ten years.
- Ensures **\$50 billion in investments over five years, including \$11 billion for advanced semiconductor R&D and \$39 billion to accelerate and drive domestic chip production**

50 new semiconductor ecosystem projects announced

\$210 billion in private investments

44,000 new jobs announced

Government spending breakdown



Semiconductor manufacturing investment announcements

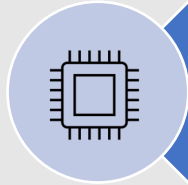


Sources: Dolcera (June 2023)
 McKinsey: <https://www.mckinsey.com/industries/public-sector/our-insights/the-chips-and-science-act-heres-whats-in-it>
 SIA (Dec. 2022): <https://www.semiconductors.org/the-chips-act-has-already-sparked-200-billion-in-private-investments-for-u-s-semiconductor-production/>

Semiconductor IP – Conclusions



The semiconductor industry is moving toward consolidation. Expect more M&A deals, partnerships, and collaborations.



Decrease in large semiconductor companies from 160 to 97 in the last decade, with market capitalization growing from \$437B to \$2.3T.



82% increase in public semiconductor companies valued under \$1B in the past decade (71 to 129), driven by innovation and a thriving startup market.



IP monetization helps in significant cost savings for the companies and generate revenue via licensing/royalty payments Expect to see rise in monetization of semiconductor IP.

Access more [Dolcera reports](#) by scanning the QRcode





LES-SVC

Advanced Synthetic Diamond Coating
Platform For Smartphone,
Semiconductor, & Other Applications

June 21, 2023

Adam Khan, Founder



Senior Executive Team

Successfully Licensed Innovative Technology To Mobile Industry



TOM LACEY

Chairman

- 30+ yrs. of executive management
- Four-time public company CEO



CRAIG MITCHELL

Chief Executive Officer

- 30 years of broad commercialization of technologies in semiconductor and electronics industries
- Scaled technology from 100's to 100's of millions; secured substantial, multi-year contracts with Tier 1 customers



JOHN THODE

President, COO

- Serial leader in senior exec roles with Motorola and Dell.
- With highly relevant experience developing and scaling transformative technologies.



Worked closely together at



- ◆ \$2B tech/licensing company
- ◆ Licensed Tier 1 Mobile OEMs
- ◆ Scaled technologies to 100's of M's
- ◆ Driving **AKHAN's license model**



See DiamondScreen as the largest licensing opportunity in our careers

Why Diamond ?

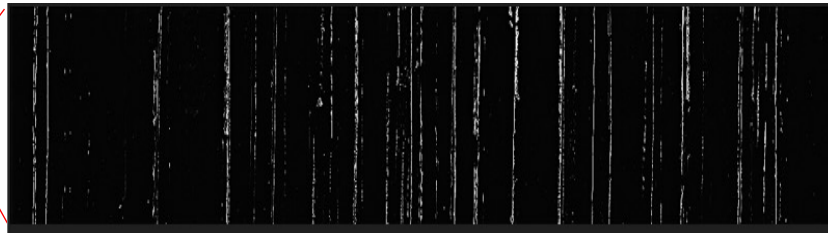
Synthetic Diamond Films Can Revolutionize Industries In Many Different Ways

- ◆ **Diamond** has fundamental properties:
 - Best-in-world hardness, strength, and durability
 - Chemically inert, water/oil/radiation resistant
 - Superb optical properties, broad spectrum transparency
 - Excellent electronic insulator, efficient thermal conductor
 - High frequency/power/temperature/voltage compatible
- ◆ **Lab-grown diamonds** are even better:
 - Used for decades in industrial applications
 - Can be grown in super-hard nanometer-level thin films
 - Low-cost manufacturing “ingredients” (hydrogen, methane is destroyed in the process)
 - Can be applied to many substrates and glass types

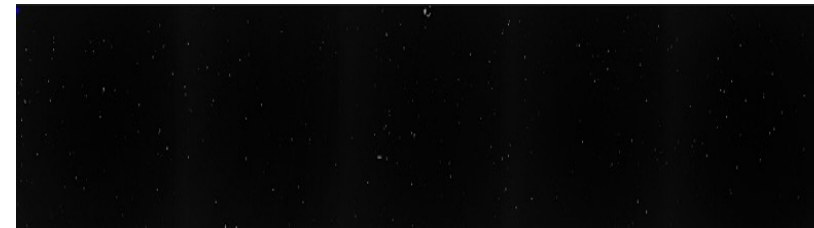
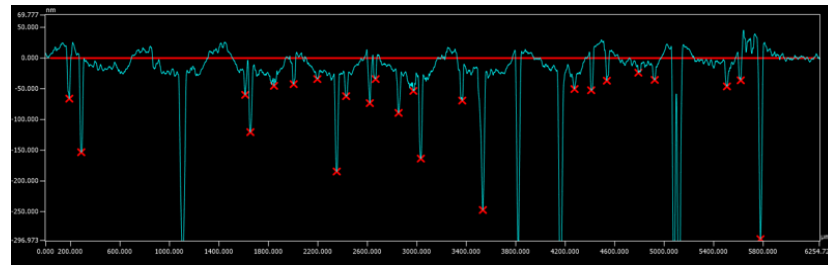


