Introduction

We have about 17 to 20.000 very early aerial photographs in the Kriegsarchiv, the military division of the State Archives in Bavaria. Dating mostly before 1918, they were produced by military units, actual air force and special aviation schools that taught reconaissance and aerial photography. After World War I, the Bavarian Military was abolished or rather nationalised, so these units too changed their organisation, and often handed their records up to that point to the Bayerische Kriegsarchiv, which is lucky. aerial photography as such passed over to specialised government agencies with their own archives to this day, so these archival collections were no longer continued.
But it is very significant that the earliest aerial photographies of Bavarian origin are in the Hauptstaatsarchiv, and that there are such numbers of them that they are an important historical resource.

My thesis in this report is that this image collections are archival material, but, like maps, they are also geographical information, so that to make this resource digitally available, we need to go beyond archival content description and look to spatial imaging and to geographical imaging to present them. .

I want to talk to you about two projects where we cooperated with surveyors to provide geographical referencing and imaging technology. One that is largely finished, and another that is just beginning.

First, I would like to show you something that nobody would expect in a Bavarian military archive, and that was known only to specialists in the field, so we decided that it deserved wider availability.

We have some 3.000 aerial photos taken by a unit of Bavarian aviators from 1917 to 1918 in, historical Palestine, of all Places, that would be modern day Israel, including parts of Lebanon, Syria and Egypt. What was the Bavarian air force, if you want to call it that, doing in Palestine? Actually, they were on a military assignment. The German empire was, as you know, an ally of the Ottoman empire in World War I, and to assist the Ottoman forces in their fight, in their losing fight agains the British under General Allenby and Lawrence of Arabia in Palestine and Syria, they were deployed in modern day northern Israel.

While the pilots did fly a few bombing missions, mostly they had reconaissance duties. Each plane carried a photographer in addition to the pilot. Aerial photos were taken primarily for purposes of reconaissance in preparation of military

campaigns, bombardments, artillery deployments, infrastructure. They were the basis for military maps, but of course they also recorded many features besides that they were not meant to record at the time. Also, the pilots were very conscious that they were flying over the holy land, over places and sites of great historical significance and interest, so they did take pictures that went beyond their narrower military mission. They took photos of religious sites and monuments, of towns and villages, also of earlier jewish settlements that are very significant in the light of the later founding and development of the state of Israel.

The last months of the pilots were spent in retreat before the advancing British, so aerial photography probably didn't help very much, and when the armisitce was signed in 1918, the aviatiars packed up and were taken back via Istanbul, England and Bremerhaven. It's a small miracle that they managed to bring about 3.000 plates back undamaged, which form the collecion I am going to show you in digitised form.

It this was all, I would not have needed to come to Pisa to show it to you. Because, let's face it, presented like this, okay, you can do searches, you have a geographical substructure here that we put in, but still, don't tell anyone I said this, but this is boring.

And I told you only half of the story. Because we were doing this project with the survey office of Bavaria, they had some interests of their own as well. First of all, they were looking for our metadata, because they get a lot of research requests on earlyer aerial images, and – to their annoyance, they don't have the earliest layer, so they wanted at least the data, so that they could give advice and point people to our resource.

What they were bringing to the project was a geographical description and measuring of the images with an aim to present them like they present much of their own material, not in an ordered list, but in the spatial grid within digital maps, in other words within a geographic information system.

To set something like this up, we learned that there are different options: You either need a WMS – a web map service, which Is a fairly powerful imaging tool with presents maps dynamically with a layer linking geographical information and descriptive metadata and its own map viewer, but – we found – way too expensive to set up for some 10 or 20.000 photographs. Or, as a technically simpler, and also a little cheaper alternative, you look for something to use that

is already there. There is a geographical information system for aerial images that is free, and can be used by everybody, and I suppose you all know it: Google Earth.
What we were told by our surveyor partners, is that there is an XML-based markup language for aerial images called kml ("Keyhole markup language"), and if you code picture metadata in this language, you can make them available in google maps.

And it works like this, you need a set of data, and you need to upload this by file into google earth.

[Like this]

So what did the surveyors do with our photos we could not have done ourselves?

First, scan them using a specialised scanner for aerial photos. This scanner is not even very great resolution-wise, you can get the same resolution with any flatbed-scanner, but the optics are very straight, so it reproduces images with absolutly no optical distortion.

Second, they located the center points of the images, the geo-referenced the pictures. For this, they cooperated with their colleagues from the Survey of Israel. This is another thing that we could not have done, and that archivist in general I think, need help with. It goes beyond our trainging.

Third, they created KML-files that could be uploaded into google maps. This is what you see here. When you have images that have a geographcal spread, you want to visualize that spread, you get a whole extra dimension to this collection of pictues.

Fourth, for some pictures, they created experimental imaging that lets you overlay the historical image over todays aerial image. This is another step in visualising historical geographical documents– you can visualize historical change very directly.

The reason we haven't put this on our website already is that the surveyors actually think they can do still better, because they have their own image viewer to compete with google maps, and they want to make the kml-files work in this environmnt, complete the markup and then go public with it, as it were. Which is fine with us.

I want to briefly show you the first results that we have with photos from Bavaria proper, as it were. Here we have a first selection of Pictures mostly from the Allgäu region in the southwest of the state (not, I have to admit, because the surveyors have not scanned, but rather because we have not yet put our metadata in order so that they can be exported).

So, my conclusions from this project, which is ongoin, are very simple: For Archival material that is geographical in nature, such are aerial photographs, but such are also maps (such could also be charters, if you see them as referring to property or rights in particular places) we should look for presentations that visualize space, rather than just digitizing finding aids that are lists of items. Now, as these visualisations are usually beyond our own technical expertise, we should try seek the cooperation of cartographers and surveyors.