

FISH OUT OF WATER



Issues and Options in Moving Heavy
Vehicles Around Deck

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ISSUES?

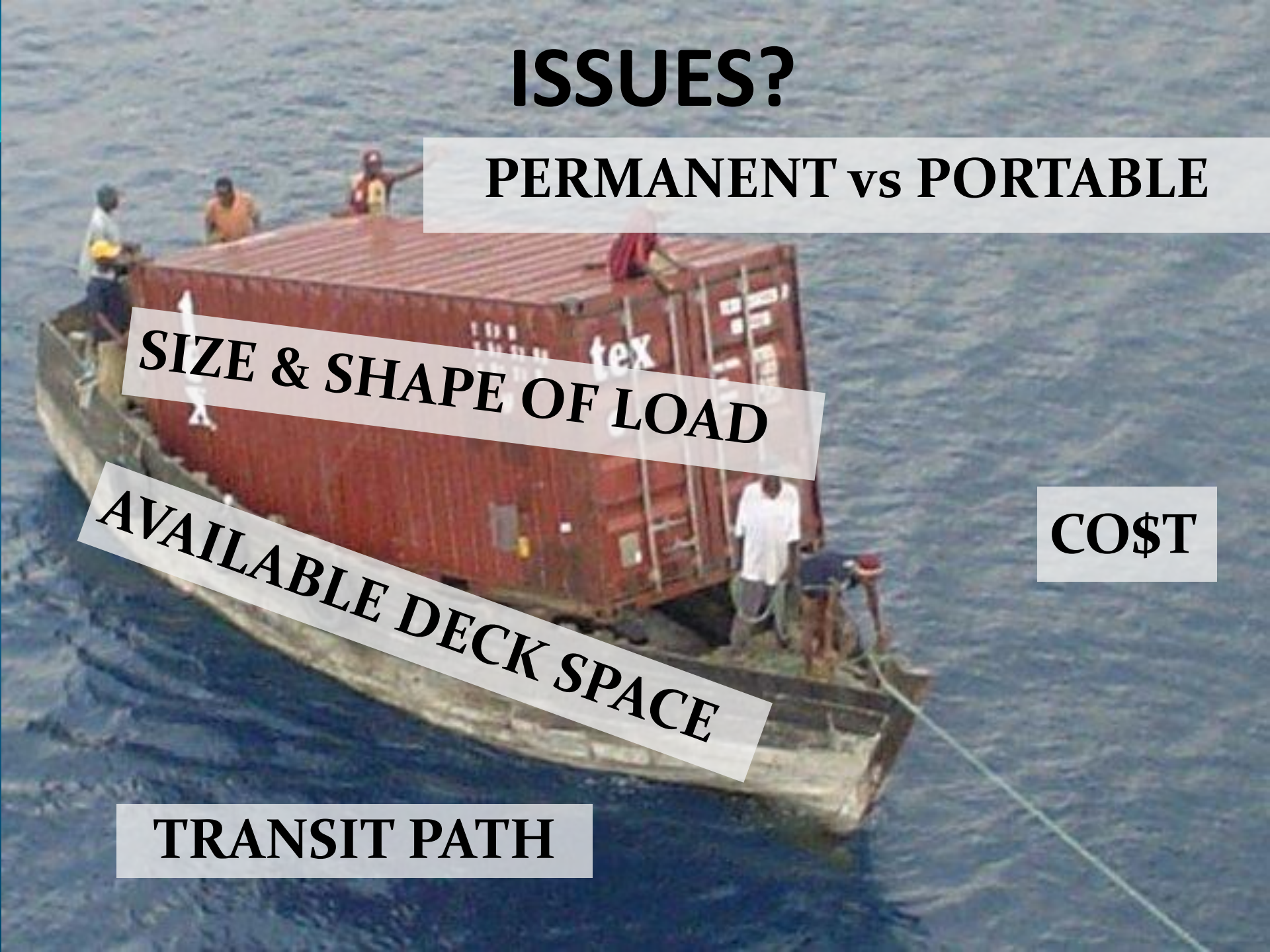
PERMANENT vs PORTABLE

SIZE & SHAPE OF LOAD

AVAILABLE DECK SPACE

COST

TRANSIT PATH



ISSUES



VESSEL STABILITY

ISSUES

DURABILITY AND MAINTENANCE



ISSUES

LABOR

A historical photograph showing a large group of men pulling a massive stone block on a ramp. The men are arranged in a long line, pulling ropes attached to the block. The scene is set outdoors on a dirt or sand surface. The word "LABOR" is overlaid in bold, black, italicized text on the right side of the image.



