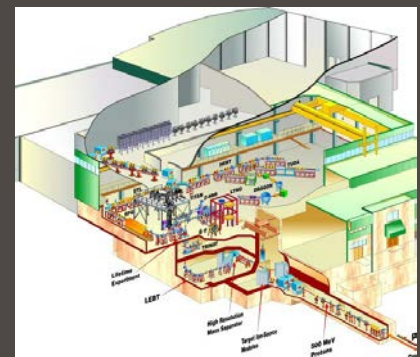


ISAC Target Reliability from Design to Implementation to Long Term Service

Violeta Toma
WAO 2012

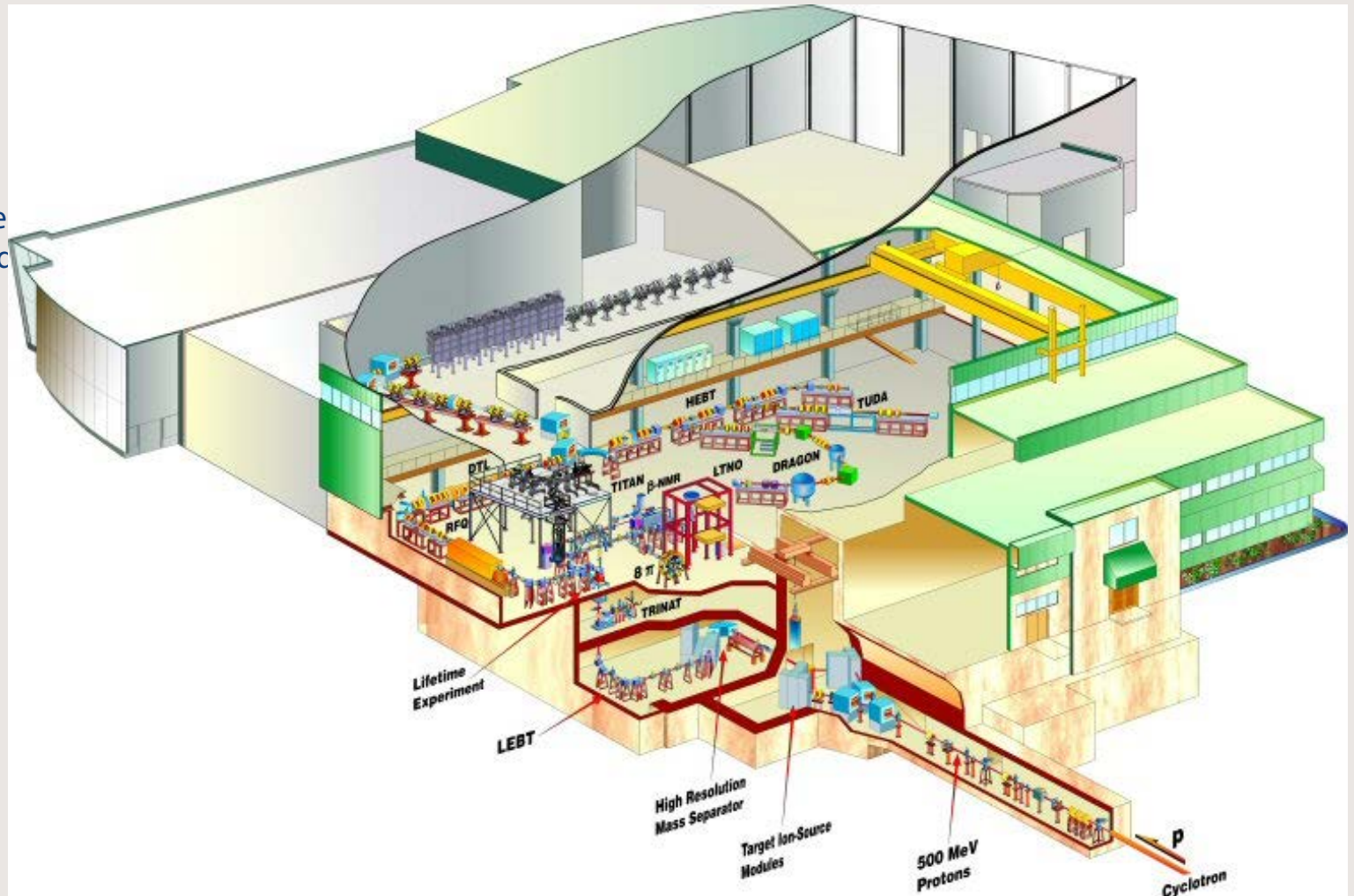
Accelerating Science for Canada
Un accélérateur de la démarche scientifique canadienne

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- Introduction to ISAC
- **Past:** Phase I – on-line testing
 - one target module
 - more target modules
- **Present:** Phase II – off line testing
 - ISAC target life cycle
- **Future:** Phase III – remote connect & disconnect

