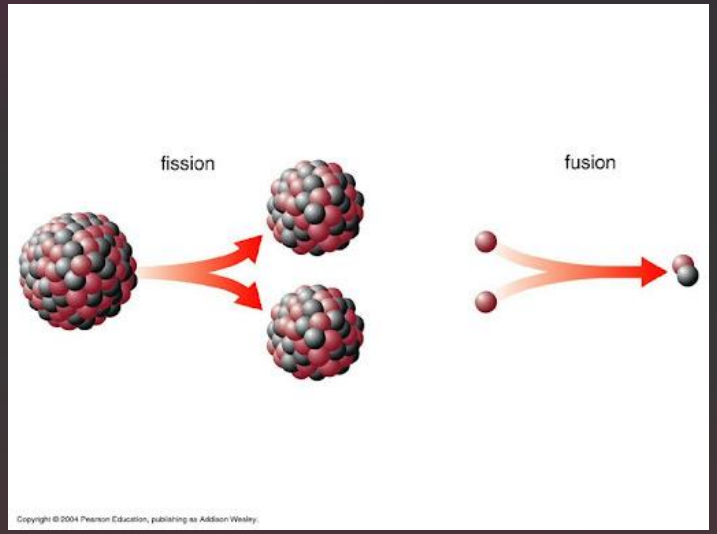
Daedal Systems

The measurement and validation infrastructure for the fusion industry

What is fusion?



Fission vs Fusion

Superheated gas (100M ºC+), called “plasma”

Future fusion Reactor

Sources: 1. Duke Energy. 2. ITER.

The Economic and Political Need for Fusion is Growing

1. Global Power Demand is Surging and Persistent

4% [1]

YoY Growth in Global *Clean, Baseload* Power Demand, 2026 to 2050

Supercharged by AI:

From 2024 to 2025, McKinsey revised forecast from 3% to 4% CAGR.

2. Sovereign Energy Infrastructure has become a National Security Necessity

46% [2]

Global Oil Production Controlled by OPEC+ Countries

62% [3]

Global Uranium Enrichment Controlled by Russia and China

1. McKinsey. 2. US Energy Information Administration. 3. Mordor Intelligence.

Fusion Energy is the Rapidly Growing Dark Horse to Fulfill Sovereign Energy Demand

11% [1]
YoY Growth In Number of Fusion Start-Ups

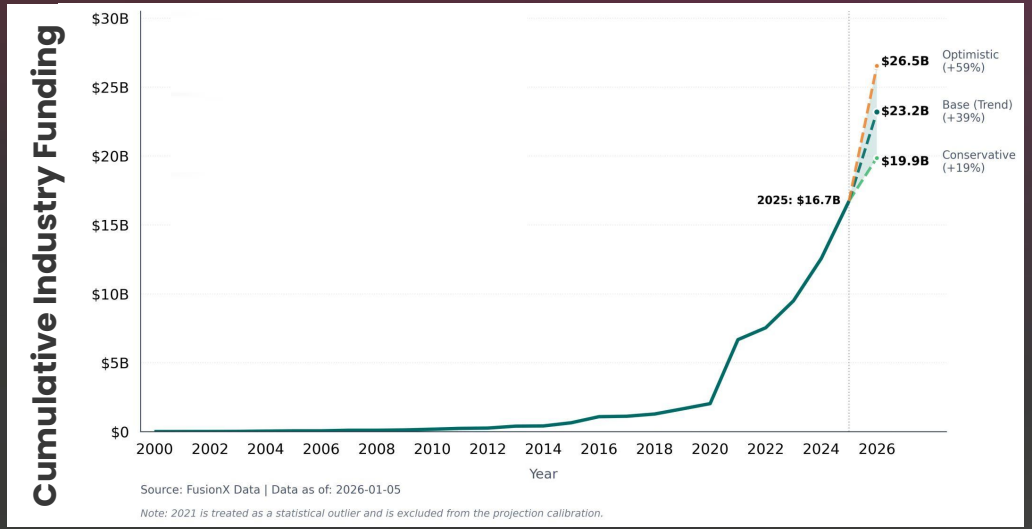
40% [2]
YoY Growth in Fusion Industry Funding

Bolstered by National Commitments:

- 15B USD from UK, US, Germany and China combined. [3]
- 50M CAD in Canada.

