



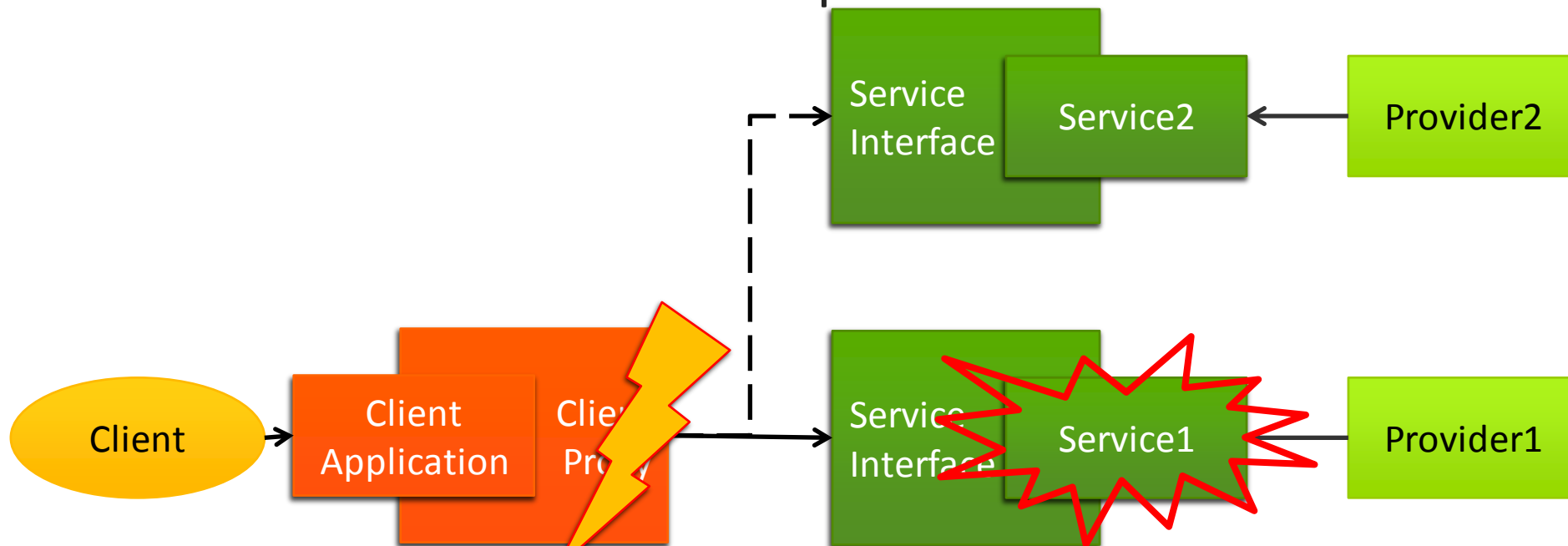
# WSDARWIN: A Decision-Support Tool for Web-Service Evolution

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# Disclaimer

- Software evolution is a socio-technical problem.
- However, web services pose extensive social and technical constraints of special interest.



# Motivation

We need to change our service to offer more features.

price,  
Value of Service

Value of Service



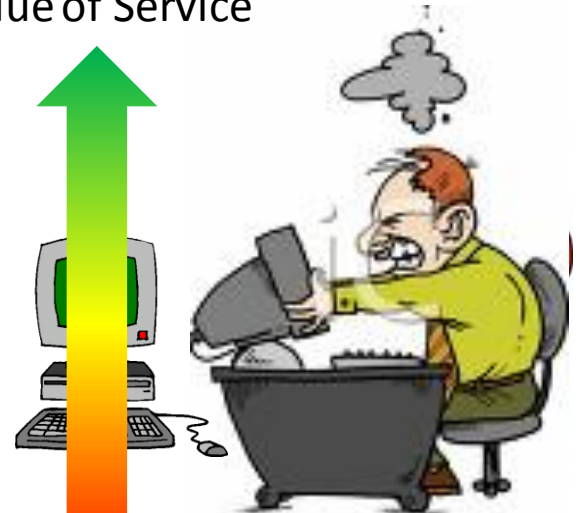
The contradictions, constraints and externalities due to interaction may be modeled as a game.

