Aircraft Crash Debris Recovery Mobile Application

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MOJAVE DESERT ECOSYSTEM PROGRAM

UNIVERSITY OF Redlands

Picture Acknowledgements: http://www.wshdwallpapers.com/wallpapers/other/airplane-in-sky.html;

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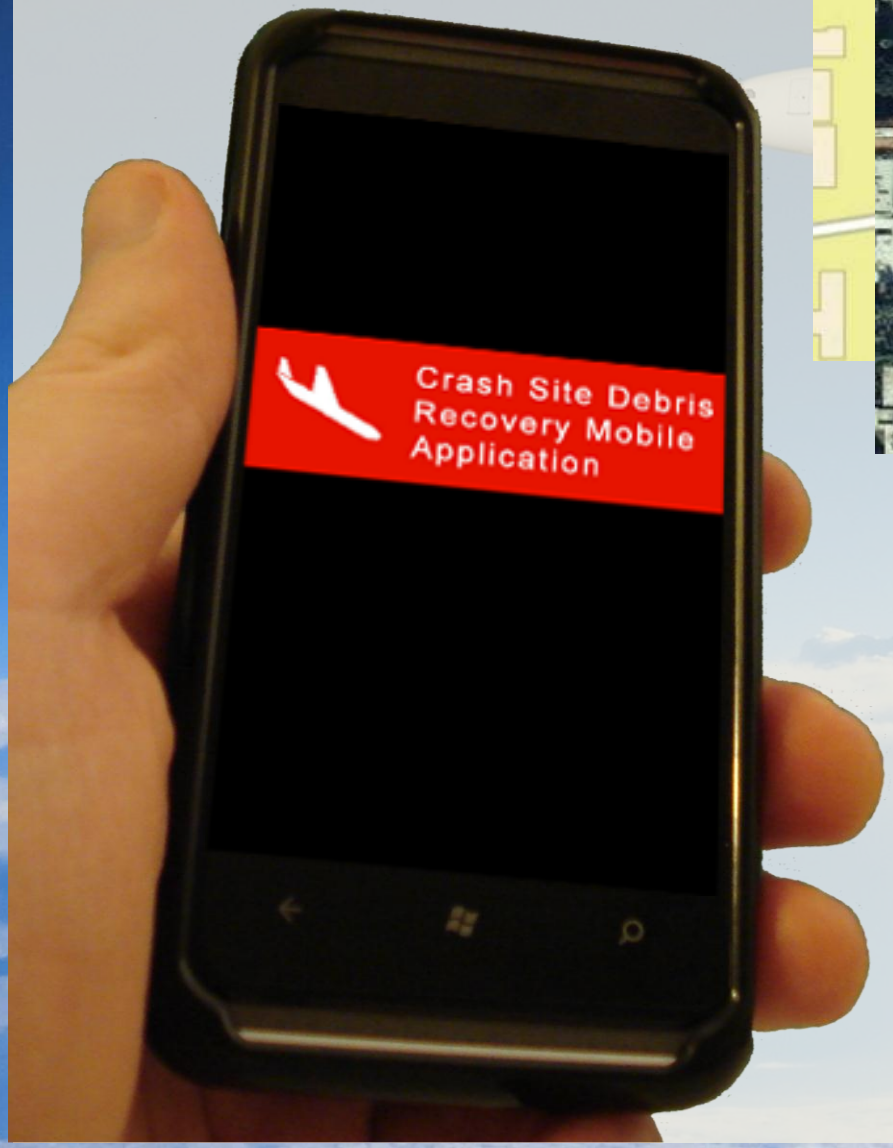

Task: CSDRMA

Display Name: CSDRMA

Category:

Help URL: http://msgis-ags-1/arcgisoutput/C20-Nicholas_Janzen_CSDRMA/CSDRMA.htm

Execution Type: esriExecutionTypeAsynchronous

Parameters:

Parameter: Impact_Latitude
Data Type: GPDouble
Display Name: Impact Latitude
Direction: esriGPParameterDirectionInput
Default Value: 0
Parameter Type: esriGPParameterTypeRequired
Category:

Parameter: Impact_Longitude
Data Type: GPDouble
Display Name: Impact Longitude
Direction: esriGPParameterDirectionInput
Default Value: 0
Parameter Type: esriGPParameterTypeRequired
Category:

Parameter: Debris_Throw_Distance
Data Type: GPDouble
Display Name: Debris Throw Distance
Direction: esriGPParameterDirectionInput
Default Value: 0
Parameter Type: esriGPParameterTypeRequired
Category:

