GEODE WORKSHOP
(CYBER) SECURITY

REINHARD BREHMER,

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SITUATION WE FACE NOW

— Grid-Operations are subject to significant technological changes
- More automation
- Increased connections between and convergence of ICT- systems

— Historical thinking has to be adapted to new circumstances (smart meters, smart grid, data analytics, demand response, etc.)

— Result:
- Vulnerability to errors and cyber threats is rising
- Effects can be dramatic

Electricity is the blood of modern society.
No daily life without it.
Special protection is the order of the day!

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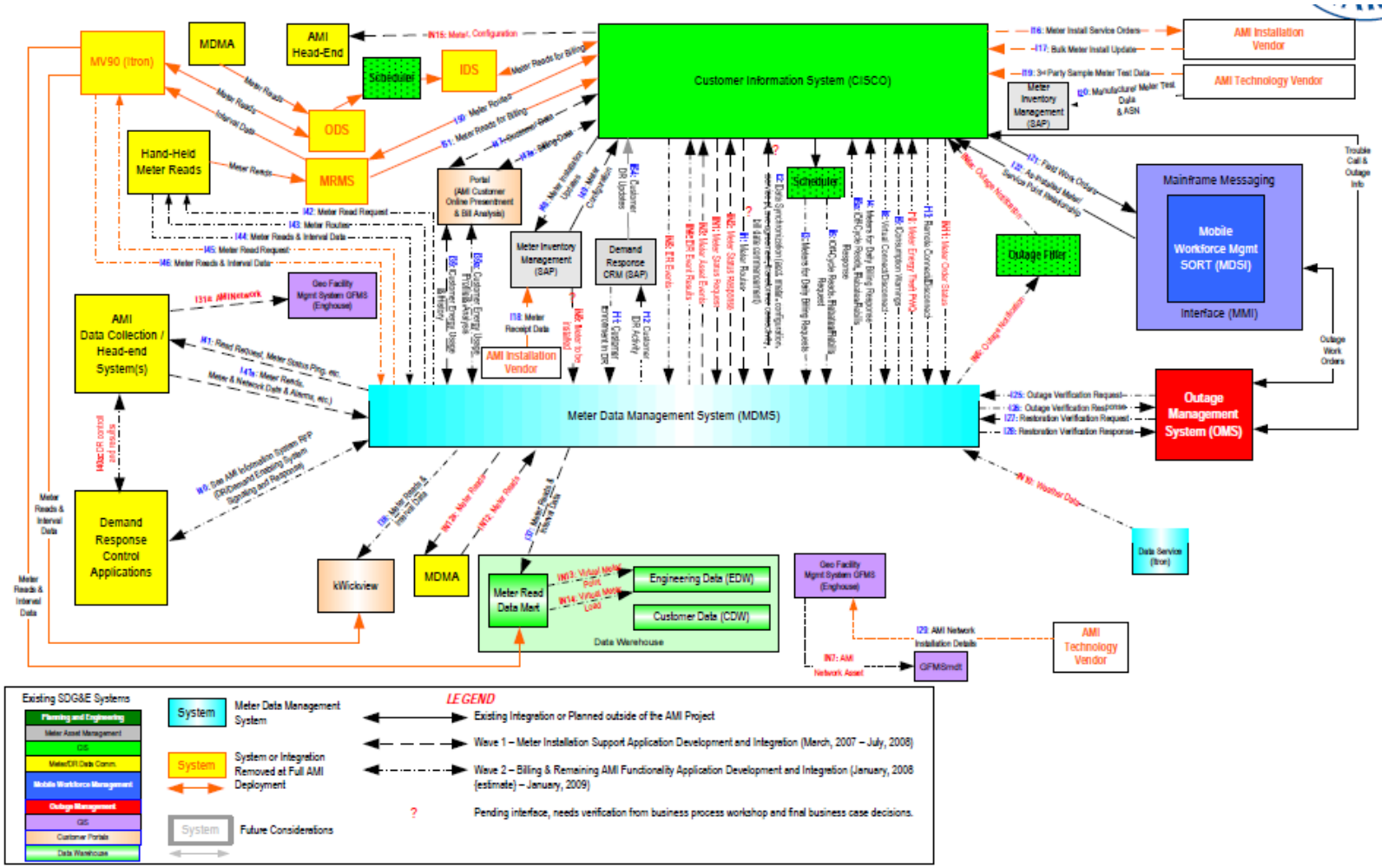
SITUATION WE FACE NOW

more than 200 interfaces and more than 400 server at SDGE with smart meter and connected systems



VARIOUS THREATS TO CRITICAL INFRASTRUCTURE

— Weakness in manufacturers products
- There is no Hard-/Software without faults
- Many components of infrastructure are getting smarter (=small computer)
- Non critical faults 1:1000 faults/line program code
- Critical faults 1:10000 faults/line program code

— Environmental influences

— Internal staff (unconscious import of malicious software, false actions, etc.)

