KRYIO

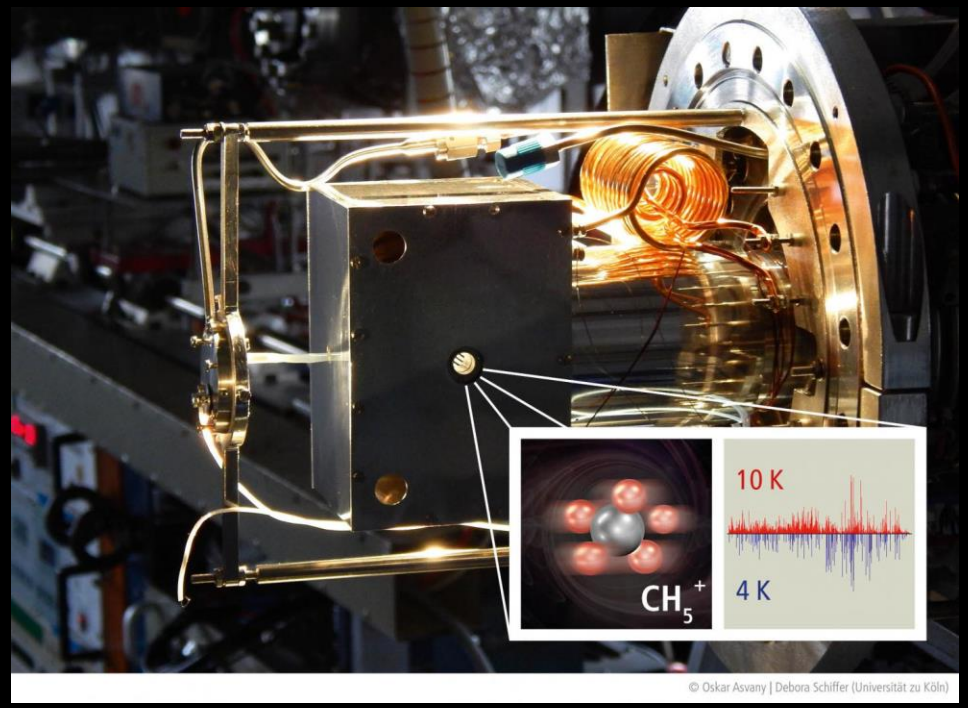
seL4 Summit

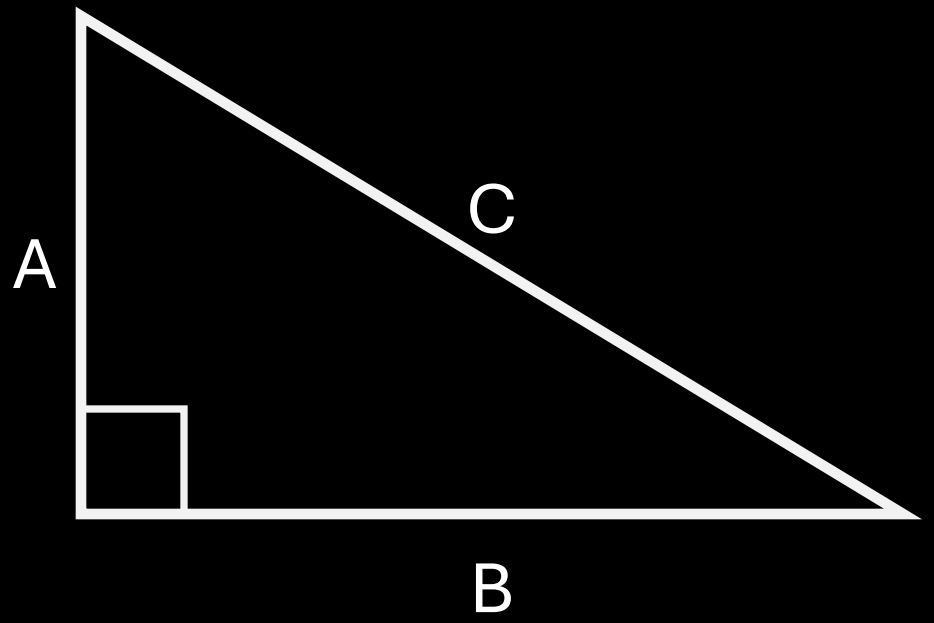
September 2025

An iqt portfolio company

Science

learning about the world as it exists, without bias





Engineering

Creation backed by evidence and science

Not Engineered

Engineered

Craftsmanship

Creation backed by best practice and experience

Magic

Use of tools without knowledge of how they work

“Any sufficiently advanced technology is indistinguishable from magic.”

