STANFORD GRADUATE SCHOOL OF BUSINESS
Case Study on
Global Technology Security

Stanford Business School
October 23, 2022
The Hon. Keith J. Krach
U.S. Undersecretary of State

STANFORD BUSINESS
GRADUATE SCHOOL OF

Architecting and Operationalizing the $280B Bipartisan "Chips and Science Act"

TECH STATECRAFT CASE SERIES

KRACH INSTITUTE FOR TECH DIPLOMACY AT PURDUE

AGENDA

KRACH INSTITUTE FOR TECH DIPLOMACY AT PURDUE

- ➢ Global Economic Security Strategy
- ➢ "Endless Frontiers Act"
- ➢ "Chips for America Act"
- ➢ "2019 GESS Act"
- ❖ "Chips and Science Act"
- ✓ "Intro to TSMC Chairman Mark Liu

MISSION

Develop and Operationalize a Global Economic Security Strategy That Drives Economic Growth, Maximizes National Security and Combats China's Economic Aggression

GLOBAL ECONOMIC SECURITY STRATEGY

GESS

3 PILLARS

I. Boost Competitiveness & Innovation

II. Safeguard America's Assets

III. Build a Network of Trusted Partners


GLOBAL ECONOMIC SECURITY STRATEGY

Proactive Integrated Strategic Plan & Execution Mechanism

Keith Krach
Under Secretary of State

October 11, 2019 Unclassified

3 PILLARS

GESS

GLOBAL ECONOMIC SECURITY STRATEGY

Boost Innovation

- **R&D Funding**
  - IP Protection
  - Allies Invest
  - Private Sector

Safeguard Assets

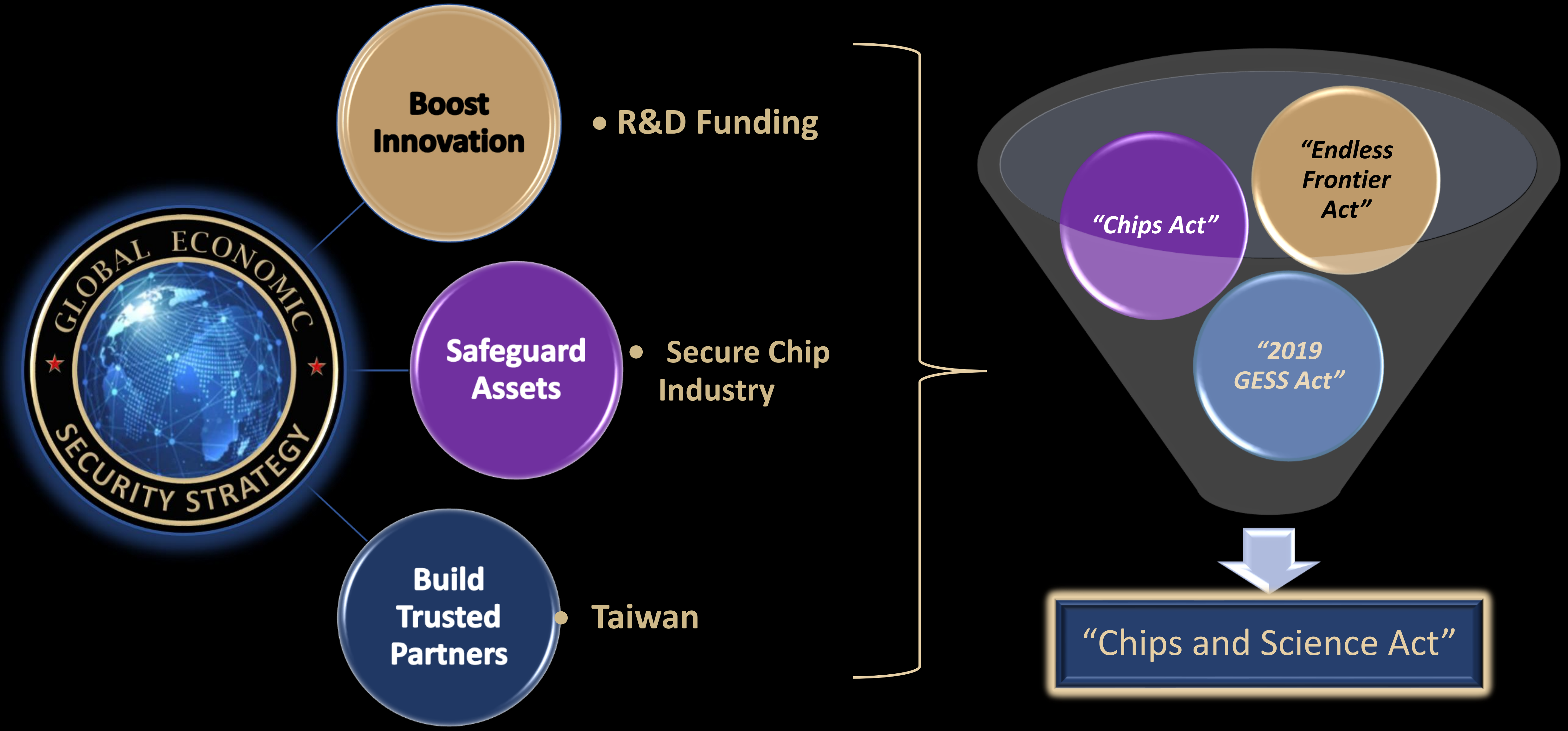
- **Secure Chip Industry**
  - Onshore TSMC
  - Intel, Samsung, Suppliers
  - Develop Workforce

