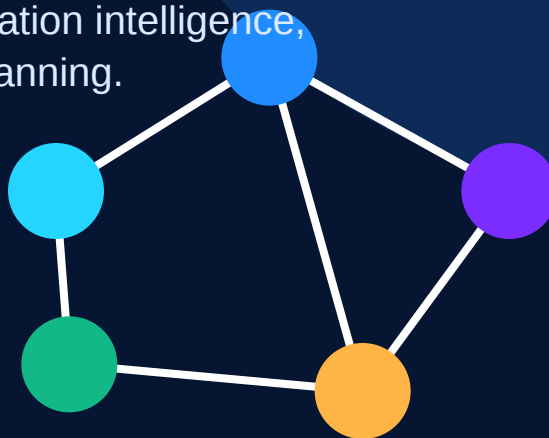




Science LLM Buyer Guide

Private AI for chemical R&D, formulation intelligence, technical service and experiment planning.



Client-controlled deployment: private cloud, on-prem server, or offline workstation

This guide explains how to evaluate, pilot and buy a private Science LLM without exposing confidential know-how to public AI systems.

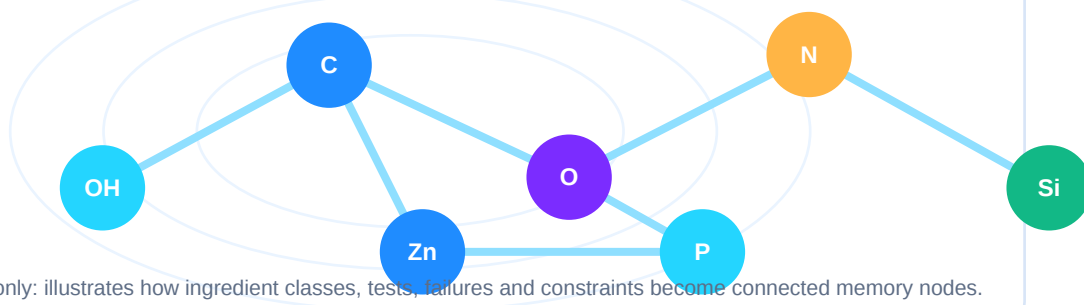
SECTION 01

Executive summary

Why private Science LLMs are becoming a board-level R&D topic.

- R&D teams are not short on knowledge. They are short on connected, usable decision memory.
- Most valuable know-how is scattered across Excel files, PDFs, TDS, MSDS, old lab notes, customer complaints and field-service history.
- A private Science LLM is not a public chatbot. It is a controlled reasoning layer deployed where the customer keeps its data.
- The near-term goal is practical: compress the path from 250,000 possible experiment directions to a short, expert-reviewable list.

From hidden R&D knowledge to connected decision memory



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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SECTION 02

The buyer problem

Fragmented data is the hidden tax on innovation.

- Formulation teams repeat experiments because old results are hard to find.
- Technical service teams answer similar customer problems without reusing full historical evidence.
- Sales teams promise performance claims without instant access to the best technical language.
- Executives cannot see which experiments, failures and customer issues are most relevant.

Core issue

The barrier is not only AI. It is the absence of AI-ready private R&D memory that connects inputs, outputs, failures, constraints and customer context.

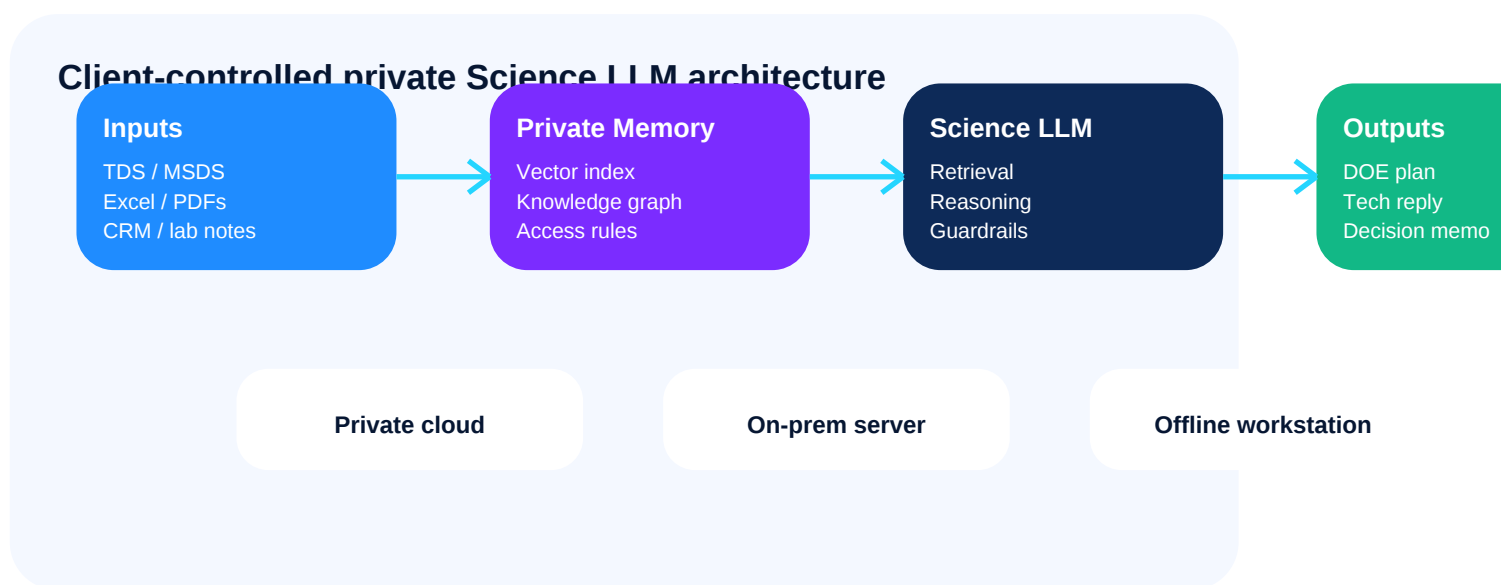
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SECTION 03

What a private Science LLM is

A decision layer above existing files and systems.

