

HACK THE WATER CRISIS



DARK CLOUDS, SILVER LININGS

HOW WE CAN BUILD A BETTER FUTURE OUT OF A WATER CRISIS

DATES: 24 & 25 February 2018

VENUE: Cape Town Science Centre - 370B Main Road, Observatory
www.ctsc.org.za | 021 300 3200

WHAT IS A HACKATHON?

A Hackathon is a form of problem solving. People come together virtually, over the web and in person, to engage in creative discussion to solve real world problems. It emerged from the computer industry although today its usage is far broader. As Wikipedia puts it '*The word **hackathon** is a portmanteau of the words hack and marathon, where hack is used in the sense of playful, exploratory programming, not its alternate meaning as a reference to computer crime.*' - Wikipedia.

WHY ARE WE DOING THIS?

To collaboratively develop and discover innovative solutions to the Cape Town water crisis utilising global and local wisdom, energy and passion. Our work will also support thinking in other parts of the world afflicted with the same, or similar, challenges.

WHAT DO WE WANT TO ACHIEVE?

- Innovative, inter-disciplinary thinking and ideas from a diverse community of people that contributes substantially to the design, adoption and implementation of innovative solutions to the Cape Town water crisis.
- Effective global design collaboration leading to real and scalable open source solutions that can be shared with other water-challenged cities around the world.

ARE THERE ANY PRIZES ON OFFER?

- The South African Renewable Energy Business Incubator (SAREBI) will be offering a number of valuable Master Incubation classes for water innovation to the technology-focused projects with the most potential.
- A number of funders have been invited to monitor the hackathon website to identify initiatives with future funding potential.



WHAT WILL HAPPEN OVER THE TWO DAYS?

- We will engage with a glocal (global and local) community of willing, able and passionate people who have perspectives and ideas to contribute to the thinking around the Cape Town water crisis.
- Out of our specialist inputs, group conversations and hacks we will develop a range of actionable solutions to be offered up to those who have the energy, passion and commitment to implement.
- Our engagement will be captured and may serve as a resource to other water-challenged cities and communities around the world.

HOW WILL WE CONTRIBUTE AND PARTICIPATE?

Those who will be joining us on the day in person at the Cape Town Science Centre (CTSC) located at 370B main Road, Observatory, Cape Town will engage in a facilitated process, with input from specialists, to explore, ideate, hack and develop solutions to the water crisis. We will be joined virtually, on line, by innovation teams from around the world, who will collaborate in an on-line Hackathon to inspire innovative thinking and develop potential solutions. The keynote speakers will be available for provocative engagement during the Hackathon to provide input into any of the hacks as thinking develops.

WHO WILL BE THERE?

- Anthony Turton
- Gunter Pauli
- Olivier Maes & Dennis Karpes (Justdiggit)
- Bernelle Verster

See their bios and topics below

WHAT WILL BE SOME OF THE ACTIVITIES?

- Global on-line hackathon – bring your computer along
- Exhibitors with water solutions and initiatives
- Workshops – Water saving, harvesting, treatment & DIY
 - » The 25 litre challenge
 - » Taking the 25 litre challenge to your school or community
 - » Panel discussions on water scarcity and its implications for sustainable living

HOW MUCH WILL IT COST ME?

There is a R25 fee to access the Cape Town Science Centre (The CTSC is a registered NPO and PBO – entry fee covers their venue costs for this event) – thereafter no additional costs other than your time, energy and commitment. An on-site coffee shop will be available for refreshments. The organisers and facilitators are all specialists in their fields who are working for free to contribute to this important issue.

WHERE, WHEN AND WHAT TIME?

Cape Town Science Centre, 370B Main Road, Observatory

- Keynote talks and presentations will take place in the SAP Auditorium in the CTSC
- Hacks will happen in different locations within the CTSC
- Exhibits and workshops will take place in CTSC Main Exhibition floor & Courtyard (weather permitting)
- Global hackers will click on links on the website

