

SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

**From Youth to Elite Sport:
Harnessing Potential and the Pursuit of Excellence**

2nd - 4th November 2022

Organised by



SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

**The Bridging Program:
Preparing the next generation of para
swimmers and coaches for Paris and beyond**


Marcel M Rossi, PhD



Sport Biomechanics, Singapore Sport Institute

Para Swimming in Singapore: A Successful History

Paralympics: 5  1  1 

Asian Para Games: 3  1  7 

World Championships: 6  8 

Commonwealth Games: 1  1 

World Records: 9

Asian Records: 12



**SINGAPORE SPORT &
PERFORMANCE CONFERENCE 2022**

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

Para Swimming in Singapore: History is still being



BAHRAIN 2021 ASIAN YOUTH PARA GAMES
البحرين ٢٠٢١ دورة الألعاب البارالمبية الآسيوية للشباب

4  2 



1 

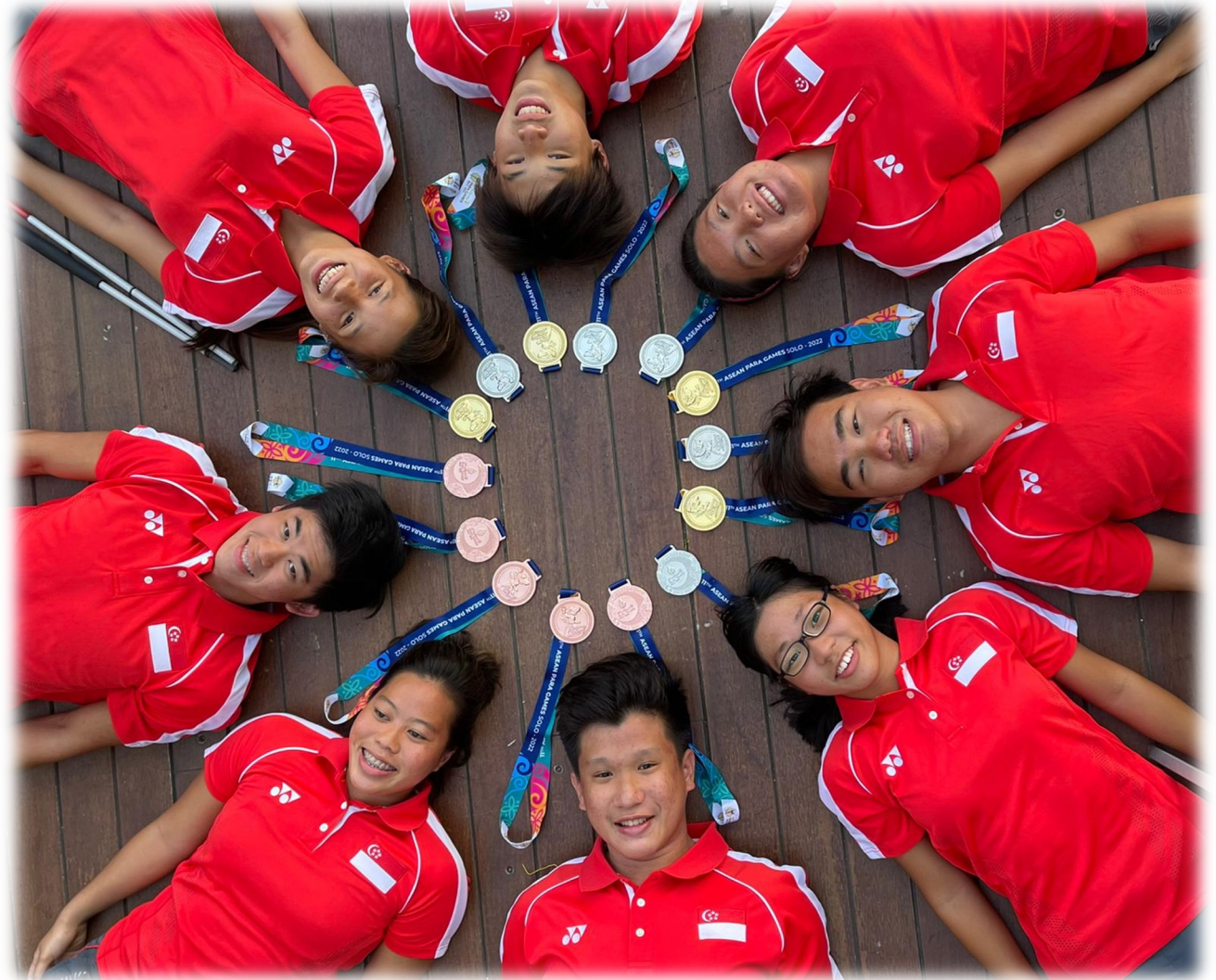


Solo 2022

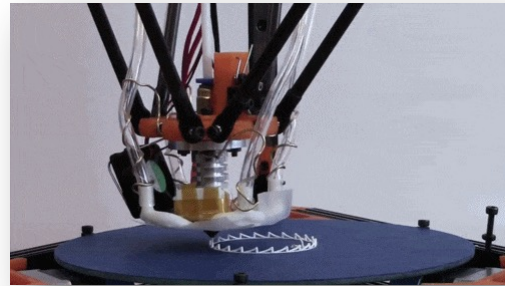
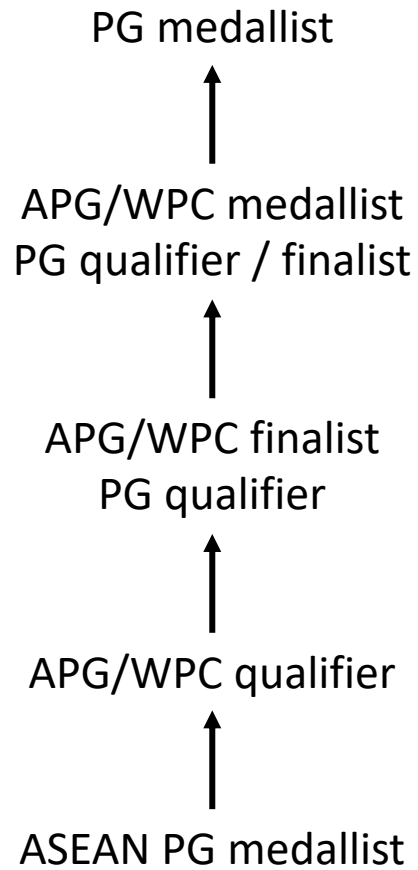
4  5  5 

SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

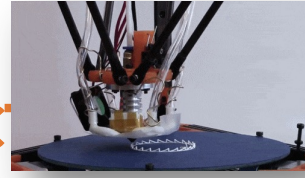
From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence



The Bridging Program: Mission and Vision



The Bridging Program: 3D Project



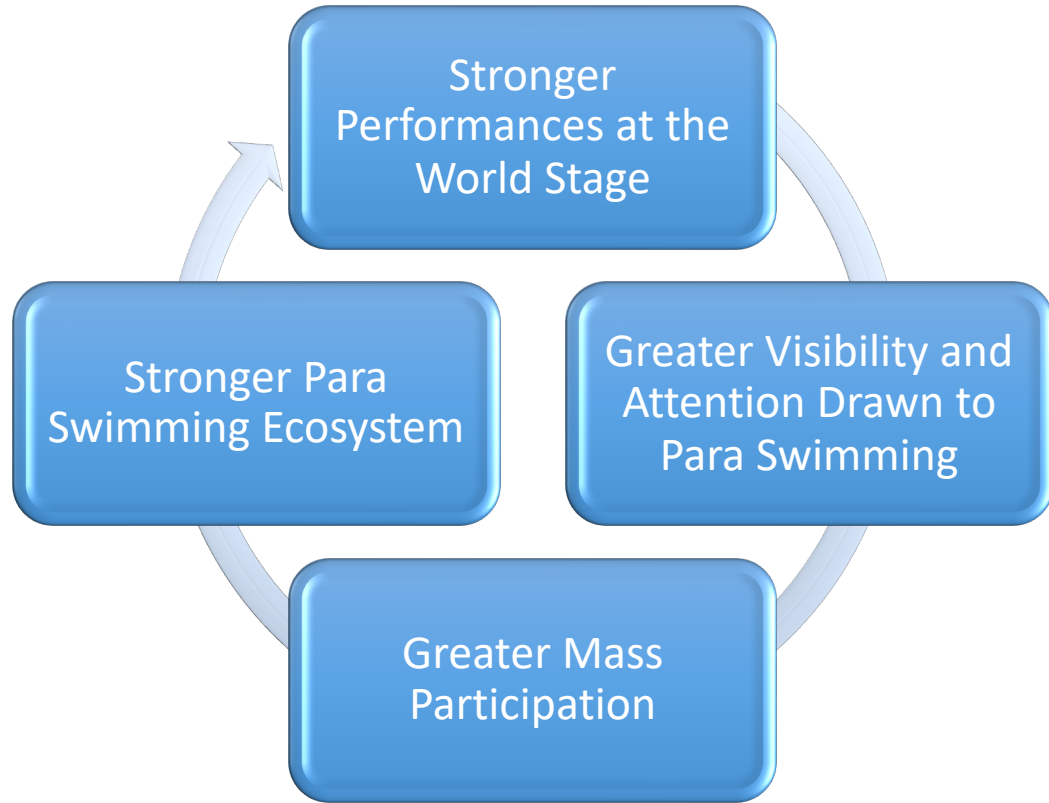
Development

Para Swimming Cycle of Success

Direction

Discovery

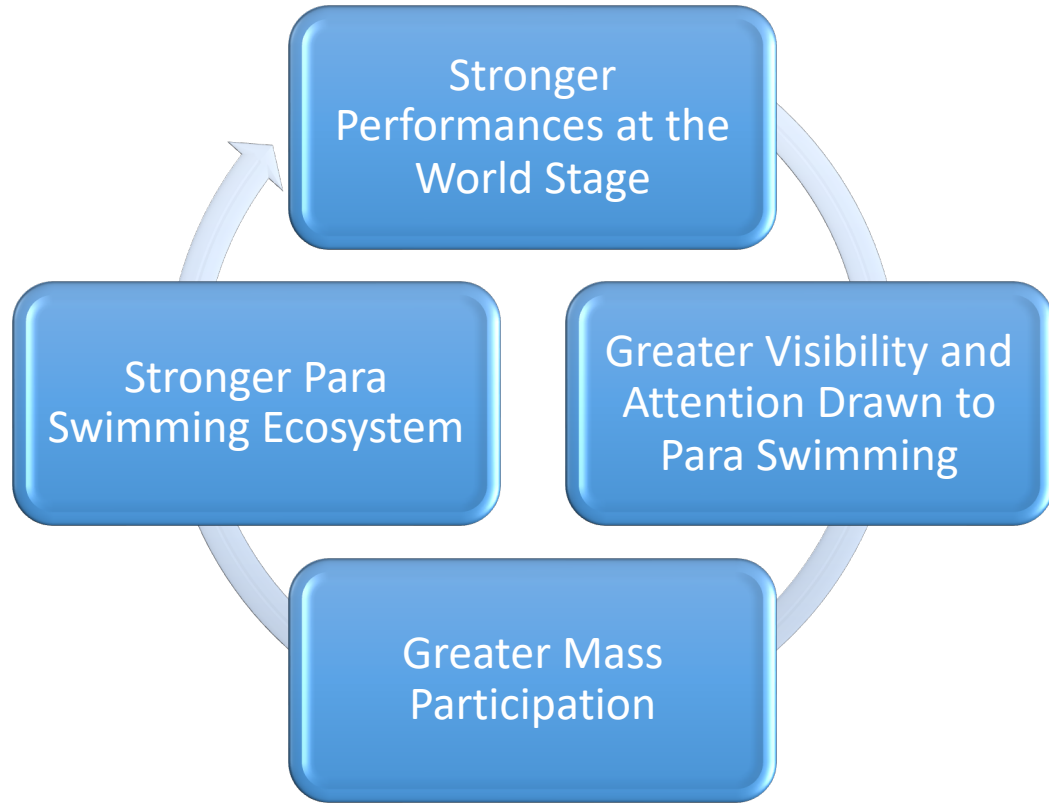
Development: Cycle of Success for Para Swimming (and other sports...)



