Optimising the design, installation and operation of a monolayer application system on a farm dam via a **'Universal Design Framework'**

G. Brink, A. Wandel, P. Pittaway, N. Hancock and E. Schmidt

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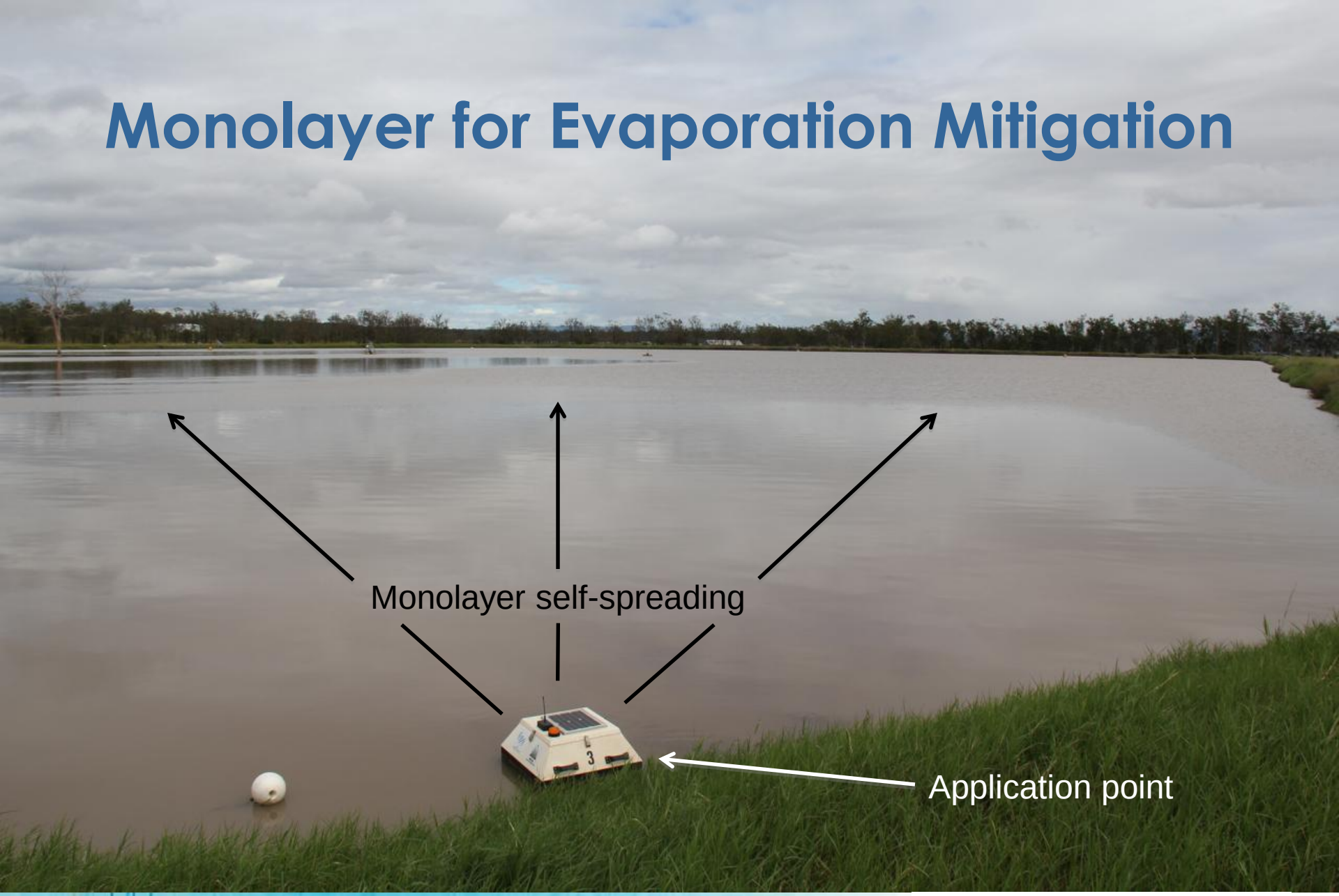
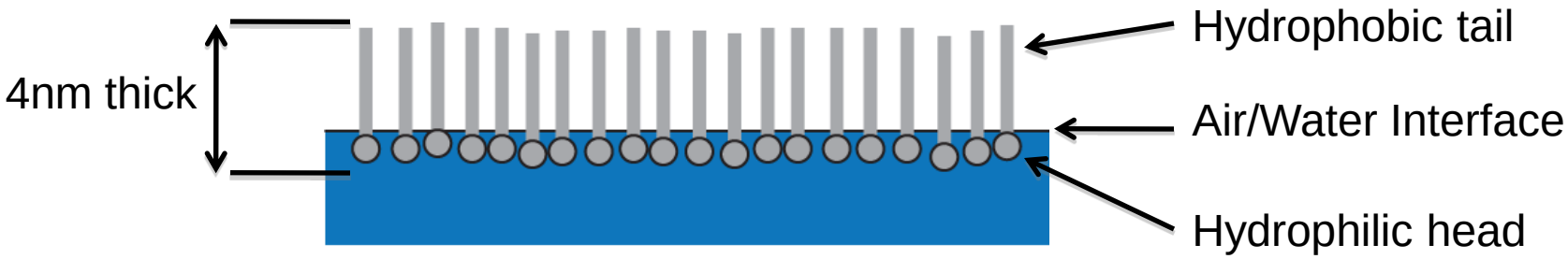
Monolayer for Evaporation Mitigation



