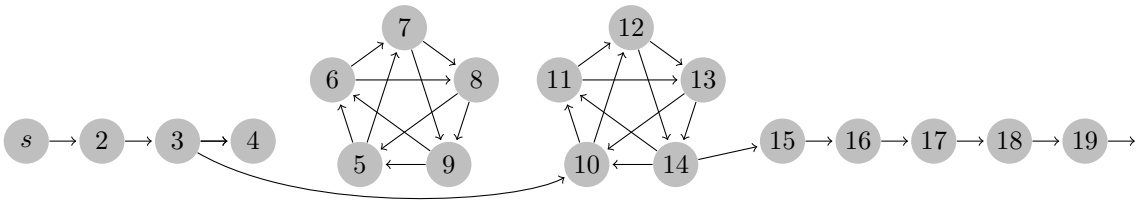
Kalman | Systems$^+$ Company Disclosure

Kalman | Systems$^+$



What We Do:

Quantum Computing: Advanced capabilities for optimisation, cryptography, and simulation | High-Performance Computing (HPC): Accelerating innovation through computational power | Data Science and AI: Predictive analytics, machine learning, and decision intelligence | Architecture Refactoring: Stabilising and modernising legacy systems for improved performance | Fractional Services: Cost-effective, flexible access to specialised expertise.

We want to help your entity access, future markets and what is available. Right now you will need to build life affirming technologies in a practical manner, without hallucinations. We do this by providing polymorphic access to our team of expertise, with fungible models and agile contracting and pricing, within reason and positivity[1].

[1] Practicality, prior to intellectual pursuit, is far superior

Contents

1 Values **1**
- 1.1 Ethics . . . 1
- 1.2 Glossary . . . 1

2 Partners **3**
- 2.1 Commercial Partnerships . . . 3
- 2.2 Alliance Partners . . . 4

3 Kalman | Systems$^+$ Executive Summary **5**
- 3.1 Professional Services Domain: . . . 5
- 3.2 Current Domains for Development: . . . 5
- 3.3 Emergent Domains Requiring Platforms for Research Enablement: . . . 6

4 Modelling and Research Enablement **7**
- 4.1 Disciplines in Engineering and Science . . . 8

5 Manufacturing Economy Consulting **9**

6 Platform Economy Consulting **10**
- 6.1 Fractional or Holistic Service . . . 10
  - 6.1.1 Fractional SLDC and Operational Services(Everything OPS) . . . 11
  - 6.1.2 Key Stages in Fractional SLDC . . . 11
  - 6.1.3 Advantages of Fractional SLDC . . . 11
- 6.2 New Product Development: . . . 12
- 6.3 Platform Integration and growth Services: . . . 12
- 6.4 Platform and Systems Refactoring: . . . 12
- 6.5 Testing . . . 12

7 Business Management Consulting **14**
- 7.1 Business Modelling . . . 14
- 7.2 Business Process Modelling . . . 15
- 7.3 Value and Consumer Modelling . . . 15
- 7.4 Audit Assurance Services . . . 15

A The Smith Chart Journey **17**

B Ergodic Theorems **19**

C Contact Us **21**

1. Values

Honesty and integrity are cornerstones of Kalman | Systems^{+} values, serving as guiding principles to ascertain clarity in confusion. In moments of uncertainty, we rely on our virtues to navigate rejection and plan for marriages and not divorce, solve problems; financially with resilience, mitigate risk, and multimodal loss. We are a group of technical and non technical professionals that understand endless consultancy and consistency is ***Tiring***. While we seek long term relationship with financial gain, good honest written and spoken communication, is preferred irrespective of stakeholders involved.

1.1 Ethics

NSPE Code of Ethics for Engineers[1] - Prescribed by the National Society of Professional Engineers for a corner stone of Kalman | Systems^{+} (We, Me, I), priorities that infer indirectly, the *Hippocratic Oath* for engineering and science.

We hold paid memberships in the following organisations since 1998:

1. Engineers Australia[2]
2. Institute of Electrical and Electronic Engineers - USA (IEEE)[3]
3. Institute of Engineering Technologists - UK (IET)[4]
4. Association of Computer Machinery - USA[5]

1.2 Glossary

In formal communications and documents we encourage all to use the following Glossary terms as defined by: **ISO/IEC/IEEE 24765:2017 Systems and software engineering ; Vocabulary** To avoid confusions as we can't offer a better Glossary ourselves.

Scope [6]:

Consistent with ISO vocabulary standards, each technical committee is responsible for standard terminology within its area of specialisation. This glossary provides a common vocabulary applicable to all systems and software engineering work falling within the scope of ISO/IEC

[1] https://www.nspe.org/resources/ethics/code-ethics

[2] https://www.engineersaustralia.org.au/

[3] https://www.ieee.org/

[4] https://www.theiet.org/

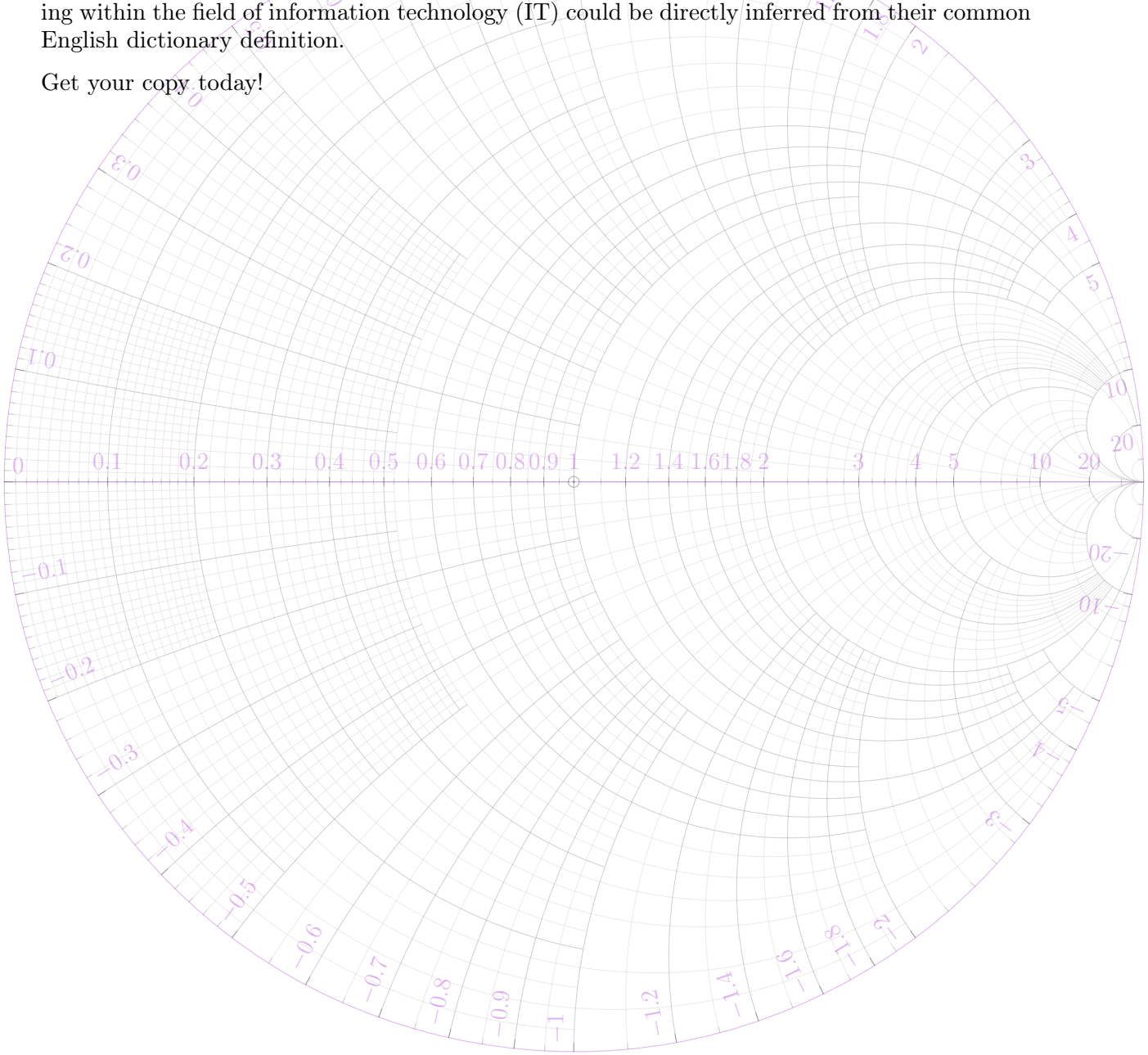
[5] https://www.acm.org/

[6] "ISO/IEC/IEEE International Standard - Systems and software engineering–Vocabulary," in ISO/IEC/IEEE 24765:2017(E) , vol., no., pp.1-541, 28 Aug. 2017, doi: 10.1109/IEEESTD.2017.8016712. keywords: IEEE Standards; ISO Standards; IEC Standards; Informatino Technology; Software Engineering; Systems engineering and Theory; Terminology; Computer; dictionary; Information Technology; Software Engineering; Systems Engineering - 24765,

JTC 1/SC 7. The scope of each defined concept has been chosen to ensure a definition suitable for general application. In cases where a more restricted application is required, a more specific definition may be necessary.

