



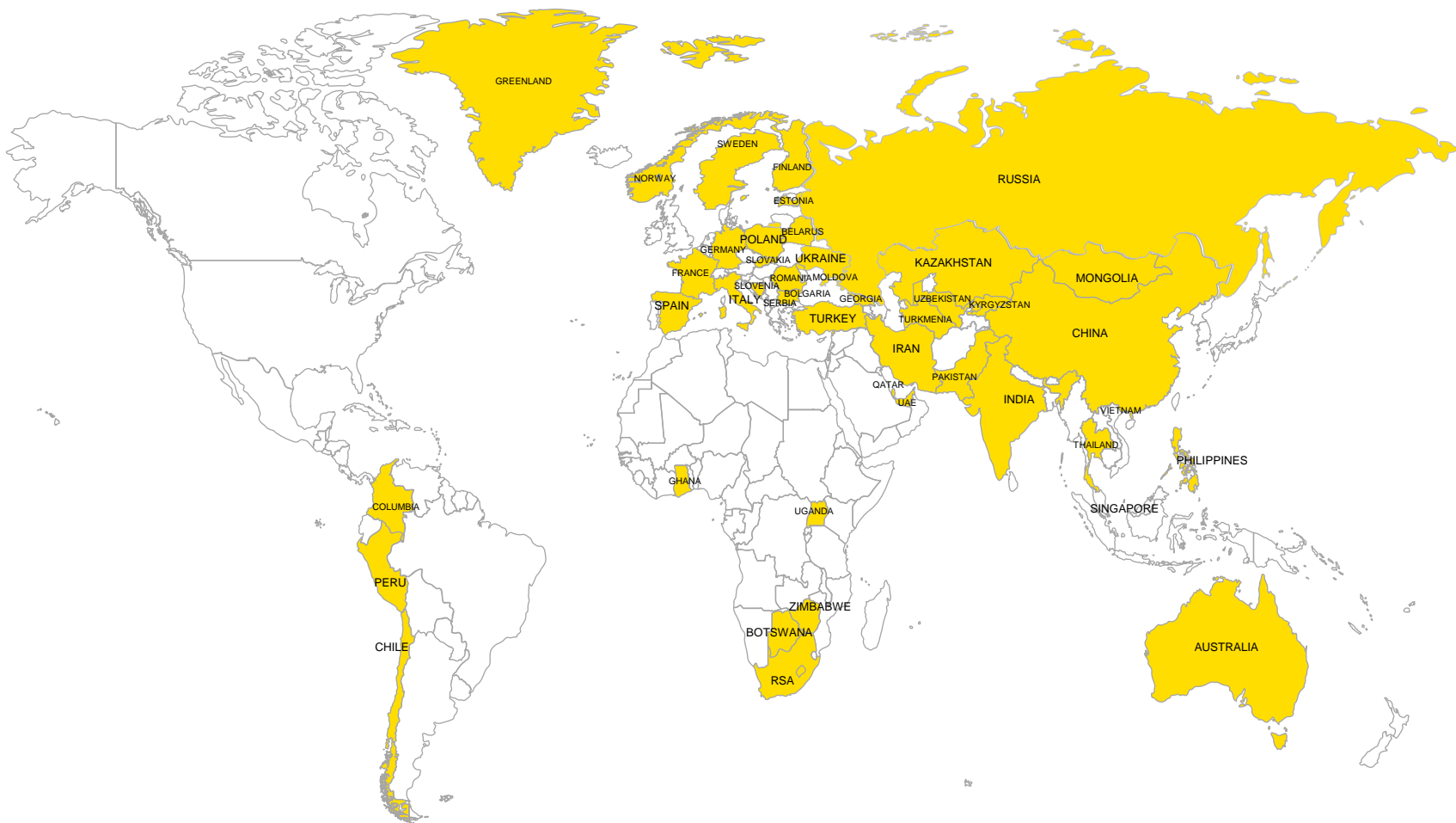
## Online monitoring of deployed SCSRs

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**IMRB RUSSIA 2017**

VIII International Mines Rescue  
Body Conference



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## Which risks exactly SCSR faces underground?



