# A New Framework to Minimize Insider Threats in Nuclear Power Operations


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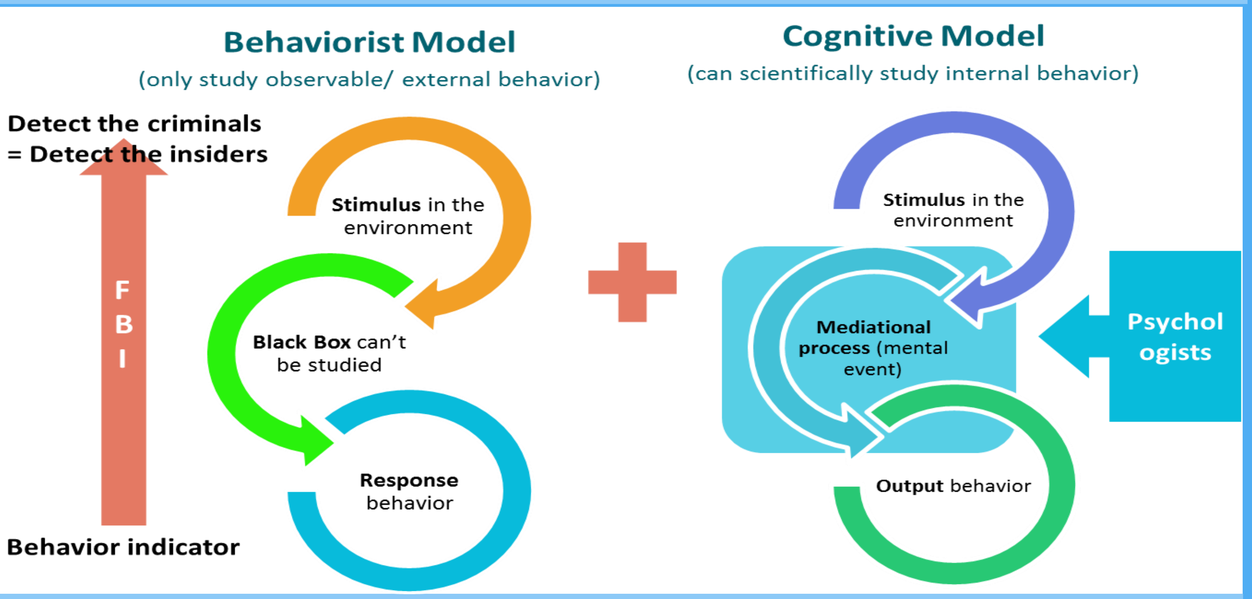
## Introduction

With the on-going global war on terror, the potential for a terrorist attack on a Nuclear Power Plant (NPP) is receiving a great deal of attention. The potential threat from an insider could lead to a grave outcome and deserves serious consideration.

### IAEA Preventive and Protective Measures for Insider Threats

- (1) Exclude access to potential insiders by identifying undesirable behavior or characteristics, which may indicate inappropriate motivation.
- (2) Remove from the premises individuals (potential insider) with undesirable behavior or characteristics after they have accessed the NPP.
- (3) Minimize opportunities for malicious acts by limiting access, authority and knowledge, by all available means.
- (4) Detect, delay and respond to malicious acts.
- (5) Mitigate or minimize the consequences resulting from malicious acts.

### Limitations: Existing Model for Insider Detection




### Objective of Research

- This study proposes a framework for detecting and predicting potential insiders.

