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*Ingenuity for life*

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# Siemens Mobility Limited

**Lean Projects Programme**  
Driving innovation across the  
rail signalling industry

[www.siemens.co.uk/rail-automation](http://www.siemens.co.uk/rail-automation)

# Siemens Mobility Limited

## Lean Projects Programme: Rail Automation



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# Introduction

Over the past two years we have introduced our Lean Projects Programme, which we created to demonstrate our commitment to driving innovation and to embed efficiencies into our projects.



We're already seeing the benefits of this programme, and so we've produced this brochure to share and celebrate our successes to date with you.



We have developed case studies for nine of the twenty-four projects in the programme to show how we are responding to the priorities of our customers and the rail signalling industry. The studies highlight how we are improving collaboration, reducing costs and enhancing efficiency, telling a story of ongoing innovation to demonstrate that the Lean programme is changing the way we work at Siemens Mobility Limited.



We are trusted and highly regarded for our product reliability, quality and delivery. Our brochure is designed to showcase these assets and, at the same time, demonstrate that we are forward-thinking, dynamic, collaborative and engaging industry leaders that welcome competition and innovation, among many other attributes.

Louise Loudon, Head of Business Excellence, said: "The Lean Programme is designed to challenge our ways of thinking, encouraging our teams to deliver our processes to the best of their ability. We want to further build on ensuring that we operate to a best in class standard in every project. To be successful it is key we identify areas where we can collaborate with our customers to unlock potential and drive cost efficiency.

"This programme is part of a broader cultural change in Siemens Mobility Limited to be fit for the future. We've had great engagement to date, but it's important that we don't become complacent. So, this

brochure is intended to share with you our progress to be an innovative organisation, committed to delivering ongoing improvements that generate value for our customers."

Matthew Kent, Director of Operations, said: "We're always looking to find innovative ways to keep costs low for customers, without compromising on safety or quality. Keeping our customers and colleagues safe must be our number one priority.

"The case studies in this brochure show how we're adapting and changing our processes, collaborating within our company and with our customers to learn from the cumulative experience. For instance, we have developed industry-leading technology to remove paperwork package plans for safer trackside working. We are now actively engaged with our clients and supply chain early in the GRIP process to activate scope stability sooner, hence removing rework cycles, and have embedded a robust lessons learned process across all projects to disseminate best practice.

"All the case studies give real-life examples of how we are achieving our mission to be efficient, innovative and integrated."



*...we're adapting and changing our processes, collaborating within our company and with our customers to learn from our cumulative experience.*



Louise Loudon,  
Head of Business  
Excellence



Matthew Kent,  
Director of Operations



## Working side-by-side with our customers

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*Siemens Mobility Limited worked collaboratively with Network Rail IP Signalling (NR IPS) on the project, forming a single team able to create a smoother way of working.*

### Increasing collaboration



#### Summary

In a rare opportunity to get involved from the outset, Siemens Mobility Limited took on the challenge of working on a project from Stage 1 of Network Rail's Governance for Railway Investment Projects (GRIP) process to explore the benefits that can be gained when involved with a scheme from its conception.

#### What we did

Rail signalling contractors are traditionally brought onto projects at the detailed design phase of a project (GRIP 4 or GRIP 5 onwards). This can lead to challenges occurring later on in the scheme and ignores the possible advantages of working collaboratively from an early stage.

To challenge the norm, we took on a full Design and Build project, from conception (GRIP 1) through to completion (GRIP 8). The result was a more efficient way of working between contractor and customer that enables both parties to reduce costs, save time and improve quality.

#### How we did it

Urray Nook was a scheme aimed at converting an old, manual level crossing in County Durham into a state of the art MCB-OD level crossing.

We worked collaboratively with Network Rail IP Signalling (NR IPS) on the project, forming a single team able to create a smoother way of working between customer and contractor.

Through a series of internal workshops, the team implemented a variety of measures aimed at streamlining project processes. These included:

- Working together to narrow the list of required deliverables
- Shortening 20-day review cycles to 5-10 days to challenge the project programme
- Combining (typically separate) roles to establish a smaller, more focused team
- Minimising design changes by scoping the project early on

- Establishing a "control before content" policy, encouraging the team to get things right first time

#### What we learned

This was a brave new world both for the customer and for Siemens Mobility Limited, with contractors rarely involved in a project as early as GRIP 1-3. It provided us with an opportunity to shape the project requirements and define an implementation methodology that provided the greatest opportunity to deliver programme and cost benefits.