Build Trusted Partners

- **Taiwan**
  - EPP Partnership
  - Tech Agreement
  - Clean Network

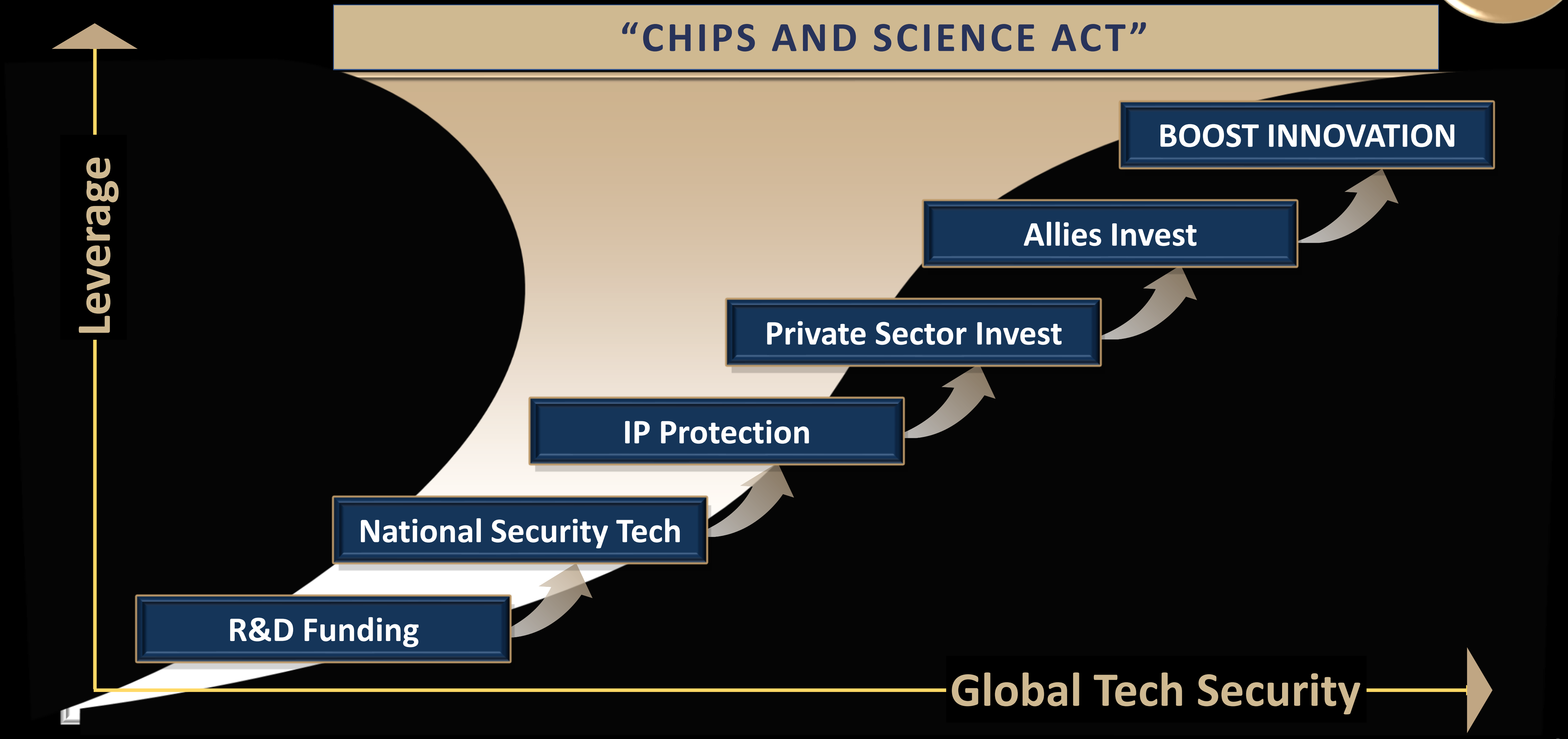
3 PILLARS

GESS



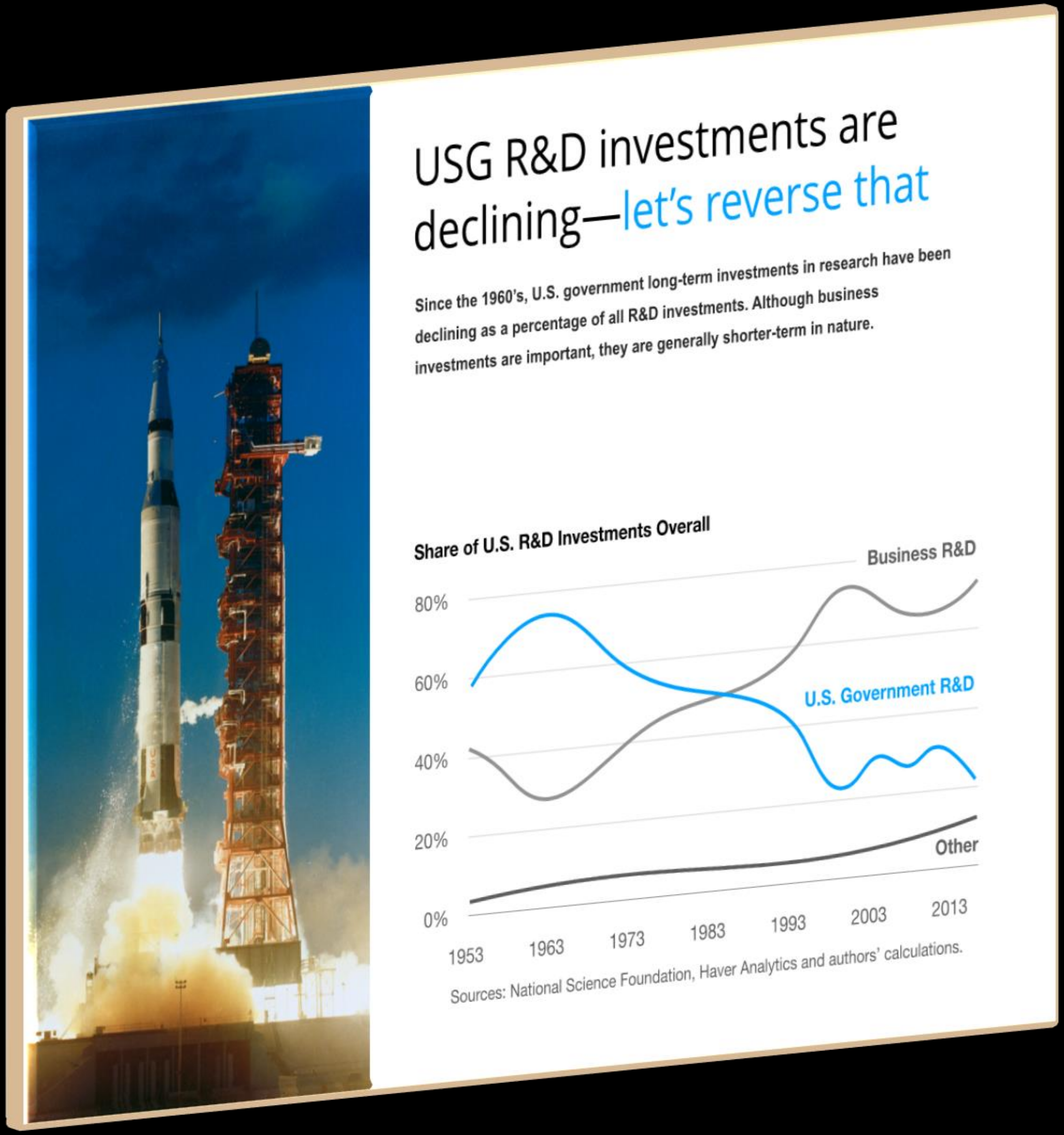
BOOST INNOVATION

"Endless Frontier Act"



