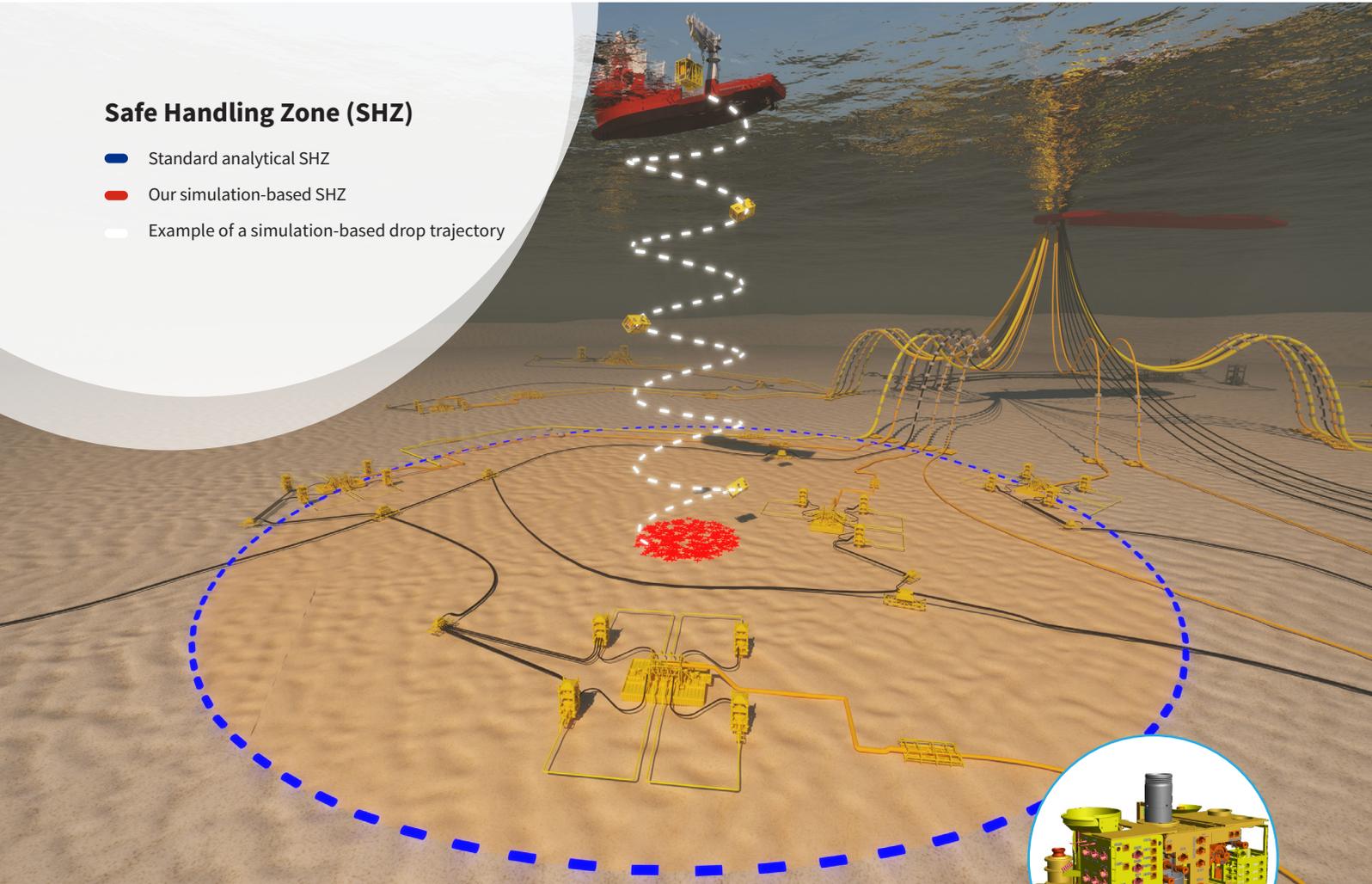


## Simulation Based Dropped Object Assessments for **Cost and Risk Reduction**

### Safe Handling Zone (SHZ)

- Standard analytical SHZ
- Our simulation-based SHZ
- Example of a simulation-based drop trajectory