The result is an approach able to streamline project processes in order to reduce timescales; reduce costs; reduce scope uncertainty and change; and build strong relationships between customer and contractor.

The model now serves as a standard for Siemens Mobility Limited, helping us to deliver both small and major projects successfully and competitively – and has even led to us securing the £35m contract for GRIP 5-8 of the Durham Coast re-signalling scheme.

### Benefits



48% reduction on overall timescales



Reduced overall project costs



Project delivered on time with a controlled and early handover



A high quality finished product



A brand new approach that serves as best practice across the business





# Defining materials management roles and responsibilities

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*Working consistently across the country means actions are addressed the first time, without confusion or misunderstanding.*

## Increasing collaboration



### Summary

Materials management is a complex, multi-function activity, with many opportunities for miscommunication and waste if it is not handled correctly. As part of a wider programme of improvement within the company, Siemens Mobility Limited has introduced a system that focuses on bringing consistency to the materials management process, involving colleagues from the outset in developing recognised roles to help define skills requirements and improve training, development and recruitment.

### What we did

Our aim was to create a community of practitioners across the company who could share best practice and work collectively on process improvement. This would replace the previous, rather disparate collection of regional roles, streamlining activities and coordinating efforts to address issues.

### How we did it

The starting point was to identify the main business functions responsible for ordering and delivering materials on time and to cost, to end users. These included colleagues from materials engineering, supply chain and logistics.

The next step was to bring this materials management community together, face-to-face and online, for workshops and forums. Involving colleagues from the outset in discussions allowed them to shape the direction of the project, giving them ownership and a desire for its success.

During their collaboration, colleagues discussed concerns and shared examples of best practice. Another key element was to establish common elements in the roles and responsibilities of the different functions so that roles could be defined for business-wide use and duplication could be avoided.

### What we learned

For the project to be a success, we had to engage colleagues from the outset in order to understand the existing frustrations and work together to improve the system.

This successful collaboration has resulted in a system where waste and costs are reduced, as materials are ordered only when necessary.

Establishing defined and consistent roles and responsibilities has helped to train new members of staff, and enabled the materials management community to share best practice and lessons learned across the company.

Inspired by this result, we have developed a culture where innovation is a natural part of the business environment.

The materials management community within Siemens Mobility Limited now operates on a national level. Working consistently across the country means actions are addressed the first time, without confusion or misunderstanding, and allows for the fine-tuning of a common process.

## Benefits



There are fewer errors in ordering and storing materials as teams are working to optimal efficiency, which helps to reduce costs



A standardised process has been established from which continuous improvement can be made, to the benefit of Siemens Mobility Limited and our clients



Inspired by their involvement in the process and its success, teams are developing a culture of collaboration, the benefits of which will be felt widely within Siemens Mobility Limited and by our clients





# Leading the industry in digitalisation

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*The project has resulted in a £1.5 million saving per annum in labour and printing costs, with an environmental benefit from the reduction in paper used.*

## Increasing collaboration



### Summary

It's vital that those working trackside comply with Network Rail standards. Historically, safe work packs to enable this were printed and tracked via spreadsheets, giving the potential for human error. Siemens Mobility Limited collaborated with users to introduce a fully compliant digital system, reducing costs and making the process more efficient.

### What we did

We introduced a digital system for safe work packs where users logged in on tablets, accessing a system that showed the status of each pack. Users are now able to view the history of each process and collaborate with colleagues in real time.

This system has ensured compliance with Network Rail standards in a way that optimises efficiency and safety for trackside teams, as well as reducing costs through cutting the amount of printing required. It has resulted in an increase in return of safe work packs from 20% to 80-100%.

### How we did it

We worked with OnTrac (rail safety software developers) for 12 months, developing this online system to meet Network Rail compliance. We then trialled the system for six months, working closely to improve safety, supporting the team on-site and obtaining feedback to improve the functionality of the tablets.

