helbling

From idea competition to development prospects

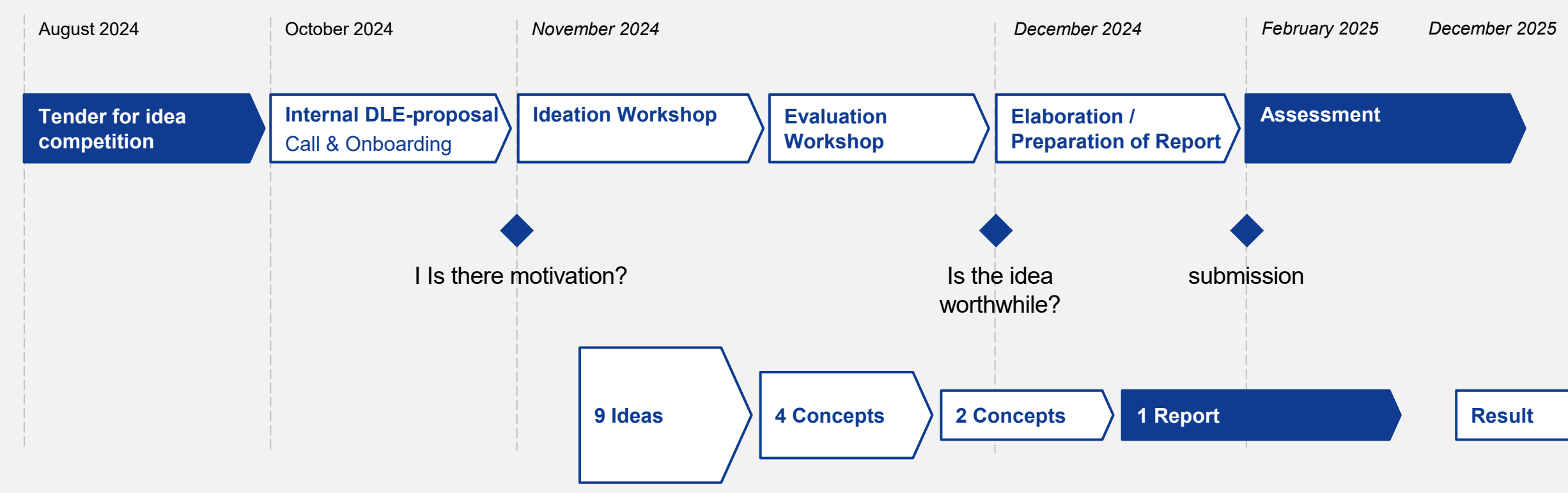
Media briefing: January 23, 2026 / Bern

Umweltfreundliche und sichere Bergungs-methoden von Munition aus Schweizer Seen

armasuisse

Event it’s just a competition, we apply our PM standards

Procedure and approach

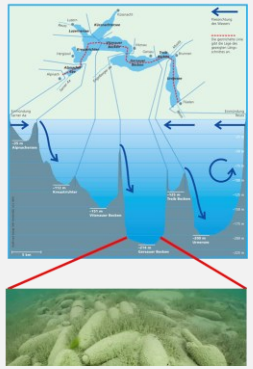


Stop criteria 1
→ if there is not enough motivation

Stop criteria 2
→ if a realistic solution is not far better than status quo

Milestones

- Technical **uncharted territory** in underwater ammunition recovery
  - Great depth
  - Covered by sediment
- Up to **215 m** underwater
- Encased in **2 m** thick sediment
- **Different** sizes
  - Maximum ⌀=20 cm, l=85 cm, m=50 kg
  - Minimum ⌀=4cm, l=4cm, m=0.4g
- Explosion hazard
- Material
  - Mostly iron (85%)
  - Copper/brass/aluminum

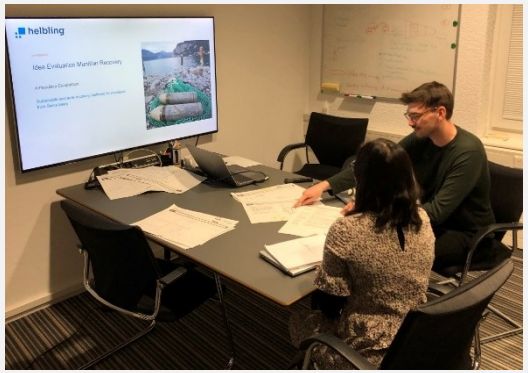


Specification assessment

Interdisciplinary workshop

Criteria	Sub-criteria	Metamorphic Dredge		Lakebed Cleaner		Gelatine A
Technical realization	-High level of technical maturity of the methods used	9.0	7.7	9.0	7.0	1.0
	-Low effort for technical implementation	7.0		4.0		1.0
	-Possibly experience with analogous problems	7.0		8.0		1.0
Environmental compatibility	-Low silt dispersion during recovery and transportation to the surface	6.0	7.0	7.0	7.0	10.0
	-Low other environmental impacts and risks	7.0		6.0		5.0
	-High energy efficiency	8.0		8.0		5.0
Clearing capacity and silt quantity for disposal	-High cleared volume per time	5.0	6.5	8.0	8.0	3.0
	-Low amount of silt produced per volume of recovered munition and per volume cleared	8.0		8.0		3.0
Clearing quality	-Little reaming munition after clearing	6.0	7.0	9.0	8.5	7.0
	-High clearing quality even for small munition objects with a diameter of 0.5 – 2cm	8.0		8.0		8.0
Safety aspects	-Little mechanical forces acting on the munition during procedure	7.0	7.0	8.0	8.0	9.0
Total Grade		***7.08***		***7.58***		***5.17***