And hyper-scaler and utility bets:

- Purchase Power Agreements and investments by ENI, Nvidia, Google.



1. FIA. 2. FusionX. 3. Over 5 years. 4. ENI, Nvidia, Microsoft, Google, TVA.

The Implications for Fusion are Massive.

The Benefits:

- 1kg of fusion fuel has equivalent energy of *13,000 tons* of coal.[1]
- Fuel abundance *can meet humanity's energy needs for millions of years.*
- No GHGs, long-lived radioactive waste.
- Passively safe. No chain reaction, no meltdown scenario.
- **Sovereign energy infrastructure independent of fuel supply chains.**

Implications:

- Unprecedented clean energy abundance enabling technologies: desalination plants, carbon sequestration, fast space travel, asteroid mining.

$40T[2]

Projected Fusion Market Cap with 1% Capture Global Energy Market, applying Tesla-like EBITDA Multiple

1. Kleinman Centre for Energy Policy. 2. Bloomberg.

Hi, I’m Henry.

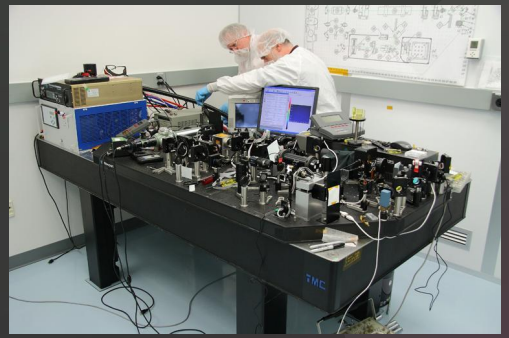
Henry Gould, P.Eng.

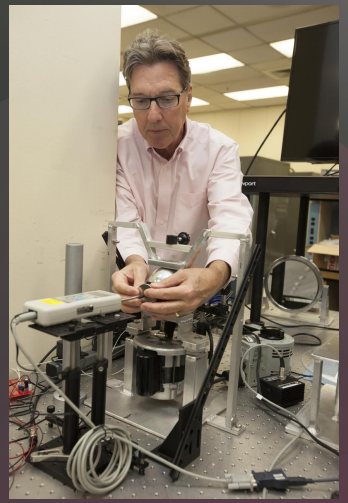
Founder

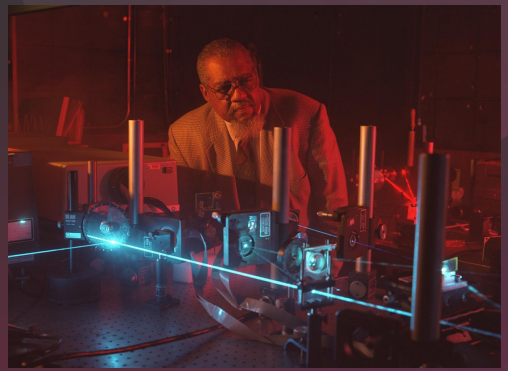
- Engineering Physicist; formerly at General Fusion in Vancouver, BC, for 5 years.
  - One of the oldest fusion companies.
- Technical Project Manager of Plasma Diagnostics.
- Saw how the whole industry needs the same measurement systems but currently build them in house.

What are plasma diagnostics?

- Complex physics instruments
  - Hardware & Software
  - E.g. measuring laser-plasma interaction.
- Many (12+) diagnostic systems are required for plasma characterization
  - Commonwealth Fusion Systems (industry leader) has ~27 distinct diagnostic systems, 50+ person team
- **They exist** at low technology readiness level in academia, “lab instruments”