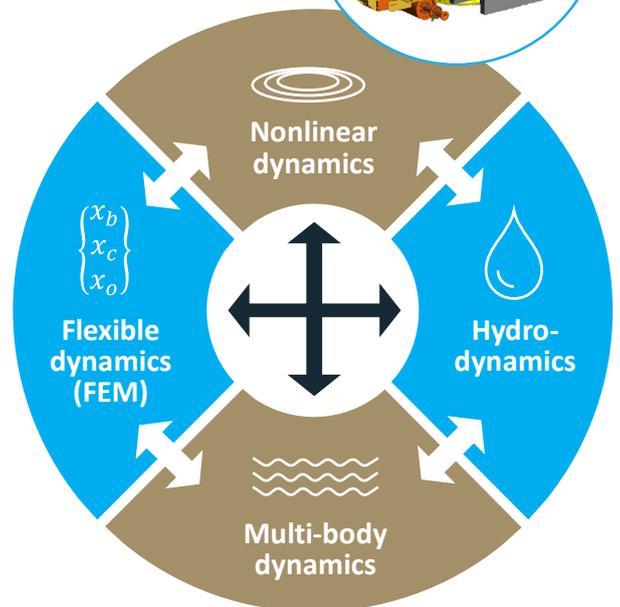


### The challenge

- Accidentally dropped objects pose serious and costly hazards to subsea facilities.
- High fidelity dropped object dynamic simulations are required to predict object trajectories and better manage risk. Previous simulation software results take a prohibitively long time to produce and are not accurate.