**SINGAPORE SPORT &
PERFORMANCE CONFERENCE 2022**

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

Development: Cycle of Success for Para Swimming (and other sports...)



SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

The Bridging Program: Athletes and Coaches



Darren Chan
2x Bronze, Asian Youth PG 2021
2x Bronze, ASEAN PG 2022



Zhi Wei Wong
2x Gold 1x Silver, ASEAN PG 2021
Asian PG finalist, 2018



Danielle Moi
3x Bronze, ASEAN PG 2021
Asian PG finalist, 2018



Colin Soon
4x Gold, Asian Youth PG 2021
4th Place, World Para Swimming Champs 2022



Sophie Soon
1x Silver, World Para Swimming Champs 2022
4th Place, Paralympic Games 2021

The Bridging Program: Athletes and Coaches



Coach Lionel Leong
Ultra Swim School



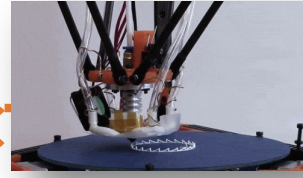
Coach Roland Tan
ART Aquatics



**SINGAPORE SPORT &
PERFORMANCE CONFERENCE 2022**

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

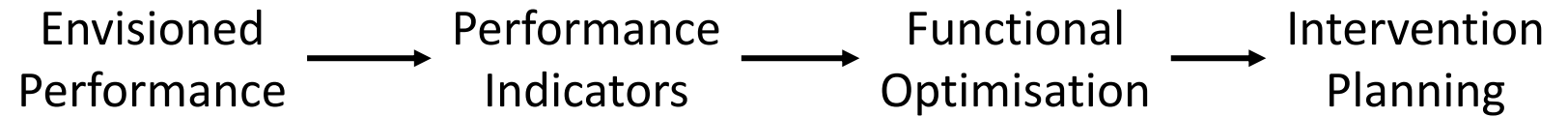
The Bridging Program: 3D Project



Development

Para Swimming Cycle of Success

Direction



Discovery

The 3D Project: Direction

Areas of focus

Relevant questions

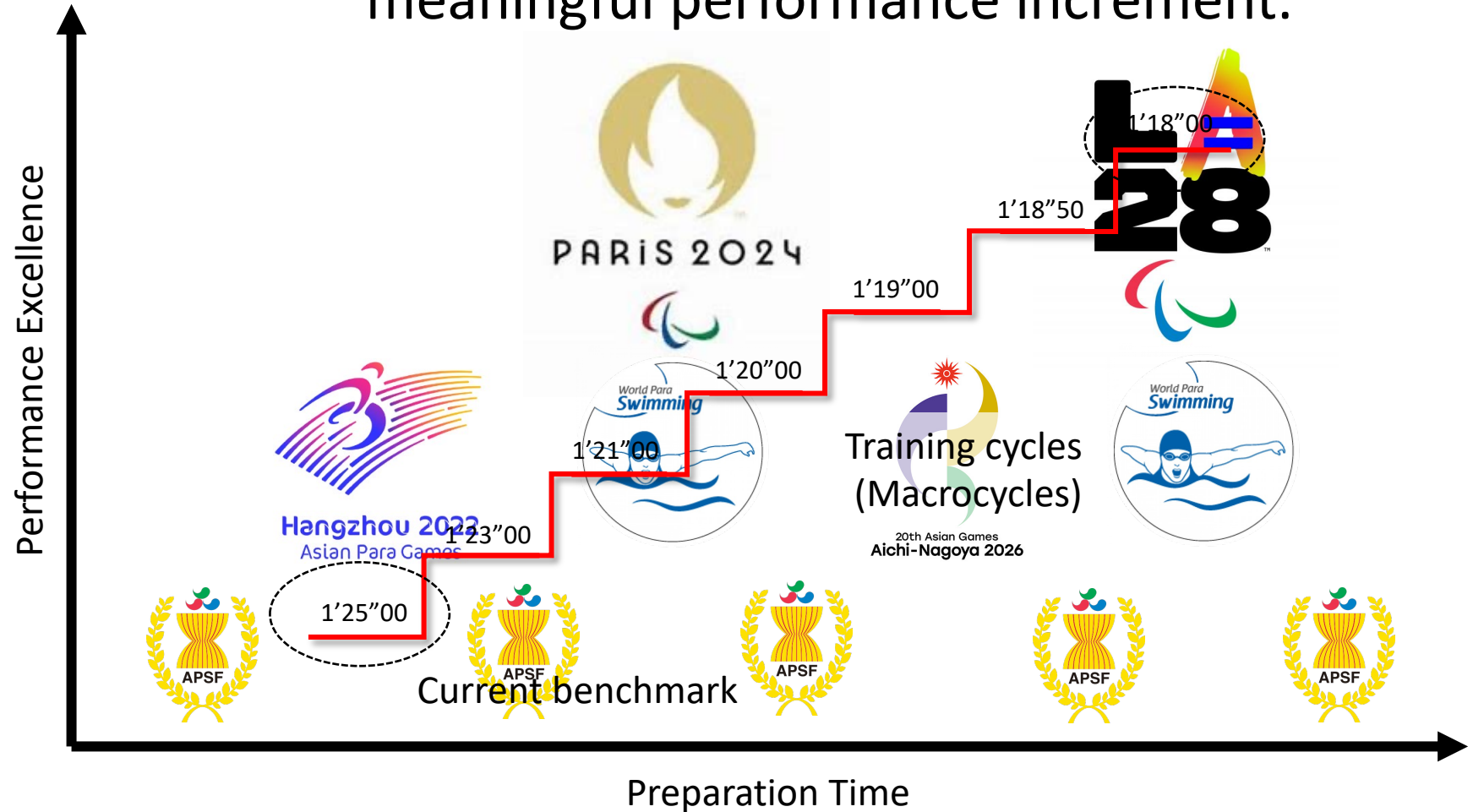
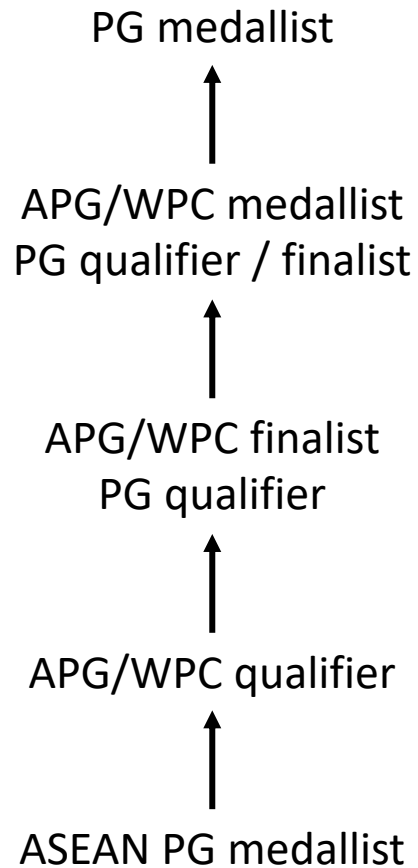
Vision Level

Envisioned performance
(Macrocycle level)

What?

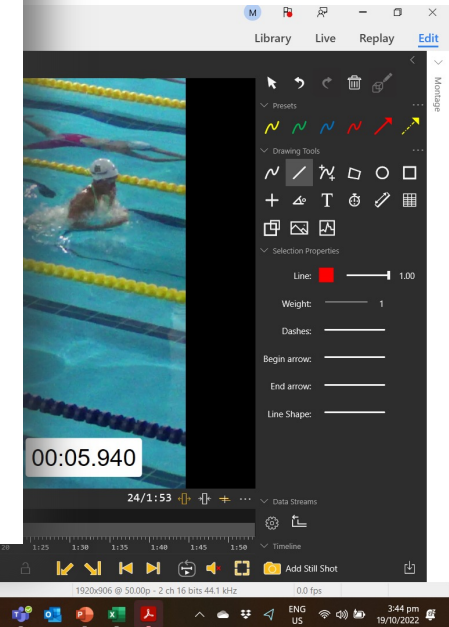
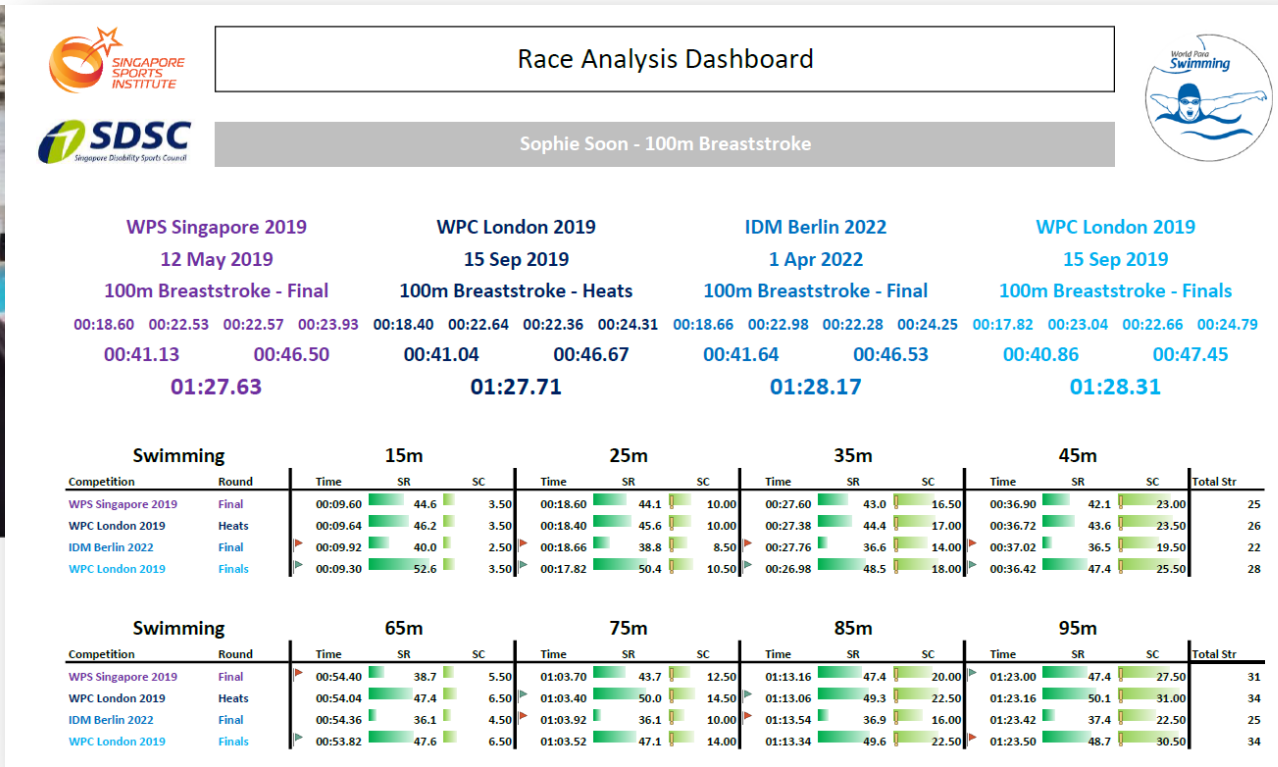
Direction: Envisioned Performance

Every training cycle envisions a small, yet targeted and meaningful performance increment.



