

PIONEERING CLOUD TECHNOLOGIES THAT ARE ROBUST, ECONOMICAL AND ENVIRONMENTALLY FRIENDLY



# INDUSTRY AFFILIATES PROGRAM

# MESSAGE FROM THE DIRECTOR



## Pioneering robust, economical and environmentally friendly IT

Welcome to EcoCloud. Our mission is to provide world-class leadership for, and to drive innovation in, sustainable cloud computing technologies. In so doing, our goal is to address major national and global IT challenges.

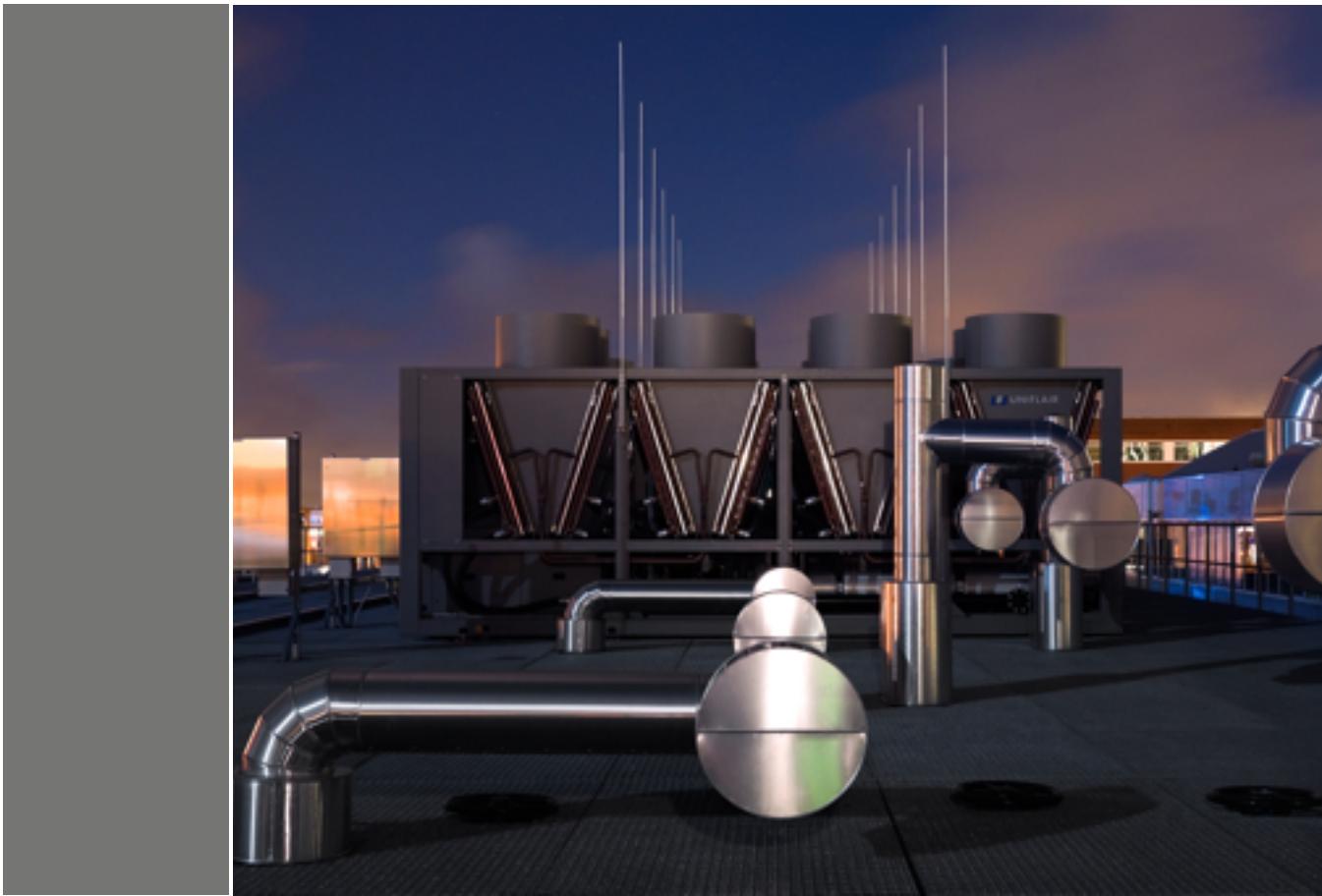
We aim to deliver the innovation and timely outputs that are crucial to ICT sector companies. Indeed, our success synergistically builds on strong support for, and a growing appreciation by, private industry.