**exposed  
to  
risks**

### Temperature shocks

- under -20, over +60 C

### Case damage

- damage of breathing system
- false start of oxygen generation

### Vibration (dust)

- rated duration decreased
- particles getting to breathing tract

### Incorrect tracking

- remaining deployment time unclear
- human errors

So, what DO we check?

**Most SCSRs are checked for tightness only**



Moisture  
under case  
cover

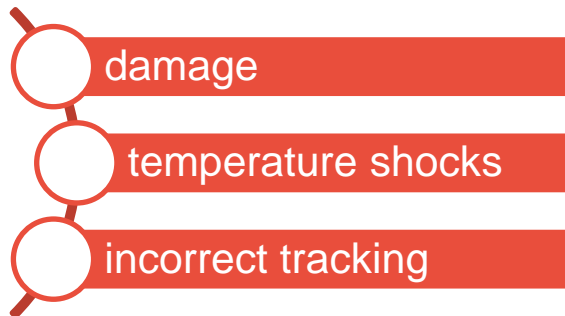
Moisture in  
regenerative  
cartridge

False start of  
the reaction  
of  
regeneration

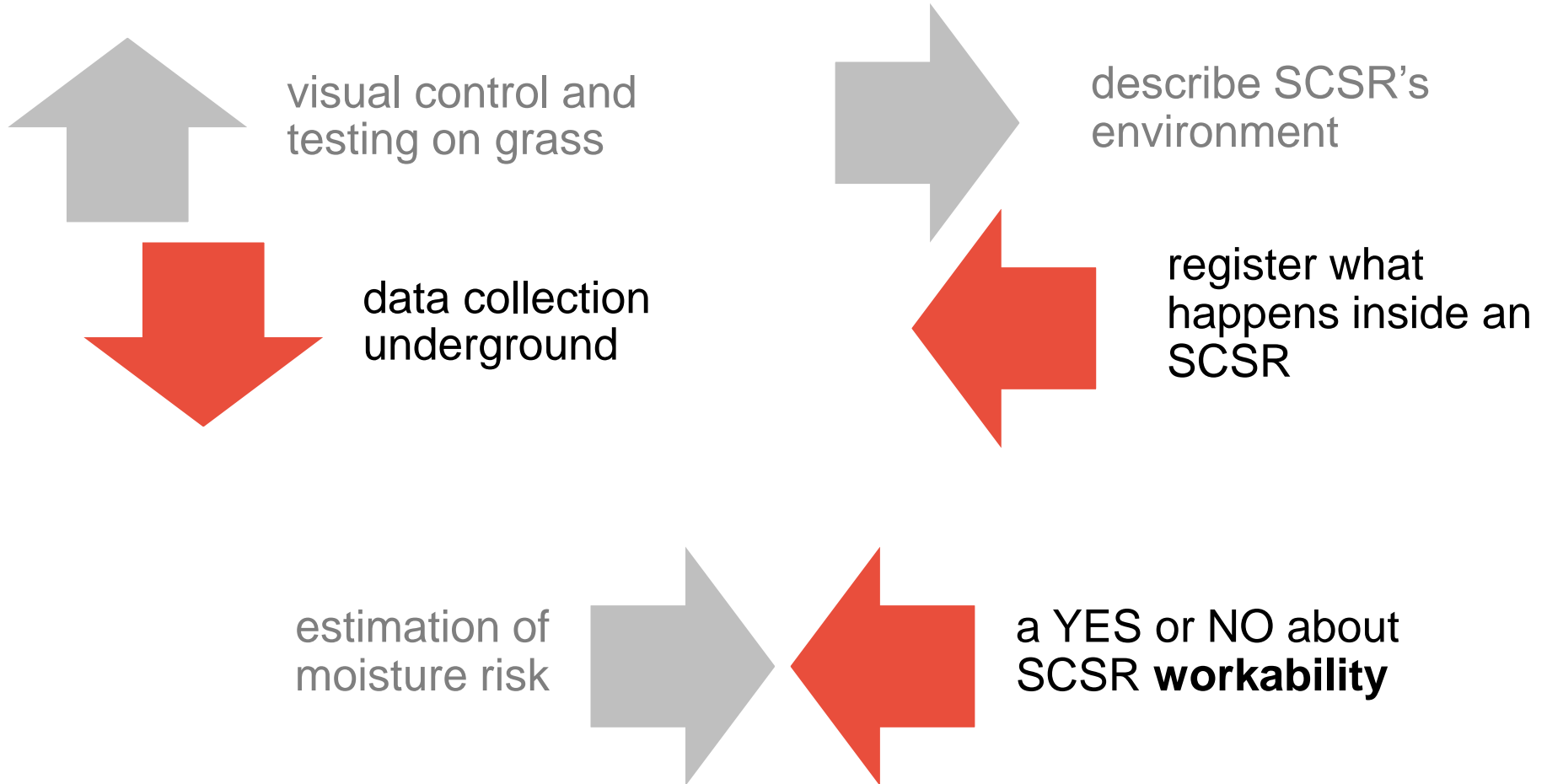