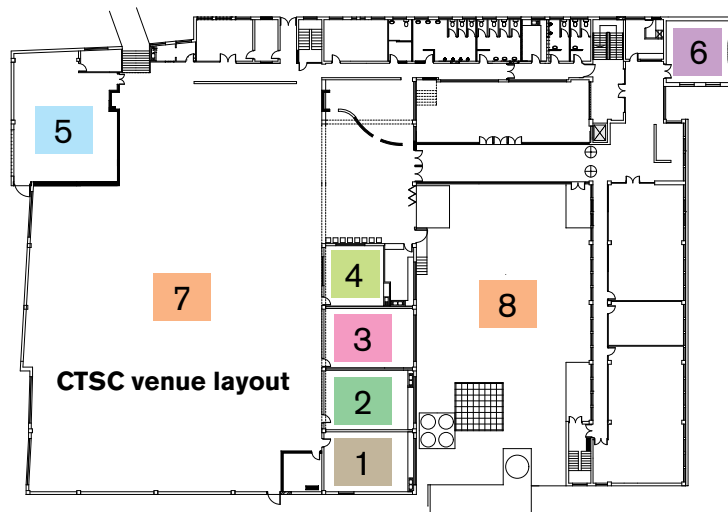
Saturday, 24 February 2018 – 9:00 to 16:30 | Sunday, 25 February 2018 – 10:00 to 16:30



VENUE	SATURDAY, 24 FEBRUARY 2018		SUNDAY, 25 FEBRUARY 2018	
	9:00	CTSC DOORS OPEN	10:00	CTSC DOORS OPEN
SAP Auditorium VENUE 5	10:00-13:00	WELCOME TO THE HACK: - ground-rules, and process VOICES OF THE SPECIALISTS: <i>Dark clouds, Silver linings - how we can build a better future out of a Water Crisunity!</i> <ul style="list-style-type: none"> • Anthony Turton - A new paradigm of abundance • Gunter Pauli - How to convert a shortage of water into a source of water • Olivier Maes & Dennis Karpes (Justdiggit) - A systemic change - restoring the water cycle • Bernelle Verster - Hacking scale; sexy innovation and then what? 	10:00-11:00	WHAT'S BEEN HAPPENING? - feedback & reflections Performance by Roots Grow Deep
			11:00-11:30	BIOMIMICRY & FLOW - Liesel Haasbroek - re-generative solutions shaped by nature
			11:30-12:00	TAKING THE PISS OUT OF URINE! Transforming waste into a valuable resource – Natasha Rightford
			12:00-13:00	A COMMUNITY-BASED RESPONSE TO WATER MANAGEMENT - Dipuo Ngozela & Samukelisiwe Coka (Inkanyezi Foundation)
	13:00-14:00	UNDERSTANDING THE CRISUNITY CONTEXT: a large group facilitation, process applying causal loops, causal layered analysis (CLA) and Common Cause to better understand the deeper issues underpinning the crisis	13:00-13:30	RECLAIM CAMISSA – Caron von Zeil
	14:00-14:45	DEVELOPING AN INCLUSIVE, CLIMATE RESILIENT CITY: Leigh Brown	13:30-14:30	COMMUNITY PANEL DISCUSSION - Challenging questions – answering citizens concerns and queries regarding the water crisis - Richard Bosman - Executive Director (Safety & Security - heading Disaster Co-ordinating Team City of Cape Town), Representative - City of Cape Town Water & Sanitation Department, Dave Crombie - Water Engineer: WISA
	14:45-15:30	EMERGING WATER INNOVATIONS: <ul style="list-style-type: none"> • A novel waterless urinal for on-site fertilizer production - Dyllon Randall • The extraordinary water innovations of ordinary people - Imraan Samuels 	14:30-15:00	BUILDING RESILIENT COMMUNITIES THROUGH SHARED VALUES & MENTAL FRAMES: Robert Ziplies
15:30-16:15	GAMIFYING WATER SAVING: A novel approach to behavioural change! - Irvan Damon (Eldo Energy)	15:00-16:30	CLOSE OF HACKATHON <ul style="list-style-type: none"> • Group sharing of hack outcomes • SAREBI awards • Wrap Up & Closing • Performance by Roots Grow Deep 	
16:15-16:30	REFLECTIONS ON THE DAY: Performance by Roots Grow Deep			
Partycle VENUE 4		KIDS HANDS-ON WORKSHOPS AND SCIENCE DEMONSTRATIONS Programme on the LIME GREEN door		KIDS HANDS-ON WORKSHOPS AND SCIENCE DEMONSTRATIONS Programme on the LIME GREEN door
Multimedia VENUE 3		MOVIES AND DRONE FOOTAGE Programme pasted on the PINK door		MOVIES AND DRONE FOOTAGE Programme pasted on the PINK door
Boardroom VENUE 6	14:30-16:30 Hack Stations		10:30-13:00 Hack Stations 13:30-15:00 Hack Stations	
Explorolab 1 VENUE 2	14:30-16:30 Hack Stations		10:30-13:00 Hack Stations 13:30-15:00 Hack Stations	
Explorolab 2 VENUE 1	14:30-16:30 Hack Stations		10:30-13:00 Hack Stations 13:30-15:00 Hack Stations	

