



UI-UAAT Collaboration Planning

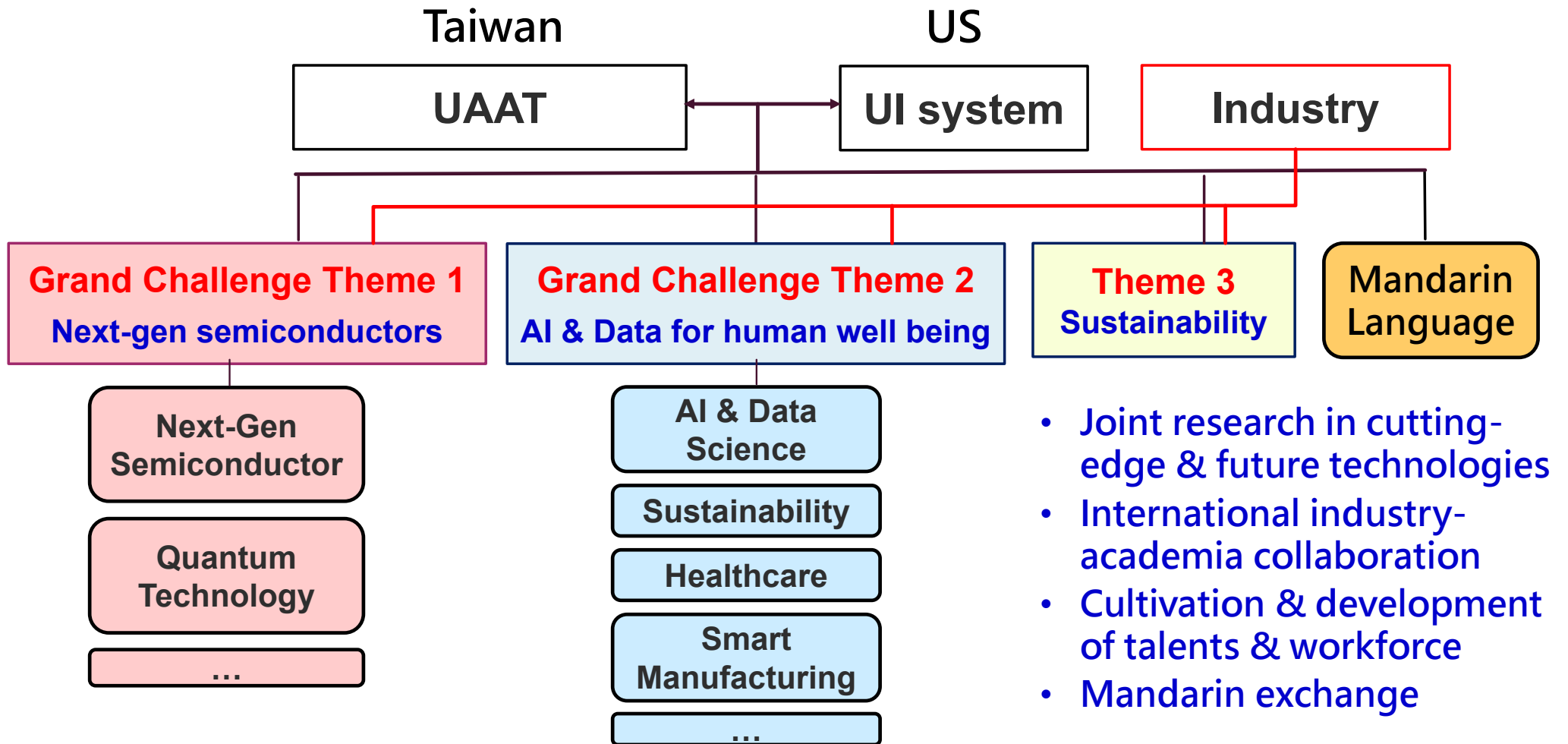
Grand Project Themes & Sub-topics with UI

Secretariat of UAAT (University Academic Alliance in Taiwan)

National Taiwan University

Oct. 2023

Collaboration Framework between UAAT & UI



Next-generation Semiconductor (+Quantum)

1. **Advanced VLSI**: technologies beyond 1 nm, IC design innovation, advanced packaging (heterogeneous integration/interconnect, 3D/2.5D IC, chiplet stacking), advanced memories, advanced materials, smart manufacturing & metrology etc.
2. **Next-gen compound semiconductors**: power & high speed devices and integrated circuits
3. **Quantum computing/communication/information**: materials, devices, architectures, software, simulation application, integration of quantum processor with high performance computing etc.
4. **Quantum & nano photonics** for quantum technology

AI & Data for Human Well Being

1. **Advanced AI & Data technologies:** efficient and trustworthy deep learning, multimodal machine learning, generative AI, efficient mining on data streaming, geospatial information technology for urban environment and health etc.
2. **AI hardware:** intelligent edge computing, LLM (large language model) accelerator, in-memory computing, low precision/analog computing, digital twins for urban environment/climate change/health etc.
3. **AI applications:** smart healthcare, smart manufacturing, cybersecurity, robotics, autonomous/smart vehicles, computer vision, remote sensing, engineering, materials, agriculture, education, business etc.

Sustainability

1. **Carbon** reduction, capture, storage and utilization for net zero
2. **Nature based solutions**: data, assessment, analysis and strategies
3. **Circular economy**
4. **Green energy**: renewable energy, energy storage, integration & operation
5. **Environment**: climate change, disaster prevention/recovery, water management, pollutant monitor/control, urban development, governance, resilience
6. Policy, economic, and technical analyses

Collaboration Schemes and Activities

1. Joint research (large Grand Challenge Project/ medium 、 small theme project/joint lab 、 joint research center/consortium)
2. International industry-academia collaboration
3. Overseas/visiting research
4. Student & faculty exchange/internship program
5. Short-term courses/intensive courses/workshop
6. Academic conferences/professional activities
7. Joint/dual degree
8. Mandarin language exchange