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# The MacGyver Approach

Research & Innovation on a budget



# Why pursue innovation?



# Speed on a budget



# The WHO?

- <https://youtu.be/-L-KML-2tLQ>
- To “MacGyver: Make or repair (an object) in an improvised or inventive way, making use of whatever items are at hand.”



# Paperclips and chewing gum

- ❑ Prioritize – diminishing gains
- ❑ Data quality
- ❑ Money doesn't guarantee good results
- ❑ Trust the right people
- ❑ Be creative
- ❑ PARTNER with people – what can you add?



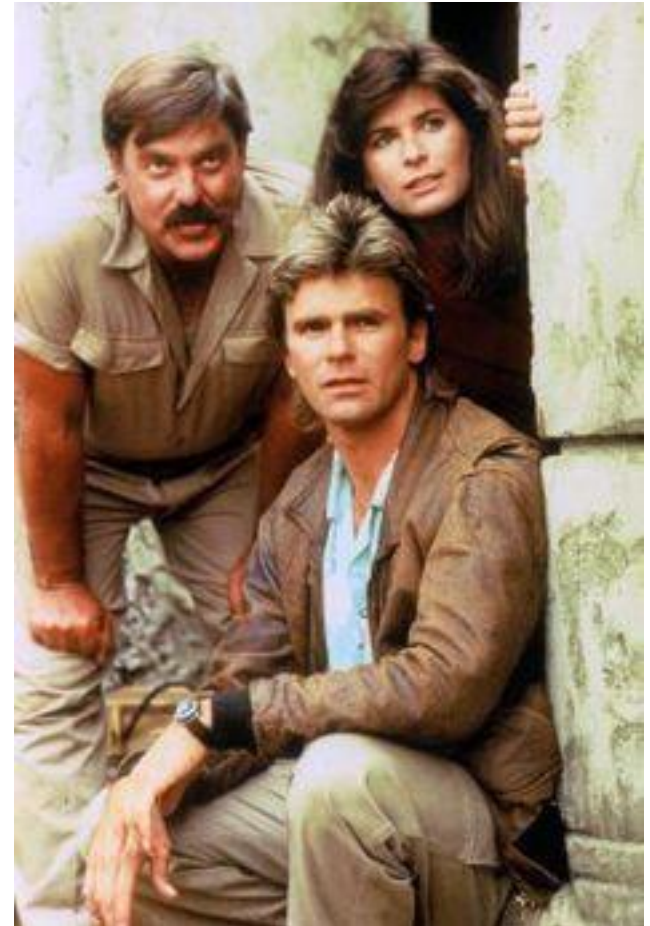
# “Think, MacGyver, think!”

- ❑ What is the performance question?
- ❑ What do you have already?
- ❑ Are there cheap ways of testing that provide high quality data?
- ❑ Who else is trying to beat your top competition?
- ❑ Who knows what you need to know already?
- ❑ What new areas can you look at?



# Partners

- Louis Garneau Sports Inc
- Argon 18
- Thought Technologies
- 4iiii
- Lululemon
- Alphamantis





# External Experts

- Len Brownlie (Aerodynamics)
- Andy Froncioni (Field aerodynamics, programming)
- STACZero (CFD)
- ... others...



# How did our approach evolve?

- Coaching question, boredom and a hair dryer
- <https://youtu.be/-2kQcn9uJqs>
- “Innovation happens when you put nice, smart, curious people with diverse backgrounds together and let them work”
- Developed the model for future partnerships

# Episode 1: The Force Awakens



- From “... if we could measure windspeed on the track...” to live timing and field aerodynamic testing
- Mike Patton, Andy Froncioni, Allan Klack, Josef Gebel, Allan Kobelansky

# Fail Hard.

Failure is an  
option here. If  
things are not  
failing, you are  
not innovating  
enough.

- Elon Musk

# Don't fail the same way twice

- Creation of Tokyo 2020 workgroup and partnerships
- We have to add value to our partners in more than just media exposure
  - Research and innovation project management
  - Connection to external experts
  - Need to develop for high performance and be conscious of retail needs
- Coach and athlete feedback process to partners



# Learning lessons from others

the star.com

Sports · Sochi 2014

## U.S. speed skaters ditch new Under Armour skinsuits

Embarrassing change of course can be traced to process filled with secrecy and questionable decisions.