Down selection on given criteria's

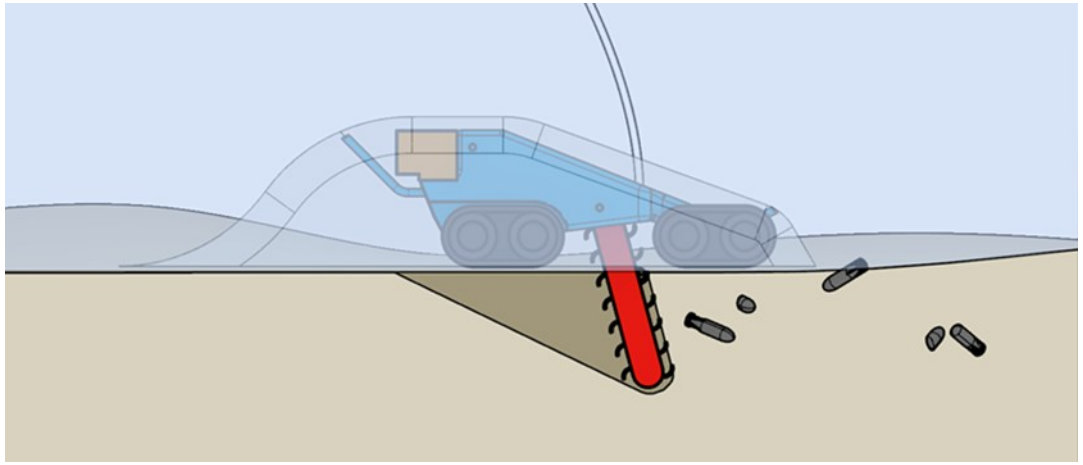


Environmental assessment

Resulting Idea

Lakebed Cleaner

- Beach cleaning inspiration, supplemented with:
  - Conveyor system
  - Screening technology
  - Crawler drive

