

COURTESY: QUALCOMM

Qualcomm Innovation Fellowship: QInF 2012



Fortune 500 Company

Leader in developing and delivering innovative digital wireless communications products and services based on CDMA and other advanced technologies

World's largest fabless semiconductor company, #1 in wireless

Broadly licensed patent portfolio: ~11,600 U.S. and ~54,100 international patents and patent applications

Member of the S&P 100 & 500 Indexes



Global R&D Organization



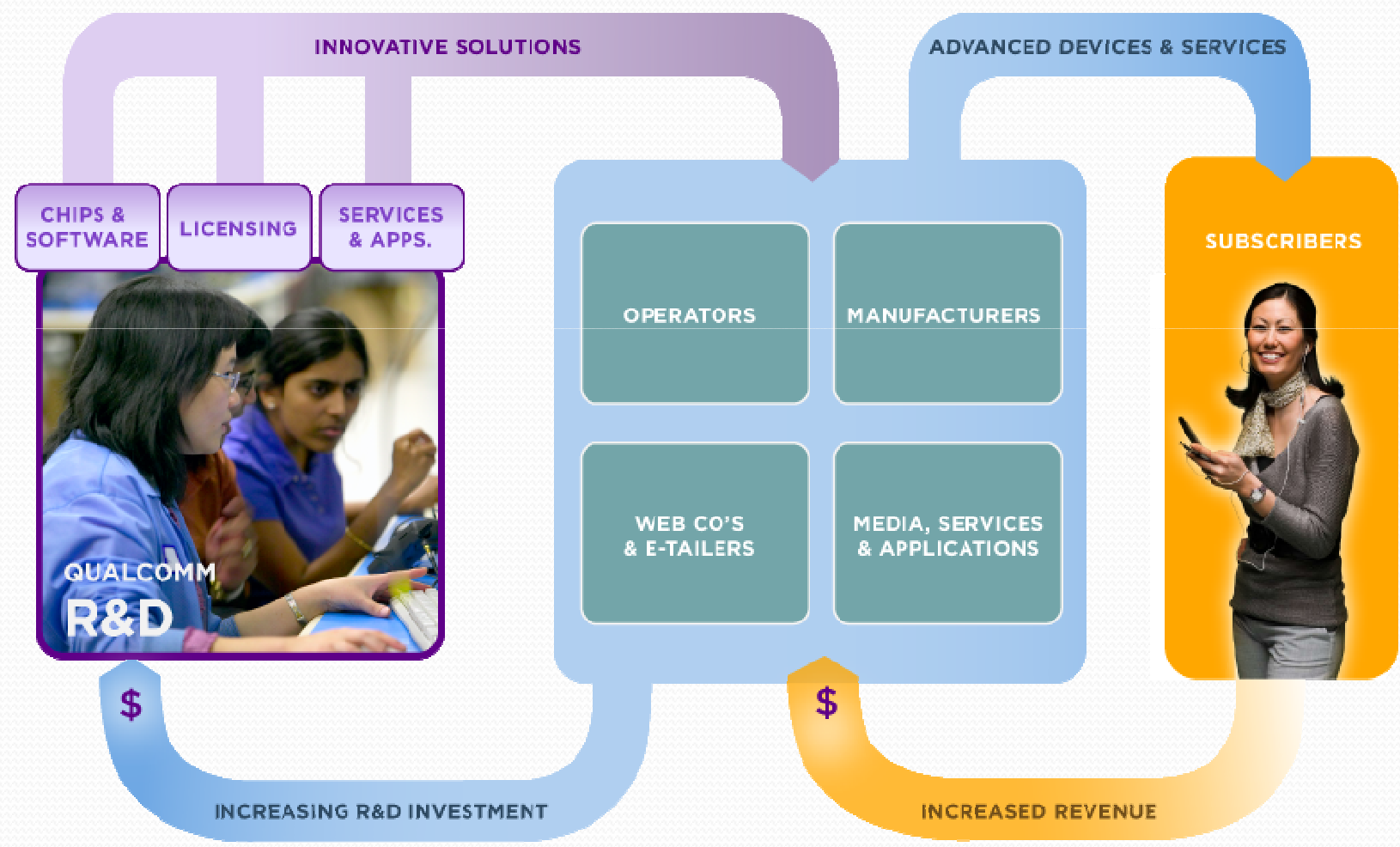
Qualcomm R&D Mission



To develop new technologies that create new business opportunities in partnership with Qualcomm's business divisions to deliver significant revenue and earnings growth in the medium and long term.

