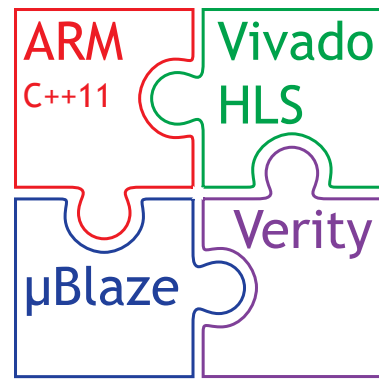


Push
Push

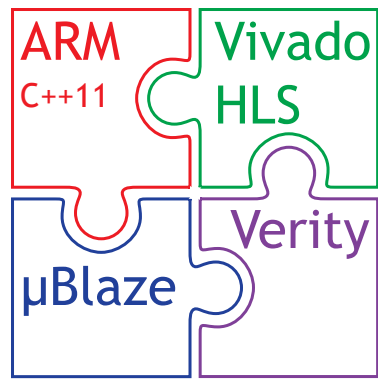


Push Push

Imperial College
London



UNIVERSITY OF
BIRMINGHAM



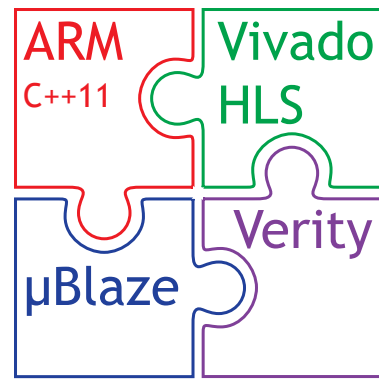
Push
Push

Imperial College
London



UNIVERSITY OF
BIRMINGHAM

System Level Linker

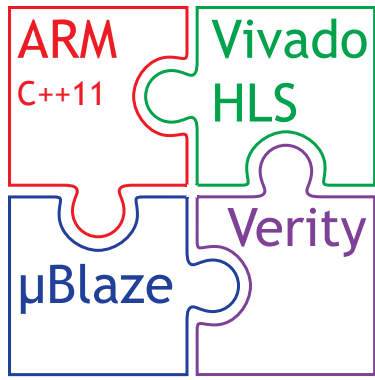


Push Push

Imperial College
London

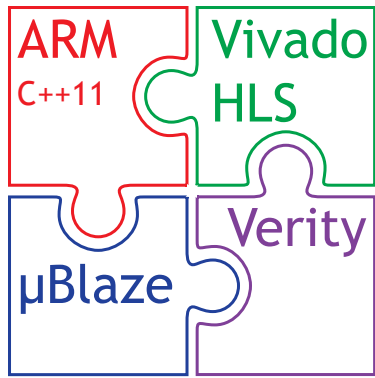


UNIVERSITY OF
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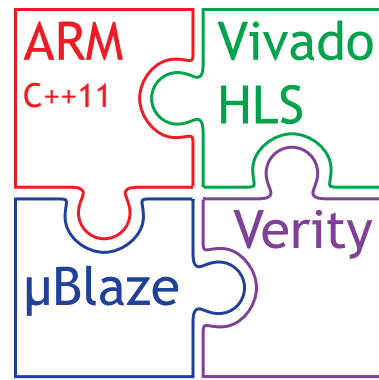
Push Push





