



People and Plant Interaction: A view from the cab



Charles Stevenson, General Manager – JCB London Office
Thursday 7th September, 2017



Overview

6th Sense - Proximity Braking

Line of Sight - `Site` dumpers

The Mk1 Eyeball - Hydradig



Proximity Braking: a product upgrade



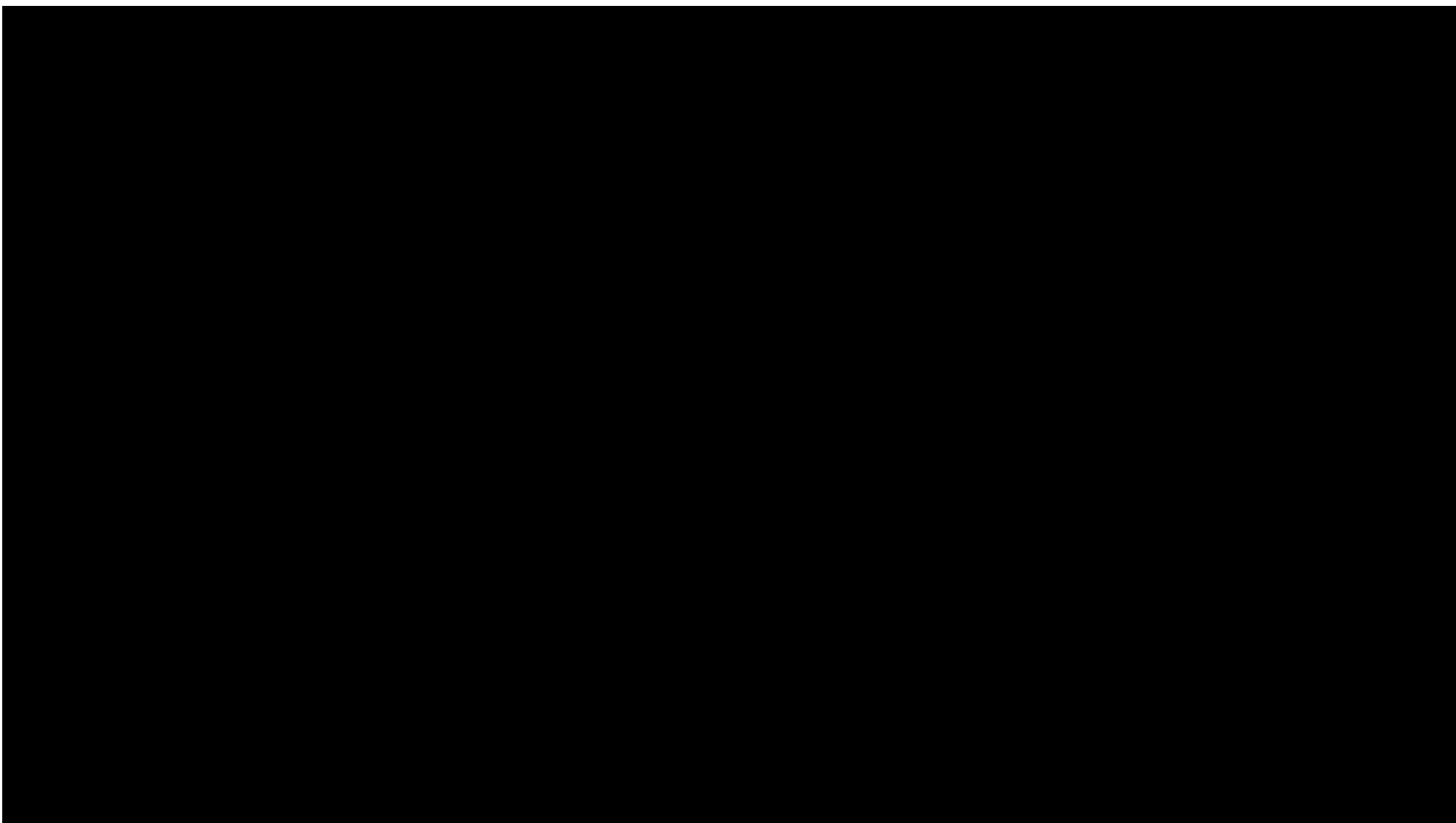


Features



- Detection zone providing a 'bubble' around the machine,
- Vibrating transponder to warn the pedestrian,
- Audible warning in the cab for the machine operator,
- Automatic braking to help reduce the risk of a collision.







