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# Evaluation of the Industrial Research Funds (IOF) and the interface activities

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# Management Summary

This management summary outlines the main results of the evaluation of the Industrial Research Funds (abbreviated to IOF<sup>1</sup>) and the interface activities of the (Flemish) university associations both at the level of the Flemish innovation system as at the level of the university associations (see further). The evaluation comprises the ex-post evaluation of the previous period (2009-2013) and the ex-ante evaluation of the draft strategic plans that the five associations have drawn up for the next period (2014-2018). In addition to the evaluation at the system level, the results of which are presented in a main report, the evaluation of the IOF and interface activities was also conducted at level of the associations themselves, and was carried out separately for each of the five university associations. The results of this part of the evaluation are presented in five association reports, one for each university association. As the interface services<sup>2</sup> of university associations are responsible for the management of the IOF and also develop and set up activities to support their specific (interface) activities, the interface services are also an element of this evaluation.

The evaluation of the IOF and interface activities is announced in the Decree of May 29, 2009 of the Flemish Government regarding the support of the Industrial Research Funds and interface activities of the associations in the Flemish Community<sup>3</sup>.

Through a public procurement procedure, the department of Economy, Science and Innovation (EWI<sup>4</sup>) of the Flemish government has given Technopolis the assignment to evaluate the Industrial Research Funds and interface activities<sup>5</sup>. The evaluation assignment was conducted under the guidance of a steering committee composed and chaired by the department EWI. The role of the steering committee was both to monitor the quality and progress of the evaluation, as well as to ensure that the fulfilment of the assignment will result in concrete recommendations that fit into the regulations. During the evaluation Technopolis has discussed the approach and the progress of the evaluation several times with the steering committee and the steering committee both commented on the draft (interim) reports as validated these. In accordance with the evaluation practice that the EWI-department uses, the university associations have also been given the opportunity to check the draft version of the final reports<sup>6</sup> (as validated by the steering committee) with a view to identify and report any material errors. In the final reports, the material errors thus identified have been corrected.

To implement this evaluation different methods were used: documentation and literature analysis, interviews, an international benchmarking and a peer review of the draft strategic plans (by two experts and by Technopolis) for the next period (2014-2018).

The main results of the evaluation of the Industrial Research Funds and the interface activities and the resulting conclusions are summarized below and ordered by

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<sup>1</sup> “Industriële Onderzoeksfondsen” or “IOF” in Dutch.

<sup>2</sup> These services are intended to provide an interface between academic research and industry, in order to valorise research results, and are sometimes referred to as “Technology Transfer Offices” or “TTO”.

<sup>3</sup> In what follows, the Decree of May 29, 2009 is referred to as the “decree”.

<sup>4</sup> The policy domain Economy, Science and Innovation is abbreviated to EWI in Dutch.

<sup>5</sup> Department EWI “Specifieke opdrachten in het kader van de evaluatie van de Industriële Onderzoeksfondsen (IOF) en de interfaceactiviteiten” – Terms of reference with number EWI-2013-01.

<sup>6</sup> In particular, the main report and the specific report about the university association in question.

evaluation theme. First, an overview of the evaluation results on the level of the Flemish innovation system is given, followed by the results of the evaluation on the level of the university associations and for each association separately.

## Main results of the evaluation at the level of the Flemish innovation system

### Positioning of the IOF and the interface services

In the set of funding instruments that the Flemish government applies in the context of its science, technology and innovation policy, the IOF - as the Special Research Funds (abbreviated in Dutch to BOF<sup>7</sup>) - function intra-university because the funds for IOF are granted separately to each association. This in contrast to the FWO<sup>8</sup> and strategic research centres (SOCs) and Lightweight Structures, who function inter-university.

The IOF is an instrument that aims at encouraging strategic basic research and is positioned between basic research (mainly funded by the FWO and BOF) and applied research (such as industrial R & D-programmes).

Interface services of university associations have been assigned to promote the interaction between the association and industry and to promote the economic exploitation of the scientific research carried out within the association, for instance through licensing, contract research and start-ups. The interface services are involved in the start-up phase of new businesses and position themselves alongside private initiatives such as investment funds and business angels. The interface services of the associations are responsible for the management of the IOF and implement specific activities to support their operations.

In the present situation there is - in addition to the IOF - the spin-off financing instrument (SOFI) for university associations, called SOFI Associations. There is also a certain complementarity between the IOF mandate holders and the Innovation mandate holders of IWT<sup>9</sup>; in practice these two types of mandate holders often work together.

The interface services valorise all research of their university association. Agreements have been made with the valorisation services of some SOCs regarding the distribution of licensing income. The SOCs' output figures (patents, spin-offs, contract revenue, etc.) are also included in those of the association for the calculation of the IOF key.

### Financing of the IOF and interface activities

The Flemish government determines the annual IOF funding for the university associations by using a distribution key that is (currently) based on the performance of each association on six different parameters<sup>10</sup>. This so-called 'IOF key' is not linked to the IOF output. From an evaluative point of view, a better starting point for the distribution of the IOF research funds would be a parameter measuring the additionality and effect of the IOF investments themselves.

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<sup>7</sup> The full Dutch name is "Bijzondere Onderzoeksfondsen".

<sup>8</sup> The Research Foundation - Flanders.

<sup>9</sup> IWT is the Flemish Agency for Innovation by Science and Technology.

<sup>10</sup> These are: share of doctoral degrees, share of publications and citations, proportion of contract revenue, contract revenue share in the European Framework Programme, share in patents, and share of spin-off companies.

The IOF key as a sealed envelope holding a fixed amount that is distributed competitively, holds the risk of creating feedback loops that have a concentrating effect. Because larger associations receive more funding, they can invest more in valorisation, and thus receive an even higher share. Given that the current IOF key is only to a limited extent a performance indicator for IOF activities, a fixed base in the IOF key would be justified, provided it remains limited in size. Such an adjustment would have to be considered in the context of a broader review of the performance aspects. Considerations deriving from the innovation policy of the Flemish government - such as for instance the policy to emphasize the regional function of some (smaller) associations - could also justify a "fixed base" in the IOF funds for these associations.