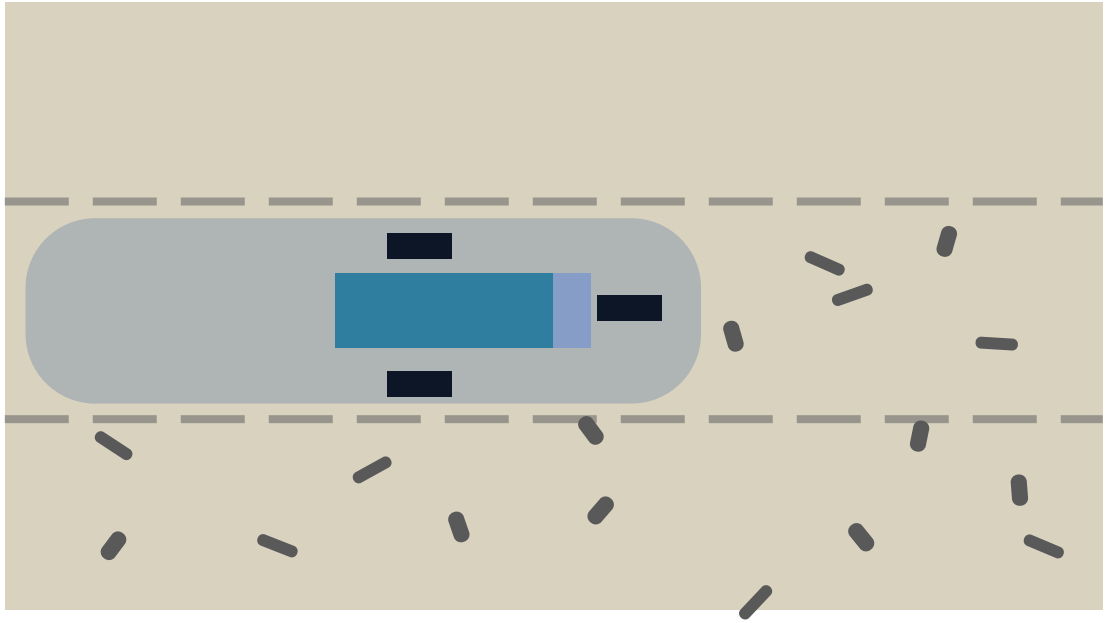


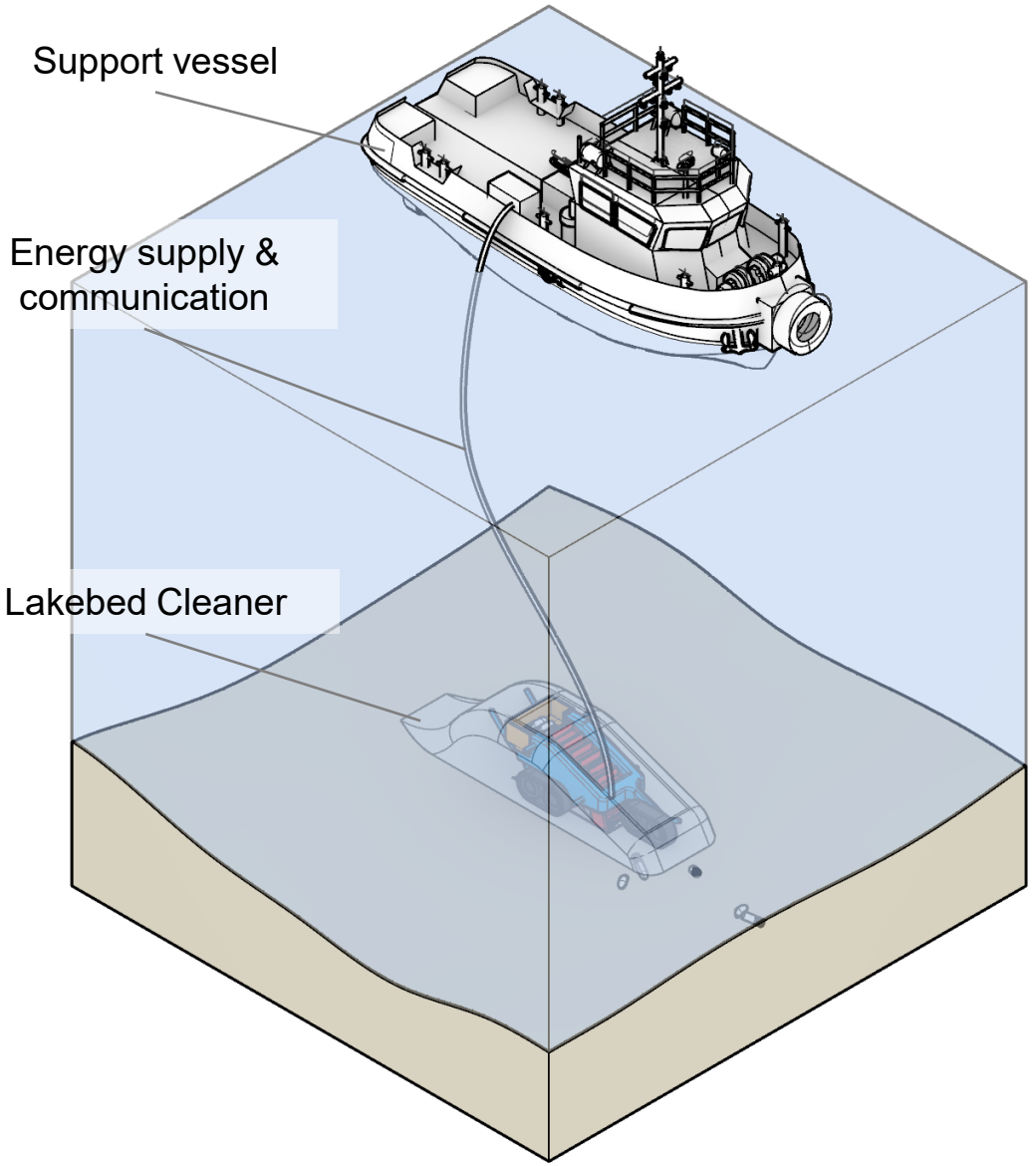
- Enables autonomous travel by:
  - Sensors for localization
  - Collison control
  - Temporary waste storage

System with support vessel & control