ISAC = Isotope
Separation and
Acceleration



Phase one

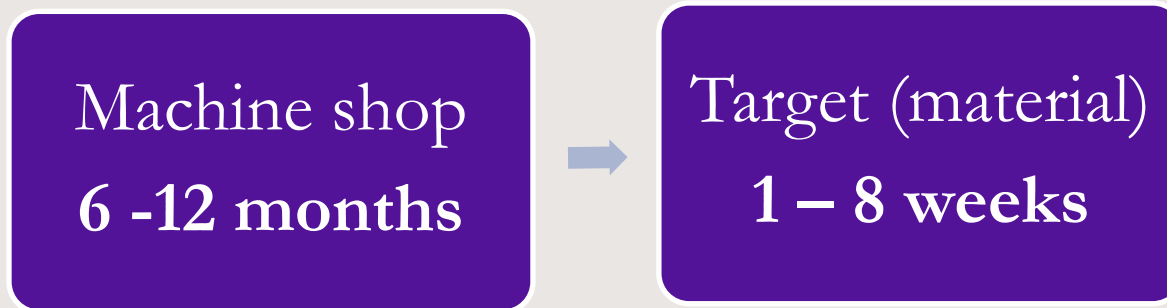


- Two target stations
- One target module

ISAC Target Life Cycle

Machine shop
6 -12 months

ISAC Target Life Cycle



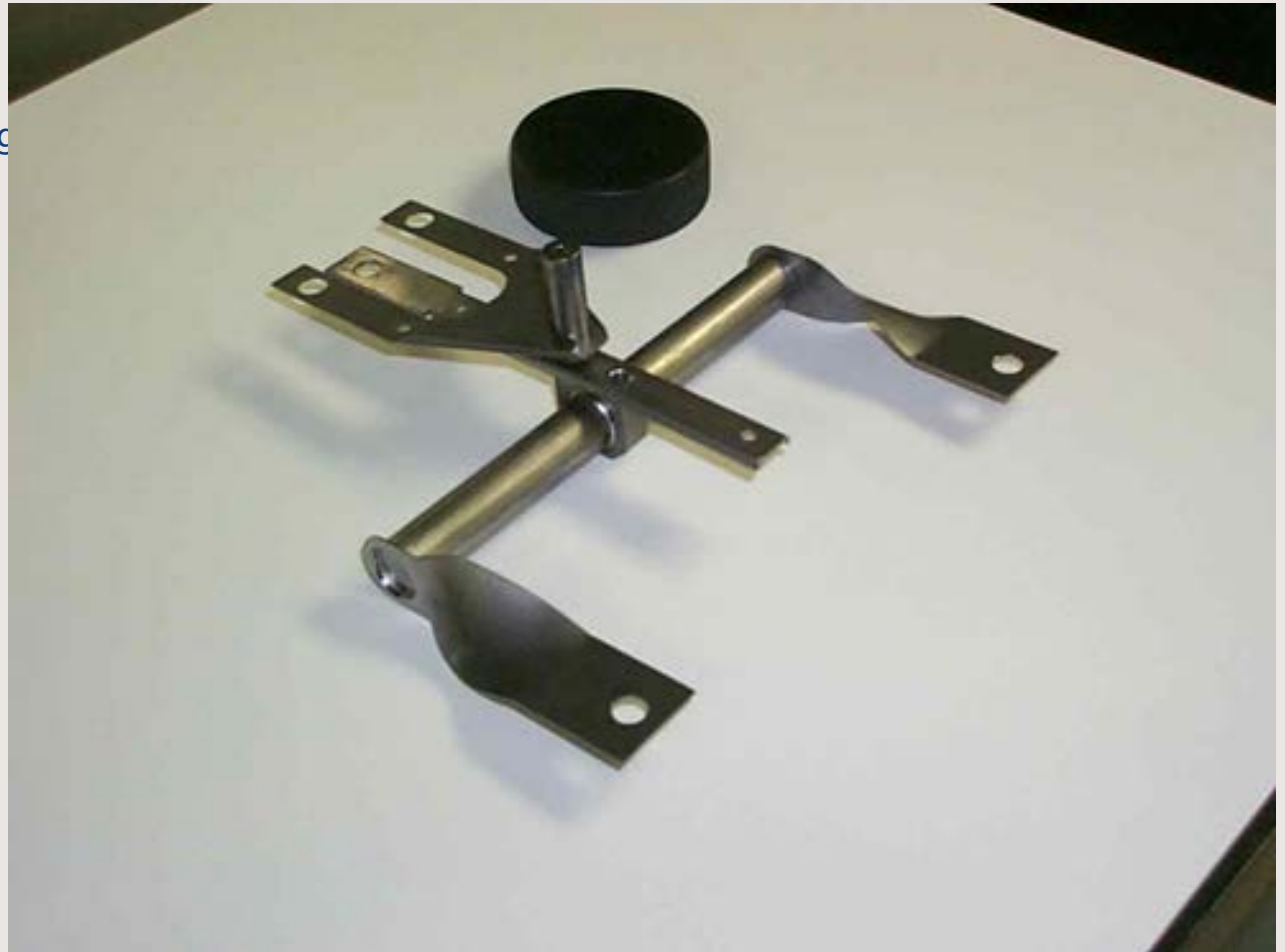
