

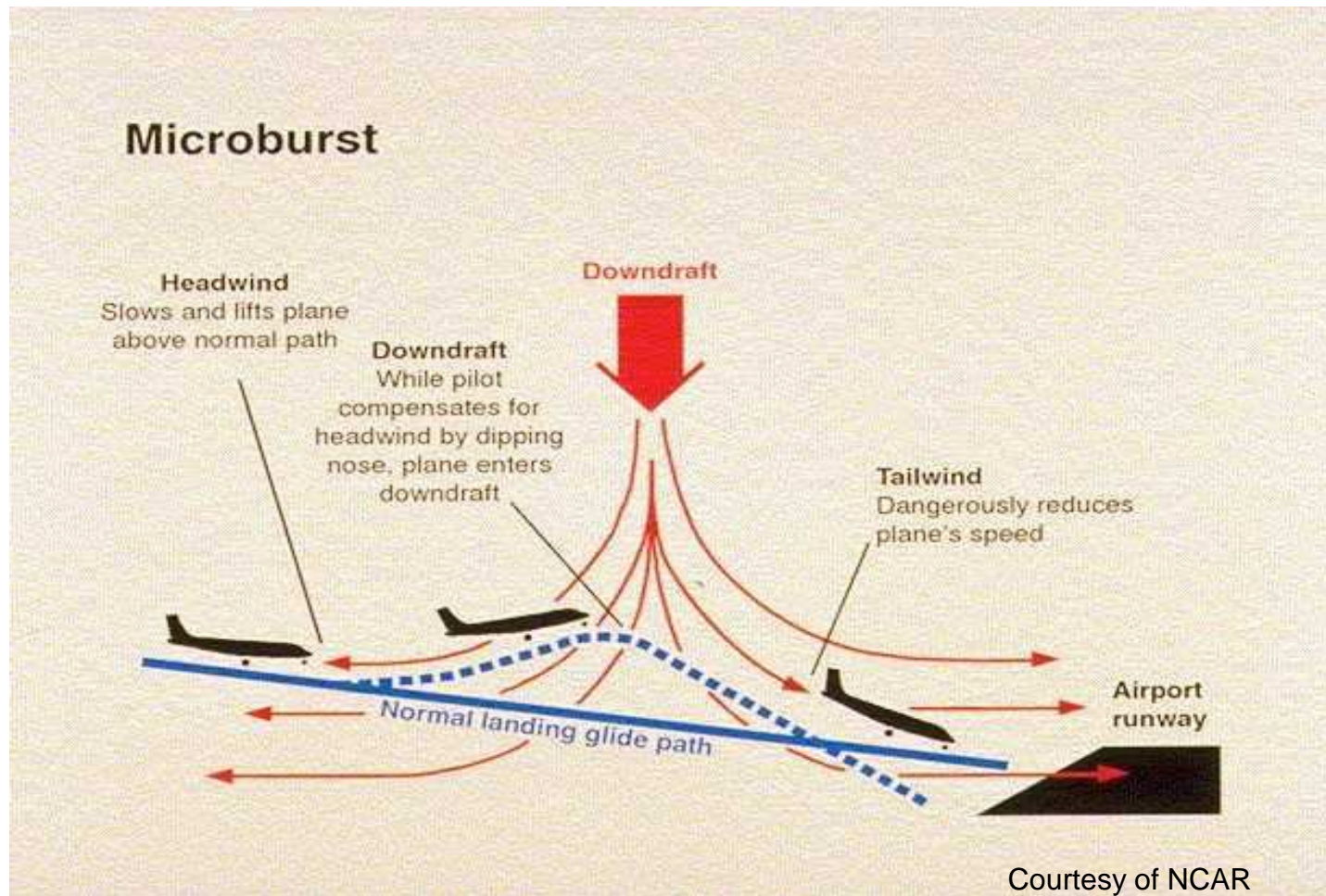
## Tecnologia de Monitoramento Wind Shear