Lakebed Cleaner

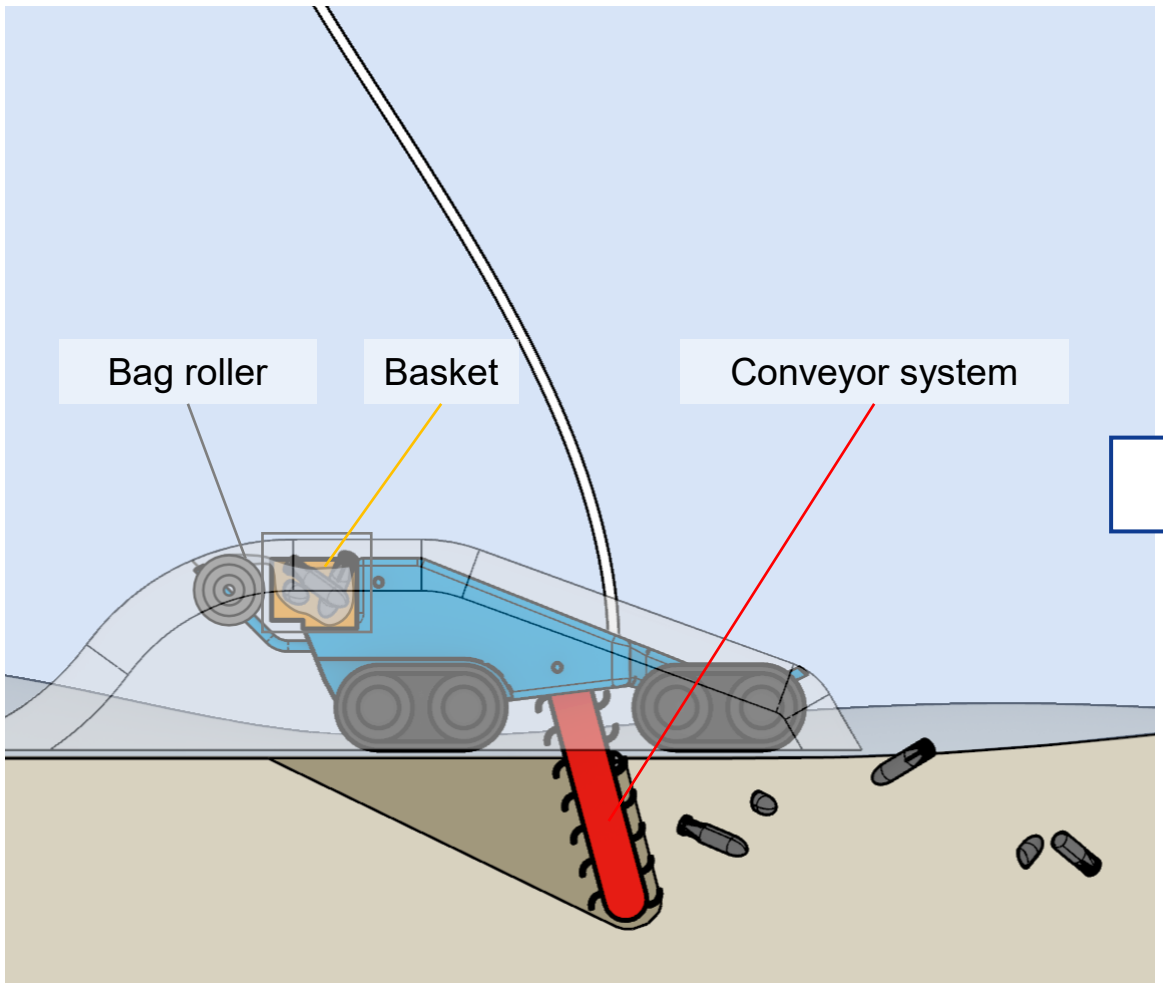
- Support vessel, main purpose
  - Energy supply
  - Operations management & monitoring
  - Catching waste bags
  - Potential onboard processing of waste material