Site dumpers: a product evolution



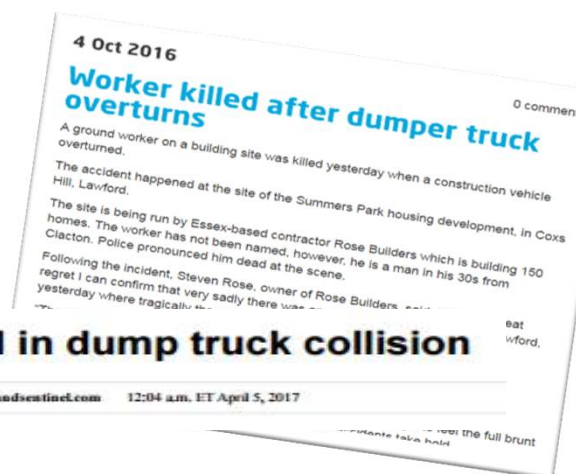
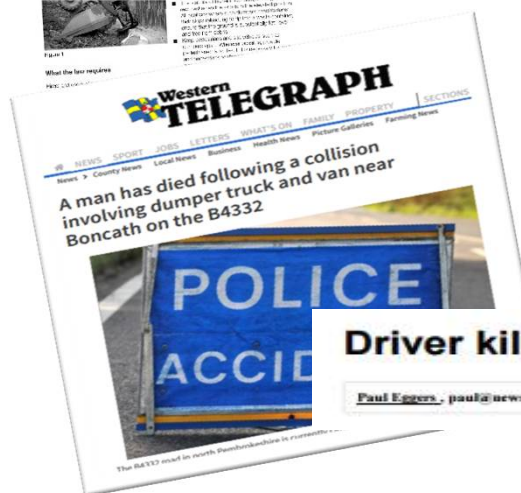
Site Incidents



Site dumpers are involved in around a third of construction transport accidents, causing many deaths and serious injuries

OH BROTHER! Man almost killed after being crushed under a three-tonne dumper truck being driven by his own BROTHER

Plumber Dave Green became trapped under the vehicle operated by his sibling Danny when it tipped over





What is a typical site?

1-2T

- Urban site – City
- Flat ground
- Small load
- Fenced site



3/6T

- Housebuilding site
- Roadways
- Medium load
- Segregated



6/9T

- Civil site
- Dry ruts and mud
- High load
- Un-segregated site



10T+

- Large site
- Off-road
- Bulk work
- Segregated site





Current options

6/9T

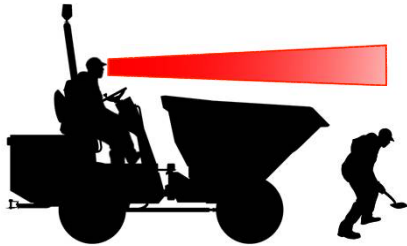
- Poor front visibility
- Unstable - heaped
- Un-protected operator