Parameter: Aircraft_Heading
Data Type: GPDouble
Display Name: Aircraft Heading
Direction: esriGPParameterDirectionInput
Default Value: 0
Parameter Type: esriGPParameterTypeRequired
Category:

Parameter: Aircraft_Wingspan
Data Type: GPDouble
Display Name: Aircraft Wingspan
Direction: esriGPParameterDirectionInput
Default Value: 0
Parameter Type: esriGPParameterTypeRequired
Category:

Parameter: Out
Data Type: GPFeatureRecordSetLayer
Display Name: Out
Direction: esriGPParameterDirectionOutput
Default Value:
Parameter Type: esriGPParameterTypeDerived
Category:

Supported Operations: Submit Job

Supported Interfaces: REST

```
double CDS = CD * FAREA;
double SLUGS = 0.002378 * Math.Pow((1 - (Math.Pow(6.875, -6 * ALT))), 4.2561);
double GSLUGS = 0.002378 * Math.Pow((1 - (Math.Pow(6.875, -6 * Groundlevel))), 4.2561);
double TVEL = (Math.Pow((2 * WT / (CDS * SLUGS)), 0.5));
double TVELKTS = TVEL * 0.5921052;
double GLTVEL = (Math.Pow((2 * WT / (CDS * GSLUGS)), 0.5));
double GTVELKTS = GLTVEL * 0.5921052;
double DT = 0.05;
double WINDone = Math.Abs((WINDC) * 6080 / 3600);
double T = 0;
double X = 0;
double Z = ALT;
double DTtwo = DT * DT;
double UVprep = ANGA * (Math.PI / 180);
double U = 1.69 * VEL * Math.Cos(UVprep);
double V = 1.69 * VEL * Math.Sin(UVprep);
double W = (Math.Pow((WINDone * (Z / 30)), 0.26));
double UO = U;
double VO = V;
double Zmax = 0;
double FPE = 0;
double FP, K, DRAG, AX, AZ;

//Compute trajectory formula
while (Z > Groundlevel)
{
    double VELtwo = U * U + V * V;
    if (U == 0)
    {
        U = 0.01;
    }
    else
    { }
    FP = Math.Atan(V / U);
    if ((U < 0) && (V < 0))
    {
        K = -1;
    }
    else
    {
        K = 1;
    }
    DRAG = (SLUGS / 2) * VELtwo * CDS;
    AX = -DRAG * Math.Cos(FP) * 32.2 * K / WT;
    AZ = -DRAG * Math.Sin(FP) * 32.2 * K / WT - 32.2;
    UO = UO + AX * DT;
    V = V + AZ * DT;
    U = UO + W;
```

