Hightech Agenda
Bavaria

GOVERNMENT POLICY STATEMENT
by the Bavarian Minister-President Dr. Markus Söder, MdL,
on 10 October 2019 to the Bavarian State Parliament
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INTRODUCTION

Today is an important day. We are launching our technology offensive entitled Hightech Agenda Bavaria. This involves an investment volume of two billion euros.

We are thus igniting our research turbo to ensure that Bavaria can still play in the Champions league in ten years’ time.

The past saw a military arms race; today, there is a competition for the best brains and for technological dominance. So far, we in Germany and Bavaria are still in the vanguard of progress.

But will that be true tomorrow too? Competition for Artificial Intelligence has long since begun, and is going to shape the future. And it is a competition we cannot afford to lose.

By 2030, China alone will have invested approximately 150 billion euros in AI. Germany, by comparison, plans to invest a mere three billion euros by 2025.
And take, for example, the USA, the United Kingdom, Denmark, France, or Israel as well – they have all recognised the signs of the times, spending big money on investment. I fear that Germany is missing out on an important development. What is our country waiting for?

On behalf of Bavaria, I would like to say this: we are not going to sit back and watch. We are doing things our own way: We are launching the Hightech Agenda Bavaria.

This is about investment and reform. The strategy has been devised for the entire legislative period, and consists of four programmes that have all been harmonised with one another.

1. The Artificial Intelligence and SuperTech programmes, worth 600 million euros.
2. The Redevelopment and Acceleration programmes, worth 600 million euros.
3. A long-overdue higher education reform, worth 400 million euros.

We are not taking any half-measures. We are not starting at any old time, but right now. Thus, by the end of this legislative period we will have spent two billion euros to beam Bavaria into the future.

Some Key Data:

- 1,000 new professorships.
- 10,000 new places at university. Taken together with the 18,000 that have already been stipulated in the Coalition Agreement, they will total almost 30,000 primarily for technology and computer science.
- More than 20 cutting-edge research centres for the entire state.
- Bringing forward and accelerating regional higher education initiatives.

Many of the ideas are new. But, importantly, they also include projects that were announced long ago but have so far failed to secure substantial parts of financing to completion.

Therefore, we are not only launching new projects but also seriously implementing promised ones, while at the same time eliminating the backlog of investment projects at many establishments of higher education.

The entire programme is concentrated future. And this is true not only of the metropolitan areas, the rural regions are to profit from it as well.
WE INVEST IN ARTIFICIAL INTELLIGENCE AND SUPERTECH

In the next four years, we will be investing 600 million euros in Artificial Intelligence and SuperTech alone.

1. THE AI DISTRICT OF BAVARIA: A NETWORK OF ARTIFICIAL INTELLIGENCE

We will spread out a network of Artificial Intelligence research across Bavaria. The entire state will thus become a leading AI District. We will invest 360 out of 600 million euros for that purpose alone, establishing 100 AI chairs throughout the state.

As a comparison, and according to information available to us: our strongest competitor, the state of Baden-Württemberg, intends to create only 20 new chairs. And Schleswig-Holstein, which claims to be “playing a leading role nationwide”, is investing a mere 4.5 million euros. This does not even account for 1.5 percent of our investment.

And, last but not least, the Federal Government intends to set up 100 AI chairs. This means that Bavaria will be doing as much as the nation as a whole. You can certainly call that a genuine statement.

Artificial Intelligence is not science fiction but reality. AI is the steam engine, as it were, for the new digital world, and will serve as the basis for a fundamental technological and industrial revolution. And Bavaria must not be left behind in the process.

Munich at the centre

Munich is the clear centre of the AI District of Bavaria. The AI network has nodes all over the state, and endpoints for various regional initiatives. Everything is linked up to everything else.

The emphasis in Munich is on intelligent robotics. With our research ecosystem consisting of the LMU and TU universities, as well as of the centres of non-university research and numerous business enterprises and start-ups, the prerequisites for success are met in an ideal fashion.

As the centre of Artificial Intelligence, we are establishing the AI Mission Institute. The Mission Institute for Artificial Intelligence will pool and interlock research and entrepreneurial activities.
The Institute will be developed from, and with, the Munich School of Robotics with its Geriatronics Research Centre in Garmisch-Partenkirchen and the Munich Centre for Machine Learning operated by the TU and LMU universities. Even today, research is being carried out into prosthetic robotics, geriatric nursing robots and novel AI drones.

Therefore, it is for this purpose alone that at LMU and TU, job advertisements and appointments will be made for 22 new AI chairs. These will be, for example, chairs for methods of Artificial Intelligence, models of machine-based learning, AI-based medical engineering or the ethics of Artificial Intelligence.