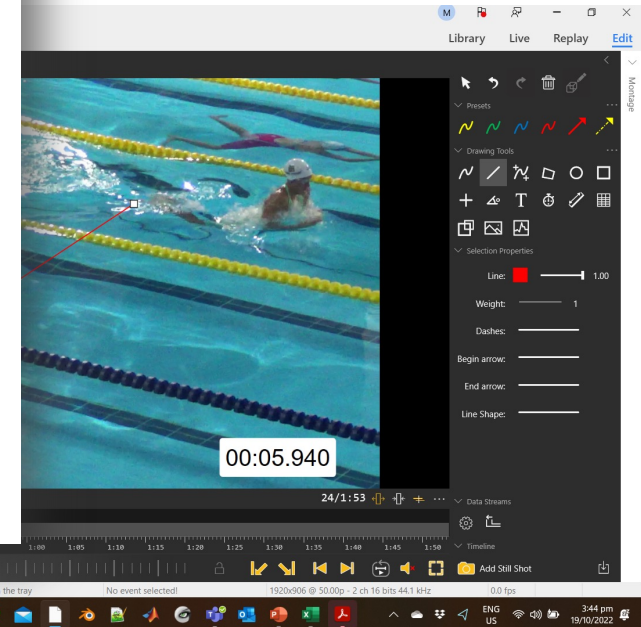
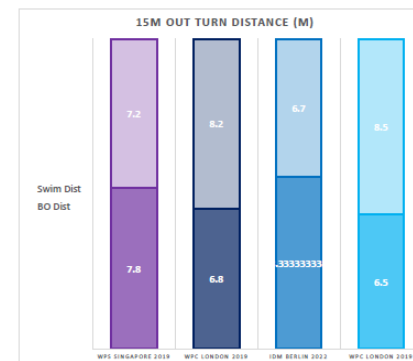
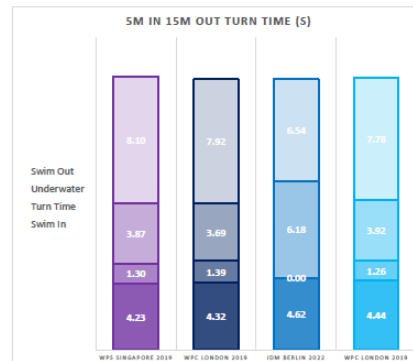
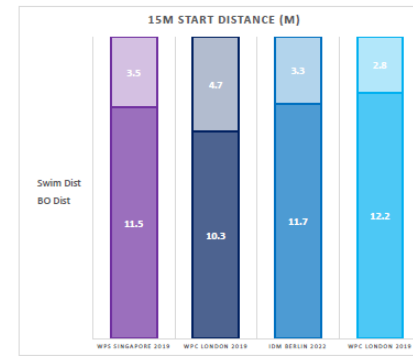
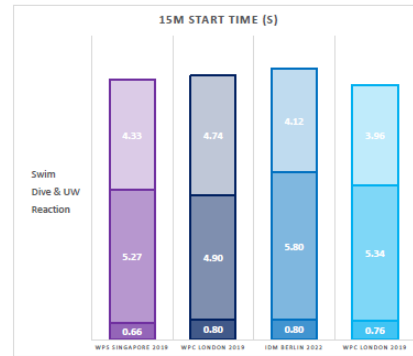
Direction: Envisioned Performance

Race analyses: Breakdown of the previous races (where we are at).



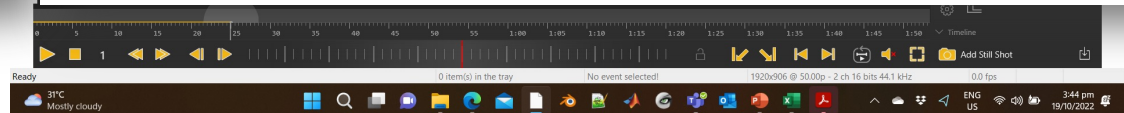
Direction: Envisioned Performance

Race analyses: Breakdown of the previous races (where we are at).



Direction: Envisioned Performance

Race analyses: Breakdown of the previous races (where we are at).



The 3D Project: Direction

Areas of focus

Relevant questions

Strategic Level

Performance
Indicators

How?

Vision Level

Envisioned performance
(Macrocycle level)

What?

Direction: Performance Indicators

Race analyses: Breakdown of the previous races (where we are at).

Race

Race Splits (50m)

Start (0 – 15m)

BT (secs)

BO time (secs)

BO dist (m)

15m time (secs)

Turn (5m in – 15m out)

Time In (secs)

BO time (secs)

BO dist (m)

Time out (secs)

Swim (15m – 45m)

Velocity (m/s)

Stroke Rate (stroke/min)

Stroke Count (stroke/m)

Stroke Index (Vel*Dist Per Stroke)

Direction: Performance Indicators

Race m
at).

ant to be



Race Analysis Dashboard



Sophie Soon - 100m Breaststroke

Race Model
19 Oct 2022
100m Breaststroke - Macro1
00:17.45 00:22.55 00:21.32 00:23.68
00:40.00 00:45.00
01:25.00

WPS Singapore 2019
12 May 2019
100m Breaststroke - Final
00:18.60 00:22.53 00:22.57 00:23.93
00:41.13 00:46.50
01:27.63

WPC London 2019
15 Sep 2019
100m Breaststroke - Heats
00:18.40 00:22.64 00:22.36 00:24.31
00:41.04 00:46.67
01:27.71

IDM Berlin 2022
1 Apr 2022
100m Breaststroke - Final
00:18.66 00:22.98 00:22.28 00:24.25
00:41.64 00:46.53
01:28.17

Start (0

BT (secs)

BO time (s

BO dist (m

15m time (secs)

Time out (secs)

Stroke Index (Vel*Dist Per Stroke)

Swimming		15m				25m				35m				45m				Total Str
Competition	Round	Time	SR	SC	Time	SR	SC	Time	SR	SC	Time	SR	SC	Time	SR	SC	Total Str	
Race Model	Macro1	00:08.75	44.2	2.50	00:17.45	44.6	9.00	00:26.37	44.4	15.50	00:35.63	44.6	22.50				25	
WPS Singapore 2019	Final	00:09.60	44.6	3.50	00:18.60	44.1	10.00	00:27.60	43.0	16.50	00:36.90	42.1	23.00				25	
WPC London 2019	Heats	00:09.64	46.2	3.50	00:18.40	45.6	10.00	00:27.38	44.4	17.00	00:36.72	43.6	23.50				26	
IDM Berlin 2022	Final	00:09.92	40.0	2.50	00:18.66	38.8	8.50	00:27.76	36.6	14.00	00:37.02	36.5	19.50				22	

45m)

Swimming		65m				75m				85m				95m				Total Str
Competition	Round	Time	SR	SC	Time	SR	SC	Time	SR	SC	Time	SR	SC	Time	SR	SC	Total Str	
Race Model	Macro1	00:52.15	47.4	5.00	01:01.32	47.0	17.00	01:10.94	50.3	37.00	01:20.55	50.1	65.00				30.5	
WPS Singapore 2019	Final	00:54.40	38.7	5.50	01:03.70	43.7	12.50	01:13.16	47.4	20.00	01:23.00	47.4	27.50				31	
WPC London 2019	Heats	00:54.04	47.4	6.50	01:03.40	50.0	14.50	01:13.06	49.3	22.50	01:23.16	50.1	31.00				34	
IDM Berlin 2022	Final	00:54.36	36.1	4.50	01:03.92	36.1	10.00	01:13.54	36.9	16.00	01:23.42	37.4	22.50				25	

roke/min)

roke/m)

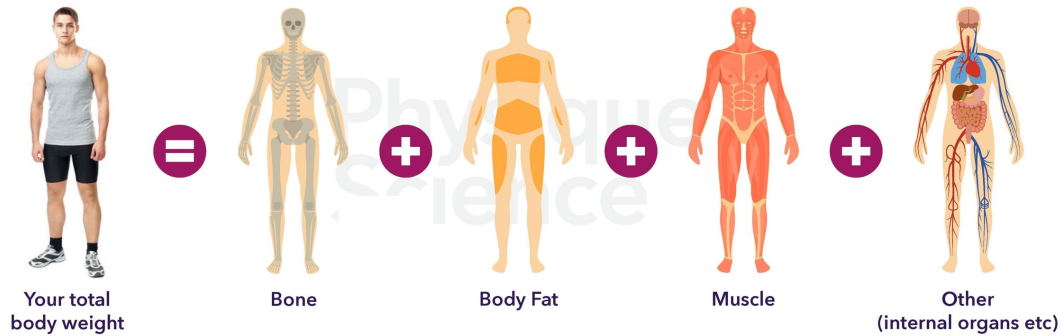
The 3D Project: Direction

	Areas of focus	Relevant questions
Tactic Level	Body Functional Optimisation (SSI's 4S Model)	Which?
Strategic Level	Performance Indicators	How?
Vision Level	Envisioned performance (Macrocycle level)	What?

Direction: Body Functional Optimisation

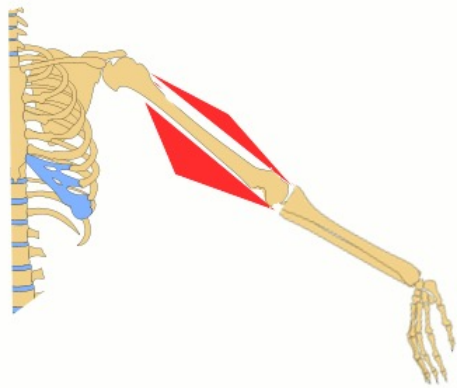
Structure

(Anatomy, Morphology, Mobility, Body Composition)



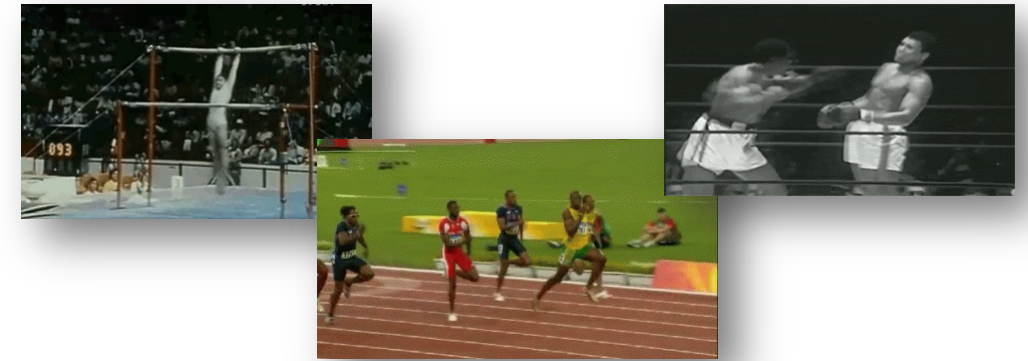
Strength

(Force Development and Energy Management)



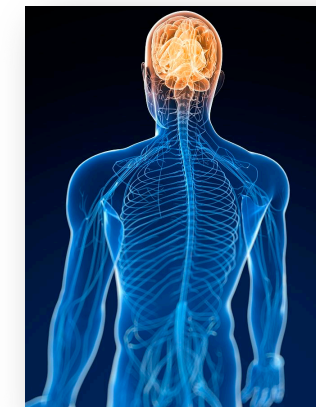
Skill

(Coordination, Agility, Balance, Technique, Velocity)



Strategy & Style

(Decision-making, Motor Control, Learning Preferences)



The 3D Project: Direction

	Areas of focus	Relevant questions
Actionable Level	Intervention Planning (Learnings, Training Load, Recovery)	Who? What? When? Where? Why? How?
Tactic Level	Body Functional Optimisation (SSI's 4S Model)	Which?
Strategic Level	Performance Indicators	How?
Vision Level	Envisioned performance (Macrocycle level)	What?