- Core Research
- Risk Reduction/Mitigation
- Prototyping
- Standards
- IP Generation
- Field Validation
- Technology Proof
- Evaluate external technologies for partnership/investment
- Qualcomm Divisional Support
- Development and Productization
- Market Strategy

Qualcomm Business Model: Technology and Value Chain Enabler



University Research Partnership

- Qualcomm University Partnership in China
 - Qualcomm has been sponsoring Chinese university research since 1998
 - Qualcomm has provided over 30 million RMB research grant to Chinese Universities over the last 12 years
 - Partnership with research labs in Tsinghua, BUPT, Shanghai Jiaotong, Southeast, CUHK, Zhejiang U., Chinese Academy of Science, Beihang
- Qualcomm Global University Research Partnership
 - Drives cutting edge research with top academic institutions in the world
 - Example of partnership institutions: Stanford, MIT, UC Berkeley, Princeton UCSD, UIUC, UCLA, Georgia Tech, Cambridge U, TI-Graz, Yonsei U.
 - Qualcomm innovation fellowship that encourages excellent graduate research
- Collaboration in many forms that complements Qualcomm R&D effort in advancing the state of art communications technology
 - Continue funded research with shared IPR
 - On-site research collaboration in the form of intern and visiting scholar
 - Informal research discussions

About QInF

- Qualcomm Innovation Fellowship (QInF)
 - In tune with QC CRD's culture of **innovation, execution and teamwork**
 - Initiated at Berkeley and Stanford in 2009 (**46** participating teams)
 - Expanded to UCLA, UCSD and USC in 2010 (**80** participating teams)
 - More prestigious schools including CMU, MIT, UIUC, Princeton, Rutgers and U Maryland are added in 2011 (**146** participating teams)
- **Key structure of Fellowship**
 - Fellowship to be awarded to a **team of 1~2** graduate students
 - Application requires submitting an **innovation proposal**
 - Advisor to 'recommend' the innovation, rather than the student
 - The respective advisor of each winning team member will administer funds to the winning students for their fellowship work and research expenses for the academic year of 2012-13.

Some of past QInF winners and topics

School	Students	Advisor	Topic	2009
Berkeley	Leo Mayerovich Seth Fowler	Ras Bodik	Parallel Web Browsing for Mobile Devices	
Stanford	David Stavens Jesse Levinson	Sebastian Thrun	Precision Localization for Indoor Environments	

School	Students	Advisor	Topic	2010
Berkeley	Maryam Tabesh Amin Arbabian	Ali Niknejad	Millimeter-wave Dual-Band Passive RFID using Antentronics	
Berkeley	Bor-Yiing Su Bryan Catanzaro	Kurt Keutzer	Parallel Object Recognition on Mobile Platforms	
USC	Viviane Ghaderi Sushmita Allam	Alice Parker Ted Berger	Modeling The Other Brain	
UCLA	Taehee Lee Teresa Ko	Stefano Soatto Deborah Estrin	Object-Level Mapping, Localization, and Change Detection on Mobile Platforms	
UCSD	Luke Barrington, Brian McFee	Gert Lanckriet, Lawrence Saul	Location-, Demographic-, Preference- and Content-Based Music Search and Recommendation	
Stanford	John Brunhaver, Andrew Danowitz	Mark Horowitz	Understanding Inefciencies in General Purpose Processors	

Timeline for QInF 2012 (China)

- Fellowship formally launched: Dec.25, 2011
- Applications due: **Feb 25, 2012**
- Finalists announced: Mar 26, 2012
- Final presentations due: April 6, 2012
- Finals at QC China office: **Week of Apr 16/20**
- Winners announced: May, 2012
- Scholarships awarded in academic year **2012-13**



QInF 2012 Schools (China)



QInF 2012 Focus Areas

- Advances in communication and networking
 - E.g., heterogeneous networks, super high frequency channel model and transmission (SHF and EHF), high-speed wire line transmission and switch
- Multi-core and parallel computing
 - E.g., hardware architecture for mobile platform, parallel computing compiler, application of OpenCL
- Multi-media signal processing
 - E.g., 3D video capture and compression, 3D image processing, high quality speech processing
- Machine learning and computer vision
 - E.g., pattern recognition, gesture recognition, image search, augmented reality(AR) , context awareness

Note: These are a selection of areas we know we are interested in. We also welcome proposals in Other Areas since we are very keen to learn about things we do not know !

QInF 2012 Submission

- Team composition
 - 1~2 graduate students
 - Need to be enrolled as full time graduate student in entire academic year 2012-13
 - At least one must be from EE/CS
- QInF website will provide further details of application
www.qinf.developer.qualcomm.com
- Each team will submit
 - Three page proposal summarizing the innovative idea
 - Letter from one or more member advisors, recommending the innovation proposal
 - CV of each student
 - QInF 2012 Official Rules statement
- Judging will be performed by researchers from QC R&D

