



Innovate UK

ENERGY INNOVATION CENTRE

# INNOVATION HUB

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# INTRODUCTION

**BEAMA, Innovate UK and the Energy Innovation Centre are partnering to host the Innovation hub at this year's LCNI Conference, 2016. This is a dedicated showcase for emerging innovation for utilities, electricity and gas networks. We are hosting 16 UK start-up companies all with solutions for UK utilities and network operators.**

This is a unique display of what the UK market can deliver and demonstrates the exceptional ability of the UK market which is seeing significant growth in innovation and new companies entering the market for this sector. A lot of this can be attributed to the degree of innovation funding available today and in the past 5 years, through the Low Carbon Network Fund, Network Innovation Allowance and Competition.

BEAMA, Innovate UK and EIC are working together to help support these companies and promote UK capabilities for the industry. Importantly we hope to help facilitate activity that will ensure new technologies are driven into Business as Usual and gain market volumes. There are also significant export opportunity for all UK businesses involved in innovation projects across the UK and BEAMA, Innovate UK and EIC are working hard to provide a platform on which UK expertise can be promoted to a range of potential customers and markets.

This document provides a summary of all the companies we are hosting at the 2016 Innovation Hub.



**BEAMA is the lead trade association representing manufacturers of electrical infrastructure products and systems from transmission through distribution to the environmental systems and services in the built environment. Our expertise also stretches beyond electrical products into water safety & hygiene and water treatment.**

Representing over 200 companies in power, electrical and building services sectors. Our membership ranges from multinationals through to SME's (including start-ups), manufacturing the wide range of equipment required for end to end electrical systems. BEAMA has significant influence over UK, EU and international political, standardisation and commercial policy.

[www.beama.org.uk](http://www.beama.org.uk)      [@BEAMASmartGrid](https://twitter.com/BEAMASmartGrid)

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## ENERGY INNOVATION CENTRE

**We are owned by gas and electricity distribution network partners. We are a trusted and proven innovation resource, discovering new technologies to trial and new ways of working.**

We help our innovation community to attract support from the large energy network operators who can help propel their technologies to the next stage.

We're here to help by...

**Scouting for new technologies and ideas** from across the world that respond to needs directly identified by network staff.

**Finding solutions to problems** by proactively promoting them to our innovation community (more than 1700 SMEs).

**Supporting the development and delivery of Innovation projects** by working with networks and SMEs providing project management support.

**Bridging the gap between SMEs and Networks** providing support to access funding and new markets.

**Facilitating collaboration** by bringing together networks, innovators and academia to innovate strategically to create and deliver innovative projects.

[www.energyinnovationcentre.com](http://www.energyinnovationcentre.com)

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## Innovate UK

**Innovate UK is the UK's innovation agency. It works with people, companies and partner organisations to fund and drive the science and technology innovations that will grow the UK economy. We work with companies to de-risk, enable and support innovation, achieving this by:**

- determining which science and technology developments will drive future economic growth
- fund the strongest opportunities
- helping innovators launch, build and grow successful businesses

Since 2007 we have committed over £1.8 billion to innovation project funding, have helped more than 7,600 organisations add more than £11.5 billion to the UK economy and created 55,000 new jobs.

[www.innovateuk.gov.uk](http://www.innovateuk.gov.uk)

# 2016 INNOVATION HUB



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## AGILY TEAM GOAL MANAGEMENT APP



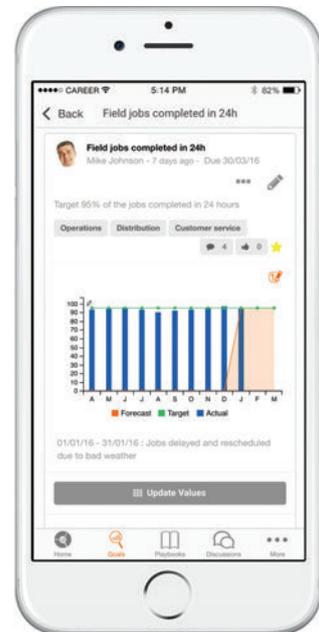
**Gas and electricity networks face significant challenges to grow their business all whilst reducing costs and improving profitability.**

Agily app offers your network a smarter approach to practice management by objectives with teams, aligning employee goals with corporate objectives, developing employee engagement and motivation.