Direction: Intervention Planning

Macrocycle

Mesocycle

Microcycle



SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

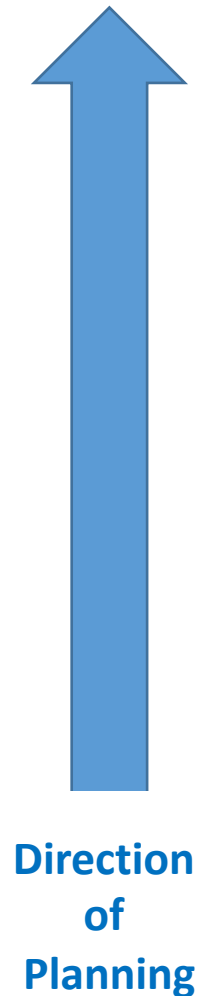
Basic endurance phase (4 to 6 weeks)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
a.m. Energy system	Pool Anaerobic threshold	Pool and gym Aerobic and kick	Off	Pool and gym Aerobic and kick	Pool Aerobic fin drills	Pool and gym Short rest/ speed	Off
p.m. Energy system	Pool Sort rest/ speed	Pool Over distance	Pool Heart rate (mod.)	Pool Threshold/ speed	Pool Aerobic and relays	Off	Off

General preparation phase (4 to 6 weeks)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
a.m. Energy system	Pool Anaerobic threshold	Gym and pool Pull and kick quality	Off	Pool and gym Pull and kick quality	Pool Aerobic fin drills	Pool and gym Lactate removal	Off
p.m. Energy system	Pool Lactate removal	Pool Aerobic and pace	Pool Quality	Pool Aerobic and pace	Pool Aerobic and relays	Off	Off

Specific competition phase (4 to 8 weeks)							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
a.m. Energy system	Pool Anaerobic threshold	Gym and pool Pull and kick quality	Off	Pool Pull and kick quality	Pool Aerobic fin drills	Pool and gym Quality	Off
p.m. Energy system	Pool Heart rate	Pool Quality	Pool Aerobic	Pool Heart rate	Pool Aerobic and relays	Off	Off

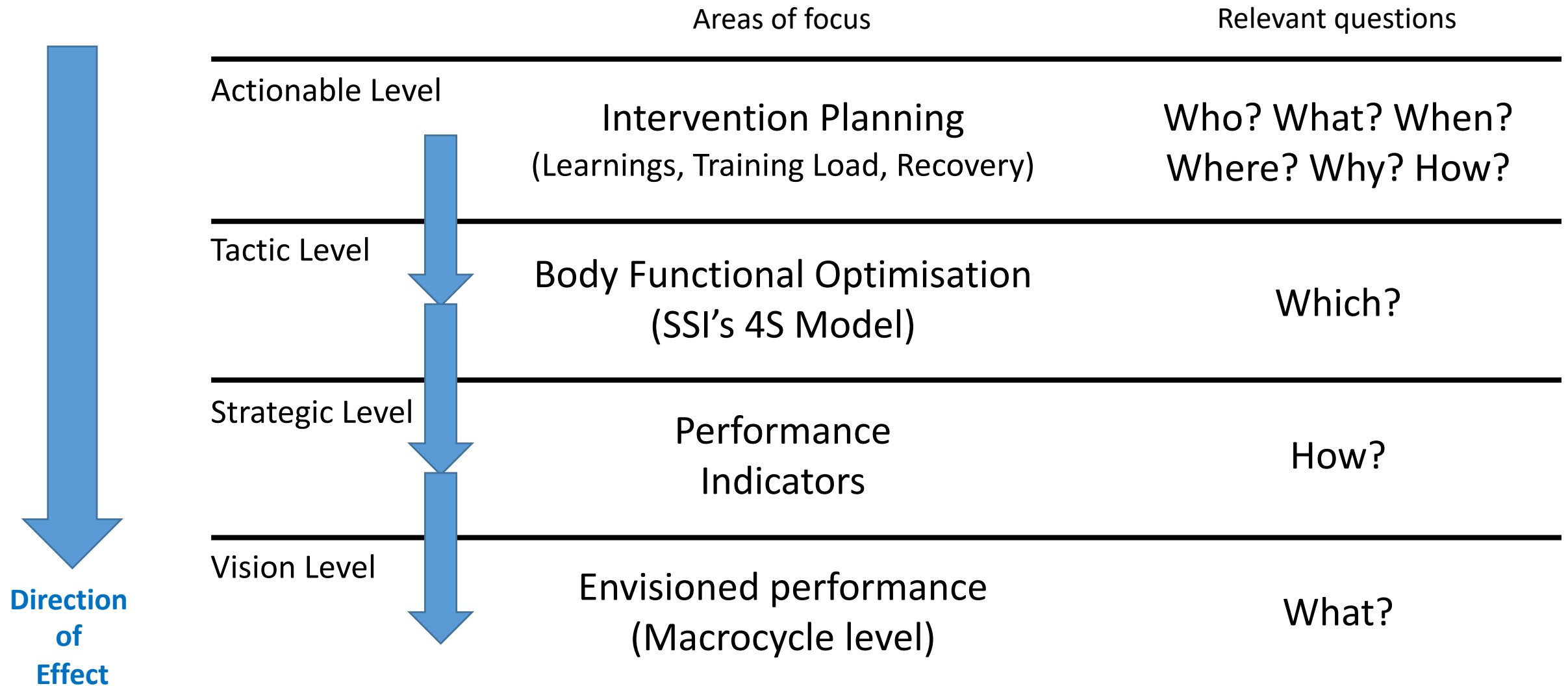
(Widmer, 2012)

The 3D Project: Direction

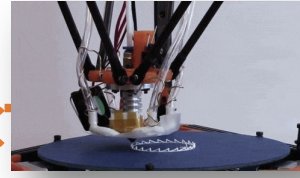


	Areas of focus	Relevant questions
Actionable Level	Intervention Planning (Learnings, Training Load, Recovery)	Who? What? When? Where? Why? How?
Tactic Level	Body Functional Optimisation (SSI's 4S Model)	Which?
Strategic Level	Performance Indicators	How?
Vision Level	Envisioned performance (Macrocycle level)	What?