The Glossary use consistent Software and Systems Engineering definitions, consistent with IEEE Computer Society Systems and Software Engineering Standards Committee (IEEE-CS S2ESC). Terms have been excluded if they were deemed prescriptive and has no context, to a particular group or organisation. The company proprietary or trademarked; multi-word terms whose meaning could be inferred from the definitions of their component words; or terms whose meaning within the field of information technology (IT) could be directly inferred from their common English dictionary definition.

Get your copy today!



2. Partners

Kalman | Systems$^+$ (We) perform business and market development while avoiding every sales technique known to the intelligent mind. We seek strategic global partnerships for innovation in strong economies with stable political environments, where permissible. Our focus is on business growth, leveraging commercially viable opportunities to deliver pertinent solutions and support. Delivered by qualified business referees, as an entity you are welcome to go directly to the partners of Kalman | Systems$^+$, and you may refer to us or omit our involvement at your own discretion.

The engineering and scientific services are performed, provided, and delivered by Principal (Partner) Companies. Our role is to work in situ, ensuring alignment on deliverables, acting as a mediator when necessary, and initiating discussions on product vision with a focus on sustainable outcomes.

Key Alliance and Commercial partners help us with functional and non functional considerations in work. These experts will give deliver any solution prescribed, after scope acceptance. New partnerships are always welcome, whether strategic or otherwise. We actively seek to engage with innovative minds, whether established or unrecognised.

While we do not seek to derive income from every transaction always, we prioritise economic growth and ease of business. However, as a company, we declare that most work will have financial imperatives, due to shared revenue and disgorgment of profits or services delivered. We are not precluded from receiving commissions on successful sales closures, where agreed upon with our partners, and disclosed upon request. Refer to further references to business services in chapter 7 provided mutually by our Alliance partners.

2.1 Commercial Partnerships

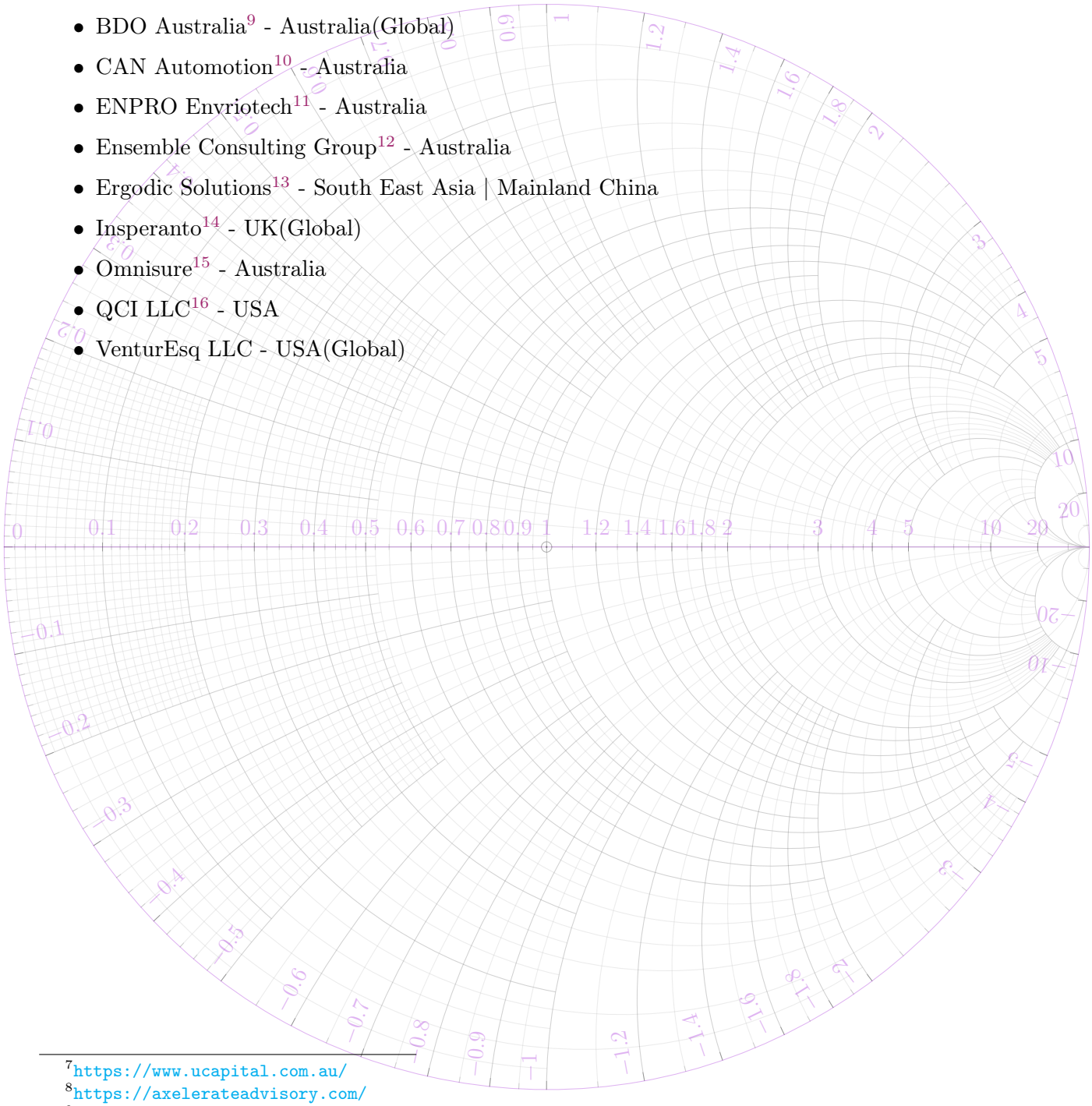
- Bayshore Intelligence Solutions[1] - USA | India
- Silicon Signals[2] - India
- Tejasoft Innovations[3] - India
- Tigon Technologies LTD DBA TLVTech[4] - Israel | Middle East
- TTS Services[5] - Spain | Europe
- Push Capital[6] - Australia

[1] https://bayshoreintel.com/
[2] https://siliconsignals.io/
[3] https://tejasoft.com/
[4] https://www.tlvtech.io/
[5] https://tts-engineering.com/en/
[6] https://pushcapital.com.au/

- UCapital[7] - Australia

2.2 Alliance Partners

- aXlerate advisory[8] - Australia
- BDO Australia[9] - Australia(Global)
- CAN Automotion[10] - Australia
- ENPRO Envriotech[11] - Australia
- Ensemble Consulting Group[12] - Australia
- Ergodic Solutions[13] - South East Asia | Mainland China
- Insperanto[14] - UK(Global)
- Omnisure[15] - Australia
- QCI LLC[16] - USA
- VenturEsq LLC - USA(Global)



[7] https://www.ucapital.com.au/
[8] https://axelerateadvisory.com/
[9] https://www.bdo.com.au/en-au/home
[10] https://www.canautomotion.com.au/
[11] https://enproenirotech.com
[12] https://ensembletechnology.com/
[13] https://ergodicsolutions.com/
[14] https://insperanto.com/
[15] https://omnisure.com.au/
[16] https://quantumcomputinginc.com/

3. Kalman | Systems$^+$ Executive Summary

Kalman | Systems$^+$ was incorporated, Between two Directors, Mr. Mahesh Shastry. and Mrs. Praneetha Shastry, the company was incorporated in July 2022, NSW, Australia. With Guidance from BDO in Australia and specifically guided by discussion with Mr. Chris Balalovski and Mr. Simon Conolly on Governance, Taxation, and Relevant Laws.

Kalman | Systems$^+$ has agnostic business practices, leveraging mutual business enablement capabilities with engineering partners. We access authorised professional communities, processes, and tools necessary to implement measured model-driven approaches. Reduce technical debt and cruft[1], in development[2]. The solution space is vast, and we focus on removing costly biases in requirements ensuring (-ity's) feasibility, flexibility, scalability, resilience and security in our propositions.