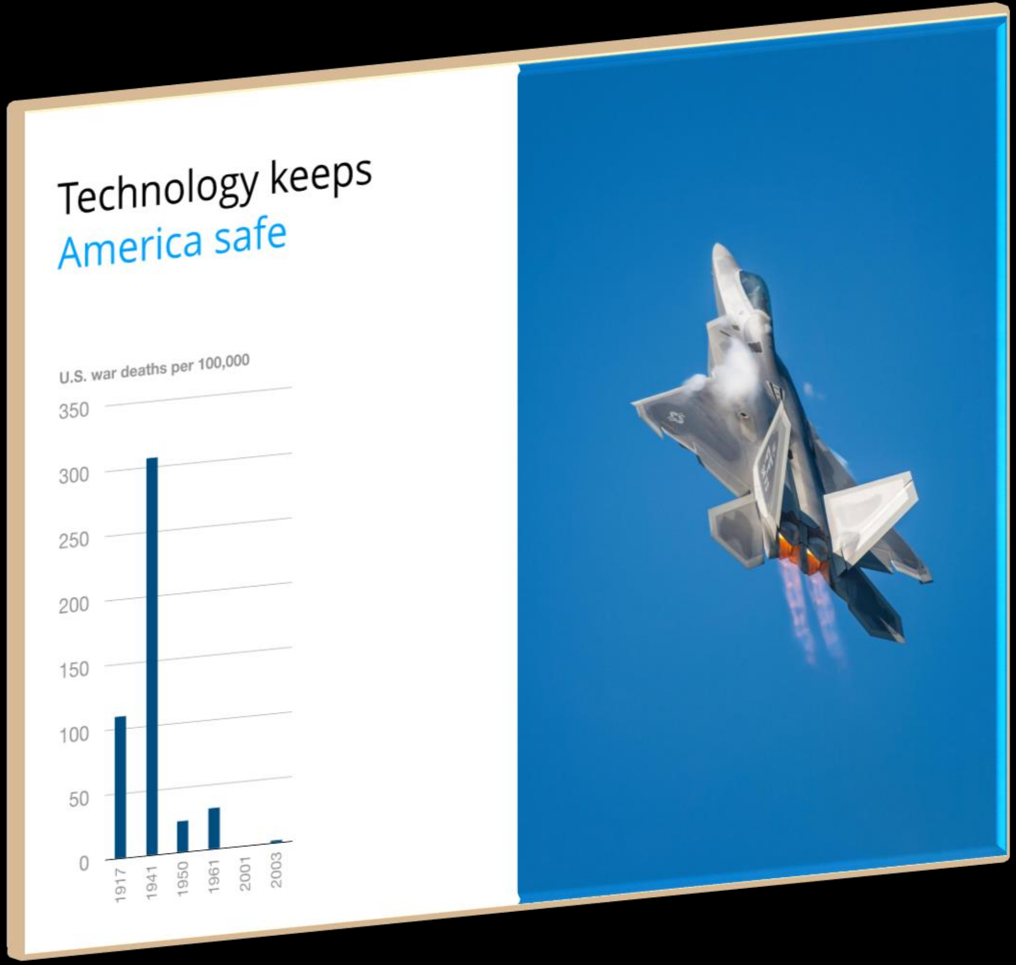
Need R&D Moonshot

Boost Innovation



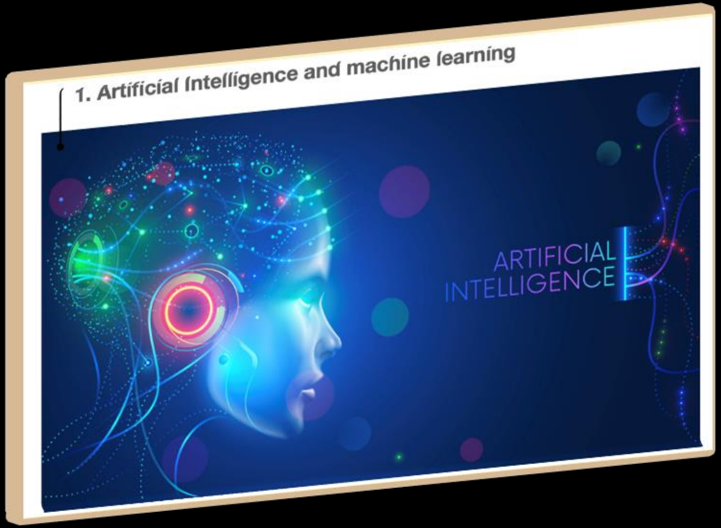
PROSPERITY & SECURITY

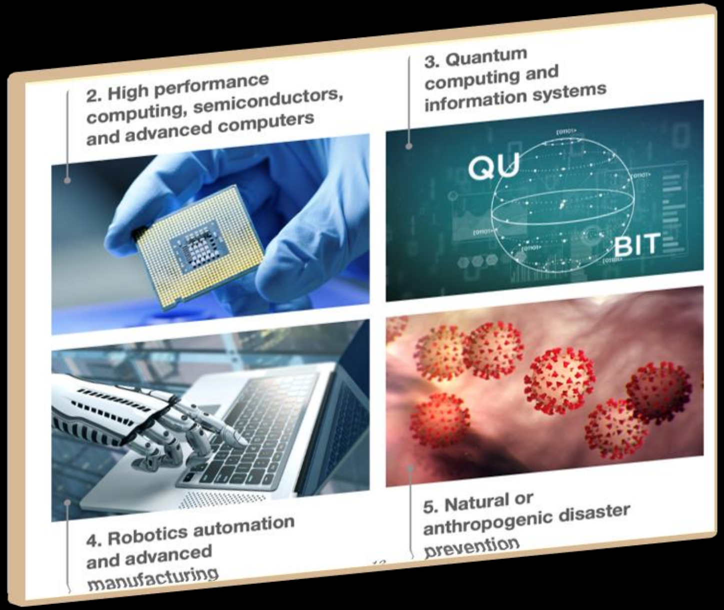
Boost Innovation

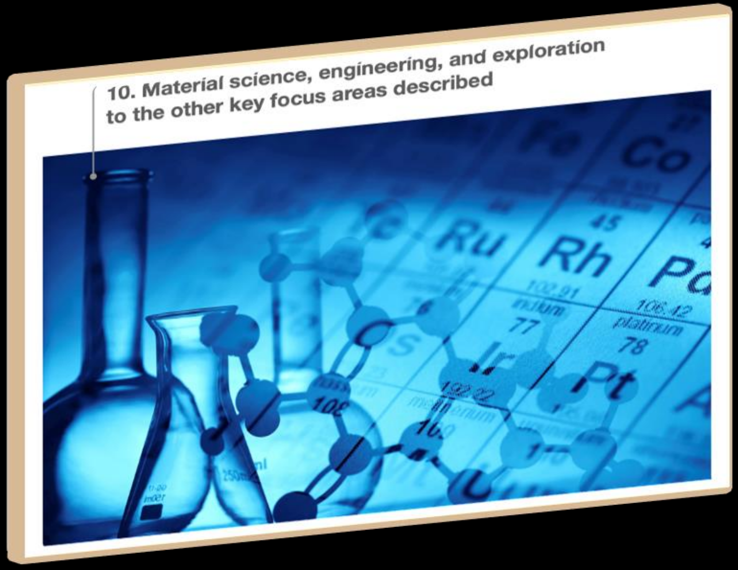


NATIONAL SECURITY TECH SECTORS

Boost Innovation







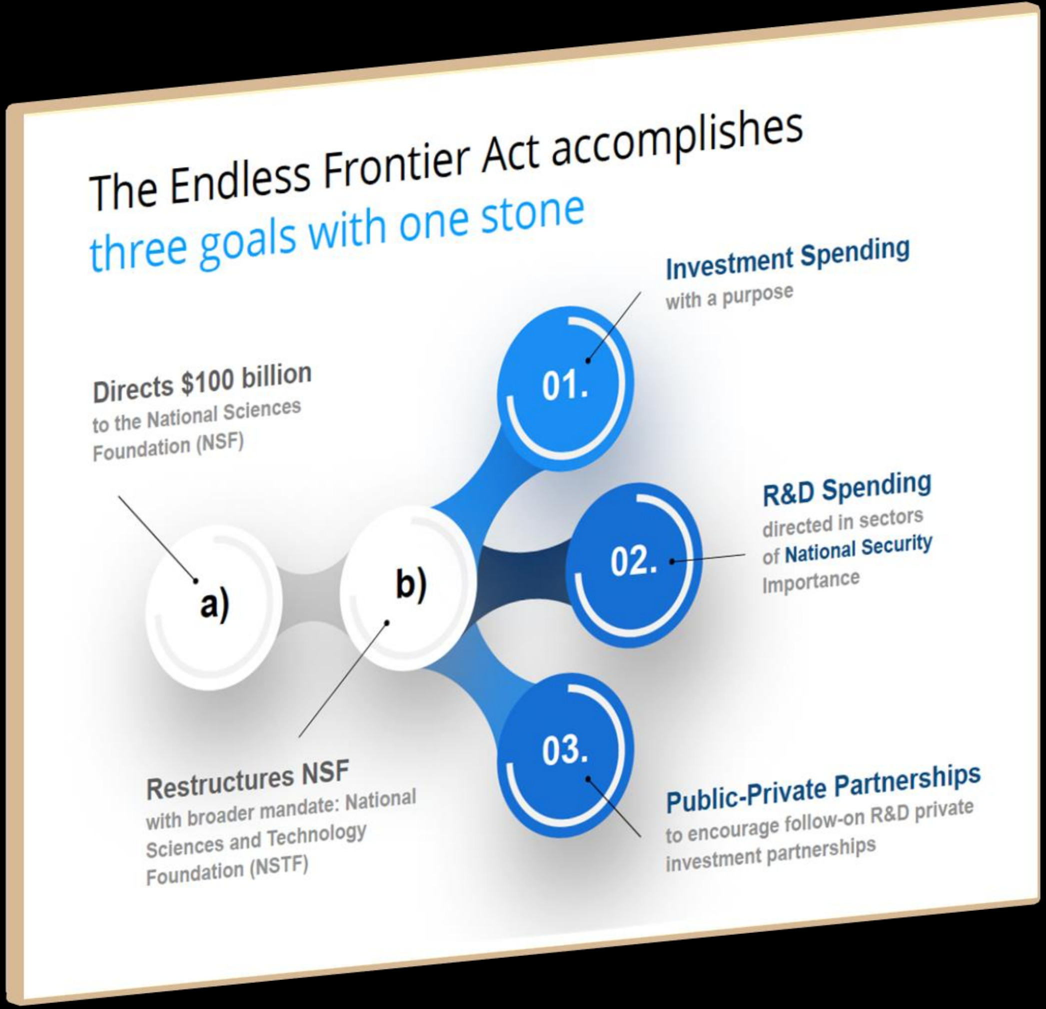
PRESENT TO SCHUMER & YOUNG

Boost Innovation

R&D Objectives

Boost Innovation

- Increase U.S. R&D investment
- Protect IP and proprietary technology
- Compound government investment
- Synergize defense spending & commercial
- Leverage private sector resources
- Strengthen tech warfare capability
- Increase competitiveness of companies
- Create new industries and jobs
- Maximize "commercialization" of R&D



LEVERAGE FEDERAL R&D FUNDS

Boost Innovation

Private Sector

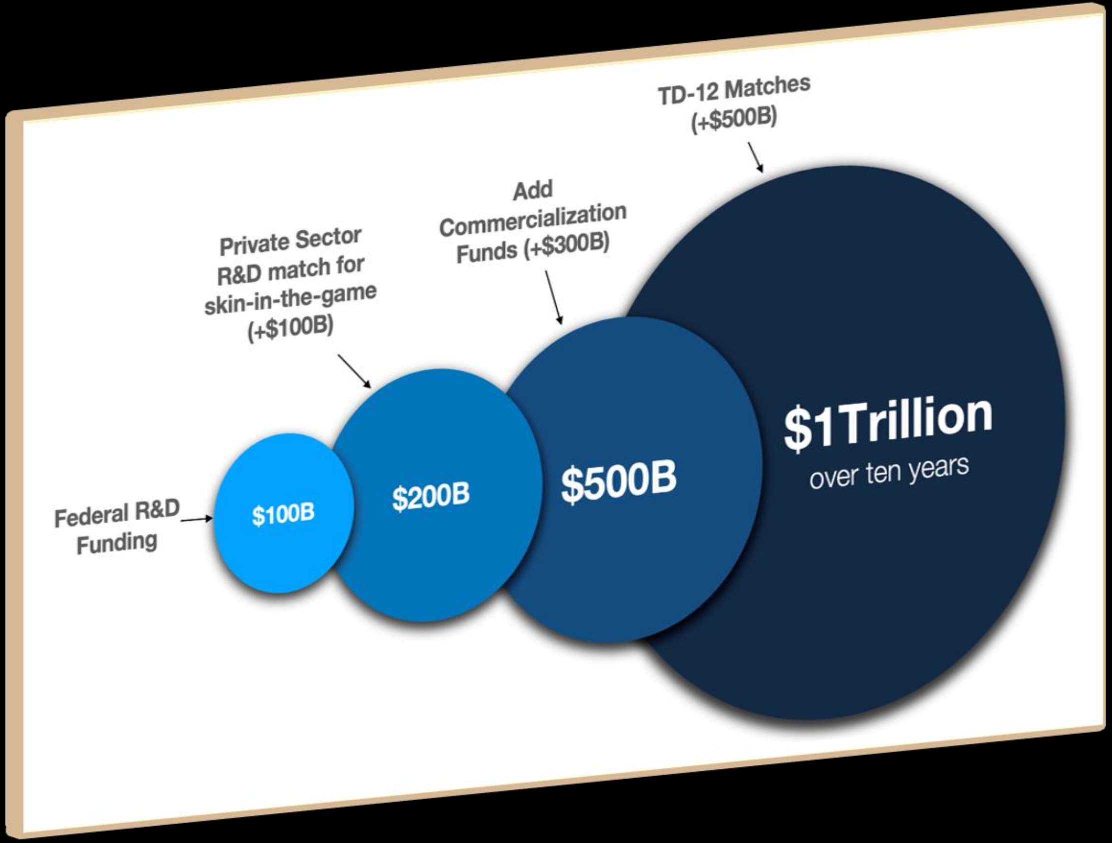
- **Public/Private Sector $1-for-$1 Match**
  - Expands R&D sector funds to **$200B**
  - Requires private sector skin-in-the-game
  - Participating private sector companies get \IP rights

Commercial Funds

- **$300 B in USG Loans Over 10 Years**
  - $30 billion per year
  - Use loan guarantees, execute through SBA
  - $100B from private sector + $300Bloans from USG

TD-10 Collaboration

- **Permit TD-10 to Join Pro Rata**
