Mission Planning with Weapon Delivery Planner.

BMS has a lot more features that benefit from pre-flight planning. For example the SAM circles and communications (IVC).
Although BMS can handle a lot of these things through the in-game user interface, there are a number of shortcomings with using that as a mission planning tool.
WDP is an alternative tool to do a more complete job of this planning in a very short time.
In this case I do not mean the creation of missions, that still need to be done in Falcon itself.
The planning for the flight for yourself or multiple humans can be done with WDP creating a datacard (lineup card) and managing your DTC at the same time.

This article will give you a short overview about planning your mission with WDP. To help explain how to use this tool, I made an easy mission that has all the components in it.
This way you can see how to plan your mission and how easy it can be. The mission contains a couple of strike flights within a larger package. The package also contains a sweep and a sead strike.

Before you leave the mission planning screen in Falcon, note the package number. This will make is easier to find your flight later, especially if you have a mission that contains a lot of packages.

After you have started WDP you will see the datacard. This is the heart of the program and it will gather all the data needed for the mission.
Find the "Open TE file" button and select the mission file you want to use. A Selection window will open and here you need to find the flight you want to join. You can also select a flight that is not an F-16 flight but note that things like performance calculations may not be correct unless you have selected an F-16 flight.
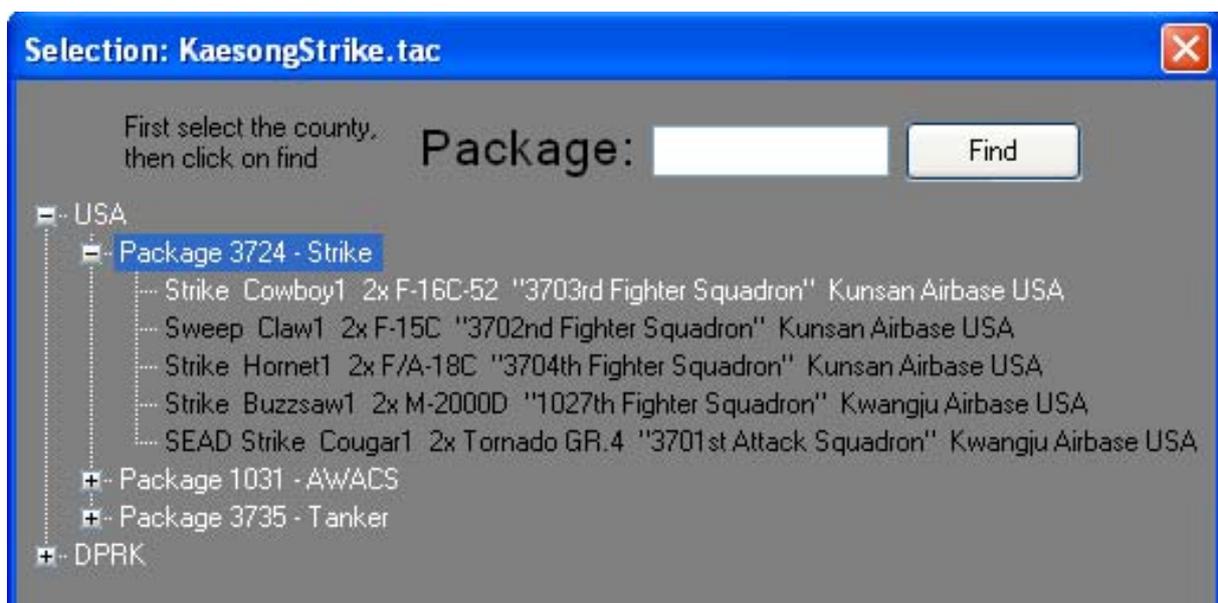
After you selected your flight, you will get the loadout screen where you can check if the loadout is correct.
The loadout is important for the performance calculations.

