BRUCE I. BERKOFF

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EXEC. LEADER: CEO/CMO/CSO/CRO,MKTG/STRATEGY / PRODUCT/INNOVATION/PR/ SALES-BIZDEV Specializes in Marketing, Strategy, Product & Pricing & Partnerships / Alliances, Sales & BizDev, ROI & GTM in Hardware/Tech/Sciences/Materials/ Also SW & Al/ML & other Industries such as electronic materials (esp. for displays/sensor/solar/& Quantum Dots). w/ IPO & JV/M&A experience, Strategic Alliances, Corp. Devel., & Road Mapping Technology and Product; Pricing & Forecasting expertise as well as Marketing and Monetizing Technology ("from labs to fabs")

~Expertise: Marketing/Revenue, Products&Pricing, Design& Planning, GTM, Strategic Partnerships

Forward-thinking Global Tech Executive (esp. w/ Marketing & Alliances) with successful record of identifying product & partnerships (& emerging markets and technologies), for maximizing profitability. Excels at forging strategic alliances, innovation management, go-to-market strategy, strategic pricing, TAMs, product roadmaps and all marketing/sales/strategy and functions. Recognized ability to bring innovations to market through every stage of the product introduction and ramp. Accomplishments include growing market-share, and revenues, while improving ROI efficiencies of R&D (lowered costs). Skilled speaker & communicator & collaborator: Lived and Interviewed (Press & TV) & Keynoted Globally.

Selected Areas of Deep Expertise:

Strategy & Product • Business Mngmnt & BizDevelopment/ Sales • Tech & Innovation Mngmnt • Marketing (CMO/CSO/CRO), Growth w/ "costs downs" • Strategic Scaling via Global Alliances & Partnerships • Differentiation & Value Prop. • GTM & Product Planning/Pricing • BENCHMARKING, Competitive Analysis, Product Design/Creation/Launch

PROFESSIONAL HISTORY

Chief Marketing Officer, CMO (2019 – Present) LIGHTSENSE TECHNOLOGY, Portland, OR (& Tucson, AZ)

Lightsense addresses various public health-focused problems via unique mini-spectrometer platforms and applying new technology to drug detection for law enforcement, Green House Gas (and more) detection for semiconductor manufacturing and process tuning, and other similar applications. From the opioid epidemic to virus pandemics and food safety issues and high-tech manufacturing, the company is working on unique new UV/IR solutions including non-invasive and non-destructive testing via Physics (not Chemistry) and utilizing Al/ML for signal/noise enhancements, and extending devices to pathogen detection and eradication, as well as transistor manufacturing/monitoring and optimization.

- Ran all sales and marketing and PR and outreach and partnership activities, as well as key investor efforts.
- Launched the new Public Health focus, company strategy, and messaging, as well as processes for product planning, marketing, corporate marketing, business devel., all major partnerships, and fundraising efforts.
- Implemented Public Health Solutions Strategy in three main areas:
 - 1st MVP in Fentanyl detection, for inexpensive and very quick and small/portable device for Law Enforcement Organizations (LEO).
 - Proof of Concept COVID rapid saliva testing (with ability to distinguish dead vs alive virus).
 - Green House Gas rapid detection via miniature IR detector for new compliance and process optimization in semiconductor fabs & beyond.
- Raised over \$2m in outside funding in first-priced seed round.
- Named and helped to spec and redesign the first product line, DrugDetect-F1, used for safely testing for Fentanyl in seconds. Created all marketing communications, spec sheets, and channel literature for LEO pocket/holster-sized device.

Founder/Principal/President (2007 – Present), esp. ~FT roles in 2007-09 & 2019-24, & PT BERKOFF & ASSOCIATES (BA LLC), Beaverton, OR

- BA LLC: Boutique consulting firm specializing in strategy, products & roadmaps, strategic and corporate marketing, public relations, investor relations, product marketing and development, market intelligence, roadmaps, pricing and forecasting in areas ranging from high-tech to green tech; from renewable energy and storage to reducing energy consumption via tech, to electronic materials and touch, PC, TV, CE and displays supply chains. Focused on Al/ML to improve systems/materials/data sets in CE & Med-tech.
 - Interim "CXO" roles (CEO/CMO/CSO/CRO...), e.g. Myolex CMO ~3yrs, Nanosys CRO ~1yr (w/ 10 yr BOD), & ASCENT Solar CMO 1yr, CEO HealthScan (4 yr), CEO Wisdom Associates,(3 yr), etc.
 - Consultant to organizations (for calls to their client), (15yr+) such as Gerson Lehrman Group (GLG), GuidePointGlobal, Coleman Research Group (CRG), Alphasites, Prosapient, Zintro, BWG Strategy, & Newry.
 - Branding/Sales/Revenue/Bus.Development (1yr+) for USA focus w/ Netherlands Nat. lab (HOLST Centrespin-out of Phillips Research), bring "Innovation for Hire" to USA. Biz Dev to Corp Research
 - University of California at **Berkeley SkyDeck** incubator program **"Key Advisor" & "SkyAdvisor"** (~6 years) mentoring 10+ companies (from 30/class from >1600 apps/yr); selection committee & "Chip Track"