As a result, mobile teams become more efficient by making informed decisions, maximise collaborations across the organisation as well as the value chain and save operational time.

**Test drive Agily 30-days totally free!**

[www.agily.io](http://www.agily.io)



## BELLROCK TECHNOLOGY LTD

**Bellrock Technology is a high-tech software company based in Glasgow, UK. We formed in 2012 to help established industries use advanced data analytics in their day-to-day operations.**

Many industries are increasingly seeking to improve performance by exploiting live operations data. More and more are turning to data science to automate the analysis of this data. But delivering results as live decision support tools is a huge challenge, requiring significant investment before business cases can be fully validated.

Our smart delivery software, Lumen®, lets companies rollout analytics applications faster, with less effort, from any supplier. Lumen is a disruptive cloud-computing platform that hosts these applications and uniquely, links them to live data automatically. This minimises IT integration costs and helps deliver innovation across all users' devices quickly and at low cost.

We work closely with our utility customers in delivering applications that predict failures, diagnose faults and avoid outage worth millions of pounds. Lumen underpins our customers' efforts to engage in on-going innovation whilst ensuring value is continually delivered to business-as-usual.

[www.bellrock.tech](http://www.bellrock.tech)

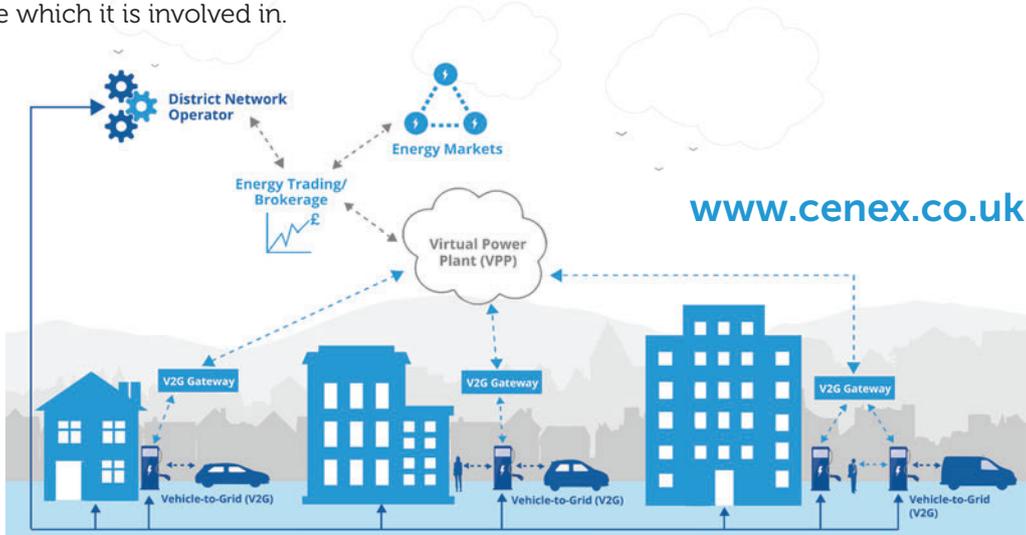
**Bellrock**  
TECHNOLOGY

# CENEX



Cenex was established in 2005 as the first UK's first Centre of Excellence for Low Carbon and Fuel Cell technologies.

Today Cenex operates as an independent, not-for-profit consultancy specialising in supporting innovation, market development and the delivery of major projects, all focused on low emission vehicles and associated energy infrastructure. Cenex will be showcasing the vehicle-to-grid projects across Europe which it is involved in.



# CNIguard



CNIguard specializes in producing and licensing ruggedized sensing systems to monitor and safeguard critical infrastructure across networks (pipelines, bridges, tunnels, roads, railways, power lines), facilities (buildings, factories, reservoirs, ports, refineries, substations, storage tanks, masts, platforms) and nodes (cabinets, chambers, covers, doors, hatches, ladders, manholes, manifolds, pylons, towers).