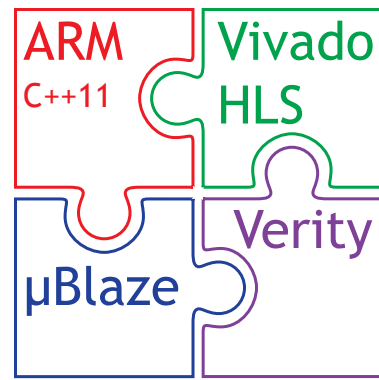
Push Push





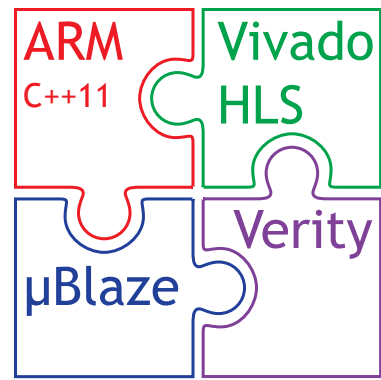
Push Push



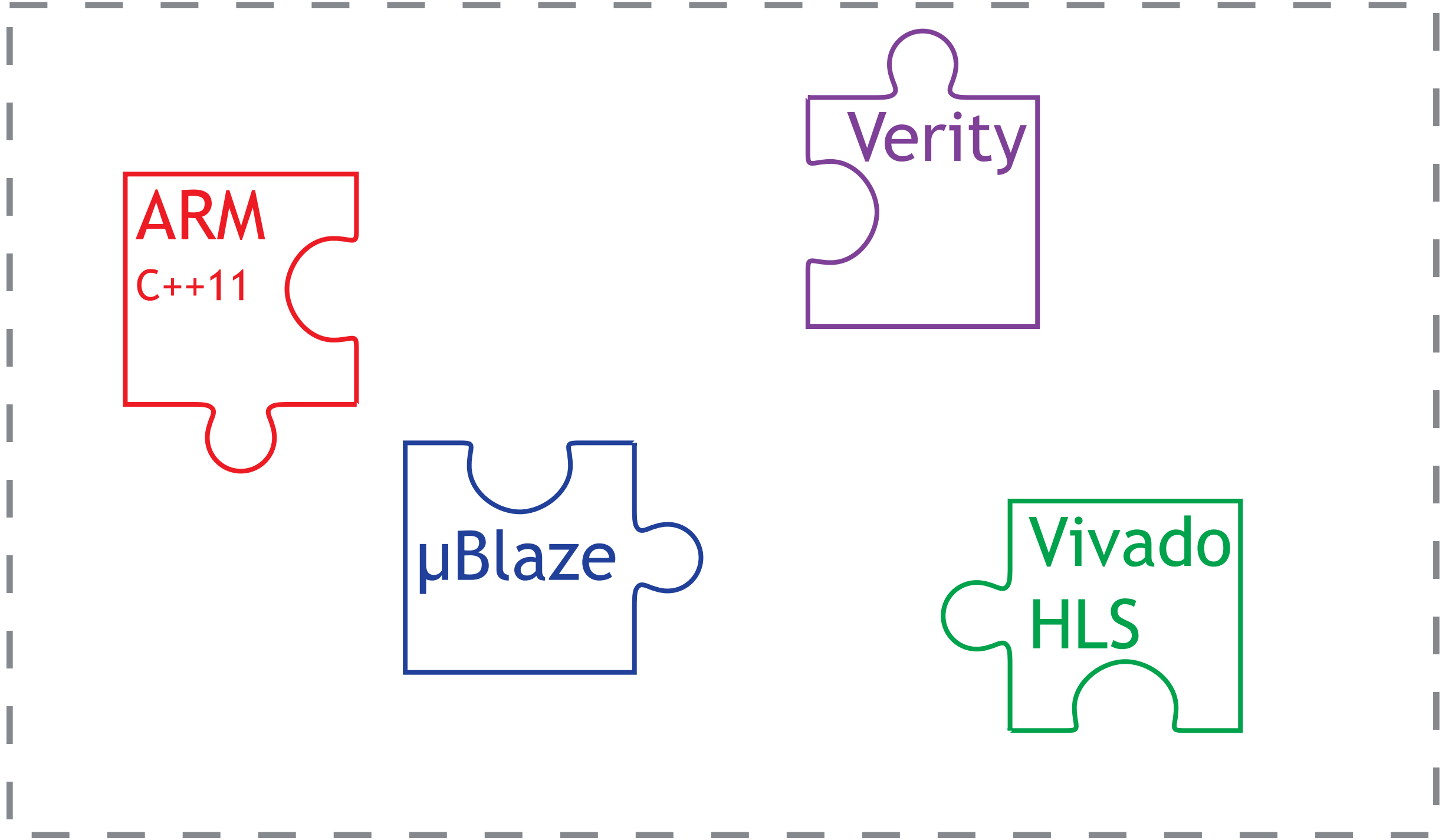


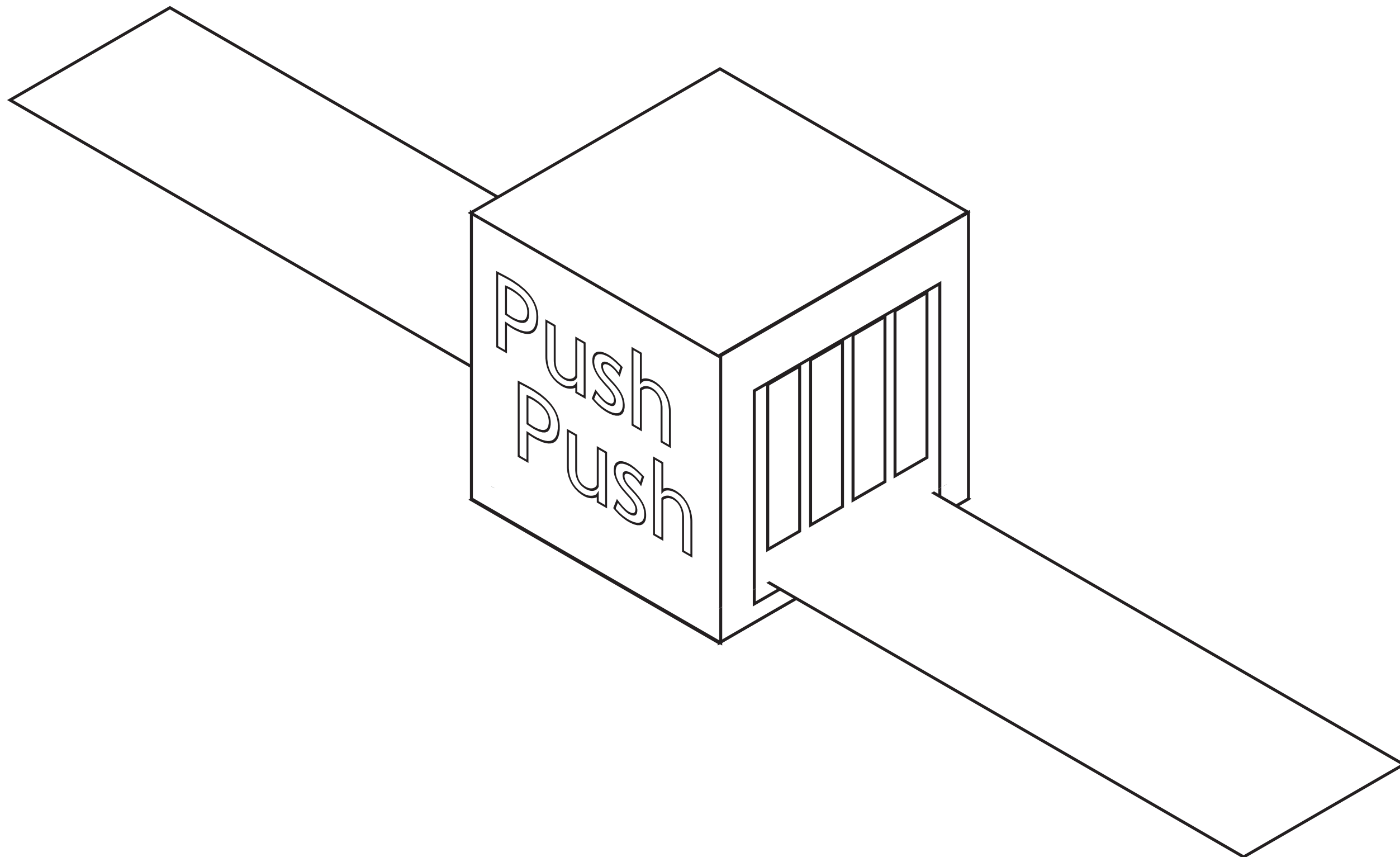
Push Push

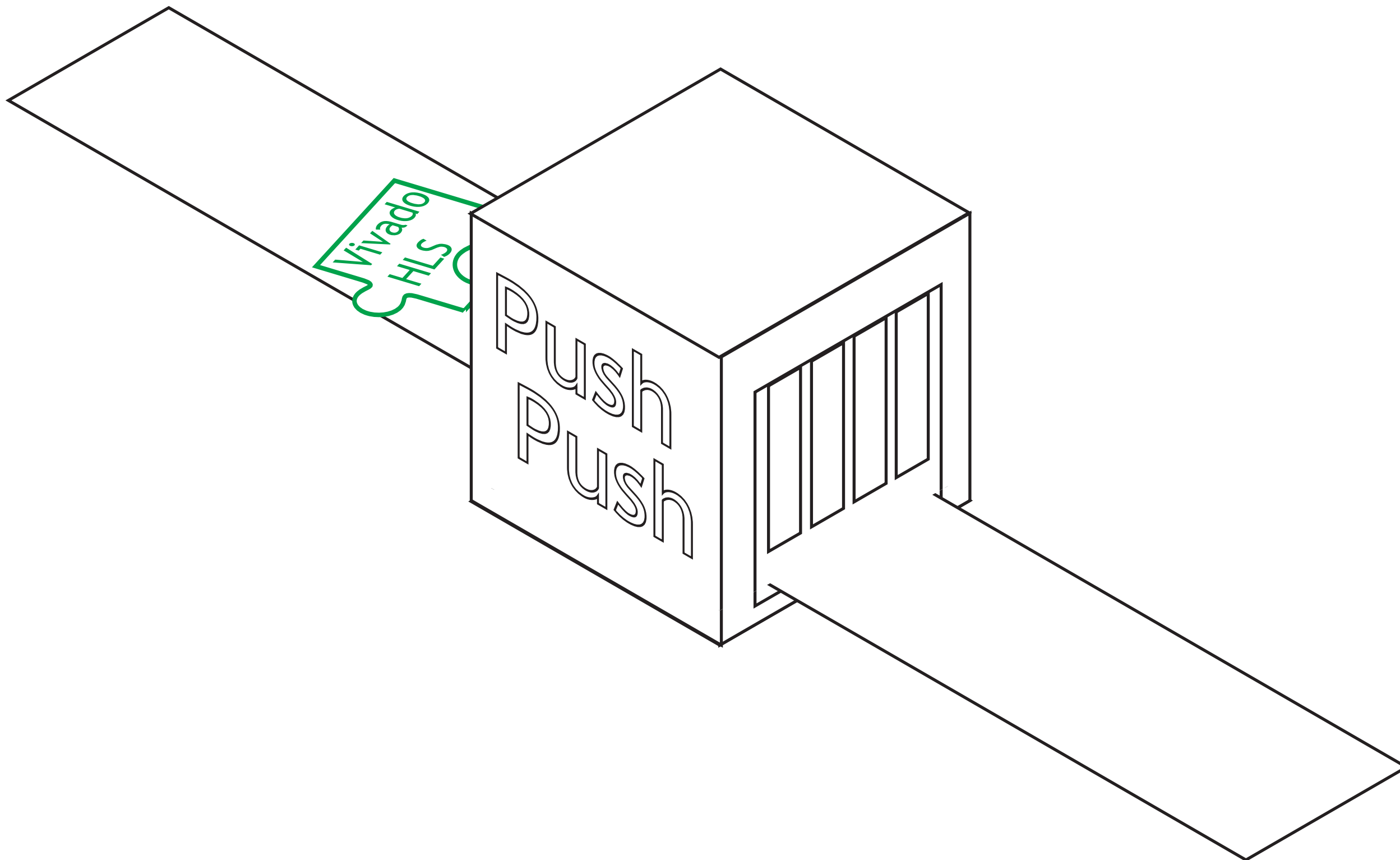


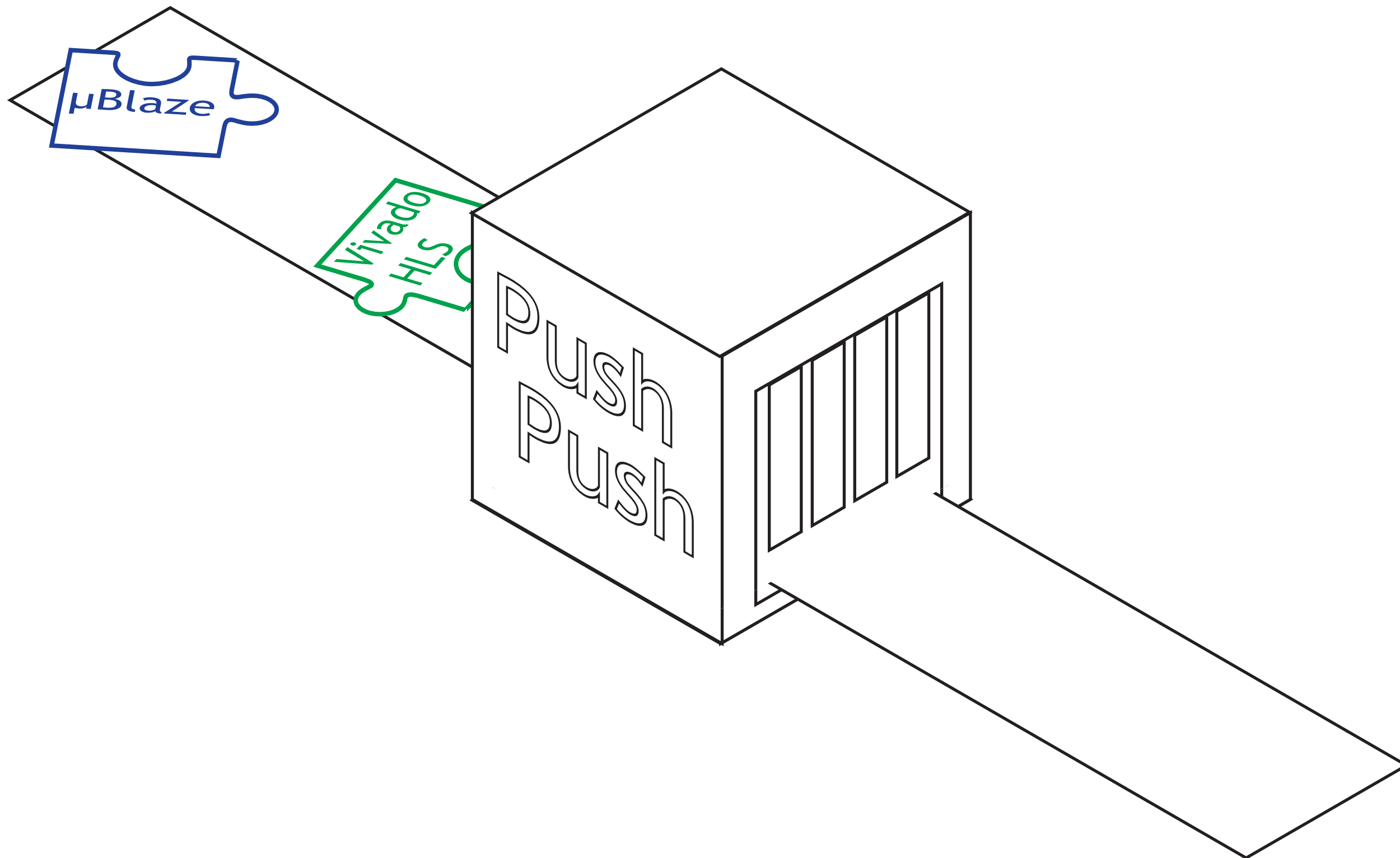


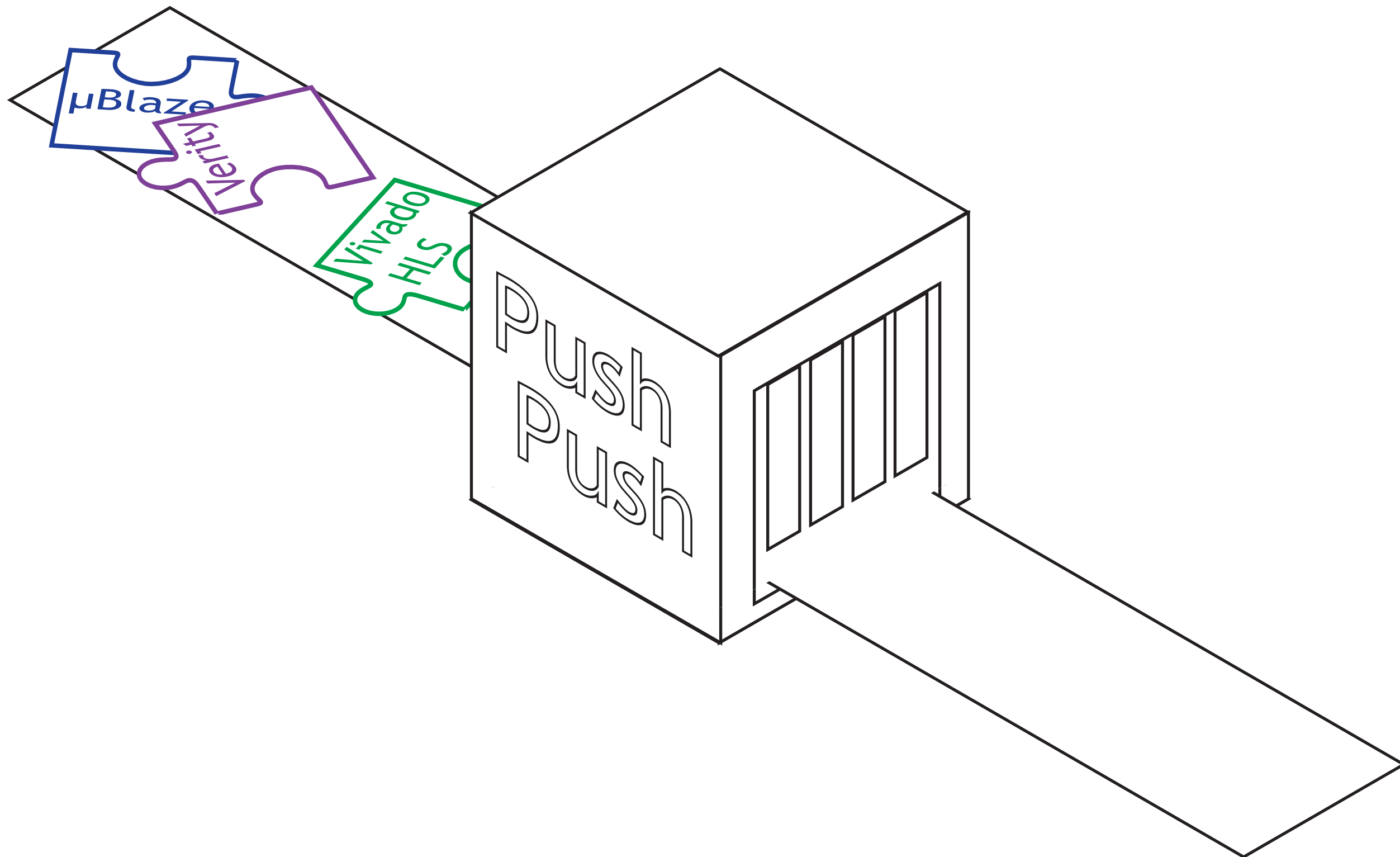
Push Push

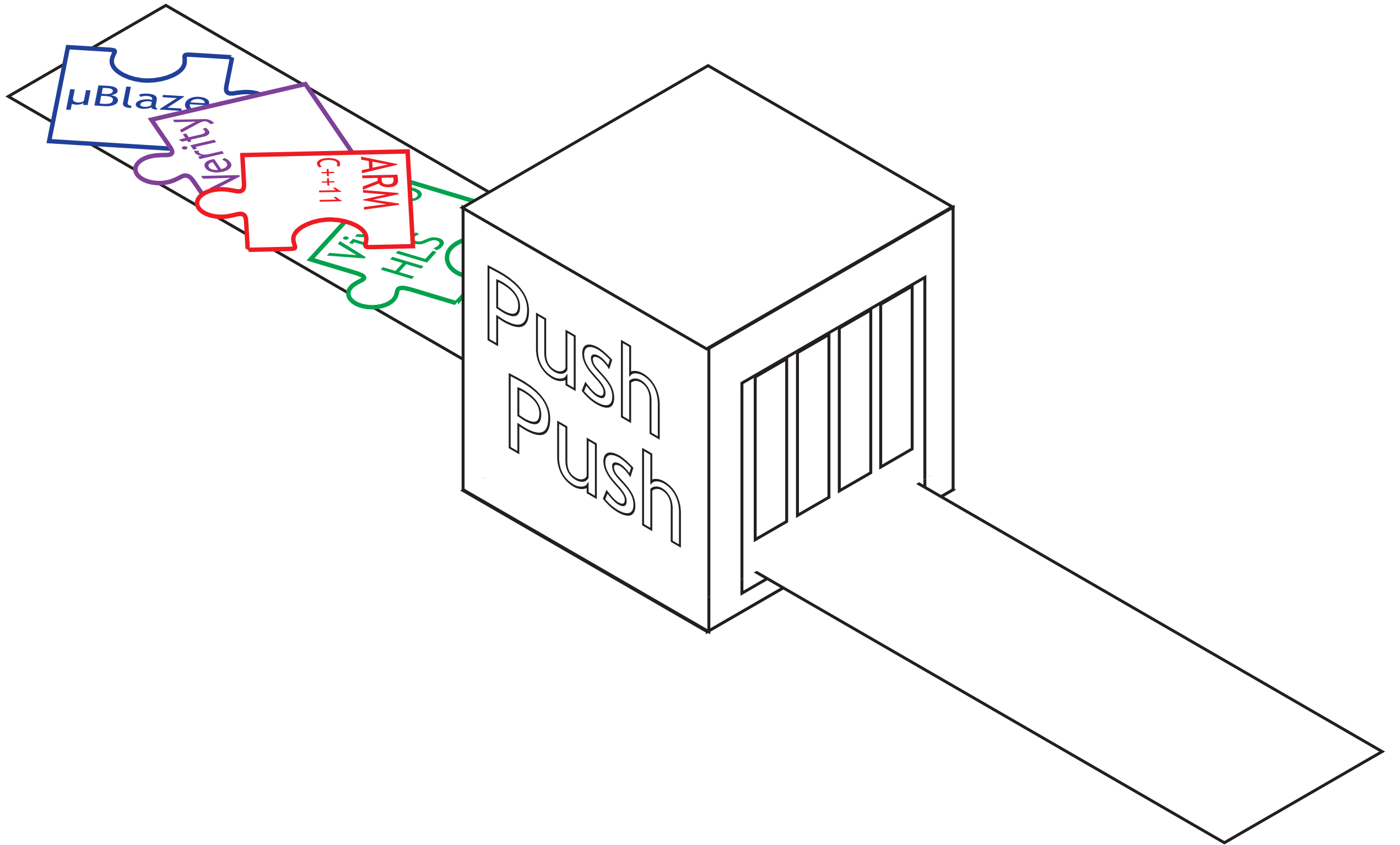


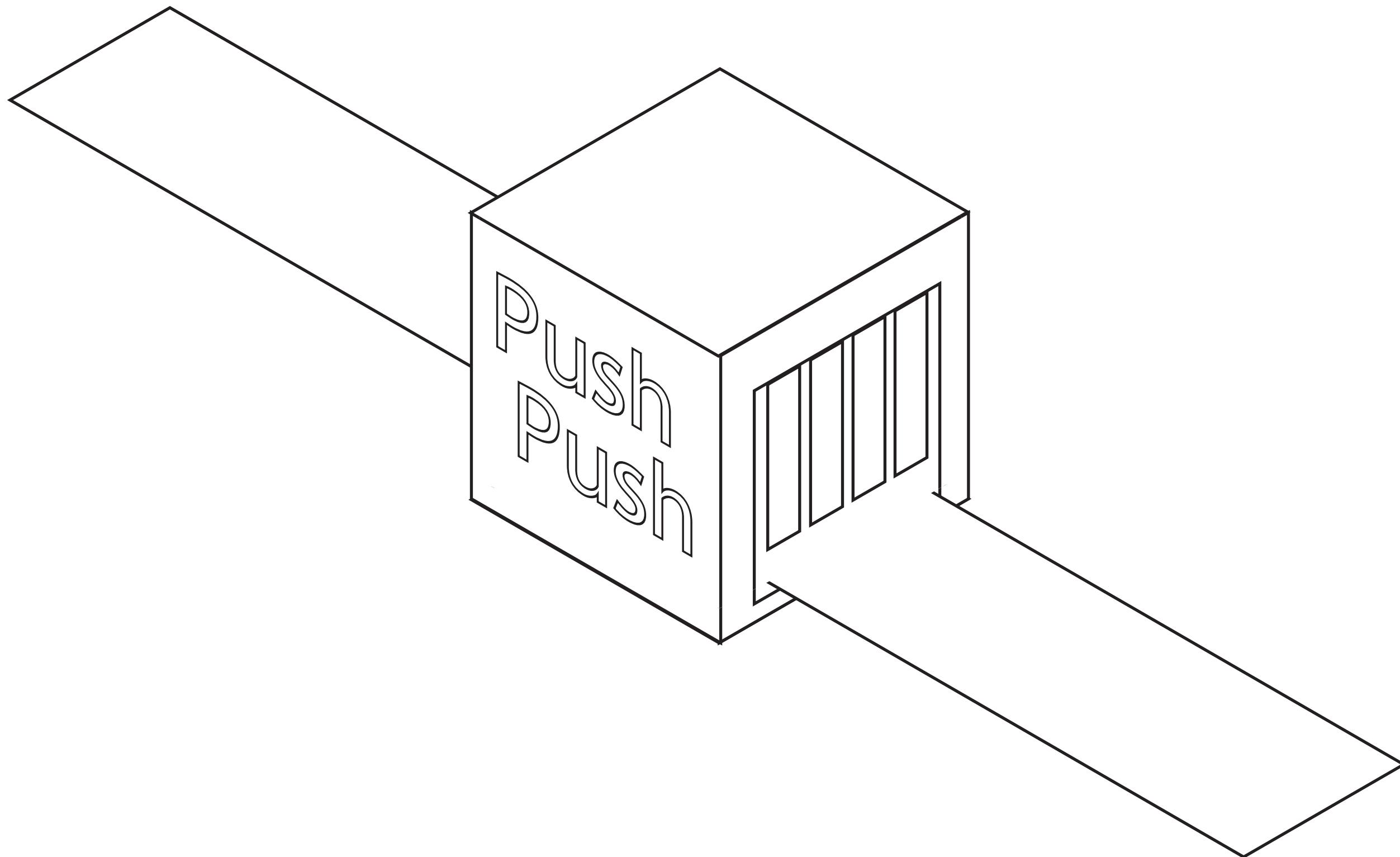


