

INVENTIVE

cādence™  
CONFIDENTIAL

# Career Discussions

Carson Fischer  
November 15, 2011





## Career Discussions - Agenda

- Introduction including my career path
- Technical challenges ahead
- Managing your career path
- Q & A

# Carson Fischer – Principle Services AE Design Automation and Methodology Expert



- Experience includes 14 years industry and 4 years at Cadence
  - Internships with Honeywell and Texas Instruments
  - Custom Cell Design, Fab Research, & PLL experience at Texas Instruments
  - AMS design engineer (Inkjet printheads) & CAD methodology support at Lexmark
  - Principle Services AE supporting front-to-back AMS methodologies at Cadence
- Expertise includes
  - Design/analysis of current mirrors, sense amps, voltage regulators, and other circuits [0.18um to 1.0um]
  - Design of RTL of communication bus and state machines (No DSPs or datapath experience)
  - Development of timing constraints for various customer projects including turning spec into SDCs
  - Design of Mixed-Signal MEMs Inkjet Printhead [1.0um – 9 mask CMOS process]
  - Analog & AMS simulations
    - Test bench creation, behavioral modeling, and formal verification including coverage analysis
    - Command line automation including processing via PERL.
    - Creation of silicon test vectors from simulations
  - PDK development and augmentation of Techfiles, CDFs, PCELLs, Assura rule decks, QRC techfiles
    - Reconciliation of LEF and OA techfile in processes from 28nm to 0.35um
    - Creation of Incremental Technology Databases (ITDB) for OA Interoperability flows
  - Methodologies
    - Custom analog & AMS design flows (Example: GF 28nm methodology overview document)
    - Timing-driven digital design flows (Work since obsolete by Foundation Flows)
    - Library characterization flows (Example: ELC setup & NG's 3<sup>rd</sup> party SRAM compiler)
    - Design/Project Environment (Directory structure/license configuration/tool install & configuration)
  - Authoring automated solutions in Virtuoso, Encounter, LINUX, and Windows using various programming languages such as SKILL, PERL, SHELL scripts, TCL, C, etc. SKILL examples include:
    - Virtuoso PDK & STC CELL Surveyors for AMS Kits
    - ADE Job Manager in IC 5141 for Qualcomm

# Carson Fischer – Principle Services AE Design Automation and Methodology Expert



- Cadence Responsibilities
  - Technical management and execution of AMS methodology projects and HDS offering
  - Technical scoping of AMS methodology projects and HDS offering
  - Staying current with AMS methodologies and applying methodologies to customer projects
  - Mentoring junior engineers
  - Improving group communication and collaboration
- Cadence Platform Knowledge
  - Custom IC Front-end: VSE-XL, ADE-XL, Spectre/APS/AMS Simulators [Expert]
  - Custom IC Back-end: VLS-XL, VFP, VCP-Digital, VCAR [Proficient]  
(Experience with space-based router variants limited)
  - Digital IC Front-end: Incisive-XL, SimVision [Proficient]
  - Digital IC Back-end: RTL Compiler, Encounter, Conformal LEC [Proficient]
  - Physical Verification: Assura DRC/LVS & QRC end-user and developer [Expert]
  - DFII Infrastructure: Techfile, CDF, PCELL, SKILL, Tool setup [Expert]
- Cadence Service's Engagements





# Technical Challenges Ahead

## *Nanometer processes are challenging!*

- Must constantly stay up on design challenges
  - Front-end has functional verification challenges with coverage
  - Back-en has physical verification challenges with gigantic number of design rule checks.
- Larger and larger ICs (SoCs) require new tools and tool flows
  - Must constantly stay up on the tools to be a successful designer
- Analog and Digital are now inseparable
  - Analog ICs are now filled with digital content
  - Digital ICs are now filled with analog content
  - Must understand the complexities of both digital and analog content



# Managing Your Career

- No one but you is in charge of your career
- Companies will supply you with resources to achieve goals, but you must plot the course
- Plot out course for 1 year, 5 year, and a general direction
  - 1 year is short term and achievable, project based
  - 5 year is long term and too many things will change to plan beyond this time
- At some point you will decide to stay technical, go management, or do something else.
  - Assess your own interest and not the ideal you imagine
- Network. Network. Network.
  - Within company
  - Outside your company including vendors, customers, and trade shows
  - E-mail & phone numbers is old method
  - LinkedIn is the new method
  - ***Use everything!***



# Q & A



cādence™