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## Matthew Williams

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### Future-Proofing the Grid

The electricity system is the biggest and one of the most complex machines ever built. In recent decades, this machine has begun to undergo a radical transition, with both the way we generate and use electricity evolving. In the midst of this, however, the power grid has not been able to keep up pace. This is a problem, because the grid was not designed for power flows of modern electricity use and generation. These changes are rapidly driving its architecture close to a breaking-point, already manifesting in reliability issues, such as power disturbances or even blackouts, and ever increasing electricity costs. The primary approach to address this so far has been to compensate for the grid's weaknesses by adding external mitigating technologies; an approach unsustainable in the face of the fundamental energy transition we are experiencing. The electricity system needs a revolution, and it needs it now.

So what would a future-proof energy system look like? First, control of balancing supply and demand should be moved from the endpoints of the system – generation and consumption – to the grid itself. This will allow for a more robust grid to balance highly variable power flows. To rule out the fragility of

relying on a central control point, a truly robust energy system will utilize autonomous decentralized control principles within its architecture. A single platform connecting a plethora of technologies adding value directly will allow for a boost in innovation to the likes of the Internet – as such will make a true Internet of Things structure possible. To deduce how this system can be realized, Founder and Chief Technology Officer of Faraday Grid, Matthew Williams will explain the thought process that led to Faraday's ground breaking solution to the Energy Trilemma emerge.

#### Speaker Biography

Matthew Williams is Founder, Director, and Chief Technology Officer of Faraday Grid Ltd. He is a Systems architect, mechatronic engineer, design leader and facilitator. He is the author of Faraday Grid's technology patents. In fulfilling Faraday's ambition to unlock sustainable prosperity through electricity, he provides a conduit of understanding between complex interdependent dynamic systems and the world; managing strategic direction and technology development. Previously, he led a systems engineering company and was responsible for technical, client, and project management of multi-million dollar projects in Australia, China, and the US, delivering mission-critical logistics, automation, business and safety systems across the power and process sectors. Using the company's proprietary Design by Rationalised Constraints methodology, He and Faraday Grid are designing the energy ecosystem of the future.

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