

# KANDUNGAN

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## **PERKHIDMATAN UTAMA**

- Pengurusan P&P
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- Promosi & Eksploitasi Hasil Penyelidikan
- Pengurusan Projek
- Pengurusan & Eksploitasi Harta Intelek

## **CORE BUSINESS**

- *R&D Management*
- *R&D Fund Soliciting*
- *Research Findings Promotion & Exploitation*
- *Project Management*
- *Intellectual Property Management & Exploitation*

## **PIAGAM PELANGGAN**

RMC adalah komited secara berterusan untuk meningkatkan kualiti perkhidmatan pengurusan Penyelidikan dan Pembangunan (P&P) bagi mencapai kepuasan pelanggan dengan memastikan:

- Pelanggan menikmati perkhidmatan pengurusan P&P yang sentiasa bermutu tinggi, terjamin dan memenuhi piawai yang ditetapkan.
- Staf yang cekap, mesra, berdisiplin dan terlatih.
- Kelengkapan, kemudahan dan teknologi sentiasa dalam keadaan yang terbaik dan terkini.

## **CUSTOMER CHARTER**

*RMC is committed to enhance the research and development (R&D) management services to meet customer satisfaction through:*

- *High quality R&D management in accordance with pre-determined standards.*
- *Efficient, friendly, disciplined and skilled employees.*
- *Excellent & advanced infrastructure and technology support.*

**BARISAN PENTADBIR RMC**  
**ADMINISTRATIVE FRONT OF RMC**



**Prof. Dr. Ariffin Samsuri**  
Dekan  
*Dean*

**Prof. Dr. Rose Alinda Alias**  
(April 2005-Sekarang)  
Timbalan Dekan I  
(Pengurusan  
Projek & Kewangan)  
*Deputy Dean I*  
(Project & Financial  
Management)

**Prof. Dr. Noraieni Mokhtar**  
(April 2005-September 2006)  
Timbalan Dekan II  
(Perkhidmatan Korporat)  
*Deputy Dean II*  
(Corporate Service)

**Prof. Dr. Wan Azelee**  
Wan Abu Bakar  
(November 2002-April 2005)  
Timbalan Dekan I  
(Pengurusan  
Projek & Kewangan)  
*Deputy Dean I*  
(Project & Financial  
Management)

**Prof. Dr. Azlan**  
Ab. Rahman  
(April 1997-April 2005)  
Timbalan Dekan II  
(Perkhidmatan Korporat)  
*Deputy Dean II*  
(Corporate Service)

**Prof. Madya Dr. Shahrudin Salleh**  
Pengurus Sistem Maklumat  
*Information System Manager*

**En. Amir Hamzah Jamil**  
Timbalan Pendaftar  
*Deputy Registrar*

**BAHAGIAN PENGURUSAN PROJEK DAN KEWANGAN**  
**PROJECT AND FINANCIAL MANAGEMENT SECTION**



**Prof. Dr. Rose Alinda Alias**  
Timbalan Dekan I  
*Deputy Dean I*

**En. Amir Hamzah Jamil**  
Timbalan Pendaftar  
*Deputy Registrar*

**Pn. Sabrina Ibrahim**  
Pegawai Tadbir  
(Aktiviti & Tuntutan)  
*Administrative Officer  
(Activity & Claim)*

**En. Jeffri Selamat**  
Pegawai Kewangan  
*Financial Officer*

**Pn. Masni Salleh**  
Pegawai Tadbir  
(Pemantauan)  
*Administrative Officer  
(Monitoring)*

**UNIT SISTEM MAKLUMAT**  
**INFORMATION SYSTEM UNIT**

**Prof. Madya Dr. Shahrudin Salleh**  
Pengurus Sistem Maklumat  
*Information System Manager*

**Cik Norazrin Kurmin**  
Pegawai Sistem Maklumat  
(Pengaturcara)  
*Information System Officer  
(Programmer)*

**Pn. Noor Fazilah Zakaria**  
Pegawai Sistem Maklumat  
*Information System Officer*





Prof. Dr. Noraieni Mokhtar  
Timbalan Dekan II  
*Deputy Dean II*



Pn. Punithavalli a/p Marimuthu  
(Oktober 2005 - Sekarang)  
Penolong Pendaftar  
*Assistant Registrar*



Pn. Zalina Pareng  
Pegawai Tadbir (Penerbitan)  
*Administrative Officer (Publication)*



Pn. Hanifah Ahmad  
(Jun 1998 -  
Oktober 2005)  
Penolong Pendaftar  
*Assistant Registrar*



Pn. Zareena Omar  
Pegawai Tadbir  
(Hubungan Industri & Promosi)  
*Administrative Officer  
(Industry Liaison & Promotion)*



En. Mohd Herme Yusman  
Mohd Tahir  
Pegawai Tadbir  
(Harta Intelek)  
*Administrative Officer  
(Intellectual Property)*

## PERUTUSAN DEKAN

Kini Pusat Pengurusan Penyelidikan (RMC) mencecah 23 tahun beroperasi dengan nama baru dan saya dengan sukacita ingin menyatakan penyelidikan UTM telah mencapai banyak kemajuan. RMC memainkan peranan dalam mengurus dan menyelaraskan aktiviti-aktiviti penyelidikan dan pembangunan (P&P) serta menggalakkan penyelidikan yang bersifat multi-disiplin dan bersepadu di UTM. RMC telah mempergiatkan lagi aktiviti-aktiviti pelaksanaan tugas utamanya yang meliputi usaha mengukuhkan keupayaan penyelidikan dan meningkatkan perolehan geran penyelidikan, pengurusan P&P, perlindungan harta intelek dan meningkatkan nilai aset hasil P&P supaya sejajar dan menyokong matlamat Universiti dan Negara. Rancangan Malaysia ke-8 yang telah berakhir pada Disember 2005 lalu, menunjukkan pertambahan jumlah geran keseluruhan P&P sebanyak 106.9% kepada RM165.632 juta berbanding dengan Rancangan Malaysia Ke-7 (RMK-7) sebanyak RM80.06 juta. Peningkatan ini telah mendorong UTM untuk meningkatkan usaha dalam mempergiatkan aktiviti-aktiviti P&P yang bukan sahaja dapat menambah sumber pendapatan Universiti malahan juga kepada negara. Saya amat berharap semua pihak di RMC dapat memberikan komitmen yang berterusan agar dapat menjadikan RMC sebagai sebuah organisasi yang cemerlang, gemilang dan terbilang. Sebagai penutup, saya ingin mengucapkan ribuan terima kasih kepada semua kerana memberikan sepenuh kepercayaan dan sokongan kepada RMC dalam melaksanakan tugas-tugasnya. Akhir kata, saya dengan sukacitanya membentangkan Laporan Tahunan 2004/2005.

**Prof. Dr. Ariffin Samsuri**

**Dean of Research Management Centre**

## DEAN'S MESSAGE



*The Research Management Centre (RMC) has reached its 23rd year of operation with a new name to mark and I am proud to say that the research done by UTM has achieved various accomplishments. RMC has played an important role in managing and coordinating research and development (R&D) activities while encouraging multi-disciplined and unified research in UTM. RMC has doubled up the activities in performing their main duties which includes the efforts to increase awarded research grants, improve R&D management, protection of intellectual property and increase the asset value of R&D products in order to be in line and in sync with the objective of the university and country. The Eighth Malaysian Plan which ended last December 2005 showed an increase of IRPA grant awarded which amounted 106.9% (RM165.632 M) compared to RMK-7 which amounted RM80.06 million. This improvement has encouraged UTM to strive towards excellence in organising R&D activities that will not only contribute to the university's income but also to the country. I really hope that the people in RMC will continue to pledge their commitments in order to create an excellent, glorious and distinctive organisation. As a conclusion, I would like to thank UTM for its trust in RMC in managing their duties. Last but surely not least, I gladly and proudly present the 2004/2005 Annual Report.*

## RMC SEPINTAS LALU

Sejarah awal RMC bermula pada tahun 1982 dengan penubuhan Unit Penyelidikan dan Perundingan. Peranan unit ini ialah menggerak dan menyelaraskan aktiviti penyelidikan dan perundingan yang dijalankan oleh fakulti-fakulti di UTM. Dalam tahun 1993 unit ini telah ditukar kepada Unit Penyelidikan dan Pembangunan. Selaras dengan tumpuan utama Universiti kepada aktiviti penyelidikan, pembangunan teknologi dan inovasi pada tahun 1997, Mesyuarat Eksekutif Universiti telah meluluskan nama unit ini diganti dengan Pusat Pengurusan Penyelidikan atau *Research Management Centre (RMC)*.

## RMC AT A GLANCE

*The early history of RMC dated back to 1982 with the establishment of the Research and Consultation Unit. The role of the unit was to initiate and coordinate the research and consultation activities organised by the various faculties in UTM. In 1993, the unit was changed to the Research & Development Unit. In line with the main focus of the university towards research, technology development and innovation activities in 1997, the UTM Executive Meeting approved the changing of its name to Research Management Centre (RMC).*



RMC merupakan sebuah pusat yang bertanggungjawab dalam pengurusan penyelidikan dan pembangunan (P&P) di UTM. Penubuhannya telah mendapat pengiktirafan daripada Kementerian Kewangan Malaysia sebagai Institut Penyelidikan yang diluluskan di bawah Seksyen 34B, Akta Cukai Pendapatan 1967 berkuatkuasa pada 1 Januari 1991.

*RMC is a centre responsible for the management of research and development (R&D) in UTM. The establishment of this centre received certification from the Malaysian Ministry of Finance as an approved Research Institute under Section 34B, Income Tax Act 1967 effective 1<sup>st</sup> January 1991.*

## RANCANGAN MASA DEPAN

Penyelidikan & Pembangunan (P&P) di Universiti Teknologi Malaysia (UTM) telah diktiraf sebagai yang terbaik di antara institusi pengajian awam di Malaysia. Kualiti P&P UTM telah mendapat pengiktirafan di peringkat kebangsaan dan antarabangsa melalui pertandingan penyelidikan dan juga perolehan geran-geran penyelidikan.

Di dalam Rancangan Malaysia ke-7 (RMK-7) dan Rancangan Malaysia ke-8 (RMK-8) UTM adalah di antara universiti yang telah menerima peruntukan tertinggi dalam bidang P&P. UTM telah dan akan melaksanakan beberapa strategi untuk menjadi unversiti ternama di dalam bidang P&P.

*The Way Forward Research and Development Strategic Plan (2003-2010)* adalah hasil beberapa sesi perbincangan dan percambahan fikiran yang telah diadakan bersama ketua-ketua penyelidik, ketua-ketua kumpulan fokus, wakil-wakil fakulti dan semua pihak yang terlibat dalam P&P Universiti untuk mensejajarkan pelan tindakan yang baru dengan visi Universiti ke arah Universiti Bertaraf Dunia pada 2010.

Pelan tindakan yang rapi telah digariskan dengan mengambilkira peluang-peluang dan cabaran-cabaran yang akan ditempuhi dalam Rancangan Malaysia ke-9 (RMK-9). Pelbagai strategi telah dikenalpasti untuk mencapai sasaran-sasaran yang telah ditetapkan Universiti. Bagi setiap sasaran, sebuah jawatankuasa akan dibentuk untuk menilai, merekod dan melaporkan kemajuan yang dicapai. Pelan Tindakan bersama dengan faktor kritikal kejayaan akan digunapakai oleh semua fakulti dan pusat kecemerlangan supaya matlamat tercapai secara bersepadu. RMC telah dipertanggungjawabkan untuk memantau dan memastikan perlaksanaannya menepati sasaran yang ditetapkan

*The Way Forward Research and Development Strategic Plan (2003-2010)* akan memastikan UTM menjadi peneraju dalam penyelidikan dan pembangunan yang bertaraf dunia. Adalah diharapkan semua penyelidik di UTM akan mempergunakan peluang ini untuk memberi maklumbalas dan menyumbangkan idea dalam melaksanakan serta memperbaiki semua pelan strategi yang telah dirancang. Adalah diharapkan Pelan Strategi yang telah dirancang dapat dijadikan panduan yang berguna kepada penyelidik-penyelidik di UTM dalam misi untuk mempertingkatkan lagi kualiti penyelidikan dan seterusnya menjadi universiti bertaraf dunia pada 2010. Antara cadangan dan isu yang telah dibincangkan dan perlu diberi perhatian adalah :

- Pembangunan Sumber Manusia yang kompeten.
- Peruntukan P&P yang mencukupi.
- Mengenalpasti bidang-bidang keutamaan.
- Pengurusan P&P dan Infrastruktur yang efektif.
- Mengukuhkan prestasi penunjuk prestasi dan penilaian yang jelas.

## THE WAY FORWARD

*R&D in Universiti Teknologi Malaysia (UTM) is recognised nationally as one of Malaysia's finest among public universities. The quality of UTM's research and recognition at national and international level is reflected in the success of its researchers in competitions for research funding. Ranked among top universities in Malaysia in R&D funding from MPKSN in 7th and 8th Malaysia Plan, the University attracts support from wide variety of private and government sources for research. In line with other top Malaysian universities, UTM is pursuing a strategic goal to nurture a world-class environment for research.*

*The UTM R&D Strategic Plan 2003-2010 is the outcome of series of brainstorming sessions involving research leaders, focus groups and R&D managers at all levels. The plan charts UTM's future direction in response to circumstances that highlight new opportunities and challenges for advancing the quality of research. Strategies have been included where measurable targets which the University wishes to achieve within the plan period. For each target, individuals or a committee is nominated to be responsible for facilitating, recording and reporting on the progress achieved. The identified Critical Success Factors (CSF) are elaborated in the plan along with the set of strategies in its attainment via the specified tasks. The implementation of these tasks will be guided by the project schedule and monitored by Research Management Centre (RMC).*

*The UTM R&D Strategic Plan 2003-2010 provides a roadmap for UTM in its quest to become a premier research university on the global stage. The plan will be adopted for implementation by all faculties, centre of excellence and focus groups and where necessary reviewed at a suitable time interval. It is hoped that all members of the University will use the opportunity provided by the review arrangement to contribute to the continuous process of improvement in implementing the strategic plan. It is also hoped that the Strategic Plan will become a useful working blueprint to assist researchers and staff in general, in their task of continual improvement of the quality of R&D University to achieve a world class institution by 2010. The major recommendations proposed area as follows :*

- *Development of Competent R & D manpower.*
- *Ensure Sufficient R & D Funding Area.*
- *Establishing Well Defined Research Area.*
- *Development R & D Management and Infrastructure Support.*
- *Establishing Well-Defined Performance Indicators and Effective R & D Evaluation.*



## LAPORAN PENGURUSAN

### Penyelidikan dalam Bidang Keutamaan

Rancangan Malaysia ke-8 yang telah berakhir pada Disember 2005 menunjukkan pertambahan jumlah peruntukan IRPA sebanyak 63.5% berbanding dengan Rancangan Malaysia Ke-7 (RMK-7). Sepanjang Rancangan Malaysia Ke-8 (RMK-8), sebanyak 338 projek dengan jumlah peruntukan RM130,609,475.19 telah diperolehi dari Kementerian Sains, Teknologi dan Inovasi (MOSTI) berbanding dengan Rancangan Malaysia Ke-7 (RMK-7) iaitu sebanyak 393 projek dengan jumlah peruntukan sebanyak RM79,882,488.46. Perincian perolehan geran IRPA RMK-8 sehingga 31 Disember 2005 adalah seperti dalam Rajah 1.