  - Expands total G7 nation R&D to **$1 trillion**
  - G7 nations can “collaborate” on joint R&D projects
  - G7 nations can “collaborate” on commercialization



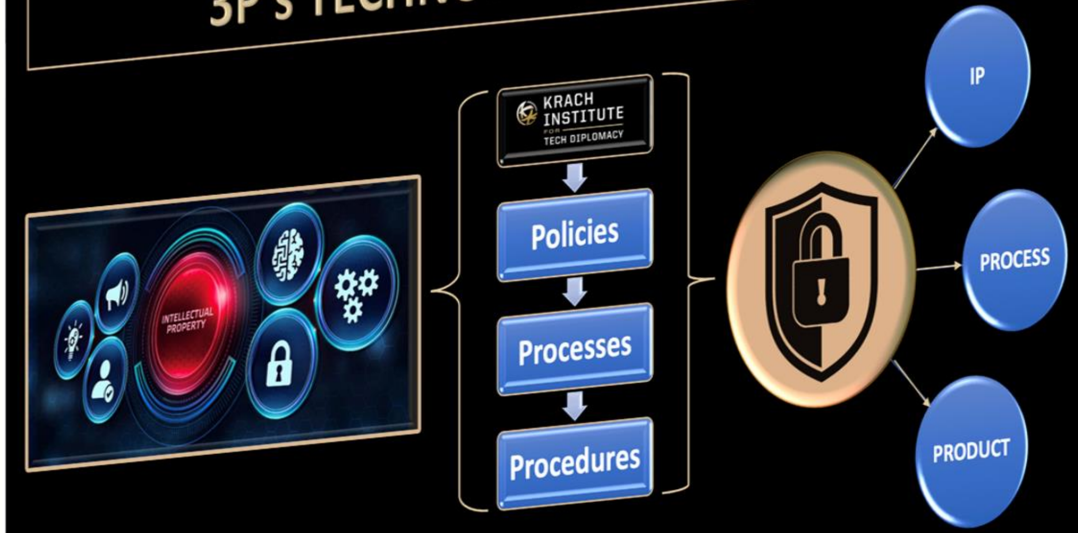
TECHNOLOGY SAFEGUARDS

Boost Innovation

PARTICIPANTS' REQUIREMENTS

- Assure all R&D is protected
- Implementation of 3P's Program
- 3rd Party Strategic Security Audit
- Protocols for IP Theft
- No resulting IP in public domain
- Non-Participants pay royalty for license
- Strategic rivals excluded & no access

3P's TECHNOLOGY PROTECTION



BIPARTISAN SUPPORT

Boost Innovation

Young, Schumer Unveil "Endless Frontier Act" to Bolster U.S. Tech Leadership and Combat China

WASHINGTON May 27, 2020– **Sen Young (R-Ind.), Senate Leader Schumer (D-N.Y.), Rep. Khanna (D-Calif.), and Rep. Mike Gallagher (R-Wis.) today unveiled the bipartisan, bicameral *Endless Frontier Act*, an initiative to solidify US's leadership in tech innovation through increased investment in the creation and commercialization of technology fields of the future.**

The best defense,
is a great offense

A new report from the Chinese Academy of Sciences bluntly states: "It is possible to turn the crisis into an opportunity—to increase the trust and the dependance of all countries around the world of 'Made in China'."