Site Dumpers Today – 3 Challenges

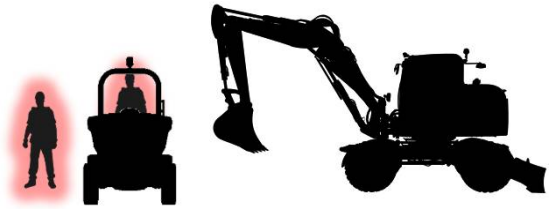
1 Visibility



2 Stability - Loaded

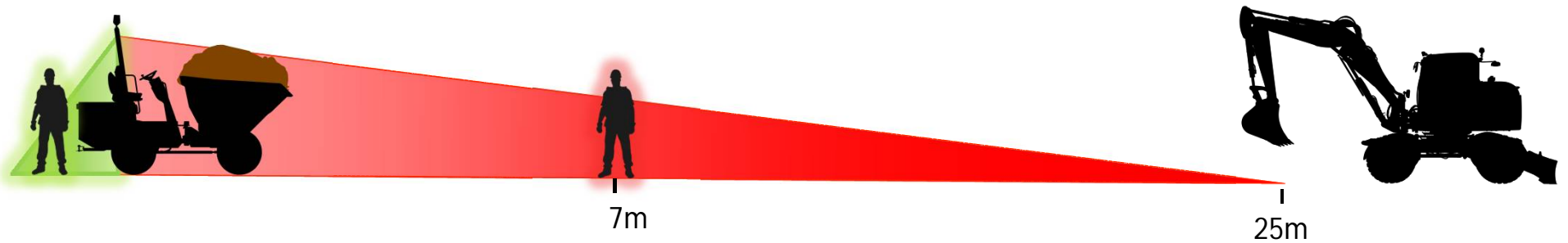


3 Operator Protection





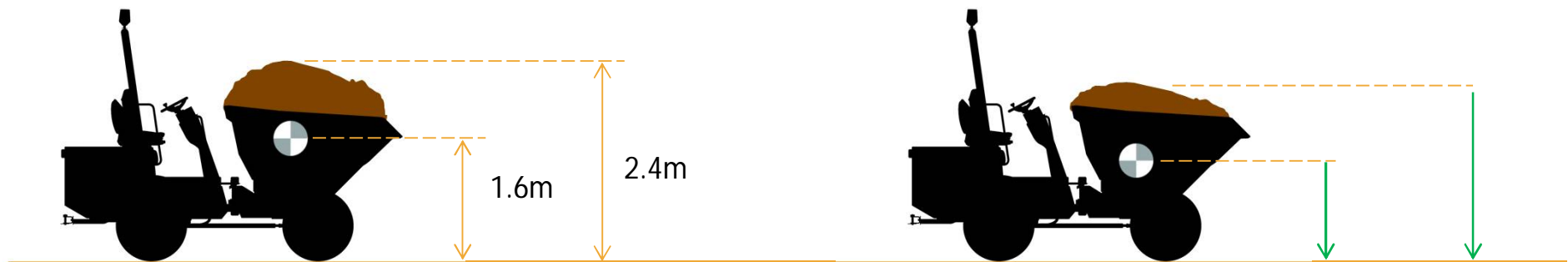
Forward Visibility Challenge



All round visibility ✓



Stability Challenge



Lower COG ✓

No loss in: Payload, Ground Clearance, Turning Circle



Operator Protection Challenge

1 Roll over protection



2 Operator impact during loading



3 Operator off machine during loading





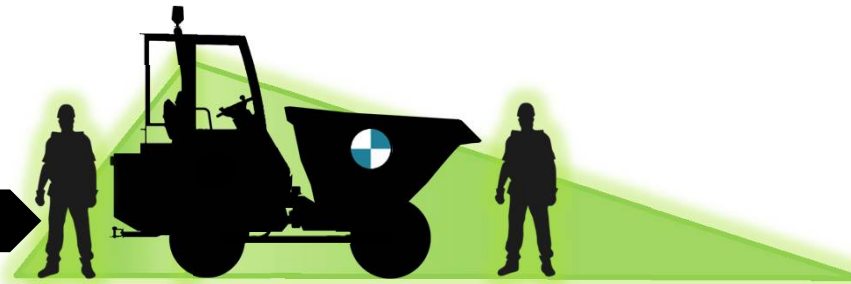
Solution?

JCB Hi-Viz Dumper Concept

Visibility

Stability

Operator protection



Innovation checklist

1. Front Visibility ✓
2. Rear Visibility ✓
3. Stability ✓
4. Operator Protection ✓
5. Maintain Ground Clearance ✓
6. Maintain Turning Circle ✓
7. Maintain Simplicity ✓
8. Maintain overall height ✓
9. Three per lorry load ✓
10. 7t / 2m³ Liquid Volume ✓



7 Tonne Hi-Viz Concept



JCB 7FT HI VIZ





HYDRADIG: a product revolution

URBAN & CONGESTED sites are becoming increasingly complex



Customers need a highly mobile machine capable of:



DIGGING, LOADING, LIFTING, PLACING & MOVING MATERIAL

Today's Compromise

Design Challenge

Restricted view
over engine

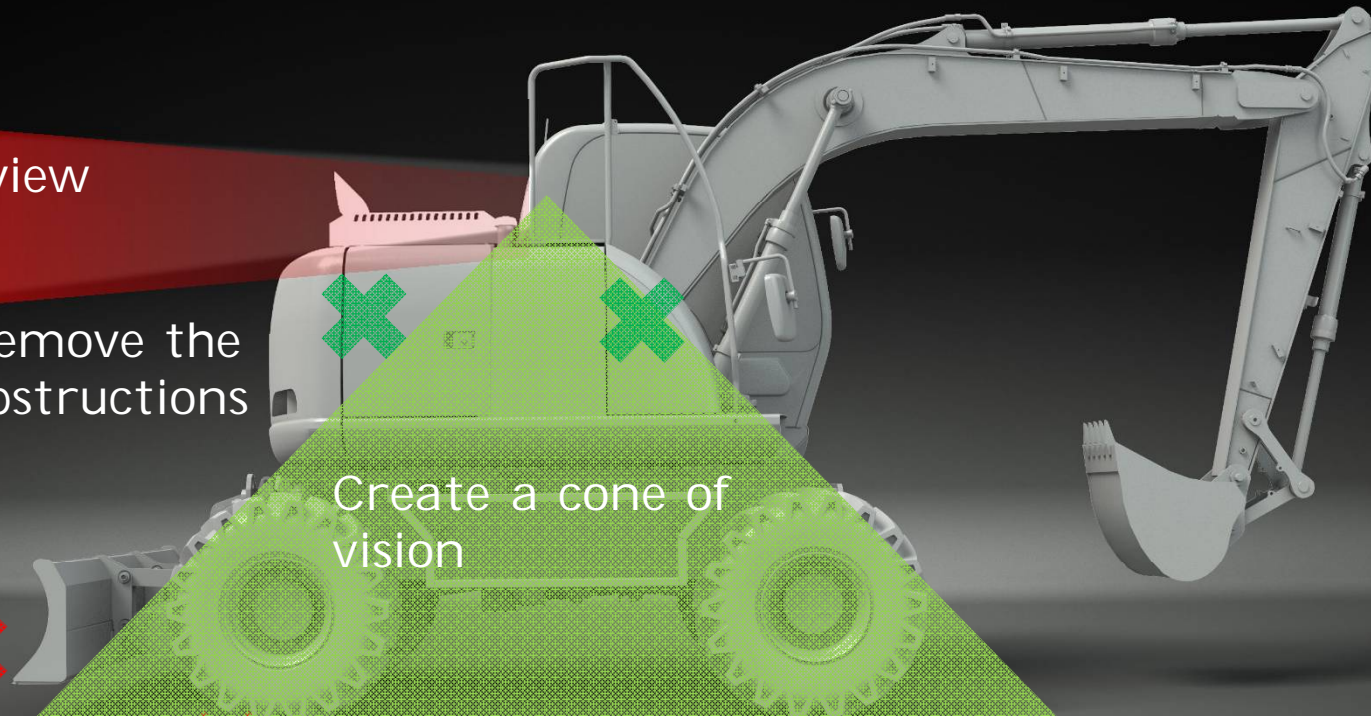
Remove the
obstructions

Create a cone of
vision

Blind spots

VISIBILITY

JCB HYDRADIG



Today's Compromise

Design Challenge

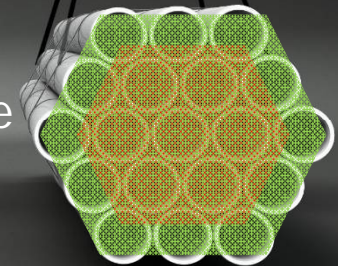
Large rear
overhang
Zero
tailswing



High centre
of gravity

Lower the
CoG

Double the
payload



Can't handle
large payloads

Perfect stability

Small machines
not stable

STABILITY

JCB HYDRADIG

Today's Compromise