ISSUES

**POSITION
CONTROL**

OPTION: TRACK SYSTEMS

A steam locomotive is crossing a wooden trestle bridge over a valley. The locomotive is emitting a large plume of white steam. The bridge is made of dark wood and has a sign on it that says "WILLIAMS". The background shows a hazy, mountainous landscape under a blue sky.

GENERALLY HIGHER COST

HIGHER LEVEL OF CONTROL

FAVOR LINEAR PATH

**INSTALLATION CAN
BE CHALLENGING**

TRACK SYSTEMS – ROLLERS VS GLIDES

ROLL RESISTANCE VS MOTION ARREST

ROLLERS – WHEELS AND/OR BEARINGS

- LOW FRICTION – EASIER TO MOVE
- SMALLER CONTACT SURFACE – HIGH PSI
- FAVORS COMPLEX PATHS
- HIGHER MAINTENANCE – DAMAGE PRONE

GLIDES – BAR STOCK AND SADDLE

- LARGER CONTACT AREA
- HIGHER FRICTION = HARDER TO MOVE
- LOWER MAINTENANCE

**HEAVY
DUTY
TRACK**

RV - ATLANTIS

- **COG WHEEL DRIVE
BUILT INTO CART**
- **SIGNIFICANT
OBSTRUCTION**



LIGHT DUTY ROLLER TRACK



V-GROOVE AND ANGLE STOCK

WHEEL CAPTURE (CHANNEL STRUT)



LOAD UP TO 250 Kg

HIGHLY COST EFFECTIVE

USE VERTICAL AS SUPPORT

HORIZONTAL FOR CART STABILIZATION

CHANNEL STRUT CLEAR OF DEBRIS



HEAVY DUTY GLIDES - KOK

SIMPLE AND COST EFFECTIVE

IDEAL FOR VERY HIGH LOADS (14 TON +)

CHAIN AND HYDRAULIC DRIVE

PERMANENT IMPEDIMENT TO OTHER OPS

MEDIUM DUTY GLIDE – KILO MOANA

MacGyver – GLIDE AND CART SYSTEM

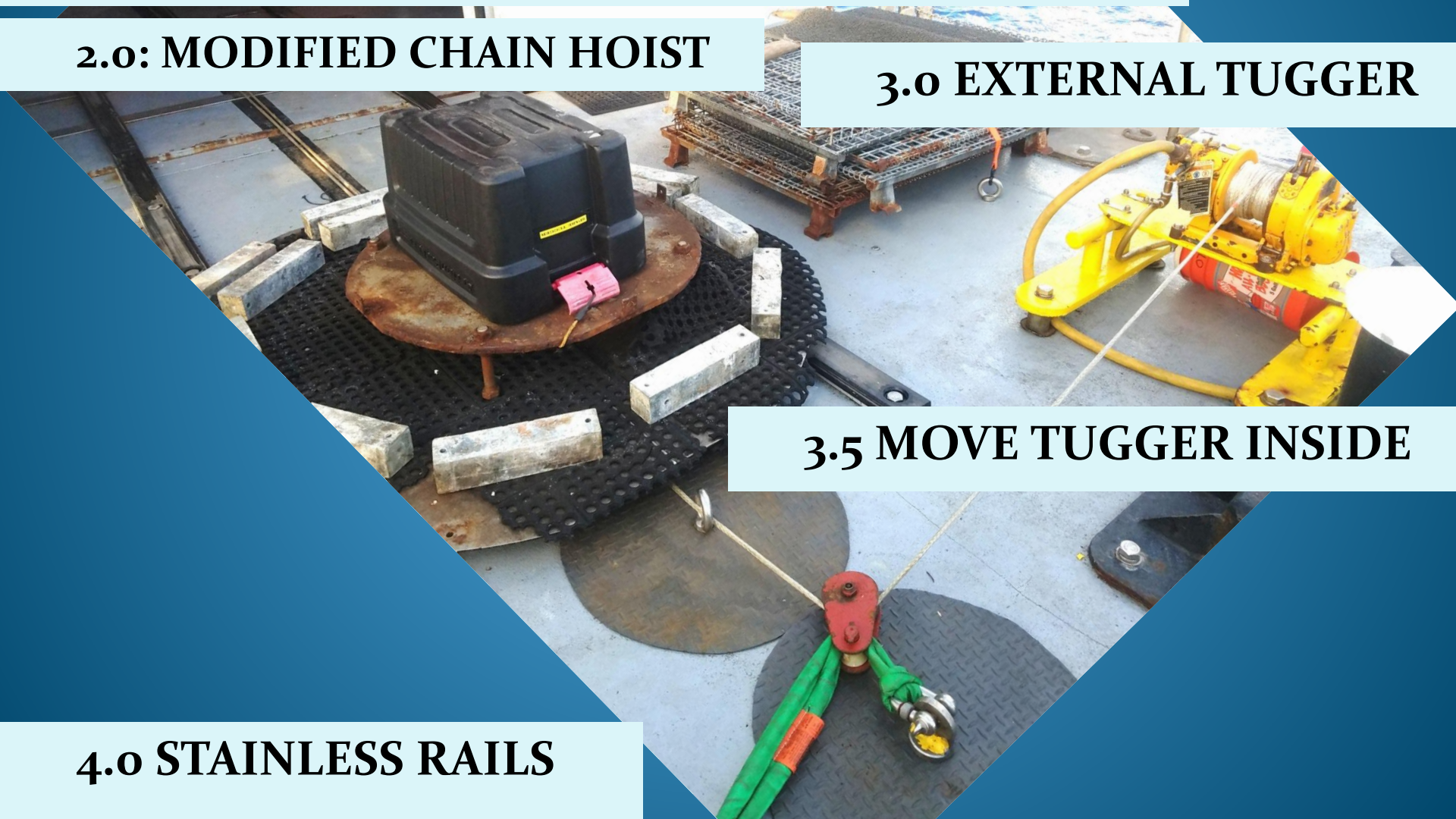
1.0: DELRIN RAILS, WIRE ROPE WINCH & PULLEY