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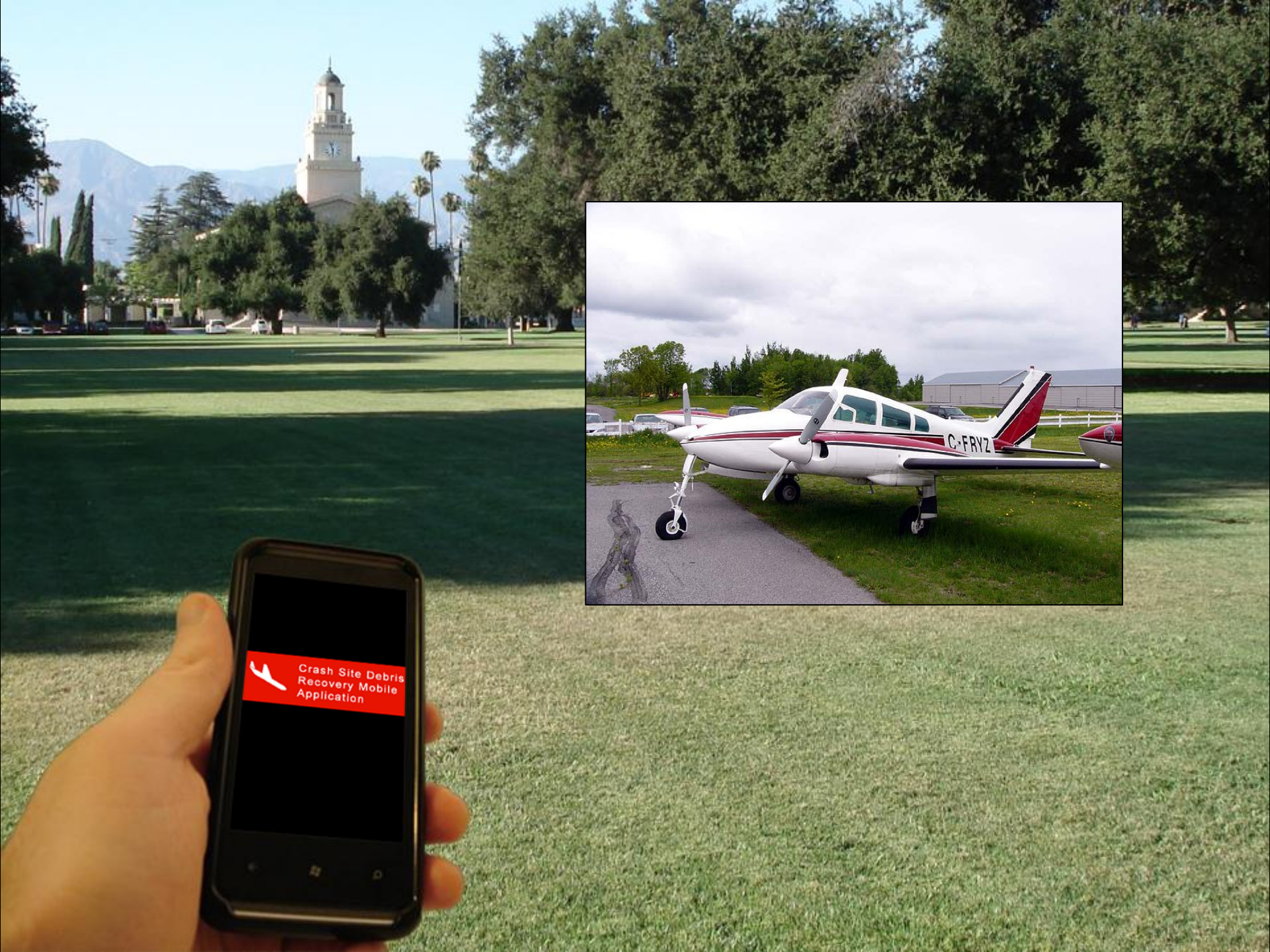
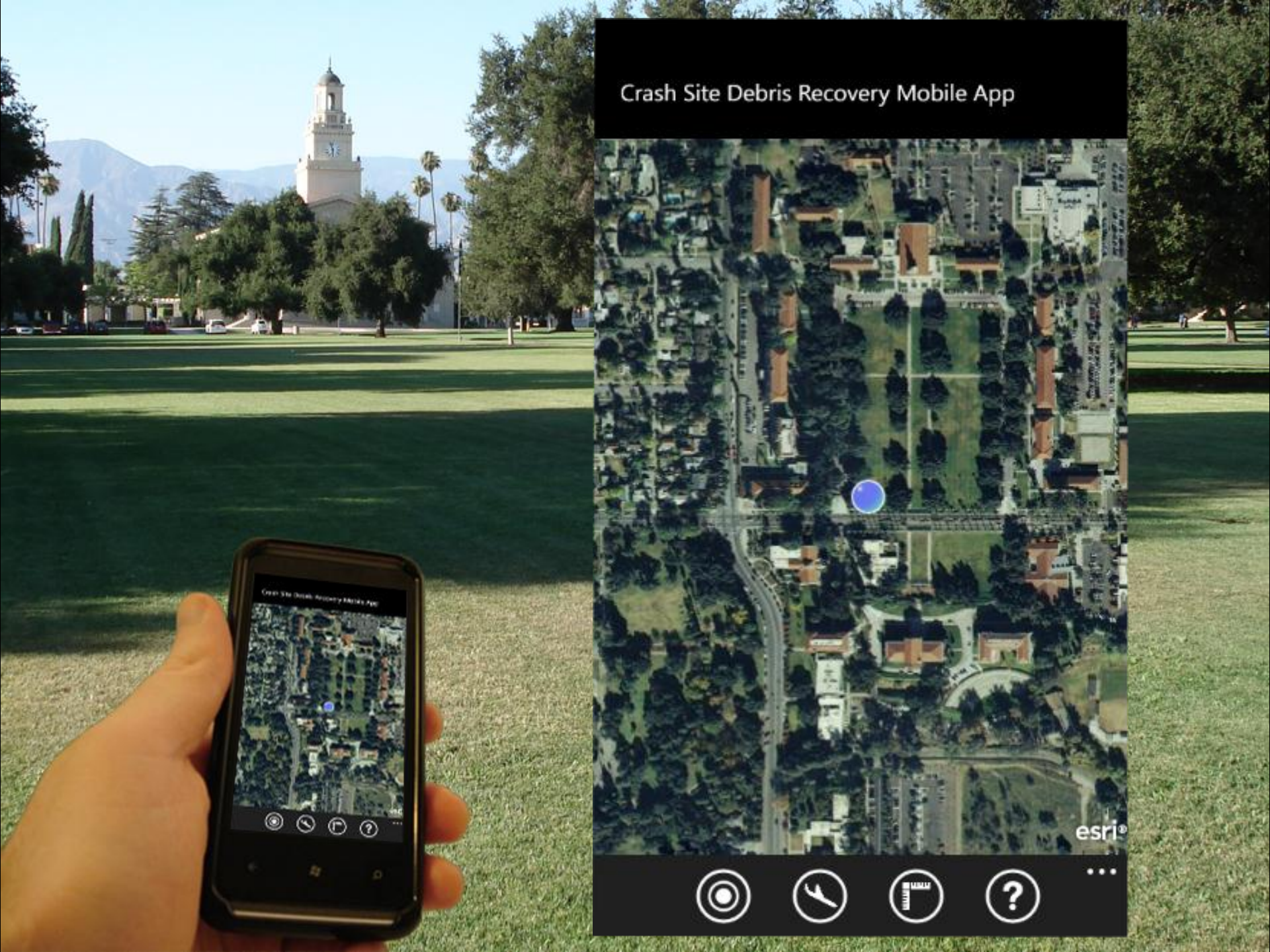