Until recently, the U.S. has primarily focused on defensive countermeasures to thwart aggression by the Chinese Communist Party: blocking Huawei, tightening export controls, and improving foreign direct investment rules.

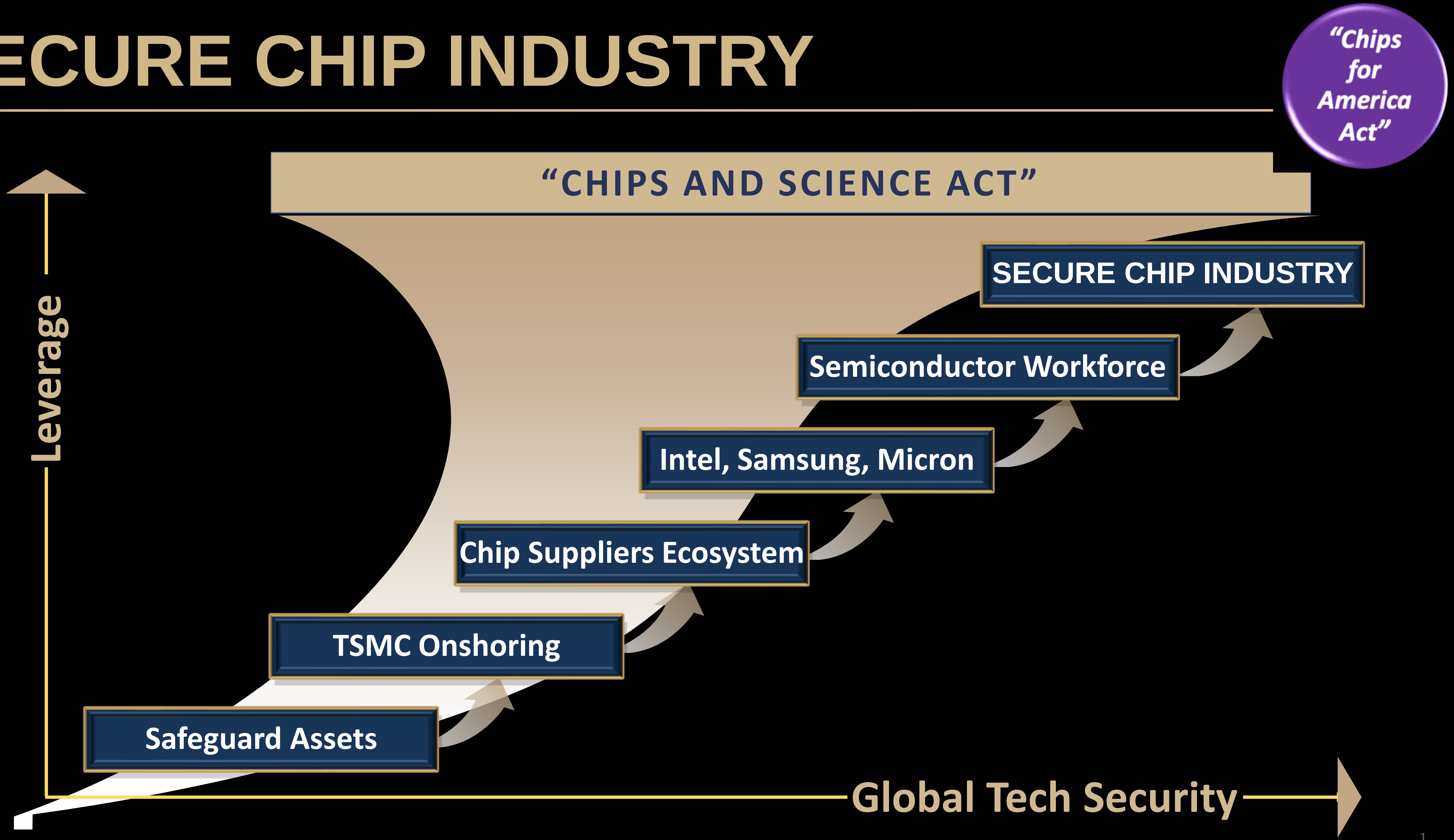
The Endless Frontier Act flips this on its head.

$100 billion to leverage $500 billion in R&D

The Endless Frontier Act provides $100 billion in federal investments in 10 key technology sectors of national security importance over 5 years.

These federally funded research and development dollars can be matched with public-private dollars from the U.S. private sector, and with partners and allies that do the same, to compound collaborative research and development across like-minded free nations.

SECURE CHIP INDUSTRY



THE MOTHER OF ONSHORINGS

Safeguard Assets

CNN BUSINESS

TSMC's $12 billion Arizona factory give US an edge in manufacturing

By Sherisse Pham May 15, 2020

One of the world's top chip making companies is bringing more manufacturing power to the United States. Taiwan Semiconductor Manufacturing Co. announced that it plans to build a $12 billion semiconductor factory in Arizona, with construction to start next year.

TSMC said the factory will create more than 1,600 high-tech jobs. It is expected to begin production in 2024.The deal is a big win for the administration, which has long been sounding the alarm on the semiconductor industry's reliance on producers and chip manufacturing done in Asia, calling the dependence a threat to national security.

US woos Taiwan and its chipmakers in step toward trade pact

Washington seeks stronger ties in push to decouple supply chains from China

U.S. Undersecretary of State Keith Krach, left, and TSMC founder Morris Chang, right, attend a banquet hosted by Taiwanese President Tsai Ing-wen on Sept. 18. (Photo courtesy of Taiwan's Presidential Office)

YU NAKAMURA and TSUYOSHI NAGASAWA, Nikkei staff writers

September 19, 2020 04:48 JST

TSMC BRINGS SUPPLIER ECOSYSTEM

Safeguard Assets

BIG WINs WITH INTEL & SAMSUNG

Safeguard Assets

Intel to Add 2 Factories in US

$20B Investment Will Create Thousands of Jobs

March 23, 202, Intel CEO Pat Gelsinger explains that this is the largest private economic development investment in Arizona's history

AP

Samsung says it will build $17B chip factory in Texas

By MATT O'BRIEN November 23, 2021

Samsung said it plans to build a $17 billion semiconductor factory outside of Austin, Texas, amid a global shortage of chips used in phones, cars, and other electronic devices.

The South Korean electronics giant chose the site based on several factors, including government incentives and the "readiness and stability" of local infrastructure, said Samsung Vice Chairman Kinam Kim.

"This is the largest foreign direct investment in the state of Texas, ever," Texas Gov. Greg Abbott said. CFRA analyst Angelo Zino said: "The expectation that Congress will approve federal subsidies for the semiconductor industry to build its factories in the U.S., in the hopes it will bring jobs, lessen future supply concerns and give the U.S. leverage over economic rival China."

