Project Report **MatchBOX**

Team	Karim Aly Lukas Egerer Philipp Ekkehard Hölzenbein Julia Poliak Nelly Prechtl Nicolas Röhrle
Tutor	Vivien Lechner
Mentor	Prof. Dr. Michael Krautblatter Prof. Dr. Alwine Mohnen

Mentor preface MatchBox

The MatchBox project team engaged with a particularly self-reflexive topic in the context of the TUM: Junge Akademie. As the scholarship to the Academy is all about preparing young people for project work with a variety of different players, the MatchBox team set itself the goal of discovering ways in which project teamwork itself can be made more effective.

At our first mentoring meeting in the summer of 2017, MatchBox had a rather ambitious vision in mind, which would have required a full-time commitment of eight persons over the next eight years. Hence, we had to refine and scale back the project's main idea.

This was to do with a web-based platform which would enable users, both project owners and project seekers, to link up with one another. To ensure a sustainable and successful long-term working relationship, the matching method envisaged was based not only on users' skills but above all on their personality profiles. The platform, that is, would enable the matching of team members who not only complemented each other in terms of their skills, but also in terms of their interpersonal compatability.

Therefore, the mentors' task now was to help the team to refine their aims and methods along more realistic lines. In the course of our discussions, the emphasis of the project began to move away from a matching approach based on the model of dating services to one based on expertise drawn from the field of coaching for start-ups.

This line of development proved to be successful and was adopted. The next step was to limit the target group. Initially, the players to be matched could have been spread throughout Europe, at a later stage, the potential reach was reduced to TUM and perhaps one or two other universities. In the end, however, the team decided to focus on evaluating the effectiveness of teams only within the TUM: Junge Akademie.

The idea of a visual final presentation, such as a Youtube video series, was also discussed, as it would have perfectly matched this year's overall Academy theme, "Idee-Kommunikation-Rezeption" (Idea-Communication-Reception). Unfortunately, the workload related to the rest of the project seemed too great to allow for this,

so the team decided to restrict themselves to the essentials of their research.

The project was, then, an investigation into the collaborative effectiveness of the other Academy project teams with the aim of identifying positive factors for success. At the same time, negative experiences of former Academy teams were also gathered and presented on a platform for all Academy members, together with the corresponding solutions that had been found to their problems.

This idea of sustaining a web-based archive of team experiences immediately appealed to the office of the TUM: Junge Akademie, so it has now been made part of the program of team development for new intakes.

Although the project's methods for measuring the success of the intervention did not completely meet scientific requirements, the team nevertheless recognized the importance of basing their approach on the relevant recommendations found in the scientific literature.

In the end, the team was able to look back on a wealth of experience regarding project planning and teamwork, and this project will have a lasting influence on the collaborative efforts of other Academy teams.

We, as mentors, greatly enjoyed working together with this highly motivated team of students, with their various personalities and the numerous challenges they faced – all of which were overcome in the end! It was fascinating to see how, in the beginning, interdisciplinarity and the different personalities in the team were considered a challenge, whereas, in the end, these factors evolved and united into a fantastic driving force. Despite the chronic lack of time of a professor, it was both personally and professionally a rewarding task to accompany this team at least part of their way.

Alwine Mohnen and Michael Krautblatter

“The magic of teamwork happens when experts, the well-prepared people, bring everything together.”

Team MatchBox met with Dr. Elisabeth Raes – and asked her, among other things, how teams can be guided towards their goal the fastest. These were her answers.

Dr. Raes, you have made a lot of experiences – what has been your worst experience as a member of a team?
I had been researching teams and thought I knew how things are supposed to be, and then came the disappointment that theory can´t always be translated into practice easily.
I thought: “Let´s talk openly with each other and see how our strengths complement each other and how we go forward together!” That was a challenge for me in my first job after finishing my doctorate.

Could you elaborate? Does that mean that, after your doctorate, working together was initially more important than the goal of the team?
No, because to me, teamwork is only a means to an end. There is no team without a mutual goal.
The question is though: “Into what do I invest my energy first?” I think one will reach one´s goals faster or even reach better goals if one first organises the team and repeatedly reflects and re-evaluates.

Now we are curious: We as Team Matchbox have investigated measurability of team success – which criteria are there apart from profitability?
I believe every team can think about their own criteria: If one works in a customer-oriented project, customer satisfaction will surely be important. So, the question is as well: “What makes us successful as a team?” In research we always have three important aspects: Firstly, performance, as in profitability and the achievement of goals. And there is efficiency, the good usage of time and money.

Can you give us an example? What is a common mistake here?
If you spend twenty hours a week on preparing a meeting, the question arises whether that is effective. The third commonly used variable is viability. (editors’ note: functioning of the team over longer timespans).

We have teams of 15 and of 7 members in the Academy. Does the measuring of performance differ between these?
Not per se. If the teams have defined a common goal, performance is measured by whether they reach it or not. With larger teams, one must invest more effort into working together before moving on to performance and tasks. In theory, the best size for a team is four to seven members.

There are short-term and long-term teams. Does one choose different criteria for evaluating team success for them?
I think the danger with temporary teams is that they think: “Let´s just finish our task!“ That can be effective for a while, but the question remains whether it is efficient and whether the potential of the team members can be reached.
Many think (…) either “achievement“ or being a “cuddle team“ where everybody thinks everybody is likeable. But in reality, there are two dimensions resulting in two axes. Consequently, the best option is “high safety – high achievement“: you know what the goal is and want to progress but giving feedback and building trust is important as well. Of course, there are always exceptional teams who achieve very good results without that part. There is theory but there are always teams that do not fit the theory.

“There is no team without a mutual goal.”

