

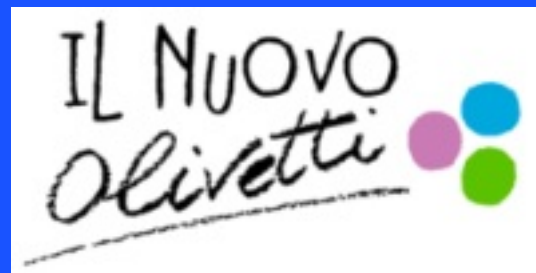
## Participating Schools

**BBS T.G.H.S**  
Bad Kreuznach

**Berufsbildende Schule**  
Technik · Gewerbe · Hauswirtschaft · Sozialwesen



Byåsen videregående skole



**KAUNO TECHNOLOGIJŲ  
MOKYMO CENTRAS**



Digital  
Revolution





## **The "*European CNC-Network - Train for Europe - Digital Revolution 4.0*"**

is an Erasmus+ KA229 technical project running 33 month from December 2020 to August 2023. It has six partner schools, one each from Croatia, Germany, Ireland, Italy, Lithuania and Norway.



**Presentation  
"Train for EUROPE"**



**Award Ceremony**

### **Description of the project**

The school partnership is an initiative going back to the „European CNC-Network“ established in 2006, a cooperation of more than 30 vocational schools in Europe.

The most popular and probably most successful school project of our network was the "Train for EUROPE" with winning the Charlemagne Youth Award in 2010.

Within that school partnership „Train for EUROPE“, the participating 24 partner schools produced model locomotives and individual wagons displaying characteristic motifs by using computer-controlled CNC machinery.

By the end of the project, the project partner had exchanged the copies of their own wagons so that today every member of the project has got their own train with at least ten different wagons. These trains are displayed for the public in showcases within the school buildings and are put into operation at special events.

The partnership described here directly builds upon the success of the „Train for EUROPE“ with a digital upgrade. The follow-up project focused on interactivity through the digital networking of the existing wagons using modern microprocessor technology, taking into account the current requirements from the „Industry 4.0“ future strategy.

## **Participating Students**

### **BBSTGHS (Germany)**

Yannick Born, Christian Kamps, Jana Kern,  
Krystian Kedzierski, Zoe Wolf

### **Byåsen videregående skole (Norway)**

Doris Baysah, , Benjamin Aukan, Thea Werness Wang,  
Janne Johansen, Tomas Raanes Vassdal

### **Istituto Olivetti (Italy)**

Matteo Bianco, Nicolo Mensa, Marco Robino,  
Cristian Alasotto, Luca Bontempi, Denis Lantero

### **I. tehnička škola Tesla (Croatia)**

Josip Peremin, Jan Stanković, Vito Mikša, Oskar  
Fabijanić, Jan Kristijan Dumančić, Ian Donelli

### **Newpark Comprehensiv School (Ireland)**

Max Hammond, Ethan Lorezo, Daniel Fortune,  
Ian Burgess, Ryan Duman, Jed O'Sullivan

### **Kauno Technologijų Mokymo Centras (Lithuania)**

Lukas Kavaliauskas, Lukas Ruoss, Kristionas Galisanskis, Vilius  
Bliuvas, Miglė Čiupaitė, Ignas Misiunas, Erika Šachvorostovaitė

# TIMELINE

**2006**

Preparatory meeting  
Train for EUROPE

**2007-2009**

Comenius Partnership  
Train for EUROPE

**2009**

Preparatory Meeting  
Train for EUROPE  
Reloaded

**2010**

Winner of the  
European  
Charlemagne Youth  
Award

**2011-2013**

Comenius Partnership  
Train for EUROPE  
Reloaded

**2020-2023**

ERASMUS+ Train for  
EUROPE - digital  
Revolution 4.0

# Kick-off meeting in Norway

On the 17th of November, 2021 students from six schools all over Europe came together in Trondheim to revive a project that has been going since 2020. After the start of the project had been delayed due to the Covid-19 pandemic, students from Lithuania, Croatia, Italy, Ireland, Norway and Germany met in the Byåsen Videregående Skole in Trondheim to get an idea of how to further improve our Train as well as strengthen the interconnection between all the participating schools.