2.0: MODIFIED CHAIN HOIST

3.0 EXTERNAL TUGGER

3.5 MOVE TUGGER INSIDE

4.0 STAINLESS RAILS



TRACKLESS SYSTEMS

A yellow and black amphibious vehicle, possibly a military or utility vehicle, is shown from a rear-quarter perspective on a body of water. The vehicle has a canopy and is moving towards the right. The background shows a forested shoreline.

MOBILIZATION IS USUALLY A LOT EASIER

PREFERABLE FOR COMPLEX
PATHS

DECK IS (MOSTLY) FREE OF OBSTRUCTIONS

CONTROL CAN BE AN ISSUE

- GENERALLY LESS PRECISE
- USUALLY ON WHEELS (HIGHER MAINTENANCE)
- FAVOR CALMER CONDITIONS
- ADDITIONAL SECURING IS REQUIRED

**TRACKLESS
Gold Standard**



30 DEGREE SLOPE

SELF PROPELLED

BELLY PACK CONTROLLED

SUB OPS –

CO\$\$\$\$\$\$T?

OceanXplorer

TRACKLESS – BARGAIN BASEMENT

“POSITIONING” TURNTABLE
IS HUGE ADVANTAGE

EASY TO MOBILIZE

SIMPLE BRAKE SYSTEM

MAINTENANCE?



