Pier 85:
Field-ready hospital waste
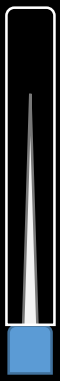
Team: Needles Needs

THE Port Hackathon 2016

14.– 16.10.2016

INTRODUCTION:

- Hard challenge : different contexts, different level, lack of ressources on the field, diversity of actors and infrastructures
- Solutions can impair other solutions

- Ideas : retracting needle, recaping reusable needle, no needle, different material for needle. Even some prospective
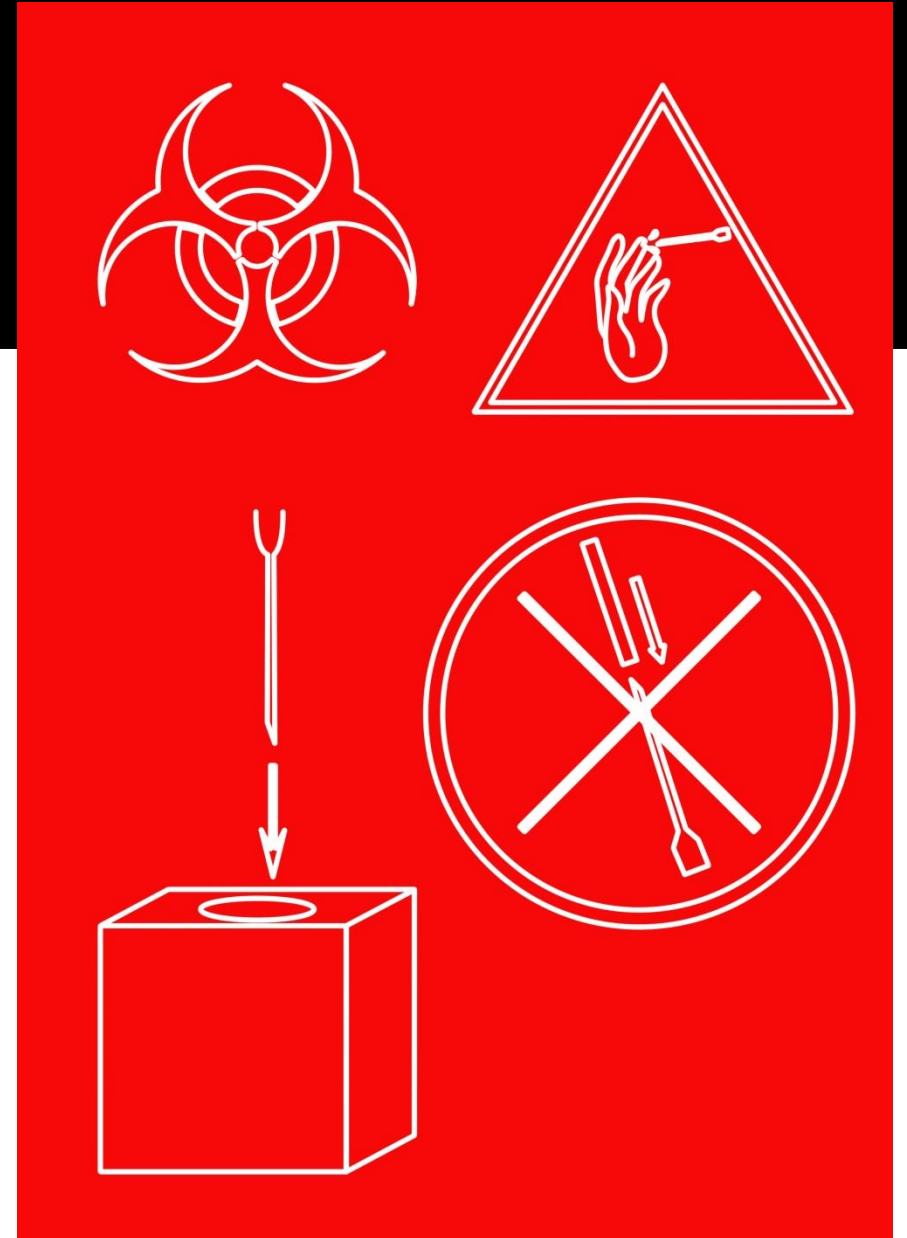
STICKERS:

- A common issue through different contexts and variety of problems is **human mistake**.
- Components of system of medical waste management : material, workers and **procedure**.
- Define area of good practices and warning regarding containers to protect people interacting with medical wastes.