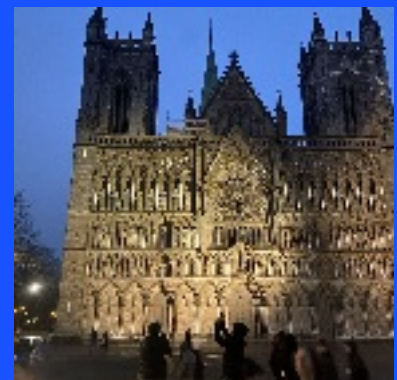
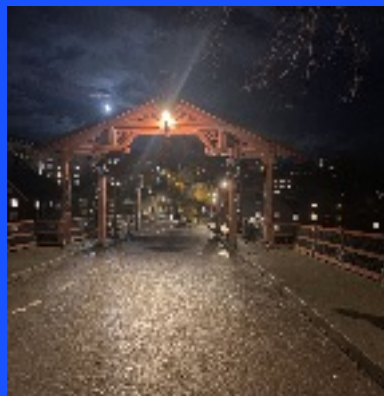
The starting event of the entire project was a dinner prepared by the students in Trondheim and it, along with the complementary lunches every day, was definitely a highlight.





On the second day the project really took off with all of us starting to think about the actual realisation of a manageable plan. After a delicious breakfast at the hotel, we all took public transport together and after arriving we heard about the project's history, the outline for our specific project and how we should work on it as well as how the project work will be structured. That evening we also were treated to a guided city tour of Trondheim where we were taken around the beautiful city centre and learned about its long and rich history. Sights we explored included the Stiftsgarden, Nidaros Cathedral, the Old Town Bridge and the Old Harbour. Afterwards we explored some more on our own and concluded the evening with our own dinner and some free time, as well as anticipation for the next day's project start.

The next day, before starting our own project work we first visited the Norwegian University of Science and Technology where we were introduced to two projects that the universities students can participate in. One was the Propulse project in which the students themselves build, code and launch rockets. The other was a project where the students participated in the Revolve student competition. These students design their own racing cars and build them as well to then race them. Both student teams explained about their projects, their wins and losses to encourage us in our own project work that we would begin working on that same day after coming back to the school.





That is exactly what we did. We divided ourselves in workgroups so that we'd end up with one representative from each delegation in each workgroup. And thus began the groupwork phases of an hour each with presentations in the end to let the other groups know what we came up. We gave room for questions and proposals to make sure everyone is in every major decision-making process. After two such work rounds the day concluded with individual dinners and some more free time to get to know the other delegations in a non-working environment or relax before the next working phases started the next day. Our last actual day in Norway was again spent working in our work groups and presenting our findings. While doing so we discovered how many similarities there are between all the different topics and how interconnected everything becomes once we started to go into more detail. This was a great start to bring all of our ideas together in the next few work phases.



Our lunch break was accompanied with a visit to the Sverresborg Trøndelag Folk Museum where we were shown a great many different buildings from throughout the ages from all over Scandinavia that were shipped there. Our tour guide lead us through history in a traditional Norwegian outfit which made the entire tour a singular experience.



Back in the school we gave ourselves homework to make the next meeting in Italy as productive as it possibly can be. Our spectacular time in Norway was concluded with a real highlight by having our last dinner at Egon, a restaurant located 80 meters high at Tyholttårnet. The restaurant revolves around itself and offers spectacular 360° panorama views as well as delicious food. Truly, the entire experience was one that none of us students would have wanted to miss and hopefully the next meetings are just as much of a wonderful experience as Norway has been.



# Second Meeting in Italy

On the 16th of February 2022, we arrived in Italy and were welcomed with a dinner at the Pizzeria La Lucciola. After not seeing the other students for so long, getting to re-meet some and meet some others for the first time, it was nice to sit together and have a clam evening before the excitement of the project really started. Some delegations brought the same members as before in Norway, others switched out part of or their entire team of students.