Chairman & Founder & CMO (2007 to present)

LCD TV ASSOCIATION, Beaverton, OR

Created this global association when LCD TVs represented just ~5% of global TV production, playing a significant role in the growth of the technology (now >95% of global TV production). Helped reduce energy per area by over ~90%. Signed members/partners and sponsored research and white papers. Created "Green TV" initiative & logo, worked with supply chain and government agencies e.g. CEC, EPA, etc. This Non-profit 501c3 marketing trade association was formed to help the LCD supply chain and retail channel, through to consumer, while focusing on ways to reduce pollution and energy consumption.

Board Member (2013 – 2023) & Chief Revenue Officer (CRO) (2022- 2023)

NANOSYS, Milpitas CA

- Largest independent maker of Quantum Dot Chemicals. Category won the Nobel Prize in Chemistry for 2023 (key patent library, MIT). Board member for over 10 years to help focus world-leading quantum dot chemical tech into the >\$100B display industry (LCD/OLED), then added acting role as Chief Revenue Officer to help grow both top and bottom lines.
 - Focused on biggest & most strategic partners/products. Engaged major display panel supplier & customer & equipment makers in the world for NRE development for future products and sales of existing products
 - Got many > +\$10 min USD new long-term revenue commitments first quarter in this role, including prepays and NRE contracts, licenses, etc. Then created roadmap for profitable growth and won design win with largest possible customer.

Vice President, Product Line Management (2016 - 2018)

INFOCUS CORPORATION VP-PLM, Portland OR, & Hayward CA

World's 1st projector company that later added large-format touch displays & S/W. Taken private 2009. Served as BOD member for two years when INFS was public. Reporting to CEO, responsible for all product lines, and monetization of related R&D/new technology for all three divisions - Projector, Flat Display, and *Collab Visual*. (Control/Video Wall) – redefine product offerings, *corporate* goals *and business* models. Grew Sales 30+%; cut R&D by 60%.

Chief Marketing Officer (2011 - 2016)

CBRITE, Santa Barbara CA (HQ) and Singapore (Asia posting), Portland OR

Founded by Nobel Laureate Dr. Alan Heeger, & a portfolio of over 110 patents on proprietary Metal Oxide Thin Film Transistor (MOTFT) technology for Display Backplanes. With operations in Taiwan and California: next-gen backplanes products for LCD and OLED displays & Advanced Digital X-Ray imaging; &- Non-Invasive Testing. Working closely with CEO, CTO, & Board, led all marketing and business development for a new generation of flat displays, both high PPI & lower power, LCDs and OLEDs, for the ~\$150 billion flat panel module market. Pivotal role in presentations & negotiations. Raised \$18 million new equity; Exceeded all targets for product/partnership rev.— raised \$5M+NRE fees.

Chief Marketing Officer/Chief Strategy Offic in Energy&Display Sys Div.- CMO/CSO of EDS (2009 – '11) APPLIED MATERIALS (AMAT/EDS/AKT), Santa Clara, CA

Responsible for global strategy & marketing for EDS Division (energy /PV, Display & lighting, energy storage -EV/battery); w/marketing budget >\$9 million. Tasked w/creating organic & inorganic growth, develop new business models ("razor blades" e.g. materials as well as traditional "razors") for Solar (crystal silicon and thin film), LED, battery and Display businesses. Owned product strategy, branding, PR, and tradeshows and partnerships for:

- AKT #1 display equipment from PECVD to PVD, & test to color filter.
- #1 solar equipment group: Baccini Cell Systems and PWS (HCT) Wafering for cSi PV related equipment, and

Equipment related to LCD, OLED and LED (MOCVD) production-related tools as well.

• I was CMO/CSO & Key interface to corp. HQ teams for EDS group (Division) for product reviews and input for M&A, IR, PR, forecasting (markets, TAM, SAM, SOM), corporate marketing, ads, tradeshow. Led launch and key customer events and sales trainings. Redefined product life cycle and product portfolio management processes. Brought customer "voice" (VOC) to the table and so helped create new "disruptive" tool strategy and roadmap for Display/AKT & Solar. Helped grow share and rev., by category (#1 or 2 in every display & solar market). AMAT is a global leader in factory equipment for semi, flat display (LCD/OLED) & solar/PV.