With our strong emphasis on industry collaboration and technology transfer, our Industrial Affiliates Program (IAP) therefore has periodic activities centered around the promotion and commercialization of research among the consortium.

The EcoCloud IAP aims to build long-term partnerships founded on research collaborations, PhD programs, University-Industry partnered research grants, internships, visiting scholar programs, fellowships, executive/continuing education, outreach and more. Our immediate focus is on expanding our relationships, and attracting additional industrial partners to this endeavour. Please get in touch if your company is interested in exploring opportunities with EcoCloud.

**Babak Falsafi**  
Director, EcoCloud

# ECOCLOUD CENTER



## Making cloud computing scalable, cost-effective and sustainable

EcoCloud is an inter-disciplinary consortium of internationally-recognized experts in data analytics and machine learning, scalable and parallel programming, software development paradigms, data and storage management technologies, computer systems and circuits engineering, and novel cooling technologies. We collaborate on innovating core technologies to bridge the gap between applications of massive data and their demand on IT resources, and the diminishing energy efficiency from conventional semiconductor fabrication technologies.

Founded on the predication that growth in economical data-centric IT can only occur through judicious and tight integration of core technologies in the IT ecosystem, EcoCloud addresses the fundamental challenges of tomorrow's clouds along three primary research thrusts:

- We are developing technologies to improve trust in cloud data management by designing seamless, service-oriented query processing techniques that optimally exploit cloud platforms and infrastructure.
- We are innovating vertically-integrated computing and cooling technologies to provide a holistic approach to energy management and minimization.
- We are developing ways to solve the truly "hard" problems, which cannot be easily parallelized and that are exponential in nature, marking the next phase in transitioning critical applications from big, expensive monolithic computers to large clusters of commodity nodes.

Our targeted research enables laboratories to work together towards a common goal, thereby propelling collaboration and the potential for trans-disciplinary innovation. In so doing, EcoCloud reinforces the core missions of EPFL.

One of Europe's leading institutes of technology, EPFL also has an extremely start-up friendly culture that supports the development of ambitious projects by facilitating trans-disciplinary research, together with industrial partners beyond the traditional frontiers of laboratories and disciplines. The campus' dynamic innovation ecosystem includes its Science Park (PSE) and the Foundation for Innovation and Technology (FIT). As a result, EcoCloud is perfectly positioned to drive innovation in cloud technologies.

## Meeting a growing need

Increasingly, information technology (IT) is an indispensable requirement of all societies. We are witnessing a second revolution in IT, at the center of which is data. As individuals we need ubiquitous access, exchange and sharing of data to interact. Similarly, businesses, governments and societies rely on collecting, analyzing and exchanging data to improve their products and services, and ultimately to enhance our lives. Up to 50% of the value of the developed world's economies is estimated to be based on information.

