Hacking AMI

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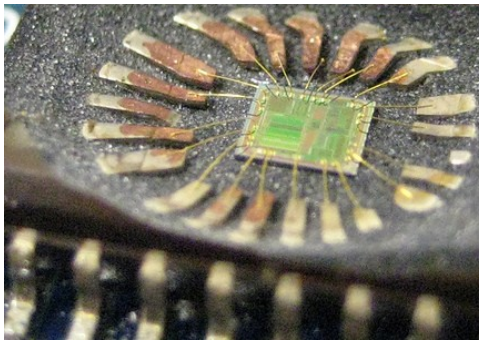
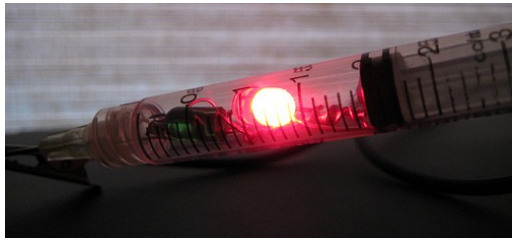
Problems in AMI

- Embedded systems have received limited attention from the security community
  - Little is known about hacking them (publicly)
  - AMI systems have received even less attention
  - Wild Wild West!
- Implications to Improperly Secured Non-Embedded Systems are **Huge**
  - Change the face of the western world...