STICKERS:

- Collect : red

- Transport : orange

- Disposal : yellow

CHALLENGE: needle re-use in developing country contexts

- Sharps are not properly disposed → **risk of pricks and infection** for patients, health workers, community

- Needle **scavenging** and **re-use** is common and dangerous

- Introduction of **extra devices and steps** will likely **not** be **adopted**

OUR IDEA: building re-use prevention into the needle itself

Standard Needle
- High re-use risk
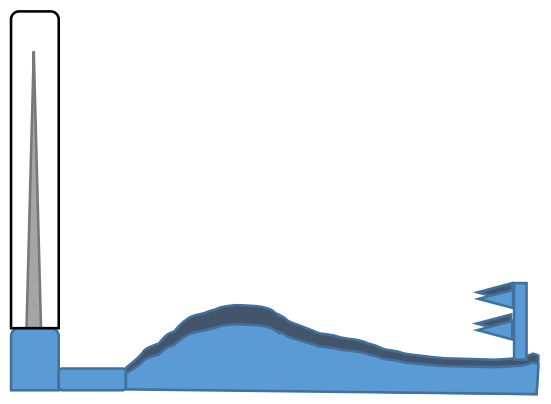- Recapping→ prick injuries

Safety Needle
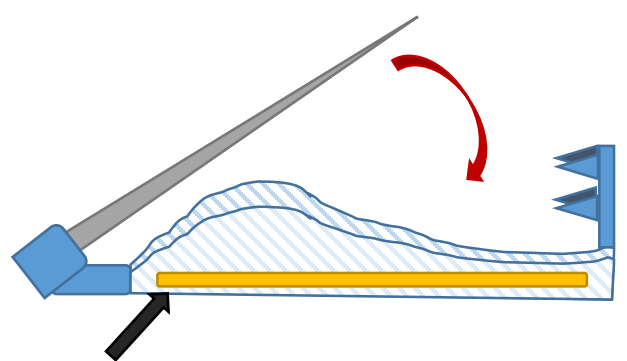- Mitigates prick and re-use risk
- **But,** still easy to retrieve needle

New Design Proposal
- Glue pouch, punctured after use, seals needle so that it cannot be retrieved for re-use
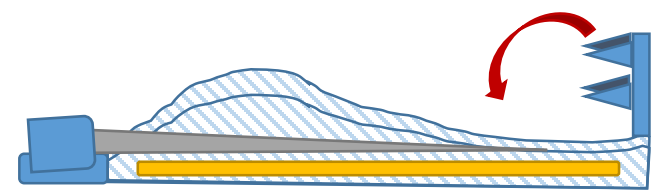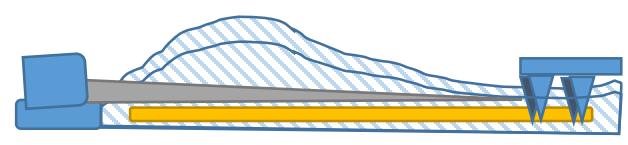- Easy process *without reliance on external devices* to reduce risk of prick and prevent re-use