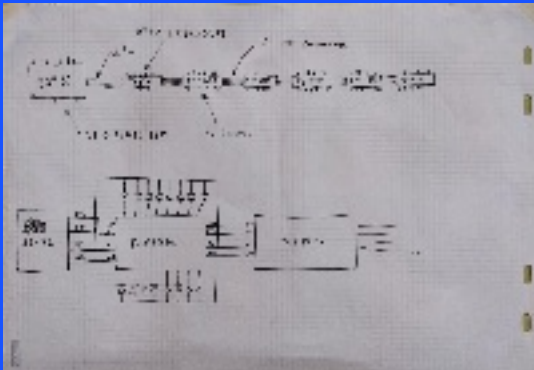
The first actual day in Ivrea started with a warm welcome to ISS Olivetti with a presentation about the Confindustria as well as the city and surrounding area. Part of that Presentation included the Aosta Valley which we would visit the next day.







Team Croatia



Wiring diagram of the wagon



Rai TV Interview

Also the Team from Croatia presented us with a working prototype using an ESP32 which works great and will be fun to use in the actual train wagons. After that eventful morning and a delicious lunch at the school cafeteria we finally got back into working on our tasks for the project. The rest of the working day was spent exploring new ideas and developing ones that we already had in Norway. We concluded the day with a school tour which the Italian students guided us on. We saw different Computer science and graphic/design labs. At the end we had some time to get individual dinners and maybe check out the town a little by ourselves.

The next day was split into a half day of work and a half day of exploring. The morning set off with a work phase of Workline C as well as Workline D, both of these were being worked on for the first time which gave a nice new perspective of what else goes into such a project.

Next to the obvious parts of a project titled “digital revolution” like programming and coding, we now also talked about public relations, the project corner and web contents. Working on these workalines gave a welcome break from all the technical talk which was all that was spoken about up to that point.

After another tasty lunch we all got on a bus to visit the gorgeous Aosta Valley where we received a tour and some free time to explore Aosta by ourselves.



Aosta Valley



Project work

The sights we saw included the Porta Pretoria which are ancient ruins, the teatro Romano which is an old amphitheater and the cathedral Santa Maria Assunta as well as the catacombs underneath the old church. We were then driven to a restaurant in Tavagnasco and enjoyed a Dinner at the “Osteria La Sosta” before driving back to Ivrea for the night and getting some well needed rest for the next day full of productive work.

Our last day in Italy was packed with project work from start to finish. Every workline was revisited and we talked about the further steps we should take to stay being productive during our time in our own countries.





We also assigned homework to each other in all our Workgroups to have an easier time picking back up at the next meeting in Croatia in May. And just like that, the project meeting was over and everyone got back to their Hotel to pack for the departure the next day.



Over all we had an amazing time in Ivrea. The people and weather were nice, the food, especially the Pizza, is something we will dearly miss once we can't have it anymore and the meetings were all productive. We are now, more than ever ready to really get to work on some more prototypes with an actual feasible plan behind us.





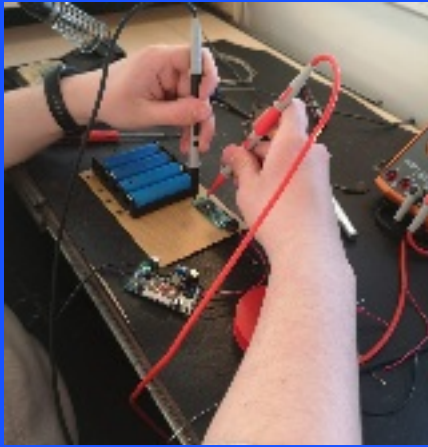
# Third meeting in Croatia

On Sunday, 1st May 2022, the five delegations arrived in Croatia to start the third project meeting in the “First School of Technical Sciences Tesla” in the country’s capital Zagreb. The first evening was giving all of us an opportunity to get settled and to have dinner together before starting work on our wagons again the next day.