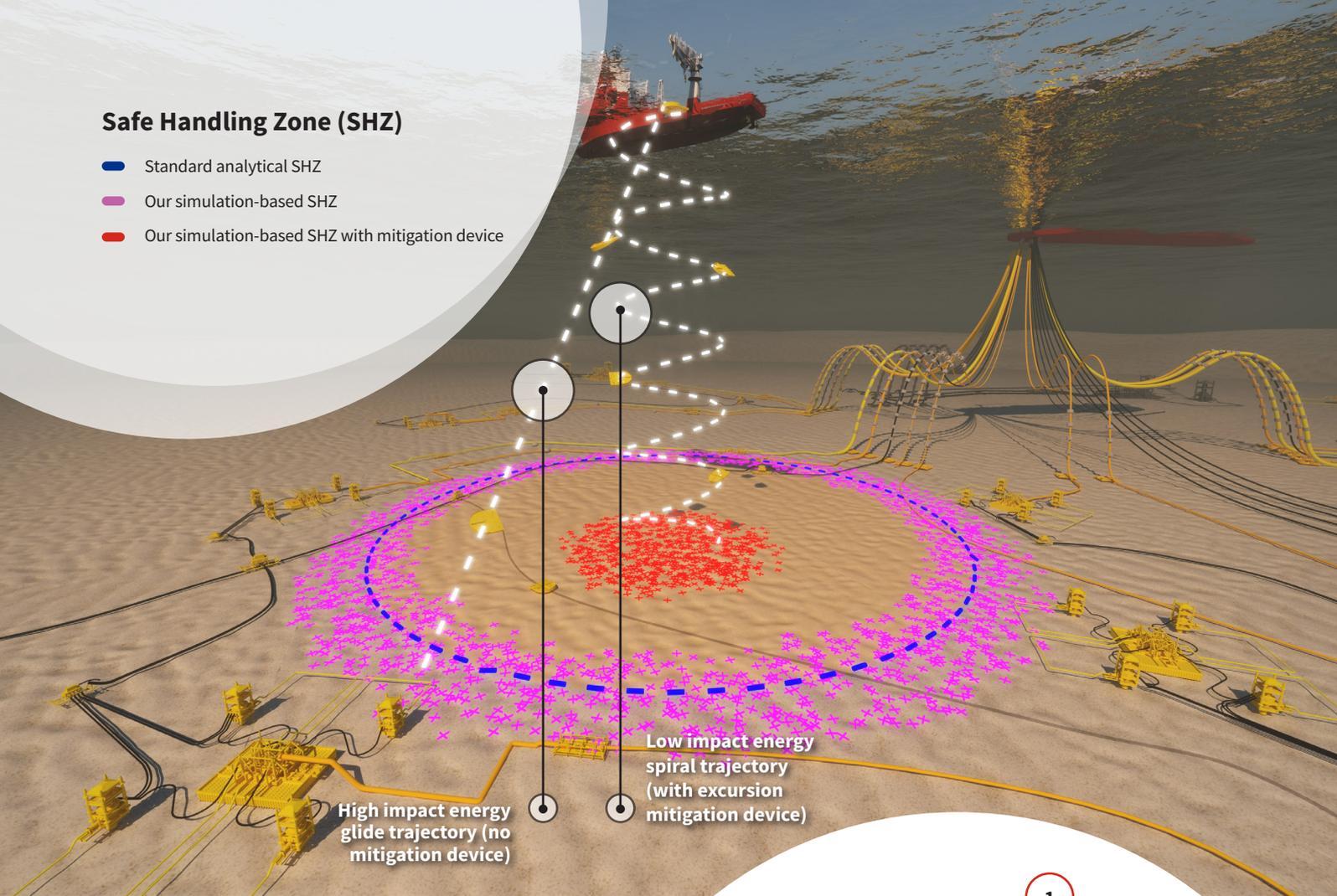
### Our solution

- An advanced nonlinear solver (FLEXAS) that has demonstrated accuracy and computational efficiency to predict accurate safe handling zone (SHZ), impact energies and complex fall trajectories and design simple devices for trajectory mitigation to better manage risks
- Validated against field accidents and model tests



## Safe Handling Zone (SHZ)

- Standard analytical SHZ
- Our simulation-based SHZ
- Our simulation-based SHZ with mitigation device



High impact energy glide trajectory (no mitigation device)

Low impact energy spiral trajectory (with excursion mitigation device)

## FLEXAS Benefits

### Improved Risk Management

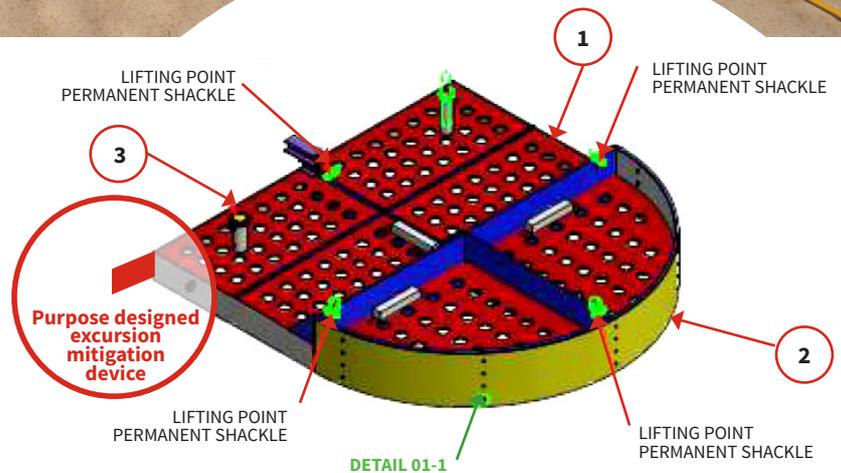
- More accurate risk assessment of potential damage to existing subsea infrastructures
- Help develop mitigation solutions for reducing probability and/or consequence of infrastructure impact
- Independent confirmation of installation contractor proposed procedures

### Reduced Schedules

- Potential for smaller safe handling zones (SHZs) – crucial for congested field layouts
- Optimize installation procedures
- Optimize duration of installation campaigns

### Reduced Costs

- Reduced vessel time required per installation due to precise SHZs & efficient procedures
- Prevent asset loss/replacement
- Prevent/assess (if accident has occurred) damage to existing infrastructure – Additional repair/replacement, lost production, potential environmental release
- Accurate impact energy prediction to optimize Rock dumping near platforms for DO risk.



Of special note is the fact that your software is far more accurate, faster and seems to better align with physics that any other software I have seen being used for dropped object simulations.

*TOTAL Subsea installation SME in charge of Installation Campaign*

**Contact** Dr Hema Wadhwa  
Level-14, 240 St George Tce, Perth Australia  
+61 430 533 556+61 8 9289 5810  
Hema.Wadhwa@intecsea.com

**Intecsea**  
Worley Group