CHIEF MARKETING OFFICER (CMO) (2008 - 2009), ASCENT SOLAR, Littleton, CO,

Ascent's thin-film PV modules had the greatest power density and weight ratio among available flexible photovoltaic products.. Resp. for all marketing, sales, products, strategy – incl. PR and branding - for this publicly traded startup: Created products & partnerships for military, BIPV (roof), and CE applications & JV/JDA in Asia.

President & CEO, Later Chairman of BOD (2005 – 2006)

ENUCLIA SEMICONDUCTOR, Beaverton, OR

Recruited by 3 top-tier VC funds to lead this fabless semi start-up, in the HDTV video processor space, a growing CE field. Closed "B" round for \$13M led by Menlo Ventures, joined by Sevin Rosen & B of A ventures – grew company from ~20 to 55 people. Developed "Pipeline Video" brand, focus & strategy. Closed multiple TV design-in wins & strategic partnerships (prior to tape-out).

EVP CMO LG DISPLAY & GM PHILIPS COMPONENTS FDS, Seoul S. Korea & San Jose, CA (1998 – 2005) With revenues of some \$26 billion, LG Display was the world's largest LCD panel maker supplier of thin-film transistor liquid crystal display panels (TFT LCDs) for NBs, PC monitors and TVs, & later OLEDs, and flexible displays. (Started as JV, LG.Philips LCD, fka LPL, now LGD or LG Display).

LGD ('99-'05): Direct report to the CEO,one of six-person top executive "CXO" leadership. Managing ~\$8-10 million annual marketing budget, responsible for all global marketing, strategy, products (& roadmaps), branding, marcom/PR. Guided tech from R&D into products across the company and industry.

- A principal architect of ~4x growth of company revenues (\$3 billion to \$12 billion) and from #4 to #1 in the market in
 all high margin segments. Promoted development and introduction of "wide" aspect ratio line of NoteBooks and later
 monitors the most profitable segments for years raised analysts' ests. of company value ~3x, from \$3 to \$9 billion.
- 1 of 3 presenters (w/ CEO and CFO) international IPO roadshow 16 cities in 8 countries, 18 days raising > \$1 billion in the second largest Asian technology IPO and the first ever concurrent dual listing on NYSE and KSE (raised a further \$2 billion in follow-on a year later). Key spokesman with visitors such as Heads of State, press, and analysts. Represented company as Keynote Speaker at conferences worldwide and later as BOD member.

Philips ('98-'99): Reported to the CEO Components with full P&L responsibility for this new S&E business unit (~\$10m rev in 1st year) and promoted to be CMO/EVP of new \$1.6B JV which became LG Display, to build large-scale LCDs in late'99. Moved to S. Korea. Stayed through IPO+ & 6+ years. Managed 55+ member teams, marketing budgets. Responsible for all global marketing, strategy, products (& roadmaps), branding, marcom, market and competitive intelligence, and PR at Philips FDS & later LGD.

- Guided tech from R&D into products across the company and industry (including higher margin "WIDE" classed products & helped to create, 1st in world for NBPC and most for Monitors and then led in flat TVs).
- FDS: Hired and managed engineering, marketing, and operations team for all FDS three lines of business: integrated circuits, boards, and software. Built the business from 0 to 1st full year revenues of ~\$10M, with 25 employees, on a development budget of \$6M. Managed the S/W & electronics group & the world's 1st driver IC project for OLED displays (& also created first "apps" S/W on screens, about a decade before iphone).

Vice President, Marketing (1993 – 1998)

UMAX COMPUTER (mac-clone spin-out Radius, joined w/SuperMac acquisition), Sunnyvale, CA

Direct report to GM of this >\$75M revenue Mac clone computer business (we started from scratch) - responsible for products, marketing, PR, technical marketing and benchmarking, MARCOM and corporate communications. Managed favorable major press reviews; won all major awards. Helped to create QA/ Test lab, "SuperMac Labs." Led the creation of new S/W graphics drivers, with >150% better product performance. Managed Display & Graphic products & Technical marketing for Radius/Supermac prior to Mac clone projects. I was direct report (and EA/COS) to Radius CEO before UMAX role too.

Macintosh Platform Manager & Environmental Platform Manager (1991 – 1993) ZD LABS (aka ZIFF DAVIS LABS), Foster City, CA

Key player in the original planning, design, set-up and management of the world's largest independent Computer and Display testing facility (ZD Labs). Responsible for all Macintosh and environmental (magnetic fields, surge, shock, etc.) testing. My team created first-ever *MacBench*, benchmark software (S/W). Tested for 15 magazines worldwide. Grew testing group from 4 to 70 people in just the 1st full year(120by second).