The 3D Project: Direction



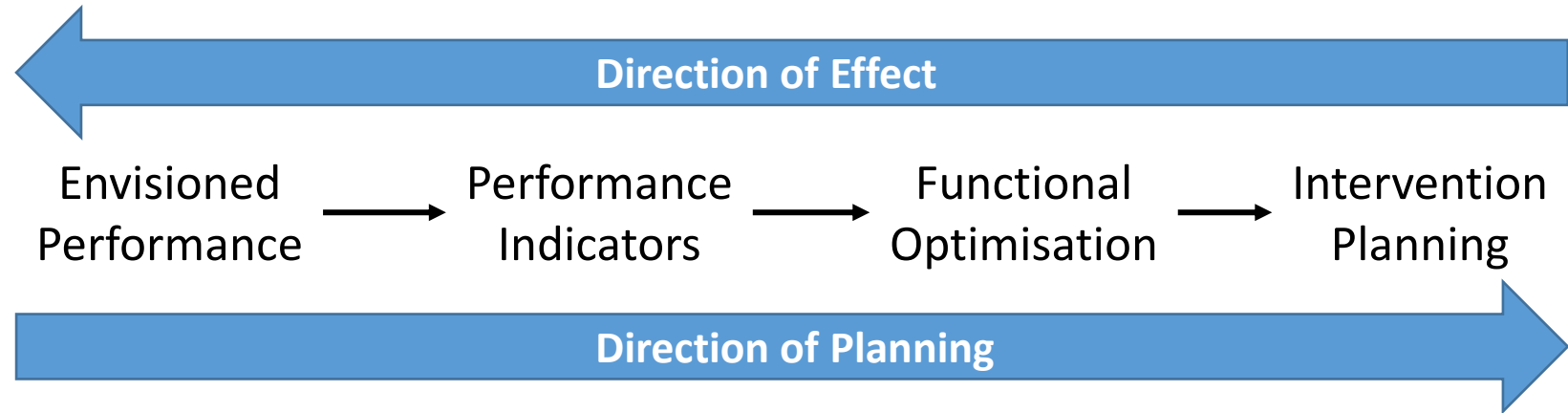
The Bridging Program: 3D Project



Development

Para Swimming Cycle of Success

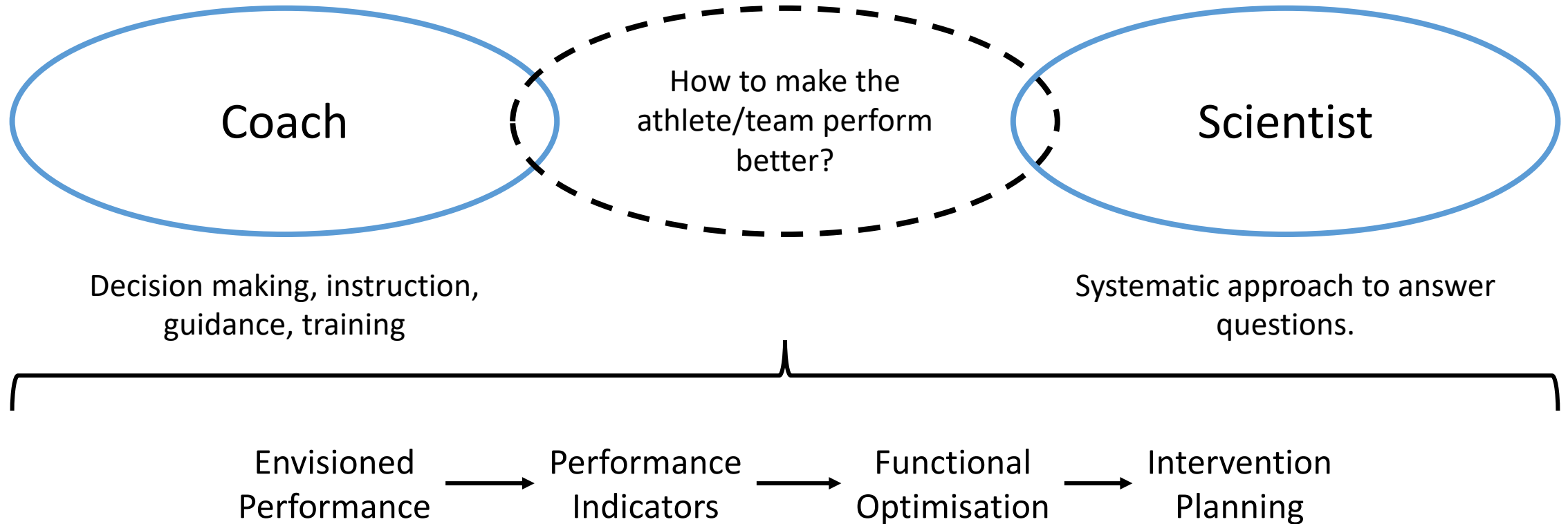
Direction



Discovery

Coach as Scientist

Discovery: Coach as Scientist



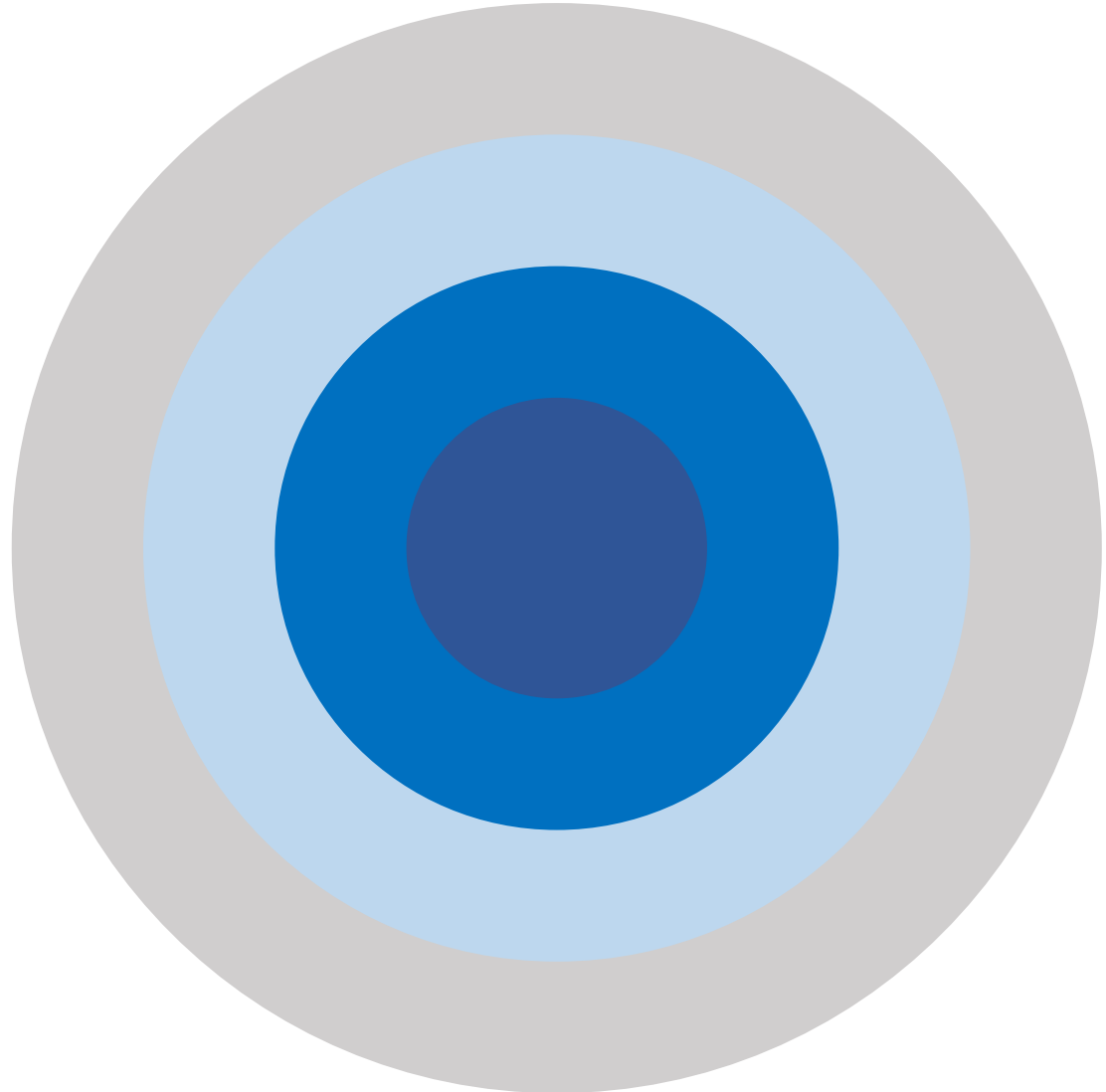
Discovery: Coach as Scientist

The screenshot displays the Goalscape application interface. On the left, a circular goal structure is shown, centered on the goal 'SS 100 BR 1'25"00'. The structure is divided into several segments: 'First Split: 45"', 'Second Split: 45"', 'Start Time: 8"75', 'Turn Time: 16"52', 'Turn In', 'Turn and Push Off', 'UW Phase', 'BO to 15m', 'Block and Flight Phase', and 'BO to 15m Phase'. Each segment is further divided into sub-segments labeled 'Structure', 'Strength', 'Skill', and 'Strategy'. A 'Focus' button is visible at the top left, and a 'Goal List' button is at the bottom left. A 'blender' tag is present at the bottom center.

On the right, a detailed view of the 'Block and Flight Phase' is shown. The goal title is 'Block and Flight Phase' with a start time of '8"75' and a goal ID of 'SS 100 BR 1'25"00'. The progress is 0%, and the importance is 34%. There are fields for 'Due date' (Add date), 'Responsible' (Add person), and 'Tags' (Add tag). Below this, there are tabs for 'NOTES & ACTIONS' and 'COMMENTS'. The 'NOTES & ACTIONS' tab is active, showing a list of main sub-variables to pay attention to:

- Maximise Horizontal Velocity at takeoff
- Optimise Vertical Velocity at takeoff
- Optimise Entry Angle
- Reduce Pitch Angle

Discovery: Coach as Scientist (and Scientist as Coach)



Interventions
(Learnings, Training Load, Recovery)
Coach Domain

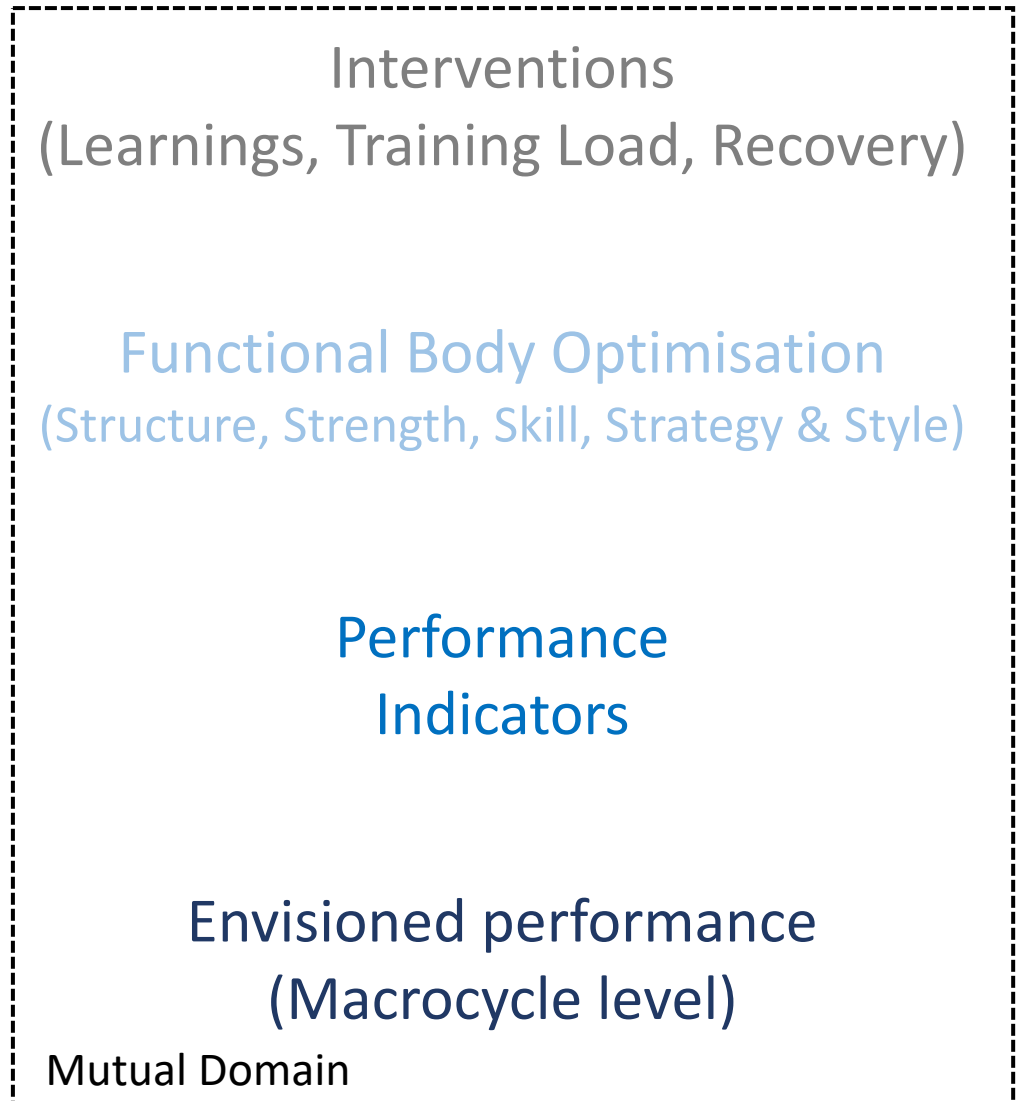
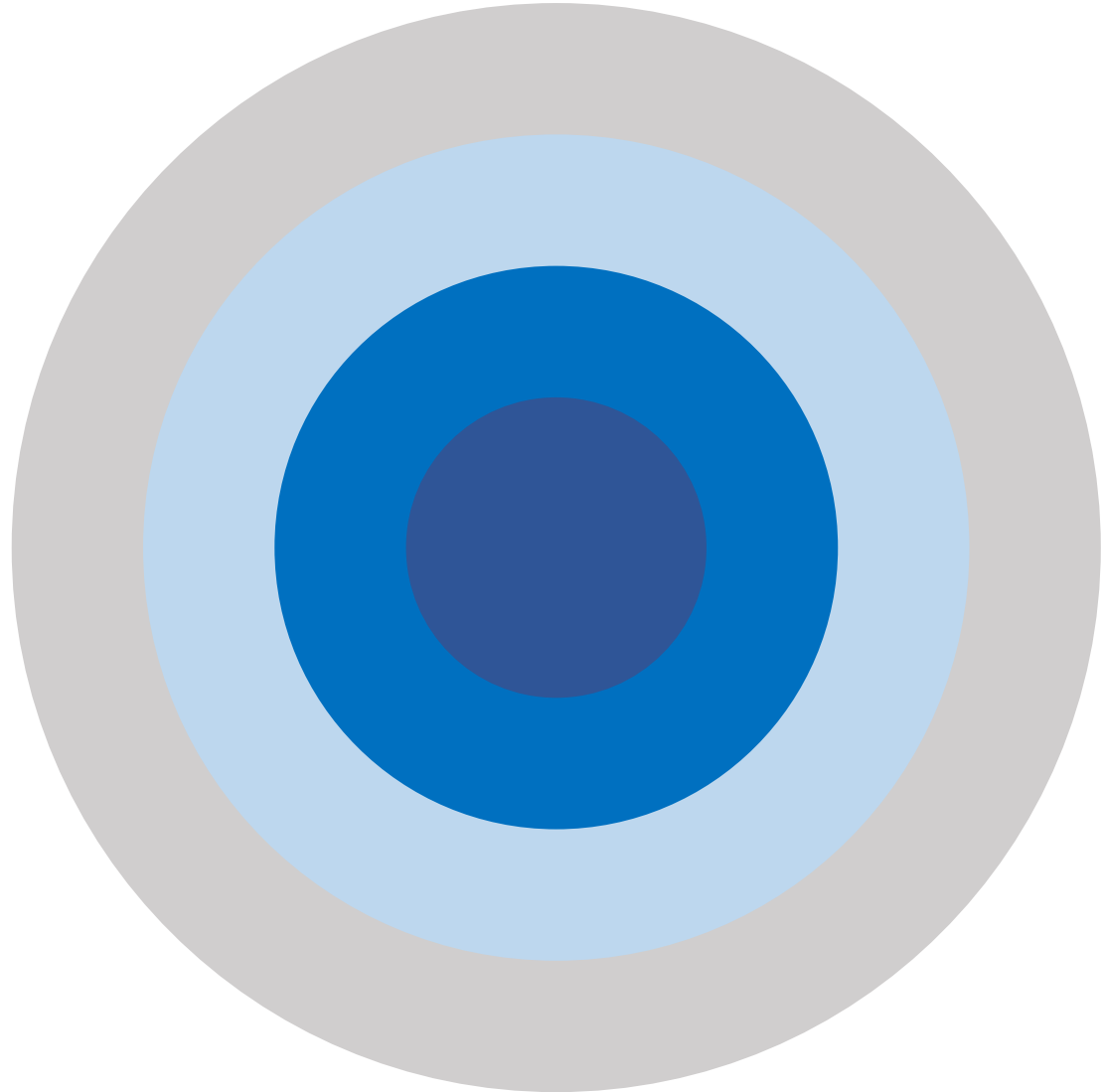
Functional Body Optimisation
(Structure, Strength, Skill, Strategy & Style)