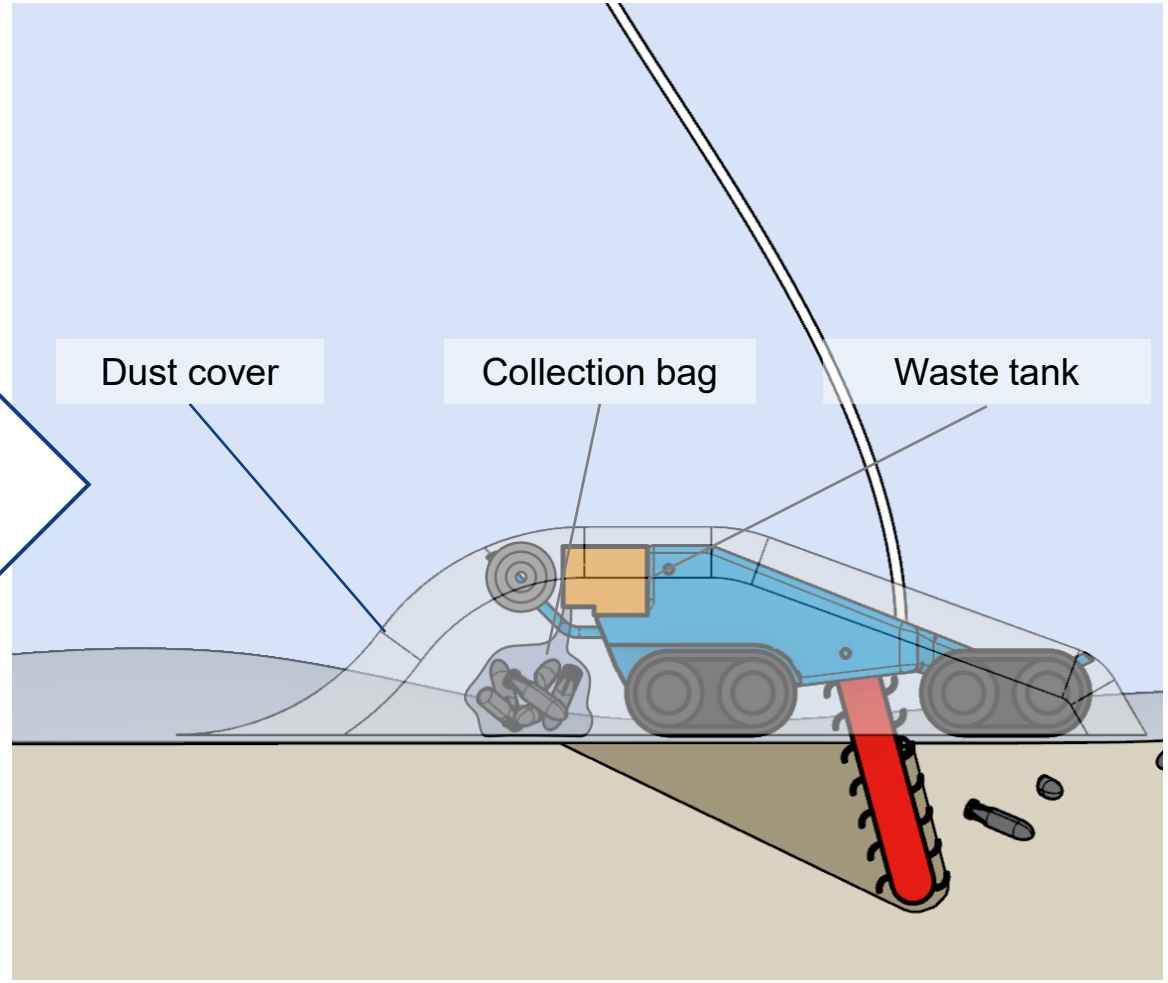




Modus Operandi 1/3

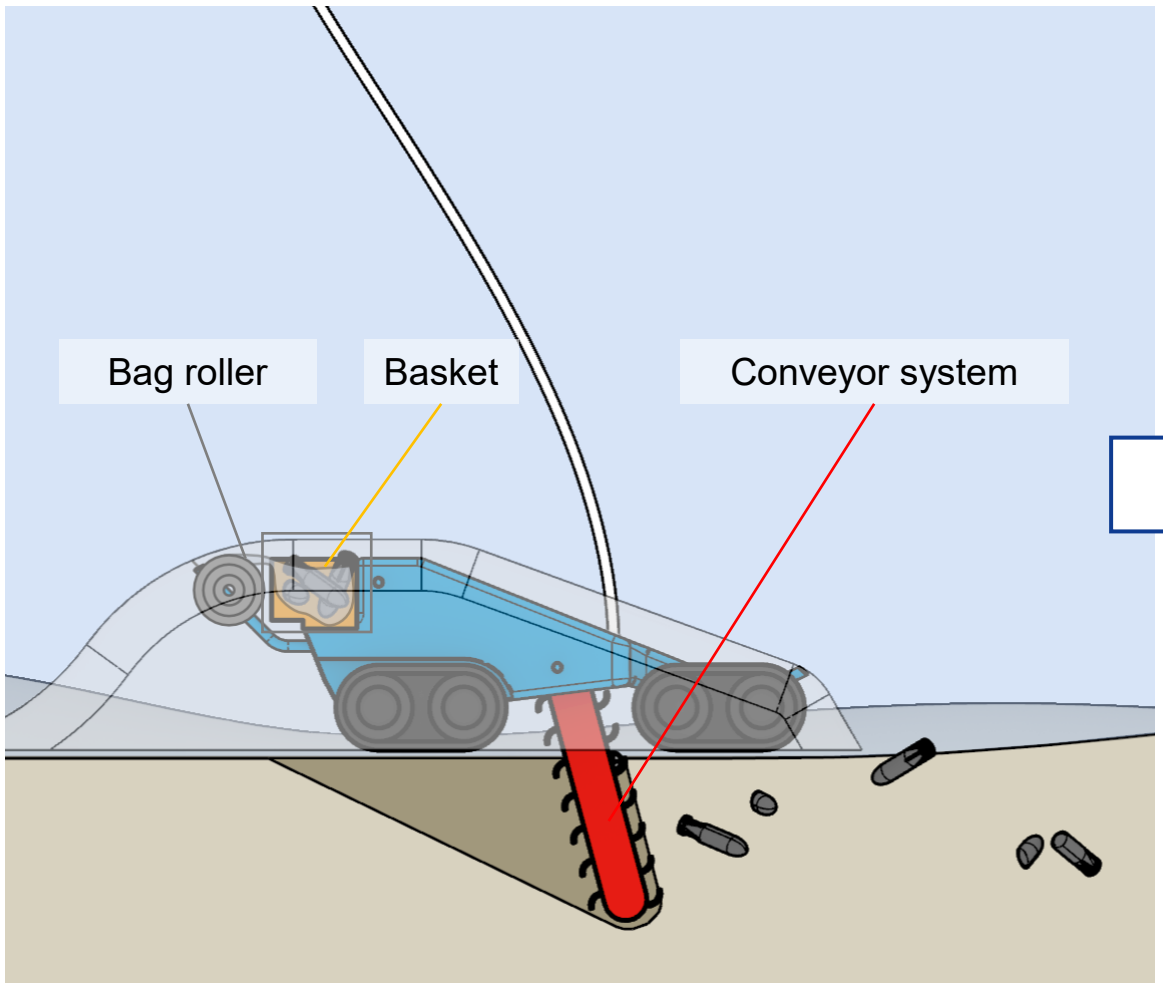
Lakebed Cleaner

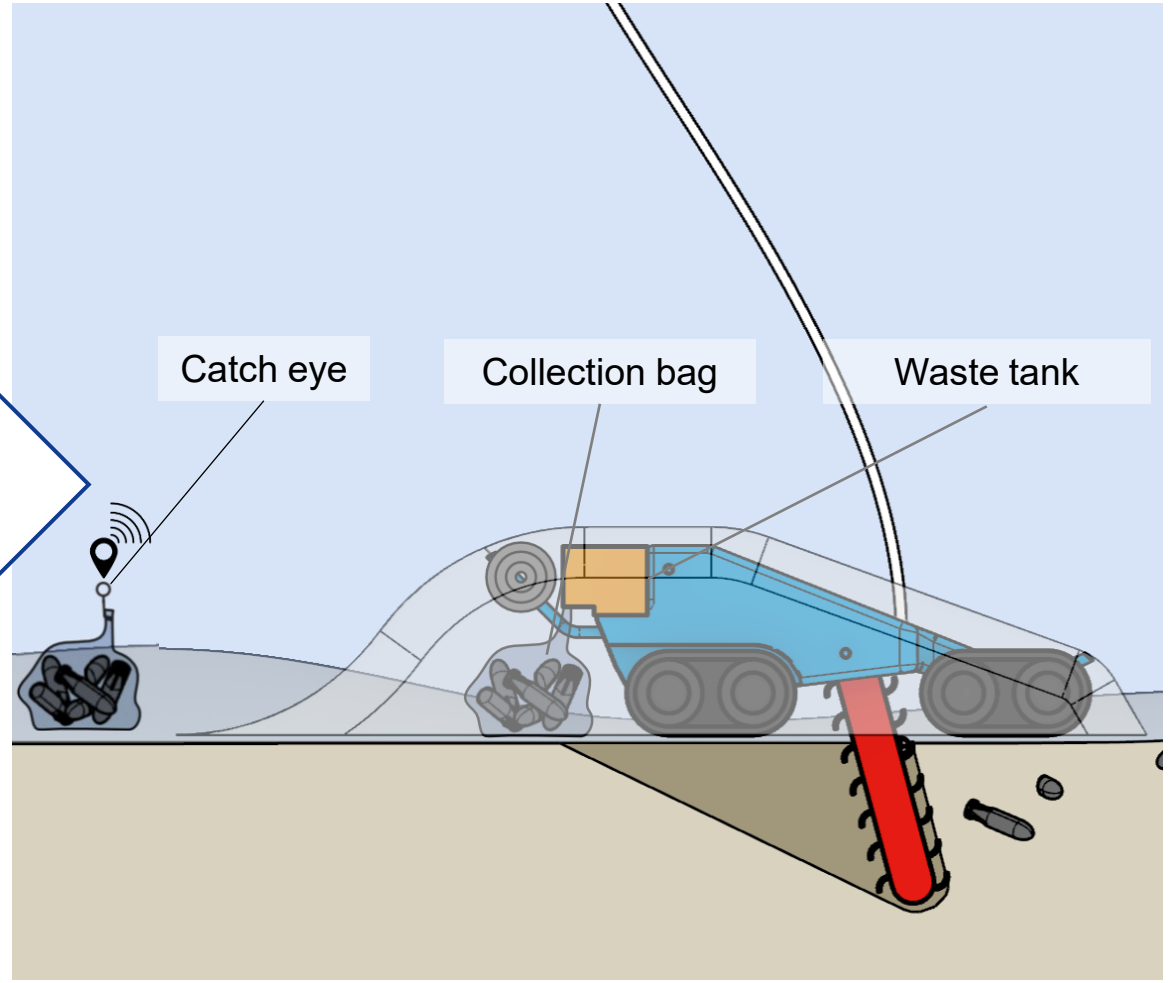




Modus Operandi 2/3

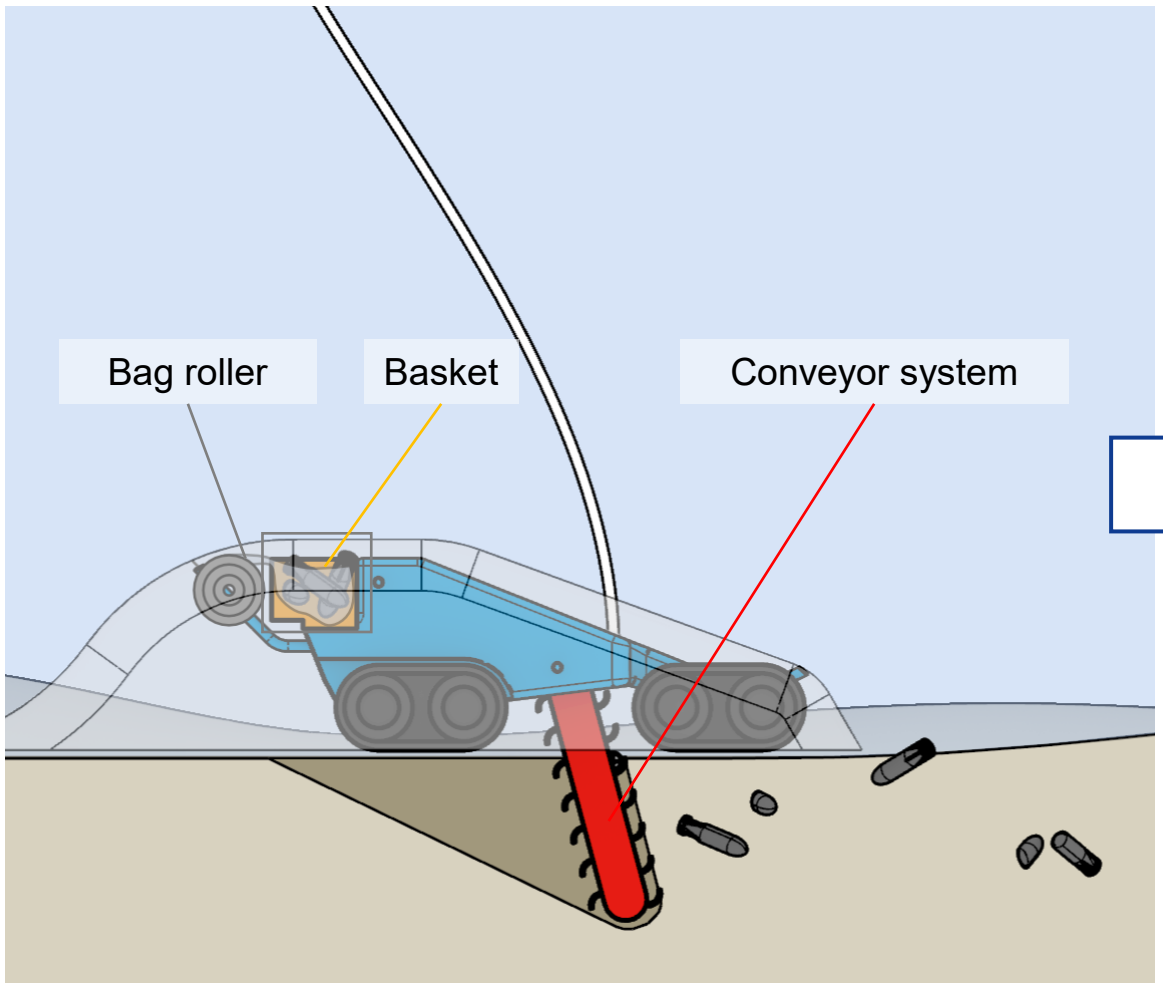
Lakebed Cleaner