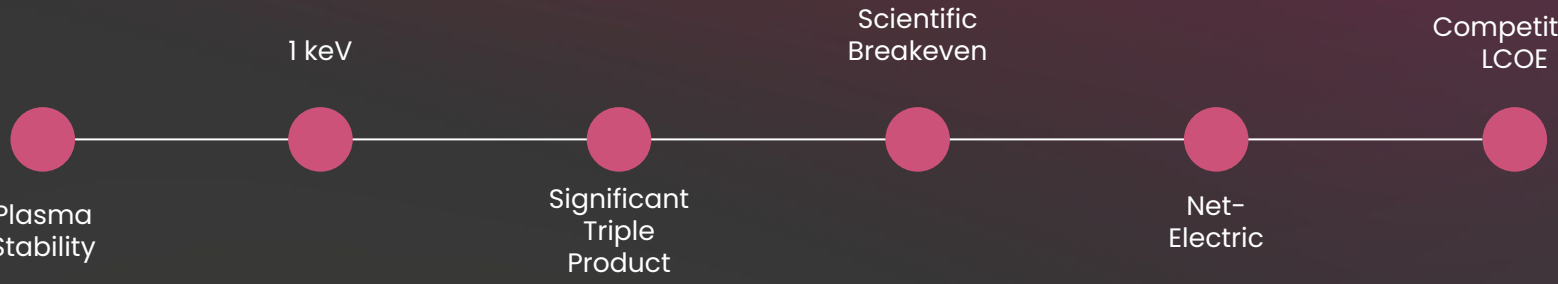






The Fusion Company Development Path

To succeed, their technology must achieve **6 key milestones:**



Capital Required (USD):	~$10M	~$100M	~$3B	~$6B	??

Every company today is working on Milestones 1-4, which are measured with plasma diagnostics.

There are **three** major problems with measurement in the fusion industry.

1. The Powerplant Problem:

- Instrumentation needed for fusion power plants ***does not yet exist,*** due to neutron loads.
- Needed for First-of-a-kinds within a decade.

2. The R&D Problem:

- Today, every fusion company needs the same diagnostics, but each must build them themselves in-house.
- R&D diagnostics are essential, but **not core intellectual property**.
- Tension results in low diagnostic quality and reliability; impedes R&D, **delays capital formation and commercialization.**

3. The Validation Problem:

- The greatest risk a fusion company faces is capital formation.
- **The Conflict of Interest:** Today, fusion companies self-report measurements to investors. How to validate?
- Today, the validation mechanisms are:
  - The academic peer-review process, which has year-long turnaround time.
  - The DOE Milestone Program, which is limited in scope and to only eight companies.
  - Ad-hoc diligence committees hired by fusion companies/investors.
- There is no **standard, trusted, fast-turnaround** validation mechanism, which is hindering capital formation.

Daedal Systems

A **plasma diagnostics integrator** and ***industry validator.***

- We deliver suites of R&D diagnostics on full-service contracts.
  - Design, Build, Operate, Maintain.
  - Products and Service.
- Develop a ***platform for plasma diagnostics.***
  - Standardized sub-units.
  - A generalized data analysis software layer.
  - Embedded best practices for data integrity, systems integration, etc.
- Enable companies to have externally validated measurements for investors, insurers and future regulators, to ***accelerate capital formation, compliance and commercialization.***

Daedal’s Value Proposition

Fusion Companies Can Focus on Core IP	Higher Quality Diagnostics	Rapid Commercial Execution	External Validation and Accelerated Capital Formation
No need to hire, manage large diagnostic teams, overhead.	Benefit from team of diagnosticians with deep expertise.	Aligned incentives as private company, as opposed to National lab.	Structurally embedded validated measurement to address conflict of self-reported results and boost investor confidence.

The plasma diagnostics market is poised to grow rapidly.

~10%
2026 Diagnostics Spend as Fraction of Total Fusion Funding

$260M
2026 R&D Plasma Diagnostics TAM

$1B – $2B [1]
Conservatively forecasted 2035 Fusion Instrumentation TAM, without inflection.

2028
World's most advanced tokamaks (SPARC and BEST) turn on. [2]

2028 projected to be inflection point for fusion, when breakeven in a *commercially viable architecture* is expected.

1. See Appendix A for details. Does not account for large industry inflection. 2. SPARC is under construction by Commonwealth Fusion Systems, BEST constructed in China.

But, diagnostics are just the beginning.

Near-term:

- **Develop plasma diagnostics platform** to deliver full-service contracts.
- Validator for the R&D phase of the industry.

Mid-Term: Market Expansion.

- Productize tech in adjacent industries.
  - ***SMR fission neutron detectors***, semiconductors, aerospace.
- Additional fusion verticals (heating, control).

Long-term:

- Be the leader in fusion powerplant operating systems.