Loadout

Aircraft

F-16C-52

AA: 2x A120B 2x A-9LM

AG: 2x B50

ECM: 1x AL131

FUEL: 2x TK370

Empty: 19500
Load: 6731
Fuel: 12194
Gross: 38425
Max: 42300
Drag: 94

9	8	7	6	5	4	3	2	1
AIM-120B	AIM-9M		370 Gal Tank		370 Gal Tank		AIM-9M	AIM-120B
1	1		1		1		1	1
			Mk-84 AIR	ALQ-131		Mk-84 AIR		
			1	1		1		

Loadout

Name	QTY	9	8	7	6	5	4	3	2	1
370 Gal Tank	2				1		1			
AIM-120B	2	1	X	X				X	X	1
AIM-9M	2	X	1	X				X	1	X
ALQ-131	1			X		1		X		
Mk-84 AIR	2			1	X		X	1		

Clear   Ok   Cancel

And now the fun starts.

In the picture below you can see what WDP already does for you. It has pre-filled the datacard with the most important data.

WDP knows your departure, arrival and alternate airport and shows you all the important data.

Weapon Delivery Planner. Version 2.4.3   created by Falcas

Options Help

Korea   DataCard Performance DTC MAP PopUp HADB TOSS Threats Munition

Open Mission
Reload Weather
Mil/Civ   Km/SM
Get DTC File
Save DTC
Print Preview
Print

Load DataCard

Check if you want
these values load
while you load a
datacard.

☑ Kias
☑ Fuel
☑ Formation

Save DataCard
DataCard Directory

Current Time
1, 06:25:00

Page 1   DATACARD

ATIS E 0625LT ILS RWY36 TL140 025/8KT CAVOK 12/7 Q1034
BCMG 0700/0800 9999 FEW080

Airbase	TCN	UHF	VHF	Elv	RWY	ILS
DEP Kunsan	75 X	292.30	126.50	10	36	110.30
ARR Kunsan	75 X	292.30	126.50	10	18	110.30
ALTN Seosan	52 X	353.10	136.75	26	02R	111.50

Pos	Name	IDM	TCN	TO	LND	Notes:
1 Lead		1-1				
2 Wing		1-2				
3 Element		1-3				
4 Wing		1-4				

Callsign Pack 3724	Aircraft Type	UHF	VHF	IDM	TCN	Task
⦿ Cowboy 1	2 F-16C-52			1		Strike
○ Claw 1	2 F-15C			2		Sweep
○ Hornet 1	2 F/A-18C			3		Strike
○ Buzzsaw 1	2 M-2000D			4		Strike
○ Cougar 1	2 Tornado GR.4			5		SEAD Strike

STPT	Action	TOS	HDG	Dist	KIAS	Alt	Min Fuel	Formation
1	T/O	06:43:39	---	---	---		7002	Spread
2	Nav	06:48:10	206	18.6	245	3000	6630	Spread
3	Push	06:54:55	272	42.1	375	15000	5999	Spread
4	Nav	07:04:32	018	74.8	465	15000	4877	Spread
5	Nav	07:12:08	024	51.3	405	500	3851	Spread
6	Nav	07:13:33	003	10.3	435	500	3645	Spread
7	Strike	07:15:00	020	10.9	450	500	3427	Spread
8	Split	07:19:06	166	32.9	475	28000	3098	Spread
9	Nav	07:27:00	360	63.2	480	32000	2466	Spread
10	Land	07:30:38	191	29.1	480	0	1884	Spread
11	Land	---	352	44.2	---	---	1000	---
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

Page 2   DATACARD

1265334 Callsign Cowboy 1 Package 3724 Mission KaesongStrike

Config							
A-A	2x A120B 2x A-9LM	Gross Wgt	38425	Rotation	152	TO Spec	13/ Mil
A-G	2x B50	Drag ind	94	Refusal	178	Fuel	12194
ECM	1x AL131	ALOW	300	Mil Power	97 %	Set Fuel	
Tanks	2x TK370	MSL	10000	Mil Climb	425/0.84	JOKER	
						BINGO	2500

Primary				Secondary			
DMPI				DMPI			
Lat&Long				Lat&Long			
Type			Profile 1		Rel Angle	45
SNSR			Arming dly	04.00	SGL/PAIR	SGL
OPS time			Burst Alt	5000	Ripple	1
Attack type	None		Release		Fuse	NOSE	Spacing	175

VIP / VRP	OA1	OA2	PUP	Pull Hdg	
TBRG				Climb	
RNG				Pull Down	
ELV				Turn	
Ingress Alt		Rel Height		Attack hdg	
Ingress Spd		Rel Spd		TGT in HUD	

	AC Type	TACAN	UHF	LOC	Notes:
Tanker 1	Camel1 - KC-10	29Y		215 / 93	06:40 - 11:43
Tanker 2					
AWACS	Chalis1 - E-3			130 / 102	06:34 - 11:43
JSTAR					
FAC					
ROE			Class	Altitudes	Notes:

Mission Notes:

All the yellow fields can be changed by clicking on them and entering new data. Depending on what kind of field you are clicking you will be prompted by a selection option or you can type anything you want.