Performance
Indicators

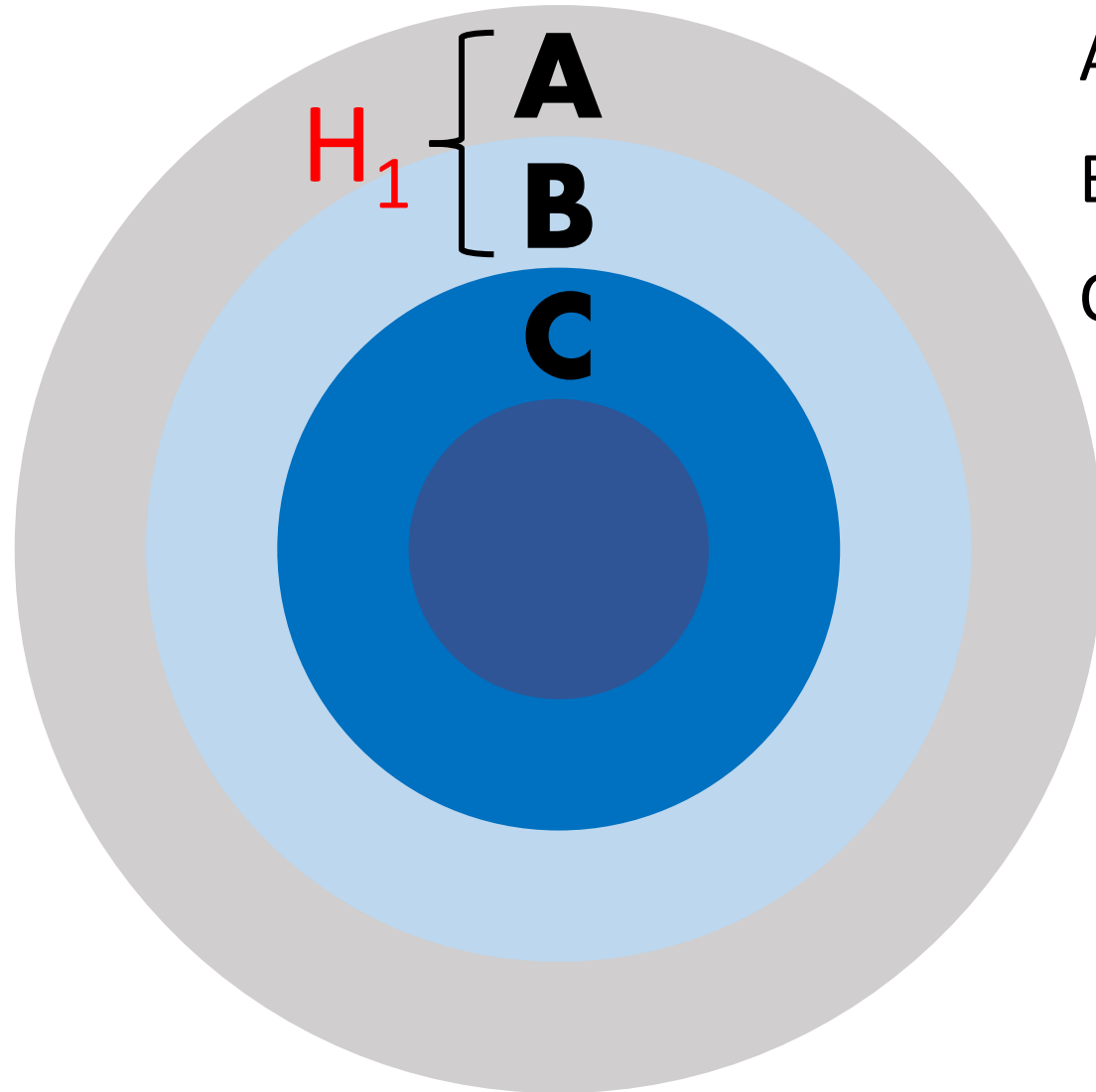
Scientists Domain

Envisioned performance
(Macrocycle level)
(Often) Mutually Neglected Domain

Discovery: Coach as Scientist (and Scientist as Coach)



Discovery: Coach as Scientist (and Scientist as Coach)



A: Intervention Variables

B: Body Functional Optimisation Variables

C: Performance Indicator Variables

Expectation (H_1)

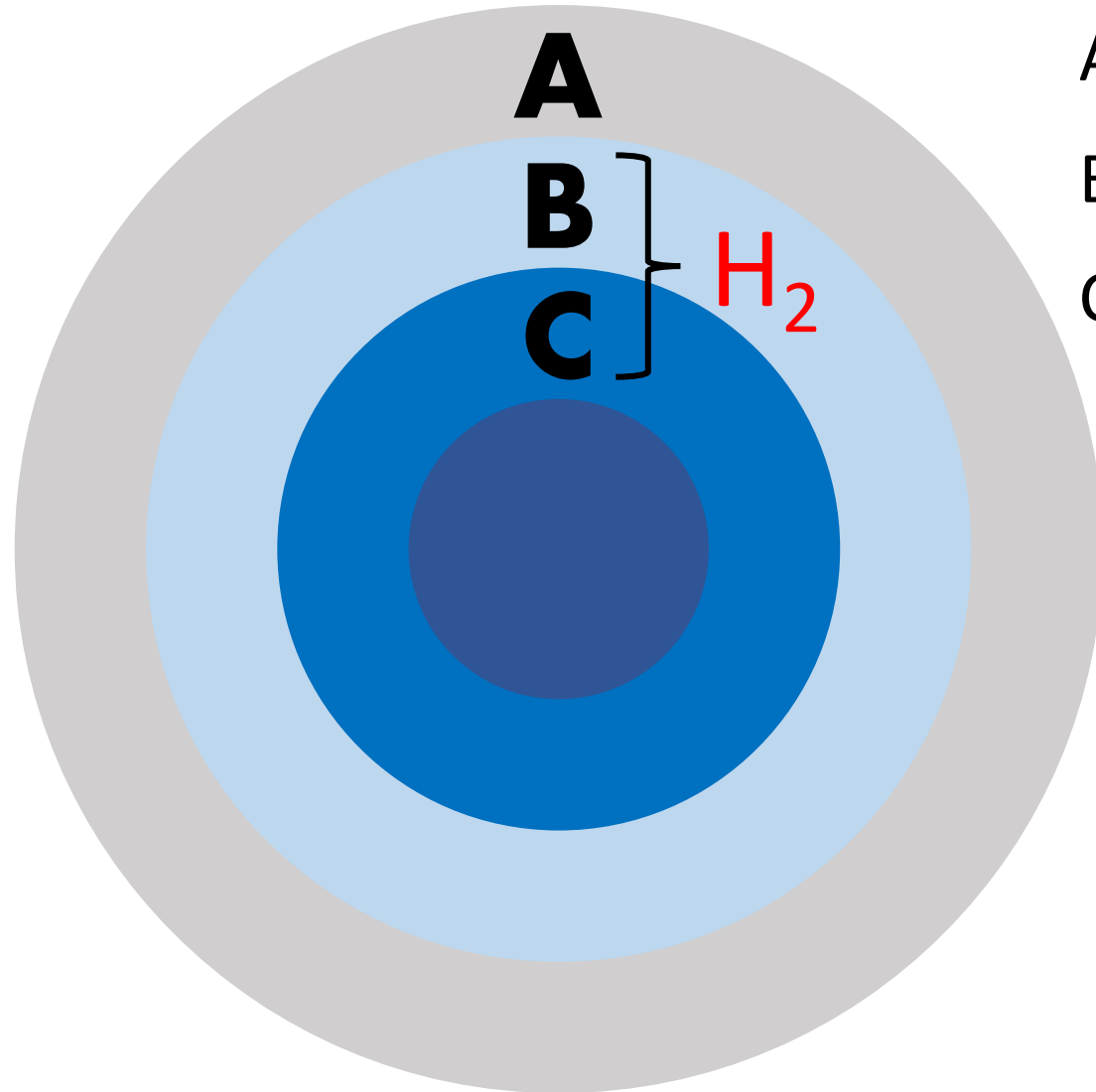
We expect the intervention **A**

To have an effect on the body adaptation **B**

Because {
Deduced from a theory
Induced by past observations

Testable

Discovery: Coach as Scientist (and Scientist as Coach)



A: Intervention Variables

B: Body Functional Optimisation Variables

C: Performance Indicator Variables

Expectation (H_2)