Monolayer for Evaporation Mitigation



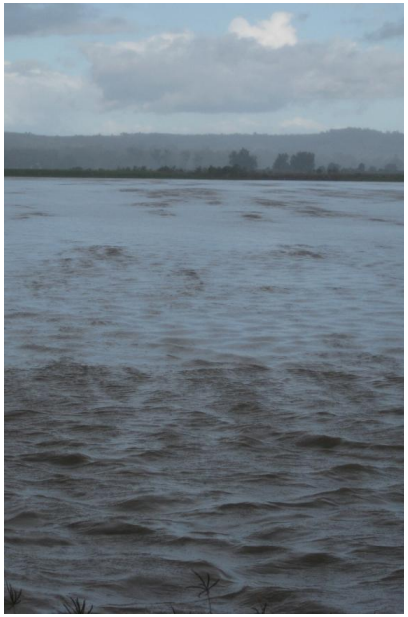
- Non-toxic
- Minimal impact on water oxygenation
- Very economical (20-30grams/ha)
- Biologically degraded within 1-4 days

Monolayer Performance = Variable

0-40% reduction in evaporation

Wind drift

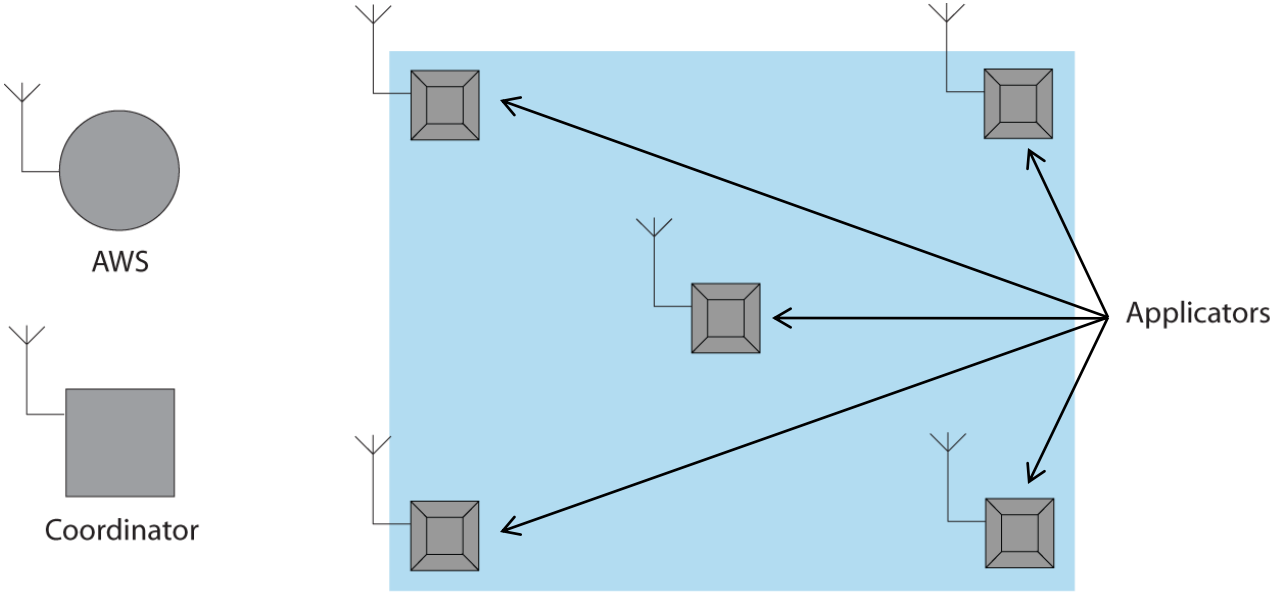
Shore deposition



Break-up by waves

Biodegradation

Autonomous Application Required



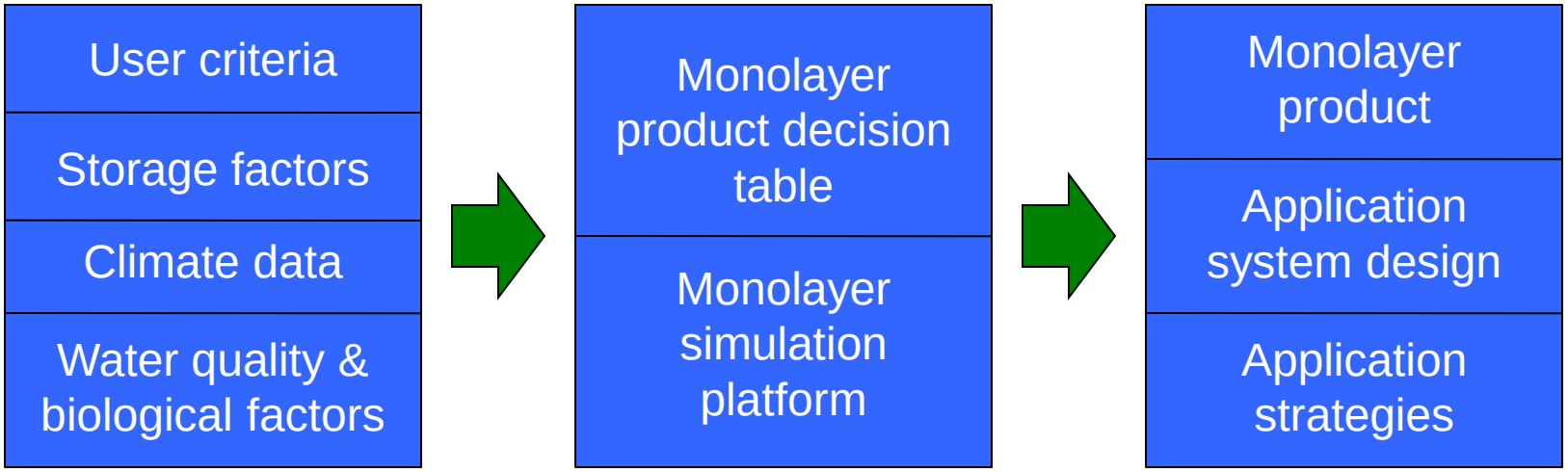
A User Needs to Know

1. What monolayer material to use,
2. how many applicators to use and where should they be located, and
3. what application strategies should be implemented.