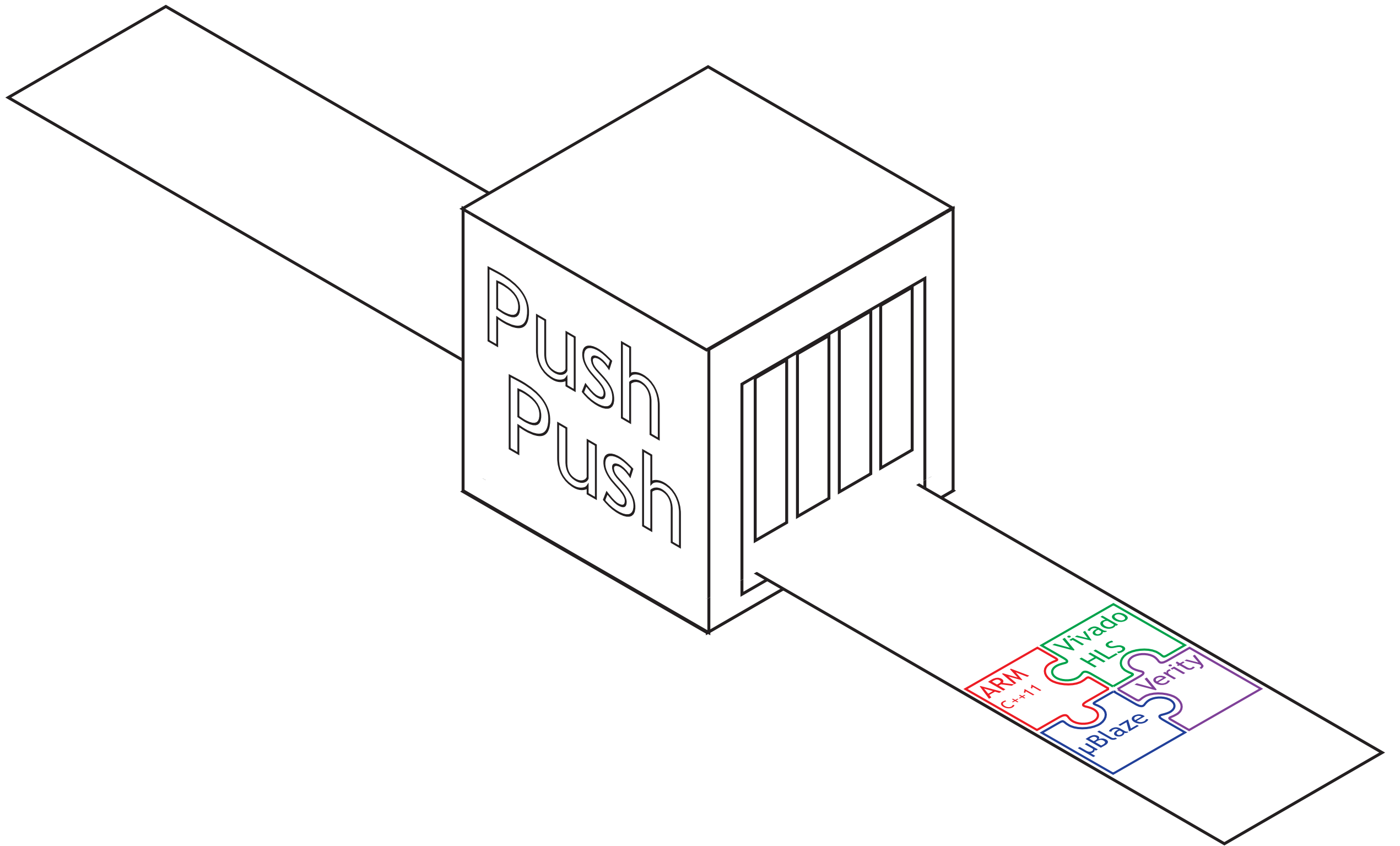


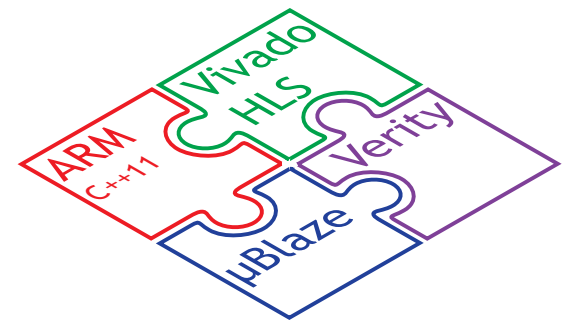


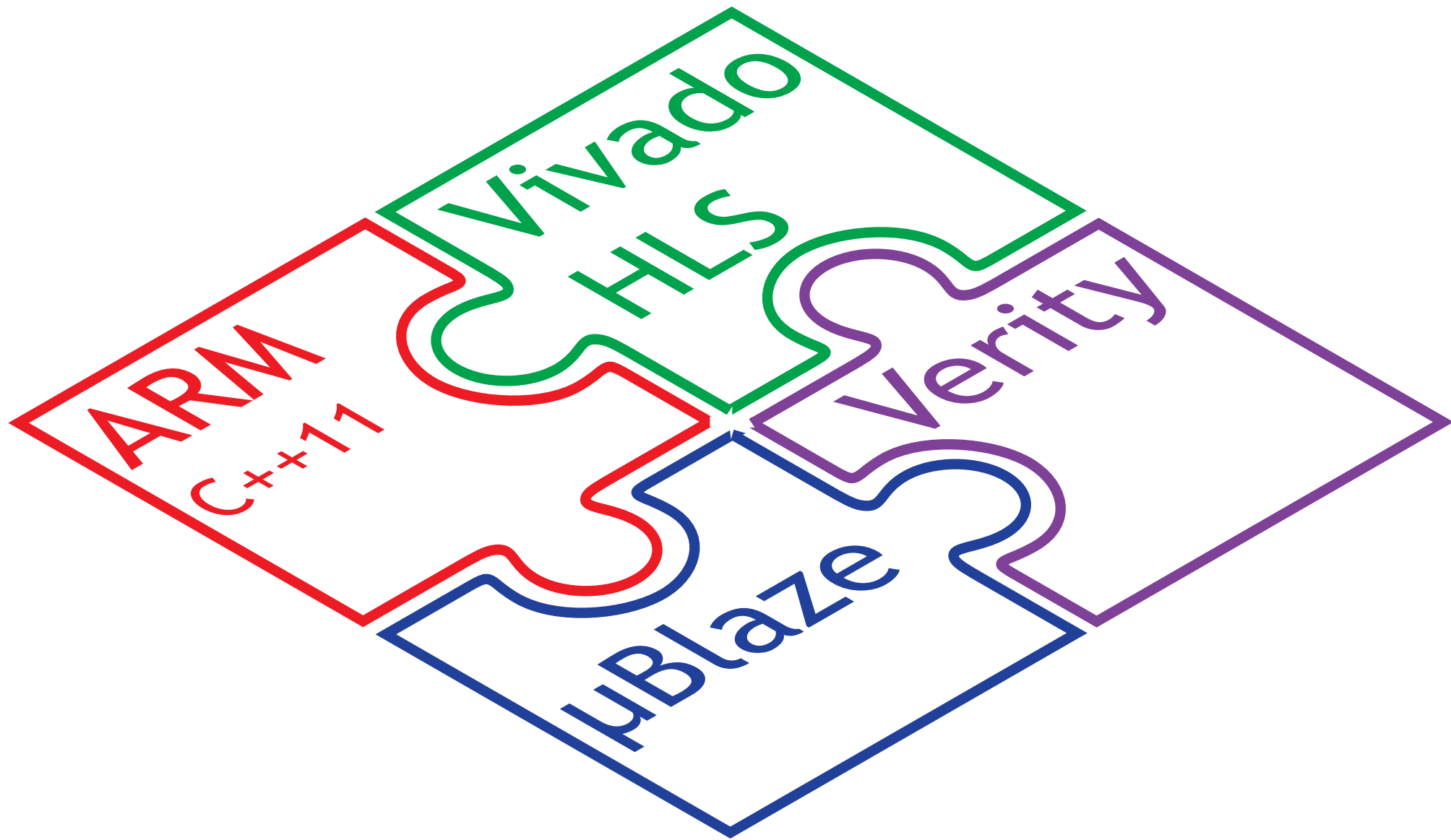


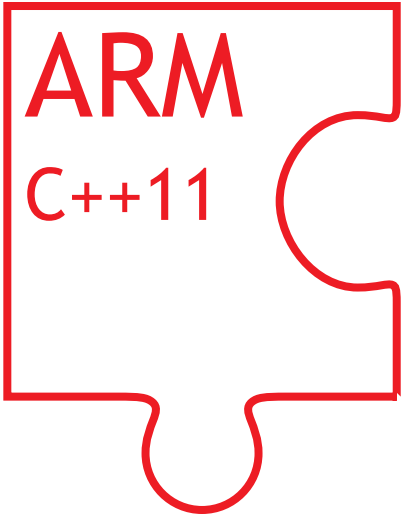








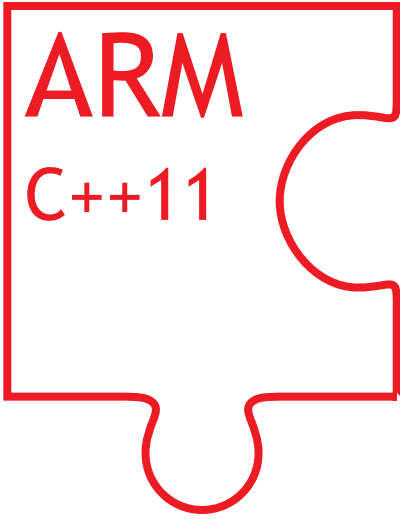




```
int main( )  
{  
    LongFunction();  
    return 1;  
}
```



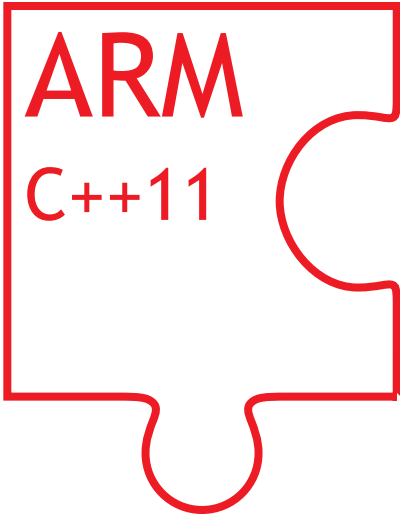
```
void LongFunction( )  
{  
    ...  
    return;  
}
```