3.1 Professional Services Domain:

1. Consulting - Business | Strategy | Economic | Technology
2. Commercialisation
3. Business - Process | Modelling
4. Product Manufacturing | Industrial Design | Device Development
5. Engineering | Execution | Management
6. Quality | Assurance | Risk | Audit | Certification
7. Business Management Consulting

3.2 Current Domains for Development:

1. Advanced Computing & Emerging Technologies
2. Cybersecurity & Decentralised Systems
3. Industrial & Manufacturing Technologies
4. Autonomous & Intelligent Systems
5. Extended Reality & Human-Centric Technologies
6. Pharmaceuticals, Healthcare & Medical Technologies

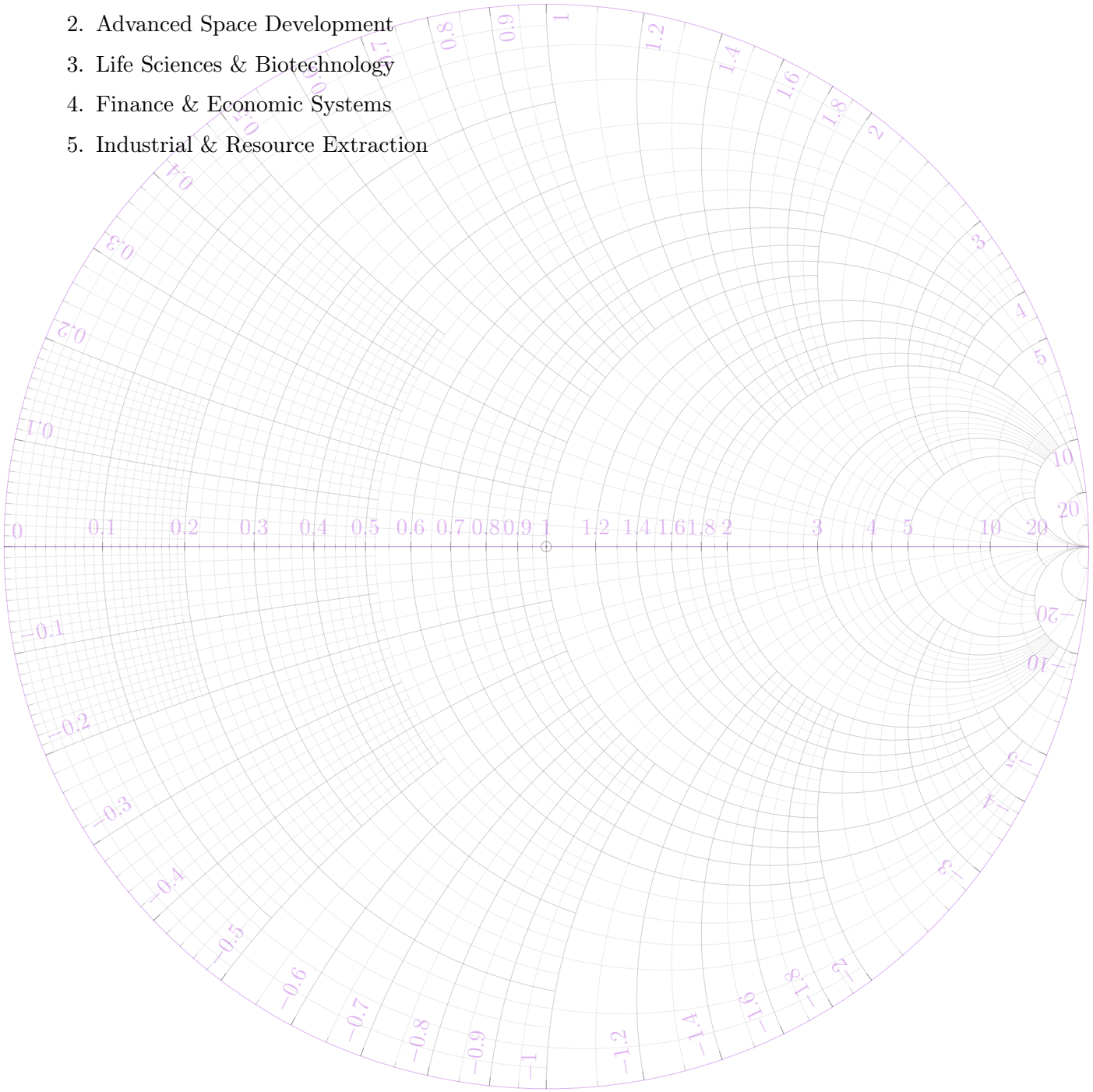
[1] Refers to unnecessary, redundant, or obsolete elements in a system, codebase | hardware principles, and design, accumulating over time. The term is commonly employed in software engineering, hardware design, and a general term in line with, technical contexts.

[2] Classification: Enterprise Software Systems | Systems Engineering | Electronics Hardware and Software Embedded Systems | Hybrid Systems | Complementary Co-Design Solutions | Industrial and Mechanical Design for Devices | Manufacture and Fabrication for Devices | Certification.

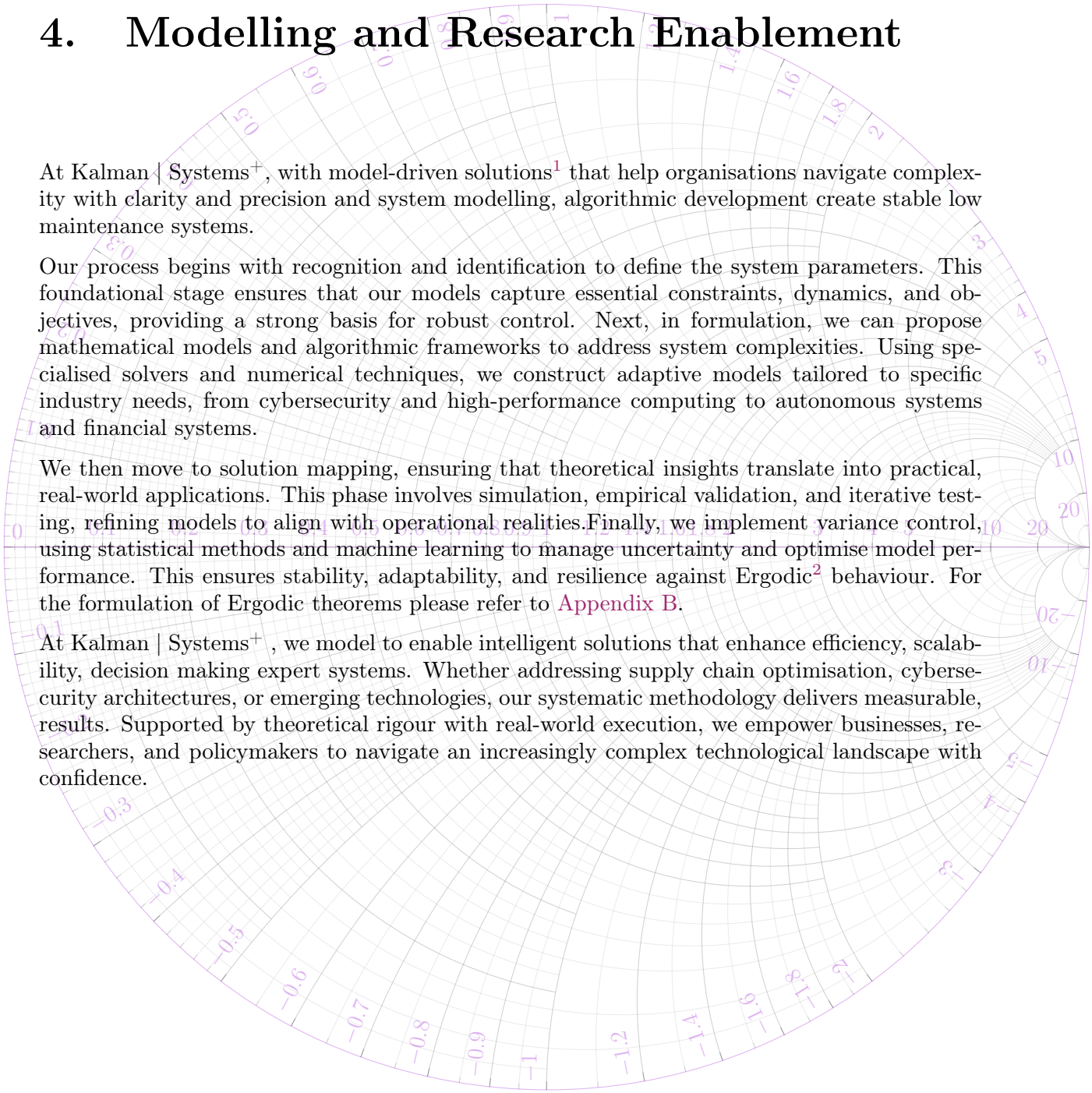
7. Web, Commerce & Service Ecosystems

3.3 Emergent Domains Requiring Platforms for Research Enablement:

1. Energy & Sustainability
2. Advanced Space Development
3. Life Sciences & Biotechnology
4. Finance & Economic Systems
5. Industrial & Resource Extraction



4. Modelling and Research Enablement



At Kalman | Systems$^+$, with model-driven solutions[1] that help organisations navigate complexity with clarity and precision and system modelling, algorithmic development create stable low maintenance systems.

Our process begins with recognition and identification to define the system parameters. This foundational stage ensures that our models capture essential constraints, dynamics, and objectives, providing a strong basis for robust control. Next, in formulation, we can propose mathematical models and algorithmic frameworks to address system complexities. Using specialised solvers and numerical techniques, we construct adaptive models tailored to specific industry needs, from cybersecurity and high-performance computing to autonomous systems and financial systems.