Our first full day in Zagreb started with a very nice breakfast in the hotel before meeting in front of the hotel to start the half hour walk to the school. The weather in May in Zagreb was quite nice so it was great to enjoy the sunbeams and the atmosphere. After arriving we got a warm welcome from our hosts as well as a presentation that gave us an insight into the country, the city and the school.







Working in  
workline A



Working in  
workline B



Statue of Nikola  
Tesla

Afterwards we started working in workline A for two hours, dealing with the technical tasks in the project and then having lunch, a delicious meal made from potatoes, beef and fresh salad. This was followed up by a guided school tour in which we got to see the classrooms and workshops. We also got told some of the school's history and the person it was named after: Nikola Tesla.

After that we continued our work in the workline B and presented them to our classmates. It seemed like the work pace had picked up as everyone had a genuine idea of what the plan was and which problems required solutions. We stopped working at around 4:30 pm to receive a tour of Zagreb. There we saw the historic upper and lower towns, the historic Stone Gate, the Cathedral of Zagreb, the "Museum of broken Relationships" and received a lot of interesting facts and information about the history of this beautiful city. After the tour it was time to get individual dinners.



Good Morning  
Flashlight



Rimac Factory



Grgosova Cave

The next day started just like the last one did and after arriving at the school we began the day with a good morning flashlight at 9 am to start off the day and make sure we were all on the same page about the previous day. Afterwards we went into the workline C and workline D before preparing for a visit to the Rimac Factory in the afternoon. Rimac is a luxury supercar producing company that works on battery powered motors. They showed us around their current production facility and even though it had just been finished they let us know that they were already outgrowing the building. It was very interesting to see how such impressive cars are being developed and produced. After the tour we got back on the bus and drove to visit the Grgosova spilja cave, an impressive stalactite cave that has built over thousands of years. The almost 100 meters long cave was quite breathtaking in its beauty. Near the cave is a restaurant where we went for dinner after our exploration and then the bus took us all back to the hotel.

Our final day started with groupwork sessions in the morning when we took our time to have a review and an outlook on what would have to be done as homework. We discussed all the progress we made in the days before and what needed to happen at home so that the next project meeting in Ireland could again be a success. At the end of this meeting we all came to the conclusion to reorganize the meeting and work structure and to reduce the number of worklines from four to two and to reorganize the workgroups as well.

This in conclusion again meant that in the coming meeting it would be easier and very clear what to focus on. We then assigned ourselves homework in the new two workline groups and departed from school to meet again at the farewell dinner that was held at the hotel.

All in all, it was a very successful project meeting. Much was accomplished, just as much was still to be done and after travelling back home, we all had the time to adequately prepare to meet again in September 2022 in Dublin, Ireland. We would all like to thank everyone involved in the planning and performance of the meeting. Thanks to the Croatian team for the support, the friendly atmosphere and for making this meeting as wonderful and memorable as it was.



Farewell Dinner



# Fourth meeting in Ireland

On Wednesday, 28 September 2022, the five delegations arrived in Dublin to start the fourth project meeting in Newpark Comprehensive, Blackrock Dublin. The first day was “arrival day” and each delegation came to the Clayton Hotel in Leopardstown according to their own schedule and settled in. There had been a meeting already earlier in the week of another Erasmus+ project under the CNC-Network called *Magical Moving Machine for Europe*. So, the arrival evening for T4EU-REV coincided with the farewell evening for 3M4EU and a joint dinner had been arranged to include both groups. This was in The Marry Ploughboy where a cultural music and dance show took place as well as a nice meal.





Welcome Dinner

On Thursday morning we got a warm welcome from our hosts as well as a school tour that gave us an insight into their educational system and school. Afterwards we had a chance to view some of the 3M4EU projects that were left for viewing by the earlier project group. Lunch was then provided by the school catering after which we went to Dublin City for a guided tour.



Good morning  
flashlight

Next morning, we walked to Newpark School and after our “Morning Flashlight” we started the reviews of the Worklines A and B. Lunch in school was followed by Plenum sessions of the Worklines. The working day was concluded by our “Evening Flashlight”. At 16:30 we returned to the hotel and took the LUAS tram to Dundrum Shopping Center where we had individual dinners.