```
int main( )  
{  
    LongFunction();  
    return 1;  
}
```



```
void LongFunction( stdout(int) )  
{  
    ...  
    return;  
}
```



```
int main( )  
{  
    LongFunction();  
    return 1;  
}
```



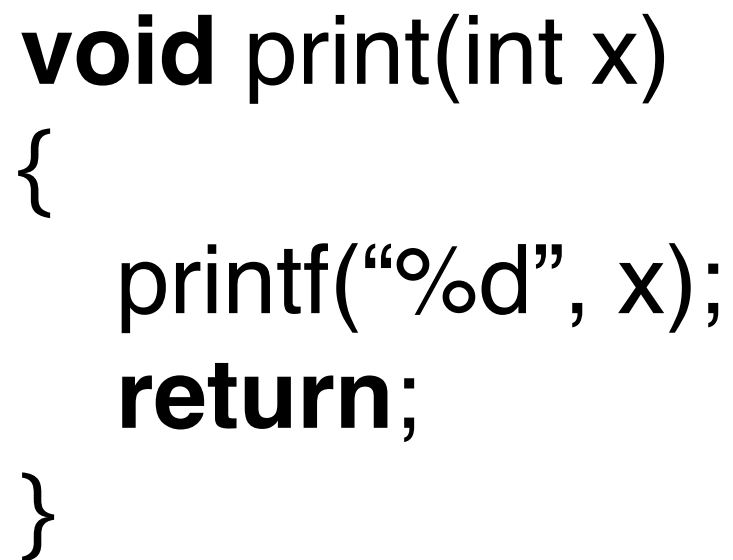
```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```

A red puzzle piece icon containing the text "ARM" and "C++11".

ARM

C++11

```
int main( )  