Our vision for the long term is therefore that of a Bavarian AI Factory. We want a spectacular industrial technology, the likes of which will not be found anywhere else on the planet. The AI Factory will be equipped with robots that can be remote-controlled by companies or employees over the Internet.

In addition, we will interconnect this with non-university research, creating new specialised centres.

We have for some time been contemplating, but have not yet secured complete financing for the foundation of the Fraunhofer Institute for Cognitive Systems in Garching. This is where we are now going to invest to make autonomous driving and flying safer.

Also, the existing Fraunhofer Institute for Applied and Integrated Security in Garching, together with the Laboratory for Safe and Secure Systems at OTH Amberg-Weiden, will be strengthened. Their work is about cyber security, an important growth market. This project has long been in demand but could not yet be implemented for lack of finance.

A wholly new project is the foundation of a so-called ELLIS Institute at the Helmholtz Centre in Munich. ELLIS Institutes are being established in all countries. We want to have the German AI Centre in Bavaria. In the area of bio-medical Artificial Intelligence, its purpose is to pool, control, and network all the activities of the Helmholtz Centres in Germany on a European scale. One of its tasks, for example, is to enable a precisely targeted fight against chronic diseases such as diabetes.

With all these measures in place, Munich will be an AI centre of world standing.

**Nodes within the territory**

The AI network of Bavaria has a centre, but nodes throughout the state. Each node stands for one specialised field of AI:

**Würzburg has the Data Science node,** because data will be the currency of the future. The University of Würzburg is planning a new institute to achieve the effective utilisation and evaluation of millions upon millions of data, and to identify certain patterns for further research. The institute and the related jobs had been desired for a long time, and now they can become reality.
**Ingolstadt is our Mobility node.** Under the AI Mobility Initiative of the Technical University of Ingolstadt, research will be carried out into AI-assisted automobile production as well as autonomous driving and pilotless aviation. Developers in Ingolstadt are all ready for the off. Now we can start.

**Erlangen is our Health node.** The university will get the desired professorships and chairs in the area of medical engineering for intelligent nursing robots, surgery robots and new methods of image processing from the inside of bodies. In the area of medical engineering, we are also planning to intensify collaboration with the campus in Fürth.

And in Nuremberg, a Technical University will be set up in the medium term. Its particular strength will be the flexible application of insights into new AI fields.

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**Endpoints in the regions**

In addition to the Munich Centre and the regional nodes, the entire state stands to profit from our research programme. In the same way that a computing network is stronger than one central processing unit, we will be able to take all of Bavaria on board.

The following projects have already been promised, and some of them have already started. Now they can be financed completely. This makes for planning reliability:

- The **Centre for Digitalised Nursing in Kempten**, with 210 university places.
- The **Centre for Digitalisation Technologies in Deggendorf**, with 1,000 places.
- The **Medical Engineering course of study with 260 students in Aschaffenburg**, where the necessary new building can now be planned.
- Add to this the extension of the Fraunhofer Institute for Applied Information Technology, which will address **Blockchain Technology** at its Bayreuth site.

AI research, however, is not conducted only at the universities and colleges mentioned above. Artificial Intelligence is a learning process. To give all the other universities of applied science a chance as well, we are launching an **AI Competition** in parallel.

All Bavarian universities and universities of applied science that have so far not been considered may submit concepts on Artificial Intelligence. On that basis, we will award another **50 new AI chairs**. Joint applications, by two or more universities in each case, will be admissible too. Thus, any university of applied science can log onto the AI Network. No other state in Germany is launching a programme such as this one.
2. SUPERTECH
In addition to AI, SuperTech still has other fields: quantum technology, aerospace, CleanTech.

Quantum technology

Quantum technology is one of the most fascinating fields of technology. It has brought us lasers, GPS, and navigation systems.

In the future, there will be quantum computers too. The quantum computer will be the supercomputer of the future. Its operations are not only exceptionally faster but also multi-dimensional. We are now investing 70 million euros in this. That is the warp drive for computing.

The pivotal point is the Leibniz Computing Centre in Garching. That is our IT cathedral! The LRZ comes 9th in the worldwide ranking of supercomputers, and is at the centre of the new Bavarian quantum network. The setup is complemented by the new Fraunhofer Quantum Computing Project Centre and a new Institute at the University of Würzburg, which will be exploring the physical foundations for quantum computers. Thus, we are planning for the first Bavarian quantum computer.

Aerospace

The aerospace industry also offers a key technology for Bavaria. We intend to give it a new boost.

