



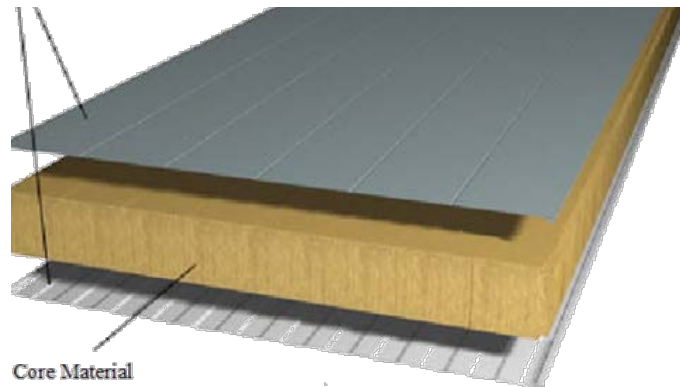
- **The Federation of American Scientists (FAS)** is a nonprofit science policy organization founded in 1945 by members of the Manhattan Project, who were concerned about the implications of the atomic bomb for the future of humankind.
- **Endorsed by 68 Nobel Laureates** in chemistry, economics, medicine and physics, FAS addresses a broad spectrum of issues in carrying out its mission to promote humanitarian uses of science and technology.
- **The FAS Building Technologies Program (BTECH)** works to mitigate climate change and advance social justice and environmental responsibility through the building industry.
 - The BTECH develops policy positions, researches new technologies, and promotes education, training, and high performance standards and codes.
 - FAS works to create strategically optimized solutions through academic, professional, and industry partnerships to have a real and positive effect on the global impact of our built environment.



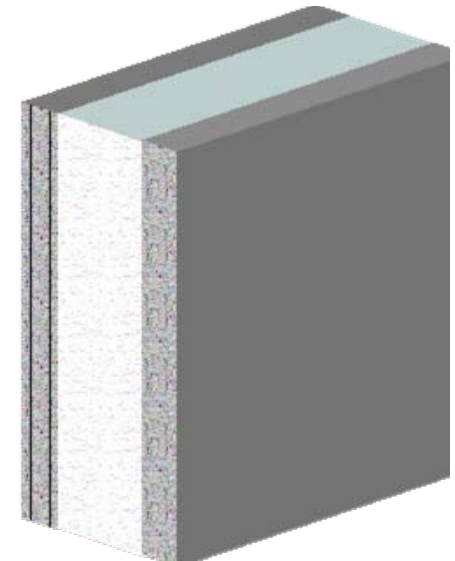
Initial focus on Structural Insulated Panels (SIPs) because the technology is vital in meeting these climate goals – now moving to advance composites.



WOOD

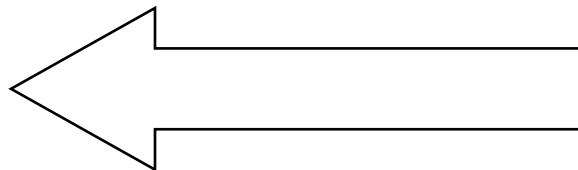


METAL



CEMENTITIOUS – Cement skins

MATURE Technology



In DEVELOPMENT



Principles for Advanced Building Technologies

- Energy goals and other design objectives should be part of integrated engineering design:
 - Attractive/flexible designs;
 - High energy efficiency – reduced carbon footprint;
 - Low construction costs/ low maintenance costs;
 - Safe for fire, earthquake, strong wind, insects, mould ;
 - High quality indoor air; and
 - Accessible.
- Ensure reliable performance and quality control/quality assurance during construction.
- Proper building commissioning (can save 30% energy)

SIPs are an enabling technology.

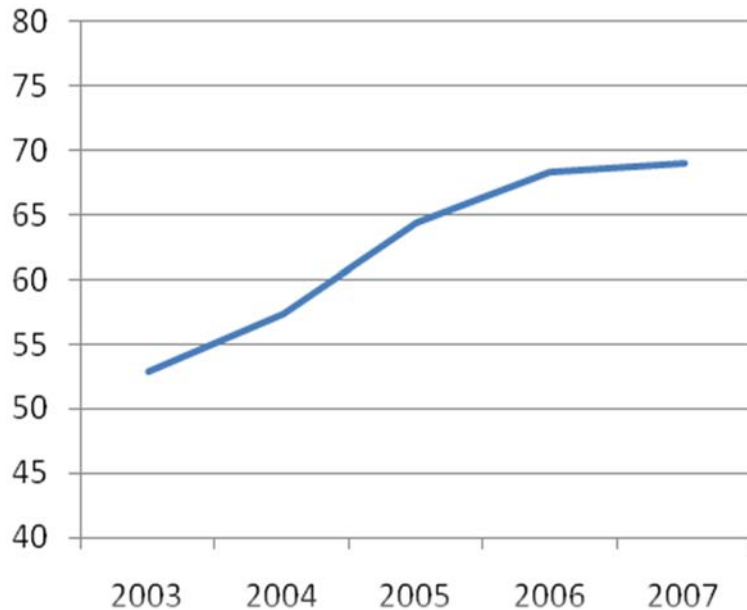
SIPs naturally address each of these principles!!!



