

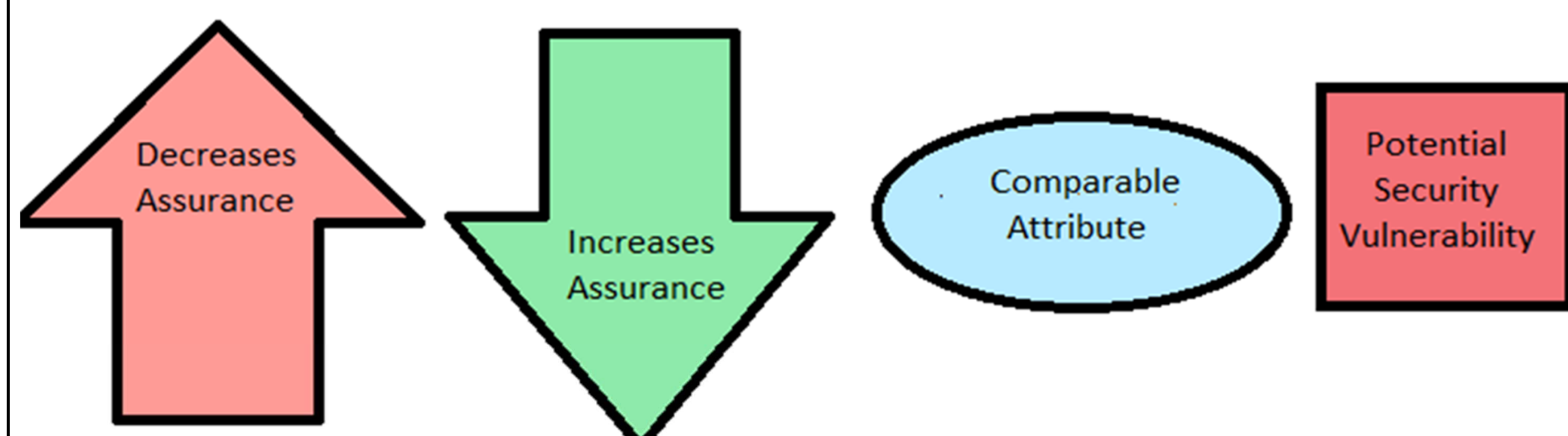
Risk Analysis of Layered Solutions

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Attributes Selected

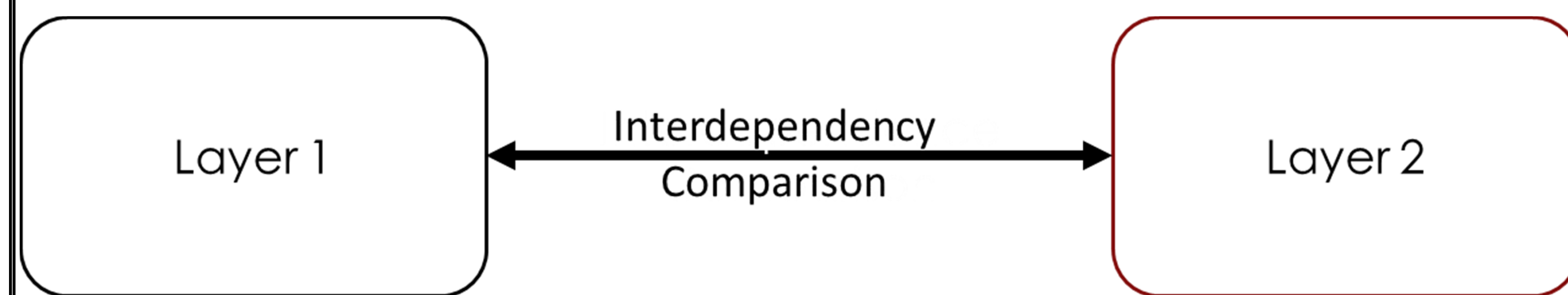
Algorithm, Protocol, Code Library, Codebase, Developer, Administrator, Compiler, Supplier, Installer, Operator

Attribute selection criteria



What is Interdependence?

A comparison between two layers describing how one layer's risk is dependent on another layer.



How do we combine multiple measures of interdependence?

Weighted Average, using weights obtained from each attributes relative importance (weights selected from Delphi Study)

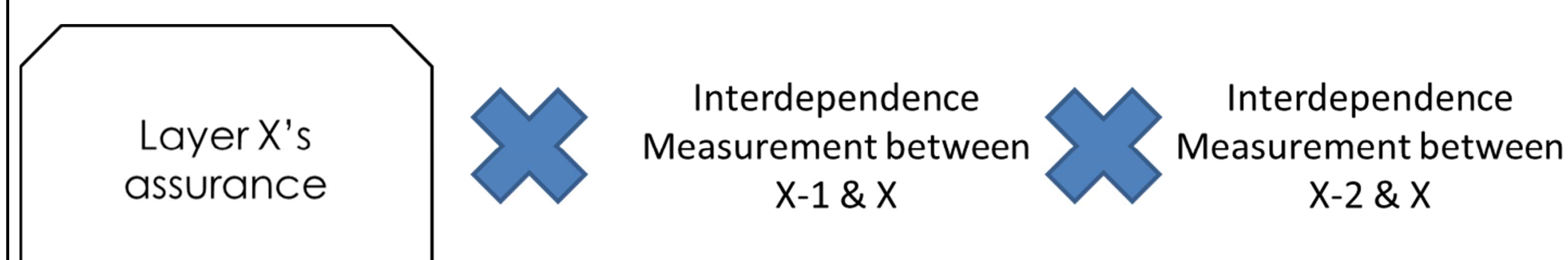
How does Interdependence affect the layered solution?