ATIS.

As BMS only has weather for the complete theatre, the report can also be used to see what the weather will be at your target.
With the buttons to the left you can choose if you want visibility values in KM or SM. At the same time the pressure will chance between mb or inhg.
You can also choose to have the weather report in the military colour code.
Here you can see what values correspond to which colour.
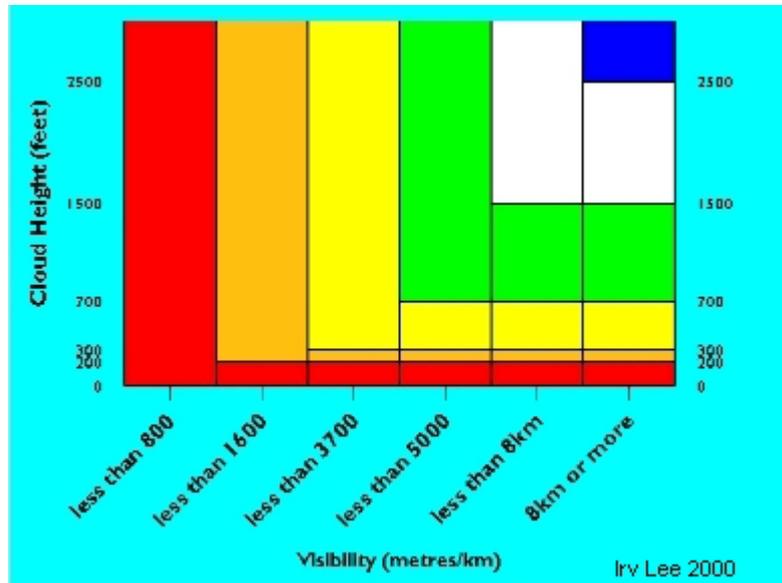
Airport data.

	Airbase		TCN	UHF	VHF	Elv	RWY	ILS
Airbase	DEP	Kunsan	75 X	292.30	126.50	10	36	110.30
	ARR	Seoul	46 X	237.10	126.20	137	19	110.90
	ALTN	Seosan	52 X	353.10	136.75	26	02R	111.50

Here you can see that I changed the arrival airport to Seoul. Now you have one more airport with all the information you need. I have also changed the runway to 19; this is the runway at Seoul that has an ILS.

Flight data.

By clicking on one of the flight name fields, you will be prompted by the screen on the left.

Here you can type in any name or callsign you like. You can also make a list of names that are automatically filled in the boxes.
In the main directory where WDP has been installed you will find a file that is called "names.ini". Open it with a text editor. The format for the file is to have one name on each line. As these lines are handled as text, you can use any character you like. Make sure you save it as a plain text with the extension ".ini"
Once you press ok, the names are filled into the main datacard. WDP will remember your last selection of names that are in the "names.ini".
The IDM numbers will change automatically depending on the flight that you have selected.

	Pos	Name	IDM	TCN	TO	LND	Notes:
Flight	1 Lead	Falcas	1-1	1Y			
	2 Wing	Snowman	1-2	64Y			
	3 Element		1-3				
	4 Wing		1-4				

There is space for the A-A Tacan that you want to use. Your actual T/O and Landing times can be noted for later use.

The notes are for anything you like. One option is to write down the registration (number plate) of every aircraft of your flight, if you are flying an aircraft that has this option.

Package data.

The package data is very important if you fly with a large package. The package number can be found on the left corner.

	Callsign Pack 3724	Aircraft Type	UHF	VHF	IDM	TCN	Task
Package	● Cowboy 1	2 F-16C-52	12	1	1	1Y	Strike
	○ Claw 1	2 F-15C	12	2	2	2Y	Sweep
	○ Hornet 1	2 F/A-18C	12	3	3	3Y	Strike
	○ Buzzsaw 1	2 M-2000D	12	4	4	4Y	Strike
	○ Cougar 1	2 Tornado GR.4	232.55	125.34	5	5Y	SEAD Strike

Here you can see the flights that are in this package. The maximum amount of flights is 5 per package.

