



3rd SHIFT Zurich Summit
August 25-26, 2016
Zurich, Switzerland

www.shiftzurich.ch

Guiding Theme:

Lightweight Construction and Materials

Two Case Studies:

Innovation 4.4 and the Biomimetic Office





Welcome

We greet you with a warm welcome to the 3rd SHIFT Zurich Summit in beautiful Zurich, Switzerland.

SHIFT Zurich is the bi-annual platform where leading bioinspired impact investors, entrepreneurs, engineers, biologists and innovators from around the world gather to challenge and fine-tune their solutions in a trusted, open environment.

Some years ago we asked ourselves:

What if we were to drive the shift from outdated linear thinking to comprehensive nature-inspired problem solving capabilities for the future?

What if we were to learn from nature to accelerate the shift towards a circular economy and low carbon prosperity?

And most importantly: What if we were to shift from talking to doing?

SHIFT Zurich is aiming to change the paradigm from linear-human to comprehensive nature-inspired problem solving in everything from research, innovation, business, finance to politics and society. We like purpose, visions and big ideas – and to brake them down to tangible, real market driven projects and initiatives.

Our action-oriented focus is shown in two carefully selected case studies that will be explored in a full day Working Session on Day 1: **Innovation 4.4** with the new NASA Planetary and Human Sustainability Innovation Center in Mountain View, California and the **Biomimetic Office**. General technical issues, particular site issues, financing models, and cultural and community building issues will be discussed.



Goal is to learn from Innovation 4.4 and the Biomimetic Office how the next generations of communities and buildings will be designed, financed, implemented, and managed to make them truly sustainable from a planetary perspective.

On Day 2 thought-provoking speakers will share their latest insights and learnings in three panel sessions focusing on industry, architecture and finance. The program further includes company pitches with cutting-edge bioinspired innovations, and provides unique networking opportunities and lively exchange among all participants and exhibitors.

It is both fascinating and motivating to be part of the SHIFT Zurich community and witness the developments since its first edition in 2012. Thank you all for making it happen and being part of the journey!

On behalf of the SHIFT Zurich team, our partners, sponsors, and exhibitors, I thank you for being here with us and wish you a rewarding and exciting event.

Christian Haeuselmann

SHIFT Zurich Chair

Zurich Host City

Four Questions for Markus Assfalg



Division Head Business and Economic Development, Office for Economy and Labour Canton of Zurich

Why Zurich? What does the city have to do with bio-inspired innovation?

Zurich is an ideal platform for this topic. Outstanding scientific research has a very high priority in the canton. People are always open to experimentation, and there is a tradition of integrating new ideas into your own work and even developing them into marketable products if possible. It's thanks to the entrepreneurial spirit in Zurich that ideas are also given a pragmatic chance, even if they appear exotic at first glance. This is the strength of our location.

The guiding theme of SHIFT Zurich 2016 is lightweight construction and materials, which are also crucial to the aerospace sector.

Is this topic also important for Zurich?

This is very important because Zurich has a meaningful aerospace cluster. High-tech developments such as satellite navigation systems are pursued here and directed towards the European aerospace sector. Research coming out of the ETH Zurich is put into practice here. The business and economic development agency of the canton of Zurich also works closely with a renowned nanocluster, which deals heavily with materials science. A beacon for Zurich is also Empa: the Swiss Federal Laboratories for Materials Science and Technology. All of these institutions and their solutions act as a paradigmatic impetus for innovation in other business sectors and scientific fields.

How so?

This is possible first and foremost through interdisciplinary networks. We encourage a lively exchange between different clusters and consciously take advantage of the short distances in Zurich. Sources of inspiration are not only cluster meetings but also of course conferences such as SHIFT Zurich.

Which business sectors are influenced by biomimetics?

The life science cluster is important for Zurich, and bionics can foster innovation when it comes to medical technologies. Just now the heads of the ETH Zurich, the University of Zurich and the University Hospital Zurich have committed further to jointly developing a globally leading health cluster. The creative industries and ICT cluster can also benefit from bionic insights. And of course the cleantech sphere, for example in the field of building technologies or new materials, are also inspired by this. But the potential extends far beyond this.