For most associations IOF resources are relatively limited (often they represent only a few percent of the total research budget of the association). Despite this relatively small budget (the total budget that was provided by the Flemish government was about 2/5 of what was initially foreseen as a growth path<sup>11</sup>) the IOF funds do have quite a large positive (leverage) effect. IOF mandate holders realized three to eight times more output than the academic staff members (ZAP<sup>12</sup>) who were not involved in IOF.

In order for the universities/university associations to perform the third mission<sup>13</sup> of universities, it is recommended to bring the share of IOF funding in balance with the share of funding for other types of research (basic and applied). In view of the above a substantial increase in the IOF budget seems justified.

The interface key has a fixed allocation that is established once in five years. The current distribution was determined by the Flemish Government in 2011 and is as follows: AKU Leuven: 41.7%; AUGhent: 30.45%; AUHA: 12.84%; UAB: 11.53% and AUHL: 3.41% (full names of the associations are written in footnote<sup>14</sup>). The interface funds can be spent on personnel, operating and overhead costs (as stipulated in the decree). As the associations consider the interface subsidy mainly as a kind of basic funding, the interface funds are generally not linked to specific activities of the interface services of the association.

### **Comparative analysis of strategic plans 2009-2013**

The strategic plans of the university associations on the IOF and interface activities for the period 2009-2013 differ greatly in how they are composed: each association has included in its plan the various elements that the strategic plan should contain according to the decree, but each has done that in its own way. Some plans conceive operational objectives as the activities the association will perform in order to achieve the strategic objectives, sometimes operational objectives have been formulated in terms of results to be achieved.

The mission statements presented in the plans differ greatly as well. The mission of the AKU Leuven is internationally oriented: they want to be part of the European top of interface services and they focus on Flanders becoming the most innovative region in 2020. The missions of the AUHA, AUHL and UAB focus on Flanders and on their own region and do not formulate ambitions in terms of long-term positions. The

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<sup>11</sup> With the introduction of the IOF in 2004, a growth path was foreseen where the IOF funds would grow to 50 million euro. The IOF funding has indeed experienced growth since 2004, but not to this level.

<sup>12</sup> ZAP stands for Zelfstandig Academisch Personeel, in English: independent academic personnel.

<sup>13</sup> The third mission of the Flemish universities is creating economic and social value through research; the first and second missions are education and research.

<sup>14</sup> AKU Leuven: Associatie Katholieke Universiteit Leuven; AUGhent: Associatie Universiteit Gent; AUHA: Associatie Universiteit en Hogescholen Antwerpen; AUHL: Associatie Universiteit-Hogescholen Limburg; UAB: Universitaire Associatie Brussel.

mission of AUGhent has no geographical focus and also includes no long-term ambitions.

The strategic plans of the associations do not make an explicit reference to the third mission of the universities and to which the IOF and the interface subsidies in principle should contribute.

### **Performance of the university associations**

The AKU Leuven has the highest scores for the indicators "patent applications" (except in 2008), "active patents", "licensing revenues" and "employment in spin-offs". The AKU Leuven also scored highest for "industrial contract revenues", followed by the AUGhent. The indicator "revenues from European Framework Programmes" is characterized by high variability for all university associations. This is especially the case for the UAB, which scores relatively high in the group of smaller universities. The AUHL scores lowest on this indicator.

Regarding the number of spin-offs per 1,000 researchers, we see a high score for the AUHL (over the entire period, except in 2010: here the AUHA is top scorer). This proves the chosen strategy of the AUHL of establishing as many spin-offs as possible. The other university associations' scores on this indicator vary annually, leading to varying positions.

Important factors explaining these results are the age, size (budget, number of employees) and competences (and thus experience, professionalism, and having benefited from learning) of the interface service of the university association. The interface service of the AKU Leuven has been around for decades and has developed into a large professional organisation, which operates as an independent business unit within the association. Moreover, the association includes a large university that has a lot of resources to invest in advanced facilities and to attract top researchers. The interface services of the AUHA, the AUHL and the UAB - much smaller associations/universities - are clearly still in the initial stage of their development, their formal establishment dating from after 2007. The interface service of the AUGhent is slightly older (established in 2004) and has developed further, but is not yet fully developed. The academic profile of the university within the association is also an important explaining factor, natural and technical sciences are more industrially relevant than research in social sciences. Finally, the value the top management of the university/association assigns to the valorisation function is also important.

For the benchmark of the performance of the group of Flemish interface services with those of other universities in Europe, universities were chosen that are comparable to those in Flanders. The sample consists of the universities of Cambridge (UK), Aarhus (Denmark), Edinburgh (UK), Eindhoven (The Netherlands) and Freiburg (Germany). The benchmark conducted, shows that the Flemish universities consistently score higher on all indicators (patents, revenues and spin-offs) than the other European universities in the benchmark and compared to the European average as well. The AKU Leuven performs extremely well and the other university associations - especially the AUGhent and the UAB - very good.

### **Cooperation between the interface services**

As a result of the evaluation of 2007-2008, the university interface services decided to pay more attention to their operation and mutual co-operation, and to present themselves in a number of forums and events under one name: TTO Flanders. A joint action plan with various activities was determined for the period 2009-2013. At this moment in time, almost all interface services are satisfied with what has been achieved with the creation of TTO Flanders and they find that cooperation should not be encouraged by other means. The AUHA however, would welcome the stimulation of

more cooperation. Informally, the associations work together through the various activities undertaken within the framework of TTO Flanders and in bilateral cooperation, including in joint spin-offs.

### **The role of the university colleges in the IOF and interface operation**

The researchers from the university colleges (“hogescholen” in Dutch) were already associated with research consortia organised around IOF mandate holders, cooperated with the university research groups (at the AUGhent, AUHA and UAB), or held an IOF mandate themselves (AKU Leuven).

The interface service of the association operates at the level of the association, so its scope has not changed in recent years by the academisation process<sup>15</sup> and this will not happen in the future either. The interface services of the larger universities have seconded a staff member at the university colleges affiliated to their association. It does not matter for the service if the university or the university college employs the researcher; to valorise research is what matters.

### **Improvement of the regulation**

The ‘Decree of the Flemish Government for the support of the Industrial Research Funds and interface activities of the associations in the Flemish Community’<sup>16</sup> was approved on May 29, 2009 and published in the Belgian Official Gazette (“Belgisch Staatsblad”<sup>17</sup>) on July 23, 2009. In April 2011 some (minor) changes to the decree have been made.