Approved for UK Government Use and USA SAFETY Act Designated, CNIguard products are engineered to operate with maximum reliability and minimum false alarms in the most hostile environments. With an installed base of thousands of units, enabled by CNIguard's existing and individually tailored solutions, customers realize superior resilience, manpower savings, higher service standards, streamlined operations and improved compliance. CNIguard is ISO 9001:2008 certified and holds GSA Schedule GS-07F-134CA for Total Solutions for Law Enforcement, Security, Facilities Management, Fire, Rescue, Clothing, Marine Craft and Emergency/ Disaster Response.

CNIguard's SENSORCORE® is a proprietary smart sensing platform with multi-purpose security and safety applications to monitor and protect critical infrastructure and key resources. The system has been designed, tested, and approved to deliver the highest level of performance in the most hostile operating environments.



Customers include blue chip utilities and infrastructure operators in the UK and USA.

[www.cniguard.com](http://www.cniguard.com)

## e2E Services Ltd



Building up from our expertise in communications network management and optimisation, we offer a distributed community-focused low-carbon management solution for electricity networks.

The solution is primarily designed to benefit the end-customer by reducing the community energy costs. The management algorithm, however, is highly adaptable, designed to be able to work towards different goals by responding to configurable management incentives. It has been demonstrated that the NEAT<sup>®</sup>energy management system can be configured to benefit the different energy sector stakeholders: Energy Suppliers, DNOs and System Operators. There is a trade-off when balancing these sometimes conflicting objectives. However, by translating the objectives into management incentives, the algorithm will adapt and find the best possible resource planning solution to meet them.

We believe the management approach is innovative because it optimises energy generation and usage at the community level rather than individual property level. It optimises energy networks by spreading demand to lower consumption at peak tariffs, by using energy storage of micro-generation to provide a more constant and predictable local supply and by using excess generation locally rather than supplying it to the national grid. NEAT<sup>®</sup>energy achieves this by using a decentralised automated approach.

NEAT<sup>®</sup> ENERGY



[www.e2eservices.co.uk](http://www.e2eservices.co.uk)

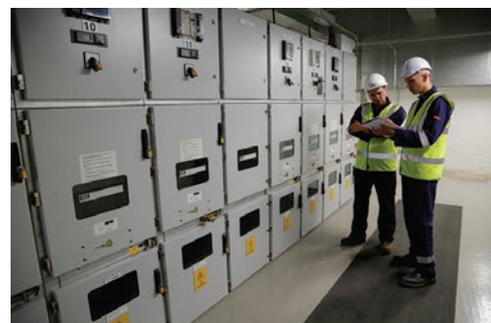
## IPEC Limited



**IPEC Ltd (UK) are experts in On-line Partial Discharge (PD) testing of MV and HV plant. We have world leading technology for the detection and location of PD in cables, switchgear and accessories. The ASM, our PD monitor for permanent installation is used on over 3,500 HV assets around the world, by both utilities and industrial clients.**

We have specialist Cybersecurity and Robotics divisions, with Security Cleared staff. We offer Based in Manchester, UK, our products range from simple to use instruments for routine spot testing to sophisticated permanently installed systems that can, for instance, be used to monitor every joint and termination on a EHV cable.

One of our key products, the PD-SGS, is a dual transducer PD detector for Switchgear. The instrument detects TEV signals generated by internal discharge as well as acoustic discharge generated by surface tracking or corona; giving asset managers a tool to quickly assess the condition of their switchgear assets without a shut down or intrusive maintenance.



[www.ipec.co.uk](http://www.ipec.co.uk)

# J3llyh34d 1ndu5tr135 Ltd



**J3llyh34d is an emergency services, aerospace and defence integrator and contractor.**

We have specialist Cybersecurity and Robotics divisions, with Security Cleared staff. We offer in-house research, development and prototyping (microelectronics, firmware, 3D scanning/printing). Our Thermalarm helmet-mounted PPE safety monitor, INCICOM rapid-deployment incident communications network and VULCAN fire-fighting robot were developed to meet Emergency Service requirements.

We are a UK reseller for Chemring's Perception military-grade network threat detection system, Verint's Actionable Intelligence software and Opgal's gas leak detection camera technology.