- It reads and retrieves company-controlled documents inside the chosen environment.
- It structures unstructured technical knowledge into searchable memory.
- It reasons with public science context plus private historical company evidence.
- It generates ranked experiment options, failure analysis notes and customer-ready technical drafts.



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SECTION 04

What it is not

A private Science LLM is not a magic formula generator.

- It should not bypass expert chemists or R&D directors.
- It should not expose secret formulas to public AI systems.
- It should not replace LIMS, ELN, CRM or ERP on day one.
- It should not make uncontrolled production decisions without human review.

Better positioning

ACRAZO is a private reasoning layer: retrieval, context, ranking, drafting and decision support for expert review.

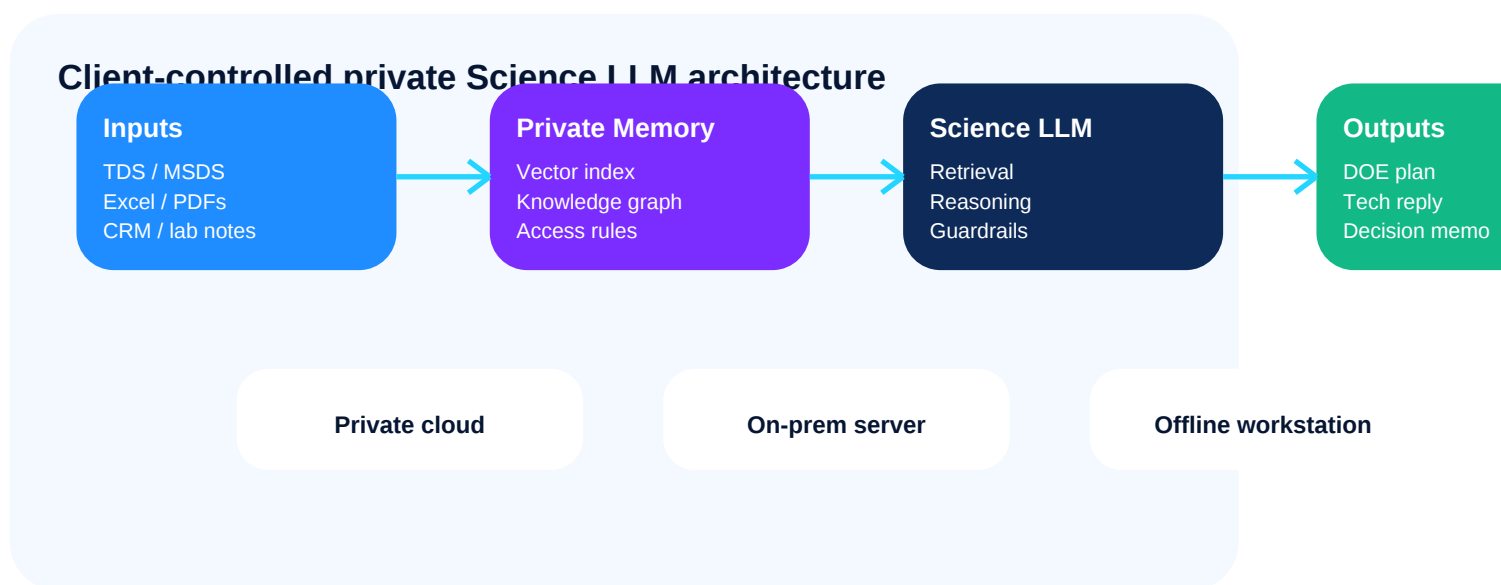
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SECTION 05

Client-controlled deployment

The customer decides where confidential data lives.

- Private cloud: isolated tenant or dedicated infrastructure.
- On-prem server: installed inside the customer network.
- Offline workstation: isolated local machine for sensitive pilots.
- Air-gapped option: scoped for organizations with strict confidentiality requirements.



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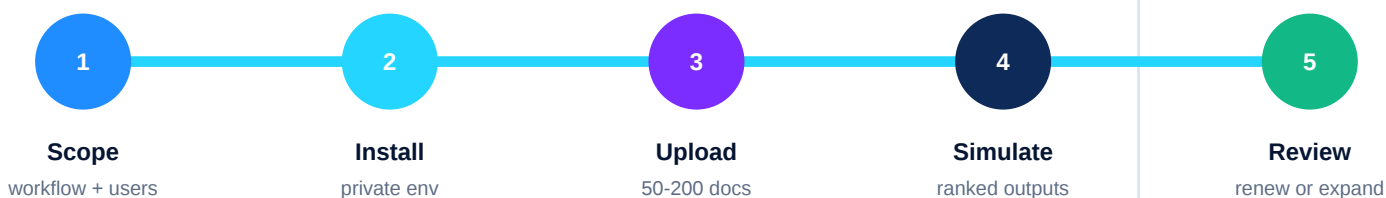
SECTION 06

60-day pilot model

Enough time to prove value without years of implementation.

- Define one high-value workflow: formulation improvement, failure diagnosis or technical service response.
- Install private environment and configure access controls.
- Upload 50-200 documents inside the customer environment.
- Run guided simulations and compare outputs against expert expectations.
- Renew monthly or convert to annual with a defined expansion plan.

60-day private pilot rhythm



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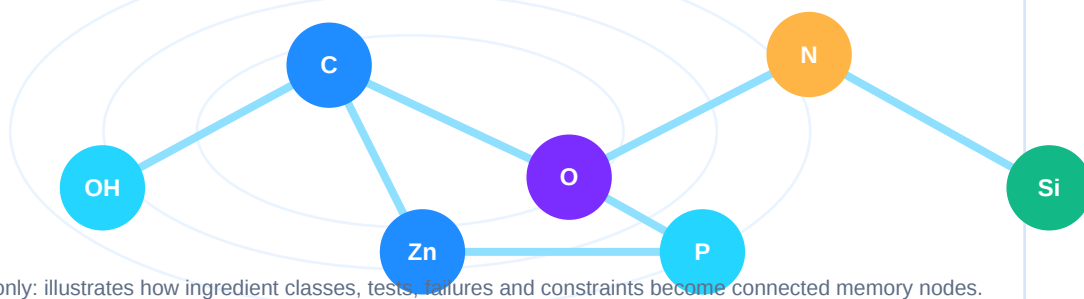
SECTION 07

Private inputs

The first pilot should use the documents scientists already trust.