Most proposals for the improvement of the decree that follow from the evaluation relate to the IOF key and the parameters that are used.

- The definitions and collection methods for Parameter 3 (contract revenue) should be harmonized in order to avoid misunderstandings about them.
- For Parameter 6 (spin-offs) a clear agreement between the associations and ECOOM<sup>18</sup> about the way the contributions of the association are mentioned in deeds and other legal documents would help to improve consistency.
- It is recommended to consider limiting the inclusion of the licensing income to patents that have been granted within a limited time frame (e.g. the last 10 years).
- The inclusion in the IOF parameters of the outputs generated in strategic research centres (SOCs) can be reconsidered in view of the fact that these centres have their own valorisation channels.
- It is recommended to check whether Parameter 4 (income from European Framework Programmes) can be calculated annually, based on the income of the previous year.

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<sup>15</sup> This means that the entities at the university colleges (within an association) providing training and courses at an academic level, strengthened their research activities and are/were then integrated in the university of the same association. This process should be completed before October 1, 2013.

<sup>16</sup> The black text is the text of the (initial) decision of 29.05.2009 (<http://www.codex.vlaanderen.be/Portals/Codex/documenten/1018147.html>). The italics are part of the changes made in the first by the decision of the Flemish Government of 1 April 2011 and relating to Articles 4 and 14 of the previous decision (<http://www.codex.vlaanderen.be/Portals/Codex/documenten/1020241.html>).

<sup>17</sup> The official medium of the Belgian authorities wherein all its legislation and regulation have to be published.

<sup>18</sup> Expert Centre for R & D Monitoring of the Flemish Community.

- Parameter 1 (doctorates) is not an adequate representative of the IOF objectives. In a review of this parameter it can be considered to integrate this parameter into a fixed base.
- Parameter 2 (citations and publications) can be maintained.

There is no parameter that represents the interpretation of the IOF objective on the interaction between association and industry. A possible way to consider this objective, could be by incorporating in Parameter 3 new contracts between the interface service and companies (preferably broken down by SME / large business, regional / national). It is recommended to investigate the feasibility of including this parameter in the IOF key.

The IOF key was developed in order to achieve a good performance driven allocation of available resources. However, the IOF key is not linked to the IOF output itself, but to the output of the entire association. For this reason it is recommended to reconsider the aspects that should be included in the distribution of the IOF funds across the associations (based on the parameters and the key): either the performance based on the IOF research of the association, either the overall valorisation performance of the association.

Other points for improvement of the regulation concern the appointment duration and the requirements for the mandate holders, the management of IOF at university or at association level, the participation of university colleges in the IOF Council, the strategic plan, the cooperation between the associations, the definition of the parameters, the use and weight of the parameters in the key and the budget of IOF.

### **Ex-ante evaluation of the draft strategic plans 2014-2018**

Only the plans of the AKU Leuven and AUHL are SMART. The plans of the other three associations lack the elaboration of the strategic and operational objectives (often translated into concrete plans and actions) in order to measure the results of the concrete plans and actions (such as an elaboration into quantitative indicators) that relate to certain time periods, for example by indicating what they want to achieve for each objective or action either annually or for the entire strategy period. Only the plan of the AKU Leuven is complete. In other plans various components are missing, components that may not be required explicitly by the IOF decree but that do belong in a strategic plan. It concerns the SWOT (AUGhent, AUHA, AUHL, UAB) and the financial resources allocated to implement the plan (AUGhent, AUHA, UAB), although most plans have a section dedicated to the funding. The plan of AUHA also lacks a vision and a mission.

The plans do not announce new types of activities or break new grounds. They mainly describe a continuation of the current situation, sometimes focussing on specific parts and elaborating other parts. Nonetheless the plans contain many challenges for the interface services (and not only because of the poor economic situation). Some plans mention new initiatives that are appreciated by the two experts.

Judging the contents of the new plans and based on the comparison with the strategic plans for the previous period (2009-2013), it can be concluded that the strategic capacities and policies of the AKU Leuven still are at the same high level. The AUHL has made great progress in these areas, when compared with the previous plan and the same can be concluded for the UAB. The strategic capacity of the AUGhent needs further development and the AUHA has had to deal with a decrease in strategic capacity and policy.

## Main results of the evaluation at the level of the university associations and for each association separately

### *AKU Leuven*

#### **Strategic plan 2009-2013**

The Strategic Plan 2009-2013 of the AKU Leuven addresses all issues that have to be addressed according to the decree. The completeness and level of detail with which the plan has been worked out, varies by item. The plan generally pays a lot of attention to the situation in 2009. The strategic objectives are formulated in terms of operations and are qualitative. The three-tier of strategic goals translated in operational goals (with result indicators) and associated activities all are present, but not easy to find because of the way the plan is structured. The selected outcome indicators in the plan have been set SMART and have been formulated very accurate and at a high-impact level.

#### **IOF spending**

As mentioned above, the IOF funds are distributed across the associations through the IOF key, which is calculated annually on the basis of (currently) six parameters. The funding is then allocated in proportion to the share of the association in the sum of the parameters after a fixed weighting (in the reference period). The IOF grant for the AKU Leuven increased in 2008-2012 from 7.6 million euro to almost 8.9 million euro. In 2012, the IOF funds represented 2.6% of the total research budget of the AKU Leuven. During the period 2008-2012, approximately 23% of the IOF budget was spent on IOF mandate holders, approximately 51% on research and the rest (6%) was used for operating costs and project fees in support of IOF mandate holders. Over this period, approximately 7.7 million euro less was spent than actually received: these reserves are made in order to be able to ensure the indefinite duration of the mandate holders' appointment, given the continuously rising labour costs. Most IOF mandate holders and IOF projects can be found in the field of medical sciences.

#### **The operation analysis of the interface service**

In 2012, Leuven Research & Development (LRD) - the interface service of AKU Leuven - is divided into a number of departments with department heads. The organisation had become too large; the division into departments should further enhance the internal workings of the still flat organisation. The service also invested in the development of ICT infrastructure. Partly, the service makes use of the accumulated expertise and infrastructure available at the Research Coordination Division (DOC) for the management of applications for IOF funding. The interface service grew in the period 2009-2012 by 35% (from 50.4 to 67.6 FTEs) and the turnover from 135.6 million euro in 2009 to 175.2 million euro in 2012, an increase of 29%. Internal customers (research groups) and external customers (companies) described the service as very professional and very efficient.