The Market Opportunity

By 2030 Bioinspiration is projected to generate USD 425B of US GDP and USD 1.6T of global GDP.¹

Today, engineers for example at Airbus design future airplanes with lightweight construction and material insights informed by nature's strategies. Google designs its office buildings in Austin, Texas based on biomimetic concepts to save energy and to increase the productivity and health of its employees. Research teams at Bank of England implement swarm-based learnings in their financial algorithms to predict financial market behaviors. The ETH Zurich Future Resilient Systems Institute in Singapore develops smart grid energy infrastructure based on nature's resilience strategies.

The field is gaining momentum with large corporates adopting biomimetic strategies, increasing case studies of companies successfully translating disruptive innovations into market proven products and services, and first funds initiated to invest solely in biomimetic companies. Stay ahead and join the SHIFT Zurich 2016 to understand the direct relevance of these developments for your business and investments, thus allowing for timely and informed strategic decisions.

1 [San Diego Zoo Global, commissioned by. Bioinspiration: An Economic Progress Report \(2013\) Fermanian Business & Economic Institute: San Diego, CA.](#)



Summit Highlights

SHIFT Zurich promotes the game-changing potential of bioinspired solutions and provides tangible business and investment opportunities for participants, thus accelerating the path towards low carbon prosperity and a more resilient economy and society.

The 2-Day Program allows for serendipitous encounters, encourages to leave the comfort zone, and to whet the appetite for discovery.

Day 1 "In the Green", Thursday, August 25th 2016

- *A full day of engaging Working Sessions in and around the Sorell Hotel Zurichberg above the City and Lake of Zurich, including lunch at the Zoo Zurich's Elephant Park*
- *Two case studies will be explored in the Working Sessions: Innovation 4.4 with the new NASA Planetary and Human Sustainability Innovation Center in Mountain View, California and the Biomimetic Office*
- *A breakout program module will be provided with the Spark Session "PHD Corner" by Kristina Wanieck, Deggendorf Institute of Technology.*

Day 2 "Downtown Zurich", Friday, August 26th 2016

- *Conference and networking in the Marriott Hotel at the Limmat river with thought-provoking speakers and three panel sessions focusing on industry, architecture and finance*
- *Company pitches by selected bioinspired entrepreneurs allow for engaging discussions between industry and finance experts*
- *Expo with cutting-edge technologies and products.*

Core Partners

swisscleantech is the leading business association promoting a green economy in Switzerland. Its main targets are to position Switzerland as a cleantech leader and foster sustainable development on a global level. swisscleantech bundles the interests of 260 member companies (startups, SME's, multinationals) and is a cluster partner of the Global Cleantech Cluster Association. GCCA enables cross-collaboration among 52 Cleantech clusters from across the world, representing 10,000 companies.

www.swisscleantech.ch

LIFE Climate Foundation – The goal of the LIFE Climate Foundation is – as an initiator – to constructively help shape the development and advancement of market-based instruments in the area of climate protection and, in doing so with the motto “for a better life”, contribute to attaining the global climate protection goals established by the Kyoto Protocol as well as the ultimate protection of our environment. As an economic and financial centre, Liechtenstein offers the best premises for the Foundation with its inclusion in the Swiss and European economic areas. Further advantages are full membership in the United Nations, implementation of the EU Emissions Trading Directive, an innovative industrial sector and an internationally aligned financial centre.

www.klimastiftung.li

The Zurich Zoo is a cultural institution in Zurich, acting as the ambassador between human beings, animals and nature. The Zoo's mission is to engage and educate a wide range of visitors and stakeholders in order to protect natural habitats, support sustainability and biodiversity, according to the slogan “knowing animals leads to protecting them”. As one of the world's most respected Zoos Zurich is building a global network to further drive its mission. One result is the Biomimicry Europe Innovation and Finance Summit held for the second time at the Zurich Zoo in Switzerland.

www.zoo.ch

Biokon – The biomimetics network of excellence, BIODON, is the umbrella for over 100 universities, research institutions, businesses and individuals from the whole of Germany and Europe, all of whom work in the field of biomimetics. The major aims of BIODON are: bundling and networking existing expert knowledge, implementing, accompanying and executing R&D projects, training and educational efforts, and offering and coordinating PR for biomimetics. BIODON converts knowledge into added value. In the last decade, BIODON has established as a central hub for information on and contacts in biomimetics and thus developed into a peer-level liaison entity for various user groups and user industries.

www.biokon.de

The Wyss Institute for Biologically Inspired Engineering at Harvard University uses nature's design principles to develop bio-inspired materials and devices that will transform medicine and create a more sustainable world. The Wyss Institute crosses disciplinary and institutional barriers to engage in high-risk research that leads to transformative technological breakthroughs. These technologies are translated into commercial products and therapies through collaboration with clinical investigators, corporate alliances, and new start-ups.