NO ONE USER OR RESERVOIR IS EVER THE SAME!

Universal Design Framework Overview

- Development of a tailored solution according to user requirements and environmental characteristics.



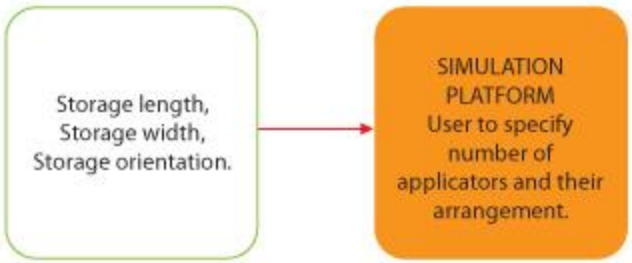
UDF Analysis 1 – Monolayer Selection

	Key Indictors				
Dam Name:	Algal Bloom:	UV Absorbance:	Water Colour:	Storage Size:	Suitable Monolayer:
Cooby Dam	no	0.14	clear	306ha	C_{16} , C_{18} or $C_{18}E_1$
USQ Ag. Plot	yes	0.31	pink	0.01ha	C_{18}
Narda Lagoon	no	0.45	brown	2ha	C_{18}

UDF Analysis 2 – Application System

Storage length,
Storage width,
Storage orientation.