Therefore, we are spending 90 million euros to expand the newly-established Department for Aerospace at the Technical University of Munich, promoting the Hyperloop, and establishing the Galileo Competence Centre in Oberpfaffenhofen. In addition, we are making investments to advance novel aviation engines, satellite technologies, and launcher systems in collaboration with the industry. It is particularly in Augsburg that we intend to enhance existing competencies in aviation, using the research programme. Since the time of former Minister-President Franz Josef Strauß, this is the most substantial promotion of aerospace in Bavaria.

Just one year ago, quite a few people merely gave us a smile; today, experts from all over the world are asking us questions about our aerospace programme. We should have more respect for younger teams of innovative researchers.

One example is the Hyperloop Team at the Technical University of Munich. Did you know that for the fourth time running our students have won a global competition involving this technology? I find that great. We should be supporting our young people rather than telling jokes about them for sheer lack of understanding.
CleanTech

The final building block of the SuperTech Initiative is CleanTech. Our goal is to turn Bavaria into a leading pioneer region for innovative climate protection. For this purpose, we are providing 80 million euros.

In the process, climate protection should not be made a success against cars, but rather along with automobility. We should not bite the hand that feeds us in terms of industrial policy. Rather, we need a fresh start for the future vision of the automobile.

Clean technologies are our Bavarian core competencies: synthetic fuels, state-of-the-art battery research, and hydrogen as the energy source of the future.

For these purposes, we are turning the Straubing-based Synthetic Fuels Research Centre into a national reference centre, adding four new chairs to the campus and installing a new power-to-liquid system in the medium term. A synthetic aviation fuel will be developed there to replace kerosene. There is hardly any other place in Germany where you will find something like this.

Despite the decision in favour of Münster as a location, we are ourselves investing in a Bavarian Battery Network consisting of BayBatt in Bayreuth, the Technical University of Munich and Fraunhofer in Augsburg and Würzburg. The objective is to develop a new generation of climate-friendly and more efficient batteries for electromobility.

In cooperation with the state of Baden-Württemberg, we even intend to launch a new battery-production project with the industry. In this context, we call upon the Federal Government to provide substantial financing in addition to the use of our own funds.

And, finally, we support the hydrogen strategy. The new Hydrogen Centre in Nuremberg will be networking this technology among establishments of higher education on the one hand, and the business community on the other. We want 50 hydrogen filling stations to be in place across Bavaria by 2023.

All this is innovative climate protection. Because technology invariably beats mere stone-age prohibitions.
II. WE REDEVELOP AND ACCELERATE

We are launching a large-scale Redevelopment and Acceleration Programme and will spend 600 million euros on this. At the same time, we will be redeveloping and accelerating.

There is no point in advancing cutting-edge technology when the plaster is crumbling on the walls at the back. We must do our homework too.

Therefore, we are reducing rehabilitation backlogs, bringing regional projects forward and closing gaps in the mobile telecommunications network.

With 400 out of 600 million euros, we are increasing construction investment in science and research by an annual 15 percent. In this way, we are bringing forward urgently needed rehabilitation and new construction projects.

This will include:

- a new building for Technical Chemistry in Erlangen,
- a new building for chairs in digital science at the Technical College in Ingolstadt,
- a new building for the International Science Centre in Passau,
- a new building for the Technology Park in Rosenheim,
In addition, we are now going to equip long-promised regional projects with personnel and non-mone-
tary resources, and will thus be able to make a full restart earlier than scheduled, and in some cases
even years earlier. To this end, we will be investing 150 million euros in the next four years alone. We
have promised a great deal, and we are going to keep our promises.

This will include:

- The Kulmbach Life Science Campus,
- the Department for the Media in Ansbach,
- the Biomaterials Centre in Waldkraiburg,
- the Neuburg Campus of the Technical University of Ingolstadt,
- promoting Denkwelt in the Upper Palatinate,
- the Cham Technology Campus to compensate for lost jobs in Roding.
- A new feature will be a project group dealing with the establishment of a Medical Campus
  in Passau.

In general, we intend to strengthen informatics as a discipline in all universities of applied science.
We will be offering 5,000 places for students of computer science – for instance, in Passau, Augsburg,
Bamberg, Hof, or Kronach – because this is where we see significant requirements for the whole
Bavarian business community. It looks like a genuine informatics wave for all of Bavaria.

But our entire programme, encompassing everything from AI and SuperTech to institutions of higher
education in rural areas, would be worth only half as much if we do not have an adequate digital in-
frastucture.

