

“Global/Local Innovations for Next Generation Automobiles”
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Patent Activities - Multi-Fuel Engine Project -

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Threat of Patents (cont'd.)

A Bus w/Novel Engine



Product Plan
R&D
Business Plan

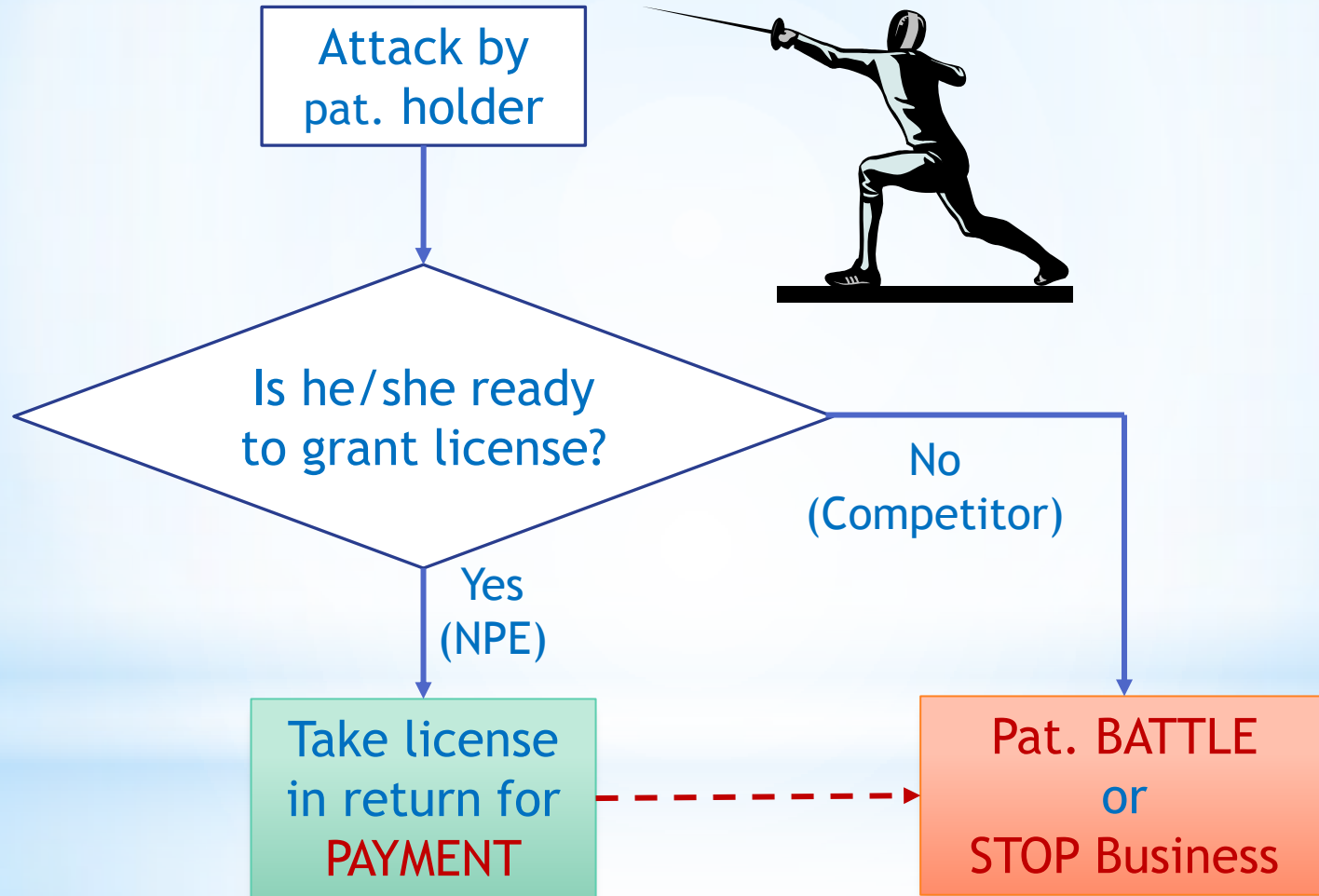


Patent Holder

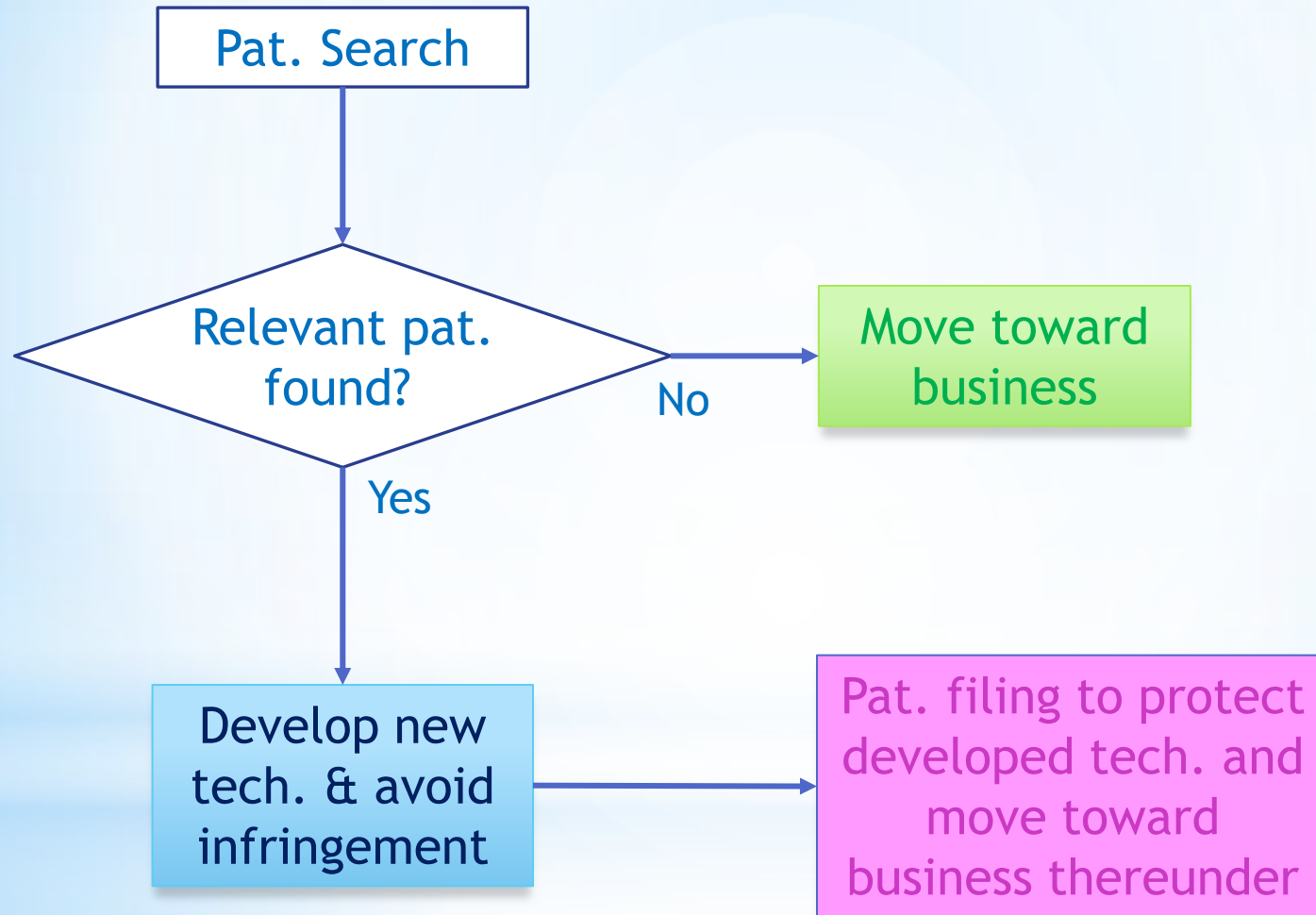


Then, how do you solve
the problem?

Threat of Patents (cont'd.)