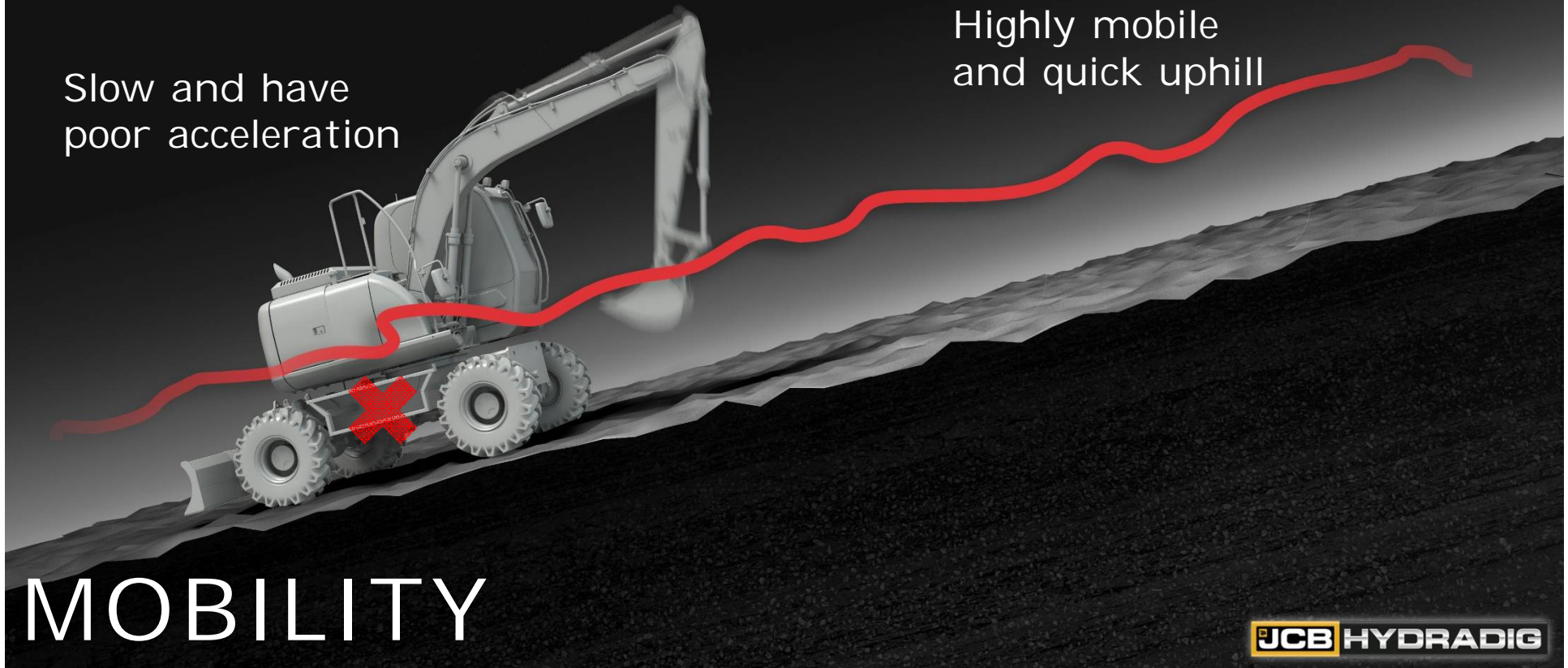
Design Challenge

Slow and have
poor acceleration

Highly mobile
and quick uphill

MOBILITY

JCB HYDRADIG



Today's Compromise

2 wheel steer –
large turning circle

4 wheel steer –
small turning circle

Design Challenge

Difficult to
operate on
congested sites

MANOEUVRABILITY

JCB HYDRADIG

Today's Compromise

Design Challenge



Not safe
working at
height

Safe, ground level
service access

SERVICEABILITY

JCB HYDRADIG

JCB HYDRADIG

visibility

re-position the engine

stability

lower the CoG by over 0.5m