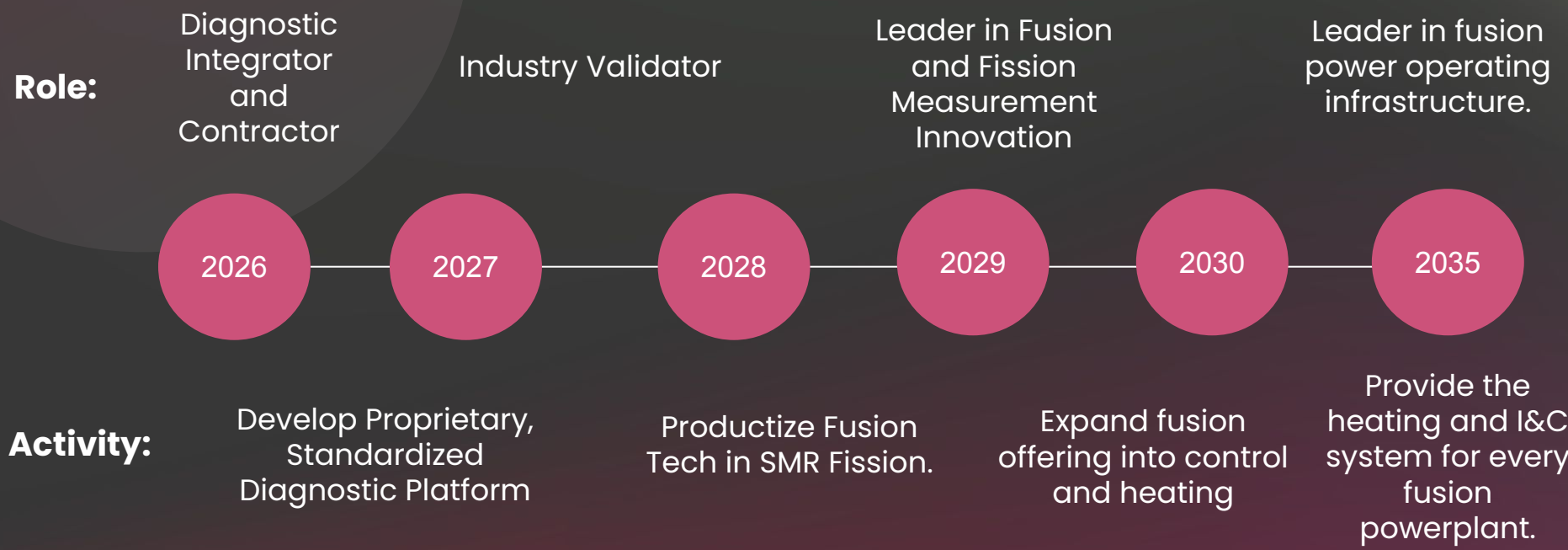
1000°C
Temperature Requirements for SMR Neutron Detectors

5% [2]
Heating and I&C Segment of Fusion Power Plant CAPEX

$800B [1]
Operating Infrastructure Market Cap, once Fusion Reaches 1% of Global Energy

1. Conservatively assume 4% heating capex. ARIES-T study estimates 4-5%. https://doi.org/10.1016/j.fusengdes.2005.11.003.Woodruff estimates 1% CAPEX (https://doi.org/10.48550/arXiv.2601.21724). 2. Assume heating and I&C market cap is 2%% of $40T fusion energy market cap.

Daedal's Evolution



The Team

Aref Vakili, Ph.D.

Founding Physicist

Former Post-Doc at UBC and TRIUMF,
Ph.D. at Catania and CERN.

Expertise: Neutron Diagnostics,
semiconductor detectors.

The Technical Advisory Committee

Benedikt Geiger, Ph.D.

Technical Advisor

Associate Professor at the University of Wisconsin-Madison, Co-Principal Investigator of the HSX Stellarator

Johan Frenje, Ph.D.

Technical Advisor

Senior Research Scientist,
Head of the HEDP Division at the MIT Plasma Science and Fusion Center

Daedal’s Competition

	Intent to Commercially Delivery at Industry Scale	Plasma Diagnostic Expertise	Efficient Capital Structure	Broad Suite Offering
National Labs (e.g. UKAEA)				
Fusion Arms of Defense Contractor (e.g. General Atomics)				
Suppliers in other Industries, e.g. Bertin (life sciences)				
Next Step Fusion				
Daedal Systems				

Companies are structurally disincentivized from internalizing diagnostics.