UDF Analysis 2 – Application System



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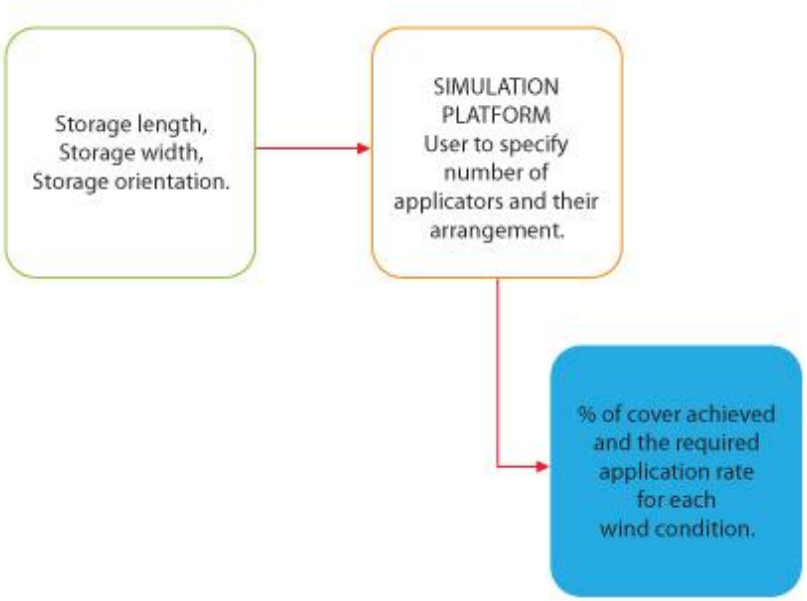

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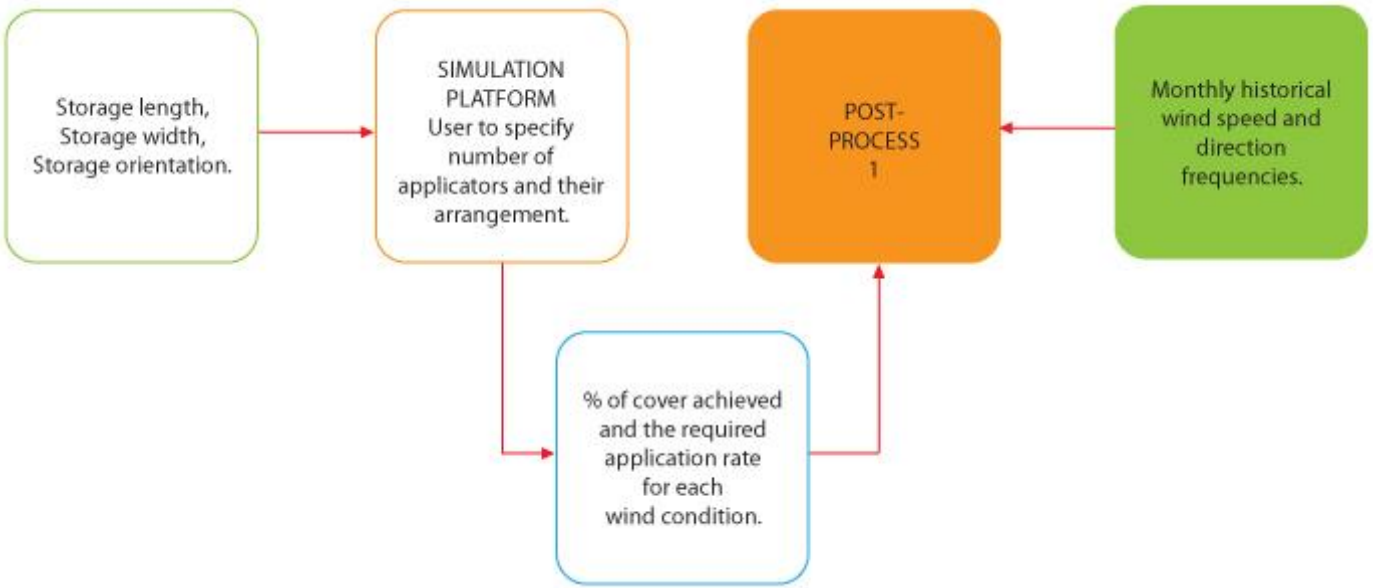