Target and target tube



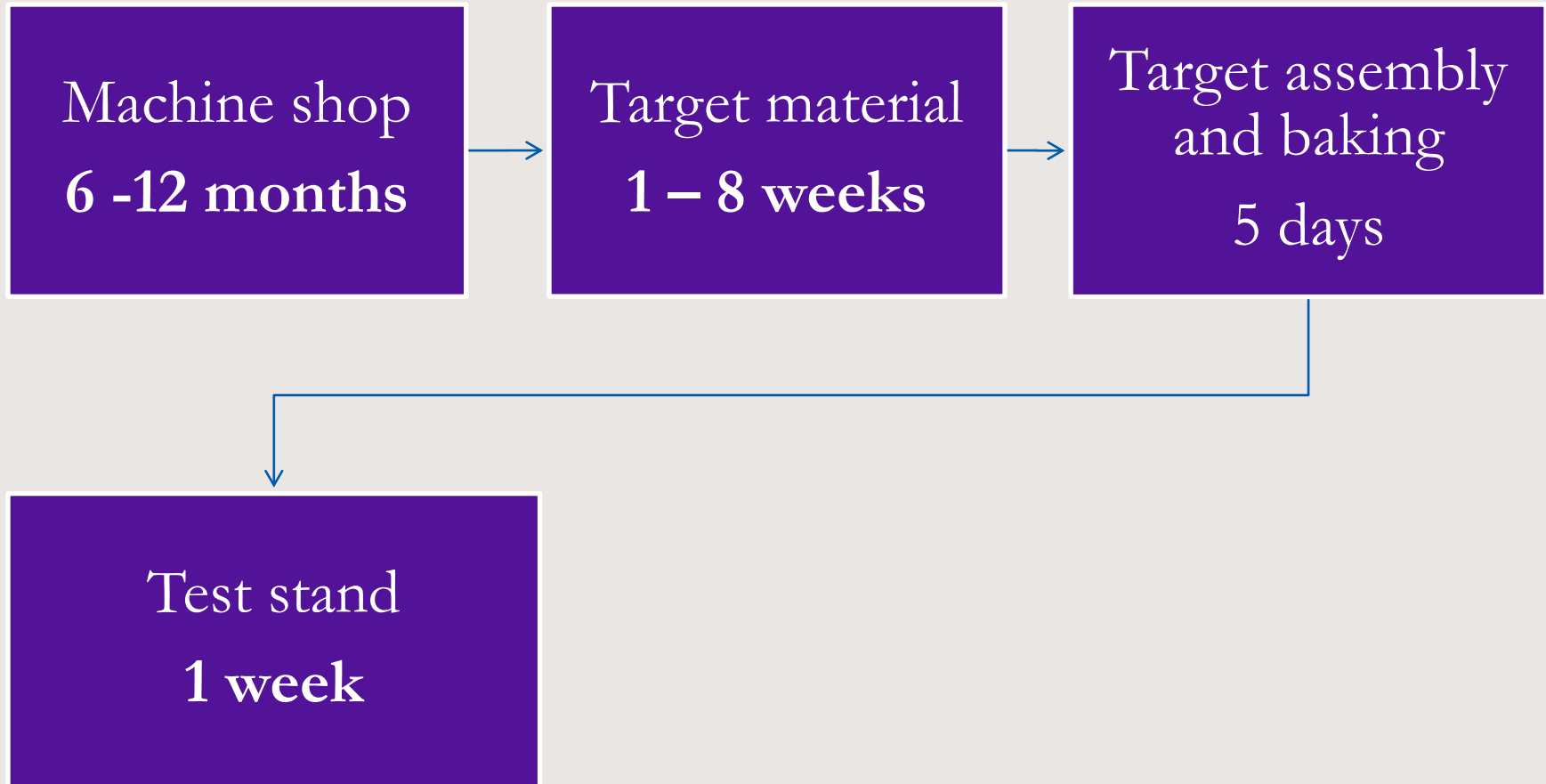
ISAC Target Life Cycle



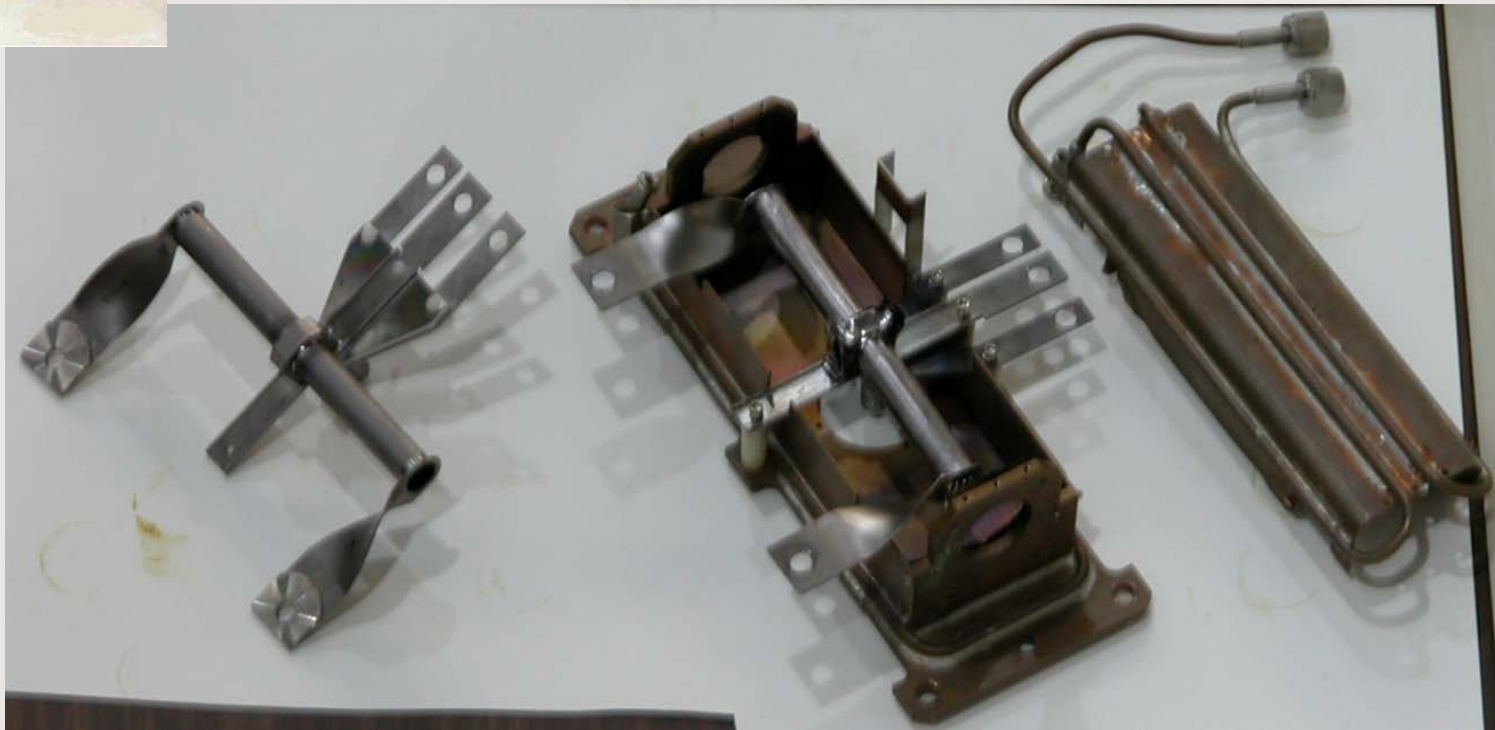
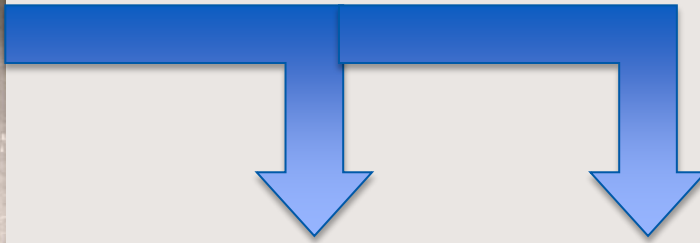
- In house made target
1 -8 weeks
- Target assembly & baking
5 days