Programming  
work

Saturday started in the usual way with the Morning Flashlight at 9am to start off the day and be sure we were all in agreement about the previous days work. Then we went into the Workgroups for the final time to consolidate the ideas that were discussed the previous day. After a short break we agreed on the “Homework” that was needed for the next meeting in Lithuania. All participants completed an Evaluation of the meeting which was done online using Office 365 Forms.



Afterwards we returned to the hotel for lunch and were then taken by bus to Avondale in Co. Wicklow to experience a spectacular vista of the Wicklow hills and forests at “Beyond the Trees”. Our farewell dinner was in a local restaurant where we enjoyed good food and a friendly atmosphere. On the way back to the hotel we were treated to an exposé of a racing car, the owner of which is a former student of the host school. In addition, we got to try out some Hurling skills which were demonstrated by one of the Irish teachers and a hurling club member. Then it was time to return to the hotel to prepare for our departure on Sunday.

All in all, it was a very successful project meeting. Much was accomplished and much remains to be done. After travelling back home, we all had the time to adequately prepare to meet again in January 2023 in Kaunas, Lithuania. We would all like to thank everyone involved in the planning and running of the meeting. Thanks to the Irish team for their support, the friendly atmosphere and for making this meeting as wonderful and memoable as it was.



Treetopwalk Avondale



Guided tour trough Dublin



# Fifth meeting in Lithuania

Saturday was the project's welcome and initial day. We all had breakfast in the hotel at 8 am and at 9 am we met outside the hotel. We were given our travel card which we use to pay for public transport all over Kaunas.

We arrived at the school in Kaunas at 9:45 where we were welcomed by a lovely member of the Lithuanian delegation named Rita. She gave a small presentation about Kaunas and gave us a small talk about the history of this wonderful town. After Rita's presentation Heinz the head leader of the project Train for Europe and a member of the German delegation gave us a welcome speech to everyone who was present at that day.





After his talk, each party member from different delegations also had to stand up to give a small introduction about themselves. This was an effective way of knowing people's strengths and weaknesses for each student to help one another in an area where one may lack but other excel in.

After the welcomes and introductions Heinz gave an instruction regarding work lines A and B. Each students had to choose one criteria belonging in work line A and B in which they wanted to work in. After the teams were set up, we were each given a room to work in and we were to give a presentation about what we had discovered and concluded amongst our group after a designated amount of time in front of Heinz and the other delegations.



At 1 am we had lunch in the school and resumed the same workstyle that we were doing prior to lunch and at 5 am our work for the day was finished and we headed back to our hotel for free time and individual dinner.

**Sunday** was our review and updating day and is also our second full day in Lithuania, we ate breakfast at the usual time and took the 9:06 am bus to school. We started off the project with a Goodmorning flashlight where we decided on what everyone will be doing during the day. Everyone wanted to complete their wagons in order to present it to everyone. The homework from Ireland was for each delegation to bring a fully animated wagon for each student that came to Lithuania. For the rest of the day everyone was working hard on getting their wagons working. At the end of the day, we presented what we had accomplished and there were two main problems for everyone. The first problem was that there were coding issues that every delegation faced, and the second problem was also coding related which unable the wagons to connect to the app that the Italians made.







Monday was a hardworking and city tour day. After breakfast we took the bus 37 to school. Our good morning flashlight started with a few words of encouragement from Heinz, and we set off to work to try and complete and fix the problems everyone had from the day before. We worked up until lunch time where we concluded that the delegations that fixed the problems first were the Croatians and the Italians.



