

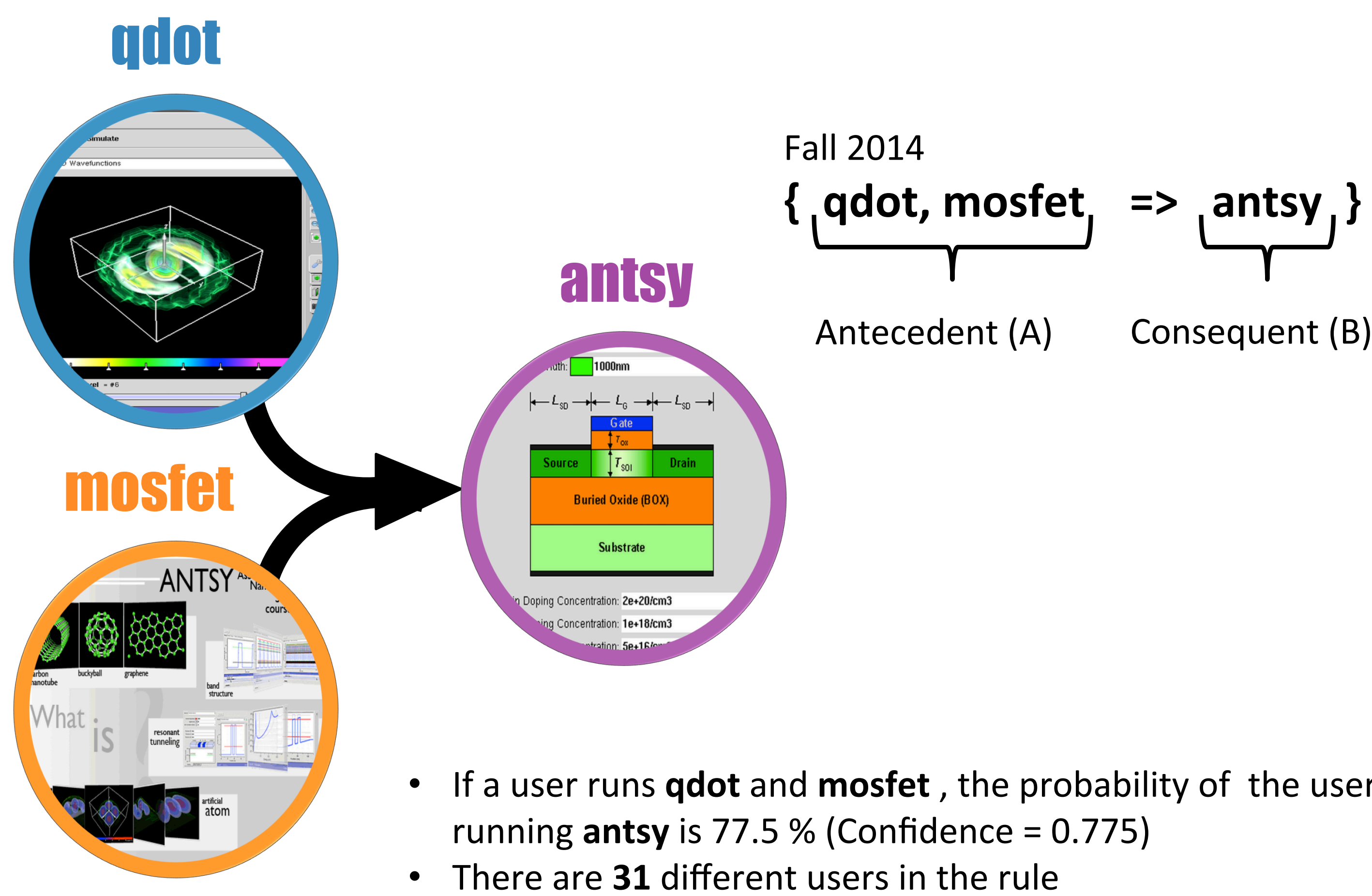
Over 60,000 simulations annually

Goals

- Identify clusters of users with similar simulation patterns
- Measure the impact of nanoHUB in terms of academics courses, events, and research
- Establish nanoHUB as a gateway of opportunity for collaboration in nanotechnology

Association Rules

Association rules is a data mining method suggested by Agrawal [1]. In our case it represents the association between tools on nanoHUB.