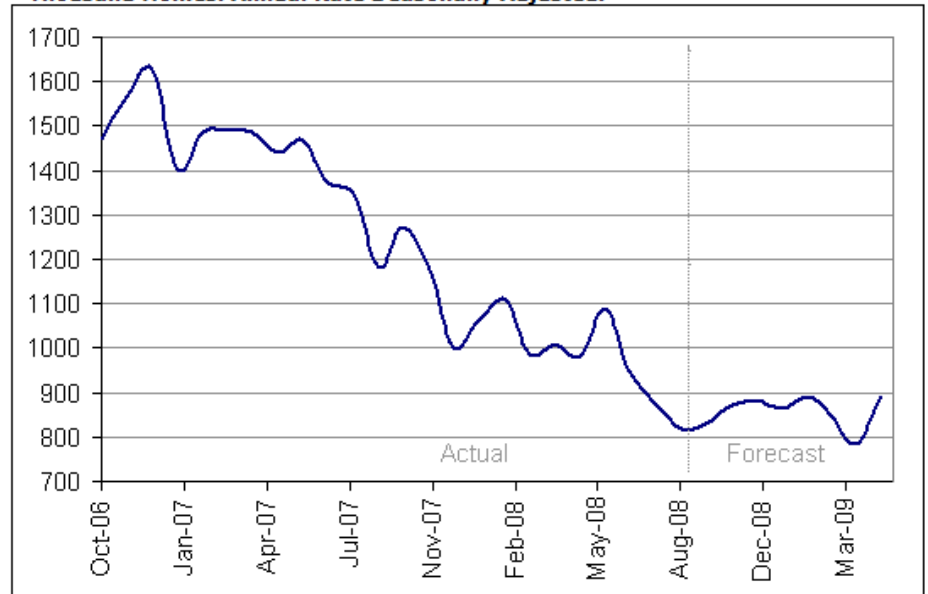
SIPs are an increasingly significant market

The market for easily constructed, energy efficient multi-story buildings is large. The current SIP market has grown rapidly since 2003:

Million of SIP panels sold (sqft)



U.S. New Housing Starts
 Past Trend Present Value & Future Projection
 Thousand Homes. Annual Rate Seasonally Adjusted.



SIPs exhibited moderate industry growth in severe housing slump!!!



Past FAS successes include...

- **Educating the SIP industry on standards** – now SIP industry is standardizing under ISO inspections, certifications, and compliance.
- **Researching Seismic Response of SIPs** – now SIP industry can correctly address Seismic Code compliance (working with UC Berkeley)
- **Developing first ever Design Procedure Document for SIPs** in commercial buildings including Engineering standards and design procedures.
- **Past SIP demonstration projects in disaster prone or disaster response areas.**
- **Working with International Code Council on development of High Performance Housing Guidelines** – addressing Energy Efficiency, Structural Advancements, Accessibility, Improved Indoor/Environmental Quality
- **Working on Online Training** using Second Life and other online environments.

Habitat SIP Demonstration 2007, Post Katrina Disaster Relief Housing...

- Constructed two cementitious SIP homes in Mobile, Alabama with Habitat for Humanity.
- Families moved in April 2008
- Homes to be monitored & benchmarked for comparison to Habitat's traditional models.
- Planning 4 house demonstration village with Habitat for Humanity.





Turkey SIP Demonstration 2007

Demonstration of Panels in Seismic Area...

- Completed Lale Villa with ILHAS (Turkey's largest developer), a demonstration house in a suburban Istanbul development on the Sea of Marmara.
- Support the transfer of advanced structural insulated panels systems to Turkey in cooperation with the IHLAS.
- Participated in and made presentations at conferences in Turkey on advanced housing technologies.