C-FRYZ
Crash Site Debris
Recovery Mobile
Application

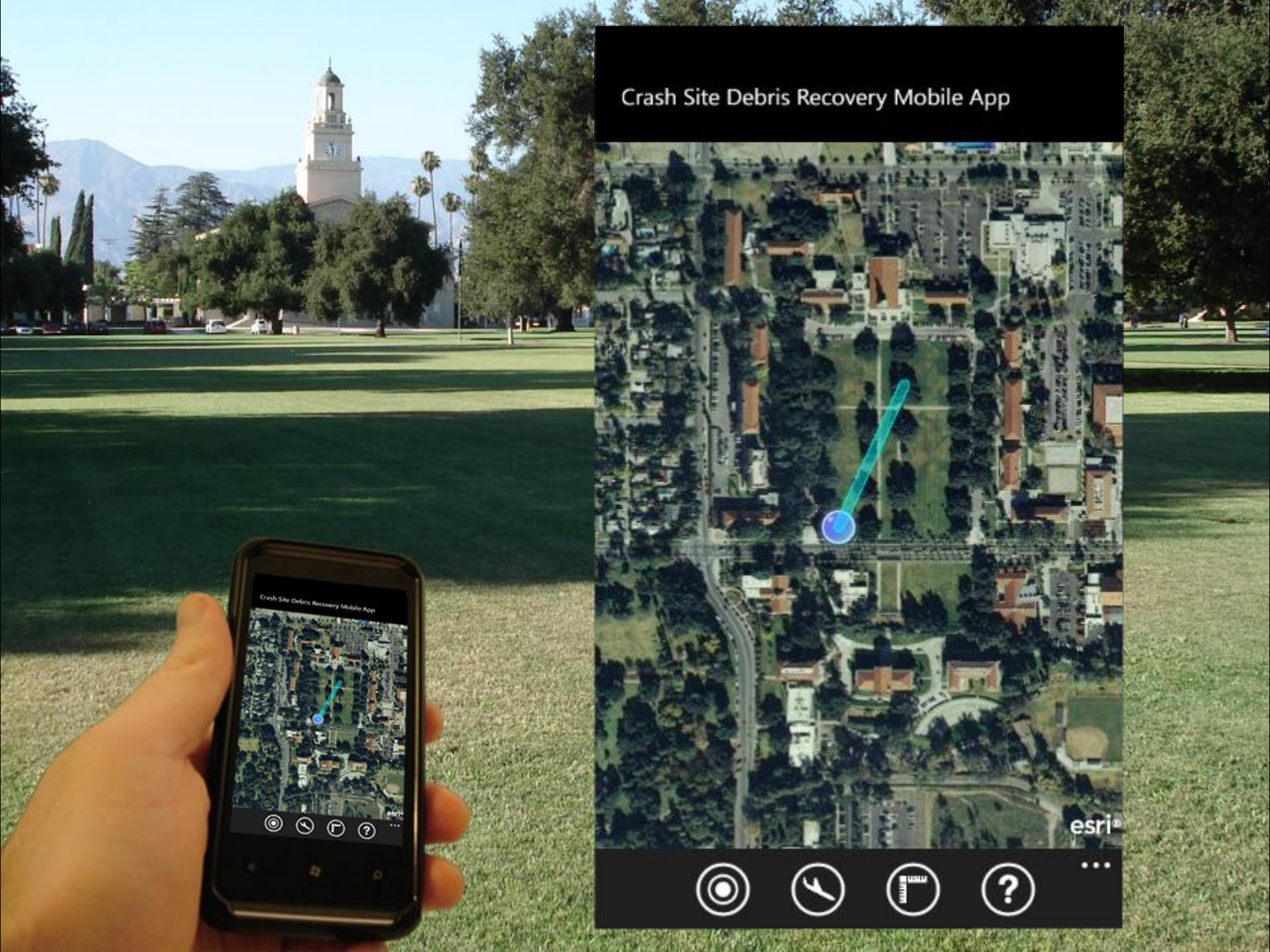

Crash Site Debris Recovery Mobile App
esri

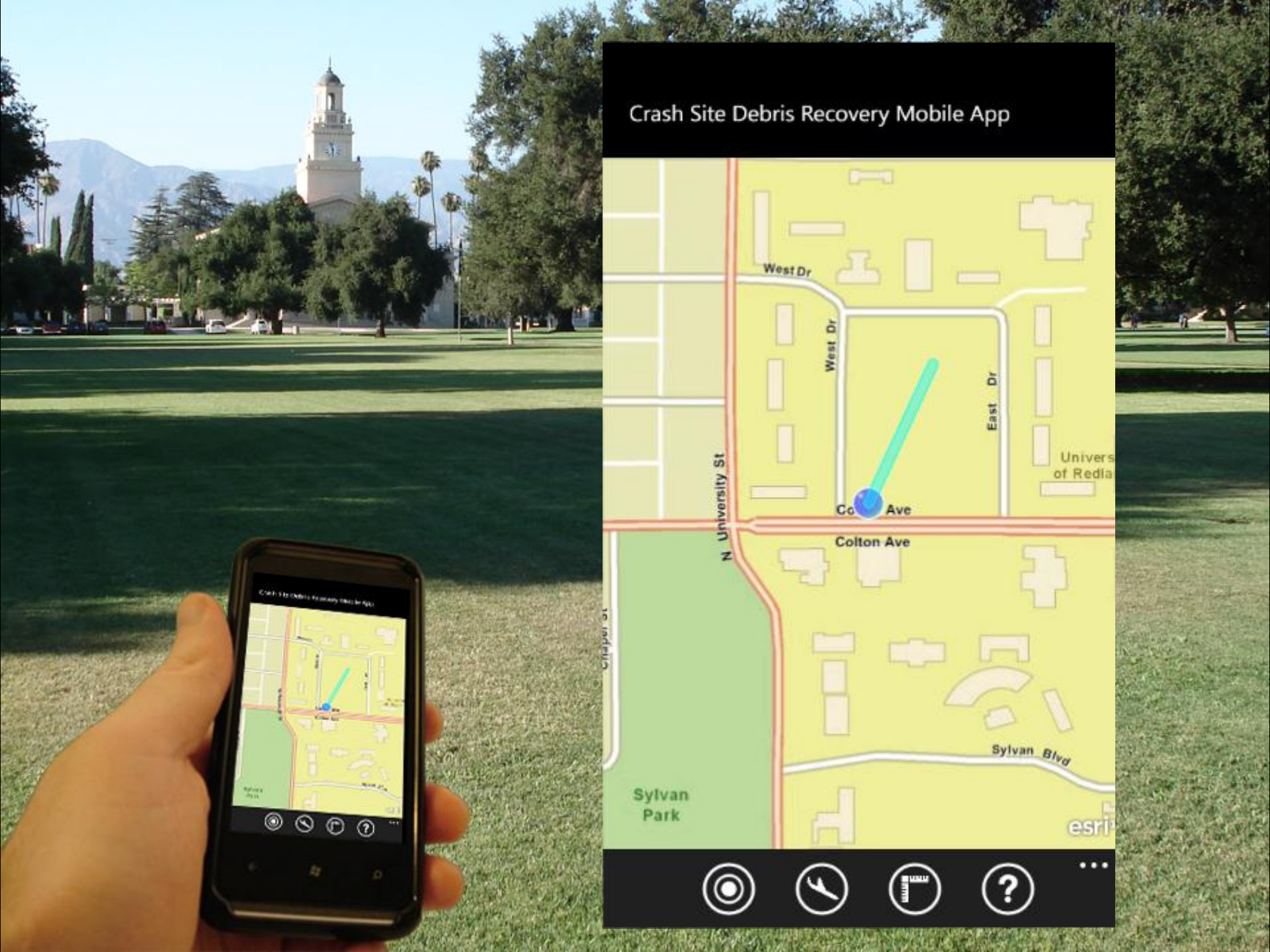

Crash Site Debris Recovery Mobile App
aircraft type fli