mobility

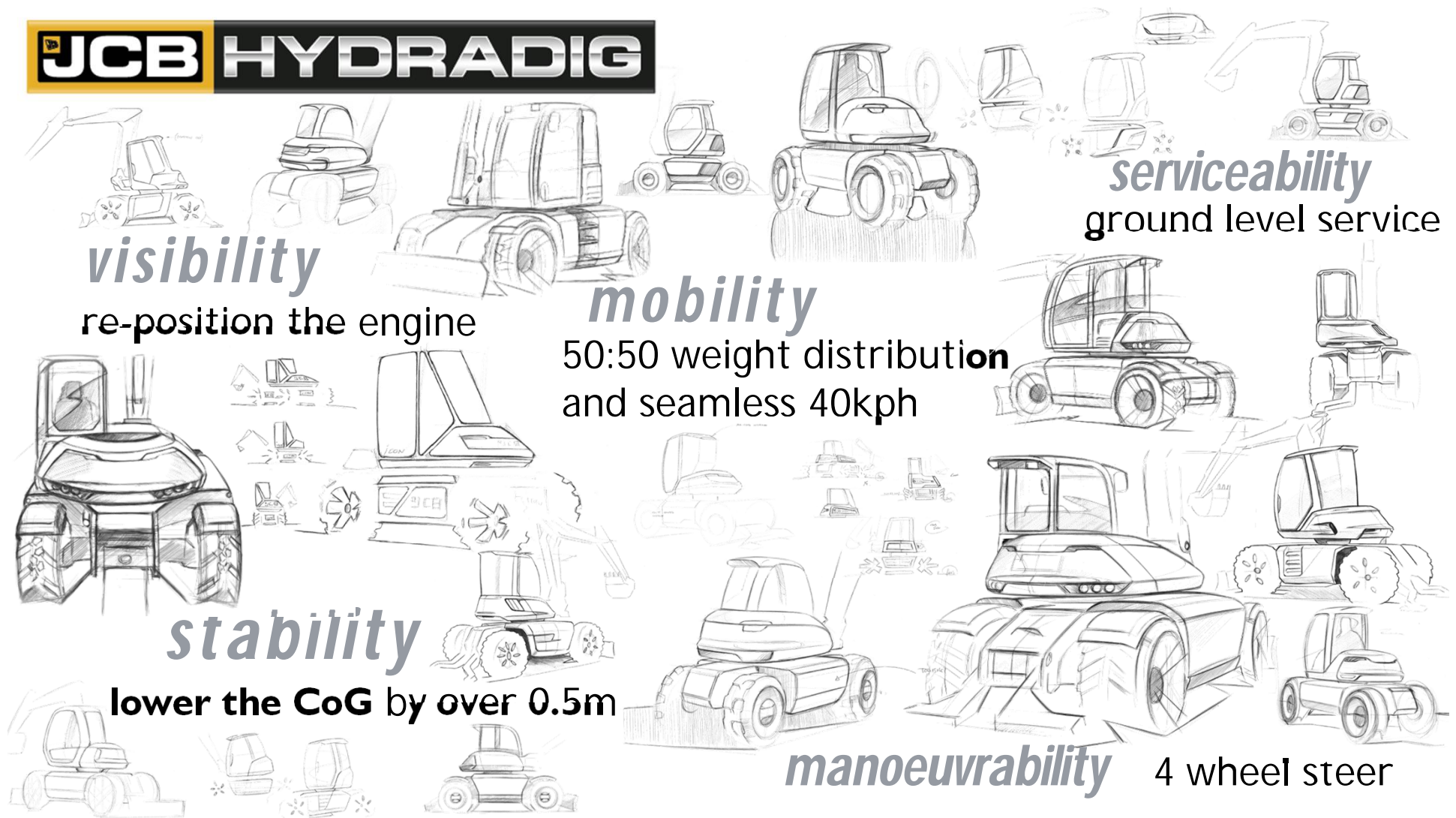
50:50 weight distribution
and seamless 40kph

manoeuvrability

4 wheel steer

serviceability

ground level service





FIRST FOR

VISIBILITY



All round visibility to ground level

FIRST FOR

STABILITY



Lift 1,000kg over the side, with zero tail swing

FIRST FOR

MOBILITY



40 kph roading with a stepless hydrostatic transmission

FIRST FOR

MANOEUVRABILITY



2 wheel, 4 wheel and crab steer for go anywhere capability

FIRST FOR

SERVICEABILITY



Safe, ground level service access