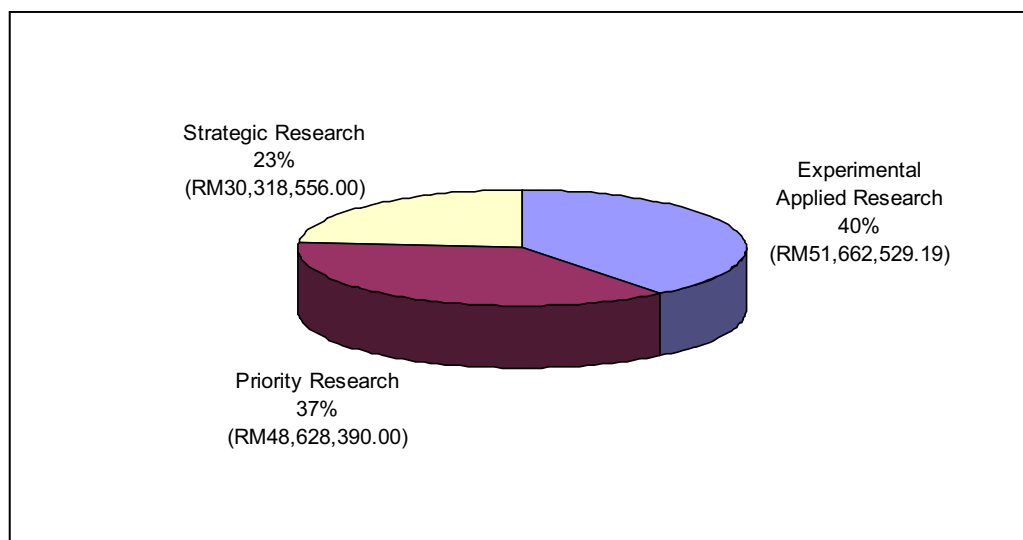
## MANAGEMENT REPORT

### Intensification of Research in Priority Area (IRPA)

The 8<sup>th</sup> Malaysian Plan that concluded in December 2005 saw an increase in the total of IRPA grants to 63.5% as compared to RMK-7. A total of 338 projects with the allocated sum of RM130,609,475.19 has been received from the Ministry of Science, Technology and Innovation (MOSTI) compared to 393 projects during RMK-7 with the allocated sum of RM79,882,488.46. The details of the IRPA grant attainment until 31 December 2005 are as illustrated in Figure 1.

**Rajah 1: Perolehan Geran IRPA**

**Figure 1 : Grant Attainment**



Terdapat tiga kategori dalam penyelidikan IRPA iaitu 'Experimental Applied Research (EAR)', 'Priority Research (PR)' dan 'Strategic Research (SR)'. Bagi tahun 2004 dan 2005 sebanyak 58 projek IRPA kategori EAR telah berjaya diperolehi oleh penyelidik UTM dengan peruntukan berjumlah RM27,643,862.00.

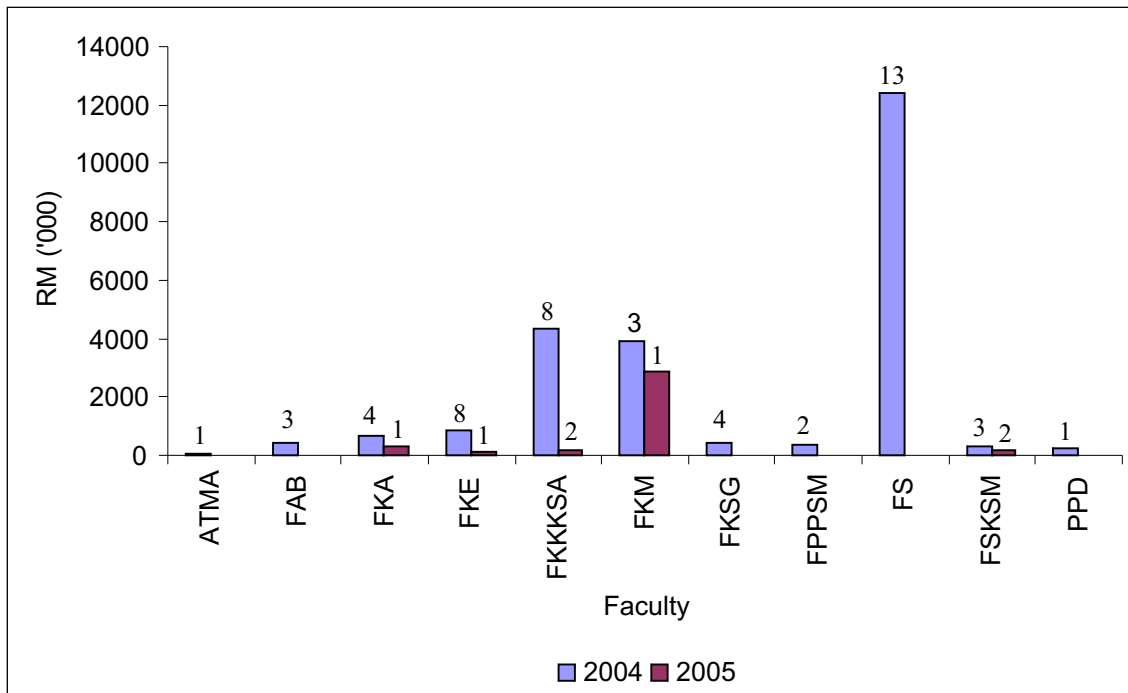
Jumlah projek dan peruntukan mengikut fakulti mencatatkan Fakulti Sains sebagai penerima peruntukan tertinggi pada tahun 2004 iaitu RM12,238,321.00 dengan jumlah projek sebanyak 13 buah projek pada tahun 2004. Manakala pada tahun 2005 Fakulti Kejuruteraan Mekanikal menerima peruntukan terbanyak iaitu RM2,849,200.00. Bilangan projek dan jumlah peruntukan bagi kesemua fakulti sepanjang 2004 dan 2005 ditunjukkan dalam Rajah 2.

There are three categories in IRPA research which includes Experimental Applied Research (EAR), Priority Research (PR) and Strategic Research (SR). For the year 2004 and 2005, a total of 58 IRPA projects worth RM27,643,862.00 have been successfully attained by UTM researchers. The sum of this allocation is focused on the EAR category only.

Based on the total number of projects and allocation received per faculty, the Faculty of Science emerged as the highest receiver allocation amounting to RM12,238,321.00 derived from 12 projects in 2004. Whereby, in 2005, the Faculty of Mechanical Engineering received the highest allocation which amounted to RM2,849,200.00. The total number of projects and allocation is shown in Figure 2.

**Rajah 2: Jumlah Peruntukan dan Jumlah Bilangan Projek Mengikut Fakulti bagi Projek Penyelidikan IRPA bagi Tahun 2004 dan 2005**

**Figure 2 : Total Allocation and Number of Projects by Faculty for IRPA Research Project Year 2004 and 2005**



**Singkatan**

**ATMA**- Akademi Tentera Malaysia, **FAB**- Fakulti Alam Bina, **FKA**- Fakulti Kejuruteraan Awam, **FKE**- Fakulti Kejuruteraan Elektrik, **FKKS**- Fakulti Kejuruteraan Kimia dan Kejuruteraan Sumber Asli, **FKM**- Fakulti Kejuruteraan Mekanikal, **FKSG**- Fakulti Kejuruteraan Sains Geoinformasi, **FP**- Fakulti Pendidikan, **FPPSM**- Fakulti Pengurusan dan Pembangunan Sumber Manusia, **FS**- Fakulti Sains, **FSKSM**- Fakulti Sains Komputer Dan Sistem Maklumat, **PPD**- Program Pengajian Diploma, **PPIPS**- Pusat Pengajian Islam dan Pembangunan Sosial.

**Abbreviation**

**ATMA**- Malaysian Military Academy, **FAB**- Faculty of Built Environment, **FKA**- Faculty of Civil Engineering, **FKE**- Faculty of Electrical Engineering, **FKKS**- Faculty of Chemical and Natural Resources Engineering, **FKM**- Faculty of Mechanical Engineering, **FKSG**- Faculty of Geoinformation Science and Engineering, **FP**- Faculty of Education, **FPPSM**- Faculty of Management and Human Resource Development, **FS**- Faculty of Science, **FSKSM**- Faculty of Computer Science and Information System, **PPD**- Program for Diploma Studies, **PPIPS**- Centre for Islamic Studies and Social Development.

**Penyelidikan Fundamental**

Peruntukan Penyelidikan Fundamental ditaja oleh Kementerian Pengajian Tinggi. Sebanyak 537 projek bernilai RM10,086,518.53 telah diluluskan sepanjang Rancangan Malaysia Ke-8 (RMK-8) berbanding dengan Rancangan Malaysia Ke-7 (RMK-7) iaitu sebanyak 653 projek dengan peruntukan RM9,406,554.40 yang menunjukkan pertambahan peruntukan sebanyak 7.23%.

**Fundamental Research**

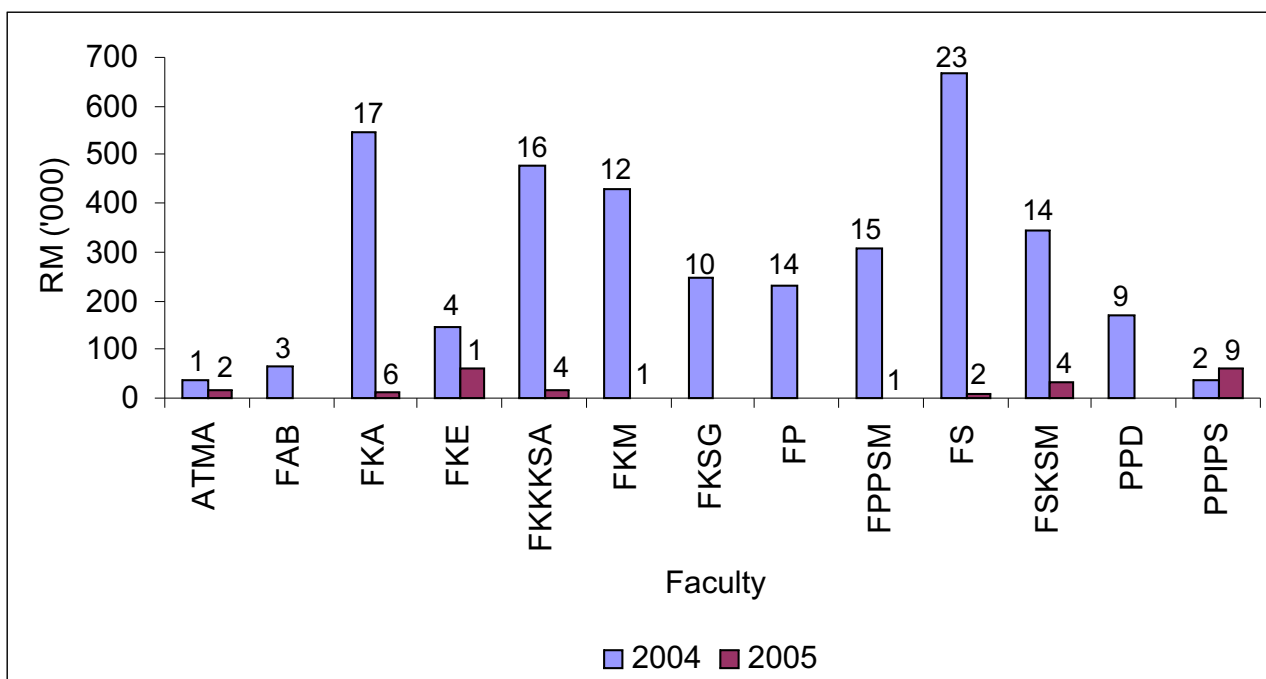
*Fundamental Research project are the projects funded by the Ministry of High Education (MOHE). A total of 537 projects with RM10,086,518.53 allocation was approved throughout the period of RMK-8 compared to RMK-7, that has 653 approved projects with RM9,406,554.40 total allocation. Hence, 7.23% of improvement.*

Untuk kategori ini, sepanjang tahun 2004 dan 2005 sebanyak RM3,948,527.00 telah diagihkan kepada penyelidik (fakulti) dengan bilangan projek sebanyak 171. Pada tahun 2004, Fakulti Sains menerima agihan terbanyak iaitu sebanyak 23 projek dengan jumlah peruntukan sebanyak RM666,000.00. Pada tahun 2005, Fakulti Kejuruteraan Kimia dan Kejuruteraan Sumber Asli telah menerima agihan terbanyak iaitu RM60,000.00 dengan empat projek. Agihan keseluruhan mengikut fakulti ditunjukkan dalam Rajah 3.

*For this category, a total of RM3,948,527.00 for 171 projects has been distributed to researchers (faculty) in the year 2004 and 2005. In 2004, the Faculty of Science is the highest recipient with an allocation of RM666,000.00 for 23 projects. Whereby in 2005, the Faculty of Chemical and Natural Resources Engineering was the highest recipient with the total sum of RM60,000.00 for four projects. The overall distribution by faculty are shown in Figure 3.*

**Rajah 3: Jumlah Peruntukan dan Bilangan Projek Mengikut Fakulti bagi Projek Penyelidikan Fundamental untuk Tahun 2004 dan 2005**

**Figure 3 : Total Allocation and Number of Projects by Faculty for Fundamental Research Project Year 2004 and 2005**



## Penyelidikan Institusi

Projek penyelidikan institusi merupakan penyelidikan yang dibiayai oleh Universiti Teknologi Malaysia dan dijalankan untuk faedah dan manfaat Universiti pada masa kini dan akan datang. Sebanyak dua projek penyelidikan yang diluluskan pada tahun 2004 dengan agihan peruntukan sebanyak RM120,000.00 iaitu RM100,000.00 dijalankan oleh penyelidik daripada Fakulti Kejuruteraan Mekanikal dan RM20,000.00 dijalankan oleh penyelidik daripada Fakulti Kejuruteraan Kimia dan Kejuruteraan Sumber Asli.

