SLIDE 1

GIORGIO PEDRAZZI

- Ricercatore universitario - Università di Brescia,
- Docente di Istituzioni di Diritto privato e
- Diritto delle Nuove Tecnologie
- Formatore e consulente **web-Privacy, IP, e-commerce, Online Dispute Resolution**
- Avvocato e Mediatore, Ordine di Brescia


OUTLINE
Smart-Grid: definizione e struttura
Pros & Cons Security: casi e questioni
Privacy: casi e questioni Standards,
Guidelines & Norms Q&A

SLIDE 3


SMART GRID
Sistema a due vie
di comunicazione
Generalmente si fa riferimento alla
potenzialità piuttosto che alla
strutttura

SLIDE 4

SLIDE 5


Supervisory control and data acquisition (SCADA) and network operation
• Energy management
• Distribution automation
• Customer inquiry
• Meter reading and control
• Substation protection, monitoring, and control
• Records and asset management
• Network expansion planning
• Operational planning and optimization
• Maintenance and construction

SLIDE 6

Advanced Metering Infrastructure (AMI)

- Evoluzione di AMR (automatic meter reading) verso un sistema di comunicazione integrato

entro il 2018 il 60% dei contatori gas dovrà essere smart

SLIDE 7

TECNOLOGIE UTILIZZATE

integrated communications, sensing
and measurement technologies,
advanced components
advanced control methods and
improved interfaces
and decision support.

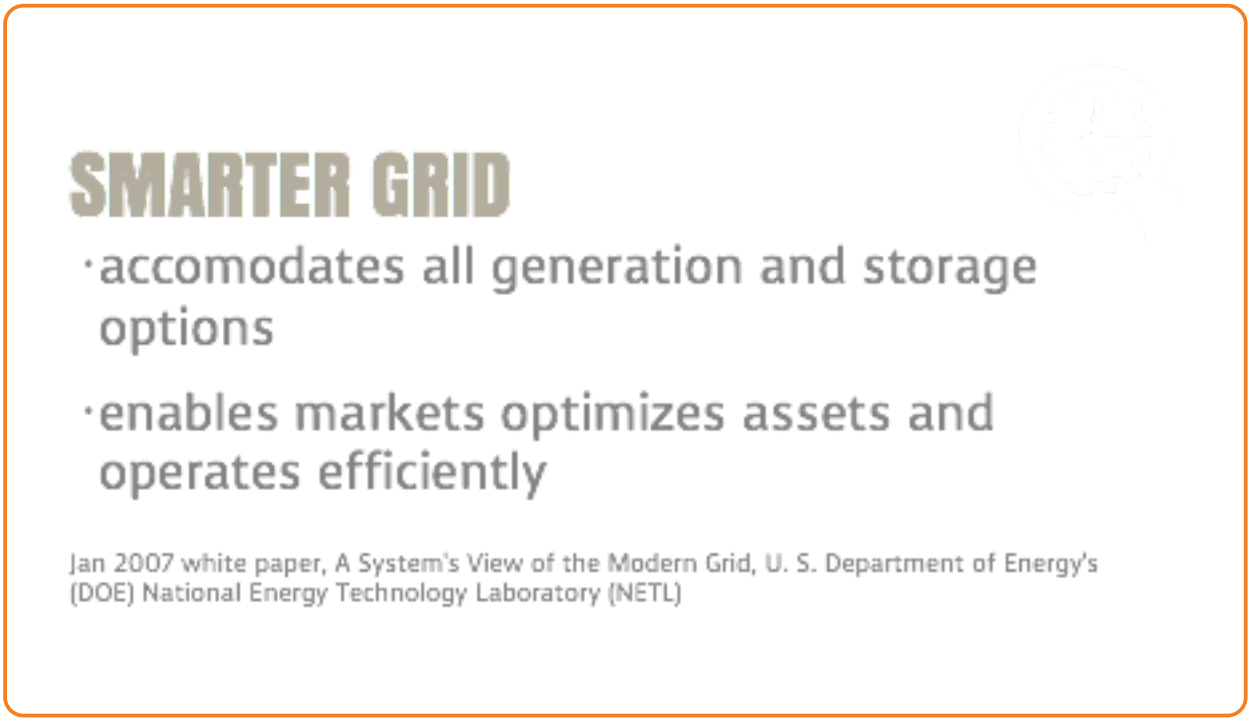
SLIDE 8


FASI DEL PROCESSO
Acquisizione estrazione del dato
Local processing and archiving
Sharing and archiving
Collaborative processing

SLIDE 9

SMARTER GRID

- self-healing
- able to motivate and engage the customer
- resistant to attacks
- provides power quality suitable for 21st century needs


SMARTER GRID
·accomodates all generation and storage options
·enables markets optimizes assets and operates efficiently
Jan 2007 white paper, A System's View of the Modern Grid, U. S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL)

SLIDE 11

PROS

Implementing the National Broadband Plan by Empowering Consumers and the Smart Grid: Data Access, Third Party Use, and Privacy, DOE Request for Information, 75 Fed. Reg 26203 july2010

The promise of the Smart Grid is enormous and includes improved reliability, flexibility and power quality, reduction in peak demand, reduction in transmission congestion costs,
Environmental benefits gained by Increased asset utilization, increased security, increased energy efficiency, and increased durability and ease of Repair in response to attacks or natural disasters


CONS
SICUREZZA
nazionale
e privata
PRIVACY
domestica
e aziendale
SALUTE
emissioni

SLIDE 13

PROTECTING THE PRIVACY OF OUR CUSTOMER-RELATED DATA. INCREASING YOUR CONTROL OVER ENERGY USE.