#### **Cooperation with other interface services**

The LRD has good contacts with the interface services of the other associations, both at the managerial and at the executive level. Additionally LRD has several contacts with the Flemish Innovation Network (Vlaams Innovatienetwerk). The structural formal cooperation with the other associations is organised via the platform TTO

Flanders, the partnership of the interface services of the five associations. With respect to TTO Flanders, the LRD values most the sharing of best practices in services and the joint actions in attracting foreign investment.

### **The role of the university colleges in IOF and interface activities**

The university colleges within the association also participate in the IOF, amongst others because they are members of the IOF Council. The university colleges are supported in writing the IOF project applications. This led to more project applications from university colleges, but on the whole, there are still relatively few applications from these colleges. A further academisation of the research groups of the university colleges that will become part of the university after October 1, 2013 is expected. This will increase the valorisation potential, which simultaneously can lead to a strain on the financial resources in the absence of an increase in the IOF funds.

### **The scientific and economic output**

The proportion of publications of the AKU Leuven is very high; it is almost half of the total of the five associations. The same applies to the citations (approx. 45%); there is a slight decrease over the period 2009-2012.

LRD does not keep track of the outputs related to IOF projects or to IOF mandate holders. For that reason the aggregated effect of IOF cannot be determined in terms of patents, revenues from contract research and spin-offs.

Over the period 2009-2012, a strong growth is shown for all patent indicators and all income indicators, but not for the spin-off indicators, this is partly due to the economic crisis.

### **Analysis of strengths, weaknesses, opportunities and threats**

The strengths of the IOF and interface service of AKU Leuven are:

- Through the IOF, AKU Leuven manages to offer a good career to application-oriented researchers which ensures that this talent remains within the university;
- The IOF gives much freedom to the association, and the AKU Leuven uses this freedom in an appropriate and specific way;
- The IOF has contributed to a change in the university culture towards more appreciation for valorisation oriented research;
- The communication about IOF to researchers is adequate and professional;
- The substantial experience (40 years) with valorisation policy and the fact that that policy has since long been incorporated in the association's vision;
- The well-developed local ecosystem of research institutes with a valorisation mission, networks with industry and a strong international network, offer many opportunities for exploitation and valorisation of research;
- The major strategic, operational and financial freedom of the interface service;
- The high level of accessibility, the flexibility of the interface services and the high degree of professionalism;
- Good contacts with industry;
- Good proactive communication towards researchers about opportunities.

The weaknesses are:

- The track records of research groups that propose IOF projects should be scrutinised more critically as at this moment in time, these track records are not sufficiently taken into account when these projects are evaluated;
- Sometimes confusion and inconvenience regarding the handling of the financial aspects of contract research occur for researchers;
- There are still research groups that could make more use of the services of LRD, than they currently do.

The opportunities are:

- Better mapping of the outcomes of an IOF leverage project or an IOF platform, in other words: more emphasis on ex-post evaluation. This can also help to communicate the 'return on investments' more clearly;
- The evaluation of proposals would be clearer for the researcher when he/she receives the feedback per evaluator (anonymously) and not per subject. In this way the context of a review would be maintained for the researchers involved;
- The professional bachelors offer opportunities in the field of practical valorisation projects. LRD can support this;
- Strengthened cooperation with innovation centres would better connect the great range of knowledge within the association to the demand from the business sector;
- A more thorough understanding of the range of clients (internal and external customers) could provide useful information for management accountability and adjustment;
- More efforts of the interface service in stimulating real joint research by researchers at the university and researchers in industry. This could lead to a relationship/connectedness between the staff of the university and the companies that would strengthen the informal and formal valorisation channels;
- The integrated research groups of university colleges could make more direct claims on the services of the LRD;
- The academisation of university colleges increases the valorisation potential through awareness and training of researchers.

The threats are:

- The risk that companies give up when success rates of the IOF projects become lower than the current 1-to-3;
- When IOF funds stagnate, the career opportunities for mandate holders decrease;
- When a knowledge platform will not be continued with a mandate holder, there is a chance that the investments made are not capitalized;
- The university colleges lag behind with respect to IOF. In case of a highly competitive selection of projects, they will not be able to start building / catching up;
- The continuing negative economic climate puts a brake on valorisation activities because providing capital is more difficult and companies invest less in research;
- The disappearance of the specific profile of university college courses, such as those of industrial engineers who especially are strongly connected to technical practice.

### **The draft Strategic Plan 2014-2018**

As mentioned above, the draft Strategic Plan 2014-2018 of the AKU Leuven was assessed by Technopolis and two external experts. The plan is SMART and complete. IOF and interface activities are embedded in a highly cohesive and integrated system. The plan is not innovative (business as usual), as it perpetuates the activities that have been started already some time ago. However - as one expert remarked - the AKU Leuven is an association that operates national and international at the forefront with respect to its entrepreneurial culture.

The plan holds, especially given the current economic situation, several challenges. The association is recommended to explore how it can pick up the task of equally balancing supply and demand (and making mutual translations), while maintaining the academic quality.

*AUGhent*

### **Strategic plan 2009-2013**

The chapters of the Strategic Plan 2009-2013 more or less correspond to the elements mentioned in the decree (cf. supra). The plan includes five strategic objectives for the IOF and five for the interface service, which are elaborated in operational objectives. For each objective, critical performance indicators (KPI) have been established, with - for each KPI - targets for the period 2009-2013. They are partly SMART formulated; the R(ealistic) content of the targets however is questionable. For many indicators, the same rise per year (about 15%) is presented implying that these targets seem to have been chosen without much consideration.

### **IOF spending**

The IOF funds are distributed across the associations in accordance with the IOF key (cf. supra). The IOF grant for the AUGhent increased from just less than 5 to 6 million euro in the period 2008-2012. In 2012, the IOF funds represented 5.2% of the total research budget of the University of Ghent. During this period, 35.1% of the IOF budget was spent on IOF mandate holders, 44.2% on research and the remainder (18.2%) on operating costs and project fees in support of IOF mandate holders. The IOF funds were mainly spent in the domains of Science and Engineering and Architecture Sciences, followed by Bio-Engineering and Medicine.