## A New Framework to Minimize the Insider Threat

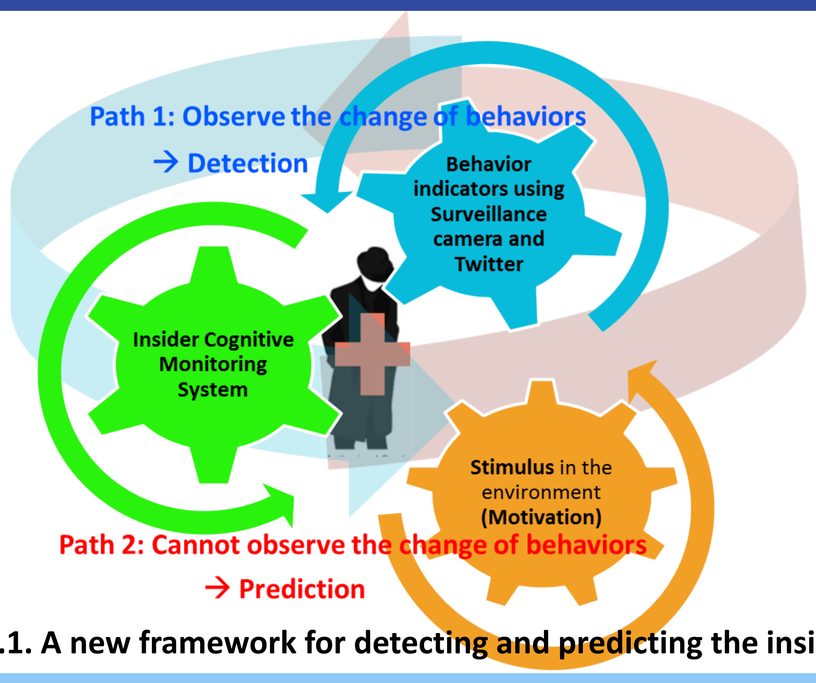
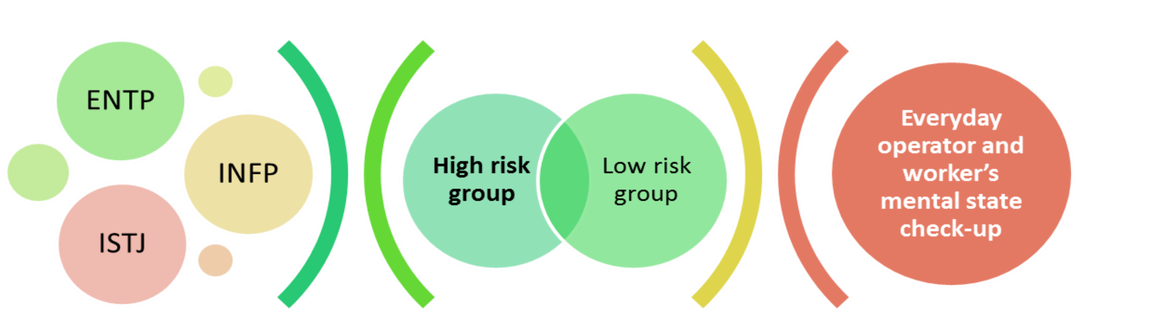



**Fig.1. A new framework for detecting and predicting the insider**

### Application of Framework to NPP Operators




**Introduction to Personality Screening System**

Using EEG test based on MBTI test for the purpose of hiring suitable employee

**Implement different style of training program**

Strengthen education for prevention of Insider threats

**Introduction to basic normal biodata collection system**

**Real-time worker's simple Biodata monitoring.**

Each day the operator's mental state should be checked to identify any abnormal bio-activity.

