

Autonomous Drone Engineer

A2 – Usage Models

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Autonomous Drone Solutions Architect



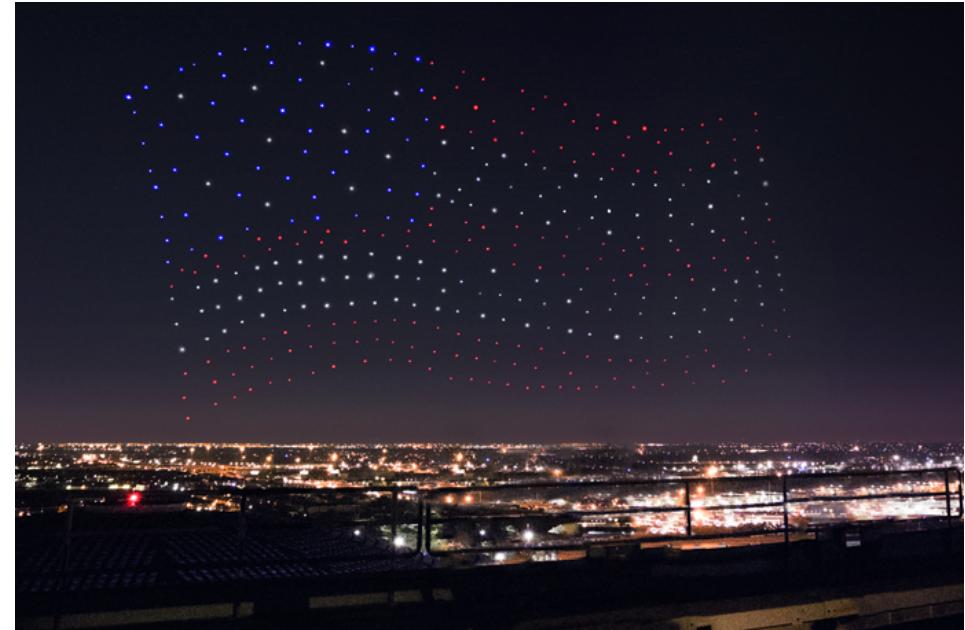
Why autonomous? Fleets!

Autonomous drones are required when you need a **very large fleet**.

- There's not enough pilots for the fleet
- Pilots can't synchronize their flight

*Ex: last 10 miles logistics,
precision agriculture, light shows*

*Photos: Intel's Drone Light Show
for the 2017 Super Bowl
Pest prevention for agriculture*



Why autonomous? Precision!

Autonomous drones are required when you need to fly **precisely**.

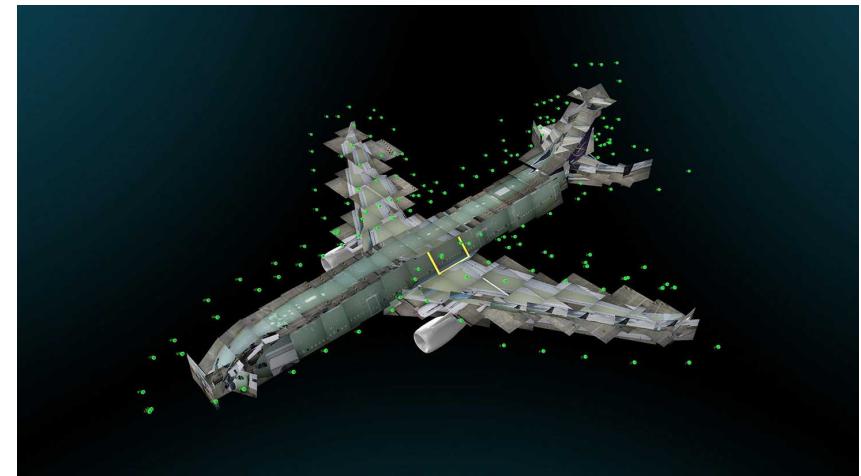
- Photos need to be taken from a precise point
- Successive flights need to follow the same path

Or when you need **predictability**.

