**949 Forecast Module for Belgrade - High Level Plan with estimates**

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| User Stories | Estimate | Status |
| **Preparation phase** | | |
| Study - reading 665 wiki  - reading 949 wiki | 2 days | **Done** |
| Study – read specifications 665 specifications:   * *AZET\_Forecaster\_Guide\_verB.docx* * *Azet\_Icons.xlsx* * *Decision tree - AZET predpovede, v14\_PN\_EN.docx* * *Feel temperature.docx* * *ikon\_dly\_EN.docx* * *About\_R\_&\_kriging\_code.ppt* * *dataFlow5.pptx* * *Instability indices for forecasting thunderstorms v2.docx* * *Metodika MOS - vseobecny popis v01.docx* * *Glahn 1972. The use of MOS in objactive weather forecast.pdf*   *949 specifications:*   * *Bias correction - Priklad pre programatorov.xlsx* * *Bias correction - Suhrn.docx* * *Bias correction - Suhrn pre programatorov.docx* * *Bias correction - Suhrn v2.docx* * *Naive Assimilation - Suhrn pre programatorov.docx* | 4 days | **Done** |
| Study – familiarize with Azet OPS, DEV machine setup Output is Deployment/Component diagram – published in 665 wiki. | 4 days | **Done** |
| Study Forecast Agents source code in IMS4 repo | 8 – 12 days | **In progress** |
| QA sessions with people   1. Gyorgy Tomcsany – GeoServer 2. Peter Šišan – GFS, WRF data 3. Patrik Synek – general questions about the project 4. Lukáš Ivica – krigin in R, Shiny server 5. Miro Chladný – about the Barnes Algorithm and other his contributions 6. Jaroslava Drozd (Integrator) – about Azet VMs, and general setup for Belgrade 7. Maťa Petrovičová – CLDB role and issues in the project | 3 days | **Done** |
| **Construction Phase 1 – Goal: Have the current Azet Forecast Module functional for the Serbian configuration** | | |
| Prepare DEV machine for 949 Belgrade Forecast Module – upgrade and firstly verify – we have 10.111.5.171 | 2 days | **Done** |
| Set up on the DEV machine GFS, WRF for Serbia grib ingestion | 4 days | **Done** |
| Configure and verify ingestion of METAR and SYNOP messages, “current data” (with Onderj Ignac), estimate is already higher due to bugs in FileInsertTerminal | 6 days | **Done** |
| Configure simulation for Serbian stations with 15 minutes data | 2 days | **Done** |
| Serbian configuration of IMS4:   1. cfg/station with Jaro Drozd 2. cfg/station/forecast 3. list of stations and locations with Lukáš Ivica | 3 – 5 days | **Almost Done** |
| Implement missing M0073 and M0076 file inserters | 4 days | **Open** |
| Verify, fix buggy METAR inserter | 2 days | **Open** |
| Integration of IMS4 Forecast Module: |  |  |
| CurrentDataReaderAgent – **fully configurable**  - adapt/fix  - integrate/verify with real data | 2 days | **Almost Done** |
| CopyGFSgribFilesAgent, MoveGFSgribFilesAgent - adapt/fix  - integrate/verify with real data | 2 days | **In progress** |
| ActualDataAgent, SimulationManagerAgent – only S, M actual data sources  - adapt/fix  - integrate/verify with real data | **8 days** | **In progress** |
| MeteogramWRFAgent – only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| MeteogramUVIndexAgent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| MeteogramAgent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | **5 – 10 days** | **In progress** |
| MeteogramDailyAgent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| ReCalculationAgent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| InterpolationRAgent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| Ragent - only S, M actual data sources  - adapt/fix  - integrate/verify with real data | 2 – 4 days | **Open** |
| Better integration of precipitation indicators implemented in python scripts  - adapt/fix  - integrate/verify with real data | 3 days | **Open** |
| **→ Upgraded and functional solution as delivered for Azet, but without full versatility to ingest 1 min/10 min - just SYNOP and METAR** |  |  |
| CopyGFSgribFilesAgent, MoveGFSgribFilesAgent – any current data source | 2 days | **Open** |
| ActualDataAgent, SimulationManagerAgent – any current data source | 4 days | **Open** |
| MeteogramWRFAgent – any current data source | 2 days | **Open** |
| MeteogramUVIndexAgent - any current data source | 2 days | **Open** |
| MeteogramAgent - any current data source | 4 days | **Open** |
| MeteogramDailyAgent - any current data source | 2 days | **Open** |
| ReCalculationAgent - any current data source | 2 days | **Open** |
| InterpolationRAgent - any current data source | 2 days | **Open** |
| Ragent - any current data source | 2 days | **Open** |
| Verify whether the current design can handle 15 minutes time interval current data correctly | 3 – 5 days | **Open** |
| Consult open questions with Juraj Bartok, address issues | 3 days | **Open** |
| Verify results on real data for Serbia | 6 days | **Open** |
| Wrap and document delivery | 5 days | **Open** |
| **→ Potentially Ship-able solution for the customer in Belgrade**  **(without new MOS, fully legacy yet – no unit nor automated integration tests)** | | |
| **Construction Phase 1 – Goal: Forecast module to be operational product, maintainable (essential parts covered with unit and integration tests, cleaned of dead code, extended of the new statistical nowcasting/bias correction, naive assimilation)** | | |
| Remove dead, not used code | 2 days | **Open** |
| Unit test File Inserters: - there were major dependency issues for File Insert Terminal, would be proper to wrap it by unit tests which tests particularly the dependencies and its changes | 5 days | **Open** |
| Design and implement batch processing to be able to repeatedly process e.g. one moth of data and verify results | 8 – 12 days | **Open** |
| Cover with unit tests:  - MOS correction  - R-kriging and other interpolations in the agents  - initialization phase of the agents | 10 days | **Open** |
| New nowcasting development: |  |  |
| Design the first version of the new nowcasting/bias correction, naive assimilation | 3 days | **Open** |
| Meet with Juraj Bartok and Ladislav Gál | 1 day | **Open** |
| Implement:  - unit tests  - algorithm itself  - verify | 2 – 5 days | **Open** |
| Conduct domain expert integration and verification | 5 days | **Open** |
| Wrap the delivery:  - automate set up of the installation  - improve scripts to be more parameterized  - document | 15 days | **Open** |
| **→ Potentially Operational Product, maintainable, configurable – supported for various customers** | | |