In your experience: What are the three most important factors for successful teamwork?
Trust, trust and trust… (laughs) No, but trust is certainly one of the most important ones. (…) Everybody wants to cooperate trustfully, of course, but, in reality, one can´t only hire trustful people. In my opinion, the better question is how to increase the trust employees have in my company. Thinking one step further, one can then question the entire HR hiring process. People write hundreds of motivation letters that nobody will read anyway. The actually interesting part is the probationary time! “Do I fit in? Am I feeling at home? Is this job for me?” That is what I would call company culture, a business asking itself how it can design this whole process. (Editors‘ note: hiring process) Of course, I don´t have the answer, but one could set up a process with a company to try out new things.

(…) Let´s interpose a question: Why do you think there are only few businesses trying this?
Because many companies just copy-paste. Human Resources is a good example. I know hardly any businesses doing it differently. Everybody does exactly the same. I am no fan of changing things that need no changing but here I think is an example where there is room for improvement.
Teams being able to learn is also central. Diversity is important too, but one needs to invest more energy to deal with diversity. The more diverse a team is and the more energy has to be invested into that, the more effective it will be eventually.

Is outsourcing to a foreign country a form of diversification then?
Surely, but only if it is actual teamwork. If the person only gets an allotted task, then that isn´t teamwork to me. If I am in real cooperation with someone, there is almost no individual work, only in preparing for the work together. The real insights and results only happen after I and everybody have prepared in that way. "The magic of teamwork" happens when experts, the well-prepared people, bring everything together. The form of diversity that is most beneficial for team success is so-called cognitive diversity: "I think differently, I see the world differently, and I analyse my environment differently." If you manage (to work) with people who think differently, no matter whether they are men or women, Indians or Americans, that is the factor most closely connected to team performance.

Can diversity be an obstacle to successful teamwork?
Diversity is the reason we bring teams together and diversity is the reason why we have conflicts in teams. That is, one actually wants conflict when bringing a team together. But then that team has to learn to deal with conflicts. In that sense, diversity in teams is difficult, if not the most difficult (element).

How do the teams of the TUM: Junge Akademie compare to "wildlife" teams in start-up companies or other institutions?
colourful group in the workplace are relatively small. On the other hand, the teams of the Academy aren't that diverse in age and background. They are mostly privileged, rich people of Caucasian descent who were well-cared for by their parents. I also include myself in that description. I think, as a student one should happily use every chance to cooperate with others because it will help you later on.
There has been research on the phases of team development. (…) Teams that know they have to go through these phases will go through them faster. That means certain issues, certain conflicts will keep reappearing. And if you know that, it will be easier to deal with them.

> "Diversity is the reason why we have conflicts in teams."

Is there a point at which teamwork should be terminated because it will simply not work out?
To be frank, I have thought that quite often with teams, when it was obvious that cooperation will only waste energy. (…) As far as the right moment is concerned, I prefer "earlier rather than later." When my gut feeling is bad, I try to stop as fast as possible. But it is rather difficult.

Have you manged to turn situations like that around, so it would work out again?
One can always do something to bring new energy into a team. But the problem is that many teams continue on this energy for two months only to crash much worse after that, because nobody dares to ask "does what we are doing make sense?"

In your experience, what are the best measures to improve teamwork?
Making things explicit. (…) It is a lot easier to talk about interpersonal things and soft skills if one knows what one is supposed to talk about. Making things measurable somehow is often helpful as well. The people who deal with these things professionally, those are the real professionals to me.

What are the most common and gravest mistakes made in teamwork?
Naturally, one shouldn´t make problems where none exist, but it is a big mistake not to dare to bring certain issues to the table.

> "There is theory but there are always teams that do not fit the theory."

Bad planning is one too. Recently, we ended a Skype meeting with "somebody should do that then". That is a common mistake, not communicating responsibilities with people, resulting in a lack of accountability. (…) Better be concrete: (…) "Who is responsible for what and how do we proceed from there?" Another big mistake is blaming people for things that went wrong. Sometimes one has to, to help process it, but most of the time it is a waste of energy. Forming a shared vision is important too, because one can fall back on it in times of conflict.

Is there empirical evidence whether teams in open or closed structures work better, for instance a team in a company versus a team of students in the Young Academy?
I find it a difficult comparison (…). Teams with autonomy tend to work well. Those with a certain freedom to organise themselves (…) I think it is affected by commitment. In a team of students with a common goal, the question "Are we enthusiastic about the topic?" is as important as the skills of the individual. That aligns with my experience with student teams and start-ups. That is also what Human Resources is about: if there is no power behind the people, nothing will happen. And power comes from motivation. I think it is smarter to aim to unlock motivation in people. As a final factor, it is also about the proper fit (editors' note: best person to fill a position).

Thank you, Dr. Raes, for this enlightening conversation!

Elisabeth Raes received her PhD in Psychology and Educational Sciences from KU Leuven. In her work as a team coach, she focuses on transferring research and theory into hands-on practical experiences for corporate teams, start-ups and other cooperative projects.

MatchBox – teams support teams

In a Nutshell:

This report deals with

- the definition of team success in a scientific environment
- consequently the potential improvement of team success
- with different approaches.

The opportunity of this research lies in the utilization of the acquired knowledge for a long term enhacement of the team structures in TUM: Junge Akademie. A pratcice-oriented approach to seek tools in order to fulfil this challenge represents one of the strengths of Team MatchBox.

The most prominent lesson that was learnt is the scientific evaluation of assumptions in order to measure the impact of this research.