### **The operation analysis of the interface service**

The size of the interface service has increased from 15 to 24 FTEs in the period 2009-2012. It has been professionalised as well: during this period new employees have been appointed with business experience and expertise in IP, Legal and Business Development. The Ghent technology transfer model consists of the central interface service (Ghent University Tech Transfer or UTT) and decentralized interface antennas (IOF valorisation consortia, the AUGhent research groups outside the IOF consortia, and the so-called university college interface antennas). An important measure to professionalise the operation of the interface service was the introduction of an IT system for the management, monitoring and follow-up of the valorisation projects. The existing contract database is not yet integrated into this system.

### **Cooperation with other interface services**

The Ghent interface service maintains bilateral contacts with all Flemish universities and other actors in the Flemish innovation system. In the recent period cooperation

with the interface services of the other associations continued to increase within the framework of TTO Flanders (the partnership of the interface services of the five Flemish associations).

### **The role of the university colleges in IOF and interface activities**

The preparation of the academisation process at the AU Ghent was launched in 2003 and since then there has been growing cooperation between the university and the university colleges within the association. Through the IOF mandate holders the university colleges became involved in IOF projects. The integration process also meant that the university college research moved closer to industrial exploitation, that the university colleges conducted more research and that research skills are also addressed in education at the university colleges. The fact that the interface service has allocated a staff member at the university colleges also has reinforced the valorisation of university college research.

### **The scientific and economic output**

In 2012, the share of AUGhent in the total number of publications of the five associations was back to the level of 2008 (28%), after a slight fall. The share of citations increased from approximately 25% in 2008 to approximately 29% in 2012.

Regarding the economic output, there is a large increase in the number of IOF-related granted and active patents and licensing income after 2010. The number of IOF-related spin-offs did not change significantly during the period 2008-2012 (with an average of four per year). However, the number of newly opened spin-off files increased after 2010 (from 9 to 16). The share of IOF-related patents represented a large proportion of the total number of patent applications in 2008-2012: for example in 2012 this was 60 of the 70 patents. The proportion of IOF-related spin-offs in the total number of spin-offs is large as well: in 2009 and 2010, three of the four and in 2012 even all five. Income (from contracts, licenses, EU Framework Programmes) varies greatly each year.

### **Analysis of strengths, weaknesses, opportunities and threats**

The strengths of the IOF and interface service of AUGhent are:

- The IOF Council works well. The council acts in a flexible way and has developed in parallel with its tasks. The IOF Council now consists of various working groups. There is good cooperation between the different parties involved (universities, university colleges and industry);
- There is a strong customer oriented focus in the consortia (clusters focused on and with knowledge of the market). IOF mandate holders are in close contact with companies; they bring researchers into contact with companies and there is a growing number of new business contacts;
- Conversely, the clusters (and the active role of the IOF mandate holders in them) are a clear point of contact for companies;
- Bringing together experts in consortia led to (profitable) research which previously was not on the radar. Without IOF there would have been much less inter-sectoral cooperation;
- The complementary action of the decentralized operating clusters with IOF mandate holders on the one hand and the central UTT (to support researchers in valorisation processes) on the other hand;
- The composition of the UTT with experienced consultants in all major disciplines a TTO needs;

- The active presence of the UTT at the university colleges.

The weaknesses are:

- The limited ability of IOF mandate holders to sufficiently address all the opportunities that arise. There is a drag on growth because the available capacity is limited. The workload in some consortia is very high, they are the victims of their own success;
- There are no additional resources to facilitate the growth of consortia; there is a limit to the funds available.

The opportunities are:

- By continuation of the activities to increase the ‘valorisation’ awareness of researchers, more researchers will become aware of the value their research may have for companies;
- As the IOF mandate holders operate as liaison / business developers and fully focus on facilitating the valorisation process, a specific career path and reward system should be introduced for them that is different from that for researchers. It is a challenge for AUGhent to develop an appropriate career perspective for both IOF mandate holders and the advisors at the UTT and thus introduce a practical solution for university functions that are aimed at implementing the third mission of the university;
- The information systems are approaching their intentional functionality, the main challenge is to integrate the contract handling in the existing CRM system as well;
- It remains to consider – given the example this may present for entrepreneurial researchers – to let the UTT function as an independently operating business unit associated with the AUGhent, with its income (such as from IOF management, licensing revenues from contract research or from services it provides within the framework of contracts) balanced with its expenses (personnel, operational costs, overhead). Given the construction of a technology platform with associated patent portfolio within UTT, the activities of the UTT are increasingly obtaining a commercial character.

The threats are:

- Valorisation projects are almost always started by IOF mandate holders. There is a great potential for good plans, but there are too few mandate holders to translate them into valorisation trajectories;
- There is clearly a disagreement between UTT and IOF mandate holders on the one hand and EWÍ on the other about which costs may or may not be attributed to the IOF. The AUGhent’s opinion on the type of activities and cost that can be financed by the IOF funds is inconsistent with the decree. If the decree is not altered accordingly, the AUGhent will have to adapt its IOF strategy;
- At this moment, the AUGhent is revising its IOF policy. Within the UTT, there would be a need to adopt a more top-down policy, whereas the consortia and especially the IOF mandate holders are concerned that their wishes and views might not be taken into account in the IOF policy revision process. These differences of opinion may have a negative effect on the functioning of the UTT.

### **The draft Strategic Plan 2014-2018**

The new plan is not sufficiently SMART. The four strategic guidelines are developed in eight operational objectives, each comprising many different plans and actions. The relevance is good. Key performance indicators are introduced, but the corresponding target values are not presented. This makes it impossible to assess the feasibility of the plan. Also the plan is not complete. Furthermore, the plan lacks a SWOT analysis and the elaboration of financial and capacity planning (which should be included in a strategic plan, although the decree does not mention these aspects). The plan contains few innovative proposals. However, ambitions are only possible if both daily management and the information and monitoring systems are operational, which is currently not yet the case. When roles, tasks and responsibilities have been settled clearly, a wide spectrum of activities may be covered. For the coming period it is - given the catching-up the AUGhent has made during the past period - an appropriate choice to first strengthen the position that has now been reached and to properly carry out the proposed activities. In that sense, the new plan contains enough challenges for the interface service and the association.