Evolution effort  
and cost

price,  
Adaptation Costs

provider

client



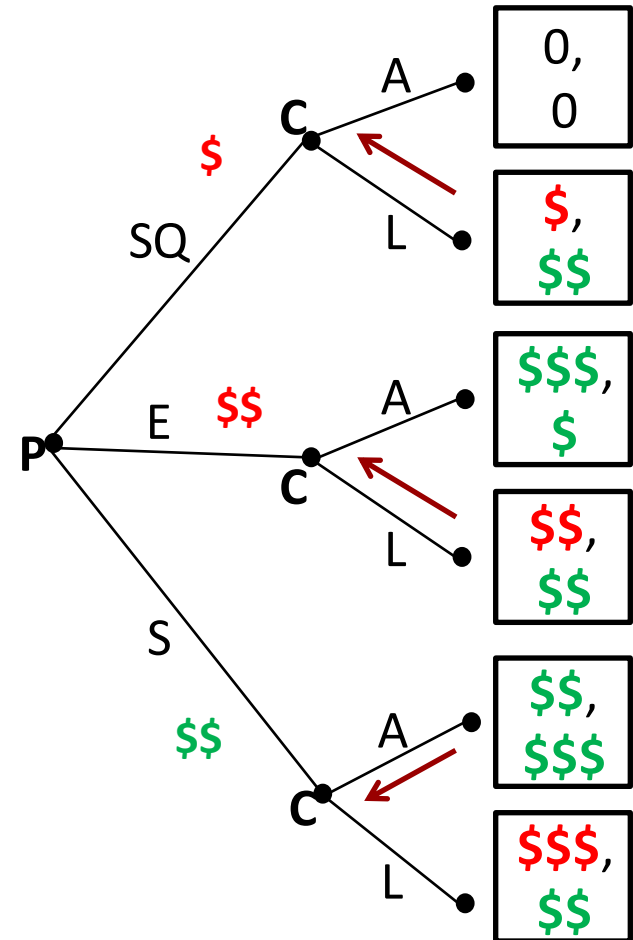
# Web-Service Evolution Game

## ➔ Provider can:

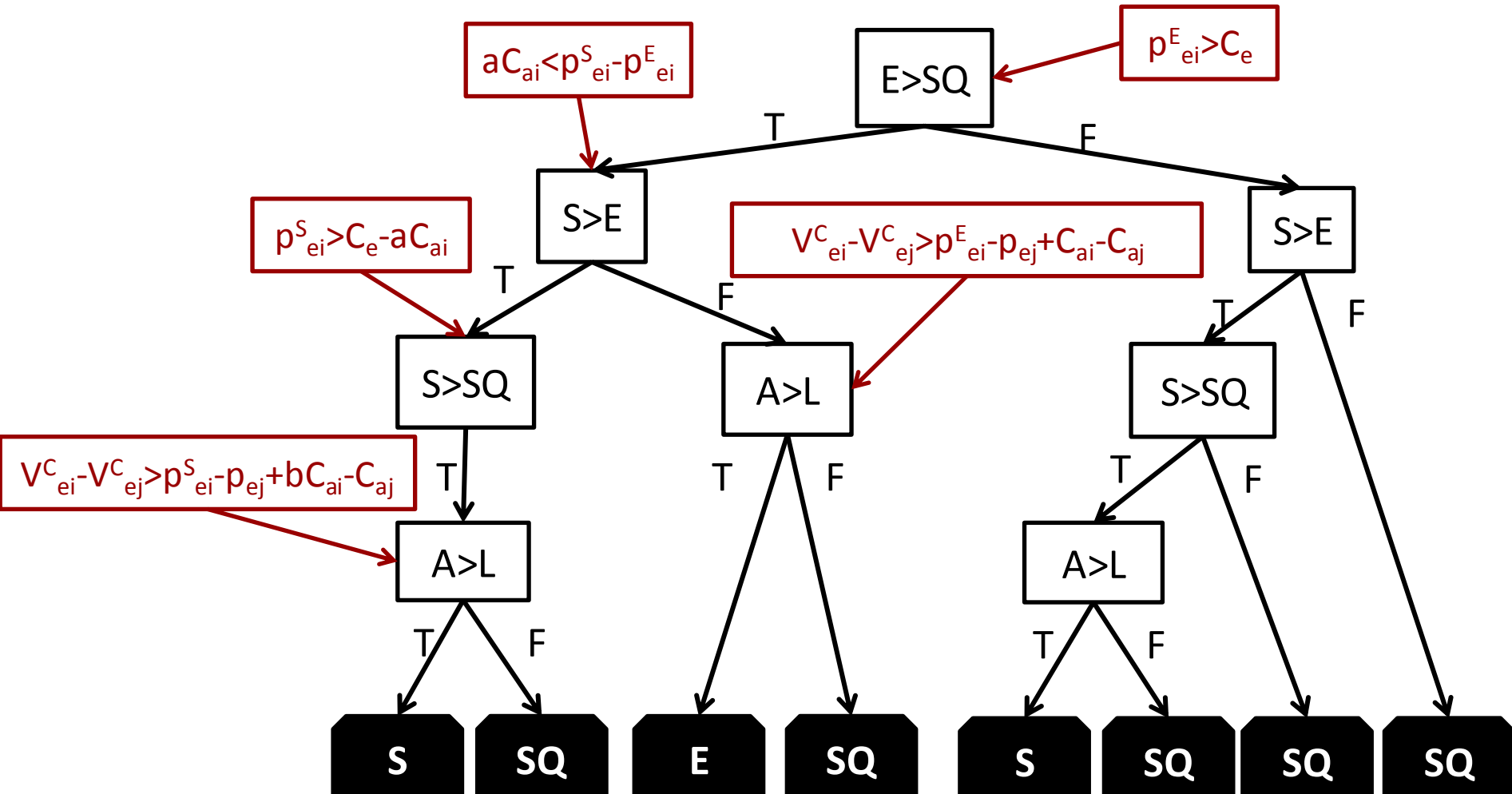
1. Retain the status quo of the service (SQ)
2. Evolve the service (E)
3. Evolve the service and support the client (S)