Abstract

In today's corporate culture, teamwork is identified as an integral part of a promising work philosophy. Research in this area mainly focuses on a business environment. Project MatchBox pursues the endeavour of examining the current project teams of the TUM: Junge Akademie regarding their team composition and success, thus aiming to improve team performance based on experiences of previous teams. For that we decided to combine two different approaches:

Tool A: Project MatchBox used the tool Team Canvas to stage an intervention with current teams of TUM: Junge Akademie to help them improve their reflexive ability about their ability to reflect their project work to help them gain insight into the status quo of their teamwork, including personal and interpersonal aspects. Framing this exercise, teams of TUM: Junge Akademie analyzed variables identified to be responsible for team success. To this end, a questionnaire was set up and evaluated. The results showed that the team members´ impression about these variables differed a lot. This leads to the assumption that there is a need for reflexion in the majority of the analyzed teams. Team Canvas might be a specially helpful tool for this.

Tool B: Project MatchBox implemented a platform which offers future scholars the opportunity to benefit from the experiences of past teams. For that, the critical challenges in the project work were identified. Subsequently, current and past scholars were asked to share their experience pertaining to each of these aspects by online survey. In future, this could enhance the efficiency with which obstacles are addressed within teams as well as result in improved personal development for team members of TUM: Junge Akademie.

structure

1. Background: current state of research

2. Goals and Methods
2.1 approach of Tool A: implementation of the tool Team Canvas
2.2 approach of Tool B: making use of the experiences of the former teams

3. Outcome and Discussion
3.1 experience in teamwork within TUM: Junge Akademie
3.2 Tool A: development of teamwork within TUM: Junge Akademie
3.3 Tool B: implementation of platform "MatchBox"

4. Vonclusion and Future Goals

1. Background: current state of research

Teamwork plays a central role in successful working environments. Furthermore, it is crucial for the potential for success within a working group.[1-4] There has been great interest in factors positively impacting teamwork.[5-10] In this context, scientific literature provides a multitude of studies analyzing characteristics of team members and their effects on the success of a team.[11-13] After focusing mainly on established major enterprises and the analysis of their respective process of performance, studies have recently shifted to assessing start-up companies and their team structure. The correlation of individual traits with successful teamwork is often defined based on psychological studies.[11]

The Aristotle project that was implemented by Google in 2012 is an example of research on teamwork within the economic environment.[14,15] The goal of this project was to identify the factors that are particular to effective teams. Google defines a team as a group of people with highly interdependent working relationships.[14] Based on that, they measured team effectiveness in four different ways:

1.The evaluation of the team by the executive
2.The evaluation of the team by the team leader
3.The evaluation of the team by the team members
4.The sales performance against quarterly quota

The analysis of the different measurements showed that the cooperation within a team is more important than each member's individual characteristics. The following parameters emerged crucial for team effectiveness:

- Psychological safety: Perception of the consequences of taking risk. When psychological safety is high, teammates feel safe to take risks, asking questions and offering new ideas
- Dependability: Completing work on time and exceeding the expectations
- Structure and clarity: Having clear roles, plans and goals
- Meaning: Finding a personal sense of purpose in either the work itself or the output of the work
- Impact: When team members think their work matters

Interestingly, in the Google study variables like team size, colocation of team members or a consensus-driven decision-making process were not significantly connected with the effectiveness of teams whereas other studies draw different conclusions.[14,16]

While the knowledge thus collated sheds light on teams and their success in an economic and entrepreneurial context, project MatchBox examines these dynamics in a scientific working environment. The TUM: Junge Akademie provides an especially suitable setting for exactly this. This is mainly because TUM: Junge Akademie is a self-contained institution, where comparable teams are not defined by economic feasibility, presenting an opportunity of independent research on team dynamics.

For the analysis of the teams of TUM: Junge Akademie, project MatchBox concentrated on the factors revealed by the Aristotle project to be the crucial ones for team effectiveness (see above). However, whether or not the definition of project success in an economic environment is also suitable for the scientific environment had to be examined. Based on expert opinion from the field of team research as laid out in the interview with Dr. Raes, three separate factors might instead be appropriate for evaluating successful scientific teamwork:

- Performance: Achievement of mandated and self-imposed goals
- Efficiency: Utilization of personal and mutual resources as well as team management (scheduling, work flow)
- Viability: Long-term capability of working, functioning, and developing adequately

Figure 1: factors for successful teamwork

Taking into account the factors identified by the Aristotle Project, we developed a model for the evaluation of team success. Any insights gained from evaluating TUM: Junge Akademie teams by such assessment may well be valuable to future teams. According to Tuckman, teams generally experience defined phases and common challenges.[17,18] It has been demonstrated that being aware of these phases enables teams to traverse these phases more quickly. Together, it stands to reason that they can be empowered to be more successful via the direct communication of such knowledge. This is particularly relevant considering that there is no organized exchange of experience between the teams yet.

All in all, these assumptions lead to the hypothesis that deliberate intervention and making experience accessible leads to improved teamwork within the TUM: Junge Akademie.

2. Goals and Methods

Through refinement of the specifications and the analysis of crucial factors, two methods were defined. To satisfy the focus on scientificality, we decided to use TUM: Junge Akademie as our survey group providing us with a homogeneous collective.

2.1 approach of Tool A: implementation of the tool Team Canvas

The basis of Tool A was the method Team Canvas. This method allows a team to evaluate themselves with regard to important contributors to successful team-work, such as psychological safety. Project MatchBox used the Team Canvas to stage an intervention with active teams of the TUM: Junge Akademie to help them gain insight into the status quo of their teamwork, including personal and interpersonal aspects.

Before guiding other teams through this method, the members of project MatchBox sought professional input so as to optimally prepare. For that, we organized a workshop with Dr. Elisabeth Raes (PhD in Psychology and Educational Sciences and expert in the field of team-work) in which we were “coached to be coaches”. This workshop included the implementation of the Team Canvas with our team. While actively reflecting on our teamwork as stipulated by the workshop, we were acutely observant of how the experienced coaches acted and reacted during implementation. Through such observation and careful consideration subsequent to the workshop, we gained insight into effective discussion within a team with the express purpose of gleaning information relevant to teamwork.