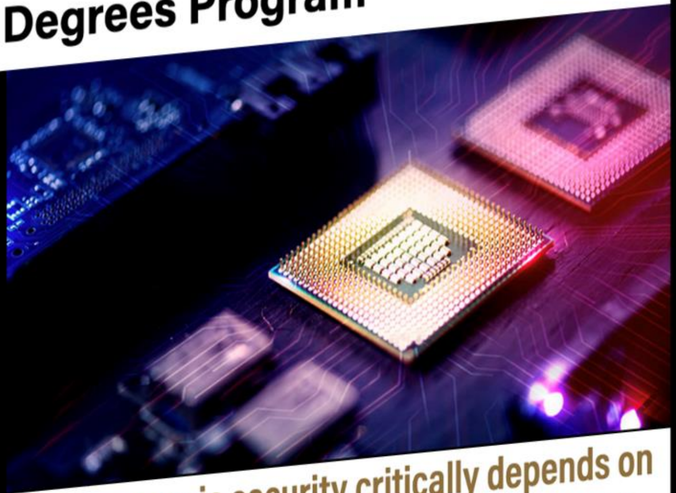
PURDUE LAUNCES FIRST SEMICONDUCTOR DEGREES

Safeguard Assets

PURDUE UNIVERSITY

May 27, 2022

Purdue launches nation's first comprehensive Semiconductor Degrees Program



U.S. economic security critically depends on developing talent pipeline in this vital field

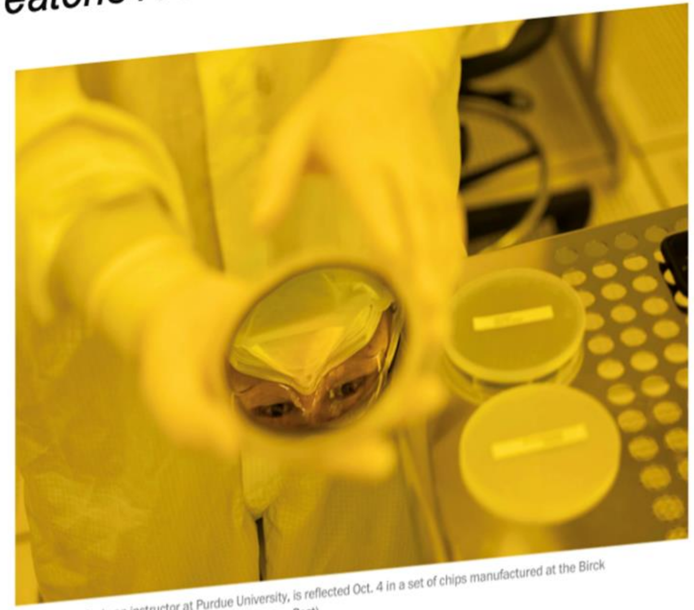
Economic Future of U.S. Depends on Making Engineering Cool

Purdue University races to expand semiconductor education to fill yawning workforce gap that threatens reshoring effort

October 23, 2022, WEST LAFAYETTE, Ind. — On a recent afternoon, an unusual group of visitors peered through a window at Purdue University students tinkering in a lab: two dozen executives from the world's biggest semiconductor companies.

The tech leaders had traveled to the small-town campus on the Wabash River to fix one of the biggest problems that they — and the U.S. economy — face: a desperate shortage of engineers.

Leading the visitors on a tour of the high-tech lab, Engineering Professor Chen mentioned that Purdue could really use some donated chip-making equipment as it scrambles to expand semiconductor education. "Okay, done. We can do that," Intel manufacturing chief Keyvan Esfarjani replied.



Joon Hyeong Park, an instructor at Purdue University, is reflected Oct. 4 in a set of chips manufactured at the Birck Nanotechnology Center. (AJ Mast for The Washington Post)

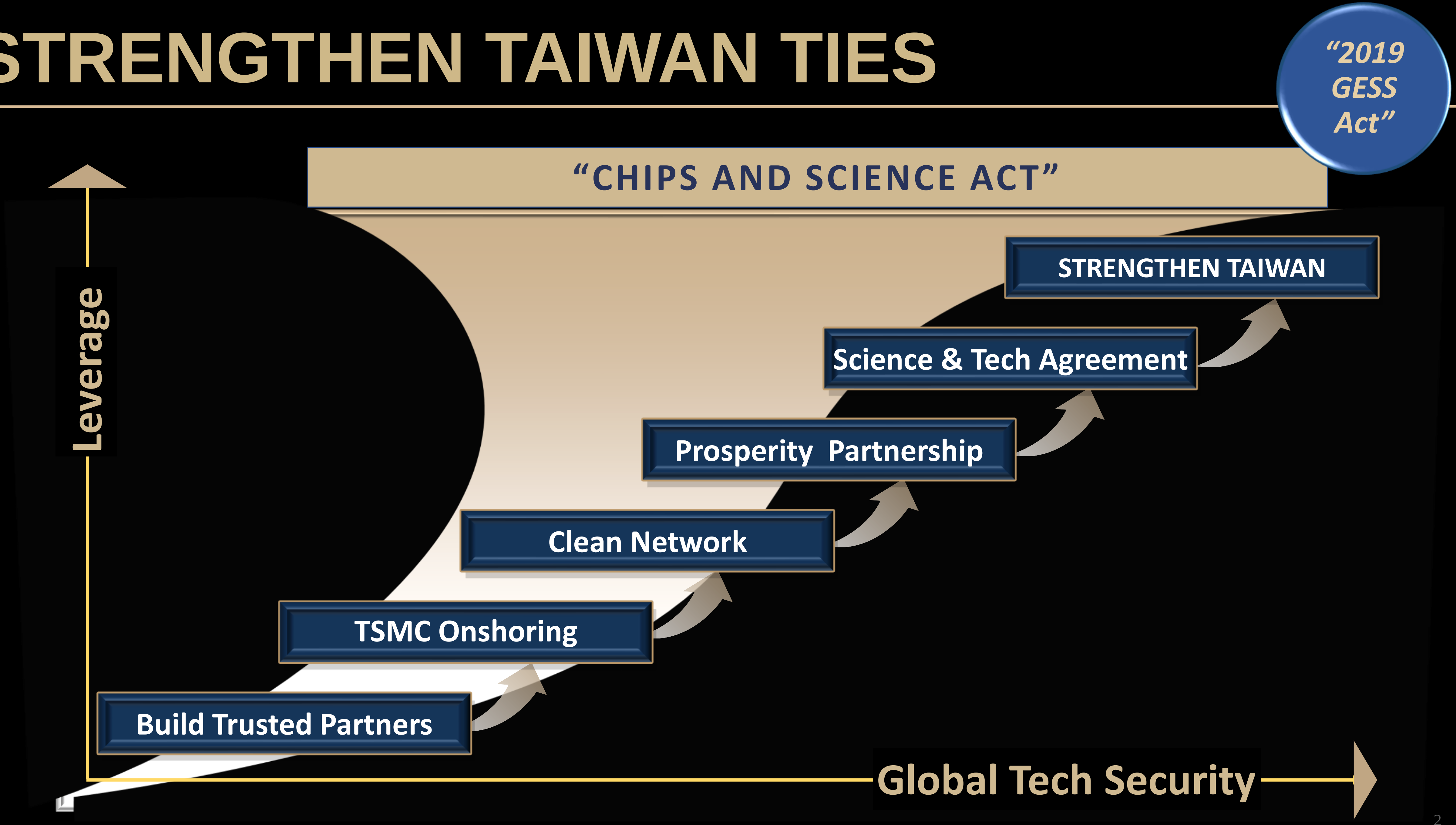
BIPARTISAN SUPPORT

Safeguard Assets

Bipartisan "CHIPS for America Act" Will Help Bring Production of Semiconductors, Critical to National Security, Back to U.S.