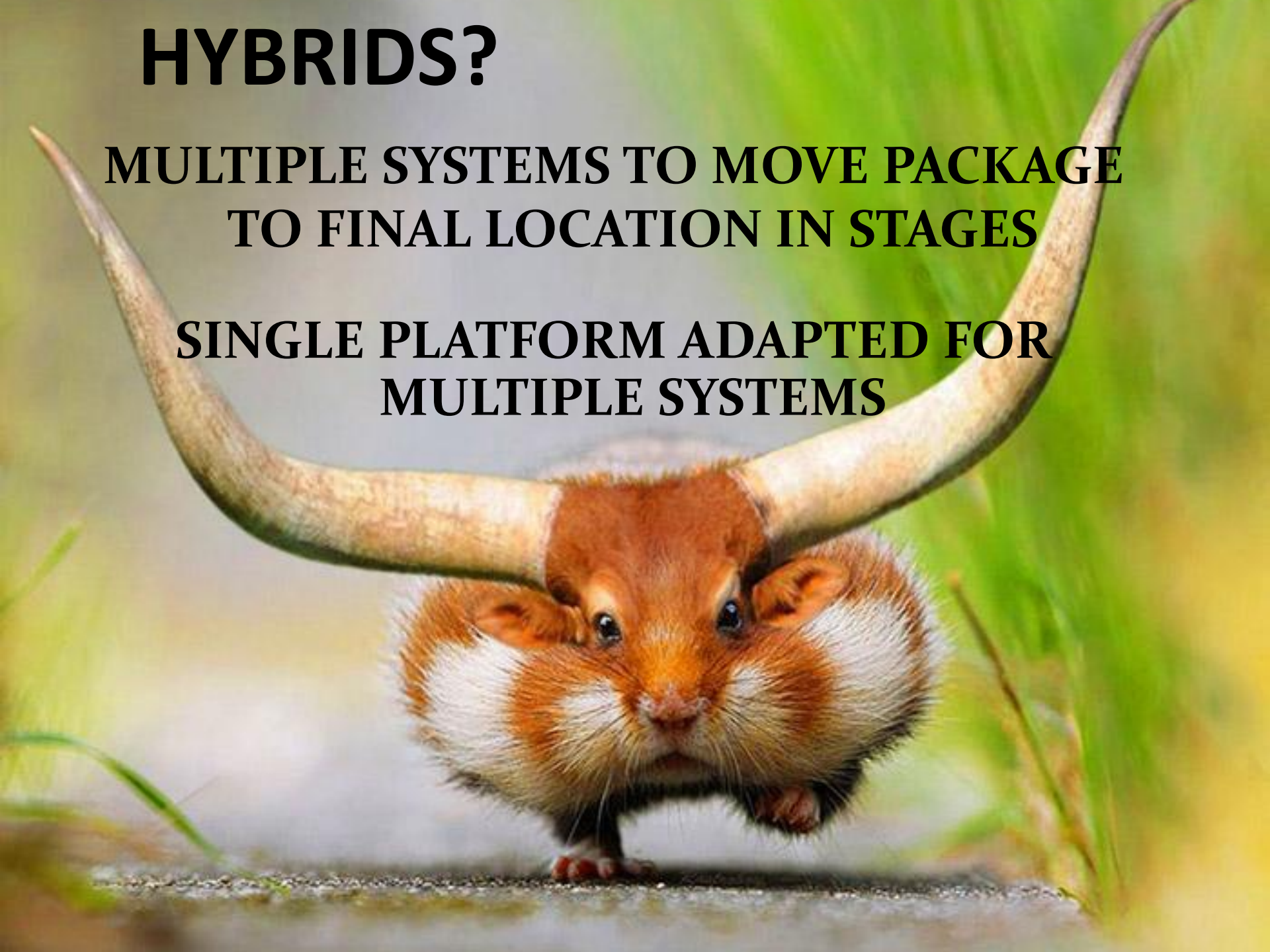
250 €

CAPACITIES
450 – 2700Kg

HYBRIDS?