<http://wyss.harvard.edu>

Summit Program

Thursday, August 25 2016

Location: Sorell Hotel Zurichberg & Zoo Zurich

Full day Working Sessions with two Case Studies: Innovation 4.4, the Human and Planetary Sustainability Innovation Center in Mountain View, CA and the Biomimetic Office

- 8:30 **Registration, coffee and croissants**
- 9:15 **Welcome: Alain Schilli and Christian Haeuselmann**, Summit Chair
- 9:25 **Introduction – a public private partnership case study, Innovation 4.4: A Living lab for technology innovation and the future of the built environment**
Lina Constantinovici, Founder of Innovation 4.4
Dr. Ioana Cozmuta, STC @Space Portal, NASA Ames, Industry Innovation and Microgravity Lead, Mountain View, CA.
- 9:45 **Ralf Bellm**, BETTR AG, Zurich. **Biomimetic Office co-developed with Michael Pawlyn** from Exploration Architecture in London, UK
- 10:00 **Overview of the day and intended outcomes.**
Working Session Facilitators: Chris Garvin, Christopher Peterka, Michael Pawlyn, Lina Constantinovici, Rainer Erb, Kunal Masania, Darja Dubravcic, Arndt Pechstein, Kalina Raskin
- 10:15 **Group Discussion:** Conceptual needs of various components of the Innovation 4.4 case study (energy and water systems; mobility; waste handling; supply and deliver strategies; open space and habitat, etc.) and precedents set by other green developments. Prioritizing of efforts.
- 10:45 **Working Groups:** Break into working teams for brainstorming sessions in topic areas.
Parallel groups: Energy, Water, Material, Mobility/Transportation, Systems
- 12:15 **Lunch and Elephant Park Tour**, Zoo Zurich (10' walk from Sorell Hotel Zurichberg)
- 14:45 **Mathieu Fauve**, **Stoekli Swiss Sports - Skis with turtle shell technology**
Christopher Peterka, Gannaka, **Biomimetic work spaces and new community design**
- 15:10 **Group Discussion:** Community and financial needs of the Innovation 4.4 case study (cost, material and productivity gains; self-organizing communities; bioinspired finance innovation, etc.). Prioritizing of efforts.
- 15:30 **Working Groups:** Break into working teams for brainstorming sessions in topic areas.
Parallel groups: Work Spaces, Community Design, Financial Frameworks, Cultural Opportunities, Communication Strategies
- 16:45 **Plenum: Rejoin for group summaries**
- 17:30 **Action Plan: Discuss next steps and action items.**
- 17:50 **Lina Constantinovici, Thomas Ermacora - Outlook:** Connecting the Future of the Built Environment and the Innovation 4.4, Design Charrette in Mountain View/CA on September 26-27th 2016
- 18:00 **Social Program**
- 19:30 **Dinner & Networking**