Sebanyak 24 projek dengan jumlah peruntukan RM1,435,435.89 telah dikendalikan menggunakan peruntukan dari Universiti sepanjang Rancangan Malaysia Ke-8 (RMK-8). Ini merupakan pertambahan sebanyak dua kali ganda berbanding Rancangan Malaysia Ke-7 (RMK-7) di mana jumlah peruntukan hanyalah RM615,916.00 untuk 12 projek. Daripada 24 projek tersebut, lapan projek (33.3%) telah tutup dengan menghantar laporan, 15 projek (62.5%) telah tamat tetapi belum menghantar laporan dan satu projek (4.2%) masih aktif.

## Penyelidikan Kontrak

Sebanyak 67 projek dengan jumlah peruntukan RM18,664,372.64 telah diperolehi dari dalam dan luar negara sepanjang Rancangan Malaysia Ke-8 (RMK-8) iaitu peningkatan peruntukan sebanyak tiga kali ganda berbanding dengan Rancangan Malaysia Ke-7 (RMK-7) di dengan jumlah peruntukan adalah RM5,400,917.13 bagi 58 projek.

Sebanyak RM4,283,312.53 bersamaan 22.9% dari jumlah peruntukan yang diterima antaranya adalah dari sumber luar negara seperti berikut:

- i. European Commission (dengan kerjasama Cardiff University, Wales, United Kingdom, University of Applied Life Science, Vienna dan University of Hertfordshire, United Kingdom)
- ii. Swedish International Development Agency, Sweden
- iii. Kennametal Inc, United States
- iv. TIMET, United States

European Commission merupakan penaja yang paling besar iaitu 90.8%. Jumlah projek mengikut fakulti adalah seperti dalam Rajah 4.

## Institutional Research

*UTM research projects are research works that financed by the University and carried out for the benefits of the university presently and for the future. For the projects approved by the university, two research projects has been approved in 2004 with an allocation of RM120,000.00. The Faculty of Mechanical Engineering received the highest grant which totaled RM100,000.00. The Faculty of Chemical and Natural Resources Engineering received a total of RM20,000.00.*

*During RMK-8, 24 projects with the total allocation of RM1,435,435.89 has been carried out using the allocation from the university. The amount has doubled-up compared to RMK-7 which saw an allocated sum of only RM615,916.00 for 12 projects. From the total 24 projects, 8 projects (33.3%) have been closed and submitted their final reports without, 15 projects (62.5%) have been completed without submitting their report and 1 project (4.2%) is still active.*

## Contract Research

*A total of 67 projects with the total allocation of RM18,664,372.64 has been received from the country and abroad during RMK-8 which resulting in a threefold increase as compared to RMK-7 whereby the total allocation was RM5,400,917.13 for 58 projects.*

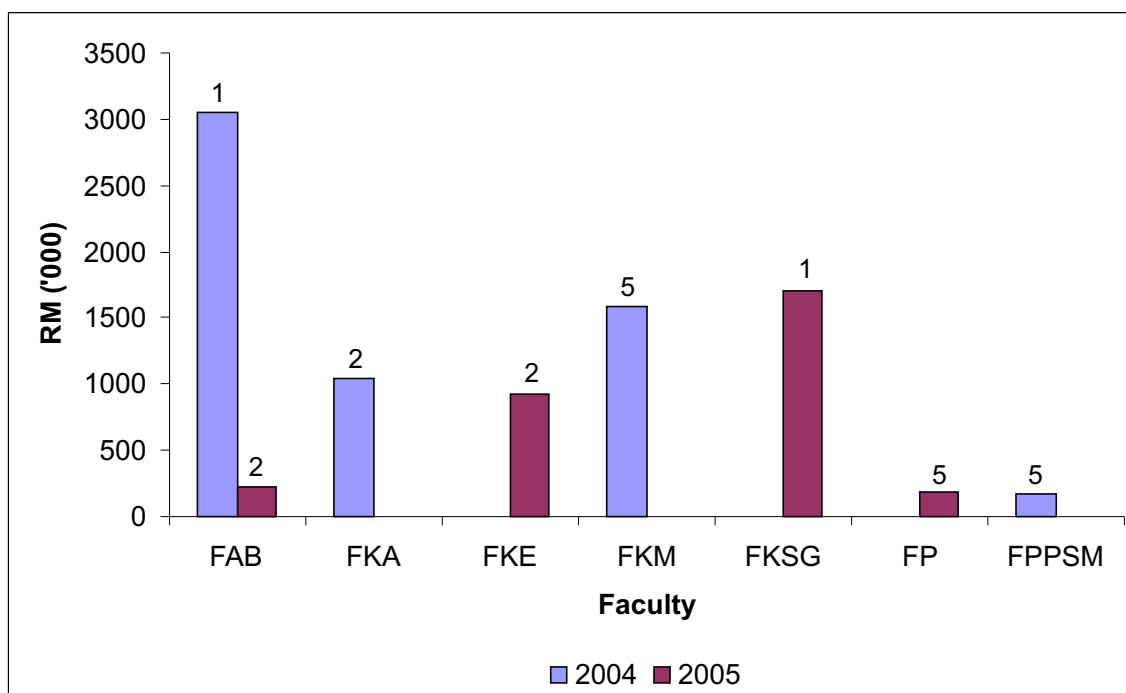
*A total of RM4,283,312.53 or 22.9% from the total allocation were received from oversea sources as listed below:*

- i. *European Commission (collaboration with Cardiff University, Wales, United Kingdom, University of Applied Life Science, Vienna, Austria and University of Hertfordshire, United Kingdom)*
- ii. *Swedish International Development Agency, Sweden*
- iii. *Kennametal Inc, United States*
- iv. *TIMET, United States*

*The European Commission is the top sponsor which contributes 90.8% of the allocation. The total of projects according to faculty are shown in Figure 4.*

**Rajah 4: Jumlah Peruntukan dan Bilangan Projek Mengikut Fakulti bagi Projek Penyelidikan Kontrak untuk Tahun 2004 dan 2005**

**Figure 4 : Total Allocation and Number of Projects by Faculty for Contract Research Project Year 2004 and 2005**



### Penyelidikan Lain-lain

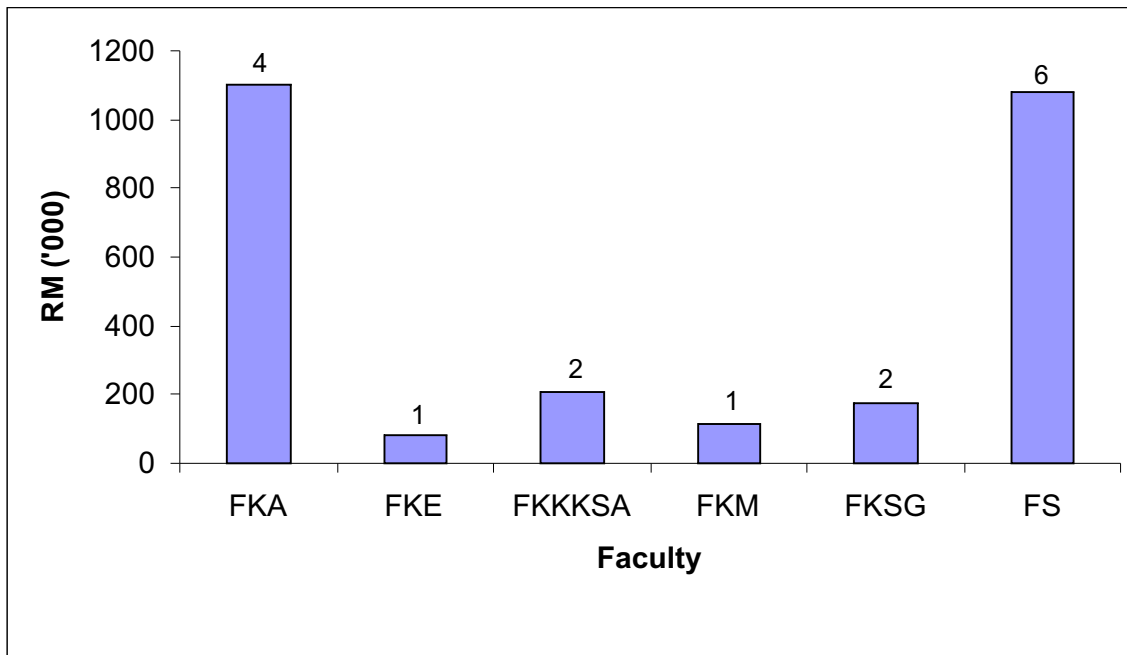
Sebanyak 25 projek dengan jumlah peruntukan RM5,737,543.12 telah diperolehi dari pelbagai sumber kewangan sepanjang Rancangan Malaysia Ke-8 (RMK-8). Dari jumlah tersebut sebanyak RM4,037,205.00 telah diperolehi dari CIDB dan selebihnya dari Intel Technology Sdn. Bhd., Yayasan Felda, MPOB (*Malaysian Palm Oil Board*), Institut Penilaian Negara, MINT (*Malaysian Institution of Nuclear Technology*) dan Akademi Sains Malaysia melalui geran SAGA (*Scientific Advancement Fund Allocation*). Jumlah peruntukan mengikut fakulti tahun 2005 adalah seperti dalam Rajah 5.

### Others Research

*A total of 25 projects with a total allocation of RM5,737,543.12 were acquired from various financial resources throughout RMK-8. From that amount, a total of RM4,037,205.00 was received from CIDB and the remaining sum is from Intel Technology Sdn Bhd, Yayasan Felda, MPOB (Malaysian Palm Oil Board), National Evaluation Institute, MINT (Malaysian Institution of Nuclear Technology) and Akademi Sains Malaysia through SAGA (Scientific Advancement Fund Allocation). The allocation according to faculty in 2005 are shown in Figure 5.*

**Rajah 5: Jumlah Peruntukan dan Bilangan Projek Mengikut Fakulti bagi Projek Penyelidikan Lain bagi Tahun 2005**

**Figure 5 : Total Allocation and Number of Projects by Faculty for Other Research Project Year 2005**



### Laporan Akhir Projek Penyelidikan Rancangan Malaysia Ke-8 (RMK-8)

Setiap penyelidik bertanggungjawab untuk mengemukakan laporan akhir kepada RMC setelah projek tamat. Berdasarkan penghantaran laporan akhir bagi tahun 2004 dan 2005, sebanyak 388 laporan akhir projek daripada 993 jumlah keseluruhan projek telah diterima oleh RMC bagi semua jenis kategori penyelidikan.

Bagi kategori Penyelidikan IRPA, penghantaran laporan akhir bagi tahun 2005 adalah meningkat berbanding tahun 2004 iaitu sebanyak 102 projek. Penerimaan laporan akhir bagi kategori Penyelidikan Fundamental turut menunjukkan peningkatan pada tahun 2005 iaitu sebanyak 258 projek berbanding 168 projek pada tahun 2004.

Berdasarkan perbandingan antara tahun 2004 dan 2005, penerimaan laporan akhir bagi kategori Penyelidikan Institusi dan Penyelidikan Kontrak tidak menunjukkan peningkatan yang ketara. Kategori Penyelidikan Institusi hanya menunjukkan pertambahan satu projek dan empat projek bagi Penyelidikan Kontrak pada tahun 2005.

Bagi penyelidikan lain-lain, tiada sebarang laporan dikemukakan ke RMC pada tahun 2004 dan 2005. Perincian penghantaran laporan akhir bagi semua kategori penyelidikan mengikut fakulti adalah seperti di Jadual 1

### The Final Project Report of the 8<sup>th</sup> Malaysian Plan Research Project

All researchers are responsible to submit the final project report to RMC upon project completion. Based on the submitted reports for the year 2004 and 2005, 388 project reports have been received by RMC from 993 projects in all research categories.

For IRPA research category, the submitted final project reports for the year 2005 have increased to 102 projects compared to the year 2004. Whereby, submissions for the final project reports in fundamental research category for the year 2005 has increased i.e. 258 projects compared 168 projects in 2004.

However, the submissions of the final project reports for institution research and contract research categories are not obviously increased in comparisons between 2004 and 2005. Only one institution research project report and four contract research project reports were submitted in 2005.

There are no report submitted to RMC in other research category for both 2004 and 2005. The detail of the end of project report submissions for all research categories according to the faculties are shown in Table 1.