- TDS and MSDS files for ingredients, binders, additives and finished products.
- Old formulations, batch records and Excel test tables.
- Failure reports: adhesion loss, blistering, yellowing, corrosion, viscosity drift, drying issues and UV change.
- Customer complaints, field photos, technical service history and sales notes.

Typical input classes in a private Science LLM pilot



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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SECTION 08

AI-ready R&D memory

The first asset is not the model. It is the memory layer.

- Documents are chunked, indexed and connected to metadata such as product family, substrate, test method and customer problem.
- Formulation inputs should connect to measured outputs: adhesion, hardness, gloss, corrosion hours, VOC, viscosity and cure window.
- Uncertainty labels matter. The LLM should distinguish evidence, assumption, and recommendation.
- The memory improves as more trusted internal evidence is added.

Buyer test

Ask whether the vendor can show exactly which internal evidence supported an AI answer. If not, the system is difficult to trust.

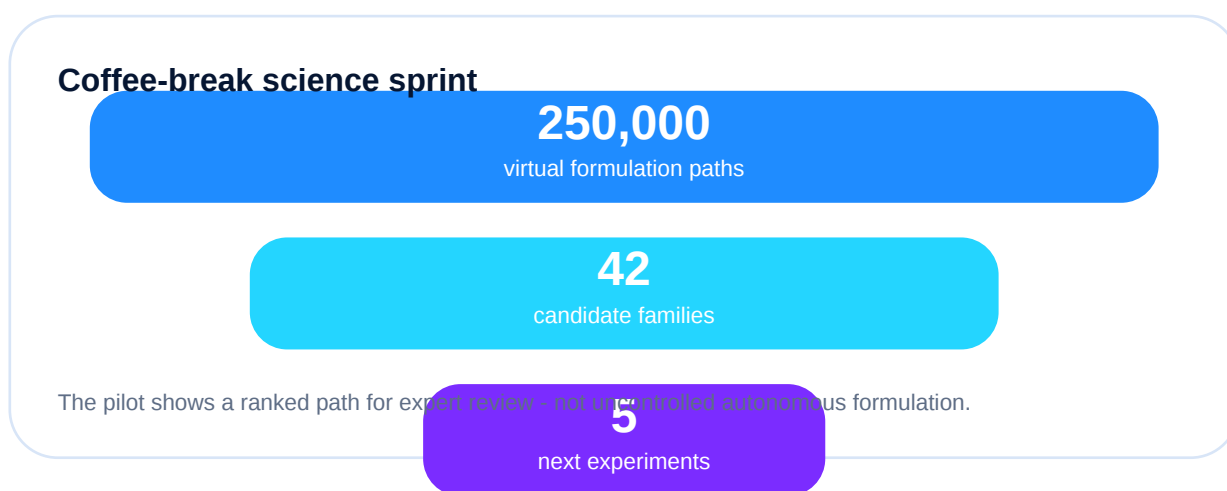
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SECTION 09

The coffee-break promise

A practical visual for executives.

- While the user takes a sip of coffee, the system can screen a broad design space virtually.
- The point is not to run 250,000 physical experiments.
- The point is to narrow the search space to a small list of high-signal next experiments.
- The buyer should see speed, but also control, traceability and expert review.



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SECTION 10

Experiment ranking

A private Science LLM should recommend next tests, not just summarize documents.

- Ranked experiments should include objective, rationale, variables, expected signal and risk.
- Recommendations should be tied to internal evidence and known constraints.
- The output should help the scientist decide the next five experiments faster.
- Low-confidence suggestions should be clearly labeled.

Coffee-break science sprint

250,000

virtual formulation paths

42

candidate families

The pilot shows a ranked path for expert review - not uncontrolled autonomous formulation.

5

next experiments

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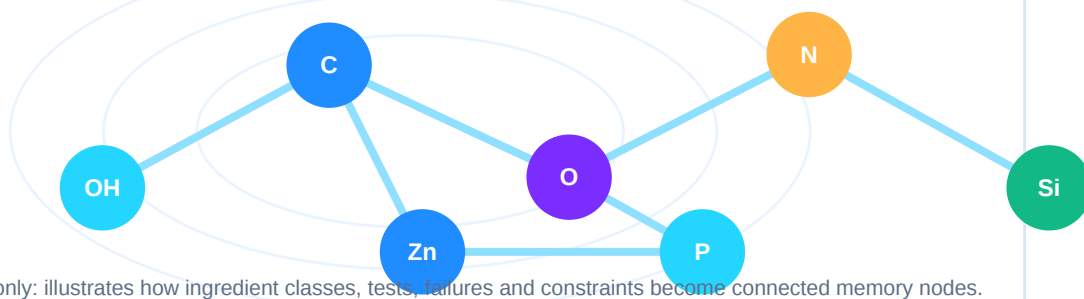
SECTION 11

DOE assistance

Design of Experiments support without overclaiming.

- The LLM can propose factors, levels and response variables for review.
- It can identify missing controls and potential confounding variables.
- It can help translate customer targets into measurable lab parameters.
- Final DOE design should remain under expert ownership.

Factors, constraints and response variables connected for DOE



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SECTION 12

Failure diagnosis

Where private context becomes especially valuable.

- Public AI can explain blistering or corrosion in general terms.
- A private Science LLM can connect the customer complaint to your old formula, substrate, pretreatment, cure history and similar past failures.
- It can draft a root-cause hypothesis tree and next verification tests.
- It can produce a customer-ready explanation that protects sensitive f

Example

A complaint about poor adhesion becomes a structured analysis: substrate, surface prep, cure, binder compatibility, film thickness, humidity exposure and historical similar cases.