Friday, August 26 2016

Location: Hotel Marriott, Zurich

- 8:30 **Registration, coffee and croissants**
- 9:00 **Markus Assfalg**, Director, Business and Economic Development Canton Zurich
- 9:10 **Angela Gruenewald**, Airbus APWorks GmbH, **Input Keynote**
- 9:30 **Panel 1. Lightweight construction and materials, applied in INDUSTRY**
Rainer Erb, Biokon, Managing Director, Berlin (**Moderator**)
Angela Gruenewald, Airbus APWorks GmbH, Munich
Andreas Wittmer, Swiss Aerospace Cluster
Darja Dubravcic, Bioinspiration Coordinator, EPFL Lausanne
Anatole Krattiger, WIPO Green, Geneva
- 10:15 **Break**
- 10:45 **Panel 2. Lightweight construction and materials, applied in ARCHITECTURE**
Chris Garvin, Terrapin Bright Green, New York (**Moderator**)
Ioana Cozmuta, STC, Industry Innovation and Microgravity Lead, Mountain View, CA
Ralf Bellm, BETTR AG, Board Member, Alpnach Dorf/Switzerland
Curtis Rodgers, Vice President, Brick & Mortar Ventures, San Francisco
Kalina Raskin, CEEBIOS, Paris
- 11:30 **Company Pitches**
- 12:15 **Lunch & Company Expo**
- 14:00 **John Rhee**, Stratis Private Equity Asia, Korea **Input Keynote**
- 14:30 **Panel 3. Finance Innovation Panel - Bioinspired risk and value creation models**
Simon Tribelhorn, LIFE Climate Foundation Liechtenstein (**Co-Moderator**)
Lina Constantinovici, BVC Fund, San Francisco (**Co-Moderator**)
Tomas Carruthers, Social Stock Exchange.SSX, London
Kavita Gupta, UN Social Innovator in Finance, San Francisco
Ardian Gjeloshi, Crowdhouse, Chairman & Co-Founder, Zurich
- 15:30 **Closing Remarks, Outlook. Alain Schilli und Christian Haeuselmann**
- 16:00 **Farewell Drinks and Networking**



Keynote Speakers & Moderators

Markus Assfalg
Business and Economic
Development Canton
Zurich

Ralf Bellm
BETRAG

Cyrille Boinay
Bcomp

Tomas Carruthers
London Social Stock
Exchange

Katherine Collins
Honeybee Capital

Lina Constantinovici
Startup Nectar

Ioana Cozmuta
STC @Space Portal,
NASA Ames

Darja Dubravcic
EPFL Lausanne

Rainer Erb
Biokon International

Thomas Ermacora
Machines Room

Mathieu Fauve
Stoekli Swiss Sports

Samuel Furrer
Zurich Zoo, Curator

Chris Garvin
Terrapin Bright Green

Ardian Gjeloshi
Crowdhouse

Angela Gruenewald
Airbus APWorks GmbH

Kavita Gupta
UN Social Innovator in
Finance

Christian Häuselmann
swisscleantech

Beat Karrer
FluidSolids

Anatole Krattiger
WIPO Green, Geneva

Kolja Kuse
TechnoCarbonTechnologies



Kunal Masania
Complex Materials
Institute, ETH Zurich

Curtis Rodgers,
Brick & Mortar
Ventures

Michal Topaz
Zoo Tel Aviv

Alessandro Medici
PowerBlox

Alex Ruebel
Zurich Zoo, Director

Simon Tribelhorn
LIFE Climate Foundation

Arndt Pechstein
Biomimicry Germany

Alain Schilli
Magnefico GmbH

Kristina Wanieck
Bayonik, Deggendorf
Institute of Technology

Christopher Peterka
Gannaka

Rolf Senti
Swiss Ecoline

Andreas Wittmer
Swiss Areospace Cluster

Kalina Raskin
CEEBIOS

Sam Shadman
Bioapply

Carl A. Ziegler
T-LINK Management AG

John Rhee
Stratis Private
Equity Asia

Thomas Speck
Biokon and Botanic
Garden Freiburg

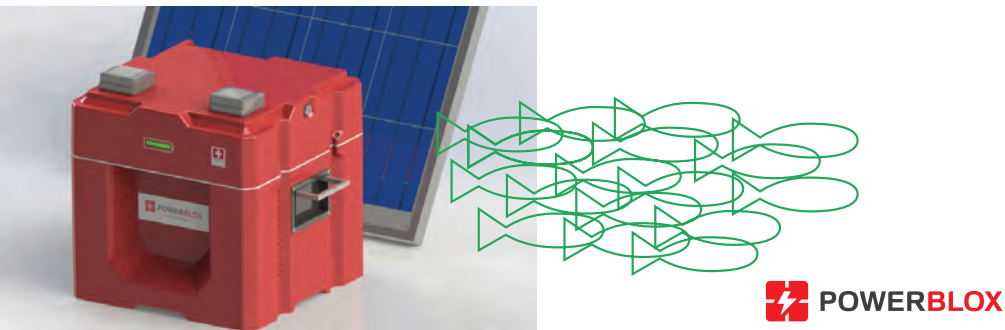
CTI Best Practice

Learn from bioinspired solutions, supported by Commission for Technology and Innovation CTI