**Jadual 1 : Jumlah Penghantaran Laporan Akhir Projek Penyelidikan Mengikut Fakulti dan Kategori bagi Tahun 2004 dan 2005**

*Table 1 : Total of Final Report Submission by Faculty and Category Year 2004 and 2005*

Fakulti <i>Faculty</i>	IRPA			Penyelidikan Fundamental <i>Fundamental Research</i>			Penyelidikan Institusi <i>Institutional Research</i>			Penyelidikan Kontrak <i>Contract Research</i>			Penyelidikan Lain-lain <i>Others Research</i>		
	Jumlah Projek	2004	2005	Jumlah Projek	2004	2005	Jumlah Projek	2004	2005	Jumlah Projek	2004	2005	Jumlah Projek	2004	2005
		Penghantaran Laporan	Penghantaran Laporan		Penghantaran Laporan	Penghantaran Laporan		Penghantaran Laporan	Penghantaran Laporan		Penghantaran Laporan	Penghantaran Laporan			
ATMA	2	0	0	4	0	2	0	0	0	0	0	0	0	0	0
FAB	8	0	1	31	18	22	1	0	0	10	3	3	0	0	0
FKA	26	1	4	47	5	22	3	2	2	7	0	0	12	0	0
FKE	46	3	22	18	8	11	2	0	0	6	1	1	1	0	0
FKKSA	73	0	24	51	17	27	1	0	0	6	1	2	2	0	0
FKM	41	0	15	37	3	7	4	0	0	16	0	1	1	0	0
FKSG	34	0	6	47	20	30	2	1	1	5	1	1	2	0	0
FPPSM	11	0	3	90	28	41	4	3	3	15	5	6	0	0	0
FP	0	0	0	42	18	25	5	1	2	0	0	0	1	0	0
FS	50	0	13	65	28	32	2	1	1	3	0	1	7	0	0
FSKSM	42	0	18	51	7	17	0	0	0	0	0	0	0	0	0
PPD	5	0	0	28	6	9	0	0	0	0	0	0	0	0	0
PPIPS	0	0	0	25	9	12	0	0	0	0	0	0	0	0	0
PSZ	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
<b>JUMLAH TOTAL</b>	<b>338</b>	<b>4</b>	<b>106</b>	<b>537</b>	<b>168</b>	<b>258</b>	<b>24</b>	<b>8</b>	<b>9</b>	<b>68</b>	<b>11</b>	<b>15</b>	<b>26</b>	<b>0</b>	<b>0</b>

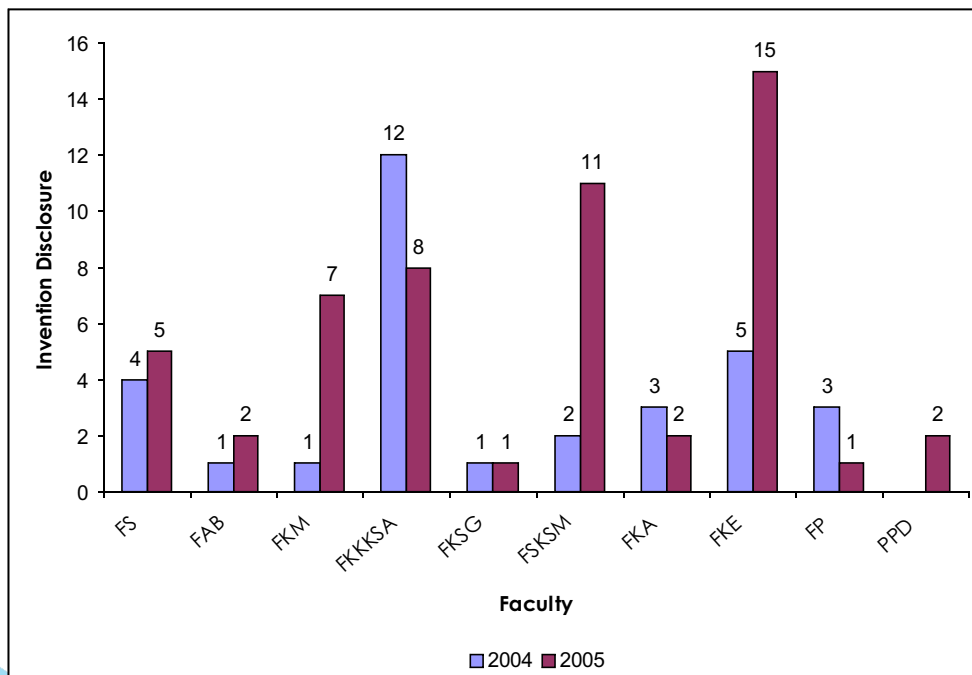
## PENGURUSAN HARTA INTELEK

Dalam usaha Universiti untuk mengkomersilkan hasil-hasil penyelidikannya, Universiti telah menubuhkan Unit Harta Intelek di bawah pentadbiran Pusat Pengurusan Penyelidikan (RMC). Sejalan dengan peningkatan kesedaran kepentingan perlindungan harta intelek di peringkat kebangsaan dan antarabangsa, RMC telah mengambil inisiatif untuk membina budaya bagi menggalakkan aktiviti inovasi dan rekacipta di kalangan penyelidik UTM. Dalam tahun 2004, sebanyak 32 borang *Invention Disclosure* telah dihantar oleh para penyelidik. Manakala pada tahun 2005, sebanyak 54 disclosure telah dihantar oleh penyelidik yang menunjukkan peningkatan sebanyak 69% daripada tahun sebelumnya. Rajah 6 menunjukkan statistik perbandingan penerimaan *Invention Disclosure* mengikut fakulti bagi tahun 2004 dan 2005, manakala Rajah 7 pula menunjukkan penerimaan *Invention Disclosure* secara keseluruhannya sehingga 31 Disember 2005. Rajah 8 pula menunjukkan bilangan produk yang berjaya untuk difailkan permohonan paten bagi tahun 2004 dan 2005.

## INTELLECTUAL PROPERTY MANAGEMENT

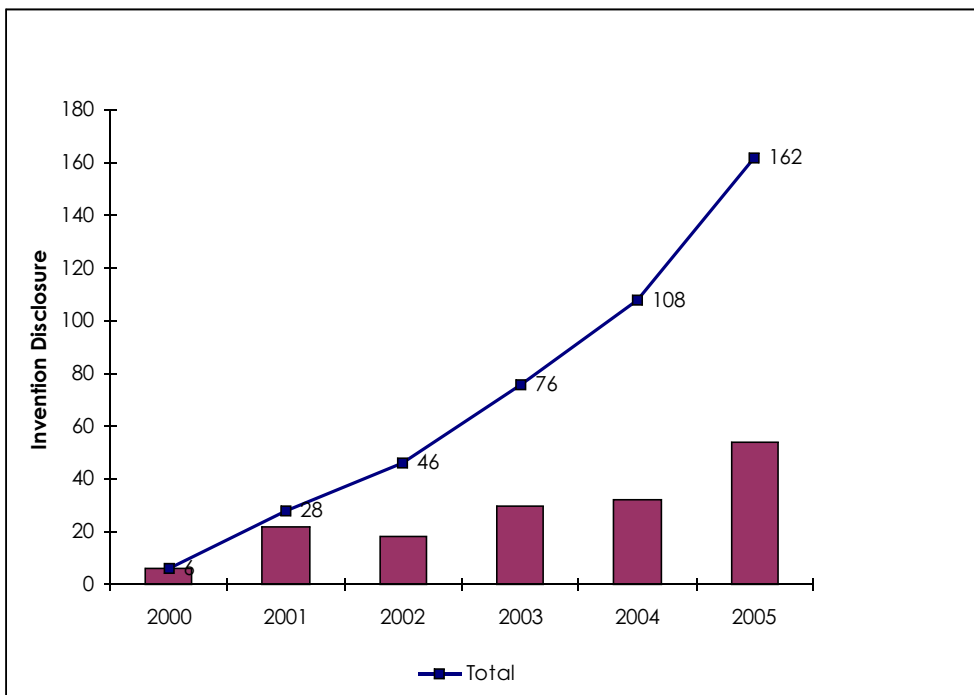
*In an effort to commercialise the products of its research, the university has established the Intellectual Property Unit under the administration of the Research Management Centre (RMC). In line with the increasing awareness regarding the importance of protecting intellectual property at the national and international level, RMC has taken the initiative to inculcate these values while encouraging innovation and invention activities among UTM researchers. In 2004, a total of 32 Invention Disclosure forms have been submitted by fellow researchers. Meanwhile, in 2005, a total of 54 disclosures have been submitted from researchers marking 69% higher than the previous year. Figure 6 shows the comparison of submitted Invention Disclosure forms by faculty while Figure 7 shows the number of products that were successfully filed for the years 2004 and 2005.*

Rajah 6: *Invention Disclosure* Mengikut Fakulti  
 Figure 6 : *Invention Disclosure* by Faculty

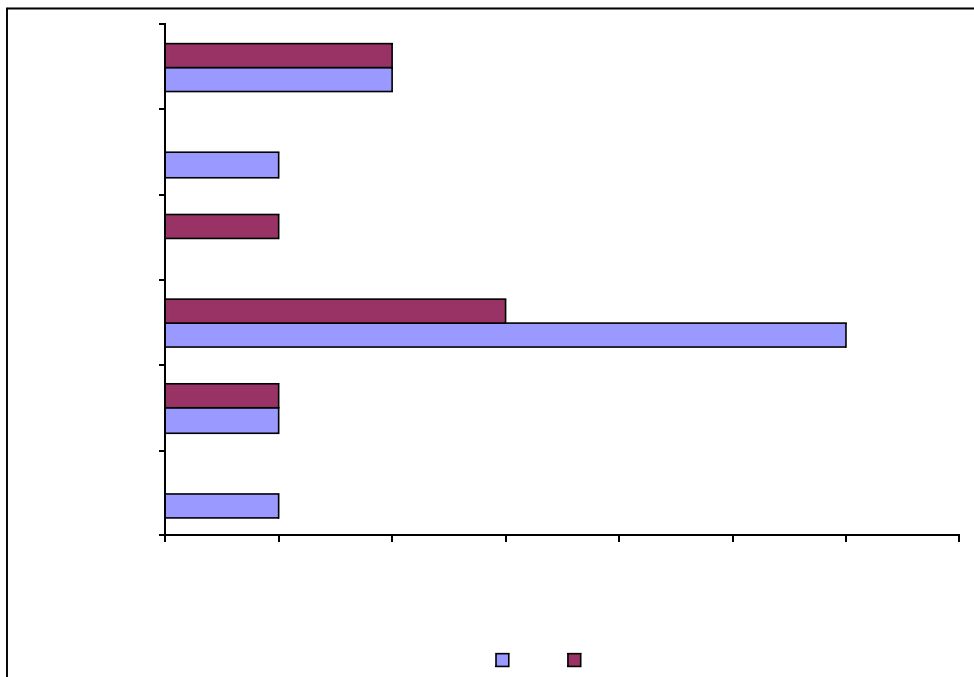




**Rajah 7: Invention Disclosure Mengikut Tahun**  
**Figure 7 :Invention Disclosure by Year**



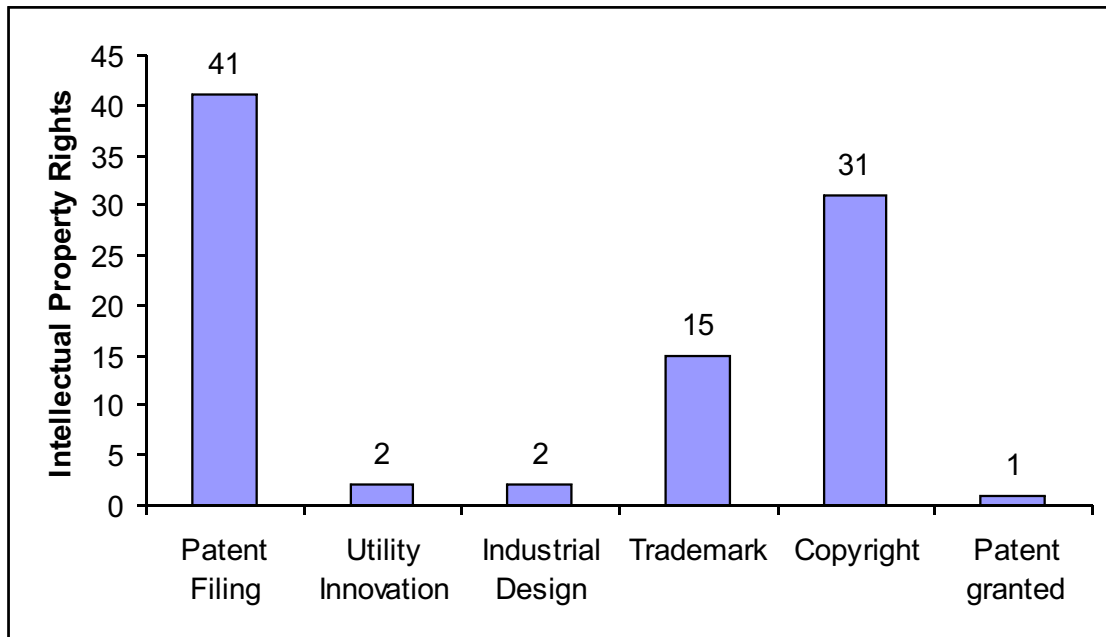
**Rajah 8: Bilangan Paten yang Difailkan**  
**Figure 8 : Number of Patent Filing**



Di samping pemfailan paten, RMC juga terlibat dalam beberapa aktiviti yang berkaitan dengan pendaftaran, penyelenggaraan paten dan program kesedaran harta intelek. Proses memberi kesedaran kepada warga Universiti adalah satu agenda utama yang sedang dijalankan bagi meningkatkan kesedaran tentang kepentingan perlindungan harta intelek. RMC juga telah mengadakan Anugerah Kreativiti & Inovasi bermula tahun 2001 sebagai menghargai dan mengiktiraf kerja-kerja penyelidikan yang telah dihasilkan oleh mereka. Langkah ini juga boleh mendorong dan menjadi pemangkin untuk membangunkan lagi teknologi dan kepakaran supaya lebih kompetitif selain meningkatkan jumlah penemuan saintifik yang boleh dipatenkan di UTM.

*Besides filing patents, RMC is also involved in activity relating to registration, patent maintenance and intellectual property awareness program. The process of raising awareness among the university population was the main agenda. This has been carried out currently to increase awareness in the importance of protecting intellectual property. RMC also organised the Creativity and Innovation Award since 2001 to honour and recognise research works that have been done. It will function as an encouragement and catalyst to develop technology and expertise so as to be more competitive besides increasing the number of scientific findings that can be patented by UTM.*

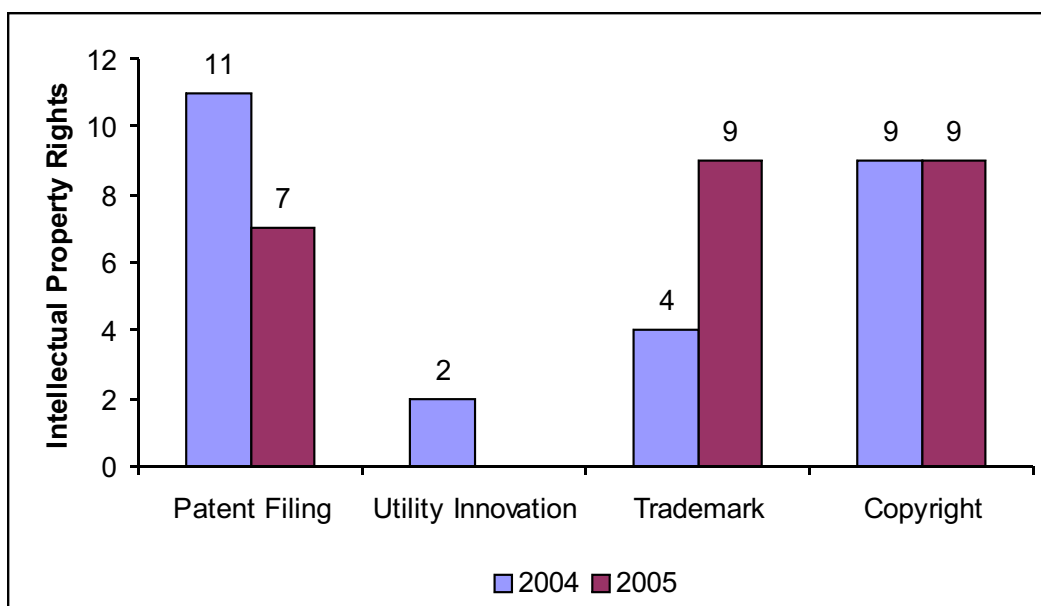
**Rajah 9: Hak Harta Intelek di UTM Sehingga 31 Disember 2005**  
**Figure 9 : UTM's Intellectual Property Rights Until December 2005**



Jumlah terkini keseluruhan perlindungan harta intelek mengikut kategori ialah sebanyak 92 produk seperti dinyatakan dalam Rajah 9. Sebanyak 26 produk telah difailkan dalam tahun 2004 dan 25 produk adalah bagi tahun 2005. Statistik perbandingan dinyatakan dalam Rajah 10.