**Exhibition Floor & Courtyard
VENUE 7 & 8**
10:00-16:30

- AgriLED SA
- Clear Grey - We Save Water
- InfiniFlow
- Invasive plants and Recycled materials
- Neville Wolhuter
- PSI and SEaB Waste to Energy System
- Re-water Solution
- Senwametsi
- Sylvantutch
- Viront Water Treatment
- Waterwise gardening



WHAT ARE THE RULES AND LAWS?

We have adopted the rules and law of Open Space –

- Whoever come are the right people.
- Whatever happens is the only thing that could have.
- Whenever it starts is the right time.
- When it's over, it's over.

The **Law of Two Feet** states that:

"If, during the course of the gathering, any person finds themselves in a situation where they are neither learning nor contributing, they must use their feet and go to some more productive place."

(With thanks to Harrison Owen)

ONCE ITS' OVER, IS IT REALLY OVER?

No, not really! The hackathon on 24 & 25 February is just the open ideation stage. Many groups are using the hackathon to find interested individuals and teams who want to work on their project and develop it further. Some of these groups already know funders who are interested in taking their concepts forward.

Some groups are sourcing collaborators and developing funding proposals from the hackathon work. Others still are building prototypes after the event, using local makerspace www.makerstation.co.za. Various university teams and hacker teams will be joining the hackathon after February to contribute to projects that they choose.

If projects become successful, then the Envienta network, Stop Reset Go OSCEDays, Action Foresight and other commons members of the network contributing to the event will proceed to Phase 2, developing a global distribution and peer manufacturing network to produce goods, services and solutions locally in water stressed cities around the world.

WHAT MAKES THIS HACKATHON UNIQUE?

1. We are testing a new people-centric model of collaboration and production that democratizes technology and manufacturing. The specific model of collaboration is called "Cosmo Localization" (Ramos, Bauwens, Kostakis, Papadimitropoulos, Niaros, Dafermos, Benkler) which leverages the internet to develop innovation globally. It creates open source designs which are then available to everyone on the planet to manufacture in their own locale. This is the so called "Design Global, Manufacture Local" model. Open source 3D Cad designs of technologies will be shared through creative commons share and share alike license, with commercialization.
2. Cosmo-localization is a smart resource use for innovators without access to capital, but who wish to design something professionally. By going directly to the resource, we skip the traditional requirement for capital although capital may be required to build prototypes.
3. The phases of the process are:
 - **PHASE 1:** The hackathon kicks off the first phase: the ideation stage to gather ideas, build strong teams and develop a Minimum Viable Product (MVP).
 - **PHASE 2:** This is the post event work to refine designs into a real working prototypes.
 - **PHASE 3:** The third phase brings these ideas into reality. This means working together as a collective, using the brand and brain power of the event, and working with partners to attract

suitable funders and crowdsourcing. Final designs will be shared in a design commons and made available to everyone for local manufacturing. This means not only Cape Town, but any water stressed city in the world will have access to manufacture these designs locally. In phase 3, we will develop a global distribution and manufacturing network, onboarding local social enterprises, B corporations, makerspaces, peer production cooperatives to sustainably manufacture the goods or services for the benefit of their local community.

4. Even though SAREBI is offering prizes of Master Business Incubation classes, this is not viewed as a competitive hackathon. We encourage every meaningful project to “win” and invite all types of funders to take interest and help fund promising projects.

HACKATHON PRINCIPLES & PRACTICES

1. Participants join by filling out the [online google form](#). If you have a unique idea, we encourage you to enter it and try to put together a global and local team to work on it during and possibly after the hackathon.
2. We will connect you to the www.oscedays.org website and open project pages for all suggested projects.
3. If you are a hackathon project proposer, go to your project page and invite other team members. Describe your project at the top and what resources you need (human and other) to finish it. Other global innovators will read your request and may also decide to join your team if they are interested in your project. If you don't have your own idea, you can look at the existing ones and join one that interests you.
4. On the day of the hackathon, each local team will have an internet scribe who will write down and take pictures, and post all the local collaboration information onto the oscedays project page. Global innovators can then provide feedback and add their own ideas. If industrial design, CAD design is done, it will be stored on the server (instructions to be provided)
5. All knowledge is Creative Commons with commercialization. This means anyone who uses it and adds new knowledge must share that knowledge with everyone. Commercialization is also allowed by anyone.
6. In June 2018, OSCEDays will showcase their global events and any ideas that reach the prototype stage can be demonstrated to potential investors invited to the platform.

