WP2 Report

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Author:	Haiyue Yuan Patrice Rusconi Shujun Li
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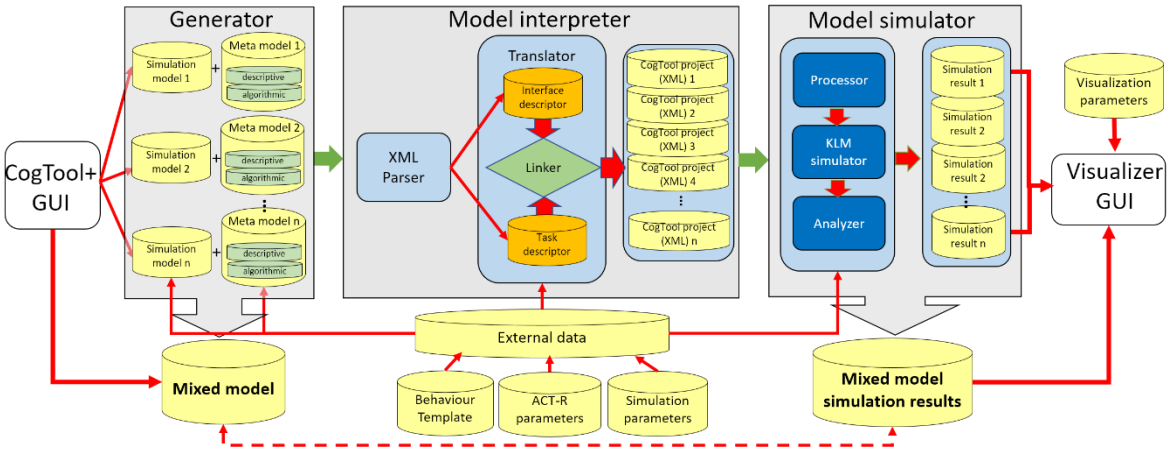
1. Introduction

This work package is led by UoS and SMU, this work package will deliver a complete software framework and toolset composed of modules for modelling and simulating humans, HCI, human behaviour related attacks, and calculating (in)security metrics.

2. Tasks

2.1 Software architecture and implementation



CogTool+ system contains three main components. *Generator* generates a mixed model that consists of one or more meta models, and each meta model describes the UI level model as well as the interaction work flow in high level. In addition, each meta model accompanies with a simulation model which contains parameters to tailor the simulation/prediction process. *Model interpreter* parses and translate each meta model before converting to one or more CogTool projects in eXtensible Markup Language (XML) format. *Model simulator* reads and processes CogTool projects and initiate the simulation process, followed by analyzing the simulation results to produce some basic statistics in a collective way. *External data* can be added to each component to facilitate the modeling process. *Visualizer GUI* allows interactive visualization of simulation results based on visualization parameters set by end users. *CogTool+ Graphical User Interface (GUI)* is currently under development by our project partner. More details can be found in our paper to be submitted to UIST2018 [1].

2.2 Software module for modelling human users

We have used CogTool+ to model two user authentication tasks, one is the Undercover [2], another one is 6 digits PIN timing attack cases. In order to make sure accurate modelling, we designed and developed dedicated descriptive model and algorithmic models. These models need the meta model to interpret and translate to modelling tasks. More details can be found in our paper to be submitted to UIST2018 [1].

2.3 Models of different human behaviour related attacks, (in)security metrics and their descriptive languages

2.4 A software module for modelling and simulating HCIs

2.5 A software model for modelling and simulating human behaviour related attacks and calculating (in)security metrics

More details for 2.3, 2.4, 2.5 can be found in our paper to be submitted to UIST2018 [1].

3. References

[1] Working Paper from UoS to be submitted to UIST2018

[2] Hirokazu Sasamoto, Nicolas Christin, and Eiji Hayashi. 2008. Undercover: authentication usable in front of prying eyes. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '08). ACM, New York, NY, USA, 183-192.