



## OVERVIEW

# Advanced Engineering Services

Eclipse Automation supports early-stage automation planning by assessing processes, validating concepts, and aligning teams around a clear path forward.

## Rethinking how teams plan for automation

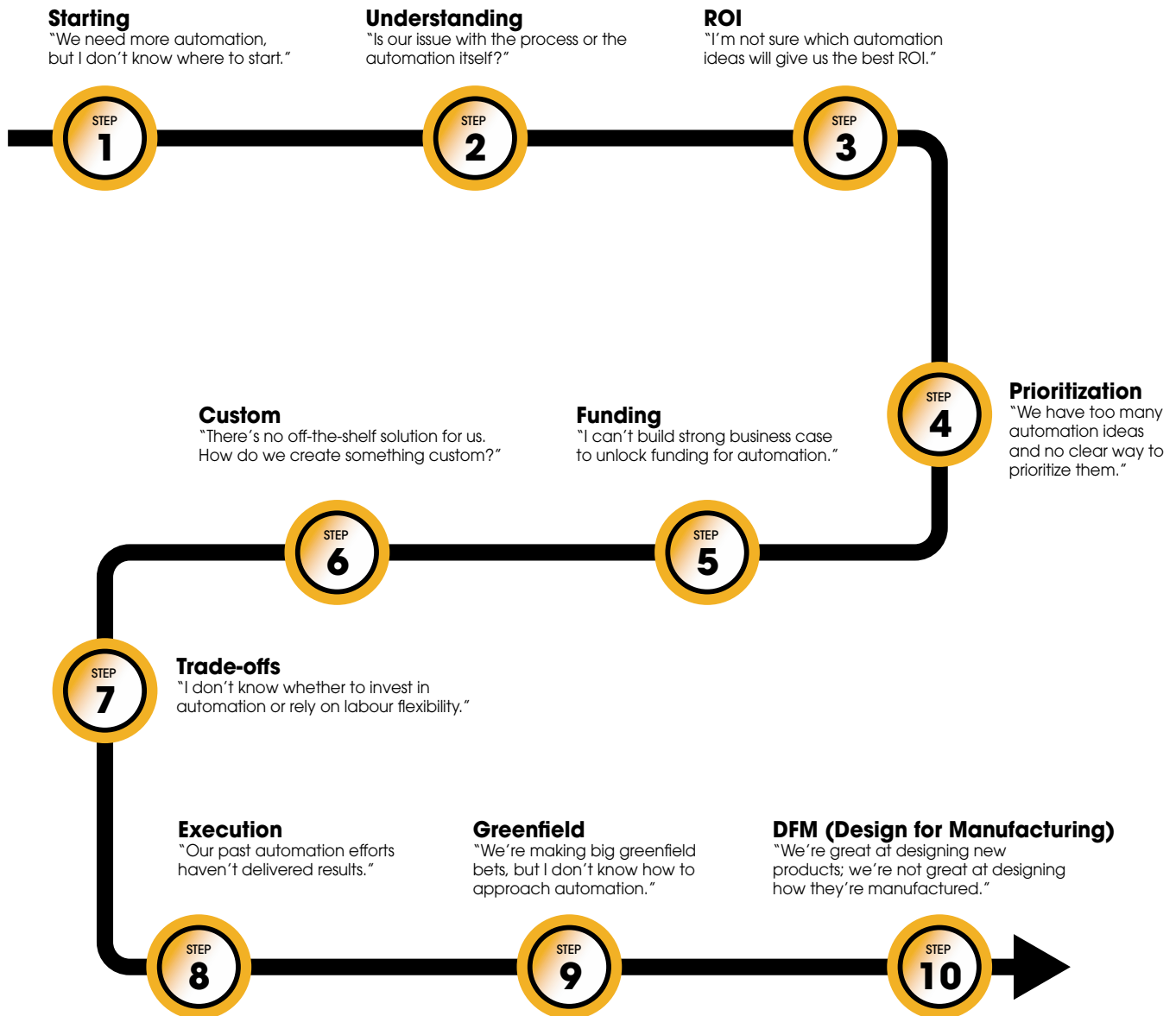
Advanced Engineering Services (AES) are critical for any automation project, especially when time spent up front can significantly increase your chance of success and decrease overall project risk.

According to our research and experience, pre-automation, including pre-planning, is one of the top success factors of an automation strategy. Its importance is further backed by McKinsey, as their research found proper pre-automation planning can cut implementation costs by 20-30%.

AES is all about planning for automation. This means reviewing the process, design, and taking the process through to proof of concept. With our decades of automation experience across multiple industries, we often resolve common challenges faced by manufacturers.

## Common automation challenges

One of the biggest challenges with starting automation journeys is knowing where to start.



## What AES involves



### Process Assessment and Optimization

Before investing in automation, companies need to identify inefficiencies and bottlenecks. Our assessment services evaluate current workflows to eliminate redundant or wasteful steps, standardize manual processes and ensure automation is applied where it adds the most value.