WASHINGTON *06/10/2020*–Senator Cornyn (R-TX) and Senate Intelligence Committee Vice Chair Warner (D-VA) today introduced the *CHIPS for America Act*, which will restore chip manufacturing back to American soil by increasing federal incentives to enable cutting-edge R&D, secure the supply chain, create jobs, and ensure national security. Rep. Matsui (CA-6) and Rep. McCaul (TX-10) back it.

STRENGTHEN TAIWAN TIES



WHAT IS KRACH'S MISSION?

Build Trusted Partners

Visit of highest-ranking US State Department official to Taiwan in 41 years confirmed

US Undersecretary of State Keith Krach to lead delegation to Taiwan, set to arrive Thursday leave Saturday

Keith Krach (L), U.S. undersecretary of state for economic growth, energy and the environment, speaks to Brent Christensen, director of the American Institute in Taiwan, during a funeral ceremony of former Taiwan president Lee Teng-hui at the Aletheia University in Nee Taipei City on Sept. 19, 2020. (HSU CHAO-CHANG/POOL/AFP via Getty Images)

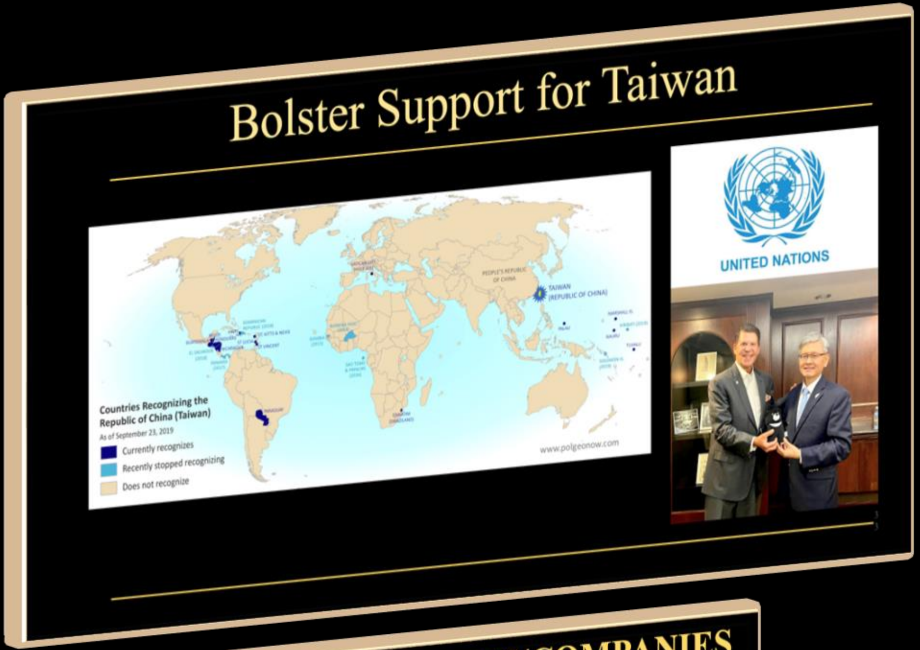
POLITICS

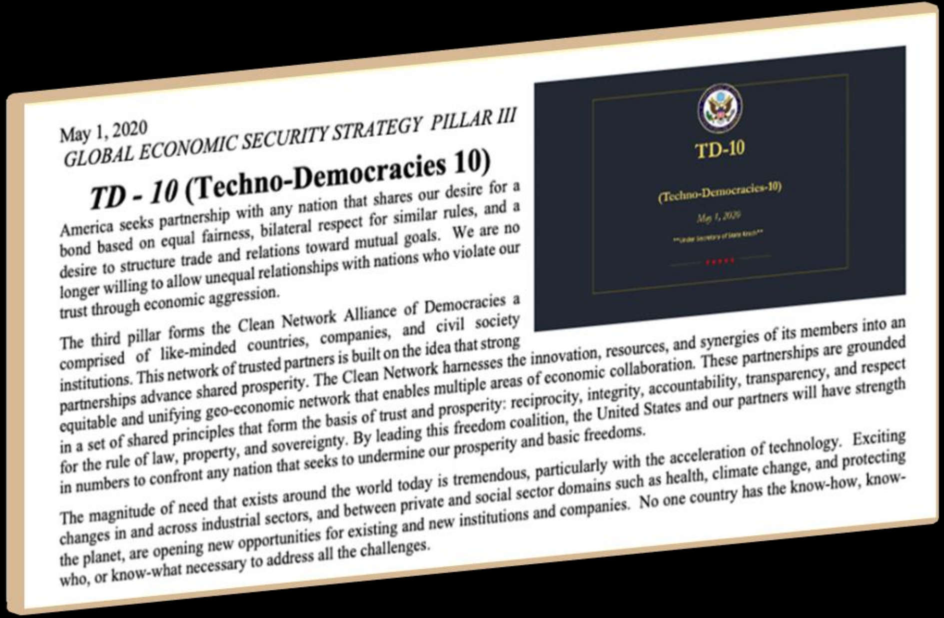
US Changes Course on Taiwan in Defiance of Beijing

BY EMEL AKAN | January 13, 2021 Updated: January 14, 2021 A A Print

BOLSTER SUPPORT FOR TAIWAN

Build Trusted Partners




May 1, 2020
GLOBAL ECONOMIC SECURITY STRATEGY PILLAR III

TD - 10 (Techno-Democracies 10)

America seeks partnership with any nation that shares our desire for a bond based on equal fairness, bilateral respect for similar rules, and a desire to structure trade and relations toward mutual goals. We are no longer willing to allow unequal relationships with nations who violate our trust through economic aggression.

The third pillar forms the Clean Network Alliance of Democracies a comprised of like-minded countries, companies, and civil society institutions. This network of trusted partners is built on the idea that strong partnerships advance shared prosperity. The Clean Network harnesses the innovation, resources, and synergies of its members into an equitable and unifying geo-economic network that enables multiple areas of economic collaboration. These partnerships are grounded in a set of shared principles that form the basis of trust and prosperity: reciprocity, integrity, accountability, transparency, and respect for the rule of law, property, and sovereignty. By leading this freedom coalition, the United States and our partners will have strength in numbers to confront any nation that seeks to undermine our prosperity and basic freedoms.

The magnitude of need that exists around the world today is tremendous, particularly with the acceleration of technology. Exciting changes in and across industrial sectors, and between private and social sector domains such as health, climate change, and protecting the planet, are opening new opportunities for existing and new institutions and companies. No one country has the know-how, know-who, or know-what necessary to address all the challenges.

STRENGTHENING TAIWAN TIES

Build Trusted Partners

Krach's historic arrival in Taiwan as the highest-ranking State Department official since 1979.

The Catalyst for Stronger US-Taiwan Ties

How Under Secretary of State Krach Became "Taiwan's Number One Friend"

by Michael Mink January 2, 2021

Krach's trip to Taiwan played a pivotal role in his mission of developing and operationalizing a global economic security strategy that would drive economic growth, maximize national security, and combat the CCP's economic aggression. Krach's strategy consisted of building a network of trusted partners comprised of an alliance of democracies, companies, and civil society that operate by a set of trust principles grounded in democratic values for all areas of economic collaboration. The network is designed to be a bipartisan, enduring strategy in the epic battle of freedom versus authoritarianism.

Krach's plan resulted in the rapidly growing Clean Network, which consists of more than 50 countries, representing 2/3 of the world's GDP, and hundreds of industry-leading companies. Krach secured an early Clean Network win by recruiting Taiwan as a member, knowing that tightening ties with the island democracy was crucial to national security and provided an ideal showcase for his three-part approach to confronting CCP aggression.

The New York Times

Pound for Pound, Taiwan Is the Most Important Place in the World

Its excellence in the computer chip market puts it at the center of the battle for global technological supremacy.