*The recent number of overall protected intellectual property by category are 92 products as shown in Figure 9. A total of 26 and 25 products were managed respectively in 2004 and 2005. Comparison statistics for Intellectual Property Rights are shown in Figure 10.*

**Rajah 10: Hak Harta Intelek Mengikut Tahun**  
**Figure 10 : Intellectual Property Rights by Year**



## AKTIVITI PENGUKUHAN P&P

### Pertandingan dan Pameran P&P

RMC telah menjalankan beberapa aktiviti pemasarannya sendiri untuk mempromosi hasil-hasil penyelidikan UTM serta kepakaran P&P kepada pihak luar melalui aktiviti pameran, penerbitan buletin, liputan media massa dan lawatan industri. Menerusi penyertaan pameran dan pertandingan di peringkat kebangsaan dan antarabangsa, Universiti dapat meningkatkan imej dan menjalin kerjasama dengan pihak luar yang dapat membantu menjana lebih banyak peluang penyelidikan. Hasil usaha tersebut, UTM telah mendapat kejayaan yang cemerlang melalui penerimaan pelbagai pingat dalam pertandingan yang disertai termasuk pengiktirafan yang diberikan kepada para penyelidik. Sehingga kini UTM telah memperolehi sebanyak 243 anugerah iaitu sebanyak 86 di peringkat antarabangsa dan 157 anugerah di peringkat kebangsaan (rujuk Jadual 2). Pencapaian ini merupakan pertambahan sebanyak 43.8% berbanding jumlah anugerah yang diperolehi sehingga akhir tahun 2004 iaitu sebanyak 63 pingat di peringkat antarabangsa dan 105 pingat di peringkat kebangsaan. Penerimaan anugerah melalui pameran dan pertandingan P&P diperingkat kebangsaan dan antarabangsa bagi tahun 2004 dan 2005 adalah seperti di Jadual 3. Acara tahunan Industrial Art & Technology Exhibition (INATEX) adalah pintu utama staf UTM mempamerkan hasil penyelidikan dan memperlihatkan potensi untuk pengkomersilan. INATEX 2004 telah berlangsung pada 6 hingga 8 Julai manakala INATEX 2005 pada 10 hingga 12 Mac.

Di peringkat kebangsaan, UTM turut menyertai beberapa pameran dan pertandingan yang berprestij. Antaranya ialah *Invention, Innovation, Industrial Design and Technology Exhibition (ITEX)*, Pameran Penyelidikan dan Pembangunan IPTA dan *Expo Science & Technology (Expo S&T)*.

## R&D ENHANCEMENT ACTIVITY

### R&D Competition and Exhibition

*RMC has carried out a number of its own marketing activities to promote the UTM's research products and R&D expertise to outsiders through exhibitions, published bulletins, mass media coverage and industrial visits. The university hopes to boost their image and co-operate with industry to generate more research opportunities through the exhibitions and competitions at national and international levels. In these efforts, UTM has achieved glorious success through the various awards garnered in the participated competitions. UTM received 243 awards which encompassed 86 at international level and 157 at national level. This achievement is an improvement of 43.8% compared to the number of awards received in the previous year, 2004 which saw 63 and 105 awards at international and national level respectively. The annual Industrial Art and Technology Exhibition (INATEX) is the main opportunity for UTM staff to exhibit the products of their research and boast their potential for commercialisation. INATEX 2004 is on 6 to 8<sup>th</sup> July while INATEX 2005 is on 10 to 12<sup>th</sup> March.*

*At national level, UTM also participated in a number of prestigious exhibition and competition. Among others are Invention, Innovation, Industrial Design and Technology Exhibition (ITEX), IPTA Research and Development Exhibition and Science & Technology Expo (Expo S&T).*

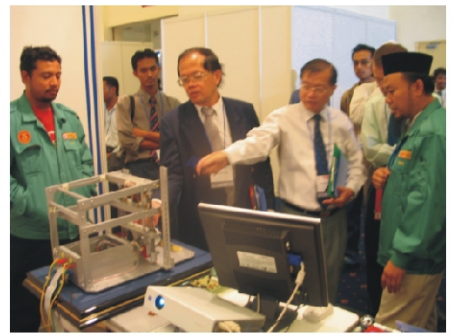
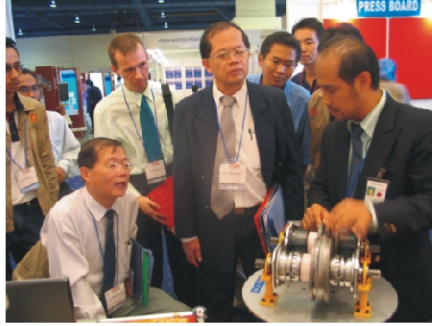


**Jadual 2 : Pencapaian Keseluruhan Anugerah P&P (Sehingga 31 Disember 2005)**  
**Table 2 : Overall R&D Competition Awards (Until 31 December 2005)**

Pameran/Anugerah <i>Exhibition/Award</i>	Emas <i>Gold</i>	Perak <i>Silver</i>	Gangsa <i>Bronze</i>	Anugerah Khas <i>Special Awards</i>	Jumlah <i>Total</i>
International Exhibition of Inventions, New Techniques and Products, Geneva	15	14	8	5	42
Invention and New Products Exposition (INPEX), USA	1	5	3	1	10
Seoul International Invention Fair (SIIF) Seoul, Korea	1	5	1	-	7
Solar Bikerace USA	-	-	-	3	3
World Solar Cycle Challenge Australia	-	-	-	3	3
Anugerah Sainis Muda ASEAN	-	-	-	1	1
Khawarizmi International Award, Iran	-	-	-	1	1
International Exhibition Ideas-Invention-New Products (IENA), Germany	3	5	2	-	10
The Association Hungarian Inventors Genius Prize	-	-	-	2	2
Women Inventor Award, Geneva	-	-	-	1	1
British Invention Show	2	2	-	2	6
<b>Antarabangsa <i>International</i></b>	<b>22</b>	<b>31</b>	<b>14</b>	<b>19</b>	<b>86</b>
EXPO Science and Technology (EXPO S&T)	7	23	23	-	53
Invention, Innovation, Industrial Design and Technology Exhibition (ITEX)	7	12	14	-	33
Malaysian Invention and Design Exhibition (MINDEX/INNOTEX)	-	2	1	1	4
ROBOCON	-	-	-	3	3
Pameran Penyelidikan dan Pembangunan IPTA	22	9	8	19	58
Petronas Inventors Awards	-	-	-	3	3
Anugerah Sainis Muda Negara	-	-	-	1	1
Anugerah Pereka Cipta Negara	-	-	-	1	1
Korea Invention Academy	-	-	-	1	1
<b>Kebangsaan <i>National</i></b>	<b>36</b>	<b>46</b>	<b>46</b>	<b>29</b>	<b>157</b>

**Jadual 3 : Anugerah yang Dimenangi pada Tahun 2004 dan 2005**  
**Table 3 : Award Received for Year 2004 and 2005**

Pameran <i>Exhibition</i>	2004					2005				
	Emas <i>Gold</i>	Perak <i>Silver</i>	Gangsa <i>Bronze</i>	Anugerah Khas <i>Special Award</i>	Jumlah <i>Total</i>	Emas <i>Gold</i>	Perak <i>Silver</i>	Gangsa <i>Bronze</i>	Anugerah Khas <i>Special Award</i>	Jumlah <i>Total</i>
International Exhibition of Inventions, New Techniques and Products, Geneva	3	1	2	-	6	5	3	2	1	11
Invention and New Products Exposition (INPEX), USA	1	1	-	-	2	-	2	2	1	5
Seoul International Invention Fair (SIIF), Korea	-	3	1	-	4	-	-	-	-	-
International Exhibition Ideas-Invention-New Products (IENA), Germany	1	1	1	-	3	1	2	-	-	3
British Invention Show (BIS)	1	-	-	1	2	1	2	-	1	4
<b>Antarabangsa <i>International</i></b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>17</b>	<b>7</b>	<b>9</b>	<b>4</b>	<b>3</b>	<b>23</b>
EXPO Science and Technology (EXPO S&T)	1	3	6	-	10	-	-	-	-	-
Invention, Innovation, Industrial Design and Technology Exhibition (ITEX)	1	-	5	1	7	2	2	1	-	5
Pameran Penyelidikan dan Pembangunan IPTA	-	-	-	-	0	22	9	8	8	47
<b>Kebangsaan <i>National</i></b>	<b>2</b>	<b>3</b>	<b>11</b>	<b>1</b>	<b>17</b>	<b>24</b>	<b>11</b>	<b>9</b>	<b>8</b>	<b>52</b>



Selain di peringkat kebangsaan, UTM turut menyertai pameran dan pertandingan di peringkat antarabangsa. Antaranya ialah *British Invention Show (BIS)*, *International Exhibition-Ideas-Invention-New Products (IENA)*, *International Exhibition of Invention, New Techniques and Products* dan *Invention and New Products Exposition (INPEX)*.

*Not just at the national level, UTM also participate in the international exhibition and competition such as British Invention Show (BIS), International Exhibition- Ideas-Invention-New Products (IENA), International Exhibition of Invention, New Techniques and Products dan Invention and New Products Exposition (INPEX).*



## Bengkel Pemantauan Projek

Pihak RMC telah mengadakan bengkel pemantauan projek penyelidikan IRPA sepanjang bulan Februari hingga Jun 2005 sebagaimana yang dikehendaki oleh pihak MOSTI. Bengkel ini dikendalikan oleh Unit Pemantauan, RMC dengan dibantu oleh Kumpulan Fokus masing-masing. Tujuan bengkel tersebut adalah untuk memantau perjalanan projek penyelidikan IRPA dan memastikan setiap projek mengikut prosedur dan peraturan seperti yang telah ditetapkan. Mesyuarat rumusan 'Bengkel Pemantauan' telah selesai diadakan oleh pihak RMC bersama Ketua Kumpulan Fokus pada 29 Jun 2005 bagi tujuan penyediaan laporan pemantauan ke MOSTI. Aktiviti ini adalah selaras dengan arahan MOSTI kepada semua koordinator (RMC) di setiap institusi yang terlibat secara langsung dalam bidang penyelidikan supaya mengadakan pemantauan sebanyak dua kali setahun. Pemantauan dilakukan oleh panel dalaman dan luaran yang dilantik.



## Project Monitoring Workshop

RMC organised the IRPA research project observation workshop from February until June 2005 as required by MOSTI. This workshop was organised by the Monitoring Unit, RMC with the help of each focus groups. The purpose of this workshop is to observe the progress of IRPA research projects and ensure each project abides to the procedure, rules and progress as required. The concluding meeting of 'Observation Workshop' was held by RMC together with leaders of the Focus Groups on 29th June 2005. The main purpose was the preparation of observation reports to be delivered to MOSTI. This activity is in line with the MOSTI instructions for a twice-a-year observation by all coordinators (RMC) in each institution directly involved in research. Observations were carried out by internal and external designated panels.



## Bengkel Perancangan Pencapaian Milestone dan Penyediaan Laporan Akhir serta IP Screening

Satu Bengkel Perancangan Pencapaian Milestone dan Penyediaan Laporan Akhir serta IP Screening bagi projek penyelidikan IRPA RMK-8 telah diadakan pada 17 Ogos 2005 di Hotel Puteri Pan Pacific, Johor Bahru. Bengkel ini bertujuan untuk membantu ketua projek yang bermasalah dalam mencapai milestone, penghantaran end of project report dan benefits report serta membantu ketua projek mengenalpasti potensi harta intelek bagi projek-projek yang telah tamat. Melalui bengkel tersebut, masalah dalam mencapai milestone, penghantaran end of project report dan benefits report dapat diselesaikan.



## The Milestone Achievement Plan and the Final Project Report Preparation with IP Screening Workshop

The Milestone Achievement Plan and the Final Project Report Preparation with IP Screening Workshop, for IRPA research projects under the 8<sup>th</sup> Malaysian Plan (MP-8) was conducted on the 17<sup>th</sup> August 2005 at the Hotel Puteri Pan Pacific, Johor Bahru. The objectives of the workshop are to help the project leader that having problems in achieving their milestone, submitting the final project report, end of project report and benefits report, and to assist the respective project leader who completed their project to identify the possible intellectual property. At the end of the workshop, the participants are capable in achieving their milestone, submitting the final project report, end of project report and benefits report.



## Hari Bersama Pelanggan

Pihak RMC telah mengadakan Program Hari Bersama Pelanggan pada 7 Disember 2005 di Pejabat RMC, Bangunan F54, UTM Skudai. Seramai 101 orang penyelidik telah menghadiri program ini mulai 9.00 pagi hingga 5.00 petang. Sebanyak tujuh kaunter yang merangkumi Pengurusan Projek, Pemantaun, Kewangan, Kumpulan Fokus, Harta Intelek dan Pameran/Promosi telah disediakan. Analisa borang soalselidik menunjukkan hampir 100% pelanggan berpuas hati dengan perkhidmatan yang ditawarkan dan objektif menghadiri program ini telah tercapai.