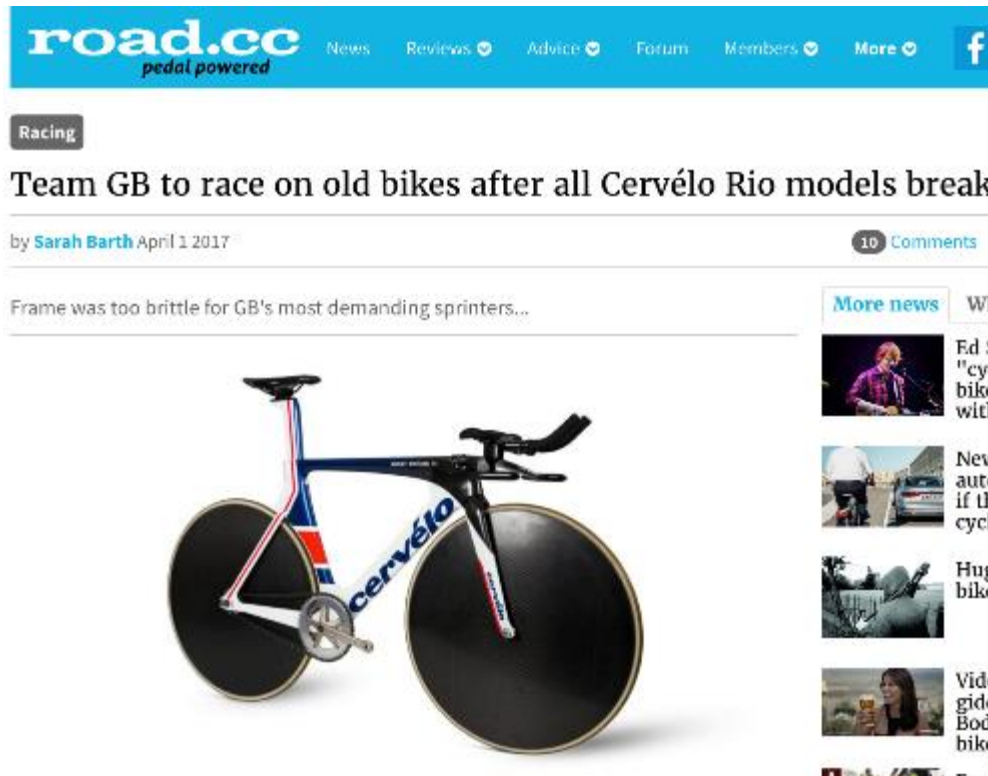


U.S. speed skater Shani Davis and his teammates are ditching their new Under Armour skinsuits in favour of their old ones after poor results across the board in Sochi. (MATT DUNHAM / THE ASSOCIATED PRESS)

By The Associated Press  
Sat., Feb. 15, 2014

- Be careful how you use the media
- Test field results before Olympics!
- Introduce new things in training early – don't necessarily use in competition until key event

# Learning lessons from others



The screenshot shows the road.cc website header with navigation links for News, Reviews, Advice, Forum, Members, and More. The article is in the 'Racing' category and is titled 'Team GB to race on old bikes after all Cervélo Rio models break' by Sarah Barth, dated April 1, 2017, with 10 comments. A sub-headline reads 'Frame was too brittle for GB's most demanding sprinters...'. The main image is a blue and white Cervélo Rio road bike. A 'More news' sidebar on the right lists other articles: 'Wh Ed S "cyc bike with', 'New auto: if the cycli', 'Hugs bike', and 'Vide: gidd: Bodc bike'.

- Don't leave delivery of final product too late!
- Athletes need to be involved in development process
- Innovators can't be completely separate from the team

# Learning lessons from others

## Illegal bike setup sees New Zealand disqualified from Commonwealth Games team pursuit

Henry Robertshaw  
April 5, 2018 11:51 am

   0 shares

They were just five millimetres out



New Zealand were disqualified from the Commonwealth Games team pursuit Credit: Ryan Pierson/Getty Images



# Team engagement costs nothing

- Athletes need to be aware and involved
- Trust is crucial
- Information can be carefully controlled
- Improves chance that final product will meet the team's needs
- Small investment needed to bring key partners to deliver prototypes