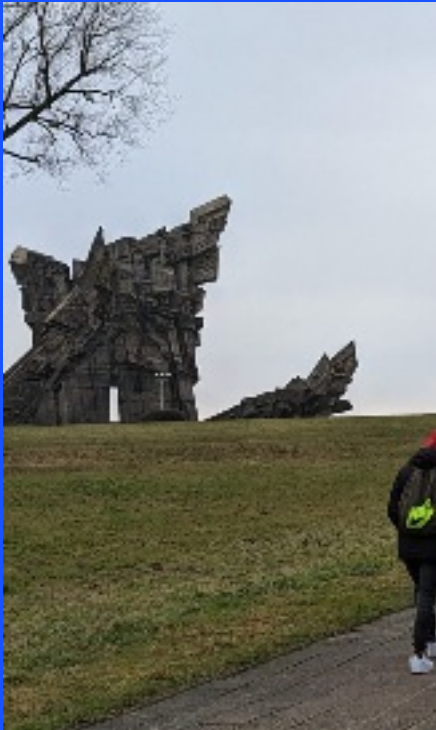
After lunch we made our way back to the hotel and rested until 3 pm where we met up with a Lithuanian tour guide outside of the hotel. The lovely tour guide told us a brief history about what happened in the area of Kaunas during the reign of the soviet army and during the invasion of the Germans during World War 1. She gave us a guided tour and we visited many historical monuments which included old churches and monumental sites. The tour ended at the old town of Kaunas where everyone had free time and individual dinner.



**Thursday** was another hardworking day alongside a cultural visit to a defensive fort established during war times in Kaunas. Heinz decided for people who have nothing to do in their wagons anymore to work on work line B. In the meantime, everyone had the period before lunch to work on the remaining malfunctioning wagons. And by the end of the allotted time everyone finally presented what they worked on.

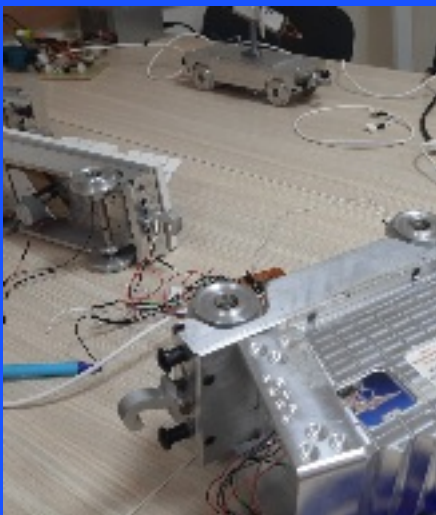
The *Lithuanian* delegation presented first and by the end of their presentation they found out that some of their mechanisms were malfunctioning and they also needed help with coding. They were lacking a few resources in order to complete the animations on their wagon. The *Irish* delegation presented next and managed to get 5 out of 6 wagons that was brought to Lithuania to be fully animated and connected to the website and app with the help of the Croatian delegation. The *German* delegation presented theirs and everything was working and fully connected to the app and website. They have also started working hard on work line B. The *Croatians* also had everything working and therefore some of their students had free time and helped generously to the delegations that needed help with their coding. The *Italians* also had everything working and have started working on the showcase where they were having problems with the calibrations of the camera inside. The *Norwegian* delegation were having electrical and technical and coding problems however, they have connected all of their ESP's to the website.





After presenting our work we achieved that day we had lunch and after lunch we visited a Lithuanian monument. This monument was a war fortress, it was a defensive ring that consisted of 9 forts used in the war against the invaders.

**Friday** started the same as any other day, we went to our work groups to fix the problems encountered the day before. By the end of the time, we were given each delegation concluded with what they have achieved that day.

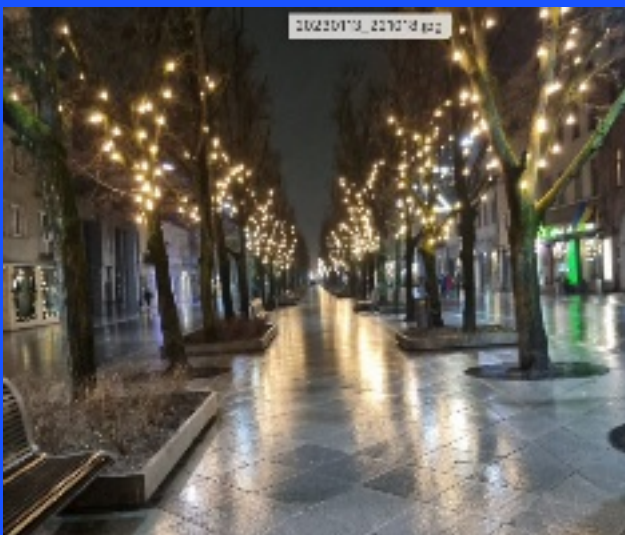


The *Croatians* were completely finished with everything therefore they divided themselves into pairs and helped delegations that were having trouble with coding. The *Germans* were also fully finished, and they kept on working with Worline B, which they were working at the day prior. They have fixed the problems regarding photos that couldn't be stored on the one drive.