## Customer Day

*RMC organised a Meet the Customer Day on 7th December 2005 at RMC Office, Building F54, UTM Skudai. A total of 101 researchers attended this program from 9.00 am to 5.00 pm. A total of 7 booths such as Project Management, Observation, Finance, Focus Group, IP and Exhibition/Promotion were set up. Analysis of the survey proved that nearly 100% of the customers were satisfied with the services offered and the objectives of this program was therefore achieved.*





## Program Kesedaran Harta Intelekt

Beberapa siri program Klinik Harta Intelekt telah diadakan bagi membincangkan mengenai produk yang telah dipatenkan bersama dengan agen paten. Dalam tahun 2004 sebanyak tiga siri Klinik Harta Intelekt telah diadakan pada bulan April, Mei dan Jun. Seminar Harta Intelekt telah diadakan pada 7 Oktober 2004 di Dewan Senat UTM. Seminar yang bertajuk Seminar on Intellectual Property in University R&D diadakan bagi memberi kesedaran kepada para penyelidik mengenai kepentingan perlindungan harta intelek. Beberapa siri program kesedaran kepentingan perlindungan harta intelek telah diadakan sepanjang tahun 2004 dan 2005. Seminar Harta Intelekt telah diadakan pada 7 Oktober 2004 di Dewan Senat, UTM. Seminar yang bertajuk "Seminar on Intellectual Property in University R&D" diadakan bagi memberi kesedaran kepada para penyelidik mengenai kepentingan perlindungan harta intelek. Bagi meningkatkan kepakaran dalaman dalam proses penilaian produk untuk permohonan paten, satu bengkel telah diadakan di Pulau Spring Resort pada 16 Disember 2004 bertajuk "A Workshop on Patent Search & Patentability Evaluation" yang dikendalikan oleh penceramah daripada SIRIM Berhad. Pada tahun 2005 pula, satu bengkel telah diadakan pada 22 Februari 2005 bertajuk "Protection of Intellectual Property Asset and Branding UTM into World Class University". Bengkel yang diadakan di Rumah Alumni, UTM ini bertujuan untuk meningkatkan kesedaran dan membentuk imej bagi mencapai matlamat "World Class University" serta pengkomersilan logo UTM bagi penjana pendapatan UTM. Selain daripada itu, bagi mengukuhkan lagi produk-produk Universiti untuk perlindungan harta intelek, tiga siri klinik harta intelek telah diadakan bersama agen paten sepanjang tahun 2004 iaitu pada bulan April (28 April 2004), Mei (5 Mei 2004) dan Jun (30 Jun 2004) dengan memberi penekanan terhadap aspek "novelty" dan memberi kefahaman kepada penyelidik tentang proses-proses yang berkaitan dengan permohonan paten. Klinik harta intelek tersebut telah dihadiri oleh para penyelidik yang terlibat dalam proses permohonan paten. Secara tidak langsung penyelidik dapat mengetahui aspek-aspek penting dalam proses permohonan paten.

## Intellectual Property Awareness Program

*A few series of the importance of intellectual property protection awareness program have been conducted along year 2004 and 2005. An intellectual property seminar was conducted on the 7<sup>th</sup> October 2004 at Dewan Senat, UTM. The seminar is entitled "Seminar on Intellectual Property in University R&D" was organised to provide awareness of the importance of intellectual property protection to the researchers. To improved internal expertise in the evaluation process for product's patent applications, a workshop has been conducted on the 16<sup>th</sup> December 2004 at the Pulau Spring Resort which is entitled "A Workshop on Patent Search & Patentability Evaluation". The speakers are came from SIRIM Berhad. The "Protection of Intellectual Property Asset and Branding UTM into World Class University Workshop" was held on the 22<sup>nd</sup> February 2005 at Rumah Alumni UTM. The purpose of this workshop is to increase awareness and to forms an image towards the aims of "World Class University", and also commercialised the UTM logo to generate UTM income. Besides that, three series of intellectual property clinics were organised with patent agent on 28<sup>th</sup> April 2004, 5<sup>th</sup> May 2004 and 30<sup>th</sup> June 2004 respectively to consolidate university products to protect its intellectual properties. These three series of intellectual property clinics are focused on the novelty aspect and to offer understanding on related process for patent applications to the researchers. It was attended by researchers who involved in patent application. Indirectly, from these clinics they will be able to know all the essential aspects during patent application process.*

### Bengkel Perancangan Strategik

Bengkel Penentuan Bidang Penyelidikan dan Pengajaran telah diadakan pada 26 April 2005 di Pulau Spring. Seramai 35 orang peserta bengkel yang terdiri daripada Ketua Kumpulan Fokus serta Timbalan Dekan (Penyelidikan & Pengajian Siswazah) dan Timbalan Dekan (Akademik) dari semua fakulti.

Bengkel Penentuan Bidang Fokus telah diadakan pada 16-18 Disember, 2005 di De Rhu Beach Resort, Kuantan Pahang untuk membentuk kluster R&D. Seramai 31 orang peserta bengkel merangkumi ketua serta seorang ahli kumpulan fokus dan timbalan-timbalan dekan (Penyelidikan & Pengajian Siswazah) semua fakulti telah menghadiri bengkel ini. Sebanyak enam cadangan kluster R&D dipersetujui seperti berikut:

- i. Fundamental Science & Mathematics
- ii. Electronics, Information & Communication Technologies for Society
- iii. Energy, Environmental Health & Safety
- iv. Advanced Material & Manufacturing
- v. Chemical & Bioengineering
- vi. Aerospace, Transport & Infrastructure Technologies

### The Strategic Planning Workshop

*The Research and Teaching Area Identification Workshop was successfully held on the 26<sup>th</sup> April 2005 at the Pulau Spring Resort. The 35 participants are consisted of the Head of Focus Groups and the Deputy Dean (Research and Postgraduates Study) from all faculties.*

*On the other hand, the Focus Area Identification Workshop was held on the 16-18<sup>th</sup> December, 2005 at the De Rhu Beach Resort, Kuantan Pahang to form R&D cluster. It was attended by 31 participants consisted of the head and one member from each focus groups and the Deputy Dean (Research and Postgraduates Study) from all faculties. Whereby, through this workshop six R&D cluster were identified as follow:*

- i. Fundamental Science & Mathematics
- ii. Electronics, Information & Communication Technologies for Society
- iii. Energy, Environmental Health & Safety
- iv. Advanced Material & Manufacturing
- v. Chemical & Bioengineering
- vi. Aerospace, Transport & Infrastructure Technologies

## PENCAPAIAN

### a) Anugerah Kualiti Naib Canselor (AKNC), UTM

Lawatan Validasi AKNC 2004 oleh Unit Kualiti, UTM ke RMC telah diadakan pada 18 Oktober 2005. Selepas tiga tahun berturut-turut mengambil bahagian dalam AKNC akhirnya pada tahun ini, RMC telah memenangi AKNC dan sekali gus meraih hadiah wang tunai sebanyak RM12,000.00. Ini membuktikan kesungguhan pihak RMC dalam memastikan segala pengurusan dijalankan dengan baik bagi mencapai kualiti yang telah ditetapkan.

## ACHIEVEMENT

### a) Vice Chancellor Quality Award (AKNC)

*The 2004 AKNC Validation Visit by the Quality Unit, UTM to RMC was held on 18th October 2005. Audit Panel was led by Prof. Dr. Ahmad Kamal bin Idris and fellow members, Prof. Dr. Ahmad Zaki bin Abu Bakar and Prof. Dr. Baharom bin Sanugi. After three consecutive participations in AKNC, RMC finally won and received RM12,000.00 in cash. This prove the earnestness of RMC in ensuring all the management were done in order to reach the quality standard.*



**b) Anugerah Teknologi Maklumat, UTM**

RMC telah menerima kunjungan panel audit atau Jawatankuasa Teknikal Anugerah Teknologi Maklumat UTM pada 13 Julai 2005 dan penyertaan dalam anugerah ini juga merupakan kali ketiga. RMC telah memenangi Anugerah Teknologi Maklumat bagi tahun 2004 dan telah menerima hadiah wang tunai sebanyak RM10,000.00. Kemenangan ini membuktikan bahawa RMC juga menitikberatkan penggunaan teknologi maklumat dalam setiap aspek pengurusannya terutamanya yang berkaitan dengan P&P.

**c) Aktiviti 5S**

Panel Kualiti Universiti telah mengadakan lawatan Audit 5S bersama wakil NPC (*National Productivity Centre*) Wilayah Selatan pada 18 November 2005. RMC telah berjaya disenaraipendek ke peringkat akhir.

**LAPORAN KEWANGAN****Peruntukan dan Perbelanjaan Projek Penyelidikan**

Sehingga 31 Disember 2004, agihan peruntukan yang diterima bagi projek-projek penyelidikan di bawah Rancangan Malaysia Ke-8 (RMK-8) adalah berjumlah RM114,160,369.30. Daripada jumlah tersebut sebanyak RM83,271,766.76 telah dibelanjakan iaitu 72.9% daripada peruntukan diterima.

Projek-projek IRPA mencatatkan angka tertinggi dari segi peruntukan dan perbelanjaan berbanding kategori penyelidikan lain dengan RM96,525,889.50 peruntukan diterima manakala RM70,022,090.49 atau 72.5% telah dibelanjakan. Walau bagaimanapun, peratus perbelanjaan yang dicatat agak rendah dan masih belum mencapai keperluan pihak MOSTI yang menetapkan peratus perbelanjaan perlu berada pada sekurang-kurangnya 80% bagi membolehkan agihan seterusnya dibuat. Ini diikuti oleh projek penyelidikan fundamental yang telah menerima agihan sebanyak RM9,869,518.53 termasuk dari pihak Kementerian Pengajian Tinggi dan sumber dalaman. Bagaimanapun, jumlah perbelanjaan mencatatkan peratusan perbelanjaan yang terendah dengan hanya 67.8% atau RM6,690,375.66 dibelanjakan dari peruntukan diterima. Ini disebabkan oleh banyak projek-projek fundamental baru yang diluluskan dalam tahun 2004 masih belum membuat perbelanjaan.

**b) Information Technology Award**

*RMC received the visit of an audit panel or Technical Committee of UTM Information Technology Award on 13th July 2005. This is the third time for RMC contested for the award. RMC won the award in 2004 and received cash prize of RM10,000.00. This achievement prove that RMC are concern in using the information technology in every aspect of management especially in related to R&D.*

**c) 5S Activity**

*University Quality Panel had organized a 5S Audit visit with NPC (National Productivity Centre) to RMC on 18th November 2005. RMC was shortlisted to the final stage.*

**FINANCIAL REPORT****Research Allocation and Expenditure**

*Until 31 December 2004, total allocation acquired for research project under RMK-8 is RM114,160,369.30. Whereby, RM83,271,766.76 or 72.9% from the total allocation have been spent.*

*IRPA projects was the highest allocation and expense compared to other research with RM96,525,889.50 have been accepted while RM70,022,090.49 or 72.5% were expended. However, the percentage of expense is quite low and does not achieved MOSTI needs; hence the percentage of expense shall be at least 80% in order to precede the next distribution.*

*This is followed by fundamental research which is accepted RM9,869,518.53 given by Ministry of Higher Education and from the internal sources. Nevertheless, the total amount of expense shows the lowest percentage with only 67.8% or RM6,690,375.66 have been expended. This is due to the fact that many approved new fundamental researches are still not doing any expense yet.*

*Contract research projects attained the allocation with amount of RM5,651,048.38, and achieved quite good total amount of expense i.e. 82.1% or RM4,636,869.29.*

Projek penyelidikan kontrak mencatatkan jumlah peruntukan diterima sebanyak RM5,651,048.38 dan jumlah perbelanjaan yang agak baik iaitu RM4,636,869.29 atau 82.1%. Secara keseluruhannya, peratus perbelanjaan berbanding peruntukan diterima bagi projek-projek penyelidikan di bawah RMK-8 sehingga 31 Disember 2004 masih berada pada tahap kurang memuaskan. Peratus perbelanjaan perlu ditingkatkan selaras dengan pelaksanaan projek-projek di bawah RMK-8 yang menghampiri penghujungnya pada akhir tahun 2005.

Sehingga 31 Disember 2005, agihan peruntukan yang diterima bagi projek-projek penyelidikan di bawah Rancangan Malaysia K-8 (RMK-8) meningkat 21% kepada RM138,245,757.71 berbanding tahun sebelumnya. Daripada jumlah tersebut jumlah perbelanjaan juga meningkat sebanyak 33% kepada RM110,832,754.43 iaitu 80.2% daripada peruntukan diterima.

Projek penyelidikan IRPA menunjukkan peningkatan prestasi perbelanjaan dengan peratusan perbelanjaan 79.4% atau RM92,463,219.74 daripada sejumlah RM116,400,721.89 peruntukan yang diterima. Ia menghampiri sasaran pihak MOSTI agar peratus perbelanjaan penyelidikan berada pada tahap 80% dari agihan diterima.

Di samping itu, beberapa kategori projek penyelidikan lain seperti fundamental, penyelidikan kontrak dan instusi juga menunjukkan peningkatan prestasi perbelanjaan yang membanggakan. Projek fundamental merekodkan peningkatan peratus perbelanjaan melebihi 14% kepada RM8,307,750.35 atau 82.4% daripada RM10,086,518.53 peruntukan yang diagihkan, penyelidikan kontrak meningkat kepada 91.7% atau RM6,294,756.52 daripada RM6,861,262.42 peruntukan diterima dan penyelidikan institusi meningkat kepada 97.3% atau RM1,655.513.45 daripada RM1,701,887.89 peruntukan diterima.

Walaupun bagaimanapun bagi kategori penyelidikan lain-lain, peratus perbelanjaan turun kepada 66.1% atau RM2,11,514.37 daripada RM3,195,366.98 peruntukan diterima. Ini disebabkan oleh peningkatan mendadak dalam jumlah peruntukan diterima di mana projek-projek di bawah tajaan agensi kerajaan khususnya Lembaga Pembangunan Industri Pembinaan (CIDB) dan Akademi Sains Malaysia yang baru menerima peruntukan dari penaja masing-masing dalam tahun tersebut.

Secara keseluruhannya, peratusan perbelanjaan projek penyelidikan di bawah RMK-8 sehingga 31 Disember 2005 menunjukkan peningkatan dan selaras dengan aspirasi kerajaan untuk meningkat jumlah perbelanjaan penyelidikan di peringkat nasional. Ia juga mencerminkan keberkesanan perancangan dan pengurusan dana projek-projek penyelidikan di bawah kendalian penyelidik UTM.