• **Confidence** is the percentage of cases containing A that also contain B

$$\text{Confidence}(A \Rightarrow B) = P(B|A) = P(A \cap B) / P(A)$$

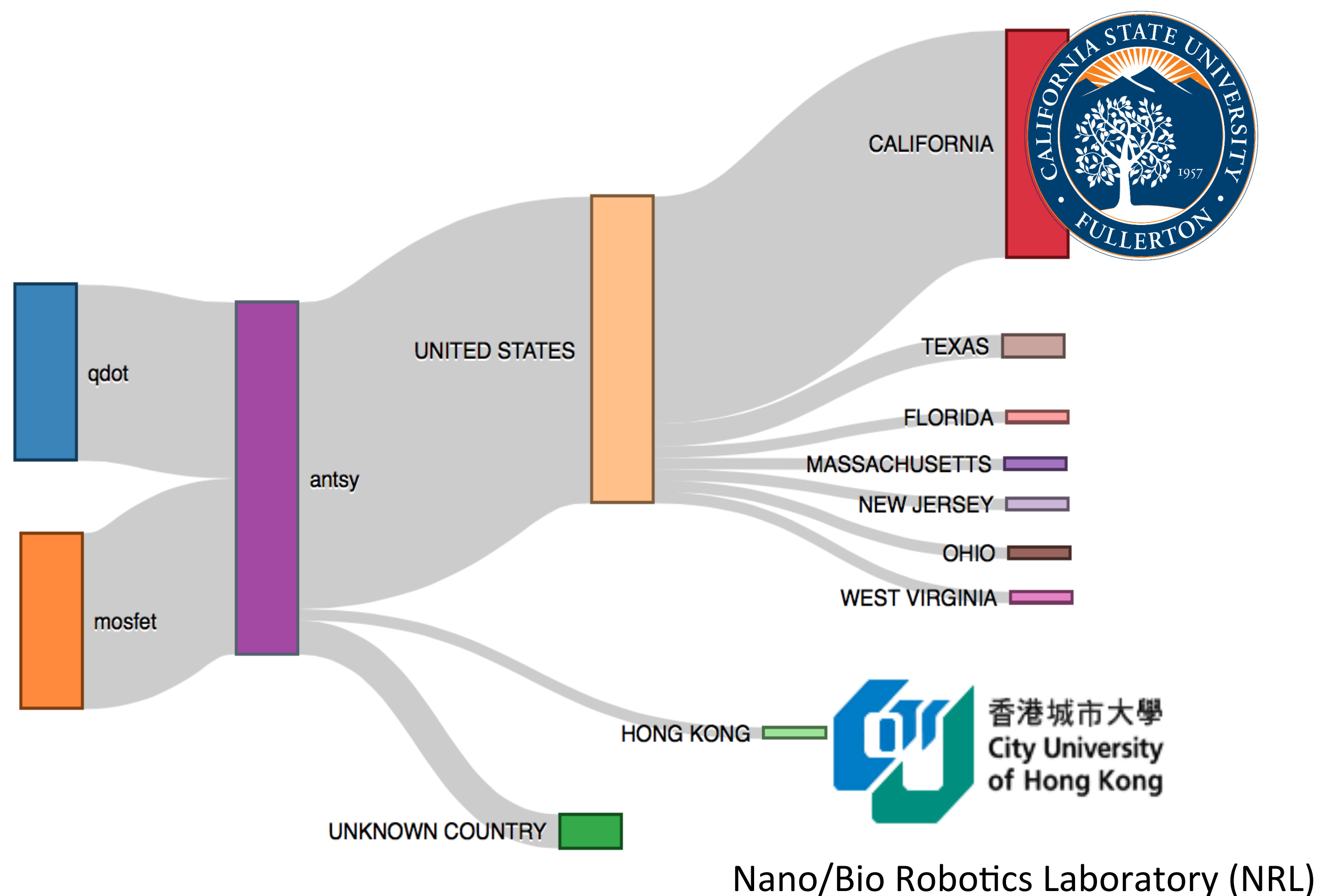
• **Support (cases)** is the percentage of cases in data that contains both A and B

$$\text{support}(A \Rightarrow B) = P(A \cap B)$$

qdot: Computes the eigenstates of a particle in a box of various shapes including domes, pyramids and multilayer structures