We then move to solution mapping, ensuring that theoretical insights translate into practical, real-world applications. This phase involves simulation, empirical validation, and iterative testing, refining models to align with operational realities.Finally, we implement variance control, using statistical methods and machine learning to manage uncertainty and optimise model performance. This ensures stability, adaptability, and resilience against Ergodic[2] behaviour. For the formulation of Ergodic theorems please refer to Appendix B.

At Kalman | Systems$^+$, we model to enable intelligent solutions that enhance efficiency, scalability, decision making expert systems. Whether addressing supply chain optimisation, cybersecurity architectures, or emerging technologies, our systematic methodology delivers measurable, results. Supported by theoretical rigour with real-world execution, we empower businesses, researchers, and policymakers to navigate an increasingly complex technological landscape with confidence.

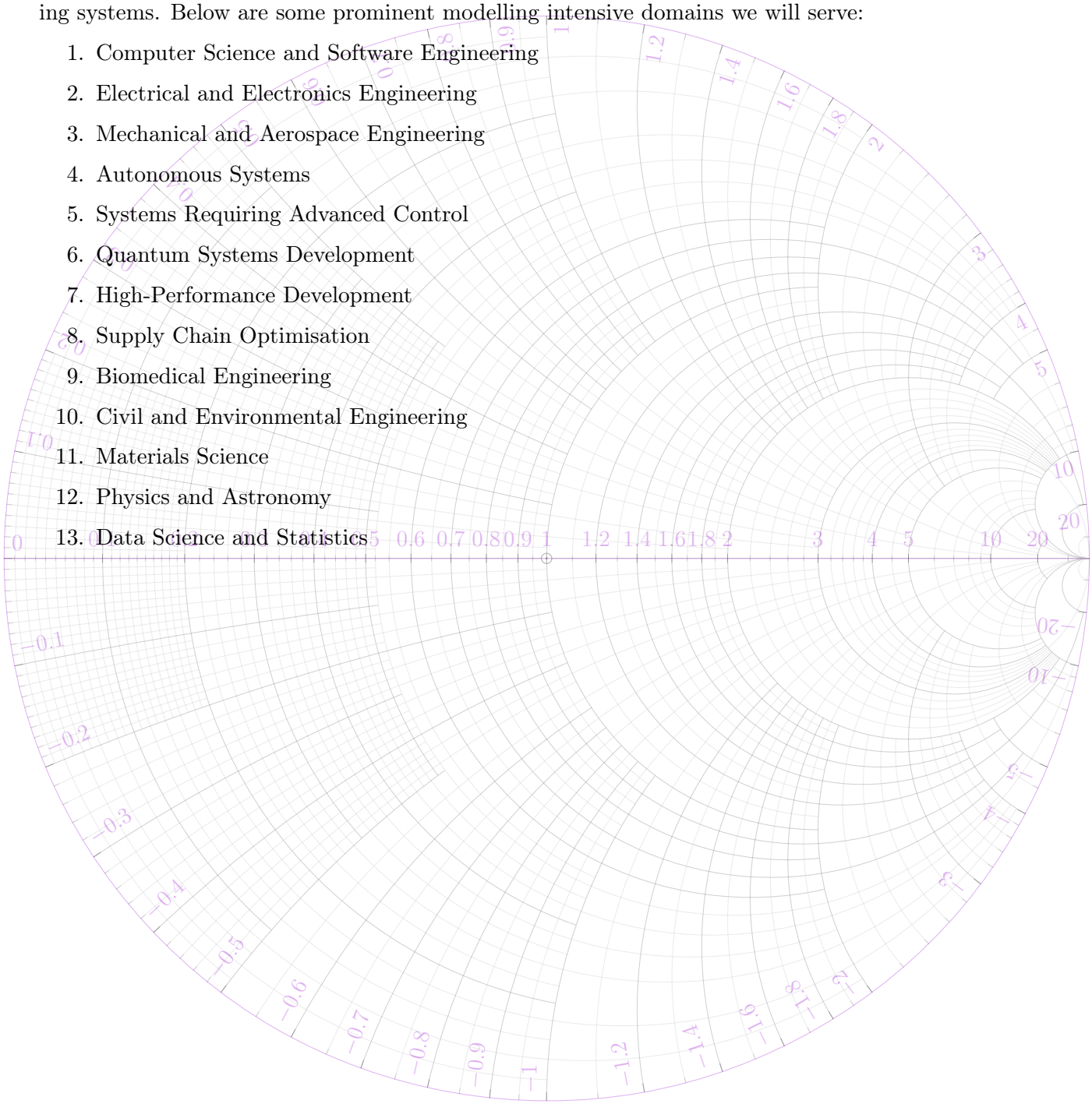
[1] *Hürilmann, D.T. (2024)* Mathematical Modeling Basics. 1st edn. Department of Informatics, CH-1700, Switzerland: University of Fribourg, pp. 28–34.

[2] https://en.wikipedia.org/wiki/Ergodicity

4.1 Disciplines in Engineering and Science

System Modelling requirements in modelling, statistics and experimental disciplines in engineering and science are fields where the development, application, and optimisation by algorithmic design & decomposition are critical for solving complex problems, analysing sensory[3], or designing systems. Below are some prominent modelling intensive domains we will serve:

1. Computer Science and Software Engineering
2. Electrical and Electronics Engineering
3. Mechanical and Aerospace Engineering
4. Autonomous Systems
5. Systems Requiring Advanced Control
6. Quantum Systems Development
7. High-Performance Development
8. Supply Chain Optimisation
9. Biomedical Engineering
10. Civil and Environmental Engineering
11. Materials Science
12. Physics and Astronomy
13. Data Science and Statistics



[3]Direct and Indirect.

5. Manufacturing Economy Consulting

Manufacturing Economy Consulting at Kalman | Systems$^+$ is designed to empower organisations in the manufacturing sector to navigate the complexities of modern industrial challenges while leveraging emerging opportunities. With a foundation in advanced technologies and process optimisation, we enable manufacturing firms to enhance productivity, reduce costs, and drive innovation. We have relationships with *Operations Management Consultants* that can support very large scale industries.

This consulting service integrates technology, strategy, and operations to achieve sustainable growth. By employing a reality driven approaches, we identify inefficiencies, optimise supply chains, and implement smart manufacturing solutions aligned with Industry 4.0 principles. Our expertise spans additive manufacturing and turnkey manufacturing systems in real-time.

Process Optimisation and Automation: We assist manufacturers in streamlining production workflows, reducing waste, and improving quality through AI-driven predictive maintenance, robotics, and IoT-enabled monitoring. Our strategies ensure agility and efficiency in dynamic markets.

Smart Manufacturing Solutions: We enable the adoption of smart factory initiatives by integrating sensors, machine learning, and advanced analytics into manufacturing ecosystems. These solutions provide real-time insights, enhancing adaptability and operational responsiveness.

Sustainable Practices and Green Manufacturing: Recognising the importance of sustainability, we help clients implement energy-efficient designs, integrate renewable energy, and adopt circular economy models to minimise costs and environmental impact.

Supply Chain Transformation: Leveraging blockchain and AI, we enhance supply chain transparency, reduce bottlenecks, and optimise logistics. Our experience in FMCG supply chains ensures efficient resource allocation and customer satisfaction.

Adoption of Emerging Technologies: We support manufacturers in integrating additive manufacturing, nanotechnology, and augmented reality (AR) for prototyping, assembly, and maintenance, ensuring competitiveness in rapidly evolving markets.

By aligning business objectives with technological advancements, Kalman | Systems$^+$ enables manufacturers to embrace innovation while maintaining operational resilience. Our tailored consulting services help clients meet the demands of modern manufacturing, ensuring success in a digital, global economy.

6. Platform Economy Consulting

Platform Economy Consulting at Kalman | Systems$^+$ focuses on enabling businesses to leverage digital platforms for growth, innovation, and market leadership. It helps organisations transition from traditional linear models to dynamic, ecosystem-driven structures where value is co-created with users and partners. By analysing trends, identifying opportunities, and optimising user engagement strategies, we guide clients in building scalable platforms.

Key areas include platform design, network effects, monetisation strategies, and governance models. Whether for marketplaces, subscription services, or community platforms, our consulting services empower businesses to unlock competitive advantages in an increasingly digitised economy. This approach fosters innovation, accelerates growth, and ensures sustained value creation.

In the Kalman | Systems$^+$ product strategy we create blueprints for creating and delivering value to customers, bespoke. Outlining the vision, objectives, and roadmap for a product, ensuring alignment with market demands and organisational goals. By identifying target audiences, understanding their needs, and analysing competing problem and solution pairs, product strategy provides clarity on positioning and differentiation. Key components include product lifecycle management, value propositions, and pricing strategies. A robust product strategy drives customer satisfaction, fosters loyalty, and positions the product as a market leader. Of course product monetisation only makes sense if the product is required by the public and in the public interest.

