

Tx @ time

$$Tm = Tb - D1$$

MS

D1

Tx @ time Tb

BTS

D3

Distance and
time in same
units.

D2

Rcv MS @ time

$$\begin{aligned} Tmi &= Tm + D3 \\ &= Tb - D1 + D3 \end{aligned}$$

ICPT

Rcv BTS @ time

$$Tbi = Tb + D2$$

D1 is known from TA.

D2 is known from map.

We measure Tmi & Tbi .

$$Tmi - Tbi = Tm + D3 - Tb - D2$$

$$Tmi - Tbi = Tb - D1 + D3 - Tb - D2$$

$$Tmi - Tbi = D3 - D1 - D2$$

$$\text{So } D3 = (Tmi - Tbi) + D1 + D2.$$

And now we can estimate MS location on the map.

Caveat: This is accurate +/- 200 m.