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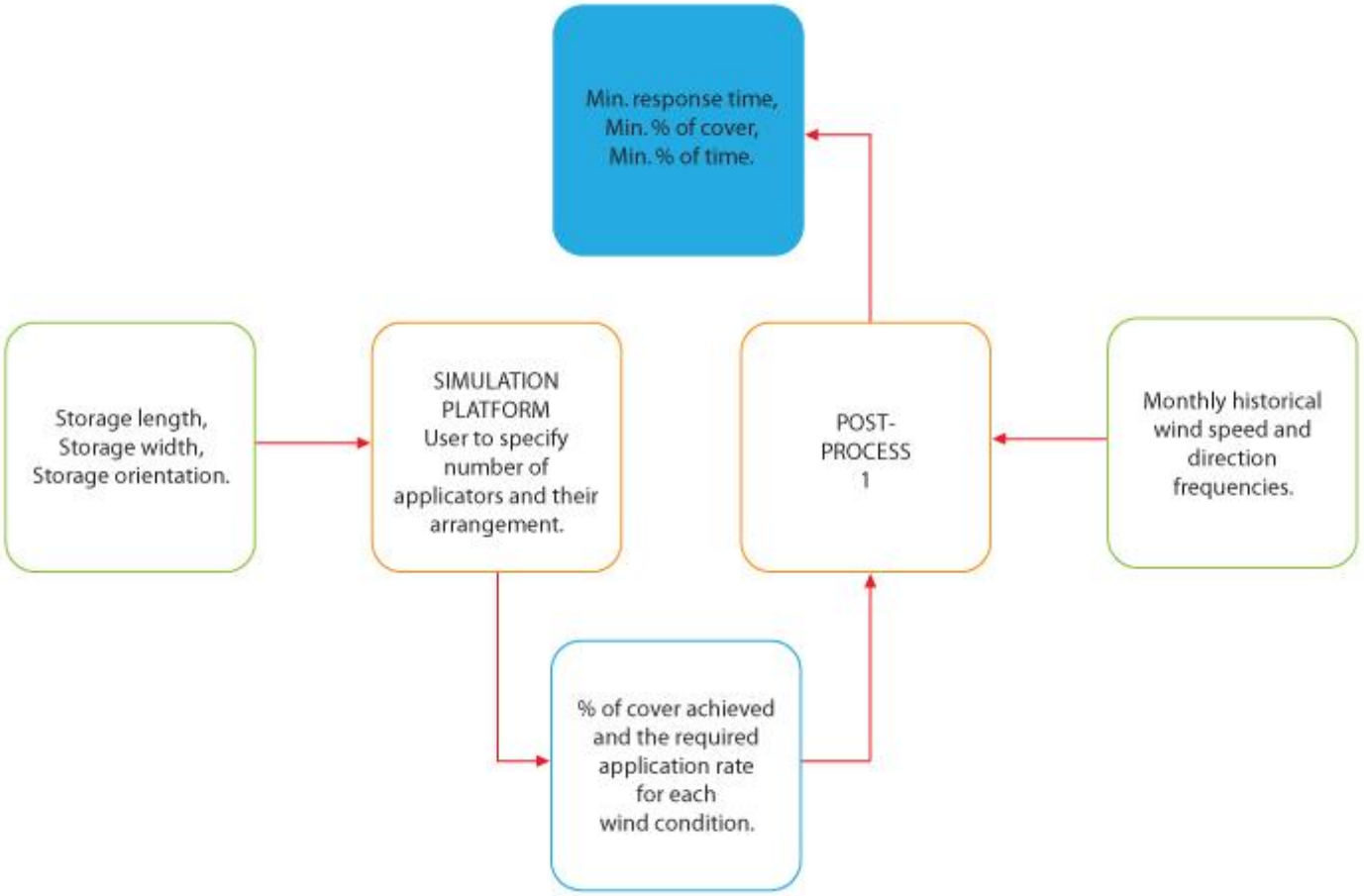