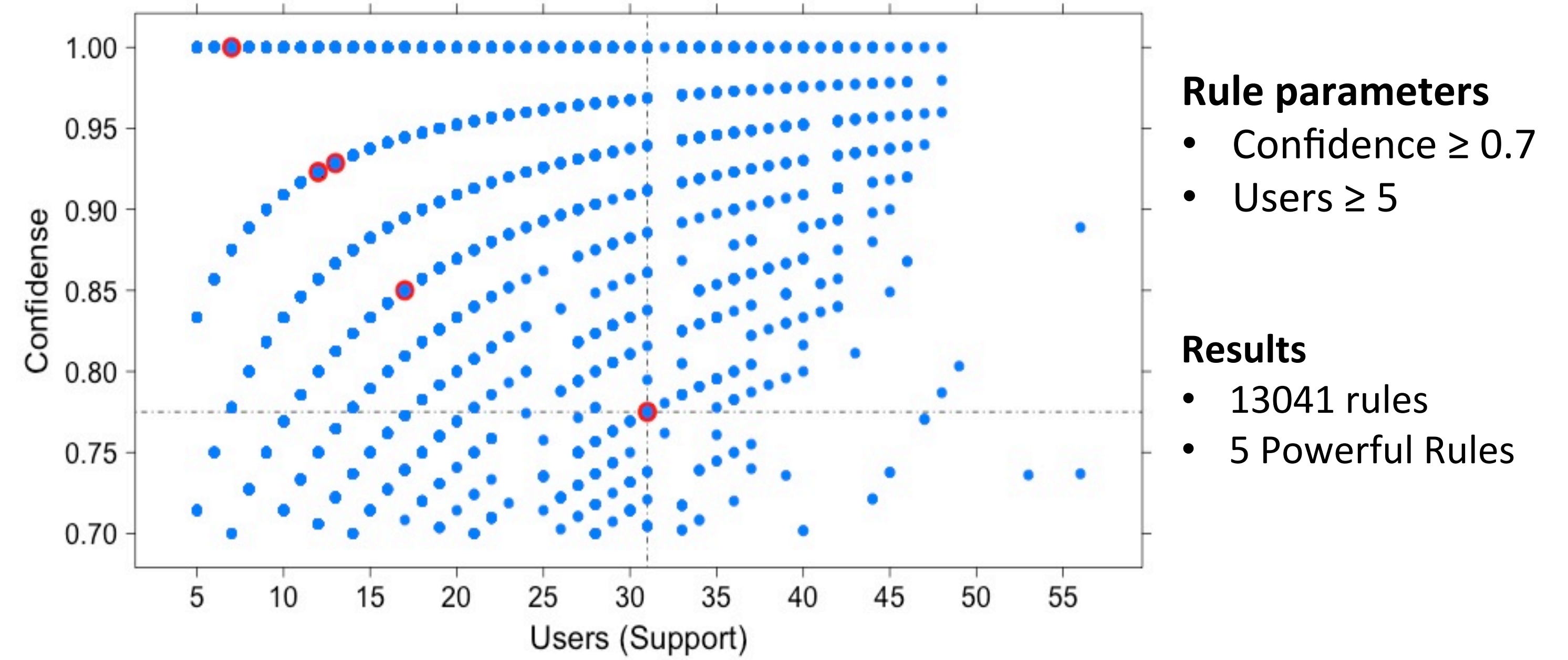
mosfet: Simulates the current-voltage characteristics for bulk, SOI, and double-gate Field Effect Transistors

antsy: An assembly of several individual tools that provide an easy step into a basic understanding of nanotechnology structures and devices