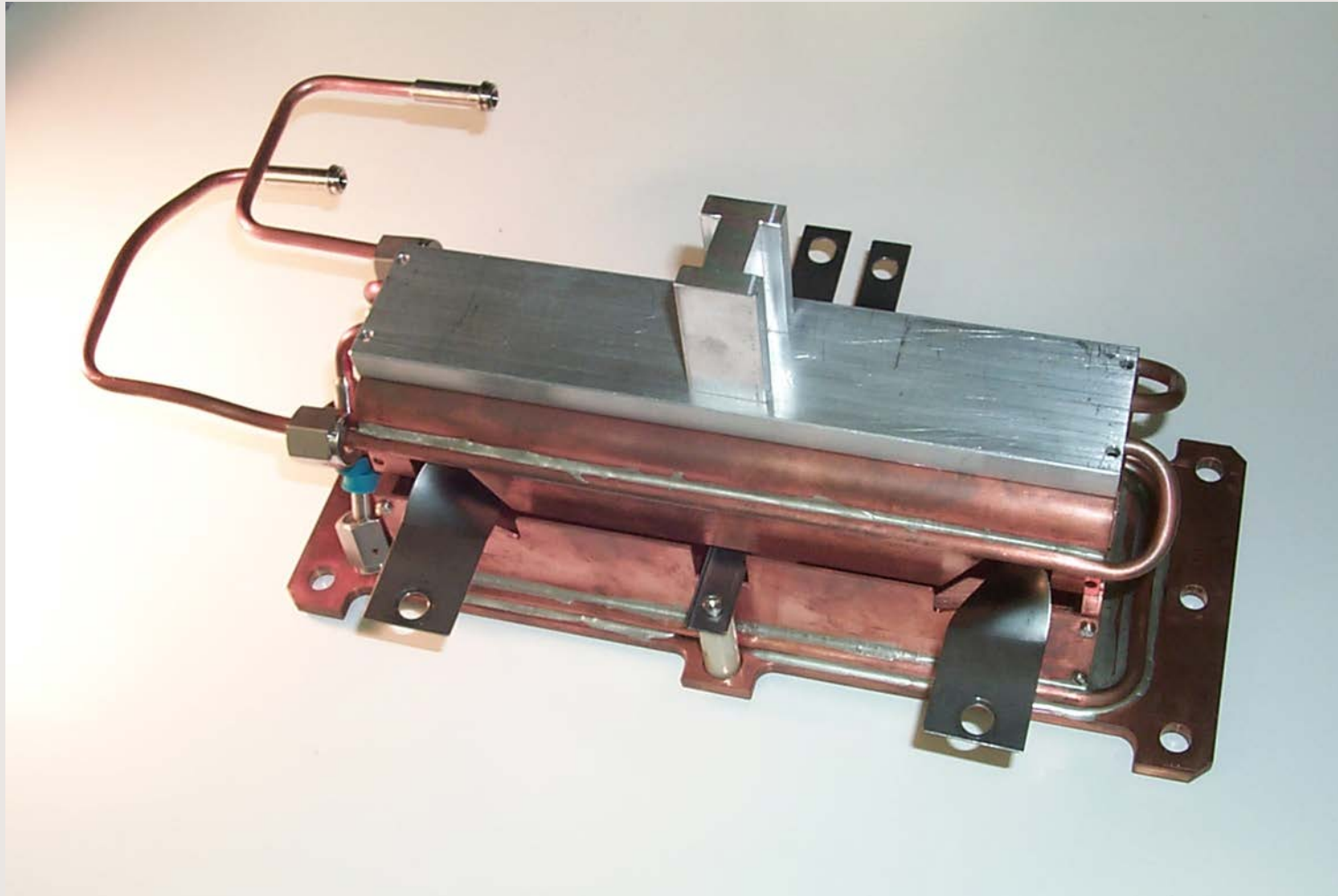
ISAC Target Life Cycle



ISAC Target

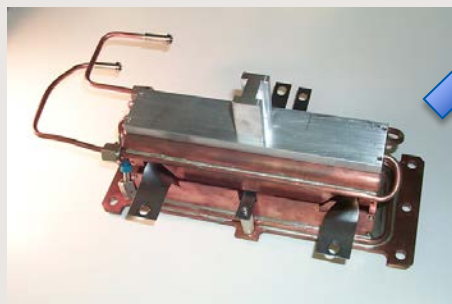


ISAC Target Life Cycle

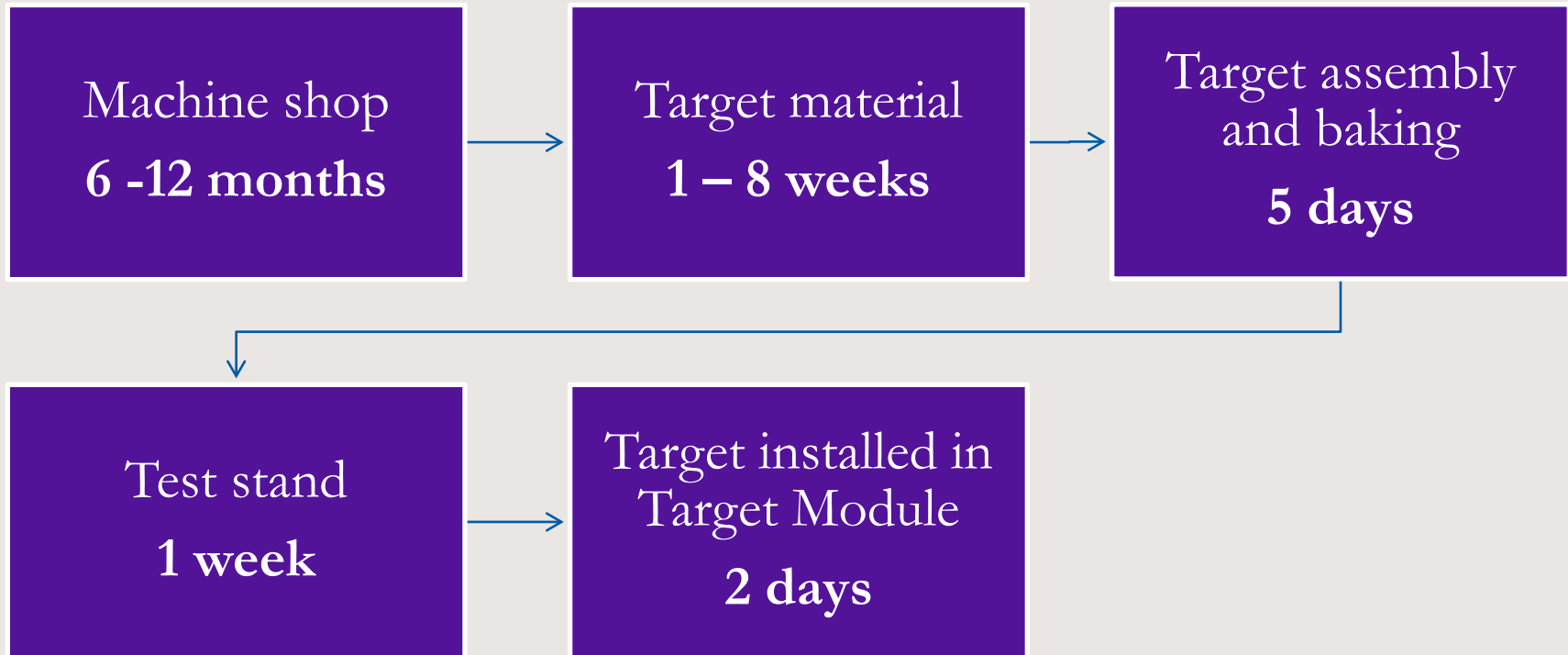


Test stand

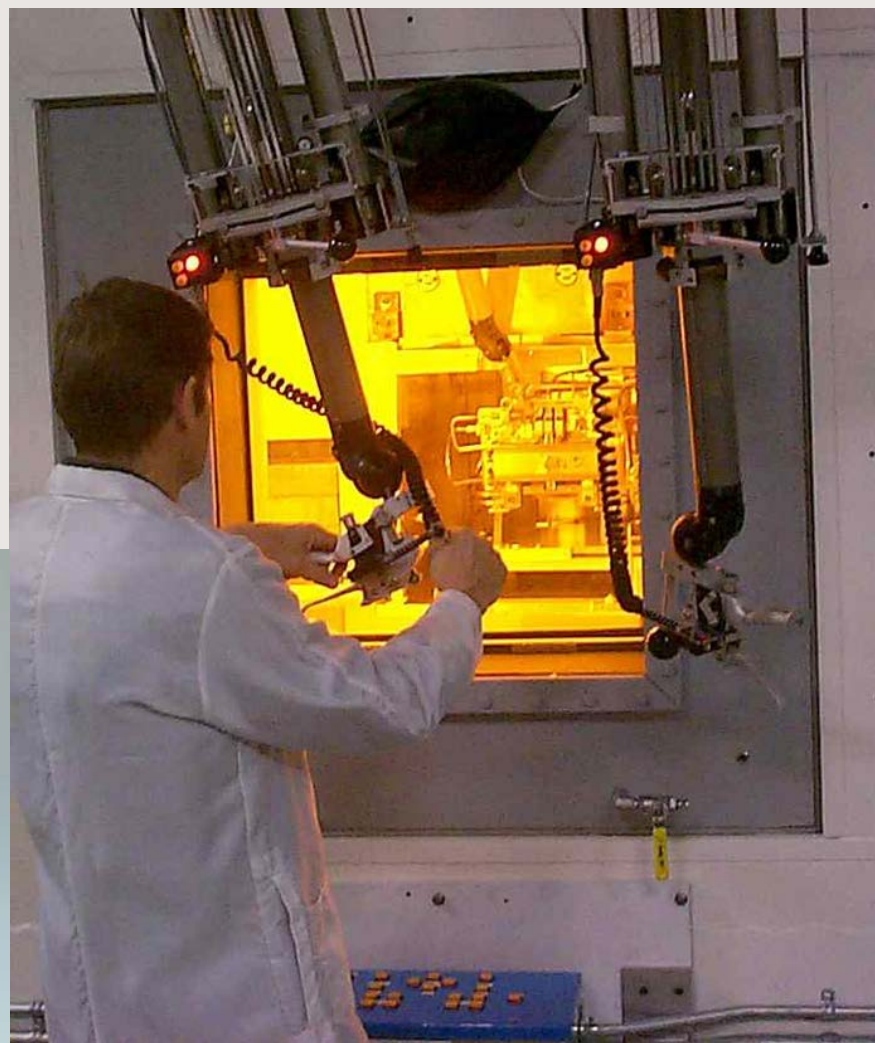