- ➔ R&D Diagnostics are not core IP for fusion companies; results in underinvestment and limited diagnostics quality.
- ➔ As plasma performance progresses, new plasma regimes demand new diagnostics techniques. Internal capabilities must be rebuilt.
- ➔ By not developing in-house capabilities for R&D diagnostics, companies will not have the expertise to develop power plant diagnostics.
- ➔ As external measurement and validation becomes an industry standard, internalizing diagnostics heightens capital formation risk.

Customer Traction

Signed MOUs with 8 Fusion Companies

- State company willingness to procure diagnostics; IP arrangement where Daedal owns diagnostic IP, companies own plasma data.

Proxima ($230M raised) MOU indicated interest in a **large-scope collaboration** to deliver the full suite of diagnostics for their Alpha device (~$2.3B project), **~$120M diagnostic budget.**

OpenStar ($20M raised) interested in contracting full (8+ diagnostics) diagnostic suite for their 2-3 yr Tahi device ($100M project) starting H2 2026, **~$10M diagnostic budget.**

Ongoing initial contract discussions with Type One, Thea Energy, Fuse, General Fusion, Avalanche, Realta, Jupiter Volta.

Additional Traction

Ontario's new Centre for Fusion Energy willing to support Daedal.

- Founded by OPG, CNL, AECL and Stellarex to leverage Canada's tritium capabilities, the essential fuel for fusion, into a domestic fusion ecosystem.
- Met with Lead at OPG, willing to fund projects for:
  - Stellarex, Proxima, European National Labs, General Fusion.

Mars IAF, a venture fund in Toronto, **is in for a 500k USD investment**.

Dan Brunner, former co-founder and CTO of Commonwealth Fusion Systems, is working on a 500k USD SPV to invest in Daedal.

Go-to-Market

H1 2026:

- Raise 3M USD to capture the window of opportunity.
- Hire 10 staff (phys, eng) to develop initial diagnostic platform.
  - 4x diagnostics: Hall probes (magnetic field), interferometry (density), Hard X-ray diagnostic (temperature), neutron diagnostic.
  - Generalized data analysis layer.

H2 2026:

- Sign and deliver one hardware contract. (e.g. **General Fusion**)
- Sign first large scope hardware contract (e.g. **OpenStar**).
- Sign first large-scope consulting contract (e.g. **Proxima**).

2027:

- Continue OpenStar project, deliver Proxima project.
- Continue to sign contracts and build platform.
- Test SMR fission neutron detector on micro-test reactor (e.g. AaloX).

Financial Forecast

	2026	2027	2028	2029
Revenue (M$ USD)	0.5	10	21	29
Operating margin (%)	23	25	30	35

General Assumptions: [1]

- 1 contracted hardware project in 2026.
- 1 large-scope consulting project e.g. Proxima, 1 full suite 10-diagnostic hardware delivery, e.g. OpenStar, in 2027.
- Grow at 40% yoy.

1. See Appendix B for more info.

Daedal has a defensible market position.

1. **Trusted 3rd Party Validator:** Fusion investors, insurers and regulators will look to Daedal to validate company results; companies will look to Daedal for validation to accelerate capital allocation.
2. **Regulatory moat:** Daedal will develop the plasma diagnostics every fusion power plant will be required to have to be compliant.
3. **Compounding IP:** Designs improve with every deployment, creating a self-reinforcing technical lead.
4. **High switching costs:** Tech embedment into fusion companies makes Daedal hard to replace.
5. **Part of the Canadian Fusion Package:** The Canadian government is seeking to leverage tritium handling expertise to prop up a domestic fusion ecosystem. Daedal can be part of work packages.

How will Daedal surpass $100M revenue within 10 years?

Fusion:

- Clients: Burning Plasma and FOAK Developers
- BP: ~$3B in projects over 7 years → $150M in diagnostic budgets → ~$20M/year per machine
- FOAK contracts: similar spend → additional $20M/year
- 4× BP contracts + 1 FOAK = 100M USD revenue/year

SMR Fission:

- Microreactors scaling to 200 units/year by 2035
- Each reactor needs 10+ diagnostic detectors
- Today detectors cost $500K; Daedal targets $50K/detector
- 10 detectors × 200 reactors = $100M USD revenue

In fusion, valuation follows opportunity, not purely revenue.

Fusion companies achieve multi-billion dollar valuations with only purchase power agreements—because the promise is massive.