## Insider Prediction Monitoring Model

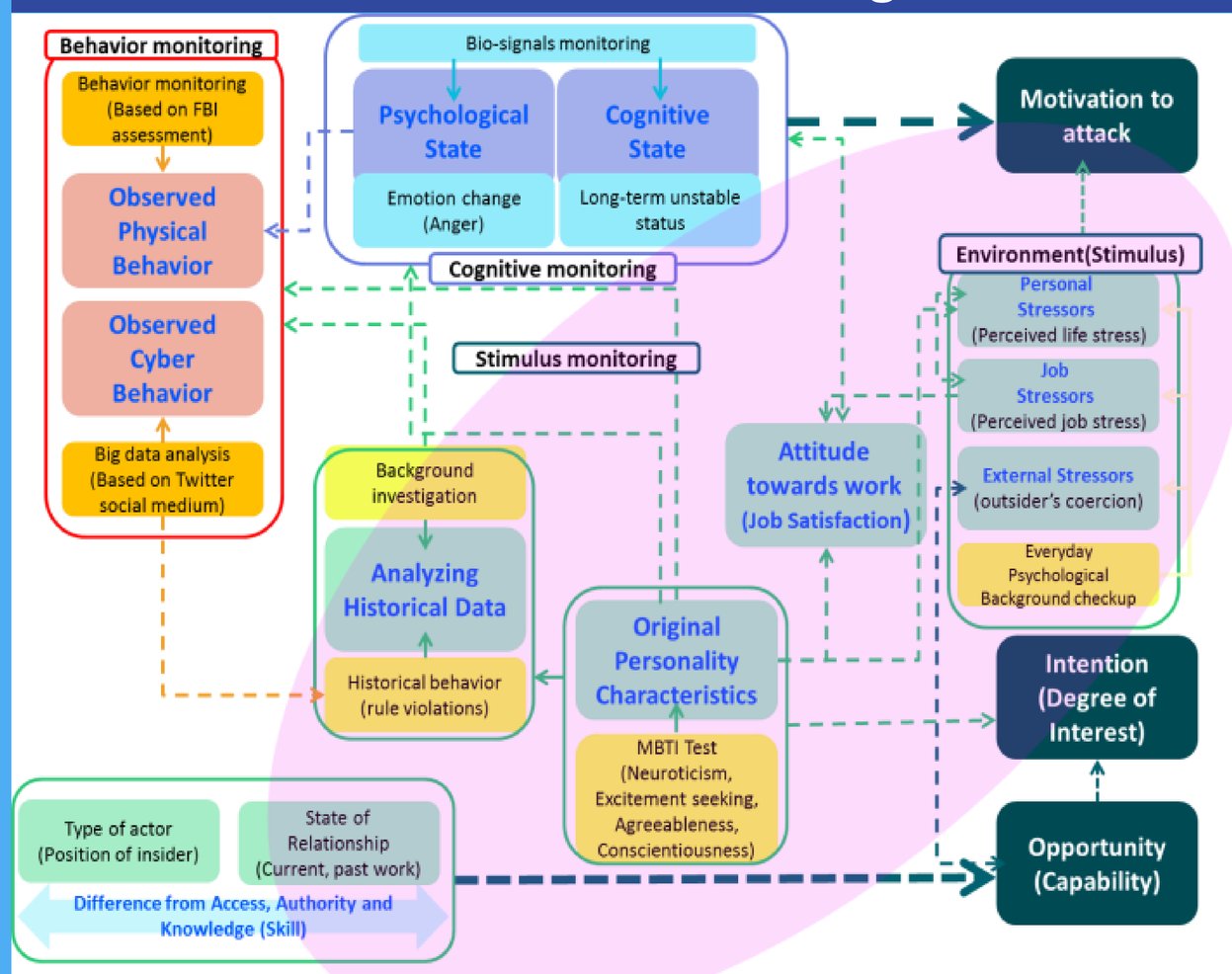



**Fig.2. Insider prediction monitoring model**

## Feasibility of the New Framework

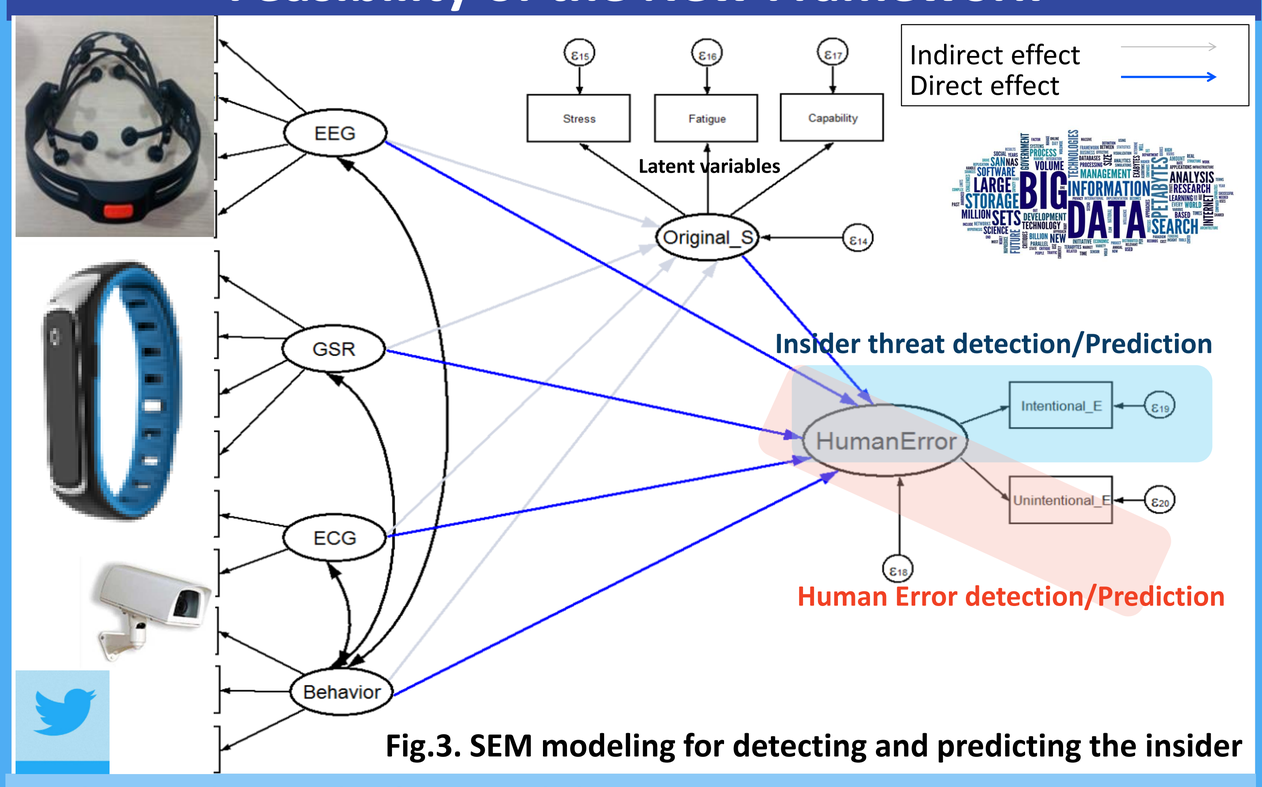
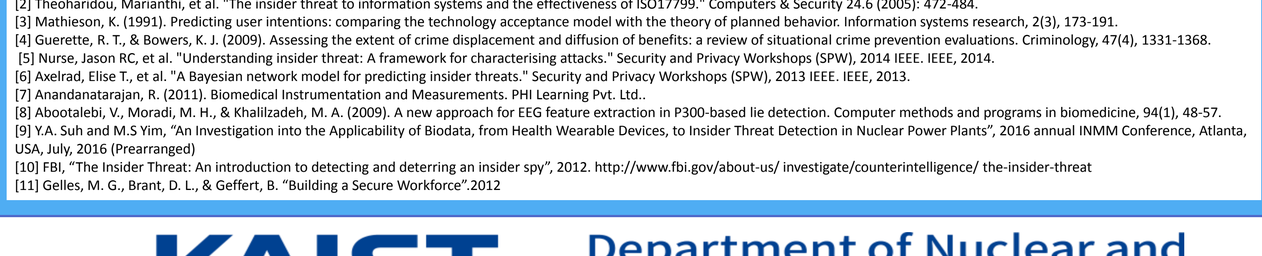



**Fig.3. SEM modeling for detecting and predicting the insider**

### Pilot Study Results for Feasibility on Cognitive Monitoring System




## Conclusion

- This paper suggests a new framework for predicting and detecting insider threats. This framework integrates not only behavioral indicators, but also stimulus monitoring and cognitive monitoring.
- This is particularly significant since recent developments and analysis in cognitive monitoring, based on human biodata, are shown to be quite reliable.
- The framework presented here opens the possibility of detecting and predicting an insider before a crime is actually committed. This model can be directly applied to reduce NPP security risks.

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