After the workshop with Dr. Elisabeth Raes, a questionnaire was sent to the active teams of the TUM: Junge Akademie to assess the current state of teamwork within those teams. The questions were related to the five factors defined in the Aristotle project.

Subsequently, the Team Canvas was applied to seven teams of the TUM: Junge Akademie at a two-day seminar. In order to evaluate whether or not and to what extent the intervention affected teamwork, a second questionnaire was sent to the participating teams after the intervention.

2.2 approach of Tool B: making use of the experiences of the former teams

In order to make the experiences of former teams accessible to current and future scholars, project MatchBox has designed a web-based platform for information exchange. The platform's goal is to provide solutions to recurring problems, thus helping scholars to solve these more efficiently.

Based on the assumption that many teams face similar challenges during their project phases, assis tance in overcoming these could lead to more successful teamwork due to problems being resolved faster. Therefore, providing suggested solution strategies to common challenges could prove valuable for future generations of scholars.

The experiences of individual scholars were collected via online questionnaires. These referred to subjects priory defined as central for team success:

- organisation: time-wise structure and assignment of tasks
- project phase: project-related steps from the beginning to the end of the project phase
- interaction: principle of communication and working together

- final product: end product and its distribution
- personal aspects: personal attitude and experiences
- involved parties: people and institutions that were most helpful during the project phase
- hints & tricks

In order to allow for further specification, these categories were divided into sub-categories as well. Scholars provided approaches to solutions in those sub-categories they felt had been challenging during their project phase. They also had the opportunity to record items which were not directly related to one of these seven categories. Prior to implementation, a dummy run of the questionnaire was performed with a TUM: Junge Akademie sub-committee. This led to further optimization of the questionnaire. The results will be made available on an internet-based platform to provide easy access for scholars. In line with current data protection legislation, the data-base will be integrated into the framework of WIKI. The overall design of the platform will be organized in line with the categories and sub-categories of the questionnaire. Entries will consist of a short description of the challenge and a subsequent approach to solve it. The platform will enable teams to look up solutions to challenges they have identified in connection with the Team Canvas intervention.

3. Outcome and Discussion

3.1 experience in teamwork within TUM: Junge Akademie

After our team initially formed at the kickoff seminar, we quickly discovered a shared vision: namely, to analyze the impact of personality traits on team success in teams each having a different context. Subsequently, we began detailing how to best implement this vision but, upon feedback by tutors and mentors, were forced to revisit the feasibility of our goals as well as to posit a precise hypothesis. FutureLabs and input from our mentors helped us narrow down our goals and approaches to focus on the teams of TUM: Junge Akademie instead of investigating extern teams. However, we then encountered a setback in the form of diminished motivation to pursue these newly defined goals, in part due to a temporary absence of two members. This we became acutely aware of at the spring 2018 FutureLab. To reflect on the status quo as well as address feasible objectives for the future, all available members met in Berlin for a “power weekend” of intense discussion and re-evaluation of MatchBox. Ultimately, we succeeded in elaborating a new concept complete with detailed timeline of envisioned milestones to be reached until project termination. These being, respectively, the practical Tool A and data-based Tool B. In order to obtain scientifically valid information, we focused on TUM: Junge Akademie teams as a homogeneous survey group.

3.2 Tool A: development of teamwork within TUM: Junge Akademie

As described in the goals and methods section, the questionnaire on the topic of teamwork in TUM: Junge Akademie was run prior to and after the Team Canvas intervention. Unfortunately, response was limited, with 41 respondents before and even fewer (17) after the intervention. This was far less than team MatchBox expected. The assessment of the utility of Team Canvas at TUM: Junge Akademie is therefore limited in terms of statistical significance.

Each item on the questionnaire was assigned to one of the five categories. Every respondent was thus evaluated within these categories, and the results were compared within the team to elucidate similarities and discrepancies in individual perception. The results of the questionnaire which was set before the Team Canvas are delineated below.

Within each team, we found that individual team members differed greatly in how they perceived important aspects of team and project work. This is evident from highly discrepant individual ratings on numerous questionnaire items, which is mirrored by the large standard deviation.

- **Psychological Safety:** In the area of psychological safety, the perception within the teams varied considerably (in questions 1, 2, 4, 5, 6, 7, 8). This implies that the team may be lacking communication touching upon such personal perception. This finding emphasizes that teams need to promote more exchange about psychological safety.

- **Dependability:** Individual team members were in disagreement about perceived dependability. Thus, sustainable structural improvements in team-work seem to be necessary in TUM: Junge Akademie (questions 12, 16). The Team Canvas is designed to lead to reflexion when having highly varying perceptions within a team. This is why it has the potential to evoke improvements in this area.

- **Structure and Clarity:** It seems that the project goals haven't been clearly formulated in the teams (question 17) and the communication between the different team members lacked (question 20). That might be the reason why the perception of the goals differed between the team members. Furthermore, the impression of team members differed about what the other expect from one another.

- **Meaning:** When goals haven't been defined clearly it was harder for the team members to see a purpose in their work (question 30, 31, 32). As Team Canvas confronts a team with the necessity to clearly define goals it can be highly effective in this area as well. Because of the fact that goals can change within the project phase, it might be especially important to discuss them more often.

- **Personal experiences of the coaches:** The personal experiences of the supervising coaches who are members of team MatchBox serve as an element for the evaluation of the effectiveness of Team Canvas. The general perception was that conflicts were already present but not yet confronted, thereby impeding successful cooperation. Moreover, teams seemed to be quite different when compared to each other. Whereas some seemed to have problems with regard to open discussions, for other it was difficult to define goals. Especially in smaller teams tasks and task areas were not defined clearly and the envisioned objectives often differed between the team members.