IT IS ALL ABOUT TRUST

Build Trusted Partners

BIPARTISAN SUPPORT

Build Trusted Partners

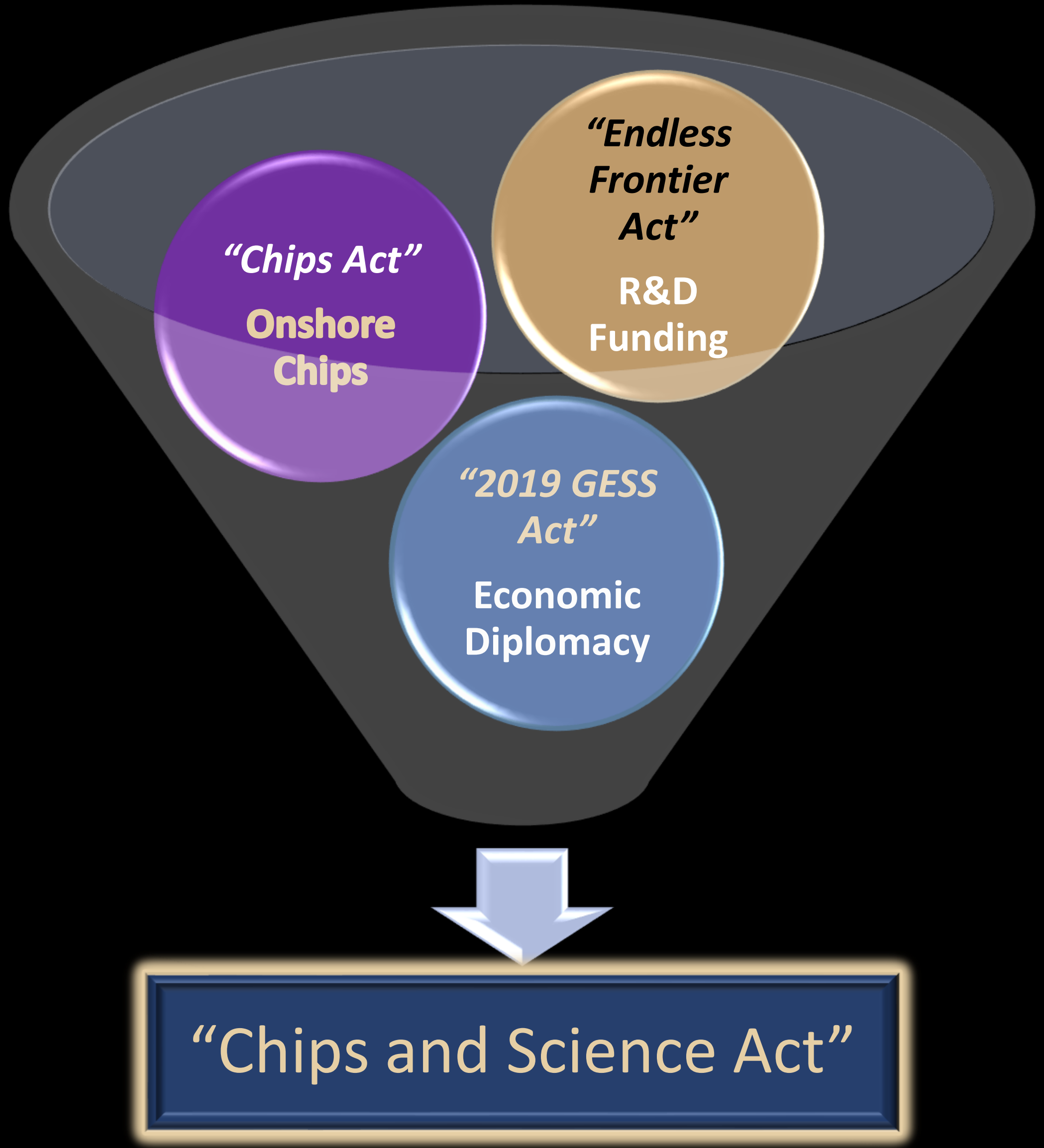
Young Aims to Help Strengthen Global Economic Security with New Bipartisan "GESS Act of 2019"

November 14, 2019: *Young aims to help strengthen U.S. economic security with new bipartisan bill*

U.S. Sens. Todd Young (R-IN), Jeff Merkley (D-OR), Chris Coons (D-DE) and Marco Rubio (R-FL) introduced S. 2826, the Global Economic Security Strategy Act of 2019.

"Predatory economic practices by China and other strategic competitors have the potential to weaken America's national security and our standing in the world. We must combat these predatory practices by working together with our like-minded partners and allies around the globe," Sen. Young said.

$280B CHIPS AND SCIENCE ACT



$280B CHIPS AND SCIENCE ACT

KRACH INSTITUTE FOR TECH DIPLOMACY AT PURDUE

Commerce Secretary Raimondo and GTS Commission Chair Krach Deliver Briefing on Advancing U.S. Tech Leadership

Implementation of the $280B Bipartisan CHIPS Act Plays Crucial Role in Combating Techno-Authoritarianism

The two-year mission of the Global Tech Security Commission established by the Krach Institute and the Atlantic Council is to develop a Global Tech Security Strategy that complements such multinational efforts as the Indo-Pacific Economic Framework and the Future of the Internet declaration. While previous commissions have primarily focused on analyzing problems and offering recommendations limited to defensive policies, the Commission will not only consist of offensive and defensive strategies for combating techno-authoritarianism, but will also begin to build a Global Tech Trust Network for adopting Tech Trust Standards to accelerate the use of trusted technology.

REUTERS®

EXCLUSIVE Chinese embassy lobbies U.S. business to oppose China bills - sources

EE|Times 50

Architect of CHIPS Act Speaks on Its Impact

By Alan Patterson 08.01.2022

In an exclusive interview with EE Times, Keith Krach, former Under Secretary of State speaks on the significance of the CHIPS Act, which has since been passed by the House in a 243–187 vote.

Krach is one of the key people who helped shape the CHIPS Act. In May 2020, Krach's effort led to an agreement by Taiwan Semiconductor Manufacturing Co. (TSMC) to build a $12 billion 5-nm chip fab in the U.S., the most advanced facility of its kind in the nation.

Keith J. Krach

Krach is also an accomplished businessman as former chairman of DocuSign and co-founder of software company Ariba. Here are Krach's thoughts on the impact the stimulus measures will have on the American semiconductor industry.

THANK YOU TSMC

EETimes

Architect of CHIPS Act Speaks on Its Impact

By Alan Patterson 08.01.2022

I know you as the person who helped facilitate TSMC's historic $12B onshoring. What was it like working with TSMC?

"It was one of the greatest collaboration experiences I ever had, whether it was as Under Secretary of State or CEO. It was about trust. TSMC opened their books to us. We opened our thoughts to them, and we made the $12 billion deal happen in two weeks' time. Up to that point, it was the largest onshoring in U.S. history. It was based on our word to do our best in helping cover their incremental costs. The caveat was that there were no guarantees because, literally, "this will take an act of Congress."

Keith J. Krach

Introducing your next Guest Lecturer…

AN ODE TO MY FRIEND DR. MARK LIU

Our team's mission was strong, steady, and true.
Onshore chips and let's start with the TSMC crew.

We went straight to the top, and called Dr Mark Liu.
Reckoning the Chairman always knows what to do.

You had us at hello and how to you do.
Plus, you agreed to come and in just two weeks time too.

As far as the money goes, we said we hadn't a clue.
But our promise to you was to do everything we could do.

After your historic $12B announcement came right on cue
Our commitment to TSMC and Taiwan grew and grew

Well, finally the CHIPS Act passed after all that hullabaloo
Bottom line, you trusted in us and we trusted in you too.