ANTHONY TURTON

Title: New Paradigm of Abundance

In the 1800's the first books on water referred to scarcity. Thomas Bain did the first reconnaissance along the Orange and found that diverting water could make a desert productive. This gave rise to the Paradigm of Scarcity in which water is viewed as a stock. Day Zero is the end of that paradigm, because there is simply no more water left to divert or mobilize with any degree of confidence in a changing world. The New Paradigm of Abundance sees water as a flux, embracing fundamental physics and chemistry. By creating policy certainty technology and capital can be attracted to create a Dual Stream Reticulation Economy as a Marshall Plan to revive our country in the post-Zuma era.

Biography: Anthony Turton served as a senior officer in the National Intelligence Service (NIS) during the transition to democracy. He became a founding member of the South African Secret Service (SASS) and was responsible for developing the capacity to respond to water as a national security risk. He has an international profile in this specialist field. He later worked at the CSIR where he was a Unit Fellow and Vice Chairman of the Research Advisory Panel (RAP) that oversees the strategic research program. He was a Deputy Governor of the World Water Council representing the CSIR, Vice President of the International Water Resource Association (IWRA) and he currently serves as Editor of Water Policy, the official journal of the World Water Council. He is an advisor, thought leader and writer on water as a corporate risk and opportunity.

GUNTER PAULI

Title: How to convert a shortage of water into a source of water

(based on +20 communities that shifted from acute water shortage to excess of water)

Biography: Gunter Pauli started the zero waste and zero emissions movement in 1991. He has designed water and power self-sufficient houses, islands and communities around the world. He is author of 22 books including The Blue Economy, The 3rd Dimension and has published 144 children stories in China.

BERNELLE VERSTER

Title: Hacking scale: Sexy innovation, and then what?

#bigideas fail. Think it through.

Hackathons, and technology pundits often aim to address challenges that are at heart a social and / or infrastructural problem (which is at the end of the day also a social / behavioural problem). This is dangerous. There are large gaps in the water field that can be addressed with cheaper/better technologies, some of which are simple to achieve. These need to be placed in context and co-created with bigger picture thinking from the ideation stage.

Biography: A self-proclaimed shit-stirrer, Bernelle Verster is passionate about sanitation and dreams of developing waterless sanitation for everyone. Bernelle studied Biochemistry and Chemistry and obtained her Masters in Functional Genomics. Having completed her PhD, the rebellious Bioprocessing Engineer is pushing boundaries in developing wastewater treatment solutions feeding

into an economically-competitive integrated water and nutrients strategy.

Improving awareness around wastes, water and wastewater is a cause Bernelle has committed to, alongside her role at the Future Water Institute. Here she “plays in the interfaces” and crosses the divide between the public and science, analysing lived experiences to contribute to her research.

Bernelle is involved with many initiatives and passion projects, including Dream Zandvlei; bringing awareness to catchments and environments through adventure and sport. The Water Sensitive Campaign AquaSavvy is another initiative she is active in, through which academic research is interpreted into action at various levels, including catchments and neighborhoods.

OLIVIER MAES, DENNIS KARPES (JUSTDIGGIT)

Title: A systemic change: restoring the water cycle

Justdiggit develops community based landscape restoration programs at scale in Africa. Their hydrological corridor approach restores water, land, biodiversity and livelihood. These techniques can be applied in the Western Cape province, which can increase water resiliency within a relatively short period of time.

Biography: Dennis Karpes is co-founder of Justdiggit, a nonprofit organisation focused on landscape restoration to restore the water cycles and combat climate change in semi-arid areas. Dennis has been acknowledged as an inspirational social entrepreneur. He is an alumni of the Young Global Leaders community from the World Economic Forum, a unique community of more than 700 exceptional young leaders who share a commitment to shaping the global future and helping society.

Olivier is CEO of Justdiggit.org. Amongst several Business Development roles in technology companies, he was Cisco's former Managing Director for Africa, where he built up an extensive knowledge of the opportunities and challenges of this continent. In 2014, he joined Justdiggit as his first social venture. Given his background in fast growing regions and companies, his focus is on building a scalable, affordable, locally relevant and resilient approach to climate issues. He believes in simplicity, action, mobilization and experimentation as a way forward to maintain a livable planet.