With 100M+ revenue and having developed the essential operating infrastructure for every fusion reactor, it is highly feasible that Daedal will be a many billion dollar company within 10 years.

In Summary

- **Three Major Fusion Measurement Problems:**
  - Powerplant diagnostics do not exist.
  - All companies need the same R&D diagnostics, but build them themselves in-house.
  - Existing validation mechanisms are delaying capital allocation.
- Daedal will resolve this by being a **diagnostic integrator** and **industry validator.**
- Our diagnostic **platform compounds value** overtime.
- In the mid-term, frontier tech developed for fusion gets **productized in other industries**, particularly targeting **SMR fission.**
- In the long term, Daedal is the **leader in fusion power operating infrastructure**.

Join us to accelerate fusion energy with measurement and validation infrastructure.

Daedal is raising:

3M USD

Pre-Seed

To:

- Build out initial team and initial diagnostics platform.
  - Magnetics, Density, Hard X-ray, neutron diagnostics, analysis software package.
- Secure large-scope contracts with OpenStar, Proxima, and others.
- Prototype and test an SMR fission neutron detector.

Deal Terms

Daedal proposes a post-money SAFE with a $15M valuation cap, made up of the following.

- Lead Investor: 1.5-2M USD
- Mars IAF: 500k USD
- Additional 500k follow-on investor.

Thank you for your time.

Questions?

Back-up Slides

Appendix A1: 2025 TAM Model

Fusion Companies:

- Categorizes each fusion company by type
  - R&D (e.g. Realta, General Fusion), Burning Plasma (e.g. CFS, Pacific), DEV BP (e.g. Gauss Fusion).
- Assigns diagnostics labour fraction
  - R&D: 10%, BP: 7%, DEV BP: 0%.
- Assume labour cost per employee, assume additional 50% for hardware, determine number of employees at each company.
- Determine diagnostic spend per company, sum for total TAM.

Public Magnetic Fusion:

- Determine number of staff at each lab.
- Assume 10% of staff for diagnostics, 30% factor for hardware.
- Ask staff at key labs (DIII-D, W7-X) for diagnostic budgets for sanity check.

Appendix A2: 2035 TAM Forecast

Fusion Companies:

- Assume fusion company development path
  - DEV R&D->R&D->BP-> FOAK->Scale-up
  - DEV BP-> BP
- Assume at each stage there is a(n):
  - Incubation time, the minimum number of years at that state
  - Promotion Rate, the likelihood of progress to the next development state.
  - Failure rate, the likelihood of going bankrupt.
- Modelled 2027, 2030 and 2035 states based on company projected outcomes; consider this “optimistic” and “zero failure rate”.
- Assume S-curve growth in the number of new companies forming.
- Assumed three cases: Baseline, Optimistic and Pessimistic with promotion failure rates, max number of companies.
- Use same spend per company type to determine forecasted TAMs.

Appendix B1: Financial Model

Capability Ramp:

- 1 contracted project in 2026.
- 1 large-scope consulting project (e.g. Proxima) and 1 full diagnostic hardware suite (e.g. OpenStar) in 2027.
- Grow at 40% yoy beyond.

Project Labour Cost:

- 1st hardware contract: 2.5 ppl for 6 months, 1.25 FTE.
- 1st large-scope consulting contract: 12 ppl for 6 months, 6 FTE.
- Learning curve: 90% resources per subsequent project of given type, up to 50% initial costs.

Project Labour Overhead:

- 20% of project labour for non-billable R&D.
- 40% of project labour for support staff.

Appendix B2: Financial Model

Facilities:

- Sqft per technical and support, lease rates based on Toronto market.
- Utilities considered.

CAPEX:

- Additional 10% of hardware project labour costs for non-billable CAPEX.
- 3.5% for large-scope consulting projects.

Revenue:

- Hardware contract: $550k revenue from labour markup, assume all hardware on pass through basis.
  - 2.5x labour cost of first contract.
- Large-scope consulting contract: $2.6M revenue from labour markup.