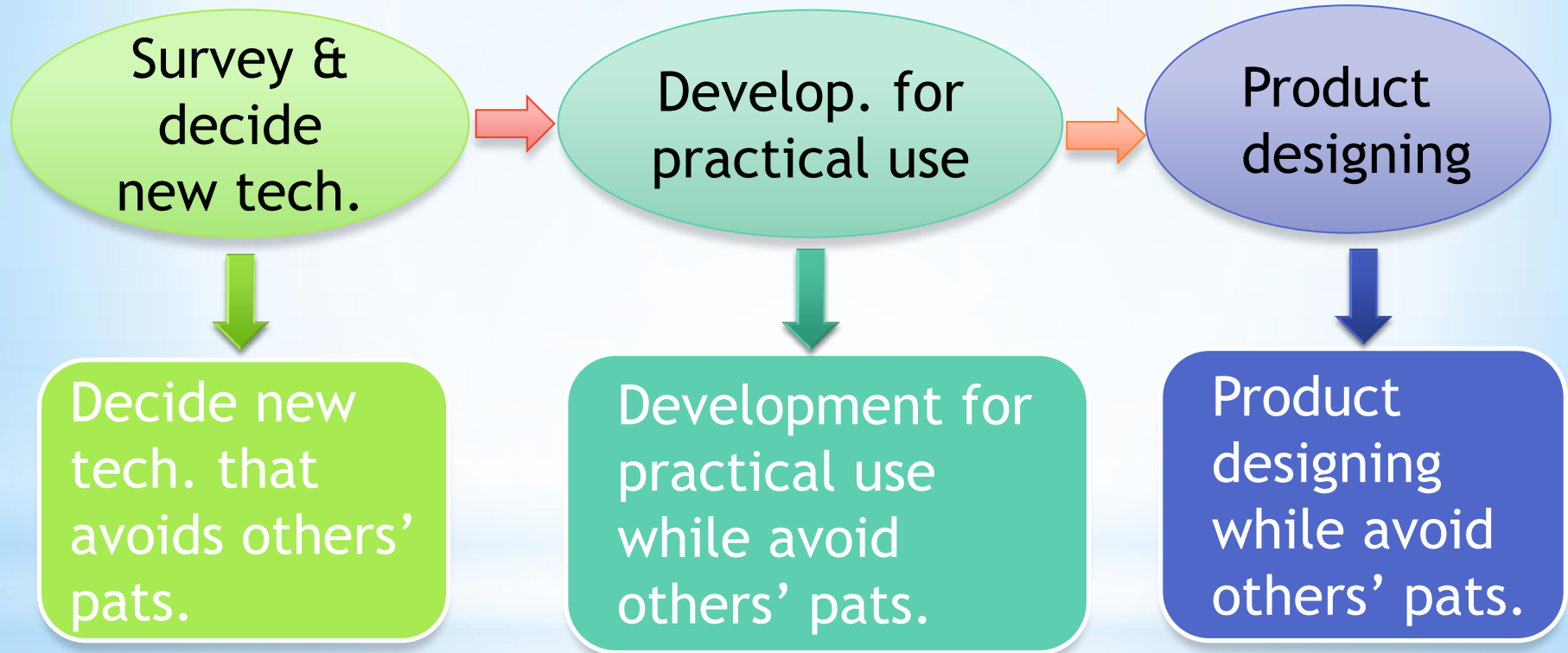


Patent Search & Patent Filing



Patent Search & Patent Filing (cont'd)

In order to avoid infringing others' patents,
patent search at each stage is important.



In order to protect developed technology,
patent filing at each stage is also important.

Summary

- Other's pat. is a serious THREAT against conducting business. If infringed, you will be stopped from doing business.
- Identifying others' relevant pats. thru search BEFORE entering business is important.
- It should be noted that acquiring pat. does NOT afford you avoidance of infringement. Your pat. protects you only from unauthorized use of your tech. by others but NEVER authorize you to use others' pats.
- However, pat. may afford you WEAPON against your competitors but has NO meaning against NPE (Non-Producing Entity).

The best way is to develop new, original, pat. protected tech. that does not infringe others' pats. and enter business thereunder.

Progress of MF Engine Project:

-Beginning of 2013, Project started

-In 1st half



1st idea
("Twin engines")

-In June, 1st patent search for novelty through pat. law firm



Prior art
found

-In 2nd half



Next idea
("DDF-CNG
combined engine")

Progress of MF Engine Project (cont'd.):

-In August, 2013, 2nd patent search for DDF, CNG, & DDF-CNG combined engines



Lots of prior pats. for
DDF or CNG engines
but less for DDF-CNG
combined engine

-Beginning of 2014, idea of current MF engine fixed

-In Feb., JP national pat. appl. filed

-In 2014, development for practical use (experiment of DDF engine)

-In Feb., 2015, PCT pat. appl. filed

-In August, PCT has been published (laid open)