Finally, we carried out face-to-face training for users and rolled the system out across the industry.

### What we learned

To ensure the success of the project, everyone involved had to embrace change, as this was the first time tablets had been distributed trackside. The system has proved incredibly popular, with more than 1,200 colleagues currently working together in real time.

The project has resulted in a £1.5 million saving per annum in labour and printing costs, with an environmental benefit from the reduction in paper used. In addition, issues are resolved quickly, safely and effectively through real time discussion.

The project is an example of best practice and, in collaboration with OnTrac and Network Rail, Siemens Mobility Limited are leading the change to digital systems across the industry.

We have a culture of continuing development to ensure we meet the demands of the rail signalling industry as it changes, both culturally and technically, and we are continuing to work with OnTrac to enhance the system further.

"Siemens Mobility Limited was the first UK organisation to implement a complete paperless safe work pack process. Many organisations have followed that lead.... We look forward to continue working closely on this and future projects." – OnTrac

"We are impressed that Siemens Mobility Limited are trying to make things better." – HM Railway Inspectorate

## Benefits



It ensures information is accurate and up to date, improving safety



The new system is more efficient, significantly lowering the time it takes to log, record and action packs



It allows teams to collaborate in real time



It is being adopted throughout the industry, ensuring consistency of operation and reducing costs





# Avoiding design changes

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*The system has helped to reduce the cost of rail signalling systems for customers, whilst still enabling Siemens Mobility Limited to deliver exceptional quality of assets and design.*

## Reducing costs



### Summary

Across the rail industry, service providers must find innovative ways to keep costs low for customers, without compromising on quality. As part of a wider programme to identify areas where the cost of signalling schemes could be reduced, Siemens Mobility Limited and Network Rail developed a Scope Stability Test, aimed at minimising costly design changes later in the project life cycle.

### What we did

At the tender stage, rail signalling designs can still typically be a work in progress. This means the final project cost can increase as design changes occur over the course of the project; this is often referred to as cost creep.

In order for Siemens Mobility Limited to provide customers with a tender cost which remains as close as possible to the final cost, we set about finding a way to stabilise the design cost before the contract began.

### How we did it

Due to our extensive knowledge and experience across the sector, we acknowledged that the later a change arose, the more costly the impact would be. Therefore, we designed a Scope Stability Test that put emphasis on minimising future changes.

We introduced the new approach through a variety of internal workshops and reviews, aimed at clarifying the scope of a design before the award of the build contract.

Understanding that, even with the Scope Stability Test, designs may still need to be adapted, we also implemented a programme of workshops aimed at helping our designers, and the wider team, to identify other ways of doing things better.

### What we learned

For the project to be a success, the team needed to adopt a totally new approach to dealing with design tenders. The result is a change in culture that focuses on making design amendments as early as possible, in order to maximise benefits later on.

The approach has helped to reduce the cost of rail signalling systems for customers. We have seen the impact of cost creep on projects reduce from as much as 20% - 30%, to as low as 10%.

It has also helped us to improve internal efficiency – enabling us to use designer’s time and skills effectively by ensuring we get the best design first time.

All of this has contributed to building a culture where challenging accepted practices, to identify possible reductions in cost, has become business as usual.

## Benefits



Better scope collaboration to help our customers get the best possible design first time



Fewer design changes helping us pass on savings to the customer, and to the customer’s customer



Better way of working between Siemens Mobility Limited and customers, helping us pass on further savings through higher efficiency





# Managing risk at every stage

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*Using knowledge from across the business, paired with a new risk and opportunities procedure, during each stage of a project's life cycle, from initial tender to handover, has made the entire risk management process more efficient and effective.*

## Reducing costs



### Summary

While many organisations rely on an individual or small team of dedicated risk managers, those involved on a project day-to-day can often offer just as much insight into potential future risks. Siemens Mobility Limited set about challenging the status quo by making all members of the project team responsible for identifying and mitigating risk – leading to a variety of benefits for contractor and client alike.

### What we did

Whilst risk management was being carried out across Siemens Mobility Limited, regional offices undertook different approaches to it. Sometimes this was carried out by small teams or individuals.