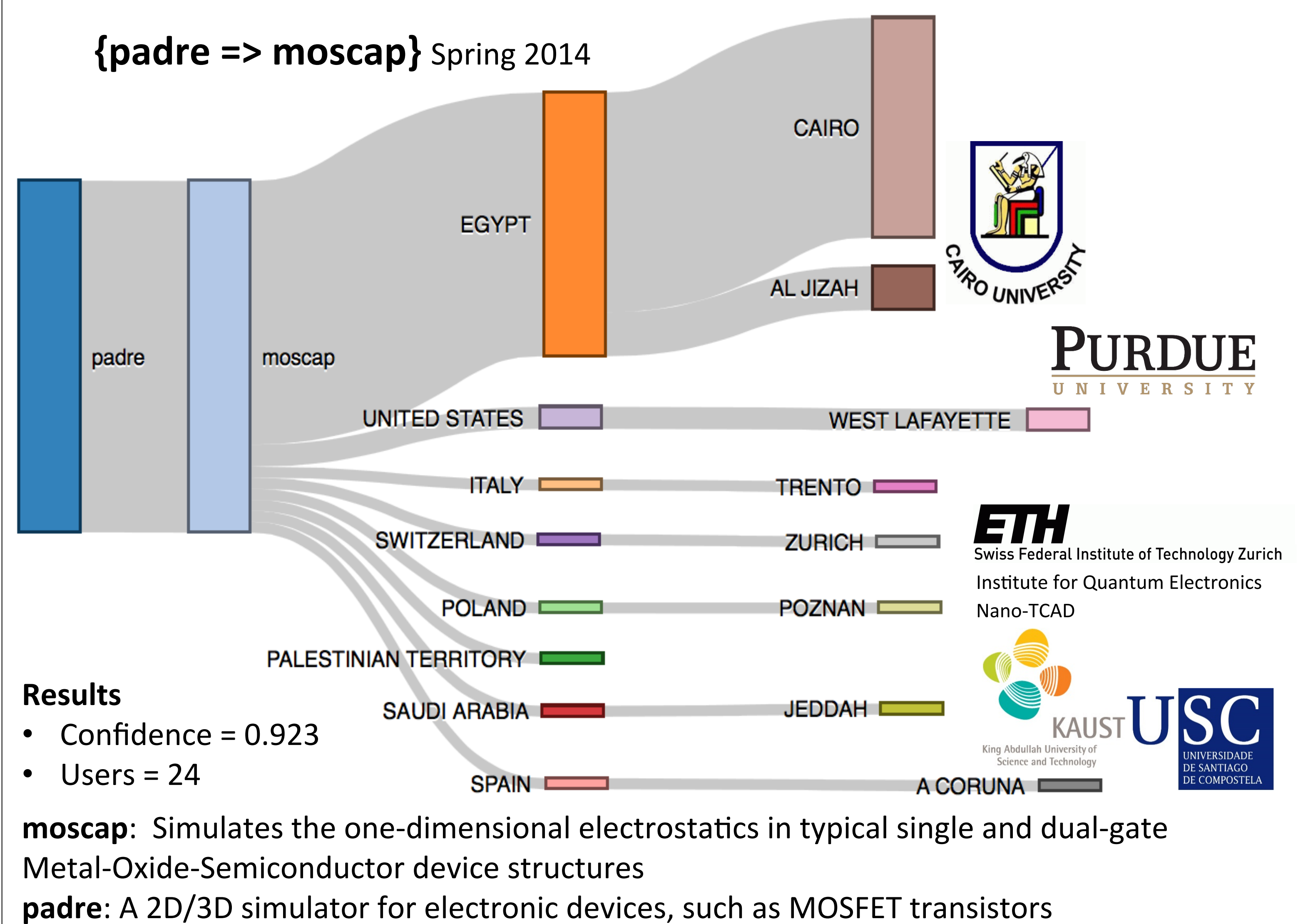


References
 [1] Agrawal, R.; Imieliński, T.; and Swami, A.: Mining association rules between sets of items in large databases. In Proceedings of the 1993 ACM SIGMOD international conference on Management of data - SIGMOD '93. p. 207, 1993.