Proposals

- Three pages (approx) in English
- The proposal is about what you are doing/going to do in the lab
- Need to include:
 - Introduction and problem definition
 - **Innovation**: proposal and relation to the state of the art
 - **Execution**: one year horizon of the project (even if the proposal is a multi-year project)
 - **Teamwork**: strength of the team for achieving the proposal milestones.
- Letter of recommendation from advisor for the proposal (guidelines)
 - Why the proposal is innovative
 - Why the proposal is important
 - Why the current team is likely to succeed in their proposal
- Note: Qualcomm does not publish the proposals, or provide templates, since we *want* to be surprised by your proposals
 - But, applicants are welcome to check out prior winners' web pages

Finalist Presentations

- Proposals are assessed in a conference-like review system by QC R&D researchers
 - For QInF 2011, every proposal received 3+ reviews (4+ reviews for every finalist)
- Based on the review process, we will announce **10 finalist teams** across all the schools
- Finalist presentation **will** be part of judging
 - 15 min talk + 5 min Q&A
 - No more than 15 slides
 - Presentation deck will be due the week before
 - Finals attended by
 - QInF finalists and advisor from various schools
 - QC Researchers

What will QC provide *in addition* to Fellowship

- Continuing relationship to QC
 - **QC mentor** to the winning team
 - Opportunities for **regular collaboration** with QC Researchers
 - Winners visit QC to present **research update** after 6 months, 1 yr
 - Expedited **internship** applications
- The fellowship concludes at the end of the first year
 - But the continuing research project may be proposed for funding through our university program
 - Funding not guaranteed, and may be at lower/higher level
- QC also keeps track of other proposals, and may fund them
 - QInF proposals are an excellent way to initiate a research relationship with QC – 3 page proposals are widely distributed and accessed
 - And don't forget internships, and full-time opportunities

FAQ: Eligibility

- Students from different advisors: Yes
- Any restrictions on receiving help from advisor, colleague: None
- Two applications with two teams: Yes
- Enrolment requirements
 - Need to be enrolled in full-time graduate program for academic year 2012-13
 - Students graduating in Fall 2012 are not eligible
- Following are **not** allowed
 - Team of more than two students
 - Member from any other schools (team across two of the QInF schools is OK)
 - Visiting scholars, post-docs, undergraduate students

FAQ: Other

- Intellectual property
 - IP developed by the students is owned by student/university, and is governed by university rules
- Are proposals for projects that are aligned with Qualcomm's business interests favored ?
 - We are hoping that the fellowship applications will introduce us to new areas of research. As such, we explicitly encourage proposals in new areas that are **not** yet aligned with Qualcomm's business interests.
- Do proposals have to be different from the graduation thesis ?
 - Not necessarily. We welcome a innovative idea that you have, either your current research work or your personal interest, and this will allow you to develop it.
- Should we include a business plan / path to commercialization?
 - No. This is a fellowship intended to encourage research.

FAQ: Other

- Does the proposal have to be the same as the research plan for my Ph.D/MS degree under my supervisor for the next year?
 - Not necessary. As long as you get approval from your supervisor
- Is there an “award quota” for schools?
 - No. This is an open contest between all schools. It is also possible that one school win more than one award
- Will the final winner receive a cash reward?
 - One third of the total award will directly go into the winner member’s pocket
 - The remaining money will be disbursed through school/department to the advisor’s account
 - The advisor will determine how to award the funds to the student’s research work

Conclusions

- Points to Remember
 - Application deadline: **Feb 25, 2012**
 - Four winner teams award for a total of **240,000RMB**
 - Other six finalist teams will also be awarded with a surprise
- Please check back regularly at the QInF web page
www.qinf.developer.qualcomm.com
- Also available on the web page
 - FAQs (compilation of all queries we receive)
 - Application submission procedure (coming)
- Questions, comments
qinf.china@qualcomm.com



Make Your Dreams A Reality

Qualcomm Innovation Fellowship



Back Up

QInF 2011 winner's proposal list

1. Robots Need Language: A computational model for the integration of vision, language and action
2. Algorithm-driven Platforms for Low-energy Intelligent Biomedical Systems
3. mLogic: Low-Power, Non-Volatile Magneto-electronic Logic Circuits for Portable Applications
4. Spatial Mobile Interaction using Depth Cameras
5. I-SENSE – Innovative Technology Enabling New Life-style
6. Single Pixel Depth Sensing and 3D Camera
7. Automatic Summarization for Mobile Search
8. Balancing The Dichotomy Between Privacy and Utility in Mobile Empathic Systems: A Compressive Sensing Approach

Wireless: Bridging Physical to Digital


PHYSICAL WORLD

 Location & Connectivity

 Biosensors

 Couponing & Recommend


 Mobile Commerce

 Location & Presence

 Content Delivery


 Connectivity


DIGITAL WORLD

Smart Infrastructure 

Healthcare Provider 

Advertising & Retail 

Banking 

Family / Social Network 

E-tailer Content 

Enterprise 



Creating New Mobile, Computing and CE Device Categories