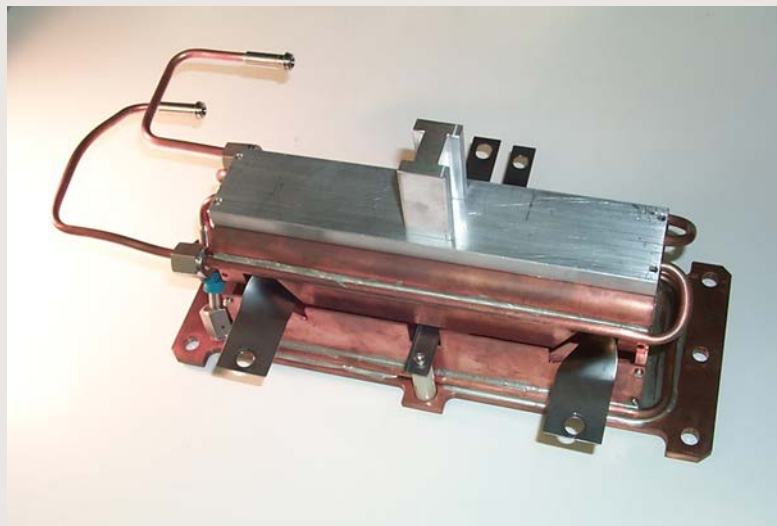
Target assembly goes to the Test stand.



ISAC Target Life Cycle



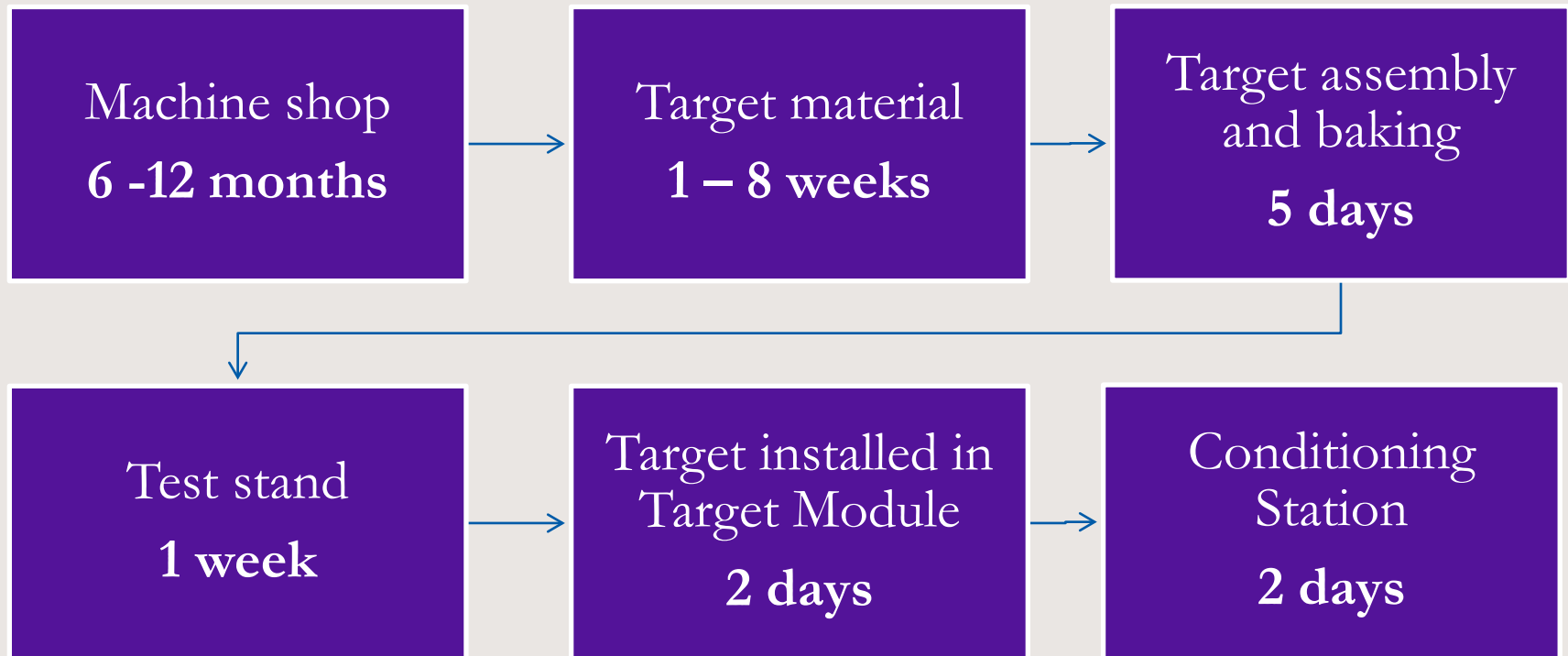
Hot Cell (HC) – Target remote installation into the Target Module (TM)