Our strategy provides an approach to leveraging business objectives for a competitive advantage. We assess current capabilities, identifying future needs and a roadmap for adoption, integration, and optimisation. Key areas include infrastructure planning, digital transformation, cybersecurity, and emerging technology exploration. A strong technology strategy enhances operational efficiency, fosters innovation, and improves adaptability in a rapidly evolving market.

6.1 Fractional or Holistic Service

Fractional services provide businesses with flexible, part-time access to expert professionals, including CTOs[1], and specialised technical professionals, while ensuring the provider retains associated risks. This approach allows organisations to access impromptu expertise without the eternal commitment of FTE[2] Staff. Ideal for start-ups, SMEs, or companies in transition, fractional services offer tailored solutions to address specific challenges. By retaining risks, providers ensure accountability and reliability, enabling businesses to innovate confidently. This model supports growth, operational efficiency, and adaptability, empowering companies to focus on their core objectives while leveraging external expertise to navigate complex and dynamic environments.

Effective stakeholders supported by honest management is a cornerstone of Kalman | Systems$^+$,

[1] Chief Technology Officer
[2] Full Time Equivalent

service delivery, ensuring that complex initiatives are executed efficiently and aligned with organisational goals.

6.1.1 Fractional SLDC and Operational Services(Everything OPS)

Fractional SLDC (Software Development Life Cycle) is a modular and flexible approach to managing the software development process. Unlike the traditional SLDC, where all stages are rigidly integrated and executed in a sequential or iterative manner, our fractional SLDC allows organisations to access and implement individual stages or subsets of the lifecycle based on their specific needs, resources, and goals. This approach is particularly useful for businesses with limited budgets, evolving requirements, or short-term project objectives. We can hire based on 6 fortnight sprints, long enough to remove technical debt, short enough to remain affordable.

6.1.2 Key Stages in Fractional SLDC

1. **Planning**: The process begins by identifying project goals, scope, stakeholders, and resource allocation. In a fractional model, planning can be tailored to address only immediate objectives or milestones.
2. **Requirements Analysis**: Focused efforts are made to gather and document functional and non-functional requirements, often on a feature-specific or phased basis.
3. **Design**: Architectural and system designs are created for specific components or modules instead of the entire system, aligning with the immediate development scope.
4. **Implementation**: Development is executed incrementally or modularly, delivering functional components that can be tested or integrated into existing systems. The implementation of planned sprints or fabrication of agreed design elements.
5. **Testing**: Testing efforts are localised to individual modules or specific functionalities, ensuring quality and compatibility before integration.
6. **Deployment**: Features or modules are deployed in phases, allowing for gradual implementation and user adaptation.
7. **Maintenance**: Ongoing support focuses on the deployed components, addressing issues, and implementing minor enhancements.
8. **Evaluation**: The process includes assessing outcomes to refine or improve future iterations or expansions.

6.1.3 Advantages of Fractional SLDC

- **Cost Efficiency**: Businesses only pay for the stages or services they require, reducing overheads.
- **Flexibility**: Adapts to changing needs, making it ideal for dynamic projects or startups.
- **Faster Delivery**: Focused efforts on specific stages accelerate time-to-market.
- **Risk Mitigation**: Gradual implementation and testing reduce risks associated with large-scale failures.

Fractional SLDC empowers organisations to adopt a pragmatic and resource optimised constrained approach to software development, ensuring agility and alignment with business goals.

6.2 New Product Development:

Innovation is at the heart of Kalman | Systems$^+$ approach to new product development. The organisation identifies market needs and translates them into cutting-edge solutions that tackle emerging challenges. By leveraging deep expertise and a strong commitment to research and development, Kalman | Systems$^+$ ensures that its products are both innovative and future-ready.

Through light hearted detailed development practices, the organisation relies on advanced philosophies of work, rigorous testing, and industry best practices to create robust solutions tailored to your needs. By staying ahead of hype cycles and anticipating market shifts, Kalman | Systems$^+$ delivers products that not only meet current demands but also remain adaptable to future requirements.

Collaboration is central to this approach, with interdisciplinary teams working closely to refine ideas, prototype efficiently, and optimise performance. This commitment to excellence ensures that each product embodies reliability, scalability, and competitive advantage. By prioritising continuous improvement and strategic innovation, Kalman | Systems$^+$ empowers businesses to stay ahead in a rapidly evolving landscape.

6.3 Platform Integration and growth Services:

By employing a structured approach, Kalman | Systems$^+$ ensures that integration is smooth, minimising disruptions while maximising performance. Its expertise spans cloud computing, cybersecurity, AI, and enterprise systems, enabling clients to transition seamlessly without compromising existing operations. The organisation adopts best practices in system architecture, ensuring compatibility and future-proofing solutions for evolving business landscapes.

Collaboration plays a crucial role in this process, with teams working closely to understand operational challenges, streamline workflows, and optimise resource allocation. Kalman | Systems$^+$ leverages some advanced integration frameworks, automation, and achieving test coverage to guarantee seamless functionality. By focusing on adaptability and resilience, the organisation empowers businesses to operate more efficiently, reduce complexity, and enhance overall performance in a rapidly advancing digital world.

6.4 Platform and Systems Refactoring:

Refactoring is central to Kalman | Systems$^+$s commitment to modernisation, enabling organisations to optimise existing system baselines and can develop realistic roadmaps, without losing face. By stabilising and enhancing architectures, Kalman | Systems$^+$ improves system constraints[3], improving reputation, cost management, and self esteem while maintaining operational continuity with security.

Through careful analysis, redundant or inefficient components are restructured, eliminating technical debt and enhancing maintainability. This approach reduces costs but also facilitates smoother system evolution, allowing businesses to adapt to emerging challenges with minimal staff complaints and resignations.

6.5 Testing

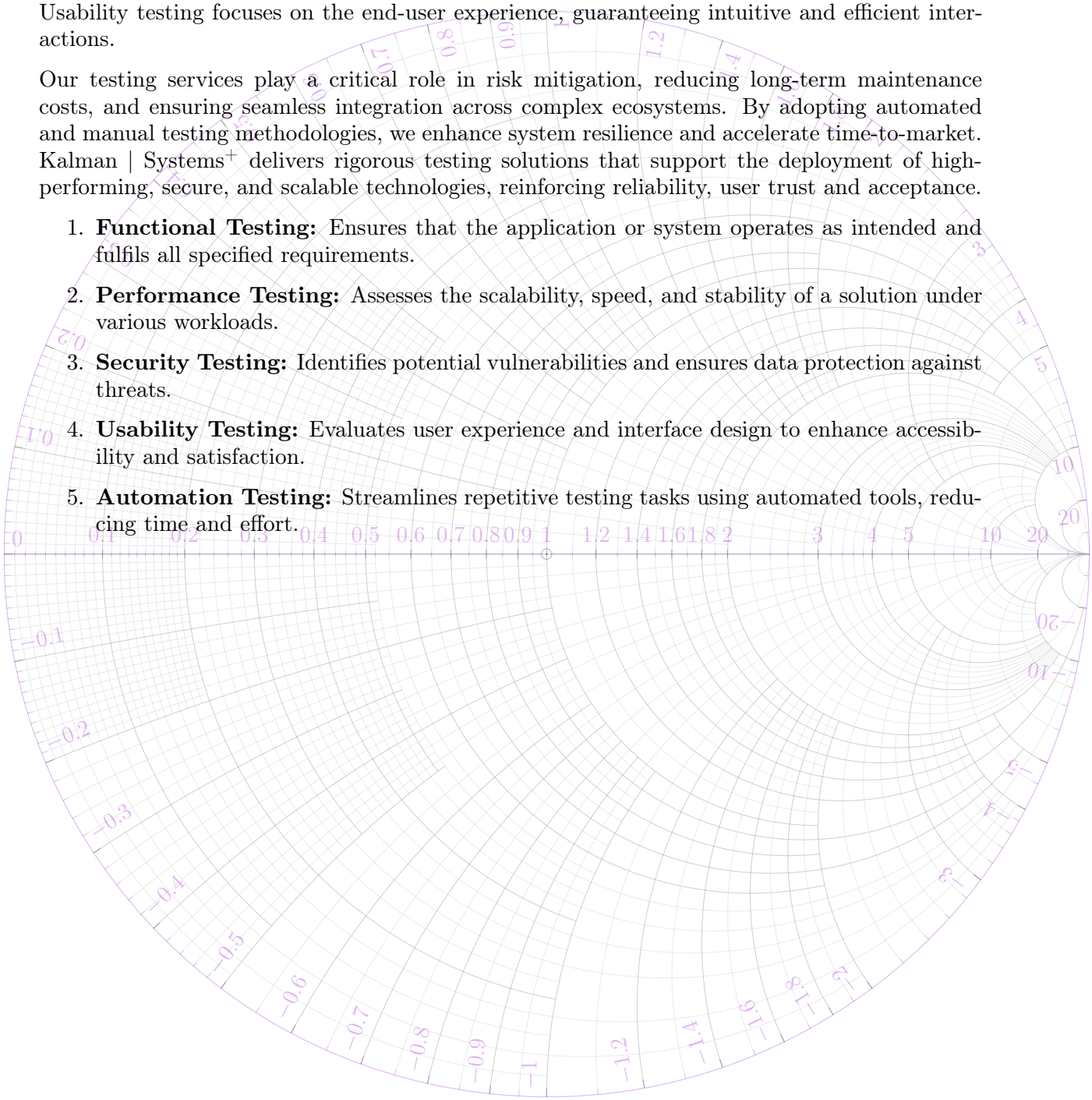
Testing services are essential for ensuring the quality, reliability, and performance of systems, applications, and products. At Kalman | Systems$^+$, our testing framework is designed to identify and resolve defects, vulnerabilities, and inefficiencies before deployment, safeguarding operational integrity and user satisfaction.