Moreover, in some teams self-assessment and assessment by the group differed drastically. Surprisingly, the perception emerged that individuals in these teams gravitated towards latent undervaluation of themselves. The expressed trust of teammates in their skills, however, then resulted in increased motivation after this prompted self-reflexion.

An other interesting insight was that members of the smaller-than-average team seemed to have a more cautious manner of interaction with each other. Besides that, the coaches got the impression that discussions could be provoked and conflicts could be resolved through the posing of precise questions by the seminar leaders. Nevertheless, difficulties in reaching a consensus remained in some teams.

The personal feedback of the participants at the end of the workshop were really positive confirming the impression of the coaches that the workshop was useful for the teams. The large majority would recommend the workshop to the other teams.

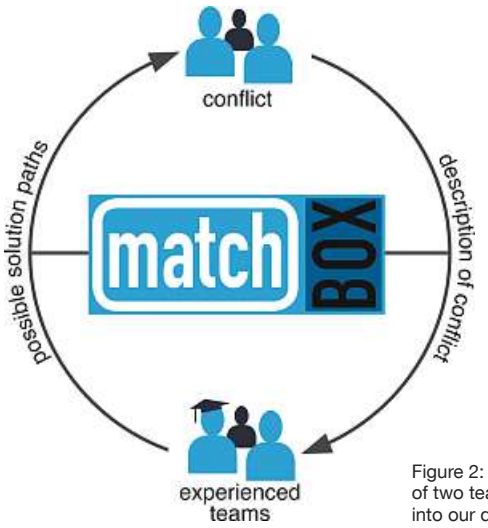


Figure 2: representative comparison of two teams (for an accurate insight into our data follow this qr-code)

3.3 Tool B: implementation of platform "MatchBox"

The implementation of the platform for Tool B is on the way and is to be finished in October 2018. Then, it can be used by the present and future team members of TUM: Junge Akademie.

The underlying tenet of Tool B is that teams of TUM: Junge Akademie often face similar challenges during the project phase. This assumption is based on the impressions of recent and former members. This provides the rationale for why we consider it vital that an organized exchange of experience between the former and the active members of the TUM: Junge Akademie is implemented. We consider it especially important when teams are confronted with the challenges which are enumerated below, including their sub-categories:

- organisation: time management, meetings, presence, assignment of tasks
- project phase: finding a topic, milestones, turning points, practicability, side projects, scientific practice
- interaction: communication, rules of working together, role allocation, liability, interpersonal conflicts, team reflexion
- final product: usability, sustainability, presentation, marketing and public relations
- personal aspects: motivation and personal attitude, time, personal advancement
- involved parties (that were most helpful): partners and external parties with either an economic, scientific or social background or parties inside the TUM: Junge Akademie including the main office, mentors, tutors and members
- hints & tricks: regarding team building, platform for working together, tools, legals, data privacy protection

In the future, the platform is intended to accumulate the experience of every new scholar at the end of their project phase. Thus, the platform is maintained up to date and is continuously provided with new information. This also allows the analysis of what topics are most difficult to handle for the scholars.

Whether or not the platform is used by future teams has to be investigated. Nevertheless, since it affords teams as well as the main office of TUM: Junge Akademie with the opportunity to benefit from past experience, we are confident that it has the potential to positively impact workflow within the TUM: Junge Akademie.

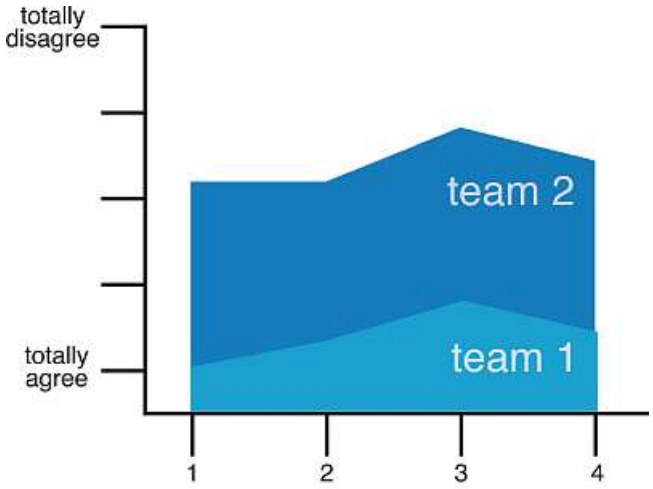


Figure 3: schematic illustration of Tool B

4. Conclusion and Future Goals

In conclusion, we are confident in saying that Team Canvas confronts the teams with their – evident and subliminal – conflicts, this tool is thus a recommended part of guided self-reflexion. For the TUM: Junge Akademie the Team Canvas could be a means of visualizing the status quo and helping to develop the team.

On top of that, existing conflicts can be unearthed and resolved via decisive intervention and prompted self-reflexion as represented by the workshop of Project MatchBox.

One could argue that this reflexion accelerates the storming phase according to Tuckman17,18, empowering teams to reach the phases of norming and performing more efficiently. For one, such reflexion may trigger resolution of highly discrepant perceptions within a team as discovered through our questionnaire. This assumption was confirmed by the impression that we gained while staging the intervention, namely that the conflicts confronted then had been present long beforehand. Not least, feedback on the workshop was stellar, with most participants likely to recommend it to other teams.

This together heralds the conclusion that Team Canvas is an appropriate tool to uncover hidden conflicts and to advance their treatment and solution. In order to be able to make more accurate statements about the impact of Team Canvas in the future, is advisable to have the workshop documented by an independent person as well. To counter the low response rate observed for our internet-based questionnaire, we recommend carrying out these surveys in a more fossilized manner in the future or replacing them in the form of a personal survey. This could also ensure that a control group of adequate size is formed to draw statistically relevant conclusions.