### *AUHA*

#### **Strategic plan 2009-2013**

The strategic plan 2009-2013 of the AUHA holds three chapters; these deal with situating the IOF interface activities within the AUHA, the organisation of application-oriented cooperation with industry and the strategic and operational objectives of the IOF and interface activities, respectively. The strategic goals of the plan are the goals that the Council for Industrial Research and Innovation Fund (RIOFI) of AUHA formulated in 2009. The strategic plan shows strong ambitions for cooperation with industry, not only focused on technological innovations but also on innovative services.

#### **IOF spending**

The IOF funds are distributed across the associations in accordance with the IOF key (cf. supra). The IOF grant for the AUHA decreased in the period 2008-2012 from 1.88 to 1.77 million euro. In 2012 the IOF funds represented 1.6% of the total research budget of the AUHA. In 2012, 33% of the IOF budget was spent on IOF mandate holders, 55% on research and the rest (12%) on operating costs and project fees in support of IOF mandate holders. In the university, the focus of the IOF spending was on Medicine and on Sciences and in the university colleges on Applied Engineering Sciences.

#### **The operation analysis of the interface service**

The interface service consists of two closely interacting parts: the Tech Transfer Service and the Basic and the Applied Research Service. The latter does the follow-up and administration of IOF. The lawyers involved in the activities of the interface service are formally employed by the Legal Monitoring Centre (Juridisch Oprovolgingscentrum - JOC) of the association. In 2008, the interface service had 11 employees (one head of the department, two business developers, four research managers, one contract manager and administrative support staff), assisted by four research coordinators at the university colleges. In 2011 there were fourteen employees, but they occupied less than 6 FTEs. In 2012 there were only 3.5 FTEs left. In the past period, the client management increased, a professional ICT system was set

up and clear rules and procedures have been introduced. However, the HR policies still show shortcomings.

### **Cooperation with other interface services**

Bilateral cooperation with other interface services is very limited; it involves collaboration led by the AKU Leuven in the field of bio-imaging. There is formal collaboration with interface services of the other associations in the context of TTO Flanders, which is the partnership of the interface services of the Flemish associations (cf. supra). From the start of the interface service, there has been cooperation with partners in the regional innovation system (Innovation Centre Antwerp, the Provincial Development Agency (POM), and VOKA Antwerp / Waasland).

### **The role of the university colleges in IOF and interface activities**

Immediately after the establishment of the Council for Industrial Research and Innovation (RIOFI), the University of Antwerp has involved the university colleges in innovation policy processes and in the implementation of the IOF decree of 2009; representatives of the university colleges of the association joined the council. In 2009, a Research Manager Academisation was appointed to guide the process of academisation of the research of the university colleges of AUHA. Attracting external research funding and committing to regional innovation activities is done from the perspective of the clusters of university and university college groups.

### **The scientific and economic output**

The share of the AUHA in the total number of publications of the five associations decreased from 14.9% in 2008 to 14.6% in 2012. The share of citations decreased from 14.3% in 2008 to 13.3% in 2012.

The number of IOF-related patent applications increased from zero in 2008 to 9 in 2012, the number of active patents from 9 in 2008 to 31 in 2012. The number of patents granted over the period is limited to 1. Income from IOF-related industrial contracts fluctuates over the period 2008-2012 (between 1 and 7 million euro), and the same applies to the income from European Framework Programmes (between 0.7 and 4 million euro). In the period 2009-2012 only a limited number of IOF-related spin-offs have been established (3 founded in 2010, one in 2011 and none in 2012). Employment at the IOF-related spin-offs in 2010 was 24.2 FTEs.

The number of reported patents fluctuates a lot during the period 2008-2012 and amounted to 14 in 2012. The number of applications for granted and active patents shows an upward trend and is in 2012 11, 6 and 56 respectively. The industrial contract income and especially the income from European Framework Programmes rose sharply. Revenues from licenses are limited compared to other sources of income, but show a strong growth in 2012 compared to the preceding period. Annually, between one and four spin-offs have been established.

### **Analysis of strengths, weaknesses, opportunities and threats**

The strengths of the IOF and interface service of the AUHA are:

- The popularity of the two instruments is large at the AUHA. The success rates of applications processed by the interface service are relatively high and this is perceived as positive by the researchers;
- The IOF Council (RIOFI) is prominent and clearly recognised in the association.

The weaknesses are:

- The number of IOF mandate holders is larger than the organisation can endure. It is, according to those involved, difficult to rationalise this number due to labour regulations. At the time the mandate holders were appointed, the association expected to receive more funds than those that were finally granted. The financial consequences for the AUHA are worrisome.
- The long lead-time before it can be decided whether a valuation process may or may not be started, discourages companies to participate in valorisation projects.

The opportunities are:

- Within the association, it is believed that the current model is too Flemish and too oriented at competitiveness. In all levels of the organisation, alternative interpretations are being considered that will have impact outside Greater Antwerp or even outside Flanders. In case these interpretations can be implemented within the framework of the decree, this will lead to new opportunities.

The threats are:

- The IOF operation at the AUHA currently experiences a difficult financial situation. The maturity of the IOF mandate holders is low. This provides on the one hand an interesting enthusiasm, but on the other hand it is also a serious threat to the IOF operation. This is because leverage is hindered. In addition, it may harm the status of the instrument and indirectly it will also harm the operation of the interface service.

### **The draft Strategic Plan 2014-2018**

The new plan includes nine concrete strategic objectives formulated for the interface service and IOF, each of which is detailed in a set of actions. These are formulated only to a very limited extent in terms of final results that have to be achieved and their measurability is limited as well. Hence, the plan is only partly SMART and the plan is not complete either. What is lacking, are both the vision and mission and a quantification of the results to be achieved. Also lacking are a description of the available human and financial resources and how they will be used to achieve the targets set, and a SWOT analysis. The plan is challenging, given the small number of employees in the interface service and the limited budget. The plan shows great enthusiasm and a great ambition, but the question is whether it can be realised with the available resources.

*AUHL*

### **Strategic plan 2009-2013**

The Strategic Plan 2009-2013 of the interface service is framed within the situation in Limburg and the role the association has in its regional environment, the vision of the AUHL on valorisation, and the spearhead policy of the AUHL. All elements required by the decree are present in the strategic plan. The plan includes strategic and operational objectives for the IOF and interface service. The objectives are not developed into performance indicators and related targets, but they are formulated in concrete terms, and for that reasons they can be monitored and reviewed. The plan

holds 31 objectives of which eight are time-bound. There is no value included that the indicators should have reached at the end of the strategy period. The number of objectives that is formulated SMART, is very limited.