{  
    LongFunction();  
    return 1;  
}
```

A red puzzle piece icon containing the text "ARM" and "C++11".

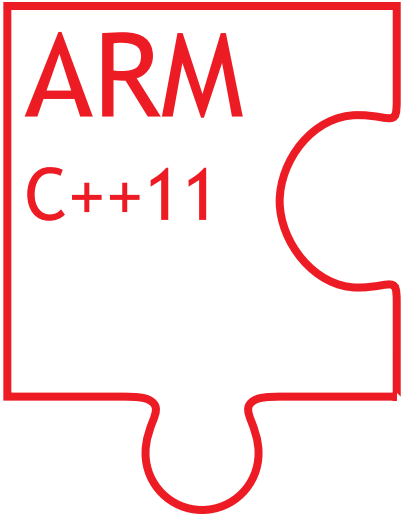
```
void print(int x)  
{  
    printf(“%d”, x);  
    return;  
}
```

A green puzzle piece icon containing the text "Vivado" and "HLS".

Vivado

HLS

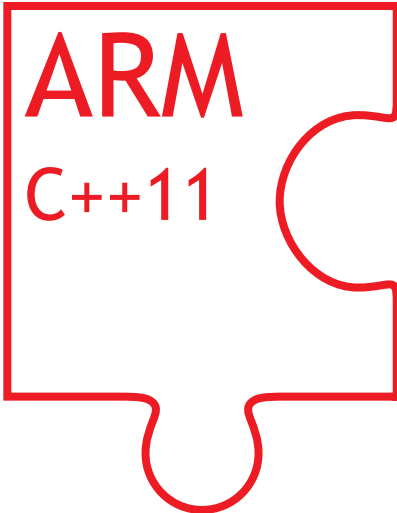
```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```



