# Digitizing in digitizer units or real-world coordinates

x = 8.258 in.
y = 16.364 in.

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y = 16.364

**Digitizer coordinate system**

Scale 1:24000

TRANSFORM to
real-world coordinates

x = 2376478.923 ft.
y = 456236.512 ft.

**Real-world coordinate system**

Register to
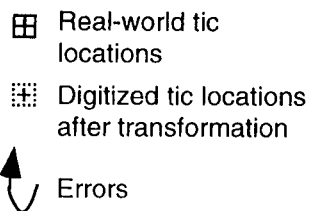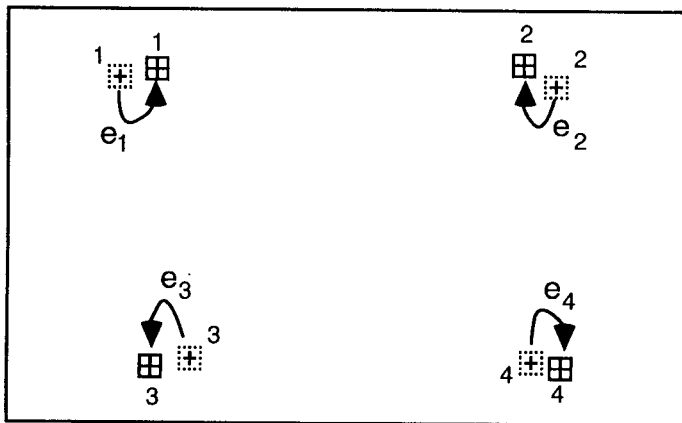digitizer coordinates
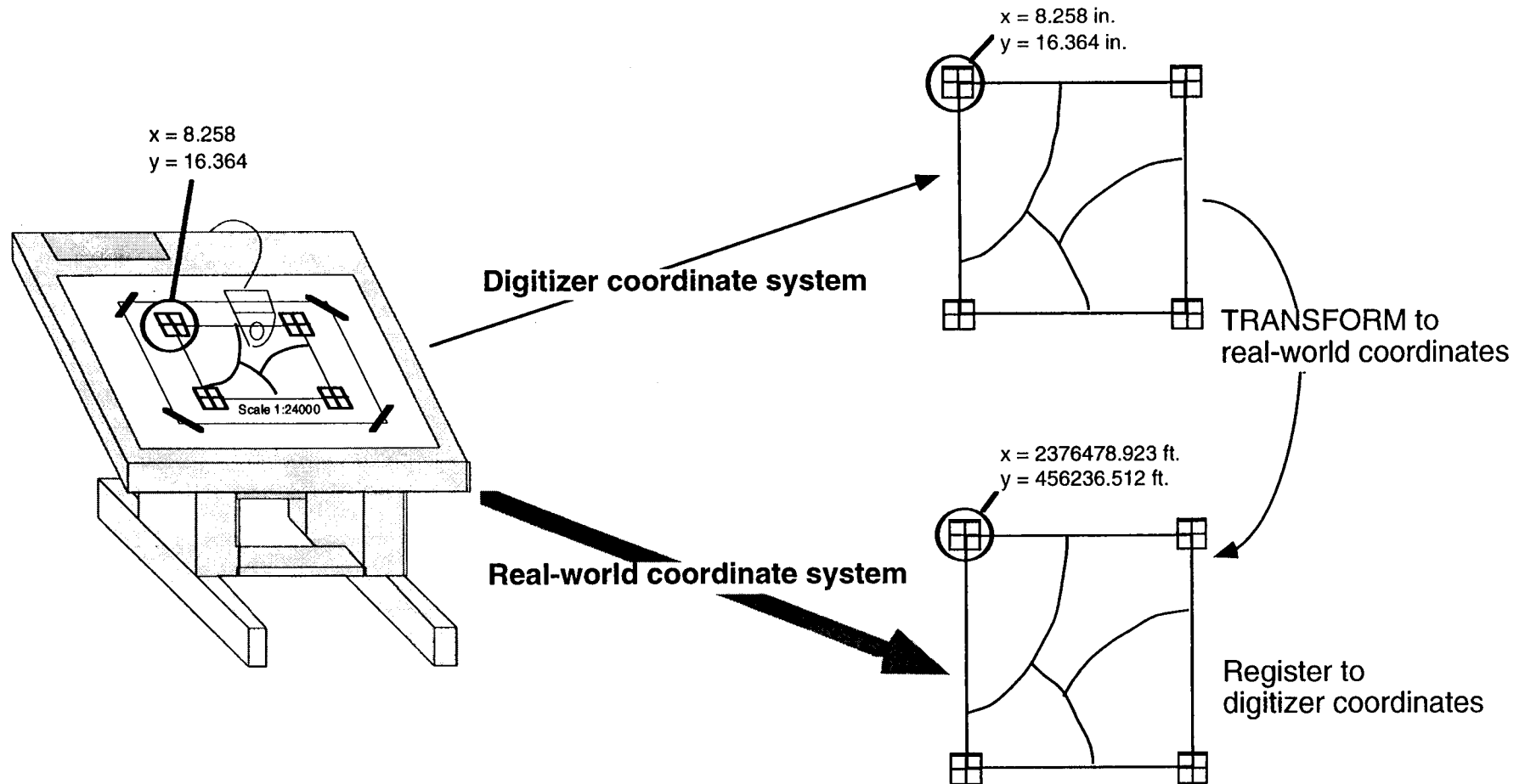
■ **Convert digitizer units to real-world units in the same projection as the source map**