Aermacchi S-211
Beechcraft Model 99
Boeing 747-200
Boeing 737-200
Cessna 172 Skyhawk
Cessna 310
Convair 880
Douglas DC-8-32
Hawker Beechcraft Hawker 800
Learjet 24
Lockheed F-104 Starfighter
Lockheed JetStar
Lockheed Martin F-22 Raptor
McDonnell Douglas F-4 Phantom II

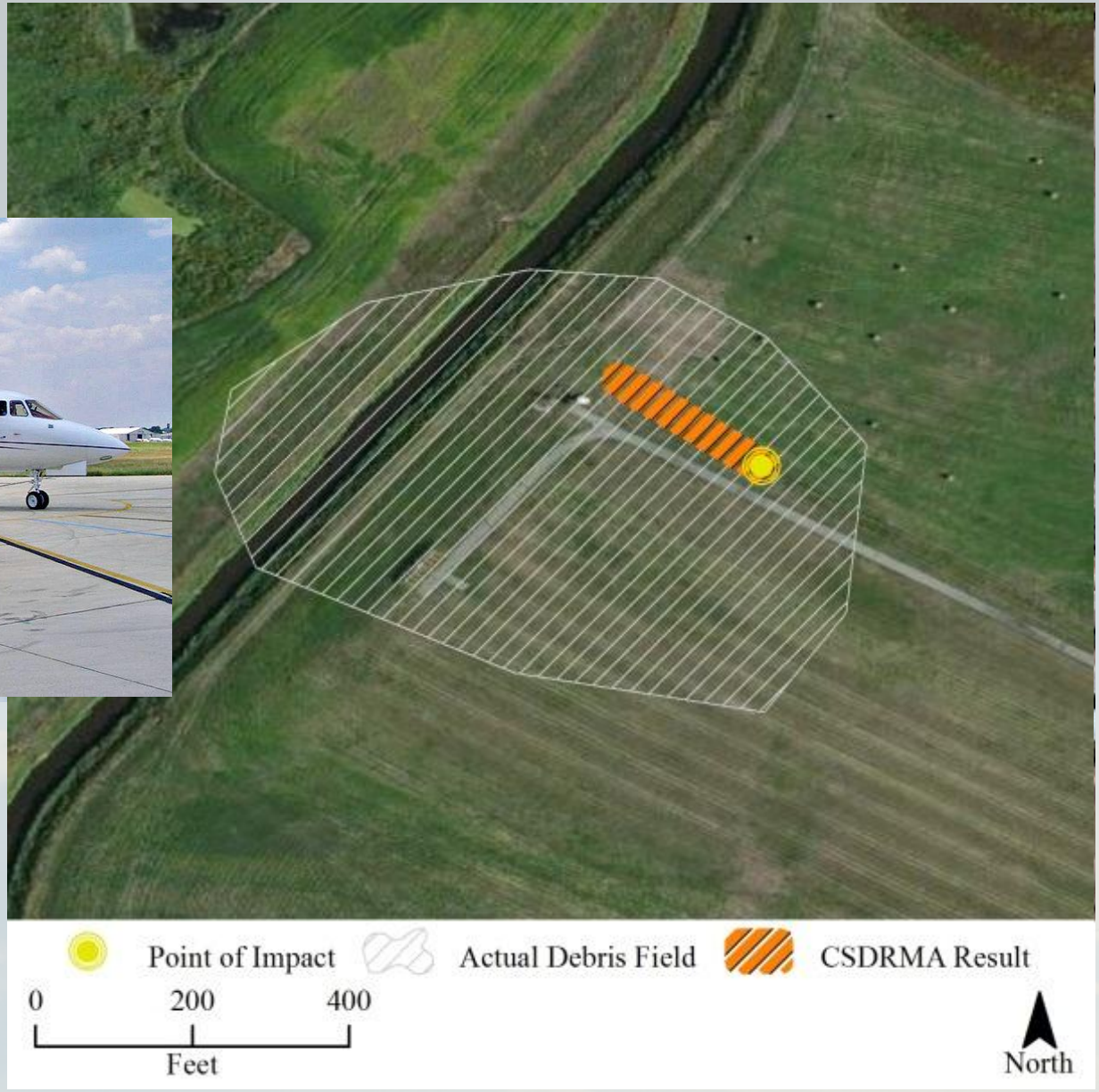

Crash Site Debris Recovery Mobile App
flight info opti
Speed of Aircraft (kts)
78
Aircraft Heading (deg)
21
Angle of Aircraft Descent
42