- Flying on dangerous sites
- Or near highly valuable objects

Ex: precise infrastructure inspection, movie shooting (James Bond Skyfall intro chase).*

Photos: Intel-Airbus collaboration.*

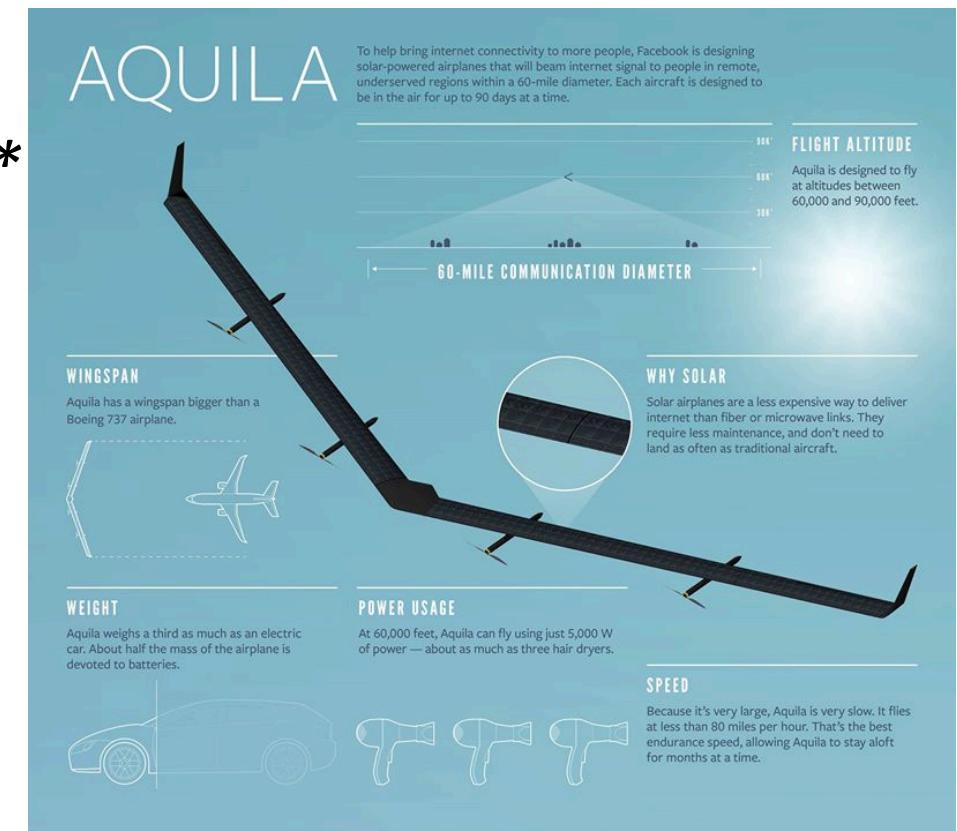


Why autonomous? Infrastructure!

Autonomous drones are required when you need to **fly constantly or anytime**.

Ex: drone as an infrastructure in the sky.

Photos: X (Google) Loon, Facebook's Aquila**



*Other names and brands may be claimed as the property of others

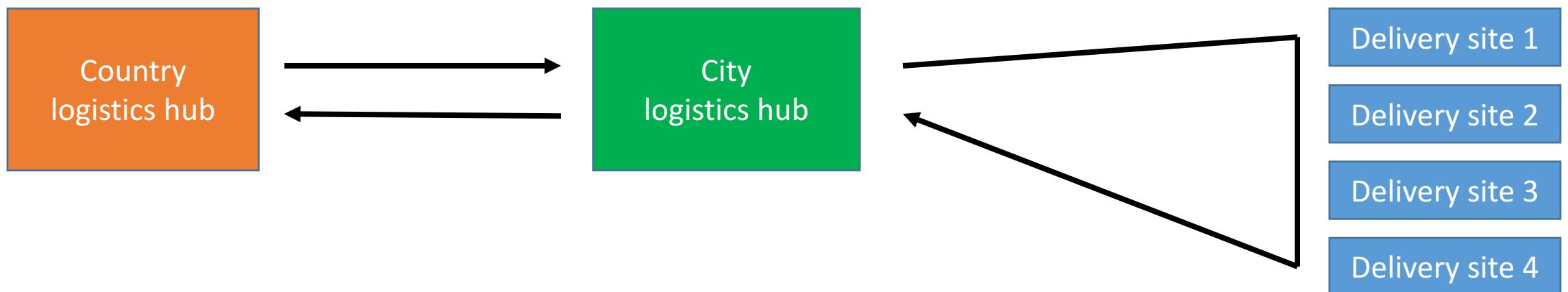
<https://plus.google.com/+ProjectLoon/posts/SLfxUHFxEnP>

<https://www.facebook.com/notes/mark-zuckerberg/the-technology-behind-aquila/10153916136506634/>

What's different?

