Technology Transfer of Biomedical Equipment: from Bedside to Academia and to Industry to Meet Clinical Needs as Detected by Research (paper ID #1570047667) for I2MTC 2015 Pisa, Italy

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Technology is applied knowledge to produce goods and services while Technology Trannsfer (TT) is the concession of knowledge from the inventor to industry. Intellectual Property is not transfereable -just like biological parenthood- but its use may be negotiated. “Invention” is the result of creativity, while “innovation” implies commercial introduction of an invention- and “dissemination and adoption” happens when the innovation makes its way well into society.

The functions of University are Teaching, Research and also Development. “Spin off” firms or other agreements with Industry are ways to output research. Specifically, **nib** is an academic group located within the University Hospital to detect equipment and software needs derived from clinical practice and research. With an interdisciplinary approach involving Medicine, Biomedical Engineering and Computer Science original solutions are sought, designed and tested.

The following TT cases, all taken from **nib** experience, will be described:

1) A clinically successful prototype having been produced to report on fetal heart rate variability, a spin off firm was created by graduates. The University bought the first units, but no other clients were interested and the initial money was spend to keep the firm operating. This was the first failure: “little initial earnings cannot support a firm with no clients”or “***there are no clients for a “no-firm”***".

2) Recent graduates with clinical devices to offer ranging from patient weight monitoring to Holter ECG data logger, are accepted in a Government “firm incubator”. The partners wrote a business plan and received professional help for bussiness, and had no running expenses. The firm was not attractive to clients, because the partners were employed in large Engineering firms, for a reassuring salary. The lesson here is that “***there is no life for a firm with no personal commitment of partners”.***

3) A clinical prototype reached a mature product, and funding was obtained for TT. This time we contacted an established firm with no biomedical experience, but a solid engineering reputation in elevator control circuits. An academic staff worked in the firm to help adopt the prototype. Sales exceeded all expectations. The lesson learned is that “***academic staff must get involved***” and that an existing firm helps to reach markets.

4) Case 3 showed nevertheless a limitation, which gave rise to yet another lesson. The product saturated the Uruguayan market, and it was thought reasonable to explore the Region. But the absence of CE marking interrupted all conversations to distribute the device abroad. The lesson then is that “***certifications are necessary to open markets***”.

5) To ease the TT process, a biomedical monitor sensors firm asked **nib** for support to better production. No Engineer had previously been employed. After two years of one **nib** academic staff in the firm, quality of procedures were both improved and received certification, thus starting an increase in sales. The lesson is that fostering presence of Academia in Industry is of mutual benefit.

We found that the detection of clinical needs in a University Hospital turned into prototypes , followed by an agreement with established firms willing to adopt inventions, may lead to innovations, provided ample cooperation of academic staff with industry is allowed. Additionally we found that University should not expect royalties until a considerable benefit is reached by the licenced company.