You can select any flight here and all the other relevant data will change as needed.

The type and amount of aircraft can be seen.

Also your communication planning for the package is done here. Choose and fill out the UHF and VHF settings that you want to use. Most of the times you will use preset values like UHF12 and VHF1. You can also use frequencies as Cougar 1 has in the example above.

Flight plan.

The flight plan is good to have with you in the cockpit.

With BMS at present there is no 2D cockpit so you don't have the kneeboard view option that used to have the flight plan.

	STPT	Action	TOS	HDG	Dist	KIAS	Alt	Min.Fuel	Formation
Flightplan	1	T/O	06:43:39	---	---	---	---	7002	Spread
	2	Nav	06:48:10	206	18.6	245	3000	6630	Spread
	3	Push	06:54:55	272	42.1	375	15000	5999	Spread
	4	Nav	07:04:32	018	74.8	465	15000	4877	Spread
	5	Nav	07:12:08	024	51.3	405	500	3851	Spread
	6	Nav	07:13:33	003	10.3	435	500	3645	Spread
	7	Strike	07:15:00	020	10.9	450	500	3427	Spread
	8	Split	07:19:06	166	32.9	475	28000	3098	Spread
	9	Nav	07:27:00	360	63.2	480	32000	2466	Spread
	10	Land	07:30:38	191	29.1	480	0	1884	Spread
	11	Land	---	352	44.2	---	---	1000	---
	12								
	13								

The fuel calculation will give you a rough estimate of how much fuel you will need at a certain point. This means that if you want to follow the flightplan, you need at least this amount of fuel to get back to your based. The standard calculation is base on a minimum of fuel at your alternate of 1000lbs. If no alternate is available, the calculation takes 1000lbs at your destination. This will give you some indication what you would need as a bingo setting. You can change the values of the fuel, but you have to be sure you use the minimum values that you want to have at a STPT.

Here you have another example of a flightplan that has a refuelling point in it.
In the picture above I changed some formations to Trail. Because this is done in WDP, there is no effect in Falcon itself; specifically, changes to formation made in WDP do not affect AI aircraft. However it gives you and your human wingman a good plan for how you want to fly.

STPT	Action	TOS	HDG	Dist	KIAS	Alt	Fuel	Formation
1	T/O	07:34:48	---	---	---	---	6730	Spread
2	Push	07:43:41	268	51.9	350	22000	5952	Spread
3	Nav	08:11:27	283	222.1	480	25000	2620	Spread
4	Refuel	08:24:57	339	108.0	480	25000	1000	Spread
5	Nav	08:36:08	336	9.4	480	25000	12450	Spread
6	Nav	08:58:47	336	181.2	480	25000	9732	Spread
7	Nav	08:59:53	313	8.8	475	21500	9600	Spread
8	Strike	09:01:00	308	8.9	480	21500	9466	Spread
9	Split	09:19:51	116	150.9	480	22000	7202	Spread
10	Nav	09:37:42	131	142.7	480	22000	5062	Spread
11	Nav	09:52:49	154	121.0	480	22000	3247	Spread
12	Nav	10:02:57	127	81.0	480	22000	2032	Spread
13	Land	10:08:06	117	41.3	475	0	1000	Spread
14								

Air to air refuelling is also taken into account. If there is a refuel point in the flight plan the minimum fuel when you arrive at the tanker is set at 1000lbs.
In the example above you can see that even that you have 2x 370gal fuel tanks, you can do a takeoff with only 7200lbs of fuel. There you would fill up all the tanks, including the wing tanks. Use the fuel slider in falcon before you go to the 3D world.
I have placed a STPT close after the tanker STPT. The reason is that you will get a good estimation of how much fuel you need to have after refuelling.
You can see that in this example you would like to carry the large wing tanks on this mission.