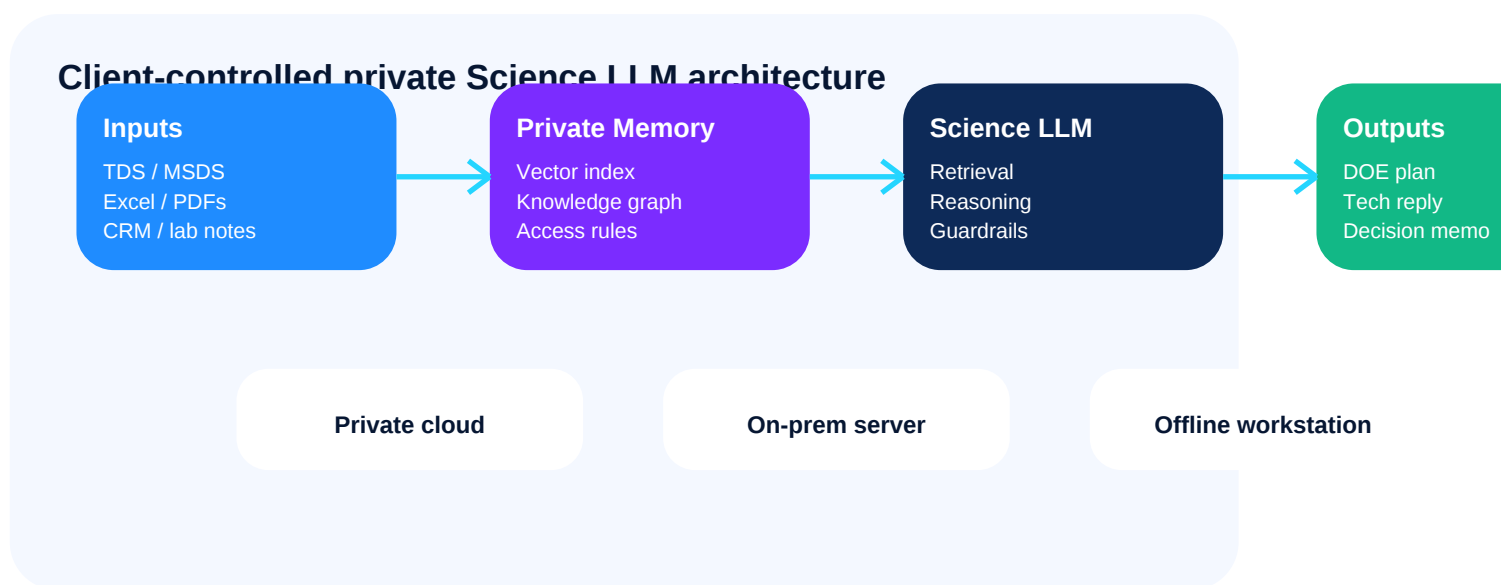
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SECTION 13

Technical service intelligence

Turn scattered field experience into reusable answers.

- Customer service teams often rewrite the same answer from memory.
- A private Science LLM can retrieve prior approved technical language.
- It can draft customer replies, internal action plans and lab retest requests.
- It can separate what can be shared with customers from what must remain internal.



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SECTION 14

Customer-ready technical response

Outputs should be useful outside the lab.

- The best output is not a long AI essay.
- It is a concise, defensible technical answer with assumptions, recommended action and next data request.
- It should be adjustable for sales, distributor, R&D director or customer audience.
- It should preserve confidential formulation knowledge.

Output standard

Every answer should show: evidence used, confidence, risk, next experiment, and customer-safe wording.

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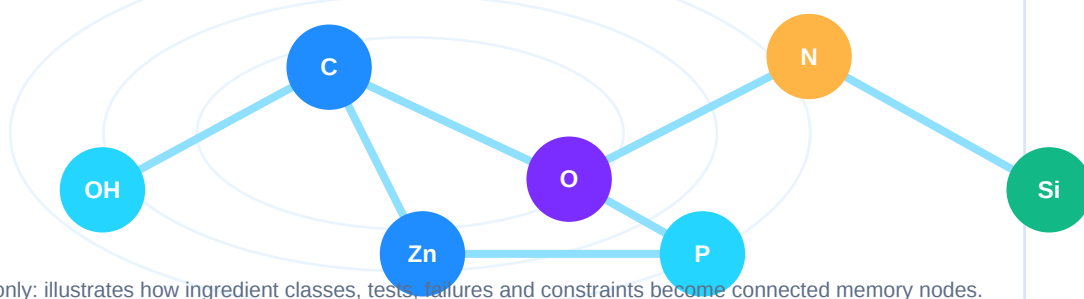
SECTION 15

Coatings use cases

Science LLM value is strongest when the workflow is specific.

- Corrosion resistance improvement without VOC increase.
- Adhesion failure diagnosis on metal, plastic, concrete or coated substrates.
- UV yellowing or gloss retention investigation.
- Drying, pot-life, viscosity drift and application window troubleshooting.
- Competitor product comparison using public data plus private internal notes.

Coatings performance map: binder, pigment, additive, substrate, process



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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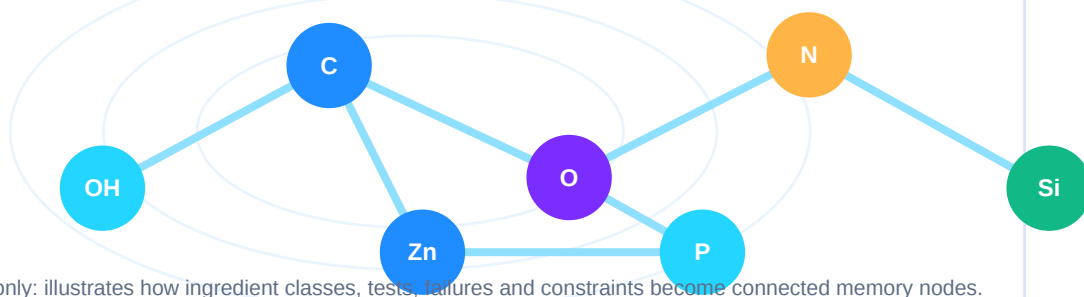
SECTION 16

Adhesives, polymers and advanced materials

The same architecture applies beyond coatings.