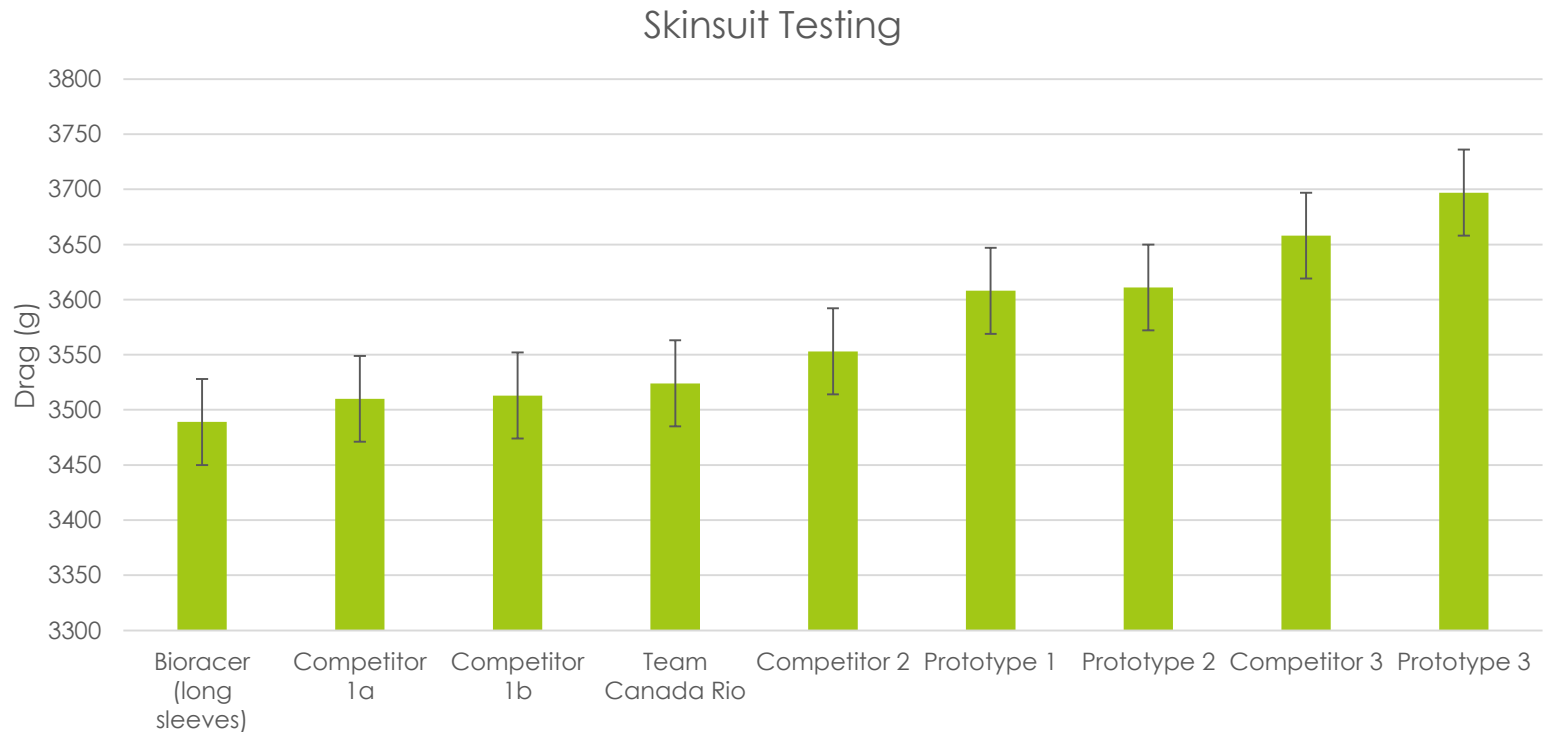


# Collaboration

- Within Cycling Canada
- With external partners
- With other Canadian sports?
- With other cycling nations?
- With competitor manufacturers?
- Sharing knowledge and resources



# Data sharing with collaborators



# Isn't sharing a bad idea?

- Bond approach rather than MacGyver approach
- Implementation is the hardest part
- Nothing is new, nothing is really “secret”
  - I.E. Vortex generators



# Key Messages

- Innovation does not have to be expensive
- Be mindful of implementation
- The enemy of your enemy is your friend...
- Sponsorship and Partnership are different
- Consider opportunity cost
- You can't ignore innovation and be consistently competitive
- It's possible to simply buy excellent products and not innovate in-house

**ONLY HAVE SOME PAPERCLIPS  
AND YARN TO SAVE THE WORLD  
YOU SAY?**

**TOO EASY.**