*The overall percentage of expense compared to the allocation that have been received for research under RMK-8 until 31 December 2004 can be categorized in unsatisfactory. Thus, the percentage of expense supposed to rise in line with the project implementation under RMK-8 which will be ended at the end of year 2005.*

*As of 31 December 2005, RM138,245,757.71 total allocation have been received for research project under RMK-8, which is 21% higher than the previous year. Whereby, 80.2% from the total allocation or RM110,832,754.43 has been expended, and shows the total amount of expense was increased up to 33%.*

*IRPA research project shows progressive total expense with 79.4% or RM92,463,219.74 from RM116,400,721.89 total allocation. It was almost achieved the MOSTI target, hence that percentage of research expense shall be 80% from distribution.*

*Other than that, some other research projects such as fundamental, contract research and institution are also showing an excellent progress in the percentage of expense. The fundamental project has increased more than 14% to RM8,307,750.35 or 82.4% from RM10,086,518.53 allocation that have been distributed, the contract research has increased to 91.7% or RM6,294,756.52 from RM6,861,262.42 and finally, the institution research increased to 97.3% or RM1,655,513.45 from RM1,701,887.889.*

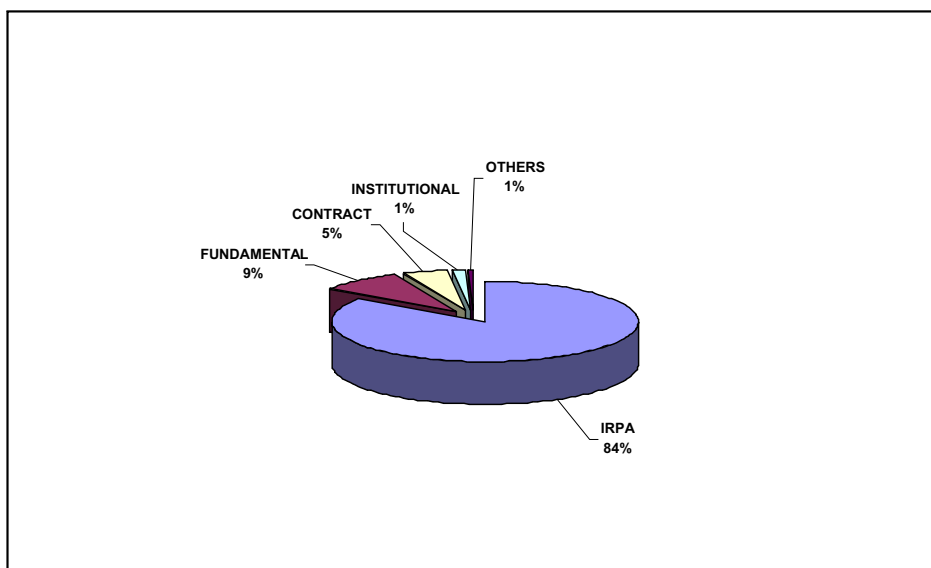
*Contradict to the other researches, the percentage of expense was decreased up to 66.1% or RM2,11,514.37 from RM3,195,366.98 allocation received. This decrement is due to the allocation has increased rapidly, whereby the project under government sponsor especially the Construction Industry Development Board (CIDB) and Akademi Sains Malaysia were just accepted the allocation from their sponsor.*

*Overall, the percentage of research expense under RMK-8 until 31 December 2005 has increased and shows progressive in line with the government aspiration to increase the amount of expense for national research. It is also reveals the effectiveness of budget for research project under responsibility of UTM researchers.*

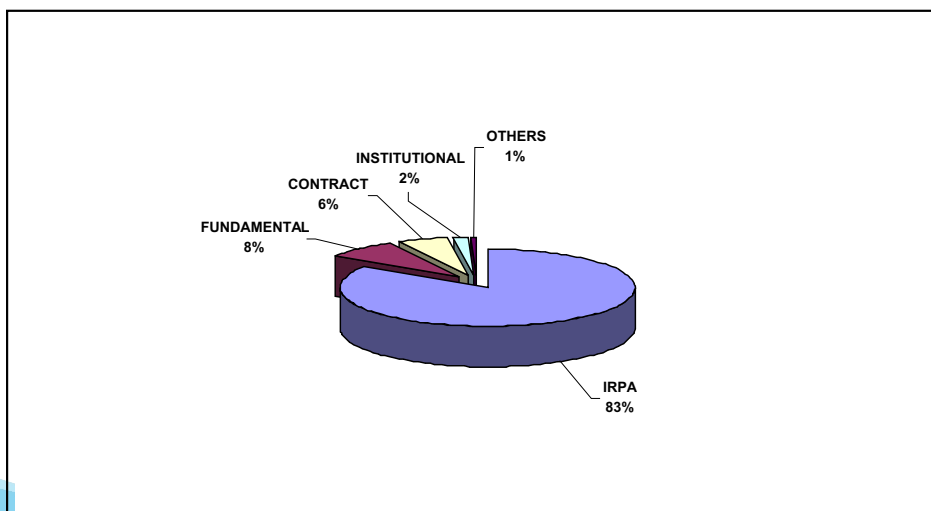
**Jadual 4: Peruntukan & Perbelanjaan Penyelidikan**  
**Table 4: Research Allocation & Expenditure**

Jenis Penyelidikan <i>Type of Research</i>	2004			2005		
	Jumlah Peruntukan <i>Total Allocation (RM)</i>	Jumlah Perbelanjaan <i>Total Expenditure (RM)</i>	Peratus Percentage	Jumlah Peruntukan <i>Total Allocation (RM)</i>	Jumlah Perbelanjaan <i>Total Expenditure (RM)</i>	Peratus Percentage
IRPA	96,525,889.50	70,022,090.49	72.5%	116,400,721.89	92,463,219.74	79.4%
Fundamental	9,869,518.53	6,690,375.66	67.8%	10,086,518.53	8,307,750.35	82.4%
Penyelidikan Kontrak	5,651,048.38	4,636,869.29	82.1%	6,861,262.42	6,294,756.52	91.7%
Institusi	1,435,437.89	1,366,929.48	95.2%	1,701,887.89	1,655,513.45	97.3%
Lain-lain	678,475.00	555,501.84	81.9%	3,195,366.98	2,111,514.37	66.1%
<b>Jumlah Total</b>	<b>114,160,369.30</b>	<b>83,271,766.76</b>	<b>72.9%</b>	<b>138,245,757.71</b>	<b>110,832,754.43</b>	<b>80.2%</b>

**Rajah 11: Peruntukan & Perbelanjaan Projek Penyelidikan sehingga 31 Disember 2004**  
**Figure 11: Project Allocation & Expenditure until 31 December 2004**

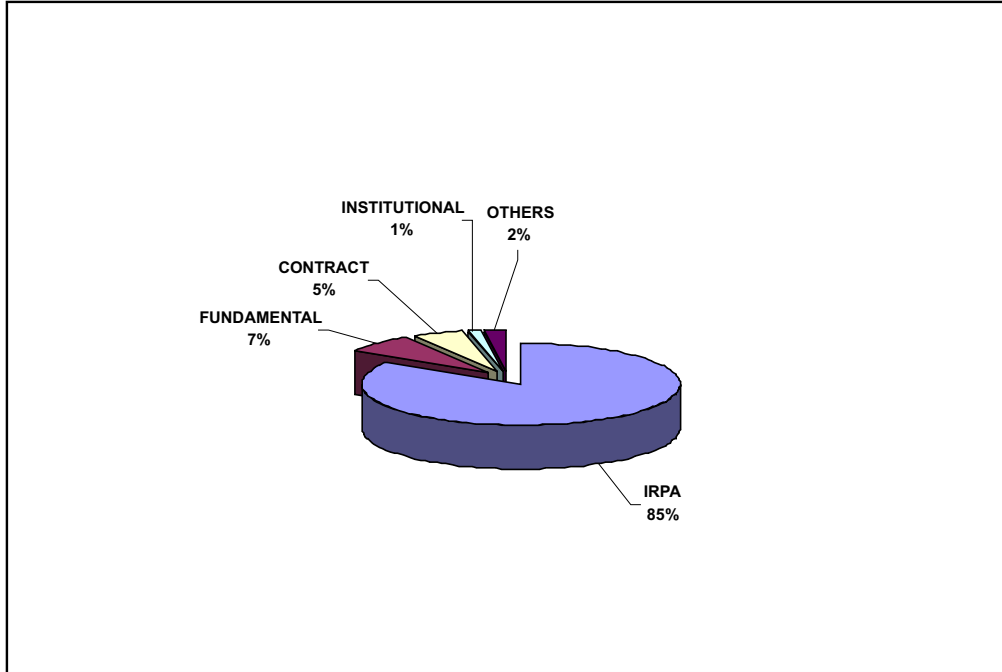


**Rajah 12: Peruntukan & Perbelanjaan Projek Penyelidikan sehingga 31 Disember 2005**  
**Figure 12: Project Allocation & Expenditure until 31 December 2005**



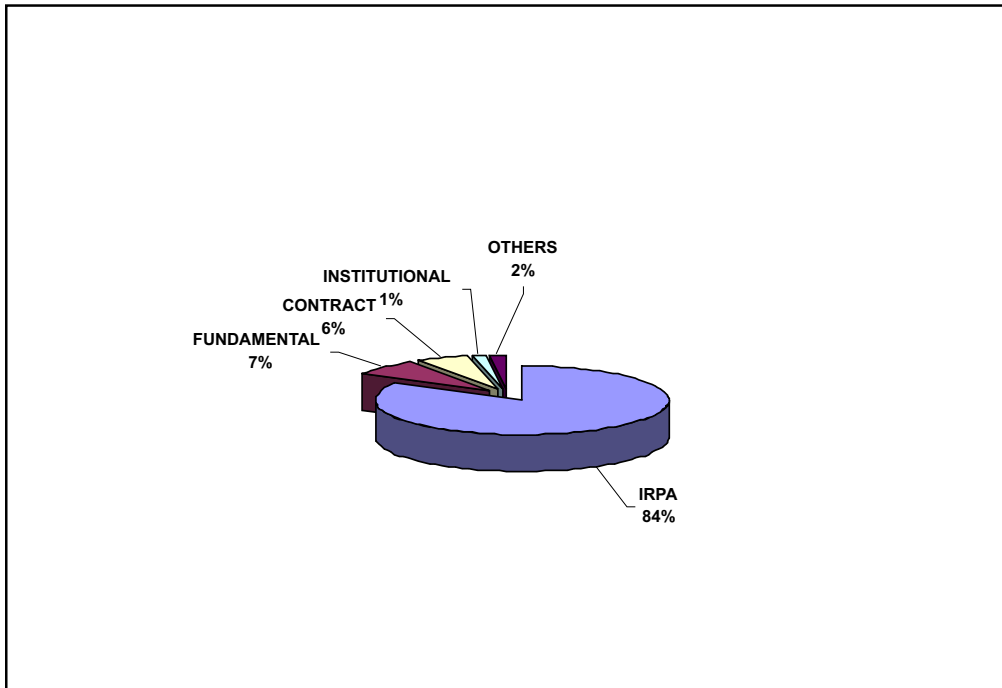
**Rajah 13 : Peruntukan P&P sehingga 31 Disember 2005**

*Figure 13 : Allocation Distribution of R&D Project until 31<sup>st</sup> December 2005*



**Rajah 14 : Perbelanjaan Projek P&P sehingga 31 Disember 2005**

*Figure 14 : Expenditure of R&D Project until 31<sup>st</sup> December 2005*



## Peruntukan dan Perbelanjaan Mengurus

Bagi tahun 2004, RMC memperoleh peruntukan mengurus sebanyak RM1,951,555 bagi membiayai kos operasi pusat. Jumlah ini adalah pengurangan sebanyak 18% dari jumlah yang diperolehi tahun sebelumnya. Walaubagaimanapun, peratus penggunaan peruntukan mencatatkan angka yang baik iaitu 97% atau RM1,894,909.88 dari jumlah peruntukan diluluskan. Ini secara tidak langsung mencerminkan keberkesanan perancangan dan kawalan perbelanjaan di peringkat pusat. Daripada jumlah perbelanjaan tersebut, sebanyak 59% atau RM1,123,887.19 meliputi perbelanjaan emolumen, 23% atau RM438,293.92 perkhidmatan dan bekalan serta 18% atau RM332,728.77 bagi aset.

Sementara itu, peruntukan mengurus yang diterima bagi 2005 juga menurun 3% berbanding tahun sebelumnya. Walaubagaimanapun, peratus penggunaan mencatatkan angka defisit berbanding peruntukan dengan RM2,040,928.83 atau 111.4% telah dibelanjakan sepanjang 2005. Ini berpunca dari peningkatan aktiviti pameran penyelidikan yang dianjurkan dan disertai oleh UTM dalam tahun berkenaan. Sebanyak 57% atau RM1,169,547.90 dibelanjakan di bawah emolumen, 32% atau RM645,903.93 di bawah perkhidmatan dan bekalan serta 11% atau RM225,477.00 di bawah aset.

## Management Allocation and Expenditure

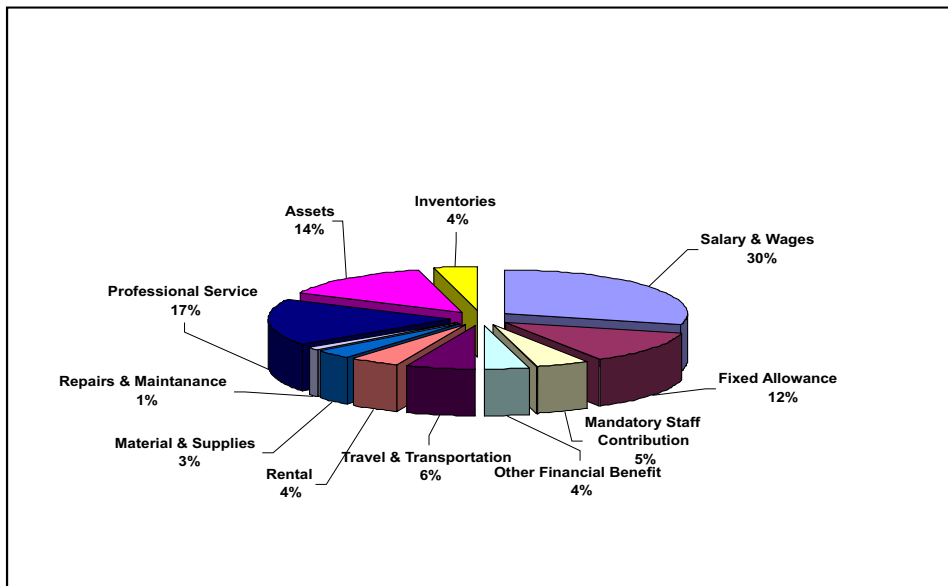
*In the year 2004, RMC attained the sum of RM1,951,555.00 allocation for the department operations. This amount was 18% lower from the total allocation received in the previous year. Nonetheless, the percentage of usage has shown a good achievement with 97% or RM1,894,909.88. On the other hand, this indicates the effectiveness of planning and controlling of the departmental expenses. Whereby, from the total of expense, 59% or RM1,123,887.19 consists of emolument expense, RM438,293.92 or 23% of services and supplies, and RM332,728.77 or 18% of assets.*

*Meanwhile, the allocation for management for the year 2005 is also 3% lower compared to the previous year. In spite of that, percentage of usage recorded deficit number compared to the allocation with RM2,040,928.83 or 111.4% have been spent throughout 2005. This increment due to the cost of UTM participation in Exhibition 2005 was taken in to the vote. In total of 57% or RM1,169,547.90 has been spent under emolument, 32% or RM645,903.93 under services and supplies, and 11% or RM225,477 under assets.*