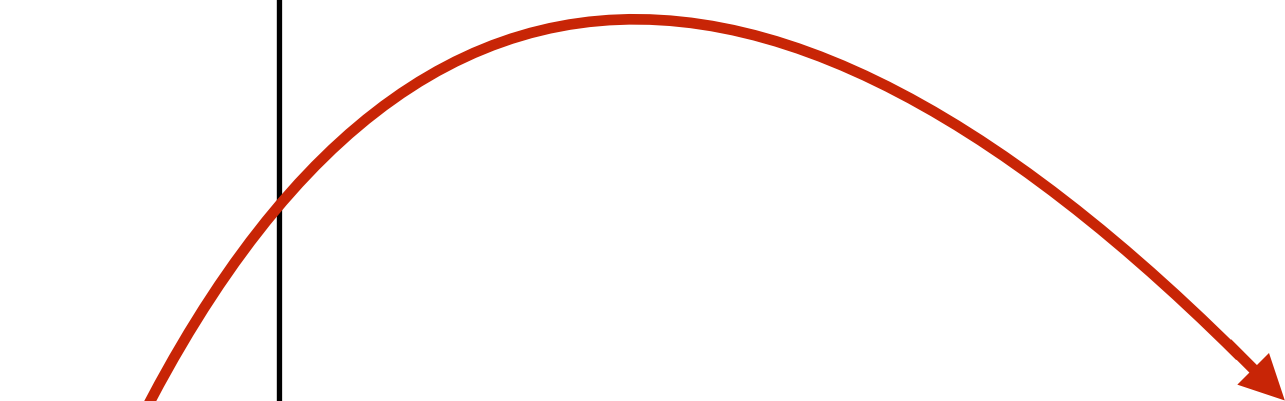
```
int main( )  
{  
    LongFunction(print);  
    return 1;  
}  
  
void print(int x)  
{  
    printf(“%d”, x);  
    return;  
}
```



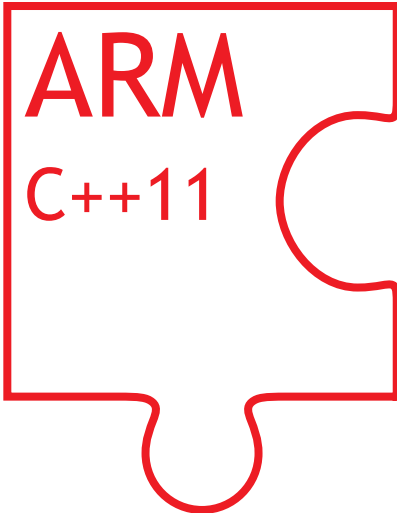
```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```



```
int main( )  
{  
    LongFunction(print);  
    return 1;  
}  
  
void print(int x)  
{  
    printf(“%d”, x);  
    return;  
}
```

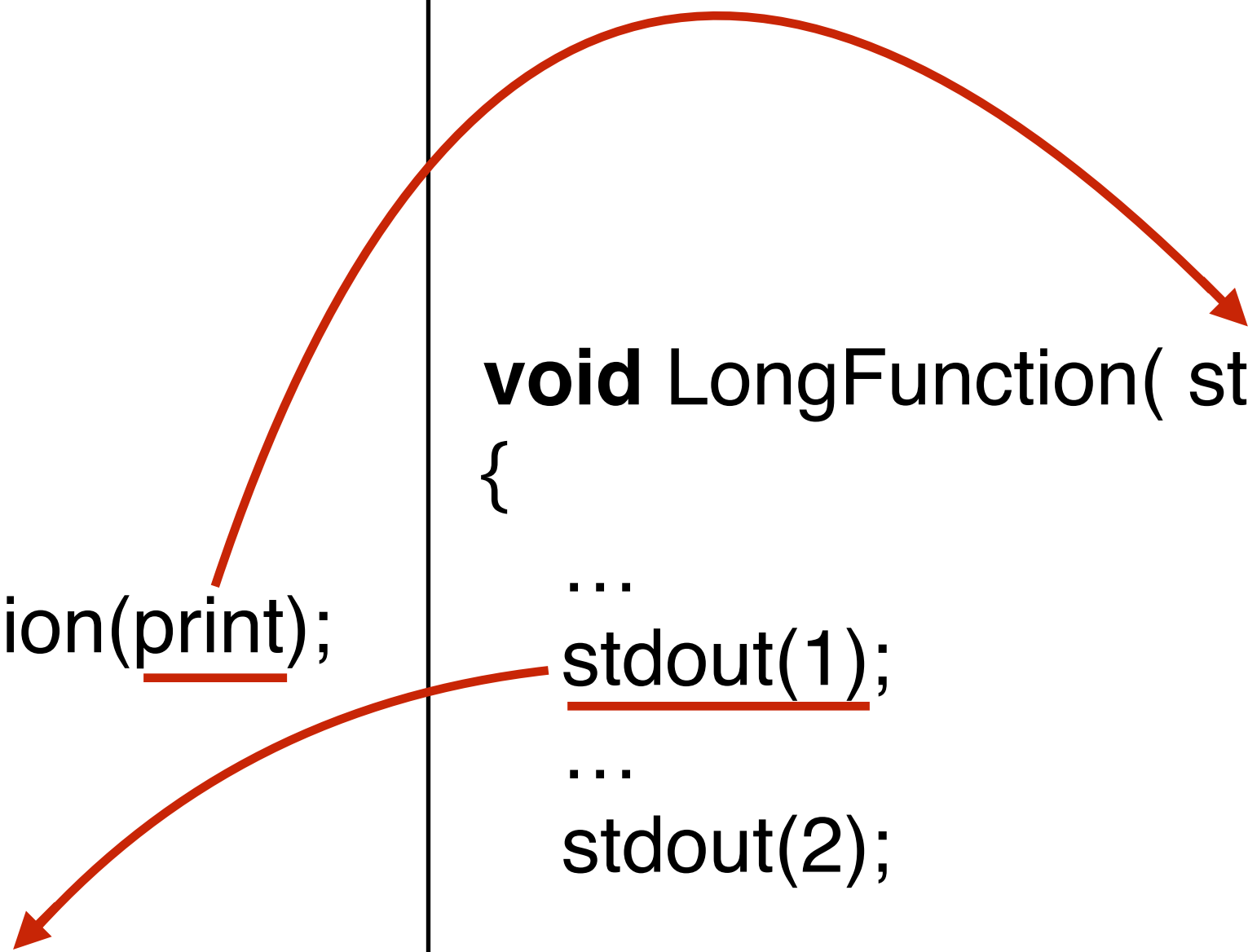


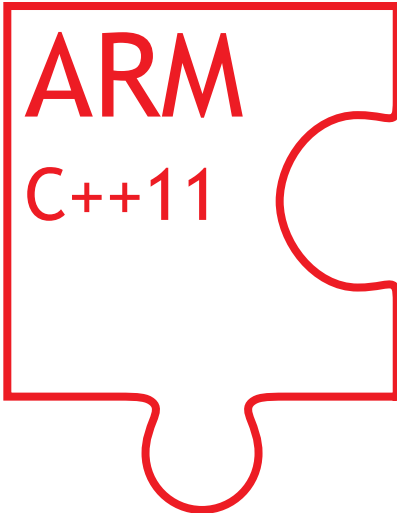
```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```

```
int main( )  
{  
    LongFunction(print);  
    return 1;  
}  
  
void print(int x)  
{  
    printf(“%d”, x);  
    return;  
}
```