- Use Assurance to describe its affect
- Each Layer has an inherited assurance value



Assurance Value in the Layered Solution

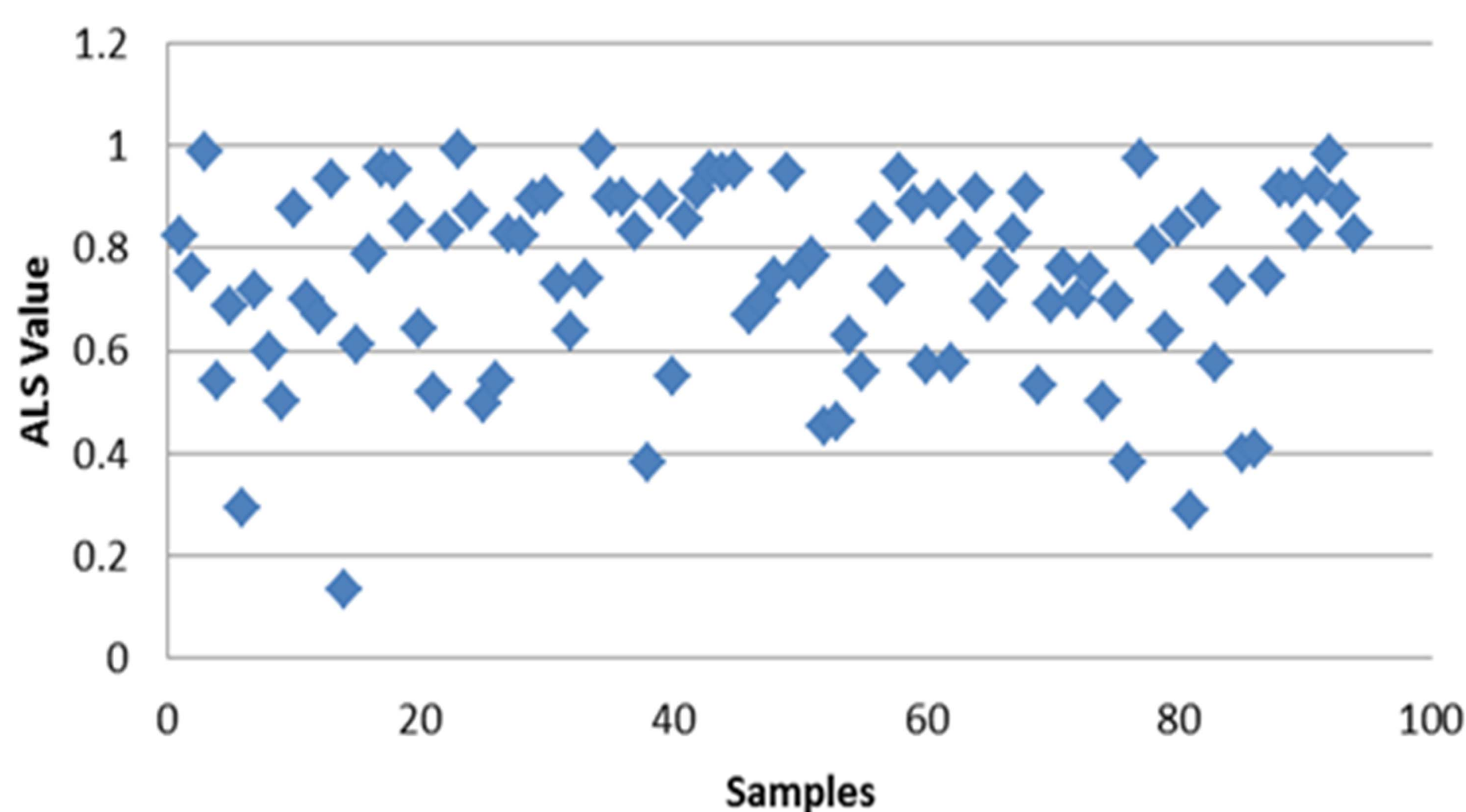
- 1st Layer provides 100% of its inherited assurance
- Additional Layers Provide a reduced amount based on its interdependence to previous layers



Modeling the risk of a Patient Attacker

- A patient attacker will attack each layer when that layer is available to them and has an unpatched vulnerability
- Each Layer has a variable, Total probability of break-in
- Each day we add a probability of break-in to each variable if the layer is vulnerable
- Add (probability of break-in) * (probability previous layer has been compromised)
- Probability of break in is assumed to be 0 if the layer has no unpatched known vulnerabilities

Assurance of the Layered Solution (ALS)



Time Adjusted Layered Assurance