Personal experience shows that teams from the TUM: Junge Akademie face similar challenges during the project phase. That is why an orderly exchange of experience between the former and the active members is useful. An experience-sharing platform offers active members the opportunity to benefit from the experiences of former teams. In the long run, this should make teamwork more effective and successful. For this reason, this platform should be established long-term as an internet data-base. This project has the potential to make a lasting contribution to the vision of the TUM: Junge Akademie to bring young scientists together in a lasting and vibrant network. It analyzes TUM: Junge Akademie as a “matchbox”, i.e. in its capacity of bringing people together with the aim of successful teamwork, thus offering a basis for optimized matching procedures for societal value-creating processes.

References

[1] LMA: Effective teamwork: the key to sucess, in: leadershipmanagement.com.au, <https:// leadershipmanagement.com.au/effective-teamwork-the-key-to-success/#> (accessed 25.09.2018)

[2] Faturochman: The Job Characteristics Theory: A Review, in: Bulletin Psikologi V, 2 (1997), 1-13

[3] Hissnauer, Wolfgang: Arbeit im Team, oder 2+2=7, Mainz 2010

[4] Hackman, J. Richard: The Design of Work Teams, in: Handbook of organizational behaviour (1987), 315-342

[5] Eberspächer, Matthias: Was macht ein gutes Projektteam aus?, 2013, in: projektmagazin.de, <https://www.projektmagazin.de/projektteam> (accessed 02.12.2017)

[6] Johnson Vickberg, Suzanne M. / Christfort, Kim: Pioneers, Drivers, Integratos, and Guardians, in: Harvard Business Review, 2 (2017), 34-40

[7] Ross, Judith A.: Make Your Good Team Great, by Harvard Management Update, 2008, in: Harvard Business Review (hbr.org), <https://hbr.org/2008/02/make-your-good-team-great-1> (accessed 02.10.2017)

[8] Llopis, Glenn: 6 Ways Successful Teams Are Built To Last, 2012, in: forbes.com, <https:// www.forbes.com/sites/glennllopis/2012/10/01/6-ways-successful-teams-are-built-to-last/ #230d58d42b55> (accessed 01.12.2017)

[9] Blümke, Matthias: Teamrollen, Was tragen Teamrollen-Modelle wie Belbin zum Teamerfolg bei?, 2016, in: business-wissen.de, <https://www.business-wissen.de/artikel/teamrollen-was- tragen-teamrollen-modelle-wie-belbin-zum-teamerfolg-bei/> (accessed 01.12.2017)

[10] Kesting, Mathias: Das Potenzial von Teams richtig einschätzen, 2015, in: humanresourcesmanager.de, <https://www.humanresourcesmanager.de/news/das-potenzial- von-teams-richtig-einschaetzen.html> (accessed 04.12.2017)

[11] Susan L. Kichuk, Willi H. Wieser (1997), The big five personality factors and team performance: implications for selecting successful product design teams, in Journal of Engineering and Technology Management

[12] Grapendorfer, Johannes: Die ‚Big Five der Zusammenarbeit', Eine Möglichkeit, den Erfolg von Top Managementteams in der Automobilindustrie zu sichern?, Eine sequentielle explorative Studie, Wien 2012 (Diplomarbeit Universität Wien)

[13] Apke, Myriam Salome: Welche Charaktere braucht ein gutes Team?, Wo geht's lang und wie kommen wir dahin? Ein Team muss Entscheidungen treffen und an einem Strang ziehen. Mit welcher Besetzung geht das am besten?, in: ZEIT WISSEN, 3 (2015), 23-24

[14] re:Work: Understand team effectiveness, in: rework.withgoogle.com, <https://rework.withgoogle.com/print/guides/5721312655835136/> (accessed 25.09.2018)

[15] Klönne, Lukas große: Die wichtigsten Erfolgskriterien für eine gute Zusammenarbeit, in: t3n 44, 6 (2016), 56-65

[16] Rozovsky, Julia: The five keys to a successful Google team, 2015, in: rework.withgoogle.com, <https://rework.withgoogle.com/blog/five-keys-to-a-successful- google-team/> (accessed 30.11.2017)

[17] Teamentwicklung Lab: Tuckman Phasenmodell, in: teamentwicklung-lab.de, <https:// teamentwicklung-lab.de/tuckman-phasenmodell> (accessed 25.09.2018)

[18] Amadeus Fire: Erfolgreiche Teamarbeit: Gemeinsam sind wir stark, 2016, in: amadeus- fire.de, <https://www.amadeus-fire.de/jobs-und-karriere/ratgeber-fuer-ihre-karriere/karriere- arbeitswelt-strategien-psychologie/erfolgreiche-teamarbeit/> (accessed 28.11.2017)

Self-reflection MatchBox

Acknowledgement

We would like to thank our mentors, Professor Dr. Alwine Mohnen and Professor Dr. Michael Krautblatter, for their critical evaluation and helpful advice. Furthermore, we thank Dr. Elisabeth Raes for her expertise on psycho-sociological aspects of our project and her assistance in implementing our workshops. We also thank our tutors, especially Vivien Lechner, for offering guidance during our journey though the project. Finally, we would like to use this moment to express our gratitude towards the TUM: Junge Akademie, Professor Dr.-Ing. Müller and particularly Maria Hannecker and Peter Finger for always being there for us.