[3]Theory of Constraints, https://www.tocinstitute.org

We employ a comprehensive approach that includes functional, performance, security, and usability testing to validate that solutions align with defined requirements and industry standards. Functional testing ensures core functionalities operate as intended, while performance testing evaluates system responsiveness and stability under various conditions. Security testing identifies potential threats and vulnerabilities, ensuring robust protection against cyber risks. Usability testing focuses on the end-user experience, guaranteeing intuitive and efficient interactions.

Our testing services play a critical role in risk mitigation, reducing long-term maintenance costs, and ensuring seamless integration across complex ecosystems. By adopting automated and manual testing methodologies, we enhance system resilience and accelerate time-to-market. Kalman | Systems$^+$ delivers rigorous testing solutions that support the deployment of high-performing, secure, and scalable technologies, reinforcing reliability, user trust and acceptance.

1. **Functional Testing:** Ensures that the application or system operates as intended and fulfils all specified requirements.
2. **Performance Testing:** Assesses the scalability, speed, and stability of a solution under various workloads.
3. **Security Testing:** Identifies potential vulnerabilities and ensures data protection against threats.
4. **Usability Testing:** Evaluates user experience and interface design to enhance accessibility and satisfaction.
5. **Automation Testing:** Streamlines repetitive testing tasks using automated tools, reducing time and effort.



7. Business Management Consulting

Business Management Consulting at Kalman | Systems$^+$ focuses on optimising organisational efficiency, strategy, and operations to drive sustainable growth.

Key areas include business strategy development, where we align organisational goals with market pain, and process optimisation on final requirements, ensuring operational safety through enterprise design, with patient persistence.

Kalman | Systems$^+$ and her Alliance Partners provide:

- Acquisitions and Mergers
- Commercial Insurance
- Cross-Border Negotiations
- Empower Industry-Academic Collaborations
- Financial Planning
- Intellectual Property and Legal Advocacy
- Operations Management Consultancy
- Provide Funding (Loans, Venture Capital)
- Provide Training
- Risk Management and Mitigation;

Commensurate to the scale of your disposition. Our expertise extends to change management, guiding businesses through transformations[1], with minimal effervescence.

Working with science & engineering verticals, and proven empirical techniques and industry standards with established practices, we enable market positioning, driving long term reproducible success.

7.1 Business Modelling

Business Modelling at Kalman | Systems$^+$ focuses on designing and analysing the mechanisms through which enterprises create, deliver, and capture value, even with no resources. It defines how an organisation operates, generates revenue, and sustains profitability by suturing frameworks and reality driven insights.

Key components include customer recognition, and presenting a realistic value propositions that meet market needs, and revenue stream identification, optimising financial sustainability. Cost structure analysis and key partnerships further enhance operational efficiency and strategic positioning.

[1] *Synchronised Crying with our Commiserations.*

Effective business modelling aligns an organisation with market complaints, enabling businesses to make informed decisions and adapt to evolving conditions. Whether launching new ventures or optimising existing operations, Kalman | Systems$^+$ provides tailored strategies that foster innovation, competitive differentiation, and a long-term peace of mind[2].

7.2 Business Process Modelling

Business Process Modelling (BPM) at Kalman | Systems$^+$ is a structured approach to understanding, analysing, and optimising organisational workflows. We clarify task execution, stakeholder roles, decision-making points, value chains in critical paths.

BPM helps identify inefficiencies, redundancies, and bottlenecks, enabling businesses to enhance productivity and operational agility. Through data and event driven knowledge and streamline resource allocation, reduce costs, and enhance service satisfaction.

By aligning business processes with strategic objectives, BPM ensures regulatory compliance, operational standardisation, and improved customer satisfaction. Legacy systems do not exist as long as they are required and not made imminently obsolete. The integration of incompatible services[3] or the expansion of capabilities through varied cross-functional collaboration is a core focus at Kalman | Systems$^+$. We deliver tailored solutions that drive efficiency, scalability, and sustained competitive advantage.

7.3 Value and Consumer Modelling

Value and Consumer Modelling focuses on optimising the delivery of value to stakeholders while enabling businesses to scale efficiently based on real-time needs. By combining structured value analysis with flexible consumption models, organisations can enhance customer satisfaction, drive innovation, and achieve operational excellence.

Value Modelling involves identifying, defining, and quantifying the value generated through products, services, or processes. Ensuring investments align with business objectives enables organisations to differentiate offerings, enhance customer experiences, and maximise market impact by awareness of your intrinsic motivations, apart from money.

Consumer Business Modelling introduces a FMCG[4] paradigms that minimises upfront investments and optimises resource amortisation. Commonly applied in areas such as distributed computing, software and development services. The contemporary model provides flexibility while reducing operational complexities. Providers retain risks, ensuring reliability and accountability, while clients benefit from control of investment and outcomes.

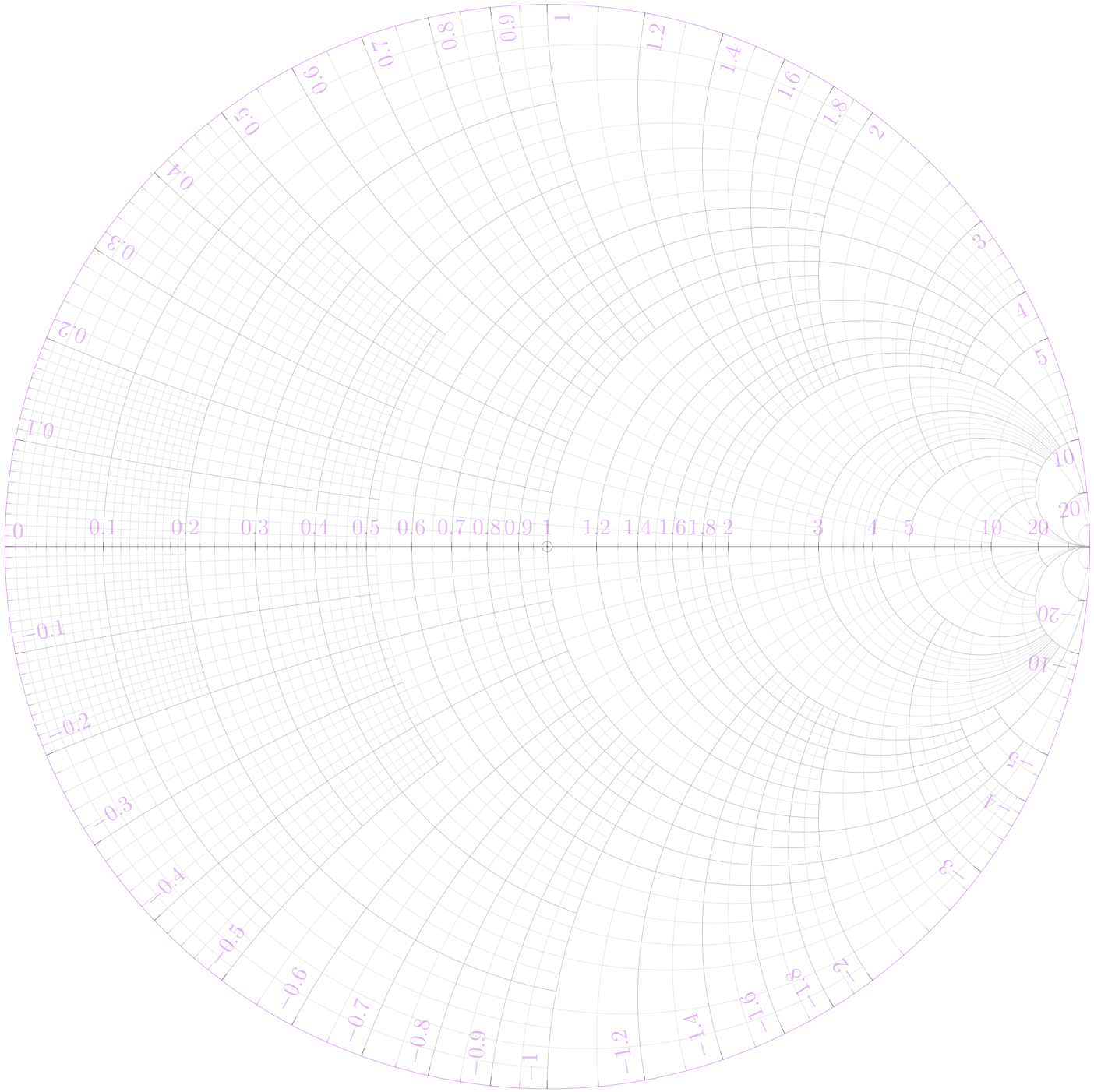
7.4 Audit Assurance Services

Audit Assurance Services at Kalman | Systems$^+$ establish a structured framework for assessing compliance, operational integrity, and financial accuracy. Through comprehensive evaluations of systems, processes, and controls, we ensure that organisations adhere to regulatory requirements, industry standards, and best practices.