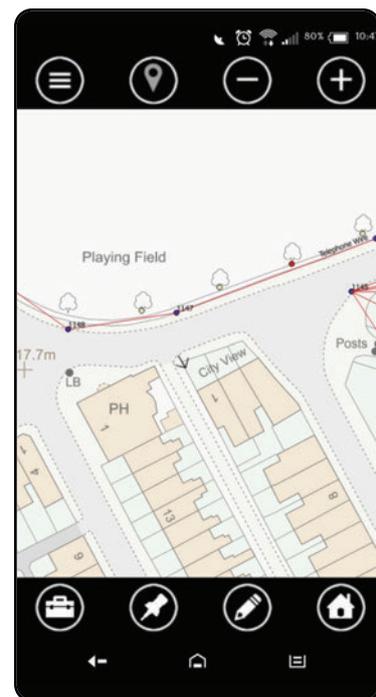
## MGISS

**MGISS helps you manage your assets more efficiently with cutting-edge yet affordable geospatial technology for the energy sector.**

Increased regulation in the energy industry is combining to impact asset owners and result in outages, customer complaints and non-compliance. MGISS understands how important it is to avoid these issues so our technology-led solutions enable you to increase efficiencies, reduce risk, improve safety and maximise resources.

Our GeoGraf-M and Graf Spatial Hub solution enables sensors, hardware and software to be integrated to deliver accuracy. It delivers verifiable and real-time business critical intelligence from the field and also enables timely and efficient decisions to be made about maintaining the asset network and infrastructure.

**Find out more at [mgiss.co.uk](http://mgiss.co.uk) or follow us @MGISSUK on Twitter.**



# Hybrid Power Generation – Off Grid Energy Ltd



Since 2011, Off Grid Energy have pioneered hybrid power solutions for remote locations and in temporary power where running a diesel generator 24/7 is a crude, unnecessarily expensive and polluting solution.

For emergency and planned applications, hybrid power generation delivers significant operational cost benefits that span savings in fuel consumption, refuelling costs, generator maintenance and generator replacement costs. This combines with significant reductions in CO2 and pollution and the elimination of noise. Hybrid power delivers tangible and significant cost savings and has considerable environmental impact.

Our technology serves equally well in PV energy storage and grid resilience applications or used to provide stored capacity for EV charging in support of weak grid situations.

Off Grid Energy are a UK technology and manufacturing business that supply the construction, events, utilities and domestic consumers. We export all over the world and as far afield as Africa, Australia and the Americas.



[www.offgrid-energy.co.uk](http://www.offgrid-energy.co.uk)

# Orchard Partners London Ltd & Clean Heat Provision Ltd



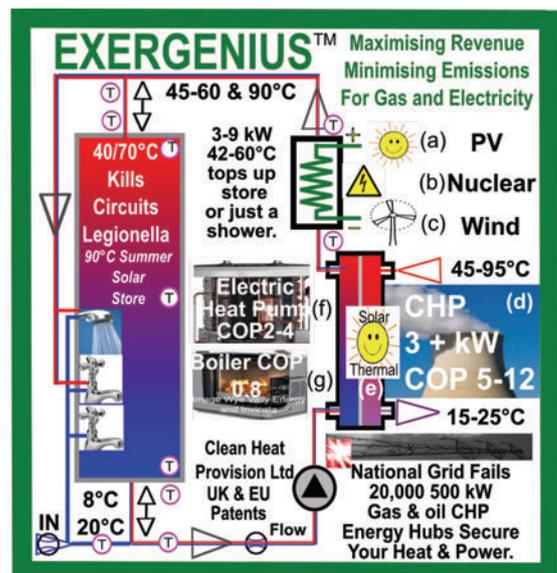
OP

William Orchard MA (Oxon) MBA CEng FIMechE MCIBSE MIET FEI, Orchard Partners London Ltd Chaired the District Heating Associations technical committee, and was instrumental in initiating the CHPA and AIEP. His interest is decarbonising our architectural heritage and its facades.

His CIBSE Journal article explains why upgrading 30C reject heat from power generation warrants an investment of £78Bn in heat networks compared to air source heat pumps. He thinks the gas industry has an opportunity to embrace heat networks as their existing pipes to dwellings can carry return water. The gas pipe route is often clear of other services, so ideal for new heat networks.