— External individuals and groups
- Virus, Trojan, Worms, ….
- Social Engineering
- Sabotage
- (economic) espionage
- In conflict case: Cyber War

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METERING.COM MARCH 19, 2014

- R.Weisenmiller, Chairman of California Energy Commission, “If you are a utility today, depending on your scale, you are under attack at this moment”
- GridEx II in Nov.2013, 230 participants incl. FBI, Dept. Energy, Dept. Homeland Sec.
- Recommended new legislation to help deal with emergencies
- NERC (North America Electric Reliability Corporation) issued v5 of CIP
- Council on CyberSecurity updated report on “Critical Security Controls”
- Evolving risks due to cloud computing, mobility, internet of things

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PROTECTION OF CRITICAL INFRASTRUCTURE THROUGH THE CREATION OF

— internal framework conditions

- Implementation of an Information Security Management System (ISMS)
- Nomination of a Chief Information Security Officer (CISO)
- Introducing Security Policies (standards e.g. NERC CIP)
- Raising Awareness among employees
- Regular Security Audits
- Security exercises

— external framework conditions

- Legal requirements
  - Standards
  - IT-Security costs recognition (for DSO!!)
- Manufacturer
  - Security awareness among manufacturers partly in need of improvement
  - Product development often very long
    (eg. new Smart Meter Type at least 12-18 months)

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CONCLUSIONS

- Permanently improving security measures is absolutely necessary (Standards)
- Security costs will constantly rise and they must be accepted (owner, NRA)
- Security must be comprehensively considered (complete system view)
- Risk/Benefit Analysis (not only Cost/Benefit!)
- Supposedly indirect systems can massively affect security of operating systems
  - E.g. May 2013 –
    - A standard query within a telecontrol system affected (overloaded) communication networks so subsequently even some SCADA systems were immobilised
    - Impact on nearly all Austrian grid operators (electricity and gas) and in some other countries (southern Germany, Slovenia)
    - To protect the own infrastructure external communication links had to be disconnected
    - Solving the issue completely (new firmware) took a few days

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FURTHER CONCLUSIONS: COOPERATIONS (WIENER NETZE EXEMPLES)

— Most important: trusted personal contact on expert level

— National
- Crisis management exercises together with other operators
- Engagement in security committees (e.g. Österreichs Energie)
- Engagement ICT risk analysis for critical infrastructure (with NRA + Ministeries)
- Intensive cooperation with other network operators regarding e.g.
  Smart Meter Security
  Smart Grid Security

— International
- Reference visits and exchange of expert experience (Europe, USA, Asia)
- Participation research projects e.g.: Precyse: Security of SCADA systems