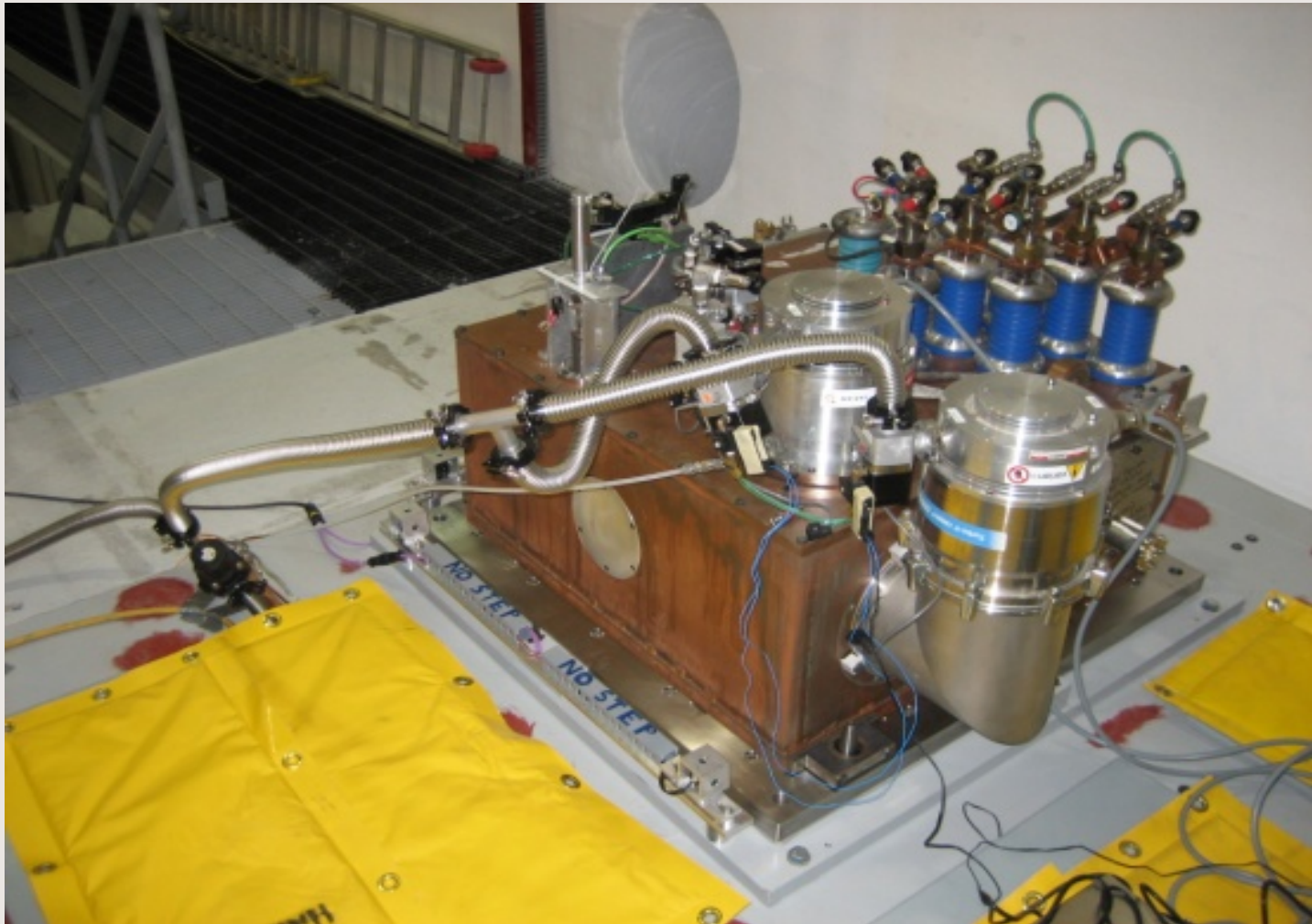
ISAC Target Module



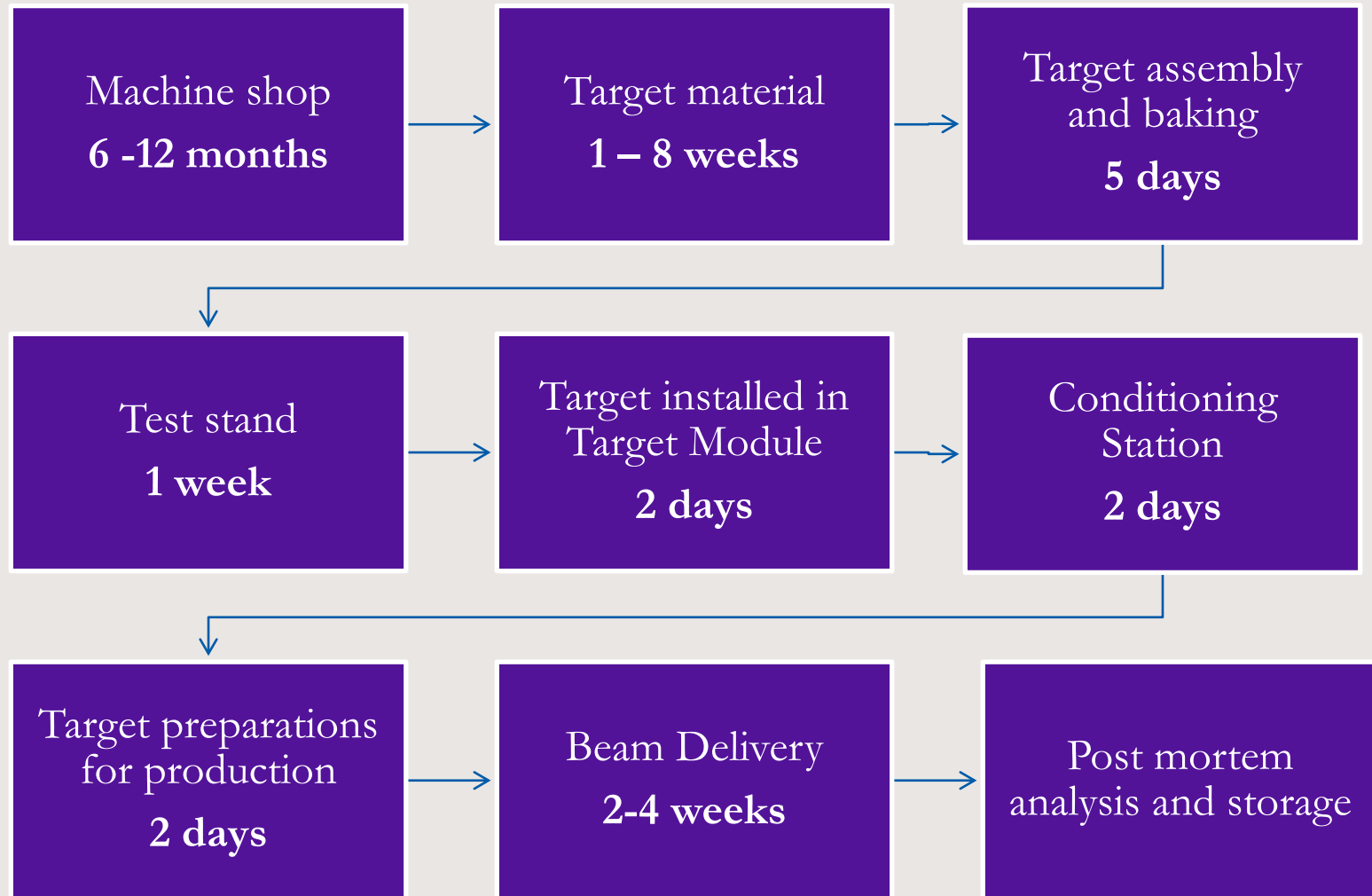
ISAC Target Life Cycle



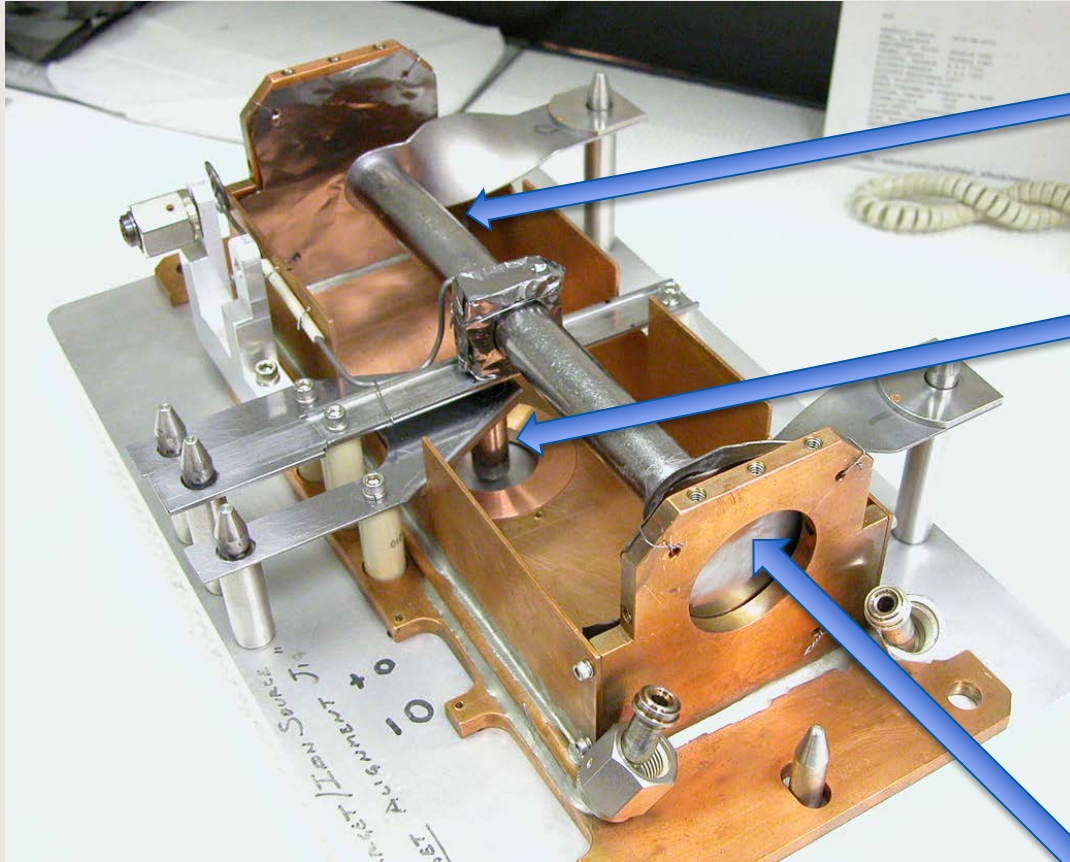
Conditioning station



ISAC Target Life Cycle



Beam on Target

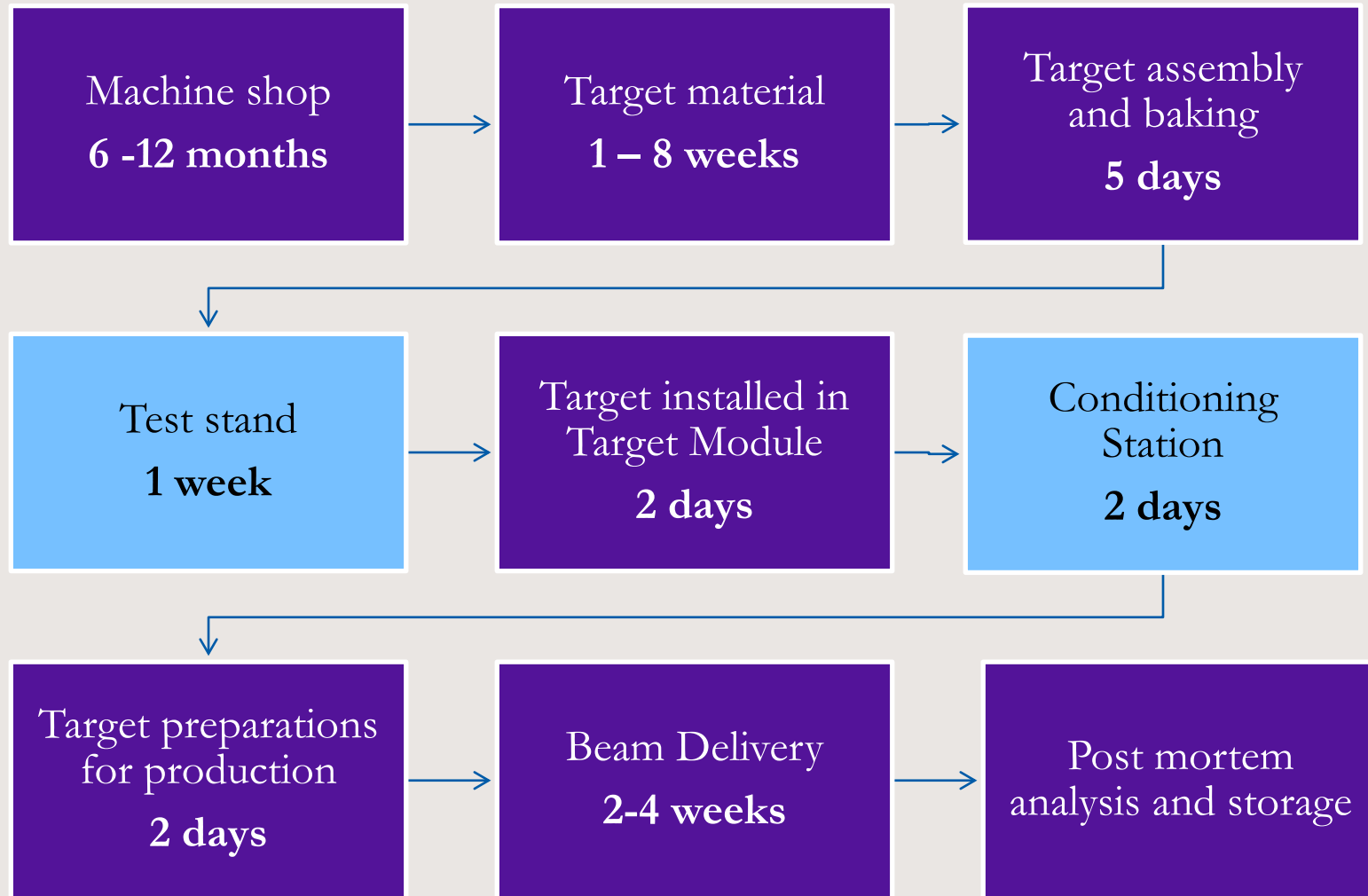


Target tube

Ionizer tube

Proton beam

Phase I & II



Documenting & Improving

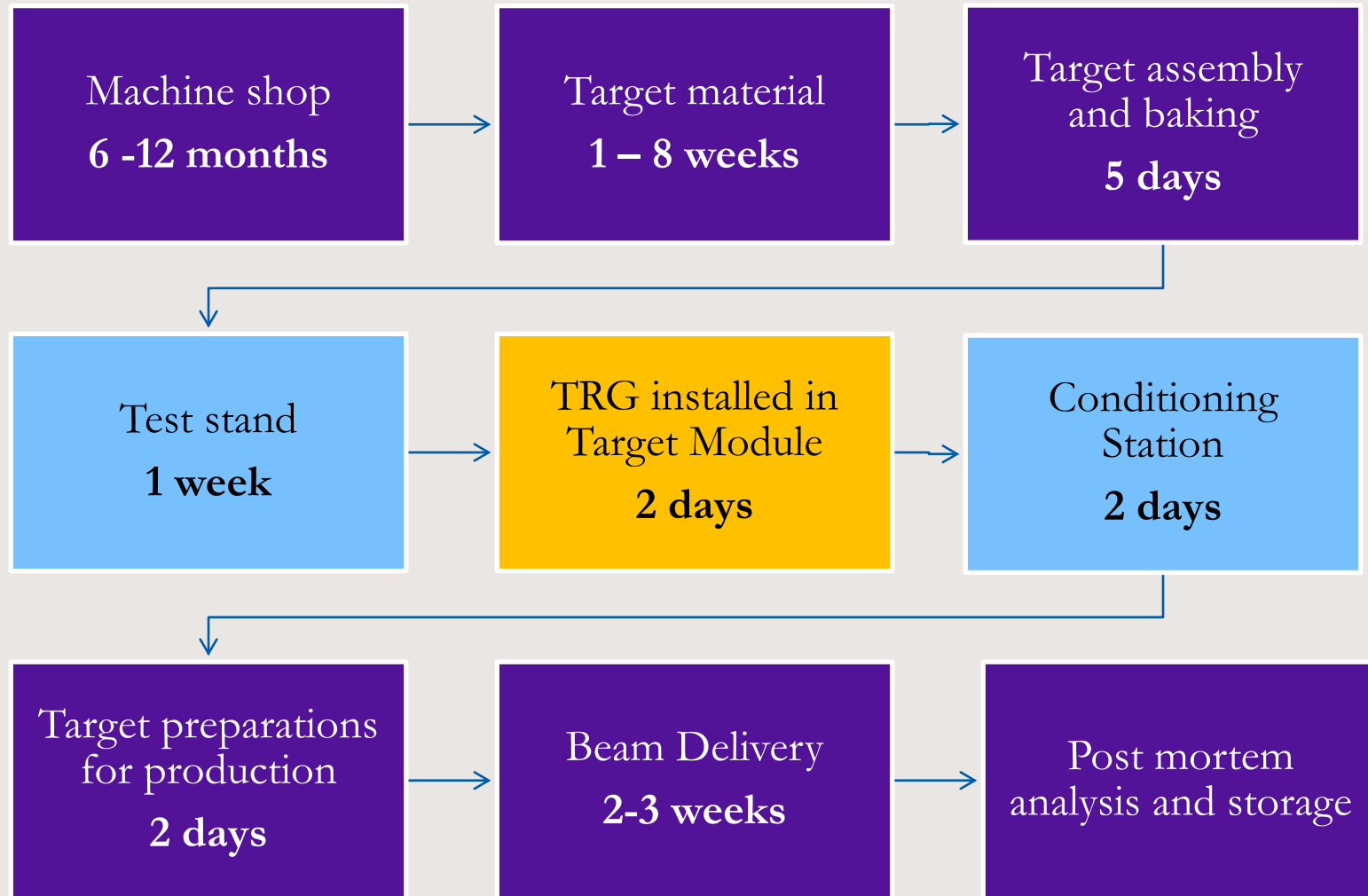
- Target travel document
 - Learn from failures