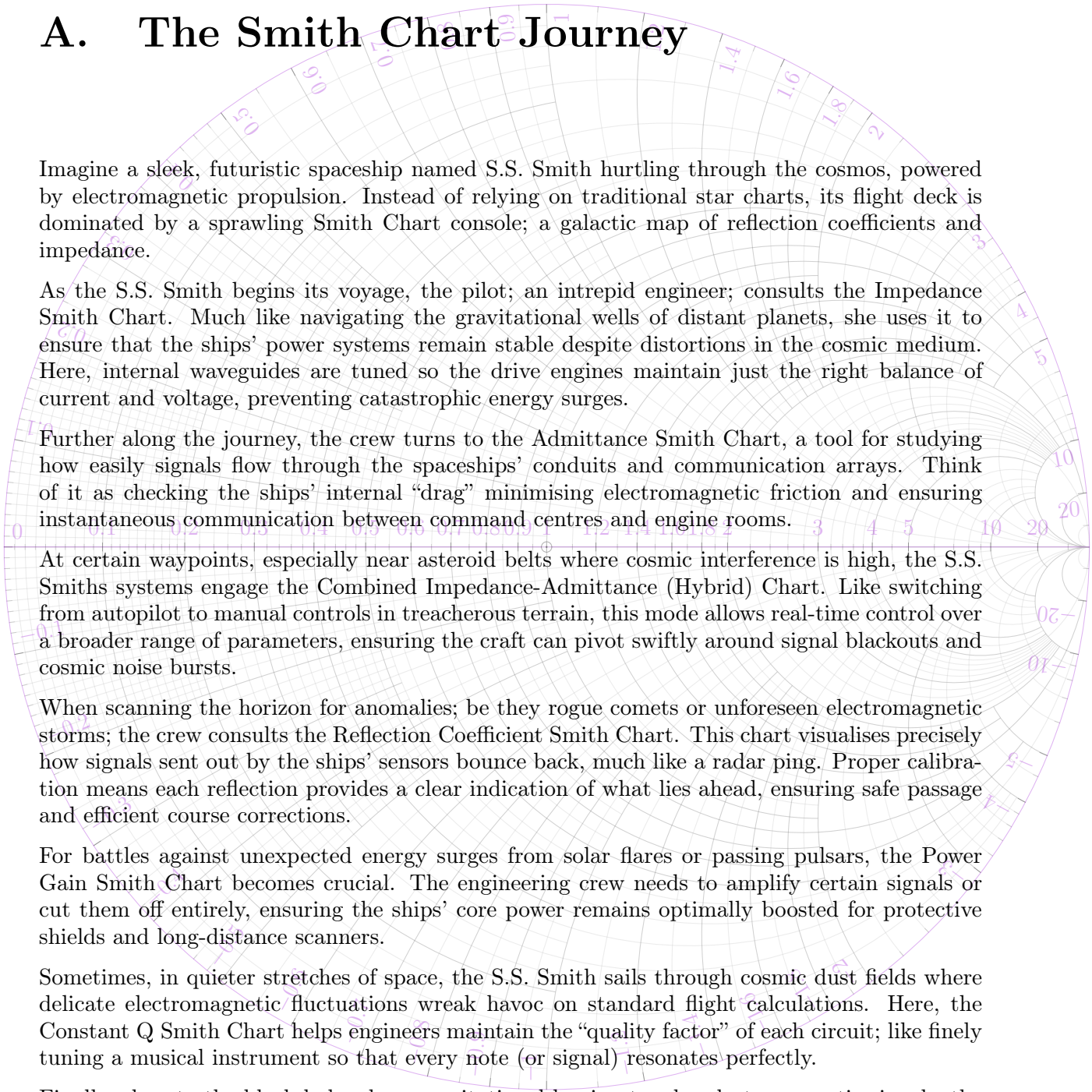
Our audit methodology incorporates risk assessment, process evaluation, and strategic recommendations to identify inefficiencies, harmful biases and strengthen natural unforced governance. By providing actionable insights, we help businesses see clarity, responsible retention of care, and mitigate risks if not, reduce them.

[2] Prosperity is important, Never money, while time is definitely not Money.
[3] Systems.
[4] Fast Moving Consumer Goods.

Whether focusing on internal compliance, regulatory adherence, or operational audits, we deliver reliable and independent assurance. Our services enable organisations to build stakeholder trust, optimise operational efficiency, and ensure sustainable business success.



A. The Smith Chart Journey



Imagine a sleek, futuristic spaceship named S.S. Smith hurtling through the cosmos, powered by electromagnetic propulsion. Instead of relying on traditional star charts, its flight deck is dominated by a sprawling Smith Chart console; a galactic map of reflection coefficients and impedance.

As the S.S. Smith begins its voyage, the pilot; an intrepid engineer; consults the Impedance Smith Chart. Much like navigating the gravitational wells of distant planets, she uses it to ensure that the ships' power systems remain stable despite distortions in the cosmic medium. Here, internal waveguides are tuned so the drive engines maintain just the right balance of current and voltage, preventing catastrophic energy surges.

Further along the journey, the crew turns to the Admittance Smith Chart, a tool for studying how easily signals flow through the spaceships' conduits and communication arrays. Think of it as checking the ships' internal "drag" minimising electromagnetic friction and ensuring instantaneous communication between command centres and engine rooms.

At certain waypoints, especially near asteroid belts where cosmic interference is high, the S.S. Smiths systems engage the Combined Impedance-Admittance (Hybrid) Chart. Like switching from autopilot to manual controls in treacherous terrain, this mode allows real-time control over a broader range of parameters, ensuring the craft can pivot swiftly around signal blackouts and cosmic noise bursts.

When scanning the horizon for anomalies; be they rogue comets or unforeseen electromagnetic storms; the crew consults the Reflection Coefficient Smith Chart. This chart visualises precisely how signals sent out by the ships' sensors bounce back, much like a radar ping. Proper calibration means each reflection provides a clear indication of what lies ahead, ensuring safe passage and efficient course corrections.

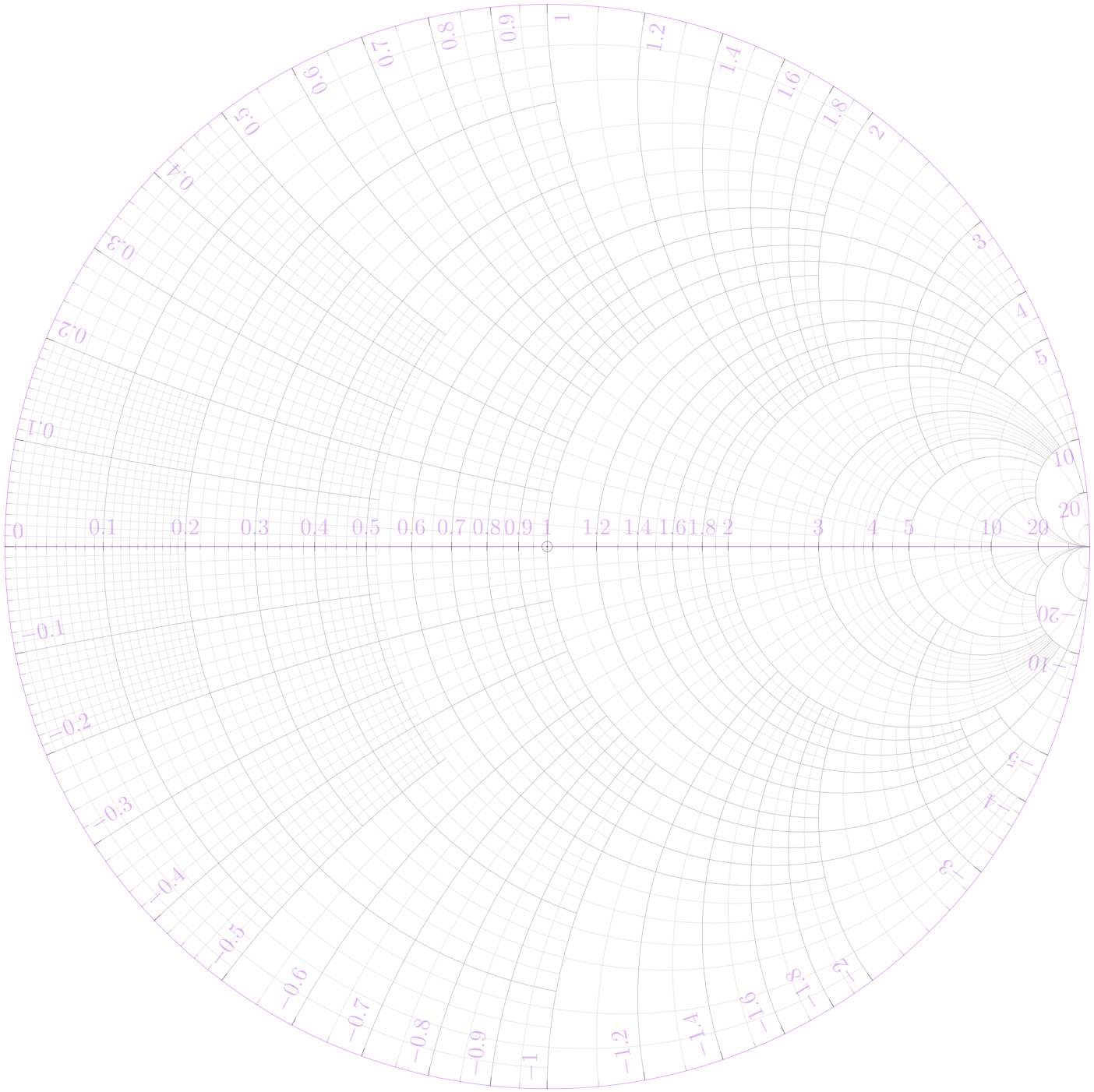
For battles against unexpected energy surges from solar flares or passing pulsars, the Power Gain Smith Chart becomes crucial. The engineering crew needs to amplify certain signals or cut them off entirely, ensuring the ships' core power remains optimally boosted for protective shields and long-distance scanners.