Recognising the need to create an effective approach to risk management across the business, we set about developing a consistent set of policies and procedures. The aim was to encourage a culture of active risk management and enable a broader group of experienced team members to use their skills and technical knowledge to act against risks more quickly and effectively.

### How we did it

We carried out a programme of workshops and established feedback processes to find out what staff throughout the country thought worked, or did not work, in their own approach to risk management. This enabled the risk team to identify best methods from across Siemens Mobility Limited's regional offices and establish one consolidated approach.

We developed a new risk and opportunities procedure to give people across the business the authority to identify risks throughout the life cycle of a project, setting clearly defined risk management requirements and deliverables at each stage. The result enables us to address risks as early as possible, ensuring we can use the risk budget wisely.

### What we learned

Using knowledge from across the business, paired with a new risk and opportunities procedure, during each stage of a project's life cycle, from initial tender to handover, has made the entire risk management process more efficient and effective.

The programme has enabled us to create a culture of active risk management, where everyone at Siemens Mobility Limited is empowered to use their skills to

identify risks – as well as invest in other innovative activities that will have further practical and financial benefits for customers.

This not only means everybody is invested in a process they helped to create, but ultimately enables us to lower project risk, avoid unforeseen costs, and identify potential savings for customers.

## Benefits



Clearer ownership of risks and risk process across the project team



Earlier identification of project risks



Avoidance of unforeseen costs after tender



Continuous improvement throughout the project life cycle





# Streamlining the materials management life cycle

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*Standardisation and automation is innovative in this section of the business, and sets a precedent in Siemens Mobility Limited for digitalisation.*

## Reducing costs



### Summary

Another part of our wider programme to improve materials management, Siemens Mobility Limited is implementing a standardised, automated process that effectively integrates the materials community to ensure a streamlined approach to delivering materials from bill of material generation to delivery at site.

### What we did

As with all project delivery processes and activities, the materials management process within Siemens Mobility Limited operates across multiple regional offices, and is dependant on the effective use of our business wide procurement system – Spiridon. Historically, since the implementation of Spiridon, four years ago, local practice and methods of working have developed. Inefficiencies sometimes emerged, as there was no holistic approach to identifying and resolving them, in addition to local good practices being recognised or shared.

To resolve these issues, we brought our key business functions together to jointly develop and implement a standardised process to more efficiently manage the material life cycle across the company. In doing this our aim was threefold: to reduce the difficulties that the materials community was experiencing in carrying out their roles; to reduce costs; and to eliminate wasted time and resource. Further, by establishing a common business wide process, we have enabled further refinement and streamlining of the process and continue to look for opportunities to automate manual activities wherever possible.

### How we did it

Having decided that a standardised process and targeted automation was required, we utilised existing meetings to give our colleagues the opportunity to shape the direction of the project, as well as take ownership and a desire for the project's success.

Now we have established a common process, we are implementing this baseline nationally along with targeted key performance indicators (KPIs) to monitor and evaluate its success. This important foundation also allows us to now explore other opportunities to streamline the system and thus improve it further. We have targeted our bill of materials process (BoM) and introduced automation to the transfer of data between the BoM and Spiridon. We are also starting to look at the automation of BoM creation using design documentation and software

to create the initial BoM. The ultimate goal is to make our system as efficient as possible through reduced duplication of effort, human error reduction and increased accuracy.

We are also trialling Spiridon Warehousing across our rail automation business. This will enable better regional management of stock, reducing the possibility of excess ordering and 'lost' materials, for example, and providing national visibility of stock holdings. This will help to ensure that materials are available when required, and reduce instances of shortages impacting project delivery.

BoM automation, and improved use of Spiridon capabilities, are just a few activities being progressed to improve materials management; we are looking at other more detailed areas for development that will enable us to keep improving.

### What we learned

The adoption of a standardised and more efficient process is beginning to reduce wasted time and resources through the reduction of material ordering mistakes. It should also ensure that materials are ordered only once, and that they are not misplaced or lost, or sent to an incorrect destination, so reducing costs further.

Standardisation and automation is innovative in this division of the business, and sets a precedent in Siemens Mobility Limited for digitalisation.