The *Irish* delegation had everything working too however, one of the Irish expander broke which led to one of our wagons to not connect to the website. The *Lithuanians* managed to gather some resources and other delegations also helped them by giving some spare parts that were not being used and by the end of the day they managed to connect to the app. The *Norwegians* have concluded the meeting by stating that they have ordered all the part that they needed and were missing to their school in Norway. They have decided to work on the projects back at their school because they didn't have the resources needed in Lithuania.

We also concluded Friday's meeting by altering the agenda for Saturday. Everyone was happy at our work progress therefore everyone decided to have lunch at 12 on Saturday instead of 1 and to have free time from 12 onwards.

**Saturday** was a day where Heinz set homework for each delegation to have completed by the meeting in Germany. We went with our work lines on the first half to decide what the homework will be for other delegations.





# Final meeting in Germany

Yes, we have finally made it to Germany, to the final meeting and we were all looking forward to seeing our “Train for Europe - Digital Revolution 4.0” adventure running at our final presentation and of course to meeting all the European friends again.

The meeting started with a beautiful welcome dinner at a small restaurant in the middle of Bad Kreuznach, just in walking distance to our hotel. It was the time that we, all those involved in the project, said hello to each other. Of course, we talked a lot about the project, our work, the machine and our trip to Germany. On our first day, Heinz and his colleague Elina gave us a tour through the city of Bad Kreuznach, to the famous “Brückenhäuser – Bridge Houses” and the historic center of this town in the southwestern part of Germany.



For lunch, we went close to the main station to fight hunger in an Asian restaurant. It was delicious!



In the afternoon we went to school and started our meeting with a review and the first work line and group work sessions. The focus of our work in the different groups was the preparation of the final meeting on Friday. Only two more days to fix any technical problems or solving minor problems of our infrastructure, at the camera, the software or our wagons. Some students directly went to the workshop and assembled their installation, others stayed in classrooms and worked on the concept for the final presentation.



On Thursday, the third day of our meeting, we again were spending almost all day at school and in the workshops. Wherever you were looking at, you could have seen students from all over Europe working on the different challenges – either preparing their performance for the final presentation, preparing short presentations and short speeches or working on the technical part of the project – soldering motherboards and cables, screwing and drilling on the showcase, fixing software problems or testing the 360° camera. What an exciting day with everyone involved in the project task and everyone being able to contribute to the project.







In the evening, after having left school at about 6 pm we finally went out for dinner and a drink and enjoyed the beautiful evening in Bad Kreuznach, that cosy nice little town at the Nahe river!

On Friday then we had our final presentation of the "Train for Europe - Digital Revolution 4.0", a lot of politicians and representatives of the school administration and the local companies were invited. To kick-off our final presentation. After a short introduction by the deputy head mistress Diana Heimann and the project coordinator Heinz Wildgrube, we all were keen on presenting our part to the public. It all went fine and all the students participated in the presentation were very happy that our "Train for Europe - Digital Revolution 4.0" school partnership was running so well. At the end everyone was very happy with the successful presentation in Bad Kreuznach.



On the final day of the meeting, we did not go to school but took a trip to the Rhine valley. This was a beautiful boat trip followed by a demanding hiking tour uphill and then an unforgettable dinner back in Bad Kreuznach, right in the middle of the "Oranienpark" and very close to our hotel, where we

enjoyed delicious pasta, said farewell to everyone and exchanged some presents to the different delegations. We had a perfect day!

Thanks to Heinz und Martin for all the organisation!







Norwegian train



Italy train



Croatia train



Ireland train



Lithuania train



Germany train