

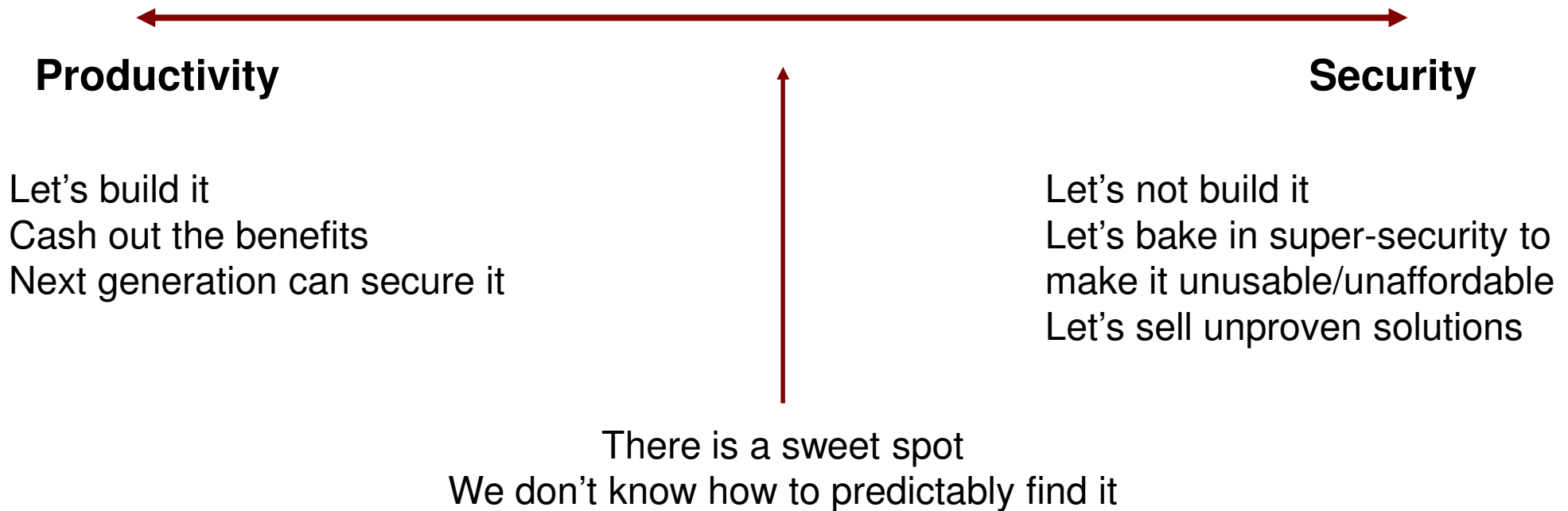
Cyber Security Grand Challenges and Prognosis

Prof. Ravi Sandhu
Executive Director and
Endowed Chair

ravi.sandhu@utsa.edu
www.profsandhu.com
www.ics.utsa.edu

- Cyber technologies and systems have evolved
- Cyber security goals have evolved
 - ❖ Computer security
 - ❖ Information security = Computer security + Communications security
 - ❖ Information assurance
 - ❖ Mission assurance
- Cyber security research and practice are loosing ground

➤ **Cyber Security is all about tradeoffs**



- **Microsec versus Macrosec**
 - ❖ Most cyber security thinking is microsec
 - ❖ Most big cyber security threats are macrosec

- **Rational microsec behavior can result in highly vulnerable macrosec**



**Tech-
Light**

**Tech-
Medium**

**Tech-
Heavy**



**High-tech
+
High-touch**

- **Develop a scientific discipline**
 - ❖ to predictably find the sweet spots for different application and mission contexts
 - ❖ to predictably find, incentivize and deploy microsec that leads to desirable macrosec outcomes
 - ❖ that can be meaningfully taught in Universities at all levels: BS, MS, PhD

- **Prognosis**
 - ❖ we shall succeed (we have no choice)
 - ❖ UTSA aims to be a world-leader in this endeavor