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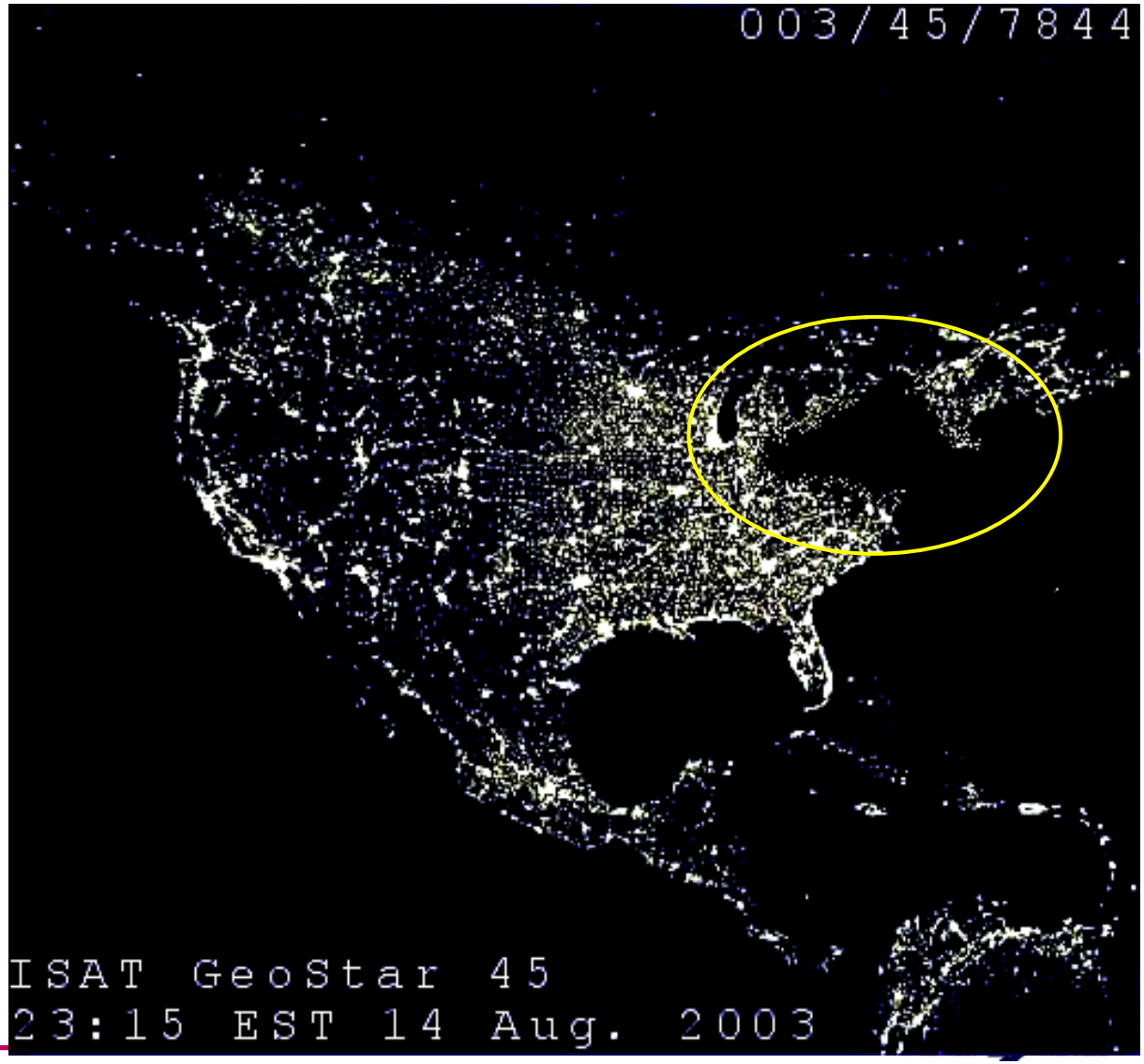
WHAT WE HAVE TO PREVENT

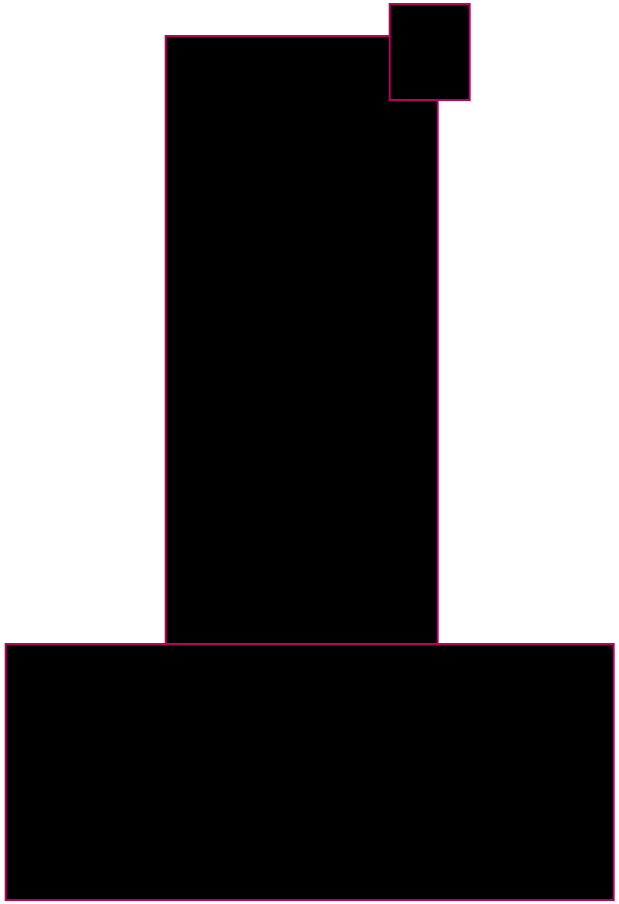


Broadway

Lower Manhattan

Times Square

The Statue of Liberty



THANK YOU

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