Self reflection

After the initial formation of the team at the kick-off seminar, we quickly discovered a shared vision for the project and agreed upon possible paths to take. In the following weeks, the team members discussed how to reach this vision in increasing detail. After presenting our decisions to the tutors and mentors, we realized we schould critically examine the feasibility of our goals and therefore articulate a precise hypothesis. Consequently we then narrowed down our specific goals and approaches, utilizing feedback in the context of the future labs and talks with our mentors. With the absence of two of our teammates – Philipp being in Singapore temporarily and Judith having to move permanently to another city for professional reasons – the group struggled to continue with the same enthusiasm and energy as before. Adding to that, the required emphasis on a scientific approach made it more difficult for us to precisely survey our subject matter due to the sociological nature of the project. Noting a lack of of true progress at the following future lab in early spring of 2018, we decided to take a

thorough look at the status quo and feasible objectives for the continuation of the project. To this end, all available team members decided to meet in Berlin for a "power weekend" of intensive discussion and re-evaluation of Project MatchBox. This resulted in a new conception of the project and a detailed timeline of the envisioned milestones to be reached on the way to completion. To satisfy the focus on science, we decided to use the TUM: Junge Akademie as our survey group, providing us with a somewhat homogeneous collective. Invigorated by the re-imagining of MatchBox we divided the project into two parts, resulting in the more practical Tool A and the data-based Tool B. The former was soon implemented as a hands-on workshop for scholars and gave us the chance to apply our knowledge and research in a real-life setting. Following a power project we temporarily toyed with the idea of designing a science-themed board game in parallel to our project. In the course of the following days, however, we decided not to follow up on this notion in order to focus completely on our original idea.

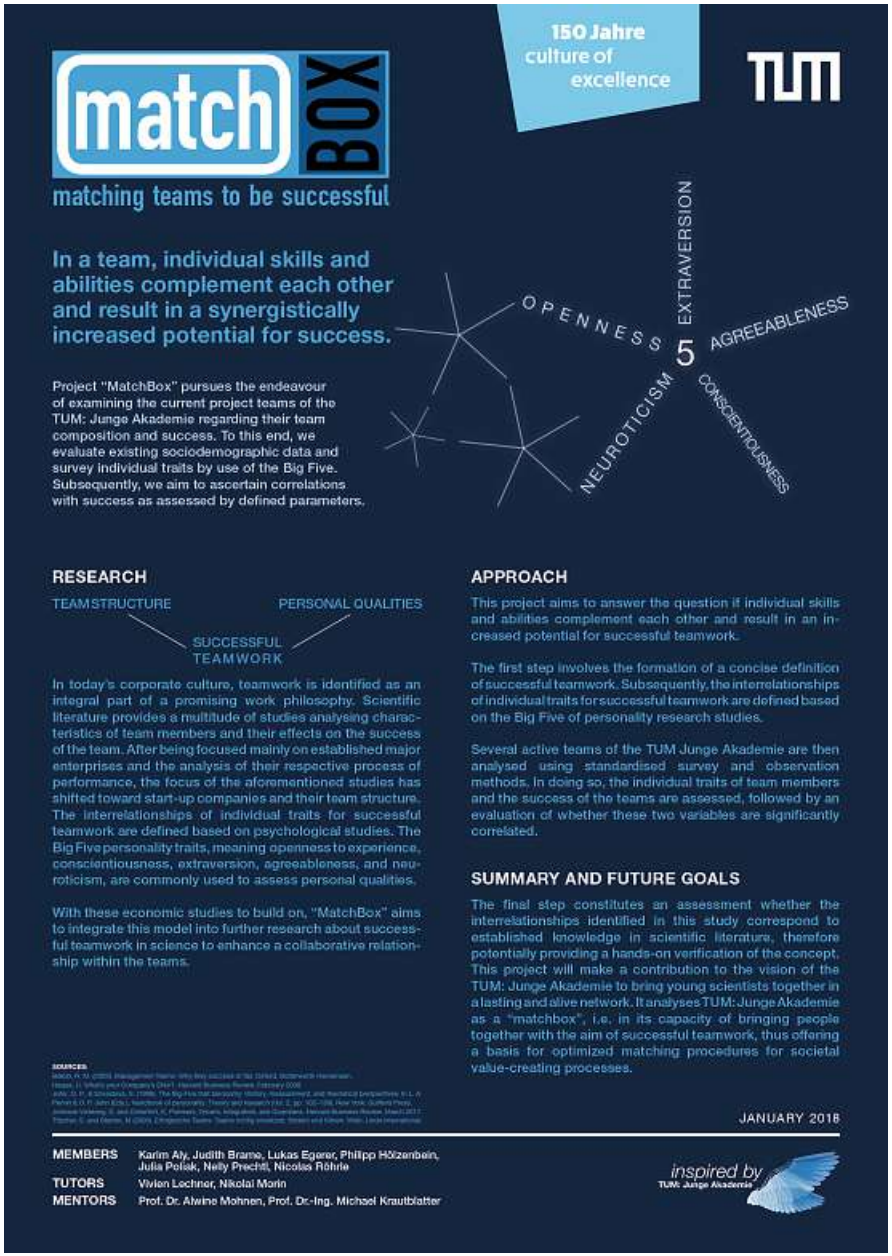
After the Berlin episode, the work stream picked up considerable speed, leading to the application of Tool A and subsequently Tool B. Both started yielding results. The scholars' responses to our questionnaires however resulted in data amounts that fell short of our expectations and thus to results that were less usable than we had hoped for. Nevertheless, we were happy to receive positive feedback from the scholars and this has prompted the TUM: Junge Akademie to continue using our workshop in the course of the program.

Despite the challenges we faced and the setbacks we suffered, working together always proved to be not only enjoyable but also the key to solving complex problems.

During the 20-month project work, we, the team MatchBox, went through a long process of development of an idea and creating a successful team. The following steps shows the progress according to the posters, which were the official milestones of our teamwork.