If you try to replace 1 delivery truck with 20 drones, you may save time and reduce costs but it's not the only difference.

Here is a typical logistics chain for an online shop:



What's different? Latency! Granularity!

Trucks:

- are big: they load a maximum of packages to make it worthwhile.
- depot is far: they have a minimum of deliveries each day.
- to minimize distance, they specialize in 1 area of the city.
- result: can achieve same day delivery with optimization, but can't scale to 30mn-1hr deliveries.



Drones:

- are variable in size: no minimal payload capacity
- can work from smaller local logistics hubs
- have a predictable flight time
- result: can propose short latency delivery of small packages

*If you can deliver 1 doughnut on demand,
what else is possible?*

Photos: X (Google) Wing, Amazon Prime Air**



What's different? Logistics centers!

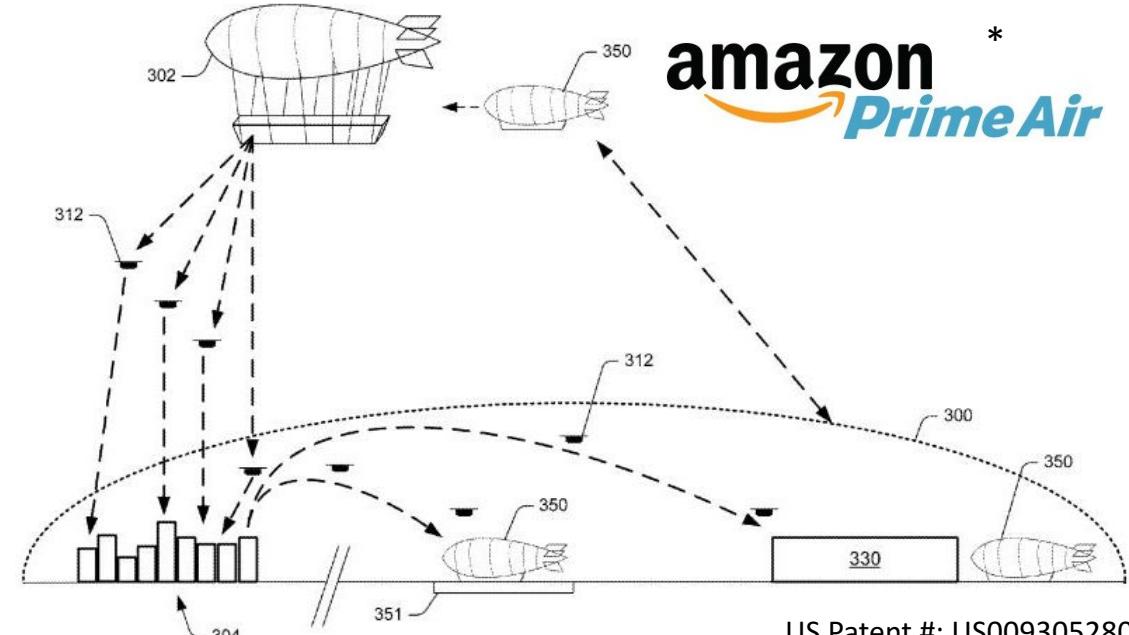
Trucks: Currently large buildings, far from city centers.

Drones: Autonomous Drones come with automated logistics centers.

The large central centers could be replaced by several smaller automated logistics buffers.

Ex:

- *Flying warehouses?*
- *Ships sailing in front of cities?*
- *Direct delivery from trains, trucks?*
- *Underground with an access shaft?*



US Patent #: US009305280

Conclusion

Autonomous Drones are not only a way
to make **marketing stunts**.

There's a need and market **today**.

Drones are not just automating **existing tasks**.
They have specific requirements
but enable **new usages**.

Thanks

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<https://intel-aero.github.io>

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