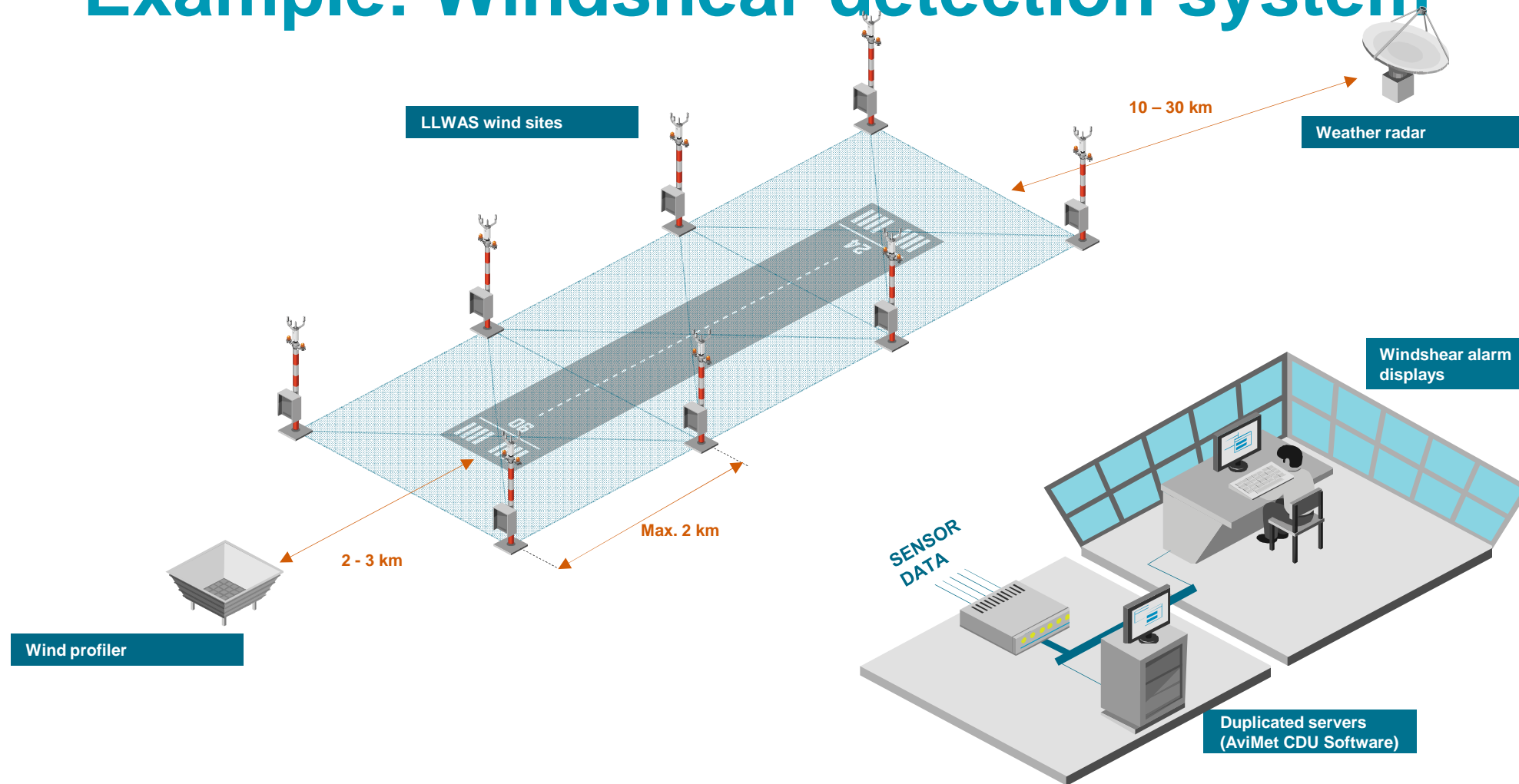
## AviMet LLWAS

- Low Level Windshear
- One expression:
  - Rapid change of local wind speed and/or direction
- Loss or gain of air speed of aircraft
- Multiple causes:
  - Flow-out from thunderstorm cells
  - Valley winds
  - Mountain waves
  - Coastal winds
  - Low level jet streams