The Daedal Systems Project Structure

Case Study: Microwave Reflectometer

1. **Initial Consultation:** Meet with company, determine physics priorities, needs.
    - Assume: need to measure electron density.
2. **Feasibility Study:** Enter NDA, receive machine and plasma specs, assess density diagnostics.
    - Suggestion: Microwave reflectometer.
3. **Concept Diagnostic Design:** Determine field-of-view, frequency setpoint, analysis method, power requirements, etc.
4. **Detailed Engineering Design:** Mechanical drawings, electrical circuit designs, analysis code.
5. **Prototype, Test:** Bench test at Daedal lab, in-situ test on a partner machine, e.g. HSX.
6. **Implement and Commission:** Daedal Staff goes to client lab, install hardware and software systems, commissions to ensure operation.
7. **Ongoing operation and maintenance:** Daedal is responsible for operation and maintenance with ongoing service contract.

Customer Profiles and Stakeholders

Customer A: Fusion company with an existing fusion machine.

- Interested in hardware delivery contracts of plasma diagnostics.

Customer B: Fusion company building large-scale fusion machine.

- Interested in large-scope consulting contracts for the conceptual design of the diagnostic suite.

Stakeholder C: National Lab and universities.

- Fusion devices, e.g. COMPASS-U at IPP-CAS (CZ), need diagnostics, possible customer.
- Also a consultant on projects, e.g. through TAC.

Future Fundraising

Series A:

- Growth to develop diagnostics for nuclear and tritium environments; initial adjacent market productization (e.g. defense tech).

Series B:

- FOAK plasma diagnostics; continued adjacent market productization (e.g. SMR neutron detectors), fusion operating systems (heating, control).

What does Daedal's future look like?

- **2030:**
  - The go-to plasma diagnostic supplier. Technology embedded in 80% of fusion companies, already installed on several large-scale devices turning on in 2031.
  - First product in adjacent market scaled.
    - E.g. mass production of SMR neutron detectors, defense industry detection.
- **2035:**
  - Invented fusion power plant diagnostics, now installed on fusion FOAKs.
  - Expanded into plasma heating and control system. Now the leading fusion supply chain company.
  - Scaled several products in adjacent industries.

Exit Opportunities

1. **IPO.**
2. **Acquisition by :**
    a. Large Instrumentation company.
        i. E.g. Thermo-Fischer, Mirion Technologies.
    b. Fusion integrator
        i. E.g. Kyoto Fusioneering.
    c. Large fusion company.
        i. Should industry consolidate into few leading companies.

Rationale for Compounding Value

By the 7th iteration of a specific diagnostic, net engineering effort is reduced by **50–65%** due to the transition from bespoke engineering to a standardized product architecture.

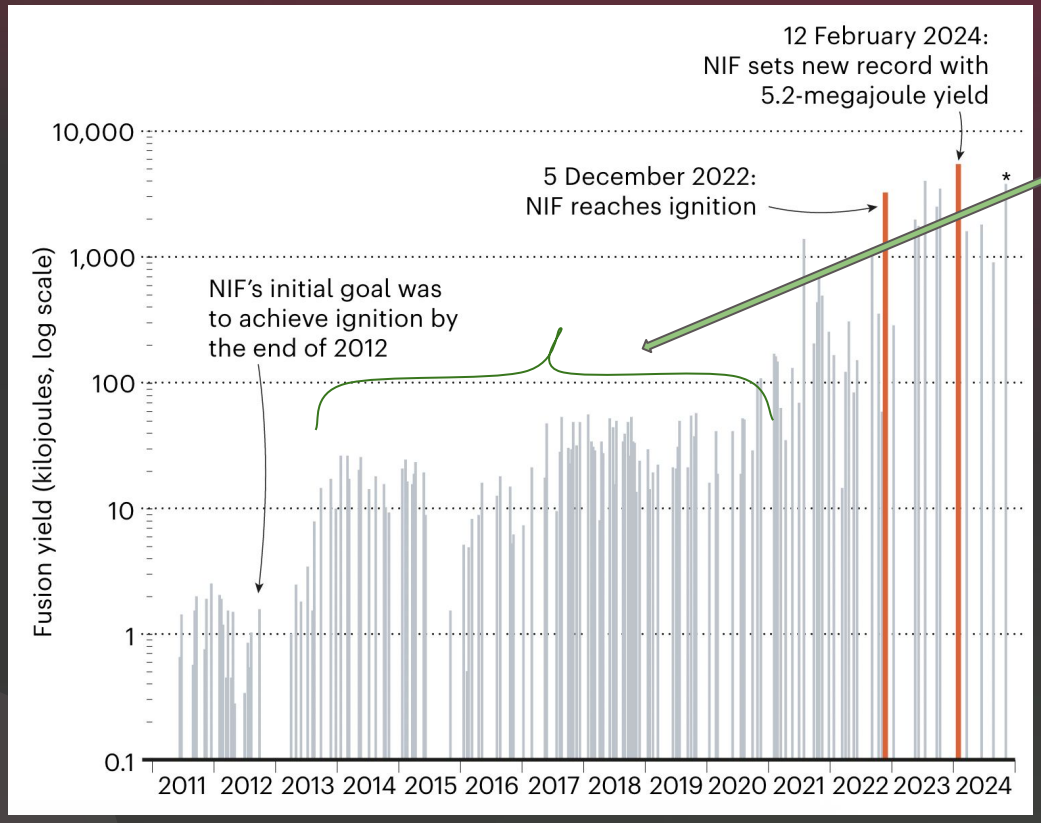
- **Software & Firmware (85% Reuse):** Highly productizable analysis codes and signal-processing layers are reused across devices, requiring only minor local data-system integration.
- **Back-End Systems (70% Efficiency):** Standardized ex-vessel electronics and modular sources (lasers/microwaves) eliminate redundant non-recurring engineering (NRE).
- **Front-End & Interface (20–30% Efficiency):** While machine geometries vary, codified design frameworks and established vacuum-interface libraries significantly accelerate in-vessel integration.
- **Platform Amortization:** Each project hardens the core platform, allowing Daedal to deliver higher quality and lower-cost systems than a first-of-a-kind (FOAK) in-house team.