Designing for fully variable flow, OP minimise pumping cost, pipe and component size, and heat loss. The Exergenius™ way to heat Domestic Hot Water, optimises the efficiency of gas boilers, resolving turn down problems in meeting a 35kW DHW load then a 6kW heat load, it also improves the performance of electric heat pumps.

The Exergenius solution incorporates a small 70 litre store which can be incorporated to suit any dwelling, giving instant hot water at any time of the day independent of the tank temperature. The smart controller learns consumer demand, allowing distributed CHP heat and power suppliers, to choose how to use the heat and electricity to minimise overall cost to consumers. The system can incorporate solar thermal, PV and wind power.



[www.orchardpartners.co.uk](http://www.orchardpartners.co.uk)

Our novel "Keep Hot Flow Pipe" for new heat networks maintains the flow temperature in the supply pipe allowing the return pipe to shutdown for an all electric supply. We are seeking improved offers to licence our patents.

## ProHeat Systems Limited



ProHeat Systems was developed around a single concept: to establish the highest standards of performance in indirect heating. By collaborating with a team of sector specialists in thermodynamics, ProHeat was able to advance from concept to technology demonstration in a period of less than 18 months.

The new Immersion Tube Preheater has been welcomed by Gas Distribution Networks as a direct response to a need for a heating technology which combines environmental performance with reliability at a competitive cost. During a recent benchmarking trial for SGN, the Immersion Tube Preheater achieved a thermal efficiency of 85% at partial load, providing a 30% reduction in fuel use and CO<sub>2</sub> emissions as compared to traditional methods of preheating.

ProHeat was proud to be recognised by the 2016 UK Energy Innovation Awards with the Best Gas Network Improvement award for the Immersion Tube Preheat technology. Combining the latest innovations, specialist expertise in heat transfer, and state-of-the-art manufacturing, ProHeat is earning its place in the market as a go-to source for preheater upgrades and water bath replacements.



[www.proheatsystems.com](http://www.proheatsystems.com)

## Pollywood Ltd



Pollywood Ltd are supported by the EIC, Northern Powergrid and Innovate UK to develop a composite wooden pole to replace creosoted poles. Early testing of the concept by our two Partner Universities, Teesside and the BioComposites Centre at Bangor, has given us confidence that the power pole we are developing, will provide the strength and durability required.

The Pollywood Pole will bring a number of advantages to users. The principal material is still wood. It will be lighter and easy to handle in difficult urban and rural locations. The product will be made with a totally repeatable specification on a process, which will enable us to make to order.

The trees are from sustainable forests, where each tree taken is replaced by a minimum of 2 trees. The product uses the wood so efficiently, that each tree currently used, will produce several Pollywood Poles. The manufacturing process uses low quantities of electricity and no water, making it substantially eco-friendlier than either the existing pole, or potential replacements from steel, aluminium or GRP.



Finnish Birch Forests

Pollywood Ltd are not trading yet, because our total focus is on developing this much needed product. For more information, contact either [steve@pollywood-natural.com](mailto:steve@pollywood-natural.com) our MD or Chairman [quentin@pollywood-natural.com](mailto:quentin@pollywood-natural.com)

[www.Pollywood-natural.com](http://www.Pollywood-natural.com)



## Steer Energy

Founded in 2012, Steer Energy is a **technology catalyst company** that specialises in providing novel products and services for the Energy Industry across a range of diverse sectors.

It **identifies, develops and deploys ideas, products and services** from the lab into the field offering new, alternative and more productive ways of working. The work may be purely providing technical assistance, or finding the right applications for technology, or projects that encompassing the whole development lifecycle.

It does this with the back up of a **multi-disciplined technology development community** of established and emerging specialist technology companies, universities, service providers and consultants working across disciplines and beyond the energy sector. These wide ranging skill-sets and expertise mean that stronger technical solutions can be found from outwith the normal, and thereby creating market opportunities for their clients.