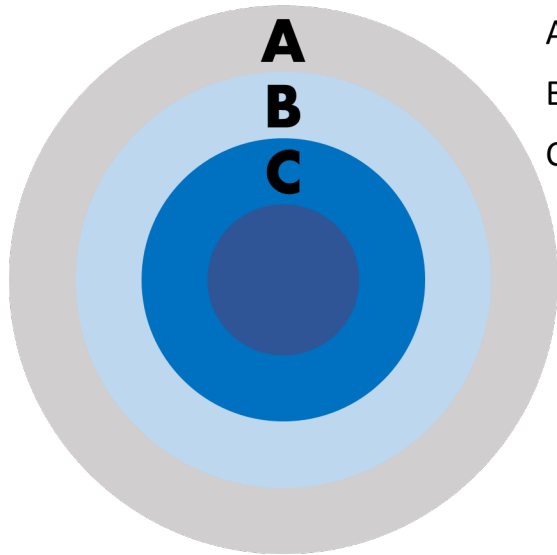
We expect the body adaptation **B**

To have an effect on the performance indicator **C**

Because {
Deduced from a theory
Induced by past observations

Testable

Discovery: Coach as Scientist (and Scientist as Coach)

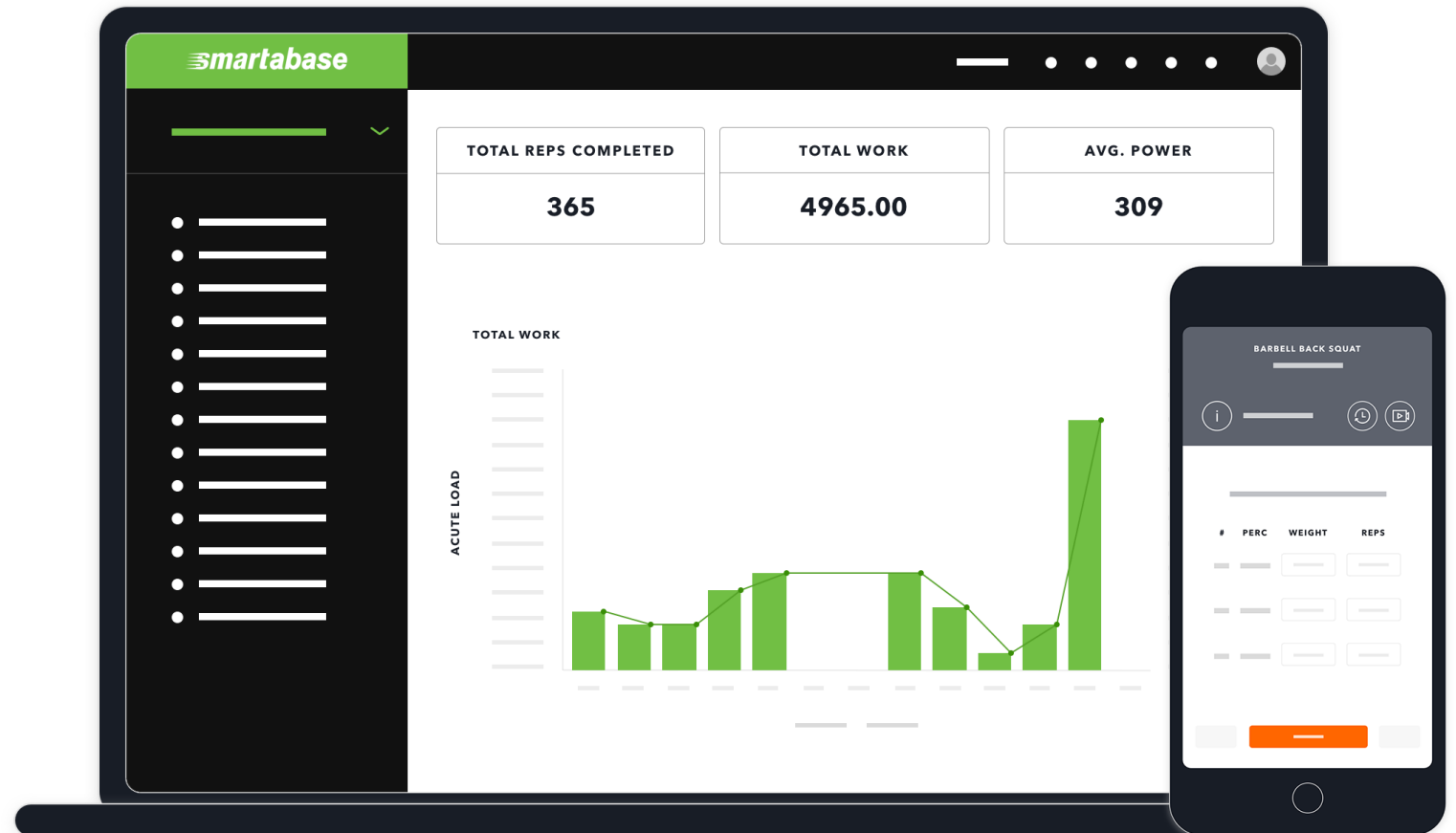


A: Intervention Variables

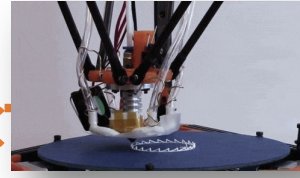
B: Body Functional Optimisation Variables

C: Performance Indicator Variables

Athlete Management System (AMS)



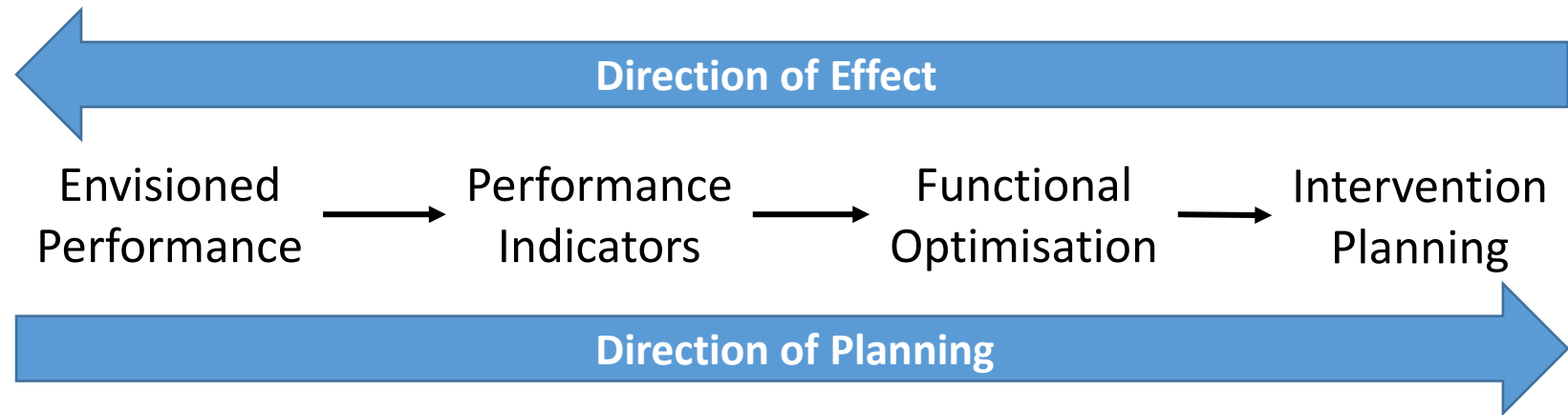
The Bridging Program: 3D Project



Development

Para Swimming Cycle of Success

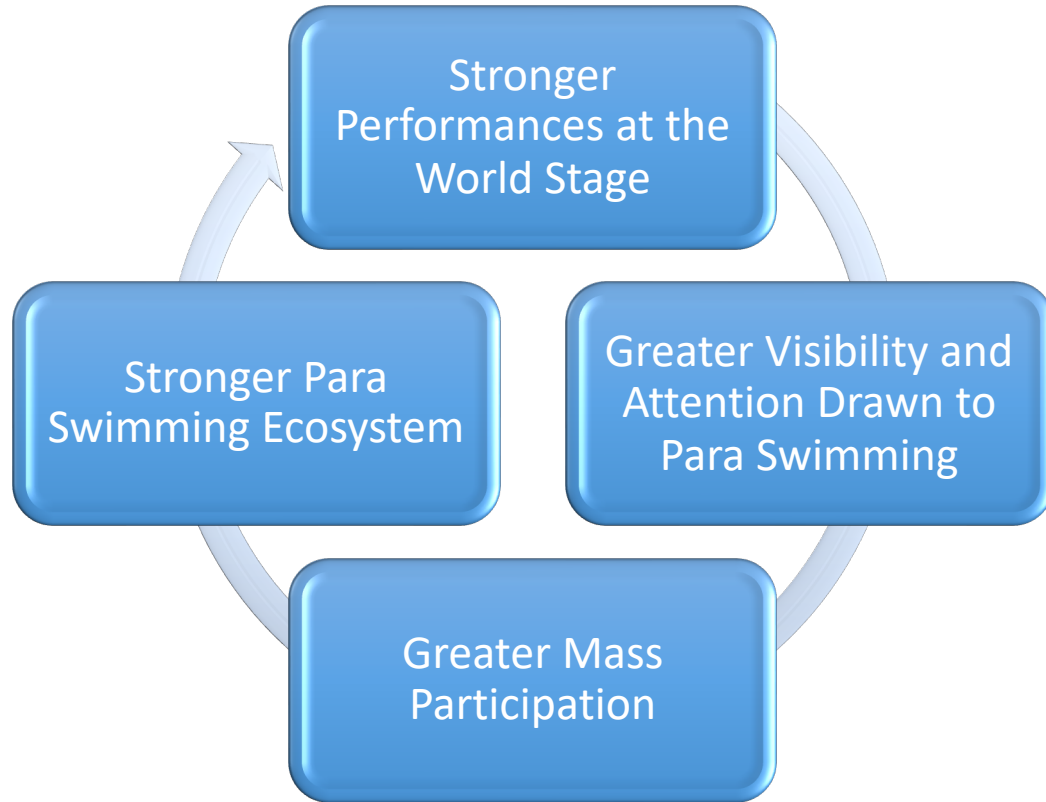
Direction



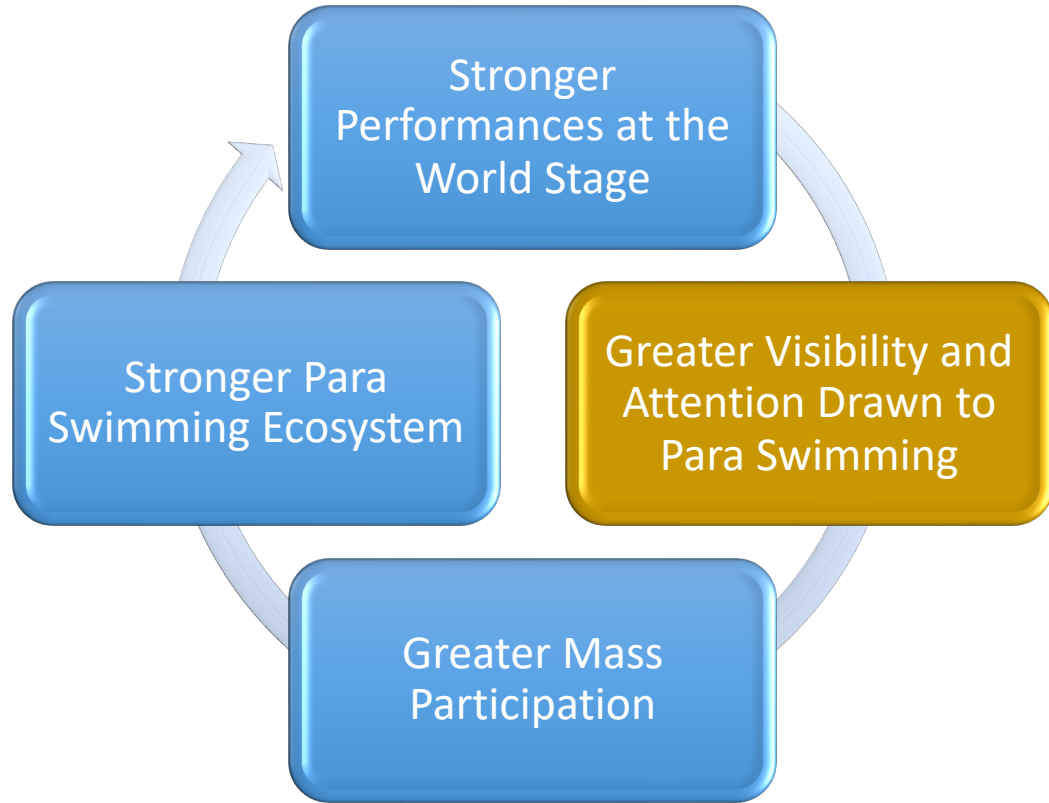
Discovery

Coach as Scientist (and Scientist as Coach)

Development: Cycle of Success for Para Swimming (and other sports...)