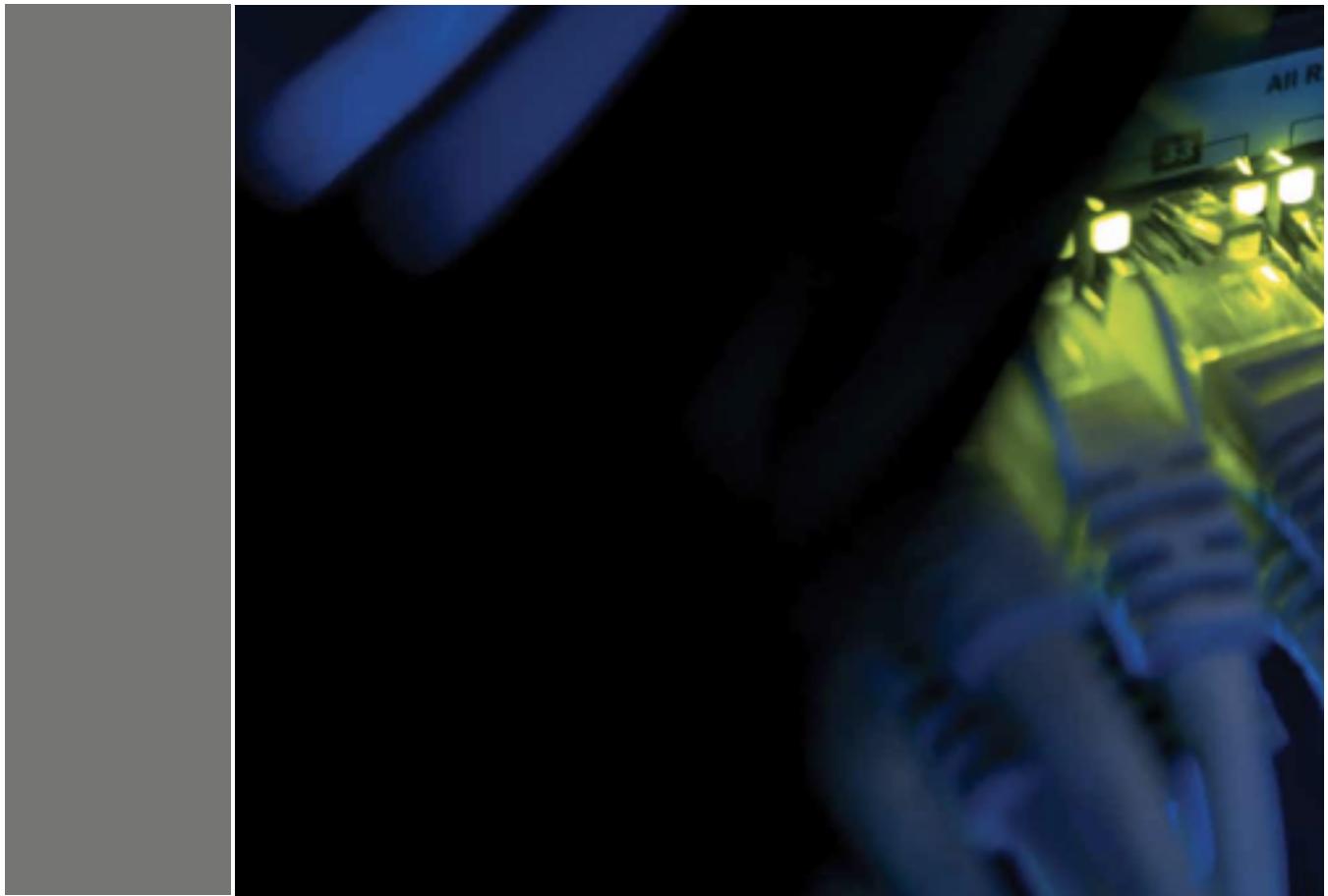
The net result is that our daily demands to store, communicate and analyze data are growing at much higher rates than improvements in technology alone can sustain. There are two phenomena that, unless mitigated, will dramatically slow down IT growth. First, the demand on data processing, communication and storage is growing faster than existing technologies can sustain, surpassing even the exponential improvements in digital platform capabilities. Second, conventional semiconductor fabrication technologies have hit fundamental physical barriers with energy, economic and environmental implications. Projected growth is at much higher rates as compared to improvements in density and capacity from technology alone. Worldwide data center electricity usage is growing at 17% annually, and server carbon footprints already match those of the airline industry in the US.

Timely innovation in massive data analytics and management is urgently needed. Mounting IT costs, slowing improvements in energy-efficiency of processor and memory chips, and the rapidly growing demand for data processing requires new technologies that will enable a sustainable growth model for IT.

Unlike current practices and trends in industry targeting low-hanging fruits to improve efficiency, EcoCloud's research activities focus on collectively reducing energy requirements in the long term for future data-centric applications through approximation, integration and specialization.