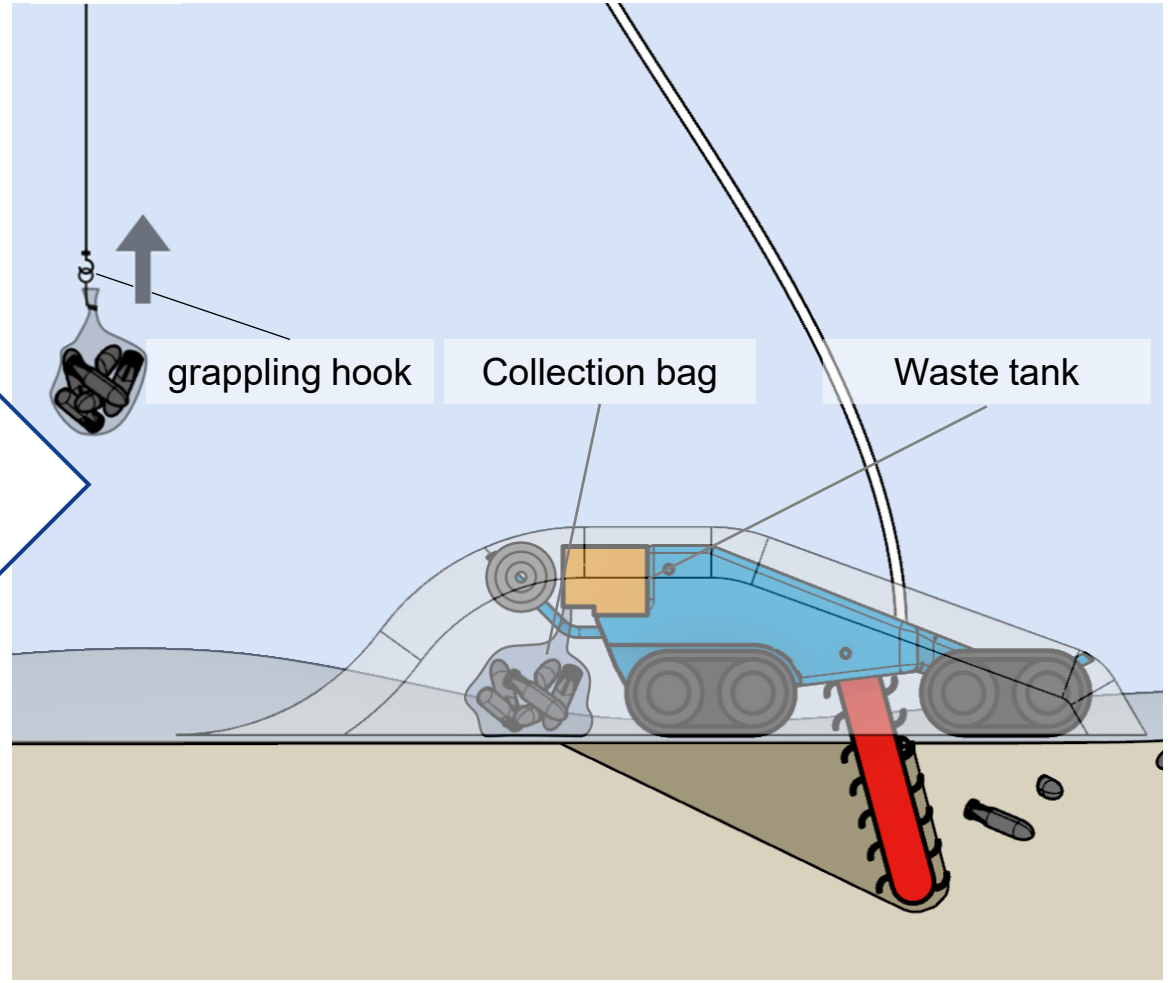




Modus Operandi 3/3

Lakebed Cleaner

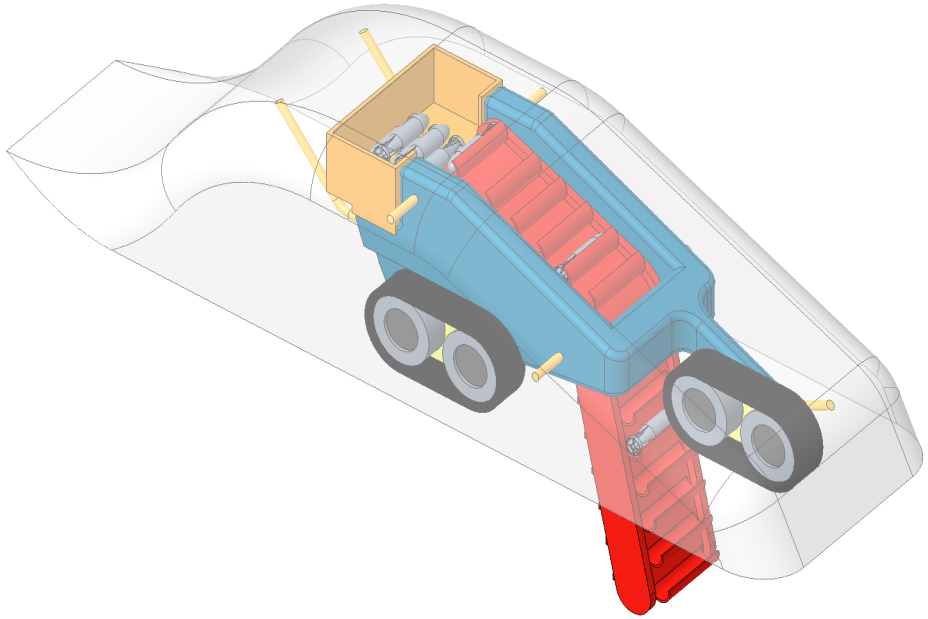




If recovery happen, why autonomous ?

Biggest advantages:

- Plausibility check done (back of the envelope)
- Economic advantage, 10 times faster