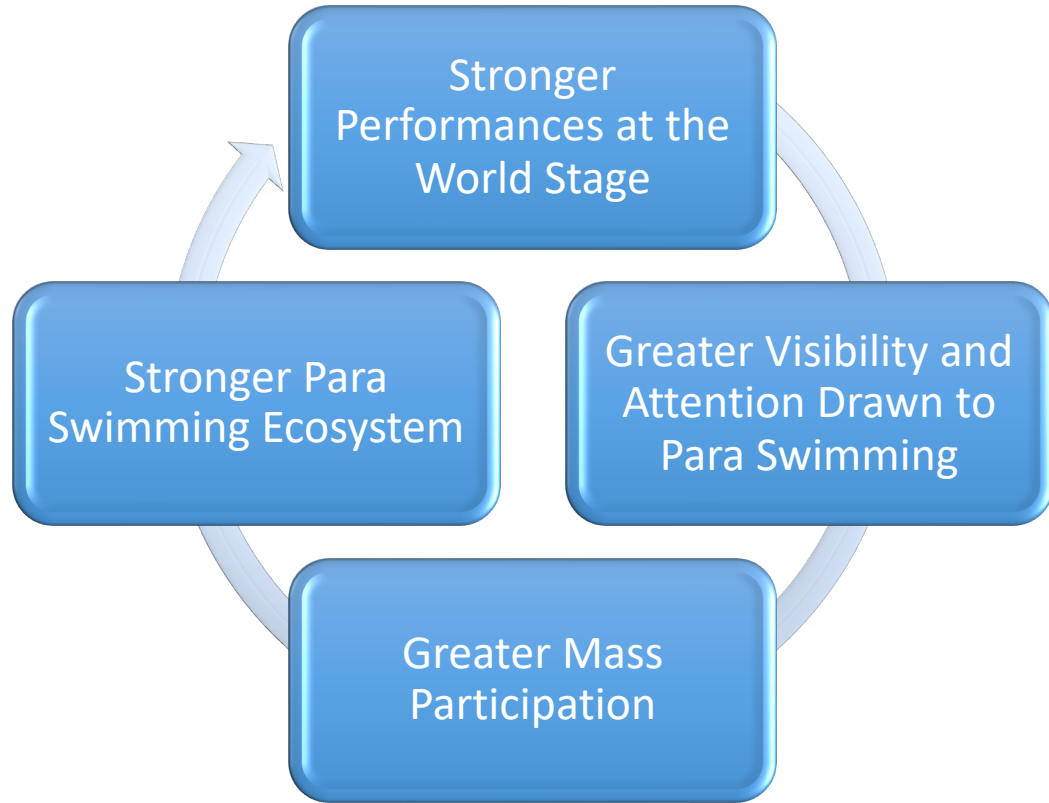
Development: Para Swimming Loop of Success



**SINGAPORE SPORT &
PERFORMANCE CONFERENCE 2022**

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

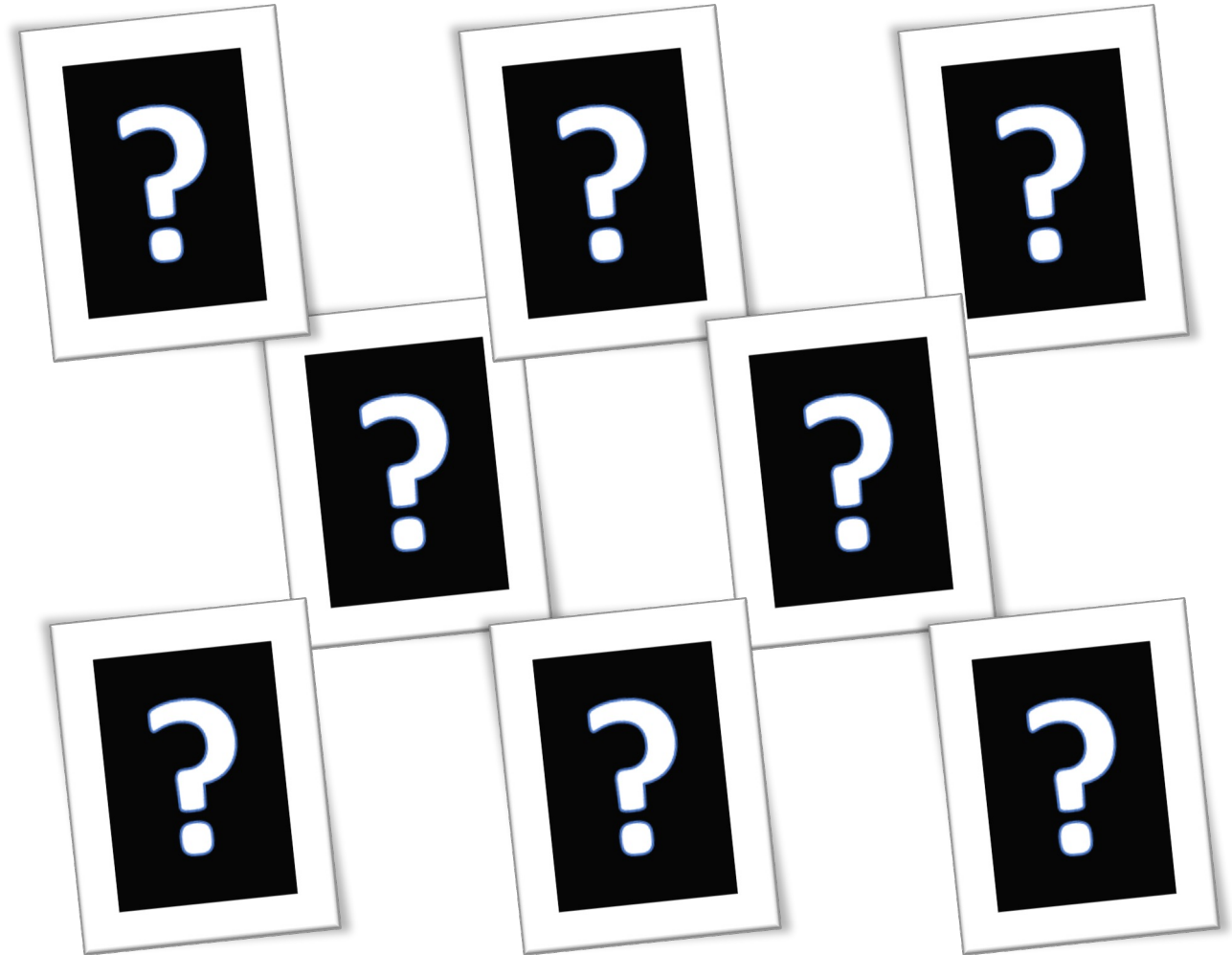
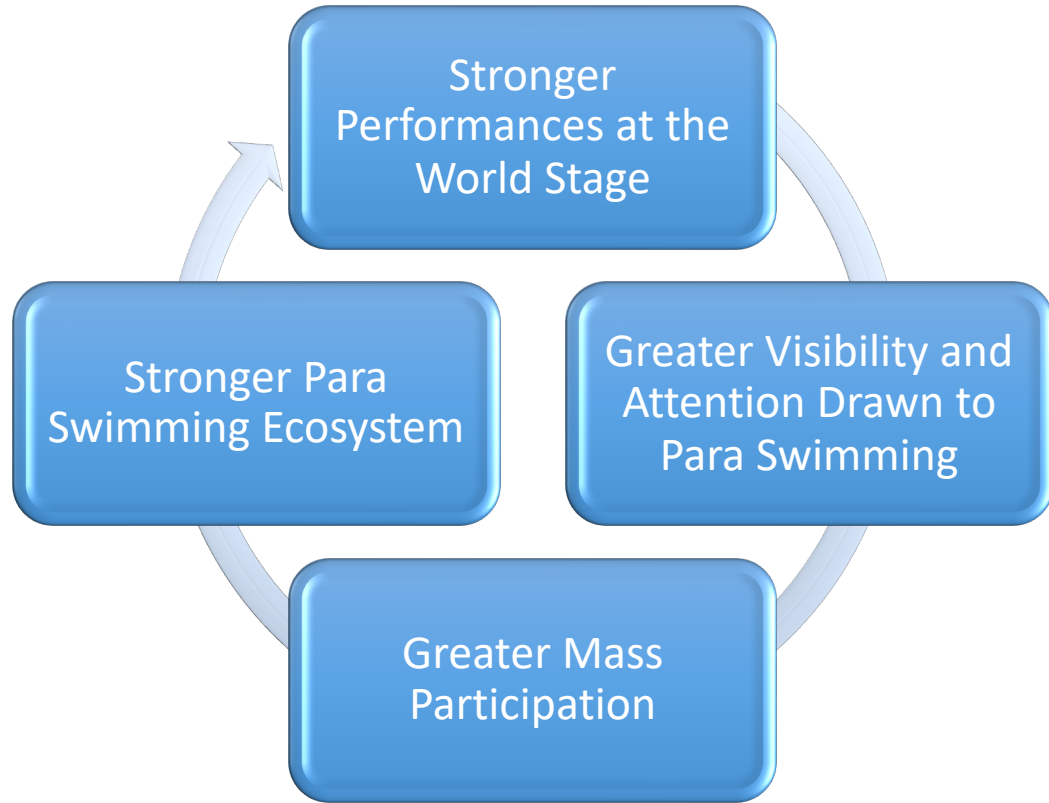
Development: Cycle of Success for Para Swimming (and other sports...)



SINGAPORE SPORT & PERFORMANCE CONFERENCE 2022

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

Development: Cycle of Success for Para Swimming (and other sports...)



**SINGAPORE SPORT &
PERFORMANCE CONFERENCE 2022**

From Youth to Elite Sport: Harnessing Potential and the Pursuit of Excellence

It Takes a Village...Thank You!

