

# Nuclear Fuel Cycle Transparency:

## An Approach to Support the Global Deployment of Nuclear Power

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**Transparency** is a high-level concept, defined as a confidence building approach among political entities, possibly in support of multi-lateral agreements, to ensure civilian nuclear facilities are not being used for the development of nuclear weapons.

Additionally, nuclear fuel cycle transparency involves the cooperative sharing of relevant nuclear material, process, and facility information among all authorized parties to ensure the SAFE AND LEGITIMATE USE of nuclear material and technology.

A system is considered TRANSPARENT when the parties involved feel that the PROLIFERATION RISK is at an acceptable level. For this to occur, proliferation risk should be monitored in a continuous fashion.

1. Bilateral or multilateral agreements on the operation, inspection, and verification of nuclear operations within a host country.
2. Added surveillance and remote monitoring of nuclear operations usually at random or without notification.
3. Direct monitoring of nuclear operations in real time.
4. Ability to remotely secure and inhibit operations.

**The highest levels of transparency imply multilateral control of nuclear facilities and processes.**

We suggest that a new paradigm be considered for the development of deployable nuclear technology. This paradigm would have the highest levels of transparency built into all aspects of the nuclear fuel cycle by design rather than "added-on" after the facilities are designed and deployed.

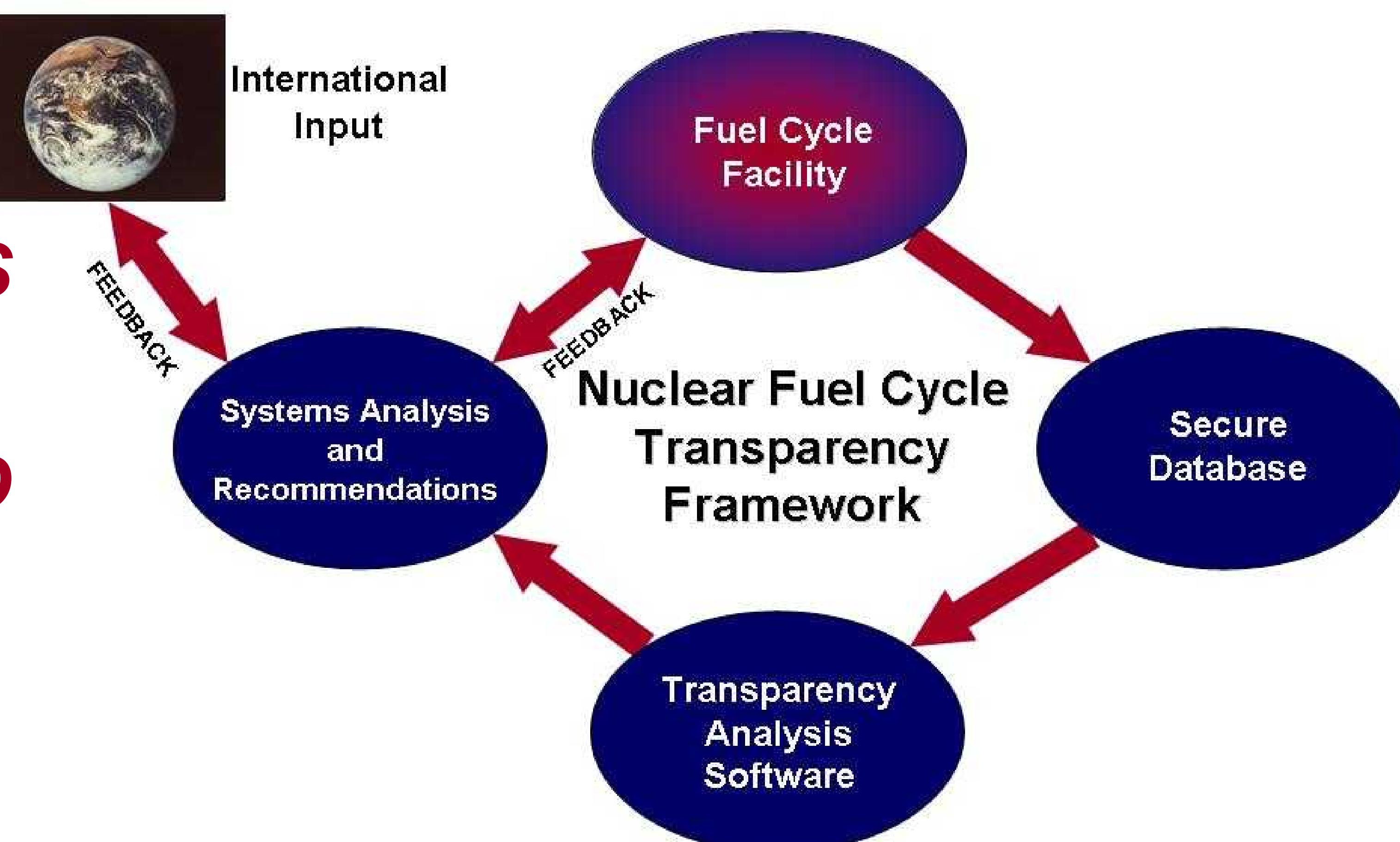
This approach offers the possibility to:

- Take advantage of the increasing level of process automation in new fuel cycle facility designs,
- Define a need for a uniform standard for transparency that is independent of the hosting country, and
- Provide a means for uniformly gathering verified data for building trust relationships between countries.

To implement this approach will require:

- New technology to provide secured plant process data,
- Secure information systems to distribute the data without providing data to potential adversaries,
- Analysis tools to digest the data provided into a uniform standard, and
- Approaches to secure material and processes safely and securely.

### TRANSPARENCY CONCEPTS CAN HELP BUILD TRUST RELATIONSHIPS THROUGH APPLIED TECHNOLOGY AND SOUND ANALYSIS TECHNIQUES.



### CONCLUSIONS

We believe that higher levels of transparency, when engineered into nuclear facilities, can provide a level of assurance for nations to verify that civilian nuclear facilities are being used safely and that the materials are being legitimately used for civilian purposes. Further, advanced approaches to transparency can be used to secure nuclear facilities and materials in the event of detected misuse, possibly before the material is diverted or a severe accident occurs.