*Streamlining layout or material flow can increase productivity by 15-30% even before automation is introduced.*



### Data-Driven Decision Making

AES includes data collection and analysis to identify high-volume, high-repetition tasks suitable for automation. They predict ROI based on real operational metrics and avoid costly investments in automating low-impact processes.

*70% of automation failures stem from inadequate upfront planning or poor process understanding.*



### Customization and System Design

Every manufacturing environment is different. AES helps to define system requirements tailored to the company's specific needs and select the right technologies (e.g., conveyors, robots, AS/RS), simulate and model automation layouts before physical installation occurs.



### Cost and Risk Reduction

Automation is capital-intensive. Breaking a project into phases helps avoid over-engineering or underutilizing expensive systems, while mitigating risks related to downtime or disruption during rollout. A phased or modular plan spreads the investment and makes it easier to foresee and adapt to risks faced at all stages of the project. This approach also helps achieve operational readiness.

*Proper pre-automation planning can cut implementation costs by 20-30%.*



### Change Management and Training Alignment

Automation often changes job roles. We assess organizational readiness, including the required upskilling, reskilling and communication plans to ensure workforce buy-in. By providing information to employees, investing in training and change management practices, projects can dramatically increase their chance of success.

## Our process and methodology

Over the last two decades, we have established and refined our robust methodology to deliver successful automation projects. We help customers develop plans, thinking about all aspects of the automation process, project scope, and other factors needed to develop a successful automation plan. The main phases of our methodology are:

### 1. Planning

- a. Identify project scope and budget
- b. Timeline identification
- c. Project objectives
- d. Assessments, data collection, analysis and review

### 2. Transitioning from manual processes to automated manufacturing

- a. Proof of principle testing
- b. Process development assistance
- c. Design for manufacture recommendations
- d. Robot and line simulations
- e. ROI calculations
- f. Developing equipment specifications
- g. Process risk assessment
- h. Change management planning and training

### 3. Strategy to successfully ramp-up volume

- a. Establish volume and ramp-up over time
- b. Optimize automation plans
- c. Provide the right level of automation at the right time to achieve goals by managing downtime and disruptions and expanding as needed

### 4. Validation and Quality Control (QC) planning

- a. Process to document all system requirements
- b. Ensure requirements are met through design
- c. Provide validation planning and support
- d. Include URS creation and GAMP 5-based processes and documentation

## Creating value with plans and recommendations

We have delivered AES plans that help clients identify and capitalize on opportunities to maximize the value of automation. Through detailed assessments, data analysis and the application of our deep industry expertise, we identify high-impact opportunities and develop tailored solutions that align with project goals, budgets and business needs.

The result is a comprehensive report that summarizes our preparation, site visits, data investigations and evaluations. This report provides clear, ranked recommendations and a detailed assessment of each opportunity to support value-driven decision-making.



## Automation assessment approach

An **automation site assessment** identifies opportunities to leverage advanced automation and robotics to increase throughput, reduce costs, increase quality, manufacture new products or increase safety. It is often a starting point for automation programs, capex initiatives, business mandates or equipment modernization.

Assessment typically can be completed in 2 weeks with onsite portion requiring 2 days per site.

Plan	Discover (On-Site)	Evaluate	Finalize Output
<ul style="list-style-type: none"> <li>Understand strategic priorities</li> </ul>	<ul style="list-style-type: none"> <li>Conduct line studies and understand processes</li> </ul>	<ul style="list-style-type: none"> <li>Identify quality automation opportunities, assess benefit, feasibility, risk</li> </ul>	<ul style="list-style-type: none"> <li>Finalize business case</li> </ul>
<ul style="list-style-type: none"> <li>Finalize scope (plants, etc.) and staffing</li> </ul>	<ul style="list-style-type: none"> <li>Document current pain points</li> </ul>	<ul style="list-style-type: none"> <li>Prepare ROM (Rough Order of Magnitude) business case</li> </ul>	<ul style="list-style-type: none"> <li>Create short-term and long-term roadmap</li> </ul>
<ul style="list-style-type: none"> <li>Plan site visits, initial data request, and engage stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Collect plant data and conduct interviews</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize automation opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Prepare report-out for all stakeholders</li> </ul>
<ul style="list-style-type: none"> <li>Document potential automation hypotheses</li> </ul>	<ul style="list-style-type: none"> <li>Prepare current state findings</li> </ul>	<ul style="list-style-type: none"> <li>Finalize prioritization and potential go-forward</li> </ul>	<ul style="list-style-type: none"> <li>Discuss initial concepts, design and next steps</li> </ul>

## Example opportunity identification



	Process Area	Opportunity	Technology
1	WIP storage - tote filling	<ul style="list-style-type: none"> <li>Eliminate manual tote handling</li> <li>Reduce temporary workers</li> </ul>	<ul style="list-style-type: none"> <li>AMRs (floor to floor)</li> <li>Industrial robot</li> <li>RFID scanning</li> </ul>
2	WIP storage - lid placement	<ul style="list-style-type: none"> <li>Eliminate temporary workers for product handling</li> </ul>	<ul style="list-style-type: none"> <li>AMRs (floor to floor)</li> <li>Industrial robot</li> <li>Cobot</li> </ul>
3	WIP pallet movement	<ul style="list-style-type: none"> <li>Eliminate the need for fork-truck drivers</li> </ul>	<ul style="list-style-type: none"> <li>AMRs (floor to floor)</li> </ul>
4	WIP pallet and tote loading	<ul style="list-style-type: none"> <li>Eliminate temporary workers</li> <li>Automate tote load/upload</li> </ul>	<ul style="list-style-type: none"> <li>Conveyor belts</li> <li>Industrial robot</li> <li>Cobot</li> </ul>