We have been making good progress in delivering broadband in Bavaria. But mobile telecommunica-
tions are still one of the embarrassments for Germany and, sadly, for Bavaria too. This is where we
need to make a decisive push ahead. We are no longer willing to tolerate those notorious white spots
on the mobile telecommunications map. To this end, we are spending an additional 50 million euros.

The implementation of the mobile-telecommunications programme run by the Ministry of Economic
Affairs is gaining momentum. We can guarantee that every cell tower required by municipalities will
be funded. And, in addition, we will provide any appropriate state-owned property to support the con-
struction of cell towers for mobile communications – and for our own account if necessary. In the end,
we will have 500 more cell towers. You have my word for it!
III. WE MODERNISE OUR HIGHER EDUCATION

A central component of our modernisation programme is higher education reform – the first in 15 years.

Why now? Formerly, Bavaria had two out of three Universities of Excellence in Germany. Now there are still two, but only two out of eleven. We have not fallen behind; the others have simply caught up. This is a wake-up call!

What we need is a modern repositioning of higher education, and to liberate its institutions from bureaucracy and centralist nannying. The headline should be: take the daring step towards greater academic freedom, stimulate potential, attract the best brains to Bavaria.

Therefore, our higher education reform – with an investment volume of 400 million euros – is going to trigger a medium-sized revolution.

We are launching a massive Attractiveness Programme for the best scientists from all over the world.

We will only win over new professors and outstanding researchers, if, we offer research and excellence professorships including improved emoluments for all universities and colleges. With this in mind, we will reduce teaching duties for all professors, thus leaving more time for research.
To keep the quality of academic teaching at a constantly high level, we will provide additional professorships by way of compensation.

In future, each institution of higher education will have its own total allotment of teaching duties which can be managed in a flexible manner by each university.

The objective is to have the modern, entrepreneurial, open and international university of the future.

**Modern University** means strengthening governance structures and reforming the law relating to the appointment of instructors. We want to transfer to the universities and colleges the right to appoint professors. In addition, the scope of the experimentation clause will be fundamentally extended with a view to enabling more competition and freedom in higher education.

**Entrepreneurial University** means a generous permission for professors to form start-ups, or to acquire shares in such start-ups. This is to be made easier even for the universities and colleges themselves.

**Open Higher Education** means a new chapter in advanced and continuing professional development. The focus will be on cooperation with the chambers of commerce and industry and chambers of trades and crafts. In future, courses of further education will be available not only to high-school graduates and master craftsmen but to anyone with a normal vocational qualification. In this way, we will be making a giant step forward in vocational education.

**International Higher Education** simply means more courses of study conducted in the English language. To make it easier to get the brightest people from all over the world to Bavaria, we intend to provide their partners, too, with an independent professional perspective. In the future, we will support applications by partners, the so-called dual careers. This is standard practice at the elite universities of the USA.

And, finally, we also need more cooperation among universities and colleges. When even Berlin reaches excellence status through cooperation among its institutions of higher education, this should be all the more possible in Bavaria. For example, a Franconian or Eastern Bavarian university of excellence, brought about through cooperation, is quite conceivable.

**An interim result:**
Be it AI or SuperTech, the Acceleration Programme, or the massive higher education reform: this is one of the most substantial research programmes in Germany, and the biggest in 20 years in Bavaria. It marks the beginning of a new era.
IV. WE SUPPORT SMALL AND MEDIUM-SIZED BUSINESS

We are also launching a campaign for small and medium-sized enterprises. Now what does this have to do with digital research? We are not living in an ivory tower for research. The incipient crisis in the automobile industry is spreading further and further in all of Bavaria, and impacting the entire supply chain in particular.

These are all small and medium-sized firms. Small and medium-sized business is the backbone of the Bavarian economy. Distortion in the automotive sector is now increasing the pressure on small and medium-sized companies to innovate and invest.

We are not going to leave our SMEs alone to make this transformation, but will provide them with help and support along that difficult path. At a time when the economy is cooling off, we want to back them up. For the State Government, small-businesses policy is a matter of great importance. Our concept is fed by the ideas from both Autoforum and numerous conversations with small and medium-sized businesses.

We are spending a total of 400 million euros to create three strong funds providing initial financing for our economy:

- The Digital Fund, endowed with 230 million,
- the Start-up Fund, endowed with 50 million, and
- the Automobile Fund, endowed with 120 million euros.
The Digital Fund will enable business enterprises to invest in digital innovation and process chains. In particular, it will offer help to companies that have no access of their own to the capital markets. In addition, we will increase regional assistance by approx. 10 percent a year to strengthen SMEs in rural areas in general. Furthermore, we will top up the Digital Bonus again to 60 million euros per year, and keep it at that level on a permanent basis.