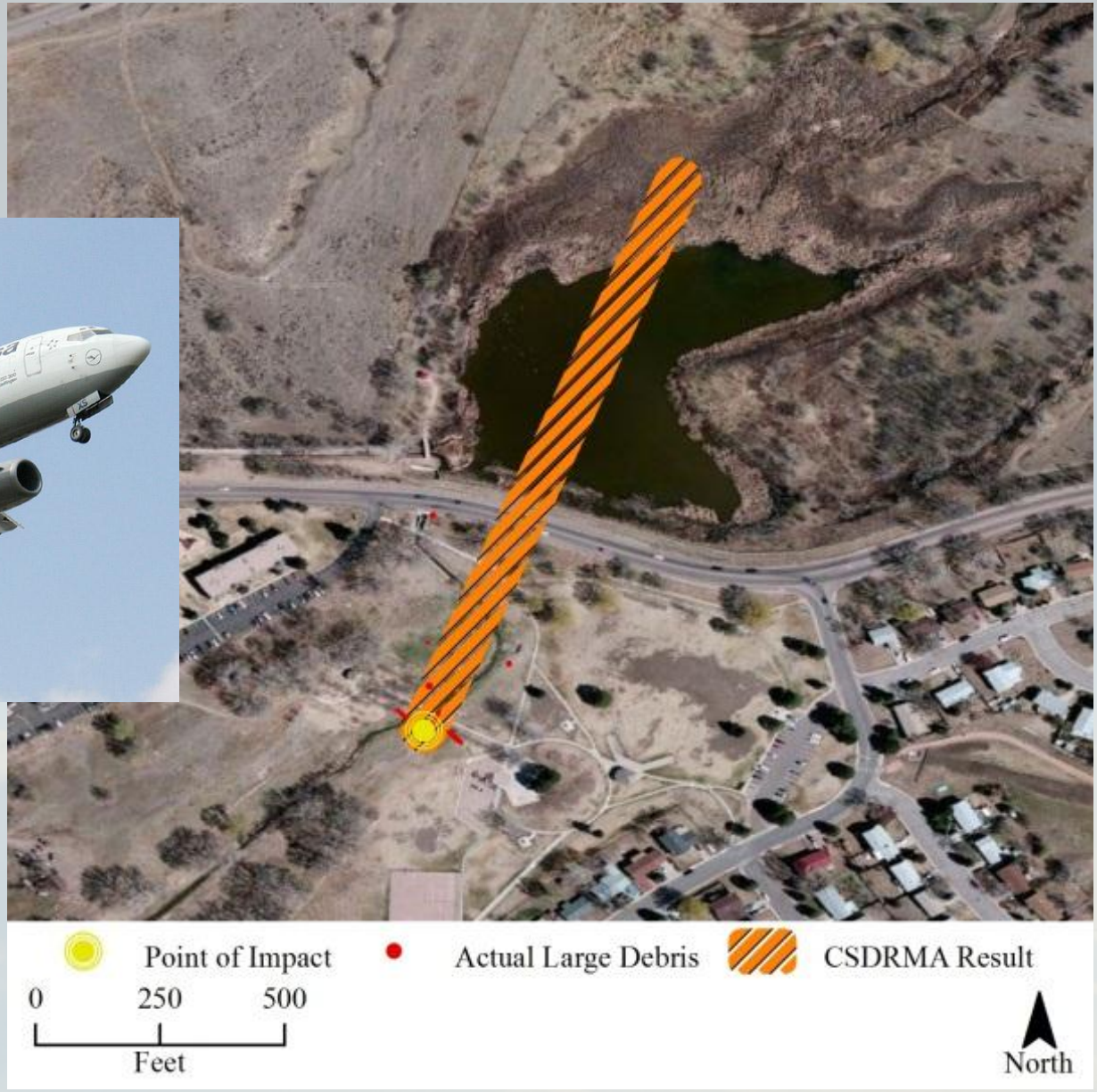

Crash Site Debris Recovery Mobile App
optional result
Ground Wind Speed (kts)
3
Ground Wind Direction (deg)
272
Terrain Angle (deg)
Aircraft Terrain Direction
Upslope
Downslope