### **IOF spending**

The IOF funds are distributed across the associations in accordance with the IOF key (cf. supra). The IOF grant for the AUHL increased in the period 2008-2012 from 0.4 to 0.7 million euro. In 2012, the IOF funds represented 1.8% of the total research budget of the AUHL. In 2012, 58% of the IOF budget was spent on IOF mandate holders, approximately 30% on research and the rest (12%) on operating costs and project costs and fees in support of IOF mandate holders. IOF funds are used in the core areas (“spearheads”) of the AUHL, in projects with a high potential for generating spin-offs. Distribution of the funds across scientific fields is not considered to be an important issue.

### **The operation analysis of the interface service**

In the past period, the interface service of the AUHL has gone through a process of professionalisation. The number of employees has grown from 4.5 FTEs in 2008 to 7.5 FTEs (9 persons) in 2012. Three of the nine people have an experienced business support profile. In the process of attracting new employees the association has looked very explicitly for people with expertise in communications and in legal affairs. Nevertheless, it remains a relatively small service considering the various tasks it must perform. A lot of time was devoted to the automatization of contract management and to client policy. Already in 2008, a new registration system for contracts was launched, which allows making detailed analyses of the contract portfolio.

### **Cooperation with other interface services**

The AUHL maintains bilateral contacts with the universities in its immediate vicinity. The interface service seeks and finds structural cooperation mainly in the context of TTO Flanders. Based on the sectorial choices made in the context of the spearhead policy priorities of the AUHL, the interface service focuses on the actors in the Flemish Innovation Network (VIN), such as IWT and the Innovation Centres with a strong emphasis on the regional environment. The impact of these activities is amplified with Interreg projects.

### **The role of the university colleges in IOF and interface activities**

The interface service of the AUHL mainly works for the Hasselt University; the position of the university colleges in the IOF and interface operation is formally settled and the contacts with the university colleges are substantial. These contacts are further elaborated in the framework of the association formation. At the university colleges interest is growing regarding what the interface service can do for them.

### **The scientific and economic output**

The proportion of the AUHL in the total number of publications of the five associations decreased in 2008-2012 from 2.4% to 2.1%. The share of citations increased from 1.7% in 2008 to 1.9% in 2012.

Regarding economic output, it can be observed that the number of IOF-related patents - granted and active - fluctuates significantly and fell after a rebound in 2010-2011. The same applies for the patents that are mediated by the interface service. In the past years, income from IOF-related contracts and licenses is nil. This also applies for the

non-IOF-related revenues from contracts and licenses. Revenues from European Framework projects decreased from nearly 1 million euro in 2008 to nearly 50,000 euro in 2012. In Limburg, many spin-off files are opened. About 1 in 8 cases results in a spin-off. None of them has stopped its operations or went bankrupt. The employment at the spin-offs remained stable (approximately 28 FTEs) over the years.

### **Analysis of strengths, weaknesses, opportunities and threats**

The strengths of the IOF and interface service of AUHL are:

- The AUHL has been able to benefit from additional funds to strengthen the IOF-operations;
- The AUHL is highly integrated in the Limburg region. In this region, especially SMEs request disclosure of academic knowledge and skills. The interface service has a well-recognised and strong network in the region.

The weaknesses are:

- IOF funding - and especially the annual fluctuations therein - remains a dangerous aspect for a small association. Without a fixed base and with a very strong focus on spin-off output, the funding is very volatile. For a number of years good progress has been made, but times can change. A fixed base of for example 25% would reduce this weakness.

The opportunities are:

- The turn-over of staff within AUHL is very small. After the past period which was characterised largely by establishing the interface service, this fact offers good chances for a strong expansion.

The threats are:

- The reputation of the interface service of the AUHL and the institutional position of the service in the university colleges still fall short. The Provinciale Hogeschool Limburg (PHL) has its own interface service (PHL Research) for research and services. PHL Research seems to have the role of preferred supplier there. As a result, it is still difficult to ensure the efficiency of the integration;
- Researchers at the university notice that occasionally the interface service is understaffed. At such times, the management of dossiers takes longer than would be desirable.

### **The draft Strategic Plan 2014-2018**

The new plan is SMART. It has a clearly defined mission and vision that have been translated into clear strategic and operational objectives. Six overarching quantitative Key Performance Indicators (KPIs) have been defined accordingly, in order to measure and monitor the effect of the interface service annually, for the period up until 2018. It is an integral plan whereby IOF is considered in conjunction with the interface service. The plan makes clear choices about what can and cannot be done. The plan is almost complete; the only thing missing is a SWOT analysis. The plan is sufficiently challenging, especially given the small number of employees of the interface service and the limited budget that is available for the operation of the service.

UAB

### **Strategic plan 2009-2013**

The Strategic Plan 2009-2013 of the UAB addresses all issues that are required by the decree. The bulk of the objectives that the UAB had chosen, met the SMART criteria, although the indicators aimed at cooperation and support were still rather qualitative. An addition to the plan made in April 2011 improved this situation, thus providing a clear framework of indicators, although the distinction between objectives and activities could still be made clearer.

### **IOF spending**

The IOF funds are distributed across the associations in accordance with the IOF key (cf. supra). The IOF grant for the UAB decreased in the period 2008-2012 from 2.0 million to 1.7 million euro. In 2012, the IOF funds represented 2.4% of the total research budget of the UAB. The bulk of the research funded falls within the domain of Engineering.

### **The operation analysis of the interface service**

In general one can conclude that over the period 2009-2013, the autonomy of the Technology Transfer Interface (TTI) of the UAB has grown, both formally and informally. In the period 2009-2012, the TTI clearly expanded and the number of FTEs grew from 9 in 2008 to 11 in 2012 and will grow to 13 in 2013. The organisation and governance seem adequate given the size of the organisation and the evolution in the past period. Researchers from the Vrije Universiteit Brussel (VUB) and the university college EhB<sup>19,20</sup> indicate that the interface service functions professionally and is committed. The expertise available at the TTI is of great importance for these researchers in the process of the negotiation of contracts, to provide assistance in applying for intellectual property and when launching spin-offs. However, it is noticed that the service sometimes becomes overloaded and hence the handling of complex dossiers takes longer than is desirable.