## Example: Low-Level Windshear



## Example: Windshear detection system





## Example: Windshear solution

Verification  
of wind shear  
phenomena at  
your airport

Design of the  
alert system  
and life-cycle  
support

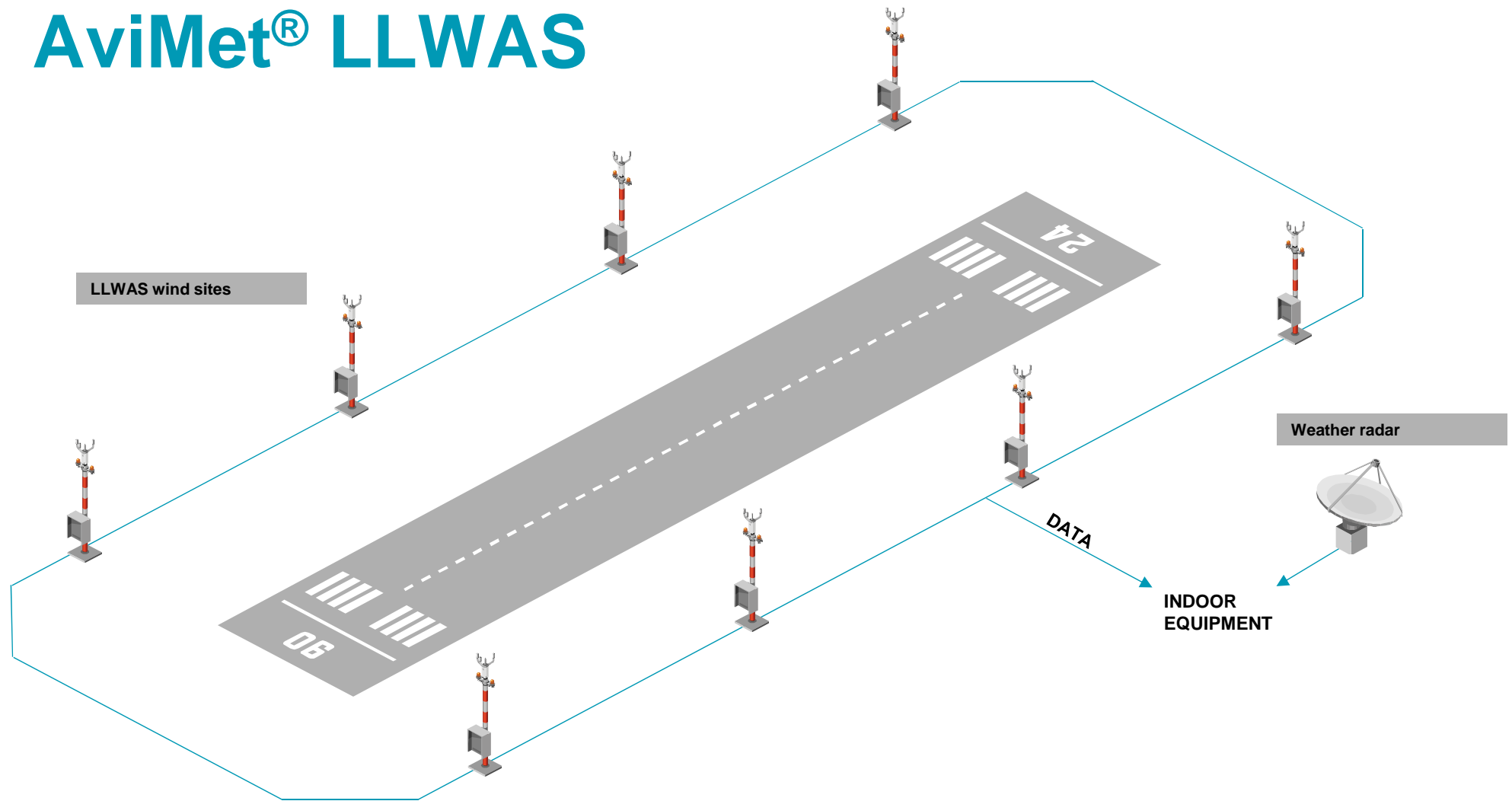
Managing  
of system  
assembly  
and delivery