AMI Embedded Systems

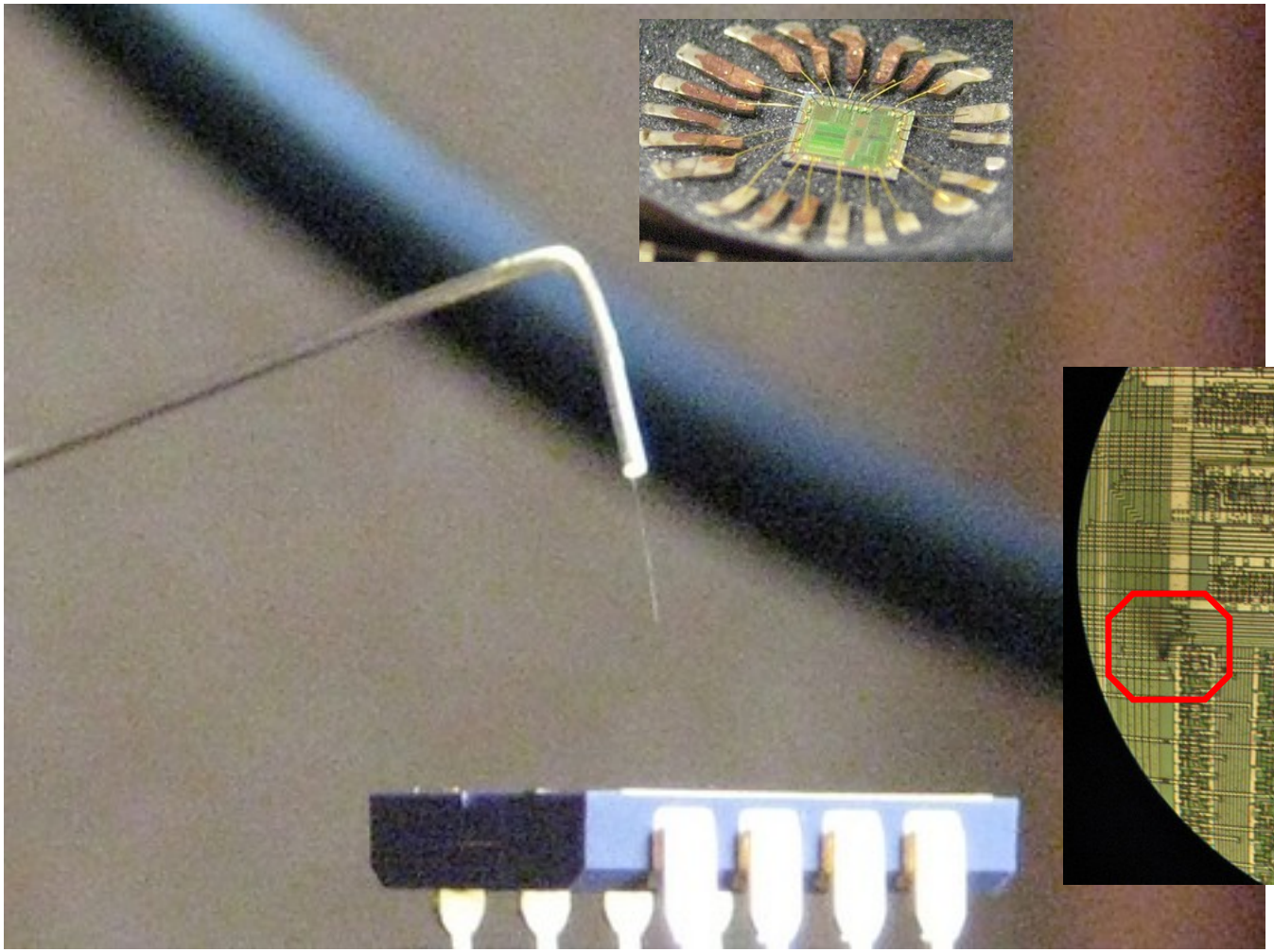


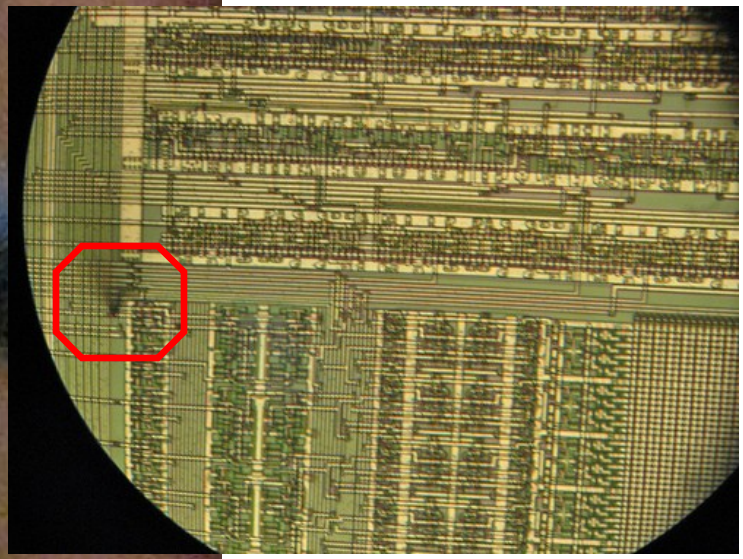
- Insecure data busses and serial connections
  - C12.22 bus
  - Data Capture, Injection (both directions)
    - Radios
    - MCU's
- Stealing/Replacing Keys In Memory
  - Network Encryption
  - Authentication and CA keys



- Blown JTAG Fuse Isn't Enough
  - Third-party labs remove top/allow microscopic access to chip
- Firmware-level vulnerabilities similar to x86 systems
- It’s the Latch!

Microscopic Probe

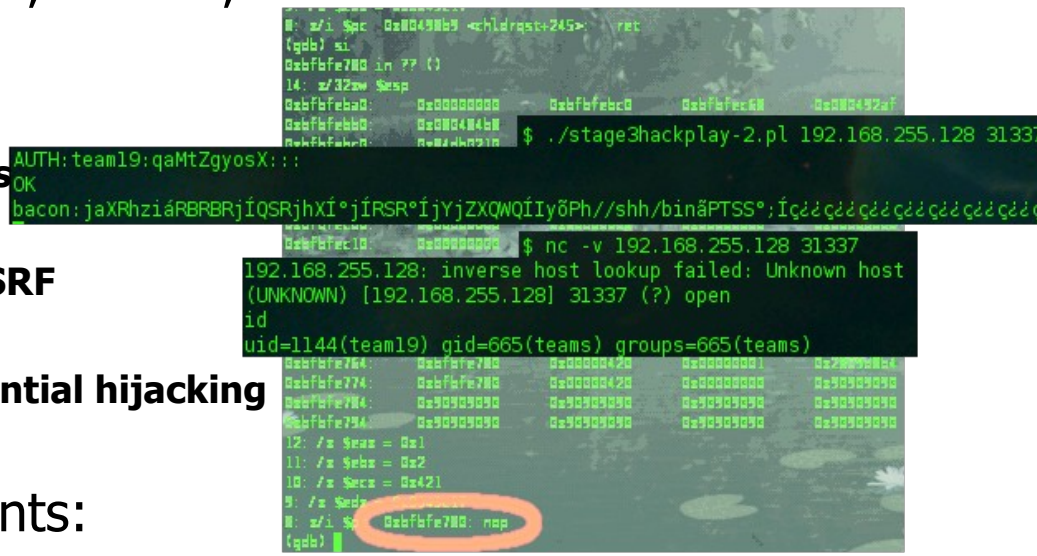




- Decapitated Chip
- Microtuned Placement
  - Access Memory
  - Reset the JTAG fuse

AMI Utility Premise (x86)

- Head-end, MDUS, ERP/OMS, SCADA, Workstations
- Standard Vulnerabilities:
  - **Buffer Overflows**
  - **Format String Exceptions**
  - **Integer Under/Overruns**
  - **SQL-Injection / XSS / CSRF**
  - **Command Injection**
  - **Clear-text session/credential hijacking**
  - **Much much more**
- Between System Components:
  - Thresholding is a must
    - Are you ***sure*** you want to shut off 100,000 meters?!?
  - Firewalling is also a must
    - Allow only **necessary** communication between appropriate systems
    - Nothing that touches the Internet in any way can originate to head-end



AMI-SEC and ASAP

- AMI-SEC Taskforce
  - ASAP (AMI-SEC Acceleration Project)
  - Red Team Testing (hacking)
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  - http://osgug.ucaiug.org/utilisec/amisec/
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