- Arthur C. Clarke

Magic

Use of tools without knowledge of how they work

Every API you call without reading and understanding its backing code

Software Revolution(s)

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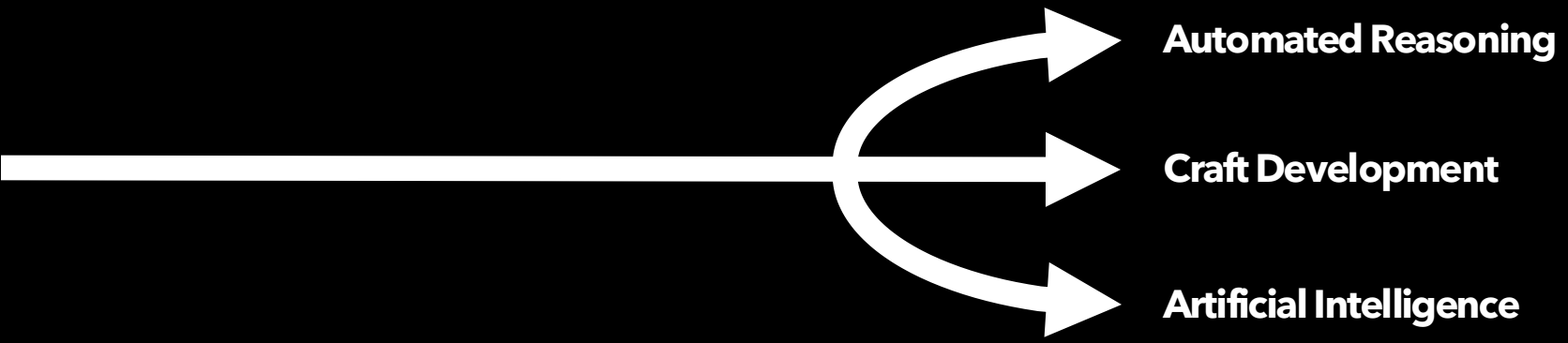

Software Craft

Software is built as a craft

We follow rules of tradition

Can't *guarantee* it works or is secure

Software Magic

AI embraces complexity to its extreme

Results are Magical, but unpredictable

Nobody *knows* how a given model works

Software Engineering

Formal Methods use math to *know* software

Proof it works the same way 100% of the time

Brings software into the age of engineering

Automated Reasoning

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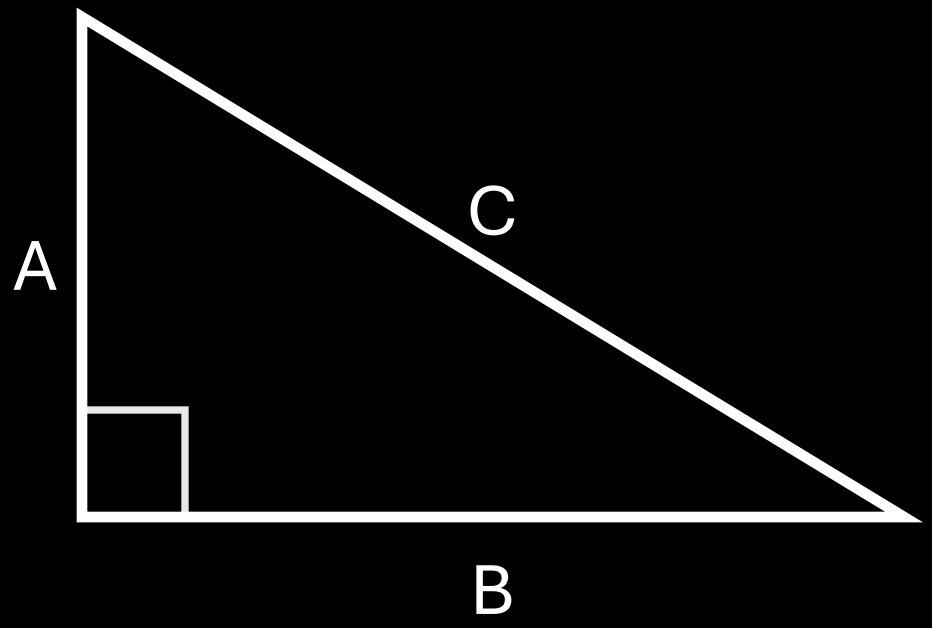

Pythagorean's Theorem

$A^2 + B^2 = C^2$

The proof is a *spec* for right triangles

3*3 + 4*4 = 5*5

It shows *any instance* is correct

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Software verified by Automated Reasoning

is Engineered Software

Almost no software today is engineered

Exception: Cryptography / Defence

So What?