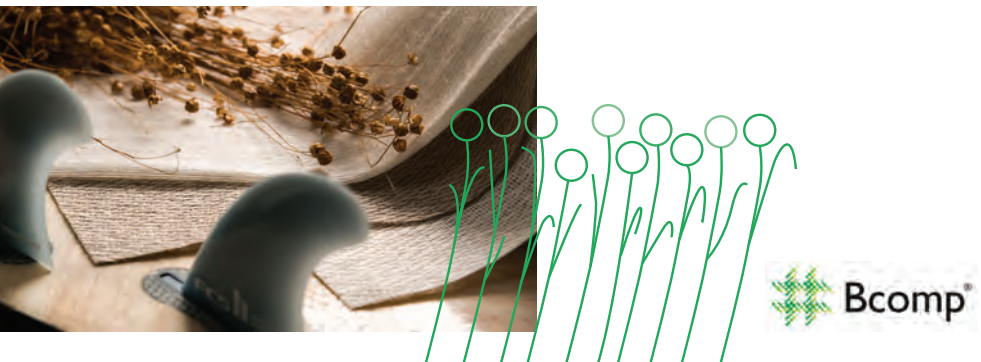
Turtle shell technology for skis



Swarm intelligence for energy storage



Structural composites parts from natural fibres

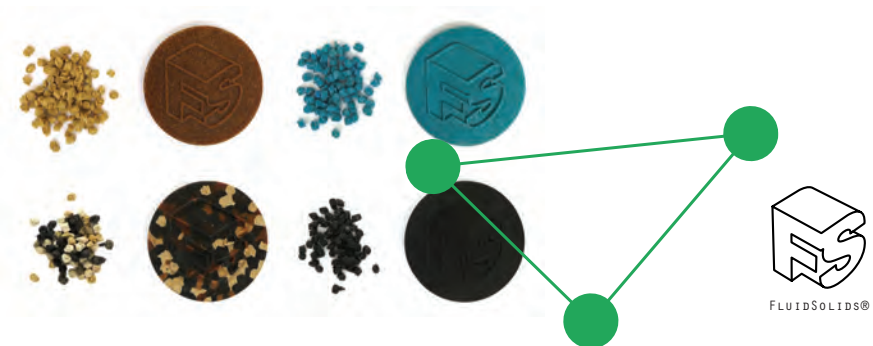


Water and energy saving armatures -

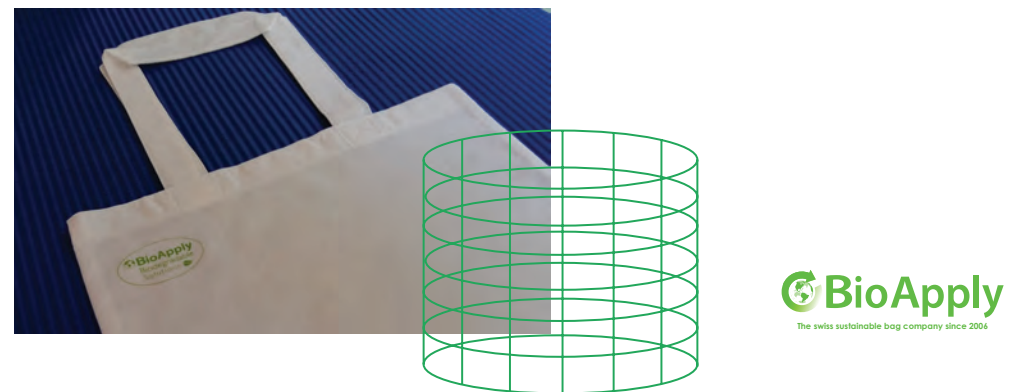
"Imagine a wash basin decomposing at the end of its life cycle"