**MULTIPLE SYSTEMS TO MOVE PACKAGE
TO FINAL LOCATION IN STAGES**

**SINGLE PLATFORM ADAPTED FOR
MULTIPLE SYSTEMS**



TRACKLESS CART

FORK LIFTING
POCKETS

COMMERCIALY AVAILABLE INDUSTRIAL SUPPLY

JACK SCREW BRAKE



ALUMINUM BOX STOCK FITS FORK POCKET

LIMIT BUMPERS



BOAT TRAILER ROLLERS WITH BOLT AND CHAIN LINKS

TRACK SYSTEM CART

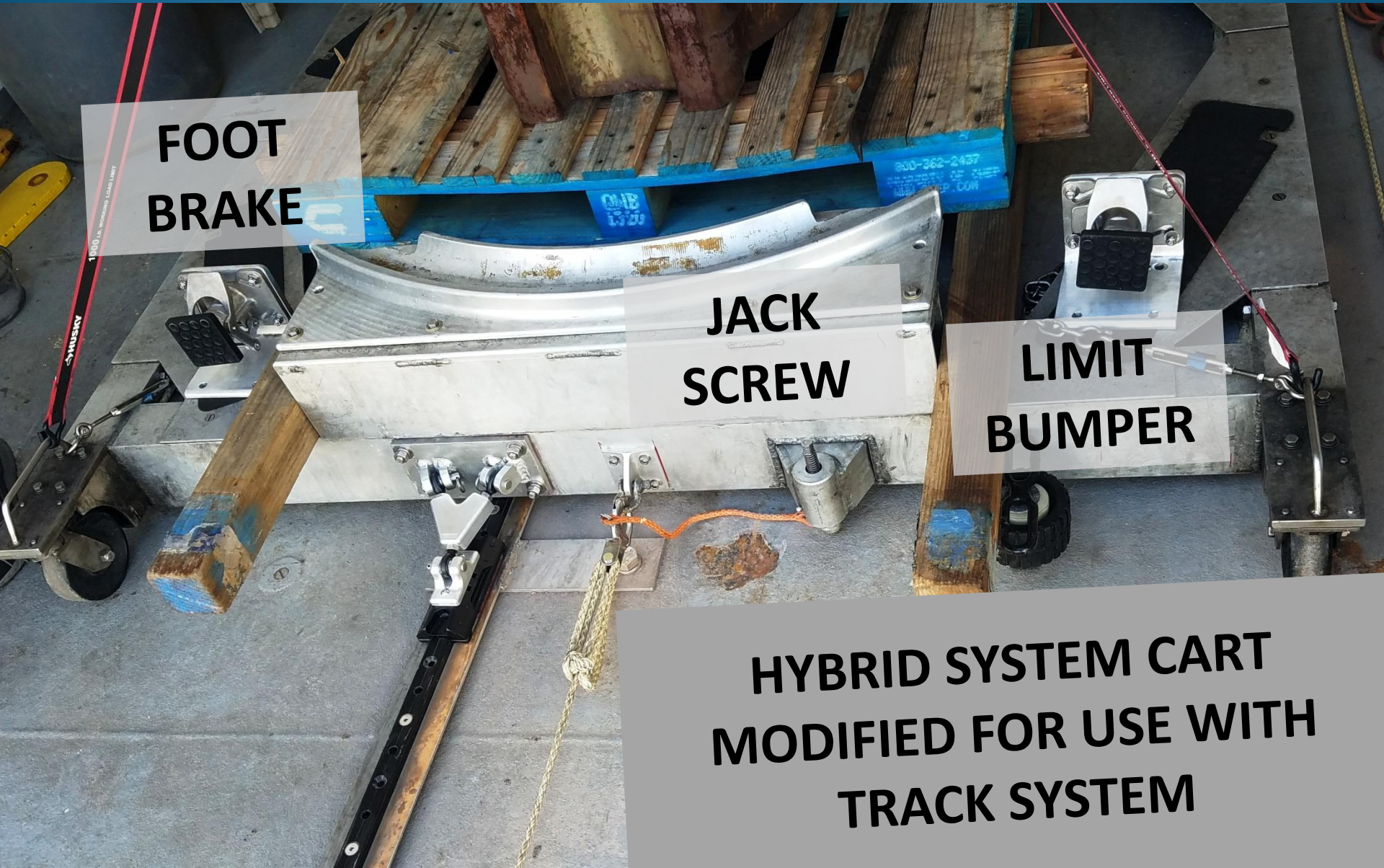
(EARLY LOAD TEST)

FOOT
BRAKE

JACK
SCREW

LIMIT
BUMPER

HYBRID SYSTEM CART
MODIFIED FOR USE WITH
TRACK SYSTEM



SPINNAKER TRAVELER CAR

MULTIPLE BALL JOINTS TO RIDE OVER UNEVEN DECK

WISHBONE FOR LATERAL STRENGTH

PULL PINS FOR EASY
CONVERSION TO
TRACKLESS

SPINNAKER CAR
SLIDES ON RAIL


RAIL SCREWED TO
SUPPORT PLATE

WELDED TO
LATERAL
SUPPORT

BOLTED TO
DECK ON
24" CENTER

QUICK RELEASE FOR TUGGER LINE





**VEHICLES
ARE THEN
STACKED ON
2ND CART**

PULLING IT ALL TOGETHER



**TRACK CONSTRUCTED IN
4 SEPARATE SECTIONS**

**HAND CARRIED ABOARD
DURING MOBILIZATION**




**1ST VEHICLE
IS STAGED
AND CART
REMOVED**

THANKS!

- CSIC – UTM - INMARTEC
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- John Calderwood – SCRIPPS
- Steve Price – Hawaii URL
- Webb Pinner – OceanXplorer



A group of 15 stylized 3D human figures in various colors (purple, blue, cyan, green, yellow, orange, red) are arranged in a circle on a white surface. Each figure is in a different pose, some sitting at desks, some standing, and some leaning forward. In the center of the circle is a semi-transparent grey rectangle containing the text "OPEN SPACE" in bold black letters.

**OPEN
SPACE**