### **Cooperation with other interface services**

The interface service of the UAB regularly works together with the interface services of other associations (mainly those of AUGhent and AKU Leuven). The VUB has an initiating role in the establishment of bilateral cooperation, especially with the University-Industry Network Crosstalks. 'The IOF - A Balance', a publication of TTO Flanders was commissioned by the group of five interface services, and produced by Crosstalks. The interface service maintains regular and good contacts with the innovation centres and it is active within 'Light Structures' such as FISCH (Flanders Innovation Hub for Sustainable Chemistry) and participates in various activities of the Flemish Innovation Network (VIN).

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<sup>19</sup> Erasmushogeschool Brussel

<sup>20</sup> The association UAB consists of the VUB and one university college, the EhB.

## **The role of the university colleges in IOF and interface activities**

Regarding the implementation of the IOF, the representatives of the university college are adequately represented in the IOF Council. Regularly, they submit proposals for IOF projects, usually from the department of Industrial Sciences or the Film department of the RITS School of Art. As the requirements to the IOF projects ‘Priority Areas’ and ‘Growers’ are very high (even in research terms), participation of the university college in the end is limited. The services provided by the TTI are open to researchers at the EhB, but the actual use by the EhB is limited. The bulk of the cooperation between the VUB and the EhB occurs through research projects; researchers of the EhB often participate in research projects of the VUB.

## **The scientific and economic output**

The scientific and economic output of the IOF-related parameters varies. It is noteworthy that both the proportion of publications and of citations has decreased over the past period. However, the number of PhDs has increased significantly from 430 to 509.5<sup>21</sup>. Regarding patents, the number of granted patents shows a fairly consistent decline over the 2009-2012 period. However, the number of active patents remains more or less the same. The industrial contract revenues increased from 8.2 million euro in 2009 to 10.0 million euro in 2010; there are no data available for 2011 and 2012. The total number of spin-offs has increased substantially over the years and none of them have gone bankrupt. The total employment in these spin-offs nearly doubled between 2008 and 2011. However, it must be noted that more than half the number of these FTE (242.5 FTE) work in a highly successful spin-off (Ablynx).

## **Analysis of strengths, weaknesses, opportunities and threats**

The strengths of the IOF and interface service of UAB are:

- The IOF funding model the UAB applies, offers great flexibility to research groups allowing them to apply the most profitable investment. The strict monitoring of these groups on the basis of roadmaps provides continuous valorisation orientation and efficiency in the selected research groups;
- Rigorous and close monitoring of the IOF projects;
- Evident leverage effect of the IOF investment;
- The IOF share in the total output is above average in size, despite the limited share of the IOF funds in the total of the research funds;
- The interface service has become a professional organisation;
- Increasing contract revenues, number of spin-offs and number of FTEs are proof of a successful valorisation policy;
- Valorisation has been made an integral part of the policy of the association: the installation of a mandate holder ‘Innovation and Valorisation’ indicates that valorisation is a priority.

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<sup>21</sup> In case doctorates are obtained based on research conducted at several universities and professors of this university have supervised the doctorate, then the doctorate is included on the score list of these universities but with a proportion that corresponds to the contribution made by the university.

The weaknesses are:

- The annual variation in IOF funds make long-term planning risky;
- Low throughput of ‘Growers’ and ‘Priority Areas’. Proof of Concept projects are also mainly used by the same research groups, hence limited access for other research groups;
- Uncertainty about (medium and) long-term financing of the interface service leads to less committed staff and a higher turnover;
- The - at times - high workload of managers in the interface service affects more complex services in the sense that these sometimes run too slow;
- Detailed and structured management information about the group of clients, both internally and externally, is still incomplete;
- Declining revenues from European Framework Programmes;
- Access to SMEs is still limited.

The opportunities are:

- To ensure better evaluation (quantitative evaluation included) of IOF mandate holders, hence allowing the effectiveness to increase even further;
- The UAB may continue to perform well by spending the IOF funds on excellent niches;
- More sharing of best practices between IOF research groups may lead to an increased efficiency and new synergies;
- The programmatic approach with ‘Priority areas’ and ‘Growers’ is aimed at making profitable investments in a particular research group. The system would be better serviceable, should in the coming period ‘Growers’ develop into ‘Priority areas’ and ‘Priority areas’ become strong enough to "stand on their own feet". Such a development would also provide room for new ‘Growers’;
- Developments under the new rectorate indicate that there is room for further professionalisation of the interface service;
- Now a high-performance interface service has been realised and investments have been made in raising awareness, in the coming years the valorisation potential may be exploited;
- More and more emphasis is laid on joint research, both by the government, European initiatives and businesses. The interface service can anticipate this development.

The threats are:

- The academisation process may lead to a decrease of the IOF budget, increasing the risk that the IOF becomes subcritical at the UAB;
- The emphasis on relatively long-term financing, the use of Proof of Concept projects by groups that already are being supported and the stagnant or declining grant, hold the risk that the IOF funds are used in a fairly static manner. This may reduce the interest of other groups in IOF;
- Due to the relatively small scale of the VUB, the IOF council consists mainly of ‘insiders’. Although good procedures have been installed to avoid conflicts of interest, there is a danger that this speaks against it;
- A declining number of IOF applications may put the quality, coverage and renewal of the IOF under pressure;

- Due to the large workload of the interface employees, the uncertainty of funding and hence their appointment, the risk of a major turnover is substantial and may affect the quality of the services.

### **The draft Strategic Plan 2014-2018**

As mentioned earlier, Technopolis and two external experts assessed the draft Strategic Plan 2014-2018 of the UAB. The strategic plan of the UAB is both formally and content-wise in line with the decree. The plan is sufficiently SMART, all requested elements are present, except an explicit SWOT analysis. The plan pays a great deal of attention to the construction of both the internal strategic capacity and the strategic policy. There is a clear overview of upcoming appointments of personnel which will increase the strategic capacity and solve the existing problems (excessive pressure on certain current employees). The plan is innovative and challenging in certain parts, but in some aspects also quite conservative in terms of the ambitions regarding the targets for the objectives.

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