Biopolymers - smart by nature



100% biodegradable and compostable bags



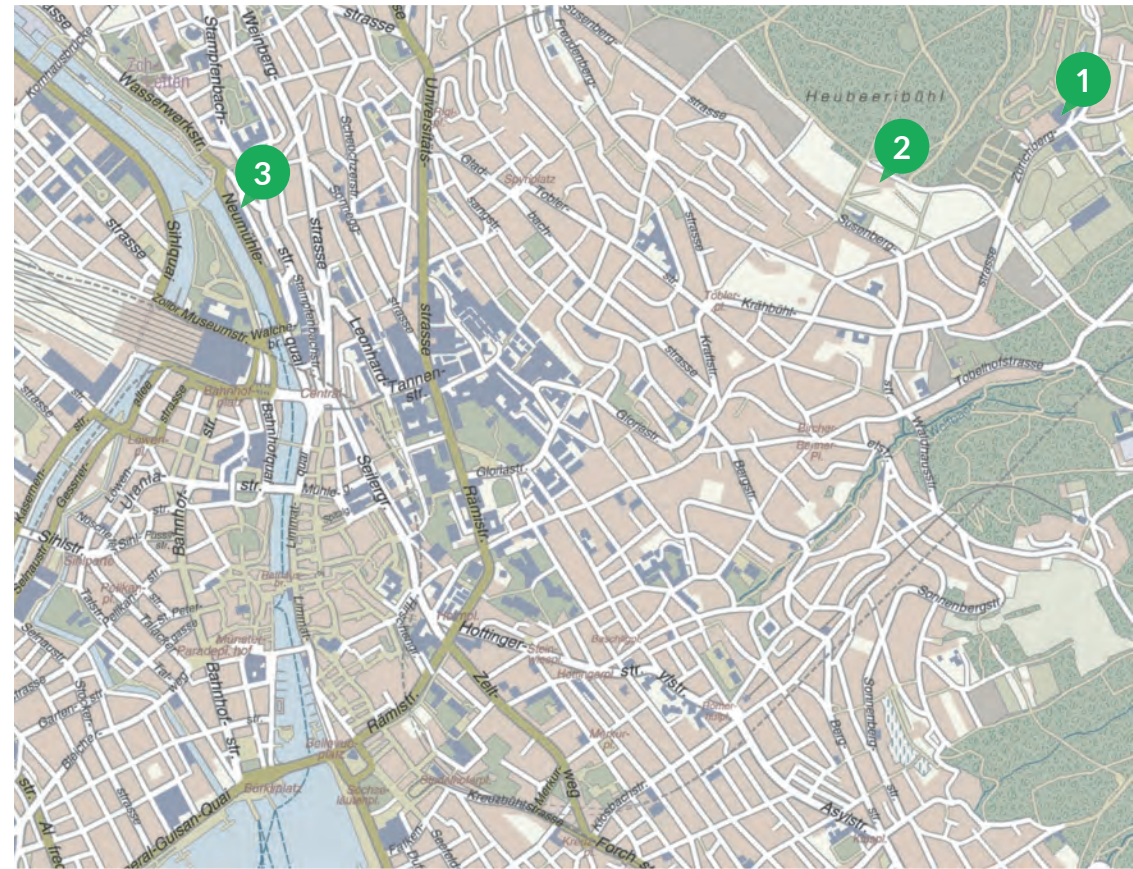
Locations

- 1 Zoo Zürich**
Zürichbergstrasse 219
8044 Zürich

P +41 44 254 25 00
- 2 Sorell Hotel Zürichberg**
Orellistrasse 21
8044 Zürich

P +41 44 268 35 35
- 3 Marriott Zürich**
Neumühlequai 42
8006 Zürich

P +41 44 360 70 70



Summit Committee

Christian Häuselmann

swisscleantech, Co-founder

Christian Häuselmann is an innovation-driven Swiss economist and serial entrepreneur, living today in Del Mar, California. He has 20 years of experience in the Cleantech sector, both with start-ups and global organizations. He is co-founder and Head of Innovation and Export of swisscleantech, driving sustainable policy development in Switzerland. Since 2010 he is the Chairman of the Global Cleantech Cluster Association/GCCA, driving collaboration among 50 global Cleantech clusters representing 10'000 companies. In 1996 he won the young entrepreneur award for his first start-up company BKTech and the market introduction of the powerful FLYER electric bike. He got his MS in Business Administration at the University of Berne/Switzerland. Co-founder SHIFT Zurich

Alain Schilli

Magnefico GmbH, Managing Partner

Alain is a business developer, entrepreneur and sustainability advisor. He is a strong believer in life-cycle approach and nature-inspired solution. Alain is founder and managing partner of Magnefico GmbH working on innovation magnifying economic, social and ecological values. He is also COO and Partner of Power-Blox Ltd developing intelligent energy cube based on swarm algorithms. For over 25 years, Alain has been engaged in the private sector with chemical-pharmaceutical industry, green building engineering company as well as with NGOs and the public sector. Alain holds a MSc in Environmental Economics and Ecology from the University of Basel and earned a MBA from EAEME at Erasmus University of Rotterdam, Netherlands. Co-founder SHIFT Zurich.