**Its clients range from micro-SME's to International Energy Operators.**

[www.steerenergy.com](http://www.steerenergy.com)

## Smart battery controller from Swanbarton Ltd

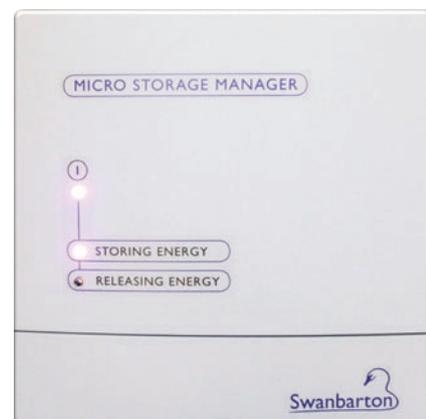
### Micro Storage Manager (MSM)

MSM controls a battery system or an Uninterruptible Power Supply (UPS) to:

- Maximise self-consumption of on-site generation
- Minimise the import of peak-price electricity
- Earn revenue by providing network balancing services
- MSM is currently deployed in UK trials.

#### Swanbarton also offers:

- Specialist consultancy services to energy storage projects and equipment vendors
- A patented Smart Trading agent for local energy markets.



[www.swanbarton.com](http://www.swanbarton.com)

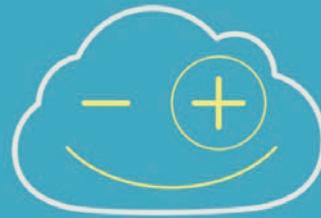
## Upside Energy Ltd

Upside Energy is developing an innovative cloud service that coordinates energy stored in behind-the-meter assets such as uninterruptible power supplies, home energy storage systems, electric vehicles, domestic heating systems, etc. This creates a Virtual Energy Store™ that enables us to sell a range of balancing services to grid and distribution network operators and energy suppliers, starting with frequency regulation services to National Grid.

We redistribute 75% of our revenue back to the original equipment owners: households, small businesses, large businesses with many sites. This creates an added incentive for them to purchase storage assets, thus growing the market for energy storage and increasing the amount of storage available to the grid. This allows us to provide highly innovative services based on the unique scalability and flexibility of our Virtual Energy Store.

We are currently operating a pilot of our service, funded by £800k of grant funding from Innovate UK, DECC and the EU Climate-KIC. Our partners and advisors on this pilot include major firms such as Sharp and Siemens, and universities such as Manchester, Oxford, and Imperial College. We recently commenced discussion with National Grid to begin operating a commercial service in early 2017.

UPS↑DE



### We're creating a Virtual Energy Store™

The electricity grid is under stress.

At peak times, it is forced to use its oldest, dirtiest, most expensive power stations to meet demand.

We have an answer.

Simply by shifting electricity usage from peak to off-peak times, we relieve stress on the grid.

At the same time, we help households and business sites reduce their energy costs and environmental impact.

Discover more:  
[www.upsideenergy.co.uk](http://www.upsideenergy.co.uk)

## Wearable Technologies Limited

### "connected worker" industrial safety

WEARABLE  
TECHNOLOGIES  
BRINGING INTELLIGENT CLOTHING TO LIFE

**WTL, based in the UK, is focused on the "connected worker" segment of the rapidly growing industrial IoT market. This multi-billion \$ opportunity is being driven by legislation and the Health & Safety bar being relentlessly driven higher.**

Whilst industrial accident reporting is now the norm, the world is now moving towards near miss incident reporting – not just accident reporting – requiring real-time monitoring of workers in dangerous environments, remote locations and the like. The continuously falling cost of electronics, allied to IoT cloud connectivity, is now making the advent of the "smart" worker – carrying environmental sensors, real-time communication, man-down buttons, cameras and physiological monitoring etc. – a realistic cost-effective proposition. We are helping to deliver it. Our existing products sell around the world, and we have commenced licensing our solutions to large PPE garment manufacturers to embed in their own garments. We have over 40 granted patents in smart fabric controls.

We have three categories of solution:

1. Standalone hiviz jackets and vests with embedded electronics to enhance visibility, from as little as £24.99.
2. "Smarter" garments with enhanced safety functionality such as collision proximity detection
3. Coming soon - Connected personal hub solutions – linking environmental sensors, physiological monitoring, location, man-down SOS etc. to a single control room dashboard.



**mark@wearable.technology • Tel: +44 7771 866584**



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## Innovate UK

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## ENERGY INNOVATION CENTRE

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