# Transformation



■ **Shift**

■ **Rotation**

■ **Scaling**
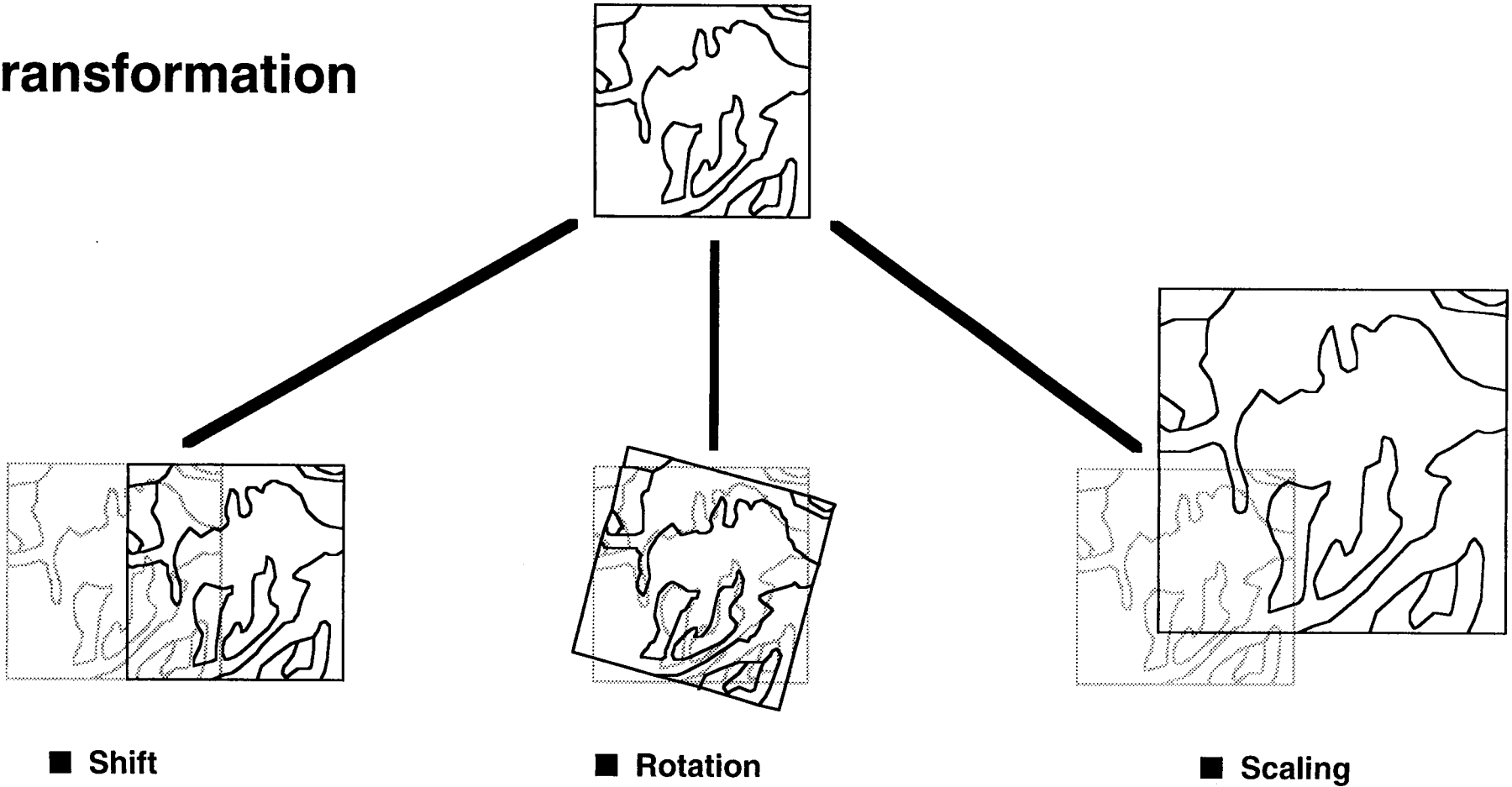
# RMS error

■ **Deviation between tic locations in the input coverage and those in the output coverage**



| | |
|---|---|
| ⊞ | Real-world tic locations |
| ⊞ | Digitized tic locations after transformation |
| ↕ | Errors |

■ **Output from transformation**

RMS error ( input,output )  =  (0.003, 3.746)

■ **RMS equation of the error**

$$\text{RMS error} = \sqrt{\frac{e_1^2 + e_2^2 + e_3^2 + \cdots + e_n^2}{n}}$$