TO and Loadout.
Here you have all the data needed before you get into the air.
The loadout, weights and drag of the aircraft. Under the TO specs you can see that the takeoff has been calculated with a rotation to 12deg pitch and use full afterburner. The rotation should be done at 154kts. In case of a problem during takeoff, you can still stop the aircraft safely on the runway up to the refusal speed of 184kts. This calculation is done for the runway that you have selected. It assumes you line up at the beginning of the runway and it does take into account that you need 50m from the threshold to get the aircraft correctly on the runway.

The F-16 can have a few different engines and do not all run at 100% rpm when you have full mil power. In case you are doing a formation takeoff, the lead needs to set 2-3% less power so

that the wingman can keep up. So knowing that the max rpm is 97% for this aircraft is very handy.

	Config				TO Spec	12/ AB	Fuel	
A-A	2x A120B 2x A-9LM	Gross Wgt	38425	Rotation	154	TO Fuel	12194
A-G	2x B50	Drag ind	94	Refusal	184	Set Fuel	
ECM	1x AL131	ALOW	300	Mil Power	97 %	JOKER	3500
Tanks	2x TK370	MSL	10000	Mil Climb	425/0.84	BINGO	2500

When you get airborne you want to climb out to the planned altitude. However you want to do this in an optimal way. So WDP calculates you the speed and mach that you want to fly to get to your planned altitude. In this case it is 425kts/0.84mach but it actually gives you very little fuel consumption and time compared to slower speeds.
Your ALOW and MSL setting from the DTC can be seen. If you change them, don't forget to hit the "Save DTC" button so that when you get to the cockpit, these values have been changed accordingly.
Looking at the flight plan, you can now decide what you want to have for the Joker and Bingo settings. The Bingo value also needs to be saved to the DTC.

Target.

In the Target information screen you can find all the data that you need for hitting the correct one.

	Primary	Kaesong Textile Factory	Secondary	
DMPI	Factory	DMPI	Warehouse
Lat&Long	N 38,01.513 / E 127,29.371	Lat&Long	N 38,01.695 / E 127,29.331

In this example the primary target is the textile factory. As a 2 ship we divided the targets. The Desired Mean Point of Impact for the lead is the Factory and the wingman will hit the Warehouse. For both targets the coordinates are supplied.

Weapon and Delivery.

The weapon and delivery part will do the planning for weapon settings and attack profile. Most of the left side of the weapon part is free text. If you click on the yellow label beside Attack type you get a couple of options.
I have planned the pop-up in the pop-up part of WDP and all the data has been transferred to the datacard already. The pop-up data needs to be saved to your DTC.

	Type	BSU-50			Profile 1		Rel Angle	0
	SNSR	Nose and Tail			Arming dly	01.50	SGL/PAIR	SGL
	OPS time	07:15			Burst Alt	1000	Ripple	2
	Release	CCIP at 2000'			Fuse	NSTL	Spacing	250
	Attack type	PopUp / VRP						
		VRP	OA1	OA2	PUP	Pul Hdg	170.0	
	TBRG	333.2	288.4	288.4	309.9	Climb	40 deg / 3 G	
	RNG	29618	9709	9709	13252	Pul Dwn	3452' / DA 30	
	ELV	150	3452	0	150	Turn	Left / 3 G	
	Ingress Alt	150	Rel Height	2000		Attack hdg	90	
	Ingress Spd	450 kias	Rel Spd	450 kias		TGT in HUD	Target visible	

The data under Profile 1 is directly from your DTC file. Make changes as you like and use the "Save DTC" to save your changes.

You can see that much of the workload for surface attack planning has shifted from the cockpit to the desktop. After you have set all these values in the datacard and saved your DTC you only need to load the DTC and you are all set.

Support.

Every flight needs some support. In this case you can see that you will have a Tanker and an AWACS on station.

		AC Type	TACAN	UHF	LOC	Notes:
Support	Tanker 1	Camel 1 / KC-10	29Y		215 / 93	06:40 - 11:43
	Tanker 2					HAVCAP: F-16C / F-18C
	AWACS	Chalis 1 / E-3			130 / 102	06:34 - 11:43
	JSTAR					HAVCAP: F-15C
	FAC					

The callsign, type, tacan, bullseye position and station time for your support flights are given automatically. I have added the HAVCAP types by hand as notes. This will give you a quick idea what is going on when you get the tanker or awacs on your radar.

Rules Of Engagement.

No rules set for this mission.