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- Craftsmanship thinking dominates Software
  - Crafted software is already “good enough”
  - Open/Free/Community grew out of Craftsmanship
  - Low to no liability for failed software
- Engineering is anathema to today’s software community
  - Math sounds hard. Don’t make me learn new things
  - Engineering is expensive! I like free / supported by others
  - Engineering means accountability! No way! Resist!

Software Engineering is inevitable

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"Cold war 2.0" is targeting civilian infrastructure such that defense and infrastructure are now the same thing

AI on the edge raises the urgency for resilience, safety

Just like other engineering disciplines, software engineering will become regulated, licensed, safe

European Cyber Resilience act is the first step towards regulating software on devices by law

Real World Engineering

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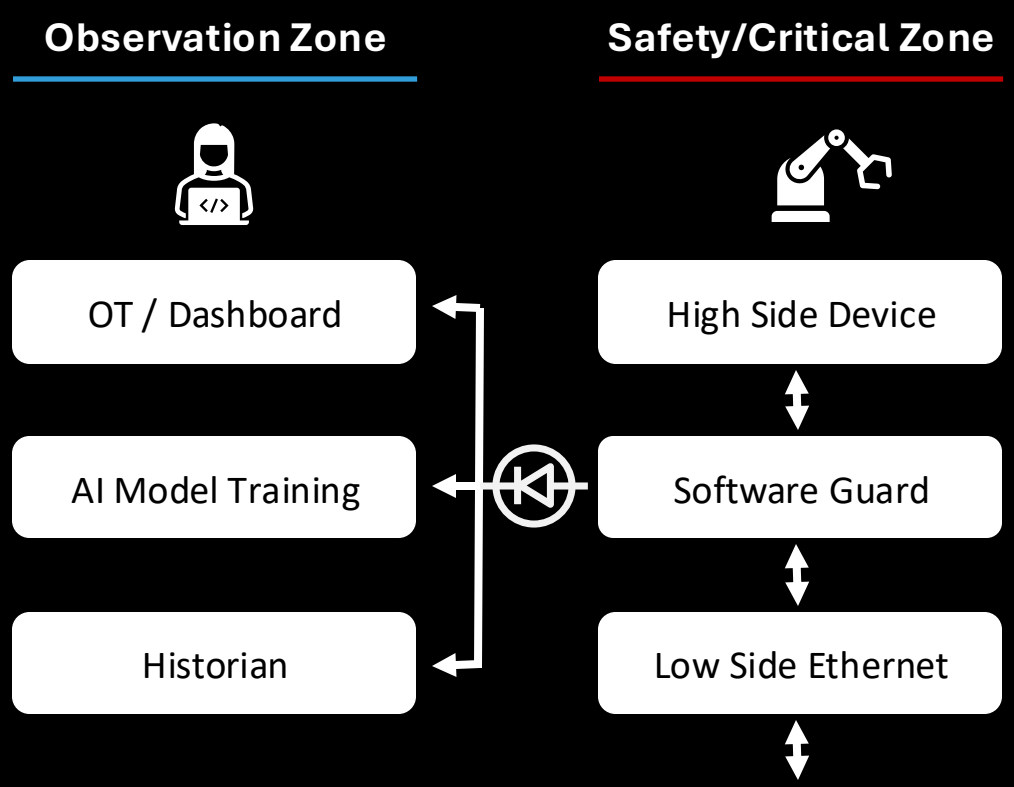
- Provable freedom from interference for compliance with evidence
- Minimum to zero downtime during updates - while machines are running
- Highly resilient - Any failure recoverable with minimal impact
- Assured rollback and update installation without physical access



Kry10 ISO 26262 safety manual coming late 2025

Call to Action

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- Embrace Certification – and raise the bar!
  We must push for *required* verification in all safety certifications
- Common language, messaging, and goals
  Automated Reasoning
  Software Engineering
  Resilience and Safety
- Transition from craftsmanship to engineering is a struggle
  Trust, reputation, readiness – Don’t confuse research with commercial
  Don’t let this take generations

Success Criteria

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- Projects under development
  Diversity of use cases. Not a monoculture.
- Deployed, active devices
  Measured in millions, then Billions
  Active, managed, deployed is more important than built or demonstrated
- Health of community
  Number of engineers in community, and at events
  Code sharing velocity

Thank you