Installation  
and commis-  
sioning of the  
system

Maintaining  
and verifying  
the performance  
of the solution

All pieces of the puzzle are needed to achieve full benefit

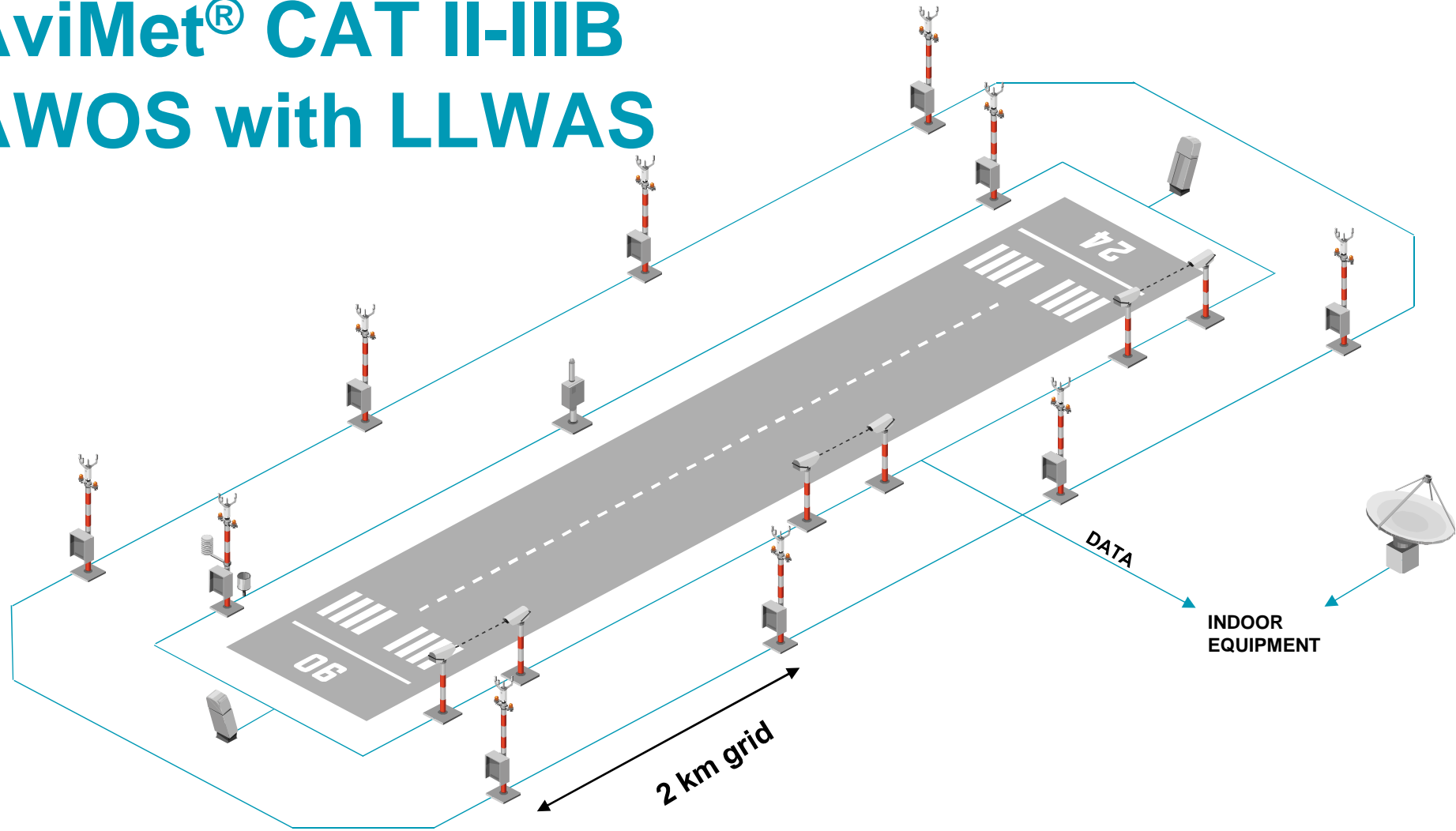
## AviMet® LLWAS



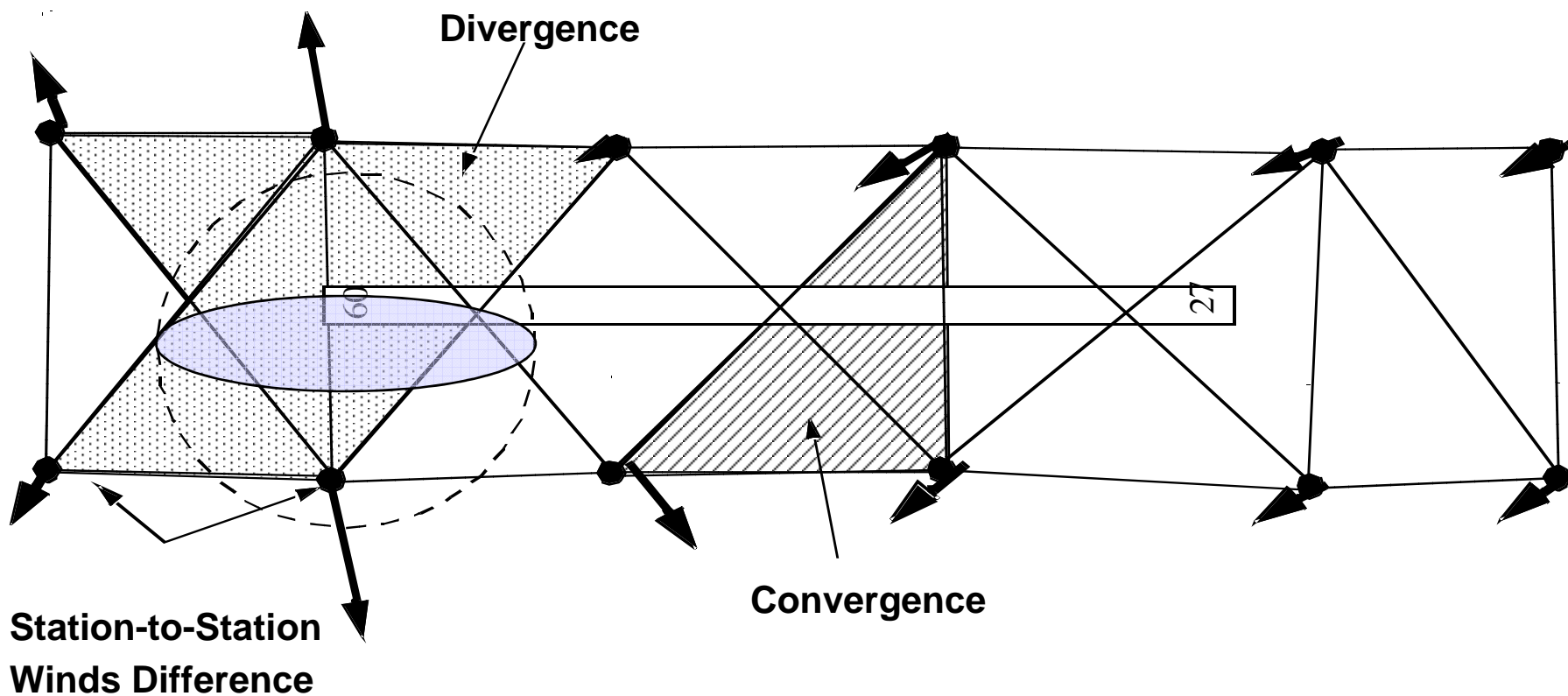
# VAISALA



## AviMet® CAT II-III B AWOS with LLWAS




## AviMet LLWAS





## AviMet LLWAS Main Displays



**Centerfield wind** → CF 180 10 G 20

**Time** → 23:04:22

**system status** → NORMAL

**Runway designators, alerts and TZ winds** → 16LA WSA RWY 35K+ 000 00  
34RD WSA RWY 35K+ 000 00  
34RA 180 15  
16LD 180 15  
34LA WSA RWY 35K+ 180 15  
16RD WSA RWY 35K+ 180 15  
16RA 000 00  
34LD 000 00

**16RD WSA RWY 35K+ 180 15**

- RW name
- Alert type
- Alert position
- Headwind loss/gain
- TZ wind

sound  
test  
ack

01RA 050 06 01LA MBA -30K 1NF 200 49  
19LD 050 06 19RD MBA -30K RWY 200 49  
19RA MBA -30K RWY 040 06 19LA 050 06  
01LD MBA -30K RWY 040 06 01RD 050 06

NORMAL

15:11:14  
RWY04L YUCC LLWAS RWY22R  
04L 180 190 A 130 190  
04LD WSA 3MD 25K- 170 12  
04LA 170 12  
22RD 190 14  
22RA WSA 3MF 25K+ 190 14  
CF 170 14 15:10:30  
NORMAL

15:10:41  
RWY04L YUCC LLWAS RWY22R  
04L 180 190 A 130 190  
04LD WSA 3MD 25K- 170 12  
04LA 170 12  
22RD 190 14  
22RA WSA 3MF 25K+ 190 14  
CF 170 14 15:10:30  
NORMAL

## AviMet LLWAS

- Capacidade de uso de 6 até 52 sensores.
- Identificação, em tempo, de microrajadas ou wind shear
  - Estimativa de perda ou ganho do headwind associado ao wind shear
  - Estimativa da localização ao primeiro sinal do wind shear
- Probabilidade de detecção (POD)  $> 0.9$
- Probabilidade de Falso Alarme  $< 0.1$

