Additive Manufacturing Report Generator

In [1]:
```
# import libraries
import pandas as pd
from docxtpl import DocxTemplate
```

In [2]:
```
# load template
doc = DocxTemplate('template.docx')
```

Create Content

In [3]:
```
# create blank  dictionary
content = {}
```

In [4]:
```
# title block
content['company'] = 'Miles In 3D'
content['department'] = 'Additive Manufacturing'
content['phone'] = '1(800)3DP-RINT'
```

In [5]:
```
# project summary table
content['date'] = 'January 1st, 2020'
content['project_name'] = 'Controller Arm'
content['prepared_by'] = 'Miles Craig'
```

In [6]:
```
# status summary

content['status_summary'] = 'The project is progressing nicely. ' + \
                            '1 part has been successfully printed. ' + \
                            '2 parts are currently printing. ' + \
                            '1 machine is being fixed.'
```

In [7]:
```
# part overview

part_cols = ['part','material','printer','due_date','status','notes']
part_data = [['bracket_01','SS','ProX DMP 320','Jan 25th','Printed and Finishe
d','Ready to Ship'],
             ['bracket_02','SS','ProX DMP 320','Jan 30th','Printing','Needs to
be finished'],
             ['bracket_03','Ti','ProX DMP 350','Jan 30th','Printing','Needs to
be finished']]
part_df = pd.DataFrame(part_data, columns=part_cols)
content['part_table'] = part_df.T.to_dict().values()
part_df
```

Out[7]:

	part	material	printer	due_date	status	notes
0	bracket_01	SS	ProX DMP 320	Jan 25th	Printed and Finished	Ready to Ship
1	bracket_02	SS	ProX DMP 320	Jan 30th	Printing	Needs to be finished
2	bracket_03	Ti	ProX DMP 350	Jan 30th	Printing	Needs to be finished

In [8]:
```
# printer overview

printer_cols = ['printer','technology','material','status','notes']
printer_data = [['ProX DMP 320','PBF/DMLS','SS','Printing','Print Next Part'],
                ['ProX DMP 350','PBF/DMLS','Ti','Printing','Material Change Ov
er'],
                ['FORTUS 450MC','FDM','ABS','Being Fixed','Print Calibration F
ile']]
printer_df = pd.DataFrame(printer_data, columns=printer_cols)

# convert df into a list of dictionaries
content['printer_table'] = printer_df.T.to_dict().values()

printer_df
```

Out[8]:

	printer	technology	material	status	notes
0	ProX DMP 320	PBF/DMLS	SS	Printing	Print Next Part
1	ProX DMP 350	PBF/DMLS	Ti	Printing	Material Change Over
2	FORTUS 450MC	FDM	ABS	Being Fixed	Print Calibration File

In [9]:
```
# material overview

material_cols = ['material','volume_queue','volume_supply','notes']
material_data = [['Stainless Steel','50','75','Consider Another Order'],
                 ['Titanium','15','15','EMERGENCY ORDER'],
                 ['ABS','5','50','N/A']]
material_df = pd.DataFrame(material_data, columns=material_cols)
content['material_table'] = material_df.T.to_dict().values()
material_df
```

Out[9]:

	material	volume_queue	volume_supply	notes
0	Stainless Steel	50	75	Consider Another Order
1	Titanium	15	15	EMERGENCY ORDER
2	ABS	5	50	N/A

In [10]:
```
# conclusion
content['conclusion'] = 'Order Titanium! ' + \
                        'Follow up with the technician about the 450 printer.'
```

In [11]:
```
# print out content dictionary
for k,v in content.items():
    print(k)
    print(v)
    print()
```

```
company
Miles In 3D

department
Additive Manufacturing

phone
1(800)3DP-RINT

date
January 1st, 2020

project_name
Controller Arm

prepared_by
Miles Craig

status_summary
The project is progressing nicely. 1 part has been successfully printed. 2 pa
rts are currently printing. 1 machine is being fixed.

part_table
dict_values([{'part': 'bracket_01', 'material': 'SS', 'printer': 'ProX DMP 32
0', 'due_date': 'Jan 25th', 'status': 'Printed and Finished', 'notes': 'Ready
to Ship'}, {'part': 'bracket_02', 'material': 'SS', 'printer': 'ProX DMP 32
0', 'due_date': 'Jan 30th', 'status': 'Printing', 'notes': 'Needs to be finis
hed'}, {'part': 'bracket_03', 'material': 'Ti', 'printer': 'ProX DMP 350', 'd
ue_date': 'Jan 30th', 'status': 'Printing', 'notes': 'Needs to be finishe
d'}])

printer_table
dict_values([{'printer': 'ProX DMP 320', 'technology': 'PBF/DMLS', 'materia
l': 'SS', 'status': 'Printing', 'notes': 'Print Next Part'}, {'printer': 'Pro
X DMP 350', 'technology': 'PBF/DMLS', 'material': 'Ti', 'status': 'Printing',
'notes': 'Material Change Over'}, {'printer': 'FORTUS 450MC', 'technology':
'FDM', 'material': 'ABS', 'status': 'Being Fixed', 'notes': 'Print Calibratio
n File'}])

material_table
dict_values([{'material': 'Stainless Steel', 'volume_queue': '50', 'volume_su
pply': '75', 'notes': 'Consider Another Order'}, {'material': 'Titanium', 'vo
lume_queue': '15', 'volume_supply': '15', 'notes': 'EMERGENCY ORDER'}, {'mate
rial': 'ABS', 'volume_queue': '5', 'volume_supply': '50', 'notes': 'N/A'}])

conclusion
Order Titanium! Follow up with the technician about the 450 printer.
```

Render and Save the Report

In [12]:
```
# render the documnet
doc.render(content)
```

In [13]:
```
# save the document
doc.save('report.docx')
```