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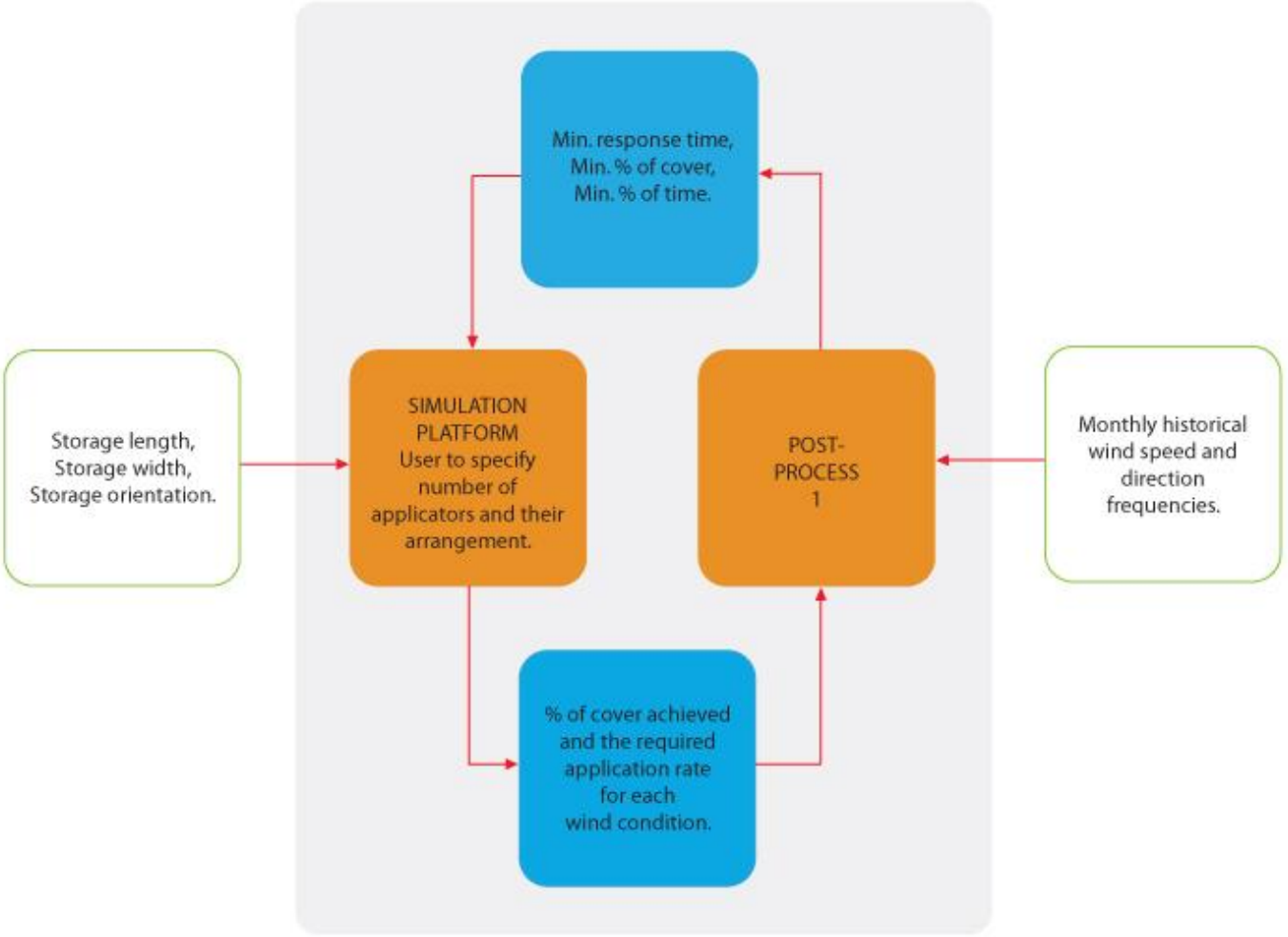