# INDUSTRY AFFILIATES PROGRAM



## Industry Affiliates Program Mission

The EcoCloud Industry Affiliate Program (IAP) offers companies a unique opportunity to collaborate with EPFL faculty, students and researchers. Affiliated are given unparalleled access to new technologies and ideas as they move from laboratory to marketplace. The ideal platform for communication and discovery between the research and corporate communities, the program catalyses collaborative research, customises educational programs and facilitates graduate recruiting.

The EcoCloud IAP was created to enable connections and strengthen collaborations between EcoCloud and industry. While there are numerous benefits to joining the IAP and becoming an Affiliate, the advantages boil down to three key reasons:

- To gain early awareness of the latest research - Through meetings, visits and a members-only website, EcoCloud Industry Affiliates get to preview the latest research findings from across our labs before they are published.
- To explore potential research collaborations and sponsorships - Companies can get much more by sponsoring EcoCloud research directly. Becoming an Affiliate allows you to see how we work and what we do, giving you the insights you need to identify research partnerships.
- To recruit EcoCloud students - Our students are one of our most valuable assets. They can add substantial value to your company as interns or employees. We post student profiles on the members-only website, and you can meet them at our Annual Event. EcoCloud can also host talks geared towards students, and distribute job and internship announcements.

# INDUSTRY AFFILIATES PROGRAM



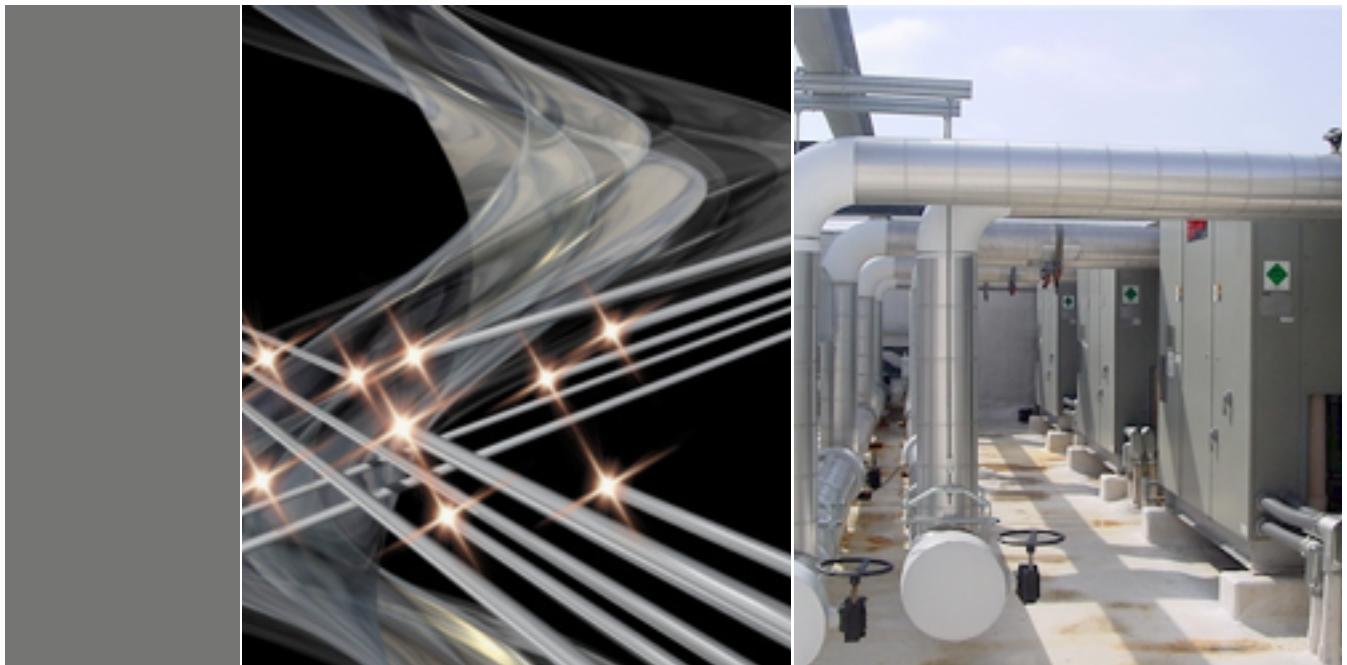
## Industry Affiliates Program Member Benefits