- Adhesives: bond strength, cure speed, open time, substrate compatibility.
- Polymers: filler packages, mechanical properties, thermal aging, processing window.
- Advanced materials: conductivity, barrier performance, flame retardancy and durability.
- Battery and energy materials: separator coatings, thermal shock, cycle-life data structures.

Materials intelligence across complex design spaces



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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SECTION 17

Public science plus private evidence

The strongest answer uses both worlds.

- Public knowledge provides chemical principles, safety context and general mechanism hypotheses.
- Private documents provide what actually happened inside the customer company.
- The LLM should never confuse public general advice with verified internal evidence.
- The UI should make this distinction visible to users.

Trust requirement

A buyer should be able to ask: Which part of this answer came from public context, and which part came from our own private R&D memory?

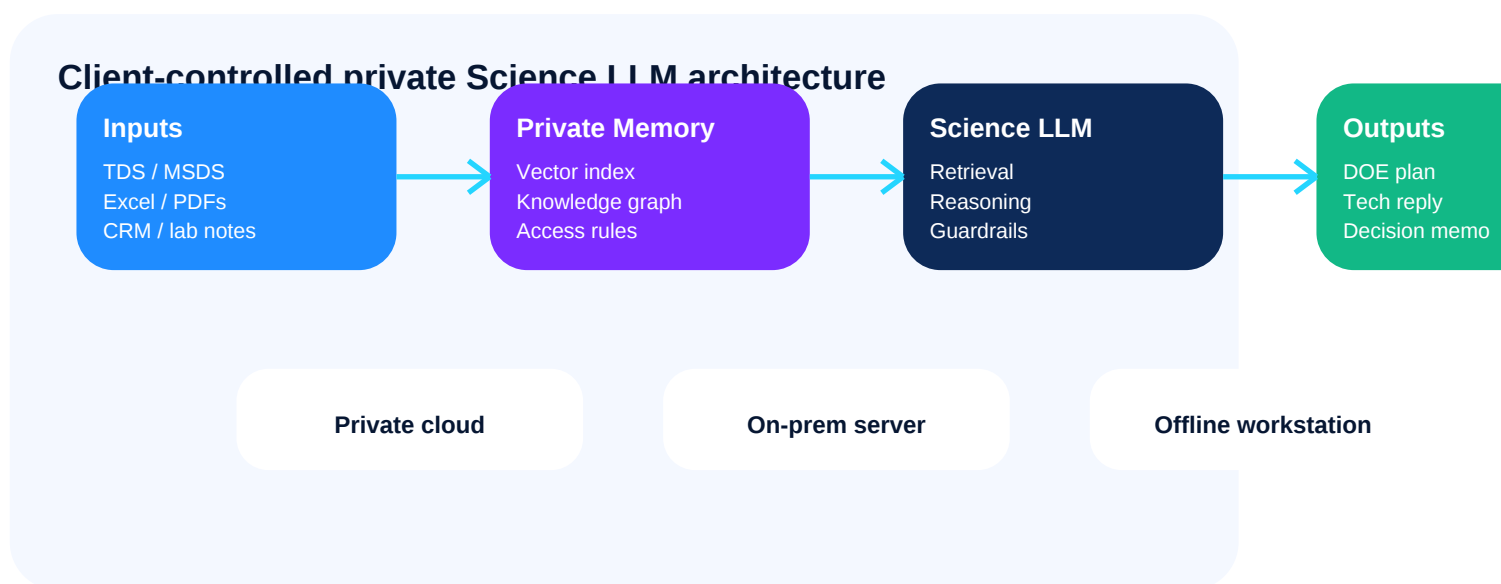
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SECTION 18

Security model

Privacy is not a paragraph. It is an architecture.

- Client-owned data remains in the client-controlled environment.
- No model training on customer documents without written permission.
- Role-based access control and audit logs should be available.
- Sensitive files can be excluded, redacted or limited by user group.
- Monthly license codes can control continuation without removing customer ownership of data.



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SECTION 19

Governance and auditability

High-stakes technical decisions need traceability.

- Each answer should retain timestamp, user, source set and version context.
- The system should identify unsupported claims and missing data.
- Administrators should control which users can access which product families or product lines.
- Audit logs are especially important for regulated or litigation-sensitive environments.

Governance principle

The private Science LLM should make expert reasoning easier to review, not harder to audit.