① ② ③

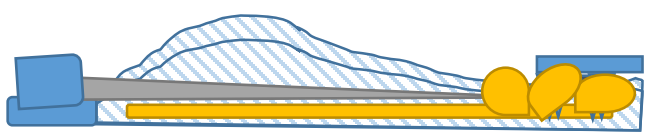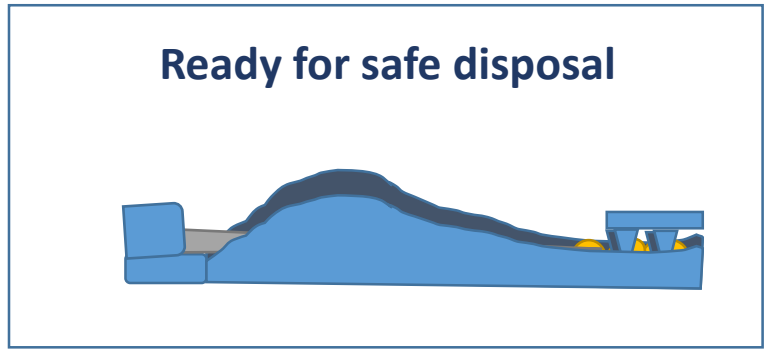**Glue pouch** (airtight but easy to puncture)

④ ⑤

Glue released to encase end of needle to prevent re-use, contain pathogens

Ready for safe disposal

explorations

GLUE

Tested:
- *epoxy*
- *Nail polish*
- *Superglue*
- *Sugru*
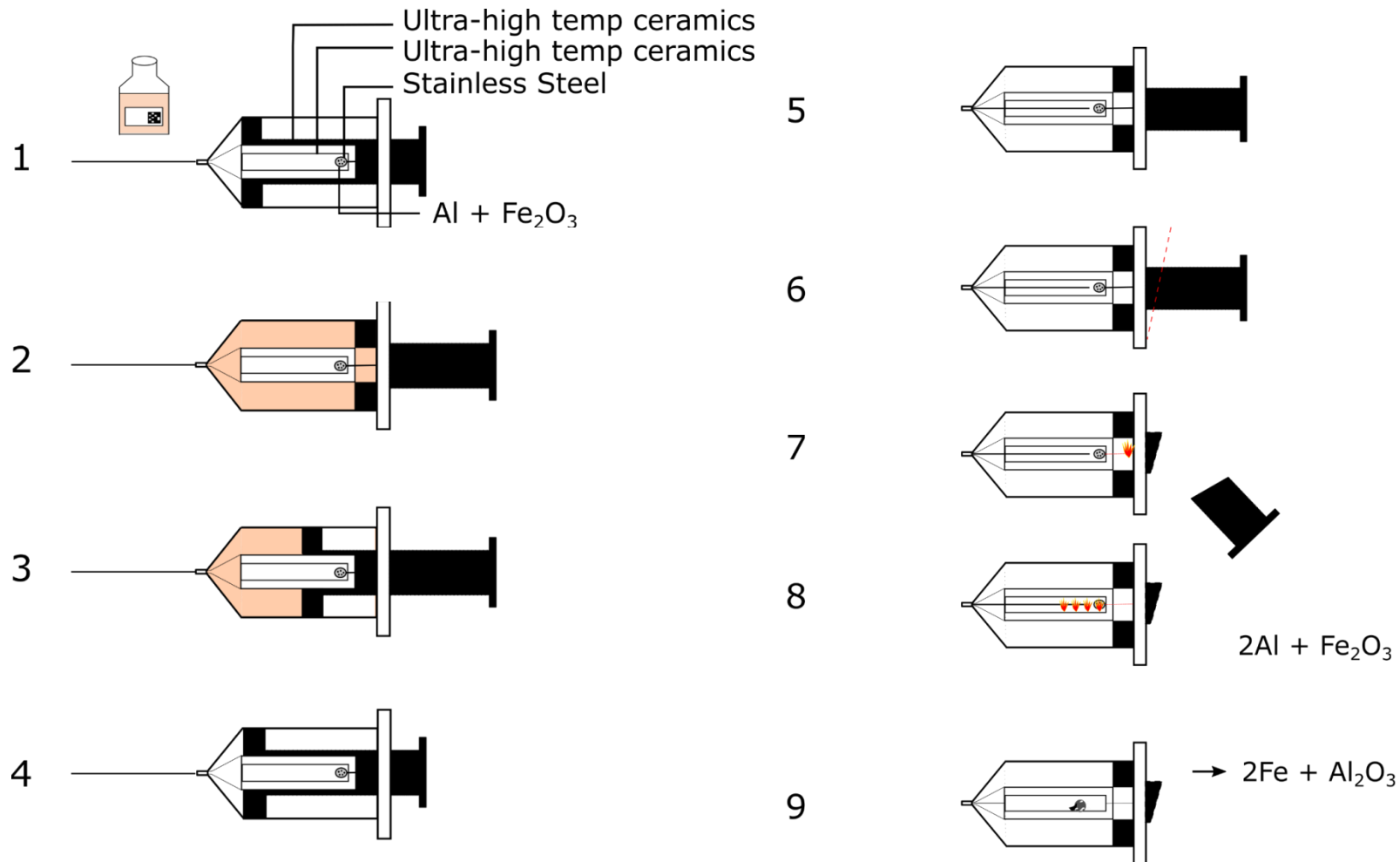- All of above can be removed easily; area for future exploration