One of Project Outcome at present:

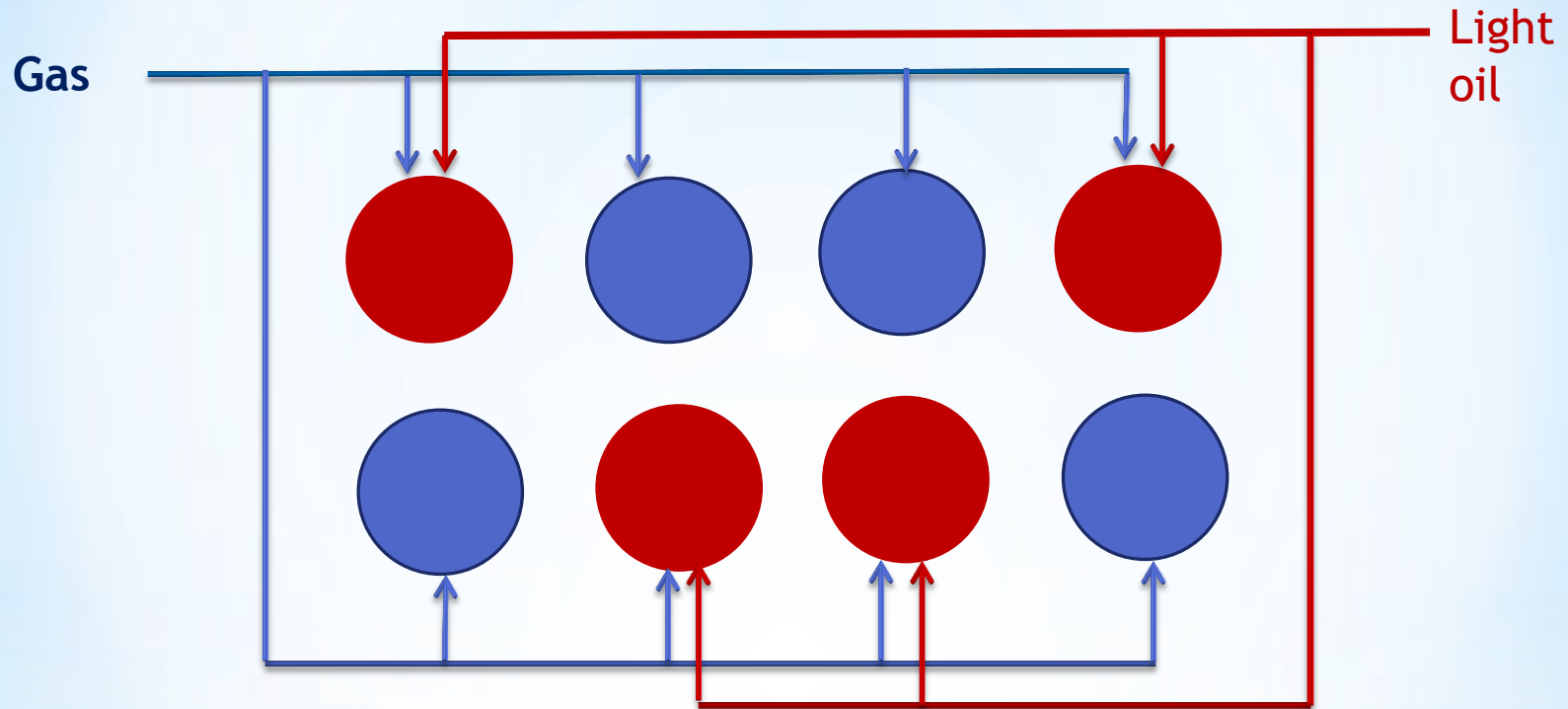
Patent application filed and now published as
WO2015122418 (laid open)

“Multi-fuel engine and control method thereof”

Applicants: Hana Engineering Japan K.K. (Sendai),
My Car Plaza Corp. (Hanamaki, Iwate), and
Kyoyu K.K. (Sendai)