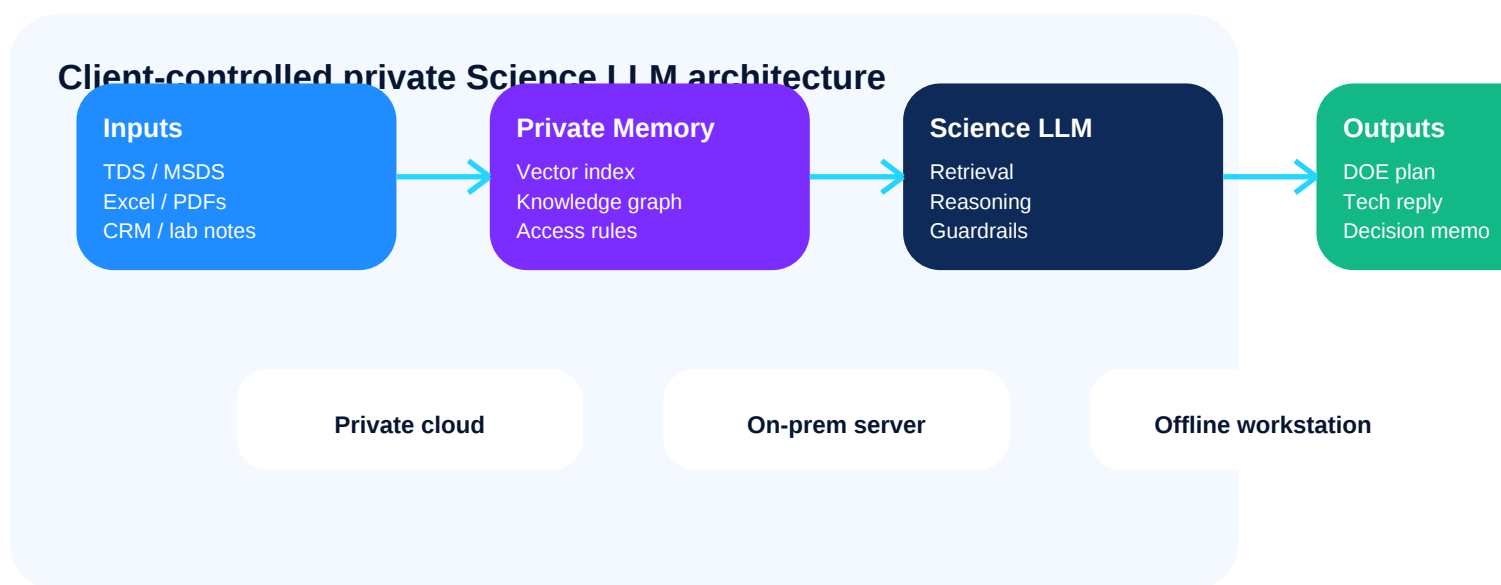
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SECTION 20

Integration with existing systems

Do not force the buyer to replace everything first.

- The pilot can begin on top of Excel, PDF, shared folders, CRM exports and lab notes.
- Later phases can connect to LIMS, ELN, SDMS, ERP, CRM and instrument data.
- The first win should prove decision value before large migration cost.
- This is how ACRAZO differs from full platform replacement projects.



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SECTION 21

Evaluation questions for vendors

What R&D directors should ask before buying.

- Where exactly do our documents reside during the pilot?
- Can we run the system in a private cloud, on-prem server or offline workstation?
- Does the answer cite our own evidence or only produce generic text?
- Can the system rank next experiments and explain the ranking?
- Can we restrict product families, customer files and formula access by user role?
- What happens when the monthly license expires?

Decision area	What to check
Data control	Where files are stored and who can access them
AI quality	Whether answers cite internal evidence
Experiment value	Whether the output changes the next test plan
Governance	Audit, roles, license and model-training policy

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SECTION 22

CEO view

Why leadership should care.

- The company already paid for decades of experiments. A private Science LLM helps reuse that knowledge.
- Faster technical answers can improve customer retention and reduce lost opportunities.
- A private pilot is easier to approve than a multi-year replacement project.
- The strategic value is compounding knowledge: every future experiment can be informed and reuse.

CEO takeaway

ACRAZO turns institutional technical memory into a reusable decision asset while preserving confidentiality.

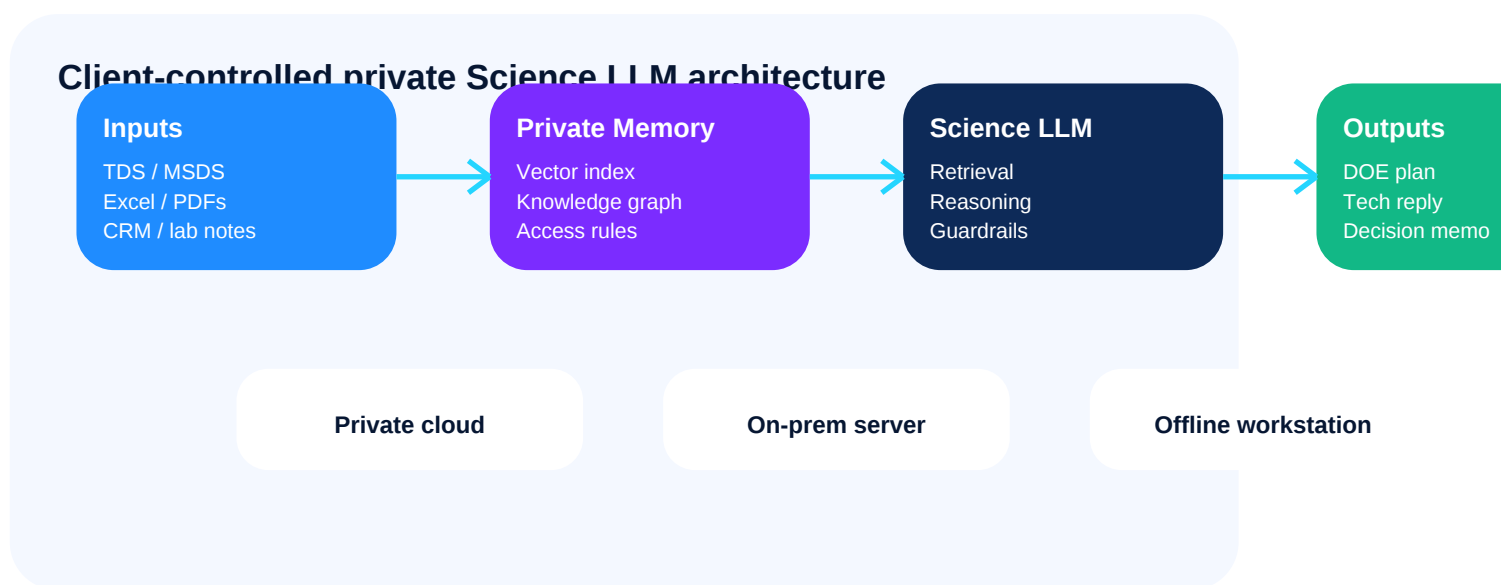
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SECTION 23

CTO view

Why architecture matters.

- Private deployment options reduce exposure to public AI and third-party model training risk.
- Access control, audit logs and environment-bound licensing create operational control.
- Integration can start lightweight, then expand to enterprise systems.
- The buyer should evaluate security, maintainability and data portability before approving scale.