Over the past decade, information technologies, such as cell phones, ATMs and WiFi, have greatly improved how we live and work. These same technologies are now being used to modernize the nation's electric system and create a smart grid that supports the 21st century economy.

The benefits of a smart grid include:

- Fewer and shorter outages through devices that can automatically reroute power when problems occur, once the smart grid is complete.
- Operational efficiencies that will create savings which will be passed on to all customers.
- More information about your home's electricity usage, which you can access securely through the Internet to give you greater control over your monthly bills.
- Easier integration of renewable energy sources, such as wind and solar power.
- Creation of thousands of full-time equivalent jobs at the grid's peak investment period.

Just like standard meters, smart meters will measure the amount of electricity you use – not how you use it. They are not surveillance devices.

PROTECTING DATA ABOUT OUR CUSTOMERS' ENERGY USE

Making sure customer-related energy use information remains confidential and secure has always been a top

SLIDE 14

PRIVACY FACT SHEET

- Just like standard meters, smart meters will measure
- the amount of electricity you use –not how you use it.
- They are not surveillance devices.

https://www.comed.com/newsroom/fact-sheets/Pages/fact-sheets.aspx

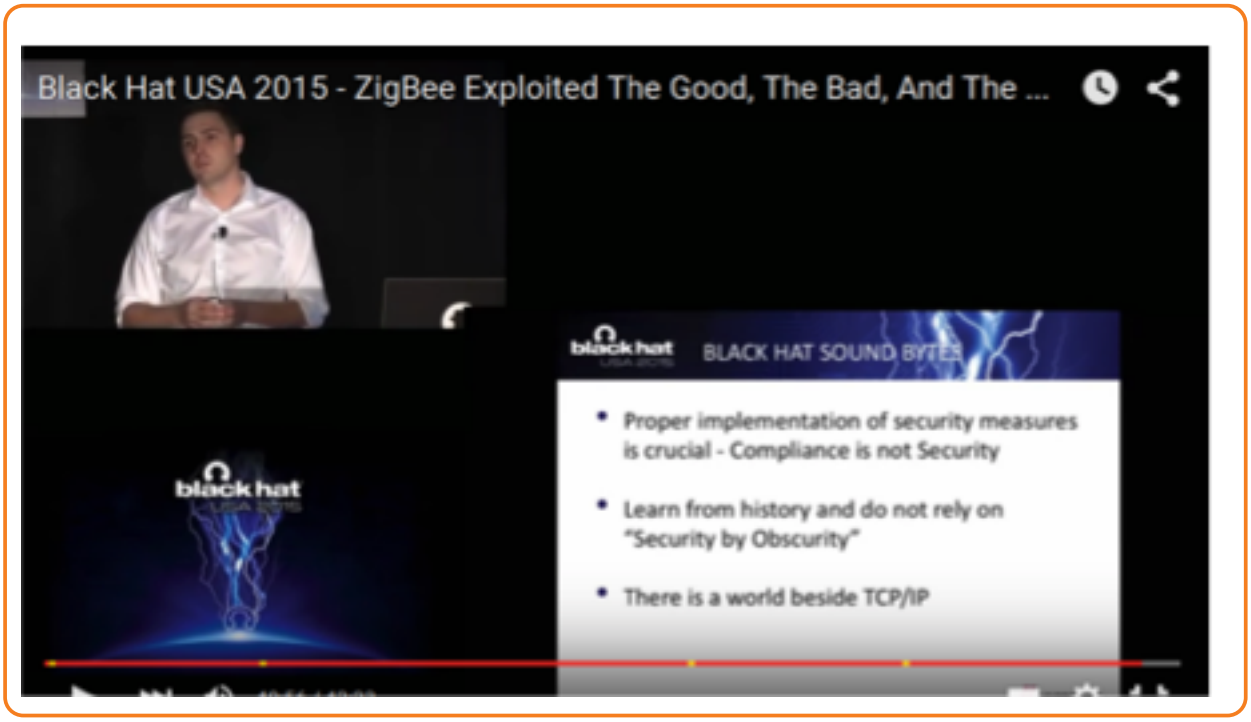
Excusatio non petita, accusatio manifesta

Scusa non richiesta, accusa manifesta

SLIDE 15

Smart Meter Hacking

SLIDE 16


Black Hat USA 2015 - ZigBee Exploited The Good, The Bad, And The ...
black hat
BLACK HAT SOUND BYTES
Proper implementation of security measures is crucial - Compliance is not Security
Learn from history and do not rely on "Security by Obscurity"
There is a world beside TCP/IP