## Incorporating the right technology and quality control procedures

We understand the challenge of developing complex manufacturing lines with varying levels of automation. No matter the requirements, it's important to find the right equipment for the right job. As a third-party independent provider, we help our clients select the most appropriate technology based on their budget, timeline and needs.

When selecting technology, we consider the project scope and the validation and quality-control requirements of the industry, ensuring all appropriate procedures and information can be captured according to relevant standards. We have experience working in complex industries such as energy, life sciences, transportation, and consumer and industrial products, and can help develop a clear and actionable validation plan aligned with GAMP and other quality standards.

## Support across the automation lifecycle

We provide our clients with comprehensive services and solutions across the entire automation value chain.



Prepare for Automation	Design for Automation	Assemble, Deploy	Integrate	Service: Support, Update Optimize
<i>What should I automate and to what extent?</i>	<i>What can I achieve through this automation solution?</i>	<i>How do I implement the automation effectively?</i>	<i>How do I connect the automation with various systems?</i>	<i>How do I continuously improve?</i>
<ul style="list-style-type: none"> <li>• Vision and strategy</li> <li>• Automation assessment</li> <li>• Manufacturing performance assessment</li> <li>• Business case development</li> </ul>	<ul style="list-style-type: none"> <li>• Proof of concept</li> <li>• Automation design</li> <li>• Design for manufacturing</li> <li>• Simulation, tech selection, performance</li> <li>• User requirements and specs</li> <li>• Engineering deployment plan</li> </ul>	<ul style="list-style-type: none"> <li>• Automation delivery</li> <li>• Testing</li> <li>• Commissioning</li> <li>• Simulation-ready machinery</li> <li>• Integration of third-party equipment</li> <li>• Build-to-print</li> <li>• Training</li> </ul>	<ul style="list-style-type: none"> <li>• Data strategy and digital architecture</li> <li>• Integration planning</li> <li>• MES</li> <li>• ERP</li> <li>• Software and IoT</li> <li>• Digital operations twin</li> </ul>	<ul style="list-style-type: none"> <li>• 24/7 automation support</li> <li>• OEE optimization</li> <li>• Inspection</li> <li>• Field technicians</li> <li>• Maintenance, managed services</li> <li>• Upgrades, continuous integration</li> <li>• Training</li> </ul>

## AES questions and checklist

### Process understanding

- What specific manufacturing processes are you looking to automate?
- Have all current workflows and bottlenecks been mapped and documented?
- Are there redundant or non-value-adding steps that can be eliminated before automation?

### Data & metrics

- Do we have accurate data on process cycle times, error rates and throughput?
- What KPIs will be used to measure the success of automation?
- Are we tracking labour costs, downtime and scrap rates consistently?

### ROI & cost justification

- What is the estimated ROI for automating these processes?
- Are there high-impact, low-cost opportunities for early wins?

### System readiness

- Is our current infrastructure ready to support automation?
- Will existing equipment integrate with new automation technology?
- Are layout or facility changes required?

### Vendor & technology evaluation

- What criteria will be used to evaluate automation technologies or vendors?
- How will we ensure scalability and future-proofing?
- Are we considering open versus proprietary systems?

### Workforce impact

- How will automation affect job roles?
- What reskilling or upskilling will be necessary?
- How do we communicate upcoming changes to gain workforce support?

### Simulation & testing

- Will there be a digital twin or simulation?
- How do we test performance before deployment?
- Is there a pilot or phased rollout plan?

### Risk management

- What are the risks of automation failure or poor implementation?
- Do we have contingency plans for downtime or system malfunctions?

### Timeline & roadmap

- What is the timeline for the AES phase?
- What milestones must be achieved before automation begins?
- Who will be responsible for each phase of the project?

### Post-planning support

- Will the vendor provide support during and after implementation?
- Are tools or training offered to help the team maintain the system?
- How will success be evaluated after automation goes live?



# The Eclipse Advantage

Founded in Cambridge in 2001, Eclipse Automation delivers manufacturing automation solutions for clients across the nuclear energy, life sciences, transportation, consumer, industrial, food & beverage, semiconductors, and aerospace & defense sectors.

Our cross-industry experience allows us to adapt proven technologies and best practices from one sector to another, enhancing precision, performance, and reliability for every customer.

With operations across Canada, the U.S., and Europe, we continue to grow our reach and capabilities to meet the evolving needs of the global manufacturers in every sector.

## Ready to build what's next?

Contact us today to see what's possible:

[www.eclipseautomation.com/book-a-discovery-call](http://www.eclipseautomation.com/book-a-discovery-call)

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