Mississippi Alternative Housing Demonstration of High Performance Homes for Disaster Recovery

- Worked with the State of Mississippi to design and building 280MN (USD) of disaster response housing (3500 homes)
- Homes are a reinvestment in the community, to “grow”
- Held briefing on the Hill with EESI on High Performance Manufactured Housing to educate Capitol Hill staff
- FEMA revised procurement to encourage these types of units, continue to informally work with FEMA on their ongoing IAQ issues
- Held HUD-DOE working group to address energy in manufactured housing per 2008 Energy Bill; expand “high performance” to larger industry as a new code with the ICC





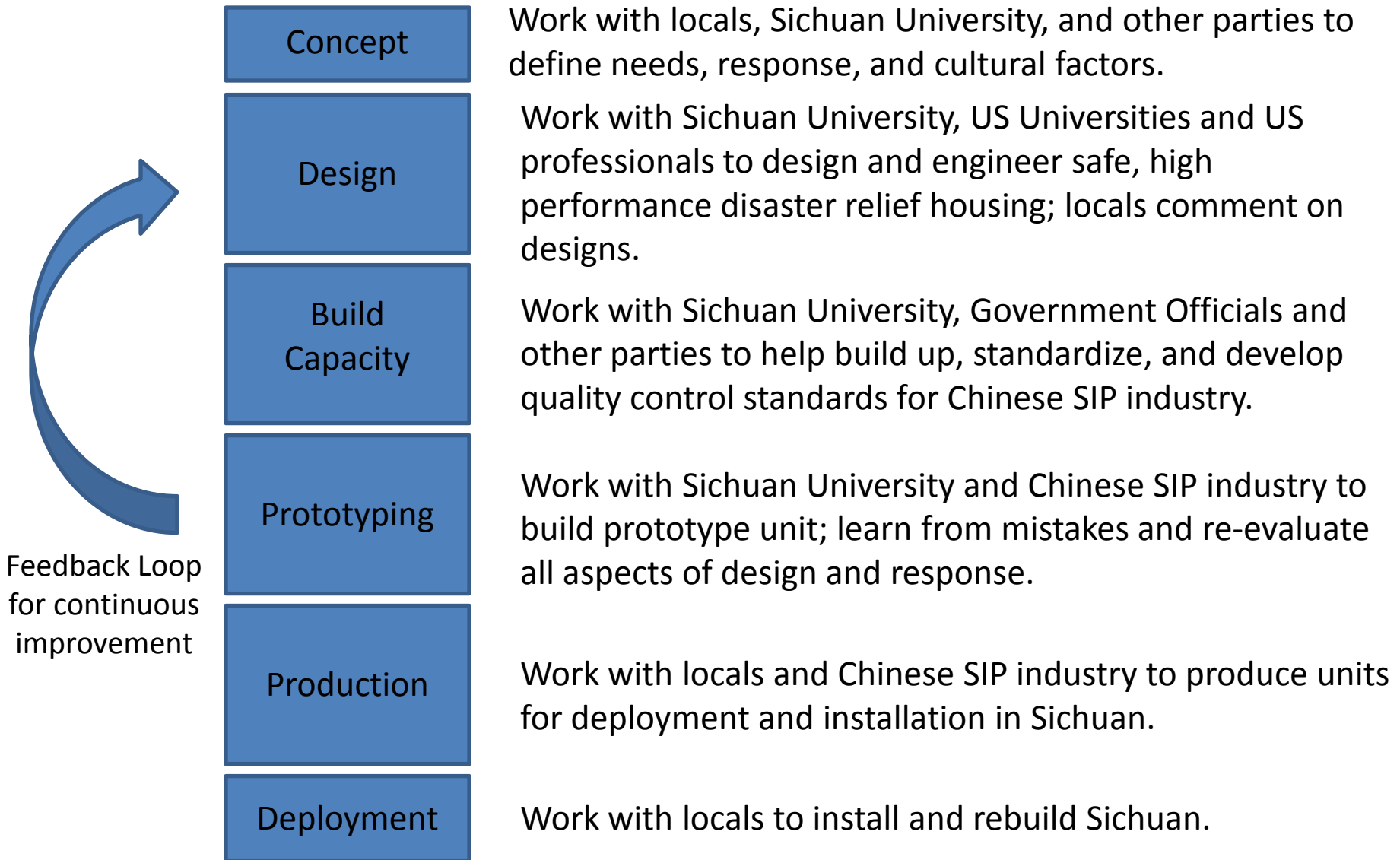






FAS's Interest in Rebuilding...

- FAS's interest is to **leverage existing disaster response, SIP technologies, and lessons learned in the US SIP industry** to respond to Sichuan's re-investment.
- Recognize, **homes are a reinvestment in the community**, should “grow”, and should be focused on High Performance, reduced energy consumption, increase structural resistance, and reduced carbon footprint.
- Secondary effects of demonstration...
 1. **Build up Chinese SIP industry** – take scattered plants/products and discuss manufacturing the US equivalences.
 2. **Develop a Chinese SIP standard** for product and manufacturing based on US standard
 3. **Test a panels for performance and design values.**
 4. **Demonstrate a model for effective disaster response** and high performance internationally.



END GOAL: Establish process to support a transparent design & quality-driven engineering/manufacturing/fabrication