Carl A. Ziegler

T-LINK Management AG, CEO

Following his studies at University of St. Gallen focussed on small and mid size enterprises Carl joined Credit Suisse as a Credit Risk Officer as part of the Recovery Team. In 1999 he joined the Group Business Development Team of Swiss Mobiliar and in 2000 was delegated to join EURAPCO a joint venture of 7 European mutual insurance companies. With the gained know how on international business Carl joined T-LINK in 2004. T-LINK is specialised in: Export Packaging, Industrial Freight Forwarding, Expo Logistics and Trade Fair Marketing. Co-founder SHIFT Zurich

Lina Constantinovici

StartupNectar and RXA Ventures

Lina Constantinovici, MBA is an entrepreneurship innovator, sustainability expert, futurist, and impact investing/finance innovation catalyst. Lina is the Founder of Innovation 4.4, a developing public private partnership focused on ensuring the technologies humanity most needs get commercialized. Lina has previously founded BVC Fund - an early-stage impact investment fund, Risk and Value Creation Institute - a think and do tank focused on aligning economic activity with our planetary systems, and StartupNectar - an incubator focused on commercializing biomimetic water, energy, and materials science technologies. StartupNectar was selected as a finalist in the NASA/SSV Showcase of Solutions for Planetary Sustainability in 2013. Lina is also a Senior Advisor for Stratis, a private equity fund investing in energy. Lina is focused on building an economy that creates conditions conducive to life.

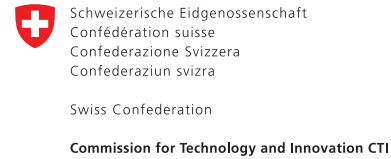
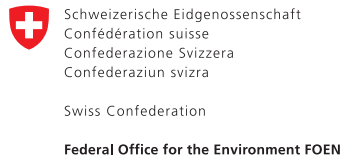
Christopher Peterka

CEO Gannaca

Christopher Patrick Peterka is a futurist and an entrepreneur. As managing partner of the gannaca think tank group, he strategically advises organizations on questions relating to the topics of innovation culture. His particular interest is dedicated to the new rules in the economy and society of the Digital Modern era. Christopher Peterka inspires, surprises and challenges. A father of two infants, he reveals the tectonic shifts between 'old and new world', bringing up new perspectives on phenomena that have already arrived in everybody's life a while ago just as his RFID implants he carries in his hands have. His thoughts scratch at the limits of the imaginable and feasible, without losing touch with daily life. Because at the end of the day what he really wants is reminding his audience of their lifes' designability and the importance of a reflected ethical standpoint.

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Carbon Offset Partner



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Network Partners





Climate Neutral Summit

Arauca Forest Conservation

Healing the Colombian rainforest after the gold rush

This pioneering forestry project entails permanent reforestation and long-term monitoring of parts of Colombia's northeast and northwest, with a particular focus on biodiversity. It seeks to promote sustainable management of forest resources in areas degraded by cattle grazing and mining, in a manner that fosters natural regeneration.

This project aimed at restoring a real forest, with a focus on re-establishing its rich ecosystem. About twenty local tree species were planted and by today already led to the settling of another 117 plants and a multitude of animals in the forest, including anteaters, monkeys, 10 different bat species and jaguars.

*More information on south pole group can be obtained under:
<https://shop.southpolecarbon.com/uploads/product/0658.pdf>*

Thank You!

Preview

September 20–21, 2016

Additive Manufacturing Expo, Messe Luzern, Switzerland

September 26–27, 2016

Innovation 4.4 Design Charrette, Mountain View, California

November 11–13, 2016

Biomimicry and bioinspired innovation, Utrecht University, NL

September 13–14, 2018 (tentative date)

4th SHIFT Zurich Summit, Switzerland