Sometimes, in quieter stretches of space, the S.S. Smith sails through cosmic dust fields where delicate electromagnetic fluctuations wreak havoc on standard flight calculations. Here, the Constant Q Smith Chart helps engineers maintain the "quality factor" of each circuit; like finely tuning a musical instrument so that every note (or signal) resonates perfectly.

Finally, close to the black hole where gravitational lensing tangles electromagnetic signals, the ship engages the Lossy Transmission Line Smith Chart. This advanced setting accounts for power lost to the relentless pull of cosmic phenomena; vital for safe manoeuvring and accurate data analysis when reality itself seems distorted.

Throughout the voyage, the Smith Chart is more than a simple engineering tool. It is a living cosmic atlas for everything electromagnetic, guiding the S.S. Smith like an interstellar compass. By harmonising impedance, admittance, and reflection coefficients, each branch of the chart

represents a new mode of exploration, enabling the crew to sail confidently across the vast electromagnetic seas of the universe.



B. Ergodic Theorems

Deep in the vast reaches of space, the S.S. Smith charted its course through shifting cosmic tides. Onboard, its quantum AI; named Birkhoff; constantly monitored power levels, gravitational pulls, and sensor data, tirelessly logging each measurement into the ships' expansive databanks. Meanwhile, the ships' navigation intelligence; Von Neumann; streamlined all flight operations, adjusting thrust levels and plotting paths to minimise energetic waste.

Despite the ever-changing cosmic backdrop; radiation bursts, passing asteroid fields, and swirling nebulae; the S.S. Smith seemed to maintain a strangely consistent performance. Birkhoff and von Neumann attributed this reliability to Ergodic principles hardcoded into the ships' operational core. Every warp jump, every cruising segment, and every sensor reading fed into a grand cosmic puzzle that spanned both time and the ensemble of possible spacefaring conditions.

From Birkhoffs' perspective, the ships' subsystems were like tiny measure preserving transformations. Fuel consumption, energy flow, and mechanical wear were all carefully tracked so that each new second of flight was essentially a reconfigurable version of the same overarching system. Over long voyages, the time averages; like mean warp efficiency or average sensor fidelity; began converging on the ensemble averages that Birkhoff had calculated from the mountain of prior missions and simulations.

Occasionally, the S.S. Smith encountered an anomalous cosmic phenomenon; like a rogue black hole or an unexpected cluster of pulsars; that seemed to upend expected statistics. Yet, each time, Birkhoffs' built-in version of the Birkhoff Ergodic Theorem reassured the captain that, over the long haul, these fluctuations would be absorbed into the bigger picture. As long as the system remained measure-preserving; meaning total energy and momentum constraints were respected; the ultimate flight parameters would circle back to stable averages.

Simultaneously, von Neumanns' navigational AI seamlessly applied the Mean Ergodic Theorem to flight paths. By averaging each minute course correction over thousands of manoeuvres, von Neumanns' charts would converge on the single best route through any cosmic corridor. Short-term chaos; like asteroids swirling in unpredictable orbits; mattered less; the long-term trajectory fell into a predictable corridor of efficiency.

Over time, the crew came to trust these Ergodic laws as a kind of cosmic guarantee. The more they traversed uncharted space, the more data they collected, ensuring that the ships' predictive models grew stronger. From thermodynamic readings in the cargo bay to probabilistic analyses of signal reflection from distant quasars, each data point helped refine the ensemble. And as the voyage continued, each fresh moment at the helm felt less uncertain, guided by the knowledge that the S.S. Smiths' behaviour, though wildly varied in the short term, would always converge to a well-understood mean in the long term.

Thus, the Ergodic nature of the S.S. Smiths' operations served as the silent backbone of its cosmic expeditions. Birkhoff and von Neumann worked in tandem, weaving time averages and ensemble averages together into a single tapestry of predictive certainty. Whether traversing star-dense sectors or lonely galactic voids, the S.S. Smith sailed onward with unshakeable confidence; secure in the promise that long-term convergence was woven into its every circuit and

algorithm.

Let $(X, \mathcal{B}, \mu)$ be a probability space, and let $T : X \to X$ be a measure preserving transformation, meaning that for all $A \in \mathcal{B}$,

$$\mu(T^{-1}A) = \mu(A).$$

(1) Pointwise Ergodic Theorem (Birkhoff's Ergodic Theorem)

For any $f \in L^1(X, \mu)$, the time averages of f converge almost surely to the space average:

$$\lim_{N\to\infty} \frac{1}{N} \sum_{n=0}^{N-1} f(T^n x) = \mathbb{E}[f|I](x),$$

where I is the σ-algebra of invariant sets under T, given by

$$I = \{A \in \mathcal{B} \mid T^{-1}A = A\}.$$

If T is Ergodic, meaning that every $A \in I$ has either $\mu(A) = 0$ or $\mu(A) = 1$, then the above reduces to

$$\lim_{N\to\infty} \frac{1}{N} \sum_{n=0}^{N-1} f(T^n x) = \int_X f \, d\mu \quad \text{almost surely.}$$

(2) Mean Ergodic Theorem (von Neumann's Ergodic Theorem)

If T is a unitary operator on a Hilbert space H, then for any $f \in H$, the sequence of averages

$$P_N f = \frac{1}{N} \sum_{n=0}^{N-1} T^n f$$

converges in the norm of H to the orthogonal projection of f onto the subspace of T-invariant functions:

$$\lim_{N\to\infty} P_N f = Pf,$$

where P is the projection onto $\{g \in H \mid Tg = g\}$.

(3) Ergodic Decomposition

For any $f \in L^1(X, \mu)$, we have

$$\mathbb{E}[f|I](x) = \lim_{N\to\infty} \frac{1}{N} \sum_{n=0}^{N-1} f(T^n x),$$

which states that the Ergodic averages converge to the conditional expectation of f with respect to the invariant σ-algebra I. If T is Ergodic, this simplifies to

$$\mathbb{E}[f|I] = \int_X f \, d\mu.$$

C. Contact Us

$\pm \oint$ Mr. Mahesh Shastry[1], $\prod$

Professional Member$_{\text{IEAust, IEEE, IET, ACM}}$

Director, Kalman | Systems^{+}

Inc. July 2022, NSW, Australia

ABN: 72 660 552 670 | ACN: 660 552 670

mahesh@kalmansystems.com

LinkedIn: https://linkedin.com/in/mshastryacmorg

Xing: https://www.xing.com/profile/Mahesh_Shastry

Meeting Booking Link: https://calendly.com/mshastryacmorg

$\pm \oint$ Mrs. Praneetha Shastry[2], $\prod$

Non-Executive Director, Kalman | Systems^{+}

ABN: 72 660 552 670 | ACN: 660 552 670

[1] We at Kalman | Systems$_{+}$ would personally; like to thanks all the camping chairs in existence, from our local suppliers, Bunnings, BigW and Kmart in NSW, Sydney. ***Ask us why!***

[2] *She who must be obeyed, or else! Death!*