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SECTION 24

R&D director view

Why scientists should care.

- The pilot must reduce wasted search time and improve experiment selection.
- The output should respect chemistry, constraints and company history.
- Scientists should see source evidence, confidence and unknowns.
- The best proof is a short list of next experiments that the team actually wants to run.

Coffee-break science sprint

250,000

virtual formulation paths

42

candidate families

The pilot shows a ranked path for expert review - not uncontrolled autonomous formulation.

5

next experiments

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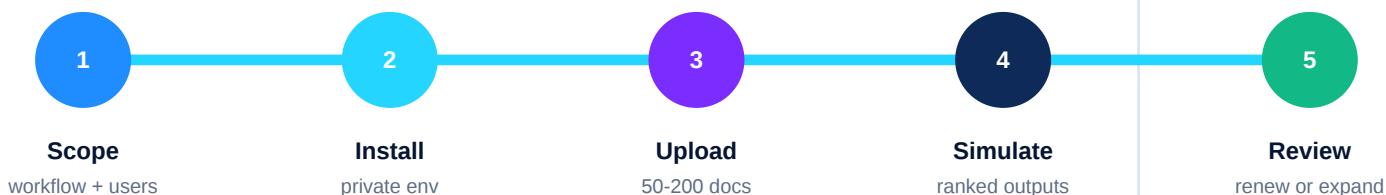
SECTION 25

Pilot success criteria

What success should look like after 60 days.

- A working private environment controlled by the customer.
- 50-200 relevant documents uploaded and searchable through AI-ready memory.
- Three to five tested workflows: formulation, failure diagnosis, technical answer, DOE plan and customer response.
- A decision on monthly continuation, annual conversion or scope expansion.
- Clear list of missing data needed for stronger predictions.

60-day private pilot rhythm



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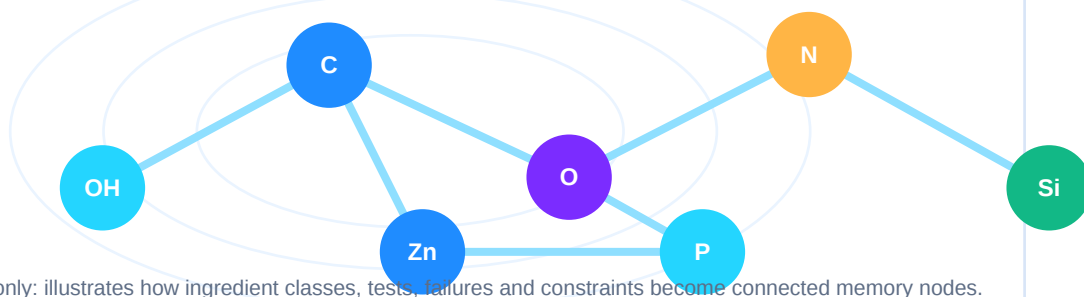
SECTION 26

Example workflow: corrosion improvement

From target to ranked experiment plan.

- User enters: improve corrosion resistance without VOC increase and preserve adhesion on metal.
- System retrieves internal formulas, salt-spray results, pretreatment notes and similar complaints.
- System proposes five next tests with rationale, variables and risk.
- System drafts a customer-safe technical explanation and internal lab plan.

Corrosion workflow evidence map



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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SECTION 27

Example workflow: adhesion failure

From complaint to root-cause tree.

- Input includes substrate, application method, cure window, film thickness and field environment.
- The LLM builds a hypothesis tree: surface contamination, cure deficiency, binder mismatch, moisture, film build or pretreatment issue.
- It retrieves similar historical cases and ranks verification tests.
- The customer reply is drafted without exposing the confidential form

Result

A field complaint becomes a structured lab action plan plus a customer-ready response.

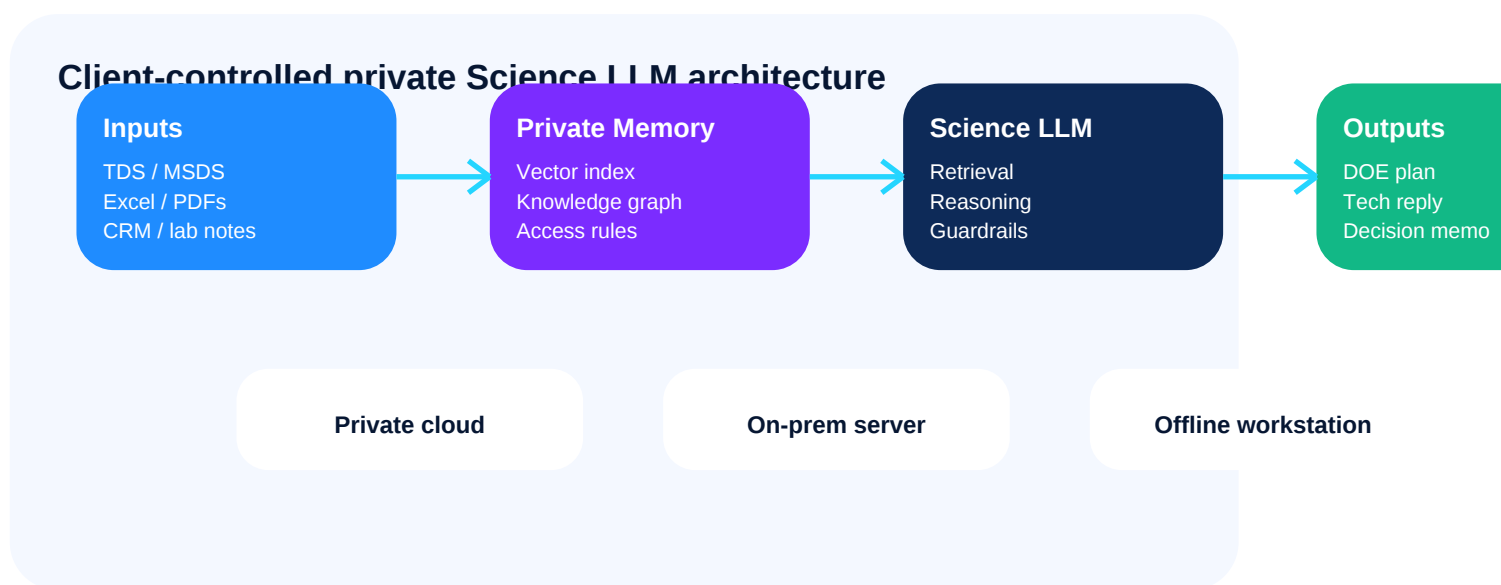
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SECTION 28

Example workflow: new product idea

From market demand to first experiment matrix.