## ➔ Client can:

1. Adapt to the new version of the service (A)
2. Leave the provider (L)

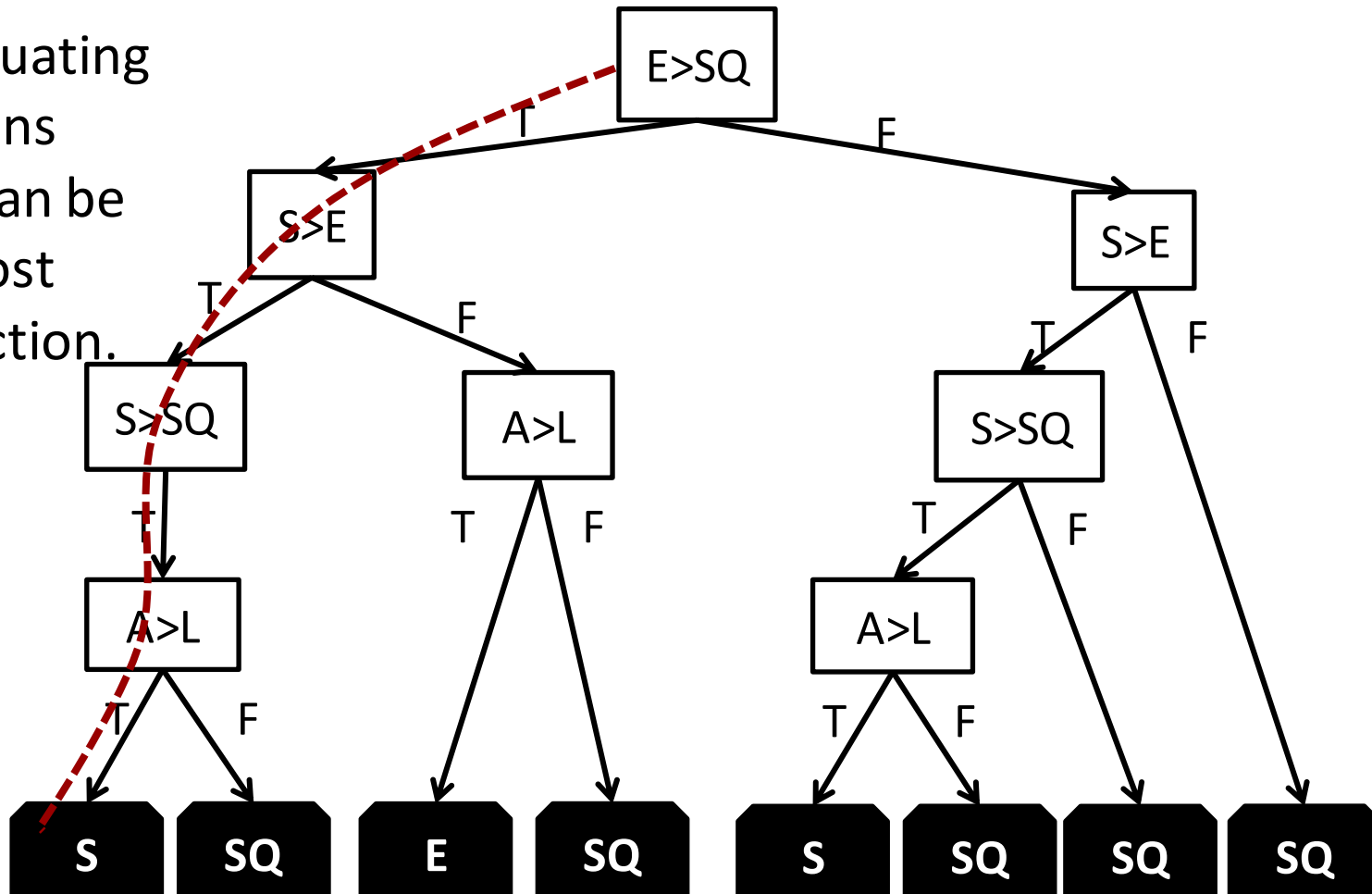


# Service Evolution Decision Tree



# Service Evolution Decision Tree

Simply by evaluating these conditions the provider can be lead to the most appropriate action.



# Conclusions

- Service evolution is a technical problem with socio-economic extensions.
- A decision cannot be made solely based on code, costs and prices.
  - Interactions and externalities have to be taken into account.
- Game theory succeeds into capturing the reaction of all participants to the various decisions.
- The decision tree is a practical tool for providers that includes the preference analysis and goes straight into aiding the decision-making process.
- The details of the mathematical model (what needs to be calculated and how) is being formulated as we speak!

# Questions

- 1. To what degree, do decision-makers take into account socio-economic parameters in software evolution?**
- 2. Should we switch from a techno-economic approach to a more socio-economic one in service evolution?**