The system will soon be rolled out nationally and we predict that this will result in tangible benefits for the rest of our organisation, with the right materials being delivered to the right location at the right time.

## Benefits



The materials community is working together across the company more efficiently, with subsequent benefits for clients



Following national roll out, our teams will no longer waste resources managing materials, but will be able to search for materials in real time, which again will increase our operational efficiency



By implementing a standardised process, we are aiming to do everything right first time, meaning that time is not wasted – and costs are saved





# Learning every step of the way

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*Speed and simplicity in using the new system were crucial. We developed an easy, user-friendly system to store, edit and track lessons learned throughout a project.*

## Enhancing efficiency



### Summary

Many companies aspire to share lessons learned from experience, but putting this into practice can be difficult. Siemens Mobility Limited has established a process where lessons learned can be reported consistently, stored and shared throughout the company and more widely. Most importantly, through encouraging widespread and ongoing communications, we're developing a culture of continuous improvement and innovation from learning, where colleagues are encouraged to challenge accepted practices, resulting in an increase in the quality of our services and products.

### What we did

A thorough internal review to establish whether lessons learned were being implemented to their fullest across Siemens Mobility Limited Rail Automation suggested that opportunities to improve were not being sought frequently enough, and there was the potential for errors to be repeated.

One reason for this was that learning tended to be focused towards the end of a project. Also, the existing systems were not particularly user-friendly. We needed a system that was easy to use which would bring tangible benefits to projects, and ultimately our customers, through improved efficiency or safety, or by reducing costs.

Introducing such a system would also have the added benefit of encouraging colleagues to share lessons learned throughout a project. The aim was to embed a culture change that would ultimately result in better standards.

### How we did it

Speed and simplicity in using the new system were crucial. We developed an easy, user-friendly system to store, edit and track lessons learned throughout a project, ensuring that there were functions in the system to allow for easy filtering and searching. This helped colleagues share lessons learned, analyse their similarities, and find learnings quickly and efficiently.

We built the new system from scratch in-house and we will continue to develop it and innovate as we progress. Where appropriate, we will share our lessons widely to help the rail industry continue to learn and improve.

### What we learned

Our colleagues are working together in a supportive environment to analyse projects to ensure that we take every opportunity to improve in the future. Sharing these efficiencies within Siemens Mobility Limited – and with our customers – ensures that the benefits are widely felt.

Implementing this system into our normal project process ensures that lessons learned are adopted at the optimum time. We are confident that the changing culture means that all colleagues are communicating and creating a holistic system where lessons can be learned throughout a project.

Ultimately, introducing the resulting efficiencies can lead to reduced costs, for Siemens Mobility Limited, and for our customers, at every stage of a project from tendering to handover.

## Benefits



Every lesson learned can potentially be communicated across the rail industry, which can also reduce costs for customers



With lessons learned being taken on board more efficiently and consistently throughout a project, the quality of Siemens Mobility Limited services and products will increase, with consequent benefits for customers



Through participation in this collaborative approach to learning, we are showing a commitment to change and continual improvement in our processes





# Digitalising trackside testing

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*A process which once took days can now take a matter of hours, meaning actions are resolved quickly and proactively.*

## Enhancing efficiency



### Summary

Across the rail automation sector, product testers largely rely on a manual system of reporting on trackside equipment. This can result in a long, drawn-out process to ensure vital services such as track maintenance are delivered to the right areas. Siemens Mobility Limited developed and implemented an electronic system, designed to improve the speed and accuracy of product test reporting.

### What we did

Until recently, the process for testing trackside equipment involved completing and logging reports on paper, before delivering them to the relevant approvers, at various sites, by hand. This resulted in a lot of toing and froing, meaning the process could take a number of days to be actioned and closed.

Four years ago, we set about designing a new electronic system to support our trackside product testers and enable them to work efficiently and safely by logging reports remotely.

### How we did it

We developed a brand new digital system, designed to be used on a mobile phone or tablet while out on-site, and trialled it among selected testers.

The system works similarly to parcel delivery updates, allowing team members to submit reports remotely from the trackside. First, the on-site tester raises a test log querying standards compliance or design. The relevant recipient is notified and is able to respond immediately. The tester receives this information whilst still on-site and is able to close the log or identify required improvements straight away.