The EcoCloud IAP is a corporate membership program whereby companies pay an annual membership fee in return for facilitated access to the research programs, the researchers and the graduate students, offering the ability to capitalize on the unique, dynamic trans-disciplinary innovation culture at EPFL. Spanning entrepreneurial startups emerging from our research, to delivering customizable executive education, industry collaboration and technology transfer lie at the heart of the EcoCloud's IAP.

Benefits of becoming an Affiliate include:

- **Annual Event** - An annual conference exclusively designed for our existing and prospective Industry Affiliates and research colleagues to showcase the activities of the center. The event's program includes activities such as presentations by EcoCloud faculty and researchers on the latest research results organized around chosen research themes; student poster sessions; lab tours; demonstrations; discussions on grand challenges, applications and technology roadmaps; and opportunities to meet and network with EcoCloud researchers, students and colleagues.
- **Research Monitoring** - Throughout the year, EcoCloud will enable Affiliates to remain engaged by means of newsletters, seminars, talks and virtual meetings. When feasible, these events will be broadcast live for our IAP member companies, so participants can join in remotely to hear from different thought leaders at EcoCloud and keep informed about the latest research. Affiliates also have preferential access to the comprehensive members-only IAP website, which contains information about research outcomes, EcoCloud events, video and publication archives, and other research outputs.

- **Graduate Student Recruiting** - EcoCloud will organize events (including the Annual Event), during which Affiliates have access to soon-to-be graduating students to facilitate recruiting. We work with our Affiliates to facilitate recruiting activities throughout the year, including advertising job and internship announcements, hosting talks and seminars, and other student-targeted networking events.
- **Occasional Visits** - Affiliates may arrange visits to EcoCloud. Visits enable previews of EcoCloud's research programs and results and demonstrations of emerging technologies. We work with our Affiliates to identify appropriate EcoCloud researchers, ongoing projects and potential opportunities for collaboration.
- **Joint Research Projects** - Member companies have opportunities to engage with EcoCloud in research projects and collaborations into deployable technology. These include, but are not limited to: the opportunity to contribute and formally participate in EcoCloud research projects, customization of educational programs and the opportunity to develop and sponsor structured research programs.
- **Advertising** - Our Affiliates have the opportunity to promote their company's brand on EcoCloud's website and reports.
- **Outreach and Executive/Continuing Education** - EcoCloud develops and hosts at least two outreach programs per year. Past events included a summer workshop on cooling technologies, a winter school on data-centric systems, and co-hosting the 3D silicon integration conference. Moreover, EcoCloud is eager to develop special executive/continuing education courses to address the specific needs of our affiliates.
- **Technical Advisory Board** - EcoCloud Affiliates designate a technical staff to EcoCloud Technical Advisory Board which meets once a year to discuss grand challenges, research and industrial trends, and discuss EcoCloud research direction. This annual meeting can vary from a one hour meeting to a full blown two-day retreat to present research and solicit feedback.
- **Visiting Scholars and Fellows Program** - The EcoCloud Visiting Scholar and Fellows Program stimulates and supports our research by engaging promising scholars and practitioners in order to foster exchange. Each year, a number of distinguished academics (Visiting Scholars) and junior faculty and students (Fellows) will be selected on the basis of their qualifications, the quality of their research plans, and the relevance to both EcoCloud's mission and targeted research objectives. EcoCloud's Visiting Scholars and Fellows will work on projects that offer joint collaborative opportunities.