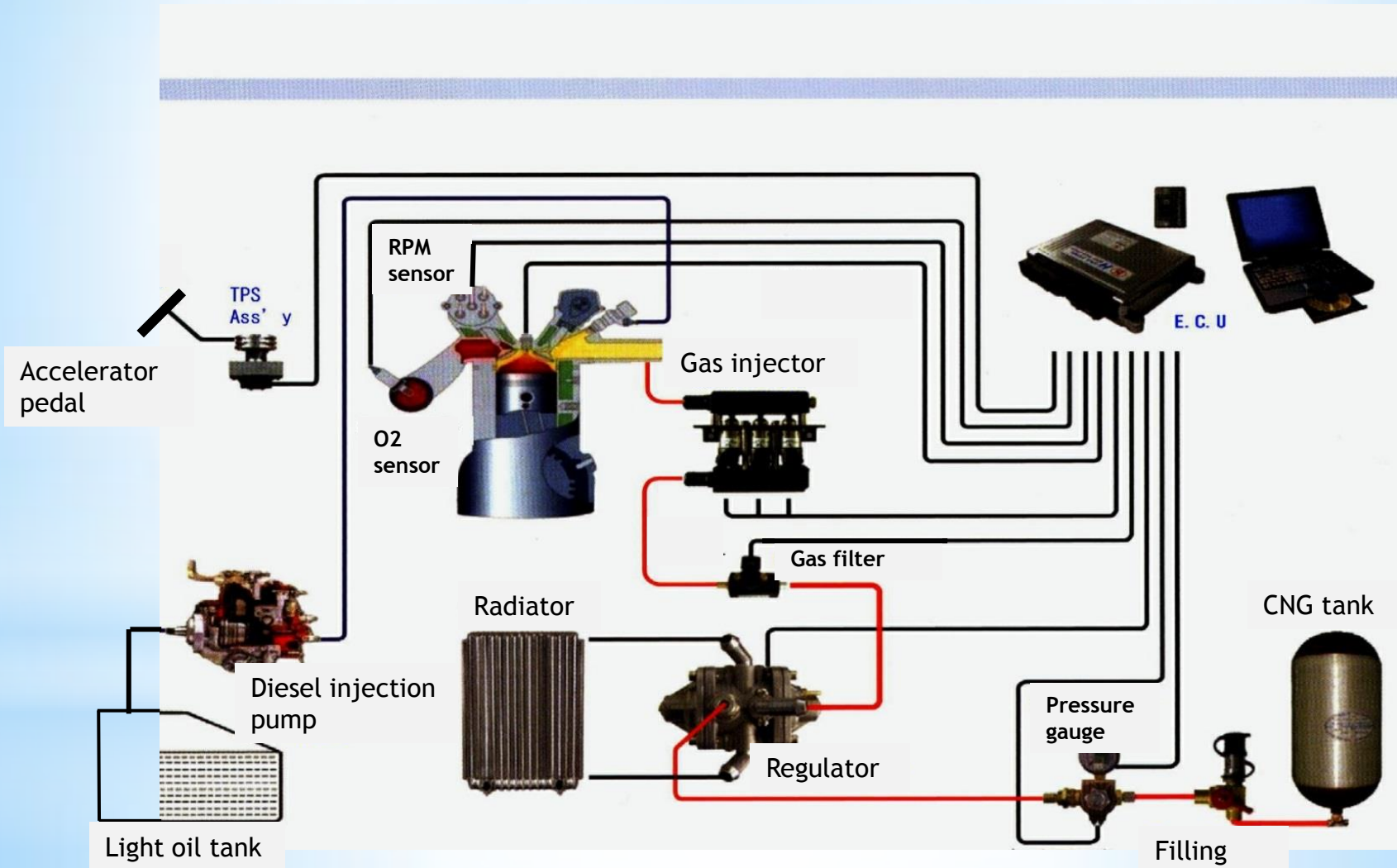
Inventors: K. Kami (Hana Engineering Japan),
R. Obara (My Car Plaza),
A. Miyamoto (Prof., Tohoku Univ.), and
T. Kuriyagawa (Prof., Tohoku Univ.)

(Abstracted from Pat. Appl.)



- ● Engine cylinders
- Ignited by spark. Used up to 1,000rpm or all rotation range.
- Ignited by pressure heat. Used beyond 1,000rpm.

Current Experimental Mid-size Bus Engine - DDF



Next stage:

- Realize “MF Engine,” that is DDF + CNG
- Survey commercial needs/areas (domestic and overseas)
- Clarify business model (such as remodeling)
- Secure patent rights based on WO2015122418 in primary countries/territories
- Search into 3rd parties’ relevant patents

We will welcome
joint partners
to our Project!