 - Learn from success
- Standardized parts
- Dedicated target reliability engineer

- Present: manual connect/disconnect
 - Cool- down for one week after beam off
 - Beam off during manual dis/re-connect
 - Personnel dose
- Future: remote connect/disconnect
 - No cool-down necessary
 - Dis/Re-connect can be done while delivering beam from the other station
 - No dose to personnel

Manual Target Disconnect/Connect

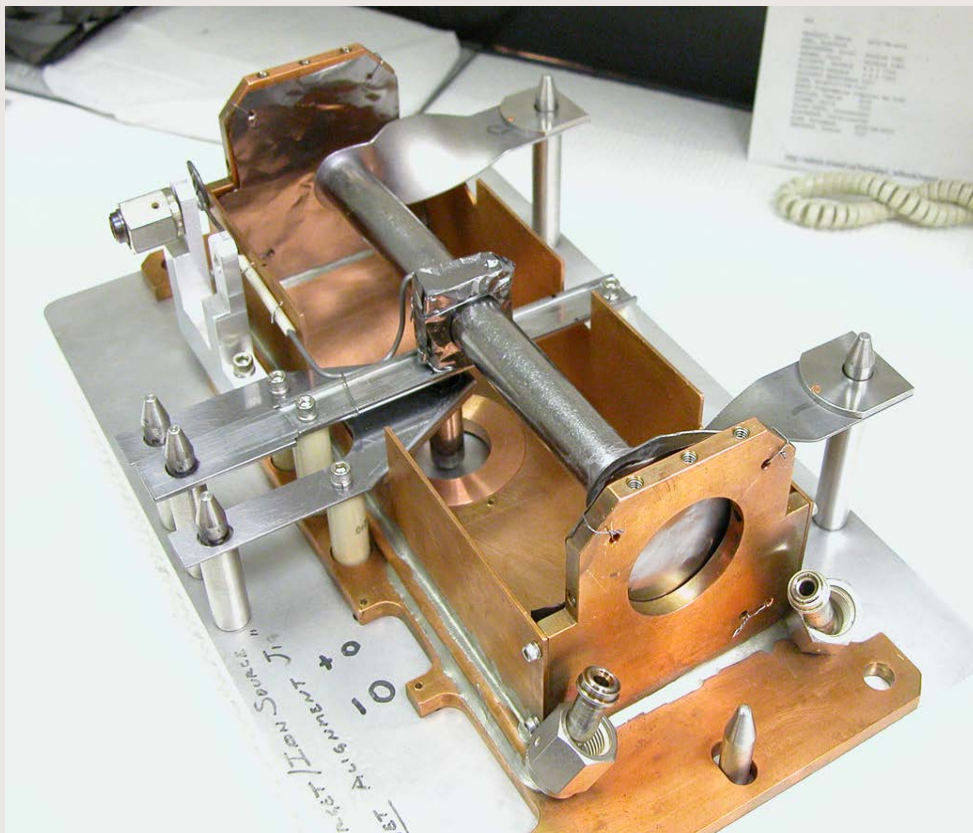


Beam Availability



- Problems:
 - Manufacturing problems
 - During baking:
 - Target legs warping
 - Target tube warping
 - During conditioning
 - Electrical short
 - Vacuum leaks
 - Water leaks

Summary



- Phase I => II
 - Gain: ~ 9 days beam availability and improved reliability

- Phase II => III
 - Gain: ~11 days beam availability and further improved reliability

Thank you!

Merci!

Questions?