FIRE

Melting plastic safety guard over needle

→ Alternative to incineration, but not sterilized
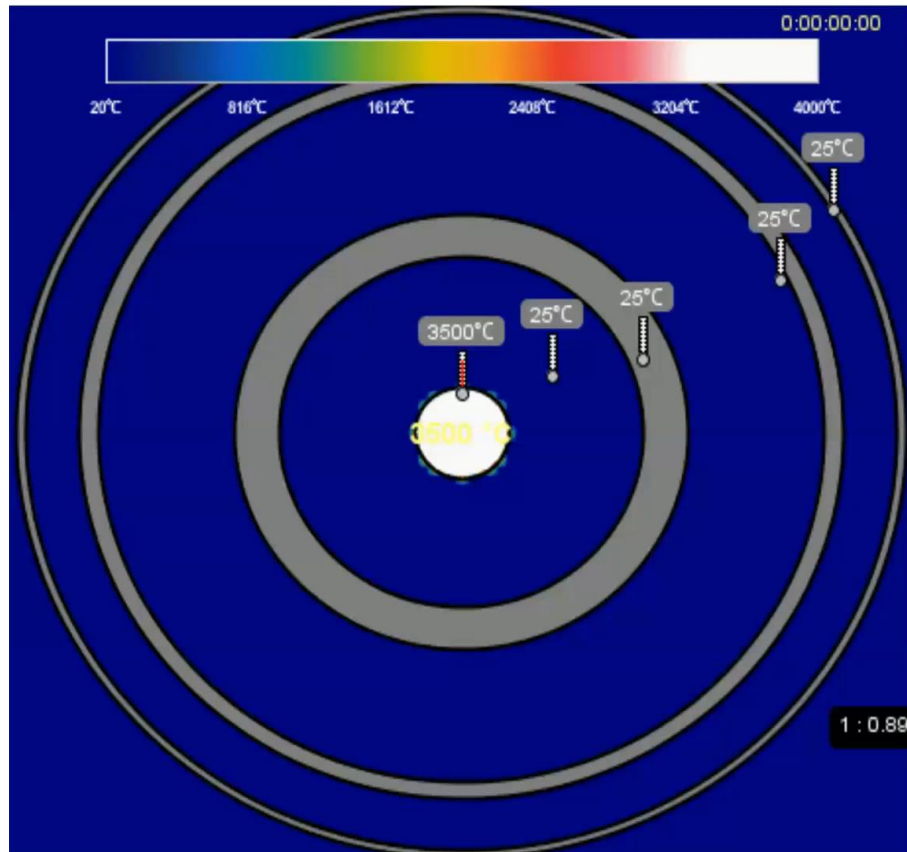→ works for normal and safety needles

Self-destructing syringe proposal

- Needle retracting
  - Sterilisation
  - Incineration
  - Destruction

Self-destructing syringe

Heat transfer

Low Cost Portable Incinerator

$Al + Fe_2O_3$

Q&A

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