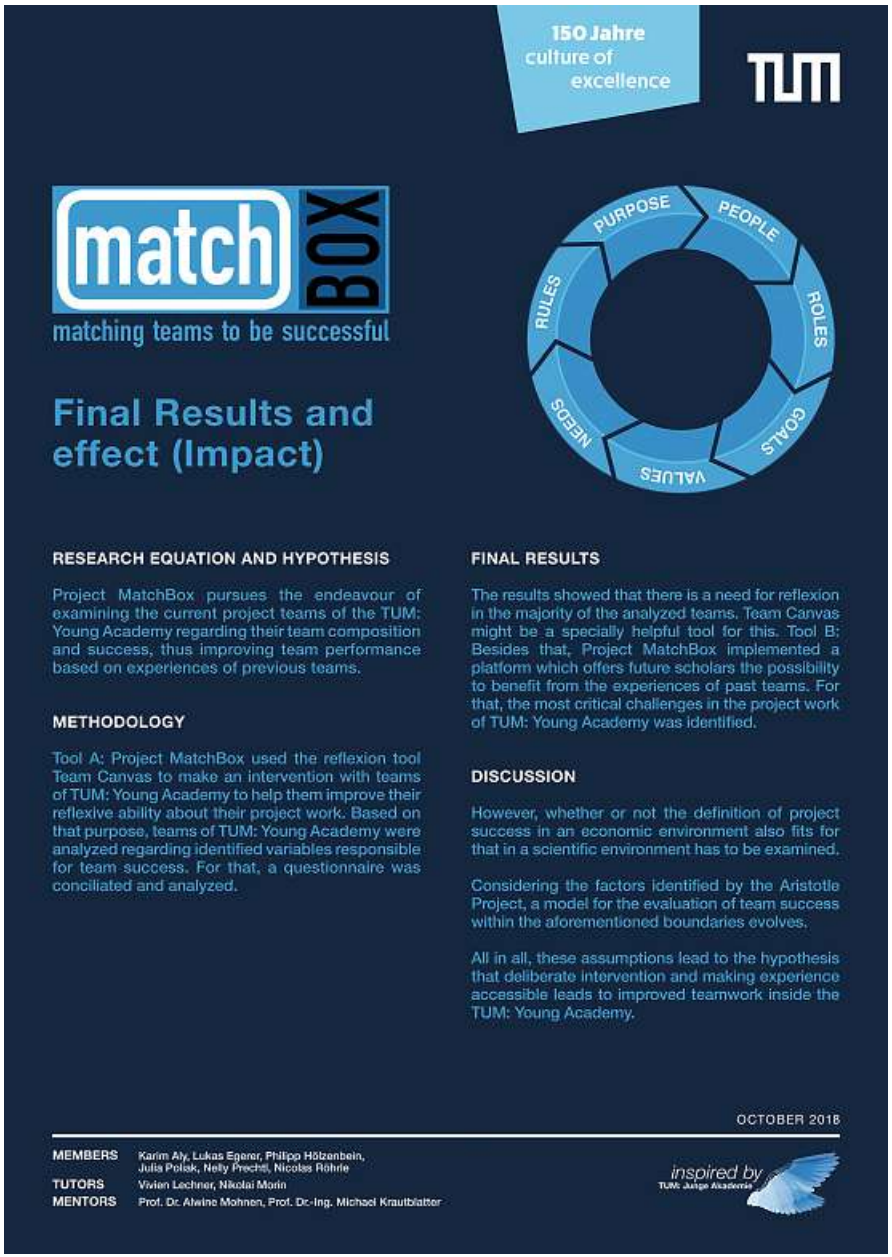
POSTER 1: The first milestone was to create a hypothesis. After the initial formation of the team at the kickoff seminar, we quickly discovered a shared vision for the project and agreed upon possible paths to take. In the following weeks, the team members discussed how to reach this vision in increasing detail. After presenting our decisions to the tutors and mentors, we realised we should critically examine the feasibility of our goals and therefore articulate a precise hypothesis. We narrowed down our target group from young European citizens to teams of the scholarship program Junge Akademie.

Consequently we then also narrowed down our specific goals and approaches, utilising feedback in the context of the future labs and talks with our mentors.



POSTER 2: The next step was to develop out of the hypothesis the following actions, by forming the methodology and make a plan for the research process. But the step of team structure had to be cleared before that. The size of the team MatchBox was loose due to several issues. One member wanting to come into our team, never arrived there and gave up half the way. Even though we tried to bring her on board. One team member had to move into another city and quit the scholarship of TUM: Junge Akademie. Another team member was permanently in Singapore, which made it impossible to get hold of him. So we struggled a lot with our motivation and focus of the project.Adding to that the emphasis on scientificality made it more difficult for us to precisely survey our subject matter due to the sociological nature of the project. Time passed without any progress.

POSTER 3: Process and a working team structure was possible after we decided to take a thorough look at the status quo and feasible objectives for the continuation of the project. To this end, all available team members decided to meet in Berlin for a "power weekend" of intensive discussion and re-evaluation of Project MatchBox. This resulted in a new concept of the project and a detailed timeline of the envisioned milestones to be reached until completion. Invigorated by the re-imagining of MatchBox we divided the project into two parts, resulting in the more practical Tool A and the data-based Tool B. The former was soon implemented as a hands on workshop for scholars and gave us the chance to apply our knowledge and research in real life setting. Following a power project we temporarily toyed with the idea of deigning a science-themed board game in parallel to our project. In the course of the following days however, we decided not to follow up on this notion in order to focus completely on our original idea.



POSTER 4: Results: After the Berlin episode the work stream picked up considerate speed, leading to the application of Tool A and subsequently Tool B. Both started yielding results. The scholars response to our questionnaires however resulted in data amounts that fell short of our expectations leading to results that were less usable than we had hoped for. Nevertheless, we were happy to receive positive feedback by the scholars prompting TUM: Junge Akademie to continue using our workshop in the course of the programme. Despite the challenges we faced and the setbacks we suffered, working together always proved to not only be enjoyable but also to be the key to solving complex problems.