The Technical Partner Network

Instituto Superior Técnico at the University of Lisbon

Global Experts in Microwave Diagnostics. Responsible officers on ITER, ASDEX and other devices.

Case Study: National Ignition Facility



Nearly a decade without significant improvement in plasma performance.

Needed to improve **plasma diagnostics** to enable better research.

Source: Nature.
https://www.nature.com/immersive/d41586-024-03745-z/index.html

Future and Adjacent Opportunities

1. **Develop plasma diagnostics for fusion power plants.**
    - Currently do not exist, significant R&D and innovation.
    - Products that scale with every fusion power plant.
2. **Use information advantage to expand into adjacent verticals.**
    - Daedal will work closely with fusion companies in near team, an advantage over power plant-only service providers.
    - Opportunity for precise R&D, expand into heating, control, etc.
3. **Productizing IP developed for fusion.**
    - MOUs state Daedal owns diagnostic IP; fusion pushes tech frontier.
    - Future commercial strategy to spin out product company to serve other industries.
        i. SMR Fission, Aerospace, defense.
4. **Expand into Canadian defense contracting.**
    - Daedal delivers complex, deeptech, integrated projects; clear capability overlap with defense.

IP Framework

To maintain a competitive moat while ensuring client security, Daedal employs an **infrastructure-centric IP model**. This distinguishes the "intelligence layer" (Daedal's platform) from the "physics layer" (the client's data).

- **100% Data Sovereignty:** The client retains exclusive ownership of all raw and processed plasma data.
- **Infrastructure Ownership:** Daedal retains 100% ownership of the **Background** and **Foreground** diagnostic IP. This includes signal processing logic, hardware-firmware interfaces, and generalized inversion algorithms.
- **Irrevocable Usage Rights:** Clients are granted a perpetual, royalty-free license to utilize all project-specific foreground IP for their internal R&D and future commercial operations.
- **Siloed Intelligence (Palantir Model):** To protect sensitive physics IP, Daedal operates in a "Clean Room" environment. While our underlying data infrastructure and algorithmic efficiency improve across deployments, **no plasma data is shared or cross-trained between competitors.**
- **Compounding Value:** As the platform is deployed on diverse machines (e.g., Stellarex, OpenStar, Proxima), the "Infrastructure Layer" becomes increasingly robust, delivering superior performance to each subsequent partner without compromising data silos.

Daedal's Near-term Pricing and Cost Model

Milestone-based, fixed-price contracts.

Profitable from design-build phase alone, additional margins driven from ongoing service.

Diagnostic platform drives margin increase.

	First Project	nth Project
Project Revenue	$550k	$550k
Project Labour	$220k	$110k
R&D	$40k	$20k
Support Staff Labour	$60k	$30k
Facilities	$30k	$20k
CAPEX	$30k	$30k
Margin	$170k USD	$350k USD

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