Association Rules Fall 2014

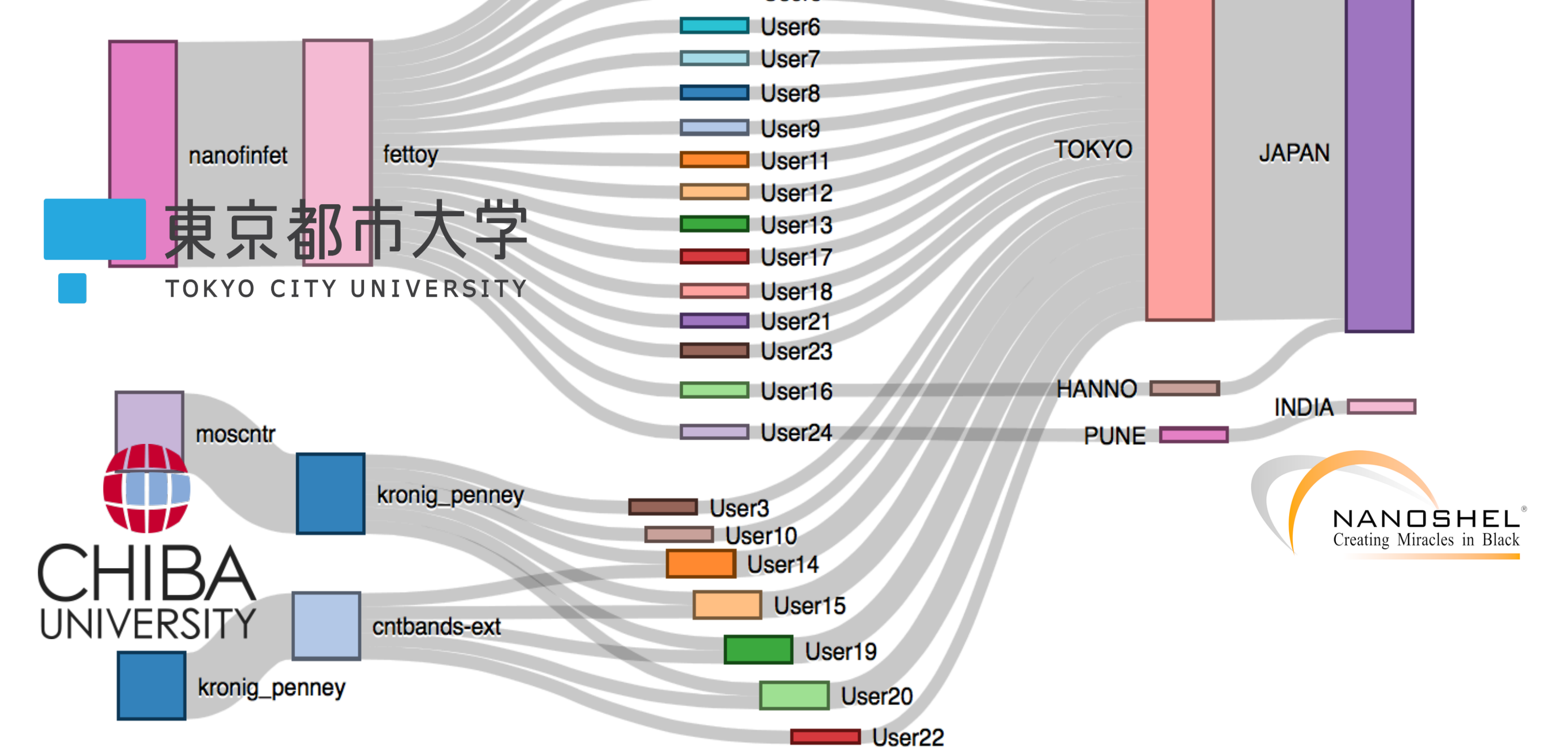


{padre => moscap} Spring 2014



Japanese Rules

Summer 2014



Rule	Confidence	Users
{nanofinfet => fettoy}	1	16
{moscntr => kronig_penney}	0.75	6
{kronig_penney => cntbands-ext}	0.71	5

fettoy: Calculates the ballistic I-V characteristics for conventional MOSFETs, Nanowire MOSFETs, and Carbon NanoTube MOSFETs

nanofinfet: Simulates the nanoscale multigate-FET structures (finFET and nanowire) using drift diffusion approaches

moscntr: Simulates 2-D electrons transport in CNTFET

kronig_penney: Solves the time independent Schrodinger equation for arbitrary periodic potentials

cntbands-ext: Simulates E-k and DOS of CNTs and graphene nanoribbons