President/Co-Founder (1989 – 1991)

BERKELY SCIENTIFIC ASSOCIATES, Berkeley, CA

Scientific software publisher for curve-fitting all data types and utilized custom solutions for mechanical curved-motion controls for movie cameras and other devices (for Ind. Light & Magic for Star Trek V and Beyond). Developed the first graphically interactive non-linear curve-fitting for the Mac platform.

BOARD MEMBERSHIPS/ADVISORY ROLES (EXAMPLES)

5 Public BOD's: LG Display (LPL); InFocus (INFS), Unipixel (UNXL), Tvia (TVIA), Syntax-Brillain (BRLC)

"N" Private Company BOD's: Nanosys, CBRITE inc, Lightsense Technology, VueReal, Mattrix Technology, & more

BOA (Board of Advisors) for various start-ups via Angel/Incubators, etc. eg. UC Berkeley SkyDeck "KeyAdvisor" role for ~ 6+ years (2019-now), and EIR (Entrepreneur in Residence) for NEWRY Corp., IASO VC,& Vonzos Partners -(BALLC) Also various tech groups, incl.CAN (Chem. Angel Ntwrk), VAN (Virt. Angels Ntwk), SID, APS, ACS, AUTM

EDUCATION AND PROFESSIONAL DEVELOPMENT

University of California at Berkeley, BioPhysics, 3.7 GPA

M.A. & Ph.D. candidacy certificate (ABD), awarded by UCB, NIH Training Grant I Thesis: Solid State NMR of Hydrogen-Bonded Organic Crystals. [A model of physical transduction of information across biological membranes]

Princeton University, Physics, 3.6 GPA

A.B.; awarded various national scholarships, AIAA I Thesis: The Effect of Base-Pair Composition on the Physical Properties of DNA (10,000x difference between AT and GC, Young's modulus like steel vs silk)

Wharton I University of Pennsylvania, Executive Training Program, Leadership Development

Royal Philips Electronics, *Executive Development Training Programs* for 4+ years. Courses in Strategy, Supply Chain, Pricing, Al/ML & many for Group CMO's

PATENTS, PROFESSIONAL PRESENTATIONS & PUBLICATIONS

- Gang Yu, <u>Chan-Long Shieh</u>, <u>Fatt Foong</u>, <u>Guangming Wang</u>, <u>Tian Xiao</u>, <u>Juergen Musolf</u>, <u>Kristoffer</u>
 <u>Ottosson</u>, Bruce Berkoff, Boo Nilsson, <u>P-22</u>: Metal-Oxide TFT with Mobility and Stability Comp. to LTPS-TFT, for DISPLAYS, <u>SID Symposium Digest of Technical Papers</u>; <u>Volume 43</u>, <u>Issue 1</u> 01Oct2012
- B. I. Berkoff, M. E. Hogan, J. Legrange, R.H. Austin, "Dependence of Oxygen Quenching of Intercalated Methylene Blue Triplet Lifetime on DNA Base-Pair Composition", Biopolymers (Journal), 25, 307-316, (1986).
- C.S. Borso, B. I. Berkoff, C.T. Mizumoto, Neutron and X-ray Small Angle Scattering for Biomolecular Research, ANL, (ArgNatLab, DOE) Bio. & Med. Res. June 1982 p95-97 [N83-22951], (1982)<u>26-1: Invited Paper: Metal Oxide TFT Turnkey Manufacturing Solution for a-Si TFT Lines</u>
- Articles and reviews in NeXTWorld and MacUser magazines concerning Maple and Mathematica; Speaker at various MACWORLD conf (Boston, San Francisco, Singapore, Argentina & Chile) & Gordon Conferences (NH).
- Patent Granted USA, US 6,803,900, "Novel touch & front-lighting techniques", For Touch in Displays. Others in process
- USDC (US Display Consortium) Investor Conference: Keynote, "The new ERA of HDTV Electronics", NYC, & SID (Society of Info. Displays) Business & Investor Conference: Invited talks on HDTV Electronics/Markets, SF, CA.
- N.I.H. Training Grant in Systems & Integrative Biology; Phila. Board of Educ. Scholarship; & Philadelphia City Scholarship; AIAA/Lockheed National Scholarship, High School Valedictorian-Alumni Gold Medal (1st out of ~1000).
- Wrote key chapter in Springer's Handbook of Visual Display Technology, (<u>LCDs, Growth &Market Coverage</u>) for 2nd edition(2013) & 3rd edition(~2025)