# CURRENT INDUSTRY AFFILIATES



CREDIT SUISSE



Powering Business Worldwide



***Microsoft***

**ORACLE**



# CONTACT

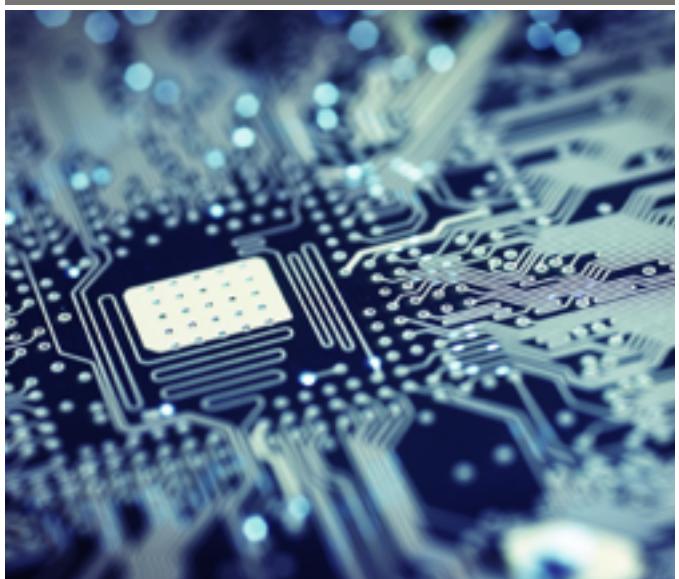
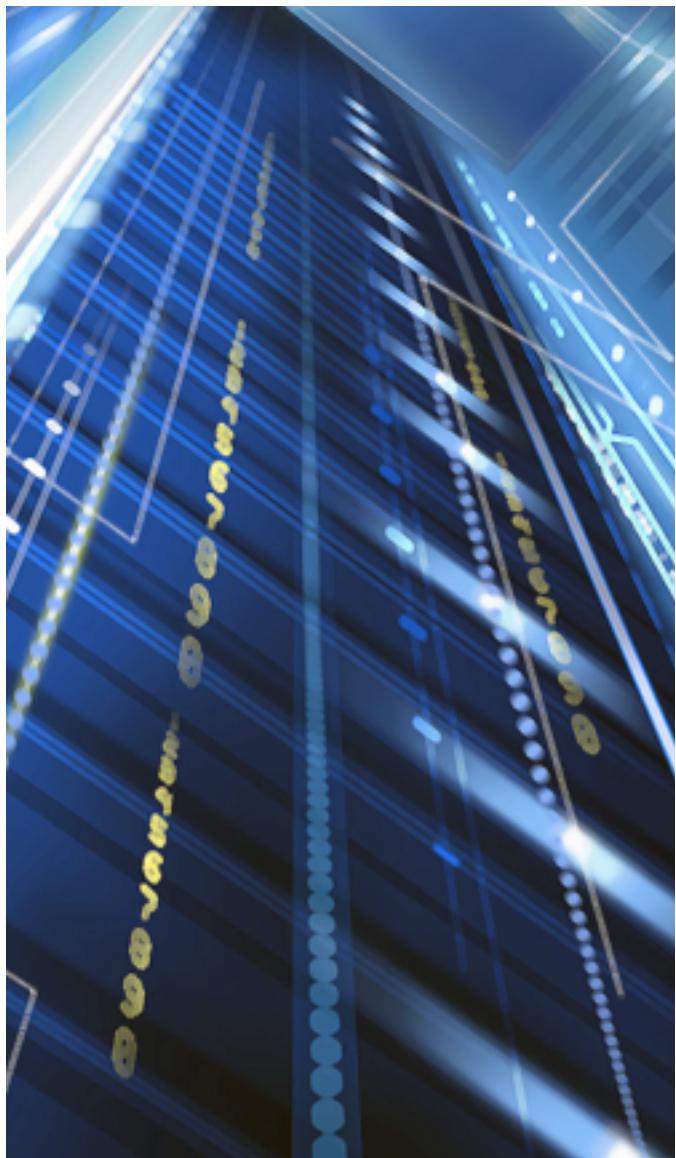
EcoCloud works with companies both on a one-to-one basis and as part of larger lab-wide initiatives, where our researchers work closely with corporate sponsors to define and execute research themes. We are currently broadening our partnerships, and welcome meeting with visionary companies across a range of disciplines.

## For information about EcoCloud research, please contact:

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