	ROE	Class	Altitudes	Notes:
Stoplines				

Mission Notes.

Mission notes are for anything you would like to add.

In this example you can see that I used it for some intel data.

Mission Notes:
Intel: MiG-21 MF/PFM squadrons stationed at Hwangju and Koksan.
They can carry the AA-2C (Radar) and AA-2D (IR) missiles
AAA has been seen at all major cities.

Map.
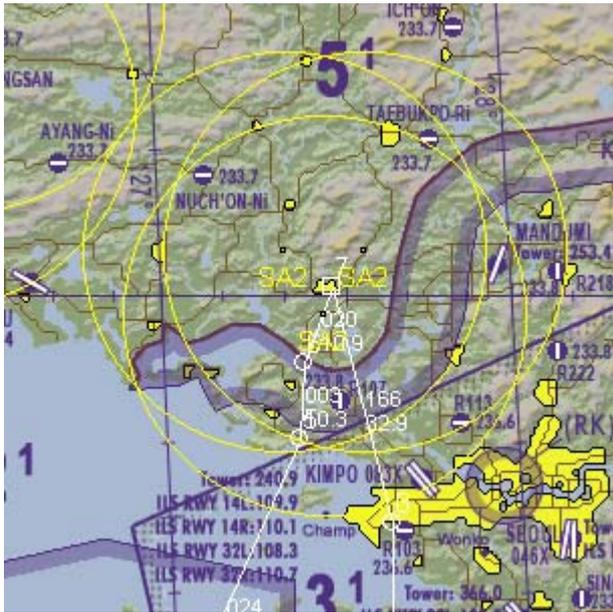
Now that you have your flight sorted, you still need an overview of the flight.
The Map view fulfils that function.
WDP will look for active SAMs and show them on the map as yellow circles.
In BMS you could place all the PPTs by hand, but this could be a big job. So WDP can do this job for you. Click the "Auto PPT" button and the threats that are close to your route will become red.
These red threats will be copied to the DTC, when you use the "Save DTC" button to record these changes.
PPTs and Lines can also be added by hand if you want. Use the right mouse button on the map to add these.

The bullseye can be changed as well. Right mouse click and place the bullseye.

Don't forget to save the bullseye position and well as all the changes you make to the PPTs and lines.
Tanker tracks can be found on the map. They include the tanker callsign, tacan channel as well as the station time.
You can draw lines over this box to find the tanker quickly during flight.
As you can see on these pictures, you can save a small part of the map.
Zoom and move the map to the view you would like to have and click on the "Save Map" button. If you have loaded a mission and selected your flight, you are automatically directed to save the map at the same location as where the datacards are saved. Also the
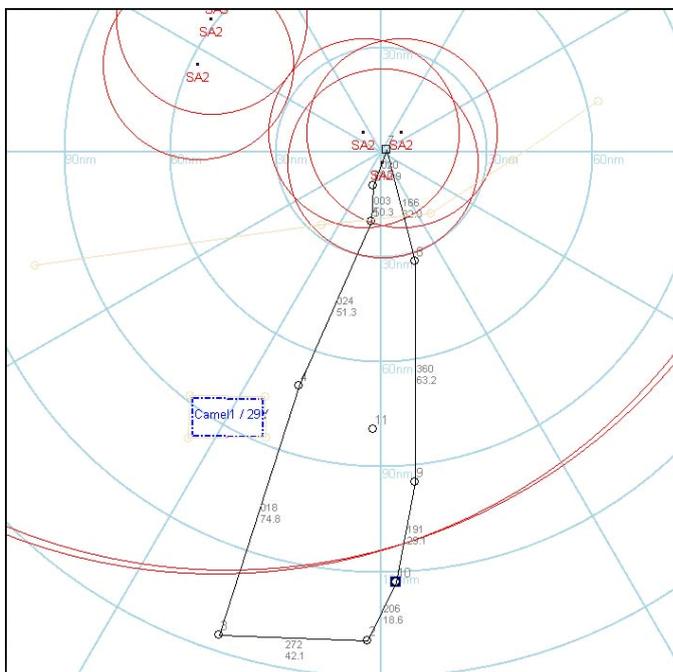
name for the map is chosen with the name of the flight. In this example it is: Cowboy1_Map.
On the right side of the map you can see a lot of options to show you data on the map.
One of the nice options is the choice if you want the background as a real map or just plain white. Now you have a map for this flight that is not cluttered with too much data.