Some also check particle fraction of regenerative cartridge

**other  
risks  
not addressed**



## Changing RPE paradigm



## What changes for the user?

### A simple Yes/No decision

- no ambiguity about moisture indicator status

### Less time

- minimum testing time
- all SCSR read at once

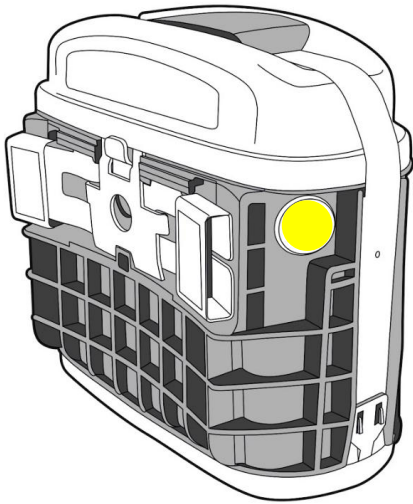
### Less effort

- no additional tests
- less people involved

### Less error

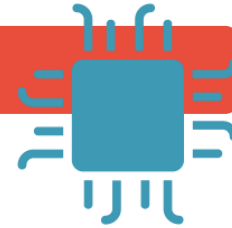
- automatic algorithm

## Our new solution



### Records changes in

- moisture
- vibration/shock
- temperature
- inner pressure



### Tracks

- all lifecycle dates (manufacture, deployment, etc)