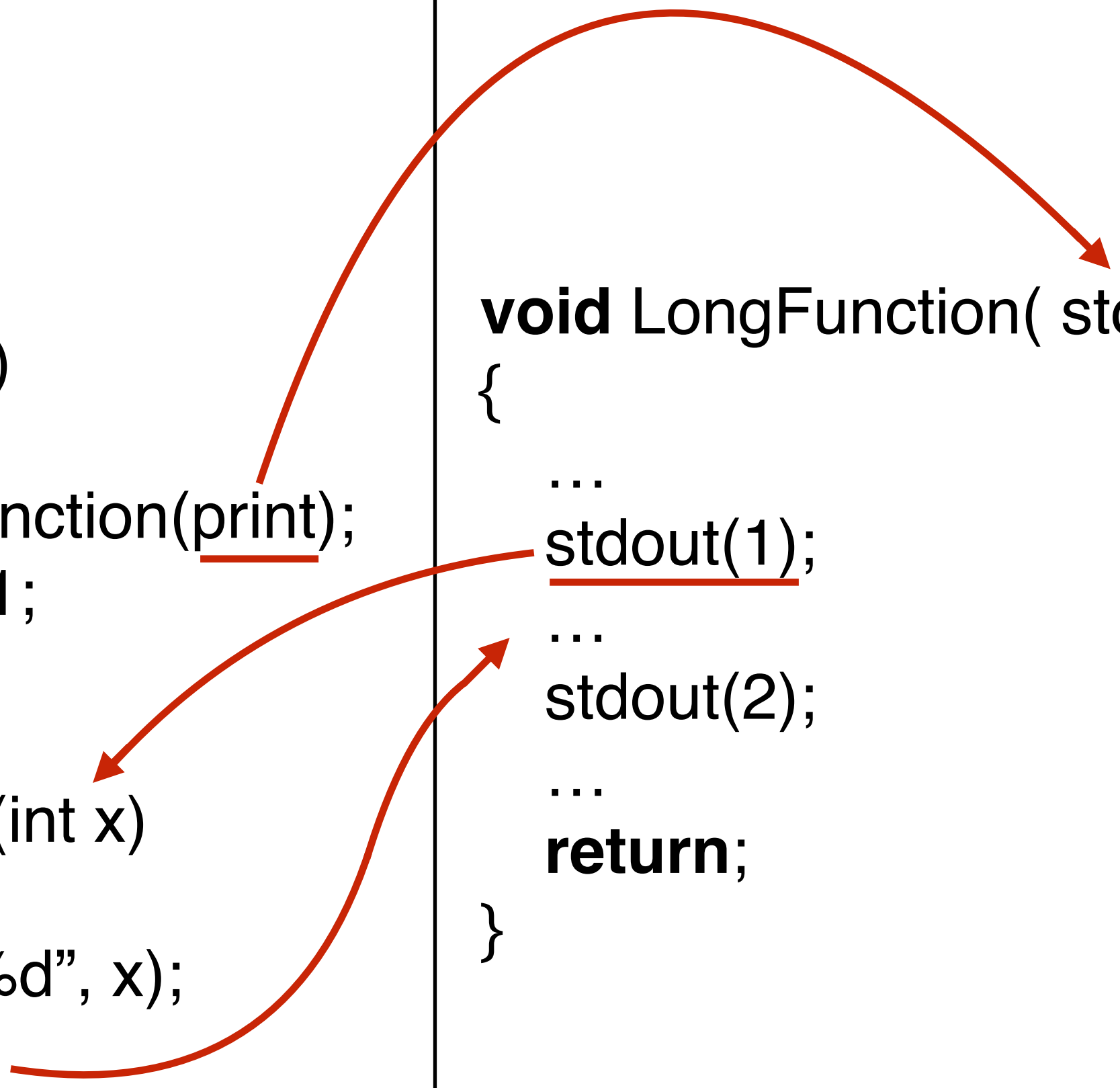
```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```

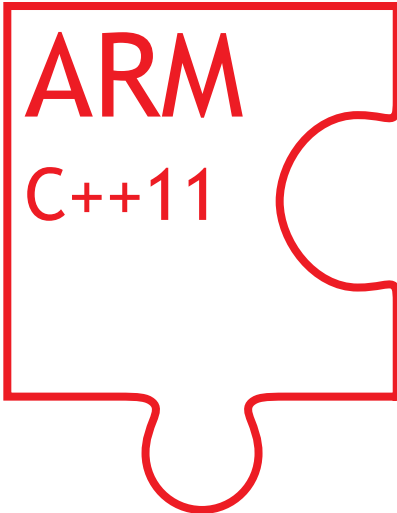




```
int main( )  
{  
  LongFunction(print);  
  return 1;  
}  
  
void print(int x)  
{  
  printf(“%d”, x);  
  return;  
}
```

```
void LongFunction( stdout(int) )  
{  
  ...  
  stdout(1);  
  ...  
  stdout(2);  
  ...  
  return;  
}
```





```
int main( )  
{  
    LongFunction(tweet);  
    return 1;  
}
```



```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```



Push Push

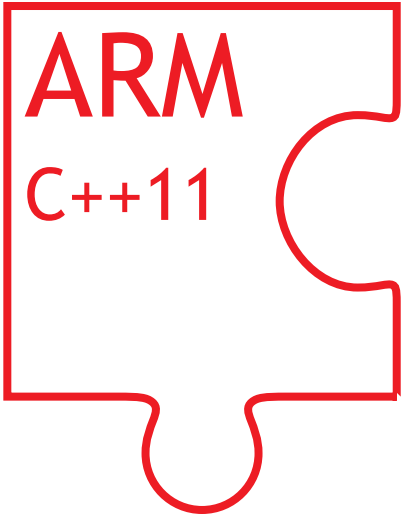
@PushPushFPGA

fail



5:41 AM - 11 Feb 2015

}



```
int main( )  
{  
    LongFunction(tweet);  
    return 1;  
}
```



```
void LongFunction( stdout(int) )  
{  
    ...  
    stdout(1);  
    ...  
    stdout(2);  
    ...  
    return;  
}
```

void HigherOrderFunction ()

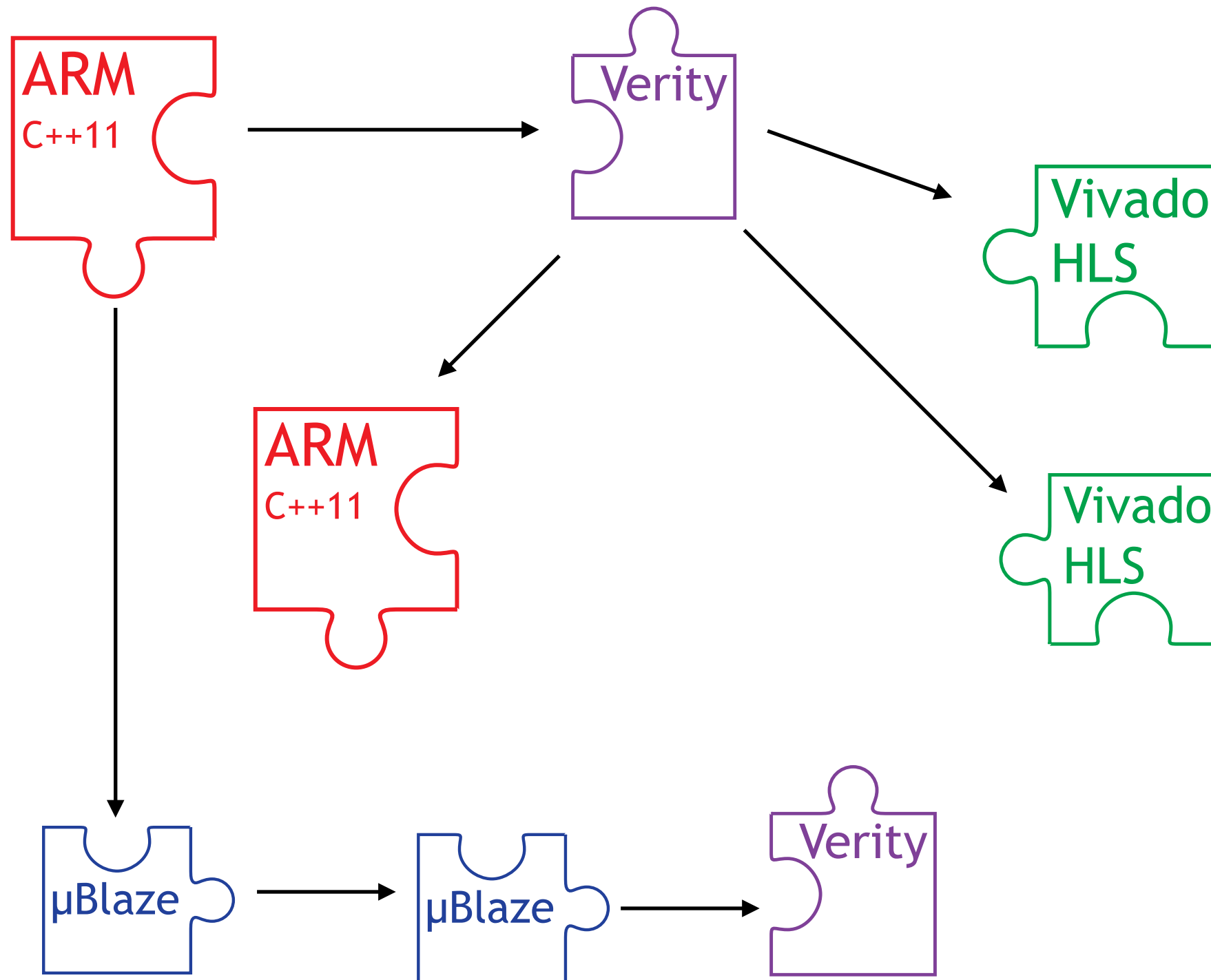
```
void HigherOrderFunction ( int (*foo)())
```