- Sales notes and customer requests are transformed into measurable technical targets.
- Private R&D memory identifies product families, raw materials and failure risks that are relevant.
- The system suggests a first-pass experiment matrix for expert approval.
- Marketing language can be drafted only after technical evidence is verified.



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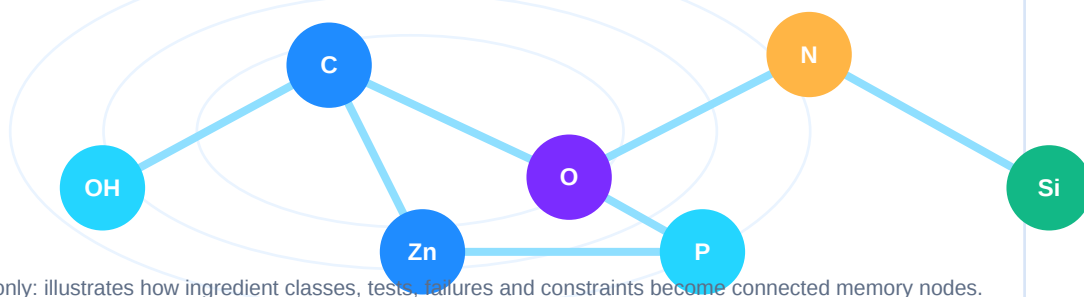
SECTION 29

User experience

The interface should feel like a decision cockpit.

- Input: voice, PDF, image, notes, Excel and customer problem.
- Middle layer: retrieval, evidence map, conflicts and confidence.
- Output: ranked experiments, root-cause analysis, customer response and executive summary.
- Controls: approve, reject, edit, mark evidence as trusted, or ask for missing data.

Decision cockpit: evidence, constraints, outputs



Example visual only: illustrates how ingredient classes, tests, failures and constraints become connected memory nodes.

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SECTION 30

Commercial model

Premium pricing requires premium clarity.

- Science: private R&D and formulation reasoning.
- Marketing: brand, customer communication and market intelligence.
- Strategy: board-level competitive, market entry and risk scenarios.
- Diplomacy: geopolitical proposal analysis and high-stakes negotiation framing
- The buyer should start with a paid private pilot, not an open public demo.

Positioning

ACRAZO is not a cheap chatbot. It is a premium private decision layer for organizations that cannot expose their know-how.

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SECTION 31

FAQ

Short answers for buyers.

- Do we send files to ACRAZO? No. The pilot can be configured so files stay inside the customer environment.
- Does the model train on our data? Not without written permission.
- Does it replace LIMS or ELN? No. It can sit above existing files and systems first.
- Can it run offline? A scoped offline workstation pilot can be evaluated for sensitive workflows.
- Is it autonomous? No. It is human-in-the-loop decision support.

Decision area	What to check
Data control	Where files are stored and who can access them
AI quality	Whether answers cite internal evidence
Experiment value	Whether the output changes the next test plan
Governance	Audit, roles, license and model-training policy

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SECTION 32

Glossary

Key terms for non-technical executives.

- LIMS: system for lab sample and workflow management.
- ELN: digital lab notebook for experiments and observations.
- SDMS: system for scientific instrument data storage and retrieval.
- Vector database: searchable memory that helps retrieve relevant document fragments.
- RAG: retrieval-augmented generation, where the LLM answers using selected source material.
- DOE: Design of Experiments, a structured way to test variables efficiently.

Decision area	What to check
Data control	Where files are stored and who can access them
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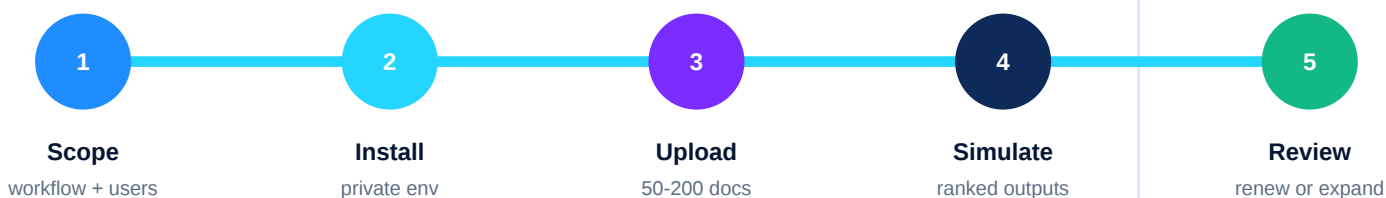
SECTION 33

Buyer checklist

Before approving a pilot.

- Choose one workflow that matters commercially.
- Prepare 50-200 representative documents inside the chosen environment.
- Define who can access which documents.
- Define three output types: experiment plan, diagnosis memo and customer response.
- Agree on the 60-day success criteria before installation.

60-day private pilot rhythm



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SECTION 34

Next step

See the interactive Science LLM demo and request a private pilot when ready.

- Start with the website demo to understand the workflow.
- Select the deployment environment: private cloud, on-prem server or offline workstation.
- Use a narrow R&D workflow for the first pilot.
- Expand only after the team sees credible, useful, source-grounded results.

ACRAZO Science LLM

Private AI for companies that cannot share their formulas, technical documents, customer problems or scattered know-how with public AI systems.

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