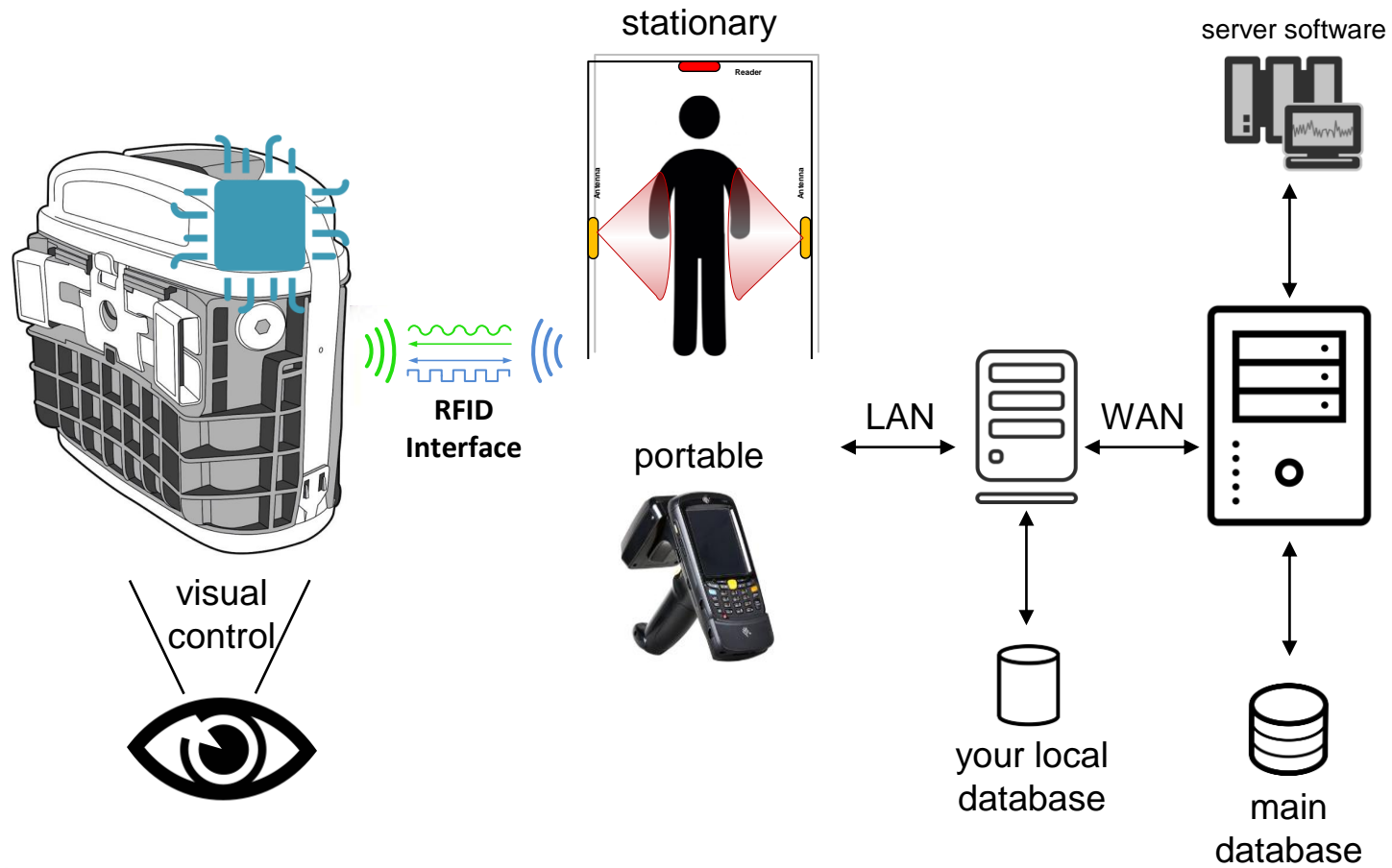
### Writes

- data to nonvolatile memory

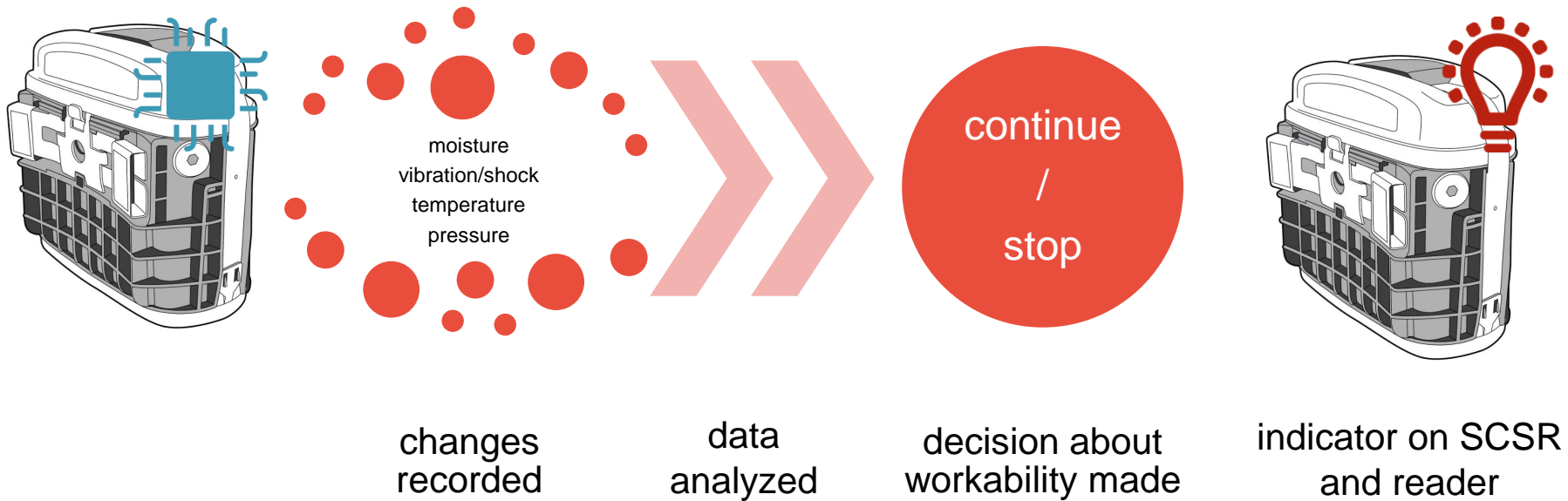
### Powered

- by a 10-year capacity battery

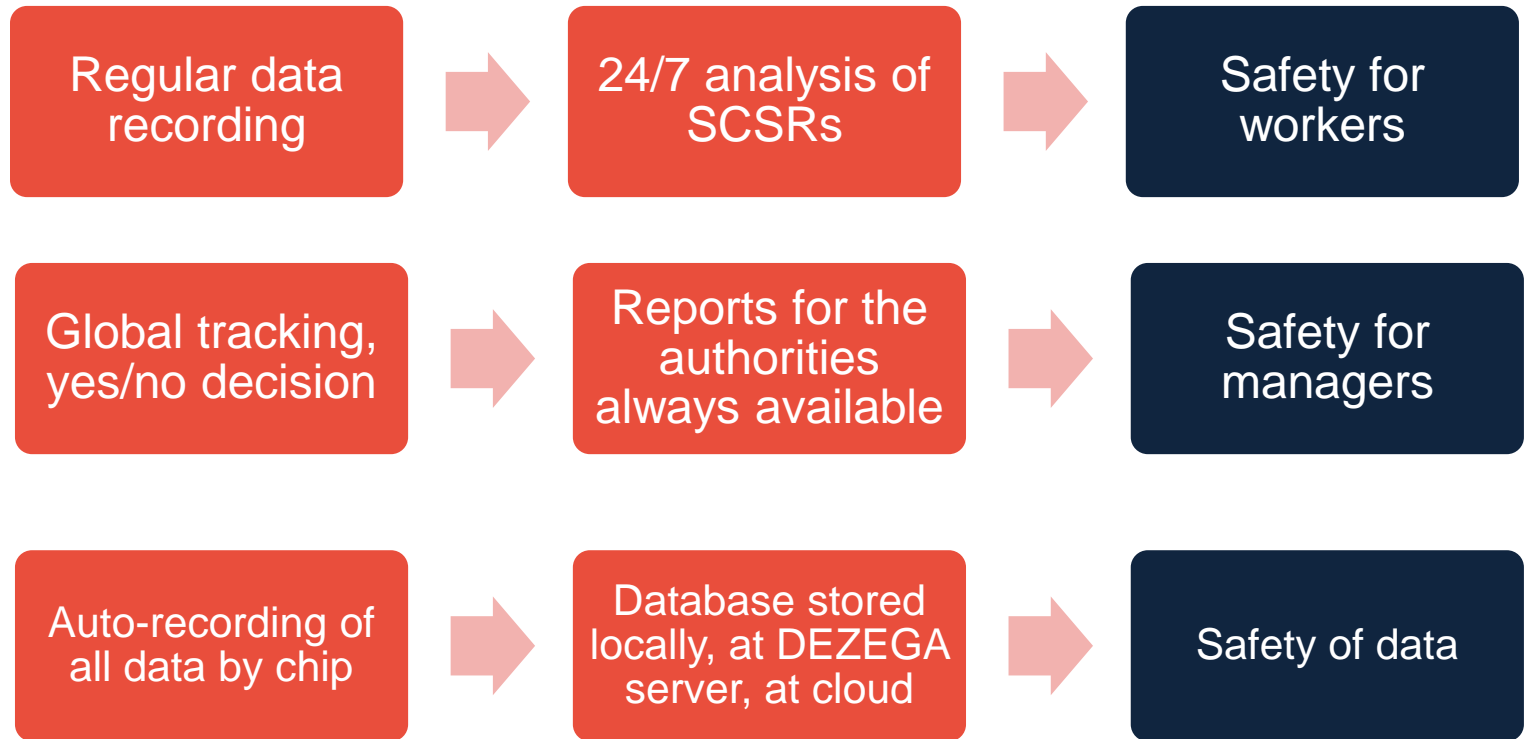
# Chip infrastructure



# Monitoring algorithm



## What benefits?





7+ million self-rescuers  
produced over time



500 000+ self-rescuers  
used daily WW

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**See you at DEZEGA SOIREE  
@Paulaner TONIGHT**