Another important point is providing sound financing to the Technology Transfer Centres in rural areas. We guarantee funding for all 25 Technology Transfer Centres up to 2023 – for example in Donauwörth, Sonthofen, Günzburg or Neustadt an der Donau. In addition, the realignment and expansion of the Kaufbeuren and Nördlingen centres will be financed.

With supplementary digital projects in tourism, for instance, we can thus offer one of the largest digital government subsidy programmes of all German states for small and medium-sized enterprises.

But there must be added value not only for the economy but also for the citizens. With the Smart Bavaria concept of the Digital Ministry, we will be using 10 million euros to ensure that in the end, everybody will be able to access almost all the digitalised administrative services from any terminal device.

Moreover, we are setting up a Start-up Fund. Bavaria must remain the start-up state. With the Start-up Fund, we will support new firms but also assist start-ups in taking the second step for funding once the company has been successfully started up. This, then, will be a genuinely Bavarian alternative to funding by foreign investors. Because start-ups should remain in Bavaria and in German ownership rather than migrating to the USA or being sold to China.

And, finally, we are setting up an Automobile Fund. We are thus supporting a package of measures that have been developed in the Automobile Forum Bavaria. These will include the expansion of additive manufacturing and light-weight construction technology. Furthermore, 7,000 charging stations for e-mobility will be in place, including the development of plug-in drive units and continuing professional development for up to 50,000 employees in the automobile sector.

All this is proactive economic policy, and a commitment to Bavaria as a location for the automobile industry.

And let me say this very clearly: Bavaria shall remain an automotive country in the future as well.
V. ADVANCING BAVARIA

All of this makes up the Hightech Agenda Bavaria. It certainly is something very substantial. Incidentally, we have not devised this all by ourselves. *The entire concept is based on strategy scouting and innumerable conversations with scientists and the business community.*

I would like to express my thanks especially for the concepts and ideas provided by Economics Minister Hubert Aiwanger, Science and Research Minister Bernd Sibler, Digital Minister Judith Gerlach and, of course, to Finance Minister Albert Füracker for the close coordination in matters concerning financing.

The concept also reflects many suggestions provided by members of parliament in the parliamentary groups of the governing parties. Thus, quite a few smart people have, directly or indirectly, contributed to this and inspired us.

In other respects, this is a concept that breathes, which can and will develop further at any time. *We are now going to spend two billion euros. It will be money well invested.*

But how are we going to fund this?

One thing is clear: we will maintain our commitment to a balanced budget in Bavaria. We will not increase taxes or incur new debts.
But let us be honest: in view of negative interest rates and a massive backlog of investment projects, it is more important to invest than to make premature repayments.

Of course, debt repayment remains important – but in times of permanent negative interest rates, all serious economists, from those of the Institut der Deutschen Wirtschaft to the Ifo Institut, recommend setting new priorities. Because investing is the best remedy for an economy that is cooling off.

We will therefore adapt debt repayment to the changes in framework conditions. In 2020, we will reduce repayment from 750 to 50 million euros, and also in 2021/2022 from one billion euros each year to 50 million. In this way, the Hightech Agenda Bavaria will be sustainably funded.

This financing concept will ensure that the budgetary reserve remains permanently stable, and nobody needs to fear that research will be funded at the expense of other budgetary titles.

No other German state would be able to shoulder such a burden in times like these.

Germany and Bavaria need a push for modernisation. Germany is hesitant, Bavaria takes action.

I am an optimist, and I believe in our opportunities: of course, the world is changing, and so is Bavaria too. But we are summoning the courage to shape it. We need courage to face the future. Our Hightech Agenda Bavaria is a strong signal to Bavaria, Germany and the whole world.

My responsibility as Minister-President is not only to describe the problems of the present but also to devise the strategy for the future of our great state.

This is political leadership. I want the lives of our children in the world of tomorrow to be as good as our lives in the world of today.

Even King Maximilian II, who in the 19th century was the first to persuade leading scientists to come to Bavaria, was very clear about this: “... that all doors should be opened to great minds. That we will advance as time progresses”.

Franz Josef Strauß, former Minister-President, said:
“I am convinced that the future of the next generation can only be secured if in competition with the other highly-industrialised nations we are able to keep abreast of them all.”

And former Minister-President Edmund Stoiber put it in a nutshell:
“Always at the very top – that is where we Bavarians belong.”

All of them, each in their own time, helped Bavaria to move ahead through reform and state-of-the-art technology. Let us follow their example!
Providing for the future through interconnection: The entire state will benefit from our Hightech Agenda Bavaria.
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