SLIDE 17

STANDARD E GUIDELINES

- National Institute of Standards and Technology (NIST)
- U.S. Department of Commerce
- Guidelines for Smart Grid Cyber Security
- NISTIR 7628 (Aug. 2010)
- NISTIR 7628, Rev. 1 (Sept. 2014)

SLIDE 18

Vol. 2 PRIVACY AND THE SMART GRID

183 pagine, in soli quattro anni
lo scenario evolutivo
è profondamente mutato e la
questione privacy ha
assunto un ruolo centrale

SLIDE 19

LINEE GUIDA SECURITY UK

- Giugno 2015
- CESG The National Technical Authority for Information Assurance
- Product Category Security Characteristic Published Date
- Smart Meters Gas Smart Metering Equipment v1.1 Jun 2015
- Smart Meters Electricity Smart Metering Equipment v1.1 Jun 2015
- Smart Meters Smart Meters Communications Hub v1.1 Jun 2015
- Smart Meters Smart Metering HAN Connected Auxiliary Load Control Switch v1.1 Jun 2015
- https://www.cesg.gov.uk/servicecatalogue/Product-Assurance/CPA/Pages/Security-Characteristics.aspx

SLIDE 20

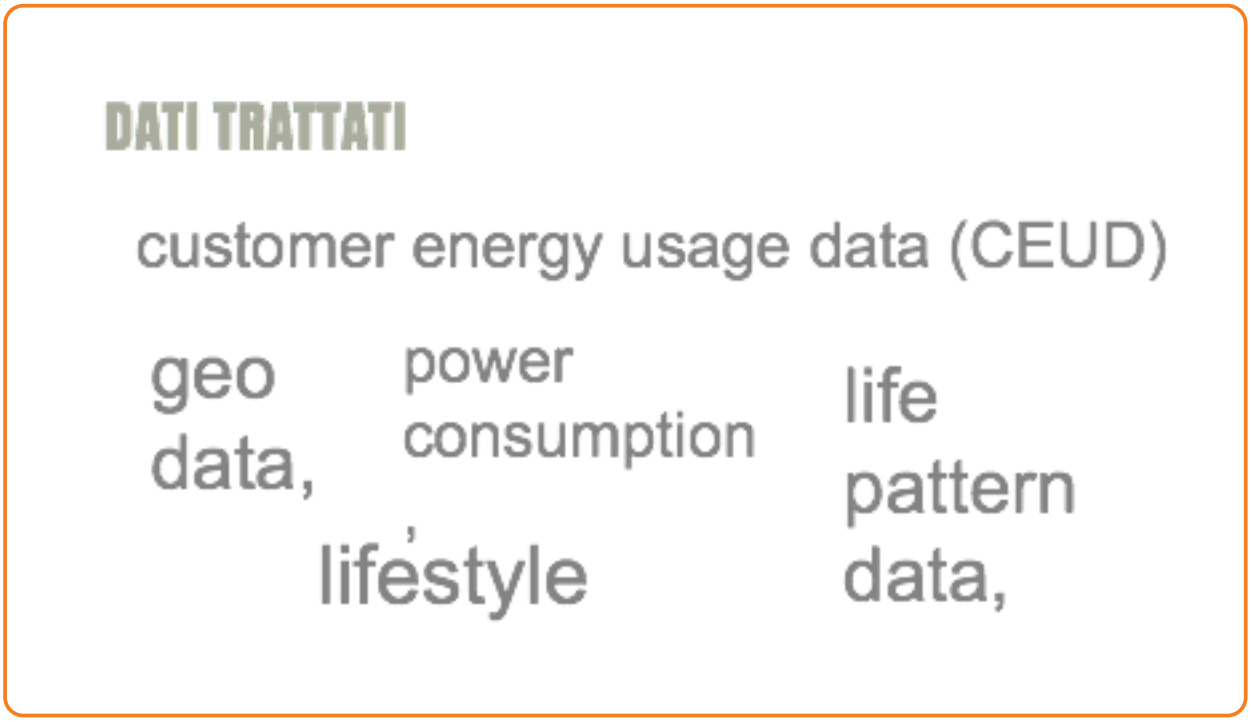
REAZIONE (RIBELLIONE) DEGLI TUTENTI

http://stopsmartmeters.org/
https://takebackyourpower.net/

OPTING OUT

- IL CONSUMATORE HA IL DIRITTO DI DECIDERE SE INSTALLARE O MENO LO SMART METER?

Michigan Bill 4916


DATI TRATTATI
customer energy usage data (CEUD)
geo data,
power consumption
life pattern data,
lifestyle

SLIDE 23

PRIVACY

By design

By default

SLIDE 24

PRIVACY DIFFERENZIALE

- Introduzione di rumore nei dati al fine di non rendere identificabili gli utenti

SLIDE 25

IN CONCLUSIONE

Meglio accendere
una candela
che maledire
l'oscurità

LAO TZU

SLIDE 26

GRAZIE PER
L'ATTENZIONE

giorgio.pedrazzi@unibs.it

SLIDE 27