Garnet Scratch Comparison

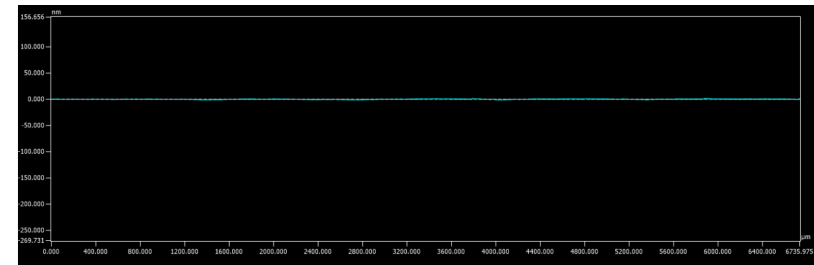
Material	Grit	Weight (kg)	Cycle Length (in)
Garnet	150	1	1.5



GG3



DiamondScreen™ on GG3



Test conditions/setup from Price, James J., Tingge Xu, Binwei Zhang, Lin Lin, Karl W. Koch, Eric L. Null, Kevin B. Reiman, Charles A. Paulson, Chang-Gyu Kim, Sang-Yoon Oh, Jung-Keun Oh, Dong-Gun Moon, Jeong-Hong Oh, Alexandre Mayolet, Carlo Kosik Williams, and Shandon D. Hart "Nanoindentation Hardness and Practical Scratch Resistance in Mechanically Tunable Anti-Reflection Coatings" *MDPI.com* Corning, Inc. Published February 12, 2021 [Coatings | Free Full-Text | Nanoindentation Hardness and Practical Scratch Resistance in Mechanically Tunable Anti-Reflection Coatings \(mdpi.com\)](#)

IP Value Ecosystem



Commercializing DiamondScreen™

Licensing Model - Complete Platform

AKHAN  **DIAMONDSCREEN™**



Akhan Licensing Approach

- ◆ **License Intellectual Property (Multi-Level Technology)**
 - Provide access to our foundational IP portfolio
 - Process/Application/Equipment/Data/Trade Secrets
- ◆ **Leverage Existing OEM Ecosystems**
 - Enable existing OEM supply chain partners
 - Utilize existing equipment, processes, capabilities where possible
- ◆ **Partner with Process, Production Equipment, and Material Suppliers**
 - License and transfer required IP and know-how to approved supply chain
 - Allow sale to licensees only
- ◆ **Transfer Technology and Know-How**
 - Access to know-how, onsite training, full documentation
 - Protections included in equipment design, data access, slurry recipes, process recipes

Notable Acquisitions by Marvell



- Marvell has made several acquisitions.
- The company has spent over \$23.60B for the acquisitions.
- Marvell has invested in multiple sectors such as Analog and Mixed Signal ICs [3], Data Center Infrastructure [2], Photonics [1], and more.



Inphi
2000, San Jose
Acquired for \$ 10.00B



Cavium Networks
2001, San Jose
Acquired for \$ 6.00B



Galileo Technologies
1983, Corrientes
Acquired for \$ 2.70B



Galileo Technology
1993, San Jose
Acquired for \$ 2.70B



Innovium
2015, San Jose
Acquired for \$ 1.10B



Avera Semi
2018, Essex
Acquired for \$ 650M



Aquantia
2004, San Jose
Acquired for \$ 452M

+3 more



Additional Information

1. ["The CHIPS and Science Act: Here's what's in it" \(mckinsey.com, Oct. 4, 2022\)](#)
2. [The CHIPS Act Has Already Sparked \\$200 Billion in Private Investments for U.S. Semiconductor Production," Casanova, Robert \(SIA, Dec. 14, 2022\)](#)
3. ["Intellectual property and the U.S. economy: Third edition." \(USPTO, Mar. 17, 2022\)](#)
4. ["Chip War: The Fight for the World's Most Critical Technology," Miller, Chris \(Oct. 2022\)](#)
5. ["Doing intellectual property the Dolby Labs way," Sherman, Andy, \(IAM, Nov. 2018\)](#)
6. ["Trends And Opportunities In Semiconductor Licensing," Tamme, Stefan, et al \(les Nouvelles, Dec. 2013\)](#)



Thank you!

Thank you to our host:

IPVALUE

Thank you to our Chapter Sponsors:



Event Materials and more available online at LES-SVC.ORG