The key was making sure that the system was quicker than the previous process, enabling the testers to deal with and close down actions trackside. This means both us and our customers receive information on project maintenance – and any associated costs – in real time.

### What we learned

Making the system electronic enables us to save money, time and resource; a process which once took days can now take a matter of hours, meaning actions are resolved quickly and proactively.

The system has also improved other areas of our operations. An 'impact' dashboard provides insight that helps to identify and correct errors, whilst information from archived data can be collated and analysed to find other areas of improvement, and avoid future errors across the trackside testing process.

The project is part of an ongoing effort to make process digitalisation the new norm across Siemens Mobility Limited. We are now looking to link this new process into schedule of works at asset level across all disciplines.

We will also continue to build digital tools in-house, which help us turn data into useful and insight information that can be acted upon to drive business excellence.

## Benefits



Improves safety by reducing the number of site visits necessary



Prevents errors by ensuring all steps are taken



Ensures efficiency by reducing the life cycle of a test log and shortening lines of communications



Delivers real time data on progress of actions, as well as product trends and insight for further improvements





# Using technology in design for best results

Siemens Mobility Limited Lean Projects Programme: Rail Automation

*We believe that the new system will save up to 4,400 hours per annum, which incorporates the time saved by the new system being quicker.*

## Enhancing efficiency



### Summary

Rail signalling products require detailed designs and drawings that go through a process of editing before final approval, and the system we were using had limited functionality and was becoming slow. Siemens Mobility Limited invested in a new Citrix based server (virtual environment) and implemented a new network hosted in Fürth Germany, as well as a new version of cab-I-Net (3.4) and Microstation (V8i) so that our designers can work more quickly, efficiently and with better accuracy.

### What we did

Our existing technology was nearing the end of its operational life and as a result, designers and approvers were losing time on a day-to-day basis. We understood the issues that our colleagues were facing, and developed the project to resolve these over a period of two years, including a trial of nearly three months. We have invested in the latest technology to equip our colleagues with the tools to complete their tasks as efficiently as possible.

### How we did it

Our existing system was only able to cope with a limited number of users at a time, resulting in designers struggling to update drawings to meet deadlines, and thus making quick turnarounds and late requests difficult to action. We have updated the server, implemented a new network and updated the hosting application. This involved improving the hardware and software, as well as configuring the network to enhance the functionality of the system.

This has improved the capability and functionality of our system so it can meet the demands of our designers. This has resulted in a system that uses the best technology available. Designers can work quickly, accurately and efficiently; there are no queues for the system and printing can be done almost immediately. We believe that the new system will save up to 4,400 hours per annum, which incorporates the time saved by the new system being quicker and the reduction in the amount of rework needed.

### What we learned

Investing in and upgrading to the latest technology is essential for Siemens Mobility Limited to continue to deliver the best services and products in the industry. Now that the hardware and software are improved, the team are monitoring and delving further to improve functionality and usability on a micro-level within the system.

This culture of continuous improvement will allow us to monitor and tailor the system as required. We will analyse impending technological advances and determine how we can use them to our – and our customers’ – advantage.

## Benefits



Investing in technological improvements will significantly improve the quality of our products



The time saved by utilising the new technology – more than two weeks per annum for every one of the 50 colleagues working in this area – can be invested in a drive for other improvements, with a knock-on benefit to customers



We can ensure that programmes are kept to time, minimise mistakes and reduce repetition of work – all efficiencies leading to benefits that can be passed on to customers





## Next steps

In this brochure, we have included a small selection of case studies to demonstrate how we are changing to be fit for the future.

However, it's not one single project – or even the nine detailed here – that result in us changing our behaviours in order to continually improve and be innovative, but more so the collective efforts of our teams involved.

The changes we're implementing through our Lean Projects Programme support our customers' drive to bring benefits to their

customers through cost reductions, improved efficiency and innovation. We're continuing to develop the Lean programme to ensure we operate to a best in class standard in every project – and the benefits of this will be felt throughout the rail signalling industry.

For more information about our Lean Projects Programme, please contact:

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