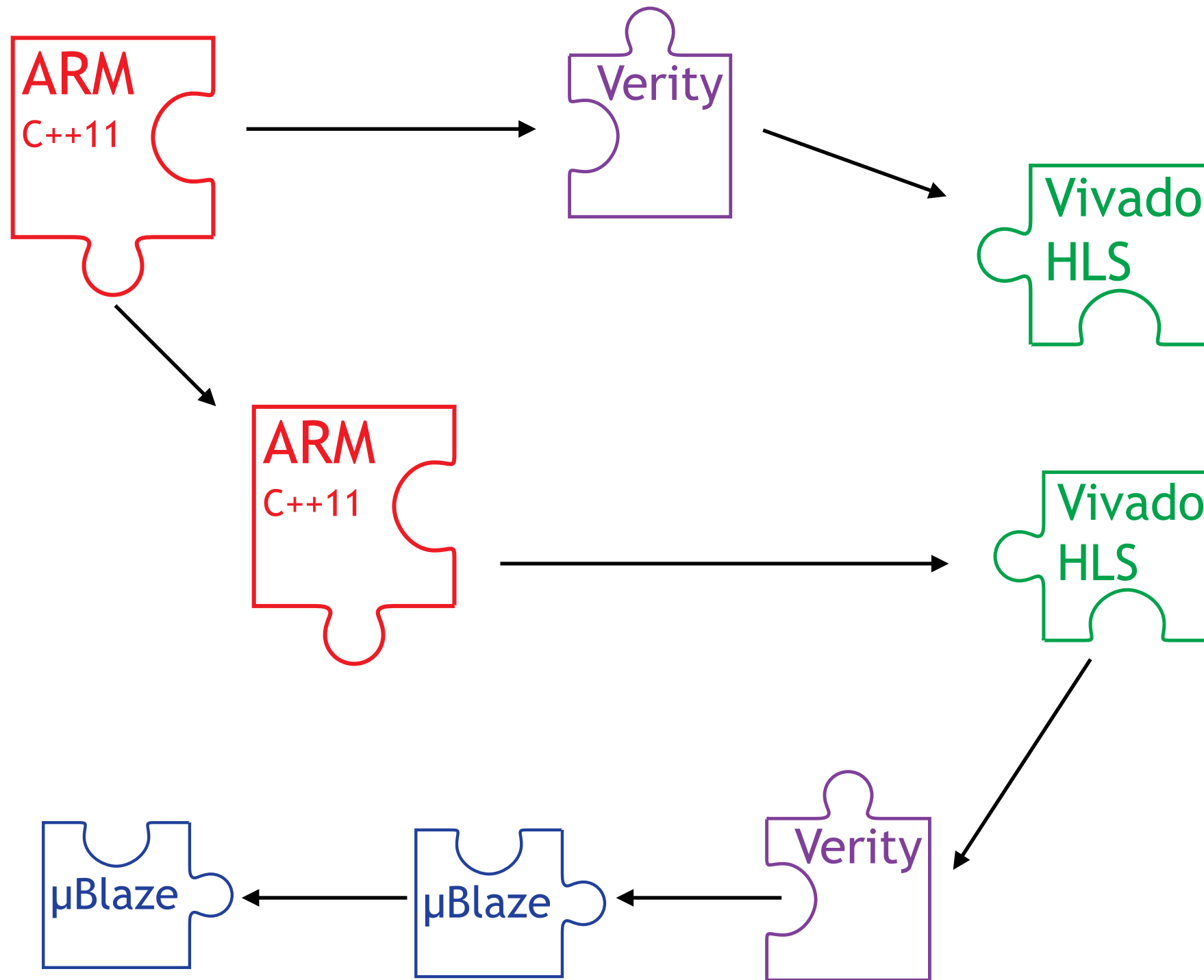
```
void HigherOrderFunction ( int (*foo)( int (*ooo)()))
```



```
void HigherOrderFunction ( int (*foo)( int (*ooo)(int (*oooo)()))))
```

```
void HigherOrderFunction ( int (*foo)( int (*ooo)(int (*oooo)(int *(ooooo)()))))
```





```
int foo( int (*b)(int a) )
```

```
int bar( int x, int y )
```

```
int foo( int (*b)(int a) )
```

```
int bar( int x, int y )
```

```
foo( bar( ) )
```

```
int foo( int (*b)(int a) )
```

```
int bar( int x, int y )
```

```
foo( bar( ) )
```



```
int foo( int (*b)(int a) )
```



```
int foo( int (*b)(int a) )
```

```
int inc( int x)
```

```
int foo( int (*b)(int a) )
```

```
int inc( int x)
```

```
foo( inc( ) )
```

```
int foo( int (*b)(int a) )
```

```
int inc( int x)
```

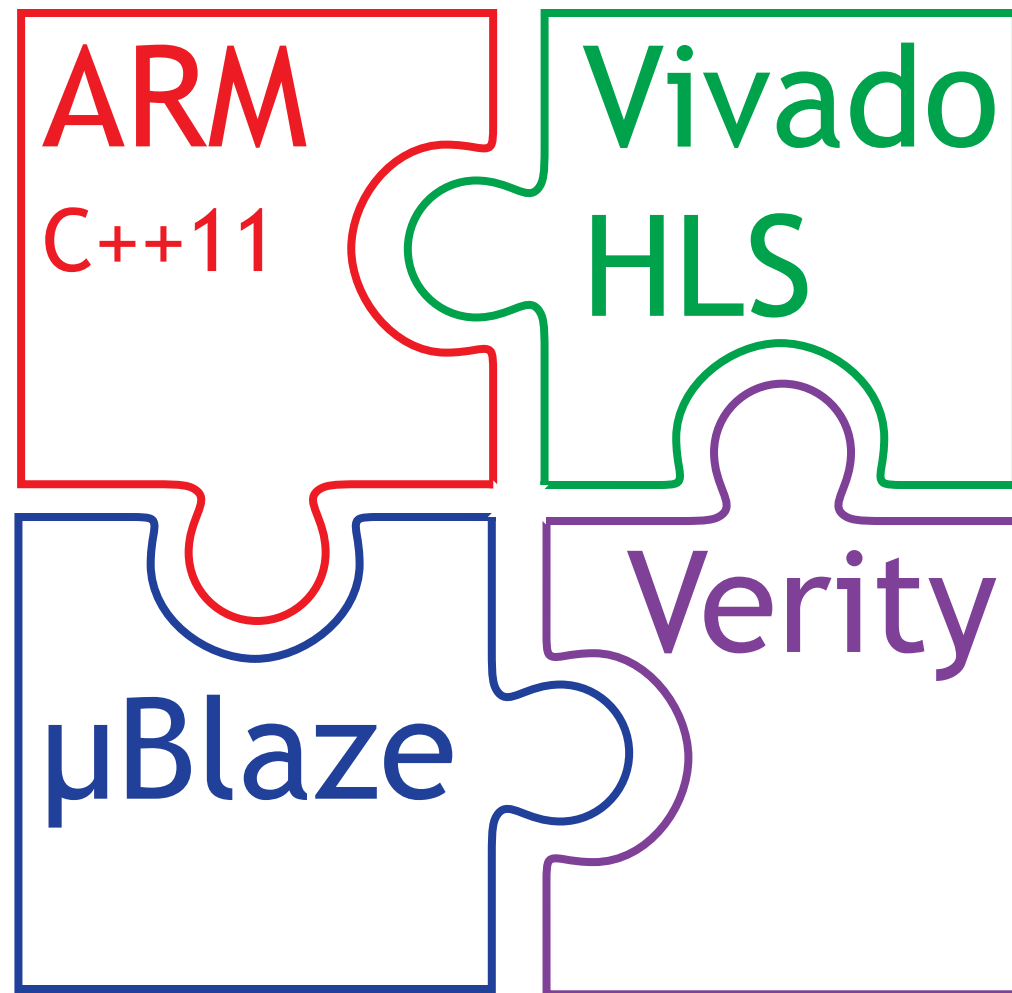
```
foo( inc( ) )
```



2 Million function calls/ second

System Level Linker

System Level Linker



System Level Linker

System Level Linker

Higher Order Functions

System Level Linker

Higher Order Functions

```
foo( bar() )  
{  
    bar();  
}
```

System Level Linker

Higher Order Functions

System Level Linker

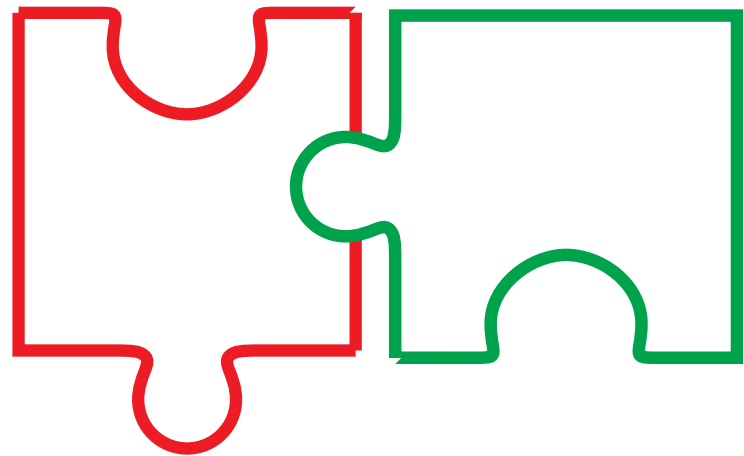
Higher Order Functions

Type Safety

System Level Linker

Higher Order Functions

Type Safety



System Level Linker

Higher Order Functions

Type Safety