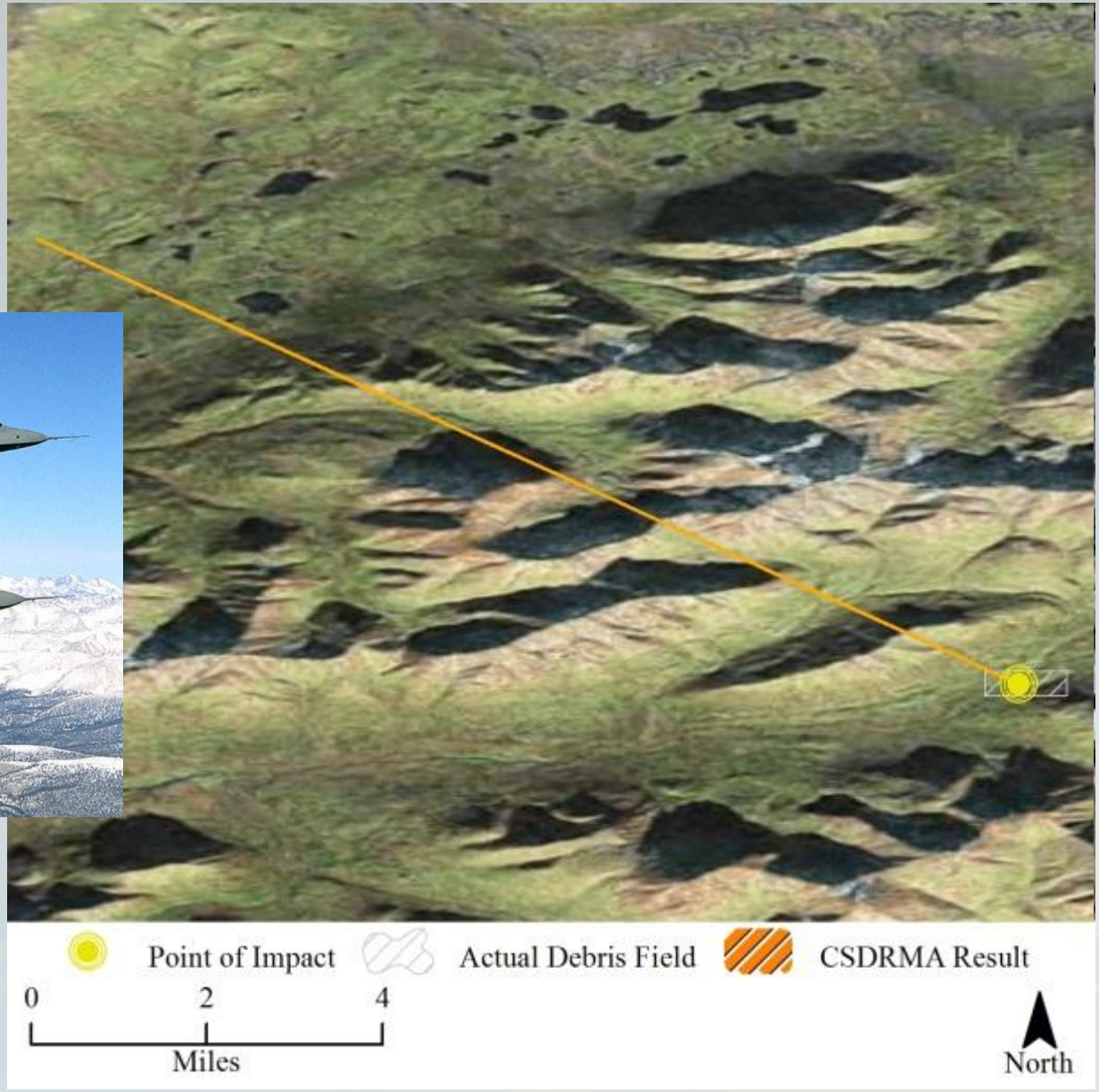

Crash Site Debris Recovery Mobile App
results aircraft
Debris Terminal Velocity:
622.53 kts
Time to Impact:
6.75 sec
Debris Throw Distance:
825.43 ft
Angle of Impact:
-42.09 deg
Speed of Impact:
110.05 kts
Max Altitude of Thrown Debris:
184.29 ft
Calculate
Map


Crash Site Debris Recovery Mobile App
esri


Crash Site Debris Recovery Mobile App
West Dr
West Dr
East Dr
N University St
Colton Ave
Colton Ave
Sylvan Blvd
Sylvan Park
esri







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Thank You

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