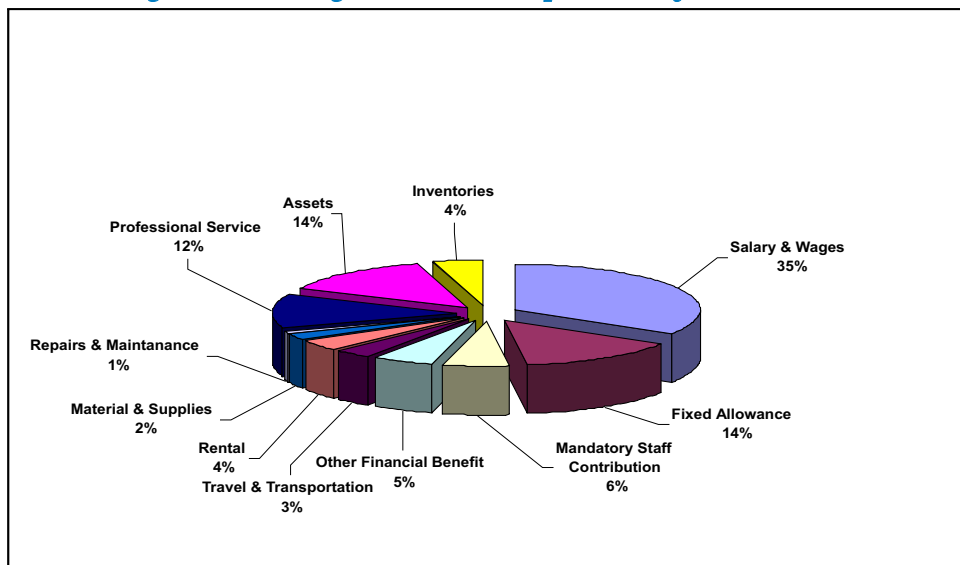
**Jadual 5 : Peruntukan & Perbelanjaan Mengurus (2004 & 2005)**  
**Table 5 : Operational Allocation & Expenditure (2004 & 2005)**

Sumber Sources	Peruntukan Allocation		Perbelanjaan Expenditure	
	2004 (RM)	2005 (RM)	2004 (RM)	2005 (RM)
Peruntukan Mengurus Jabatan	1,951,555.00	1,831,825.00	1,894,909.88	2,040,928.83
Tabung Pengurusan Projek R&D	1,102,465.28	1,046,863.05	1,641,506.19	1,519,565.02
<b>Jumlah Total</b>	<b>3,054,020.28</b>	<b>2,878,688.05</b>	<b>3,536,416.07</b>	<b>3,560,493.85</b>

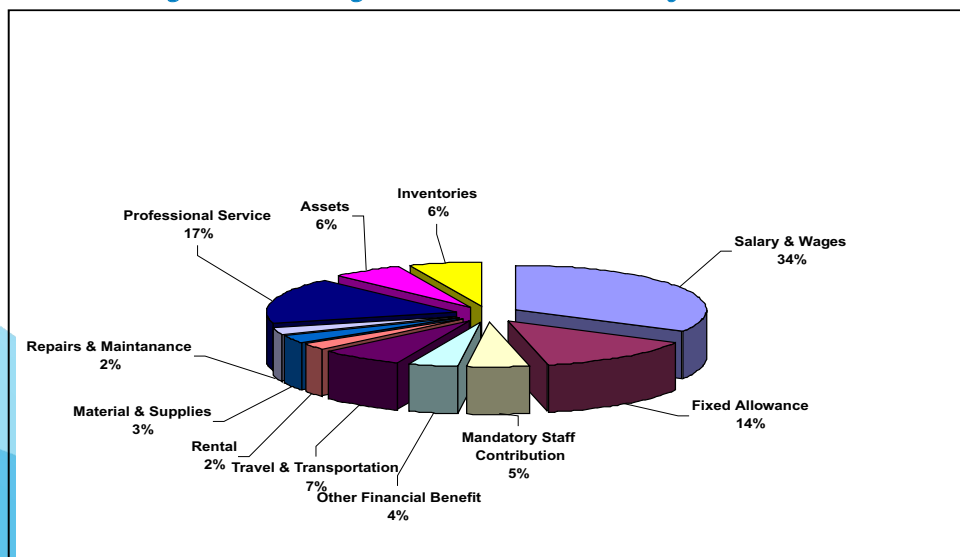
**Rajah 15: Peruntukan Geran Mengurus bagi Tahun 2004**  
**Figure 15: Management Grant Allocation for Year 2004**



**Rajah 16: Perbelanjaan Geran Mengurus bagi Tahun 2004**  
**Figure 16: Management Grant Expenditure for Year 2004**

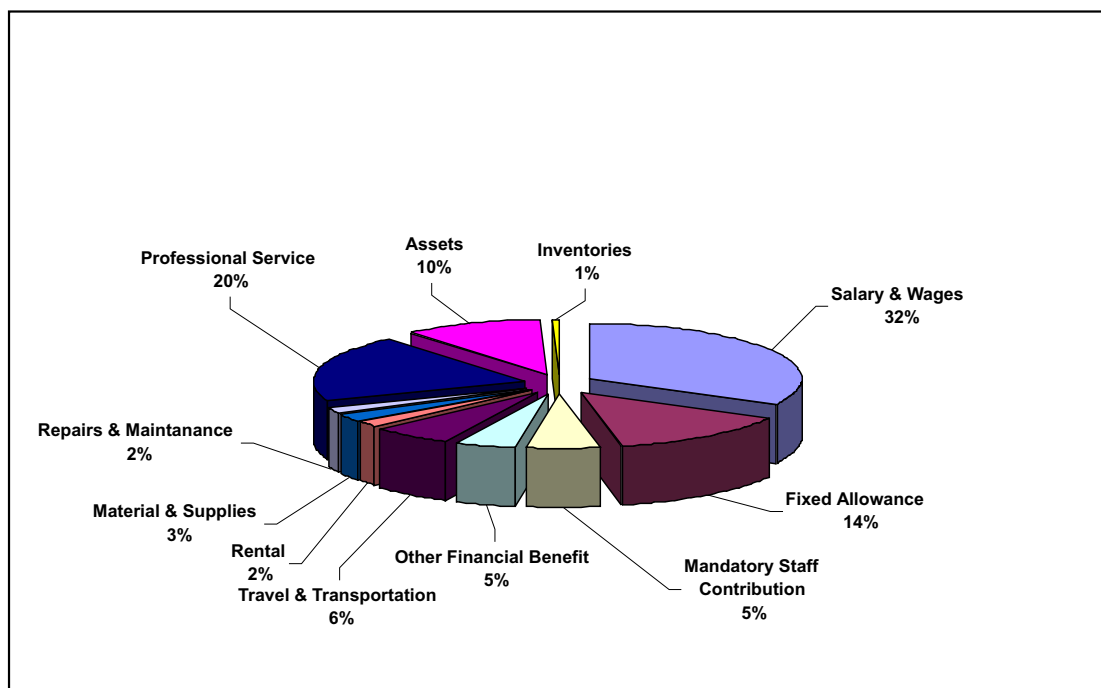


**Rajah 17: Peruntukan Geran Mengurus bagi Tahun 2005**  
**Figure 17: Management Grant Allocation for Year 2005**





**Rajah 18: Perbelanjaan Geran Mengurus bagi Tahun 2005**  
**Figure 18: Management Grant Expenditure for Year 2005**



### Pengurusan Tabung Projek P&P

Dalam tahun 2004, peruntukan yang diterima bagi tabung ini ialah RM1,102,465.28 manakala peratus penggunaan amat tinggi iaitu 148.9% atau RM1,641,506.19. Antara komponen utama perbelanjaan tabung ini ialah 55% emolument bagi staf lantikan RMC atau RM895,376.42 dan peruntukan projek institusi 21% atau 346,000.00, bengkel dan seminar sebanyak 10% atau RM163,191.00.

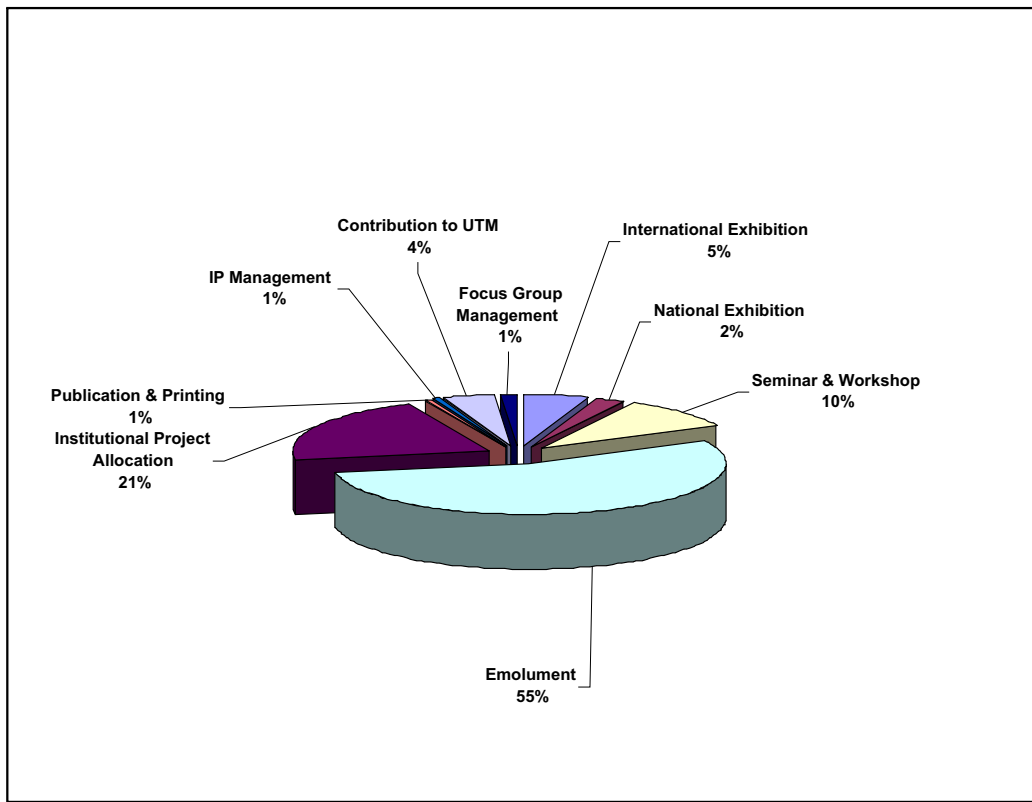
Dalam tahun 2005, perolehan peruntukan tabung ini menurun 5% kepada RM1,046,863.05 berbanding tahun sebelumnya. Jumlah perbelanjaan juga menurun 7% kepada RM1,519,565.02. Perbelanjaan emolument masih menjadi komponen perbelanjaan utama dengan meliputi 57% dari jumlah perbelanjaan atau RM858,343.82, diikuti perbelanjaan pameran peringkat antarabangsa sebanyak 19% atau RM282,162.99, peruntukan projek institusi sebanyak 11% atau RM170,000.00.

### R&D Project Management Fund

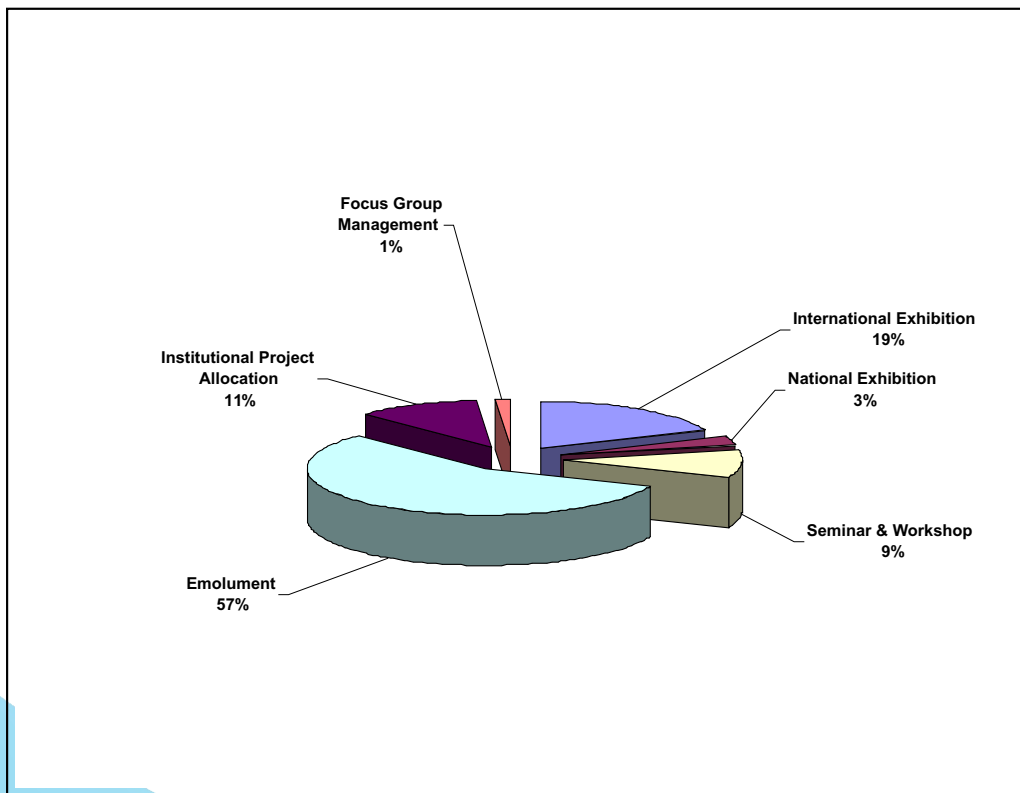
*In the year 2004, the allocation received for this fund is RM1,102,465.28 with excellent percentage of usage i.e. 148.9% or RM1,641,506.19. Some of the main components of expense for this fund is RM895,376.42 or 55% emolument for staff constituted by RMC, RM346,000.00 or 21% allocation for institution project, and RM163,191.00 or 10% for workshop and seminar.*

*In the year 2005, the allocation that have been received for this fund was decreased up to 5% to RM1,046,863.05 compared to the year before. The total expense was also decreased 7% to RM1,519,565.02 compared to the previous year. Emolument expense is still being the foremost expense with 57% from the whole expenditure or RM858,343.82, then followed by expense for the international exhibition amounting to RM282,162.99 or 19%, and RM170,000.00 or 11% allocation for institutional project.*

**Rajah 19 : Perbelanjaan Tabung P&P bagi Tahun 2004**  
*Figure 19 : Expenditure of R&D Fund Year 2004*



**Rajah 20 : Perbelanjaan Tabung P&P bagi Tahun 2005**  
*Figure 20 : Expenditure of R&D Fund Year 2005*



**STAF RMC**  
**RMC STAFF**



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