- Cope with ecological and economical constraints

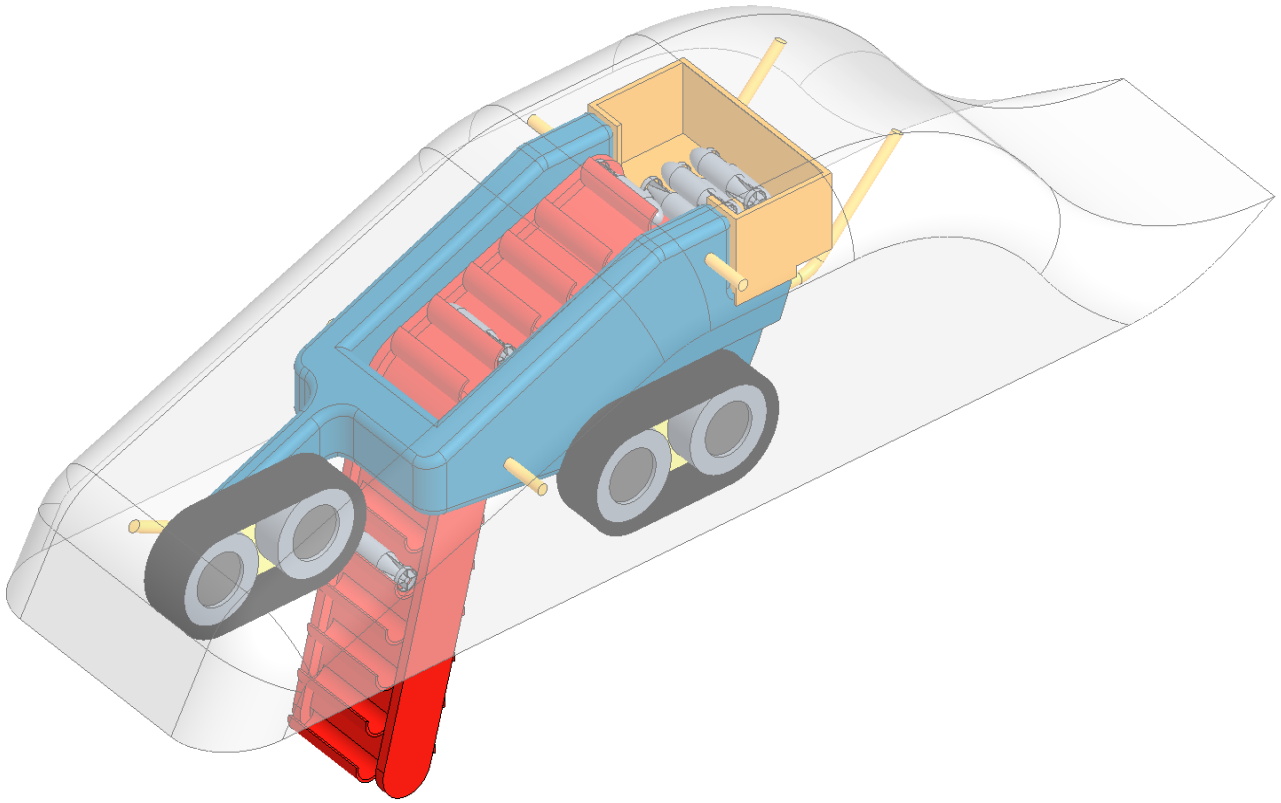


Next steps:

- Deepen environment & regulative restrictions
- functional prototype → sedimentation dynamics
- Systematic project planning / gate process to minimize risks

If recovery happen, why autonomous ?

To add

- Contemporary and important knowledge will be built up
- Solutions or services can later be sold abroad
- Established project partners and a motivated team → Thank you

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