Managing your datacard.

After you have filled all the data on the datacard it would be a shame if you needed to do this over and over again for the same mission. So WDP can store your data if you want. Every yellow field can be saved. Use the "Save Datacard" button and multiple files get saved. The first file is the file that has all the values of the yellow fields of the datacard. With this file you can reload these values and you don't need to type the same info if you want to work on the mission later on. This way you can also reload common data for other flights.

The second file is a picture (jpg) of the datacard itself. This way datacards can be prepared and are easy to send to squadron mates.

The third file is a copy of the mission.ini file. This mission.ini file is one of the DTC files. A small explanation about what to do with this files is done later, it is a bit too much to explain all about the DTC in this article. For that reason I have written a separate article called: "Working with the DTC".

When you save the files they are sorted in the following way. In the main directory of WDP you will find a directory called: Datacards. If you would place all the datacards there you would have a problem. A lot of missions use the same callsign like Cowboy1 or Viper1 for a flight. So WDP creates a separate directory for every mission. This directory has the name of the mission, in this example it is "KaesongStrike". This directory will contain multiple directories with the package number and for this example it will be "3724". In this directory, with the package number, you will find directories with the name of the flights that are in this package.
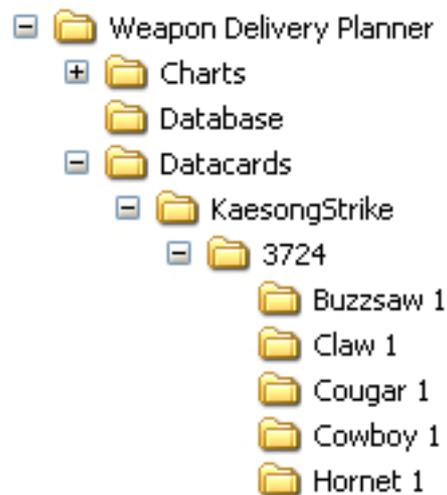
The files for your flight are saved to the directory with the callsign of your flight. If you have saved the map for Cowboy flight to the same directory you will find the following files there.

Cowboy 1.bdc
Cowboy 1.jpg
KaesongStrike.ini
Cowboy 1_Map.jpg

To quickly get to these files, use the "Datacards Directory" button.

Suppose that you want to fly a multiplayer flight and all aircraft are manned with your squadron buddies. The mission is planned and all the datacards, DTC files and maps are created at this time. You understand that you need some kind of system here. But before that, I still need to explain a bit about the DTC files.

If you are using this for a TE, the mission.ini should have exactly the same name as the mission. In this case the mission name is KaesongStrike. For every flight that you save, an "ini" file will be created in the directory with the callsign for this flight. Each of this file will contain the route or flightplan. If you would mix those up, a flight could get a totally different flightplan if you load the DTC while in the aircraft. For this reason there are different files created.

If you are flying a campaign, there is no separate "ini" file for the mission. All the data comes from your callsign.ini.

As you want to pass the files to your squadron, the best is to ZIP or RAR the complete KaesongStrike directory and keep the directory structure. The receiving squadron mates should unpack the ZIP/RAR to a safe place. To get the DTC working correctly, it needs the mission.ini in the correct directory for every player. The location of this directory can vary

depending on the theatre you fly.The basic Korea location is:
…\FalconBMS4\Data\Campaign\SAVE.
The receiving player should copy the KaesongStrike.ini from the flight directory that he is going to fly to the mission directory of BMS.

If you already have made a backup of the datacard with the "Save Datacard" button and you load the same mission again, WDP will look if it can find the backup and you will be prompted if you want to load it. If you do, WDP will also load the backup of the "ini" file. This way you have the datacard and the DTC file for this flight loaded in WDP. If you want to load the datacard saved data again, make sure you load the mission before you load the backup file.

I hope that this article gives you a good idea what can all be done with WDP.
Not every detail has been described in this article, so have a look at the WDP manual for more information.

For any more questions or updates of WDP, check out the weapon delivery planner website.
http://www.weapondeliveryplanner.nl/

Enjoy your flight,

Falcas