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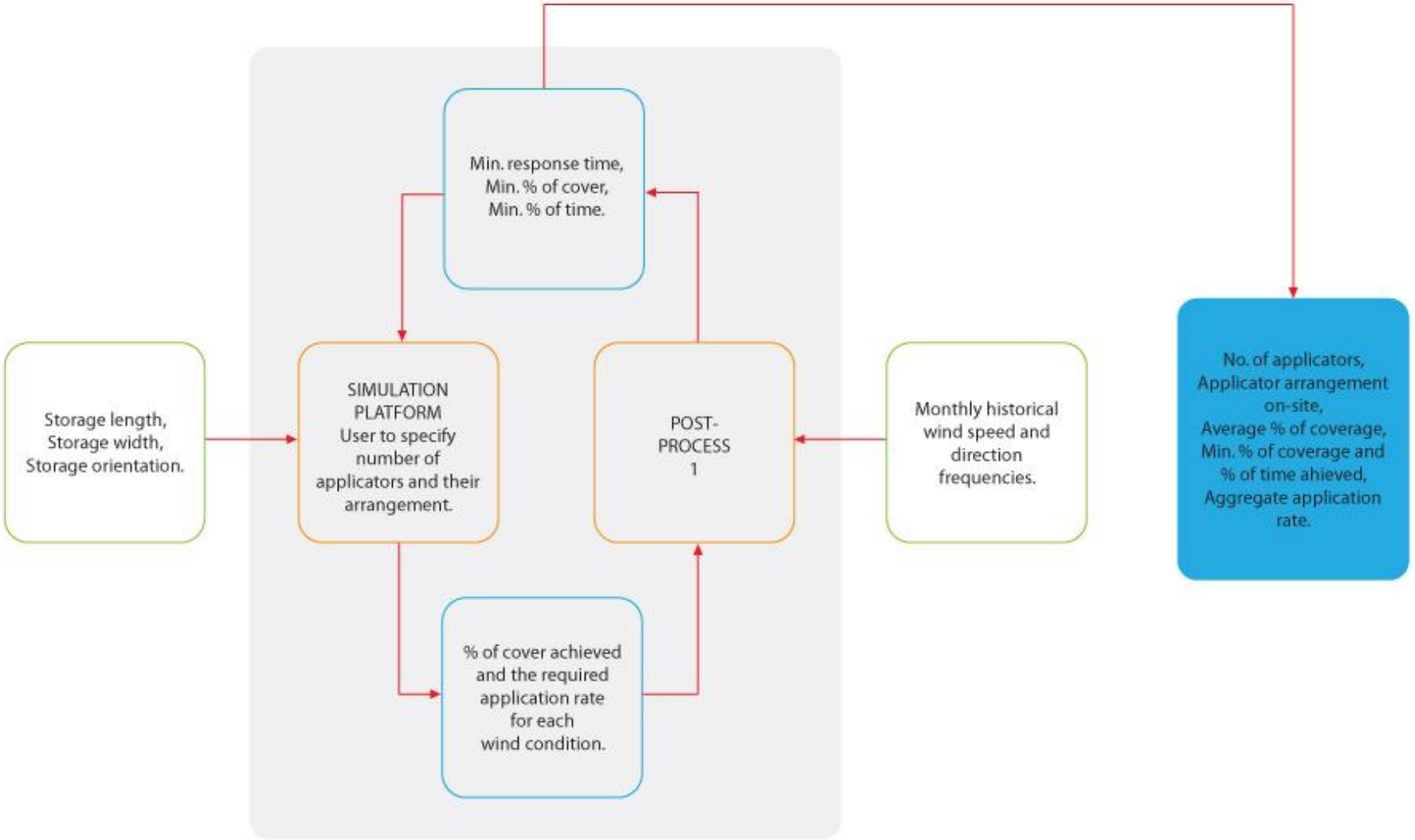
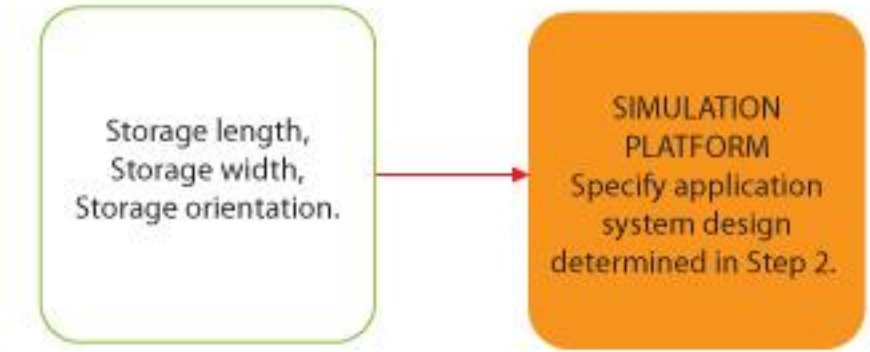


UDF Analysis 3 – Application Strategies

Storage length,
Storage width,
Storage orientation.

UDF Analysis 3 – Application Strategies



UDF Analysis 3 – Application Strategies

General Conclusions

- No ‘one-size-fits-all’:
  - monolayer product
  - application system, or
  - application strategy
- The UDF will:
  - address these issues by tailoring a solution to every users unique requirements.
  - help improve monolayer performance and thereby, their commercial adoption.

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